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Polyseal®

Total Sealing Technology

Polyseal is a registered trade name of
Claron Hydraulic Seals Ltd.

Elastomer Based Seals:-

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West Midlands. B64 6PN UK

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Fax. +44 (0) 121 559 1036

E-Mail: Sales@claron-seals.co.uk
Website: www.claron.co.uk

PTFE / Plastic Faced Seals:-

Claron Hydraulic Services
Yalberton Industrial Estate, Paignton
Devon, TQ4 7QL UK

Tel. +44 (0) 1803 528852
Fax. +44 (0) 1803 525134

E-Mail: Services@claron.co.uk
Website: www.claron.co.uk

PTFE Stock Shapes:-

Claron (Plastics) Ltd.
Yalberton Industrial Estate, Paignton
Devon, TQ4 7QL UK

Tel. +44 (0) 1803 528677
Fax. +44 (0) 1803 525134

E-Mail: Plastics@claron.co.uk
Website: www.claron.co.uk

www.claron.co.uk
for updated information

Introduction

The Claron Group of companies is one of the leading manufacturers of high quality hydraulic and pneumatic sealing products, marketing a range of seals under the "Polyseal" trade name. Based in the UK, it has expanded rapidly since its formation in 1973 and since 1985 has continued to develop modern manufacturing plants in both the West Midlands and South Devon.

A high level of expertise in the manufacture of rubber and plastics products enables the group to co-ordinate the design and manufacture of high quality seals using many specialist materials. Various combinations of rubber/fabric, polyurethane's, PTFE Compounds, TPE, POM, UHMWPE, VESPEL, PEEK and Phenolic along with other high performance materials enables the Group to offer an extremely comprehensive range of sealing products.

The extensive knowledge of modern materials necessary for the production of the "Polyseal" range of products and the further development of specialist processing methods also provide the facilities for other complementary ranges of products and customer related services. Claron is the UK's largest manufacturer of stock shapes based on PTFE compounds specifically developed for sealing systems. The quality of this range of products has gained the approval and widespread use of many diverse industries whether supplied as P.T.F.E. semi-finished products or machined components.
The trend towards the supply of quality seal kits, packaged to meet the requirements of both production and aftermarket sales is also uniquely accommodated by the Group, being ideally suited to the many diverse methods of manufacture available.
Claron is not only a market leader but unique within the UK for the range of products manufactured. With the exception of both O-Ring production all the products shown in this catalogue are manufactured by Claron within the UK, utilising modern in-house plant and stringent quality procedures to ISO Standards.

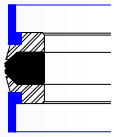
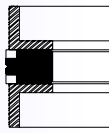
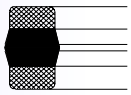
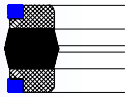
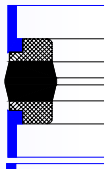
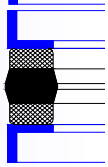
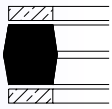
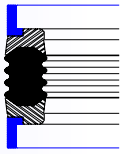
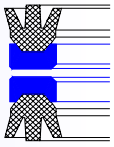
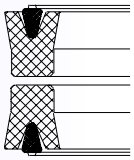
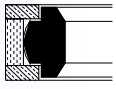
The Group is uniquely equipped to meet the demands of today's sealing technology and a continuing policy of product development with a commitment to quality and excellence ensures that the Group will continue to be capable of meeting the future demands of the Hydraulics and Pneumatic industries with products at the forefront of technology.

The Claron Group operate a quality management system, accredited through the BSI, to the BS EN ISO 9002; 1994 standard.

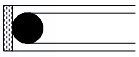
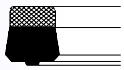
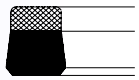
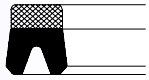
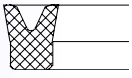
Claron Group - Products

Hydraulic & Pneumatic Seals
Seal Kits
Precision Rubber Mouldings
PTFE Stock shapes
Bellows & Components
Plastics, Gaskets
Valve Seats

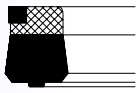
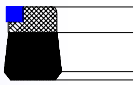
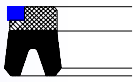
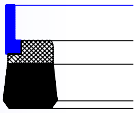
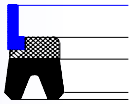
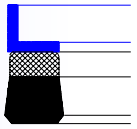
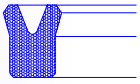
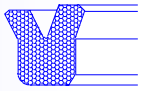
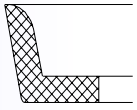
Product Range

Type	Profile	Style	Description	Temp. °C	Pressure Bar ≤	Speed M/Sec ≤	Availability Metric	Availability Inch	Page
				Maximum Non-Simultaneous Conditions					
Double Acting Piston Seals - Section A		**SPS**	Double acting NBR piston seal for one piece pistons, incorporating Polyester anti-extrusion rings & POM bearing rings	-30 to 100	500	0.5	☑	☑	A1
		**SPS**	Double acting NBR piston seal for one piece pistons, incorporating P.T.F.E. anti-extrusion rings & POM bearing rings.	-30 to 100	250	0.5	☑	☑	A2
		**DP**	Double acting NBR piston seal with rubberised fabric reinforcement.	-30 to 100	400	0.5	☑	☑	A3
		**DPE**	Double acting NBR piston seal with rubberised fabric reinforcement & clip on POM anti-extrusion rings.	-30 to 100	400	0.5	☑	☑	A4
		**DPW**	Double acting NBR piston seal with rubberised fabric reinforcement & clip on POM anti-extrusion Bearing rings.	-30 to 100	400	0.5	☑	☑	A5
		**DPW.../L**	Double acting NBR piston seal with rubberised fabric reinforcement & full width POM anti-extrusion Bearing rings.	-30 to 100	400	0.5	☑	☑	A6
		**JS/H**	Double acting NBR piston seal with polyester anti-extrusion headers.	-30 to 100	600	0.5	☒	☑	A7
		**DPDS**	Double acting NBR piston seal for one piece pistons, incorporating Hytrel anti-extrusion rings & POM bearing rings.	-30 to 100	600	0.5	☑	☑	A8
		**SFD**	Double acting NBR rubberised fabric piston seal incorporating POM anti-extrusion header.	-30 to 100	600	0.8	☑	☒	A9
		**PRF PFD**	Double acting NBR rubberised fabric piston seal incorporating POM or NBR filler ring.	-30 to 100	400	0.5	☑	☒	A10 Call
		**SPW**	Double acting NBR energised Bronze filled PTFE piston seal for one piece pistons, incorporating MoS_2 filled PA anti-extrusion rings.	-30 to 100	500	4.0	☑	☑	A11
		**CSPG**	Double acting NBR energised	-40 to 120	800	15.0	☒	☑	A12

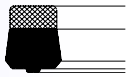
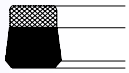
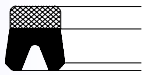
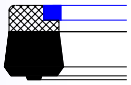
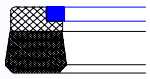
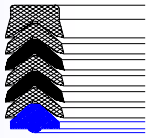
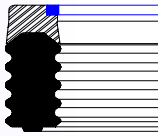
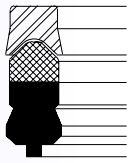
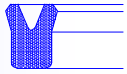
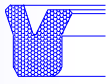
Product Range

Type	Profile	Style	Description	Temp. °C	Pressure Bar ≤	Speed M/Sec ≤	Availability Metric	Availability Inch	Page
				Maximum Non-Simultaneous Conditions					
Double Acting Piston Seals - A		**CS 8**	Glass filled PTFE piston seal for one piece pistons. Double acting NBR energised 98° Shore A Polyurethane piston seal for one piece pistons to ISO/European housing standards.	-30 to 100	450	1.0	☑	☒	A13
		**CSPGI**	Double acting NBR energised 98° Shore A Polyurethane piston seal for one piece pistons to Japanese housing standards	-30 to 100	450	1.0	☑	☒	A14
	 	**CS 5** **841**	Double acting NBR energised Bronze filled PTFE piston seal for one piece pistons.	-50 to 200	800	15.0	☑	☑	A15
		**CS2** **CS4**	Double acting NBR energised PTFE piston seal for one piece pistons.	-50 to 200	350	15.0	☑	☑	A16
		**D-Ring**	Double acting NBR energised Bronze filled PTFE piston seal for one piece pistons	-50 to 200	800	15.0	☑	☑	A17
		**DSE**	Double acting NBR energised PTFE piston seal for O-Ring housings to BS1806 & BS4518.	-50 to 200	350	5.0	☑	☑	A18 Call
Single Acting Piston Seals - Section B		**CP**	Single acting NBR piston / rod seal with rubberised fabric reinforcement.	-30 to 100	400	0.5	☑	☒	B1
		**P**	Single acting NBR piston / rod seal with rubberised fabric reinforcement.	-30 to 100	400	0.5	☒	☑	B2
		**GP**	Single acting U-Section NBR piston / rod seal with rubberised fabric reinforcement.	-30 to 100	400	0.5	☑	☑	B3
		**PRU**	Single acting U-Section NBR piston / rod seal .	-30 to 100	150	0.5	☑	☑	B4 Call
		**PFU**	Single acting U-Section NBR rubberised fabric piston / rod seal.	-30 to 100	400	0.5	☑	☑	B5 Call

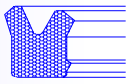
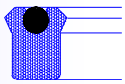
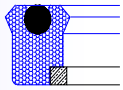
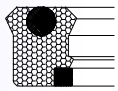
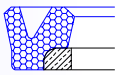
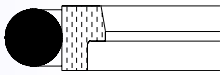
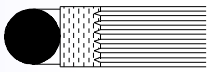
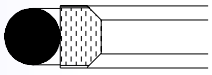
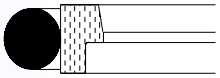
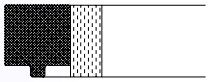
Product Range

Type	Profile	Style	Description	Temp. °C	Pressure Bar ≤	Speed M/Sec ≤	Availability Metric	Availability Inch	Page
Single Acting Piston Seals - Section B				Maximum Non-Simultaneous Conditions					
		**CPE**	Single acting NBR piston seal with rubberised fabric reinforcement & clip on POM anti-extrusion ring.	-30 to 100	400	0.5	☑	☒	B6
		**PEO**	Single acting NBR piston seal with rubberised fabric reinforcement & clip on POM anti-extrusion ring.	-30 to 100	400	0.5	☒	☑	B7
		**GPE**	Single acting U-Section NBR piston seal with rubberised fabric reinforcement & clip on POM anti-extrusion ring.	-30 to 100	400	0.5	☑	☑	B8
		**PW**	Single acting NBR piston seal with rubberised fabric reinforcement & clip on POM bearing ring.	-30 to 100	400	0.5	☒	☑	B9
		**GPW**	Single acting U-Section NBR piston seal with rubberised fabric reinforcement & clip on POM Bearing ring.	-30 to 100	400	0.5	☑	☑	B10
		**PW.../L**	Single acting NBR piston seal with rubberised fabric reinforcement & full width POM bearing ring.	-30 to 100	400	0.5	☑	☑	B11
		**CPU**	Single acting U-Section AU piston / rod seal.	-40 to 110	400	0.5	☑	☑	B12
		**CPU.../P**	Single acting Asymetric AU piston seal.	-40 to 110	400	0.5	☑	☑	B13
		**FPC**	Single acting NBR rubberised fabric piston seal.	-30 to 100	170	0.5	☑	☑	B14
		**PRC**	Single acting NBR piston seal.	-30 to 100	35	0.5	☑	☑	B15 Call
		**851**	Single acting NBR energised Bronze filled PTFE piston seal for one piece pistons.	-50 to 200	800	15.0	☑	☑	B16
		**PDE**	Single acting NBR piston seal.	-30 to 100	100	0.5	☑	☑	B17 Call

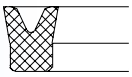
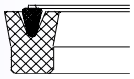
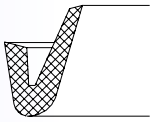
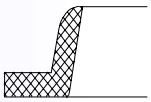
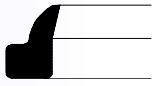
Product Range

Type	Profile	Style	Description	Temp. °C	Pressure Bar ≤	Speed M/Sec ≤	Availability Metric	Availability Inch	Page
				Maximum Non-Simultaneous Conditions					
B		PSR	POM piston seal retaining ring.	-30 to 100		0.5	☑	☑	B18
Rod Seals - Section C		CP	Single acting NBR rod / piston seal with rubberised fabric reinforcement.	-30 to 100	400	0.5	☑	☒	C1
		P	Single acting NBR rod / piston seal with rubberised fabric reinforcement.	-30 to 100	400	0.5	☒	☑	C2
		GP	Single acting U-Section NBR rod / piston seal with rubberised fabric reinforcement.	-30 to 100	400	0.5	☑	☑	C3
		CPI	Single acting NBR rod seal with rubberised fabric reinforcement & clip on POM anti-extrusion ring.	-30 to 100	400	0.5	☑	☒	C4
		PEI	Single acting NBR rod seal with rubberised fabric reinforcement & clip on POM anti-extrusion ring.	-30 to 100	400	0.5	☒	☑	C5
		PV PVM	Single acting NBR rubberised fabric rod / piston seal. PVM include NBR V-Rings as standard	-30 to 100	700	0.5	☑	☑	C6
		PDS	Single acting NBR rod seal incorporating a Polyester anti-extrusion header & POM anti-extrusion rings.	-30 to 100	600	0.5	☑	☑	C7
		EGS	Single acting NBR rod seal incorporating rubberised fabric reinforcement and polyester anti extrususion header.	-30 to 100	400	0.5	☒	☑	C8
		CPU	Single acting U-Section AU rod / piston seal.	-40 to 110	400	0.5	☑	☑	C9
		CPU.../F	Single acting U-Section AU rod / piston seal.	-30 to 100	400	0.5	☑	☑	C10
		CPU.../G	Single acting Asymetric AU rod seal.	-40 to 110	400	0.5	☑	☑	C11

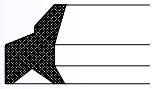
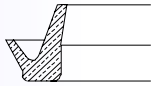
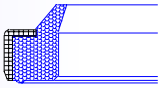
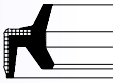
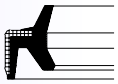
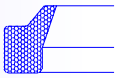
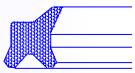
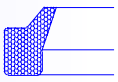
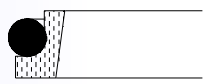
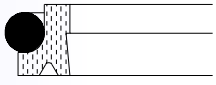
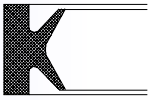
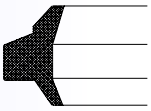
Product Range

Type	Profile	Style	Description	Temp. °C	Pressure Bar ≤	Speed M/Sec ≤	Availability Metric	Availability Inch	Page
				Maximum Non-Simultaneous Conditions					
Rod Seals - Section C		**CPG**	Single acting Asymetric AU rod seal with secondary sealing lip.	-40 to 110	400	0.5	☑	☑	C12
		**CPS**	Single acting solid section AU rod seal.	-40 to 110	400	0.5	☑	☒	C13
		**CPU.../OR**	Single acting U-Section AU rod seal with NBR energiser.	-40 to 110	400	0.5	☑	☑	C14
		**CPUI.../OR**	Single acting U-Section AU rod seal with NBR energiser & MoS_2 filled PA anti-extrusion rings.	-40 to 110	500	0.5	☑	☒	C15
		**CPGI.../OR**	Single acting U-Section AU rod seal with NBR energiser , MoS_2 filled PA anti-extrusion rings, & secondary sealing lip	-40 to 110	500	0.5	☑	☒	C16
		**HBI**	Single acting U-Section AU rod seal with POM anti-extrusion rings.	-40 to 110	500	0.5	☑	☒	C17
		**CS6**	Double acting NBR energised Bronze filled PTFE rod seal.	-50 to 200	800	15.0	☑	☑	C18
		**741**	Double acting NBR energised Bronze filled PTFE rod seal.	-50 to 200	800	15.0	☑	☑	C18
		**751**	Double acting NBR energised Bronze filled PTFE rod seal.	-50 to 200	800	15.0	☑	☑	C18
		**CS1 CS3**	Double acting NBR energised PTFE rod seal.	-50 to 200	350	15.0	☑	☑	C19
		**HBT**	Single acting NBR energised Bronze filled PTFE rod seal.	-50 to 200	800	15.0	☑	☑	C20
		**HBTY**	Single acting NBR energised filled PTFE tandem seal.	-30 to 120	400	15.0	☑	☒	C21

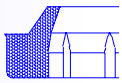
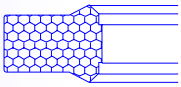
Product Range

Type	Profile	Style	Description	Temp. °C	Pressure Bar ≤	Speed M/Sec ≤	Availability Metric	Availability Inch	Page
				Maximum Non-Simultaneous Conditions					
Rod Seals - Section C		**DSI**	Double acting NBR energised PTFE rod seal for O-Ring housings to BS1806 & BS4518.	-30 to 120	350	5.0	☑	☑	C22 Call
		**PFU**	Single acting U-Section NBR rubberised fabric rod / piston seal.	-30 to 100	400	0.5	☑	☑	C23 Call
		**PRU**	Single acting U-Section NBR rod / piston seal.	-30 to 100	150	0.5	☑	☑	C24 Call
		**PDI**	Single acting U-Section NBR rod seal.	-30 to 100	100	0.5	☑	☑	C25 Call
		**PRF PFD**	Single acting NBR rubberised fabric rod seal incorporating POM or NBR filler ring.	-30 to 100	400	0.5	☑	☒	C26 Call
		**PFI**	Single acting NBR rubberised fabric rod seal.	-30 to 100	200	0.5	☑	☑	C27 Call
		**PFC**	Single acting NBR rubberised fabric rod seal.	-30 to 100	200	0.5	☑	☑	C28 Call
Rod Wipers - Section D		**PWB**	Single acting NBR light duty rod wiper.	-30 to 100		3.0	☒	☑	D1
		**PWO**	Single acting NBR medium to heavy duty rod wiper.	-30 to 100		3.0	☒	☑	D2
		**PWS**	Single acting NBR medium to heavy duty rod wiper.	-30 to 100		3.0	☑	☑	D3
		**PWM**	Single acting NBR medium to heavy duty rod wiper.	-30 to 100		3.0	☑	☑	D4
		**WM**	Single acting NBR medium to heavy duty rod wiper.	-30 to 100		3.0	☑	☒	D5

Product Range

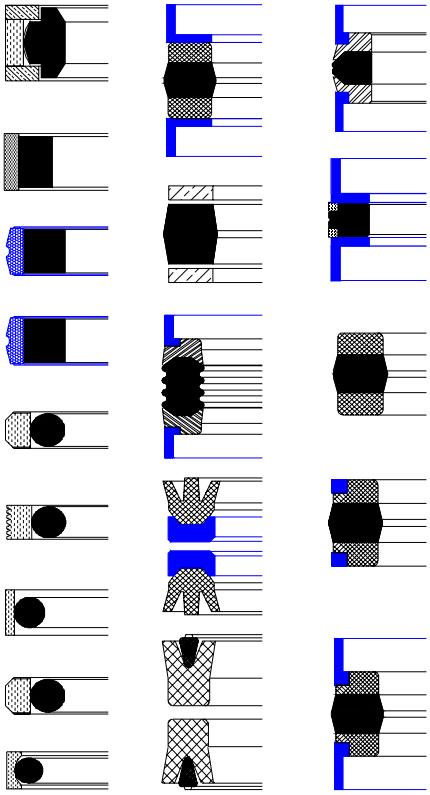
Type	Profile	Style	Description	Temp. °C	Pressure Bar ≤	Speed M/Sec ≤	Availability Metric	Availability Inch	Page
				Maximum Non-Simultaneous Conditions					
Rod Wipers D		**PWE**	Twinlip NBR medium to heavy duty rod wiper.	-30 to 100		3.0	☒	☑	D6
		**CSWM CSW**	Single lip MoS_2 filled PA medium to heavy duty rod wiper.	-40 to 100		5.0	☑	☑	D7
		**PMW**	Single lip metal cased AU medium to heavy duty Press fit rod wiper.	-40 to 110		3.0	☑	☒	D8
		**PFB**	Twinlip metal cased NBR medium to heavy duty Press fit rod wiper.	-30 to 100		3.0	☑	☒	D9
		**PFP**	Twinlip metal cased AU medium to heavy duty Press fit rod wiper.	-40 to 110		3.0	☑	☒	D10
		**UPWM**	Single lip AU medium to heavy duty rod wiper.	-40 to 110		3.0	☑	☒	D11
		**PWD**	Twinlip AU medium to heavy duty rod wiper.	-40 to 110		3.0	☑	☒	D12
		**EW**	Single lip AU heavy duty rod wiper.	-40 to 110		3.0	☑	☒	D13
		**931**	Single lip NBR energised PTFE light to heavy duty rod wiper.	-50 to 200		15.0	☑	☑	D14
		**941 951**	Twinlip NBR energised PTFE light to heavy duty rod wiper.	-50 to 200		15.0	☑	☑	D14
		**PWH**	Twinlip NBR light duty rod wiper.	-30 to 100		3.0	☒	☑	D15 Call
		**PWN**	Twinlip NBR medium to heavy duty rod wiper.	-30 to 100		3.0	☒	☑	D16 Call

Product Range

Type	Profile	Style	Description	Temp. °C	Pressure Bar ≤	Speed M/Sec ≤	Availability Metric	Availability Inch	Page
				Maximum Non-Simultaneous Conditions					
D		**PWC**	Single lip AU medium to heavy duty rod wiper.	-40 to 110		3.0	☑	☒	D17
Bearing Rings - Section E		**EBR IBR**	POM rod/piston bearing rings.	-40 to 110	See Table	1	☑	☑	E1
		**BT CT**	Bronze or Carbon filled PTFE rod/piston bearing rings.	-60 to 200	See Table	15	☑	☑	E2
		**BGF**	Glass filled PA rod/piston bearing rings.	110	See Table	115	☑	☑	E3
		**PBR**	Reinforced Phenolic resin rod / piston bearing rings.	150	See Table	3	☑	☑	E4
O-Rings, Backup Rings & Flange Seals - Section F		**BS.../OR70** **BS.../OR90**	NBR O-Rings 75° IRHD. NBR O-Rings 90° IRHD.	-40 to 130 -30 to 100	100		☑	☑	F1 Call
		**BS.../ORP**	Polyurethane O-Rings.	-40 to 110	350		☑	☑	F2 Call
		**BS.../ORV**	P.T.F.E. O-Rings.	-200 to +260	400		☑	☑	F3 Call
		**BS...**							
		**BS.../E**	P.T.F.E. Anti-extrusion rings to suit O-Rings in Spiral, Endless, or Endless Split styles.	-200 to +200	400		☑	☑	F4
		**BS.../ES**							
		**CFS**	Polyurethane Static Flange Seal to suit SAE J518 Flanges	-40 to 110	400		☑	☑	F5

ALL PRODUCTS ARE PRODUCED IN HOUSE IN THE U.K.
EXCEPT FOR BULK RUBBER O- RING PRODUCTION.

Section A
Double Acting Piston Seals



Design

Designed for use on one piece pistons, the five part assembly consists of an endless precision rubber moulded sealing element supported at each end with angle split support rings. The support rings are designed to accommodate split Polyacetal anti-extrusion bearing rings.
The design allows the anti extrusion bearing rings to react positively to increasing pressures. The final assembly provides a robust sealing unit designed to operate at higher pressures.
The seal is also suitable for existing two piece pistons of the same housing dimensions.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-30°C to 80°C	-30°C to 100°C
0.50	400 Bar	300 Bar
0.15	500 Bar	400 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1for further information.

Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Housing

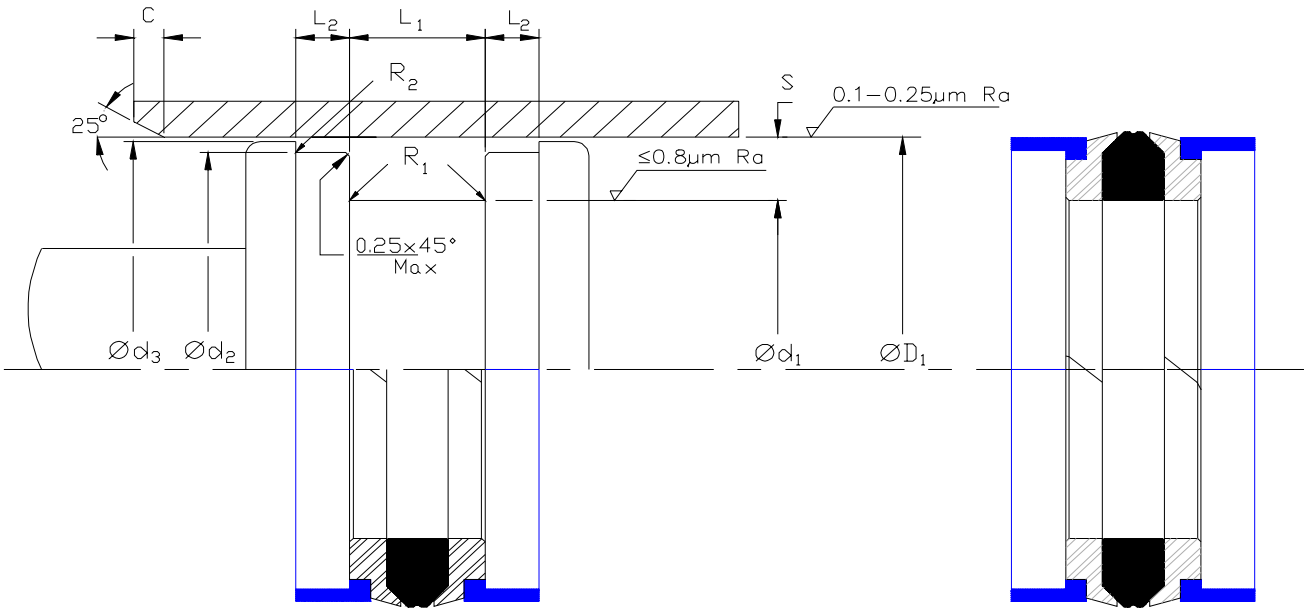
For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

Fit seal onto the piston in the following sequence.

1- Rubber Sealing Element
2- Support Rings
3- Polyacetal bearing rings.

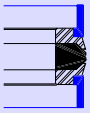
It is important that care be taken in fitting the seal within its housing.
Refer to Appendix 3 for check list.



Double Acting Piston Seal

SPS

Metric

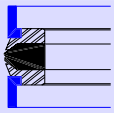


Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	h9 $Ød_1$	h9 $Ød_2$	h11 $Ød_3$	+0.63 +0.38 L_1	+0.1 -0.0 L_2	Nominal S	Minimum C	Maximum R_1	Maximum R_2
* SPS 125094/2	32	24	28.00	31.40	15.12	3.20	4.0	2.5	0.4	0.2
* SPS 157125/1	40	32	36.00	39.40	15.12	3.20	4.0	2.5	0.4	0.2
SPS 157094	40	24	35.40	38.65	18.00	6.35	8.0	5.0	0.4	0.2
SPS 196133	50	34	45.40	48.65	18.00	6.35	8.0	5.0	0.4	0.2
SPS 196133/4	50	34	46.00	49.40	20.12	3.10	8.0	5.0	0.4	0.2
SPS 196149	50	38	46.00	49.40	20.12	4.20	6.0	5.0	0.4	0.2
SPS 196157/1	**50**	**40**	**47.00**	**49.00**	**12.50**	**4.00**	**5.0**	**2.5**	**0.4**	**0.4**
SPS 216153	55	39	51.00	54.40	20.12	3.10	8.0	5.0	0.4	0.2
SPS 236173	60	44	55.40	58.65	18.00	6.35	8.0	5.0	0.4	0.2
SPS 236173/4	60	44	56.00	59.40	20.12	3.10	8.0	5.0	0.4	0.2
SPS 236177	60	45	55.40	58.65	22.12	6.35	7.5	5.0	0.4	0.2
SPS 236188	60	48	56.00	59.40	20.12	4.20	6.0	5.0	0.4	0.2
SPS 248185	63	47	58.40	61.65	19.00	6.35	8.0	5.0	0.4	0.2
SPS 248185/4	63	47	59.00	61.50	20.12	3.10	8.0	5.0	0.4	0.2
SPS 248200	63	51	59.00	62.40	20.12	4.20	6.0	5.0	0.4	0.2
SPS 248208/1	**63**	**53**	**60.00**	**62.00**	**12.50**	**4.00**	**5.0**	**2.5**	**0.4**	**0.4**
SPS 255196	65	50	60.40	63.65	18.00	6.35	7.5	5.0	0.4	0.2
SPS 275196	70	50	64.15	68.35	22.00	6.35	10.0	5.0	0.4	0.2
SPS 275216	70	55	64.15	68.35	22.12	6.35	7.5	5.0	0.4	0.2
SPS 275212/4	70	54	66.00	68.50	20.12	3.10	8.0	5.0	0.4	0.2
SPS 275228	70	58	66.00	69.40	20.12	4.20	6.0	5.0	0.4	0.2
SPS 314236	80	60	74.15	78.35	22.00	6.35	10.0	5.0	0.4	0.2
SPS 314244/4	80	62	76.00	78.50	22.12	3.60	9.0	5.0	0.4	0.2
SPS 314255	80	65	74.15	78.35	22.12	6.35	7.5	5.0	0.4	0.2
SPS 314255/1	**80**	**65**	**76.00**	**78.50**	**20.00**	**5.00**	**7.5**	**4.0**	**0.4**	**0.4**
SPS 314259	80	66	76.00	79.40	22.12	5.20	7.0	5.0	0.4	0.2
SPS 354275	90	70	84.15	88.35	22.00	6.35	10.0	5.0	0.4	0.2
SPS 354275/1	90	70	84.15	88.35	29.62	6.35	10.0	5.0	0.4	0.2
SPS 354299	90	76	86.00	89.40	22.12	5.20	7.0	5.0	0.4	0.2
SPS 393295	100	75	93.15	98.00	22.00	6.35	12.5	6.5	0.4	0.2
SPS 393314	100	80	94.15	98.35	29.62	6.35	10.0	5.0	0.4	0.2
SPS 393334	**100**	**85**	**96.00**	**98.50**	**20.00**	**5.00**	**7.5**	**4.0**	**0.4**	**0.4**
SPS 393338	100	86	96.00	99.40	22.12	5.20	7.0	5.0	0.4	0.2
SPS 433334	110	85	103.10	108.00	22.00	6.35	12.5	6.5	0.4	0.2
SPS 433354	110	90	103.10	108.00	29.62	6.35	10.0	5.0	0.4	0.2
SPS 472393	120	100	113.10	118.00	29.62	6.35	10.0	5.0	0.4	0.2
SPS 492393	125	100	118.00	123.00	25.00	12.70	12.5	6.5	0.4	0.2
SPS 492393/1	125	100	118.00	123.00	25.00	6.35	12.5	6.5	0.4	0.2
SPS 492425	125	108	121.00	124.00	26.12	5.70	8.5	5.0	0.4	0.2
SPS 511433	130	110	123.08	128.00	29.62	6.35	10.0	5.0	0.4	0.2
SPS 629531	160	135	152.60	157.00	25.00	9.52	12.5	6.5	0.4	0.2
SPS 629551	160	140	151.40	158.50	24.62	12.50	10.0	5.0	0.4	0.2

Items in **BOLD** are to suit ISO 6547 Housings

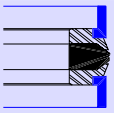
Items marked * comprise of sealing element and two split bearing rings only



Double Acting Piston Seal

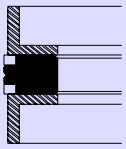
SPS

Imperial



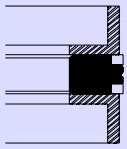
Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	h9 $Ød_1$	h9 $Ød_2$	h11 $Ød_3$	+0.025" +0.015" L_1	+0.004 -0.000 L_2	Nominal S	Minimum C	Maximum R_1	Maximum R_2
SPS 175112	1.750	1.125	1.570	1.698	0.750	0.250	0.312	0.156	0.008	
SPS 200137	2.000	1.375	1.820	1.948	0.750	0.250	0.312	0.156	0.008	
SPS 225162	2.250	1.625	2.069	2.197	0.750	0.250	0.312	0.156	0.008	
SPS 237175	2.375	1.750	2.194	2.322	0.750	0.250	0.312	0.156	0.008	
SPS 250187	2.500	1.875	2.319	2.446	0.750	0.250	0.312	0.156	0.008	
SPS 262200	2.625	2.000	2.443	2.571	0.750	0.250	0.312	0.156	0.008	
SPS 275200	2.750	2.000	2.522	2.685	0.937	0.250	0.375	0.187	0.008	
SPS 300225	3.000	2.250	2.772	2.935	0.937	0.250	0.375	0.187	0.008	
SPS 325250	3.250	2.500	3.021	3.184	0.937	0.250	0.375	0.187	0.008	
SPS 325262	3.250	2.625	3.021	3.184	0.775	0.245	0.312	0.156	0.008	
SPS 350275	3.500	2.750	3.271	3.434	0.937	0.250	0.375	0.187	0.008	
SPS 350285	3.500	2.850	3.272	3.460	0.775	0.295	0.325	0.156	0.008	
SPS 375300	3.750	3.000	3.520	3.683	0.937	0.250	0.375	0.187	0.008	
SPS 400325	4.000	3.250	3.770	3.933	0.937	0.250	0.375	0.187	0.008	
SPS 400337	4.000	3.375	3.772	3.960	0.775	0.245	0.312	0.156	0.008	
SPS 450350	4.500	3.500	4.229	4.422	1.250	0.250	0.500	0.218	0.015	
SPS 500400	5.000	4.000	4.709	4.902	1.250	0.375	0.500	0.218	0.015	
SPS 500425	5.000	4.250	4.772	4.960	0.963	0.245	0.375	0.187	0.008	
SPS 600500	6.000	5.000	5.709	5.902	1.250	0.375	0.500	0.218	0.015	



Double Acting Piston Seal SPS

Metric
Imperial



Design

Designed for use on one piece pistons, the five part assembly comprises of a precision moulded rubber sealing element to which are fitted endless P.T.F.E. anti-extrusion ring son the O.D. The anti extrusion rings are designed to be pre loaded on assembly thus effecting a more positive sealing arrangement. Split Polyacetal anti-extrusion bearing rings are added either side to provide support for the piston head.
This compact one piece piston seal has proven to be popular and effective over a wide range of applications.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-30°C to 80°C	-30°C to 100°C
0.50	175 Bar	110 Bar
0.15	250 Bar	160 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Housing

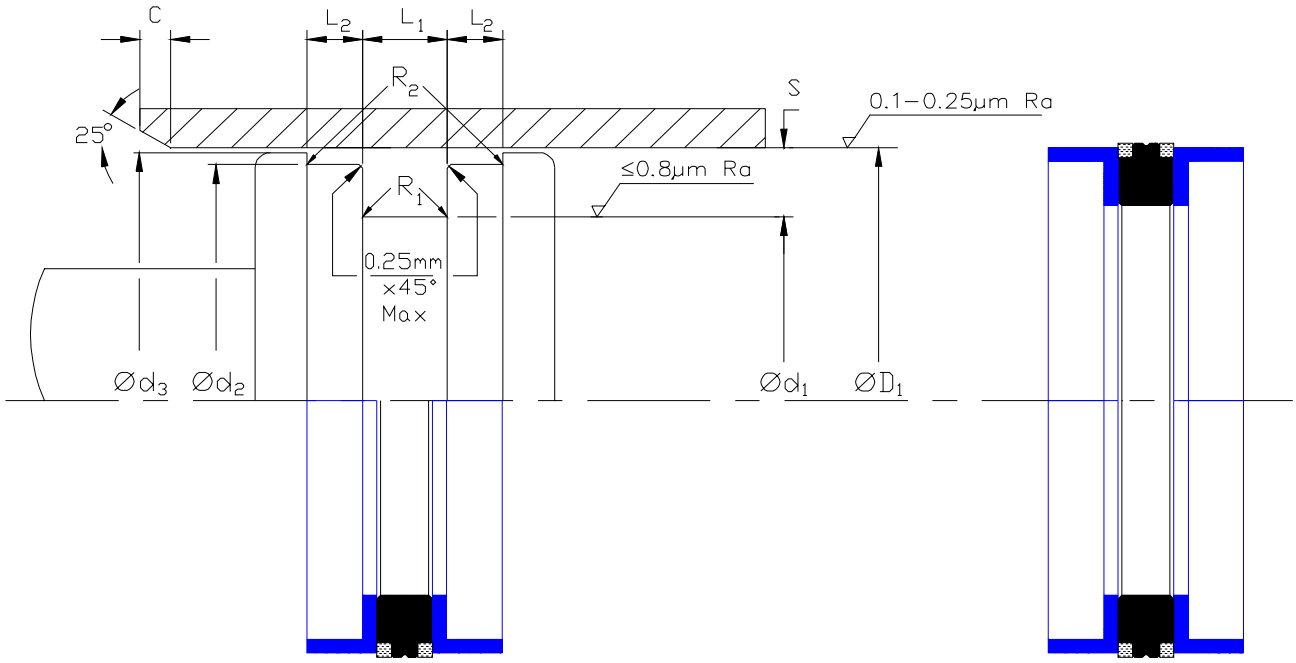
For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

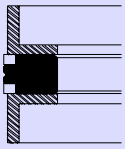
Fitting

Fit seal onto the piston in the following sequence.

1- Solid Anti Extrusion Ring.
2- Rubber Sealing Element
3- Solid Anti Extrusion Ring.
4- Polyacetal bearing rings.

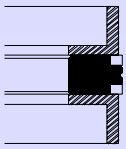
It is important that care be taken in fitting the seal within its housing.
Refer to appendix 3 for check list.





SPS

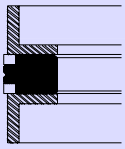
Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	h9 $Ød_1$	h9 $Ød_2$	h9 $Ød_3$	+0.40 +0.13 L_1	+0.0 -0.13 L_2	Nominal S	Minimum C	Maximum R_1	Maximum R_2
* SPS 098068	25	17.5	21.3	24.0	8.5	3.25	3.75	2.0	0.2	
SPS 118082/4	30	21.0	27.0	29.0	13.5	2.0	4.5	2.5	0.2	
SPS 125086	32	22.0	27.5	31.0	11.0	4.0	5.0	2.5	0.2	
SPS 157118	40	30.0	35.5	39.0	11.0	4.0	5.0	2.5	0.2	
SPS 196157	50	40.0	45.5	49.0	11.0	4.0	5.0	2.5	0.2	
SPS 216177	55	45.0	50.5	54.0	11.0	4.0	5.0	2.5	0.2	
SPS 248208	63	53.0	58.5	61.5	11.0	4.0	5.0	2.5	0.2	
SPS 314275	80	70.0	75.5	78.5	11.0	4.0	5.0	2.5	0.2	
SPS 393342	100	87.0	93.8	98.5	14.0	6.0	6.5	4.0	0.4	
SPS 492440	125	112.0	118.8	123.5	14.0	6.0	6.5	4.0	0.4	

* This size comprises Rubber Sealing Element and two Split Bearing Rings only.

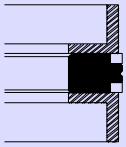


ClaronPolyseal®

Double Acting Piston Seal

SPS

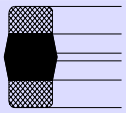
Imperial

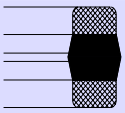


Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	h9 $Ød_1$	h9 $Ød_2$	h9 $Ød_3$	+0.015" +0.005" L_1	-0.005 +0.000 L_2	Nominal S	Minimum C	Maximum R_1	Maximum R_2
*SPS 100068	1.000	0.687	0.829	0.937	0.343	0.125	0.156	0.078	0.008	
*SPS 106075	1.062	0.750	0.900	1.000	0.312	0.062	0.156	0.093	0.008	
*SPS 125094	1.250	0.937	1.079	1.187	0.343	0.125	0.156	0.078	0.008	
SPS 150112	1.500	1.125	1.324	1.437	0.437	0.150	0.187	0.093	0.008	
SPS 175137	1.750	1.375	1.574	1.687	0.437	0.150	0.187	0.093	0.008	
SPS 175137/1	1.750	1.375	1.638	1.710	0.490	0.245	0.187	0.093	0.008	
SPS 200162	2.000	1.625	1.824	1.937	0.437	0.150	0.187	0.093	0.008	
SPS 200162/1	2.000	1.625	1.888	1.960	0.490	0.245	0.187	0.093	0.008	
SPS 237200	2.375	2.000	2.195	2.312	0.437	0.150	0.187	0.093	0.008	
SPS 250200	2.500	2.000	2.320	2.460	0.650	0.245	0.250	0.125	0.008	
SPS 250212	2.500	2.125	2.325	2.437	0.437	0.150	0.187	0.093	0.008	
SPS 275225	2.750	2.250	2.570	2.710	0.650	0.250	0.250	0.125	0.008	
SPS 275237	2.750	2.375	2.575	2.687	0.437	0.150	0.187	0.093	0.008	
SPS 300237	3.000	2.375	2.772	2.960	0.775	0.245	0.312	0.156	0.016	
SPS 300262	3.000	2.625	2.825	2.937	0.437	0.150	0.187	0.093	0.008	
SPS 325287	3.250	2.875	3.075	3.187	0.437	0.150	0.187	0.093	0.008	
SPS 350300	3.500	3.000	3.270	3.437	0.562	0.210	0.250	0.125	0.008	
SPS 375325	3.750	3.250	3.520	3.687	0.562	0.210	0.250	0.125	0.008	
SPS 400350	4.000	3.500	3.770	3.937	0.562	0.210	0.250	0.125	0.008	

Items marked * comprise of Sealing Element and two Split Bearing Rings only.





Design

Designed for use on split pistons, the seal is a precision moulded Nitrile rubber element with bonded rubberised fabric reinforcements. The seal is designed with initial radial interference such that when fitted low pressure sealing is effected. Rubberised fabric has the advantage of retaining the sealing media within its surface, thus reducing friction and wear. Style DP has proven to be effective over a wide range of applications.

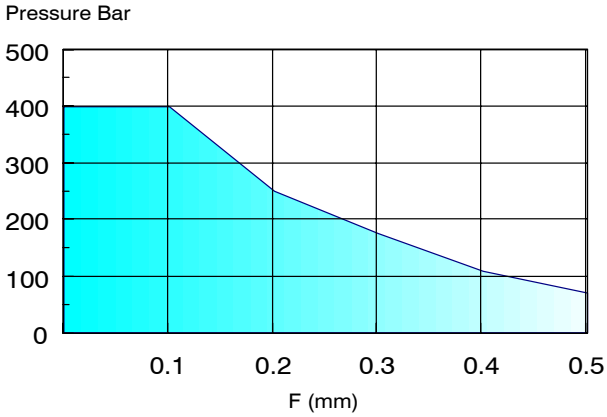
Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps. Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

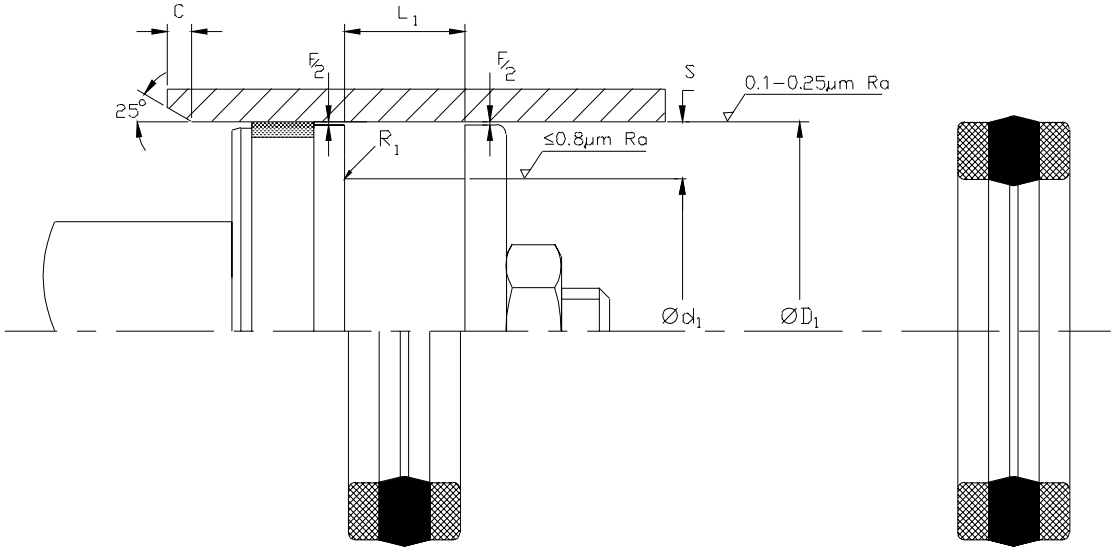
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

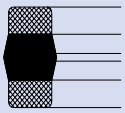
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.

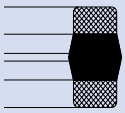




Double Acting Piston Seal

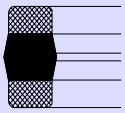
DP

Metric



Nominal Dimensions & Machining Tolerances

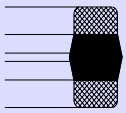
Claron Part Number	H11 $ØD_1$	js11 $Ød_1$	+0.25 -0.00 L_1	Nominal S	Minimum C	Maximum R_1
DP 098059	25	15	12.5	5.0	2.5	0.4
DP 126086	32	22	12.5	5.0	2.5	0.4
DP 157098/1	40	25	19.0	7.5	4.0	0.6
DP 177102	45	26	25.0	9.5	5.0	0.8
DP 196137/1	50	35	19.0	7.5	4.0	0.6
DP 216157	55	40	19.0	7.5	4.0	0.6
DP 236157/1	60	40	25.0	10.0	5.0	0.8
DP 236177/1	60	45	19.0	7.5	4.0	0.6
DP 248169	63	43	25.0	10.0	5.0	0.8
DP 248188	63	48	19.0	7.5	4.0	0.6
DP 275196/2	70	50	25.0	10.0	5.0	0.8
DP 314236/2	80	60	25.0	10.0	5.0	0.8
DP 354275/1	90	70	25.0	10.0	5.0	0.8
DP393295	100	75	20.0	12.5	6.5	1.2
DP 393314	100	80	25.0	10.0	5.0	0.8
DP 433354	110	90	25.0	10.0	5.0	0.8
DP 472393	120	100	25.0	10.0	5.0	0.8
DP 492393/2	125	100	32.0	12.5	6.5	1.2
DP 551472	140	120	25.0	10.0	5.0	0.8
DP 570492	145	125	25.0	10.0	5.0	0.8
DP 590492/1	150	125	32.0	12.5	6.5	1.2
DP 629531	160	135	32.0	12.5	6.5	1.2
DP 629551	160	140	25.0	10.0	5.0	0.8



Double Acting Piston Seal

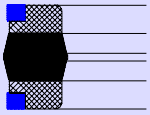
DP

Imperial



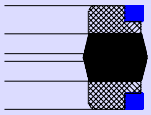
Nominal Dimensions & Machining Tolerances

Claron Part Number	H11 $ØD_1$	js11 $Ød_1$	+0.025" +0.015" L_1	Nominal S	Minimum C	Maximum R_1
DP 075037/1	0.750	0.375	0.468	0.187	0.093	0.008
DP 087050	0.875	0.500	0.312	0.187	0.093	0.008
DP 100062	1.000	0.625	0.468	0.187	0.093	0.008
DP 112062	1.125	0.625	0.500	0.250	0.125	0.015
DP 112062/1	1.125	0.625	0.625	0.250	0.125	0.015
DP 125075	1.250	0.750	0.625	0.250	0.125	0.015
DP 137087	1.375	0.875	0.625	0.250	0.125	0.015
DP 150100	1.500	1.000	0.625	0.250	0.125	0.015
DP 162100	1.625	1.000	0.750	0.312	0.156	0.025
DP 175112	1.750	1.125	0.750	0.312	0.156	0.025
DP 200137	2.000	1.375	0.750	0.312	0.156	0.025
DP 212150	2.125	1.500	0.750	0.312	0.156	0.025
DP 225162	2.250	1.625	0.750	0.312	0.156	0.025
DP 237175	2.375	1.750	0.750	0.312	0.156	0.025
DP 250187	2.500	1.875	0.750	0.312	0.156	0.025
DP 262200	2.625	2.000	0.750	0.312	0.156	0.025
DP 275200	2.750	2.000	0.937	0.375	0.187	0.031
DP 300225	3.000	2.250	0.937	0.375	0.187	0.031
DP 300225/4	3.000	2.250	0.593	0.375	0.187	0.031
DP 325250	3.250	2.500	0.937	0.375	0.187	0.031
DP 325250/3	3.250	2.500	0.562	0.375	0.187	0.031
DP 350275	3.500	2.750	0.937	0.375	0.187	0.031
DP 375300	3.750	3.000	0.937	0.375	0.187	0.031
DP 400325	4.000	3.250	0.937	0.375	0.187	0.031
DP 402324/1	4.024	3.245	0.875	0.389	0.187	0.031
DP 425350	4.250	3.500	0.937	0.375	0.187	0.031
DP 450350	4.500	3.500	1.250	0.500	0.218	0.046
DP475375	4.750	3.750	1.250	0.500	0.218	0.046
DP 500400	5.000	4.000	1.250	0.500	0.218	0.046
DP 525425	5.250	4.250	1.250	0.500	0.218	0.046
DP 550450	5.500	4.500	1.250	0.500	0.218	0.046
DP 600500	6.000	5.000	1.250	0.500	0.218	0.046
DP 700600	7.000	6.000	1.250	0.500	0.218	0.046
DP 800700	8.000	7.000	1.250	0.500	0.218	0.046



Double Acting Piston Seal DPE

Metric
Imperial



Design

Designed for use on split pistons, the seal is a precision moulded rubber element with rubberised fabric reinforcements. Style DPE is fitted with Polyacetal anti-extrusion rings on the O.D. to allow larger machining clearances between the piston head and cylinder bore, and to permit higher working pressures. The seal is designed with sufficient radial sectional interference that on complete assembly low pressure sealing is effected. The supporting rubberised fabric has the capability of retaining the sealing media thus assisting in reducing friction and wear. Style DPE has proven to be effective over a wide range of applications.

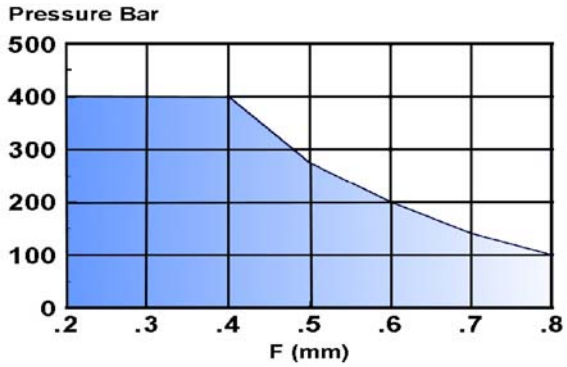
Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

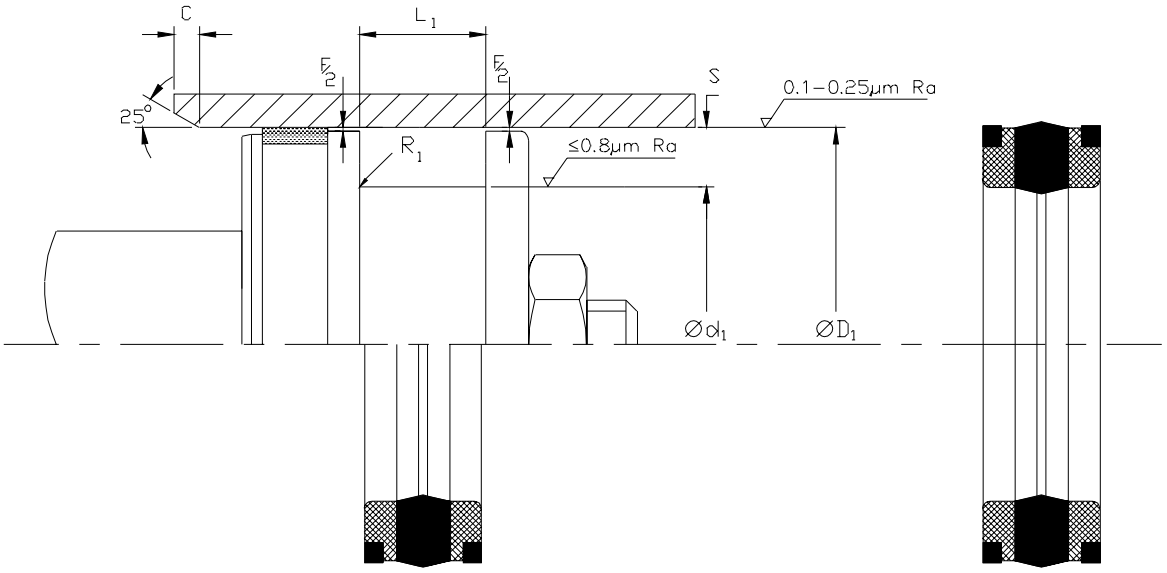
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

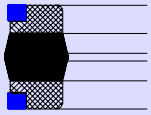
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

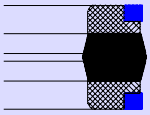




ClaronPolyseal®
Double Acting Piston Seal

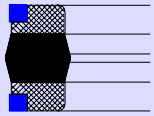
DPE

Metric



Nominal Dimensions & Machining Tolerances

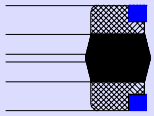
Claron Part Number	H11 $ØD_1$	js11 $Ød_1$	+0.63 +0.38 L_1	Nominal S	Minimum C	Maximum R_1
DPE 098047	25	12	12	6.5	2.5	0.4
DPE 118066	30	17	15	6.5	2.5	0.4
DPE 157094	40	24	18	8.0	4.0	0.4
DPE 177114	45	29	18	8.0	4.0	0.4
DPE 188125	48	32	18	8.0	4.0	0.4
DPE 196133	50	34	18	8.0	4.0	0.4
DPE 216153/1	55	39	18	8.0	4.0	0.4
DPE 236173/1	60	44	18	8.0	4.0	0.4
DPE 248185	63	47	19	8.0	4.0	0.4
DPE 255196	65	50	18	7.5	4.0	0.6
DPE 275196	70	50	22	10.0	5.0	0.8
DPE 295216	75	55	22	10.0	5.0	0.8
DPE 314236	80	60	22	10.0	5.0	0.8
DPE 334255	85	65	22	10.0	5.0	0.8
DPE 354275	90	70	22	10.0	5.0	0.8
DPE 393295	100	75	22	12.5	6.5	1.2
DPE 393314	100	80	25	10.0	5.0	0.8
DPE 413314	105	80	22	12.5	6.5	1.2
DPE 433334/1	110	85	22	12.5	6.5	1.2
DPE 452354	115	90	22	12.5	6.5	1.2
DPE 472374	120	95	22	12.5	6.5	1.2
DPE 492393	125	100	25	12.5	6.5	1.2
DPE 531433	135	110	25	12.5	6.5	1.2
DPE 551472	140	120	25	10.0	5.0	0.8
DPE 570472	145	120	25	10.0	5.0	0.8
DPE570492	145	125	25	10.0	5.0	0.8
DPE 590492	150	125	25	12.5	6.5	1.2
DPE 629511	160	130	25	15.0	7.5	1.2



ClaronPolyseal®
Double Acting Piston Seal

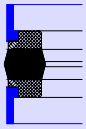
DPE

Imperial



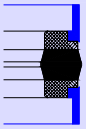
Nominal Dimensions & Machining Tolerances

Claron Part Number	H11 $ØD_1$	js11 $Ød_1$	+0.025" +0.015" L_1	Nominal S	Minimum C	Maximum R_1
DPE 100062	1.000	0.625	0.468	0.187	0.093	0.008
DPE 112062	1.125	0.625	0.500	0.250	0.125	0.015
DPE 125075	1.250	0.750	0.625	0.250	0.125	0.015
DPE 150100	1.500	1.000	0.625	0.250	0.125	0.015
DPE 162112	1.625	1.125	0.625	0.250	0.125	0.015
DPE 175112	1.750	1.125	0.750	0.312	0.156	0.025
DPE 200137	2.000	1.375	0.750	0.312	0.156	0.025
DPE 212150	2.125	1.500	0.750	0.312	0.156	0.025
DPE 225162	2.250	1.625	0.750	0.312	0.156	0.025
DPE 237175	2.375	1.750	0.750	0.312	0.156	0.025
DPE 250187	2.500	1.875	0.750	0.312	0.156	0.025
DPE 250187/1	2.500	1.875	0.937	0.312	0.156	0.025
DPE 262200	2.625	2.000	0.750	0.312	0.156	0.025
DPE 275200	2.750	2.000	0.937	0.375	0.187	0.031
DPE 300225	3.000	2.250	0.937	0.375	0.187	0.031
DPE 300225/1	3.000	2.250	1.125	0.375	0.187	0.031
DPE 312237	3.125	2.375	0.937	0.375	0.187	0.031
DPE 325250	3.250	2.500	0.937	0.375	0.187	0.031
DPE 350275	3.500	2.750	0.937	0.375	0.187	0.031
DPE 375300	3.750	3.000	0.937	0.375	0.187	0.031
DPE 387312	3.875	3.125	0.937	0.375	0.187	0.031
DPE 400325	4.000	3.250	0.937	0.375	0.187	0.031
DPE 425350	4.250	3.500	0.937	0.375	0.187	0.031
DPE 450350	4.500	3.500	1.250	0.500	0.218	0.046
DPE 450350/1	4.500	3.500	1.500	0.500	0.218	0.046
DPE 475375	4.750	3.750	1.250	0.500	0.218	0.046
DPE 500400	5.000	4.000	1.250	0.500	0.218	0.046
DPE 525425	5.250	4.250	1.250	0.500	0.218	0.046
DPE 550450	5.500	4.500	1.250	0.500	0.218	0.046
DPE 550450/2	5.500	4.500	1.500	0.500	0.218	0.046
DPE 575475	5.750	4.750	1.250	0.500	0.218	0.046
DPE 600500	6.000	5.000	1.250	0.500	0.218	0.046
DPE 650550	6.500	5.500	1.250	0.500	0.218	0.046
DPE 700600	7.000	6.000	1.250	0.500	0.218	0.046
DPE 800700	8.000	7.000	1.250	0.500	0.218	0.046



Double Acting Piston Seal
DPW

Metric
Imperial



Design

Designed for use on split pistons, the seal is a precision moulded rubber element with rubberised fabric reinforcements. Style DPW is fitted with clip on anti-extrusion bearing rings on the O.D. to allow larger machining clearances between the piston head and cylinder bore, and to permit higher working pressures. The Polyacetal bearing rings also support the piston head under side load conditions thus preventing metal to metal contact. The bearing rings are an integral part of the seal therefore react directly to operating pressures thus closing the extrision gap. The seal is designed with sufficient radial sectional interference that on complete assembly low pressure sealing is effected. The supporting rubberised fabric has the capability of retaining the sealing media thus assisting in reducing friction and wear.
Style DPW has proven to be effective over a wide range of applications.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various fluids

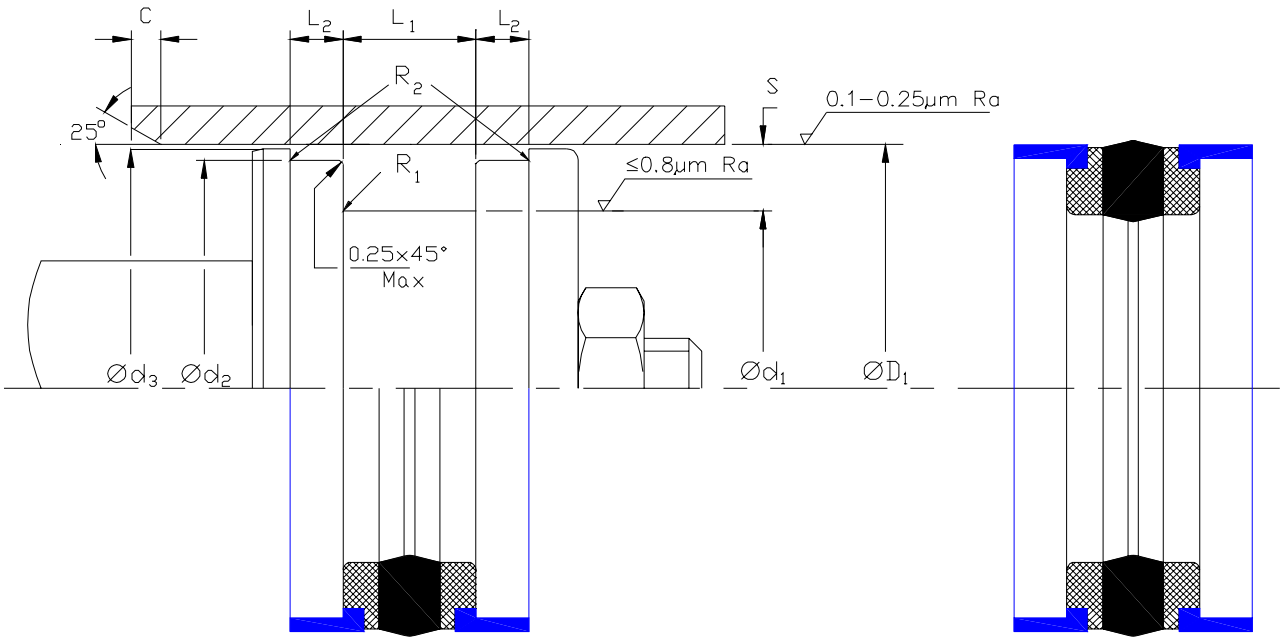
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

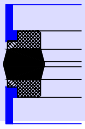
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

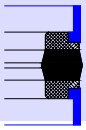
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.





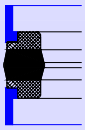
Double Acting Piston Seal DPW

Metric



Nominal Dimensions & Machining Tolerances

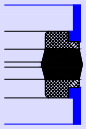
Claron Part Number	H11 $ØD_1$	js11 $Ød_1$	js10 $Ød_2$	js11 $Ød_3$	+0.63 +0.38 L_1	+0.1 -0.0 L_2	Nominal S	Minimum C	Maximum R_1	Maximum R_2
DPW 098047	25	12	21.45	23.75	12	6.35	6.5	2.5	0.4	0.2
DPW 118066	30	17	26.45	28.95	15	6.35	6.5	2.5	0.4	0.2
DPW 157094	40	24	35.40	38.65	18	6.35	8.0	4.0	0.4	0.2
DPW 177114	45	29	40.40	43.65	18	6.35	8.0	4.0	0.4	0.2
DPW 188125	48	32	43.35	46.65	18	6.35	8.0	4.0	0.4	0.2
DPW 196133	50	34	45.40	48.65	18	6.35	8.0	4.0	0.4	0.2
DPW 216153/1	*55*	39	50.40	53.65	18	6.35	8.0	4.0	0.4	0.2
DPW 236173/1	60	44	55.40	58.65	18	6.35	8.0	4.0	0.4	0.2
DPW 248185	63	47	58.40	61.65	19	6.35	8.0	4.0	0.4	0.2
DPW 255196	65	50	60.40	63.65	18	6.35	7.5	4.0	0.6	0.2
DPW 275196	70	50	64.15	68.35	22	6.35	10.0	5.0	0.8	0.2
DPW 295216	*75*	55	69.15	73.35	22	6.35	10.0	5.0	0.8	0.2
DPW 314236	80	60	74.15	78.35	22	6.35	10.0	5.0	0.8	0.2
DPW 334255	85	65	79.15	83.35	22	6.35	10.0	5.0	0.8	0.2
DPW 354275	90	70	84.15	88.35	22	6.35	10.0	5.0	0.8	0.2
DPW 393295	100	75	93.15	98.00	22	6.35	12.5	6.5	1.2	0.4
DPW 393314	100	80	94.15	98.35	25	6.35	10.0	5.0	0.8	0.2
DPW 413314	105	80	98.10	103.35	22	6.35	12.5	6.5	1.2	0.4
DPW 433334	110	85	103.10	108.00	25	6.35	12.5	6.5	1.2	0.4
DPW 433334/1	110	85	103.10	108.00	22	6.35	12.5	6.5	1.2	0.4
DPW 452354	115	90	108.10	113.00	22	6.35	12.5	6.5	1.2	0.4
DPW 472374	120	95	113.10	118.00	22	6.35	12.5	6.5	1.2	0.4
DPW 492393	125	100	118.10	123.00	25	6.35	12.5	6.5	1.2	0.4
DPW 531433	135	110	128.00	133.00	25	6.35	12.5	6.5	1.2	0.4
DPW 543433	138	110	131.00	136.00	25	6.35	14.0	7.5	1.2	0.4
DPW 551472	140	120	134.05	138.35	25	6.35	10.0	5.0	0.8	0.2
DPW 570472	145	120	138.30	143.00	25	6.35	10.0	5.0	0.8	0.2
DPW 590492	150	125	143.00	148.00	25	6.35	12.5	6.5	1.2	0.4
DPW 629511	160	130	153.00	158.00	25	6.35	15.0	7.5	1.2	0.4



Double Acting Piston Seal

DPW

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	H11 $ØD_1$	js11 $Ød_1$	js10 $Ød_2$	js11 $Ød_3$	+0.025" +0.015" L_1	+0.004 -0.000 L_2	Nominal S	Minimum C	Maximum R_1	Maximum R_2
DPW 100062	1.000	0.625	0.883	0.964	0.468	0.250	0.187	0.093	0.008	0.008
DPW 112062	1.125	0.625	0.986	1.083	0.500	0.250	0.250	0.125	0.015	0.008
DPW 125075	1.250	0.750	1.111	1.208	0.625	0.250	0.250	0.125	0.015	0.008
DPW 150100	1.500	1.000	1.360	1.458	0.625	0.250	0.250	0.125	0.015	0.008
DPW 150100/S	1.500	1.000	1.360	1.458	0.625	0.188	0.250	0.125	0.015	0.008
DPW 162112	1.625	1.125	1.485	1.583	0.625	0.250	0.250	0.125	0.015	0.008
DPW 175112	1.750	1.125	1.570	1.698	0.750	0.250	0.312	0.156	0.025	0.008
DPW 200137	2.000	1.375	1.820	1.948	0.750	0.250	0.312	0.156	0.025	0.008
DPW 212150	2.125	1.500	1.944	2.074	0.750	0.250	0.312	0.156	0.025	0.008
DPW 225162	2.250	1.625	2.069	2.197	0.750	0.250	0.312	0.156	0.025	0.008
DPW 237175	2.375	1.750	2.194	2.322	0.750	0.250	0.312	0.156	0.025	0.008
DPW 250187	2.500	1.875	2.319	2.446	0.750	0.250	0.312	0.156	0.025	0.008
DPW 250187/1	2.500	1.875	2.302	2.437	0.937	0.250	0.312	0.156	0.025	0.008
DPW 262200	2.625	2.000	2.443	2.571	0.750	0.250	0.312	0.156	0.025	0.008
DPW 275200	2.750	2.000	2.522	2.685	0.937	0.250	0.375	0.187	0.031	0.008
DPW 300225	3.000	2.250	2.772	2.935	0.937	0.250	0.375	0.187	0.031	0.008
DPW 300225/1	3.000	2.250	2.772	2.935	1.125	0.250	0.375	0.187	0.031	0.008
DPW 312237	3.125	2.375	2.896	3.060	0.937	0.250	0.375	0.187	0.031	0.008
DPW 325250	3.250	2.500	3.021	3.184	0.937	0.250	0.375	0.187	0.031	0.008
DPW 350275	3.500	2.750	3.271	3.434	0.937	0.250	0.375	0.187	0.031	0.008
DPW 375300	3.750	3.000	3.520	3.683	0.937	0.250	0.375	0.187	0.031	0.008
DPW 387312	3.875	3.125	3.646	3.809	0.937	0.250	0.375	0.187	0.031	0.008
DPW 400325	4.000	3.250	3.770	3.933	0.937	0.250	0.375	0.187	0.031	0.008
DPW 425350	4.250	3.500	4.019	4.182	0.937	0.250	0.375	0.187	0.031	0.008
DPW 450350	4.500	3.500	4.229	4.422	1.250	0.250	0.500	0.218	0.046	0.015
DPW 450350/1	4.500	3.500	4.229	4.422	1.500	0.250	0.500	0.218	0.046	0.015
DPW 475375	4.750	3.750	4.478	4.671	1.250	0.250	0.500	0.218	0.046	0.015
DPW 500400	5.000	4.000	4.728	4.921	1.250	0.250	0.500	0.218	0.046	0.015
DPW 525425	5.250	4.250	4.977	5.170	1.250	0.250	0.500	0.218	0.046	0.015
DPW 550450	5.500	4.500	5.227	5.420	1.250	0.250	0.500	0.218	0.046	0.015
DPW 550450/2	5.500	4.500	5.232	5.437	1.500	0.370	0.500	0.218	0.046	0.015
DPW 575475	5.750	4.750	5.475	5.669	1.250	0.250	0.500	0.218	0.046	0.015
DPW 600500	6.000	5.000	5.726	5.919	1.250	0.250	0.500	0.218	0.046	0.015
DPW 650550	6.500	5.500	6.226	6.419	1.250	0.250	0.500	0.218	0.046	0.015
DPW 700600	7.000	6.000	6.724	6.917	1.250	0.250	0.500	0.218	0.046	0.015
DPW 800700	8.000	7.000	7.723	7.915	1.250	0.250	0.500	0.218	0.046	0.015
DPW 950850	9.500	8.500	9.225	9.418	1.250	0.250	0.500	0.218	0.046	0.015

DPW/L

Design

Designed for use on split pistons, the seal is a precision moulded rubber element with rubberised fabric reinforcements as style DP but with additional full width Polyacetal anti-extrusion bearing rings at each end to allow larger machining clearances between the piston head and cylinder bore, and to permit higher working pressures. The Polyacetal bearing rings also support the piston head under side load conditions thus preventing metal to metal contact. The seal is designed with sufficient radial sectional interference that on complete assembly low pressure sealing is effected. The supporting rubberised fabric has the capability of retaining the sealing media thus assisting in reducing friction and wear.
Style DPW/L has proven to be effective over a wide range of applications and is a popular alternative for existing housing designs.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various fluids

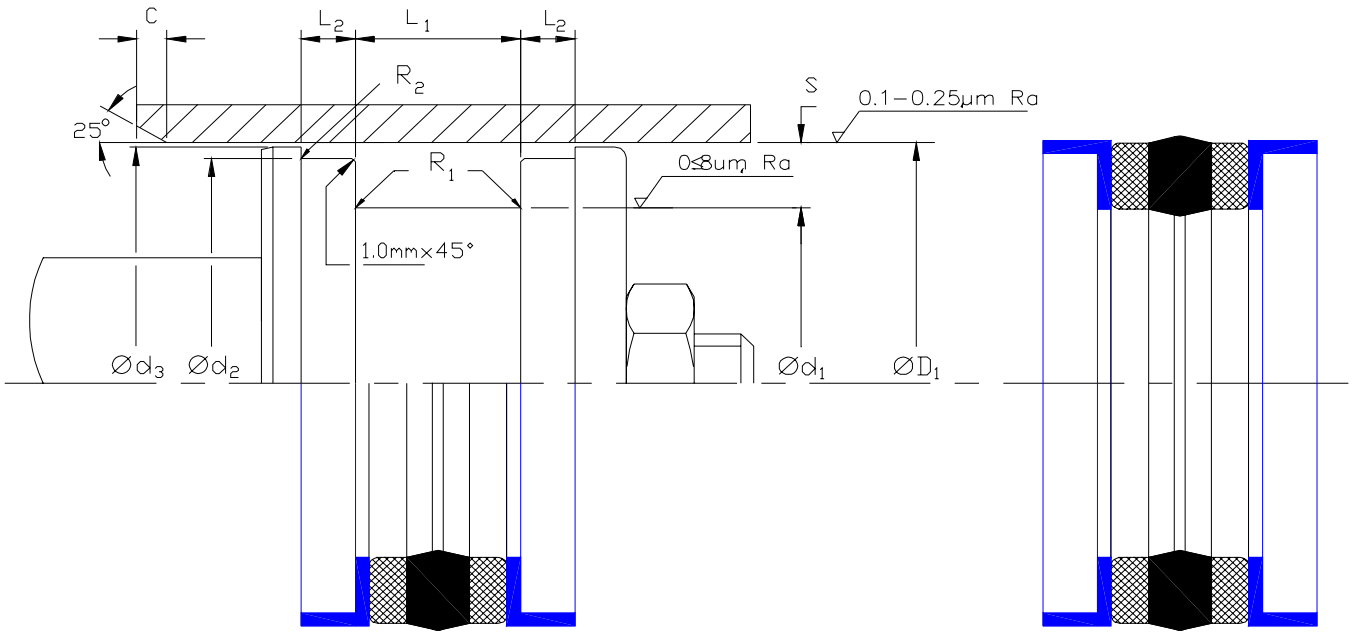
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

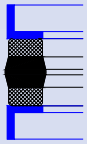
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

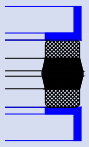
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.





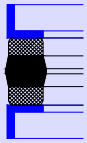
DPW/L

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	H11 $ØD_1$	Js11 $Ød_1$	h9 $Ød_2$	js11 $Ød_3$	+0.25 -0.00 L_1	+0.00 -0.15 L_2	Nominal S	Minimum C	Maximum R_1	Maximum R_2
DPW 098059/L	25	15.0	21.80	24.0	15.5	5.00	5.00	2.5	0.2	
DPW 126086/L	32	22.0	28.80	31.0	15.5	5.00	5.00	2.5	0.2	
DPW 137087/L	35	22.3	31.52	34.0	19.4	6.30	6.35	3.0	0.2	
DPW 157098/1L	40	25.0	34.80	39.0	24.0	6.00	7.50	4.0	0.2	
DPW 177102/L	45	26.0	38.80	43.0	31.0	6.50	9.50	3.5	0.2	
DPW 196137/1L	50	35.0	44.80	48.5	24.0	6.00	7.50	4.0	0.2	
DPW 216157/L	55	40.0	49.80	53.5	24.0	6.00	7.50	4.0	0.2	
DPW 236157/1L	60	40.0	53.80	58.5	31.0	7.00	10.00	5.0	0.2	
DPW 248169/L	63	43.0	56.80	61.5	31.0	7.00	10.00	5.0	0.2	
DPW 248188/L	63	48.0	57.80	61.5	24.0	6.00	7.50	4.0	0.2	
DPW 275196/2L	70	50.0	63.80	68.0	31.0	7.00	10.00	5.0	0.2	
DPW 314236/2L	80	60.0	73.80	78.0	31.0	7.00	10.00	5.0	0.2	
DPW 354275/1L	90	70.0	83.80	88.0	31.0	7.00	10.00	5.0	0.2	
DPW393295/L	100	75.0	93.80	98.0	25.0	9.50	12.50	6.5	0.4	
DPW 393314/L	100	80.0	93.80	98.0	31.0	7.00	10.00	5.0	0.2	
DPW 433354/L	110	90.0	103.80	108.0	31.0	7.00	10.00	5.0	0.2	
DPW 472393/L	120	100.0	113.80	118.0	31.0	7.00	10.00	5.0	0.2	
DPW 492393/2L	125	100.0	118.80	123.0	38.0	9.50	12.50	6.5	0.4	
DPW 551472/L	140	120.0	133.80	138.0	31.0	7.00	10.00	5.0	0.2	
DPW 570492/L	145	125.0	138.80	143.0	31.0	7.00	10.00	5.0	0.2	
DPW 590492/1L	150	125.0	143.50	148.0	38.0	6.45	12.50	6.5	0.4	
DPW 629531/L	160	135.0	153.80	158.0	38.0	9.50	12.50	6.5	0.4	
DPW 629551/L	160	140.0	153.80	158.0	31.0	7.00	10.00	5.0	0.2	

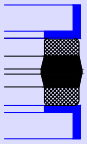


ClaronPolyseal®

Double Acting Piston Seal

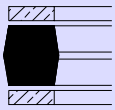
DPW/L

Imperial



Nominal Dimensions & Machining Tolerances

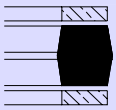
Claron Part Number	H11 $ØD_1$	Js11 $Ød_1$	h9 $Ød_2$	js11 $Ød_3$	+0.025" +0.015" L_1	+0.005" -0.000 L_2	Nominal S	Minimum C	Maximum R_1	Maximum R_2
DPW 075037/1L	0.750	0.375	0.615	0.718	0.593	0.182	0.187	0.093	0.008	
DPW 100062/L	1.000	0.625	0.865	0.968	0.593	0.182	0.187	0.093	0.008	
DPW 112062/1L	1.125	0.625	0.990	1.093	0.750	0.241	0.250	0.125	0.008	
DPW 125075/L	1.250	0.750	1.115	1.218	0.750	0.245	0.250	0.125	0.008	
DPW 137087/L	1.375	0.875	1.241	1.343	0.750	0.245	0.250	0.125	0.008	
DPW 150100/L	1.500	1.000	1.365	1.468	0.750	0.245	0.250	0.125	0.008	
DPW 162100/L	1.625	1.000	1.428	1.562	0.937	0.245	0.312	0.156	0.008	
DPW 175112/L	1.750	1.125	1.552	1.687	0.937	0.245	0.312	0.156	0.008	
DPW 200137/L	2.000	1.375	1.802	1.937	0.937	0.245	0.312	0.156	0.008	
DPW 225162/L	2.250	1.625	2.052	2.187	0.937	0.245	0.312	0.156	0.008	
DPW 237175/L	2.375	1.750	2.177	2.312	0.937	0.245	0.312	0.156	0.008	
DPW 250187/L	2.500	1.875	2.302	2.437	0.937	0.245	0.312	0.156	0.008	
DPW 262200/L	2.625	2.000	2.428	2.562	0.937	0.245	0.312	0.156	0.008	
DPW 275200/L	2.750	2.000	2.482	2.687	1.187	0.245	0.375	0.187	0.008	
DPW 300225/L	3.000	2.250	2.732	2.937	1.187	0.245	0.375	0.187	0.008	
DPW 300225/4L	3.000	2.250	2.732	2.937	0.843	0.245	0.375	0.187	0.008	
DPW 325250/L	3.250	2.500	2.982	3.187	1.187	0.245	0.375	0.187	0.008	
DPW 350275/L	3.500	2.750	3.232	3.437	1.187	0.245	0.375	0.187	0.008	
DPW 375300/L	3.750	3.000	3.482	3.687	1.187	0.245	0.375	0.187	0.008	
DPW 400325/L	4.000	3.250	3.732	3.937	1.187	0.245	0.375	0.187	0.008	
DPW 425350/L	4.250	3.500	3.982	4.187	1.187	0.245	0.375	0.187	0.008	
DPW 450350/L	4.500	3.500	4.232	4.437	1.500	0.370	0.500	0.218	0.015	
DPW 475375/L	4.750	3.750	4.482	4.687	1.500	0.370	0.500	0.218	0.015	
DPW 500400/L	5.000	4.000	4.732	4.937	1.500	0.370	0.500	0.218	0.015	
DPW 525425/L	5.250	4.250	4.982	5.187	1.500	0.370	0.500	0.218	0.015	
DPW 550450/L	5.500	4.500	5.232	5.437	1.500	0.370	0.500	0.218	0.015	
DPW 600500/L	6.000	5.000	5.732	5.937	1.500	0.370	0.500	0.218	0.015	
DPW 650550/L	6.500	5.500	6.232	6.437	1.500	0.370	0.500	0.218	0.015	
DPW 700600/L	7.000	6.000	6.732	6.937	1.500	0.370	0.500	0.218	0.015	



Double Acting Piston Seal

JS.../H

Imperial



Design

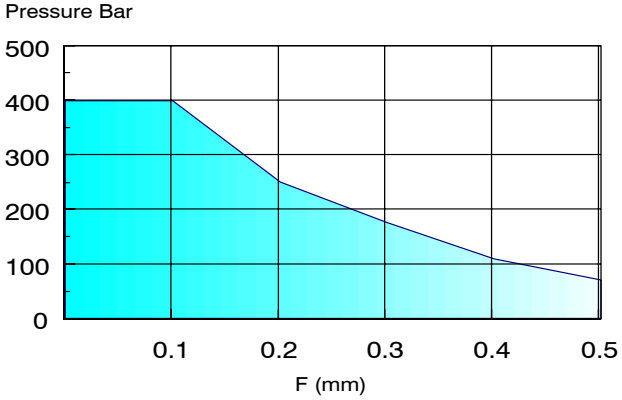
Designed for use on one piece pistons, the three part assembly consists of an endless precision rubber moulded sealing element supported at each end with split polyester support rings.
The seal is also suitable for existing two piece pistons of the same housing dimensions.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

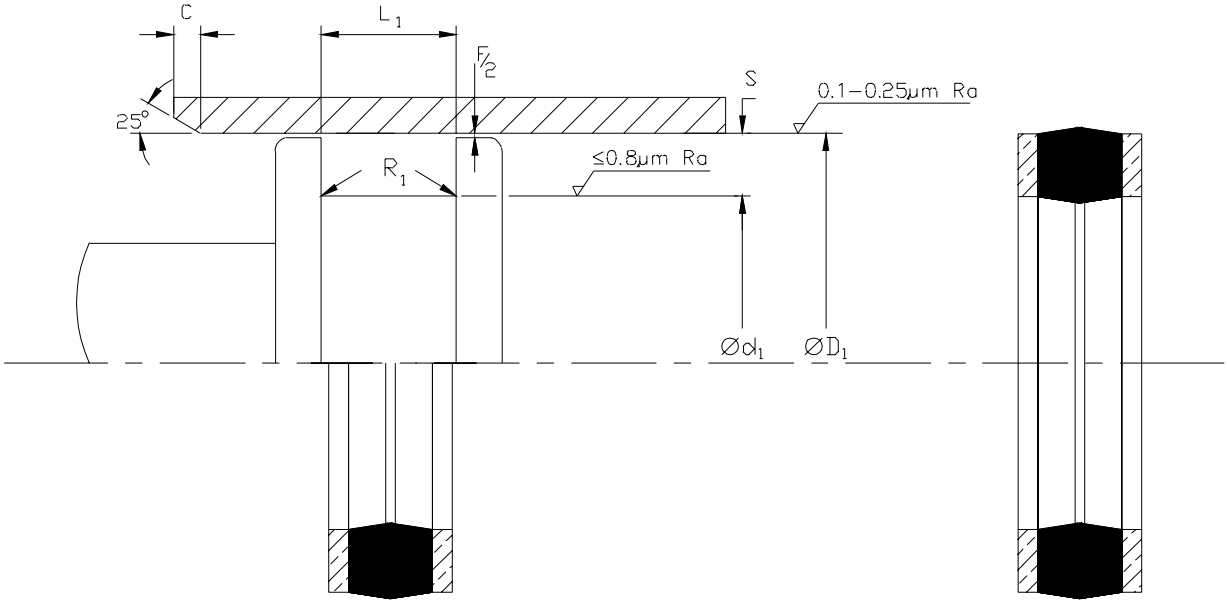
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C. The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

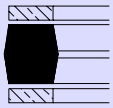
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

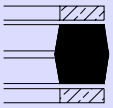




Double Acting Piston Seal

JS.../H

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	H11	js11	+0.025 +0.015	Nominal	Minimum	Maximum
	$ØD_1$	$Ød_1$	L_1	S	C	R_1
JS 112/H	1.125	0.750	0.452	0.187	0.090	0.008
JS 137/H	1.375	1.000	0.452	0.187	0.090	0.008
JS 150/H	1.500	1.125	0.452	0.187	0.090	0.008
JS 162/H	1.625	1.250	0.452	0.187	0.090	0.008
JS 175/H	1.750	1.375	0.452	0.187	0.090	0.008
JS 200/H	2.000	1.500	0.587	0.250	0.125	0.008
JS 225/H	2.250	1.750	0.587	0.250	0.125	0.008
JS 250/H	2.500	2.000	0.587	0.250	0.125	0.008
JS 300/H	3.000	2.500	0.587	0.250	0.125	0.008
JS 325/H	3.250	2.750	0.587	0.250	0.125	0.008
JS 350/H	3.500	3.000	0.587	0.250	0.125	0.008
JS 375/H	3.750	3.250	0.587	0.250	0.125	0.008
JS 400/H	4.000	3.250	0.780	0.375	0.187	0.008
JS 450/H	4.500	3.750	0.780	0.375	0.187	0.008
JS 500/H	5.000	4.250	0.780	0.375	0.187	0.008
JS 550/H	5.500	4.750	0.780	0.375	0.187	0.008

Design

Claron Style DPDS double acting piston seal is a 5 piece assembly consisting of a Nitrile Rubber sealing element supported by 2 thermoplastic elastomer headers with Acetal anti-extrusion bearing rings on the O.D. The complete assembly forms a highly robust sealing unit for use in high pressure applications where shock loads and pressure spikes are present. This seal is widely used in the mobile plant industry.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	325 Bar
0.15	600 Bar

These range perameters are Maximum simultaneous conditions.

These range parameters are Maximum conditional values.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

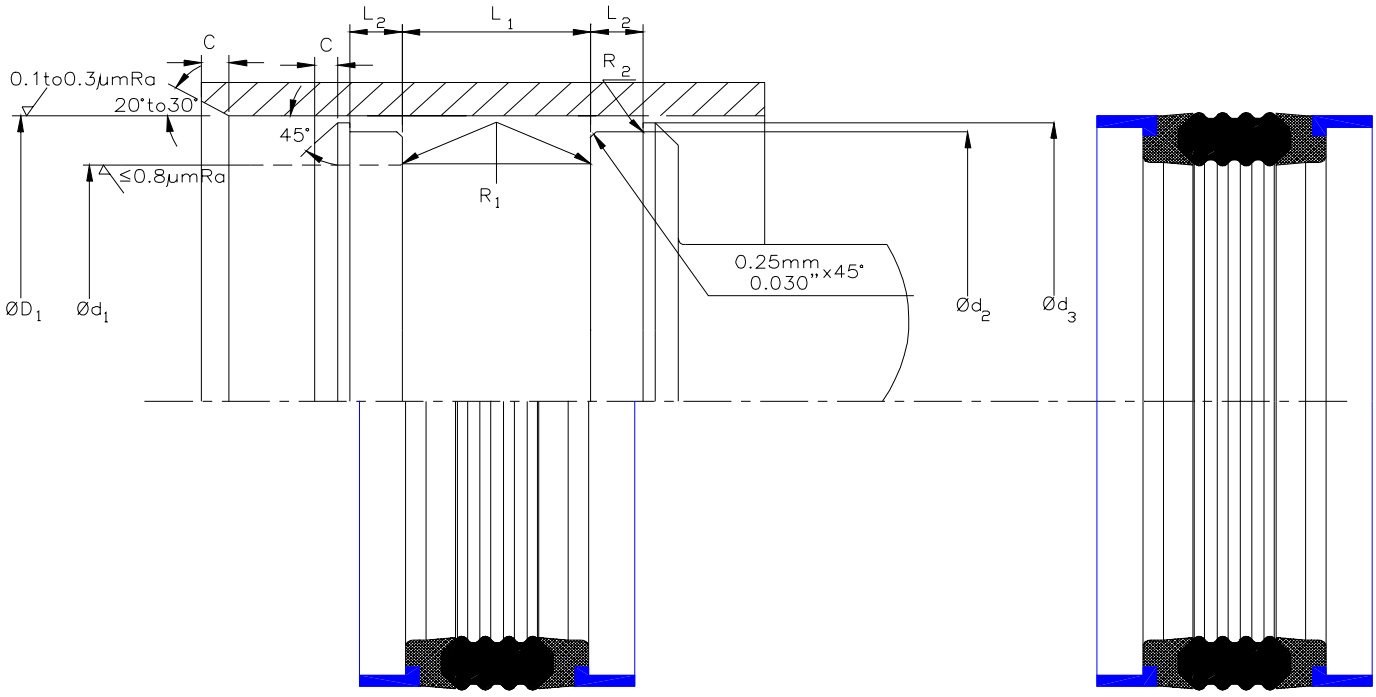
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style DPDS is designed to be fitted onto a split piston as shown in the illustration below.
The seal can be supplied split to ease fitting if required. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



ClaronPolyseal®

Double Acting Piston Seal

DPDS

Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	H 11 $ØD_1$	h 10 $Ød_1$	js 10 $Ød_2$	js 11 $Ød_3$	+0.6 +0.4 L_1	+0.2 -0.0 L_2	S	Min C	Max. R_1	Max. R_2
DPDS 228165	58.00	42.00	51.10	56.00	32.00	9.52	8.00	4.00	0.40	
DPDS 393314	100.00	80.00	92.60	97.50	35.00	9.52	10.00	5.00	0.40	
DPDS 433354	110.00	90.00	102.60	107.40	35.00	9.52	10.00	5.00	0.40	
DPDS 492393	125.00	100.00	116.80	122.30	45.00	12.70	12.50	6.50	0.40	

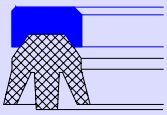
Double Acting Piston Seal

DPDS

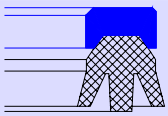
Imperial

Nominal Dimensions & Machining Tolerances

Claron Part Number	H 11 ØD$_1$	h 10 Ød$_1$	js 10 Ød$_2$	js 11 Ød$_3$	+0.025 +0.015 L$_1$	+0.005 -0.000 L$_2$	S	Min C	Max. R$_1$ R$_2$
DPDS 362287	3.625	2.875	3.330	3.530	1.375	0.375	0.375	0.187	0.008
DPDS 400325	4.000	3.250	3.710	3.900	1.375	0.375	0.375	0.187	0.008
DPDS 450350	4.500	3.500	4.180	4.400	1.750	0.500	0.500	0.218	0.015
DPDS 500400	5.000	4.000	4.675	4.900	1.750	0.500	0.500	0.218	0.015
DPDS 600500	6.000	5.000	5.675	5.900	1.750	0.500	0.500	0.218	0.015



Double Acting Piston Seal Metric
SFD



Design

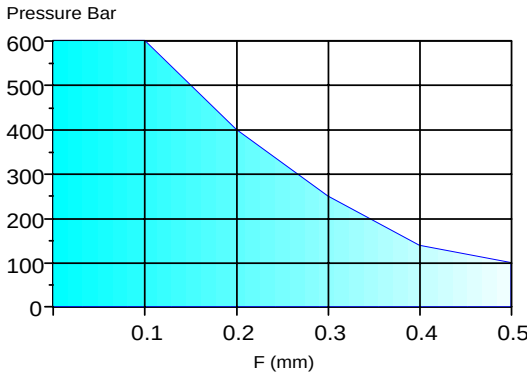
Claron Style SFD is a single acting piston seal which may also be arranged back to back in pairs to form a double acting piston assembly. The sealing element is manufactured from fabric reinforced Nitrile Rubber with either an Acetal or fabric reinforced Header ring. The seal assembly forms a highly robust unit resistant to shock loads and high pressures typically found in mobile plant equipment.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.80	400 Bar
0.15	600 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps. Refer to appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

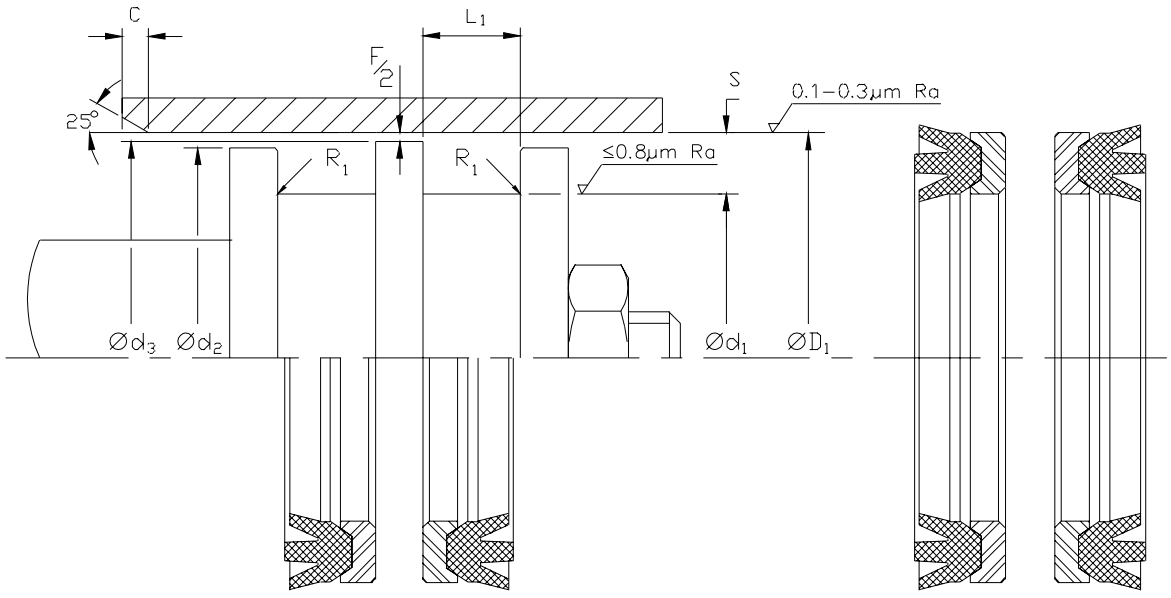
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

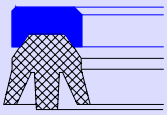
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style SFD is designed to fit back to back on a split piston. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



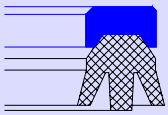


ClaronPolyseal®

Double Acting Piston Seal

SFD

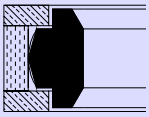
Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	h11 $Ød_1$	+0.0 -0.3 $Ød_2$	e8 $Ød_3$	+0.3 -0.0 L_1	Nominal S	Minimum C	Maximum R_1
SFD 157098	40.00	25.00	39.00	40.00	9.50	7.50	4.00	0.80
SFD 196137	**50.00**	**35.00**	**49.00**	**50.00**	**9.50**	**7.50**	**4.00**	**0.80**
SFD 248188	**63.00**	**48.00**	**62.00**	**63.00**	**9.50**	**7.50**	**4.00**	**0.80**
SFD 275196	70.00	50.00	68.50	70.00	12.50	10.00	5.00	0.80
SFD 314236	**80.00**	**60.00**	**78.50**	**80.00**	**12.50**	**10.00**	**5.00**	**0.80**
SFD 314236-FH	**80.00**	**60.00**	**78.50**	**80.00**	**12.50**	**10.00**	**5.00**	**0.80**
SFD 393314	**100.00**	**80.00**	**98.50**	**100.00**	**12.50**	**10.00**	**5.00**	**0.80**
SFD 393314-FH	**100.00**	**80.00**	**98.50**	**100.00**	**12.50**	**10.00**	**5.00**	**0.80**
SFD 413334	105.00	85.00	103.50	105.00	12.50	10.00	5.00	0.80
SFD 413334/1FH	105.00	85.00	103.50	105.00	13.50	10.00	5.00	0.80
SFD 433354-FH	110.00	90.00	108.50	110.00	12.50	10.00	5.00	0.80
SFD 452354	115.00	90.00	113.50	115.00	15.50	12.50	6.50	1.20
SFD 452354-FH	115.00	90.00	113.50	115.00	15.50	12.50	6.50	1.20
SFD 492393	125.00	100.00	123.50	125.00	15.50	12.50	6.50	1.20
SFD 492393-FH	125.00	100.00	123.50	125.00	15.50	12.50	6.50	1.20
SFD 511413	130.00	105.00	128.50	130.00	17.00	12.50	6.50	1.20
SFD 551472	140.00	120.00	138.50	140.00	15.00	10.00	5.00	0.80
SFD 551472-FH	140.00	120.00	138.50	140.00	15.00	10.00	5.00	0.80

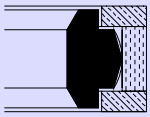
Items in **BOLD** are to suit ISO 5597 housings.
Suffix FH denotes Fabric reinforced header.



Double Acting Piston Seal

SPW

Metric



Design

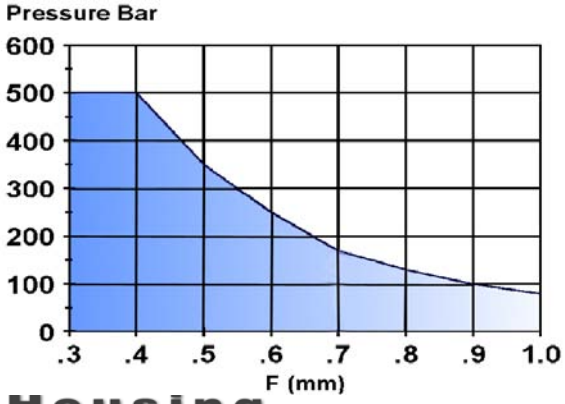
Designed for use on one piece pistons, the seal assembly consists of a filled PTFE high performance outer sleeve, pre loaded and pressure energised by a precision moulded NBR element. These two components are protected from extrusion at either side by the fitting of two low friction plastic anti-extrusion rings making the seal highly resistant to shock loads as found in heavy duty mobile equipment. The housing dimensions are those used in standard metric J.I.S. cylinders.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-30°C to 80°C	-30°C to 100°C
4	350 Bar	280 Bar
2	500 Bar	400 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

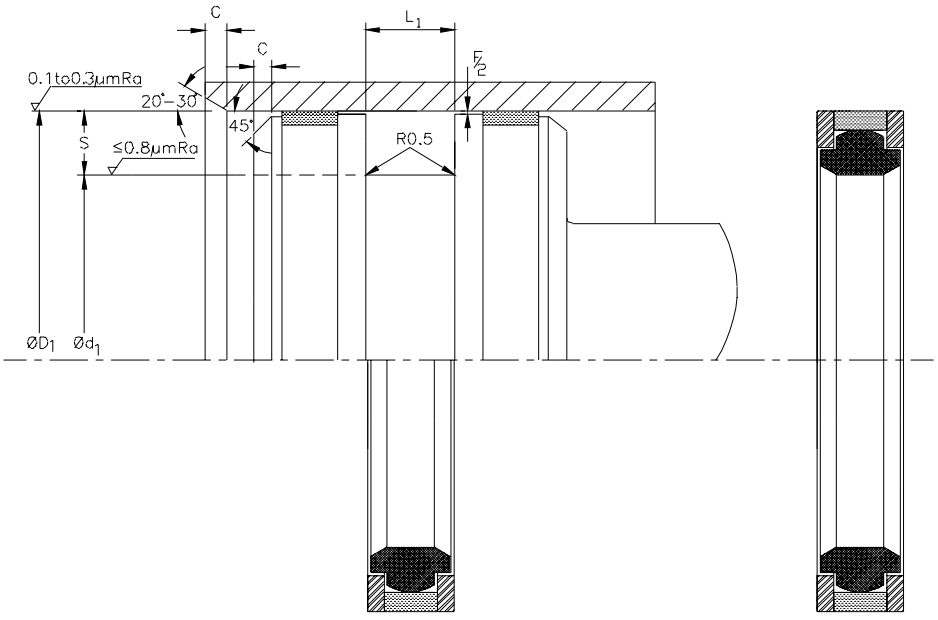
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

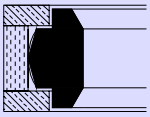
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

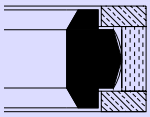




Double Acting Piston Seal

SPW

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	+0.00 -0.20 $Ød_1$	+0.20 -0.00 L_1	Nominal C
SPW 050	50	36	9.0	4.0
SPW 060	60	46	9.0	4.0
SPW 065	65	50	11.0	5.0
SPW 070	70	55	11.0	5.0
SPW 075	75	60	11.0	5.0
SPW 080	80	65	11.0	5.0
SPW 085	85	70	11.0	5.0
SPW 090	90	75	11.0	5.0
SPW 095	95	80	11.0	5.0
SPW 100	100	85	12.5	5.0
SPW 105	105	90	12.5	5.0
SPW 108	108	93	12.5	5.0
SPW 110	110	95	12.5	5.0
SPW 115	115	100	12.5	6.5
SPW 120	120	105	12.5	6.5
SPW 125	125	102	16.0	6.5
SPW 130	130	107	16.0	6.5
SPW 135	135	112	16.0	6.5
SPW 140	140	117	16.0	6.5
SPW 145	145	122	16.0	6.5
SPW 150	150	127	16.0	6.5
SPW 160	160	137	16.0	6.5
SPW 165	165	142	16.0	6.5
SPW 170	170	147	16.0	6.5
SPW 180	180	157	16.0	6.5
SPW 185	185	162	16.0	6.5
SPW 190	190	167	16.0	6.5
SPW 200	200	177	16.0	6.5
SPW 210	210	187	16.0	6.5
SPW 220	220	197	16.0	6.5
SPW 225	225	202	16.0	6.5
SPW 250	250	222	17.5	7.5

Double Acting Piston Seal

CSPG

Imperial

Design

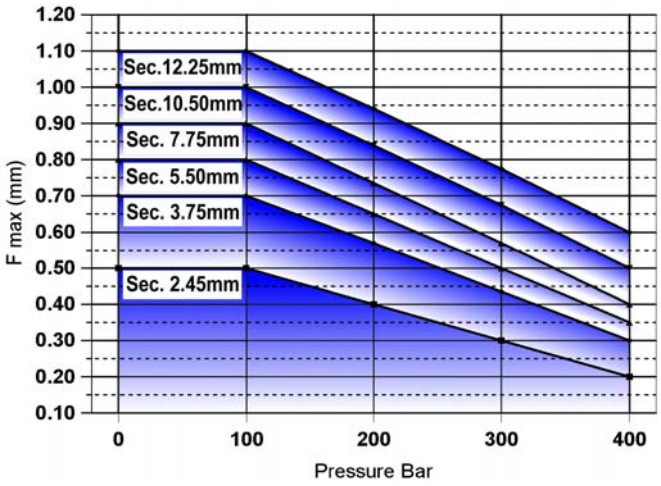
Claron composite seals Style CSPG are designed as high pressure, Low Friction Double-Acting Piston Seals for use in heavy duty hydraulic cylinders as found in mobile equipment to American designs.

Materials

Claron Style CSPG consists of a glass filled high performance P.T.F.E. sealing eliment, energised by a precision moulded rectangular section NBR rubber.

Operating Range

Temp -40°C to 120°C
Pressure upto 800 bar
Velocity upto 15m/s
These range parameters are maximum conditional values.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information**.**



Operating Conditions

Maximum Working Pressure for “Standard” seal applications using specified tolerances and clearances.

Temp. range	Temp. range
-30°C to 80°C	80°C to 120°C
800bar	350 bar

Diametrical Clearance F shown in the graph is calculated as the maximum permissible extrusion gap, allowing for movement due to side load, for various pressures and temperatures upto 80°C. This product is intended for use with either **STYLE** PBR or **STYLE** BGF Bearing Rings which effectively reduce the **Radial clearance** to a value nearer to F/2 thus increasing the pressure capability.
The maximum seal extrusion gap should be calculated allowing for all tolerances, movement and cylinder expansion.
For pressures **>** 400 bar, the seal extrusion gap should be reduced by utilising smaller tolerances. e.g H8 for Cylinder bore, f8 for piston diameter either side of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

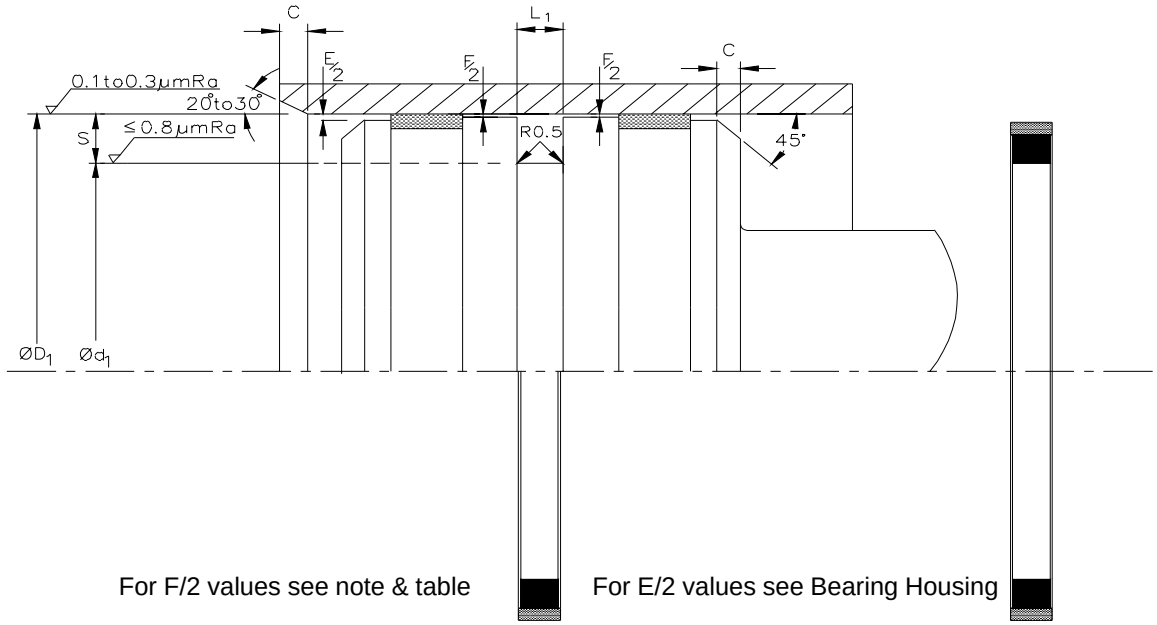
Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

Double Acting Piston Seal

CSPG

Imperial



For F/2 values see note & table

For E/2 values see Bearing Housing

Claron Part Number	Nominal Dimensions & Machining Tolerances				
	H9 $ØD_1$	+0.00 -0.20 $Ød_1$	+0.10 -0.00 L_1	Nominal S	Nominal C
CSPG0200	2.000	1.625	0.190	0.187	0.100
CSPG0250	2.500	2.125	0.190	0.187	0.100
CSPG0275	2.750	2.375	0.190	0.187	0.100
CSPG0300	3.000	2.468	0.190	0.268	0.150
CSPG0325	3.250	2.718	0.190	0.268	0.150
CSPG0350	3.500	2.968	0.190	0.268	0.150
CSPG0375	3.750	3.218	0.190	0.333	0.150
CSPG0400	4.000	3.338	0.250	0.333	0.180
CSPG0425	4.250	3.588	0.250	0.333	0.180
CSPG0450	4.500	3.838	0.250	0.333	0.180
CSPG0475	4.750	4.088	0.250	0.383	0.180
CSPG0500	5.000	4.238	0.375	0.383	0.200
CSPG0525	5.250	4.488	0.375	0.383	0.200
CSPG0550	5.500	4.738	0.375	0.383	0.200
CSPG0600	6.000	5.102	0.375	0.451	0.250
CSPG0625	6.250	5.352	0.375	0.451	0.250
CSPG0650	6.500	5.602	0.375	0.451	0.250
CSPG0700	7.000	6.102	0.375	0.451	0.250
CSPG0725	7.250	6.352	0.375	0.451	0.250
CSPG0825	8.250	7.230	0.375	0.512	0.260
CSPG0925	9.250	8.230	0.375	0.512	0.260
CSPG1050	10.500	9.420	0.437	0.542	0.260

Double Acting Piston Seal

CS 8

Metric

Design

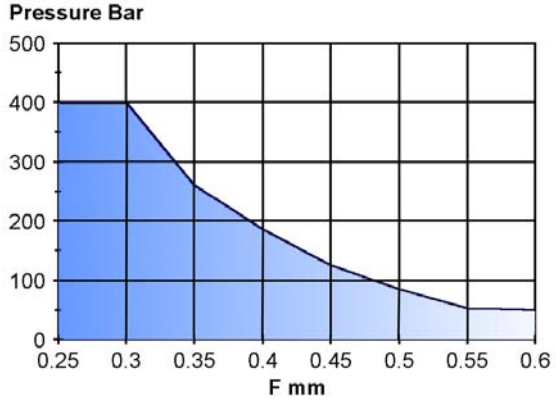
Designed for use on one piece pistons, Claron Style CS8 consists of a precision moulded high performance 98°Shore Polyurethane outer sleeve, pre loaded and pressure energised by a square section NBR 80°Shore rubber element. The compact design allows smaller width pistons to be used, and offers excellent wear resistance on a wide range of surface finishes.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-30°C to 80°C	-30°C to 100°C
1.0	280 Bar	250 Bar
0.5	450 Bar	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

Polyurethane / Nitrile Composite		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	NS
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

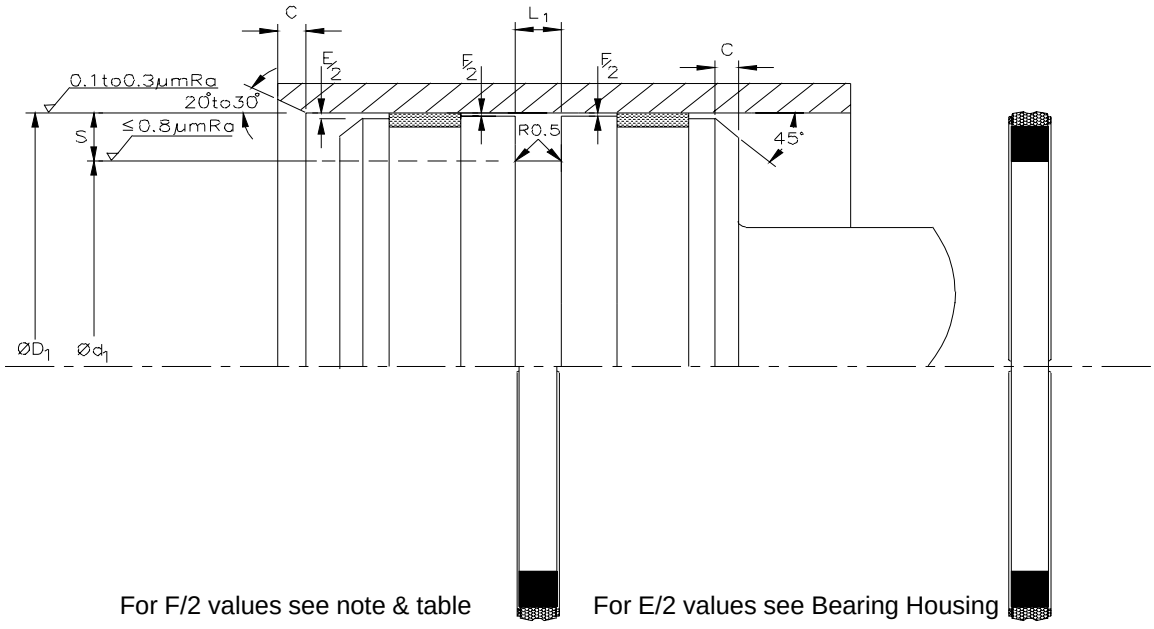
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

For E/2 values see Bearing Housing

Double Acting Piston Seal

CS 8

Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	h9 $Ød_1$	+0.20 -0.00 L_1	Nominal S	Nominal C
CS 80200	20	12.5	3.2	3.75	2.0
CS 80250	25	17.5	3.2	3.75	2.0
CS 80300	30	22.5	3.2	3.75	2.0
CS 80320	32	24.5	3.2	3.75	2.0
CS 80400	40	29.0	4.2	5.50	3.0
CS 80400/2	40	24.5	6.3	7.75	4.0
CS 80450	45	34.0	4.2	5.50	3.0
CS 80500	50	39.0	4.2	5.50	3.0
CS 80500/2	50	34.5	6.3	7.75	4.0
CS 80550/2	55	39.5	6.3	7.75	4.0
CS 80600	60	49.0	4.2	5.50	3.0
CS 80600/2	60	44.5	6.3	7.75	4.0
CS 80630	63	52.0	4.2	5.50	3.0
CS 80630/2	63	47.5	6.3	7.75	4.0
CS 80650/2	65	49.5	6.3	7.75	4.0
CS 80650/4	65	52.0	6.3	6.50	3.0
CS 80700	70	59.0	4.2	5.50	3.0
CS 80700/2	70	54.5	6.3	7.75	4.0
CS 80700/4	70	57.0	6.3	6.50	3.0
CS 80750/2	75	59.5	6.3	7.75	4.0
CS 80750/4	75	62.0	6.3	6.50	3.0
CS 80800	80	64.5	6.3	7.75	4.0
CS 80900	90	74.5	6.3	7.75	4.0
CS 81000	100	84.5	6.3	7.75	4.0
CS 81000/2	100	79.0	8.1	10.50	5.0
CS 81000/4	100	86.5	6.3	6.75	4.0
CS 81100/2	110	89.0	8.1	10.50	5.0
CS 81200/2	120	99.0	8.1	10.50	5.0
CS 81250/2	125	104.0	8.1	10.50	5.0
CS 81300/2	130	109.0	8.1	10.50	5.0
CS 81400	140	119.0	8.1	10.50	5.0
CS 81500	150	129.0	8.1	10.50	5.0
CS 81600	160	139.0	8.1	10.50	5.0
CS 81800	180	159.0	8.1	10.50	5.0
CS 82000	200	179.0	8.1	10.50	5.0

Double Acting Piston Seal

CSPGI

Metric

Design

Designed for use on one piece pistons. The seal consists of a precision moulded high performance 98°Shore Polyurethane outer sleeve, pre loaded and pressure energised by a square section NBR 80°Shore rubber element. The compact design allows smaller width pistons to be used. The seal offers excellent wear resistance on a wide range of surface finishes. Sizes conform to standard Japanese housings.

Operating Conditions

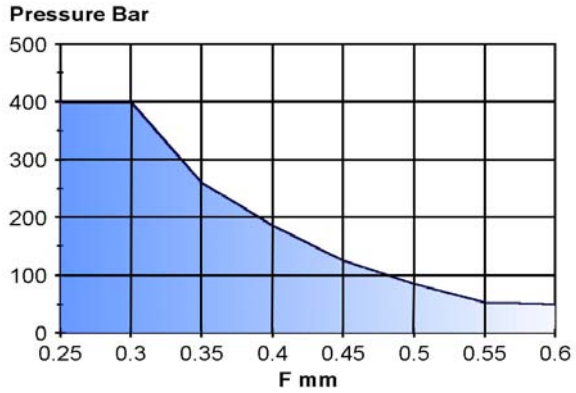
Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-30°C to 80°C	-30°C to 100°C
1.0	280 Bar	250 Bar
0.5	450 Bar	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for variuos fluids

Polyurethane / Nitrile Composite		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	NS
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F



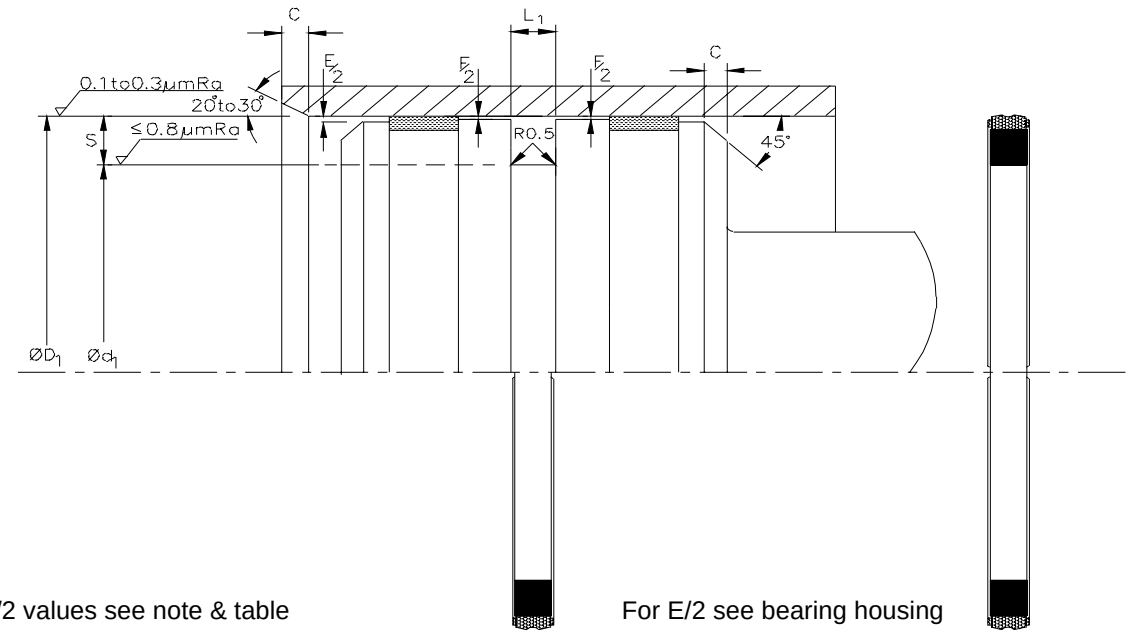
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



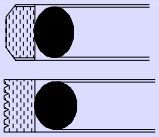
For F/2 values see note & table

For E/2 see bearing housing

Double Acting Piston Seal CSPGI Metric

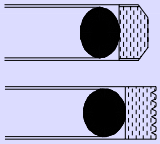
Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	h9 $Ød_1$	$^{+0.20}_{-0.00}$ L_1	Nominal S	Nominal C
CSPGI 030	30.0	20.5	4.5	4.75	2.0
CSPGI 031.5	31.5	22.0	4.5	4.75	3.5
CSPGI 032	32.0	22.5	4.5	4.75	3.5
CSPGI 040	40.0	30.0	4.5	5.0	3.5
CSPGI 050	50.0	40.0	4.5	5.0	4.0
CSPGI 060	60.0	50.0	4.5	5.0	4.0
CSPGI 063	63.0	48.0	7.5	7.5	4.0
CSPGI 065	65.0	50.0	7.5	7.5	4.0
CSPGI 070	70.0	55.0	7.5	7.5	4.0
CSPGI 075	75.0	60.0	7.5	7.5	4.0
CSPGI 080	80.0	65.0	7.5	7.5	5.0
CSPGI 090	90.0	75.0	7.5	7.5	5.0
CSPGI 100	100.0	85.0	7.5	7.5	5.0
CSPGI 125	125.0	109.0	7.5	8.0	6.5
CSPGI 140	140.0	124.0	7.5	8.0	6.5
CSPGI 160	160.0	144.0	7.5	8.0	6.5
CSPGI 180	180.0	158.0	11.0	11.0	6.5
CSPGI 200	200.0	178.0	11.0	11.0	6.5
CSPGI 220	220.0	198.0	11.0	11.0	6.5
CSPGI 224	224.0	202.0	11.0	11.0	6.5
CSPGI 250	250.0	228.0	11.0	11.0	6.5



Double Acting Piston Seal Metric

CS5 841



Design

Claron Composite Seals Style CS5 and Style 841 are designed as high pressure, low friction Double-acting piston seals for use in heavy duty hydraulic and pneumatic cylinders.
Claron Composite Seals Style 841 is specifically designed for minimum leakage and slow rotary applications using the same housing designs as Style CS5
The inclusion of radial grooves on the P.T.F.E. element, from 20mm diameter onwards, allows rapid response to bi-directional pressure changes.

Materials

Standard materials are Bronze filled P.T.F.E with a Nitrile O-Ring Energiser but both the outer sealing element and the energiser are available in a wide range of high performance materials to suit a variety of applications . The application parameters should be carefully considered prior to selecting suitable materials from the tables in Appendix 2.
Consult Claron for further advice.

Operating Range

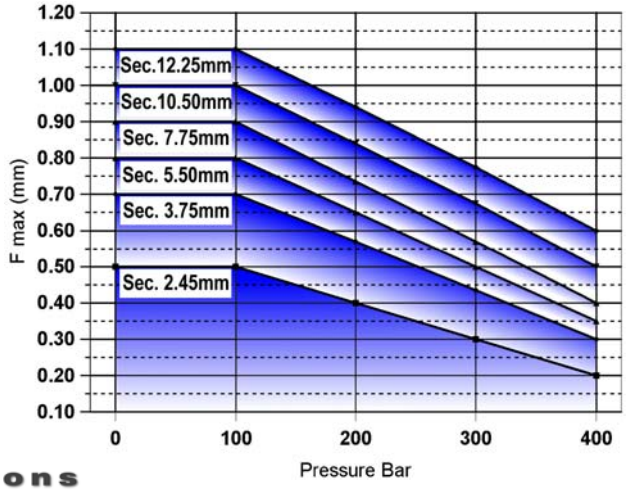
Temp -54°C to 200°C Dependent upon O-Ring Material used
Pressure upto 800 bar
Velocity upto 15m/s
These range parameters are maximum conditional values
Optimum service conditions are affected by temperature, speed pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information**.**

Operating Conditions

Maximum Working Pressure for “Standard” seal applications using specified tolerances.

Temp. range	Temp. range
-30°C to 80°C	80°C to 120°C
400bar	350 bar

Diametrical Clearance F shown in the graph to the right is calculated as the maximum permissible extrusion gap, allowing for movement due to side load, for various pressures and temperatures upto 80°C. The use of a suitably selected Claron bearing ring will effectively reduce the **Radial clearance** to a value nearer to F/2 thus increasing the pressure capability of the seal.
The maximum seal extrusion gap should be calculated allowing for all tolerances, movement and cylinder expansion.
For pressures **>** 400 bar, the seal extrusion gap should be reduced by utilising smaller tolerances. e.g H8 for Cylinder bore, f8 for piston diameter.



Range Of Installation Dimensions

The full range of diameters applicable to the “Standard”, “Light” and “Heavy” Duty Sections are shown in the table below

Housing		Cylinder Bore		
Section	Width	Standard	Light (/1)	Heavy (/2)
2.50	2.20	8 to 14.9	15 to 39.9	
3.75	3.20	15 to 39.9	40 to 79.9	
5.50	4.20	40 to 79.9	80 to 132.9	15 to 39.9
7.75	6.30	80 to 132.9	133 to 329.9	40 to 79.9
10.50	8.10	133 to 329.9	330 to 580	80 to 132.9
12.25	8.10	330 to 580		133 to 329.9
14.00	9.50			330 to 580

How To Order

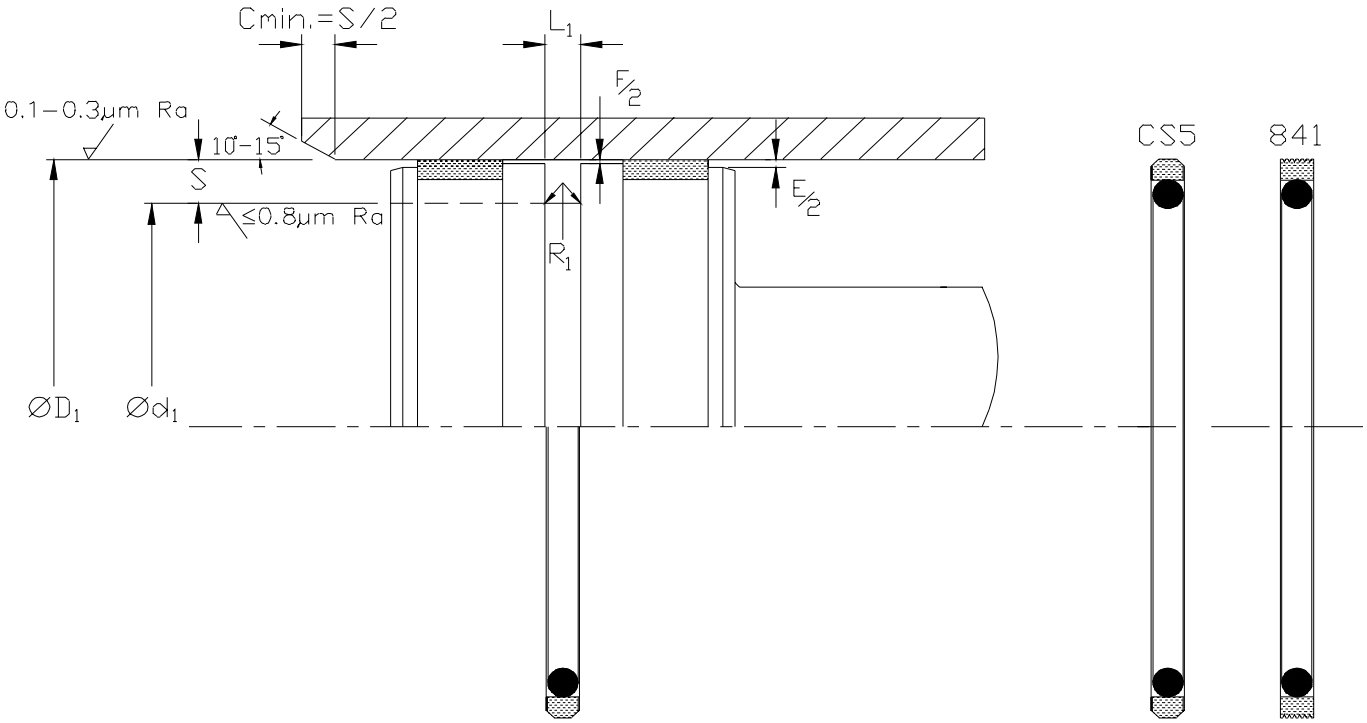
When ordering, prefix the size reference with the style required and use the suffix shown in the material application tables Appendix 2.

e.g. CS5 Standard section in Bronze filled material for 70mm diameter **CS50700/B**
CS5 Light duty section in Glass filled material for 70 mm diameter **CS50700/1G**
841 Heavy duty section in Carbon filled material for 70 mm diameter **841-0700/2C**

For O-Ring energiser materials other than Nitrile, use suffix shown in material table, Appendix 2.
e.g Flourocarbon material (FKM), **CS50700/B/FKM**

Housing

For surface finish and lead in chamfers refer to the illustration below. For Housing dimensions and tolerances refer to the table of recommended sizes, and Appendix 4 for value of tolerance symbols.

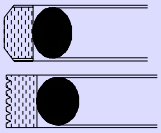


For F/2 values see note & tables

For E/2 refer to Guide Tape page

Fitting

For the seal to function correctly it is important that care is taken during fitting. For details refer to Appendix 3

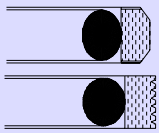


CS5

841

Double Acting Piston Seal Metric

CS5 841



Nominal Dimensions & Machining Tolerances

Claron	ØD$_1$ H9	Ød$_1$ h9	L$_1$ +0.2 -0.0	S Nom Sec	R$_1$ MAX	F/2 MAX
CS50100/B	10.00	5.00	2.20	2.50	0.30	0.20
CS50120/B	12.00	7.00	2.20	2.50	0.30	0.20
CS50140/B	14.00	9.00	2.20	2.50	0.30	0.20
CS50150/B	15.00	7.50	3.20	3.75	0.50	0.30
CS50160/1B	**16.00**	**11.00**	**2.20**	**2.50**	0.30	0.20
CS50160/B	**16.00**	**8.50**	**3.20**	**3.75**	**0.50**	0.30
CS50180/B	18.00	10.50	3.20	3.75	0.50	0.30
CS50200/1B	**20.00**	**15.00**	**2.20**	**2.50**	0.30	0.20
CS50200/B	**20.00**	**12.50**	**3.20**	**3.75**	**0.50**	0.30
CS50220/B	22.00	14.50	3.20	3.75	0.50	0.30
CS50250/B	**25.00**	**17.50**	**3.20**	**3.75**	**0.50**	0.30
CS50250/2B	**25.00**	**14.00**	**4.20**	**5.50**	0.80	0.35
CS50254/B	25.40	17.90	3.20	3.75	0.50	0.30
CS50280/B	28.00	20.50	3.20	3.75	0.50	0.30
CS50300/B	30.00	22.50	3.20	3.75	0.50	0.30
CS50320/2B	**32.00**	**21.00**	**4.20**	**5.50**	0.80	0.35
CS50320/B	**32.00**	**24.50**	**3.20**	**3.75**	**0.50**	0.30
CS50350/B	35.00	27.50	3.20	3.75	0.50	0.30
CS50360/B	36.00	28.50	3.20	3.75	0.50	0.30
CS50381/B	38.10	30.60	3.20	3.75	0.50	0.30
CS50400/1B	**40.00**	**32.50**	**3.20**	**3.75**	**0.50**	0.30
CS50400/B	**40.00**	**29.00**	**4.20**	**5.50**	0.80	0.35
CS50420/B	42.00	31.00	4.20	5.50	0.80	0.35
CS50450/B	45.00	34.00	4.20	5.50	0.80	0.35
CS50480/B	48.00	37.00	4.20	5.50	0.80	0.35
CS50500/1B	50.00	42.50	3.20	3.75	0.50	0.30
CS50500/2B	**50.00**	**34.50**	**6.30**	**7.75**	1.20	0.40
CS50500/B	**50.00**	**39.00**	**4.20**	**5.50**	0.80	0.35
CS50508/B	50.80	39.80	4.20	5.50	0.80	0.35
CS50520/B	52.00	41.00	4.20	5.50	0.80	0.35
CS50550/B	55.00	44.00	4.20	5.50	0.80	0.35
CS50600/B	60.00	49.00	4.20	5.50	0.80	0.35
CS50630/1B	63.00	55.50	3.20	3.75	0.50	0.30
CS50630/2B	**63.00**	**47.50**	**6.30**	**7.75**	1.20	0.40
CS50630/B	**63.00**	**52.00**	**4.20**	**5.50**	0.80	0.35
CS50635/B	63.50	52.50	4.20	5.50	0.80	0.35
CS50650/B	65.00	54.00	4.20	5.50	0.80	0.35
CS50700/2B	70.00	54.50	6.30	7.75	1.20	0.40
CS50700/B	70.00	59.00	4.20	5.50	0.80	0.35
CS50750/B	75.00	64.00	4.20	5.50	0.80	0.35
CS50800/1B	**80.00**	**69.00**	**4.20**	**5.50**	0.80	0.35
CS50800/2B	80.00	59.00	8.10	10.50	1.50	0.50
CS50800/B	**80.00**	**64.50**	**6.30**	**7.75**	1.20	0.40
CS50850/2B	85.00	64.00	8.10	10.50	1.50	0.50
CS50850/B	85.00	69.50	6.30	7.75	1.20	0.40
CS50900/2B	90.00	69.00	8.10	10.50	1.50	0.50
CS50900/B	90.00	74.50	6.30	7.75	1.20	0.40
CS50950/2B	95.00	74.00	8.10	10.50	1.50	0.50
CS50950/B	95.00	79.50	6.30	7.75	1.20	0.40
CS51000/1B	**100.00**	**89.00**	**4.20**	**5.50**	0.80	0.35
CS51000/2B	100.00	79.00	8.10	10.50	1.50	0.50
CS51000/B	**100.00**	**84.50**	**6.30**	**7.75**	1.20	0.40
CS51016/B	101.60	86.10	6.30	7.75	1.20	0.40
CS51050/2B	105.00	84.00	8.10	10.50	1.50	0.50
CS51050/B	105.00	89.50	6.30	7.75	1.20	0.40

Nominal Dimensions & Machining Tolerances

Claron	ØD$_1$ H9	Ød$_1$ h9	L$_1$ +0.2 -0.0	S Nom Sec	R$_1$ MAX	F/2 MAX
CS51100/2B	110.00	89.00	8.10	10.50	1.50	0.50
CS51100/B	110.00	94.50	6.30	7.75	1.20	0.40
CS51143/B	114.30	98.80	6.30	7.75	1.20	0.40
CS51150/2B	115.00	94.00	8.10	10.50	1.50	0.50
CS51150/B	115.00	99.50	6.30	7.75	1.20	0.40
CS51200/2B	120.00	99.00	8.10	10.50	1.50	0.50
CS51200/B	120.00	104.50	6.30	7.75	1.20	0.40
CS51250/2B	**125.00**	**104.00**	**8.10**	**10.50**	1.50	0.50
CS51250/B	**125.00**	**109.50**	**6.30**	**7.75**	1.20	0.40
CS51270/B	127.00	111.50	6.30	7.75	1.20	0.40
CS51300/2B	130.00	109.00	8.10	10.50	1.50	0.50
CS51300/B	130.00	114.50	6.30	7.75	1.20	0.40
CS51350/B	135.00	114.00	8.10	10.50	1.50	0.50
CS51400/B	140.00	119.00	8.10	10.50	1.50	0.50
CS51500/B	150.00	129.00	8.10	10.50	1.50	0.50
CS51524/B	152.40	131.40	8.10	10.50	1.50	0.50
CS51600/1B	**160.00**	**144.50**	**6.30**	**7.75**	1.20	0.40
CS51600/2B	160.00	135.50	8.10	12.25	1.50	0.60
CS51600/B	**160.00**	**139.00**	**8.10**	**10.50**	1.50	0.50
CS51700/B	170.00	149.00	8.10	10.50	1.50	0.50
CS51800/B	180.00	159.00	8.10	10.50	1.50	0.50
CS51900/B	190.00	169.00	8.10	10.50	1.50	0.50
CS52000/1B	**200.00**	**184.50**	**6.30**	**7.75**	1.20	0.40
CS52000/2B	200.00	175.50	8.10	12.25	1.50	0.60
CS52000/B	**200.00**	**179.00**	**8.10**	**10.50**	1.50	0.50
CS52100/B	210.00	189.00	8.10	10.50	1.50	0.50
CS52200/B	220.00	199.00	8.10	10.50	1.50	0.50
CS52250/B	225.00	204.00	8.10	10.50	1.50	0.50
CS52300/B	230.00	209.00	8.10	10.50	1.50	0.50
CS52400/B	240.00	219.00	8.10	10.50	1.50	0.50
CS52500/2B	250.00	225.50	8.10	12.25	1.50	0.50
CS52500/B	**250.00**	**229.00**	**8.10**	**10.50**	1.50	0.50
CS52600/B	260.00	239.00	8.10	10.50	1.50	0.50
CS52800/B	280.00	259.00	8.10	10.50	1.50	0.50
CS53000/B	300.00	279.00	8.10	10.50	1.50	0.50
CS53200/2B	**320.00**	**295.50**	**8.10**	**12.25**	1.50	0.60
CS53200/B	**320.00**	**299.00**	**8.10**	**10.50**	1.50	0.50
CS53500/B	350.00	325.50	8.10	12.25	1.50	0.60
CS53600/B	360.00	335.50	8.10	12.25	1.50	0.60
CS53800/B	380.00	355.50	8.10	12.25	1.50	0.60
CS54000/B	**400.00**	**375.50**	**8.10**	**12.25**	1.50	0.60
CS54200/B	420.00	395.50	8.10	12.25	1.50	0.60
CS54500/B	450.00	425.50	8.10	12.25	1.50	0.60
CS54800/B	480.00	455.50	8.10	12.25	1.50	0.60
CS55000/B	**500.00**	**475.50**	**8.10**	**12.25**	1.50	0.60

Dimensions in bold type conform to ISO 7425-1 :1988

Intermediate sizes upto 580mm are available, incl. Imperial

Double Acting Piston Seal.

CS 2 Imperial
CS 4 Metric

CS2 CS4

Design

Claron composite seals styles CS2 and CS 4 are designed for use in light duty hydraulic or pneumatic piston applications. Style CS2 covers the range of imperial sizes, and CS4 the metric sizes.

Materials

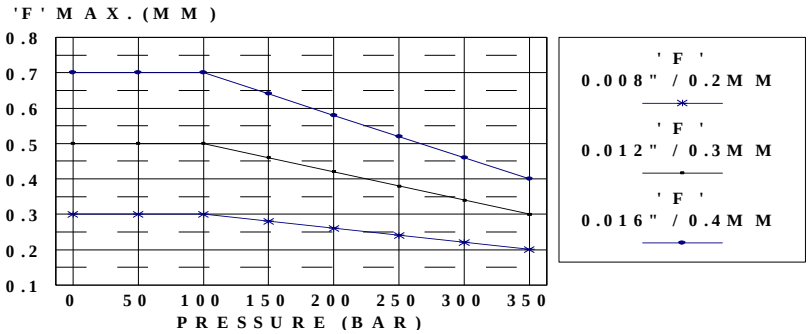
Claron composite seals style CS2 and CS4 as standard comprise of a Virgin PTFE outer sleeve and are energised by a 75° shore hardness Nitrile rubber O-Ring. A full range of materials are available to suit a variety of applications.
See tables in Appendix 2.

Operating Conditions

Maximum Working Pressure for “Standard” seal applications using specified tolerances.
Temp Range: -40°C to +120°C (Dependent upon energiser material. See Appendix 2)
Max. Pressure: 350 Bar
Max. Linear Speed: 15m/s
These range parameters are maximum conditional values
Optimum service conditions are affected by temperature, speed pressure, surface finish and extrusion gaps..
Refer to Appendix 1 section for further information.

Diametral Clearance 'F'

'F' shown in the size tables is based upon Virgin P.T.F.E., temperatures up to 80°C and 350 Bar pressure in designs where PTFE guide tape is utilised. For other pressures, refer to the graph shown below.



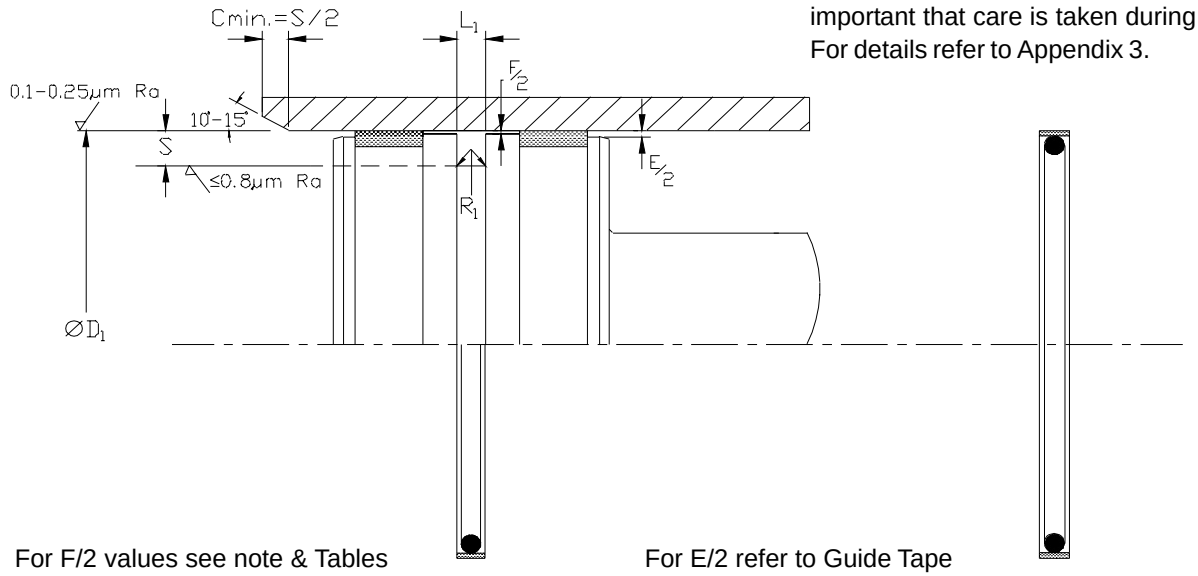
To use this graph, refer to the tables on for the max. value of 'F' at 350 Bar then apply the relevant curve for the various pressures.

The maximum extrusion gap 'F/2' should be calculated allowing for all movements due to tolerances, side-loads and cylinder expansion.

How To Order

When ordering, quote the size reference shown on the dimensions table.
If an energiser material other than the standard nitrile type is required, consult Claron for the part number to be used.

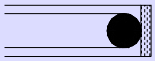
For the seal to function correctly it is important that care is taken during fitting. For details refer to Appendix 3.



For F/2 values see note & Tables

For E/2 refer to Guide Tape

Double Acting Piston Seal.



CS 2 Imperial Sizes

Nominal Dimensions & Machining Tolerances

Claron Part No.	H9 $ØD_1$	L_1 ±0.003	S	Tol. On. S	R_1 Max	F Max (350 Bar)
CS 20031	0.312					
CS 20034	0.343					
CS 20037	0.375	0.094	0.080	+0.002 -0.000	0.010	0.008
CS 20043	0.437					
CS 20050	0.500					
CS 20056	0.562					
CS 20062	0.625					
CS 20068	0.687					
CS 20075	0.750	0.141	0.111	+0.003 -0.000	0.020	0.008
CS 20081	0.812					
CS 20087	0.875					
CS 20093	0.937					
CS 20100	1.000					
CS 20106	1.062					
CS 20112	1.125					
CS 20118	1.187					
CS 20125	1.250					
CS 20131	1.312					
CS 20137	1.375	0.188	0.152	+0.004 -0.000	0.030	0.008
CS 20143	1.437					
CS 20150	1.500					
CS 20156	1.562					
CS 20162	1.625					
CS 20168	1.687					
CS 20175	1.750					
CS 20187	1.875					
CS 20200	2.000					
CS 20212	2.125					
CS 20225	2.250					
CS 20237	2.375					
CS 20250	2.500					
CS 20262	2.625					
CS 20275	2.750					
CS 20287	2.875					
CS 20300	3.000					
CS 20312	3.125					
CS 20325	3.250					
CS 20337	3.375					
CS 20350	3.500	0.281	0.244	+0.004 -0.000	0.040	0.012
CS 20362	3.625					
CS 20375	3.750					
CS 20387	3.875					
CS 20400	4.000					
CS 20412	4.125					
CS 20425	4.250					
CS 20437	4.375					
CS 20450	4.500					
CS 20462	4.625					
CS 20475	4.750					
CS 20487	4.875					
CS 20500	5.000					
CS 20512	5.125					
CS 20525	5.250					
CS 20537	5.375					
CS 20550	5.500					
CS 20562	5.625					
CS 20575	5.750					
CS 20587	5.875					
CS 20600	6.000					
CS 20612	6.125					
CS 20625	6.250					
CS 20637	6.375	0.375	0.328	+0.005 -0.000	0.040	0.016
CS 20650	6.500					
CS 20662	6.625					
CS 20675	6.750					
CS 20700	7.000					
CS 20750	7.500					
CS 20800	8.000					
CS 20850	8.500					
CS 20900	9.000					
CS 20950	9.500					
CS 21000	10.000					
CS 21200	12.000					

CS 4 Metric Sizes

Nominal Dimensions & Machining Tolerances

Claron Part No.	H9 $ØD_1$	L_1 ±0.075	S	Tol. On. S	R_1 Max	F Max (350 Bar)
CS 4008	8					
CS 4009	9					
CS 4010	10					
CS 4011	11					
CS 4012	12	2.40	2.15	+0.05 -0.00	0.25	0.20
CS 4013	13					
CS 4014	14					
CS 4015	15					
CS 4016	16					
CS 4017	17					
CS 4018	18					
CS 4020	20	3.60	3.00	+0.075 -0.00	0.50	0.20
CS 4022	22					
CS 4023	23					
CS 4024	24					
CS 4025	25					
CS 4026	26					
CS 4027	27					
CS 4028	28					
CS 4029	29					
CS 4030	30					
CS 4031	31					
CS 4032	32					
CS 4033	33					
CS 4034	34					
CS 4035	35					
CS 4036	36					
CS 4037	37	4.80	4.00	+0.10 -0.00	0.75	0.20
CS 4038	38					
CS 4039	39					
CS 4040	40					
CS 4041	41					
CS 4042	42					
CS 4043	43					
CS 4044	44					
CS 4045	45					
CS 4047	47					
CS 4048	48					
CS 4049	49					
CS 4050	50					
CS 4053	53					
CS 4055	55					
CS 4056	56					
CS 4060	60					
CS 4063	63					
CS 4065	65					
CS 4070	70					
CS 4073	73					
CS 4075	75	7.15	6.20	+0.10 -0.0	1.00	0.30
CS 4080	80					
CS 4085	85					
CS 4090	90					
CS 4100	100					
CS 4105	105					
CS 4110	110					
CS 4115	115					
CS 4120	120					
CS 4125	125					
CS 4130	130					
CS 4135	135					
CS 4140	140					
CS 4145	145					
CS 4150	150					
CS 4160	160					
CS 4165	165	9.50	8.40	+0.10 -0.00	1.00	0.40
CS 4170	170					
CS 4175	175					
CS 4200	200					
CS 4250	250					
CS 4320	320					

Double Acting Piston Seal

D-Ring

Metric

Design

Claron D-Ring Seals are designed as high pressure, low friction Double-acting piston seals for use in heavy duty hydraulic cylinders.
The seals high pressure resistance makes it suitable for use in heavy duty applications where shock loads and pressure spikes occur, as found in mobile plant equipment.
The inclusion of radial grooves on the P.T.F.E. element allows rapid response to bi-directional pressure changes.

Materials

Standard materials are Bronze Filled P.T.F.E. Outer Ring with a Nitrile O-Ring Energiser but both the outer sealing element and the energiser are available in a wide range of high performance materials to suit a variety of applications.
The application parameters should be carefully considered prior to selecting suitable materials from the tables.
Consult Claron for further advice.

Operating Range

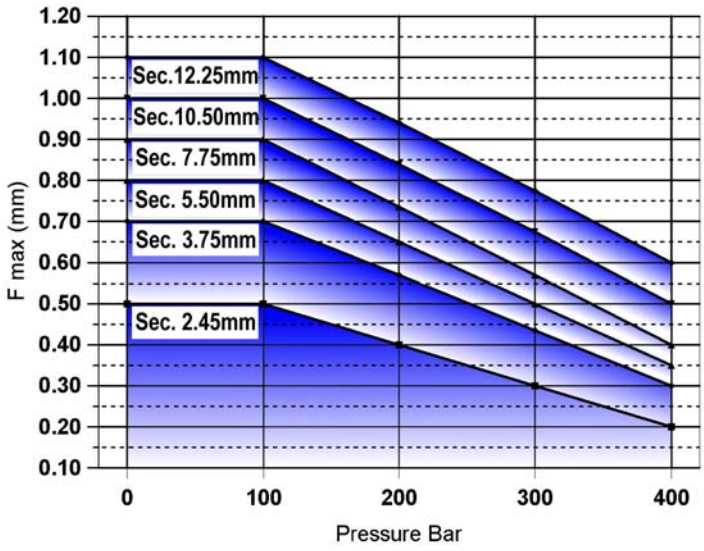
Temp. -54°C to 200°C Dependent upon O-Ring Material used
Pressure upto 800 bar
Velocity upto 15m/s
These range parameters are maximum conditional values
Optimum service conditions are affected by temperature, speed pressure, surface finish and extrusion gaps.
Refer to Appendix 1 section for further information.

Operating Conditions

Maximum Working Pressure for "Standard" seal applications using specified tolerances.

Temp. range	Temp. range
-30°C to 80°C	80°C to 120°C
400bar	350 bar

Diametral Clearance F shown in the graph to the right is calculated as the maximum permissible extrusion gap, allowing for movement due to side load, for various pressures and temperatures up to 80°C.
The use of a suitably selected Claron bearing ring will effectively reduce the **Radial clearance** to a value nearer to F/2 thus increasing the pressure capability of the seal.
The maximum seal extrusion gap should be calculated allowing for all tolerances, movement and cylinder expansion.
For pressures **>** 400 bar, the seal extrusion gap should be reduced by utilising smaller tolerances.
e.g H8 for Cylinder bore, f8 for piston diameter and P.T.F.E tape seating diameter.



Range Of Installation Dimensions

The full range of diameters applicable to the "Standard and "Light" Duty Sections are shown in the table below

Housing		Cylinder Bore	
Section	Width	Standard	Light (/1)
7.75	6.30		70 to 132.9
10.50	8.10	95 to 320	

D-Ring

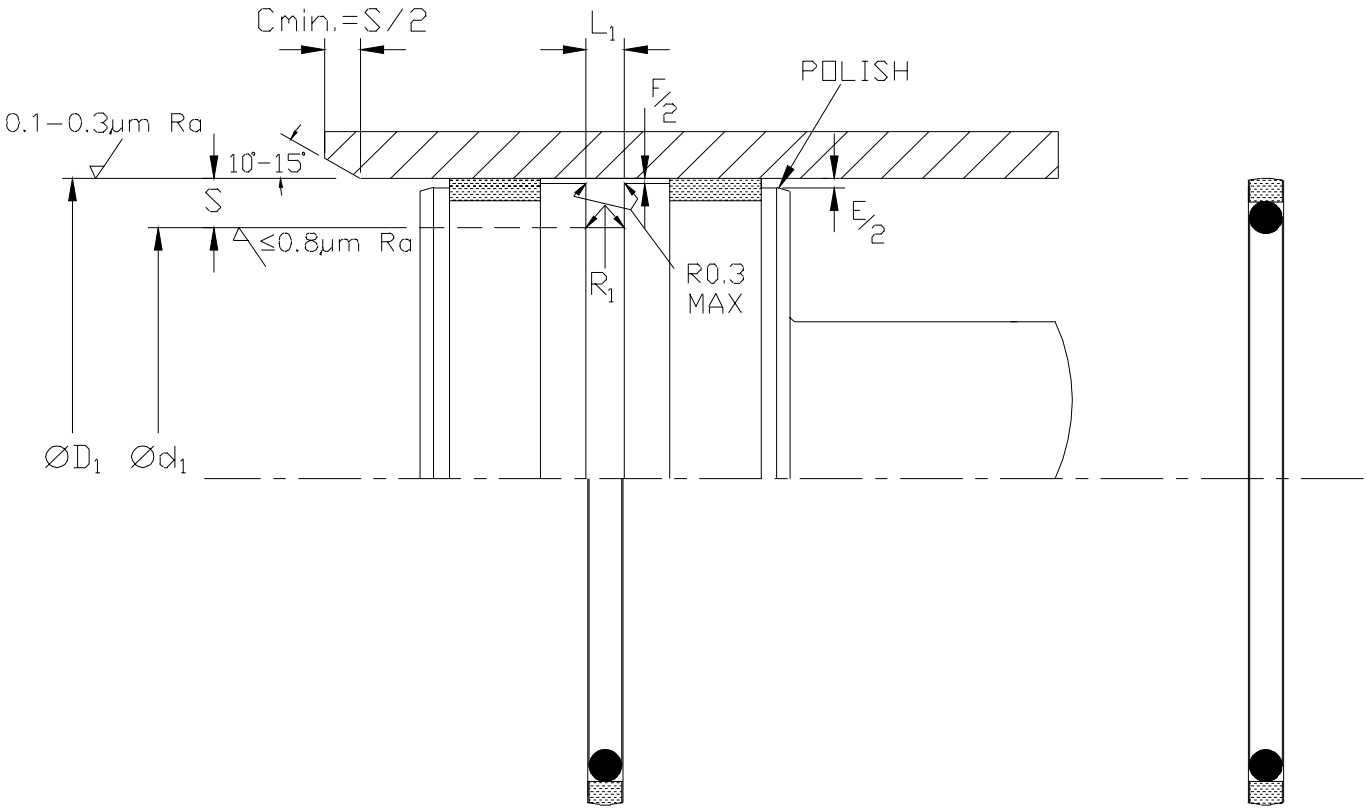
How To Order

When ordering, prefix the size reference with the style required and use the suffix shown in the material application tables.

e.g. D-Ring Standard section in Bronze filled material for 70mm diameter **D0700/B**
D-Ring Light duty section in Glass filled material for 70 mm diameter **D0700/1G**
For O-Ring energiser materials other than Nitrile, use suffix shown in material table.
e.g Flourocarbon material (FKM), **D0700/B/FKM**

Housing

For surface finish and lead in chamfers refer to the illustration below. For Housing dimensions and tolerances refer to the table of recommended sizes, and Appendix 4 for value of tolerance symbols.



For F/2 values see note and tables

For E/2 values refer to P.T.F.E. Guide Tape

Fitting

For the seal to function correctly it is important that care is taken during fitting.
For details refer to Appendix 3.

Double Acting Piston Seal Metric

D-Ring

Nominal Dimensions & Machining Tolerances

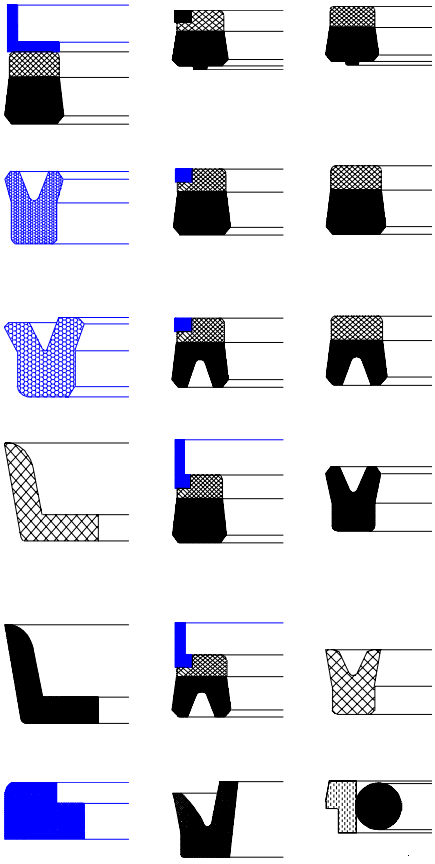
Claron Part No.	H9 $ØD_1$	h9 $Ød_1$	L_1 +0.2 -0.0	S Nom Sec	R_1 Max	F/2 Max
D0700/1B	70.00	54.50	6.30	7.75	0.90	0.40
D0750/1B	75.00	59.50	6.30	7.75	0.90	0.40
D0800/1B	**80.00**	**64.50**	**6.30**	**7.75**	**0.90**	0.40
D0850/1B	85.00	69.50	6.30	7.75	0.90	0.40
D0900/1B	90.00	74.50	6.30	7.75	0.90	0.40
D0950/1B	95.00	79.50	6.30	7.75	0.90	0.40
D1000/1B	**100.00**	**84.50**	**6.30**	**7.75**	**0.90**	0.40
D1050/1B	105.00	89.50	6.30	7.75	0.90	0.40
D1100/1B	110.00	94.50	6.30	7.75	0.90	0.40
D1150/1B	115.00	99.50	6.30	7.75	0.90	0.40
D1200/1B	120.00	104.50	6.30	7.75	0.90	0.40
D1250/1B	**125.00**	**109.50**	**6.30**	**7.75**	**0.90**	0.40
D1300/1B	130.00	114.50	6.30	7.75	0.90	0.40
D0950/B	95.00	74.00	8.10	10.50	0.90	0.50
D1000/B	100.00	79.00	8.10	10.50	0.90	0.50
D1050/B	105.00	84.00	8.10	10.50	0.90	0.50
D1100/B	110.00	89.00	8.10	10.50	0.90	0.50
D1150/B	115.00	94.00	8.10	10.50	0.90	0.50
D1200/B	120.00	99.00	8.10	10.50	0.90	0.50
D1250/B	**125.00**	**104.00**	**8.10**	**10.50**	**0.90**	**0.50**
D1300/B	130.00	109.00	8.10	10.50	0.90	0.50
D1350/B	135.00	114.00	8.10	10.50	0.90	0.50
D1400/B	140.00	119.00	8.10	10.50	0.90	0.50
D1450/B	145.00	124.00	8.10	10.50	0.90	0.50
D1500/B	150.00	129.00	8.10	10.50	0.90	0.50
D1550/B	155.00	134.00	8.10	10.50	0.90	0.50
D1600/B	**160.00**	**139.00**	**8.10**	**10.50**	**0.90**	**0.50**
D1650/B	165.00	144.00	8.10	10.50	0.90	0.50
D1700/B	170.00	149.00	8.10	10.50	0.90	0.50
D1800/B	180.00	159.00	8.10	10.50	0.90	0.50
D1900/B	190.00	169.00	8.10	10.50	0.90	0.50
D2000/B	**200.00**	**179.00**	**8.10**	**10.50**	**0.90**	**0.50**
D2100/B	210.00	189.00	8.10	10.50	0.90	0.50
D2200/B	220.00	199.00	8.10	10.50	0.90	0.50
D2300/B	230.00	209.00	8.10	10.50	0.90	0.50
D2400/B	240.00	219.00	8.10	10.50	0.90	0.50
D2500/B	250.00	229.00	8.10	10.50	0.90	0.50
D2600/B	**260.00**	**239.00**	**8.10**	**10.50**	**0.90**	0.60

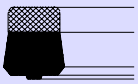
Nominal Dimensions & Machining Tolerances

Claron Part No.	H9 $ØD_1$	h9 $Ød_1$	L_1 +0.2 -0.0	S Nom Sec	R_1 Max	F/2 Max
D2700/B	270.00	249.00	8.10	10.50	0.90	0.60
D2800/B	280.00	259.00	8.10	10.50	0.90	0.60
D2900/B	290.00	269.00	8.10	10.50	0.90	0.50
D3000/B	300.00	279.00	8.10	10.50	0.90	0.60
D3200/B	**320.00**	**299.00**	**8.10**	**10.50**	**0.90**	0.60

DIMENSIONS IN BOLD TYPE CONFORM TO ISO 7425-1 :1988

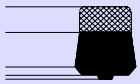
Section B
Single Acting Piston Seals





CP

Metric



Design

CLARON STYLE CP is designed with a symmetrical profile for use as a single acting piston or rod seal. The seal is a precision moulded Nitrile rubber sealing element with a bonded fabric reinforced base to resist extrusion. Designed with initial radial interference to effect low pressure sealing, at higher pressures the seal is energised thus increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, thus reducing friction and wear. Style CP is produced with radial grooves incorporated into the top of the seal on the pressure side. This innovative design ensures a rapid energisation of the seal without excessive end float and resultant wear.

Operating Conditions

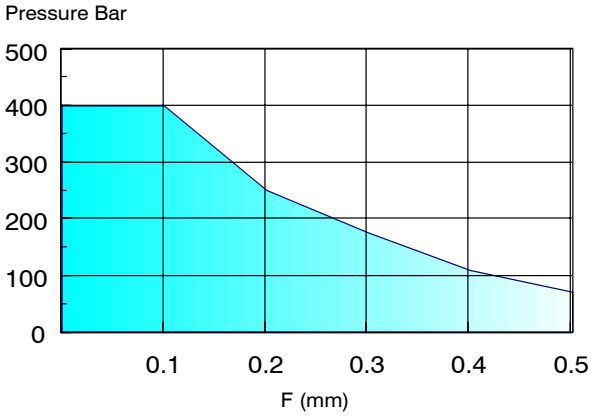
Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F



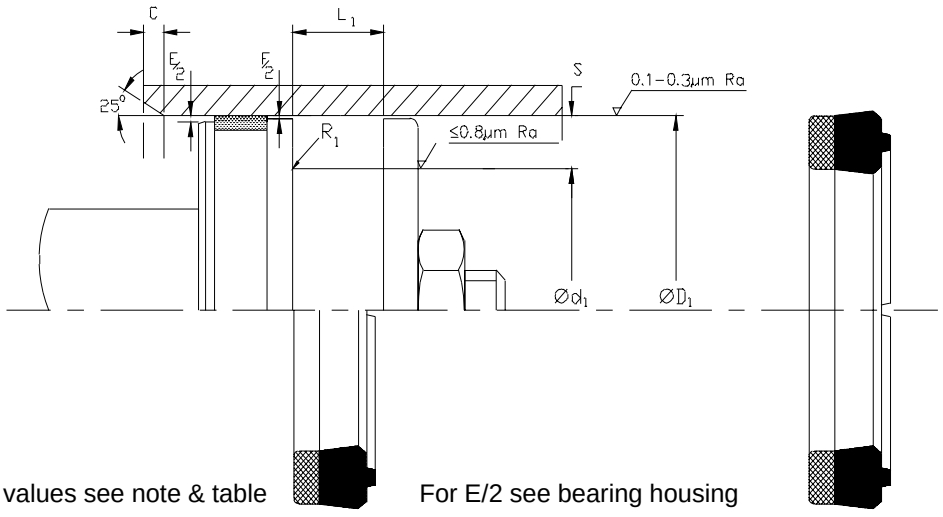
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.
For Rod applications see Section C.

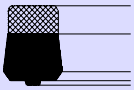
Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

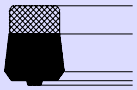
For E/2 see bearing housing



Single Acting Piston Seal
CP
Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	js11 $Ød_1$	+0.25 -0.00 L_1	Nominal S	Min C	Max R_1
CP 078047	20.00	12.00	6.30	4.00	2.00	0.20
CP 094063/1	24.00	16.00	7.50	4.00	2.00	0.20
CP 094063/2	24.00	16.00	6.30	4.00	2.00	0.20
CP 098047	25.00	12.00	10.00	6.50	2.50	0.40
CP 098070	25.00	18.00	7.00	3.50	2.00	0.20
CP 102062/1	26.00	16.00	8.00	5.00	2.50	0.40
CP 102066	26.00	17.00	5.70	4.50	2.00	0.20
CP 102070	26.00	18.00	6.30	4.00	2.00	0.20
CP 102078	26.00	20.00	5.50	3.00	1.50	0.20
CP 106059	27.00	15.00	7.00	6.00	2.50	0.40
CP 110070	28.00	18.00	6.30	5.00	2.50	0.40
CP 110078	28.00	20.00	7.00	4.00	2.00	0.20
CP 110078/1	28.00	20.00	6.30	4.00	2.00	0.20
CP 114074	29.00	19.00	8.00	5.00	2.50	0.40
CP 118078/1	30.00	20.00	8.00	5.00	2.50	0.40
CP 118086/1	30.00	22.00	6.30	4.00	2.00	0.20
CP 118086/2	30.00	22.00	7.50	4.00	2.00	0.20
CP 125086	32.00	22.00	7.50	5.00	2.50	0.40
CP 125094	32.00	24.00	7.00	4.00	2.00	0.20
CP 129098/1	33.00	25.00	6.30	4.00	2.00	0.20
CP 137098	35.00	25.00	8.00	5.00	2.50	0.40
CP 141110/1	36.00	28.00	6.40	4.00	2.00	0.20
CP 149110/1	38.00	28.00	8.00	5.00	2.50	0.40
CP 149118	38.00	30.00	6.40	4.00	2.00	0.20
CP 149118/1	38.00	30.00	8.50	4.00	2.00	0.20
CP 157118	40.00	30.00	7.50	5.00	2.50	0.40
CP 157125/1	40.00	32.00	6.40	4.00	2.00	0.20
CP 165125	42.00	32.00	8.00	5.00	2.50	0.40
CP 169137	43.00	35.00	6.40	4.00	2.00	0.20
CP 173141	44.00	36.00	6.40	4.00	2.00	0.20
CP 173141/1	44.00	36.00	8.50	4.00	2.00	0.20
CP 177118/1	45.00	30.00	9.00	7.50	4.00	0.80
CP 177137/1	45.00	35.00	9.00	5.00	2.50	0.40
CP 177137/5	45.00	35.00	8.00	5.00	2.50	0.40
CP 181141/1	46.00	36.00	8.00	5.00	2.50	0.40
CP 181149	46.00	38.00	6.30	4.00	2.00	0.20
CP 185125	47.00	32.00	11.00	7.50	4.00	0.80
CP 188157	48.00	40.00	6.40	4.00	2.00	0.20
CP 196137/1	50.00	35.00	12.50	7.50	4.00	0.80
CP 196137/2	50.00	35.00	11.00	7.50	4.00	0.80
CP 196157	50.00	40.00	11.00	5.00	2.50	0.40
CP 196157/2	50.00	40.00	13.50	5.00	2.50	0.40
CP 196157/3	50.00	40.00	7.50	5.00	2.50	0.40
CP 196165	50.00	42.00	6.30	4.00	2.00	0.20
CP 200141	51.00	36.00	11.50	7.50	4.00	0.80

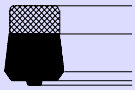


Single Acting Piston Seal
CP

Metric

Nominal Dimensions & Machining Tolerances

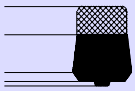
Claron Part Number	H10 ØD$_1$	js11 Ød$_1$	+0.25 -0.00 L$_1$	Nominal Sec. S	Min C	Max R$_1$
CP 216157/2	55.00	40.00	11.50	7.50	4.00	0.80
CP 216177	55.00	45.00	8.00	5.00	2.50	0.40
CP 216177/3	55.00	45.00	10.50	5.00	2.50	0.40
CP 228196	58.00	50.00	8.50	4.00	2.00	0.20
CP 236177/1	60.00	45.00	11.50	7.50	4.00	0.80
CP 236196	60.00	50.00	8.00	5.00	2.50	0.40
CP 236196/3	60.00	50.00	14.50	5.00	2.50	0.40
CP 244196/1	62.00	50.00	9.50	6.00	3.00	0.40
CP 248188/2	63.00	48.00	11.00	7.50	4.00	0.80
CP 255196/1	65.00	50.00	11.00	7.50	4.00	0.80
CP 255216	65.00	55.00	10.50	5.00	2.50	0.40
CP 255216/1	65.00	55.00	8.00	5.00	2.50	0.40
CP 259220	66.00	56.00	8.00	5.00	2.50	0.40
CP 275196	70.00	50.00	14.50	10.00	5.00	0.80
CP 275236/3	70.00	60.00	8.00	5.00	2.50	0.40
CP 275236/4	70.00	60.00	14.50	5.00	2.50	0.40
CP 279220	71.00	56.00	12.50	7.50	4.00	0.80
CP 283236	72.00	60.00	10.0	6.00	3.00	0.40
CP 283236/2	72.00	60.00	11.00	6.00	3.00	0.40
CP 295248	75.00	63.00	9.60	6.00	3.00	0.40
CP 303255	77.00	65.00	9.60	6.00	3.00	0.40
CP 307248	78.00	63.00	12.50	7.50	4.00	0.80
CP 314236	80.00	60.00	14.50	10.00	5.00	0.80
CP 314255	80.00	65.00	11.50	7.50	4.00	0.80
CP 314275/1	80.00	70.00	8.00	5.00	2.50	0.40
CP 314275/3	80.00	70.00	12.00	5.00	2.50	0.40
CP 322275/1	82.00	70.00	9.60	6.00	3.00	0.40
CP 322275/2	82.00	70.00	11.00	6.00	3.00	0.40
CP 334255	85.00	65.00	14.50	10.00	5.00	0.80
CP 334275	85.00	70.00	12.50	7.50	4.00	0.80
CP 334295/1	85.00	75.00	8.00	5.00	2.50	0.40
CP 342295	87.00	75.00	9.50	6.00	3.00	0.40
CP 354275/1	90.00	70.00	10.50	10.00	5.00	0.80
CP 358318	91.00	81.00	8.00	5.00	2.50	0.40
CP 362314	92.00	80.00	9.60	6.00	3.00	0.40
CP 362314/1	92.00	80.00	11.00	6.00	3.00	0.40
CP 374295	95.00	75.00	14.50	10.00	5.00	0.80
CP 374314	95.00	80.00	13.00	7.50	4.00	0.80
CP 374314/1	95.00	80.00	12.50	7.50	4.00	0.80
CP 374334	95.00	85.00	8.00	5.00	2.50	0.40
CP 393314	100.00	80.00	14.50	10.00	5.00	0.80
CP 393334	100.00	85.00	12.50	7.50	4.00	0.80
CP 393354	100.00	90.00	10.50	5.00	2.50	0.40
CP 401354	102.00	90.00	9.60	6.00	3.00	0.40
CP 413334/1	105.00	85.00	13.00	10.00	5.00	0.80



Single Acting Piston Seal

CP

Metric

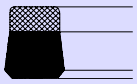


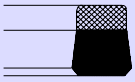
Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	js11 $Ød_1$	+0.25 -0.00 L_1	Nominal Sec. S	Min C	Max R_1
CP 413354	105.00	90.00	9.50	7.50	4.00	0.80
CP 413354/1	105.00	90.00	12.50	7.50	4.00	0.80
CP 421374	107.00	95.00	12.50	6.00	3.00	0.40
CP 433342	110.00	87.00	8.00	11.50	5.00	0.80
CP 433342/1	110.00	87.00	18.50	11.50	5.00	0.80
CP 452393/1	115.00	100.00	12.00	7.50	4.00	0.80
CP 452413	115.00	105.00	11.00	5.00	2.50	0.40
CP 472393	120.00	100.00	14.50	10.00	5.00	0.80
CP 492433	125.00	110.00	12.00	7.50	4.00	0.80
CP 492452	125.00	115.00	8.00	5.00	2.50	0.40
CP 523484	133.00	123.00	8.00	5.00	2.50	0.40
CP 590492	150.00	125.00	14.50	12.50	6.50	1.20
CP 629551/2	160.00	140.00	12.00	10.00	5.00	0.80
CP 661602	168.00	153.00	12.50	7.50	4.00	0.80
CP 669590/1	170.00	150.00	14.50	10.00	5.00	0.80

Single Acting Piston Seal

P Imperial





Design

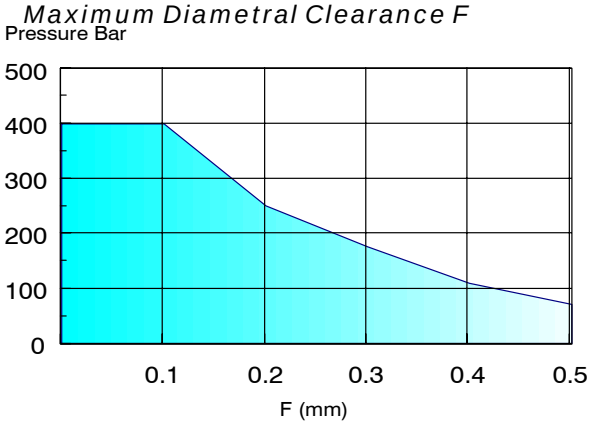
CLARON STYLE P is designed with a symmetrical profile for use as a single acting rod or piston seal. The seal is a precision moulded Nitrile rubber sealing element with a bonded fabric reinforced base to resist extrusion. Designed with initial radial interference to effect low pressure sealing, at higher pressures the seal is energised thus increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, thus reducing friction and wear.
Style CP is an effective seal over a wide range of applications.

Operating Conditions

Maximum Pressure	
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various Fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

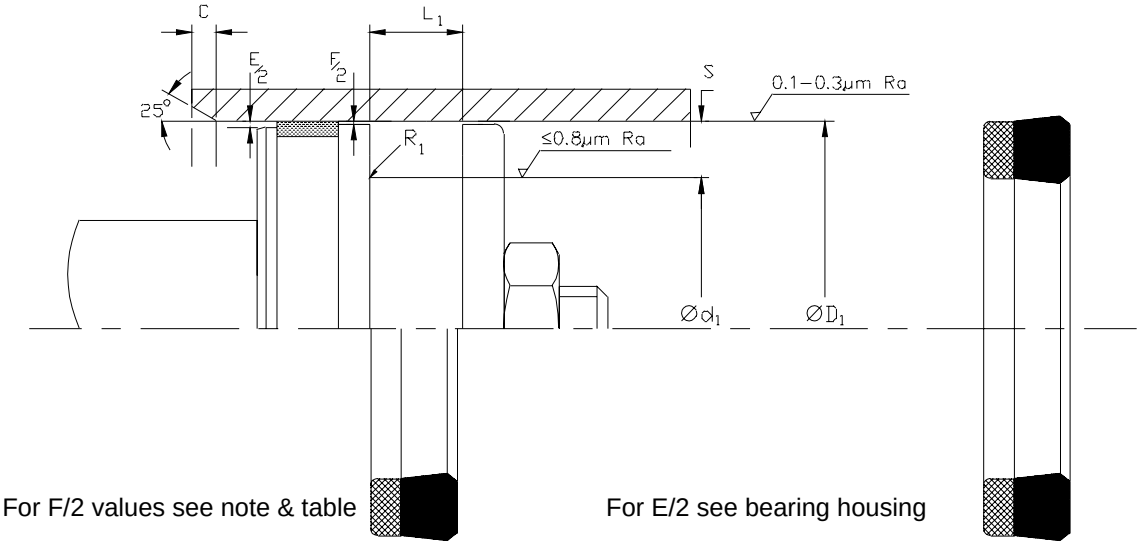
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

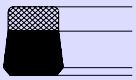
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.
For Rod application see section C.

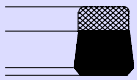
Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



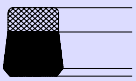


Single Acting Piston Seal
P
Imperial



Nominal Dimensions & Machining Tolerances

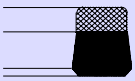
Claron Part Number	H10 ØD$_1$	js11 Ød$_2$	+0.025 +0.015 L$_1$	Nominal Sec. S	Min C	Max R$_1$
P 056025	0.562	0.250	0.250	0.156	0.093	0.010
P 062031	0.625	0.312	0.250	0.156	0.093	0.010
P 062037	0.625	0.375	0.187	0.125	0.093	0.010
P 075037	0.750	0.375	0.281	0.187	0.093	0.010
P 075050	0.750	0.500	0.187	0.125	0.093	0.010
P 081043	0.812	0.437	0.281	0.187	0.093	0.010
P 087050	0.875	0.500	0.281	0.187	0.093	0.010
P 087062	0.875	0.625	0.187	0.125	0.093	0.010
P 093056	0.937	0.562	0.281	0.187	0.093	0.010
P 100062	1.000	0.625	0.281	0.187	0.093	0.010
P 100075	1.000	0.750	0.187	0.125	0.093	0.010
P 109075	1.093	0.750	0.281	0.171	0.093	0.010
P 112062	1.125	0.625	0.375	0.250	0.125	0.015
P 112075	1.125	0.750	0.312	0.187	0.093	0.010
P 112087	1.125	0.875	0.163	0.125	0.093	0.010
P 118068	1.187	0.687	0.375	0.250	0.125	0.015
P 125075/1	1.250	0.750	0.312	0.250	0.125	0.015
P 125075/2	1.250	0.750	0.375	0.250	0.125	0.015
P 125087	1.250	0.875	0.375	0.187	0.093	0.010
P 125100	1.250	1.000	0.187	0.125	0.093	0.010
P 125100/1	1.250	1.000	0.121	0.125	0.093	0.010
P 131081	1.312	0.812	0.375	0.250	0.250	0.015
P 137087	1.375	0.875	0.375	0.250	0.125	0.015
P 137087/1	1.375	0.875	0.250	0.250	0.125	0.125
P 137100	1.375	1.000	0.250	0.187	0.093	0.010
P 137112	1.375	1.125	0.187	0.125	0.093	0.010
P 143093	1.437	0.937	0.375	0.250	0.125	0.015
P 150087	1.500	0.875	0.375	0.312	0.156	0.015
P 150098	1.500	0.980	0.380	0.260	0.125	0.015
P 150100	1.500	1.000	0.375	0.250	0.125	0.015
P 150100/1	1.500	1.000	0.250	0.250	0.125	0.015
P 150125	1.500	1.250	0.187	0.125	0.093	0.010
P 156112	1.562	1.125	0.343	0.218	0.125	0.015
P 162100	1.625	1.000	0.437	0.312	0.156	0.015
P 162112	1.625	1.125	0.375	0.250	0.125	0.015
P 162125	1.625	1.250	0.281	0.187	0.093	0.010
P 162125/1	1.625	1.250	0.250	0.187	0.093	0.010
P 162125/2	1.625	1.250	0.500	0.187	0.093	0.010
P 162130	1.627	1.302	0.240	0.162	0.093	0.010
P 168118/1	1.687	1.187	0.375	0.250	0.125	0.015
P 175100	1.750	1.000	0.375	0.375	0.187	0.032
P 175112	1.750	1.125	0.437	0.312	0.156	0.015
P 175123	1.750	1.235	0.340	0.257	0.125	0.015
P 175125	1.750	1.250	0.375	0.250	0.125	0.015
P 175125/1	1.750	1.250	0.281	0.250	0.125	0.015



Single Acting Piston Seal

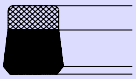
P

Imperial



Nominal Dimensions & Machining Tolerances

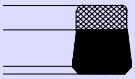
Claron Part Number	H 10 $ØD_2$	js11 $Ød_1$	+0.025 +0.015 L_1	Nominal Sec. S	Min C	Max R_1
P 175125/2	1.750	1.250	0.250	0.250	0.125	0.015
P 175137	1.750	1.375	0.281	0.187	0.093	0.010
P 187125	1.875	1.250	0.437	0.312	0.156	0.015
P 187125/1	1.875	1.250	0.312	0.312	0.156	0.015
P 187125/2	1.875	1.250	0.500	0.312	0.156	0.015
P 187125/3	1.875	1.250	0.406	0.312	0.156	0.015
P 187150	1.875	1.500	0.172	0.187	0.093	0.010
P 187150/1	1.875	1.500	0.250	0.187	0.093	0.010
P 193168	1.937	1.687	0.187	0.125	0.093	0.010
P 200137/1	2.000	1.375	0.375	0.312	0.156	0.015
P 200137/2	2.000	1.375	0.437	0.312	0.156	0.015
P 200137/3	2.000	1.375	0.500	0.312	0.156	0.015
P 200137/4	2.000	1.375	0.312	0.312	0.156	0.015
P 200148	2.000	1.485	0.340	0.257	0.125	0.015
P 200150	2.000	1.500	0.375	0.250	0.125	0.015
P 200150/1	2.000	1.500	0.468	0.250	0.125	0.015
P 200150/4	2.000	1.500	0.250	0.250	0.125	0.015
P 200162/2	2.000	1.625	0.276	0.187	0.093	0.010
P 212150/1	2.125	1.500	0.437	0.312	0.156	0.015
P 212150/2	2.125	1.500	0.468	0.312	0.156	0.015
P 212175	2.125	1.750	0.172	0.187	0.093	0.010
P 212175/1	2.125	1.750	0.300	0.187	0.093	0.010
P 212175/2	2.125	1.750	0.281	0.187	0.093	0.010
P 218150	2.187	1.500	0.437	0.343	0.156	0.015
P 225150	2.250	1.500	0.468	0.375	0.187	0.032
P 225162	2.250	1.625	0.437	0.312	0.156	0.015
P 225175/1	2.250	1.750	0.375	0.250	0.125	0.015
P 225175/2	2.250	1.750	0.437	0.250	0.125	0.015
P 225187	2.250	1.875	0.265	0.187	0.093	0.010
P 237175	2.375	1.750	0.437	0.312	0.156	0.015
P 237200	2.375	2.000	0.172	0.187	0.093	0.010
P 243175	2.437	1.750	0.437	0.343	0.156	0.015
P 250175	2.500	1.750	0.500	0.375	0.156	0.015
P 250187	2.500	1.875	0.437	0.312	0.156	0.015
P 250187/1	2.500	1.875	0.375	0.312	0.156	0.015
P 250187/3	2.500	1.875	0.312	0.312	0.156	0.015
P 250198	2.500	1.980	0.360	0.260	0.125	0.015
P 250200	2.500	2.000	0.312	0.250	0.125	0.015
P 250200/1	2.500	2.000	0.375	0.250	0.125	0.015
P 250200/2	2.500	2.000	0.343	0.250	0.125	0.015
P 262187	2.625	1.875	0.625	0.375	0.187	0.032
P 262200	2.625	2.000	0.437	0.312	0.156	0.015
P 262200/2	2.625	2.000	0.312	0.312	0.156	0.015
P 262200/3	2.625	2.000	0.500	0.312	0.156	0.015
P 262212	2.625	2.125	0.375	0.250	0.125	0.015



Single Acting Piston Seal

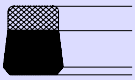
P

Imperial



Nominal Dimensions & Machining Tolerances

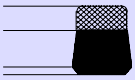
Claron Part Number	H 10 $ØD_2$	js11 $Ød_1$	+0.025 +0.015 L_1	Nominal Sec. S	Min C	Max R_1
P 262225	2.625	2.250	0.172	0.187	0.093	0.010
P 262225/1	2.625	2.250	0.210	0.187	0.093	0.010
P 275200	2.750	2.000	0.437	0.375	0.187	0.032
P 275200/1	2.750	2.000	0.625	0.375	0.187	0.032
P 275200/2	2.750	2.000	0.562	0.375	0.187	0.032
P 275212	2.750	2.125	0.375	0.312	0.156	0.015
P 275225	2.750	2.250	0.375	0.250	0.125	0.015
P 275231	2.750	2.312	0.375	0.219	0.093	0.010
P 287200	2.875	2.000	0.625	0.437	0.187	0.032
P 287212	2.875	2.125	0.562	0.375	0.187	0.032
P 287225	2.875	2.250	0.437	0.312	0.156	0.015
P 287237	2.875	2.375	0.281	0.250	0.125	0.015
P 300200	3.000	2.000	0.750	0.500	0.250	0.032
P 300212	3.000	2.125	0.500	0.437	0.187	0.032
P 300225	3.000	2.250	0.375	0.375	0.187	0.032
P 300225/1	3.000	2.250	0.500	0.375	0.187	0.032
P 300225/2	3.000	2.250	0.562	0.375	0.187	0.032
P 300237	3.000	2.375	0.468	0.312	0.156	0.015
P 300250	3.000	2.500	0.312	0.250	0.125	0.015
P 306250	3.062	2.500	0.437	0.281	0.125	0.015
P 312237	3.125	2.375	0.562	0.375	0.187	0.032
P 312250	3.125	2.500	0.625	0.312	0.156	0.015
P 312250/1	3.125	2.500	0.375	0.312	0.156	0.015
P 325250	3.250	2.500	0.375	0.375	0.187	0.032
P 325250/1	3.250	2.500	0.562	0.375	0.187	0.032
P 325250/2	3.250	2.500	0.625	0.375	0.187	0.032
P 325250/3	3.250	2.500	0.468	0.375	0.187	0.032
P 325262	3.250	2.625	0.562	0.312	0.156	0.015
P 325273	3.250	2.735	0.340	0.257	0.125	0.015
P 325275	3.250	2.750	0.375	0.257	0.125	0.015
P 337262	3.375	2.625	0.562	0.375	0.187	0.032
P 337275/1	3.375	2.750	0.437	0.312	0.156	0.015
P 350250	3.500	2.500	0.750	0.500	0.250	0.032
P 350275	3.500	2.750	0.562	0.375	0.187	0.032
P 350275/1	3.500	2.750	0.375	0.375	0.187	0.032
P 350275/3	3.500	2.750	0.500	0.375	0.187	0.032
P 350287	3.500	2.875	0.470	0.312	0.156	0.015
P 350300	3.500	3.000	0.375	0.250	0.125	0.015
P 362262	3.625	2.625	0.750	0.500	0.250	0.032
P 362287	3.625	2.875	0.562	0.375	0.187	0.032
P 362300	3.625	3.000	0.375	0.312	0.156	0.015
P 375275	3.750	2.750	0.500	0.500	0.250	0.032
P 375300	3.750	3.000	0.562	0.375	0.187	0.032
P 375300/1	3.750	3.000	0.500	0.375	0.187	0.032
P 375300/2	3.750	3.000	0.375	0.375	0.187	0.032



Single Acting Piston Seal

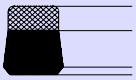
P

Imperial



Nominal Dimensions & Machining Tolerances

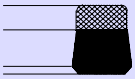
Claron Part Number	H 10 $ØD_2$	js11 $Ød_1$	+0.025 +0.015 L_1	Nominal Sec. S	Min C	Max R_1
P 375323	3.750	3.230	0.360	0.260	0.125	0.015
P 387287	3.875	2.875	0.625	0.500	0.250	0.032
P 387312	3.875	3.125	0.562	0.375	0.187	0.032
P 400300	4.000	3.000	0.625	0.500	0.250	0.032
P 400300/2	4.000	3.000	0.375	0.500	0.250	0.032
P 400325/1	4.000	3.250	0.562	0.375	0.187	0.032
P 400325/2	4.000	3.250	0.500	0.375	0.187	0.032
P 400350	4.000	3.500	0.375	0.250	0.125	0.015
P 412337	4.125	3.375	0.562	0.375	0.187	0.032
P 412350	4.125	3.500	0.375	0.312	0.156	0.015
P 425325	4.250	3.250	0.750	0.500	0.250	0.032
P 425350/1	4.250	3.500	0.562	0.375	0.187	0.032
P 450350/1	4.500	3.500	0.562	0.500	0.250	0.032
P 450350/2	4.500	3.500	0.750	0.500	0.250	0.032
P 450350/3	4.500	3.500	0.375	0.500	0.250	0.032
P 450375	4.500	3.750	0.500	0.375	0.187	0.032
P 450375/1	4.500	3.750	0.410	0.375	0.187	0.032
P 450400	4.500	4.000	0.375	0.250	0.125	0.015
P 462362	4.625	3.625	0.750	0.500	0.250	0.032
P 462362/1	4.625	3.625	0.500	0.500	0.250	0.032
P 475375/1	4.750	3.750	0.812	0.500	0.250	0.032
P 475375/2	4.750	3.750	0.750	0.500	0.250	0.032
P 475425	4.750	4.250	0.375	0.250	0.125	0.015
P 487400	4.875	4.000	0.656	0.437	0.187	0.032
P 487437	4.875	4.375	0.375	0.250	0.125	0.032
P 500400	5.000	4.000	0.750	0.500	0.250	0.032
P 500425	5.000	4.250	0.562	0.375	0.187	0.032
P 525400	5.250	4.000	0.500	0.625	0.250	0.046
P 525425	5.250	4.250	0.750	0.500	0.250	0.032
P 537437	5.375	4.375	0.750	0.500	0.250	0.032
P 550450	5.500	4.500	0.750	0.500	0.250	0.032
P 550500	5.500	5.000	0.375	0.250	0.125	0.015
P 575475	5.750	4.750	0.750	0.500	0.250	0.032
P 600500	6.000	5.000	0.750	0.500	0.250	0.032
P 600537	6.000	5.375	0.375	0.312	0.156	0.015
P 625525/1	6.250	5.250	0.531	0.500	0.250	0.032
P 625525/3	6.250	5.250	0.875	0.500	0.250	0.032
P 625550	6.250	5.500	0.687	0.375	0.187	0.032
P 650550	6.500	5.500	0.750	0.500	0.250	0.032
P 675575	6.750	5.750	0.750	0.500	0.250	0.032
P 700575	7.000	5.750	0.937	0.625	0.250	0.046
P 700600	7.000	6.000	0.750	0.500	0.250	0.032
P 700625	7.000	6.250	0.562	0.375	0.156	0.015
P 775650	7.750	6.500	1.000	0.625	0.250	0.046
P 800700	8.000	7.000	0.875	0.500	0.250	0.032



Single Acting Piston Seal

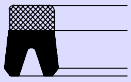
P

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	H 10 $ØD_2$	js11 $Ød_1$	+0.025 +0.015 L_1	Nominal Sec. S	Min C	Max R_1
P 850725	8.500	7.250	1.000	0.625	0.250	0.046
P 950837	9.500	8.375	0.750	0.562	0.250	0.046



GP

Metric
Imperial

Design

CLARON STYLE GP is designed with a symmetrical profile for Piston or Rod applications. The seal is a precision moulded Nitrile rubber with a fabric reinforced base to resist extrusion. Designed with initial radial interference to effect low-pressure sealing, the seal is progressively energised at higher pressures thereby increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, thus reducing friction and wear. Style GP is designed to provide effective low pressure sealing through distortion of the lips rather than "squeeze". This gives an improved response to pressure variations and reduces low pressure stiction to ensure a smoother return stroke.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

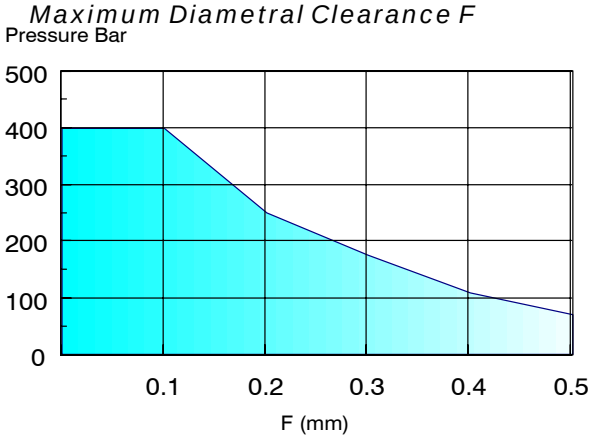
These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 section for further information.

Continuous operating temperature for various Fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F



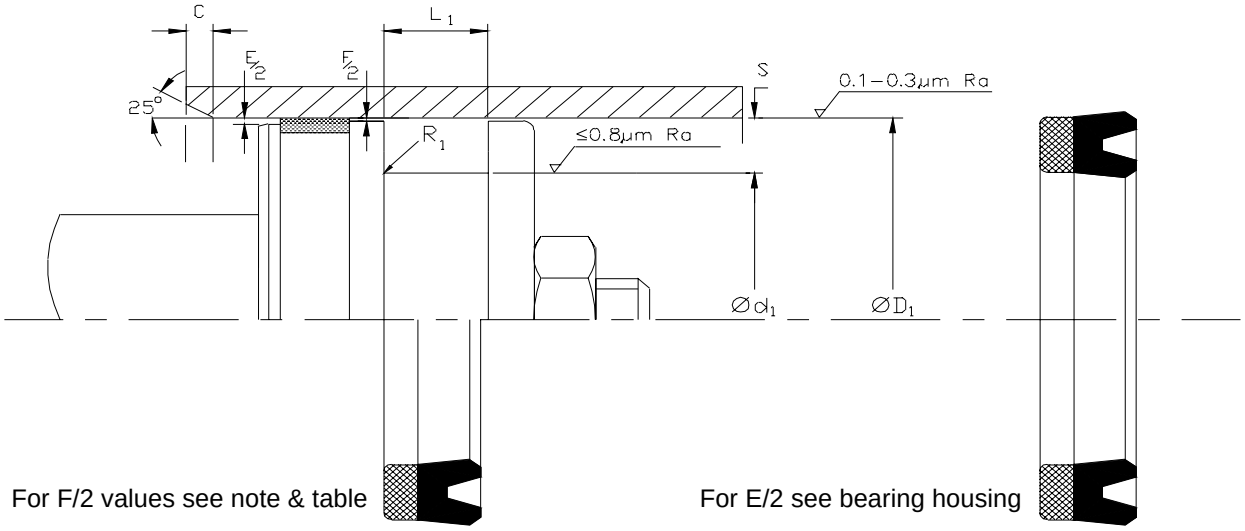
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.
For Rod application see section C.

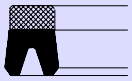
Fitting

Style GP is designed for use on a split piston and may be used with Claron Seal Retainer Style PSR. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

For E/2 see bearing housing



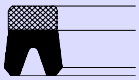
GP

Metric

Nominal Dimensions & Machining Tolerances

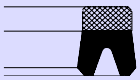
Claron Part Number	H 10 $ØD_1$	js11 $Ød_1$	+0.25 -0.00 L_1	Nominal Sec. S	Min Chamf. C	Max R_1
GP157118	40	30	7.0	5.0	2.5	0.4
GP196157	50	40	7.0	5.0	2.5	0.4
GP236196	60	50	7.0	5.0	2.5	0.4
GP279220	71	56	10.0	7.5	4.0	0.8
GP275236	70	60	7.0	5.0	2.5	0.4
GP314236	80	60	13.0	10.0	5.0	0.8
GP307248	78	63	10.0	7.5	4.0	0.8
GP334275	85	70	12.5	7.5	4.0	0.8
GP354275	90	70	13.0	10.0	5.0	0.8
GP393314	100	80	13.0	10.0	5.0	0.8
GP433354	110	90	13.0	10.0	5.0	0.8

Single Acting Piston Seal



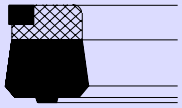
GP

Imperial

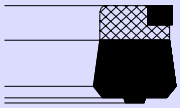


Nominal Dimensions & Machining Tolerances

Claron Part Number	H 10 $ØD_1$	js11 $Ød_1$	+0.025 +0.015 L_1	Nominal Sec. S	Min Chamf. C	Max R_1
GP 150100	1.500	1.000	0.375	0.250	0.125	0.015
GP 200150	2.000	1.500	0.375	0.250	0.125	0.015
GP 200150/1	2.000	1.500	0.468	0.250	0.125	0.015
GP 212150	2.125	1.500	0.468	0.313	0.156	0.015
GP 237200/1	2.375	2.000	0.360	0.188	0.093	0.010
GP 262200/1	2.625	2.000	0.312	0.313	0.156	0.015
GP 300237	3.000	2.375	0.312	0.313	0.156	0.015
GP 325250/1	3.250	2.500	0.562	0.375	0.187	0.032



Single Acting Piston Seal
CPE
Metric



Design

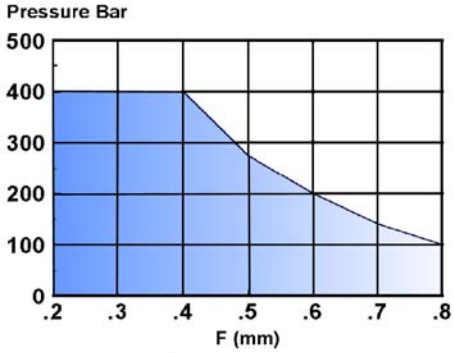
CLARON STYLE CPE is designed for use as a single acting Piston seal. The seal is a precision moulded Nitrile rubber sealing element with a fabric reinforced base to resist extrusion. Style CPE also has the added benefit of a clip on POM anti-extrusion ring. Designed with initial radial interference to effect low pressure sealing, at higher pressures the seal is energised thus increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, thus reducing friction and wear. Style CP is produced with radial grooves incorporated into the top of the seal on the pressure side. This innovative design ensures a rapid energisation of the seal without excessive end float and resultant wear. Style CP is an effective design over a wide range of applications.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to appendix 1 for further information.



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F

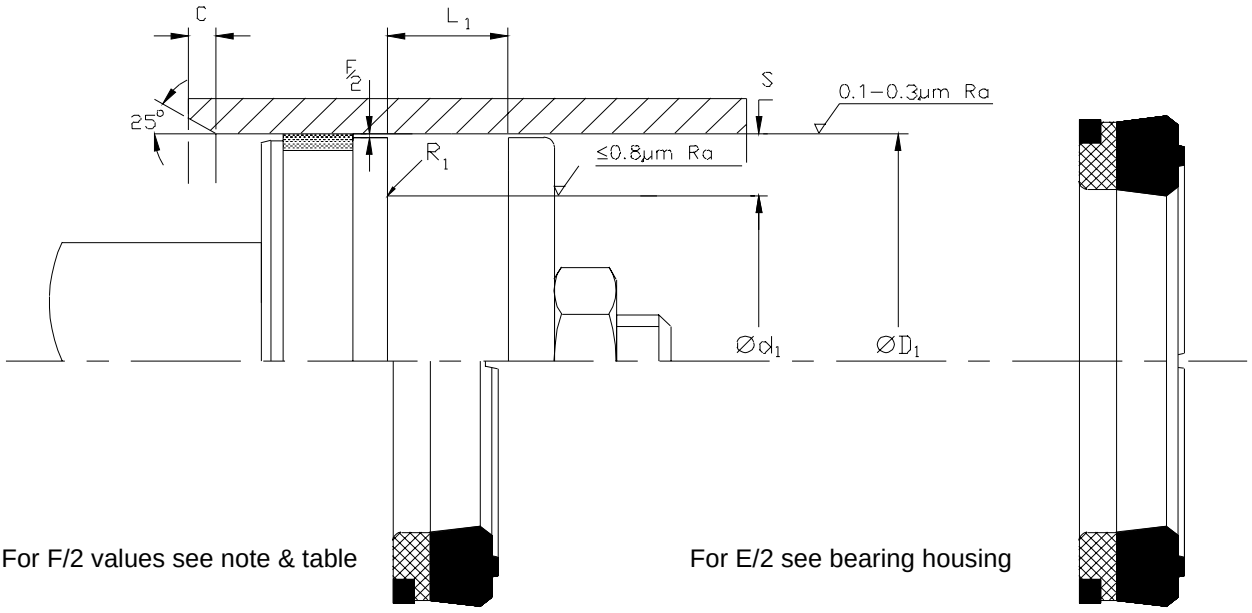
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.
For Rod application see section C.

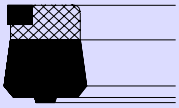
Fitting

Style CPE is designed to be fitted onto a spit and may be used together with Claron Style PSR retainer.
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

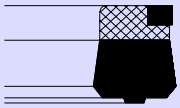
For E/2 see bearing housing



Single Acting Piston Seal

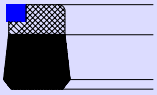
CPE

Metric



Nominal Dimensions & Machining Tolerances

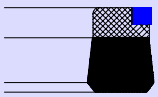
Claron Part Number	H 10 $ØD_1$	js 11 $Ød_1$	+0.25 -0.00 L_1	Nominal S	Min C	Max R_1
CPE 157110	40.00	28.00	9.00	6.00	3.00	0.40
CPE 196149	50.00	38.00	9.40	6.00	3.00	0.40
CPE 236177	60.00	45.00	10.50	7.50	4.00	0.40
CPE 314236	80.00	60.00	14.50	10.00	5.00	0.40
CPE 393314	100.00	80.00	14.00	10.00	5.00	0.40



Single Acting Piston Seal

PEO

Imperial



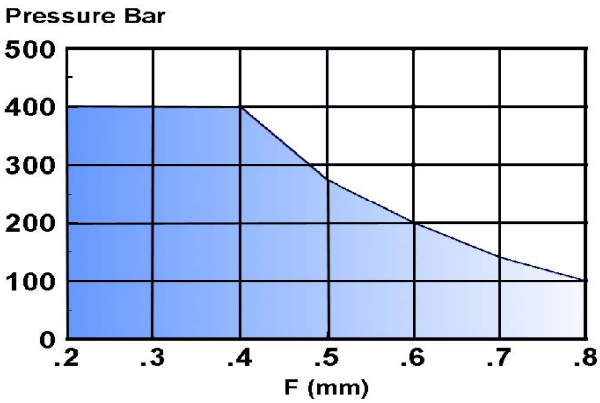
Design

Claron Style PEO is designed for use as a single acting piston seal. The seal is a precision moulded Nitrile rubber sealing element with a bonded reinforced fabric base and an acetal back up ring to resist extrusion. The acetal back up ring allows larger clearances and higher pressures. The seal is designed with initial radial interference to effect low pressure sealing. At higher pressures the seal is energised thus increasing sealing . The rubberised fabric header has the advantage of retaining fluid within its surface thus reducing both friction and wear.
Style PEO is an effective seal over a wide range of applications.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F

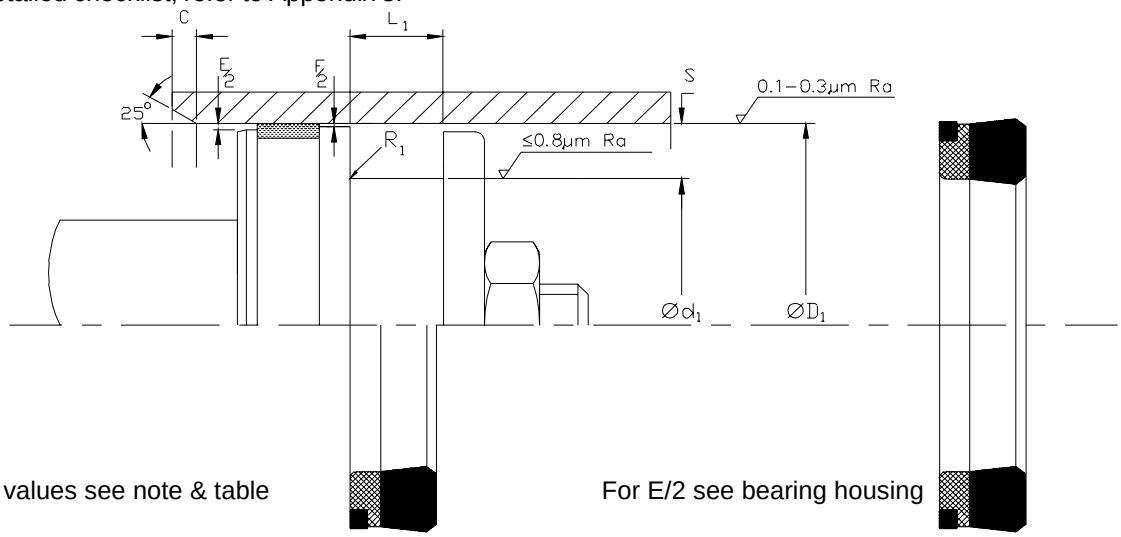
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

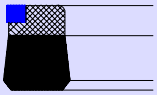
Fitting

Style PEO is designed to be fitted onto a split piston, and may be used with a Claron Style PSR retainer. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

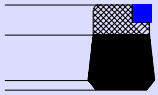
For E/2 see bearing housing



Single Acting Piston Seal

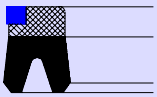
PEO

Imperial



Nominal Dimensions & Machining Tolerances

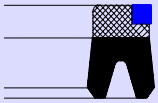
Claron Part Number	H10 $ØD_1$	js11 $Ød_1$	+0.025 +0.015 L_1	Nominal Sec. S	Min C	Max R_1
PEO 100062	1.000	0.625	0.281	0.188	0.093	0.010
PEO 112075	1.125	0.750	0.312	0.188	0.093	0.010
PEO 125075/1	1.250	0.750	0.312	0.250	0.125	0.010
PEO 150100	1.500	1.000	0.375	0.250	0.125	0.010
PEO 168118	1.687	1.187	0.312	0.250	0.125	0.010
PEO 175112	1.750	1.125	0.437	0.313	0.156	0.015
PEO 200137/1	2.000	1.375	0.375	0.313	0.156	0.015
PEO 200137/2	2.000	1.375	0.437	0.313	0.156	0.015
PEO 200150	2.000	1.500	0.375	0.250	0.125	0.010
PEO 237175	2.375	1.750	0.437	0.313	0.156	0.015
PEO 250187	2.500	1.875	0.437	0.313	0.156	0.015
PEO 275200/1	2.750	2.000	0.625	0.375	0.187	0.010
PEO 275200/2	2.750	2.000	0.562	0.375	0.187	0.032
PEO 300225/2	3.000	2.250	0.562	0.375	0.187	0.032
PEO 325250/1	3.250	2.500	0.562	0.375	0.187	0.032
PEO 350300	3.500	3.000	0.375	0.250	0.125	0.010
PEO 362300	3.625	3.000	0.375	0.313	0.156	0.015
PEO 400325/1	4.000	3.250	0.562	0.375	0.187	0.032
PEO 400350	4.000	3.500	0.375	0.250	0.125	0.010
PEO 450350/1	4.500	3.500	0.562	0.500	0.250	0.032
PEO 500400	5.000	4.000	0.750	0.500	0.250	0.032
PEO 700600	7.000	6.000	0.750	0.500	0.250	0.032
PEO 700625	7.000	6.250	0.562	0.375	0.187	0.032
PEO 825750	8.250	7.500	0.562	0.375	0.187	0.032



Single Acting Piston Seal

GPE

Metric



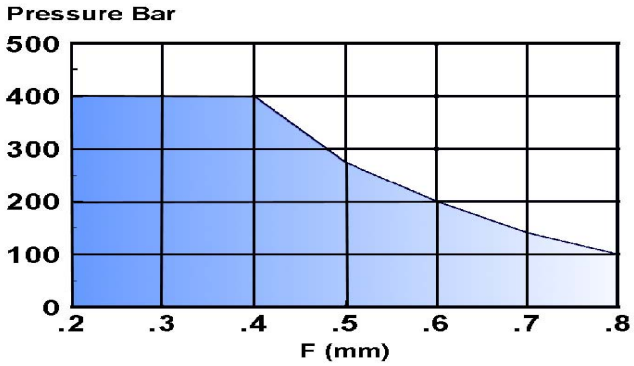
Design

Claron Style GPE is designed for use as a single acting piston seal. The seal is a precision moulded Nitrile rubber sealing element with a proportional bonded reinforced fabric base, and an acetal back up ring to resist extrusion. The acetal anti-extrusion ring allows larger clearances and higher pressures. Style GPE is designed to provide effective low pressure sealing through distortion of the lips rather than "squeeze". This gives an improved response to pressure variations and reduces low pressure stiction to ensure a smoother return stroke. The seal is designed with initial radial interferance to effect low pressure sealing. The rubberised fabric header has the advantage of retaining fluid within its surface thus reducing both friction and wear. Style GPE is an effective seal over a wide range of applications.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F

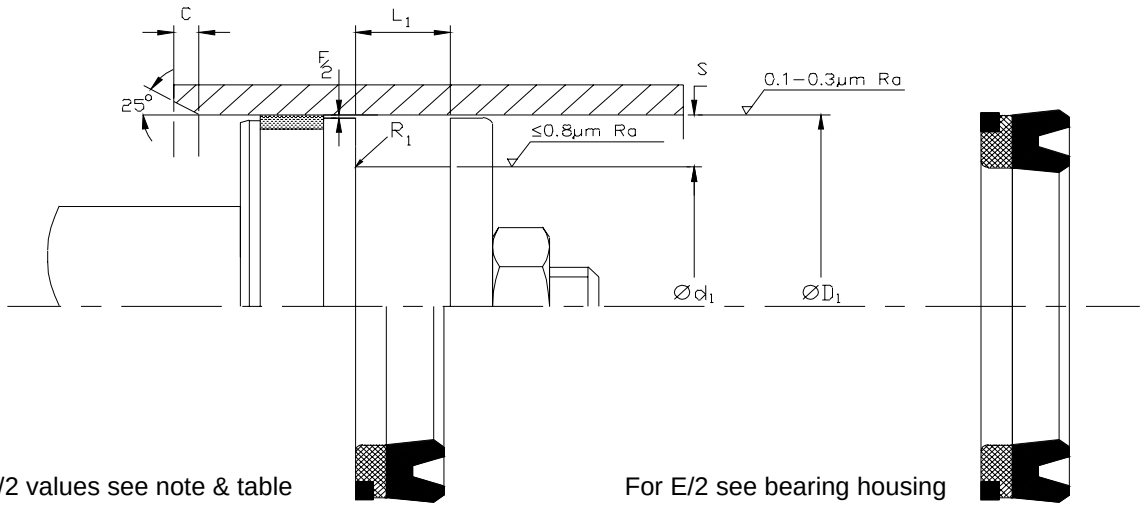
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

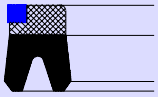
Fitting

Style GPE is designed to be fitted onto a split piston and may be used with Claron Style PSR retainer. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

For E/2 see bearing housing



ClaronPolyseal®

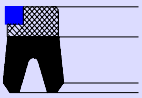
Single Acting Piston Seal

GPE

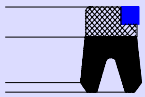
Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	H 10 $ØD_1$	js11 $Ød_1$	+0.63 +0.38 L_1	Nominal Sec. S	Min Chamf. C	Max R_1
GPE 125086	32.00	22.00	9.00	5.00	2.50	0.40
GPE 177118/2	45.00	30.00	10.00	7.50	4.00	0.60
GPE 196137	50.00	35.00	11.00	7.50	4.00	0.60
GPE 196157/1	50.00	40.00	10.00	5.00	2.50	0.40
GPE 216157/1	55.00	40.00	10.50	7.50	4.00	0.60
GPE 248188/1	63.00	48.00	9.50	7.50	4.00	0.60
GPE 248196	63.00	50.00	10.00	6.50	4.00	0.60
GPE 275196	70.00	50.00	14.00	10.00	5.00	0.80
GPE 314236	80.00	60.00	14.00	10.00	5.00	0.80
GPE 393314	100.00	80.00	14.00	10.00	5.00	0.80
GPE 413334/3	105.00	85.00	18.00	10.00	5.00	0.80
GPE 433354	110.00	90.00	12.50	10.00	5.00	0.80

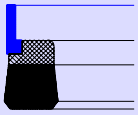


Single Acting Piston Seal GPE Imperial

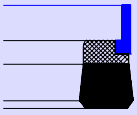


Nominal Dimensions & Machining Tolerances

Claron Part Number	H 10 $ØD_1$	js11 $Ød_1$	+0.025 +0.015 L_1	Nominal Sec S	Min Chamf. C	Max R_1
GPE 112062	1.125	0.625	0.468	0.250	0.125	0.015
GPE 141087	1.417	0.875	0.468	0.271	0.125	0.015
GPE 150100	1.500	1.000	0.375	0.250	0.125	0.015
GPE 162100	1.625	1.000	0.437	0.312	0.156	0.025
GPE 175125	1.750	1.250	0.375	0.250	0.125	0.015
GPE 178116	1.786	1.161	0.468	0.312	0.156	0.025
GPE 187125/2	1.875	1.250	0.500	0.312	0.156	0.025
GPE 200137/1	2.000	1.375	0.375	0.312	0.156	0.025
GPE 212150	2.125	1.500	0.468	0.312	0.156	0.025
GPE 225162	2.250	1.625	0.437	0.312	0.156	0.025
GPE 237175	2.375	1.750	0.437	0.312	0.155	0.025
GPE 250187/1	2.500	1.875	0.375	0.312	0.156	0.025
GPE 262200	2.625	2.000	0.437	0.312	0.156	0.025
GPE 275200	2.750	2.000	0.437	0.375	0.187	0.031
GPE 275200/2	2.750	2.000	0.562	0.375	0.187	0.031
GPE 275212	2.750	2.125	0.468	0.312	0.156	0.025
GPE 300225/1	3.000	2.250	0.500	0.375	0.187	0.031
GPE 325250/1	3.250	2.500	0.562	0.375	0.187	0.031
GPE 325262	3.250	2.625	0.562	0.312	0.156	0.025
GPE 350275	3.500	2.750	0.562	0.375	0.187	0.031
GPE 350300/1	3.500	3.000	0.500	0.250	0.125	0.015
GPE 362287	3.625	2.875	0.562	0.375	0.187	0.031
GPE 362300/1	3.625	3.000	0.437	0.312	0.156	0.025
GPE 400325/1	4.000	3.250	0.562	0.375	0.187	0.031
GPE 425350/1	4.250	3.500	0.562	0.375	0.187	0.031
GPE 450375	4.500	3.750	0.562	0.375	0.187	0.032
GPE 500400	5.000	4.000	0.750	0.500	0.250	0.046
GPE 600500	6.000	5.000	0.750	0.500	0.250	0.046
GPE 700600	7.000	6.000	0.750	0.500	0.250	0.046



Single Acting Piston Seal
PW
Imperial



Design

Designed for use on split pistons, the seal is a precision moulded rubber element with a reinforced fabric base. The seal is fitted with Polyacetal anti-extrusion wear rings on the O.D. to allow larger machining clearances between the piston head and cylinder bore, and to permit higher working pressures. The seal is designed with sufficient radial sectional interference that on complete assembly low pressure sealing is effected. The supporting rubberised fabric has the capability of retaining the sealing media thus assisting in reducing friction and wear. Style PW has proven to be effective over a wide range of applications.

Operating Conditions

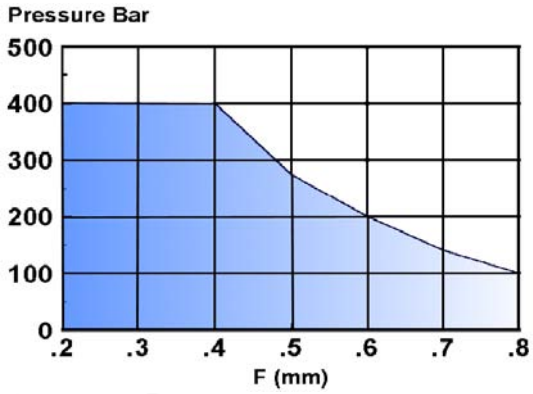
Maximum Pressure	
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F



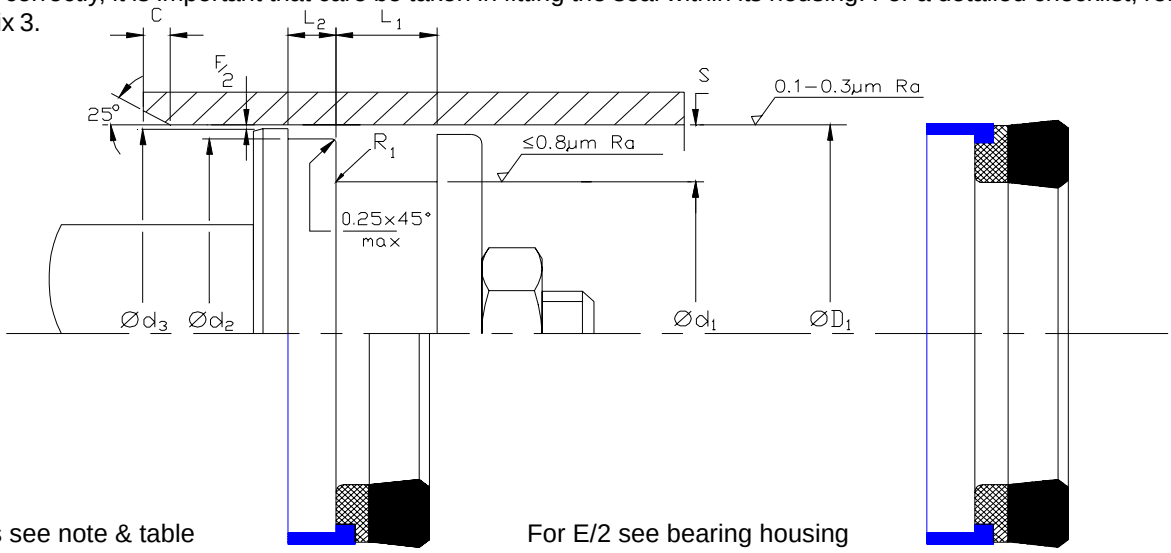
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

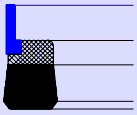
Fitting

Style PW is designed to be fitted onto a split piston and may be used with Claron seal retainer Style PSR. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

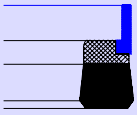
For E/2 see bearing housing



Single Acting Piston Seal

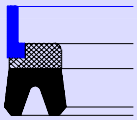
PW

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	H 10 $ØD_1$	js 11 $Ød_1$	js 10 $Ød_2$	js 11 $Ød_3$	+0.025 +0.015 L_1	+0.004 -0.000 L_2	Nominal S	Min C	Max R_1	Max R_2
PW 100062	1.000	0.625	0.883	0.964	0.281	0.250	0.187	0.093	0.008	0.008
PW 125075/2	1.250	0.750	1.111	1.208	0.375	0.250	0.250	0.125	0.015	0.008
PW 150100	1.500	1.000	1.360	1.458	0.375	0.250	0.250	0.125	0.015	0.008
PW 168118	1.687	1.187	1.547	1.645	0.312	0.250	0.250	0.125	0.015	0.008
PW 175112	1.750	1.125	1.570	1.698	0.437	0.250	0.312	0.156	0.025	0.008
PW 200137/1	2.000	1.375	1.820	1.948	0.375	0.250	0.312	0.156	0.025	0.008
PW 200137/2	2.000	1.375	1.820	1.948	0.437	0.250	0.312	0.156	0.025	0.008
PW 200137/3	2.000	1.375	1.820	1.948	0.500	0.250	0.312	0.156	0.025	0.008
PW 225162	2.250	1.625	2.069	2.198	0.437	0.250	0.312	0.156	0.025	0.008
PW 237175	2.375	1.750	2.194	2.322	0.437	0.250	0.312	0.156	0.025	0.008
PW 250187	2.500	1.875	2.319	2.446	0.437	0.250	0.312	0.156	0.025	0.008
PW 250200	2.500	2.000	2.360	2.447	0.312	0.250	0.250	0.125	0.025	0.008
PW 275200	2.750	2.000	2.522	2.685	0.437	0.250	0.375	0.187	0.032	0.008
PW 275200/1	2.750	2.000	2.522	2.685	0.625	0.250	0.375	0.187	0.032	0.008
PW 275200/2	2.750	2.000	2.522	2.685	0.562	0.250	0.375	0.187	0.032	0.008
PW 300225/1	3.000	2.250	2.772	2.935	0.500	0.250	0.375	0.187	0.032	0.008
PW 300225/2	3.000	2.250	2.772	2.935	0.562	0.250	0.375	0.187	0.032	0.008
PW 312237	3.125	2.375	2.896	3.070	0.562	0.250	0.375	0.187	0.032	0.008
PW 325250/1	3.250	2.500	3.069	3.190	0.562	0.250	0.375	0.187	0.032	0.008
PW 350275	3.500	2.750	3.271	3.437	0.562	0.250	0.375	0.187	0.032	0.008
PW 375275	3.750	2.750	3.508	3.685	0.500	0.250	0.500	0.218	0.046	0.015
PW 400325/1	4.000	3.250	3.770	3.933	0.562	0.250	0.375	0.187	0.032	0.008
PW 450350/1	4.500	3.500	4.229	4.422	0.562	0.250	0.500	0.218	0.046	0.015
PW 500400	5.000	4.000	4.728	4.920	0.750	0.250	0.500	0.218	0.046	0.015
PW 700600	7.000	6.000	6.724	5.919	0.750	0.250	0.500	0.218	0.046	0.015
PW 725600	7.250	6.000	6.979	7.170	1.000	0.250	0.625	0.250	0.046	0.015

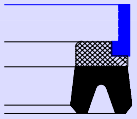


ClaronPolyseal®

Single Acting Piston Seal

GPW

Metric
Imperial



Design

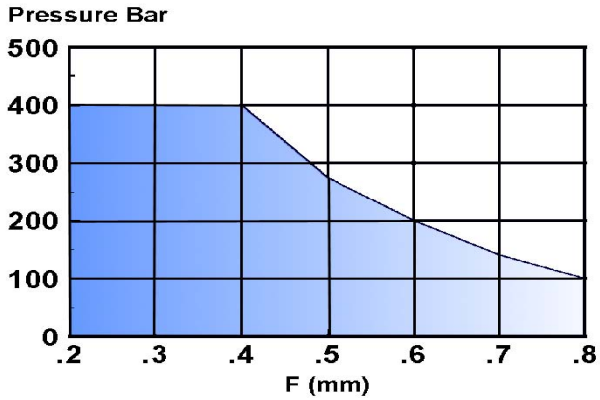
Claron Style GPW is designed for use as a single acting piston seal The seal is a precision moulded Nitrile rubber sealing element with a proportional bonded reinforced NBR header and an acetal bearing ring to resist extrusion. The acetal bearing ring resists extrusion of the seal to allow greater clearances and higher pressures, and provides bearing support for the piston preventing misalignment and metal to metal contact between piston and bore.Style GPW is designed to provide effective low pressure sealing through distortion of the lips rather than “squeeze”. This gives an improved response to pressure variations and reduces low pressure stiction to ensure a smoother return stroke. Style GPW has proven to be effective over a wide range of applications.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

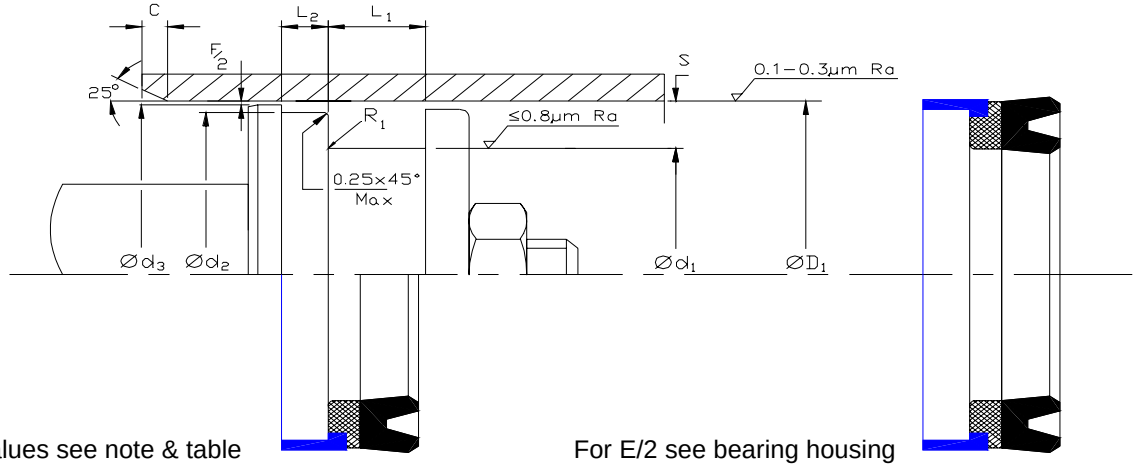
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

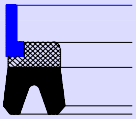
Fitting

Style GPW is designed to be fitted onto a split piston and may be used with Claron Style PSR retainer. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

For E/2 see bearing housing

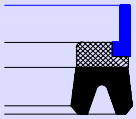


ClaronPolyseal®

Single Acting Piston Seal

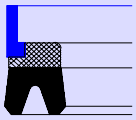
GPW

Metric



Nominal Dimensions & Machining Tolerances

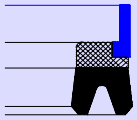
Claron Part Number	H 10 $ØD_1$	js 11 $Ød_1$	js 10 $Ød_2$	js 11 $Ød_3$	+0.63 +0.38 L_1	+0.1 -0.0 L_2	Nominal S	Min C	Max R_1	Max R_2
GPW 196137	50.00	35.00	43.96	48.10	11.00	6.35	7.50	4.00	0.60	0.20
GPW 196157/1	50.00	40.00	46.43	48.80	10.00	6.35	5.00	2.50	0.40	0.20
GPW 216157/1	55.00	40.00	50.37	53.65	10.50	6.35	7.50	4.00	0.60	0.20
GPW 248188/1	63.00	48.00	58.40	61.65	9.50	6.35	7.50	4.00	0.60	0.20
GPW 248196	63.00	50.00	58.40	61.65	10.00	6.35	6.50	4.00	0.60	0.20
GPW 255188	65.00	48.00	60.40	63.65	12.00	6.35	8.50	4.00	0.60	0.20
GPW 255196	65.00	50.00	60.40	63.65	10.00	6.35	7.50	4.00	0.60	0.20
GPW 275196	70.00	50.00	64.15	68.35	14.00	6.35	10.00	5.00	0.80	0.20
GPW 314236	80.00	60.00	74.15	78.35	14.00	6.35	10.00	5.00	0.80	0.20
GPW 393314	100.00	80.00	94.15	98.35	14.00	6.35	10.00	5.00	0.80	0.20
GPW 433354	110.00	90.00	104.10	108.00	12.50	6.35	10.00	5.00	0.80	0.20
GPW 551472	142.00	120.00	134.15	138.00	12.00	6.35	10.00	5.00	0.80	0.20



Single Acting Piston Seal

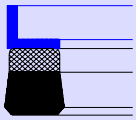
GPW

Imperial



Nominal Dimensions & Machining Tolerances

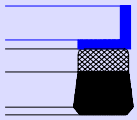
Claron Part Number	H 10 $ØD_1$	js 11 $Ød_1$	js 10 $Ød_2$	js 11 $Ød_3$	+0.025 +0.015 L_1	+0.004 -0.000 L_2	Nominal S	Min C	Max R_1	Max R_2
GPW 112062	1.125	0.625	0.986	1.085	0.468	0.250	0.250	0.125	0.015	0.008
GPW 141087	1.417	0.875	1.277	1.375	0.468	0.250	0.271	0.125	0.015	0.008
GPW 150100	1.500	1.000	1.360	1.450	0.375	0.250	0.250	0.125	0.015	0.008
GPW 162100	1.625	1.000	1.445	1.575	0.437	0.250	0.312	0.156	0.025	0.008
GPW 175125	1.750	1.250	1.604	1.698	0.375	0.250	0.250	0.125	0.015	0.008
GPW 178116	1.786	1.161	1.606	1.735	0.468	0.250	0.312	0.156	0.025	0.008
GPW 187125/2	1.875	1.250	1.674	1.825	0.500	0.250	0.312	0.156	0.025	0.008
GPW 200137/1	2.000	1.375	1.820	1.950	0.375	0.250	0.312	0.156	0.025	0.008
GPW 212150	2.125	1.500	1.944	2.075	0.468	0.250	0.312	0.156	0.025	0.008
GPW 225162	2.250	1.625	2.070	2.200	0.437	0.250	0.312	0.156	0.025	0.008
GPW 237175	2.375	1.750	2.194	2.325	0.437	0.250	0.312	0.156	0.025	0.008
GPW 262200	2.625	2.000	2.443	2.571	0.437	0.250	0.312	0.156	0.025	0.008
GPW 275200	2.750	2.000	2.522	2.695	0.437	0.250	0.375	0.187	0.031	0.008
GPW 275200/2	2.750	2.000	2.522	2.695	0.562	0.250	0.375	0.187	0.031	0.008
GPW 275212	2.750	2.125	2.569	2.695	0.468	0.250	0.312	0.156	0.025	0.008
GPW 300225/1	3.000	2.250	2.772	2.935	0.500	0.250	0.375	0.187	0.031	0.008
GPW 325262	3.250	2.625	3.069	3.195	0.562	0.250	0.312	0.156	0.025	0.008
GPW 350275	3.500	2.750	3.271	3.435	0.562	0.250	0.375	0.187	0.031	0.008
GPW 362287	3.625	2.875	3.395	3.560	0.562	0.250	0.375	0.187	0.031	0.008
GPW 400325/1	4.000	3.250	3.770	3.935	0.562	0.250	0.375	0.187	0.031	0.008
GPW 425350/1	4.250	3.500	4.019	4.185	0.562	0.250	0.375	0.187	0.031	0.008
GPW 450375	4.500	3.750	4.229	4.422	0.562	0.250	0.375	0.187	0.031	0.008
GPW 500400	5.000	4.000	4.733	4.920	0.750	0.250	0.500	0.218	0.046	0.015
GPW 600500	6.000	5.000	5.726	5.920	0.750	0.250	0.500	0.218	0.046	0.015
GPW 700600	7.000	6.000	6.724	6.920	0.750	0.250	0.500	0.218	0.046	0.015



Single Acting Piston Seal

PW.../L

Imperial



Design

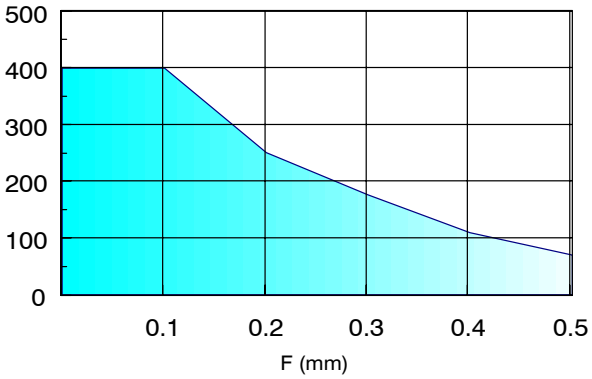
CLARON STYLE PW.../L is a precision moulded Nitrile rubber with a fabric reinforced base. Produced with initial radial interference to effect low-pressure sealing, the seal is progressively energised at higher pressures thereby increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, thus reducing friction and wear. The full width polyacetal bearing ring resists extrusion of the seal to allow greater clearances and higher pressures, and provides bearing support for the piston preventing misalignment and metal to metal contact between piston and bore.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 section for further information.

Pressure Bar



Continuous operating temperature for various Fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F

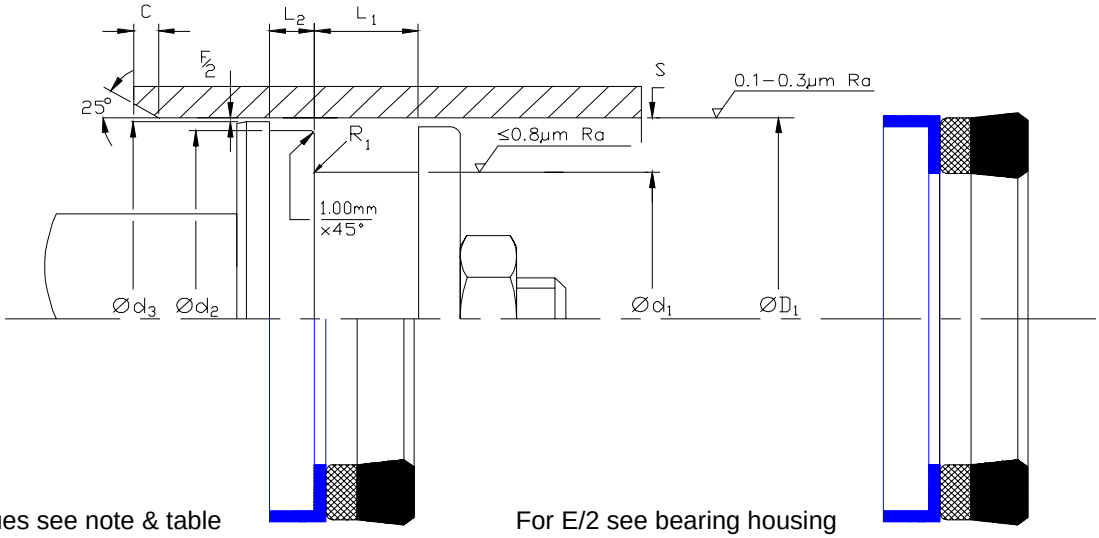
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

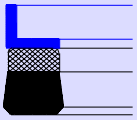
Fitting

Style PW/L is designed to be fitted onto a split piston and may be used with Claron seal retainer Style PSR.For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.



For F/2 values see note & table

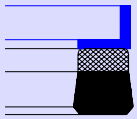
For E/2 see bearing housing



Single Acting Piston Seal

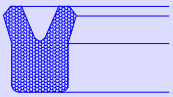
PW.../L

Imperial

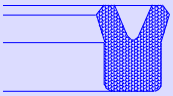


Nominal Dimensions & Machining Tolerances

Claron Part Number	H 10 $ØD_1$	js 11 $Ød_1$	js 10 $Ød_2$	js 11 $Ød_3$	+0.025 +0.015 L_1	+0.004 -0.000 L_2	Nominal S	Min C	Max R_1	Max R_2
PW 100062/L	1.000	0.625	0.868	0.968	0.343	0.182	0.187	0.093	0.008	
PW 125075/1L	1.250	0.750	1.115	1.218	0.375	0.245	0.250	0.125	0.008	
PW 125075/2L	1.250	0.750	1.115	1.218	0.437	0.245	0.250	0.125	0.008	
PW 150100/L	1.500	1.000	1.365	1.468	0.437	0.245	0.250	0.125	0.008	
PW 150100/1L	1.500	1.000	1.365	1.468	0.312	0.245	0.250	0.125	0.008	
PW 175112/L	1.750	1.125	1.552	1.687	0.531	0.245	0.312	0.156	0.008	
PW 200137/1L	2.000	1.375	1.802	1.937	0.468	0.245	0.312	0.156	0.008	
PW 200137/2L	2.000	1.375	1.802	1.937	0.531	0.245	0.312	0.156	0.008	
PW 200137/3L	2.000	1.375	1.802	1.937	0.593	0.245	0.312	0.156	0.008	
PW 200137/4L	2.000	1.375	1.802	1.937	0.406	0.245	0.312	0.156	0.008	
PW 225162/L	2.250	1.625	2.052	2.187	0.531	0.245	0.312	0.156	0.008	
PW 237175/L	2.375	1.750	2.177	2.312	0.531	0.245	0.312	0.156	0.008	
PW 250187/L	2.500	1.875	2.302	2.437	0.531	0.245	0.312	0.156	0.008	
PW 250187/1L	2.500	1.875	2.302	2.437	0.468	0.245	0.312	0.156	0.008	
PW 250187/3L	2.500	1.875	2.302	2.437	0.406	0.245	0.312	0.156	0.008	
PW 262200/L	2.625	2.000	2.428	2.562	0.531	0.245	0.312	0.156	0.008	
PW 262200/2L	2.625	2.000	2.428	2.562	0.406	0.245	0.312	0.156	0.008	
PW 262200/3L	2.625	2.000	2.428	2.562	0.593	0.245	0.312	0.156	0.008	
PW 275200/L	2.750	2.000	2.482	2.687	0.562	0.245	0.375	0.187	0.008	
PW 275200/2L	2.750	2.000	2.482	2.687	0.687	0.245	0.375	0.187	0.008	
PW 300225/L	3.000	2.250	2.732	2.937	0.500	0.245	0.375	0.187	0.008	
PW 300225/1L	3.000	2.250	2.732	2.937	0.625	0.245	0.375	0.187	0.008	
PW 300225/2L	3.000	2.250	2.732	2.937	0.687	0.245	0.375	0.187	0.008	
PW 325250/L	3.250	2.500	2.982	3.187	0.500	0.245	0.375	0.187	0.008	
PW 325250/1L	3.250	2.500	2.982	3.187	0.687	0.245	0.375	0.187	0.008	
PW 325250/2L	3.250	2.500	2.982	3.187	0.750	0.245	0.375	0.187	0.008	
PW 325250/3L	3.250	2.500	2.982	3.187	0.593	0.245	0.375	0.187	0.008	
PW 350275/L	3.500	2.750	3.232	3.437	0.687	0.245	0.375	0.187	0.008	
PW 350275/1L	3.500	2.750	3.232	3.437	0.500	0.245	0.375	0.187	0.008	
PW 350275/3L	3.500	2.750	3.232	3.437	0.625	0.245	0.375	0.187	0.008	
PW 362300/L	3.625	3.000	3.360	3.562	0.500	0.245	0.312	0.156	0.008	
PW 375300/L	3.750	3.000	3.482	3.687	0.687	0.245	0.375	0.187	0.008	
PW 375300/2L	3.750	3.000	3.482	3.687	0.500	0.245	0.375	0.187	0.008	
PW 400325/1L	4.000	3.250	3.732	3.937	0.687	0.245	0.375	0.187	0.008	
PW 425350/1L	4.250	3.500	3.985	4.187	0.687	0.245	0.375	0.187	0.008	
PW 450350/1L	4.500	3.500	4.232	4.437	0.687	0.370	0.500	0.218	0.015	
PW 450350/2L	4.500	3.500	4.232	4.437	.875	0.370	0.500	0.218	0.015	
PW 450350/3L	4.500	3.500	4.232	4.437	0.500	0.370	0.500	0.218	0.015	
PW 475375/2L	4.750	3.750	4.485	4.687	0.875	0.370	0.500	0.218	0.015	
PW 500400/L	5.000	4.000	4.732	4.937	0.875	0.370	0.500	0.218	0.015	
PW 550450/L	5.500	4.500	5.232	5.437	0.875	0.370	0.500	0.218	0.015	
PW 600500/L	6.000	5.000	5.732	5.937	0.875	0.370	0.500	0.218	0.015	
PW 650550/L	6.500	5.500	6.232	6.437	0.875	0.370	0.500	0.218	0.015	
PW 700600/L	7.000	6.000	6.732	6.937	0.875	0.370	0.500	0.218	0.015	



Single Acting Piston Seal
CPU
Metric
Imperial



Design

The Claron style CPU is a symmetrical profiled lip seal manufactured in a high performance grade of Polyurethane and is suitable for both piston and rod sealing. The sealing lips are machine trimmed to ensure dimensional consistency and good low pressure sealing. Polyurethane exhibits outstanding abrasion and extrusion resistance.

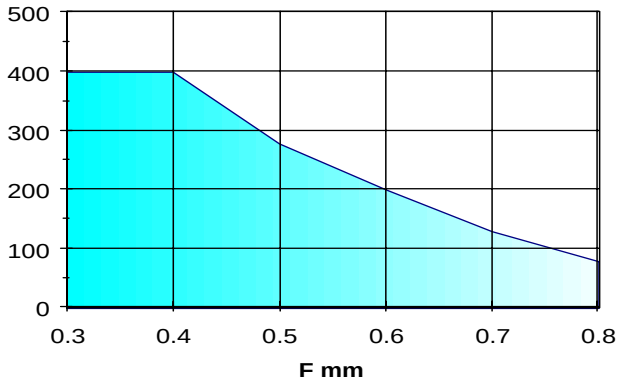
Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	280 Bar	250 Bar
0.15	400 Bar	350 Bar

These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed,pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Pressure Bar



Continuous operating temperature for various Fluids

AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

Maximum Diametral Clearance F

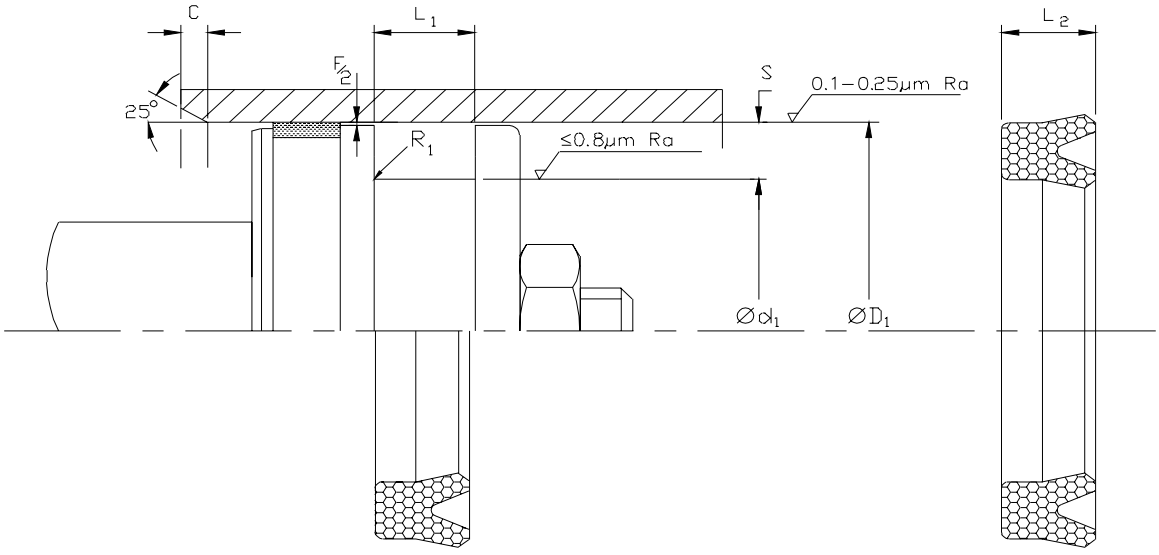
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

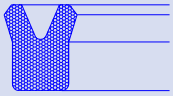
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.
Refer to section C for rod application.

Fitting

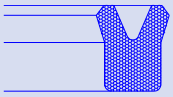
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.





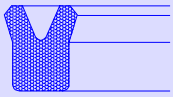
Single Acting Piston Seal Metric

CPU

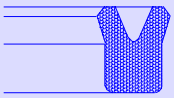


Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	js11 $Ød_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 062039	16.00	10.00	5.00	4.40	4.00	3.00	0.20
CPU 078047	20.00	12.00	9.00	8.40	4.00	3.00	0.20
CPU 078055	20.00	14.00	4.50	4.00	3.00	3.00	0.20
CPU 086063	22.00	16.00	5.00	4.40	3.00	3.00	0.20
CPU 098055	25.00	14.00	6.10	5.50	5.50	4.00	0.30
						4.00	
CPU 098063	25.00	16.00	8.25	7.50	4.50		0.30
CPU 098070	25.00	18.00	6.75	6.00	3.50	3.00	0.20
CPU 102063	26.00	16.00	8.75	8.00	5.00	4.00	0.30
CPU 102070	26.00	18.00	5.70	5.00	4.00	3.00	0.20
CPU 110078	28.00	20.00	7.25	6.50	4.00	3.00	0.20
CPU 110078/1	28.00	20.00	5.70	5.00	4.00	3.00	0.30
CPU 110078/2	28.00	20.00	4.50	4.00	4.00	3.00	0.20
CPU 118078	30.00	20.00	8.75	8.00	5.00	4.00	0.30
CPU 118086	30.00	22.00	6.75	6.00	4.00	3.00	0.20
CPU 118088	30.00	22.40	5.70	5.00	3.80	3.00	0.30
CPU 129098	33.00	25.00	6.30	5.70	4.00	3.00	0.20
CPU 129098/1	33.00	25.00	8.75	8.00	4.00	3.00	0.20
CPU 129098/2	33.00	25.00	5.60	5.00	4.00	3.00	0.20
CPU 137098	35.00	25.00	8.75	8.00	5.00	4.00	0.30
CPU 137098/1	35.00	25.00	10.75	10.00	5.00	4.00	0.30
CPU 137098/2	35.00	25.00	7.50	7.30	5.00	4.00	0.30
CPU 139110	35.50	28.00	5.70	5.00	3.75	3.00	0.20
CPU 149098	38.00	25.00	10.75	10.00	6.50	4.00	0.30
CPU 157078	40.00	20.00	12.00	11.00	10.00	5.00	0.40
CPU 157098	40.00	25.00	10.75	10.00	7.50	5.00	0.40
CPU 157118	40.00	30.00	10.75	10.00	5.00	4.00	0.30
CPU 157118/1	40.00	30.00	7.00	6.00	5.00	4.00	0.30
CPU 163124	41.50	31.50	7.00	6.00	5.00	4.00	0.30
CPU 165118	42.00	30.00	10.75	10.00	6.00	4.00	0.30
CPU 165125	42.00	32.00	6.30	5.80	5.00	4.00	0.30
CPU 169110	43.00	28.00	11.00	10.00	7.50	5.00	0.40
CPU 173141	44.00	36.00	8.75	8.00	4.00	3.00	0.20
CPU 177118	45.00	30.00	10.75	10.00	7.50	5.00	0.30
CPU 177137	45.00	35.00	10.75	10.00	5.00	4.00	0.30
CPU 177137/1	45.00	35.00	7.00	6.00	5.00	4.00	0.30
CPU 181141	46.00	36.00	8.00	7.30	5.00	4.00	0.30
CPU 196118	50.00	30.00	10.75	10.00	10.00	4.00	0.30
CPU 196137	50.00	35.00	10.75	10.00	7.50	5.00	0.40
CPU 196157	50.00	40.00	10.75	10.00	5.00	4.00	0.30
CPU 196157/2	50.00	40.00	5.75	5.00	5.00	4.00	0.30
CPU 196157/3	50.00	40.00	7.00	6.00	5.00	4.00	0.30
CPU 196165	50.00	42.00	6.30	5.80	4.00	3.00	0.20
CPU 216149	55.00	38.00	10.75	10.00	8.50	5.00	0.40
CPU216157	55.00	40.00	10.75	10.00	7.50	5.00	0.40
CPU 216177/1	55.00	45.00	6.75	6.00	5.00	4.00	0.30

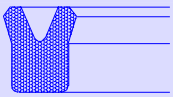


Single Acting Piston Seal
CPU
Metric



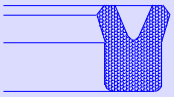
Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	js11 $Ød_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 216177	55.00	45.00	10.75	10.00	5.00	4.00	0.30
CPU 236157	60.00	40.00	12.75	12.00	10.00	5.00	0.40
CPU 236157/1	60.00	40.00	19.00	18.00	10.00	5.00	0.40
CPU 236177	60.00	45.00	10.75	10.00	7.50	5.00	0.40
CPU236196	60.00	50.00	10.75	10.00	5.00	4.00	0.30
CPU 236196/1	60.00	50.00	7.00	6.00	5.00	4.00	0.30
CPU 248208	63.00	53.00	6.75	6.00	5.00	4.00	0.30
CPU 255177	65.00	45.00	10.75	10.00	10.00	5.00	0.40
CPU 255196	65.00	50.00	10.75	10.00	7.50	5.00	0.40
CPU 255216/2	65.00	55.00	7.00	6.00	5.00	4.00	0.30
CPU 255216	65.00	55.00	12.75	12..00	5.00	4.00	0.30
CPU 275196	70.00	50.00	12.75	12.00	10.00	5.00	0.40
CPU 275196/1	70.00	50.00	10.75	10.00	10.00	5.00	0.40
CPU 275196/2	70.00	50.00	19.00	18.00	10.00	5.00	0.40
CPU 275236/1	70.00	60.00	7.00	6.00	5.00	4.00	0.30
CPU 275236	70.00	60.00	12.75	12.00	5.00	4.00	0.30
CPU 295216	75.00	55.00	13.00	12.00	10.00	5.00	0.60
CPU 295255	75.00	65.00	12.75	12.00	5.00	4.00	0.30
CPU 295255/1	75.00	65.00	10.75	10.00	5.00	4.00	0.30
CPU 295255/2	75.00	65.00	7.00	6.00	5.00	4.00	0.30
CPU 307228	78.00	58.00	16.00	15.00	5.00	4.00	0.30
CPU 314236	80.00	60.00	12.75	12.00	10.00	5.00	0.40
CPU 314236/1	80.00	60.00	19.00	18.00	10.00	5.00	0.40
CPU 314255	80.00	65.00	12.75	12.00	7.50	5.00	0.40
CPU 314275/3	80.00	70.00	7.00	6.00	5.00	4.00	0.30
CPU 314275/1	80.00	70.00	9.00	8.00	5.00	4.00	0.30
CPU 314275/2	80.00	70.00	11.00	10.00	5.00	4.00	0.30
CPU 314275	80.00	70.00	12.75	12.00	5.00	4.00	0.30
CPU 334255	85.00	65.00	13.00	12.00	10.00	5.00	0.60
CPU 334275	85.00	70.00	12.75	12.00	7.50	5.00	0.40
CPU 334295	85.00	75.00	7.00	6.00	5.00	4.00	0.30
CPU 354275	90.00	70.00	12.75	12.00	10.00	5.00	0.40
CPU 354295	90.00	75.00	12.75	12.00	7.50	5.00	0.40
CPU 354314/1	90.00	80.00	7.00	6.00	5.00	4.00	0.30
CPU 354314	90.00	80.00	12.75	12.00	5.00	4.00	0.30
CPU 374295	95.00	75.00	13.00	12.00	10.00	5.00	0.60
CPU 374314	95.00	80.00	10.75	10.00	7.50	5.00	0.40
CPU 393314	100.00	80.00	12.75	12.00	10.00	5.00	0.40
CPU 393334/1	100.00	85.00	10.00	9.00	7.50	5.00	0.40
CPU 393334	100.00	85.00	12.75	12.00	7.50	5.00	0.40
CPU 413334	105.00	85.00	13.00	12.00	10.00	5.00	0.60
CPU 4133354/1	105.00	90.00	10.00	9.00	7.50	5.00	0.40
CPU 413354	105.00	90.00	12.75	12.00	7.50	5.00	0.40
CPU 433354	110.00	90.00	13.00	12.00	10.00	5.00	0.60
CPU 433374/1	110.00	95.00	10.00	9.00	7.50	5.00	0.40



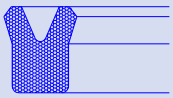
Single Acting Piston Seal CPU

Metric

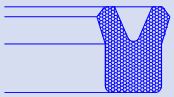


Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	js11 $Ød_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 433374	110.00	95.00	12.75	12.00	7.50	5.00	0.40
CPU 452374	115.00	95.00	13.00	12.00	10.00	5.00	0.60
CPU 452393/1	115.00	100.00	10.00	9.00	7.50	5.00	0.40
CPU 452393	115.00	100.00	12.75	12.00	7.50	5.00	0.40
CPU 472393	120.00	100.00	13.00	12.00	10.00	5.20	0.60
CPU 492393	125.00	100.00	15.75	15.00	12.50	6.50	0.60
CPU492413	125.00	105.00	17.00	15.00	10.00	5.00	0.60
CPU 492413/1	125.00	105.00	13.00	12.00	10.00	5.00	0.60
CPU 492433	125.00	110.00	12.75	12.00	7.50	5.00	0.40
CPU 492440	125.00	112.00	10.00	9.00	6.50	5.00	0.30
CPU 492452	125.00	115.00	12.75	12.00	5.00	4.00	0.30
CPU 511433	130.00	110.00	17.00	15.00	10.00	5.00	0.60
CPU 551472	140.00	120.00	17.00	15.00	10.00	5.00	0.60
CPU 551492	140.00	125.00	10.00	9.00	7.50	5.00	0.40
CPU 570492	145.00	125.00	17.00	15.00	10.00	5.00	0.60
CPU 590511	150.00	130.00	17.00	15.00	10.00	5.00	0.60
CPU 590535	150.00	136.00	10.00	9.00	7.50	5.00	0.40
CPU 610551	155.00	140.00	10.00	9.00	7.50	5.00	0.40
CPU 629551	160.00	140.00	17.00	15.00	10.00	5.00	0.60
CPU 629570	160.00	145.00	10.00	9.00	7.50	5.00	0.40
CPU 669590	170.00	150.00	17.00	15.00	10.00	5.00	0.60



CPU



Nominal Dimensions & Machining Tolerances

Claron Part Number	H10 $ØD_1$	js11 $Ød_1$	+0.010 -0.000 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 056031	0.562	0.312	0.275	0.250	0.125	0.093	0.016
CPU 100062	1.000	0.625	0.300	0.281	0.187	0.093	0.016
CPU 100062/1	1.000	0.625	0.208	0.187	0.187	0.093	0.016
CPU 125087	1.250	0.875	0.208	0.187	0.187	0.093	0.016
CPU 150100	1.500	1.000	0.275	0.250	0.250	0.125	0.032
CPU 162112	1.625	1.125	0.550	0.500	0.250	0.125	0.032
CPU 175112	1.750	1.125	0.550	0.500	0.312	0.156	0.032
CPU 175125	1.750	1.250	0.312	0.280	0.250	0.125	0.032
CPU 175125/1	1.750	1.250	0.395	0.375	0.250	0.125	0.032
CPU 187150	1.875	1.500	0.275	0.250	0.187	0.093	0.016
CPU 200137	2.000	1.375	0.582	0.562	0.312	0.156	0.032
CPU 200137/1	2.000	1.375	0.520	0.500	0.312	0.156	0.032
CPU 225150	2.250	1.500	0.550	0.500	0.375	0.187	0.046
CPU 225162	2.250	1.625	0.457	0.437	0.312	0.156	0.032
CPU 237175	2.375	1.750	0.582	0.562	0.312	0.156	0.032
CPU 237175/1	2.375	1.750	0.395	0.375	0.312	0.156	0.032
CPU 250150	2.500	1.500	0.665	0.625	0.500	0.156	0.032
CPU 250212	2.500	2.125	0.280	0.250	0.187	0.093	0.016
CPU 262200	2.625	2.000	0.582	0.562	0.312	0.156	0.032
CPU 262200/1	2.625	2.000	0.340	0.312	0.312	0.156	0.032
CPU 262212	2.625	2.125	0.395	0.375	0.250	0.125	0.032
CPU 275200	2.750	2.000	0.520	0.500	0.375	0.187	0.046
CPU 287187	2.875	1.875	0.665	0.625	0.500	0.216	0.046
CPU 300225	3.000	2.250	0.520	0.500	0.375	0.187	0.046
CPU 300237	3.000	2.375	0.582	0.562	0.312	0.156	0.032
CPU 312250	3.125	2.500	0.582	0.562	0.312	0.156	0.032
CPU 325262	3.250	2.625	0.582	0.562	0.312	0.156	0.032
CPU 337275	3.375	2.750	0.582	0.562	0.312	0.156	0.032
CPU 350250	3.500	2.500	0.730	0.687	0.500	0.216	0.046
CPU 350275	3.500	2.750	0.520	0.500	0.375	0.187	0.046
CPU 362300	3.625	3.000	0.582	0.562	0.312	0.156	0.032
CPU 362300/1	3.625	3.000	0.340	0.312	0.312	0.156	0.032
CPU 375300	3.750	3.000	0.520	0.500	0.375	0.187	0.046
CPU 387325	3.875	3.250	0.582	0.562	0.312	0.156	0.032
CPU 400300	4.000	3.000	0.730	0.687	0.500	0.216	0.046
CPU 412337	4.125	3.375	0.582	0.562	0.375	0.156	0.032
CPU 425350	4.250	3.500	0.530	0.500	0.375	0.156	0.032
CPU 425362	4.250	3.625	0.582	0.562	0.312	0.156	0.032
CPU 450350	4.500	3.500	0.730	0.687	0.500	0.216	0.046
CPU 487425	4.875	4.250	0.582	0.562	0.312	0.156	0.032
CPU 500437	5.000	4.375	0.582	0.562	0.312	0.156	0.032
CPU 525462	5.250	4.625	0.582	0.562	0.312	0.156	0.032
CPU 600537	6.000	5.375	0.582	0.562	0.312	0.156	0.032
CPU 700637	7.000	6.375	0.582	0.562	0.312	0.156	0.032

CPU.../P

Design

The Claron style CPU.../P is an asymmetrical profiled lip seal manufactured in a high performance grade of Polyurethane and is suitable for piston sealing. The sealing lips are machine trimmed to ensure dimensional consistency and good low pressure sealing. Polyurethane exhibits outstanding abrasion and extrusion resistance. The offset lip design allows rapid energization of the seal without excessive axial movement.

Operating Conditions

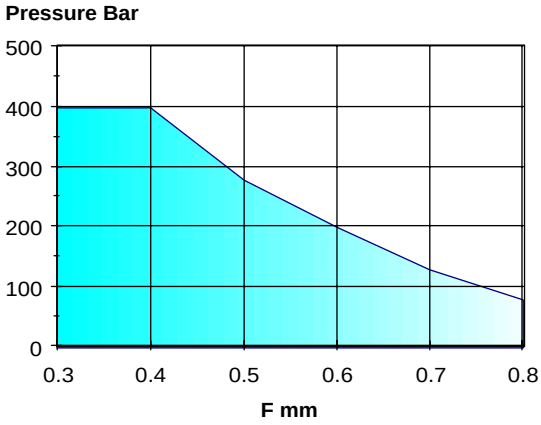
Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	280 Bar	250 Bar
0.15	400 Bar	350 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to appendix 1 for further information.

Continuous operating temperature for various fluids

AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

Maximum Diametral clearance F



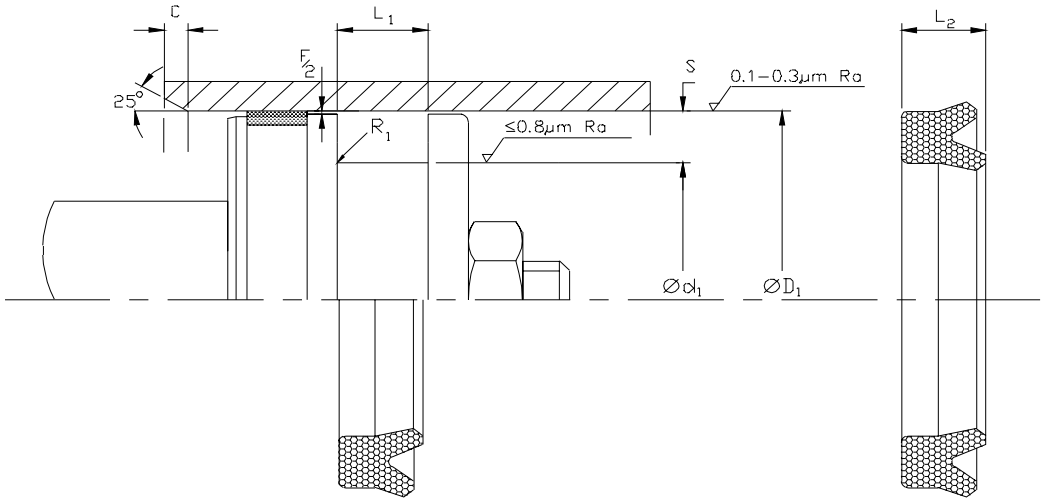
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

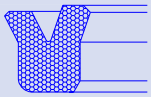
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

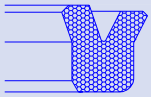
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.





Single Acting AU Piston Seal Metric

CPU.../P



Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	js11 $Ød_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 125098/P	32.00	25.00	5.60	5.00	3.50	3.00	0.20
CPU 196157/P	50.00	40.00	8.00	7.30	5.00	3.50	0.40
CPU 255216/1P	65.00	55.00	8.00	7.30	16.50	3.50	0.40
CPU 314185/P	80.00	47.00	17.00	16.00	12.50	8.00	1.60
CPU 393295/P	100.00	75.00	19.00	18.00	5.00	7.00	1.20

Style CPUO is fitted with an anti-extrusion ring on the OD

CPUO 236196/P	60.00	50.00	8.00	7.30	5.00	3.50	0.40

Design

Claron Style FPC single acting piston seal is manufactured from fabric reinforced Nitrile Rubber suitable for mineral based hydraulic oils and water soluble fluids. The Fabric cup is a non preferred design for modern applications, but is available to meet existing design requirement within the industry.

Style FPC may also be used 'back to back' to form a double acting arrangement.

Operating Range

Temp. range	-30°C to 100°C
Max Pressure	175Bar (2500psi)
Linear Speed m/sec	0.5

These Range parameters are Maximum Values
Optimum service conditions are affected by temperature, speed,pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Diametrical Clearance 'F' is calculated as the maximum permissable extrusion gap, allowing for movement due to side load, tolerances and cylinder expansion.

Pressure (Bar)	70	140	175
Gap F (mm)	0.5	0.45	0.4

Continuous operating temperature for various Fluids

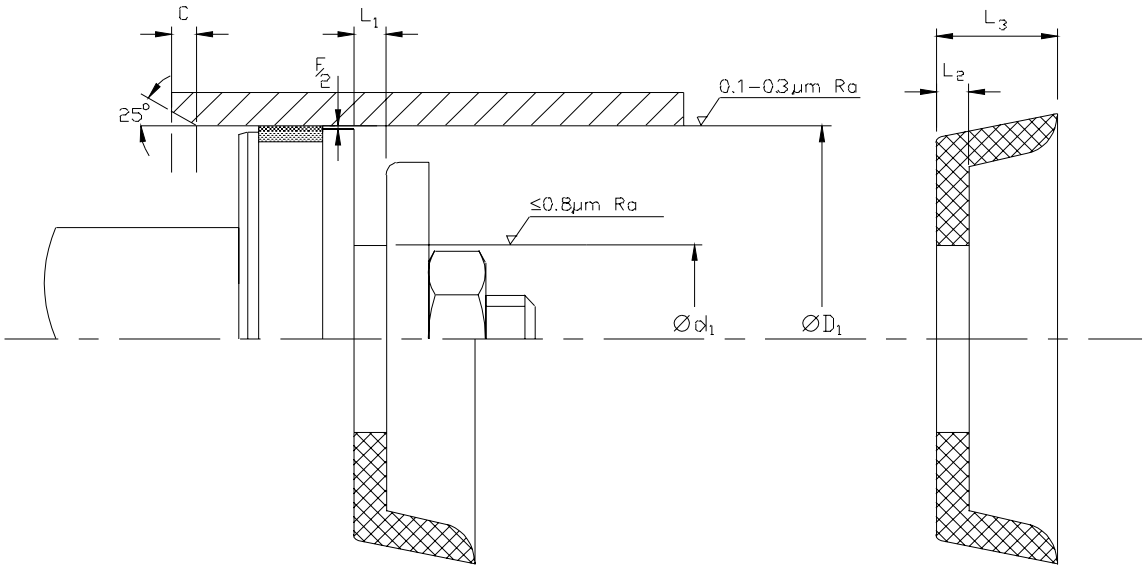
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

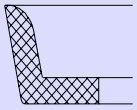
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

It is essential to apply a controlled squeeze to the base of the cup to avoid distortion of the heal and lip.
A location spigot of length L_1 and top plate must be used to avoid excessive wear and premature failure.
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

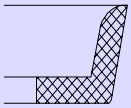




Single Acting Piston Seal

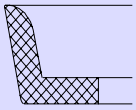
FPC

Metric



Nominal Dimensions & Machining Tolerances

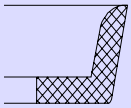
Claron Part Number	H 11 $ØD_1$	+0.00 -0.12 $Ød_1$	Nom. Depth Fabric Cup L_3	Nom. Base Thickness L_2	+0.00 -0.12 L_1	Min C
FPC 157055/RA	40.00	28.00	14.00	3.00	2.70	5.00
FPC 236078/FA	60.00	32.00	20.00	4.76	4.36	5.50
FPC 275062/2FA	70.00	40.00	15.88	4.75	4.35	5.50
FPC 299078/1FA	76.00	17.00	20.00	4.00	3.60	5.50
FPC 299078/FA	76.00	38.00	20.00	4.76	4.36	5.50
FPC 314075/FA	80.00	50.00	19.00	4.75	4.35	5.50
FPC 338078/FA	86.00	17.00	20.00	4.76	4.36	5.50
FPC 354075/FA	90.00	25.40	19.05	4.74	4.31	6.35
FPC 374078/FA	95.00	17.00	20.00	4.00	3.60	6.00
FPC 393050/FA	100.00	70.00	12.70	4.75	4.35	5.50



Single Acting Piston Seal

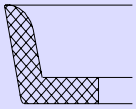
FPC

Imperial



Nominal Dimensions & Machining Tolerances

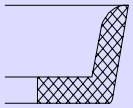
Claron Part Number	H 11 $ØD_1$	+0.000 -0.005 $Ød_1$	Nom. Depth Fabric Cup L_3	Nom. Base Thickness L_2	+0.000 -0.005 L_1	Min C
FPC 062028/FA	0.625	0.250	0.281	0.093	0.085	0.187
FPC 062028/FB	0.625	0.180	0.281	0.093	0.085	0.187
FPC 100037/FA	1.000	0.375	0.375	0.093	0.085	0.187
FPC 125037/FA	1.250	0.250	0.375	0.125	0.115	0.187
FPC 137043/FA	1.375	0.562	0.437	0.125	0.115	0.187
FPC 137043/FB	1.375	0.687	0.437	0.125	0.115	0.187
FPC 150050/FA	1.500	0.250	0.500	0.125	0.115	0.187
FPC 150050/FB	1.500	0.875	0.500	0.125	0.115	0.187
FPC 162050/FA	1.625	0.375	0.500	0.125	0.115	0.187
FPC 162053/FA	1.625	0.405	0.531	0.156	0.140	0.187
FPC 162056/FA	1.625	0.500	0.562	0.156	0.140	0.187
FPC 168050/FA	1.687	0.687	0.500	0.125	0.115	0.187
FPC 175050/FA	1.750	0.375	0.500	0.125	0.115	0.187
FPC 175056/FA	1.750	0.405	0.562	0.187	0.170	0.187
FPC 175062/3RA	1.750	0.750	0.625	0.187	0.170	0.187
FPC 175062/4FA	1.750	1.000	0.625	0.187	0.170	0.187
FPC 178062/FA	1.781	16.5mm	0.625	0.187	0.170	0.187
FPC 200037/FA	2.000	1.125	0.375	0.125	0.115	0.187
FPC 200037/FB	2.000	1.250	0.375	0.125	0.115	0.187
FPC 200050/FA	2.000	0.375	0.500	0.125	0.115	0.187
FPC 200050/RA	2.000	0.750	0.500	0.141	0.131	0.187
FPC 200050/RB	2.000	1.250	0.500	0.141	0.131	0.187
FPC 200075/2FA	2.000	0.625	0.750	0.156	0.140	0.187
FPC 200075/FA	2.000	12.0mm	0.750	0.187	0.170	0.187
FPC 200081/FA	2.000	0.625	0.812	0.219	0.198	0.187
FPC 212062/FA	2.125	0.375	0.625	0.156	0.140	0.187
FPC 225050/2FA	2.250	1.250	0.500	0.156	0.140	0.218
FPC 225062/FA	2.50	1.312	0.625	0.156	0.140	0.218
FPC 225075/1FA	2.250	0.625	0.750	0.187	0.170	0.218
FPC 225075/1FB	2.250	1.000	0.750	0.187	0.170	0.218
FPC 225075/1FC	2.250	1.125	0.750	0.187	0.170	0.218
FPC 237075/1FA	2.375	0.687	0.750	0.187	0.170	0.218
FPC 237075/1FB	2.375	0.750	0.750	0.187	0.170	0.218
FPC 237075/1FC	2.375	0.500	0.750	0.187	0.170	0.218
FPC 237075/1FD	2.375	22.0 mm	0.750	0.187	0.170	0.218
FPC 237075/1FE	2.375	1.250	0.750	0.187	0.170	0.218
FPC 237075/1FSA	2.375	0.875	0.750	0.187	0.170	0.218
FPC 237075/FA	2.375	1.250	0.750	0.219	0.198	0.218
FPC 250062/FA	2.500	0.500	0.625	0.156	0.140	0.218
FPC 250062/FB	2.500	1.500	0.625	0.156	0.140	0.218
FPC 250062/FC	2.500	1.250	0.625	0.156	0.140	0.218
FPC 250087/FA	2.500	0.750	0.875	0.250	0.225	0.218
FPC 262075/FA	2.625	0.750	0.750	0.187	0.170	0.218
FPC 262075/FB	2.625	22.0mm	0.750	0.187	0.170	0.218
FPC 262075/FC	2.625	0.875	0.750	0.187	0.170	0.218



Single Acting Piston Seal

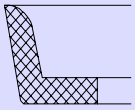
FPC

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	H 11 $ØD_1$	+0.000 -0.005 $Ød_1$	Nom. Depth Fabric Cup L_3	Nom. Base Thickness L_2	+0.000 -0.005 L_1	Min C
FPC 262075/FD	2.625	1.500	0.750	0.187	0.170	0.218
FPC 262075/FE	2.625	0.500	0.750	0.187	0.170	0.218
FPC 262081/FA	2.625	0.875	0.812	0.219	0.198	0.218
FPC 262100/RA	2.625	0.875	1.000	0.250	0.225	0.218
FPC 264075/FA	2.645	0.875	0.750	0.187	0.170	0.218
FPC 275062/1FA	2.750	0.687	0.625	0.187	0.170	0.218
FPC 275062/FA	2.750	0.687	0.625	0.219	0.198	0.218
FPC 275075/FA	2.750	0.500	0.750	0.187	0.170	0.218
FPC 275075/FB	2.750	0.750	0.750	0.187	0.170	0.218
FPC 275075/FC	2.750	0.875	0.750	0.187	0.170	0.218
FPC 287062/FA	2.875	1.000	0.625	0.187	0.170	0.218
FPC 287087/FA	2.875	1.000	0.875	0.187	0.170	0.218
FPC 291062/FA	2.915	1.000	0.625	0.187	0.170	0.218
FPC 300062/FA	3.000	0.500	0.625	0.156	0.140	0.218
FPC 300062/FB	3.000	0.750	0.625	0.156	0.140	0.218
FPC 300062/FC	3.000	1.500	0.625	0.156	0.140	0.218
FPC 300062/FD	3.000	1.875	0.625	0.156	0.140	0.218
FPC 300075/FA	3.000	0.812	0.750	0.219	0.198	0.218
FPC 300075/FB	3.000	0.750	0.750	0.219	0.198	0.218
FPC 300075/FC	3.000	1.250	0.750	0.219	0.198	0.218
FPC 300081/FA	3.000	1.500	0.812	0.156	0.140	0.218
FPC 312075/FA	3.125	22.0mm	0.750	0.187	0.170	0.250
FPC 312075/FB	3.125	0.500	0.750	0.187	0.170	0.250
FPC 312075/FSA	3.125	0.875	0.750	0.187	0.170	0.250
FPC 325062/FA	3.250	0.687	0.625	0.219	0.198	0.250
FPC 325075/1FA	3.250	1.000	0.750	0.219	0.198	0.250
FPC 325075/FA	3.250	0.750	0.750	0.187	0.170	0.250
FPC 325075/FB	3.250	22.0mm	0.750	0.187	0.170	0.250
FPC 325075/FC	3.250	0.500	0.750	0.187	0.170	0.250
FPC 325075/FD	3.250	2.000	0.750	0.187	0.170	0.250
FPC 325081/1FA	3.250	1.250	0.812	0.250	0.225	0.250
FPC 325081/FA	3.250	1.000	0.812	0.219	0.198	0.250
FPC 325100/2RA	3.250	1.000	1.000	0.250	0.225	0.250
FPC 328075/FA	3.280	1.000	0.750	0.187	0.170	0.250
FPC 350075/FA	3.500	0.500	0.750	0.187	0.170	0.250
FPC 350075/FB	3.500	0.750	0.750	0.187	0.170	0.250
FPC 350075/FC	3.500	2.125	0.750	0.187	0.170	0.250
FPC 350087/FA	3.500	1.000	0.875	0.250	0.225	0.250
FPC 362050/FA	3.625	2.562	0.500	0.187	0.170	0.250
FPC 362068/FA	3.625	2.375	0.687	0.187	0.170	0.250
FPC 362068/FB	3.625	0.625	0.687	0.187	0.170	0.250
FPC 362075/FA	3.625	0.812	0.750	0.219	0.198	0.250
FPC 362075/FB	3.625	1.250	0.750	0.219	0.198	0.250
FPC 362075/FC	3.625	1.750	0.750	0.219	0.198	0.250
FPC 375062/FA	3.750	0.687	0.625	0.219	0.198	0.250

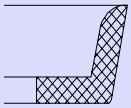


ClaronPolyseal®

Single Acting Piston Seal

FPC

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	H 11 $ØD_1$	+0.000 -0.005 $Ød_1$	Nom. Depth Fabric Cup L_3	Nom. Base Thickness L_2	+0.000 -0.005 L_1	Min C
FPC 375075/1FA	3.750	0.500	0.750	0.187	0.170	0.250
FPC 375075/1FB	3.750	0.750	0.750	0.187	0.170	0.250
FPC 375075/FA	3.750	0.625	0.750	0.250	0.225	0.250
FPC 387050/FA	3.875	0.750	0.500	0.150	0.135	0.250
FPC 387075/FA	3.875	22.0mm	0.750	0.187	0.170	0.250
FPC 387075/FB	3.875	0.750	0.750	0.187	0.170	0.250
FPC 387081/FA	3.875	1.125	0.812	0.219	0.198	0.250
FPC 387100/1RA	3.875	1.125	1.000	0.219	0.198	0.250
FPC 400075/FA	4.000	0.750	0.750	0.187	0.170	0.250
FPC 400075/FB	4.000	22.0mm	0.750	0.187	0.170	0.250
FPC 400075/FC	4.000	2.500	0.750	0.187	0.170	0.250
FPC 400075/FD	4.000	0.500	0.750	0.187	0.170	0.250
FPC 400075/FSA	4.000	0.875	0.750	0.187	0.170	0.250
FPC 400075/RA	4.000	1.000	0.750	0.187	0.170	0.250
FPC 412087/FA	4.125	1.000	0.875	0.250	0.225	0.250
FPC 425062/FA	4.250	2.500	0.625	0.125	0.115	0.250
FPC 425075/FA	4.250	0.687	0.750	0.187	0.170	0.250
FPC 425075/FB	4.250	0.750	0.750	0.187	0.170	0.250
FPC 450075/FA	4.500	0.500	0.750	0.187	0.170	0.250
FPC 475081/FA	4.750	1.250	0.812	0.219	0.198	0.250
FPC 475100/1RA	4.750	1.250	1.000	0.219	0.198	0.250
FPC 475100/FA	4.750	22.0mm	1.000	0.250	0.225	0.250
FPC 500075/FA	5.000	3.500	0.750	0.187	0.170	0.250
FPC 500075/FB	5.000	0.500	0.750	0.187	0.170	0.250
FPC 500075/FC	5.000	1.500	0.750	0.250	0.225	0.250
FPC 500087/FA	5.000	1.000	0.875	0.250	0.225	0.250
FPC 500100/FA	5.000	22.0mm	1.000	0.250	0.225	0.250
FPC 500100/FSA	5.000	0.875	1.000	0.250	0.255	0.250
FPC 525050/FA	5.250	3.750	0.500	0.187	0.170	0.250
FPC 525050/FB	5.250	0.750	0.500	0.187	0.170	0.250
FPC 550075/RA	5.500	0.750	0.750	0.187	0.170	0.250
FPC 575081/FA	5.750	1.500	0.812	0.219	0.198	0.250
FPC 600075/FA	6.000	1.500	0.750	0.250	0.225	0.250
FPC 600087/FA	6.000	1.000	0.875	0.250	0.225	0.250
FPC 600100/FA	6.000	22.0mm	1.000	0.250	0.225	0.250
FPC 600100/FSA	6.000	0.875	1.000	0.250	0.225	0.250
FPC 650100/2FA	6.500	4.000	1.000	0.250	0.225	0.250
FPC 650100/2FB	6.500	4.500	1.000	0.250	0.225	0.250
FPC 650100/2FC	6.500	0.750	1.000	0.250	0.225	0.250
FPC 650100/2FD	6.500	1.500	1.000	0.250	0.225	0.250
FPC 700087/FA	7.000	1.375	0.875	0.250	0.225	0.250
FPC 700087/RA	7.000	1.000	0.875	0.219	0.198	0.250
FPC 700100/1FA	7.000	2.750	1.000	0.219	0.198	0.250
FPC 700100/FA	7.000	22.0mm	1.000	0.250	0.225	0.250
FPC 700100/RA	7.000	2.500	1.000	0.250	0.225	0.250
FPC 825100/RA	8.250	2.500	1.000	0.250	0.225	0.250
FPC 825100/RB	8.250	2.750	1.000	0.250	0.225	0.250

Single Acting Piston Seal Metric

851

Design

The Claron style 851 is a heavy duty single acting seal for hydraulic or pneumatic piston applications.
Designed as a high pressure - low friction seal for use singly, in tandem sealing arrangements or back to back for double acting applications without pressure lock.

Materials

Standard materials are Bronze filled P.T.F.E with a Nitrile O-Ring Energiser but both the outer sealing element and the energiser are available in a wide range of high performance materials to suit a variety of applications . The application parameters should be carefully considered prior to selecting suitable materials from the tables.
Consult Claron for further advice.

Operating Range

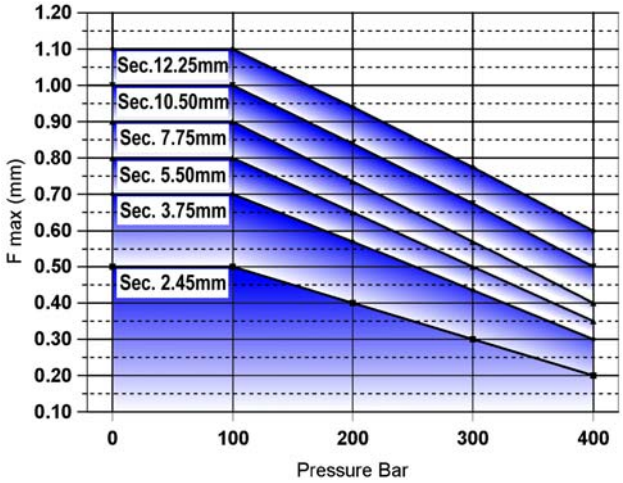
Temp. -54°C to 200°C (Dependent upon O-Ring Material used See Appendix 2)
Pressure upto 800 bar
Velocity upto 15m/s
These range parameters are maximum conditional values
Optimum service conditions are affected by temperature, speed pressure, surface finish and extrusion gaps..
Refer to Appendix 1 section for further information.

Operating Conditions

Maximum Working Pressure for “Standard” seal applications using specified tolerances.

Temp. range	Temp. range
-30°C to 80°C	80°C to 120°C
400bar	350 bar

Diametrical Clearance F shown in the graph to the right is calculated as the maximum permissible extrusion gap, allowing for movement due to side load, for various pressures and temperatures upto 80°C. The use of a suitably selected Claron bearing ring will effectively reduce the **Radial clearance** to a value nearer to F/2 thus increasing the pressure capability of the seal. The maximum seal extrusion gap should be calculated allowing for all tolerances, movement and cylinder expansion.
For pressures **>** 400 bar, the seal extrusion gap should be reduced by utilising smaller tolerances. e.g H8 for Cylinder bore, f8 for piston diameter.



Range Of Installation Dimensions

The full range of diameters applicable to the "Standard ", "Light" and "Heavy" Duty Sections shown in the table below

Housing		Applicable Bore dia.		
Section	Width	Standard Duty	Light Duty (/1)	Heavy Duty (/2)
2.50	2.2	10 to 16.9	17 to26.9	
3.75	3.2	17 to 26.9	27 to 59.9	
5.50	4.2	27 to 59.9	60 to 199.9	17 to 26.9
7.75	6.3	60 to 199.9	200 to 255.9	27 to 59.9
10.50	8.1	200 to 255.9	256 to 280	60 to 199.9
12.25	8.1	256 to 580		200 to 255.9

How To Order

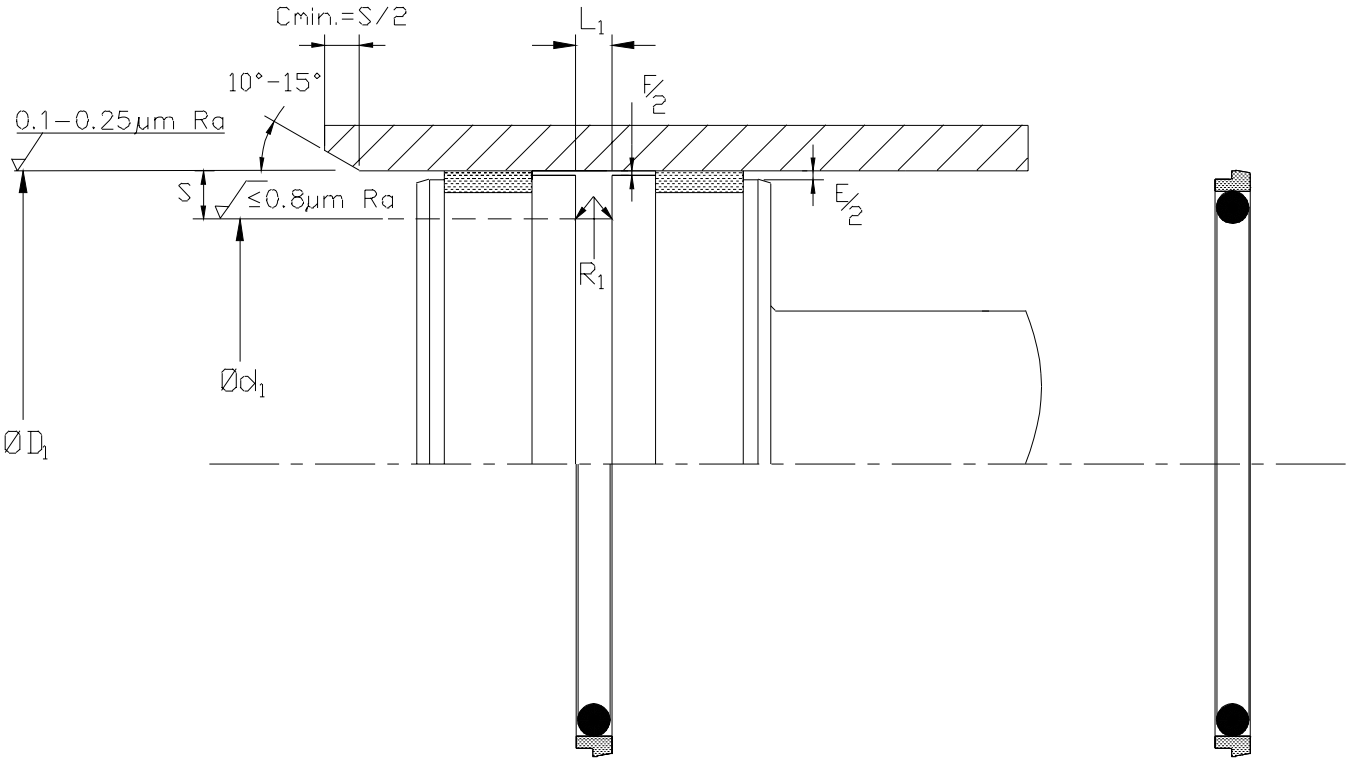
When ordering, prefix the size reference with the style required and use the suffix shown in the material application tables Appendix 2.

e.g. 851 Standard section in Bronze filled material for 70mm diameter **851-0700/B**
851 Light duty section in Glass filled material for 70 mm diameter **851-0700/1G**
851 Heavy duty section in Carbon filled material for 70 mm diameter **851-0700/2C**

For O-Ring energiser materials other than Nitrile, use suffix shown in material table. Appendix 2
e.g Flourocarbon material (FKM), **851-0700/B/FKM**

Housing

For surface finish and lead in chamfers refer to the illustration below. For Housing dimensions and tolerances refer to the table of recommended sizes and Appendix 4 for value of tolerance symbols



For F/2 values see note & table

For E/2 refer to Guide Tape page

Fitting

For the seal to function correctly it is important that care is taken during fitting.
For details refer to Appendix 3

Single Acting Piston Seal

851

Metric

Nominal Dimensions & Machining Tolerances

Claron	D_1 H9	d_1 h9	L_1 +0.2 -0.0	S Nom Sec	R_1 Max	F/2 Max
851-0100/B	10.00	5.00	2.20	2.50	0.30	0.20
851-0120/B	12.00	7.00	2.20	2.50	0.30	0.20
851-0140/B	14.00	9.00	2.20	2.50	0.30	0.20
851-0150/B	15.00	10.00	2.20	2.50	0.30	0.20
851-0160/B	**16.00**	**11.00**	**2.20**	**2.50**	0.30	0.20
851-0180/B	18.00	10.50	3.20	3.75	0.50	0.30
851-0200/B	**20.00**	**12.50**	**3.20**	**3.75**	**0.50**	0.30
851-0200/1B	**20.00**	**15.00**	**2.20**	**2.50**	0.30	0.20
851-0220/B	22.00	14.50	3.20	3.75	0.50	0.30
851-0250/B	**25.00**	**17.50**	**3.20**	**3.75**	**0.50**	0.30
851-0250/2B	**25.00**	**14.00**	**4.20**	**5.50**	0.80	0.35
851-0280/B	28.00	17.00	4.20	5.50	0.80	0.35
851-0300/B	30.00	19.00	4.20	5.50	0.80	0.35
851-0320/B	**32.00**	**21.00**	**4.20**	**5.50**	0.80	0.35
851-0320/1B	**32.00**	**24.50**	**3.20**	**3.75**	**0.50**	0.30
851-0350/B	35.00	24.00	4.20	5.50	0.80	0.35
851-0360/B	36.00	25.00	4.20	5.50	0.80	0.35
851-0381/B	38.10	27.10	4.20	5.50	0.80	0.35
851-0400/B	**40.00**	**29.00**	**4.20**	**5.50**	0.80	0.35
851-0400/1B	**40.00**	**32.50**	**3.20**	**3.75**	**0.50**	0.30
851-0420/B	42.00	31.00	4.20	5.50	0.80	0.35
851-0450/B	45.00	34.00	4.20	5.50	0.80	0.35
851-0480/B	48.00	37.00	4.20	5.50	0.80	0.35
851-0500/B	**50.00**	**39.00**	**4.20**	**5.50**	0.80	0.35
851-0500/2B	**50.00**	**34.50**	**6.30**	**7.75**	1.20	0.40
851-0520/B	52.00	41.00	4.20	5.50	0.80	0.35
851-0550/B	55.00	44.00	4.20	5.50	0.80	0.35
851-0600/B	60.00	44.50	6.30	7.75	1.20	0.40
851-0630/B	**63.00**	**47.50**	**6.30**	**7.75**	1.20	0.40
851-0630/1B	**63.00**	**52.00**	**4.20**	**5.50**	0.80	0.35
851-0650/B	65.00	49.50	6.30	7.75	1.20	0.40
851-0700/B	70.00	54.50	6.30	7.75	1.20	0.40
851-0700/1B	70.00	59.00	4.20	5.50	0.80	0.35
851-0750/B	75.00	59.50	6.30	7.75	1.20	0.40
851-0800/B	**80.00**	**64.50**	**6.30**	**7.75**	1.20	0.40
851-0800/1B	**80.00**	**69.00**	**4.20**	**5.50**	0.80	0.35
851-0850/B	85.00	69.50	6.30	7.75	1.20	0.40
851-0850/2B	85.00	64.00	8.10	10.50	1.50	0.50
851-0900/B	90.00	74.50	6.30	7.75	1.20	0.40
851-0900/2B	90.00	69.00	8.10	10.50	1.50	0.50
851-0950/B	95.00	79.50	6.30	7.75	1.20	0.40
851-0950/2B	95.00	74.00	8.10	10.50	1.50	0.50
851-1000/B	**100.00**	**84.50**	**6.30**	**7.75**	1.20	0.40
851-1000/1B	**100.00**	**89.00**	**4.20**	**5.50**	0.80	0.35
851-1000/2B	100.00	89.00	8.10	10.50	1.50	0.50
851-1050/B	105.00	89.50	6.30	7.75	1.20	0.40
851-1050/2B	105.00	84.00	8.10	10.50	1.50	0.50
851-1100/B	110.00	94.50	6.30	7.75	1.20	0.40
851-1100/2B	110.00	89.00	8.10	10.50	1.50	0.50
851-1150/B	115.00	99.50	6.30	7.75	1.20	0.40
851-1150/2B	115.00	94.00	8.10	10.50	1.50	0.50
851-1200/B	120.00	104.50	6.30	7.75	1.20	0.40
851-1200/2B	120.00	99.00	8.10	10.50	1.50	0.50
851-1250/B	**125.00**	**109.50**	**6.30**	**7.75**	1.20	0.40
851-1250/2B	**125.00**	**104.00**	**8.10**	**10.50**	1.50	0.50

Nominal Dimensions & Machining Tolerances

Claron	D_1 H9	d_1 h9	L_1 +0.2 -0.0	S Nom Sec	R_1 Max	F/2 Max
851-1300/B	130.00	114.50	6.30	7.75	1.20	0.40
851-1300/2B	130.00	109.00	8.10	10.50	1.50	0.50
851-1350/B	135.00	119.50	6.30	7.75	1.20	0.40
851-1350/2B	135.00	114.00	8.10	10.50	1.50	0.50
851-1400/B	140.00	124.50	6.30	7.75	1.20	0.40
851-1400/2B	140.00	129.00	8.10	10.50	1.50	0.50
851-1500/B	150.00	134.50	6.30	7.75	1.20	0.40
851-1500/2B	150.00	139.00	8.10	10.50	1.50	0.50
851-1600/B	**160.00**	**144.50**	**6.30**	**7.75**	1.20	0.40
851-1600/2B	**160.00**	**139.00**	**8.10**	**10.50**	1.50	0.50
851-1700/B	170.00	154.50	6.30	7.75	1.20	0.40
851-1700/2B	170.00	149.00	8.10	10.50	1.50	0.50
851-1800/B	180.00	164.50	6.30	7.75	1.20	0.40
851-1800/2B	180.00	159.00	8.10	10.50	1.50	0.50
851-1900/B	190.00	174.50	6.30	7.75	1.20	0.40
851-1900/2B	190.00	169.00	8.10	10.50	1.50	0.50
851-2000/B	**200.00**	**179.00**	**8.10**	**10.50**	1.50	0.50
851-2000/1B	**200.00**	**184.50**	**6.30**	**7.75**	1.20	0.40
851-2100/B	210.00	189.00	8.10	10.50	1.50	0.50
851-2200/B	220.00	199.00	8.10	10.50	1.50	0.50
851-2300/B	230.00	209.00	8.10	10.50	1.50	0.50
851-2400/B	240.00	219.00	8.10	10.50	1.50	0.50
851-2500/B	**250.00**	**229.00**	**8.10**	**10.50**	1.50	0.50
851-2500/2B	**250.00**	**225.50**	**8.10**	**12.25**	1.50	0.60
851-2600/B	260.00	235.50	8.10	12.25	1.50	0.60
851-2800/B	280.00	255.50	8.10	12.25	1.50	0.60
851-3000/B	300.00	275.50	8.10	12.25	1.50	0.60
851-3200/B	**320.00**	**295.50**	**8.10**	**12.25**	1.50	0.60
851-3200/1B	**320.00**	**299.00**	**8.10**	**10.50**	1.50	0.50
851-3500/B	350.00	325.50	8.10	12.25	1.50	0.60
851-3600/B	360.00	335.50	8.10	12.25	1.50	0.60
851-3800/B	380.00	355.50	8.10	12.25	1.50	0.60
851-4000/B	**400.00**	**375.50**	**8.10**	**12.25**	1.50	0.60
851-4200/B	420.00	395.50	8.10	12.25	1.50	0.60
851-4500/B	450.00	425.50	8.10	12.25	1.50	0.60
851-4800/B	480.00	455.50	8.10	12.25	1.50	0.60
851-5000/B	**500.00**	**475.50**	**8.10**	**12.25**	1.50	0.60

Dimensions in bold type conform to ISO 7425-1 :1988

Intermediate sizes upto 580mm are available, incl. Imperial

Piston Seal Retaining Ring PSR

Metric
Imperial

Design

Claron Style PSR retainer is designed to retain single acting piston seals. The retainer is manufactured from Acetal (POM) and is profiled to fit into a groove on the piston. The retainer is split with two holes similar to a circlip to facilitate fitting with circlip pliers. The retainer provides a simple housing design solution for all single acting piston seals.

Operating Conditions

Temp. range	-30°C to 100°C
Linear Speed m/sec	5

Optimum service conditions are affected by temperature, speed, side load and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various fluids

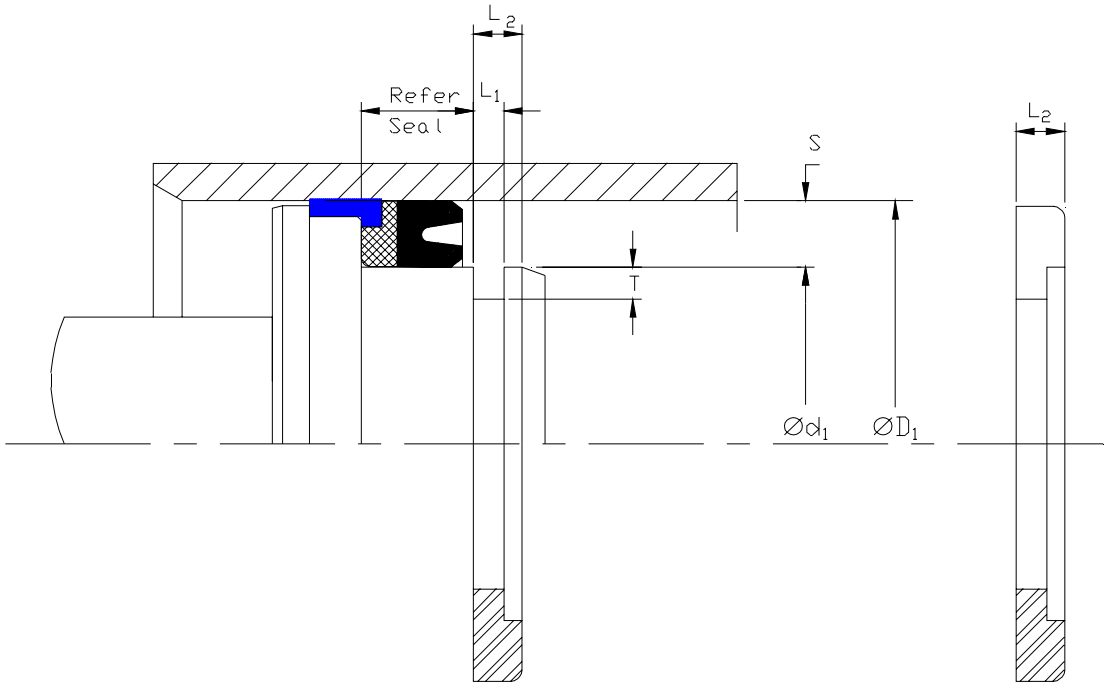
POM Polyacetal		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	80
HFD S	Chlorinated hydrocarbon based	80
HFD T	Mixtures of HFD R and HFD S	80
HEPG	Polyglycol based	100
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	100

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For seal housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PSR snap fits into a groove and may be fitted with standard circlip pliers. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



Piston Seal Retaining Ring PSR Metric

Nominal Dimensions & Machining Tolerances

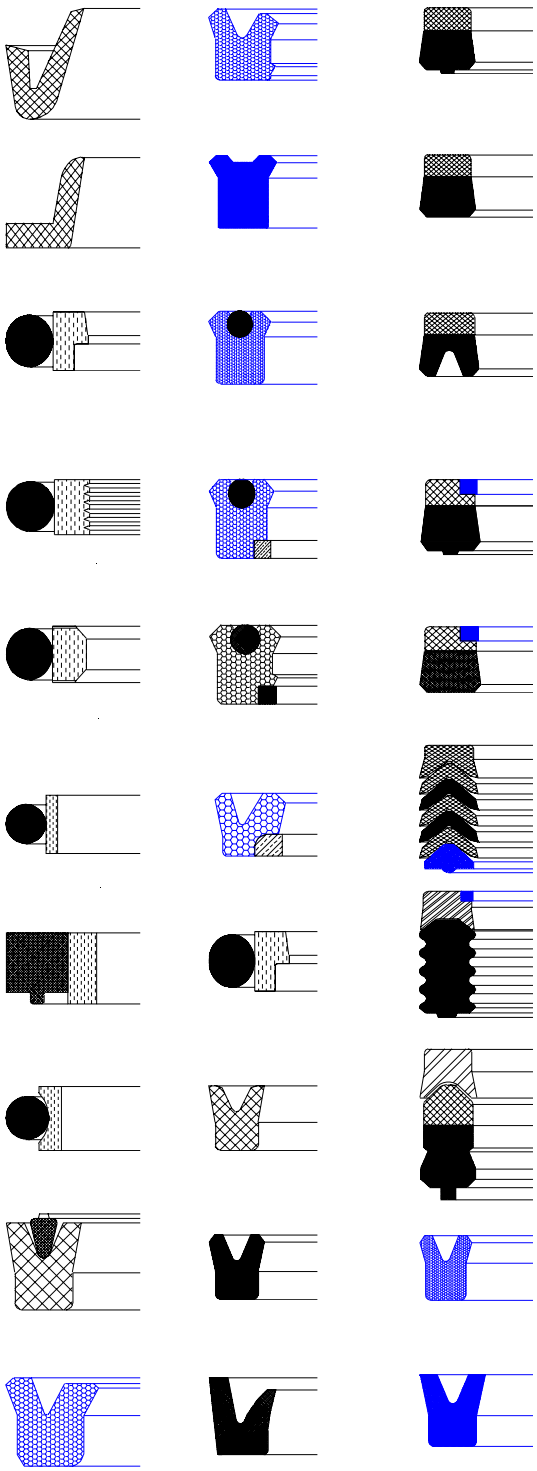
Claron Part Number	Refer to seal section ØD$_1$	Refer to seal section Ød$_1$	Nominal S	+0.13 -0.00 L$_1$	+0.00 -0.13 T	+0.13 -0.13 L$_2$
PSR 125086	32.00	22.00	5.00	2.62	2.10	5.00
PSR 157110	40.00	28.00	6.00	3.12	2.10	6.00
PSR 196137	50.00	35.00	7.50	3.30	2.10	6.40
PSR 196157	50.00	40.00	5.00	2.62	2.10	5.00
PSR 216157	55.00	40.00	7.50	3.30	2.10	6.40
PSR 248188	63.00	48.00	7.50	3.30	2.10	6.00
PSR 248196	63.00	50.00	6.50	3.30	2.10	6.40
PSR 275196	70.00	50.00	10.00	3.30	2.10	6.40
PSR 314236	80.00	60.00	10.00	3.30	2.10	6.40
PSR 354275	90.00	70.00	10.00	3.30	2.10	6.40
PSR 393314	100.00	80.00	10.00	3.30	2.10	6.40
PSR 411334	104.50	85.00	9.75	3.30	2.20	6.30
PSR 433354	110.00	90.00	10.00	3.30	2.10	6.40

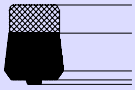
PSR

Nominal Dimensions & Machining Tolerances

Claron Part Number	Refer to seal section $ØD_1$	Refer to seal section $Ød_1$	Nominal S	+0.005 -0.000 L_1	+0.000 -0.005 T	+0.005 -0.005 L_2
PSR 112062	1.125	0.625	0.250	0.098	0.082	0.187
PSR 141087	1.417	0.875	0.270	0.105	0.082	0.195
PSR 150100	1.500	1.000	0.250	0.130	0.082	0.250
PSR 162100	1.625	1.000	0.312	0.130	0.082	0.250
PSR 162112	1.625	1.125	0.250	0.130	0.082	0.250
PSR 175125	1.750	1.250	0.250	0.130	0.082	0.250
PSR 178116	1.781	1.160	0.312	0.130	0.082	0.250
PSR 200137	2.000	1.375	0.312	0.130	0.082	0.250
PSR 212150	2.125	1.500	0.312	0.130	0.082	0.250
PSR 225162	2.250	1.625	0.312	0.130	0.082	0.250
PSR 237175	2.375	1.750	0.312	0.130	0.082	0.250
PSR 250187	2.500	1.875	0.312	0.130	0.082	0.250
PSR 262200	2.625	2.000	0.312	0.130	0.082	0.250
PSR 275200	2.750	2.000	0.375	0.130	0.082	0.250
PSR 275212	2.750	2.125	0.312	0.130	0.082	0.250
PSR 300225	3.000	2.250	0.375	0.130	0.082	0.250
PSR 312250	3.125	2.500	0.312	0.130	0.082	0.250
PSR 325250	3.250	2.500	0.375	0.130	0.082	0.250
PSR 325262	3.250	2.625	0.312	0.130	0.082	0.250
PSR 337275	3.375	2.750	0.312	0.130	0.082	0.250
PSR 350275	3.500	2.750	0.375	0.130	0.082	0.250
PSR 350287	3.500	2.875	0.312	0.130	0.082	0.250
PSR 362300	3.625	3.000	0.312	0.130	0.082	0.250
PSR 387312/1	3.875	3.125	0.375	0.190	0.110	0.312
PSR 400325	4.000	3.250	0.375	0.130	0.082	0.250
PSR 400325/1	4.000	3.250	0.375	0.190	0.082	0.275
PSR 412337	4.125	3.375	0.375	0.130	0.082	0.250
PSR 412350	4.125	3.500	0.312	0.130	0.082	0.250
PSR 450375	4.500	3.750	0.375	0.130	0.082	0.250
PSR 475375	4.750	3.750	0.500	0.145	0.082	0.281
PSR 475400/1	4.750	4.000	0.375	0.190	0.110	0.312
PSR 500400	5.000	4.000	0.500	0.145	0.082	0.281
PSR 575500/1	5.750	5.000	0.375	0.190	0.110	0.312
PSR 675600/1	6.750	6.000	0.375	0.190	0.110	0.312
PSR 875800/1	8.750	8.000	0.375	0.190	0.110	0.312

Section C
Rod Seals

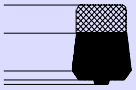




Single Acting Rod Seal

CP

Metric



Design

CLARON STYLE CP is designed with a symmetrical profile for use as a single acting rod or piston seal. The seal is a precision moulded Nitrile rubber sealing element with a fabric reinforced base to resist extrusion. Designed with initial radial interference to effect low pressure sealing, at higher pressures the seal is energised thus increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, thus reducing friction and wear. Style CP is produced with radial grooves incorporated into the top of the seal on the pressure side. This innovative design ensures a rapid energisation of the seal without excessive end float and resultant wear.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

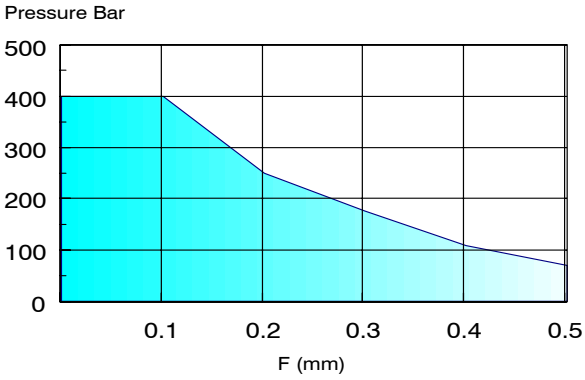
These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F



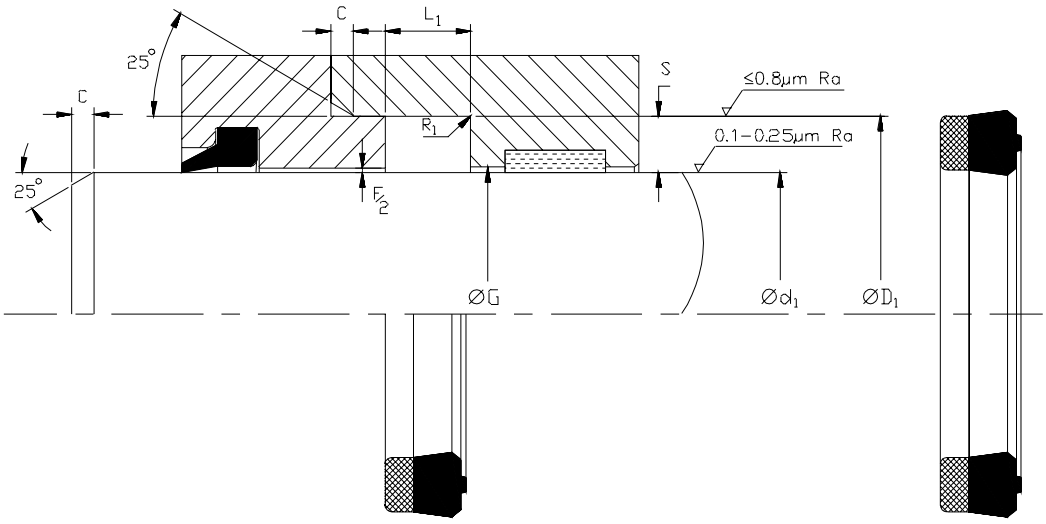
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

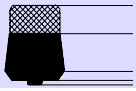
For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to appendix 4 for value of tolerance symbols.
For Piston applications refer to section B.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

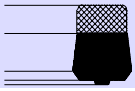


Single Acting Rod Seal



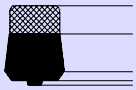
CP

Metric



Nominal Dimensions & Machining Tolerances

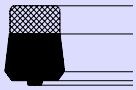
Claron Part Number	Js 11 $ØD_1$	f8 $Ød_1$	H9 ØG	L_1 +0.25 -0.00	Nominal Sec S	Min C	Max R_1
CP 078047	20.00	12.00		6.30	4.00	2.00	0.20
CP 094063/1	24.00	16.00		7.50	4.00	2.00	0.20
CP 094063/2	24.00	16.00		6.30	4.00	2.00	0.20
CP 098047	25.00	12.00		10.00	6.50	2.50	0.40
CP 098070	25.00	18.00		7.00	3.50	2.00	0.20
CP 102062/1	26.00	16.00		8.00	5.00	2.50	0.40
CP 102066	26.00	17.00		5.70	4.50	2.00	0.20
CP 102070	26.00	18.00		6.30	4.00	2.00	0.20
CP 102078	26.00	20.00		5.50	3.00	1.50	0.20
CP 106059	27.00	15.00		7.00	6.00	2.50	0.40
CP 110070	28.00	18.00		6.30	5.00	2.50	0.40
CP 110078	28.00	20.00		7.00	4.00	2.00	0.20
CP 110078/1	28.00	20.00		6.30	4.00	2.00	0.20
CP 114074	29.00	19.00		8.00	5.00	2.50	0.40
CP 118078/1	30.00	20.00		8.00	5.00	2.50	0.40
CP 118086/1	30.00	22.00		6.30	4.00	2.00	0.20
CP 118086/2	30.00	22.00		7.50	4.00	2.00	0.20
CP 125086	32.00	22.00		7.50	5.00	2.50	0.40
CP 125094	32.00	24.00		7.00	4.00	2.00	0.20
CP 129098/1	33.00	25.00		6.30	4.00	2.00	0.20
CP 137098	35.00	25.00		8.00	5.00	2.50	0.40
CP 141110/1	36.00	28.00		6.40	4.00	2.00	0.20
CP 149110/1	38.00	28.00		8.00	5.00	2.50	0.40
CP 149118	38.00	30.00		6.40	4.00	2.00	0.20
CP 149118/1	38.00	30.00		8.50	4.00	2.00	0.20
CP 157118	40.00	30.00		7.50	5.00	2.50	0.40
CP 157125/1	40.00	32.00		6.40	4.00	2.00	0.20
CP 165125	42.00	32.00		8.00	5.00	2.50	0.40
CP 169137	43.00	35.00		6.40	4.00	2.00	0.20
CP 173141	44.00	36.00		6.40	4.00	2.00	0.20
CP 173141/1	44.00	36.00		8.50	4.00	2.00	0.20
CP 177118/1	45.00	30.00		9.00	7.50	4.00	0.80
CP 177137/1	45.00	35.00		9.00	5.00	2.50	0.40
CP 177137/5	45.00	35.00		8.00	5.00	2.50	0.40
CP 181141/1	46.00	36.00		8.00	5.00	2.50	0.40
CP 181149	46.00	38.00		6.30	4.00	2.00	0.20
CP 185125	47.00	32.00		11.00	7.50	4.00	0.80
CP 188157	48.00	40.00		6.40	4.00	2.00	0.20
CP 196137/1	50.00	35.00		12.50	7.50	4.00	0.80
CP 196137/2	50.00	35.00		11.00	7.50	4.00	0.80
CP 196157	50.00	40.00		11.00	5.00	2.50	0.40
CP 196157/2	50.00	40.00		13.50	5.00	2.50	0.40
CP 196157/3	50.00	40.00		7.50	5.00	2.50	0.40
CP 196165	50.00	42.00		6.30	4.00	2.00	0.20
CP 200141	51.00	36.00		11.50	7.50	4.00	0.80



Single Acting Rod Seal
CP
Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	Js 11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.25 -0.00 L_1	Nominal S	Min C	Max R_1
CP 216157/2	55.00	40.00		11.50	7.50	4.00	0.80
CP 216177	55.00	45.00		8.00	5.00	2.50	0.40
CP 216177/3	55.00	45.00		10.50	5.00	2.50	0.40
CP 228196	58.00	50.00		8.50	4.00	2.00	0.20
CP 236177/1	60.00	45.00		11.50	7.50	4.00	0.80
CP 236196	60.00	50.00		8.00	5.00	2.50	0.40
CP 236196/3	60.00	50.00		14.50	5.00	2.50	0.40
CP 244196/1	62.00	50.00		9.50	6.00	3.00	0.40
CP 248188/2	63.00	48.00		11.00	7.50	4.00	0.80
CP 255196/1	65.00	50.00		11.00	7.50	4.00	0.80
CP 255216	65.00	55.00		10.50	5.00	2.50	0.40
CP 255216/1	65.00	55.00		8.00	5.00	2.50	0.40
CP 259220	66.00	56.00		8.00	5.00	2.50	0.40
CP 275196	70.00	50.00		14.50	10.00	5.00	0.80
CP 275236/3	70.00	60.00		8.00	5.00	2.50	0.40
CP 275236/4	70.00	60.00		14.50	5.00	2.50	0.40
CP 279220	71.00	56.00		12.50	7.50	4.00	0.80
CP 283236	72.00	60.00		10.0	6.00	3.00	0.40
CP 283236/2	72.00	60.00		11.00	6.00	3.00	0.40
CP 295248	75.00	63.00		9.60	6.00	3.00	0.40
CP 303255	77.00	65.00		9.60	6.00	3.00	0.40
CP 307248	78.00	63.00		12.50	7.50	4.00	0.80
CP 314236	80.00	60.00		14.50	10.00	5.00	0.80
CP 314255	80.00	65.00		11.50	7.50	4.00	0.80
CP 314275/1	80.00	70.00		8.00	5.00	2.50	0.40
CP 314275/3	80.00	70.00		12.00	5.00	2.50	0.40
CP 322275/1	82.00	70.00		9.60	6.00	3.00	0.40
CP 322275/2	82.00	70.00		11.00	6.00	3.00	0.40
CP 334255	85.00	65.00		14.50	10.00	5.00	0.80
CP 334275	85.00	70.00		12.50	7.50	4.00	0.80
CP 334295/1	85.00	75.00		8.00	5.00	2.50	0.40
CP 342295	87.00	75.00		9.50	6.00	3.00	0.40
CP 354275/1	90.00	70.00		10.50	10.00	5.00	0.80
CP 358318	91.00	81.00		8.00	5.00	2.50	0.40
CP 362314	92.00	80.00		9.60	6.00	3.00	0.40
CP 362314/1	92.00	80.00		11.00	6.00	3.00	0.40
CP 374295	95.00	75.00		14.50	10.00	5.00	0.80
CP 374314	95.00	80.00		13.00	7.50	4.00	0.80
CP 374314/1	95.00	80.00		12.50	7.50	4.00	0.80
CP 374334	95.00	85.00		8.00	5.00	2.50	0.40
CP 393314	100.00	80.00		14.50	10.00	5.00	0.80
CP 393334	100.00	85.00		12.50	7.50	4.00	0.80
CP 393354	100.00	90.00		10.50	5.00	2.50	0.40
CP 401354	102.00	90.00		9.60	6.00	3.00	0.40
CP 413334/1	105.00	85.00		13.00	10.00	5.00	0.80



Single Acting Rod Seal
CP

Metric

Claron Part Number	Nominal Dimensions & Machining Tolerances					
	Js 11	f8 H9	+0.25 -0.00	Nominal	Min	Max
	$ØD_1$	$Ød_1$ ØG	L_1	S	C	R_1
CP 413354	105.00	90.00	9.50	7.50	4.00	0.80
CP 413354/1	105.00	90.00	12.50	7.50	4.00	0.80
CP 421374	107.00	95.00	12.50	6.00	3.00	0.40
CP 433342	110.00	87.00	8.00	11.50	5.00	0.80
CP 433342/1	110.00	87.00	18.50	11.50	5.00	0.80
CP 452393/1	115.00	100.00	12.00	7.50	4.00	0.80
CP 452413	115.00	105.00	11.00	5.00	2.50	0.40
CP 472393	120.00	100.00	14.50	10.00	5.00	0.80
CP 492433	125.00	110.00	12.00	7.50	4.00	0.80
CP 492452	125.00	115.00	8.00	5.00	2.50	0.40
CP 523484	133.00	123.00	8.00	5.00	2.50	0.40
CP 590492	150.00	125.00	14.50	12.50	6.50	1.20
CP 629551/2	160.00	140.00	12.00	10.00	5.00	0.80
CP 661602	168.00	153.00	12.50	7.50	4.00	0.80
CP 669590/1	170.00	150.00	14.50	10.00	5.00	0.80

Single Acting Rod Seal
P

Imperial

Design

CLARON STYLE P is designed with a symmetrical profile for use as a single acting Rod or Piston seal. The seal is a precision moulded Nitrile rubber sealing element with a fabric reinforced base to resist extrusion. Designed with initial radial interference to effect low pressure sealing, at higher pressures the seal is energised thus increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, so reducing friction and wear. Style CP is an effective seal over a wide range of applications.

Operating Conditions

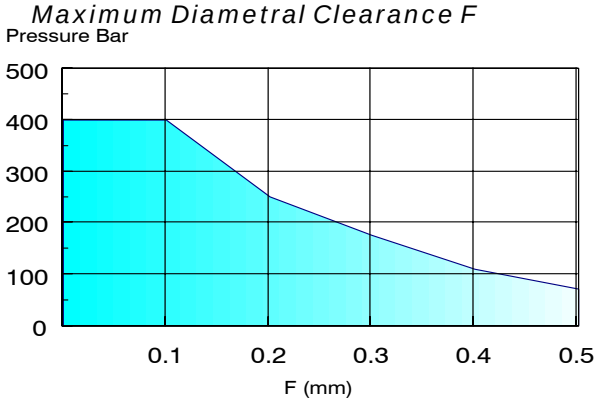
Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F



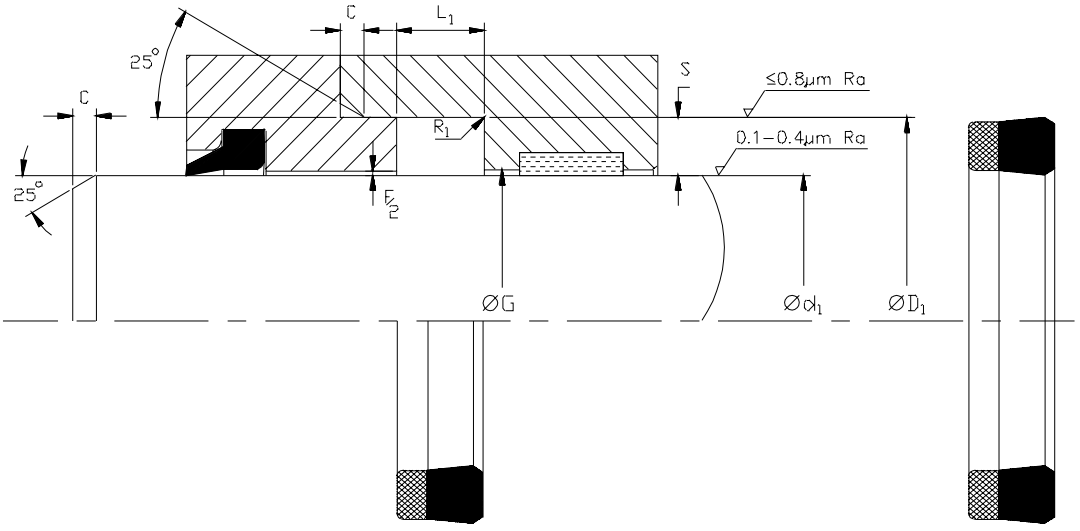
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

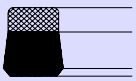
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.
For Piston applications refer to section B.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

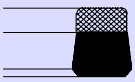




Single Acting Rod Seal

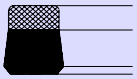
P

Imperial



Nominal Dimensions & Machining Tolerances

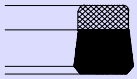
Claron Part Number	Js11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.025 +0.015 L_1	Nominal S	Min C	Max R_1
P 056025	0.562	0.250		0.250	0.156	0.093	0.010
P 062031	0.625	0.312		0.250	0.156	0.093	0.010
P 062037	0.625	0.375		0.187	0.125	0.093	0.010
P 075037	0.750	0.375		0.281	0.187	0.093	0.010
P 075050	0.750	0.500		0.187	0.125	0.093	0.010
P 081043	0.812	0.437		0.281	0.187	0.093	0.010
P 087050	0.875	0.500		0.281	0.187	0.093	0.010
P 087062	0.875	0.625		0.187	0.125	0.093	0.010
P 093056	0.937	0.562		0.281	0.187	0.093	0.010
P 100062	1.000	0.625		0.281	0.187	0.093	0.010
P 100075	1.000	0.750		0.187	0.125	0.093	0.010
P 109075	1.093	0.750		0.281	0.171	0.093	0.010
P 112062	1.125	0.625		0.375	0.250	0.125	0.015
P 112075	1.125	0.750		0.312	0.187	0.093	0.010
P 112087	1.125	0.875		0.163	0.125	0.093	0.010
P 118068	1.187	0.687		0.375	0.250	0.125	0.015
P 125075/1	1.250	0.750		0.312	0.250	0.125	0.015
P 125075/2	1.250	0.750		0.375	0.250	0.125	0.015
P 125087	1.250	0.875		0.375	0.187	0.093	0.010
P 125100	1.250	1.000		0.187	0.125	0.093	0.010
P 125100/1	1.250	1.000		0.121	0.125	0.093	0.010
P 131081	1.312	0.812		0.375	0.250	0.250	0.015
P 137087	1.375	0.875		0.375	0.250	0.125	0.015
P 137087/1	1.375	0.875		0.250	0.250	0.125	0.125
P 137100	1.375	1.000		0.250	0.187	0.093	0.010
P 137112	1.375	1.125		0.187	0.125	0.093	0.010
P 143093	1.437	0.937		0.375	0.250	0.125	0.015
P 150087	1.500	0.875		0.375	0.312	0.156	0.015
P 150098	1.500	0.980		0.380	0.260	0.125	0.015
P 150100	1.500	1.000		0.375	0.250	0.125	0.015
P 150100/1	1.500	1.000		0.250	0.250	0.125	0.015
P 150125	1.500	1.250		0.187	0.125	0.093	0.010
P 156112	1.562	1.125		0.343	0.218	0.125	0.015
P 162100	1.625	1.000		0.437	0.312	0.156	0.015
P 162112	1.625	1.125		0.375	0.250	0.125	0.015
P 162125	1.625	1.250		0.281	0.187	0.093	0.010
P 162125/1	1.625	1.250		0.250	0.187	0.093	0.010
P 162125/2	1.625	1.250		0.500	0.187	0.093	0.010
P 162130	1.627	1.302		0.240	0.162	0.093	0.010
P 168118/1	1.687	1.187		0.375	0.250	0.125	0.015
P 175100	1.750	1.000		0.375	0.375	0.187	0.032
P 175112	1.750	1.125		0.437	0.312	0.156	0.015
P 175123	1.750	1.235		0.340	0.257	0.125	0.015
P 175125	1.750	1.250		0.375	0.250	0.125	0.015
P 175125/1	1.750	1.250		0.281	0.250	0.125	0.015



Single Acting Rod Seal

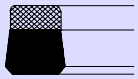
P

Imperial



Nominal Dimensions & Machining Tolerances

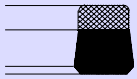
Claron Part Number	Js11 ØD$_1$	f8 Ød$_1$	H9 ØG	+0.025 +0.015 L$_1$	Nominal S	Min C	Max R$_1$
P 175125/2	1.750	1.250		0.250	0.250	0.125	0.015
P 175137	1.750	1.375		0.281	0.187	0.093	0.010
P 187125	1.875	1.250		0.437	0.312	0.156	0.015
P 187125/1	1.875	1.250		0.312	0.312	0.156	0.015
P 187125/2	1.875	1.250		0.500	0.312	0.156	0.015
P 187125/3	1.875	1.250		0.406	0.312	0.156	0.015
P 187150	1.875	1.500		0.172	0.187	0.093	0.010
P 187150/1	1.875	1.500		0.250	0.187	0.093	0.010
P 193168	1.937	1.687		0.187	0.125	0.093	0.010
P 200137/1	2.000	1.375		0.375	0.312	0.156	0.015
P 200137/2	2.000	1.375		0.437	0.312	0.156	0.015
P 200137/3	2.000	1.375		0.500	0.312	0.156	0.015
P 200137/4	2.000	1.375		0.312	0.312	0.156	0.015
P 200148	2.000	1.485		0.340	0.257	0.125	0.015
P 200150	2.000	1.500		0.375	0.250	0.125	0.015
P 200150/1	2.000	1.500		0.468	0.250	0.125	0.015
P 200150/4	2.000	1.500		0.250	0.250	0.125	0.015
P 200162/2	2.000	1.625		0.276	0.187	0.093	0.010
P 212150/1	2.125	1.500		0.437	0.312	0.156	0.015
P 212150/2	2.125	1.500		0.468	0.312	0.156	0.015
P 212175	2.125	1.750		0.172	0.187	0.093	0.010
P 212175/1	2.125	1.750		0.300	0.187	0.093	0.010
P 212175/2	2.125	1.750		0.281	0.187	0.093	0.010
P 218150	2.187	1.500		0.437	0.343	0.156	0.015
P 225150	2.250	1.500		0.468	0.375	0.187	0.032
P 225162	2.250	1.625		0.437	0.312	0.156	0.015
P 225175/1	2.250	1.750		0.375	0.250	0.125	0.015
P 225175/2	2.250	1.750		0.437	0.250	0.125	0.015
P 225187	2.250	1.875		0.265	0.187	0.093	0.010
P 237175	2.375	1.750		0.437	0.312	0.156	0.015
P 237200	2.375	2.000		0.172	0.187	0.093	0.010
P 243175	2.437	1.750		0.437	0.343	0.156	0.015
P 250175	2.500	1.750		0.500	0.375	0.156	0.015
P 250187	2.500	1.875		0.437	0.312	0.156	0.015
P 250187/1	2.500	1.875		0.375	0.312	0.156	0.015
P 250187/3	2.500	1.875		0.312	0.312	0.156	0.015
P 250198	2.500	1.980		0.360	0.260	0.125	0.015
P 250200	2.500	2.000		0.312	0.250	0.125	0.015
P 250200/1	2.500	2.000		0.375	0.250	0.125	0.015
P 250200/2	2.500	2.000		0.343	0.250	0.125	0.015
P 262187	2.625	1.875		0.625	0.375	0.187	0.032
P 262200	2.625	2.000		0.437	0.312	0.156	0.015
P 262200/2	2.625	2.000		0.312	0.312	0.156	0.015
P 262200/3	2.625	2.000		0.500	0.312	0.156	0.015
P 262212	2.625	2.125		0.375	0.250	0.125	0.015



Single Acting Rod Seal

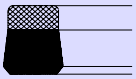
P

Imperial



Nominal Dimensions & Machining Tolerances

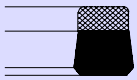
Claron Part Number	Js11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.025 +0.015 L_1	Nominal S	Min C	Max R_1
P 262225	2.625	2.250		0.172	0.187	0.093	0.010
P 262225/1	2.625	2.250		0.210	0.187	0.093	0.010
P 275200	2.750	2.000		0.437	0.375	0.187	0.032
P 275200/1	2.750	2.000		0.625	0.375	0.187	0.032
P 275200/2	2.750	2.000		0.562	0.375	0.187	0.032
P 275212	2.750	2.125		0.375	0.312	0.156	0.015
P 275225	2.750	2.250		0.375	0.250	0.125	0.015
P 275231	2.750	2.312		0.375	0.219	0.093	0.010
P 287200	2.875	2.000		0.625	0.437	0.187	0.032
P 287212	2.875	2.125		0.562	0.375	0.187	0.032
P 287225	2.875	2.250		0.437	0.312	0.156	0.015
P 287237	2.875	2.375		0.281	0.250	0.125	0.015
P 300200	3.000	2.000		0.750	0.500	0.250	0.032
P 300212	3.000	2.125		0.500	0.437	0.187	0.032
P 300225	3.000	2.250		0.375	0.375	0.187	0.032
P 300225/1	3.000	2.250		0.500	0.375	0.187	0.032
P 300225/2	3.000	2.250		0.562	0.375	0.187	0.032
P 300237	3.000	2.375		0.468	0.312	0.156	0.015
P 300250	3.000	2.500		0.312	0.250	0.125	0.015
P 306250	3.062	2.500		0.437	0.281	0.125	0.015
P 312237	3.125	2.375		0.562	0.375	0.187	0.032
P 312250	3.125	2.500		0.625	0.312	0.156	0.015
P 312250/1	3.125	2.500		0.375	0.312	0.156	0.015
P 325250	3.250	2.500		0.375	0.375	0.187	0.032
P 325250/1	3.250	2.500		0.562	0.375	0.187	0.032
P 325250/2	3.250	2.500		0.625	0.375	0.187	0.032
P 325250/3	3.250	2.500		0.468	0.375	0.187	0.032
P 325262	3.250	2.625		0.562	0.312	0.156	0.015
P 325273	3.250	2.735		0.340	0.257	0.125	0.015
P 325275	3.250	2.750		0.375	0.257	0.125	0.015
P 337262	3.375	2.625		0.562	0.375	0.187	0.032
P 337275/1	3.375	2.750		0.437	0.312	0.156	0.015
P 350250	3.500	2.500		0.750	0.500	0.250	0.032
P 350275	3.500	2.750		0.562	0.375	0.187	0.032
P 350275/1	3.500	2.750		0.375	0.375	0.187	0.032
P 350275/3	3.500	2.750		0.500	0.375	0.187	0.032
P 350287	3.500	2.875		0.470	0.312	0.156	0.015
P 350300	3.500	3.000		0.375	0.250	0.125	0.015
P 362262	3.625	2.625		0.750	0.500	0.250	0.032
P 362287	3.625	2.875		0.562	0.375	0.187	0.032
P 362300	3.625	3.000		0.375	0.312	0.156	0.015
P 375275	3.750	2.750		0.500	0.500	0.250	0.032
P 375300	3.750	3.000		0.562	0.375	0.187	0.032
P 375300/1	3.750	3.000		0.500	0.375	0.187	0.032
P 375300/2	3.750	3.000		0.375	0.375	0.187	0.032



Single Acting Rod Seal

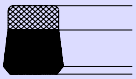
P

Imperial

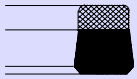


Nominal Dimensions & Machining Tolerances

Claron Part Number	Js11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.025 +0.015 L_1	Nominal S	Min C	Max R_1
P 375323	3.750	3.230		0.360	0.260	0.125	0.015
P 387287	3.875	2.875		0.625	0.500	0.250	0.032
P 387312	3.875	3.125		0.562	0.375	0.187	0.032
P 400300	4.000	3.000		0.625	0.500	0.250	0.032
P 400300/2	4.000	3.000		0.375	0.500	0.250	0.032
P 400325/1	4.000	3.250		0.562	0.375	0.187	0.032
P 400325/2	4.000	3.250		0.500	0.375	0.187	0.032
P 400350	4.000	3.500		0.375	0.250	0.125	0.015
P 412337	4.125	3.375		0.562	0.375	0.187	0.032
P 412350	4.125	3.500		0.375	0.312	0.156	0.015
P 425325	4.250	3.250		0.750	0.500	0.250	0.032
P 425350/1	4.250	3.500		0.562	0.375	0.187	0.032
P 450350/1	4.500	3.500		0.562	0.500	0.250	0.032
P 450350/2	4.500	3.500		0.750	0.500	0.250	0.032
P 450350/3	4.500	3.500		0.375	0.500	0.250	0.032
P 450375	4.500	3.750		0.500	0.375	0.187	0.032
P 450375/1	4.500	3.750		0.410	0.375	0.187	0.032
P 450400	4.500	4.000		0.375	0.250	0.125	0.015
P 462362	4.625	3.625		0.750	0.500	0.250	0.032
P 462362/1	4.625	3.625		0.500	0.500	0.250	0.032
P 475375/1	4.750	3.750		0.812	0.500	0.250	0.032
P 475375/2	4.750	3.750		0.750	0.500	0.250	0.032
P 475425	4.750	4.250		0.375	0.250	0.125	0.015
P 487400	4.875	4.000		0.656	0.437	0.187	0.032
P 487437	4.875	4.375		0.375	0.250	0.125	0.032
P 500400	5.000	4.000		0.750	0.500	0.250	0.032
P 500425	5.000	4.250		0.562	0.375	0.187	0.032
P 525400	5.250	4.000		0.500	0.625	0.250	0.046
P 525425	5.250	4.250		0.750	0.500	0.250	0.032
P 537437	5.375	4.375		0.750	0.500	0.250	0.032
P 550450	5.500	4.500		0.750	0.500	0.250	0.032
P 550500	5.500	5.000		0.375	0.250	0.125	0.015
P 575475	5.750	4.750		0.750	0.500	0.250	0.032
P 600500	6.000	5.000		0.750	0.500	0.250	0.032
P 600537	6.000	5.375		0.375	0.312	0.156	0.015
P 625525/1	6.250	5.250		0.531	0.500	0.250	0.032
P 625525/3	6.250	5.250		0.875	0.500	0.250	0.032
P 625550	6.250	5.500		0.687	0.375	0.187	0.032
P 650550	6.500	5.500		0.750	0.500	0.250	0.032
P 675575	6.750	5.750		0.750	0.500	0.250	0.032
P 700575	7.000	5.750		0.937	0.625	0.250	0.046
P 700600	7.000	6.000		0.750	0.500	0.250	0.032
P 700625	7.000	6.250		0.562	0.375	0.156	0.015
P 775650	7.750	6.500		1.000	0.625	0.250	0.046
P 800700	8.000	7.000		0.875	0.500	0.250	0.032



Single Acting Rod Seal P Imperial

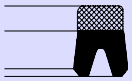


Nominal Dimensions & Machining Tolerances

Claron Part Number	Js11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.025 +0.015 L_1	Nominal S	Min C	Max R_1
P 850725	8.500	7.250		1.000	0.625	0.250	0.046
P 950837	9.500	8.375		0.750	0.562	0.250	0.046

Single Acting Rod Seal
GP

Metric
Imperial



Design

CLARON STYLE GP is designed with a symmetrical profile for Rod or Piston applications. The seal is a precision moulded Nitrile rubber with a fabric reinforced base to resist extrusion. Designed with initial radial interference to effect low-pressure sealing, the seal is progressively energised at higher pressures thereby increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, thus reducing friction and wear. Style GP is designed to provide effective low pressure sealing through distortion of the lips rather than "squeeze". This gives an improved response to pressure variations and reduces low pressure stiction to ensure a smoother return stroke.

Operating Conditions

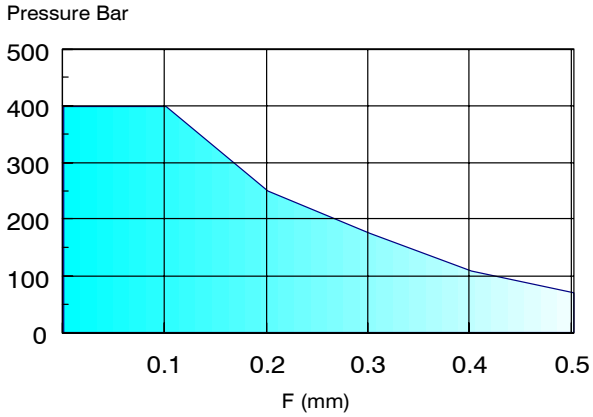
Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F



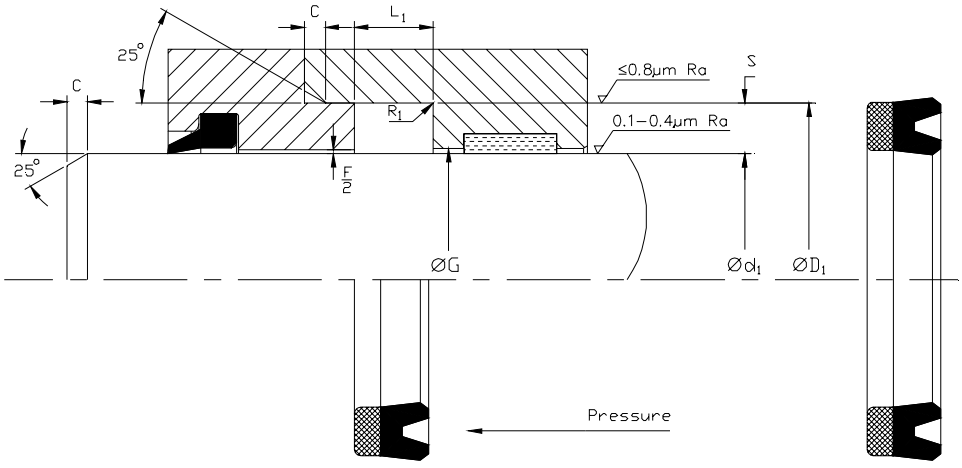
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

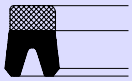
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols. For Piston applications refer to section B.

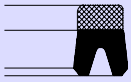
Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

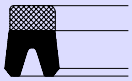




Single Acting Rod Seal
GP
Metric

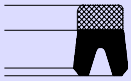


Claron Part Number	Nominal Dimensions & Machining Tolerances					
	Js 11	f8	H9	+0.25 -0.00	Nominal	Min	Max
	$ØD_1$	$Ød_1$	ØG	L_1	S	C	R_1
GP157118	40.00	30.00		7.00	5.00	2.50	0.40
GP196157	50.00	40.00		7.00	5.00	2.50	0.40
GP236196	60.00	50.00		7.00	5.00	2.50	0.40
GP279220	71.00	56.00		10.00	7.50	4.00	0.80
GP275236	70.00	60.00		7.00	5.00	2.50	0.40
GP314236	80.00	60.00		13.00	10.00	5.00	0.80
GP307248	78.00	63.00		10.00	7.50	4.00	0.80
GP334275	85.00	70.00		12.50	7.50	4.00	0.80
GP354275	90.00	70.00		13.00	10.00	5.00	0.80
GP393314	100.00	80.00		13.00	10.00	5.00	0.80
GP433354	110.00	90.00		13.00	10.00	5.00	0.80



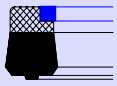
Single Acting Rod Seal
GP

Imperial

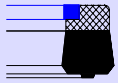


Nominal Dimensions & Machining Tolerances

Claron Part Number	Js 11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.025 +0.015 L_1	Nominal S	Min C	Max R_1
GP 150100	1.500	1.000		0.375	0.250	0.125	0.015
GP 200150	2.000	1.500		0.375	0.250	0.125	0.015
GP 200150/1	2.000	1.500		0.468	0.250	0.125	0.015
GP 212150	2.125	1.500		0.468	0.313	0.156	0.015
GP 237200/1	2.375	2.000		0.360	0.188	0.093	0.010
GP 262200/1	2.625	2.000		0.312	0.313	0.156	0.015
GP 300237	3.000	2.375		0.312	0.313	0.156	0.015
GP 325250/1	3.250	2.500		0.562	0.375	0.187	0.032



Single Acting Rod Seal
CPI
Metric



Design

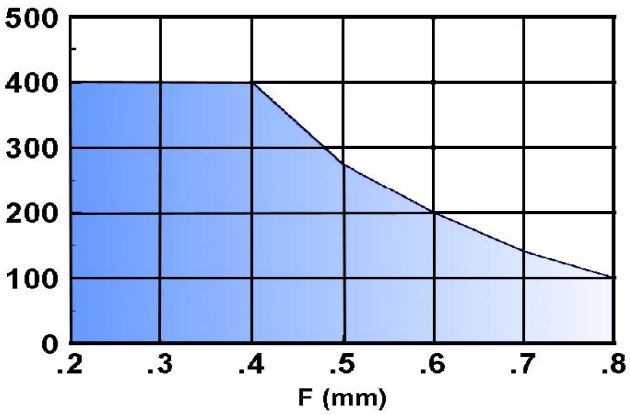
Claron Style CPI is designed for use as a single acting rod seal. The seal is a precision moulded Nitrile rubber sealing element with a fabric reinforced base and an acetal back up ring to resist extrusion. The acetal back up ring allows larger clearances and higher pressures. Designed with initial radial interference to effect low pressure sealing, at higher pressures the seal is progressively energised thus increasing the sealing force. Rubberised fabric has the advantage of retaining fluid within its surface so reducing both friction and wear. Style CP is produced with radial grooves incorporated into the top of the seal on the pressure side. This innovative design ensures a rapid energisation of the seal without excessive end float and resultant wear.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 section for further information.

Pressure Bar



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F

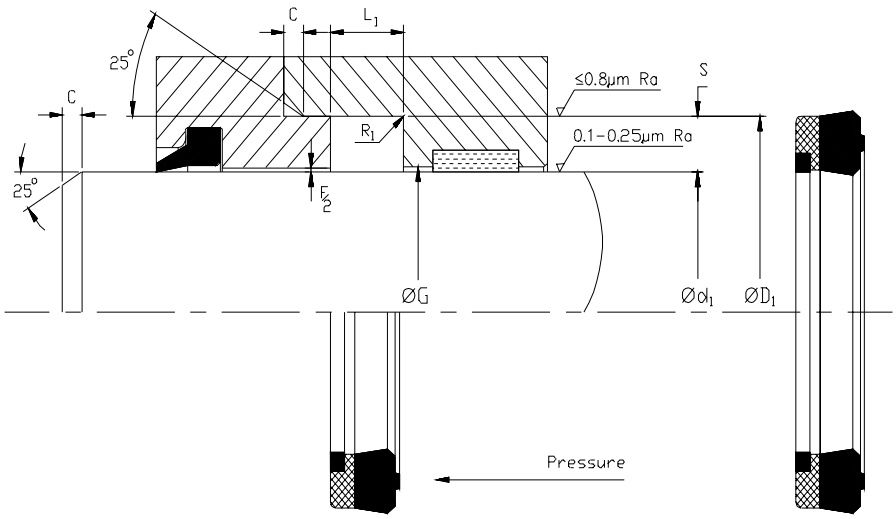
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

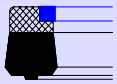
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

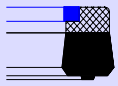
Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



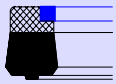


Single Acting Rod Seal
CPI
Metric



Nominal Dimensions & Machining Tolerances

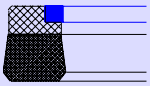
Claron Part Number	Js 11 $ØD_1$	f8 d_1	H9 ØG	+0.25 -0.00 L_1	Nominal S	Min C	Max R_1
CPI 094063	24.00	16.00		6.30	4.00	2.00	0.20
CPI 106078	27.00	20.00		6.40	3.50	2.00	0.20
CPI 110070	28.00	18.00		6.30	5.00	2.00	0.20
CPI 110078	28.00	20.00		7.00	4.00	2.00	0.20
CPI 118086	30.00	22.00		7.00	4.00	2.00	0.20
CPI 129098	33.00	25.00		7.00	4.00	2.00	0.20
CPI 129098/1	33.00	25.00		6.30	4.00	2.00	0.20
CPI 129098/2	33.00	25.00		7.50	4.00	2.00	0.20
CPI 137098	35.00	25.00		8.00	5.00	2.50	0.40
CPI 149110	38.00	28.00		8.50	5.00	2.50	0.40
CPI 149110/1	38.00	28.00		8.00	5.00	2.50	0.40
CPI 149118	38.00	30.00		6.40	4.00	2.00	0.20
CPI 157110	40.00	28.00		9.00	6.00	3.00	0.40
CPI 157118	40.00	30.00		7.50	5.00	2.50	0.40
CPI 157125	40.00	32.00		9.00	4.00	2.00	0.20
CPI 157125/2	40.00	32.00		8.50	4.00	2.00	0.20
CPI 165125	42.00	32.00		8.00	5.00	2.50	0.40
CPI 169141	43.00	36.00		6.40	3.50	2.00	0.20
CPI 173125	44.00	32.00		12.00	6.00	3.00	0.40
CPI 177118	45.00	30.00		9.50	7.50	4.00	0.80
CPI 177137	45.00	35.00		7.00	5.00	2.50	0.40
CPI 177137/3	45.00	35.00		10.50	5.00	2.50	0.40
CPI 181141/1	46.00	36.00		8.00	5.00	2.50	0.40
CPI 196137/2	50.00	35.00		11.00	7.50	4.00	0.80
CPI 196157/1	50.00	40.00		10.50	5.00	2.50	0.40
CPI 196157/2	50.00	40.00		13.50	5.00	2.50	0.40
CPI 196157/3	50.00	40.00		8.00	5.00	2.50	0.40
CPI 216157	55.00	40.00		8.00	7.50	4.00	0.80
CPI 216157/1	55.00	40.00		10.50	7.50	4.00	0.80
CPI 216177	55.00	45.00		8.00	5.00	2.50	0.40
CPI 216177/1	55.00	45.00		11.00	5.00	2.50	0.40
CPI 236188/1	60.00	48.00		11.00	6.00	3.00	0.40
CPI 236196	60.00	50.00		8.00	5.00	2.50	0.40
CPI 236196/1	60.00	50.00		10.50	5.00	2.50	0.40
CPI 236196/3	60.00	50.00		14.50	5.00	2.50	0.40
CPI 244196/1	62.00	50.00		9.50	6.00	3.00	0.40
CPI 255196	65.00	50.00		11.00	7.50	4.00	0.80
CPI 255216	65.00	55.00		10.50	5.00	2.50	0.40
CPI 259220	66.00	56.00		10.50	5.00	2.50	0.40
CPI 275216	70.00	55.00		10.50	7.50	4.00	0.80
CPI 275236	70.00	60.00		13.00	5.00	2.50	0.40
CPI 275236/3	70.00	60.00		8.00	5.00	2.50	0.40
CPI 279220	71.00	56.00		12.50	7.50	4.00	0.80
CPI 295236	75.00	60.00		13.00	7.50	4.00	0.80
CPI 307248	78.00	63.00		12.50	7.50	4.00	0.80



Single Acting Rod Seal
CPI
Metric

Nominal Dimensions & Machining Tolerances

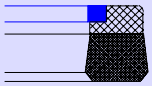
Claron Part Number	Js 11 $ØD_1$	f8 d_1	H9 ØG	+0.25 -0.00 L_1	Nominal S	Min C	Max R_1
CPI 314236	80.00	60.00		14.50	10.00	5.00	0.80
CPI 314275	80.00	70.00		12.50	5.00	2.50	0.40
CPI 322275	82.00	70.00		10.50	6.00	3.00	0.40
CPI 326248	83.00	63.00		14.50	10.00	5.00	0.80
CPI 334255	85.00	65.00		14.50	10.00	5.00	0.80
CPI 334275	85.00	70.00		12.50	7.50	4.00	0.80
CPI 354275	90.00	70.00		14.50	10.00	5.00	0.80
CPI 374295	95.00	75.00		14.50	10.00	5.00	0.80
CPI 374314	95.00	80.00		13.00	7.50	4.00	0.80
CPI 374314/1	95.00	80.00		12.50	7.50	4.00	0.80
CPI 393314	100.00	80.00		14.50	10.00	5.00	0.80
CPI 413354/1	105.00	90.00		12.50	7.50	4.00	0.80
CPI 433354	110.00	90.00		12.50	10.00	5.00	0.80
CPI 452374	115.00	95.00		14.50	10.00	5.00	0.80
CPI 452413	115.00	105.00		10.50	5.00	2.50	0.40
CPI 472393	120.00	100.00		14.50	10.00	5.00	0.80
CPI 511433	130.00	110.00		12.50	10.00	5.00	0.80
CPI 551492/1	140.00	125.00		13.00	7.50	4.00	0.80
CPI 629551	160.00	140.00		12.50	10.00	5.00	0.80
CPI 669590/1	170.00	150.00		14.50	10.00	6.00	0.80



Single Acting Rod Seal

PEI

Imperial



Design

CLARON STYLE PEI is designed for use as a single acting Rod seal. The seal is a precision moulded Nitrile rubber sealing element with a bonded fabric reinforced base to resist extrusion. Style PEI also has the added benefit of a clip on POM anti-extrusion ring for larger clearances or higher pressures. Designed with initial radial interference to effect low pressure sealing, at higher pressures the seal is progressively energised thus increasing the sealing force. Rubberised fabric has the advantage of retaining the sealing media within it's surface, thus reducing friction and wear. Style PEI is an effective design over a wide range of applications.

Operating Conditions

Maximum Pressure	
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

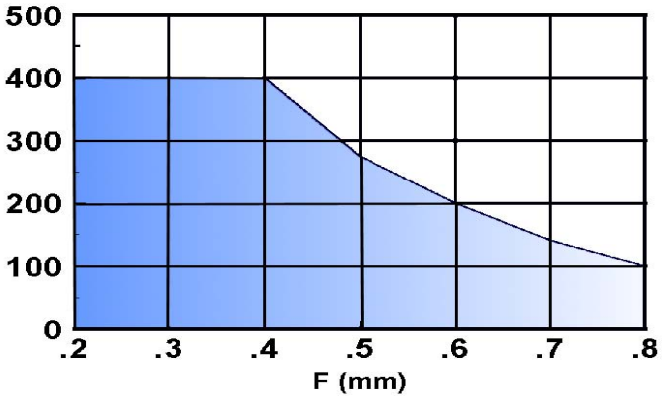
These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Pressure Bar



Maximum Diametral Clearance F

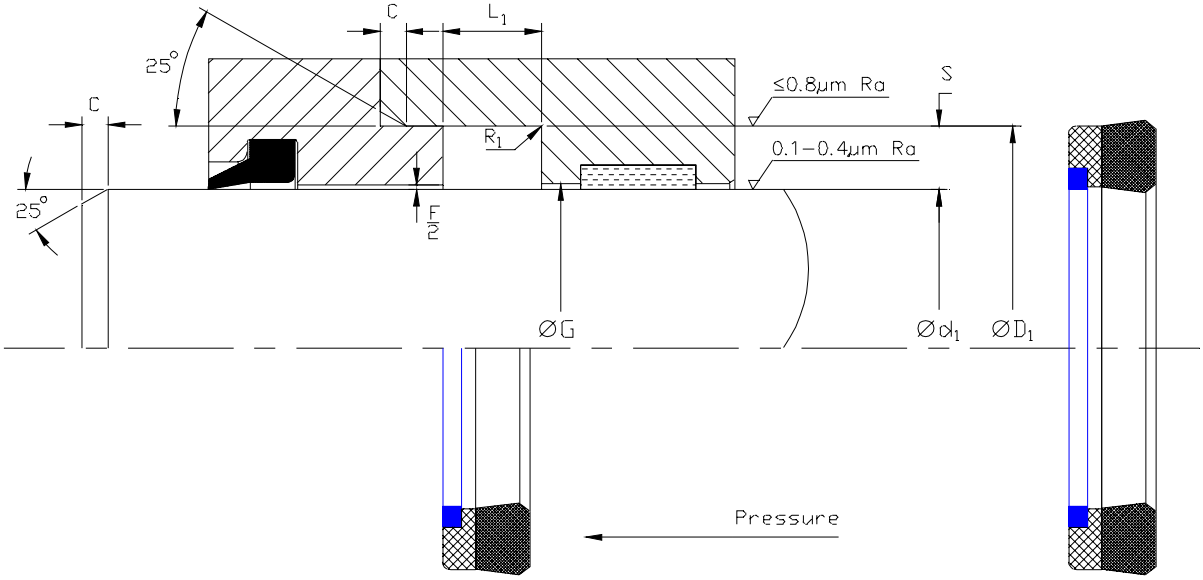
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

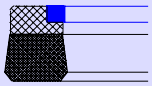
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

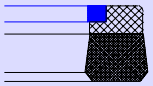
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.





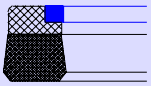
Single Acting Rod Seal Imperial

PEI

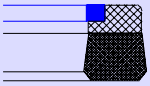


Nominal Dimensions & Machining Tolerances

Claron Part Number	Js 11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.025 -0.015 L_1	Nominal S	Min C	Max R_1
PEI 100062	1.000	0.625		0.281	0.187	0.093	0.010
PEI 109075	1.093	0.750		0.281	0.171	0.093	0.010
PEI 112075	1.125	0.750		0.312	0.187	0.093	0.010
PEI 125075/1	1.250	0.750		0.312	0.250	0.125	0.015
PEI 125075/2	1.250	0.750		0.375	0.250	0.125	0.015
PEI 125100	1.250	1.000		0.187	0.125	0.093	0.010
PEI 137087/1	1.375	0.875		0.250	0.250	0.125	0.015
PEI 137100	1.375	1.000		0.250	0.187	0.093	0.010
PEI 137112	1.375	1.125		0.187	0.125	0.093	0.010
PEI 143093	1.437	0.937		0.375	0.250	0.125	0.015
PEI 150100	1.500	1.000		0.375	0.250	0.125	0.015
PEI 150100/1	1.500	1.000		0.250	0.250	0.125	0.015
PEI 150100/2	1.500	1.000		0.437	0.250	0.125	0.015
PEI 156112	1.562	1.125		0.343	0.218	0.093	0.010
PEI 162112	1.625	1.125		0.375	0.250	0.125	0.015
PEI 162125	1.625	1.250		0.281	0.187	0.093	0.010
PEI 162125/1	1.625	1.250		0.250	0.187	0.093	0.010
PEI 175112	1.750	1.125		0.437	0.312	0.156	0.015
PEI 175125	1.750	1.250		0.375	0.250	0.125	0.015
PEI 187125	1.875	1.250		0.437	0.312	0.156	0.015
PEI 187125/2	1.875	1.250		0.500	0.312	0.156	0.015
PEI 187150/1	1.875	1.500		0.250	0.187	0.093	0.010
PEI 187150/2	1.875	1.500		0.281	0.187	0.093	0.010
PEI 200150	2.000	1.500		0.375	0.250	0.125	0.010
PEI 200150/1	2.000	1.500		0.468	0.250	0.125	0.010
PEI 200162/1	2.000	1.625		0.281	0.187	0.093	0.010
PEI 212150/1	2.125	1.500		0.437	0.312	0.156	0.015
PEI 212175/1	2.125	1.750		0.300	0.187	0.093	0.010
PEI 212175/2	2.125	1.750		0.281	0.187	0.093	0.010
PEI 225175/1	2.250	1.750		0.375	0.250	0.125	0.010
PEI 231200	2.312	2.000		0.250	0.156	0.093	0.010
PEI 237175	2.375	1.750		0.437	0.312	0.156	0.015
PEI 237198	2.375	1.980		0.360	0.197	0.093	0.010
PEI 250175	2.500	1.750		0.500	0.375	0.187	0.032
PEI 250198	2.500	1.980		0.360	0.260	0.125	0.010
PEI 250200/1	2.500	2.000		0.375	0.250	0.125	0.010
PEI 250212	2.500	2.125		0.312	0.187	0.093	0.010
PEI 262200	2.625	2.000		0.437	0.312	0.156	0.015
PEI 275200/1	2.750	2.000		0.625	0.375	0.187	0.032
PEI 275225	2.750	2.250		0.375	0.250	0.125	0.010
PEI 300250	3.000	2.500		0.312	0.250	0.125	0.010
PEI 306250	3.062	2.500		0.437	0.281	0.125	0.010
PEI 325225	3.250	2.250		0.875	0.500	0.250	0.032
PEI 325250/1	3.250	2.500		0.562	0.375	0.187	0.032
PEI 350275	3.500	2.750		0.562	0.375	0.187	0.032



Single Acting Rod Seal
PEI
Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	Js11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.025 -0.015 L_1	Nominal S	Min C	Max R_1
PEI 375300	3.750	3.000		0.562	0.375	0.187	0.032
PEI 425348	4.250	3.480		0.450	0.385	0.187	0.032
PEI 425350/1	4.250	3.500		0.562	0.375	0.187	0.032
PEI 475400/1	4.750	4.000		0.687	0.375	0.187	0.032
PEI 500400	5.000	4.000		0.750	0.500	0.250	0.032

Single Acting Rod Seal
PVM & PV

Metric
Imperial

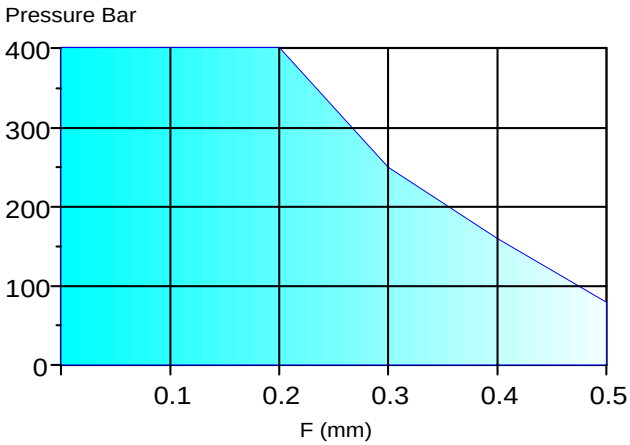
Design

Claron Style PV and PVM is a single acting rod or piston seal for medium to heavy duty applications. The assembly consists of a male and female header and a series of 'V' rings. The number of 'V' rings may be varied to alter the assembled height. The material is generally fabric reinforced NBR rubber, although style PVM incorporates an 'NBR only' 'V'-ring to assist low pressure sealing. This is now a non preferred design, but it still has a place in application where difficult conditions prevail such as pressure surges and misalignment.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	400 Bar
0.15	700 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.



Continuous operating temperature for various fluids

NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Maximum Diametral Clearance F

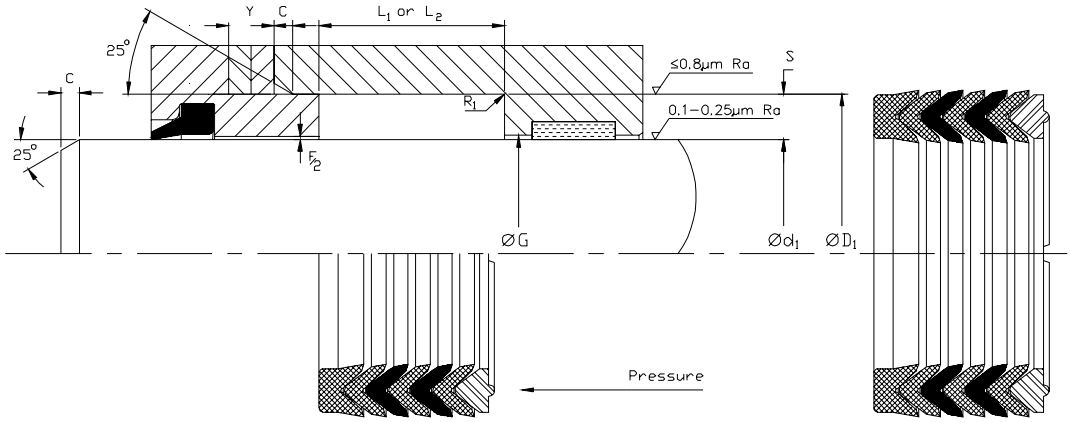
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PV and PVM are designed to be fitted to a split gland or piston. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For installations with spacers use dimensions Y and L2 without spacers use L1
For a detailed checklist, refer to Appendix 3.



Single Acting Rod Seal
PVM

Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.20 -0.00 L_1	L_2	Y	Nominal S	Min. C	Max. R_1	No. of fabric V rings	No. of Rubber V rings
PVM 102062 - A	26	16		18.5	19.5	2.0	5.0	2.5	0.3	3	2
PVM 110070 - A	28	18		18.5	19.5	2.0	5.0	2.5	0.3	3	2
PVM 118078 - A	30	20		18.5	19.5	2.0	5.0	2.5	0.3	3	2
PVM 125078 - A	32	20		22.5	23.7	2.5	6.0	3.0	0.4	3	2
PVM 145098 - A	37	25		22.5	23.7	2.0	6.0	3.0	0.4	3	2
PVM 145098 - B	37	25		22.5	23.7	2.0	6.0	3.0	0.4	5	0
PVM 157098 - A	40	25		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 157110 - A	40	28		22.5	23.7	2.0	6.0	3.0	0.4	3	2
PVM 157118 - A	40	30		18.5	19.5	2.0	5.0	2.5	0.3	3	2
PVM 165118 - A	42	30		22.5	23.7	2.5	5.0	3.0	0.4	3	2
PVM 185125 - A	47	32		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 185125 - B	47	32		22.5	23.7	2.5	7.5	4.0	0.4	5	0
PVM 185137 - A	47	35		22.5	23.7	2.0	6.0	3.0	0.4	3	2
PVM 185137 - B	47	35		22.5	23.7	2.0	6.0	3.0	0.4	5	0
PVM 196137 - A	50	35		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 216157 - B	55	40		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 236177 - A	60	45		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 255196 - B	65	50		22.5	23.7	2.5	7.5	4.0	0.4	5	0
PVM 255177 - A	65	45		27.5	28.2	3.5	10.0	5.0	0.6	3	2
PVM 255196 - A	65	50		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 275216 - A	70	55		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 295236 - A	75	60		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 314236 - B	80	60		37.0	38.2	3.5	10.0	5.0	0.6	3	2
PVM 314255 - A	80	65		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 326248 - A	83	63		37.0	38.2	3.5	10.0	5.0	0.6	3	3
PVM 334275 - A	85	70		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 334275 - B	85	70		16.5	17.5	2.5	7.5	4.0	0.4	2	1
PVM 354275 - C	90	70		40.0	41.2	3.5	10.0	5.0	0.6	3	2
PVM 354295 - A	90	75		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 374314 - A	95	80		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 393314 - D	100	80		40.0	41.2	3.5	10.0	5.0	0.6	3	2
PVM 393334 - A	100	85		22.5	22.2	3.5	7.5	4.0	0.4	3	2
PVM 433354 - D	110	90		21.0	23.7	2.5	10.0	5.0	0.6	1	0
PVM 413354 - A	105	90		22.5	23.7	2.5	7.5	4.0	0.4	3	2
PVM 433354 - E	110	90		40.0	41.2	3.5	10.0	5.0	0.6	3	2
PVM 433354 - C	110	90		40.0	41.2	3.5	10.0	5.0	0.6	4	1
PVM 472393 - A	120	100		40.0	41.2	3.5	10.0	5.0	0.6	4	1
PVM 472393 - C	120	100		40.0	41.2	3.5	10.0	5.0	0.6	4	1

Single Acting Rod Seal
PV

Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	f9 $Ød_1$	H9 ØG	+0.20 -0.00 L_1	Nominal S	Min. C	Max. R_1	No. of fabric V rings	No. of Rubber V rings	Effective depth of single Fabric V
PV 094055-A	24.0	14.0		16.0	4.0	2.0	0.4	3	-	2.50
PV 171108-A	43.5	27.5		18.25	8.0	4.0	0.4	1	-	4.73
PV 196137-B	50.0	35.0		22.0	7.5	4.0	0.4	4	-	3.00
PV 196157-A	50.0	40.0		19.05	5.0	2.5	0.4	2	-	4.50
PV 196157-B	50.0	40.0		23.0	5.0	2.5	0.4	3	-	4.50
PV 216157-A	55.0	40.0		22.5	7.5	4.0	0.4	3	-	4.70
PV 216157-C	55.0	40.0		27.8	7.5	4.0	0.4	3	1	4.70
PV 216157-D	55.0	40.0		10.5	7.5	4.0	0.4	1	-	4.70
PV 236157-A	60.0	40.0		30.0	10.0	5.0	0.4	3	-	4.00
PV 240177-A	61.0	45.0		31.0	8.0	4.0	0.4	3	-	4.44
PV 240177-B	61.0	45.0		31.0	8.0	4.0	0.4	2	1	4.44
PV 255177-A	65.0	45.0		27.5	10.0	5.0	0.4	3	2	3.80
PV 255177-B	65.0	45.0		27.0	10.0	5.0	0.4	-	5	3.50
PV 263196-A	67.0	50.0		27.1	8.5	4.0	0.4	2	1	4.70
PV 275196-A	70.0	50.0		30.0	10.0	5.0	0.4	2	-	6.70
PV 275196-B	70.0	50.0		35.0	10.0	5.0	0.4	3	-	6.70
PV 295216-A	75.0	55.0		26.0	10.0	5.0	0.4	3	-	5.20
PV 311236-A	79.0	60.0		31.5	9.5	5.0	0.4	2	1	7.00
PV 314236-A	80.0	60.0		26.0	10.0	5.0	0.4	3	-	5.10
PV 314236-B	80.0	60.0		37.0	10.0	5.0	0.4	3	2	5.10
PV 314236-C	80.0	60.0		31.0	10.0	5.0	0.4	4	-	5.10
PV 314236-D	80.0	60.0		37.0	10.0	5.0	0.4	4	-	5.10
PV 334255-A	85.0	65.0		30.0	10.0	5.0	0.4	3	-	4.00
PV 350275-B	89.0	70.0		23.0	9.5	5.0	0.4	2	1	5.10
PV 354275-A	90.0	70.0		40.0	10.0	5.0	0.4	4	-	7.30
PV 354275-B	90.0	70.0		32.5	10.0	5.0	0.4	3	2	3.50
PV 354275-D	90.0	70.0		30.0	10.0	5.0	0.4	3	-	5.00
PV 374295-A	95.0	75.0		30.0	10.0	5.0	0.4	3	-	4.00
PV 374314-B	95.0	80.0		26.5	7.5	4.0	0.4	3	2	2.80
PV 393314-A	100.0	80.0		31.5	10.0	5.0	0.4	2	1	5.25
PV 393314-B	100.0	80.0		41.5	10.0	5.0	0.4	3	2	5.25
PV 393314-C	100.0	80.0		21.0	10.0	5.0	0.4	1	-	5.25
PV 397342-A	101.0	87.0		30.0	7.0	4.0	0.4	3	2	4.00
PV 433354-A	110.0	90.0		30.0	10.0	5.0	0.4	3	-	5.00
PV 433354-B	110.0	90.0		31.7	10.0	5.0	0.4	3	-	5.00
PV 433354-D	110.0	90.0		21.0	10.0	5.0	0.4	1	-	5.00
PV 492393-A	125.0	100.0		27.5	12.5	6.5	1.2	3	-	3.50
PV 507452-A	129.0	115.0		30.0	7.0	4.0	0.4	3	2	4.00
PV 551472-A	140.0	120.0		30.0	10.0	5.0	0.4	3	-	4.50
PV 551472-B	140.0	120.0		35.0	10.0	5.0	0.4	4	-	4.50
PV 551492-A	140.0	125.0		24.0	7.5	4.0	0.4	3	-	3.75
PV1083964-A	275.0	245.0		58.0	15.0	7.5	0.8	5	-	7.50

Single Acting Rod Seal
PV

Imperial

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	f9 $Ød_1$	H9 ØG	+0.010 -0.000 L_1	Nominal S	Min. C	Max. R_1	No. of fabric V rings	No. of Rubber V rings	Effective depth of single Fabric V
PV 090050-A	0.906	0.500		0.531	0.203	0.093	0.010	3	-	0.110
PV 095062-A	0.950	0.625		0.531	0.167	0.093	0.010	3	-	0.110
PV 110075-A	1.100	0.750		0.531	0.175	0.093	0.010	2	-	0.110
PV 110075-B	1.100	0.750		0.640	0.175	0.093	0.010	3	-	0.110
PV 125087-A	1.250	0.875		0.657	0.187	0.093	0.010	3	-	0.100
PV 131081-A	1.312	0.812		0.625	0.250	0.125	0.015	2	-	0.130
PV 137075-A	1.375	0.750		1.020	0.312	0.156	0.015	3	-	0.185
PV 137100-A	1.375	1.000		0.750	0.187	0.093	0.010	4	-	0.110
PV 141091-A	1.410	0.910		0.625	0.250	0.125	0.015	2	-	0.140
PV 150087-A	1.500	0.875		1.125	0.312	0.156	0.015	4	-	0.186
PV 150100-A	1.500	1.000		0.750	0.250	0.125	0.015	2	-	0.175
PV 150100-B	1.500	1.000		0.875	0.250	0.125	0.015	3	-	0.175
PV 156106-A	1.562	1.062		0.695	0.250	0.125	0.015	3	-	0.156
PV 156106-B	1.562	1.062		0.815	0.250	0.125	0.015	4	-	0.156
PV 162100-A	1.625	1.000		1.000	0.312	0.156	0.015	3	-	0.186
PV 162112-A	1.625	1.125		0.750	0.250	0.125	0.015	3	-	0.140
PV 175125-A	1.750	1.250		0.750	0.250	0.125	0.015	3	-	0.150
PV 175125-B	1.750	1.250		1.000	0.250	0.125	0.015	5	-	0.150
PV 177115-A	1.775	1.153		0.875	0.316	0.156	0.015	2	-	0.210
PV 178128-A	1.781	1.281		0.625	0.250	0.125	0.015	2	-	0.140
PV 188137-A	1.889	1.375		1.000	0.257	0.125	0.015	3	2	0.120
PV 200138-A	2.000	1.380		1.000	0.310	0.156	0.015	4	-	0.165
PV 200138-B	2.000	1.380		1.165	0.310	0.156	0.015	5	-	0.165
PV 200150-A	2.000	1.500		0.750	0.250	0.125	0.015	3	-	0.150
PV 200150-B	2.000	1.500		0.900	0.250	0.125	0.015	4	-	0.150
PV 212150-A	2.125	1.500		0.900	0.312	0.156	0.015	2	-	0.165
PV 212150-B	2.125	1.500		1.000	0.312	0.156	0.015	3	-	0.165
PV 212150-C	2.125	1.500		1.078	0.312	0.156	0.015	2	1	0.165
PV 212150-D	2.125	1.500		1.040	0.312	0.156	0.015	3	-	0.165
PV 212150-F	2.125	1.500		1.000	0.312	0.156	0.015	2	1	0.165
PV 225125-A	2.250	1.250		1.840	0.500	0.250	0.032	4	-	0.295
PV 225175-A	2.250	1.750		0.735	0.250	0.125	0.015	2	1	0.129
PV 225175-B	2.250	1.750		0.640	0.250	0.125	0.015	1	1	0.129
PV 225175-C	2.250	1.750		0.750	0.250	0.125	0.015	2	1	0.129
PV 225175-D	2.250	1.750		0.790	0.250	0.125	0.015	3	-	0.129
PV 225175-E	2.250	1.750		0.900	0.250	0.125	0.015	3	1	0.129
PV 225175-G	2.250	1.750		0.900	0.250	0.125	0.015	4	-	0.129
PV 226175-A	2.264	1.750		0.681	0.257	0.125	0.015	2	1	0.125
PV 237175-A	2.375	1.750		0.970	0.312	0.156	0.015	2	-	0.190
PV 237175-B	2.375	1.750		0.990	0.312	0.156	0.015	3	-	0.190
PV 237175-C	2.375	1.750		1.093	0.312	0.156	0.015	3	-	0.190
PV 237175-D	2.375	1.750		1.187	0.312	0.156	0.015	4	-	0.190
PV 237175-E	2.375	1.750		1.093	0.312	0.156	0.015	2	1	0.190
PV 237200-A	2.375	2.000		0.718	0.187	0.093	0.010	3	-	0.100
PV 250175-A	2.500	1.750		1.000	0.375	0.187	0.032	3	-	0.195
PV 250175-B	2.500	1.750		1.186	0.375	0.187	0.032	3	1	0.195

Single Acting Rod Seal
PV
Imperial

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	f9 $Ød_1$	H9 ØG	+0.010 -0.000 L_1	Nominal S	Min. C	Max. R_1	No. of fabric V rings	No. of Rubber V rings	Effective depth of single Fabric V
PV 250200-A	2.500	2.000		0.650	0.250	0.125	0.015	2	-	0.150
PV 250200-B	2.500	2.000		0.750	0.250	0.125	0.015	2	-	0.165
PV 250200/C	2.500	2.000		0.875	0.250	0.125	0.015	4	-	0.150
PV 250200-D	2.500	2.000		0.910	0.250	0.125	0.015	3	-	0.165
PV 250200-E	2.500	2.000		0.812	0.250	0.125	0.015	3	-	0.165
PV 262200-A	2.625	2.000		0.937	0.312	0.156	0.015	3	-	0.192
PV 262200-B	2.625	2.000		1.000	0.312	0.156	0.015	3	-	0.192
PV 262200-C	2.625	2.000		1.058	0.312	0.156	0.015	3	1	0.192
PV 262200-D	2.625	2.000		1.125	0.312	0.156	0.015	4	-	0.192
PV 275200-A	2.750	2.000		0.978	0.375	0.187	0.032	2	1	0.240
PV 275200-B	2.750	2.000		1.027	0.375	0.187	0.032	2	-	0.240
PV 275212-A	2.750	2.125		1.000	0.312	0.156	0.015	3	-	0.186
PV 275225-A	2.750	2.250		0.750	0.250	0.125	0.015	3	-	0.120
PV 275225-B	2.750	2.250		0.860	0.250	0.125	0.015	4	-	0.120
PV 276220-A	2.764	2.200		0.681	0.282	0.125	0.015	2	-	0.120
PV 287225-A	2.875	2.250		1.058	0.312	0.150	0.015	3	1	0.192
PV 300200-A	3.000	2.000		1.000	0.500	0.250	0.032	1	-	0.295
PV 300200-B	3.000	2.000		1.500	0.500	0.250	0.032	3	-	0.295
PV 300225-A	3.000	2.250		1.020	0.375	0.187	0.032	2	-	0.230
PV 300225-B	3.000	2.250		1.060	0.375	0.187	0.032	3	-	0.195
PV 300225-C	3.000	2.250		1.281	0.375	0.187	0.032	4	-	0.230
PV 300225-D	3.000	2.250		1.225	0.375	0.187	0.032	4	-	0.195
PV 300225-F	3.000	2.250		1.250	0.375	0.187	0.032	3	-	0.195
PV 300250-A	3.000	2.500		0.718	0.250	0.125	0.015	3	-	0.130
PV 300250-B	3.000	2.500		0.810	0.250	0.125	0.015	3	-	0.130
PV 303227-A	3.030	2.273		1.220	0.380	0.187	0.032	4	-	0.195
PV 303227-B	3.030	2.273		1.220	0.380	0.187	0.032	2	2	0.195
PV 312249-A	3.125	2.490		1.058	0.317	0.156	0.015	3	1	0.170
PV 325250-A	3.250	2.500		0.978	0.375	0.187	0.032	2	1	0.195
PV 325250-B	3.250	2.500		1.066	0.375	0.187	0.032	3	-	0.214
PV 325250-C	3.250	2.500		1.250	0.375	0.187	0.032	4	-	0.214
PV 337262-A	3.375	2.625		1.975	0.375	0.187	0.032	6	-	0.220
PV 337262-B	3.375	2.625		1.312	0.375	0.187	0.032	3	-	0.220
PV 350275-A	3.500	2.750		1.000	0.375	0.187	0.032	2	1	0.170
PV 350275-C	3.500	2.750		1.250	0.375	0.187	0.032	3	-	0.250
PV 350275-D	3.500	2.750		1.280	0.375	0.187	0.032	3	-	0.200
PV 353278-A	3.531	2.781		1.200	0.375	0.187	0.032	2	2	0.225
PV 362300-A	3.625	3.000		0.875	0.312	0.156	0.015	2	-	0.180
PV 375300-A	3.750	3.000		1.060	0.375	0.187	0.032	2	1	0.195
PV 375300-B	3.750	3.000		1.320	0.375	0.187	0.032	3	2	0.195
PV 375300-C	3.750	3.000		1.250	0.375	0.187	0.032	3	1	0.195
PV 375300-D	3.750	3.000		0.970	0.375	0.187	0.032	3	-	0.195
PV 376319-A	3.767	3.196		0.889	0.285	0.156	0.015	3	2	0.125
PV 400325-A	4.000	3.250		1.141	0.375	0.187	0.032	3	-	0.195
PV 400325-B	4.000	3.250		1.230	0.375	0.187	0.032	2	1	0.195
PV 400337-A	4.000	3.375		0.937	0.312	0.156	0.015	2	-	0.186
PV 400350-A	4.000	3.500		0.762	0.250	0.125	0.015	3	-	0.145
PV 400350-B	4.000	3.500		0.937	0.250	0.125	0.015	4	-	0.145
PV 403328-A	4.031	3.281		1.156	0.375	0.187	0.032	2	2	0.196
PV 418368-A	4.187	3.687		0.889	0.250	0.125	0.015	3	2	0.120

Single Acting Rod Seal
PV
Imperial

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	f9 $Ød_1$	H9 ØG	+0.010 -0.000 L_1	Nominal S	Min. C	Max. R_1	No. of fabric V rings	No. of Rubber V rings	Effective depth of single Fabric V
PV 425350-A	4.250	3.500		1.030	0.375	0.187	0.032	3	-	0.205
PV 425350-B	4.250	3.500		1.210	0.375	0.187	0.032	3	1	0.205
PV 425350-C	4.250	3.500		0.875	0.375	0.187	0.032	2	-	0.205
PV 425350-D	4.250	3.500		0.920	0.375	0.187	0.032	2	-	0.205
PV 426350-A	4.269	3.500		1.406	0.384	0.187	0.032	3	2	0.200
PV 450350-A	4.500	3.500		1.389	0.500	0.250	0.032	3	-	0.250
PV 450375-A	4.500	3.750		1.020	0.375	0.187	0.032	3	-	0.195
PV 450387-A	4.500	3.875		0.937	0.312	0.156	0.015	2	-	0.186
PV 450400-A	4.500	4.000		1.032	0.250	0.125	0.015	3	-	0.255
PV 450400-B	4.500	4.000		1.289	0.250	0.125	0.015	4	-	0.255
PV 500350-A	5.000	3.500		1.625	0.750	0.250	0.032	3	-	0.295
PV 500400-A	5.000	4.000		1.496	0.500	0.250	0.032	3	1	0.250
PV 500400-B	5.000	4.000		1.312	0.500	0.250	0.032	3	-	0.250
PV 502425-A	5.029	4.250		1.406	0.389	0.187	0.032	3	2	0.196
PV 550450-A	5.500	4.500		1.496	0.500	0.250	0.032	3	1	0.250
PV 550475-A	5.500	4.750		1.125	0.375	0.187	0.032	3	-	0.230
PV 600500-A	6.000	5.000		1.265	0.500	0.250	0.032	3	-	0.225
PV 700600-A	7.000	6.000		1.375	0.500	0.250	0.032	3	-	0.225
PV 800700-A	8.000	7.000		1.281	0.500	0.250	0.032	3	-	0.234

Single Acting Rod Seal
PDS

Metric
Imperial

Design

Claron Style PDS rod seal is a 3 piece assembly consisting of a Nitrile Rubber sealing element which is backed up by a tough Thermoplastic elastomer header complete with an Acetal anti-extrusion ring on the I.D. The complete assembly forms a highly robust sealing unit for use in high pressure applications where shock loads and pressure spikes are present. This seal is widely used in the mobile plant industry and is also a modern replacement for common veepac seals.

Operating Conditions

Maximum Pressure	
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	325 Bar
0.15	600 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps. Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

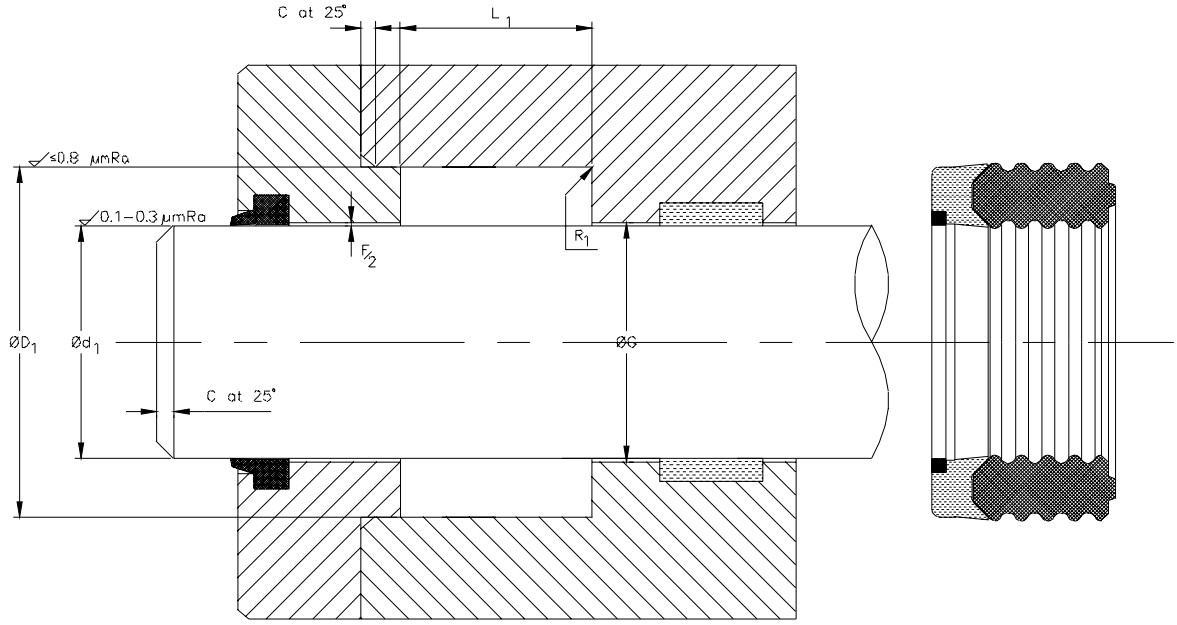
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PDS is designed to be fitted into a split gland as shown in the illustration below. The seal can be supplied split to ease fitting if required. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.



Single Acting Rod Seal
PDS
Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 Ød$_1$ ØG	Js11 ØD$_1$	+0.25 -0.00 L$_1$	Nominal Section S	Min. C	Max. R$_1$
PDS 169118	30	43	20.0	6.5	3	0.4
PDS 204157	40	52	22.5	6.0	3	0.4
PDS 216157	40	55	22.5	7.5	4	0.4
PDS 248196	50	63	20.0	6.5	3	0.4
PDS 255196	50	65	22.5	7.5	4	0.4
PDS 295236	60	75	22.5	7.5	4	0.4

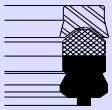
Single Acting Rod Seal
PDS
Imperial

Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 Ød$_1$ ØG	Js11 ØD$_1$	+0.010 -0.000 L$_1$	Nominal S	Min. C	Max. R$_1$
PDS 175125	1.250	1.750	0.750	0.250	0.125	0.015
PDS 200150	1.500	2.000	0.748	0.250	0.125	0.015
PDS 237175	1.750	2.375	1.060	0.312	0.156	0.015
PDS 250200	2.000	2.500	0.850	0.250	0.125	0.015
PDS 262200	2.000	2.625	1.000	0.312	0.156	0.015
PDS 325250	2.500	3.250	1.230	0.375	0.187	0.032

Single Acting Rod Seal

Imperial



EGS

Design

Claron Style EGS rod seal is a 2 piece assembly consisting of a Nitrile Rubber sealing element complete with rubberised fabric reinforcement which is backed up by a tough Thermoplastic elastomer header. The complete assembly forms a robust sealing unit for use in high pressure applications where shock loads and pressure spikes are present. This seal is widely used in telescopic cylinder applications.

Operating Conditions

Maximum	Pressure
Max Speed	Temp. Range
m/s	-30°C to 100°C
0.50	250 Bar
0.15	400 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps. Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

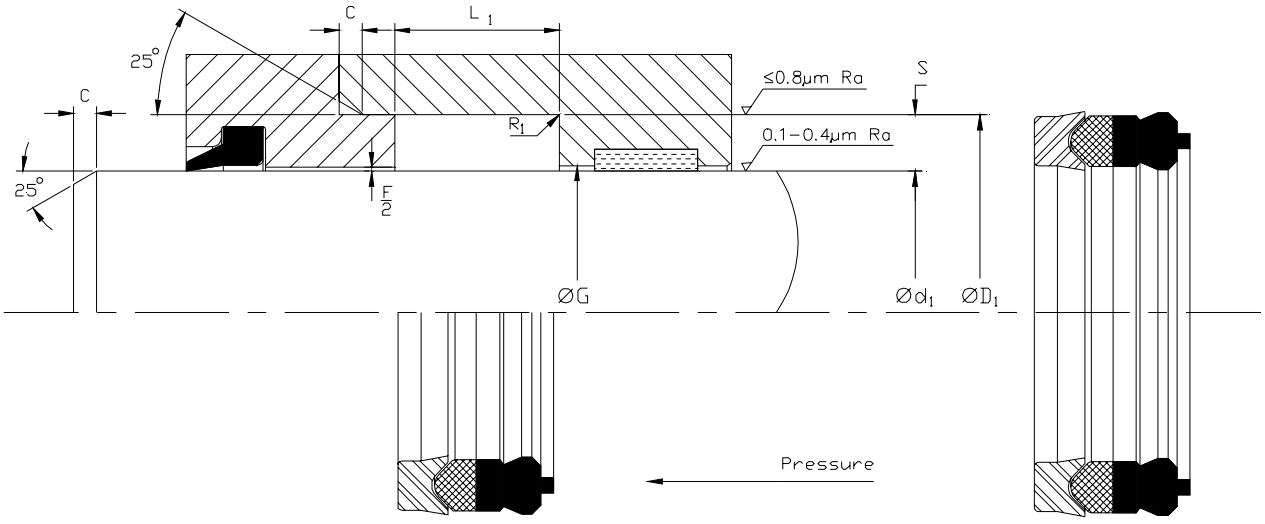
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

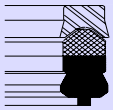
Style EGS is designed to be fitted into a split gland as shown in the illustration below. The seal can be supplied split to ease fitting if required. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.



Single Acting Rod Seal

EGS

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	±0.001 H9 $Ød_1$ ØG	±0.003 $ØD_1$	+0.015 +0.025 L_1	Max. F	Max. R_1	Max. R_2
EGS 275	2.750	3.200	0.750	0.010	0.020	0.030
EGS 350	3.500	4.013	0.750	0.010	0.020	0.030
EGS 437	4.365	4.888	0.750	0.010	0.020	0.030
EGS 525	5.249	5.888	0.775	0.010	0.020	0.030
EGS 631	6.312	6.889	0.750	0.010	0.020	0.030
EGS 731	7.312	7.954	0.750	0.010	0.020	0.030
EGS 837	8.375	9.000	0.750	0.010	0.020	0.030

Single Acting Rod Seal
CPU

Metric
Imperial

Design

The Claron style CPU is a symmetrical profiled lip seal manufactured in a high performance grade of Polyurethane and is suitable for both rod and piston sealing. The sealing lips are machine trimmed to ensure dimensional consistency and good low pressure sealing. Polyurethane exhibits outstanding abrasion and extrusion resistance.

Operating Conditions

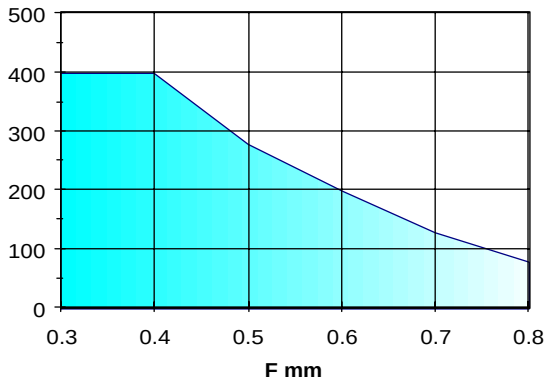
Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	280 Bar	250 Bar
0.15	400 Bar	350 Bar

These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed,pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F

Pressure Bar



Continuous operating temperature for various Fluids

AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

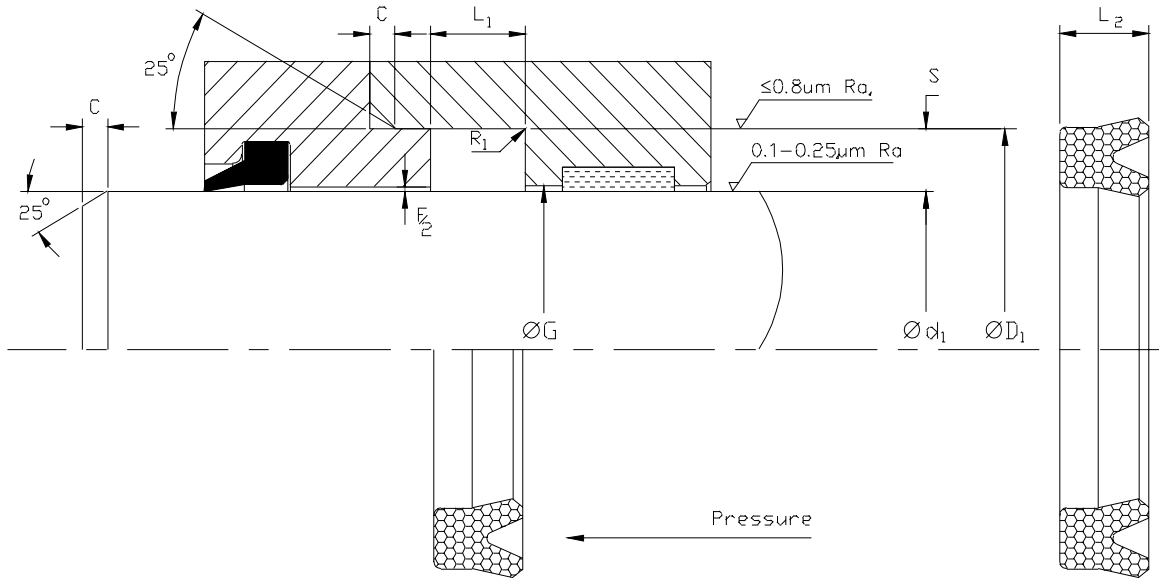
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

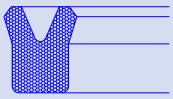
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.
Refer to section B for piston applicaion.

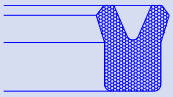
Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

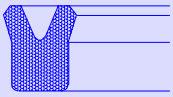




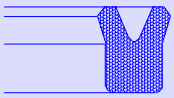
Single Acting Rod Seal
CPU
Metric



Claron Part Number	Nominal Dimensions & Machining Tolerances						
	Js 11	f8 H9	+0.25 -0.00	Nominal	Nominal	Min	Max.
	$ØD_1$	$Ød_1$ ØG	L_1	L_2	S	C	R_1
CPU 062039	16.00	10.00	5.00	4.40	4.00	3.00	0.20
CPU 078047	20.00	12.00	9.00	8.40	4.00	3.00	0.20
CPU 078055	20.00	14.00	4.50	4.00	3.00	3.00	0.20
CPU 086063	22.00	16.00	5.00	4.40	3.00	3.00	0.20
CPU 098055	25.00	14.00	6.10	5.50	5.50	4.00	0.30
CPU 098063	25.00	16.00	8.25	7.50	4.50	4.00	0.30
CPU 098070	25.00	18.00	6.75	6.00	3.50	3.00	0.20
CPU 102063	26.00	16.00	8.75	8.00	5.00	4.00	0.30
CPU 102070	26.00	18.00	5.70	5.00	4.00	3.00	0.20
CPU 110078	28.00	20.00	7.25	6.50	4.00	3.00	0.20
CPU 110078/1	28.00	20.00	5.70	5.00	4.00	3.00	0.30
CPU 110078/2	28.00	20.00	4.50	4.00	4.00	3.00	0.20
CPU 118078	30.00	20.00	8.75	8.00	5.00	4.00	0.30
CPU 118086	30.00	22.00	6.75	6.00	4.00	3.00	0.20
CPU 118088	30.00	22.40	5.70	5.00	3.80	3.00	0.30
CPU 129098	33.00	25.00	6.30	5.70	4.00	3.00	0.20
CPU 129098/1	33.00	25.00	8.75	8.00	4.00	3.00	0.20
CPU 129098/2	33.00	25.00	5.60	5.00	4.00	3.00	0.20
CPU 137098	35.00	25.00	8.75	8.00	5.00	4.00	0.30
CPU 137098/1	35.00	25.00	10.75	10.00	5.00	4.00	0.30
CPU 137098/2	35.00	25.00	8.0	7.30	5.00	4.00	0.30
CPU 139110	35.50	28.00	5.70	5.00	3.75	3.00	0.20
CPU 149098	38.00	25.00	10.75	10.00	6.50	4.00	0.30
CPU 157078	40.00	20.00	12.00	11.00	10.00	5.00	0.40
CPU 157098	40.00	25.00	10.75	10.00	7.50	5.00	0.40
CPU 157118	40.00	30.00	10.75	10.00	5.00	4.00	0.30
CPU 157118/1	40.00	30.00	7.00	6.00	5.00	4.00	0.30
CPU 163124	41.50	31.50	7.00	6.00	5.00	4.00	0.30
CPU 165118	42.00	30.00	10.75	10.00	6.00	4.00	0.30
CPU 165125	42.00	32.00	6.30	5.80	5.00	4.00	0.30
CPU 169110	43.00	28.00	11.00	10.00	7.50	5.00	0.40
CPU 173141	44.00	36.00	8.75	8.00	4.00	3.00	0.20
CPU 177118	45.00	30.00	10.75	10.00	7.50	5.00	0.30
CPU 177137	45.00	35.00	10.75	10.00	5.00	4.00	0.30
CPU 177137/1	45.00	35.00	7.00	6.00	5.00	4.00	0.30
CPU 181141	46.00	36.00	8.00	7.30	5.00	4.00	0.30
CPU 196118	50.00	30.00	10.75	10.00	10.00	4.00	0.30
CPU 196137	50.00	35.00	10.75	10.00	7.50	5.00	0.40
CPU 196157	50.00	40.00	10.75	10.00	5.00	4.00	0.30
CPU 196157/2	50.00	40.00	5.75	5.00	5.00	4.00	0.30
CPU 196157/3	50.00	40.00	7.00	6.00	5.00	4.00	0.30
CPU 196165	50.00	42.00	6.30	5.80	4.00	3.00	0.20
CPU 216149	55.00	38.00	10.75	10.00	8.50	5.00	0.40
CPU 216157	55.00	40.00	10.75	10.00	7.50	5.00	0.40
CPU 216177/1	55.00	45.00	6.75	6.00	5.00	4.00	0.30

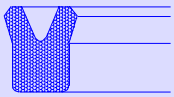


Single Acting Rod Seal
CPU
Metric



Nominal Dimensions & Machining Tolerances

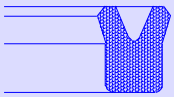
Claron Part Number	Js 11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 216177	55.00	45.00		10.75	10.00	5.00	4.00	0.30
CPU 236157	60.00	40.00		12.75	12.00	10.00	5.00	0.40
CPU 236157/1	60.00	40.00		19.00	18.00	10.00	5.00	0.40
CPU 236177	60.00	45.00		10.75	10.00	7.50	5.00	0.40
CPU 236196	60.00	50.00		10.75	10.00	5.00	4.00	0.30
CPU 236196/1	60.00	50.00		7.00	6.00	5.00	4.00	0.30
CPU 248208	63.00	53.00		6.75	6.00	5.00	4.00	0.30
CPU 255177	65.00	45.00		10.75	10.00	10.00	5.00	0.40
CPU 255196	65.00	50.00		10.75	10.00	7.50	5.00	0.40
CPU 255216/2	65.00	55.00		7.00	6.00	5.00	4.00	0.30
CPU 255216	65.00	55.00		12.75	12..00	5.00	4.00	0.30
CPU 275196	70.00	50.00		12.75	12.00	10.00	5.00	0.40
CPU 275196/1	70.00	50.00		10.75	10.00	10.00	5.00	0.40
CPU 275196/2	70.00	50.00		19.00	18.00	10.00	5.00	0.40
CPU 275236/1	70.00	60.00		7.00	6.00	5.00	4.00	0.30
CPU 275236	70.00	60.00		12.75	12.00	5.00	4.00	0.30
CPU 295216	75.00	55.00		13.00	12.00	10.00	5.00	0.60
CPU 295255	75.00	65.00		12.75	12.00	5.00	4.00	0.30
CPU 295255/1	75.00	65.00		10.75	10.00	5.00	4.00	0.30
CPU 295255/2	75.00	65.00		7.00	6.00	5.00	4.00	0.30
CPU 307228	78.00	58.00		16.00	15.00	5.00	4.00	0.30
CPU 314236	80.00	60.00		12.75	12.00	10.00	5.00	0.40
CPU 314236/1	80.00	60.00		19.00	18.00	10.00	5.00	0.40
CPU 314255	80.00	65.00		12.75	12.00	7.50	5.00	0.40
CPU 314275/3	80.00	70.00		7.00	6.00	5.00	4.00	0.30
CPU 314275/1	80.00	70.00		9.00	8.00	5.00	4.00	0.30
CPU 314275/2	80.00	70.00		11.00	10.00	5.00	4.00	0.30
CPU 314275	80.00	70.00		12.75	12.00	5.00	4.00	0.30
CPU 334255	85.00	65.00		13.00	12.00	10.00	5.00	0.60
CPU 334275	85.00	70.00		12.75	12.00	7.50	5.00	0.40
CPU 334295	85.00	75.00		7.00	6.00	5.00	4.00	0.30
CPU 354275	90.00	70.00		12.75	12.00	10.00	5.00	0.40
CPU 354295	90.00	75.00		12.75	12.00	7.50	5.00	0.40
CPU 354314/1	90.00	80.00		7.00	6.00	5.00	4.00	0.30
CPU 354314	90.00	80.00		12.75	12.00	5.00	4.00	0.30
CPU 374295	95.00	75.00		13.00	12.00	10.00	5.00	0.60
CPU 374314	95.00	80.00		10.75	10.00	7.50	5.00	0.40
CPU 393314	100.00	80.00		12.75	12.00	10.00	5.00	0.40
CPU 393334/1	100.00	85.00		10.00	9.00	7.50	5.00	0.40
CPU 393334	100.00	85.00		12.75	12.00	7.50	5.00	0.40
CPU 413334	105.00	85.00		13.00	12.00	10.00	5.00	0.60
CPU 4133354/1	105.00	90.00		10.00	9.00	7.50	5.00	0.40
CPU 413354	105.00	90.00		12.75	12.00	7.50	5.00	0.40
CPU 433354	110.00	90.00		13.00	12.00	10.00	5.00	0.60
CPU 433374/1	110.00	95.00		10.00	9.00	7.50	5.00	0.40



Single Acting Rod Seal

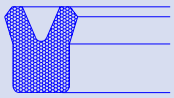
CPU

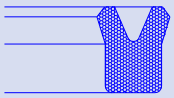
Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	Js 11 $ØD_1$	f8 H9 $Ød_1$ ØG	+0.010 -0.000 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 433374	110.00	95.00	12.75	12.00	7.50	5.00	0.40
CPU 452374	115.00	95.00	13.00	12.00	10.00	5.00	0.60
CPU 452393/1	115.00	100.00	10.00	9.00	7.50	5.00	0.40
CPU 452393	115.00	100.00	12.75	12.00	7.50	5.00	0.40
CPU 472393	120.00	100.00	13.00	12.00	10.00	5.00	0.60
CPU 492393	125.00	100.00	15.75	15.00	12.50	6.50	0.60
CPU 492413	125.00	105.00	17.00	15.00	10.00	5.00	0.60
CPU 492413/1	125.00	105.00	13.00	12.00	10.00	5.00	0.60
CPU 492433	125.00	110.00	12.75	12.00	7.50	5.00	0.40
CPU 492440	125.00	112.00	10.00	9.00	6.50	5.00	0.30
CPU 492452	125.00	115.00	12.75	12.00	5.00	4.00	0.30
CPU 511433	130.00	110.00	17.00	15.00	10.00	5.00	0.60
CPU 551472	140.00	120.00	17.00	15.00	10.00	5.00	0.60
CPU 551492	140.00	125.00	10.00	9.00	7.50	5.00	0.40
CPU 570492	145.00	125.00	17.00	15.00	10.00	5.00	0.60
CPU 590511	150.00	130.00	17.00	15.00	10.00	5.00	0.60
CPU 590535	150.00	136.00	10.00	9.00	7.50	5.00	0.40
CPU 610551	155.00	140.00	10.00	9.00	7.50	5.00	0.40
CPU 629551	160.00	140.00	17.00	15.00	10.00	5.00	0.60
CPU 629570	160.00	145.00	10.00	9.00	7.50	5.00	0.40
CPU 669590	170.00	150.00	17.00	15.00	10.00	5.00	0.60





Nominal Dimensions & Machining Tolerances

Claron Part Number	Js 11 $ØD_1$	f8 H9 $Ød_1$ ØG	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 056031	0.562	0.312	0.275	0.250	0.125	0.093	0.016
CPU 100062	1.000	0.625	0.300	0.281	0.187	0.093	0.016
CPU 100062/1	1.000	0.625	0.208	0.187	0.187	0.093	0.016
CPU 125087	1.250	0.875	0.208	0.187	0.187	0.093	0.016
CPU 150100	1.500	1.000	0.275	0.250	0.250	0.125	0.032
CPU 162112	1.625	1.125	0.550	0.500	0.250	0.125	0.032
CPU 175112	1.750	1.125	0.550	0.500	0.312	0.156	0.032
CPU 175125	1.750	1.250	0.312	0.280	0.250	0.125	0.032
CPU 175125/1	1.750	1.250	0.395	0.375	0.250	0.125	0.032
CPU 187150	1.875	1.500	0.275	0.250	0.187	0.093	0.016
CPU 200137	2.000	1.375	0.582	0.562	0.312	0.156	0.032
CPU 200137/1	2.000	1.375	0.520	0.500	0.312	0.156	0.032
CPU 225150	2.250	1.500	0.550	0.500	0.375	0.187	0.046
CPU 225162	2.250	1.625	0.457	0.437	0.312	0.156	0.032
CPU 237175	2.375	1.750	0.582	0.562	0.312	0.156	0.032
CPU 237175/1	2.375	1.750	0.395	0.375	0.312	0.156	0.032
CPU 250150	2.500	1.500	0.665	0.625	0.500	0.156	0.032
CPU 250212	2.500	2.125	0.280	0.250	0.187	0.093	0.016
CPU 262200	2.625	2.000	0.582	0.562	0.312	0.156	0.032
CPU 262200/1	2.625	2.000	0.340	0.312	0.312	0.156	0.032
CPU 262212	2.625	2.125	0.395	0.375	0.250	0.125	0.032
CPU 275200	2.750	2.000	0.520	0.500	0.375	0.187	0.046
CPU 287187	2.875	1.875	0.665	0.625	0.500	0.216	0.046
CPU 300225	3.000	2.250	0.520	0.500	0.375	0.187	0.046
CPU 300237	3.000	2.375	0.582	0.562	0.312	0.156	0.032
CPU 312250	3.125	2.500	0.582	0.562	0.312	0.156	0.032
CPU 325262	3.250	2.625	0.582	0.562	0.312	0.156	0.032
CPU 337275	3.375	2.750	0.582	0.562	0.312	0.156	0.032
CPU 350250	3.500	2.500	0.730	0.687	0.500	0.216	0.046
CPU 350275	3.500	2.750	0.520	0.500	0.375	0.187	0.046
CPU 362300	3.625	3.000	0.582	0.562	0.312	0.156	0.032
CPU 362300/1	3.625	3.000	0.340	0.312	0.312	0.156	0.032
CPU 375300	3.750	3.000	0.520	0.500	0.375	0.187	0.046
CPU 387325	3.875	3.250	0.582	0.562	0.312	0.156	0.032
CPU 400300	4.000	3.000	0.730	0.687	0.500	0.216	0.046
CPU 412337	4.125	3.375	0.582	0.562	0.375	0.156	0.032
CPU 425350	4.250	3.500	0.530	0.500	0.312	0.156	0.032
CPU 425362	4.250	3.625	0.582	0.562	0.312	0.156	0.032
CPU 450350	4.500	3.500	0.730	0.687	0.500	0.216	0.046
CPU 487425	4.875	4.250	0.582	0.562	0.312	0.156	0.032
CPU 500437	5.000	4.375	0.582	0.562	0.312	0.156	0.032
CPU 525462	5.250	4.625	0.582	0.562	0.312	0.156	0.032
CPU 600537	6.000	5.375	0.582	0.562	0.312	0.156	0.032
CPU 700637	7.000	6.375	0.582	0.562	0.312	0.156	0.032

Single Acting Rod Seal

CPU.../F

Metric
Imperial

Design

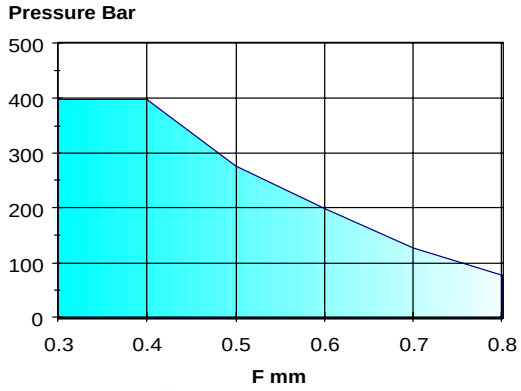
The Claron style CPU.../F is a symmetrical profiled lip seal manufactured in a high performance grade of Polyurethane and is suitable for both rod and piston sealing. The sealing lips are machine trimmed to ensure dimensional consistency and good low pressure sealing. Polyurethane exhibits outstanding abrasion and extrusion resistance.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	280 Bar	250 Bar
0.15	400 Bar	350 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various Fluids

AU Polyurethane		
DIN	Hydraulic Fluid Description	°C
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

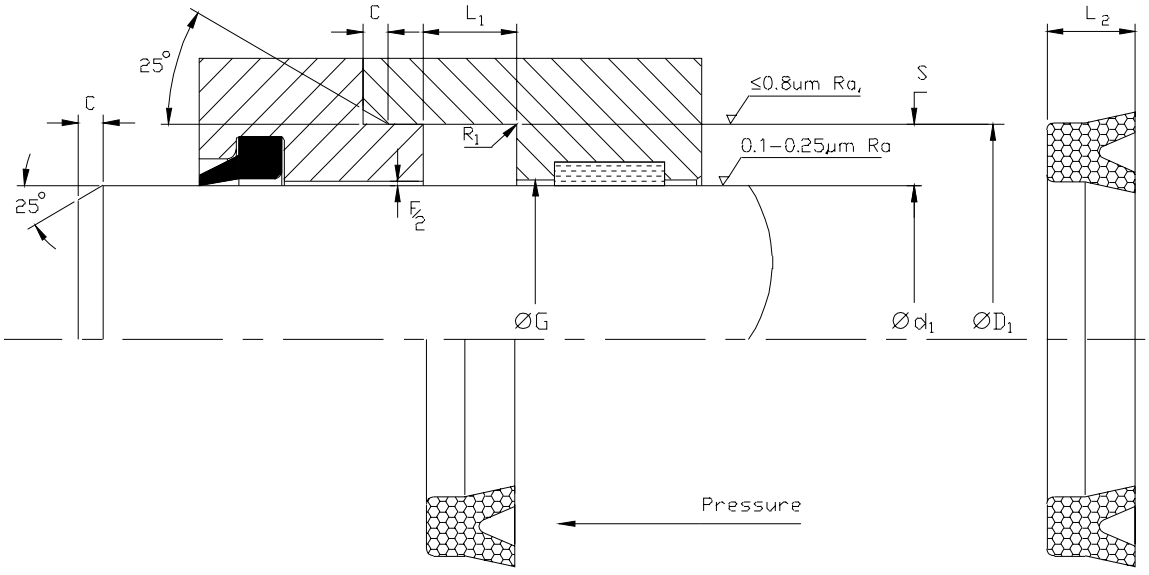
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



CPU.../F

Nominal Dimensions & Machining Tolerances

Claron Part Number	Js 11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 086063/F	22	16		4.50	4.0	3.0	3.0	0.2
CPU 118078/1F	30	20		6.75	6.0	5.0	4.0	0.3
CPU 141078/F	36	20		8.75	8.0	8.0	5.0	0.4
CPU 141110/F	36	28		4.50	4.0	4.0	3.0	0.2
CPU 196177/F	50	45		4.50	4.0	2.5	1.5	0.2
CPU 267236/F	68	60		8.75	8.0	4.0	3.0	0.2
CPU 393354/F	100	90		7.50	7.0	5.0	4.0	0.3
CPU 511433/F	130	110		15.75	15.0	10.0	5.0	0.4
CPU 846669/F	215	170		22.00	20.0	22.5	8.0	1.0

CPU.../F

Nominal Dimensions & Machining Tolerances

Claron Part Number	Js 11 $ØD_1$	f8 $Ød_1$	H9 ØG	+0.010 -0.000 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 062031/F	0.625	0.312		0.275	0.250	0.156	0.093	0.016
CPU 068043/F	0.687	0.437		0.281	0.250	0.125	0.093	0.016
CPU 075037/F	0.750	0.375		0.300	0.281	0.187	0.093	0.016
CPU 075037/1F	0.750	0.375		0.275	0.250	0.187	0.093	0.016
CPU 087062/F	0.875	0.625		0.275	0.250	0.125	0.093	0.016
CPU 100075/F	1.000	0.750		0.175	0.156	0.125	0.093	0.016
CPU 162112/F	1.625	1.125		0.550	0.500	0.250	0.125	0.032
CPU 168118/F	1.687	1.187		0.400	0.375	0.250	0.125	0.032
CPU 175112/F	1.750	1.125		0.550	0.500	0.312	0.156	0.032
CPU 206168/F	2.062	1.687		0.340	0.312	0.187	0.093	0.016

Design

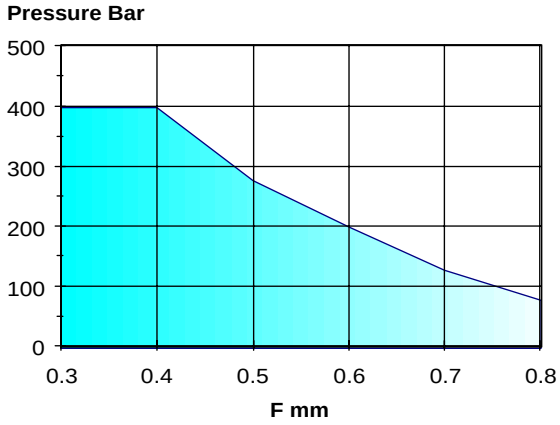
The Claron style CPG.../G is an asymmetrical profiled lip seal designed for medium duty rod applications. Features include an outside diameter specifically designed for static face sealing and a robust inner lip for high performance sealing. Manufactured in a high performance grade of Polyurethane for outstanding abrasion and extrusion resistance combined with flexibility for ease of installation. European and Japanese standard housings are covered in this range.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	280 Bar	250 Bar
0.15	400 Bar	350 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various Fluids

AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

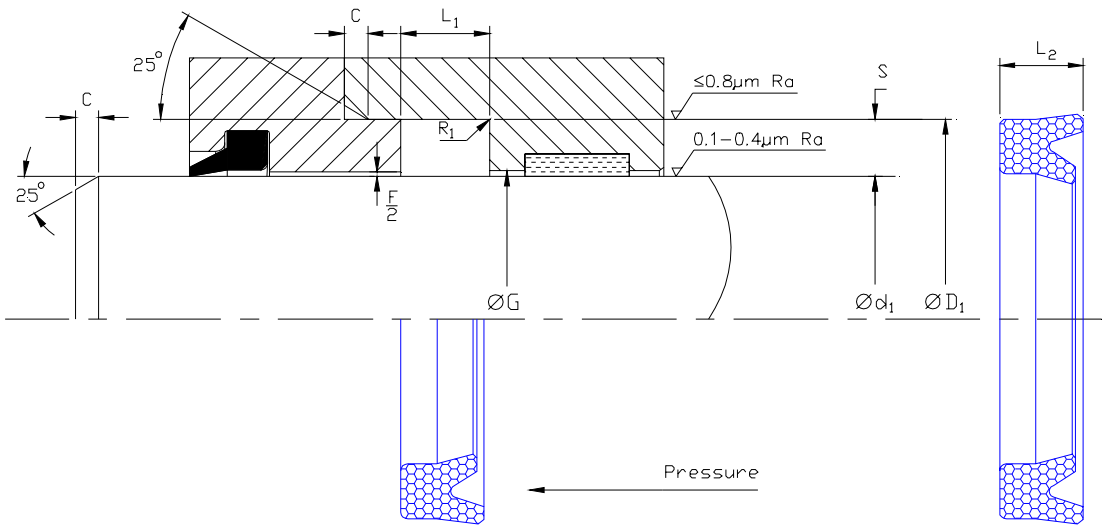
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

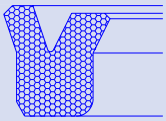
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

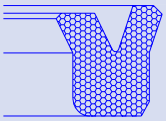
Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



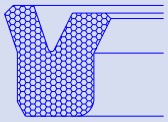


CPU.../G



Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 $Ød_1$ ØG	Js 11 $ØD_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 074047/G	12	19	5.6	5.0	3.5	3.0	0.3
CPU 110078/G	20	28	6.3	5.7	4.0	3.0	0.3
CPU 141110/G	28	36	6.3	5.7	4.0	3.0	0.3
CPU 145118/G	30	37	6.7	6.0	3.5	3.0	0.3
CPU 149118/G	30	38	9.0	8.2	4.0	3.0	0.3
CPU 157118/1G	30	40	8.0	7.3	5.0	3.5	0.5
CPU 157125/G	32	40	6.3	5.7	4.0	3.0	0.3
CPU 177137/1G	35	45	8.0	7.3	5.0	3.5	0.5
CPU 188157/G	40	48	6.3	5.7	4.0	3.0	0.3
CPU 196157/G	40	50	8.0	7.3	5.0	3.5	0.5
CPU 208177/G	45	53	6.3	5.8	4.0	3.0	0.3
CPU 216157/G	40	55	11.0	10.0	7.5	5.0	0.4
CPU 228177/G	45	58	9.0	8.3	6.5	4.0	0.4
CPU 236157/2G	40	60	11.0	10.0	10.0	5.0	0.6
CPU 248196/G	50	63	11.0	10.0	6.5	4.0	0.4
CPU 267216/G	55	68	11.0	10.0	6.5	4.0	0.4
CPU 275216/G	55	70	10.0	9.0	7.5	5.0	0.4
CPU 287236/G	60	73	11.0	10.0	6.5	4.0	0.4
CPU 295236/G	60	75	10.0	9.0	7.5	5.0	0.4
CPU 295255/G	65	75	6.7	6.0	5.0	3.5	0.5
CPU 307255/G	65	78	11.0	10.0	6.5	4.0	0.4
CPU 314255/G	65	80	10.0	9.0	7.5	5.0	0.3
CPU 334255/G	65	85	13.0	12.0	10.0	5.0	0.6
CPU 334275/G	70	85	10.0	9.0	7.5	5.0	0.4
CPU 326275/G	70	83	11.0	10.0	6.5	4.0	0.4
CPU 334295/G	75	85	6.7	6.0	5.0	3.5	0.5
CPU 354275/G	70	90	13.0	12.0	10.0	5.0	0.4
CPU 354295/G	75	90	10.0	9.0	7.5	5.0	0.4
CPU 346295/G	75	88	11.0	10.0	6.5	4.0	0.4
CPU 354314/G	80	90	6.7	6.0	5.0	3.5	0.5
CPU 366314/G	80	93	11.0	10.0	6.5	4.0	0.6
CPU 374295/G	75	95	13.0	12.0	10.0	5.0	0.6
CPU 374314/G	80	95	10.0	9.0	7.5	5.0	0.4
CPU 393314/G	80	100	13.0	12.0	10.0	5.0	0.6
CPU 393334/G	85	100	11.0	10.0	7.5	5.0	0.4
CPU 393334/1G	85	100	10.0	9.0	7.5	5.0	0.4
CPU 413354/G	90	105	11.0	10.0	7.5	5.0	0.4
CPU 413354/1G	90	105	10.0	9.0	7.5	5.0	0.4
CPU 433354/G	90	110	13.0	12.0	10.0	5.0	0.6
CPU 433354/1G	90	110	10.0	9.0	10.0	5.0	0.6
CPU 433374/G	95	110	11.0	10.0	7.5	5.0	0.4
CPU 433374/1G	95	110	10.0	9.0	7.5	5.0	0.4
CPU 452354/G	90	115	13.0	12.0	7.5	5.0	0.4
CPU 452374/G	95	115	13.0	12.0	10.0	5.0	0.6
CPU 452393/G	100	115	11.0	10.0	7.5	5.0	0.4

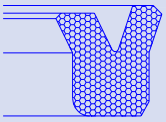


ClaronPolyseal®

Single Acting Rod Seal

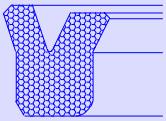
CPU.../G

Metric



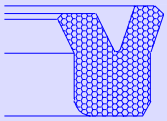
Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 $Ød_1$ ØG	Js 11 $ØD_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 472393/G	100	120	13.0	12.0	10.0	5.0	0.6
CPU 492413/G	105	125	13.0	12.0	10.0	5.0	0.6
CPU 511433/G	110	130	13.0	12.0	10.0	5.0	0.6
CPU 511433/1G	110	130	11.0	10.0	10.0	5.0	0.6
CPU 511433/2G	110	130	14.0	13.0	10.0	5.0	0.6
CPU 531452/G	115	135	13.0	12.0	10.0	5.0	0.6
CPU 551472/G	120	140	11.0	10.0	10.0	5.0	0.6
CPU 551472/1G	120	140	14.0	13.0	10.0	5.0	0.6
CPU 590511/G	130	150	13.0	12.0	10.0	5.0	0.6
CPU 590551/G	140	150	6.7	6.0	3.5	3.0	0.3
CPU 610551/G	140	155	10.0	9.0	7.5	5.0	0.4
CPU 629551/G	140	160	14.0	13.0	10.0	5.0	0.6
CPU 728649/G	165	185	13.0	12.0	10.0	5.0	0.6
CPU 885787/G	200	225	18.0	16.5	12.5	5.0	0.6



Single Acting Rod Seal Imperial

CPU.../G



Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 $Ød_1$ ØG	Js 11 $ØD_1$	+0.010 -0.000 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 100060/G	0.605	1.000	0.275	0.250	0.197	0.093	0.016
CPU 125100/G	1.000	1.250	0.205	0.187	0.125	0.093	0.016
CPU 212175/G	1.750	2.125	0.280	0.260	0.187	0.093	0.016
CPU 250200/G	2.000	2.500	0.413	0.380	0.250	0.125	0.032
CPU 275225/G	2.250	2.750	0.413	0.380	0.250	0.125	0.032
CPU 287237/G	2.375	2.875	0.413	0.380	0.250	0.125	0.032
CPU 300250/G	2.500	3.000	0.413	0.380	0.250	0.125	0.032
CPU 312262/G	2.625	3.125	0.413	0.380	0.250	0.125	0.032
CPU 325275/G	2.750	3.250	0.413	0.380	0.250	0.125	0.032
CPU 350300/G	3.000	3.500	0.413	0.380	0.250	0.125	0.032
CPU 375325/G	3.250	3.750	0.413	0.380	0.250	0.125	0.032
CPU 400350/G	3.500	4.000	0.413	0.380	0.250	0.125	0.032
CPU 425350/1G	3.500	4.250	0.690	0.660	0.375	0.187	0.040
CPU 425375/G	3.750	4.250	0.620	0.580	0.250	0.125	0.032
CPU 462400/G	4.000	4.625	0.413	0.380	0.312	0.156	0.032
CPU 575525/G	5.250	5.750	0.620	0.580	0.250	0.125	0.032
CPU 612550/G	5.500	6.125	0.413	0.380	0.312	0.156	0.032
CPU 725675/G	6.750	7.250	0.620	0.580	0.250	0.125	0.032
CPU 750650/G	6.500	7.500	0.785	0.755	0.500	0.218	0.040
CPU 800700/G	7.000	8.000	0.785	0.755	0.500	0.218	0.040

Design

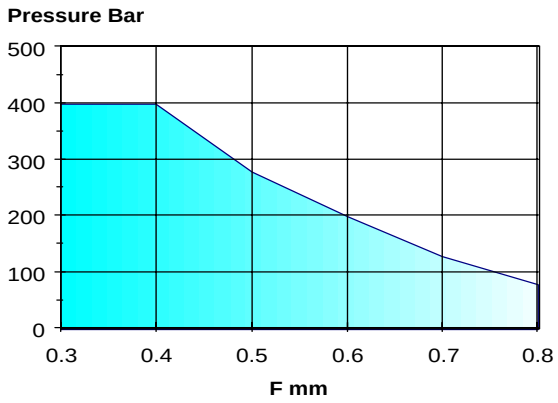
The Claron style CPG is an asymmetrical profiled lip seal designed for medium duty rod applications. Features include an outside diameter specifically designed for static face sealing and a robust inner lip with a secondary supporting sealing edge for high performance sealing. Manufactured in a high performance grade of Polyurethane for outstanding abrasion and extrusion resistance combined with flexibility for ease of installation.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	280 Bar	250 Bar
0.15	400 Bar	350 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

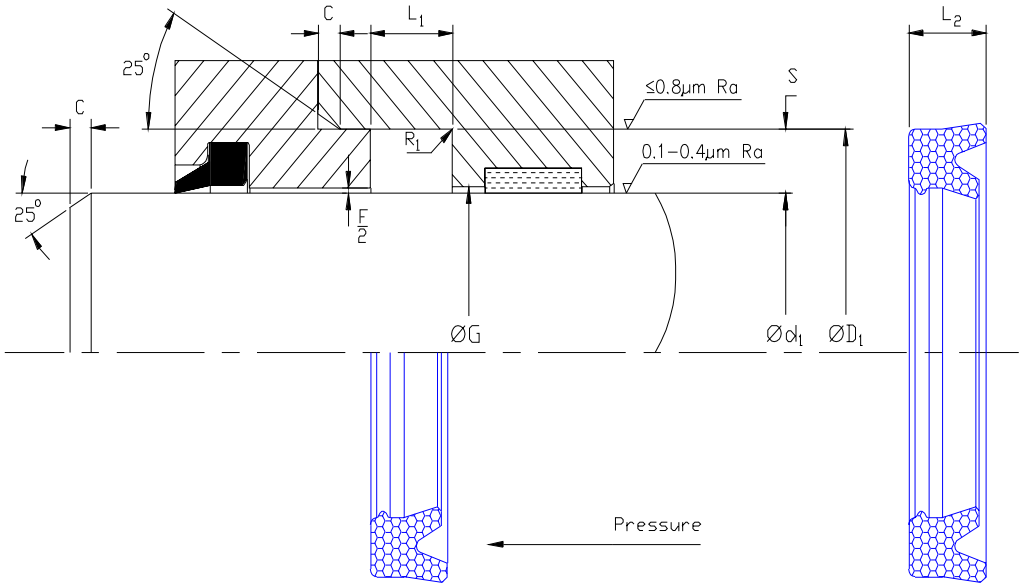
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

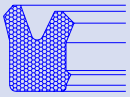
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

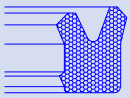




Single Acting Rod Seal

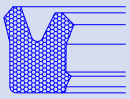
CPG

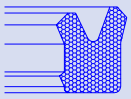
Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 $Ød_1$ ØG	Js 11 $ØD_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPG 014024	14	24	8.0	7.3	5.0	2.5	0.3
CPG 016022	16	22	5.0	4.5	3.0	2.5	0.3
CPG 016022/1	16	22	6.0	5.4	3.0	2.5	0.3
CPG 020026	20	26	5.5	5.0	3.0	2.5	0.3
CPG 022030	22	30	6.3	5.7	4.0	2.5	0.3
CPG 025033	25	33	7.5	6.8	4.0	2.5	0.3
CPG 025033/1	25	33	6.3	5.7	4.0	2.5	0.3
CPG 028038	28	38	8.0	7.3	5.0	2.5	0.3
CPG 028040	28	40	9.0	8.0	6.0	2.5	0.3
CPG 030038	30	38	9.0	8.2	4.0	2.5	0.3
CPG 030040	30	40	11.0	10.0	5.0	2.5	0.3
CPG 030040/1	30	40	7.5	7.0	5.0	2.5	0.3
CPG 032040	32	40	7.5	6.5	4.0	2.5	0.3
CPG 032042	32	42	11.0	10.0	5.0	2.5	0.3
CPG 032042/1	32	42	8.0	7.0	5.0	2.5	0.3
CPG 035045	35	45	11.0	10.0	5.0	2.5	0.3
CPG 036044/1	36	44	9.0	8.0	4.0	2.5	0.3
CPG 040048	40	48	6.3	5.7	4.0	2.5	0.3
CPG 040050	40	50	11.0	10.0	5.0	2.5	0.3
CPG 040050/2	40	50	8.0	7.3	5.0	2.5	0.3
CPG 040055	40	55	11.0	10.0	7.5	4.0	0.4
CPG 045055	45	55	8.0	7.3	5.0	2.5	0.3
CPG 045055/1	45	55	7.5	6.5	4.0	2.5	0.3
CPG 045055/2	45	55	11.0	10.0	5.0	2.5	0.3
CPG 050060	50	60	8.0	7.3	5.0	2.5	0.3
CPG 050060/1	50	60	11.0	10.0	5.0	2.5	0.3
CPG 050065	50	65	12.0	10.9	7.5	4.0	0.3
CPG 055065/1	55	65	9.0	8.2	5.0	2.5	0.3
CPG 060075	60	75	11.0	10.0	7.5	4.0	0.4
CPG 060075/1	60	75	12.5	11.4	7.5	4.0	0.4
CPG 065085	65	85	12.5	11.4	10.0	4.0	0.4
CPG 070085	70	85	12.5	11.4	7.5	4.0	0.4
CPG 080091	80	91	8.0	7.1	5.5	2.5	0.3





Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 $Ød_1$ $ØG$	Js 11 $ØD_1$	+0.010 -0.000 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPG 10001250	1.000	1.250	0.207	0.187	0.125	0.093	0.010
CPG 11251375	1.125	1.375	0.207	0.187	0.125	0.093	0.016
CPG 12501500	1.250	1.500	0.275	0.250	0.125	0.093	0.010
CPG 12501625/2	1.250	1.625	0.275	0.250	0.187	0.093	0.016
CPG 12501625/1	1.250	1.625	0.207	0.187	0.187	0.093	0.016
CPG 12501625	1.250	1.625	0.300	0.280	0.187	0.093	0.016
CPG 12501750	1.250	1.750	0.413	0.380	0.250	0.125	0.020
CPG 12501750/1	1.250	1.750	0.275	0.250	0.250	0.125	0.020
CPG 13751750	1.375	1.750	0.375	0.341	0.187	0.093	0.016
CPG 15001750	1.500	1.750	0.275	0.250	0.125	0.093	0.010
CPG 15001875	1.500	1.875	0.275	0.250	0.187	0.093	0.016
CPG 15002000/1	1.500	2.000	0.275	0.250	0.250	0.125	0.020
CPG 15002000	1.500	2.000	0.413	0.375	0.250	0.125	0.020
CPG 16252000	1.625	2.000	0.413	0.375	0.187	0.093	0.016
CPG 17502125	1.750	2.125	0.275	0.250	0.187	0.093	0.016
CPG 17502250/1	1.750	2.250	0.275	0.250	0.250	0.125	0.020
CPG 17502250	1.750	2.250	0.413	0.375	0.250	0.125	0.020
CPG 20002500	2.000	2.500	0.413	0.375	0.250	0.125	0.020
CPG 20002500/1	2.000	2.500	0.275	0.250	0.250	0.093	0.020
CPG 22502625	2.250	2.625	0.207	0.187	0.187	0.093	0.016
CPG 25003000	2.500	3.000	0.275	0.250	0.250	0.125	0.020
CPG 25003125	2.500	3.125	0.550	0.500	0.312	0.216	0.046
CPG 30003750	3.000	3.750	0.688	0.625	0.375	0.187	0.046

Single Acting Rod Seal Metric

CPS

Design

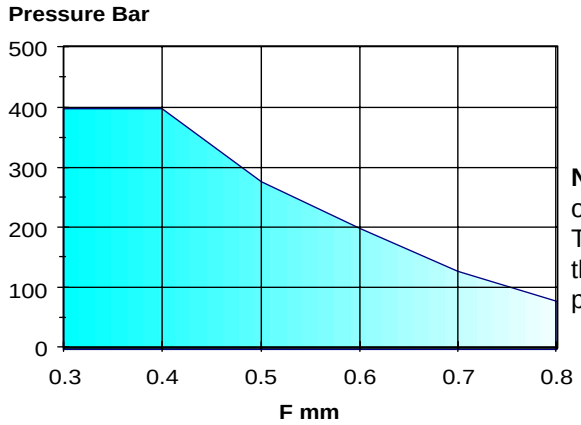
The Claron style CPS is a symmetrical profiled semi-solid seal designed for narrow section rod sealing and manufactured in a high performance grade of polyurethane. The sealing lips are machine trimmed to ensure dimensional consistency and good low pressure sealing whilst polyurethane exhibits outstanding abrasion and extrusion resistance providing a rod seal with a consistent operating performance.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	280 Bar	250 Bar
0.15	400 Bar	350 Bar

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

AU Polyurethane		
DIN	Hydraulic Fluid Description	°C
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

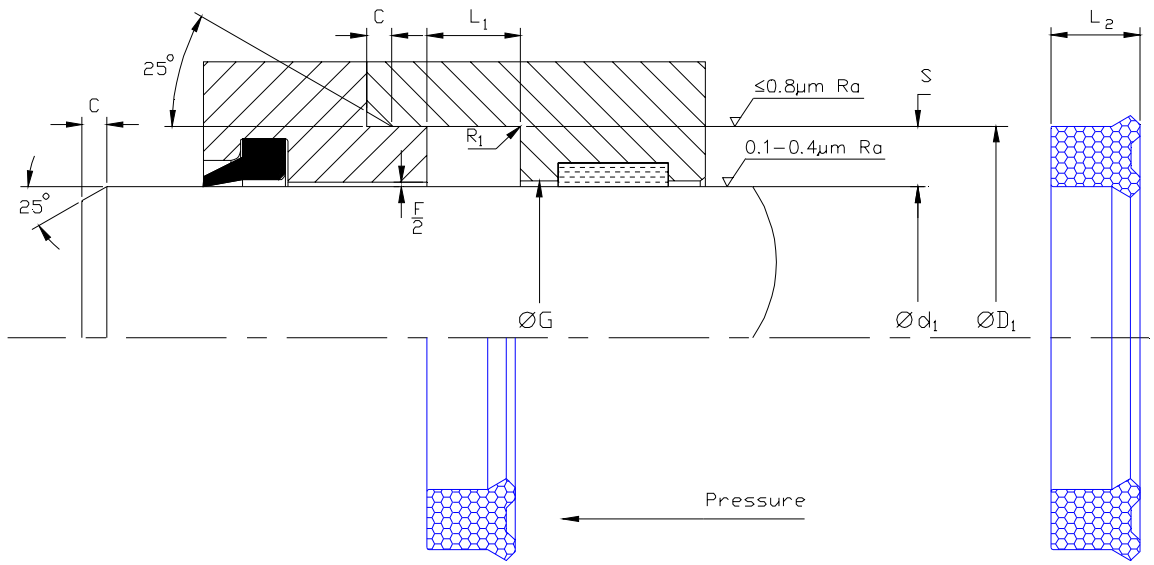
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



CPS

Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 Ød$_1$ ØG	H10 ØD$_1$	+0.25 -0.00 L$_1$	Nominal L$_2$	Nominal S	Min C	Max. R$_1$
CPS 022028	22	28	5.5	4.5	3.0	3.0	0.20
CPS 030038	30	38	9.0	8.0	4.0	3.0	0.20
CPS 030043	30	43	11.0	10.0	6.5	3.0	0.20
CPS 030045	30	45	11.0	10.0	7.5	3.0	0.20
CPS 038045	38	45	7.0	6.0	3.5	3.0	0.20
CPS 045053	45	53	9.0	8.0	4.0	3.0	0.20
CPS 050058	50	58	9.0	8.0	4.0	3.0	0.20
CPS 060066	60	66	6.0	5.0	3.0	3.0	0.20

CPSG

CPSG are the same profile as CPS but with an extra sealing lip on the inside back edge.

CPSG 0450557	45	57.7	10.5	9.5	6.35	3.0	0.2

Imperial

CPSG 22502625	2.250	2.625	0.413	0.375	0.187	0.093	0.2

CPU.../OR

Design

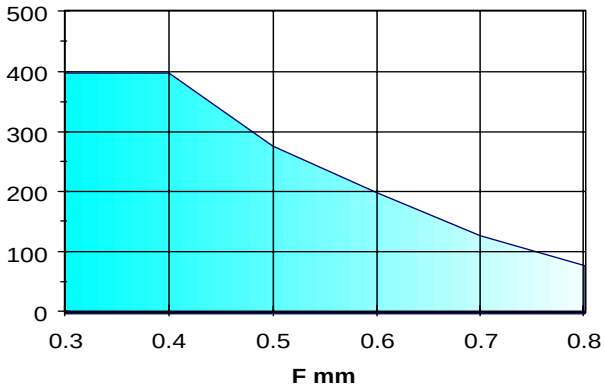
The Claron style CPU../OR is a symmetrical profiled lip seal designed for rod sealing, manufactured in a high performance grade of Polyurethane and fitted with an NBR O-Ring. This special feature guarantees the pre-loading of the sealing lips at no load and low pressures whilst polyurethane provides outstanding abrasion and extrusion resistance.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	280 Bar	250 Bar
0.15	400 Bar	350 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

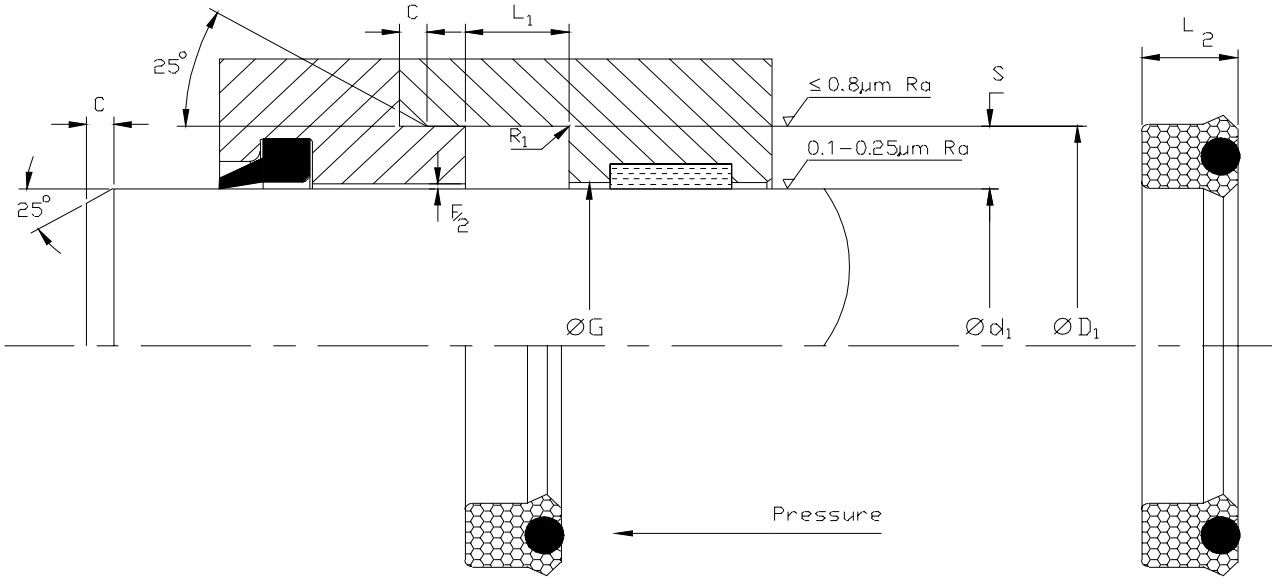
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

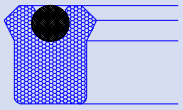
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

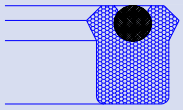
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.





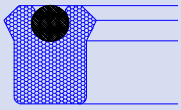
Single Acting Rod Seal Metric

CPU.../OR

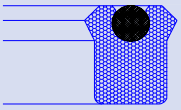


Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 $Ød_1$ ØG	H10 $ØD_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 093068/OR	17.5	23.8	7.0	6.35	3.1	2.5	0.2
CPU 118078/OR	20	30	8.0	7.0	5.0	3.5	0.3
CPU 129098/OR	25	33	6.3	5.7	4.0	3.0	0.2
CPU 129098/1OR	25	33	5.5	4.5	4.0	3.0	0.2
CPU 137098/OR	25	35	8.0	7.0	5.0	3.5	0.3
CPU 157118/1FOR	30	40	6.3	5.7	5.0	3.5	0.3
CPU 157118/OR	30	40	7.7	7.0	5.0	3.5	0.3
CPU 165133/OR	34	42	9.0	8.0	4.0	3.0	0.2
CPU 177137/OR	35	45	8.0	7.0	5.0	3.5	0.3
CPU 196157/1OR	40	50	7.7	7.0	5.0	3.5	0.3
CPU 236196/OR	50	60	8.0	7.0	5.0	3.5	0.3
CPU 255196/OR	50	65	12.5	11.4	7.5	5.0	0.4
CPU 295236/OR	60	75	12.5	11.4	7.5	5.0	0.4
CPU 314255/OR	65	80	12.5	11.4	7.5	5.0	0.4
CPU 314275/2OR	70	80	12.5	11.4	5.0	3.5	0.3
CPU 322275/OR	70	82	9.7	8.7	6.0	4.0	0.3
CPU 334275/OR	70	85	12.5	11.4	7.5	5.0	0.4
CPU 433354/OR	90	110	12.5	11.4	10.0	6.5	0.6



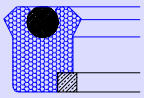
CPU.../OR

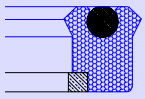


Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 $Ød_1$ $ØG$	H10 $ØD_1$	+0.010 -0.000 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPU 093068/OR	0.687	0.937	0.275	0.250	0.125	0.093	0.020
CPU 125100/OR	1.000	1.250	0.207	0.187	0.125	0.093	0.020
CPU 237175/OR	1.750	2.375	0.582	0.562	0.312	0.156	0.020
CPU 250175/OR	1.750	2.500	0.582	0.562	0.375	0.187	0.020
CPU 250187/OR	1.875	2.500	0.452	0.437	0.312	0.156	0.020
CPU 262200/OR	2.000	2.625	0.475	0.437	0.312	0.156	0.032
CPU 275200/OR	2.000	2.750	0.520	0.500	0.375	0.187	0.020
CPU 337275/OR	2.750	3.375	0.582	0.562	0.312	0.156	0.020
CPU 375300/OR	3.000	3.750	0.520	0.500	0.375	0.187	0.020
CPU 375300/1OR	3.000	3.750	0.582	0.562	0.375	0.187	0.020
CPU 412337/OR	3.375	4.125	0.687	0.625	0.375	0.187	0.020
CPU 462400/OR	4.000	4.625	0.413	0.375	0.312	0.156	0.032
CPU 600525/OR	5.250	6.000	0.413	0.375	0.375	0.187	0.020

CPUI.../OR





Design

Claron style CPUI.../OR is a Polyurethane U-seal incorporating an O-Ring energiser. This guarantees the pre-loading of the seal lips for low pressure sealing, thus optimising seal performance. Polyurethane provides outstanding abrasion and wear resistance ensuring that the seal operates in the most arduous conditions. The anti-extrusion ring which is energised at high pressures, increases the maximum working pressure as well as protecting the seal against pressure spikes.

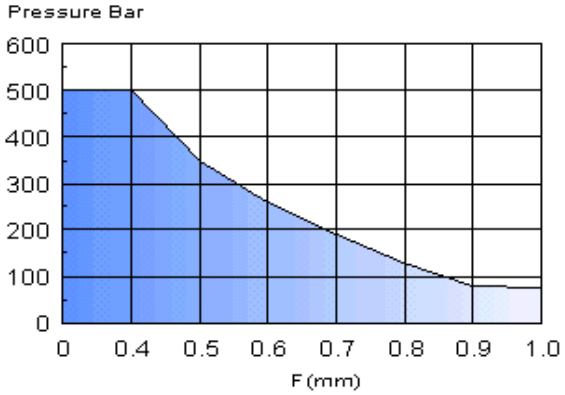
Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	350 Bar	300 Bar
0.15	500 Bar	450 Bar

These range perameters are Maximum simultaneous conditions.

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

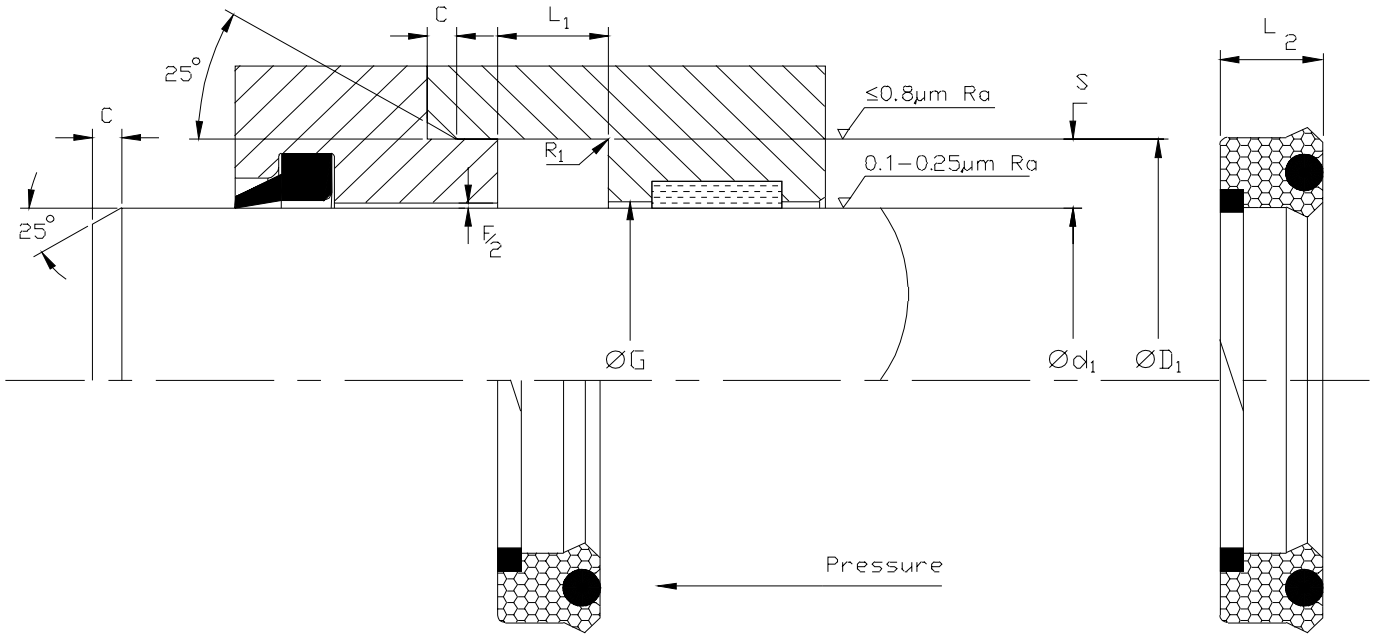
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

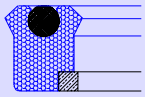
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

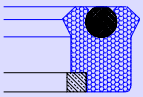
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.





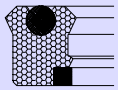
Single Acting Rod Seal
CPUI.../OR

Metric

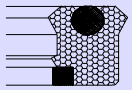


Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 H9 $Ød_1$ ØG	H10 $ØD_1$	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPUI 216157/OR	40	55	12.5	11.4	7.5	5.0	0.4
CPUI 255196/OR	50	65	12.5	11.4	7.5	5.0	0.4
CPUI 295236/OR	60	75	12.5	11.4	7.5	5.0	0.4
CPUI 314255/OR	65	80	12.5	11.4	7.5	5.0	0.4
CPUI 413354/OR	90	105	12.5	11.3	7.5	5.0	0.4
CPUI 433354/OR	90	110	12.5	11.3	10.0	6.5	0.6



CPGI.../OR



Design

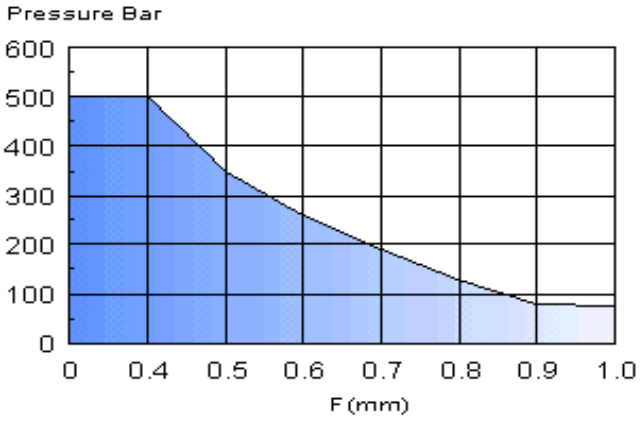
The seal is an asymmetric Polyurethane U-seal incorporating an NBR energiser pre-loading the seal lips thus improving sealing at low pressures. The secondary sealing lip assists sealing, reduces friction and helps to protect the main lip from damage caused by dirt ingression. The Anti-extrusion ring which is energised at high pressures increases the maximum working pressure as well as protecting the seal against pressure spikes caused by shock loads. Polyurethane exhibits outstanding abrasion and wear resistance ensuring that the seal operates in the most arduous conditions.

Operating Conditions

Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	350 Bar	300 Bar
0.15	500 Bar	450 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Continuous operating temperature for various fluids

Polyurethane / Nitrile Composite		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	NS
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

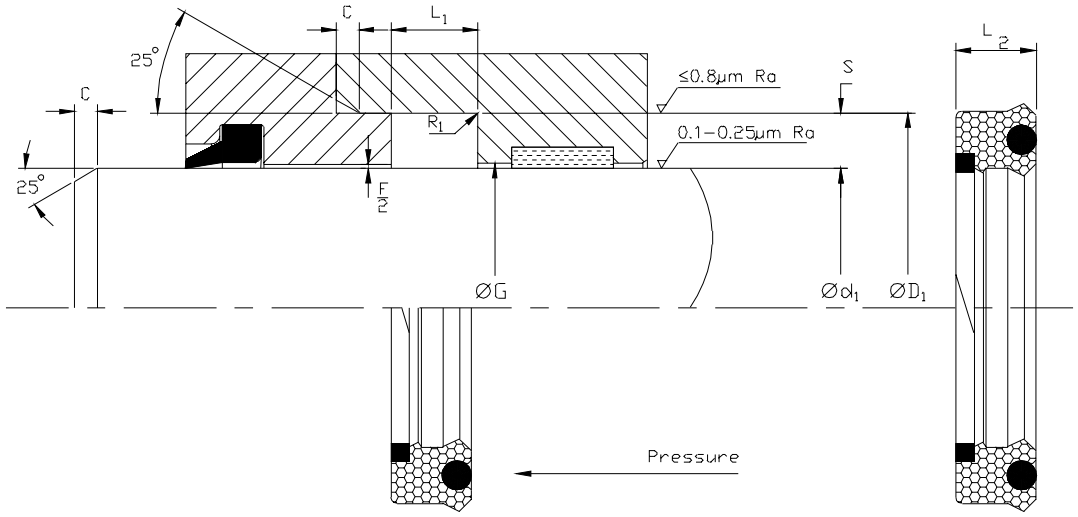
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

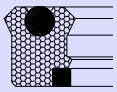
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

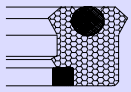




Single Acting Rod Seal

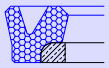
CPGI.../OR

Metric

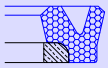


Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 $Ød_1$	H10 H9 $ØD_1$ ØG	+0.25 -0.00 L_1	Nominal L_2	Nominal S	Min C	Max. R_1
CPGI 065080/OR	65	80	12.5	11.4	7.5	5.0	0.4
CPGI 070085/OR	70	85	12.5	11.4	7.5	5.0	0.4
CPGI 075090/OR	75	90	12.5	11.4	7.5	5.0	0.4
CPGI 080095/OR	80	95	12.5	11.4	7.5	5.0	0.4
CPGI 085100/OR	85	100	12.5	11.4	7.5	5.0	0.4
CPGI 090105/OR	90	105	12.5	11.4	7.5	5.0	0.4
CPGI 095110/OR	95	110	12.5	11.4	7.5	5.0	0.4
CPGI 100115/OR	100	115	12.5	11.4	7.5	5.0	0.4



Single Acting Rod Seal
HBI
Metric



Design

Claron style HBI is a single acting seal for gland applications using the same housing designs as Style CS6. The sealing element is manufactured in Polyurethane, with an Acetal anti-extrusion ring. Designed as a high pressure, low friction seal for use in second generation tandem sealing arrangements. The HBI seal is used on the pressure side, and a 'low leak' but higher friction seal on the non-pressure side to collect the oil film during the positive stroke. This type of arrangement is used where both low friction and low leakage are required. The seals high pressure resistance makes it suitable for use in heavy duty applications where shock loads and pressure spikes occur, as found in mobile plant equipment.

Operating Conditions

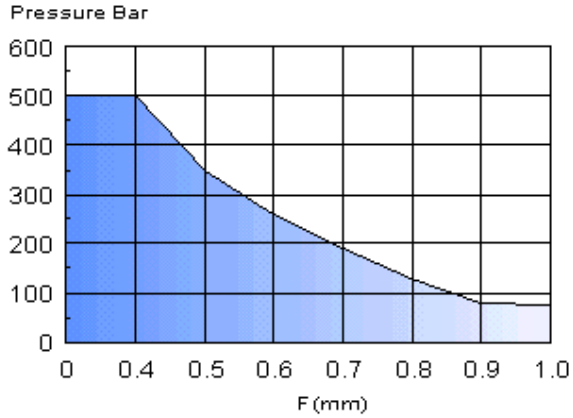
Maximum Pressure		
Max Speed	Temp. Range	Temp. Range
m/s	-40°C to 80°C	-40°C to 110°C
0.50	350 Bar	300 Bar
0.15	500 Bar	450 Bar

These range perameters are Maximum simultaneous conditions.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information.

Continuous operating temperature for various fluids

AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

Maximum Diametral Clearance F



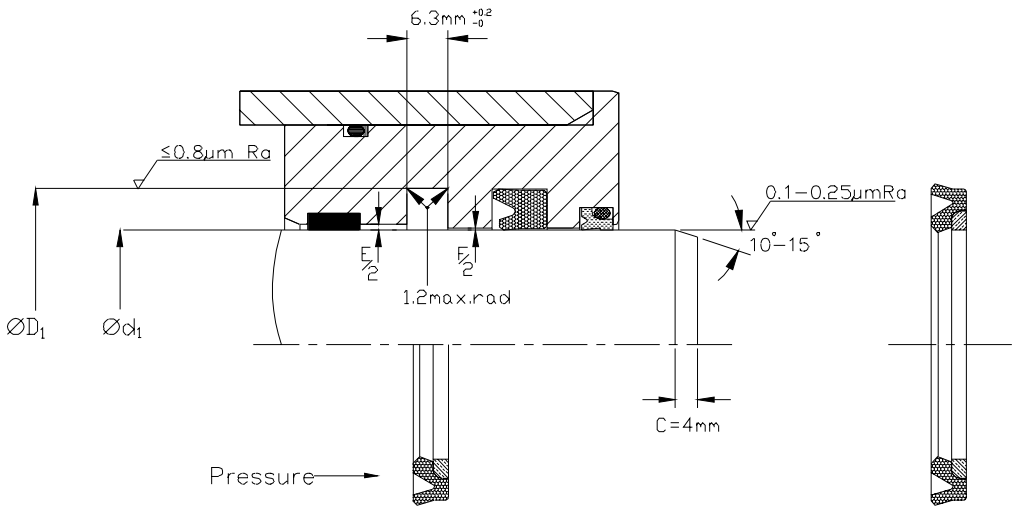
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 100°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.

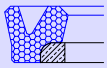
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.

Fitting

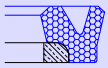
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.





Single Acting Rod Seal
HBI

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 $Ød_1$	H9 $ØD_1$	+0.20 -0.00 L_1	Nominal C
HBI 065	65	80.5	6.3	4
HBI 070	**70**	**85.5**	**6.3**	**4**
HBI 075	75	90.5	6.3	4
HBI 080	**80**	**95.5**	**6.3**	**4**
HBI 085	85	100.5	6.3	4
HBI 090	**90**	**105.5**	**6.3**	**4**
HBI 095	95	110.5	6.3	4
HBI 100	**100**	**115.5**	**6.3**	**4**
HBI 140	140	155.5	6.3	4

Items in **BOLD** are to suit ISO7425-2 housings.

741 751 CS6

Design

Claron Composite Seals **Style CS6** are designed as high pressure, low friction **Single-acting** Rod seals for use in heavy duty hydraulic and pneumatic cylinders.

Claron Composite Seals **Style 741** and **Style 751** are designed as high pressure, low friction **Double-acting** Rod seals using the same housing designs as **Style CS6**. (These styles must be used in conjunction with single acting wiper seals, as Style 931). The inclusion of radial grooves on the P.T.F.E. element, from 20mm diameter onwards allows rapid response to bi-directional pressure changes.
Claron Composite Seals **Style 741** is specifically designed for minimum leakage and slow rotary applications
Housing sizes and tolerances are identical to **Style CS6**

Materials

Standard materials are Bronze filled P.T.F.E with a Nitrile O-Ring Energiser but both the outer sealing element and the energiser are available in a wide range of high performance materials to suit a variety of applications .The application parameters should be carefully considered prior to selecting suitable materials from the tables shown in Appendix 2. Consult Claron for further advice.

Operating Range

Temp. -54°C to 200°C (Dependent upon O-Ring Material used see Appendix)
Pressure upto 800 bar
Velocity upto 15m/s
These range parameters are maximum conditional values.
Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps.
Refer to Appendix 1 for further information**.**

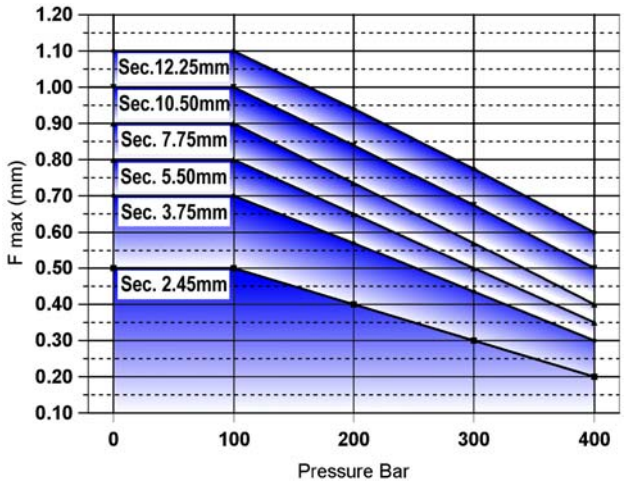
Operating Conditions

Maximum Working Pressure for “Standard” seal applications using specified tolerances.

Temp. range	**Temp. range**
-30°C to 80°C	80°C to 120°C
400bar	350 bar

Diametrical Clearance F

Shown in the graph to the right is calculated as the maximum permissible extrusion gap, allowing for movement due to side load, for various pressures and temperatures upto 80°C. The use of a suitably selected Claron bearing ring will effectively reduce the **Radial clearance** to a value nearer to F/2 thus increasing the pressure capability of the seal.
The maximum seal extrusion gap should be calculated allowing for all tolerances and movement due to side load.
For pressures **>** 400 bar, the seal extrusion gap should be reduced by utilising smaller tolerances. e.g H8 for Housing bore and f8 for Rod diameter.



741 751 CS6

Range Of Installation Dimensions

The full range of diameters applicable to the “Standard”, “Light” and “Heavy” Duty Sections are shown in the table below

Housing		Rod dia.		
Section	Width	Standard	Light (/1)	Heavy (/2)
2.5	2.2	3 to 7.9	8 to 18.9	
3.75	3.2	8 to 18.9	19 to 37.9	
5.5	4.2	19 to 37.9	38 to 199.9	8 to 18.9
7.75	6.3	38 to 199.9	200 to 255.9	19 to 37.9
10.5	8.1	200 to 255.9	256 to 550	38 to 199.9
12.25	8.1	256 to 550		200 to 255.9

Split grooves should be utilised for Rod Diameters < 19mm
For closed grooves 19 to 38mm use Light Duty Section only

How To Order

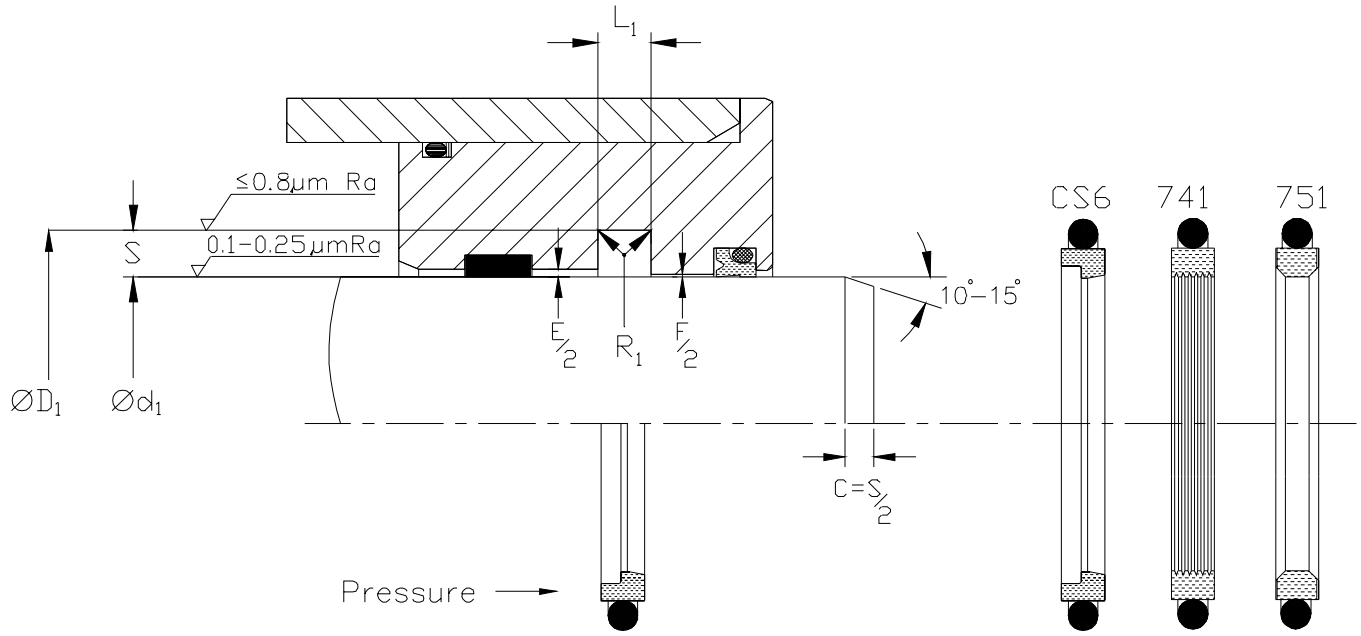
When ordering, prefix the size reference with the style required and use the suffix shown in the material application tables.

e.g. CS6 Standard section in Bronze filled material for 70mm Rod **CS60700/B**
CS6 Light duty section in Glass filled material for 70 mm Rod **CS60700/1G**
741 Heavy duty section in Carbon filled material for 70 mm Rod **741-0700/2C**

For O-Ring energiser materials other than Nitrile, use suffix shown in material table.
e.g Flourocarbon material (FKM), **CS60700/B/FKM**

Housing

For surface finish and lead in chamfers refer to the illustration below. For Housing dimensions and tolerances refer to the table of recommended sizes.



For F/2 values see note and tables

For E/2 values refer to P.T.F.E. Guide Tape

Fitting

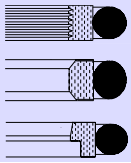
For the seal to function correctly it is important that care is taken during fitting. For details refer to Appendix 3.

ClaronPolyseal®

Single & Double Acting Rod Seals

741 751 CS6

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	d_1 f8	D_1 H9	L_1 +0.2 -0.0	S SECT	R_1 MAX	F/2 MAX
CS60030/B	3.00	8.00	2.20	2.50	0.30	0.20
CS60040/B	4.00	9.00	2.20	2.50	0.30	0.20
CS60050/B	5.00	10.00	2.20	2.50	0.30	0.20
CS60060/B	**6.00**	**11.00**	**2.20**	**2.50**	0.30	0.20
CS60063/B	6.30	11.30	2.20	2.50	0.30	0.20
CS60080/1B	**8.00**	**13.00**	**2.20**	**2.50**	0.30	0.20
CS60080/B	8.00	15.50	3.20	3.75	0.50	0.30
CS60100/1B	**10.00**	**15.00**	**2.20**	**2.50**	0.30	0.20
CS60100/B	10.00	17.50	3.20	3.75	0.50	0.30
CS60120/1B	**12.00**	**17.00**	**2.20**	**2.50**	0.30	0.20
CS60120/B	**12.00**	**19.50**	**3.20**	**3.75**	**0.50**	0.30
CS60140/1B	**14.00**	**19.00**	**2.20**	**2.50**	0.30	0.20
CS60140/B	**14.00**	**21.50**	**3.20**	**3.75**	**0.50**	0.30
CS60150/B	15.00	22.50	3.20	3.75	0.50	0.30
CS60160/B	**16.00**	**23.50**	**3.20**	**3.75**	**0.50**	0.30
CS60180/B	**18.00**	**25.50**	**3.20**	**3.75**	**0.50**	0.30
CS60200/1B	**20.00**	**27.50**	**3.20**	**3.75**	**0.50**	0.30
CS60200/B	**20.00**	**31.00**	**4.20**	**5.50**	0.80	0.35
CS60220/1B	**22.00**	**29.50**	**3.20**	**3.75**	**0.50**	0.30
CS60220/B	**22.00**	**33.00**	**4.20**	**5.50**	0.80	0.35
CS60250/1B	**25.00**	**32.50**	**3.20**	**3.75**	**0.50**	0.30
CS60250/B	**25.00**	**36.00**	**4.20**	**5.50**	0.80	0.35
CS60280/B	**28.00**	**39.00**	**4.20**	**5.50**	0.80	0.35
CS60300/B	30.00	41.00	4.20	5.50	0.80	0.35
CS60320/B	**32.00**	**43.00**	**4.20**	**5.50**	0.80	0.35
CS60350/B	35.00	46.00	4.20	5.50	0.80	0.35
CS60360/B	**36.00**	**47.00**	**4.20**	**5.50**	0.80	0.35
CS60400/1B	**40.00**	**51.00**	**4.20**	**5.50**	0.80	0.35
CS60400/B	40.00	55.50	6.30	7.75	1.20	0.40
CS60420/1B	42.00	53.00	4.20	5.50	0.80	0.35
CS60420/B	42.00	57.50	6.30	7.75	1.20	0.40
CS60450/1B	**45.00**	**56.00**	**4.20**	**5.50**	0.80	0.35
CS60450/B	45.00	60.50	6.30	7.75	1.20	0.40
CS60480/1B	48.00	59.00	4.20	5.50	0.80	0.35
CS60480/B	48.00	63.50	6.30	7.75	1.20	0.40
CS60500/1B	**50.00**	**61.00**	**4.20**	**5.50**	0.80	0.35
CS60500/B	50.00	65.50	6.30	7.75	1.20	0.40
CS60520/1B	52.00	63.00	4.20	5.50	0.80	0.35
CS60520/B	52.00	67.50	6.30	7.75	1.20	0.40
CS60550/1B	55.00	66.00	4.20	5.50	0.80	0.35
CS60550/B	55.00	70.50	6.30	7.75	1.20	0.40
CS60560/1B	**56.00**	**67.00**	**4.20**	**5.50**	0.80	0.35
CS60560/B	**56.00**	**71.50**	**6.30**	**7.75**	1.20	0.40

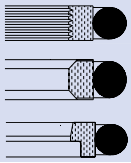
Items in **BOLD** are to suit ISO7425-2 Housings

ClaronPolyseal®

Single & Double Acting Rod Seals

741 751 CS6

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	d_1 f8	D_1 H9	L_1 +0.2 -0.0	S SECT	R_1 MAX	F/2 MAX
CS60600/1B	60.00	71.00	4.20	5.50	0.80	0.35
CS60600/B	60.00	75.50	6.30	7.75	1.20	0.40
CS60630/1B	**63.00**	**74.00**	**4.20**	**5.50**	0.80	0.35
CS60630/B	**63.00**	**78.50**	**6.30**	**7.75**	1.20	0.40
CS60650/B	65.00	80.50	6.30	7.75	1.20	0.40
CS60700/B	**70.00**	**85.50**	**6.30**	**7.75**	1.20	0.40
CS60750/B	75.00	90.50	6.30	7.75	1.20	0.40
CS60762/B	76.20	91.70	6.30	7.75	1.20	0.40
CS60800/B	**80.00**	**95.50**	**6.30**	**7.75**	1.20	0.40
CS60850/B	85.00	100.50	6.30	7.75	1.20	0.40
CS60900/B	**90.00**	**105.50**	**6.30**	**7.75**	1.20	0.40
CS60950/B	95.00	110.50	6.30	7.75	1.20	0.40
CS61000/B	**100.00**	**115.50**	**6.30**	**7.75**	1.20	0.40
	f8	**H8**	**+0.2-0**	**SECT**	**MAX**	**MAX**
CS61050/B	105.00	120.50	6.30	7.75	1.20	0.40
CS61100/B	**110.00**	**125.50**	**6.30**	**7.75**	1.20	0.40
CS61150/B	115.00	130.50	6.30	7.75	1.20	0.40
CS61200/B	120.00	135.50	6.30	7.75	1.20	0.40
CS61250/B	**125.00**	**140.50**	**6.30**	**7.75**	1.20	0.40
CS61300/B	130.00	145.50	6.30	7.75	1.20	0.40
CS61350/B	135.00	150.50	6.30	7.75	1.20	0.40
CS61400/B	**140.00**	**155.50**	**6.30**	**7.75**	1.20	0.40
CS61500/B	150.00	165.50	6.30	7.75	1.20	0.40
CS61600/B	**160.00**	**175.00**	**6.30**	**7.75**	1.20	0.40
CS61600/2B	**160.00**	**181.00**	**8.10**	**10.50**	1.50	0.50
CS61700/B	170.00	185.50	6.30	7.75	1.50	0.50
CS61800/B	**180.00**	**195.50**	**6.30**	**7.75**	1.20	0.40
CS61800/2B	**180.00**	**201.00**	**8.10**	**10.50**	1.20	0.40
CS61900/B	190.00	205.50	6.30	7.75	1.20	0.40
CS62000/B	**200.00**	**221.00**	**8.10**	**10.50**	1.50	0.50
CS62100/B	210.00	231.00	8.10	10.50	1.50	0.50
CS62200/B	**220.00**	**241.00**	**8.10**	**10.50**	1.50	0.50
CS62300/B	230.00	251.00	8.10	10.50	1.50	0.50
CS62400/B	240.00	261.00	8.10	10.50	1.50	0.50
CS62500/B	**250.00**	**271.00**	**8.10**	**10.50**	1.50	0.50
CS62800/B	**280.00**	**304.50**	**8.10**	**12.25**	1.50	0.60
CS63000/B	300.00	324.50	8.10	12.25	1.50	0.60
CS63200/B	**320.00**	**344.50**	**8.10**	**12.25**	1.50	0.60
CS63500/B	350.00	374.50	8.10	12.25	1.50	0.60
CS63600/B	**360.00**	**384.50**	**8.10**	**12.25**	1.50	0.60
CS64000/B	400.00	424.50	8.10	12.25	1.50	0.60
CS64200/B	420.00	444.50	8.10	12.25	1.50	0.60
CS64500/B	450.00	474.50	8.10	12.25	1.50	0.60
CS64800/B	480.00	504.50	8.10	12.25	1.50	0.60
CS65000/B	500.00	524.50	8.10	12.25	1.50	0.60

Items in **BOLD** are to suit ISO7425-2 Housings

CS 1 Imperial
CS 3 Metric

Double Acting Rod Seals

CS1 CS3

Design

Claron composite seals styles CS1 and CS 3 are designed for use in light duty hydraulic or pneumatic rod applications. Style CS1 covers the range of imperial sizes, and the CS3 metric sizes.
For advice on installation, refer to Appendix.

Materials

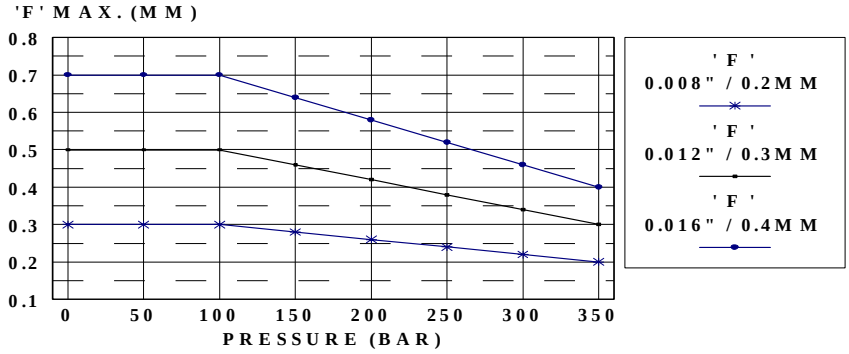
Claron composite seals style CS1 and CS3 as standard comprise of a Virgin PTFE inner sleeve and are energised by a 75° shore hardness Nitrile rubber O-Ring. A full range of materials are available to suit a variety of applications.
See tables in Appendix.

Operating Conditions

Maximum Working Pressure for “Standard” seal applications using specified tolerances.
Temp Range: -40°C to +120°C (Dependent upon energiser material. See Appendix)
Max. Pressure: 350 Bar
Max. Linear Speed: 15m/s
These range parameters are maximum conditional values
Optimum service conditions are affected by temperature, speed pressure, surface finish and extrusion gaps..
Refer to Appendix 1 for further information**.**

Diametral Clearance 'F'

'F' shown in the size tables is based upon Virgin P.T.F.E., temperatures up to 80°C and 350 Bar pressure in designs where PTFE guide tape is utilised. For other pressures, refer to the graph shown below.

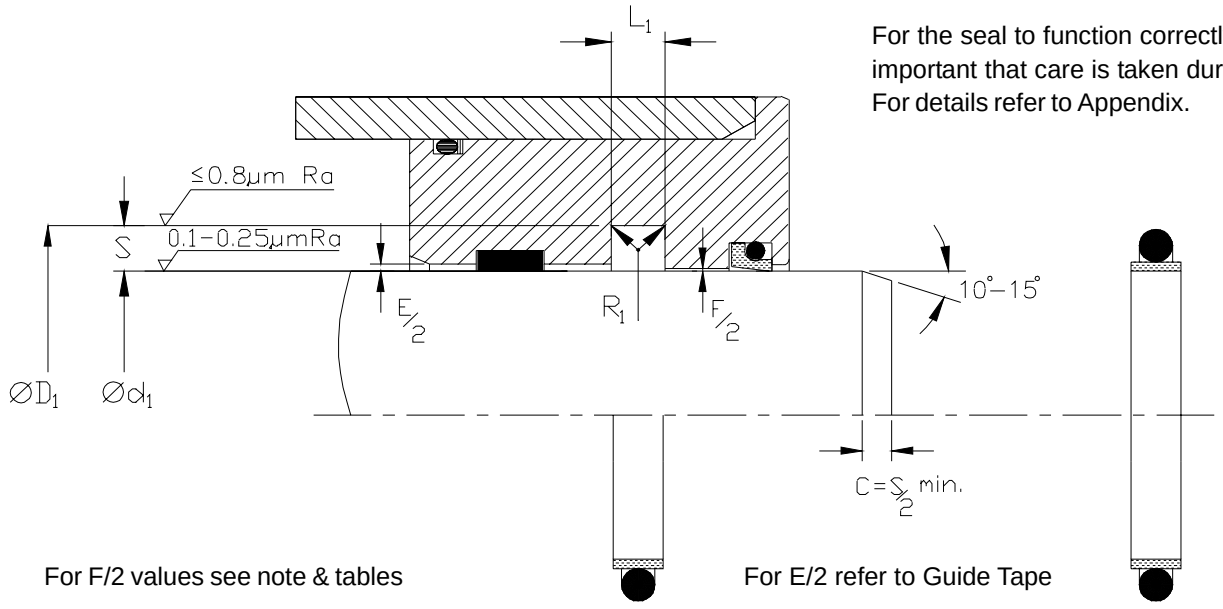


To use this graph, refer to the tables on page for the max. value of 'F' at 350 Bar then apply the relevant curve for the various pressures.

The maximum extrusion gap 'F/2' should be calculated allowing for all movements due to tolerances, side-loads and cylinder expansion.

How To Order

When ordering, quote the size reference shown on the dimensions table.
If an energiser material other than the standard nitrile type is required, consult Claron for the part number to be used.



For the seal to function correctly it is important that care is taken during fitting. For details refer to Appendix.

For F/2 values see note & tables

For E/2 refer to Guide Tape

CS 1 Imperial Sizes

Nominal Dimensions & Machining Tolerances

Claron	h9 Ød$_1$	±0.003 L$_1$	S	Tol. On S	Max R$_1$	Max 350 Bar F
CS 10025	0.250	0.094	0.080	+0.002 -0	0.010	0.008
CS 10031	0.312					
CS 10037	0.375					
CS 10043	0.437					
CS 10050	0.500	0.141	0.111	+0.003 -0	0.020	0.008
CS 10056	0.562					
CS 10062	0.625					
CS 10068	0.687					
CS 10075	0.750					
CS 10081	0.812					
CS 10087	0.875					
CS 10093	0.937					
CS 10100	1.000					
CS 10106	1.062					
CS 10112	1.125	0.188	0.152	+0.004 -0	0.030	0.008
CS 10118	1.187					
CS 10125	1.250					
CS 10131	1.312					
CS 10137	1.375					
CS 10143	1.437					
CS 10150/1	1.500					
CS 10156	1.562					
CS 10168	1.687					
CS 10150	1.500					
CS 10162	1.625					
CS 10175	1.750					
CS 10187	1.875					
CS 10200	2.000					
CS 10212	2.125					
CS 10225	2.250					
CS 10237	2.375					
CS 10250	2.500					
CS 10262	2.625					
CS 10275	2.750					
CS 10287	2.875					
CS 10300	3.000	0.281	0.244	+0.004 -0	0.040	0.012
CS 10312	3.125					
CS 10325	3.250					
CS 10337	3.375					
CS 10350	3.500					
CS 10362	3.625					
CS 10375	3.750					
CS 10387	3.875					
CS 10400	4.000					
CS 10412	4.125					
CS 10425	4.250					
CS 10437	4.375					
CS 10450	4.500					
CS 10462	4.625					
CS 10475	4.750					
CS 10487	4.875					
CS 10500	5.000					
CS 10512	5.125					
CS 10525	5.250	0.375	0.328	+0.005 -0	0.040	0.016
CS 10537	5.375					
CS 10550	5.500					
CS 10562	5.625					
CS 10575	5.750					
CS 10587	5.875					
CS 10600	6.000					
CS 10800	8.000					

CS 3 Metric Sizes

Nominal Dimensions & Machining Tolerances

Claron	h9 Ød$_1$	±0.075 L$_1$	S	Tol. On S	Max R$_1$	Max 350 Bar F
CS 3007	7					
CS 3008	8					
CS 3009	9					
CS 3010	10					
CS 3011	11					
CS 3012	12	3.60	3.00	+0.075 -0	0.50	0.20
CS 3013	13					
CS 3014	14					
CS 3015	15					
CS 3016	16					
CS 3017	17					
CS 3018	18					
CS 3020	20					
CS 3022	22					
CS 3023	23					
CS 3024	24					
CS 3025	25					
CS 3026	26					
CS 3027	27					
CS 3028	28					
CS 3029	29					
CS 3030	30					
CS 3031	31					
CS 3032	32	4.80	4.00	+0.10 -0	0.75	0.20
CS 3033	33					
CS 3034	34					
CS 3035	35					
CS 3036	36					
CS 3037	37					
CS 3038	38					
CS 3039	39					
CS 3040	40					
CS 3041	41					
CS 3042	42					
CS 3043	43					
CS 3044	44					
CS 3045	45					
CS 3050	50					
CS 3053	53					
CS 3055	55					
CS 3056	56					
CS 3060	60					
CS 3063	63					
CS 3065	65					
CS 3070	70	7.15	6.20	+0.10 -0	1.00	0.30
CS 3075	75					
CS 3080	80					
CS 3085	85					
CS 3090	90					
CS 3095	95					
CS 3100	100					
CS 3105	105					
CS 3110	110					
CS 3120	120					
CS 3125	125					
CS 3130	130					
CS 3135	135	9.50	8.40	+0.10 -0	1.00	0.40
CS 3140	140					
CS 3145	145					
CS 3150	150					
CS 3155	155					
CS 3160	160					

Single Acting Rod Seal

HBT

Metric

Design

Claron style HBT is a single acting seal for gland applications. Designed as a high pressure, low friction seal for use in second generation tandem sealing arrangements where the lower friction seal is used on the pressure side, and a 'low leak' but higher friction seal on the non pressure side to collect the oil film during the positive stroke. This type of arrangement is used where both low friction and low leakage are required. The seals high pressure resistance makes it suitable for use in heavy duty applications where shock loads and pressure spikes occur, as found in mobile plant equipment.

Materials

Both the inner sealing element and the energiser are available in a wide range of materials to suit a variety of applications. The inner sealing element is manufactured from high performance Bronze filled PTFE, energised by an NBR O-Ring as standard.

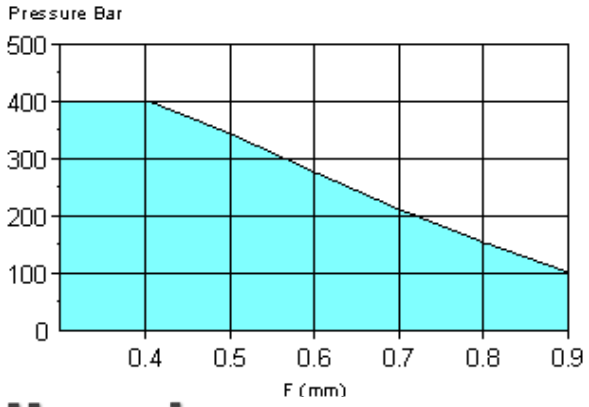
Operating Range

Maximum Working Pressure Bar (For Standard Materials)

Temp. Range	Temp. Range
-30°C to 80°C	80°C to 120°C
400 Bar	350 Bar

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps. Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C

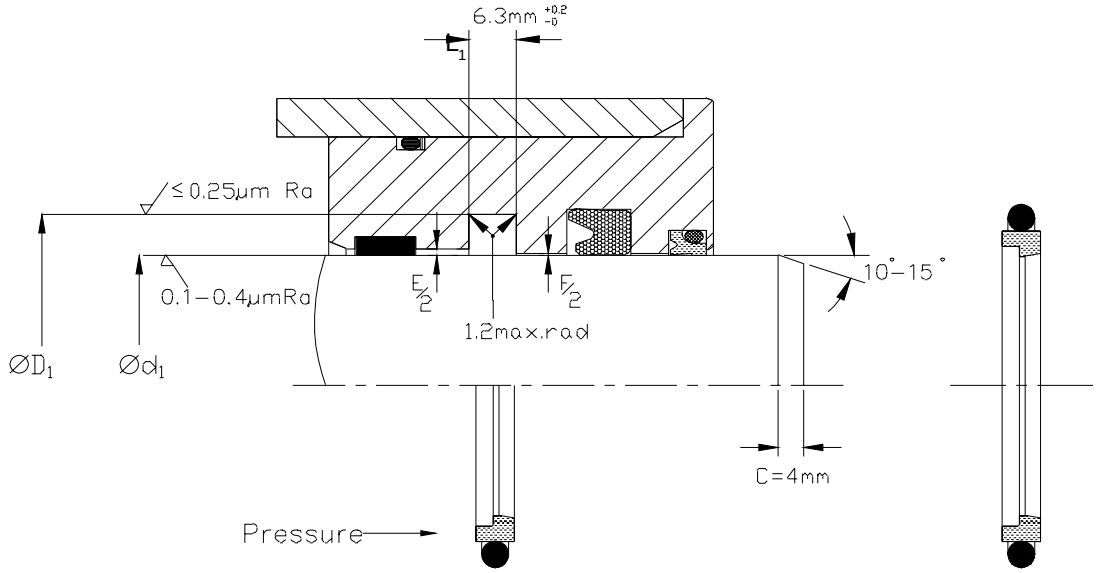
The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal. F/2 should be calculated allowing for all movements due to side-load and cylinder expansion.

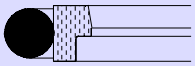
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. For value of E/2, refer to the bearing ring requirements. Refer to Appendix 4 for value of tolerance symbols.

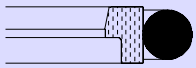
Fitting

Style HBT may be deformed and fitted into a closed groove. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.





Single Acting Rod Seal
HBT
Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 Ød$_1$	H9 ØD$_1$	+0.20 -0.00 L$_1$	Nominal C
HBT 015	15	30.5	6.3	4
HBT 020	20	35.5	6.3	4
HBT 025	25	40.5	6.3	4
HBT 030	30	45.5	6.3	4
HBT 035	35	50.5	6.3	4
HBT 040	40	55.5	6.3	4
HBT 045	45	60.5	6.3	4
HBT 050	50	65.5	6.3	4
HBT 055	55	70.5	6.3	4
HBT 060	60	75.5	6.3	4
HBT 063	**63**	**78.5**	**6.3**	**4**
HBT 065	65	80.5	6.3	4
HBT 070	**70**	**85.5**	**6.3**	**4**
HBT 075	75	90.5	6.3	4
HBT 080	**80**	**95.5**	**6.3**	**4**
HBT 085	85	100.5	6.3	4
HBT 090	**90**	**105.5**	**6.3**	**4**
HBT 095	95	110.5	6.3	4
HBT 100	**100**	**115.5**	**6.3**	**4**
HBT 105	105	120.5	6.3	4
HBT 110	**110**	**125.5**	**6.3**	**4**
HBT 115	115	130.5	6.3	4
HBT 120	120	135.5	6.3	4
HBT 125	**125**	**140.5**	**6.3**	**4**
HBT 130	130	145.5	6.3	4
HBT 135	135	150.5	6.3	4
HBT 140	**140**	**155.5**	**6.3**	**4**
HBT 145	145	160.5	6.3	4
HBT 150	150	165.5	6.3	4
HBT 155	155	170.5	6.3	4
HBT 160	**160**	**175.5**	**6.3**	**4**
HBT 165	165	180.5	6.3	4
HBT 170	170	185.5	6.3	4
HBT 175	175	190.5	6.3	4
HBT 180	**180**	**195.5**	**6.3**	**4**
HBT 185	185	200.5	6.3	4
HBT 190	190	205.5	6.3	4
HBT 195	195	210.5	6.3	4
HBT 200	200	215.5	6.3	4
HBT 205	205	220.5	6.3	4
HBT 210	210	225.5	6.3	4
HBT 215	215	230.5	6.3	4
HBT 220	220	235.5	6.3	4
HBT 225	225	240.5	6.3	4
HBT 230	230	245.5	6.3	4

Items in **BOLD** are to suit ISO7425-2 housings.

Single Acting Rod Seal

HBTY

Metric

Design

Claron style HBTY is a single acting seal for gland applications useing the same housing designs as Style HBI and Style HBT. Designed as a high pressure, low friction seal for use in second generation tandem sealing arrangements where the lower friction seal is used on the pressure side, and a 'low leak' but higher friction seal on the non pressure side to collect the oil film during the positive stroke. This type of arrangement is used where both low friction and low leakage are required. The seals high pressure resistance makes it suitable for
use in heavy duty applications where shock loads and pressure spikes occur, as found in mobile plant equipment.

Materials

Both the inner sealing element and the energiser are available in a wide range of materials to suit a variety of applications. The inner sealing element is manufactured from high performance glass filled PTFE, energised by an NBR Sqaure section Ring as standard. Materials can be specified by a part number suffix E.g. HBTY065/B Bronze Filled PTFE.

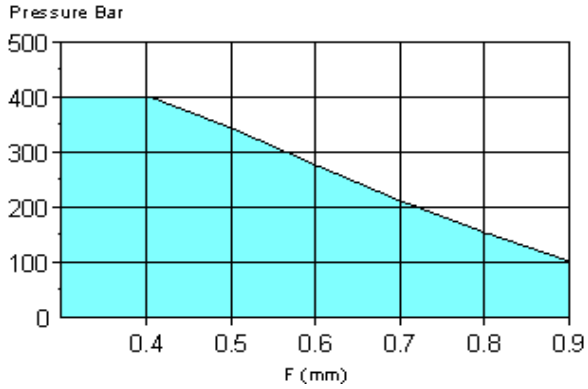
Operating Range

Maximum Working Pressure Bar (For Standard Materials)

Temp. Range	Temp. Range
-30°C to 80°C	80°C to 120°C
400 Bar	350 Bar

Optimum service conditions are affected by temperature, speed, pressure, surface finish and extrusion gaps. Refer to Appendix 1 for further information.

Maximum Diametral Clearance F



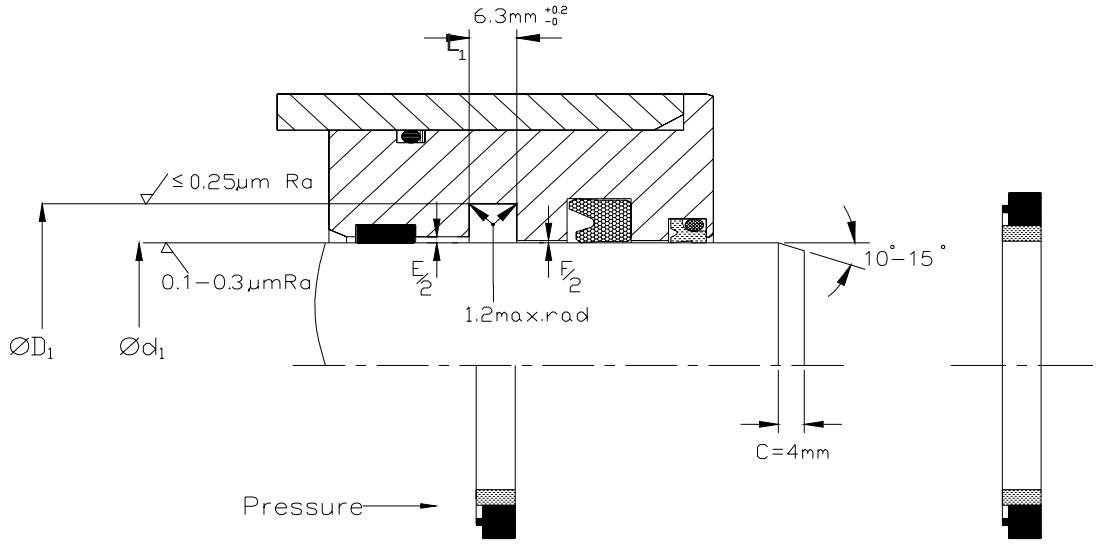
Note: Clearance gap F is the maximum permissable. i.e. gap completely on one side, in the temperature range of -30°C to 80°C The use of a suitably selected Claron bearing ring will effectively reduce the clearance gap F max. to a value closer to F/2 thus increasing the pressure capability of the seal.
F/2 should be calculated allowing for all movements due to side-load and cylinder expansion.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. For value of E/2, refer to the bearing ring requirements.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style HBT may be deformed and fitted into a closed groove. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.



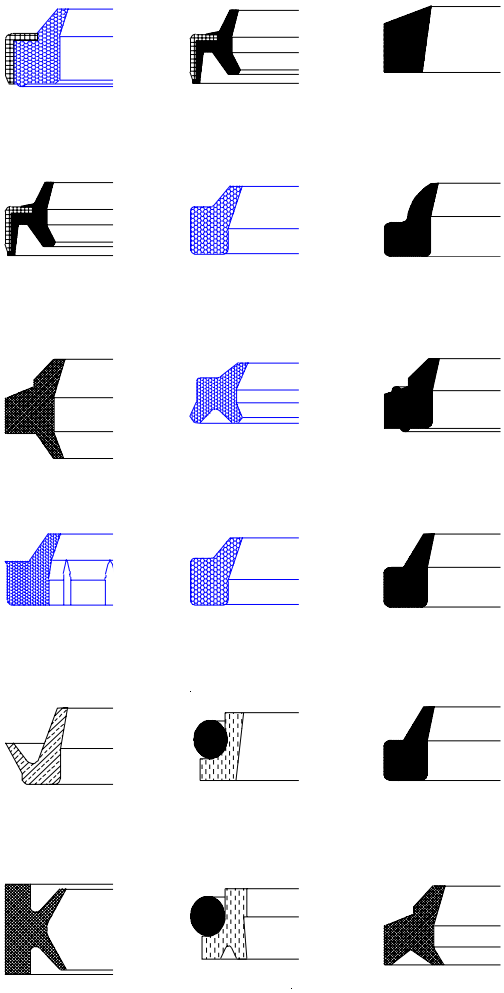
Single Acting Rod Seal
HBTY
Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 Ød$_1$	H9 ØD$_1$	+0.20 -0.00 L$_1$	Nominal C
HBTY 050	50	65.5	6.3	4
HBTY 055	55	70.5	6.3	4
HBTY 060	60	75.5	6.3	4
HBTY 065	**65**	**80.5**	**6.3**	**4**
HBTY 070	**70**	**85.5**	**6.3**	**4**
HBTY 075	75	90.5	6.3	4
HBTY 080	**80**	**95.5**	**6.3**	**4**
HBTY 085	85	100.5	6.3	4
HBTY 090	**90**	**105.5**	**6.3**	**4**
HBTY 095	95	110.5	6.3	4
HBTY 100	**100**	**115.5**	**6.3**	**4**
HBTY 105	105	120.5	6.3	4
HBTY 110	110	125.5	6.3	4
HBTY 115	115	130.5	6.3	4
HBTY 120	120	135.5	6.3	4
HBTY 130	130	145.5	6.3	4

Items in **BOLD** are to suit ISO7425-2 housings.

Section D
Wiper Seals



Single Acting Rod Wiper Seal
PWB
Imperial

Design

Claron Style PWB rod wiper is designed to remove potential system contaminants from a reciprocating rod during the negative stroke. It is classified as a light duty wiper and is precision moulded in Nitrile 90° rubber. The wiper is machine trimmed to provide a precise wiping lip.
The wiper is compact in design making it ideal for use where space is an important factor.

Operating Conditions

Temp. Range	-30°C to 100°C	
Max.Linear Speed	m/sec	3.0

Optimum service conditions are affected by temperature, speed, and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

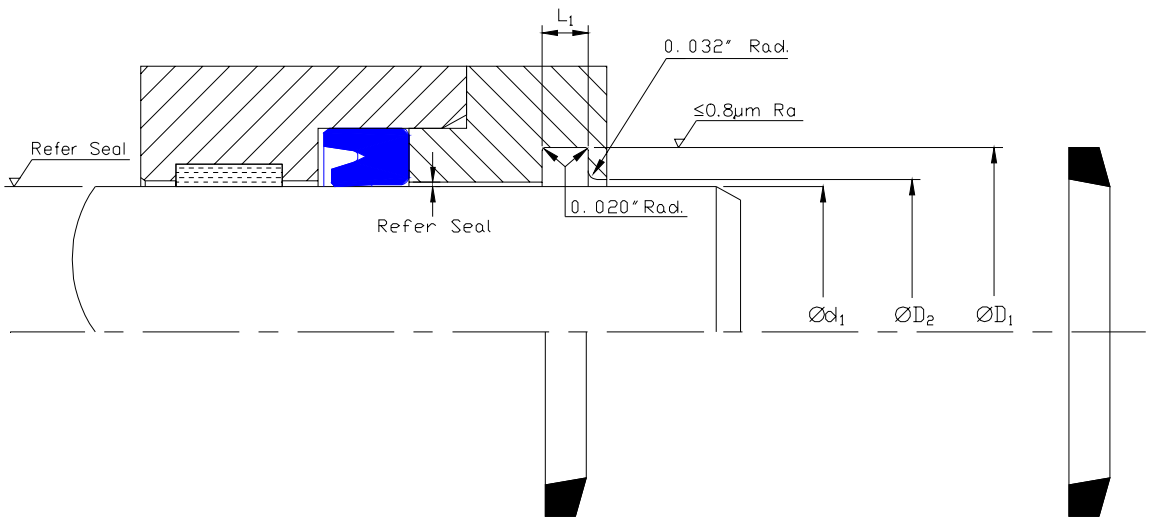
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PWB may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



Single Acting Rod Wiper Seal
PWB
Imperial

Claron Part Number	Nominal Dimensions & Machining Tolerances			
	Refer Seal Selection $Ød_1$	+0.000 -0.005 $ØD_1$	+0.005 -0.000 $ØD_2$	Nominal ±0.010 L_1
PWB 0	0.375	0.540	0.430	0.120
PWB 01	0.437	0.610	0.495	0.120
PWB 1	0.500	0.680	0.560	0.130
PWB 2	0.562	0.740	0.630	0.130
PWB 3	0.625	0.820	0.700	0.140
PWB 4	0.687	0.880	0.760	0.140
PWB 5	0.750	0.950	0.820	0.140
PWB 6	0.812	1.020	0.880	0.140
PWB 7	0.937	1.080	0.950	0.150
PWB 8	0.937	1.150	1.010	0.150
PWB 9	1.000	1.240	1.080	0.160
PWB 11	1.125	1.375	1.210	0.160
PWB 12	1.187	1.420	1.270	0.160
PWB 13	1.250	1.490	1.330	0.170
PWB 15	1.375	1.625	1.460	0.170
PWB 17	1.500	1.770	1.590	0.180
PWB 19	1.625	1.880	1.720	0.180
PWB 20	1.687	1.960	1.780	0.190
PWB 21	1.750	2.030	1.850	0.190
PWB 23	1.875	2.160	1.970	0.190
PWB 25	2.000	2.300	2.100	0.200
PWB 26	2.125	2.430	2.230	0.210
PWB 27	2.250	2.570	2.360	0.210
PWB 28	2.375	2.700	2.490	0.220
PWB 29	2.500	2.840	2.610	0.220
PWB 30	2.625	2.970	2.740	0.230
PWB 31	2.750	3.110	2.870	0.230
PWB 32	2.875	3.240	3.000	0.240
PWB 33	3.000	3.380	3.130	0.240
PWB 34	3.125	3.500	3.260	0.250
PWB 35	3.250	3.650	3.390	0.250
PWB 36	3.375	3.780	3.510	0.260
PWB 37	3.500	3.920	3.640	0.270
PWB 38	3.625	4.050	3.770	0.270
PWB 39	3.750	4.190	3.900	0.280
PWB 40	3.875	4.320	4.030	0.280
PWB 41	4.000	4.460	4.160	0.290
PWB 44	4.250	4.730	4.410	0.300
PWB 45	4.375	4.860	4.540	0.300
PWB 46	4.500	5.000	4.670	0.310
PWB 48	5.000	5.540	5.180	0.330
PWB 50	5.250	5.810	5.440	0.340
PWB 51	5.375	5.945	5.570	0.345
PWB 52	5.500	6.080	5.700	0.350
PWB 53	5.625	6.126	5.185	0.355
PWB 56	6.000	6.620	6.210	0.380
PWB 60	6.500	7.160	6.720	0.400
PWB 61	6.625	7.295	6.850	0.405

Single Acting Rod Wiper Seal

PWO Imperial

Design

Claron Style PWO Rod wiper is designed to remove potential system contaminents from a reciprocating rod during the negative stroke. It is classified as a light to medium duty wiper and is precision moulded in Nitrile 90° rubber. The wiper is machine trimmed to provide a precise wiping lip.

Operating Conditions

Temp. Range	-30°C to 100°
Max.Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed, and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

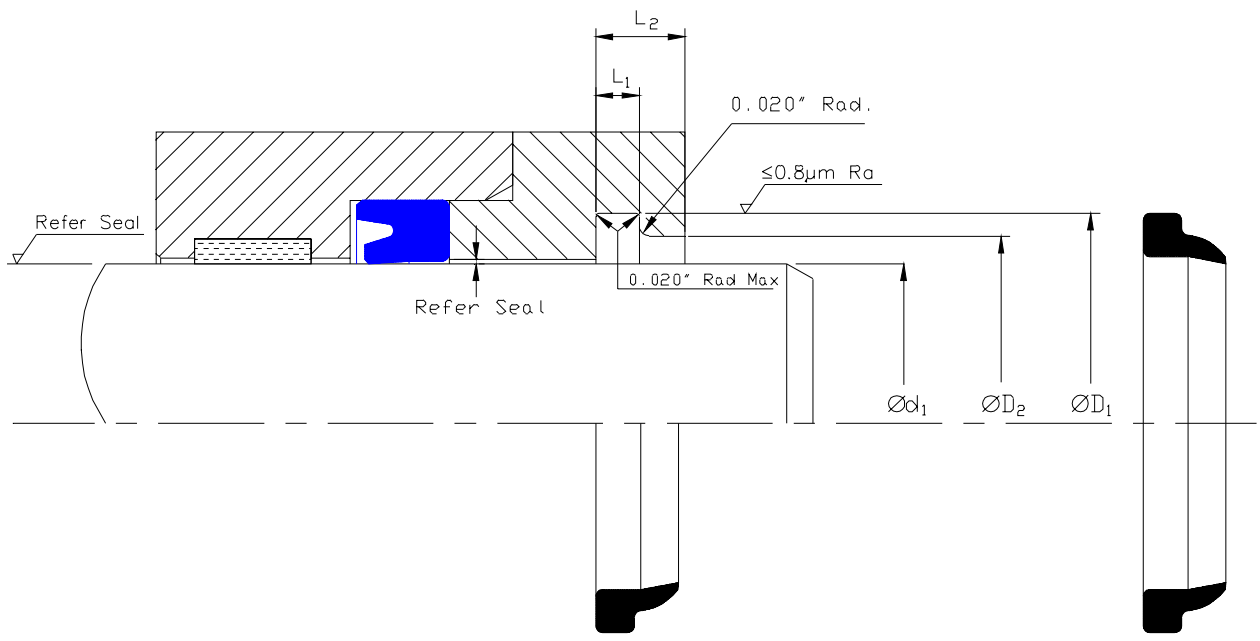
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

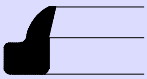
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

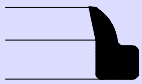
Style PWO may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



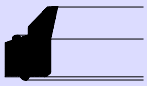


Single Acting Rod Wiper Seal

PWO Imperial

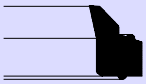


Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.020 +0.010 $ØD_1$	±0.005 $ØD_2$	+0.020 +0.010 L_1	Nominal L_2
PWO 050090	0.500	0.900	0.700	0.125	0.250
PWO 062102	0.625	1.025	0.825	0.125	0.250
PWO 075115	0.750	1.150	0.950	0.125	0.250
PWO 081121	0.812	1.213	1.013	0.125	0.250
PWO 087127	0.875	1.275	1.075	0.125	0.250
PWO 100140	1.000	1.400	1.200	0.125	0.250
PWO 112162	1.125	1.625	1.425	0.125	0.375
PWO 125175	1.250	1.750	1.550	0.125	0.375
PWO 131187	1.312	1.875	1.675	0.125	0.250
PWO 137187	1.375	1.875	1.675	0.125	0.375
PWO 150200	1.500	2.000	1.800	0.125	0.375
PWO 162212	1.625	2.125	1.925	0.125	0.375
PWO 175225	1.750	2.250	2.050	0.125	0.375
PWO 187237	1.875	2.375	2.175	0.125	0.375
PWO 200250	2.000	2.500	2.300	0.125	0.375
PWO 212262	2.125	2.625	2.425	0.125	0.375
PWO 225275	2.250	2.750	2.550	0.125	0.375
PWO 237287	2.375	2.875	2.675	0.125	0.375
PWO 250300	2.500	3.000	2.800	0.125	0.375
PWO 275325	2.750	3.250	3.050	0.125	0.375
PWO 300350	3.000	3.500	3.300	0.125	0.375
PWO 325400	3.250	4.000	3.650	0.187	0.500
PWO 350425	3.500	4.250	3.900	0.187	0.500
PWO 375450	3.750	4.500	4.150	0.187	0.500
PWO 400475	4.000	4.750	4.400	0.187	0.500
PWO 425500	4.250	5.000	4.650	0.187	0.500
PWO 450525	4.500	5.250	4.900	0.187	0.500
PWO 500575	5.000	5.750	5.400	0.187	0.500
PWO 600675	6.000	6.750	6.400	0.187	0.500



Single Acting Rod Wiper Seal
PWS

Metric
Imperial



Design

Claron Style PWS Rod wiper is designed to remove potential system contaminants from a reciprocating rod during the negative stroke. It is classified as a medium to heavy duty wiper and is precision moulded in Nitrile 90° rubber. The wiper is machine trimmed to provide a precise wiping lip.
The addition of sealing beads on this wiper provide positive sealing in the housing preventing moisture/contaminants from passing the outside of the wiper.

Operating Conditions

Temp. Range	-30°C to 100°C
Max.Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

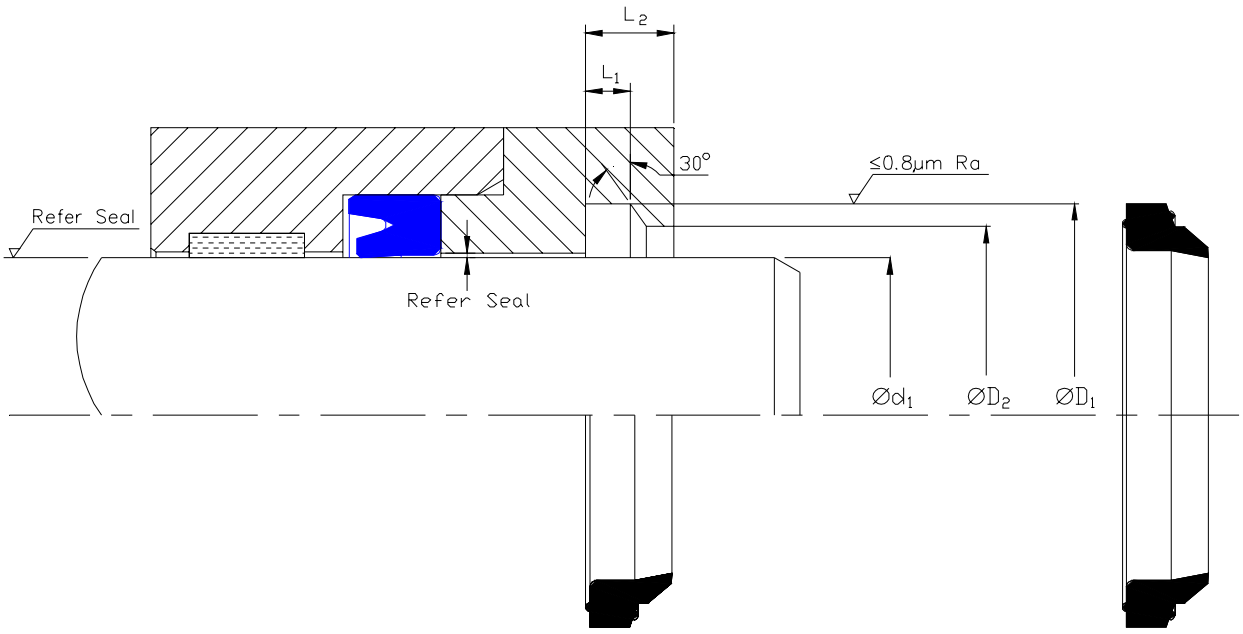
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

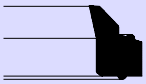
Fitting

Style PWS may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



Single Acting Rod Wiper Seal
PWS

Metric

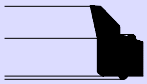


Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.20 -0.00 $ØD_1$	+0.20 -0.00 $ØD_2$	+0.20 -0.00 L_1	Nominal L_2
PWS 074106	19.00	27.00	23.00	3.40	7.00
PWS 098148	25.00	37.70	31.40	5.30	8.90
PWS 118168	30.00	42.70	36.40	5.30	8.90
PWS 125157	32.00	40.00	36.00	3.40	7.00
PWS 137187	35.00	47.70	41.40	5.30	8.90
PWS 157207	40.00	52.70	46.40	5.30	8.90
PWS 196228	50.00	58.00	54.00	3.40	7.00
PWS 220270	56.00	68.70	62.40	5.30	8.90
PWS 236286	60.00	72.70	66.40	5.30	8.90
PWS 248298	63.00	75.70	69.40	5.30	8.90
PWS 255305	65.00	77.70	71.40	5.30	8.90
PWS 295345	75.00	87.70	81.40	5.30	8.90
PWS 315365	80.00	92.70	86.40	5.30	8.90
PWS 334384	85.00	97.70	91.40	5.30	8.90
PWS 393443	100.00	112.70	106.40	5.30	8.90

Single Acting Rod Wiper Seal

PWS

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	Refer Seal Selection Ød$_1$	+0.008 -0.000 ØD$_1$	+0.008 -0.000 ØD$_2$	+0.008 -0.000 L$_1$	Nominal L$_2$
PWS 100150	1.000	1.500	1.250	0.208	0.350
PWS 112162	1.125	1.625	1.375	0.208	0.350
PWS 125175	1.250	1.750	1.500	0.208	0.350
PWS 137187	1.375	1.875	1.625	0.280	0.350
PWS 150200	1.500	2.000	1.750	0.208	0.350
PWS 162212	1.625	2.125	1.875	0.208	0.350
PWS 175225	1.750	2.250	2.000	0.208	0.350
PWS 187237	1.875	2.375	2.125	0.208	0.350
PWS 200250	2.000	2.500	2.250	0.208	0.350
PWS 212262	2.125	2.625	2.375	0.208	0.350
PWS 225275	2.250	2.750	2.500	0.208	0.350
PWS 250300	2.500	3.000	2.750	0.208	0.350
PWS 275325	2.750	3.250	3.000	0.208	0.350
PWS 300350	3.000	3.500	3.250	0.208	0.350
PWS 325375	3.250	3.750	3.500	0.208	0.350
PWS 337387	3.375	3.875	3.625	0.208	0.350
PWS 350400	3.500	4.000	3.750	0.208	0.350
PWS 362412	3.625	4.125	3.875	0.208	0.350
PWS 400450	4.000	4.500	4.250	0.208	0.350
PWS 437487	4.375	4.875	4.625	0.208	0.350
PWS 450500	4.500	5.000	4.750	0.208	0.350
PWS 462512	4.625	5.125	4.875	0.208	0.350
PWS 475525	4.750	5.250	5.000	0.208	0.350
PWS 512562	5.125	5.625	5.375	0.208	0.350
PWS 537587	5.375	5.875	5.625	0.208	0.350
PWS 562612	5.625	6.125	5.875	0.208	0.350

Single Acting Rod Wiper Seal

PWM

Metric
Imperial

Design

Claron Style PWM Rod wiper is designed to remove potential system contaminates from a reciprocating rod during the negative stroke. It is classified as a medium duty wiper and is precision moulded in Nitrile 90° rubber.
The wiper is machine trimmed to provide a precise wiping lip.

Operating Conditions

Temp. Range	-30°C to 100°C
Max.Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1section for further information.

Continuous operating temperature for various Fluids

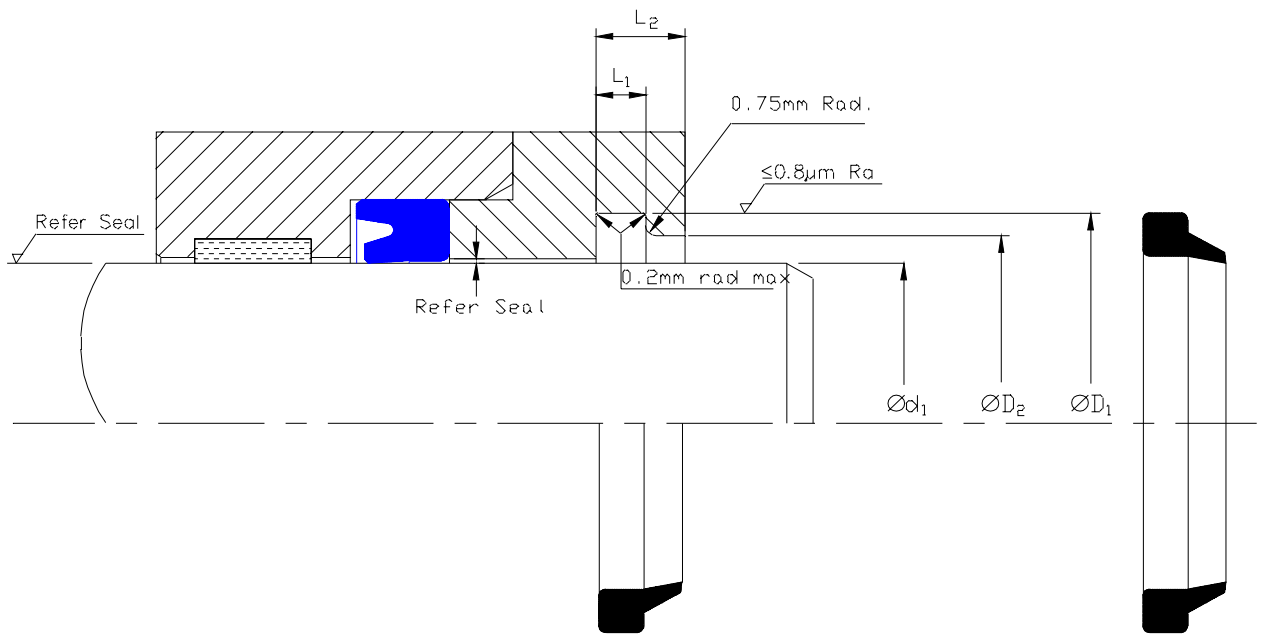
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PWM may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



Single Acting Rod Wiper Seal
PWM
Metric

Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.20 -0.00 $ØD_1$	+0.20 -0.00 $ØD_2$	+0.20 -0.00 L_1	Nominal L_2
PWM 070094	18	24.6	21	3.8	5.3
PWM 070102	18	26.6	21	5.3	7.0
PWM 078110	20	28.6	23	5.3	7.0
PWM 086118	22	30.6	25	5.3	7.0
PWM 098129	25	33.6	28	5.3	7.0
PWM 110141	28	36.6	31	5.3	7.0
PWM 118149	30	38.6	33	5.3	7.0
PWM 125157	32	40.6	35	5.3	7.0
PWM 137169	35	43.6	38	5.3	7.0
PWM 141173	36	44.6	39	5.3	7.0
PWM 157188	40	48.6	43	5.3	7.0
PWM 177208	45	53.6	48	5.3	7.0
PWM 196228	50	58.6	53	5.3	7.0
PWM 216248	55	63.6	58	5.3	7.0
PWM 220251	56	64.6	59	5.3	7.0
PWM 236267	60	68.6	63	5.3	7.0
PWM 248279	63	71.6	66	5.3	7.0
PWM 275307	70	78.6	73	5.3	7.0
PWM 295326	75	83.6	78	5.3	7.0
PWM 314346	80	88.6	83	5.3	7.0
PWM 354401	90	102.6	96	7.1	10.5
PWM 362409	92	104.6	98	7.1	10.5
PWM 393440	100	112.2	106	7.1	10.5
PWM 464511	118	130.2	124	7.1	10.5
PWM 9631043	245	266.0	259	11.0	14.5

Single Acting Rod Wiper Seal
PWM
Imperial

Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.008 -0.000 $ØD_1$	+0.008 -0.000 $ØD_2$	+0.008 -0.000 L_1	Nominal L_2
PWM 075100	0.750	1.026	0.875	0.156	0.210
PWM 100137	1.000	1.398	1.187	0.230	0.300
PWM 137175	1.375	1.773	1.562	0.230	0.300
PWM 150187	1.500	1.898	1.678	0.230	0.300
PWM 175206	1.750	2.085	1.875	0.218	0.280
PWM 200237	2.000	2.398	2.187	0.230	0.300
PWM 225262	2.250	2.648	2.437	0.230	0.300
PWM 250287	2.500	2.898	2.687	0.230	0.300
PWM 300337	3.000	3.398	3.187	0.230	0.300
PWM 350400	3.500	4.008	3.750	0.295	0.450
PWM 400450	4.000	4.508	4.250	0.295	0.450
PWM 437487	.4.375	4.883	4.625	0.295	0.450
PWM 500550	5.000	5.508	5.250	0.295	0.450

Single Acting Rod Wiper Seal
WM
Metric

Design

Claron Style WM Rod wiper is designed to remove potential system contaminents from a reciprocating rod during the negative stroke. It is classified as a medium duty wiper and is precision moulded in Nitrile 90° rubber.
The wiper is machine trimmed to provide a precise wiping lip.

Operating Conditions

Temp.Range	-30°C to 100°C
Max Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1for further information.

Continuous operating temperature for various Fluids

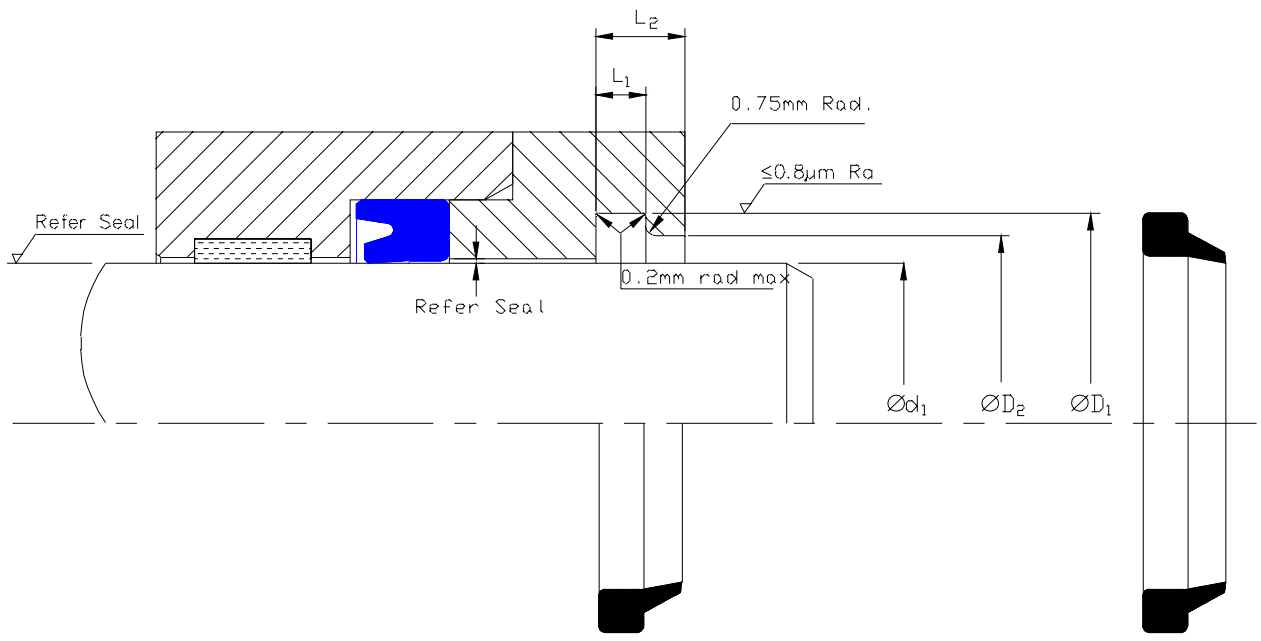
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

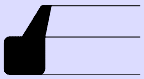
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style WM may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

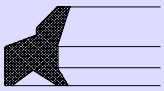




Single Acting Rod Wiper Seal
WM

Metric

Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.20 -0.00 $ØD_1$	+0.20 -0.00 $ØD_2$	+0.20 -0.00 L_1	Nominal L_2
WM 078110	20	28.0	24	4.0	6
WM 098129	25	33.0	29	4.0	6
WM 110141	28	36.0	32	4.0	6
WM 118165	30	42.0	36	6.0	9
WM 125173	32	44.0	38	6.0	9
WM 141188	36	48.0	42	6.0	9
WM 157204	40	52.0	46	6.0	9
WM 177224	45	57.0	51	6.0	9
WM 196244	50	62.0	55	6.0	9
WM 216255	55	65.6	58	5.3	7
WM 248295	63	75.0	69	6.0	9
WM 314362	80	92.2	86	7.1	12



Double Acting Rod Wiper Seal Imperial

PWE

Design

Claron **Style PWE** double acting Rod wiper is designed to remove potential system contaminants from a reciprocating rod during the negative stroke and to assist sealing by collecting the fluid film on the positive stroke. It is classified as a medium to heavy duty wiper and is precision moulded in Nitrile 90º rubber. The wiper is machine trimmed to provide a precise wiping lip. The wipers ability to assist sealing make it ideal for use where zero leakage is required. Claron Wiper Seals Style PWE should not be utilised in combination with double-acting Rod seals unless the housing design allows for pressure relief between the wiper and the seal.

Operating Conditions

Temp. range	-30°C to 100°C
Max Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

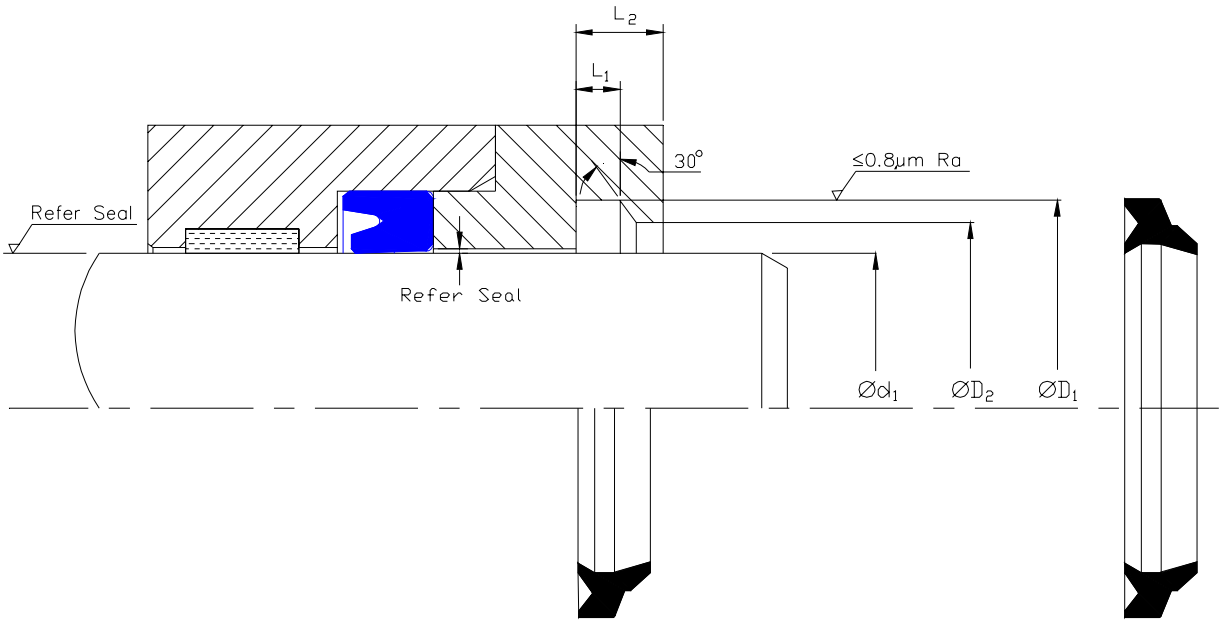
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

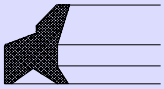
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PWE may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.



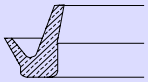


Double Acting rod Wiper Seal

PWE

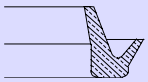
Imperial

Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.005 -0.000 $ØD_1$	+0.005 -0.000 $ØD_2$	+0.005 - 0.000 L_1	Nominal L_2
PWE 100137	1.000	1.385	1.082	0.195	0.343
PWE 125162	1.250	1.635	1.332	0.195	0.343
PWE 137175	1.375	1.760	1.457	0.195	0.343
PWE 150187	1.500	1.885	1.582	0.195	0.343
PWE 162200	1.625	2.010	1.707	0.195	0.343
PWE 175212	1.750	2.135	1.832	0.195	0.343
PWE 200237	2.000	2.385	2.082	0.195	0.343
PWE 250287	2.500	2.885	2.582	0.195	0.343
PWE 300350	3.000	3.510	3.157	0.255	0.468
PWE 362412	3.625	4.135	3.782	0.255	0.468
PWE 400450	4.000	4.510	4.157	0.255	0.468
PWE 475525	4.750	5.260	4.907	0.255	0.468



Single Acting Rod Wiper Seal

CSW CSWM Imperial Metric



Design

Claron Style CSW Rod wiper is designed to remove more tenacious mud and ice from a reciprocating rod during the negative stroke. It is classified as a heavy duty scraper. The scraper is precision moulded in Nylon (PA) with a filter of MOS_2 to improve the friction and wear characteristics of the material. The materials high modulus (stiffness) allow it to aggressively scrape larger debris from the rod. the wiper is designed with an outside sealing lip providing positive sealing on the housing thus preventing dirt and moisture from entering the system around the outside of the wiper.

Operating Conditions

Temp. range	-40°C to 100°C
Max Linear Speed m/sec	5

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temp. in various fluids

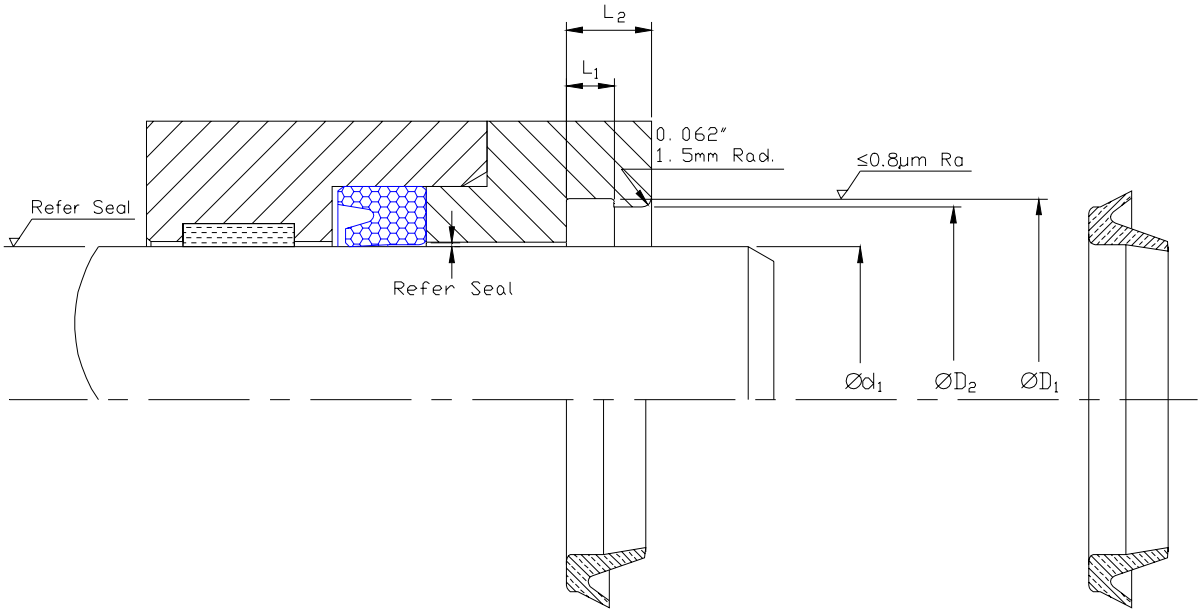
PA Nylon		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	120
H-L	Mineral Fluid with anti corrosion and anti ageing additives	120
H-LP	Mineral oil as HL plus additives reducing wear, raising load	120
H-LPD	Mineral oil as H-LP but with detergents and dispersants	120
H-V	Mineral oil as H-LP plus improved viscosity temp.	120
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	80
HFD S	Chlorinated hydrocarbon based	80
HFD T	Mixtures of HFD R and HFD S	80
HEPG	Polyglycol based	100
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	100

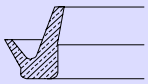
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Styles CSW & CSWM are designed to snap fit into its housing. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

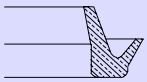




Single Acting Rod Wiper Seal

CSWM

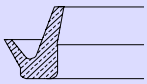
Metric



Nominal Dimensions & Machining Tolerances

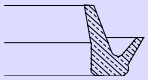
Claron Part Number	Refer Seal Selection $Ød_1$	+0.20 -0.00 $ØD_1$	+0.20 -0.00 $ØD_2$	+0.20 -0.00 L_1	Nominal L_2
CSWM 016	16	26	24.5	4.5	6.5
CSWM 018	18	28	26.5	4.5	6.5
CSWM 020	20	33	31.5	6.0	8.5
CSWM 022	22	35	33.5	6.0	8.5
CSWM 025	25	38	36.5	6.0	8.5
CSWM 028	28	41	39.5	6.0	8.5
CSWM 030	30	43	41.5	6.0	8.5
CSWM 032	32	45	43.5	6.0	8.5
CSWM 036	36	49	47.5	6.0	8.5
CSWM 040	40	53	51.5	6.0	8.5
CSWM 045	45	58	56.5	6.0	8.5
CSWM 050	50	63	61.5	6.0	8.5
CSWM 055	55	68	66.5	6.0	8.5
CSWM 056	56	69	67.5	6.0	8.5
CSWM 060	60	73	71.5	6.0	8.5
CSWM 063	63	76	74.5	6.0	8.5
CWSM 065	65	78	76.5	6.0	8.5
CSWM 070	70	83	81.5	6.0	8.5
CSWM 080	80	93	91.5	6.0	8.5
CSWM 090	90	103	101.5	6.0	8.5
CSWM 100	100	113	111.5	6.0	8.5

Single Acting Rod Wiper Seal



CSW

Imperial



Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.008 -0.000 $ØD_1$	+0.008 -0.000 $ØD_2$	+0.008 -0.000 L_1	Nominal L_2
CSW 050	0.500	0.875	0.812	0.172	0.250
CSW 062	0.625	1.000	0.938	0.172	0.250
CSW 075	0.750	1.250	1.187	0.234	0.345
CSW 087	0.875	1.375	1.312	0.234	0.345
CSW 100	1.000	1.500	1.437	0.234	0.345
CSW 112	1.125	1.625	1.562	0.234	0.345
CSW 125	1.250	1.750	1.687	0.234	0.345
CSW 137	1.375	1.875	1.812	0.234	0.345
CSW 150	1.500	2.000	1.937	0.234	0.345
CSW 162	1.625	2.125	2.062	0.234	0.345
CSW 175	1.750	2.250	2.187	0.234	0.345
CSW 200	2.000	2.500	2.437	0.234	0.345
CSW 212	2.125	2.625	2.562	0.234	0.345
CSW 225	2.250	2.750	2.687	0.234	0.345
CSW 250	2.500	3.000	2.937	0.234	0.345
CSW 275	2.750	3.250	3.187	0.234	0.345
CSW 300	3.000	3.500	3.437	0.234	0.345
CSW 325	3.250	3.750	3.687	0.234	0.345
CSW 350	3.500	4.000	3.937	0.234	0.345
CSW 375	3.750	4.250	4.187	0.234	0.345
CSW 400	4.000	4.500	4.375	0.234	0.345

Single Acting Rod Wiper Seal Imperial

PMW

Design

Claron Style PMW metal cased Rod wiper is designed to remove potential system contaminents from a reciprocating rod during the negative stroke. It is classified as a medium to heavy duty rod wiper/scraper. The wiper is precision moulded in 98° Shore Polyurethane with an accurately machined lip. The high modulus (stiffness) of this material allows the wiper to scrape tenatious mud and dirt from the rod. The wiper has a metal case designed to press fit in the housing thus retaining the wiper. The metal case is coated with a corrosion resistant yellow Zinc plating. The press fit design of this wiper allows it to be used in simple 'open ended' housing.

Operating Conditions

Temp. range	-40°C to 110°C
Max Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuos operating temperature for various fluids

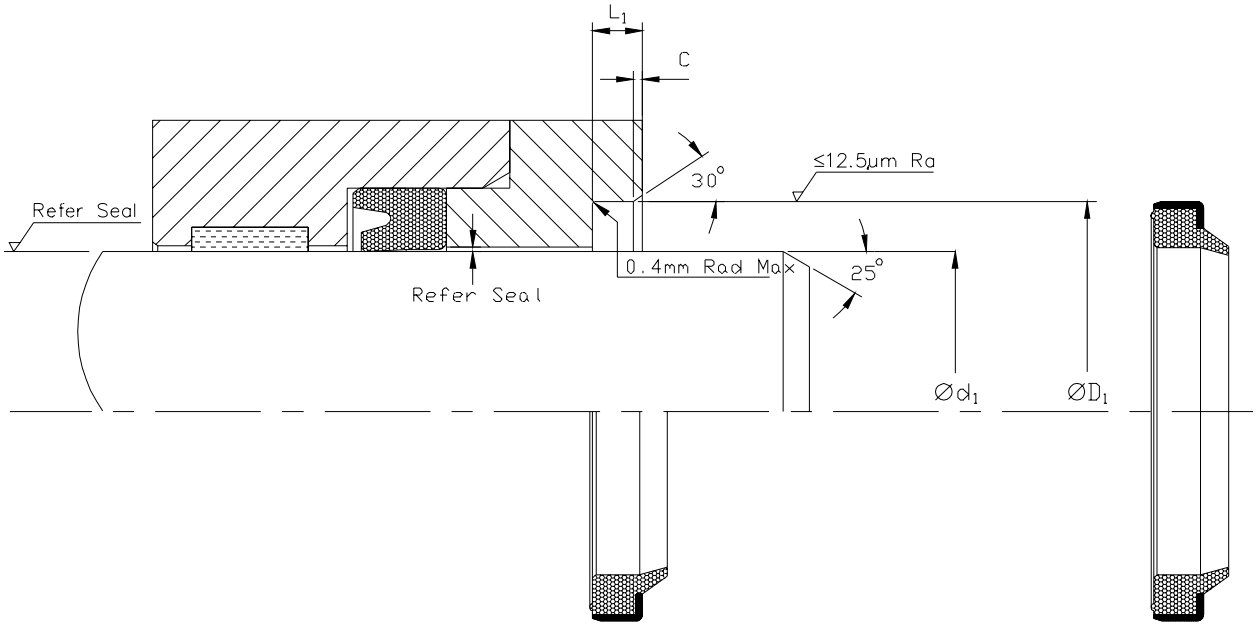
AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

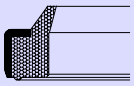
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PMW is designed to press fit into an open ended housing. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

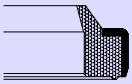




Single Acting Rod Wiper Seal

PMW

Imperial



Nominal Dimensions & Machining Tolerances

Claron Part Number	Refer Seal Selection $Ød_1$	H8 $ØD_1$	+0.020 -0.000 L_1	Nominal L_2
PMW 1000	1.000	1.375	0.218	0.281
PMW 1250	1.250	1.625	0.218	0.281
PMW 1500	1.500	1.875	0.218	0.281

Double Acting Rod Wiper Seal

PFB

Metric

Design

Claron **Style PFB** double acting Rod wiper is designed to remove potential system contaminents from a reciprocating rod during the negative stroke and to assist sealing by collecting the fluid film on the positive stroke. It is classified as a medium to heavy duty rod wiper. The wiper is precision moulded in 80° Shore Nitrile Rubber with an accurately machined lip. The wiper has a metal case designed to press fit in the housing thus retaining the wiper. The press fit design of this wiper allows it to be used in a simple open ended housing. The sizes are to common Japanese housing standards.
Claron Wiper Seals **Style PFB** should not be utilised in combination with double-acting Rod seals unless the housing design allows for pressure relief between the wiper and the seal.

Operating Conditions

Temp. range	-30°C to 100°C
Max. Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1for further information.

Continuous operating temperature for various Fluids

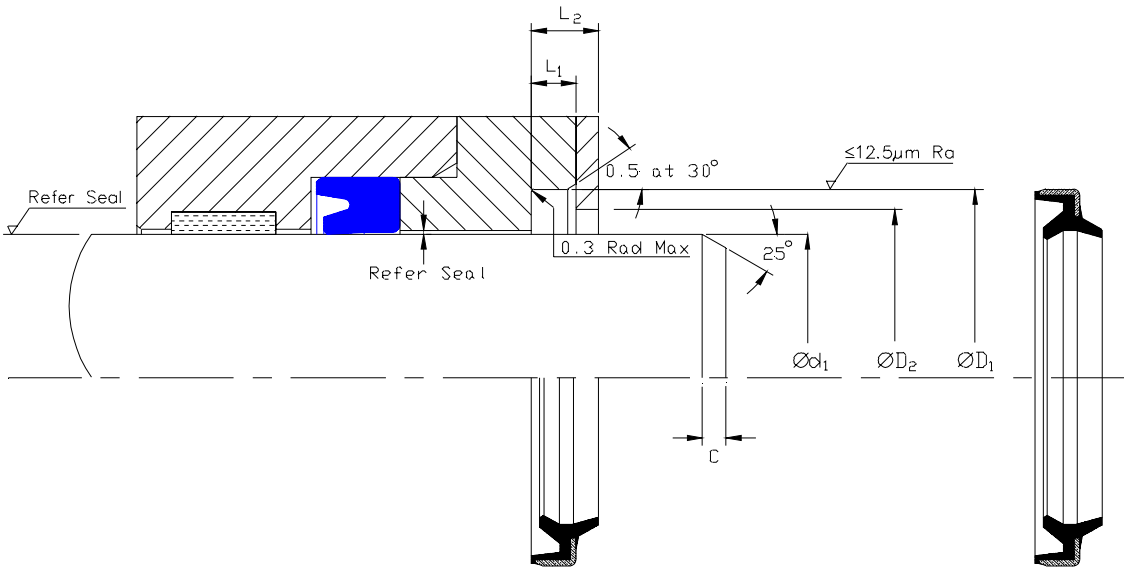
NBR Rubber		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	NS
HFD S	Chlorinated hydrocarbon based	NS
HFD T	Mixtures of HFD R and HFD S	NS
HEPG	Polyglycol based	NS
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	NS

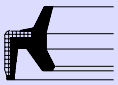
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PFB is designed to press fit into the open ended housings. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

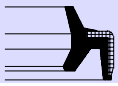




Double Acting Rod Wiper Seal

PFB

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	Refer Seal Selection $Ød_1$	H8 $ØD_1$	+0.30 -0.00 $ØD_2$	+0.60 +0.40 L_1	Nominal L_2
PFB 022033	22	33	28	6	9
PFB 025037	25	37	31	6	9
PFB 030042	30	42	36	6	9
PFB 035047	35	47	41	6	9
PFB 040052	40	52	46	7	10
PFB 045057	45	57	51	7	10
PFB 050062	50	62	56	7	10
PFB 055069	55	69	62	8	11
PFB 060074	60	74	67	8	11
PFB 065079	65	79	72	8	11
PFB 070084	70	84	77	8	11
PFB 075089	75	89	82	8	11
PFB 080094	80	94	87	8	11
PFB 085099	85	99	92	8	11
PFB 090104	90	104	97	8	11
PFB 095109	95	109	102	8	11
PFB 100114	100	114	107	8	11
PFB 110126	110	126	118	9	12
PFB 120136	120	136	128	9	12
PFB 130146	130	146	138	9	12
PFB 140160	140	160	150	10	14
PFB 155175	155	175	165	10	14
PFB 160180	160	180	170	10	14
PFB 170190	170	190	180	10	14

Double Acting Rod Wiper Seal Metric

PFP

Design

Claron **Style PFP** double acting Rod wiper is designed to remove potential system contaminents from a reciprocating rod during the negative stroke and to assist sealing by collecting the fluid film on the positive stroke. It is classified as a heavy duty rod wiper. The wiper is precision moulded in 92° Shore A Polyurethane with an accurately machined lip. The wiper has a metal case designed to press fit in the housing thus retaining the wiper. The press fit design of this wiper allows it to be used in a simple open ended housing. The sizes are to common Japanese housing standards.
Claron Wiper Seals Style PFP should not be utilised in combination with double-acting Rod seals unless the housing design allows for pressure relief between the wiper and the seal.

Operating Conditions

Temp. range	-40°C to 110°C
Max Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

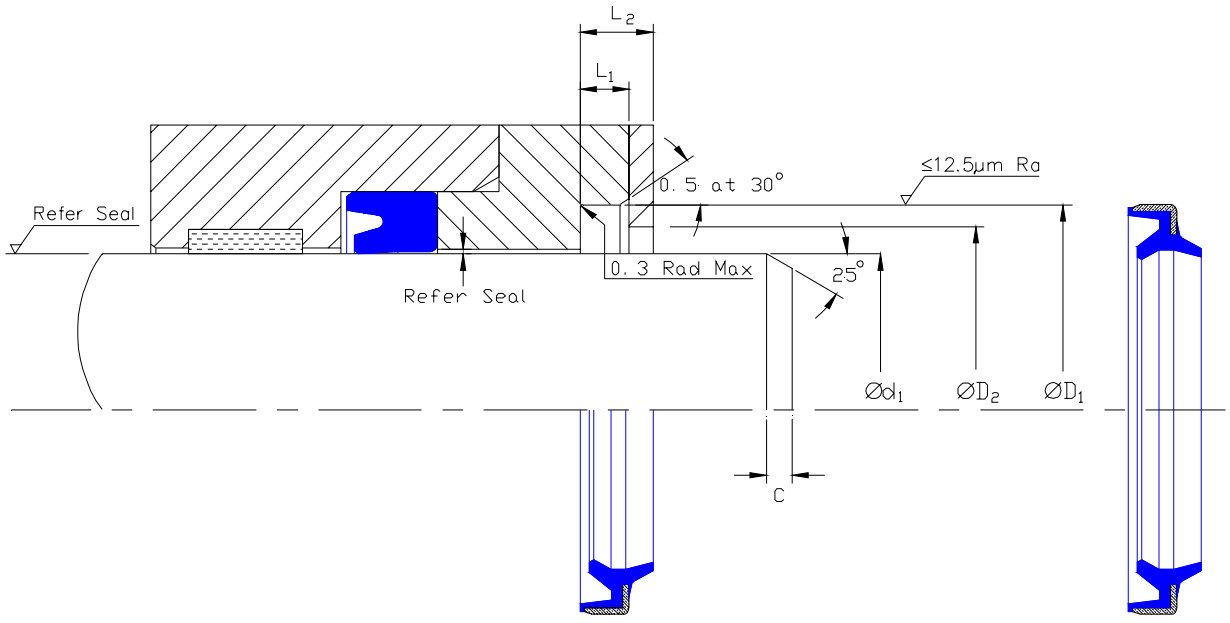
AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

Housing

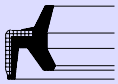
For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to appendix 4 for value of tolerance symbols.

Fitting

Style PFP is designed to press fit into the open ended housings. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

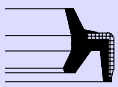


Double Acting Rod Wiper Seal



PFP

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	Refer Seal Selection $Ød_1$	H8 $ØD_1$	+0.30 -0.00 $ØD_2$	+0.30 -0.00 L_1	Nominal L_2
PFP 020033	20	33	28	6	9
PFP 025037	25	37	32	6	9
PFP 030042	30	42	37	6	9
PFP 035047	35	47	42	7	10
PFP 035047/1	35	47	47	7	10
PFP 040050/1	40	50	47	7	10
PFP 040052	40	52	47	7	10
PFP 040052/1	40	52	47	7	10
PFP 045057	45	57	52	7	10
PFP 045057/1	45	57	52	7	10
PFP 050062	50	62	57	7	10
PFP 050062/1	50	62	57	7	10
PFP 055069	55	69	62	8	11
PFP 060074	60	74	67	8	11
PFP 065079	65	79	72	8	11
PFP 070084	70	84	77	8	11
PFP 075089	75	89	82	8	11
PFP 080094	80	94	87	8	12
PFP 085099	85	99	92	8	11
PFP 090104	90	104	97	8	11
PFP 095109	95	109	102	8	12
PFP 100114	100	114	107	8	11
PFP 110126	110	126	118	9	12
PFP 120136	120	136	128	9	12
PFP 130146	130	146	138	9	12
PFP 140160	140	160	150	10	14
PFP 150170	150	170	160	10	14
PFP 160180	160	180	170	10	14
PFP 200225	200	225	212	12	17

Single Acting Rod Wiper Seal

UPWM

Metric

Design

Claron Style UPWM Rod wiper is designed to remove potential system contaminents from a reciprocating rod during the negative stroke. It is classified as a medium to heavy duty wiper and is precision moulded in 92° Shore A Polyurethane. The wiper is machine trimmed to provide a precise wiping lip.

Operating Conditions

Temp. range	-40°C to 110°C
Max Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

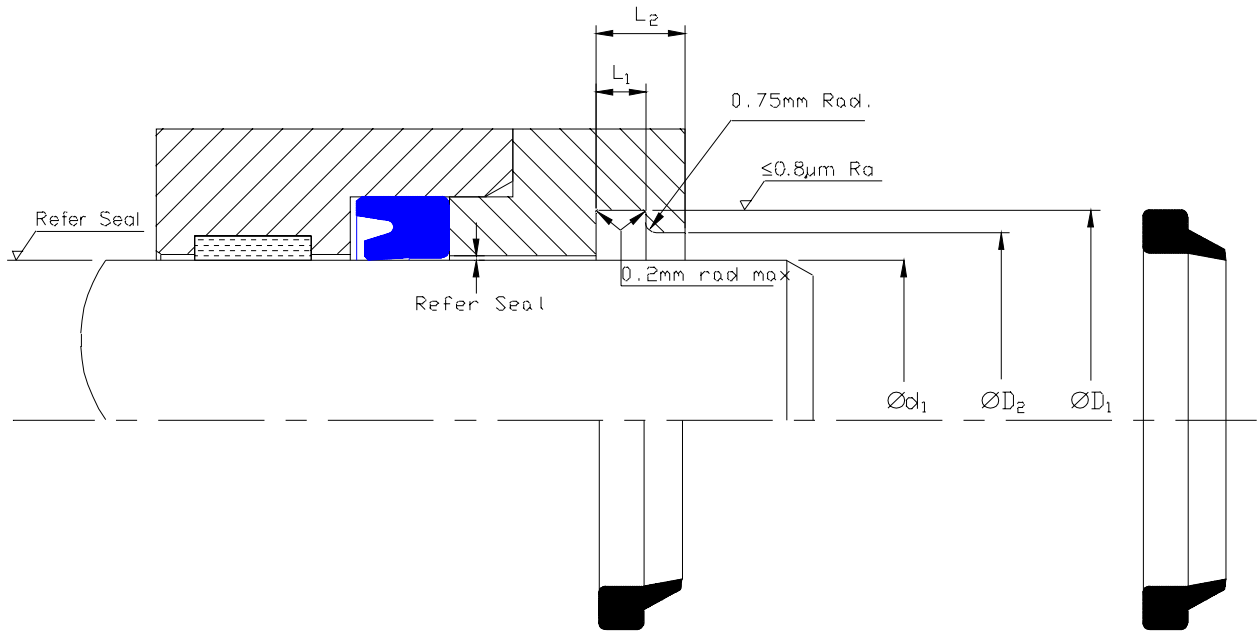
AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

Housing

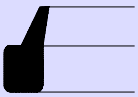
For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style UPWM may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

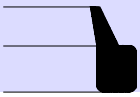


Single Acting Rod Wiper Seal



UPWM

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	Refer Seal Selection $Ød_1$	H11 $ØD_1$	H11 $ØD_2$	+0.20 -0.00 L_1	Nominal L_2
UPWM 30	30.00	38.60	33.00	5.30	7.00
UPWM 40	40.00	50.00	45.00	7.10	12.00
UPWM 50	50.00	60.00	55.00	7.10	12.00
UPWM 60	60.00	70.00	65.00	7.10	12.00
UPWM 65	65.00	75.00	70.00	7.10	12.00

Design

Designed to preclude the ingress of contaminents into the system as well as assist in sealing the Rod. Produced in Polyurethane, the wiper is designed to fit into closed housings with pre-loading of the static face providing stability and sealing. The wiper is profiled such that the lip facing the media collects fluid passing the rod seal. The use of Polyurethane with it's excellent properties combined with the proportioned design of the wiper will extend the service life of the rod seal.Claron Wiper Seals **Style PWD** should not be utilised in combination with double-acting Rod seals unless the housing design allows for pressure relief between the wiper and the seal.

Operating Conditions

Temp. Range	-40°C to 110°C
Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various fluids

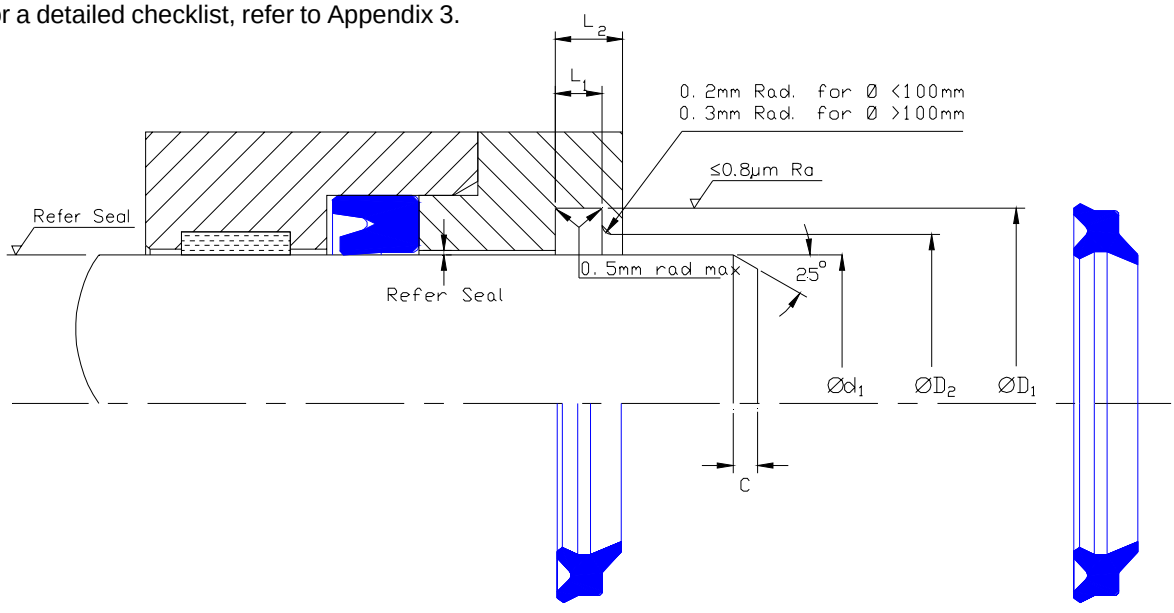
AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

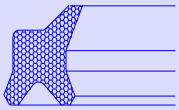
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Aappendix 4 for value of tolerance symbols.
Style PWD may be deformed and fitted into a closed groove.

Fitting

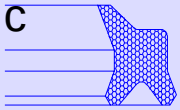
For the wiper to function correctly, it is important that care be taken in fitting the wiper within its housing.
For a detailed checklist, refer to Appendix 3.





Double Acting Rod Wiper Seal

Metric



PWD

Nominal Dimensions & Machining Tolerances

Claron Part Number	Refer Seal Selection $Ød_1$	H11 $ØD_1$	H11 $ØD_2$	+0.10 -0.00 L_1	Min. L_2
PWD 018	18	24.0	20.5	4.0	7
PWD 025/1	25	33.6	28.0	5.3	7
PWD 030	30	38.0	33.0	5.2	6
PWD 030/2	30	40.0	35.0	7.0	10
PWD 035/1	35	43.6	38.0	5.3	7
PWD 040	40	48.0	43.0	5.2	6
PWD 042/1	42	50.6	45.0	5.3	7
PWD 045/2	45	55.6	48.0	5.3	7
PWD 048/1	48	56.6	51.0	5.3	7
PWD 050	50	58.0	53.0	5.2	6
PWD 055/2	55	65.6	58.0	5.3	7
PWD 060	60	70.0	63.0	6.2	7
PWD 065	65	75.0	68.0	6.2	7
PWD 070	70	80.0	73.0	6.2	7
PWD 075	75	85.0	78.0	6.2	7
PWD 080	80	90.0	83.0	6.2	7
PWD 085	85	95.0	88.0	6.2	7
PWD 090	90	100.0	93.0	6.2	7
PWD 095	95	105.0	98.0	6.2	7
PWD 100	100	110.0	103.0	6.2	7

EW

Design

Claron Style EW Rod wiper is designed to remove potential system contaminants from a reciprocating rod during the negative stroke. It is classified as a medium to heavy duty wiper and is precision moulded in 98°Shore A Polyurethane. The wiper is machine trimmed to provide a precise wiping lip.

Operating Conditions

Temp. range	-40°C to 110°
Max Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

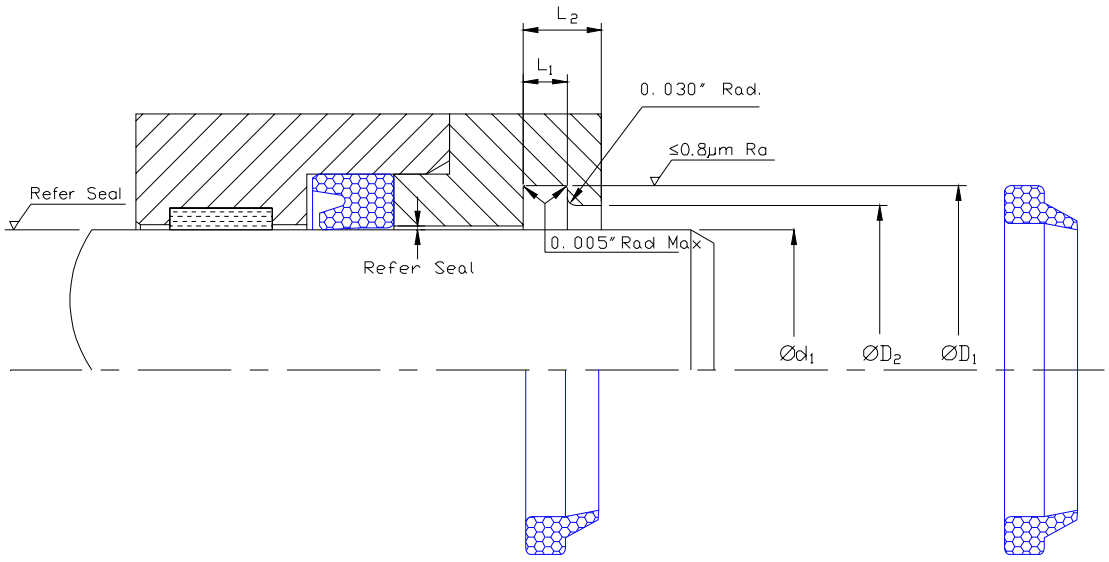
AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

Housing

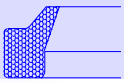
For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style EW may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

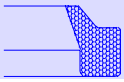


Single Acting Rod Wiper Seal

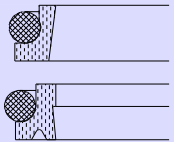


EW

Imperial



Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.008 -0.000 $ØD_1$	+0.008 -0.000 $ØD_2$	+0.004 -0.000 L_1	Nominal L_2
EW 275	2.750	3.187	2.980	0.187	0.437
EW 300	3.000	3.500	3.278	0.187	0.500
EW 350	3.500	4.062	3.850	0.187	0.582
EW 362	3.625	4.187	3.950	0.187	0.562
EW 437	4.375	4.908	4.697	0.187	0.533
EW 525	5.250	5.844	5.602	0.187	0.594
EW 631	6.312	6.906	6.665	0.187	0.594
EW 731	7.312	7.906	7.665	0.187	0.594
EW 837	8.375	8.969	8.665	0.187	0.594



931
941
951

Single & Double Acting Rod Wiper Seals

Metric

931 941 951

Design

Claron Wiper Seals **Style 941** and **951** are designed as low friction **Double-acting** seals to assist the sealing capability of single-acting Rod seal arrangements in arduous conditions. Double Acting Wiper Seals **Style 941** and **951** should not be utilised in combination with double-acting Rod seals unless the housing design allows for pressure relief between the wiper and the seal.

Claron Wiper Seals **Style 931** are designed as low friction **Single-acting** Rod wiper seals for use with other single or double-acting Rod seals in hydraulic and pneumatic cylinders. This style does not offer any assistance to the sealing capability of the Rod seal and therefore would not be recommended for use where **Style 941** and **951** could be utilised**.** Housing sizes and tolerances for **Style 931** are identical to **Style 941. Style 951** utilises a seperate range of installation sizes.

Materials

Standard materials are Virgin Modified P.T.F.E with a Nitrile O-Ring Energiser but both the inner wiper element and the energiser are available in a wide range of high performance materials to suit a variety of applications. The application parameters should be carefully considered prior to selecting suitable materials from the tables shown in Appendix 2-3. Consult Claron for further advise.

Operating Range

Temp. -50°C to 200°C, (Dependent upon O-Ring Material used see Appendix 2.)
Velocity upto 15m/s linear, 5m/s Rotary or Oscillating
These range parameters are maximum conditional values.
Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 section for further information**.**

Range Of Installation Dimensions

The full range of diameters applicable to the “Standard”, “Light” and “Heavy” Duty Sections are shown in the table below.

STYLES 931 and 941

Housing		Rod Dia.		
Section	Width	Standard Duty	Light Duty	Heavy Duty
2.4	3.7	6.0 to 11.9	12.0 to 64.9	
3.4	5.0	12.0 to 64.9	65.0 to 250.9	6.0 to 11.9
4.4	6.0	65.0 to 250.9	251.0 to 420.9	12.0 to 64.9
6.1	8.4	251.0 to 420.9	421.0 to 580.0	65.0 to 250.9
8.0	11.0	421.0 to 580.0		251.0 to 420.9

STYLE 951

Housing		Rod Dia.		
Section	Width	Standard Duty	Light Duty	Heavy Duty
3.8	4.2	8.0 to 39.9	40 to 69.9	
4.4	6.3	40 to 69.9	70 to 139.9	
6.1	8.1	70 to 139.9	140 to 350.0	
8.0	9.5	140 to 399.9	400 to 580.0	100 to 139.9
12.0	14.0	400 to 580.0		200 to 399.9

For Standard and Light Duty Sections split grooves should be utilised for Rod Diameters < 30mm
For Heavy Duty Sections use split grooves for Rod Diameters <40mm

How To Order

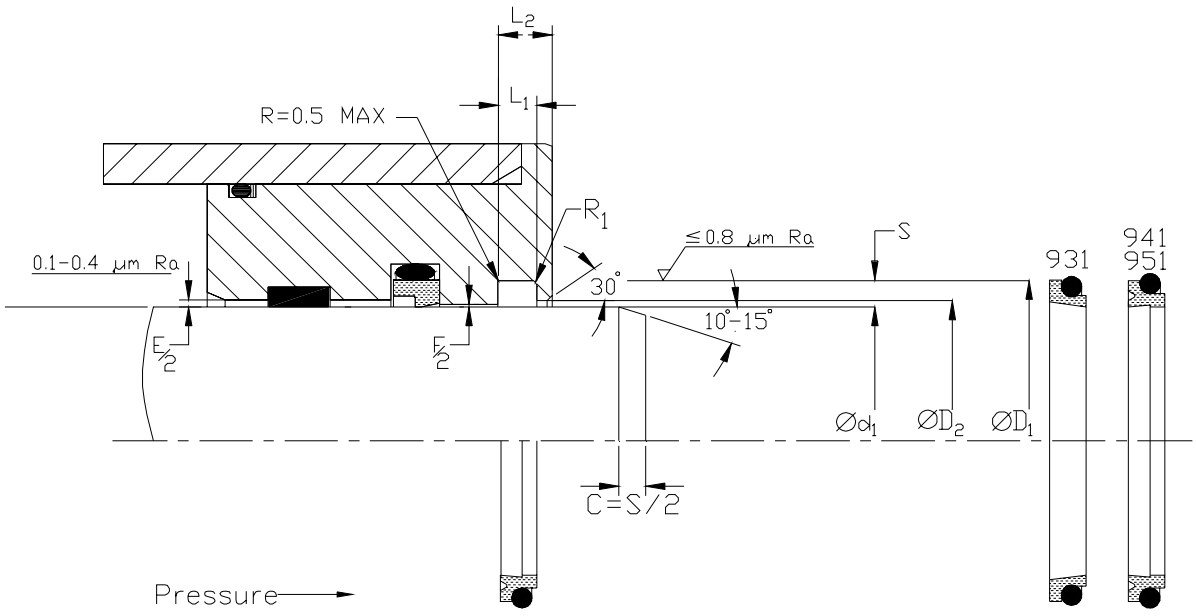
When ordering, prefix the size reference with the style required and use the suffix shown in the material application tables.

e.g. 931 Standard section in Virgin Modified material for 70mm Rod **931-0700/VM**
941 Light duty section in Virgin Modified material for 70 mm Rod **941-0700/1VM**
941 Heavy duty section in Carbon filled material for 70 mm Rod **941-0700/2C**
951 Standard section in Virgin Modified material for 70mm Rod **951-0700/VM**

For O-Ring energiser materials other than Nitrile, use suffix shown in material table
e.g Flourocarbon material (FKM), **941-0700/VM/FKM**

Housing

For surface finish and lead in chamfers refer to the illustration below.
For Housing dimensions and tolerances refer to the table of recommended sizes.



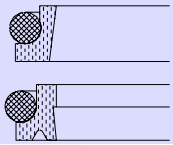
For F/2 values see note and tables

For E/2 values refer to P.T.F.E. Guide Tape

For Standard and Light Duty Sections split grooves should be utilised for Rod Diameters < 30mm
For Heavy Duty Sections use split grooves for Rod Diameters <40mm

Fitting

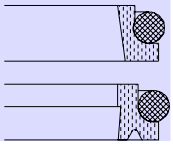
For the seal to function correctly it is important that care is taken during fitting.
For details refer to Appendix 3.



Single & Double Acting Rod Wiper Seals

Metric

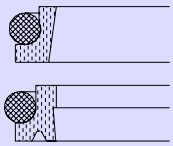
941 931



Nominal Dimensions & Machining Tolerances

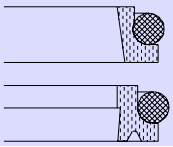
Claron Part Number	f8 d_1	H9 D_1	+0.20 -0.00 D_2	+0.20 -0.00 L_1	Min L_2	SECT S	MAX R_1
941-0060/VM	**6.00**	10.80	7.50	3.70	5.70	2.40	0.40
941-0063/VM	6.35	11.15	7.85	3.70	5.70	2.40	0.40
941-0080/VM	**8.00**	12.80	9.50	3.70	5.70	2.40	0.40
941-0100/VM	**10.00**	14.80	11.50	3.70	5.70	2.40	0.40
941-0120/VM	**12.00**	18.80	13.50	5.00	7.00	3.40	0.70
941-0140/VM	**14.00**	20.80	15.50	5.00	7.00	3.40	0.70
941-0150/VM	15.00	21.80	16.50	5.00	7.00	3.40	0.70
941-0160/VM	**16.00**	22.80	17.50	5.00	7.00	3.40	0.70
941-0180/VM	**18.00**	24.80	19.50	5.00	7.00	3.40	0.70
941-0200/VM	**20.00**	26.80	21.50	5.00	7.00	3.40	0.70
941-0220/VM	**22.00**	28.80	23.50	5.00	7.00	3.40	0.70
941-0250/VM	**25.00**	31.80	26.50	5.00	7.00	3.40	0.70
941-0280/VM	**28.00**	34.80	29.50	5.00	7.00	3.40	0.70
941-0300/VM	30.00	36.80	31.50	5.00	7.00	3.40	0.70
941-0320/VM	**32.00**	38.80	33.50	5.00	7.00	3.40	0.70
941-0350/VM	35.00	41.80	36.50	5.00	7.00	3.40	0.70
941-0360/VM	**36.00**	42.80	37.50	5.00	7.00	3.40	0.70
941-0400/VM	40.00	46.80	41.50	5.00	7.00	3.40	0.70
941-0420/VM	42.00	48.80	43.50	5.00	7.00	3.40	0.70
941-0450/VM	**45.00**	51.80	46.50	5.00	7.00	3.40	0.70
941-0480/VM	48.00	54.80	49.50	5.00	7.00	3.40	0.70
941-0500/VM	**50.00**	56.80	51.50	5.00	7.00	3.40	0.70
941-0520/VM	52.00	58.80	53.50	5.00	7.00	3.40	0.70
941-0550/VM	55.00	61.80	56.50	5.00	7.00	3.40	0.70
941-0560/VM	**56.00**	62.80	57.50	5.00	7.00	3.40	0.70
941-0600/VM	60.00	66.80	61.50	5.00	7.00	3.40	0.70
941-0630/VM	**63.00**	69.80	64.50	5.00	7.00	3.40	0.70
941-0650/VM	65.00	73.80	66.50	6.00	9.00	4.40	1.00
941-0700/VM	**70.00**	78.80	71.50	6.00	9.00	4.40	1.00
941-0750/VM	75.00	83.80	76.50	6.00	9.00	4.40	1.00
941-0762/VM	76.20	85.00	77.70	6.00	9.00	4.40	1.00
941-0800/VM	**80.00**	88.80	81.50	6.00	9.00	4.40	1.00
941-0850/VM	85.00	93.80	86.50	6.00	9.00	4.40	1.00
941-0900/VM	**90.00**	98.80	91.50	6.00	9.00	4.40	1.00
941-0950/VM	95.00	103.80	96.50	6.00	9.00	4.40	1.00

Dimensions in bold type conform to ISO 3320 :1987



931 Single & Double Acting Rod Wiper Seals Metric

941



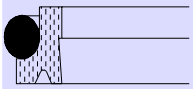
941 931

Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 d_1	H9 D_1	+0.20 -0.00 D_2	+0.20 -0.00 L_1	Min L_2	SECT S	MAX R_1
941-1000/VM	**100.00**	108.80	101.50	6.00	9.00	4.40	1.00
941-1050/VM	105.00	113.80	106.50	6.00	9.00	4.40	1.00
941-1100/VM	**110.00**	118.80	111.50	6.00	9.00	4.40	1.00
941-1150/VM	115.00	123.80	116.50	6.00	9.00	4.40	1.00
941-1200/VM	120.00	128.80	121.50	6.00	9.00	4.40	1.00
941-1250/VM	**125.00**	133.80	126.50	6.00	9.00	4.40	1.00
941-1300/VM	130.00	138.80	131.50	6.00	9.00	4.40	1.00
941-1350/VM	135.00	143.80	136.50	6.00	9.00	4.40	1.00
941-1400/VM	**140.00**	148.80	141.50	6.00	9.00	4.40	1.00
941-1500/VM	150.00	158.80	151.50	6.00	9.00	4.40	1.00
941-1600/VM	**160.00**	168.80	161.50	6.00	9.00	4.40	1.00
941-1700/VM	170.00	178.80	171.50	6.00	9.00	4.40	1.00
941-1800/VM	**180.00**	188.80	181.50	6.00	9.00	4.40	1.00
941-1900/VM	190.00	198.80	191.50	6.00	9.00	4.40	1.00
941-2000/VM	**200.00**	208.80	201.50	6.00	9.00	4.40	1.00
941-2100/VM	210.00	218.80	211.50	6.00	9.00	4.40	1.00
941-2200/VM	**220.00**	228.80	221.50	6.00	9.00	4.40	1.00
941-2300/VM	230.00	238.80	231.50	6.00	9.00	4.40	1.00
941-2400/VM	240.00	248.80	241.50	6.00	9.00	4.40	1.00
941-2500/VM	**250.00**	258.80	251.50	6.00	9.00	4.40	1.00
941-2800/VM	**280.00**	292.20	282.00	8.40	11.40	6.10	1.20
941-3000/VM	300.00	312.20	302.00	8.40	11.40	6.10	1.20
941-3200/VM	**320.00**	332.20	322.00	8.40	11.40	6.10	1.20
941-3500/VM	350.00	362.20	352.00	8.40	11.40	6.10	1.20
941-3600/VM	**360.00**	372.20	362.00	8.40	11.40	6.10	1.20
941-4000/VM	400.00	412.20	402.00	8.40	11.40	6.10	1.20
941-4200/VM	420.00	432.20	422.00	8.40	11.40	6.10	1.20
941-4500/VM	450.00	466.00	452.00	11.00	15.00	8.00	1.50
941-4800/VM	480.00	496.00	482.00	11.00	15.00	8.00	1.50
941-5000/VM	500.00	516.00	502.00	11.00	15.00	8.00	1.50

Dimensions in bold type conform to ISO 3320 :1987

All intermediate sizes upto 580mm are available, incl. Imperial



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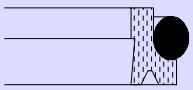
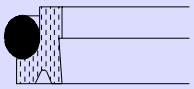


Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 d_1	H9 D_1	+0.20 -0.20 D_2	+0.20 -0.00 L_1	Min L_2	SECT S	MAX R_1
951-0080/VM	**8.00**	15.60	9.00	4.20	7.20	3.80	0.70
951-0100/VM	**10.00**	17.60	11.00	4.20	7.20	3.80	0.70
951-0120/VM	**12.00**	19.60	13.00	4.20	7.20	3.80	0.70
951-0140/VM	**14.00**	21.60	15.00	4.20	7.20	3.80	0.70
951-0150/VM	15.00	22.60	16.00	4.20	7.20	3.80	0.70
951-0160/VM	**16.00**	23.60	17.00	4.20	7.20	3.80	0.70
951-0180/VM	**18.00**	25.60	19.00	4.20	7.20	3.80	0.70
951-0200/VM	**20.00**	27.60	21.00	4.20	7.20	3.80	0.70
951-0220/VM	**22.00**	29.60	23.00	4.20	7.20	3.80	0.70
951-0250/VM	**25.00**	32.60	26.00	4.20	7.20	3.80	0.70
951-0280/VM	**28.00**	35.60	29.00	4.20	7.20	3.80	0.70
951-0300/VM	30.00	37.60	31.00	4.20	7.20	3.80	0.70
951-0320/VM	**32.00**	39.60	33.00	4.20	7.20	3.80	0.70
951-0350/VM	35.00	42.60	36.00	4.20	7.20	3.80	0.70
951-0360/VM	**36.00**	43.60	37.00	4.20	7.20	3.80	0.70
951-0400/VM	**40.00**	48.80	41.50	6.30	9.30	4.40	0.70
951-0420/VM	42.00	50.80	43.50	6.30	9.30	4.40	0.70
951-0450/VM	**45.00**	53.80	46.50	6.30	9.30	4.40	0.70
951-0480/VM	48.00	56.80	49.50	6.30	9.30	4.40	0.70
951-0500/VM	**50.00**	58.80	51.50	6.30	9.30	4.40	0.70
951-0520/VM	52.00	60.80	53.50	6.30	9.30	4.40	0.70
951-0550/VM	55.00	63.80	56.50	6.30	9.30	4.40	0.70
951-0560/VM	**56.00**	64.80	57.50	6.30	9.30	4.40	0.70
951-0600/VM	60.00	68.80	61.50	6.30	9.30	4.40	0.70
951-0630/VM	**63.00**	71.80	64.50	6.30	9.30	4.40	0.70
951-0650/VM	65.00	73.80	66.50	6.30	9.30	4.40	0.70
951-0700/VM	**70.00**	82.20	72.00	8.10	12.10	6.10	1.00
951-0750/VM	75.00	87.20	77.00	8.10	12.10	6.10	1.00
951-0762/VM	76.20	88.40	78.20	8.10	12.10	6.10	1.00
951-0800/VM	**80.00**	92.20	82.00	8.10	12.10	6.10	1.00

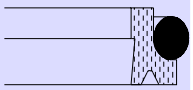
Dimensions in bold type conform to ISO 3320 :1987

Double Acting Rod Wiper Seals



951

Metric



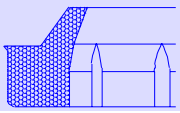
951

Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 d_1	H9 D_1	+0.20 -0.20 D_2	+0.20 -0.00 L_1	Min L_2	SECT S	MAX R_1
951-0850/VM	85.00	97.20	87.00	8.10	12.10	6.10	1.00
951-0900/VM	**90.00**	102.20	92.00	8.10	12.10	6.10	1.00
951-0950/VM	95.00	107.20	97.00	8.10	12.10	6.10	1.00
951-1000/VM	**100.00**	112.20	102.00	8.10	12.10	6.10	1.00
951-1050/VM	105.00	117.20	105.00	8.10	12.10	6.10	1.00
951-1100/VM	**110.00**	122.20	112.00	8.10	12.10	6.10	1.00
951-1150/VM	115.00	127.20	117.00	8.10	12.10	6.10	1.00
951-1200/VM	120.00	132.20	122.00	8.10	12.10	6.10	1.00
951-1250/VM	**125.00**	137.20	127.00	8.10	12.10	6.10	1.00
951-1300/VM	130.00	142.20	132.00	8.10	12.10	6.10	1.00
951-1350/VM	135.00	147.20	137.00	8.10	12.10	8.00	1.00
951-1400/VM	**140.00**	156.00	142.50	9.50	14.50	8.00	1.20
951-1500/VM	150.00	166.00	152.50	9.50	14.50	8.00	1.20
951-1600/VM	**160.00**	176.00	162.50	9.50	14.50	8.00	1.20
951-1700/VM	170.00	186.00	172.50	9.50	14.50	8.00	1.20
951-1800/VM	**180.00**	196.00	182.50	9.50	14.50	8.00	1.20
951-1900/VM	190.00	206.00	192.50	9.50	14.50	8.00	1.20
951-2000/VM	**200.00**	216.00	202.50	9.50	14.50	8.00	1.20
951-2100/VM	210.00	226.00	212.50	9.50	14.50	8.00	1.20
951-2200/VM	**220.00**	236.00	222.50	9.50	14.50	8.00	1.20
951-2300/VM	230.00	246.00	232.50	9.50	14.50	8.00	1.20
951-2400/VM	240.00	256.00	242.50	9.50	14.50	8.00	1.20
951-2500/VM	**250.00**	266.00	252.50	9.50	14.50	8.00	1.20
951-2800/VM	**280.00**	296.00	282.50	9.50	14.50	8.00	1.20
951-3000/VM	300.00	316.00	302.50	9.50	14.50	8.00	1.20
951-3200/VM	**320.00**	336.00	322.50	9.50	14.50	8.00	1.20
951-3500/VM	350.00	366.00	352.50	9.50	14.50	8.00	1.20
951-3600/VM	**360.00**	376.00	362.50	9.50	14.50	8.00	1.20
951-4000/VM	400.20	424.00	402.50	14.00	22.00	12.00	1.50
951-4200/VM	420.00	444.00	422.50	14.00	22.00	12.00	1.50
951-4500/VM	450.00	474.00	452.50	14.00	22.00	12.00	1.50
951-4800/VM	480.00	504.00	482.50	14.00	22.00	12.00	1.50
951-5000/VM	500.00	524.00	502.50	14.00	22.00	12.00	1.50
951-5500/VM	550.00	574.00	552.50	14.00	22.00	12.00	1.50

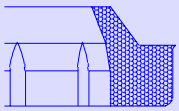
Dimensions in bold type conform to ISO 3320 :1987

All intermediate sizes upto 580mm are available, incl. Imperial



PWC

Metric



Design

Designed to prevent the ingress of contaminents into the system thus extending the service life of the cylinder in applications where there is a risk of large accumulations of dirt on the Rod such as earth moving equipment. The Wiper is designed with positive seating of the outside face and beads on the inside diameter. These features provide sealing on the static face as well as stability in the housing. The Wiper is produced in 98° Shore A Polyurethane which offers a high level of stiffness providing the Wiper with the ability to remove dried on mud from the Rod. The material also has excellent wear properties for a long service life even under arduous conditions. The Wiper is designed to fit into closed housings.

Operating Conditions

Temp. Range	-40°C to 110°C
Max Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuos operating temperature for various fluids

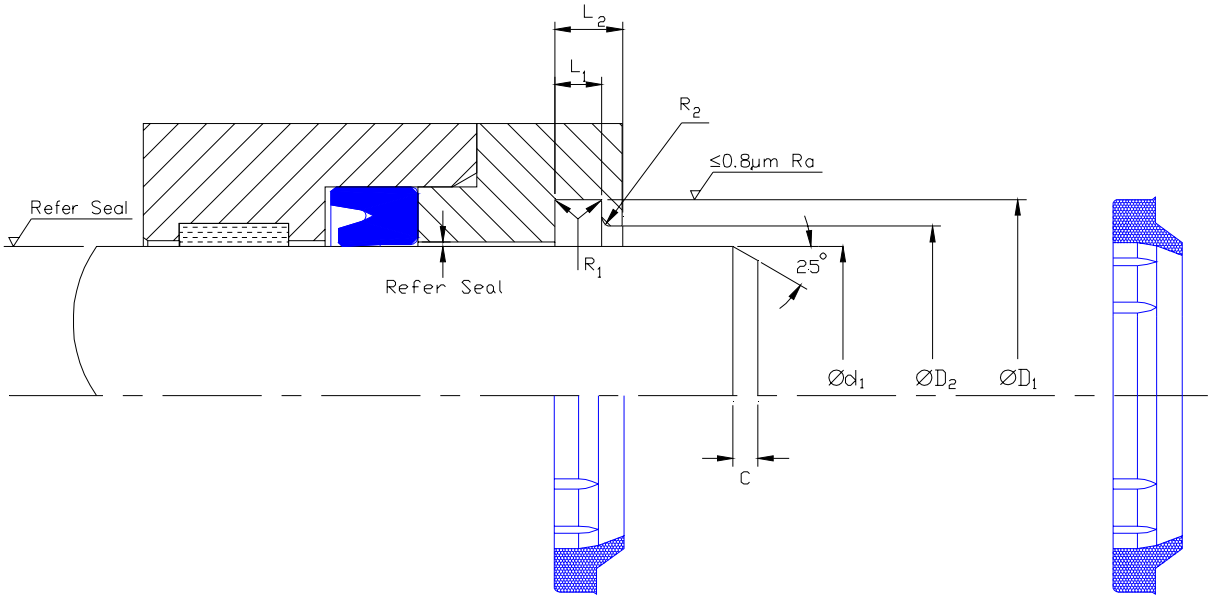
AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

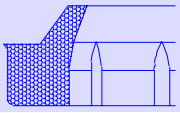
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.
Style PWC Wiper maybe deformed and fitted into a closed groove housing.

Fitting

For the wiper to function correctly, it is important that care be taken in fitting the wiper within its housing.
For a detailed checklist, refer to Appendix 3.

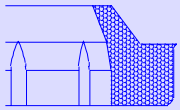




Rod Wiper Seal

PWC

Metric



Nominal Dimensions & Machining Tolerances

Claron Part Number	Refer Seal Selection $Ød_1$	H11 $ØD_1$	H11 $ØD_2$	+0.20 -0.00 L_1	Min. L_2	Nominal. R_1	Nominal. R_2
PWC 045	45	53	50.5	5	8	0.4	0.2
PWC 050	50	58	55.5	5	8	0.4	0.2

Single Acting Rod Wiper Seal Imperial

PWK

Design

Claron **Style PWK** Rod wiper is designed to remove potential system contaminants from a reciprocating rod during the negative stroke. It is classified as a medium to heavy duty wiper and is precision moulded in 92° shore Polyurethane. The wiper is machine trimmed to provide a precise wiping lip. The design incorporates ribs on the heel working face to ensure concentricity and stability.

Operating Conditions

Temp. range	-40°C to 110°C
Max Linear Speed m/sec	3.0

Optimum service conditions are affected by temperature, speed and surface finish.
Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

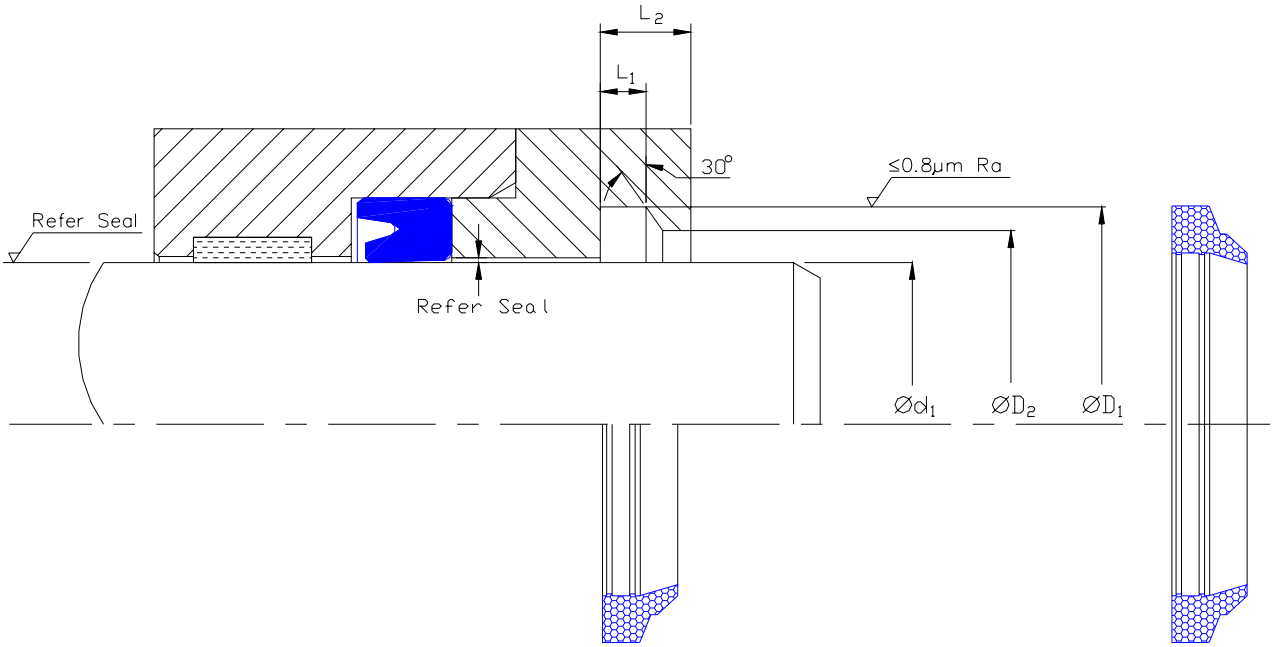
AU Polyurethane		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

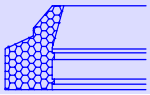
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

Style PWK may be deformed and fitted into a closed groove housing as shown below. For the seal to function correctly, it is important that care be taken in fitting the seal within its housing.
For a detailed checklist, refer to Appendix 3.

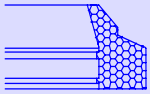




Single Acting Rod Wiper Seal

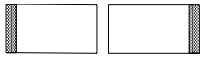
PWK

Imperial



Claron Part Number	Nominal Dimensions & Machining Tolerances				
	Refer Seal Selection $Ød_1$	+0.005 -0.000 $ØD_1$	+0.005 -0.000 $ØD_2$	+0.005 - 0.000 L_1	Nominal L_2
PWK 1000	1.000	1.385	1.082	0.195	0.343
PWK 1250	1.250	1.635	1.332	0.195	0.343
PWK 1375	1.375	1.760	1.457	0.195	0.343
PWK 1500	1.500	1.885	1.582	0.195	0.343
PWK 1500A	1.500	1.760	1.582	0.183	0.295
PWK 1750	1.750	2.135	1.832	0.195	0.343
PWK 1875	1.875	2.260	1.957	0.195	0.343
PWK 2000	2.000	2.385	2.082	0.195	0.343
PWK 2000A	2.000	2.260	2.082	0.183	0.295
PWK 2250	2.250	2.760	2.405	0.255	0.468
PWK 2500	2.500	3.010	2.657	0.255	0.468
PWK 2750	2.750	3.260	2.905	0.255	0.468
PWK 3000	3.000	3.510	3.157	0.255	0.468

Section E
Polymeric Plain Bearings



Bearing selection

Claron produce four main types of polymer bearings for use in hydraulic cylinder applications. Each has a varying set of properties to cover a wide range of applications. The following tables are designed to help select the correct type for a given application.

Table 1 shows the properties for each type of bearing. Values shown as low/high should be interpreted as relative to each other.

	BGF	BT	EBR	PBR
Material	Modified & Filled PA	Bronze Filled PTFE	POM	Reinforced Phenolic
Max Operating Temp °C	110	200	110	120
Max Linear Velocity m/s	1.5	15	1	3
Coefficient of friction	0.15	0.06	0.14	0.12
Load Capacity	High	Low	Normal	High
Sevice Life	High	High	Normal	Normal
Relative Cost factor	1.5	3	1	3.5
Production of contamination	Normal	V.Low	Normal	High
Modification of metal finish	High	V.Low	Normal	High
Chemical resistance	Normal	V.High	Normal	Normal

Table 2 shows a summary of recommended uses.

Type	Recommended Uses
BGF	Applications requiring high bearing capacity and long service life.
BT/CT	All applications utilising PTFE based seals. Applications requiring smooth low friction operation. Applications with poor lubrication, or high speeds. Type CT should be used for pneumatic applications or for non-ferrous metals.
EBR	Standard applications requiring a low cost but efficient bearing.
PBR	Applications requiring high bearing capacity at high temperatures, or where the 'dieseling effect' (ignition of vapour) may take place.

To calculate the maximum allowable bearing load in Newtons for a Claron bearing ring used in standard hydraulic cylinder applications, multiply the projected area by the load capacity as follows:-

1) To calculate the projected area multipy the ID of the bearing by its width:-

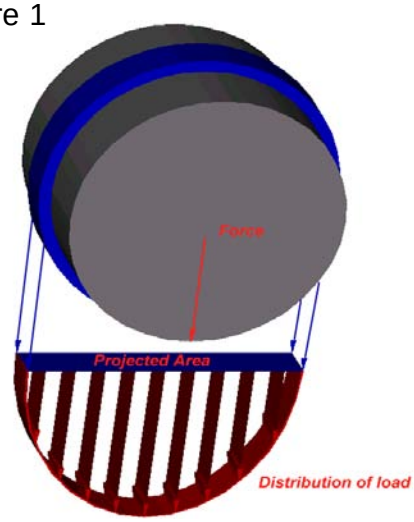
Projected area= ID(mm) x W(mm)

2) Multiply the projected area by the load capacity taken from figure 2 for the required maximum operating temperature.

Bearing Load = Projected Area x Load capacity

Calculation of maximum allowable bearing Load

Figure 1



Note:
Figure 1 shows that the load distribution is not even along the projected area, this however has already been taken into account in the calculation of load capacity in figure 2.

Lubricated applications.
Load Capacity as a function of Temperature

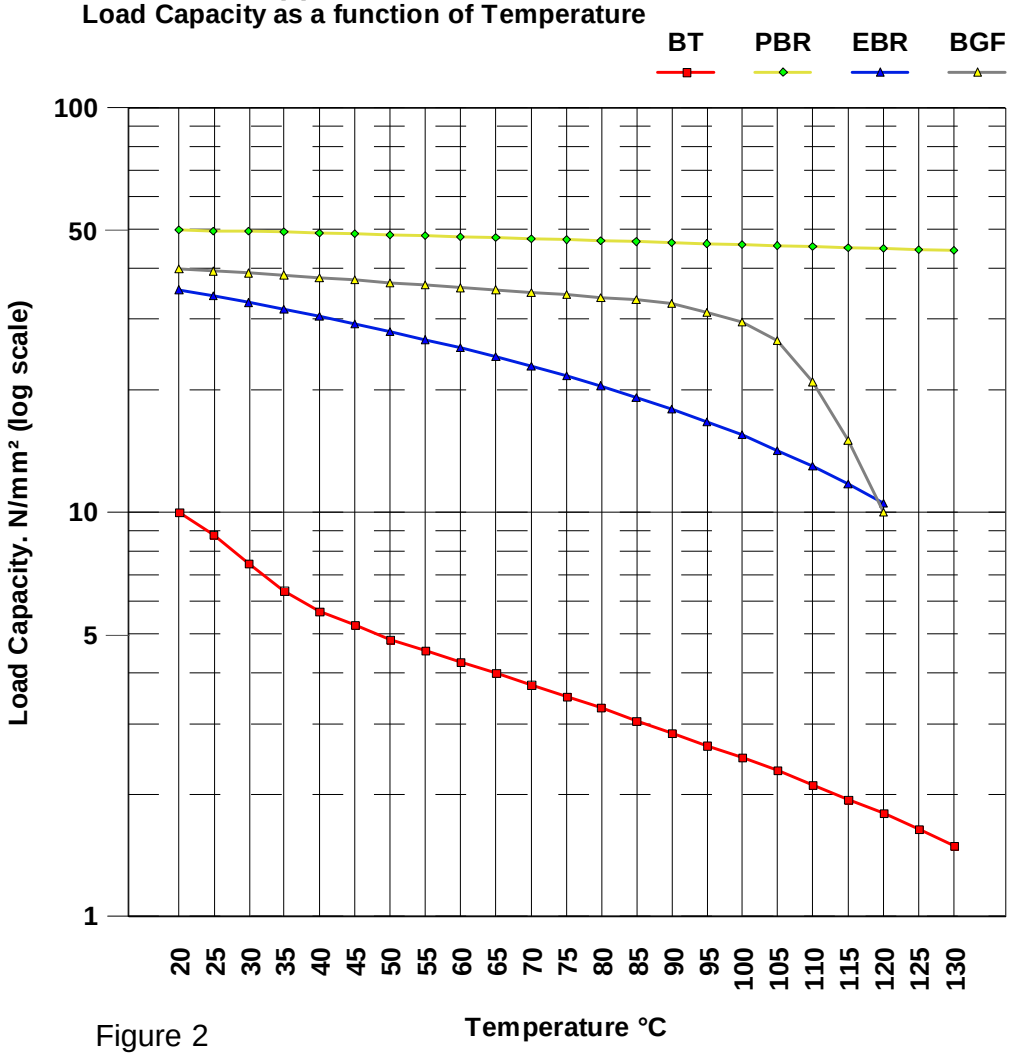


Figure 2

For unlubricated applications Claron recommends the use of Carbon bearing tape CT. See section E2

Design

Claron EBR & IBR bearing rings are designed for use on Pistons or Rods to align Rod and Piston and to prevent metal to metal contact. This bearing is precision moulded from a high performance grade of Polyacetal. These bearing rings are Butt split to facilitate assembly, and to allow the passage of fluid. See the 'selection of bearing rings' at the beginning of this section for further application details.

Operating Conditions

Max. Operating Temp	110°C
Max. Linear Velocity	1 m/sec

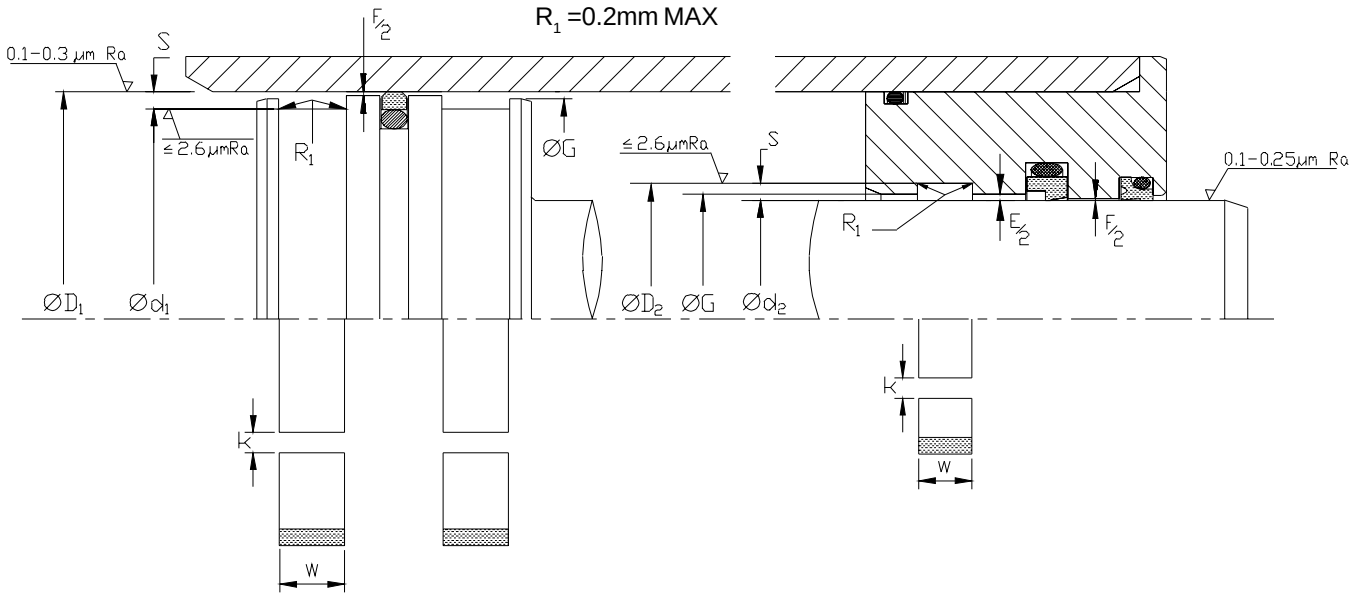
See graph at the beginning of this section for load capacity values

Continuos operating temperature for various fluids

POM Polyacetal		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	80
HFD S	Chlorinated hydrocarbon based	80
HFD T	Mixtures of HFD R and HFD S	80
HEPG	Polyglycol based	100
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	100

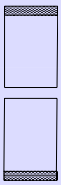
Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.



Fitting

For the bearing to function correctly, it is important that care be taken in fitting the bearing within its housing.
For a detailed checklist, refer to Appendix 3.

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $ØD_1$	≤100mm +0.0 -0.05 >100mm +0.0 -0.08 $Ød_1$	±0.20 L_1	±0.40 ØG
EBR 25	25	19	10.0	22
EBR 32	32	26	10.0	29
EBR 40	40	34	10.0	37
EBR 46	46	40	10.0	43
EBR 50	50	44	10.0	47
EBR 50/1	50	44	13.0	47
EBR 55	55	49	13.0	52
EBR 60	60	54	13.0	57
EBR 63	63	57	13.0	60
EBR 65	65	59	13.0	62
EBR 70	70	64	13.0	67
EBR 75	75	69	13.0	72
EBR 80	80	74	13.0	77
EBR 90	90	84	13.0	87
EBR 100	100	94	13.0	97
EBR 110	110	104	13.0	107
EBR 115	115	109	13.0	112
EBR 120	120	114	13.0	117
EBR 120/1	120	114	19.5	117
EBR 125	125	119	13.0	122
EBR 125/1	125	119	19.5	122
EBR 127	127	121	13.0	124
EBR 130	130	124	13.0	127
EBR 140	140	134	13.0	137
EBR 150	150	144	13.0	147
EBR 150/1	150	144	19.5	147
EBR 160	160	154	19.5	157
EBR 170	170	164	19.5	167
EBR 180	180	174	19.5	177
EBR 200	200	194	19.5	197
EBR 220	220	214	19.5	217
EBR 250	250	244	19.5	247

EBR

Imperial

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 $Ød_1$	≤4.000" +0.000" -0.002" >4.000" +0.000" -0.003" $ØD_1$	±0.004 L_1	±0.010 ØG
EBR 1000	1.000	0.764	0.393	0.882
EBR 1250	1.250	1.014	0.393	1.132
EBR 1500	1.500	1.264	0.393	1.382
EBR 1750	1.750	1.514	0.393	1.632
EBR 2000	2.000	1.764	0.393	1.882
EBR 2001/1	2.000	1.764	0.512	1.882
EBR 2250	2.250	2.014	0.512	2.132
EBR 2500	2.500	2.264	0.512	2.382
EBR 2625	2.625	2.389	0.512	2.507
EBR 2750	2.750	2.514	0.512	2.632
EBR 3000	3.000	2.764	0.512	2.882
EBR 3250	3.250	3.014	0.512	3.132
EBR 3500	3.500	3.264	0.512	3.382
EBR 3750	3.750	3.514	0.512	3.632
EBR 4000	4.000	3.764	0.512	3.882
EBR 4500	4.500	4.264	0.512	4.382
EBR 4500/1	4.500	4.264	0.768	4.382
EBR 5000	5.000	4.764	0.512	4.882
EBR 5500	5.500	5.264	0.512	5.382
EBR 6000	6.000	5.764	0.512	5.882
EBR 6500	6.500	6.264	0.768	6.382
EBR 7000	7.000	6.764	0.768	6.882
EBR 7250	7.250	7.014	0.768	7.132
EBR 7500	7.500	7.264	0.768	7.382
EBR 8000	8.000	7.764	0.768	7.882
EBR 8250/1	8.250	8.014	0.512	8.132
EBR 8500	8.500	8.264	0.768	8.382
EBR 9000	9.000	8.764	0.768	8.882
EBR 9500	9.500	9.264	0.768	9.382

Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 $Ød_2$	≤115mm +0.05 -0.00 >115mm +0.08 -0.00 $ØD_2$	±0.20 L_1	±0.40 ØG
IBR 020	20	26	10.0	23
IBR 022	22	28	10.0	25
IBR 025	25	31	10.0	28
IBR 028	28	34	10.0	31
IBR 032	32	38	10.0	35
IBR 036	36	42	10.0	39
IBR 040	40	46	10.0	43
IBR 045	45	51	13.0	48
IBR 045/2	45	51	10.0	48
IBR 050	50	56	13.0	53
IBR 056	56	62	13.0	59
IBR 060	60	66	13.0	63
IBR 063	63	69	13.0	66
IBR 070	70	76	13.0	73
IBR 075	75	81	13.0	78
IBR 080	80	86	13.0	83
IBR 090	90	96	13.0	93
IBR 095	95	101	13.0	98
IBR 100	100	106	13.0	103
IBR 100/1	100	106	20.5	103
IBR 110	110	116	13.0	113
IBR 120	120	126	13.0	123
IBR 125	125	131	13.0	128
IBR 125/1	125	131	25.5	128
IBR 130	130	136	13.0	133
IBR 140	140	146	13.0	143
IBR 145	145	151	13.0	148

Nominal Dimensions & Machining Tolerances

Claron Part Number	f8 $Ød_2$	≤4.500" +0.002" -0.000" >4.500" +0.002" -0.000" $ØD_2$	±0.004 L_1	±0.010 ØG
IBR 1000	1.000	1.236	0.393	1.118
IBR 1125	1.125	1.361	0.393	1.243
IBR 1250	1.250	1.486	0.393	1.368
IBR 1375	1.375	1.611	0.393	1.493
IBR 1500	1.500	1.736	0.393	1.618
IBR 1750	1.750	1.986	0.393	1.868
IBR 1750/1	1.750	1.986	0.512	1.868
IBR 2000	2.000	2.236	0.512	2.118
IBR 2125/1	2.125	2.361	0.512	2.243
IBR 2250	2.250	2.486	0.512	2.368
IBR 2375	2.375	2.611	0.512	2.493
IBR 2500	2.500	2.736	0.512	2.618
IBR 2625	2.625	2.861	0.512	2.743
IBR 2750	2.750	2.986	0.512	2.868
IBR 3000	3.000	3.236	0.512	3.118
IBR 3250	3.250	3.486	0.512	3.368
IBR 3375	3.375	3.611	0.512	3.493
IBR 3500	3.500	3.736	0.512	3.618
IBR 3625	3.625	3.861	0.512	3.743
IBR 3750	3.750	3.986	0.512	3.868
IBR 4000	4.000	4.236	0.512	4.118
IBR 4250	4.250	4.486	0.512	4.368
IBR 4375	4.375	4.611	0.512	4.493
IBR 4500	4.500	4.736	0.512	4.618
IBR 4750	4.750	4.986	0.512	4.868
IBR 5000	5.000	5.236	0.512	5.118
IBR 5500	5.500	5.736	0.512	5.618
IBR 5750	5.750	5.986	0.512	5.868
IBR 6000	6.000	6.236	0.767	6.118
IBR 6750	6.750	6.986	0.767	6.868

Bearing Tape BT/CT

Metric

Design

This range of products is designed for use in hydraulic and pneumatic piston and gland applications to minimise the problems of metal to metal contact by inexpensive means. Produced from wear resistant filled grades of PTFE with its known properties of low friction, these products eliminate 'stiction' between moving parts, reduce 'nibbling' of the seal at high pressures due to radial movement and are easily assembled.

Materials

For hydraulic applications we recommend CLARON P.T.F.E. bearing tape with a **Bronze filling**. Style **BT....**
For pneumatic applications we recommend CLARON P.T.F.E. bearing tape with a **Carbon filling**. Style **CT....**
Other materials are available ant the table in Appendix 2 should be carefully considered.
Consult CLARON for further advice on alternative materials.

Operating Range

Temp. -60°C to 200°C
Velocity 15m/sec
These range parameters are maximum conditional values.
Refer to "Bearing Selection" page E0-1 and "Bearing Materials" in Appendix 1.

How To Order

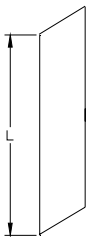
Example:
Hydraulic application, section 2mm, width 9.7mm, Bore 100mm,
Reciprocating application.(R cut): **BT 20097/304/R**

Material **BT** or **CT**
Section & Width S & W
Length L
Type of cut **R** or **O**

TAPE LENGTH 'L'
(For Temperatures upto 120°C)

Piston Application (mm)
$L=\pi(0.99ØD_1-S)-1$

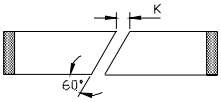
Rod Application (mm)
$L=\pi(0.99Ød_2+S)-1$



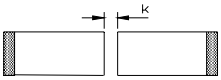
For rolls of tape, quote length required and material / size code. e.g. 15m **BT 25097**

TYPE OF CUT

Reciprocating Application Suffix **R**



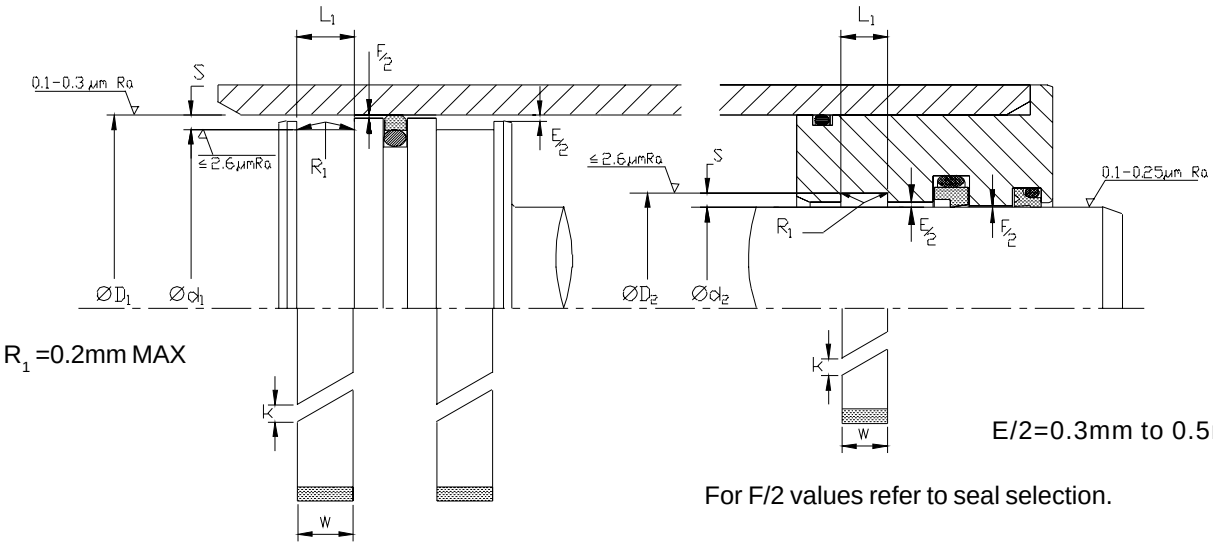
Rotary or **O**scillating Application Suffix **O**



TAPE WIDTH 'W'
In new designs, the choice of tape width 'W' is determined by formula based upon load, diameter and material capability under the given operating conditions.
Note:
Refer also to "Bearing Selection" page E0-1.

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to Appendix 4 for value of tolerance symbols.



R_1 =0.2mm MAX

E/2=0.3mm to 0.5mm

For F/2 values refer to seal selection.

Bearing Material

Claron P.T.F.E. Bearing Tape is specifically designed for use with P.T.F.E. Composite Seals. The nature of P.T.F.E. allows for a manufactured size giving a tighter fit than 'harder' materials such as Phosphor-Bronze, Meehanite or Polyester Fabric. This reduction in radial clearance gives a marginal improvement to the pressure capability of the seal but, more importantly, protects the seal from contaminant particles within the system. A combination of the design of the bearing and the characteristics of P.T.F.E. allow the particles to become embedded in the P.T.F.E. on the non-working face, thus also protecting the steel counterface from scoring. During use, bearing materials wear, causing debris and contamination of the fluid.Extensive tests have shown that particulate contamination >15µm within the fluid, increases with the use of Phosphor-Bronze or Meehanite, and tends to decrease with the use of P.T.F.E. The harder debris created by these bearings also has a greater effect upon seal performance.Particulate contamination in the fluid surrounding the seal can be over 100 times that in the main system due to the bearing preventing flushing of the seal space. Increased contamination in this area will increase the probability of a large enough particle gaining access to the seal interface, causing damage and leakage.**Claron P.T.F.E. Bearing Tape** is designed to allow pressure relief to the seal by use of the expansion gap (**k**). This avoids the possibility of a pressure lock between the seal and the bearing, as well as eliminating the possibility of Hydrodynamic pressure build-up (shown in Figure 1) causing premature destruction of the seal.

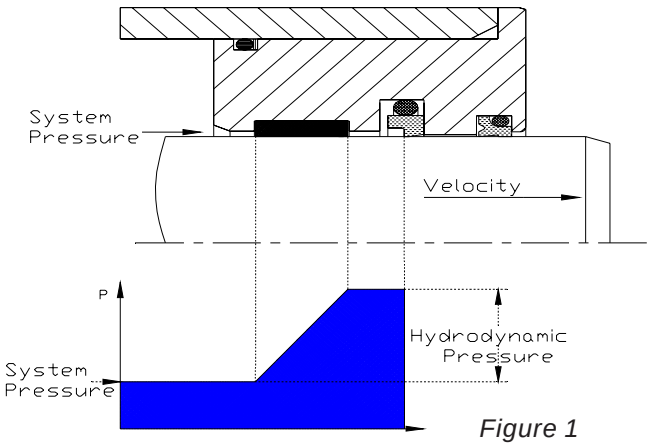


Figure 1

This relief also avoids the presence of excess pressure during the return stroke which can prevent the transfer of the fluid film back to the pressure side of the seal, so creating the effect of a leaking seal. Pressure relief should be incorporated within the design of continuous bearings, particularly for fast cycling applications.The advantages of **Claron P.T.F.E. Bearing Tape** are not restricted to **Composite Seals** but apply to Nitrile and Polyurethane Seals.

Consideration of Radial Load

The maximum radial load applied to the bearings will determine both the width 'W' of the tape and number of bearings to be used. This can be calculated based on the radial force and the maximum permissible load capacity of the material at a given temperature. In the case of either lubricated dynamic, or unlubricated static applications **BRONZE filled P.T.F.E.** tape should be used and the value of 'P' should be taken from graph 1 shown below.

In the case of unlubricated Dynamic applications, friction has a much greater effect on the material which reduces the permissible load capacity of the material as the velocity increases. Therefore to allow for the effect of velocity, the load capacity P taken from graph 1 for **CARBON filled P.T.F.E.** should be reduced by multiplying it by a factor f taken from graph 2.

Lubricated Dynamic Conditions

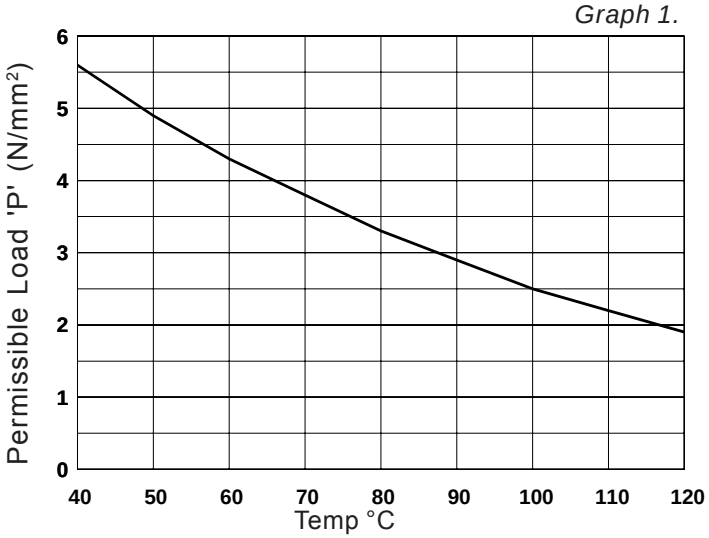
$$W = \frac{F\ max}{P x n x d}$$

Where:-
W=Minimum Required Tape Width (mm)
n=Number of Bearings
F=Maximum Radial Force (Kp)
d=Inside diameter of tape(mm)
P=Permissible load capacity N/mm²)
f=Reduction Factor

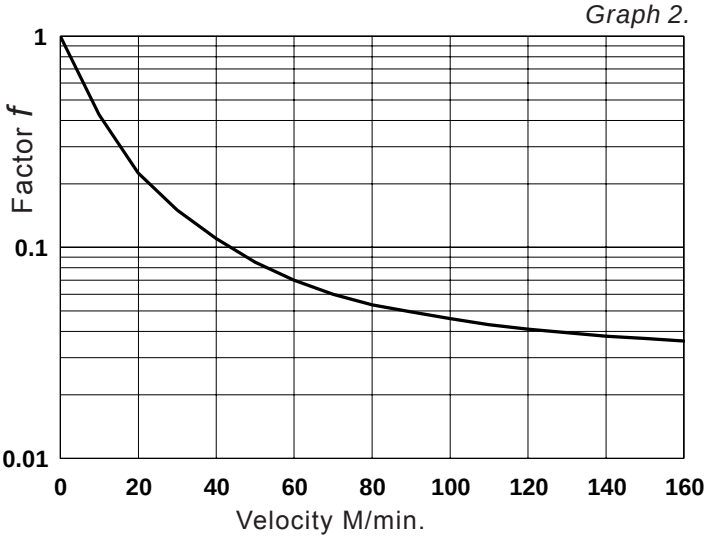
Unlubricated Dynamic Conditions

$$W = \frac{F\ max}{P x f x n x d}$$

Graph 1.



Graph 2.



Nominal Dimensions & Machining Tolerances

Claron Part Number Prefix BT CT	S	W MAX	Min Ø Ød1	Min Ø ØD2	≤100mm +0.00 -0.05 >100mm +0.00 -0.08 $Ød_1$	≤115mm +0.05 -0.00 >115mm +0.08 -0.00 $ØD_2$	+0.20 -0.00 L_1
15032	1.5	3.0	10	10	D_1-3.0	d_2+3.0	3.2
15063	1.5	6.1	15	10	D_1-3.0	d_2+3.0	6.3
15097	1.5	9.5	30	25	D_1-3.0	d_2+3.0	9.7
15150	1.5	14.8	45	35	D_1-3.0	d_2+3.0	15.0
15200	1.5	19.5	50	40	D_1-3.0	d_2+3.0	20.0
15250	1.5	24.5	100	80	D_1-3.0	d_2+3.0	25.0
15300	1.5	29.5	110	110	D_1-3.0	d_2+3.0	30.0
15400	1.5	39.5	110	110	D_1-3.0	d_2+3.0	40.0
20063	2.0	6.1	20	15	D_1-4.0	d_2+4.0	6.3
20081	2.0	7.9	30	25	D_1-4.0	d_2+4.0	8.1
20097	2.0	9.5	35	30	D_1-4.0	d_2+4.0	9.7
20100	2.0	9.8	35	30	D_1-4.0	d_2+4.0	10.0
20150	2.0	14.8	50	40	D_1-4.0	d_2+4.0	15.0
20200	2.0	19.5	75	60	D_1-4.0	d_2+4.0	20.0
20250	2.0	24.5	120	100	D_1-4.0	d_2+4.0	25.0
20300	2.0	29.5	130	130	D_1-4.0	d_2+4.0	30.0
20350	2.0	34.5	150	150	D_1-4.0	d_2+4.0	35.0
25056	2.5	5.4	25	20	D_1-5.0	d_2+5.0	5.6
25063	2.5	6.1	25	20	D_1-5.0	d_2+5.0	6.3
25081	2.5	7.9	35	30	D_1-5.0	d_2+5.0	8.1
25097	2.5	9.5	40	35	D_1-5.0	d_2+5.0	9.7
25100	2.5	9.8	40	35	D_1-5.0	d_2+5.0	10.0
25150	2.5	14.8	60	50	D_1-5.0	d_2+5.0	15.0
25200	2.5	19.5	90	75	D_1-5.0	d_2+5.0	20.0
25250	2.5	24.5	140	120	D_1-5.0	d_2+5.0	25.0
25300	2.5	29.5	150	150	D_1-5.0	d_2+5.0	30.0
30063	3.0	6.1	30	25	D_1-6.0	d_2+6.0	6.3
30081	3.0	7.9	45	40	D_1-6.0	d_2+6.0	8.1
30097	3.0	9.5	45	40	D_1-6.0	d_2+6.0	9.7
30100	3.0	9.8	45	40	D_1-6.0	d_2+6.0	10.0
30127	3.0	12.5	70	60	D_1-6.0	d_2+6.0	12.7
30150	3.0	14.8	70	60	D_1-6.0	d_2+6.0	15.0
30200	3.0	19.5	120	100	D_1-6.0	d_2+6.0	20.0
30250	3.0	24.5	160	140	D_1-6.0	d_2+6.0	25.0
30300	3.0	29.5	170	170	D_1-6.0	d_2+6.0	30.0
32056	3.2	5.4	35	30	D_1-6.4	d_2+6.4	5.6
32127	3.2	12.5	70	60	D_1-6.4	d_2+6.4	12.7
32190	3.2	18.8	120	100	D_1-6.4	d_2+6.4	19.0
32254	3.2	24.9	160	140	D_1-6.4	d_2+6.4	25.4
40063	4.0	6.1	45	35	D_1-8.0	d_2+8.0	6.3
40081	4.0	7.9	50	40	D_1-8.0	d_2+8.0	8.1
40097	4.0	9.5	60	50	D_1-8.0	d_2+8.0	9.7
40150	4.0	14.8	80	70	D_1-8.0	d_2+8.0	15.0
40200	4.0	19.5	130	110	D_1-8.0	d_2+8.0	20.0
40250	4.0	24.5	180	160	D_1-8.0	d_2+8.0	25.0

BGF

Design

Claron BGF bearing rings are designed for use on pistons or rods to align rod and piston and to prevent metal to metal contact. This bearing is precision moulded from a reinforced and heat stabilised grade of Nylon. The reinforcing fibres allows a higher than normal load capability and life span for this type of material. All Claron bearing rings are split to facilitate assembly, and to allow the passing of fluid. See the 'selection of bearing rings' at the beginning of this section for further application details.

Operating Conditions

Max. Operating Temp	110°C
Max. Linear Velocity	1.5 m/sec

See graph at the beginning of this section for load capacity values

Continuos operating temperature for various fluids

PA Nylon		
DIN	**Hydraulic Fluid Description**	**°C**
H	Mineral oil without additives	120
H-L	Mineral Fluid with anti corrosion and anti ageing additives	120
H-LP	Mineral oil as HL plus additives reducing wear, raising load	120
H-LPD	Mineral oil as H-LP but with detergents and dispersants	120
H-V	Mineral oil as H-LP plus improved viscosity temp.	120
HFA E	Emulsions of mineral oil in water. Water content 80-95%	55
HFA S	Synthetic oil in water. Water content 80-95%	55
HFB	Emulsions of water in mineral oil. Water content 40%	60
HFC	Aqueous polymer solutions. Water content 35%	60
HFD R	Phosphoric acid ester based	80
HFD S	Chlorinated hydrocarbon based	80
HFD T	Mixtures of HFD R and HFD S	80
HEPG	Polyglycol based	100
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	100

How To Order

Order using the part number shown followed by a suffix denoting the type of cut required:-

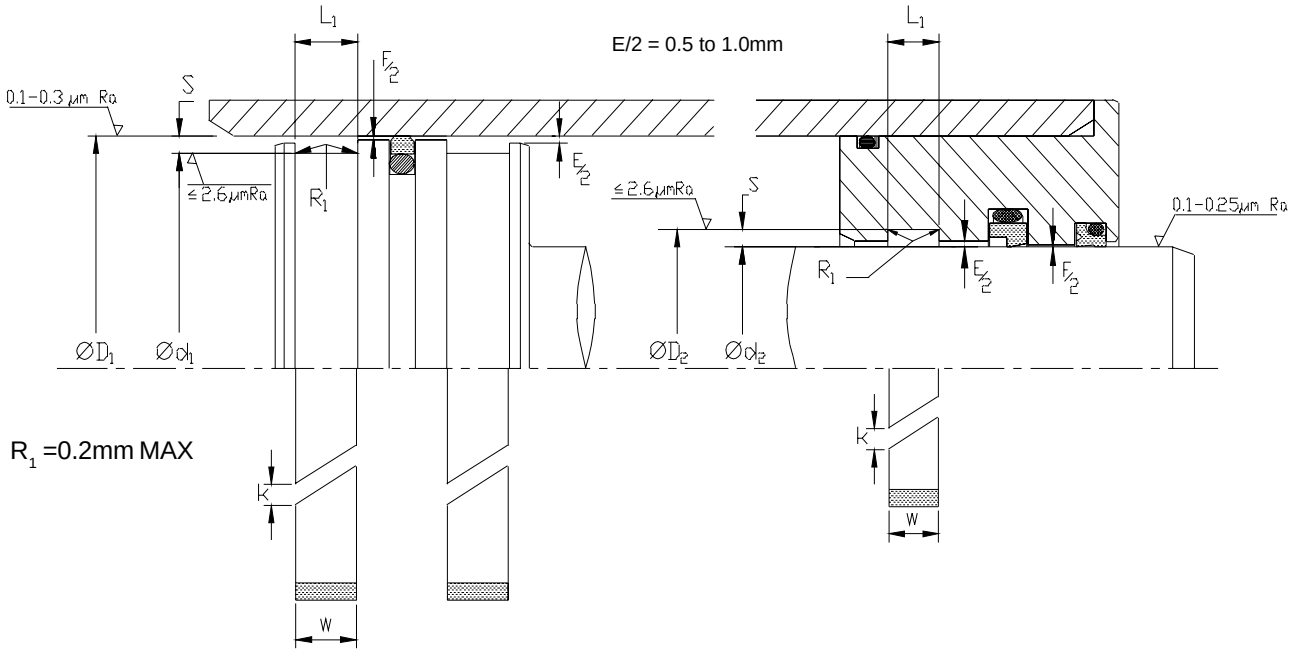
Type	**Suffix**
Straight cut	/O
Angle cut	/R60 (where the number represents the angle required)

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the bearing to function correctly, it is important that care be taken in fitting the bearing within its housing. For a detailed checklist, refer to Appendix 3.



BGF

Metric

Nominal Dimensions & Machining Tolerances

Claron Part Number	H9 ØD$_1$	≤115mm +0.05 -0.00 >115mm +0.08 -0.00 ØD$_2$	≤100mm +0.00 -0.05 >100mm +0.00 -0.08 Ød$_1$	f8 Ød$_2$	+0.20 -0.00 L$_1$	E
BGF 032028960/	32.0		28.0		9.6	
BGF 044040300/	44.0		40.0		30.0	
BGF 050044090/	50.0		44.0		9.0	
BGF 055040010/	55.0		40.0		10.0	
BGF 055049125/	55.0		49.0		12.5	
BGF 062057198/	62.18		57.18		19.8	
BGF 063058055/	63.0		58.0		5.5	
BGF 065050010/	65.0		50.0		10.0	
BGF 065055070/	65.0		55.0		7.0	
BGF 065061080/	65.0		61.0		8.0	
BGF 065061100/	65.0		61.0		10.0	
BGF 068064100/	68.0		64.0		10.0	
BGF 070064125/	70.0		64.0		12.5	
BGF 070065070/	70.0		65.0		7.0	
BGF 070065205/	70.0		65.0		20.5	
BGF 071066055/	71.0		66.0		5.5	
BGF 075060010/	75.0		60.0		10.0	
BGF 075070057/	75.0		70.0		5.7	1.0 to 2.0
BGF 075071100/	75.0		71.0		10.0	
BGF 080074097/	80.0		74.0		9.7	
BGF 080074125/	80.0		74.0		12.5	
BGF 080075097/	80.0		75.0		9.7	
BGF 080076100/	80.0		76.0		10.0	
BGF 083080150/	83.0		80.0		15.0	
BGF 085081100/	85.0		81.0		10.0	
BGF 090084125/	90.0		84.0		12.5	
BGF 090085097/	90.0		85.0		9.7	
BGF 094089198/	93.9		88.9		19.8	
BGF 100094125/	100.0		94.0		12.5	
BGF 100095150/	100.0		95.0		15.0	
BGF 105101150/	105.0		101.0		15.0	
BGF 110104125/	110.0		104.0		12.5	
BGF 110105150/	110.0		105.0		15.0	
BGF 115111150/	115.0		111.0		15.0	
BGF 120114125/	120.0		114.0		12.5	
BGF 120116150/	120.0		116.0		15.0	
BGF 130125150/	130.0		125.0		15.0	

Design

Claron PBR bearing rings are designed for use on pistons or rods to align rod and piston and to prevent metal to metal contact. This bearing is precision machined from a reinforced grade of Phenolic resin. The thermoset properties of this material allows a high load capability even at higher temperatures. All Claron bearing rings are split to facilitate assembly, and to allow the passage of fluid.
See the 'selection of bearing rings' at the beginning of this section for further application details.

Operating Conditions

Max. Operating Temp. (Intermittent)	150°C
Max. Operating Temp. (Continuous)	120°C
Max. Linear Velocity	3m/sec

See graph at the beginning of this section for load capacity values

How To Order

Order using the part number shown followed by a suffix denoting the type of cut required:-

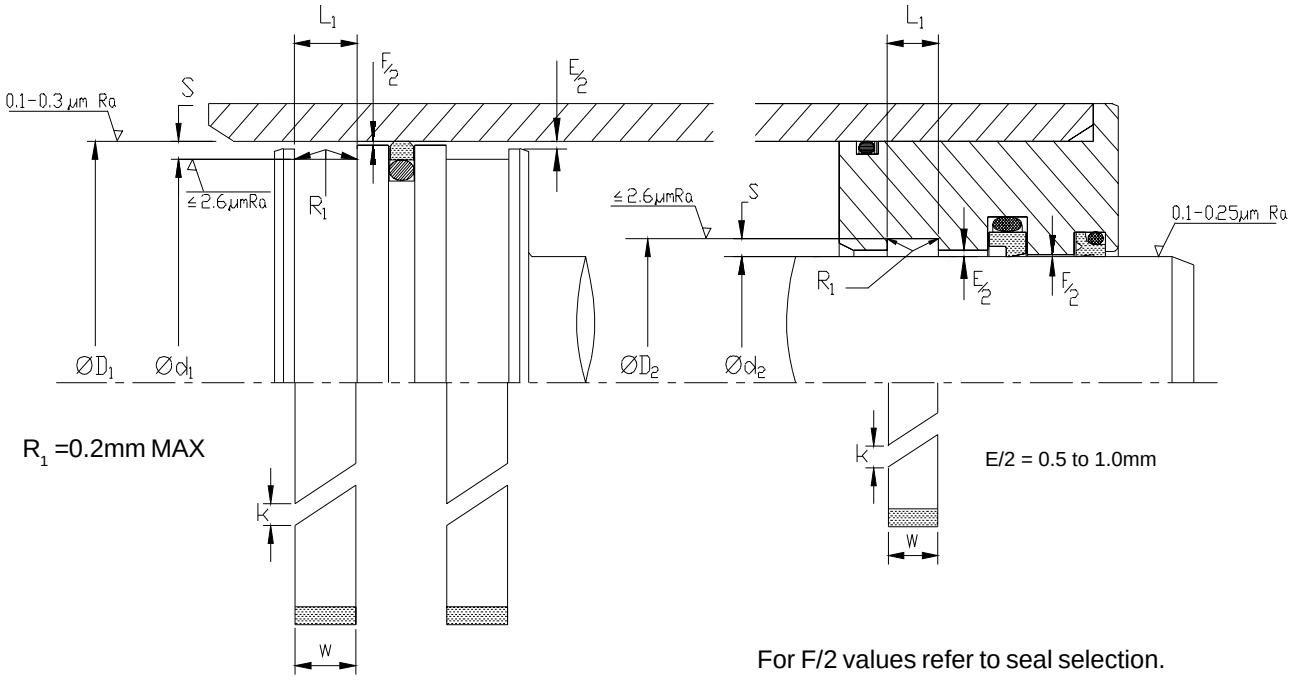
Type	**Suffix**
Straight cut	/O
Angle cut	/R60 (where the number represents the angle required)

Housing

For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.
Refer to Appendix 4 for value of tolerance symbols.

Fitting

For the bearing to function correctly, it is important that care be taken in fitting the bearing within its housing.
For a detailed checklist, refer to Appendix 3.



R_1 =0.2mm MAX

E/2 = 0.5 to 1.0mm

For F/2 values refer to seal selection.

Claron Part Number	Nominal Dimensions & Machining Tolerances						
	H9 ≤115mm +0.05 -0.00 >115mm +0.08 -0.00		f8 ≤100mm +0.00 -0.05 >100mm +0.00 -0.08		+0.20 -0.00	Nom. Sec.	
	$ØD_1$	$ØD_2$	$Ød_1$	$Ød_2$	L_1	S	E
PBR 016011056	**16**		**11.0**		**5.6**	**2.5**	
PBR 020017040	**20**		**16.9**		**4.0**	**1.55**	
PBR 020016080	20		16.0		8.0	2.0	
PBR 020015056	**20**		**15.0**		**5.6**	**2.5**	
PBR 025022040	**25**		**21.9**		**4.0**	**1.55**	
PBR 025021080	25		21.0		8.0	2.0	
PBR 025020056	**25**		**20.0**		**5.6**	**2.5**	
PBR 025020097	25		20.0		9.7	2.5	
PBR 030027040	30		26.9		4.0	1.55	
PBR 030026080	30		26.0		8.0	2.0	
PBR 030025056	30		25.0		5.6	2.5	
PBR 030025097	30		25.0		9.7	2.5	
PBR 032029040	**32**		**28.9**		**4.0**	**1.55**	
PBR 032027056	**32**		**27.0**		**5.6**	**2.5**	
PBR 032027097	32		27.0		9.7	2.5	
PBR 035032040	35		31.9		4.0	1.55	
PBR 035031010	35		31.0		10.0	2.0	
PBR 035030056	35		30.0		5.6	2.5	1.0 to 2.0
PBR 035030097	35		30.0		9.7	2.5	
PBR 040037040	**40**		**36.9**		**4.0**	**1.55**	
PBR 040036010	40		36.0		10.0	2.0	
PBR 040035056	**40**		**35.0**		**5.6**	**2.5**	
PBR 040035097	40		35.0		9.7	2.5	
PBR 045042040	45		41.9		4.0	1.55	
PBR 045040080	45		40.0		8.0	2.5	
PBR 045040056	45		40.0		5.6	2.5	
PBR 045040097	45		40.0		9.7	2.5	
PBR 045040150	45		40.0		15.0	2.5	
PBR 050047040	**50**		**46.9**		**4.0**	**1.55**	
PBR 050045056	**50**		**45.0**		**5.6**	**2.5**	
PBR 050045063	50		45.0		6.3	2.5	
PBR 050045080	50		45.0		8.0	2.5	
PBR 050045097	50		45.0		9.7	2.5	
PBR 050045150	50		45.0		15.0	2.5	
PBR 050044125	50		44.0		12.5	3.0	
PBR 055050056	55		50.0		5.6	2.5	
PBR 055050080	55		50.0		8.0	2.5	
PBR 055050097	55		50.0		9.7	2.5	
PBR 055050150	55		50.0		15.0	2.5	
PBR 060055056	60		55.0		5.6	2.5	
PBR 060055080	60		55.0		8.0	2.5	
PBR 060055097	60		55.0		9.7	2.5	
PBR 060055150	60		55.0		15.0	2.5	
PBR 060054125	60		54.0		12.5	3.0	
PBR 063058056	**63**		**58.0**		**5.6**	**2.5**	

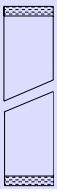
Claron Part Number	Nominal Dimensions & Machining Tolerances					
	H9 ≤115mm +0.05 -0.00 >115mm +0.08 -0.00		f8 ≤100mm +0.00 -0.05 >100mm +0.00 -0.08		+0.20 -0.00	Nom. Sec.
	$ØD_1$	$ØD_2$	$Ød_1$	$Ød_2$	L_1	S	E
PBR 063058063	63		58.0		6.3	2.5	
PBR 063058097	**63**		**58.0**		**9.7**	**2.5**	
PBR 065060056	65		60.0		5.6	2.5	
PBR 065060097	65		60.0		9.7	2.5	
PBR 065060100	65		60.0		10.0	2.5	
PBR 065060150	65		60.0		15.0	2.5	
PBR 065060200	65		60.0		20.0	2.5	
PBR 068063063	68		63.0		6.3	2.5	
PBR 070065056	70		65.0		5.6	2.5	
PBR 070065097	70		65.0		9.7	2.5	
PBR 070065010	70		65.0		10.0	2.5	
PBR 070065150	70		65.0		15.0	2.5	
PBR 070065200	70		65.0		20.0	2.5	
PBR 070064125	70		64.0		12.5	3.0	
PBR 075070056	75		70.0		5.6	2.5	
PBR 075070063	75		70.0		6.3	2.5	
PBR 075070097	75		70.0		9.7	2.5	
PBR 075070100	75		70.0		10.0	2.5	1.0 to 2.0
PBR 075070150	75		70.0		15.0	2.5	
PBR 080075056	**80**		**75.0**		**5.6**	**2.5**	
PBR 080075097	**80**		**75.0**		**9.7**	**2.5**	
PBR 080075100	80		75.0		10.0	2.5	
PBR 080075100	80		75.0		10.0	2.5	
PBR 080075150	80		75.0		15.0	2.5	
PBR 080075200	80		75.0		20.0	2.5	
PBR 080074125	80		74.0		12.5	3.0	
PBR 085080056	85		80.0		5.6	2.5	
PBR 085080063	85		80.0		6.3	2.5	
PBR 085080097	85		80.0		9.7	2.5	
PBR 085080150	85		80.0		15.0	2.5	
PBR 085079150	85		79.0		15.0	3.0	
PBR 085079250	85		79.0		25.0	3.0	
PBR 090085056	90		85.0		5.6	2.5	
PBR 090085097	90		85.0		9.7	2.5	
PBR 090085150	90		85.0		15.0	2.5	
PBR 090084125	90		84.0		12.5	3.0	
PBR 090084150	90		84.0		15.0	3.0	
PBR 090084250	90		84.0		25.0	3.0	
PBR 095090056	95		90.0		5.6	2.5	
PBR 095090097	95		90.0		9.7	2.5	
PBR 095090150	95		90.0		15.0	2.5	
PBR 095089150	95		89.0		15.0	3.0	
PBR 095089250	95		89.0		25.0	3.0	
PBR 100095056	**100**		**95.0**		**5.6**	**2.5**	
PBR 100095097	**100**		**95.0**		**9.7**	**2.5**	

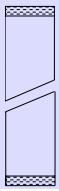
Piston & Rod Bearing Rings PBR Metric

Claron Part Number	Nominal Dimensions & Machining Tolerances						
	H9 ≤115mm +0.05 -0.00 >115mm +0.08 -0.00		f8 ≤100mm +0.00 -0.05 >100mm +0.00 -0.08		+0.20 -0.00	Nom. sec.	
	$ØD_1$	$ØD_2$	$Ød_1$	$Ød_2$	L_1	S	E
PBR 100095150		100	95.0		15.0	2.5	
PBR 100094125		100	94.0		12.5	3.0	
PBR 100094150		100	94.0		15.0	3.0	
PBR 100094250		100	94.0		25.0	3.0	
PBR 105100056		105	100.0		5.6	2.5	
PBR 105100097		105	100.0		9.7	2.5	
PBR 105100150		105	100.0		15.0	2.5	
PBR 105099250		105	99.0		25.0	3.0	
PBR 110105056		110	105.0		5.6	2.5	
PBR 110105097		110	105.0		9.7	2.5	
PBR 110105150		110	105.0		15.0	2.5	
PBR 110104125		110	104.0		12.5	3.0	
PBR 110104150		110	104.0		15.0	3.0	
PBR 110104250		110	104.0		25.0	3.0	
PBR 115110056		115	110.0		5.6	2.5	
PBR 115110097		115	110.0		9.7	2.5	
PBR 115110150		115	110.0		15.0	2.5	
PBR 115109300		115	109.0		30.0	3.0	1.0 to 2.0
PBR 115109300		115	109.0		30.0	3.0	
PBR 12015056		120	115.0		5.6	2.5	
PBR 120115097		120	115.0		9.7	2.5	
PBR 12015150		120	115.0		15.0	2.5	
PBR 120114125		120	114.0		12.5	3.0	
PBR 120114150		120	114.0		15.0	3.0	
PBR 120114300		120	114.0		30.0	3.0	
PBR 125120056		**125**	**120.0**		**5.6**	**2.5**	
PBR 125120097		**125**	**120.0**		**9.7**	**2.5**	
PBR 125120150		125	120.0		15.0	2.5	
PBR 125119150		125	119.0		15.0	3.0	
PBR 125119300		125	119.0		30.0	3.0	
PBR 130125097		130	125.0		9.7	2.5	
PBR 130125150		130	125.0		15.0	2.5	
PBR 130124125		130	124.0		12.5	3.0	
PBR 130123150		130	123.0		15.0	3.5	
PBR 130123300		130	123.0		30.0	3.5	
PBR 135130097		135	130.0		9.7	2.5	
PBR 135130150		135	130.0		15.0	2.5	
PBR 140135097		**140**	**135.0**		**9.7**	**2.5**	
PBR 140135150		**140**	**135.0**		**15.0**	**2.5**	
PBR 140132080		140	132.0		8.0	4.0	
PBR 140133200		140	133.0		20.0	3.5	
PBR 140133350		140	133.0		35.0	3.5	
PBR 150145097		150	145.0		9.7	2.5	
PBR 150145150		150	145.0		15.0	2.5	
PBR 150143200		150	143.0		20.0	3.5	

Claron Part Number	Nominal Dimensions & Machining Tolerances						
	H9	≤115mm +0.05 -0.00 >115mm +0.08 -0.00	≤100mm +0.00 -0.05 >100mm +0.00 -0.08	f8	+0.20 -0.00	Nom. Sec.	
	$ØD_1$	$ØD_2$	$Ød_1$	$Ød_2$	L_1	S	E
PBR 150143350		150	143		35.0	3.5	
PBR 160155097		**160**	**155**		**9.7**	**2.5**	
PBR 160155150		**160**	**155**		**15.0**	**2.5**	
PBR 160153200		160	153		20.0	3.5	
PBR 160153400		160	153		40.0	3.5	
PBR 170165097		170	165		9.7	2.5	
PBR 170165150		170	165		15.0	2.5	
PBR 170162250		170	162		25.0	4.0	
PBR 170162450		170	162		45.0	4.0	
PBR 180175097		**180**	**175**		**9.7**	**2.5**	
PBR 180175150		**180**	**175**		**15.0**	**2.5**	
PBR 180172250		180	172		25.0	4.0	
PBR 180172450		180	172		45.0	4.0	
PBR 190185097		190	185		9.7	2.5	
PBR 190185150		190	185		15.0	2.5	
PBR 190182250		190	182		25.0	4.0	
PBR 190182450		190	182		45.0	4.0	
PBR 200195097		**200**	**195**		**9.7**	**2.5**	
PBR 200195150		**200**	**195**		**15.0**	**2.5**	
PBR 200192250		200	192		25.0	4.0	
PBR 200192450		200	192		45.0	4.0	
PBR 210205097		210	205		9.7	2.5	
PBR 210205150		210	205		15.0	2.5	1.0 to 2.0
PBR 210202250		210	202		25.0	4.0	
PBR 210202500		210	202		50.0	4.0	
PBR 220215097		**220**	**215**		**9.7**	**2.5**	
PBR 220215150		220	215		15.0	**2.5**	
PBR 220212500		220	212		50.0	4.0	
PBR 225217250		225	217		25.0	4.0	
PBR 230225097		230	225		9.7	2.5	
PBR 230225150		230	225		15.0	2.5	
PBR 230225097		230	222		30.0	4.0	
PBR 230222550		230	222		55.0	4.0	
PBR 240235097		240	235		9.7	2.5	
PBR 240235150		240	235		15.0	2.5	
PBR 240232300		240	232		30.0	4.0	
PBR 240232550		240	232		55.0	4.0	
PBR 250245097		**250**	**245**		**9.7**	**2.5**	
PBR 250245150		**250**	**245**		**15.0**	**2.5**	
PBR 250242300		250	242		30.0	4.0	
PBR 250242550		250	242		55.0	4.0	
PBR 260255097		260	255		9.7	2.5	
PBR 260255150		260	255		15.0	2.5	
PBR 260252600		260	252		60.0	4.0	
PBR 270265097		270	265		9.7	2.5	

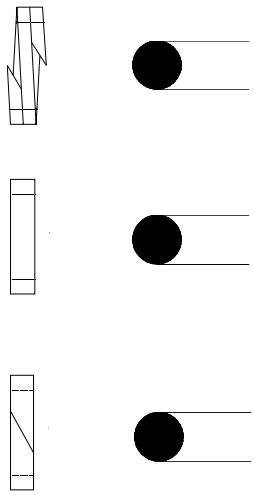
Piston & Rod Bearing Rings
PBR
Metric





Claron Part Number	Nominal Dimensions & Machining Tolerances						
	H9 ≤115mm +0.05 -0.00 >115mm +0.08 -0.00		f8 ≤100mm +0.00 -0.05 >100mm +0.00 -0.08		+0.20 -0.00	Nom. Sec.	
	$ØD_1$	$ØD_2$	$Ød_1$	$Ød_2$	L_1	S	E
PBR 270265150	270		265		15.0	2.5	1.0 to 2.0
PBR 270262600	270		262		60.0	4.0	
PBR 280275150	**280**		**275**		**15.0**	**2.5**	
PBR 280275250	**280**		**275**		**25.0**	**2.5**	
PBR 280272250	**280**		**272**		**25.0**	**4.0**	
PBR 320315150	**320**		**315**		**15.0**	**2.5**	
PBR 320315250	**320**		**315**		**25.0**	**2.5**	
PBR 320312250	**320**		**312**		**25.0**	**4.0**	
PBR 360355150	**360**		**355**		**15.0**	**2.5**	
PBR 360352250	**360**		**352**		**25.0**	**4.0**	
PBR 400395150	**400**		**395**		**15.0**	**2.5**	
PBR 400395250	**400**		**395**		**25.0**	**2.5**	
PBR 400392250	**400**		**392**		**25.0**	**4.0**	
PBR 450445150	**450**		**445**		**15.0**	**2.5**	
PBR 450445250	**450**		**445**		**25.0**	**2.5**	
PBR 450442250	**450**		**442**		**25.0**	**4.0**	
PBR 500495150	**500**		**495**		**15.0**	**2.5**	
PBR 500495250	**500**		**495**		**25.0**	**2.5**	
PBR 500492250	**500**		**492**		**25.0**	**4.0**	

Section F
Back-Up Rings



PTFE Back-Up Rings

Design

This range of products is designed to overcome the problems of 'O'-Ring extrusion when the system pressures are greater than the sealing capabilities of an unsupported 'O'-Ring. The use of P.T.F.E. for anti-extrusion rings has many advantages over 'hard rubber' materials, particularly at high system pressures. The cold flow characteristics of PTFE are used to full advantage in reducing the extrusion gaps to a minimum and allowing automatic compensation for wear. The capability of specialist compounding to suit extremes of duty combined with a high resistance to virtually all chemicals, low friction and wear rates render PTFE as the ideal material for anti-extrusion devices.

Variations

Spiral

The spiral back up ring is the most common style in use being effectively self adjusting to diametral tolerances. Spiral back up rings are manufactured from virgin PTFE only.

Manufactured to suit O-Rings to BS1806, BS4518, JISB2401, JW17000, MS28782 standards

Order as part number shown on table.e.g. BS 210 or as below...

BS1806 ... BS006
BS4518 ... BS0031-16
MS28782 ... MS28782-001
JISB2401 ... JISP003
JW17000 ... SJWI7001

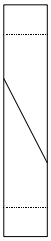
Endless

The endless back up ring is used where problems can occur with the rotation of a screwed endcaps which on assembly could cause a spiral type to unwind. Endless back up rings are normally manufactured from virgin PTFE.

Manufactured to suit O-Rings to BS1806, BS4518, JISB2401, MS27595 standards.

Order as part number shown on the table with suffix E, e.g. BS 210/E or as below...

BS1806 ... BS006/E
JISB2401... JISP003/E
BS4518 ... BS0031-16/E
MS27595 ... MS27595-004



Endless Split

The endless split back up ring is manufactured as the endless style but is split at 30° to facilitate ease of assembly in certain applications. Endless split back up rings are normally manufactured from virgin PTFE.

Manufactured to suit O-Rings to BS1806, BS4518, JISB2401, MS28774, AS8791/1 standards.

Order as part number shown on the table with the suffix ES, e.g. BS 210/ES or as below...

BS1806 ... BS006/ES
JISB2401 ... JISP003/ES
AS8791/1 ... M8791-004/ES
BS4518 ... BS0031-16/ES
MS28774 ... MS28774-004/ES

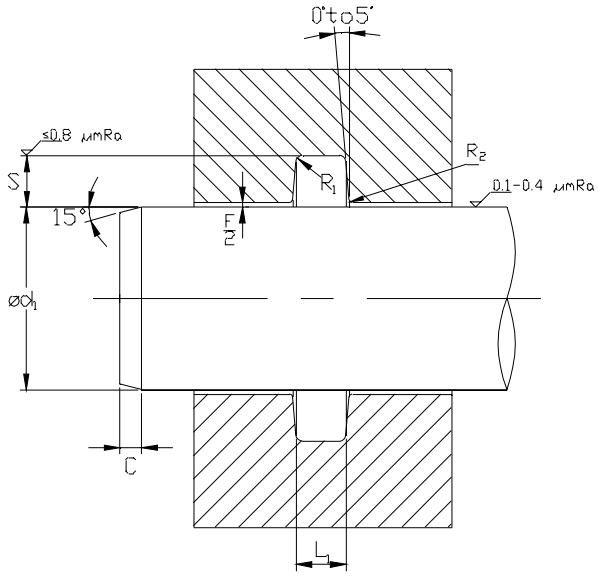
Materials

All the above can be supplied in a variety of PTFE materials including Virgin PTFE, Glass Filled PTFE and material specifications to MIL-R-8791/1.
The **Endless** and **Endless Split** Styles can also be supplied in Acetal, Nylon and Peek materials along with a variety of other filled PTFE grades such as Carbon and Bronze.

Housing

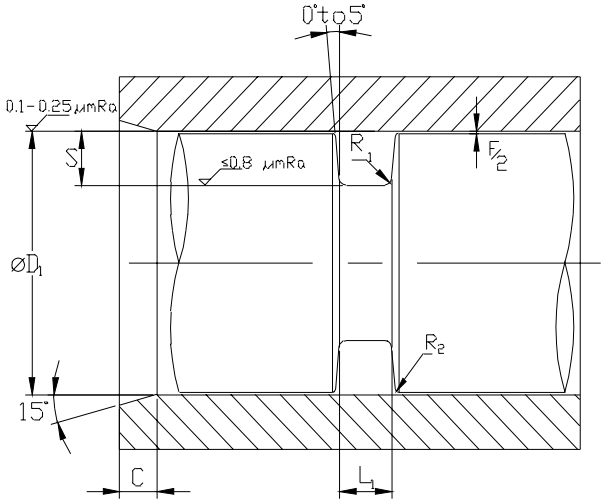
For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal. Refer to appendix 4 for value of tolerance symbols.

HOUSING DIMENSIONS (refer to following tables 1& 2)



Gland housing arrangement

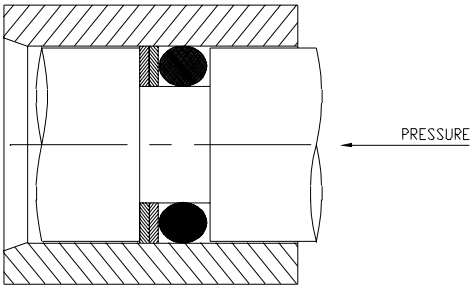
Max groove dia.= Shaft dia.$d_1$min.+2S max
Min groove dia.= Shaft dia.$d_1$min.+2S min.



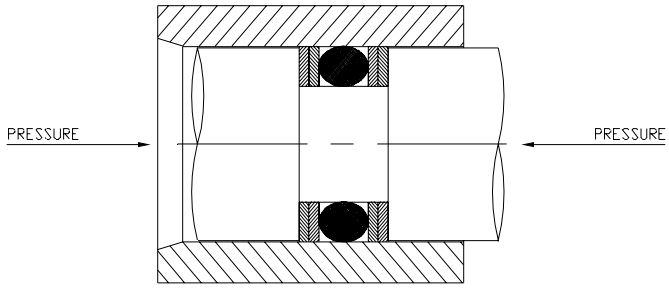
Piston housing arrangement

Max. groove dia.= Cylinder dia.D_1min.-2S min.
Min. groove dia.=Cylinder dia.D_1max.-2S max.

POSITIONING OF BACK-UP RINGS



Uni-Directional Pressure



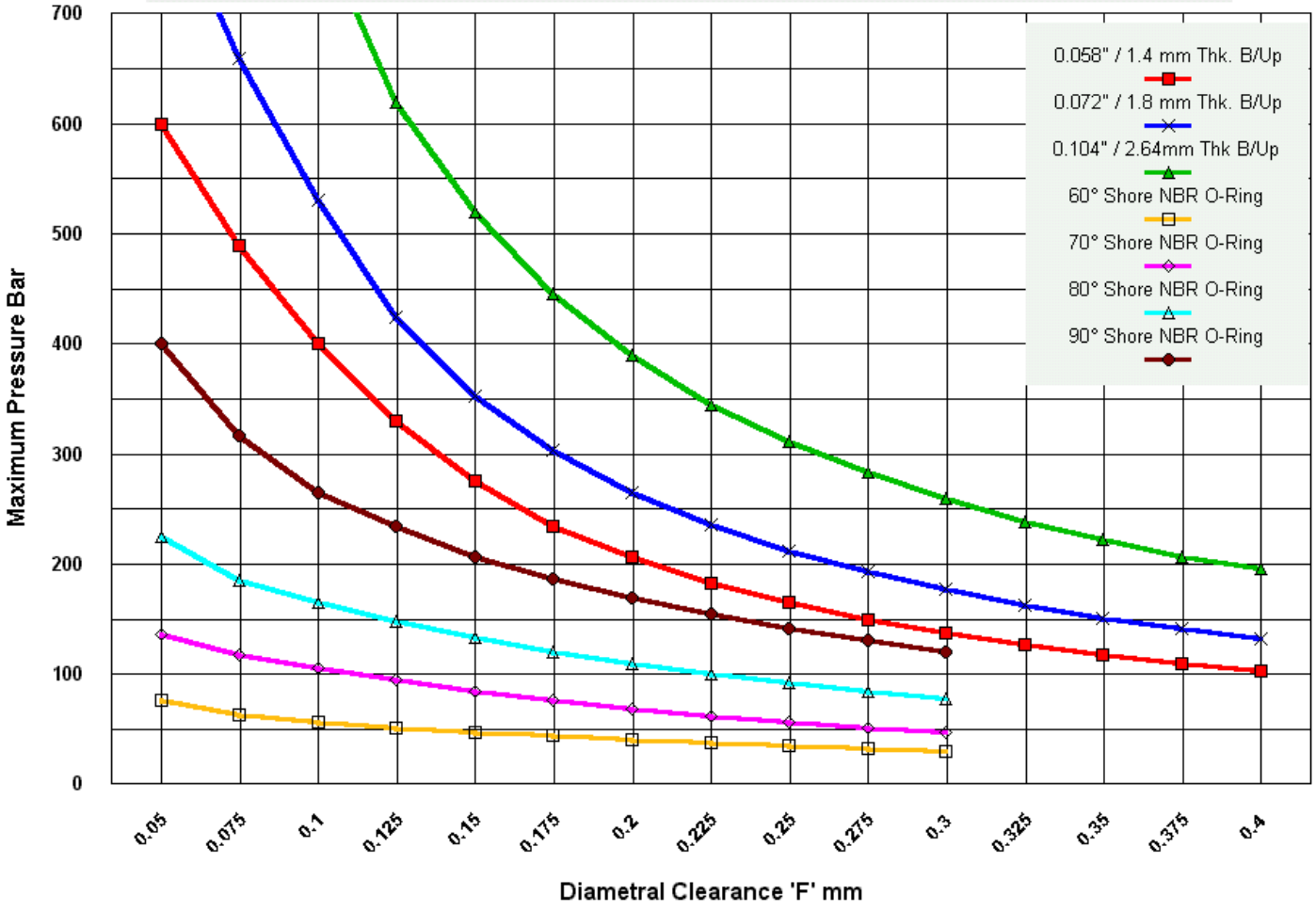
Bi-Directional Pressure

Fitting

For the back up ring to function correctly, it is important that care be taken in fitting the backup within its housing. For a detailed checklist, refer to Appendix 3.

Operating Conditions

Maximum Pressure Vs. Diametral Clearance 'F' for O-Rings & O-Rings with virgin PTFE Back up rings.
If concentricity of mating diameters is assured, 'F' may be doubled for any given pressure.



Where O-Rings are used in dynamic applications, an anti-extrusion ring is recommended for pressures >100bar and temperatures >100°C.

Housing groove dimensions for 'O'-Rings to BS1806 and BS4518 fitted with back-up rings in Dynamic and Static diametral applications.
Tables 1 & 2 refer to the housing drawings.

IMPERIAL

Housing groove dimensions for O-Rings to BS1806 fitted with back-up rings in Dynamic & Static diametrical applications.

O-Ring Section	Radial Width 'S'		Groove Width L_1				Radius 'R1' Max.	Cham. 'C' Min.
			One back-up ring		Two back-up rings			
	Max.	Min.	Max.	Min.	Max.	Min.		
0.070"	0.062"	0.060"	0.152"	0.147"	0.210"	0.205"	0.030"	0.085"
0.103"	0.094"	0.091"	0.199"	0.194"	0.257"	0.252"	0.030"	0.097"
0.139"	0.125"	0.122"	0.247"	0.241"	0.305"	0.299"	0.030"	0.103"
0.210"	0.188"	0.184"	0.355"	0.348"	0.427"	0.420"	0.030"	0.156"
0.275"	0.250"	0.245"	0.480"	0.473"	0.582"	0.576"	0.030"	0.187"

Table 1

METRIC

Housing groove dimensions for O-Rings to BS4518 fitted with back-up rings in Dynamic & Static diametrical applications.

O-Ring Section	Radial Width 'S'		Groove Width L_1				Radius 'R1' Max.	Chamf. 'C' Min.
			One back-up ring		Two back-up rings			
	Max.	Min.	Max.	Min.	Max.	Min.		
1.6 mm	1.3 mm	1.25 mm	4.0 mm	3.8 mm	5.4 mm	5.2 mm	0.5 mm	2.2 mm
2.4 mm	2.09 mm	1.97 mm	4.8 mm	4.6 mm	6.2 mm	6.0 mm	0.5 mm	2.2 mm
3.0 mm	2.65 mm	2.50 mm	5.6 mm	5.4 mm	7.0 mm	6.8 mm	1.0 mm	2.6 mm
5.7 mm	5.18 mm	4.95 mm	9.5 mm	9.3 mm	11.3 mm	11.1 mm	1.0 mm	3.7 mm

Table 2

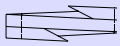

Spiral


Solid. E


Solid Split. ES

PTFE Back-Up Rings To Suit O-Rings to BS 1806

Imperial

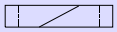


Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 005	0.109	0.234		
BS 006	0.125	0.250		
BS 007	0.156	0.281		
BS 008	0.187	0.312		
BS 009	0.219	0.344		
BS 010	0.250	0.375		
BS 011	0.312	0.437		
BS 012	0.375	0.500		
BS 013	0.437	0.562		
BS 014	0.500	0.625		
BS 015	0.562	0.687		
BS 016	0.625	0.750		
BS 017	0.687	0.812		
BS 018	0.750	0.875		
BS 019	0.812	0.937		
BS 020	0.875	1.000		
BS 021	0.937	1.062		
BS 022	1.000	1.125		
BS 023	1.062	1.187		
BS 024	1.125	1.250		
BS 025	1.187	1.312		
BS 026	1.250	1.375		
BS 027	1.312	1.437		
BS 028	1.375	1.500	0.058	0.070
BS 029	1.500	1.625		
BS 030	1.625	1.750		
BS 031	1.750	1.875		
BS 032	1.875	2.000		
BS 033	2.000	2.125		
BS 034	2.125	2.250		
BS 035	2.250	2.375		
BS 036	2.375	2.500		
BS 037	2.500	2.625		
BS 038	2.625	2.750		
BS 039	2.750	2.875		
BS 040	2.875	3.000		
BS 041	3.000	3.125		
BS 042	3.250	3.375		
BS 043	3.500	3.625		
BS 044	3.750	3.875		
BS 045	4.000	4.125		
BS 046	4.250	4.375		
BS 047	4.500	4.625		
BS 048	4.750	4.875		
BS 049	5.000	5.125		
BS 050	5.250	5.375		
BS 108	0.250	0.437		
BS 109	0.312	0.500		
BS 110	0.375	0.562	0.058	0.103
BS 111	0.437	0.625		
BS 112	0.500	0.687		

Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 113	0.562	0.750		
BS 114	0.625	0.812		
BS 115	0.687	0.875		
BS 116	0.750	0.937		
BS 117	0.812	1.000		
BS 118	0.875	1.062		
BS 119	0.937	1.125		
BS 120	1.000	1.187		
BS 121	1.062	1.250		
BS 122	1.125	1.312		
BS 123	1.187	1.375		
BS 124	1.250	1.437		
BS 125	1.312	1.500		
BS 126	1.375	1.562		
BS 127	1.437	1.625		
BS 128	1.500	1.687		
BS 129	1.562	1.750		
BS 130	1.625	1.812		
BS 131	1.687	1.875		
BS 132	1.750	1.937		
BS 133	1.812	2.000		
BS 134	1.875	2.062		
BS 135	1.937	2.125	0.058	0.103
BS 136	2.000	2.187		
BS 137	2.062	2.250		
BS 138	2.125	2.312		
BS 139	2.187	2.375		
BS 140	2.250	2.437		
BS 141	2.312	2.500		
BS 142	2.375	2.562		
BS 143	2.437	2.625		
BS 144	2.500	2.687		
BS 145	2.562	2.750		
BS 146	2.625	2.812		
BS 147	2.687	2.875		
BS 148	2.750	2.937		
BS 149	2.812	3.000		
BS 150	2.875	3.062		
BS 151	3.000	3.187		
BS 152	3.250	3.437		
BS 153	3.500	3.687		
BS 154	3.750	3.937		
BS 155	4.000	4.187		
BS 156	4.250	4.437		
BS 157	4.500	4.687		
BS 158	4.750	4.937		
BS 159	5.000	5.187		
BS 160	5.250	5.437		
BS 161	5.500	5.687		
BS 162	5.750	5.937		

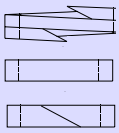

Spiral


Solid. E


Solid Split. ES

PTFE Back-Up Rings To Suit O-Rings to BS 1806

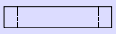
Imperial

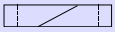


Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 206	0.500	0.750		
BS 207	0.562	0.812		
BS 208	0.625	0.875		
BS 209	0.687	0.937		
BS 210	0.750	1.000		
BS 211	0.812	1.062		
BS 212	0.875	1.125		
BS 213	0.937	1.187		
BS 214	1.000	1.250		
BS 215	1.062	1.312		
BS 216	1.125	1.375		
BS 217	1.187	1.437		
BS 218	1.250	1.500		
BS 219	1.312	1.562		
BS 220	1.375	1.625		
BS 221	1.437	1.687		
BS 222	1.500	1.750		
BS 223	1.625	1.875		
BS 224	1.750	2.000		
BS 225	1.875	2.125		
BS 226	2.000	2.250		
BS 227	2.125	2.375		
BS 228	2.250	2.500		
BS 229	2.375	2.625	0.058	0.139
BS 230	2.500	2.750		
BS 231	2.625	2.875		
BS 232	2.750	3.000		
BS 233	2.875	3.125		
BS 234	3.000	3.250		
BS 235	3.125	*3.375*		
BS 236	3.250	3.500		
BS 237	3.375	3.625		
BS 238	3.500	3.750		
BS 239	3.625	3.875		
BS 240	3.750	4.000		
BS 241	3.875	4.125		
BS 242	4.000	4.250		
BS 243	4.125	*4.375*		
BS 244	4.250	4.500		
BS 245	4.375	4.625		
BS 246	4.500	4.750		
BS 247	4.625	*4.875*		
BS 248	4.750	5.000		
BS 249	4.875	5.125		
BS 250	5.000	5.250		
BS 251	5.125	5.375		
BS 252	5.250	5.500		
BS 253	5.375	5.625		
BS 254	5.500	5.750		
BS 255	5.625	5.875		

Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 256	5.750	6.000		
BS 257	5.875	6.125		
BS 258	6.000	6.250		
BS 259	6.250	6.500		
BS 260	6.500	6.750		
BS 261	6.750	7.000		
BS 262	7.000	7.250		
BS 263	7.250	7.500		
BS 264	7.500	7.750		
BS 265	7.750	8.000		
BS 266	8.000	8.250		
BS 267	8.250	8.500		
BS 268	8.500	8.750		
BS 269	8.750	9.000		
BS 270	9.000	9.250		
BS 271	9.250	9.500	0.058	0.139
BS 272	9.500	9.750		
BS 273	9.750	10.000		
BS 274	10.000	10.250		
BS 275	10.500	10.750		
BS 276	11.000	11.250		
BS 277	11.500	11.750		
BS 278	12.000	12.250		
BS 279	13.000	13.250		
BS 280	14.000	14.250		
BS 281	15.000	15.250		
BS 282	16.000	16.250		
BS 283	17.000	17.250		
BS 284	18.000	18.250		
BS 314	0.750	1.125		
BS 315	0.812	1.187		
BS 316	0.875	1.250		
BS 317	0.937	1.312		
BS 318	1.000	1.375		
BS 319	1.062	1.437		
BS 320	1.125	1.500		
BS 321	1.187	1.562		
BS 322	1.250	1.625		
BS 323	1.312	1.687		
BS 324	1.375	1.750		
BS 325	1.500	1.875		
BS 326	1.625	2.000	0.072	0.210
BS 327	1.750	2.125		
BS 328	1.875	2.250		
BS 329	2.000	2.375		
BS 330	2.125	2.500		
BS 331	2.250	2.625		
BS 332	2.375	2.750		
BS 333	2.500	2.875		
BS 334	2.625	3.000		
BS 335	2.750	3.125		
BS 336	2.875	3.250		

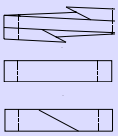

Spiral


Solid. E


Solid Split. ES

PTFE Back-Up Rings To Suit O-Rings to BS 1806

Imperial

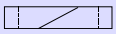


Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 337	3.000	3.375		
BS 338	3.125	3.500		
BS 339	3.250	3.625		
BS 340	3.375	3.750		
BS 341	3.500	3.875		
BS 342	3.625	4.000		
BS 343	3.750	4.125		
BS 344	3.875	4.250		
BS 345	4.000	4.375		
BS 346	4.125	4.500		
BS 347	4.250	4.625		
BS 348	4.375	4.750		
BS 349	4.500	4.875		
BS 350	4.625	5.000		
BS 351	4.750	5.125		
BS 352	4.875	5.250		
BS 353	5.000	5.375		
BS 354	5.125	5.500		
BS 355	5.250	5.625		
BS 356	5.375	5.750		
BS 357	5.500	5.875		
BS 358	5.625	6.000		
BS 359	5.750	6.125		
BS 360	5.875	6.250		
BS 361	6.000	6.375		
BS 362	6.250	6.625		
BS 363	6.500	6.875	0.072	0.210
BS 364	6.750	7.125		
BS 365	7.000	7.375		
BS 366	7.250	7.625		
BS 367	7.500	7.875		
BS 368	7.750	8.125		
BS 369	8.000	8.375		
BS 370	8.250	8.625		
BS 371	8.500	8.875		
BS 372	8.750	9.125		
BS 373	9.000	9.375		
BS 374	9.250	9.625		
BS 375	9.500	9.875		
BS 376	9.750	10.125		
BS 377	10.000	10.375		
BS 378	10.500	10.875		
BS 379	11.000	11.375		
BS 380	11.500	11.875		
BS 381	12.000	12.375		
BS 382	13.000	13.375		
BS 383	14.000	14.375		
BS 384	15.000	15.375		
BS 385	16.000	16.375		
BS 386	17.000	17.375		
BS 387	18.000	18.375		
BS 388	19.000	19.375		
BS 389	20.000	20.375		
BS 390	21.000	21.375		
BS 391	22.000	22.375		
BS 392	23.000	23.375		
BS 393	24.000	24.375		
BS 394	25.000	25.375		
BS 395	26.000	26.375		

Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 425	4.500	5.000		
BS 426	4.625	5.125		
BS 427	4.750	5.250		
BS 428	4.875	5.375		
BS 429	5.000	5.500		
BS 430	5.125	5.625		
BS 431	5.250	5.750		
BS 432	5.375	5.875		
BS 433	5.500	6.000		
BS 434	5.625	6.125		
BS 435	5.750	6.250		
BS 436	5.875	6.375		
BS 437	6.000	6.500		
BS 438	6.250	6.750		
BS 439	6.500	7.000		
BS 440	6.750	7.250		
BS 441	7.000	7.500		
BS 442	7.250	7.750		
BS 443	7.500	8.000		
BS 444	7.750	8.250		
BS 445	8.000	8.500		
BS 445A	8.250	8.750		
BS 446	8.500	9.000		
BS 446A	8.750	9.250		
BS 447	9.000	9.500		
BS 447A	9.250	9.750		
BS 448	9.500	10.000	0.104	0.275
BS 448A	9.750	10.250		
BS 449	10.000	10.500		
BS 449A	10.250	10.750		
BS 450	10.500	11.000		
BS 450A	10.750	11.250		
BS 451	11.000	11.500		
BS 451A	11.250	11.750		
BS 452	11.500	12.000		
BS 452A	11.750	12.250		
BS 453	12.000	12.500		
BS 454	12.500	13.000		
BS 455	13.000	13.500		
BS 456	13.500	14.000		
BS 457	14.000	14.500		
BS 458	14.500	15.000		
BS 459	15.000	15.500		
BS 460	15.500	16.000		
BS 461	16.000	16.500		
BS 462	16.500	17.000		
BS 463	17.000	17.500		
BS 464	17.500	18.000		
BS 465	18.000	18.500		
BS 466	18.500	19.000		
BS 467	19.000	19.500		
BS 468	19.500	20.000		
BS 469	20.000	20.500		
BS 470	21.000	21.500		
BS 471	22.000	22.500		
BS 472	23.000	23.500		
BS 473	24.000	24.500		
BS 474	25.000	25.500		
BS 475	26.000	26.500		

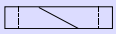

Spiral


Solid. E


Solid Split. ES

PTFE Back-Up Rings To Suit O-Rings to BS 4518

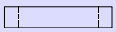
Metric



Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 0031-16	3.5	6.0		
BS 0041-16	4.5	7.0		
BS 0051-16	5.5	8.0		
BS 0061-16	6.5	9.0		
BS 0071-16	7.5	10.0		
BS 0081-16	8.5	11.0		
BS 0091-16	9.5	12.0		
BS 0101-16	10.5	13.0		
BS 0111-16	11.5	14.0		
BS 0121-16	12.5	15.0		
BS 0131-16	13.5	16.0		
BS 0141-16	14.5	17.0	1.4	1.6
BS 0151-16	15.5	18.0		
BS 0161-16	16.5	19.0		
BS 0171-16	17.5	20.0		
BS 0181-16	18.5	21.0		
BS 0191-16	19.5	22.0		
BS 0221-16	22.5	25.0		
BS 0251-16	25.5	28.0		
BS 0271-16	27.5	30.0		
BS 0291-16	29.5	32.0		
BS 0321-16	32.5	35.0		
BS 0351-16	35.5	38.0		
BS 0371-16	37.5	40.0		
BS 0036-24	4	8		
BS 0046-24	5	9		
BS 0056-24	6	10		
BS 0066-24	7	11		
BS 0076-24	8	12		
BS 0086-24	9	13		
BS 0096-24	10	14		
BS 0106-24	11	15		
BS 0116-24	12	16		
BS 0126-24	13	17		
BS 0136-24	14	18		
BS 0146-24	15	19		
BS 0156-24	16	20		
BS 0166-24	17	21		
BS 0176-24	18	22		
BS 0186-24	19	23		
BS 0196-24	20	24		
BS 0206-24	21	25		
BS 0216-24	22	26		
BS 0246-24	25	29		
BS 0276-24	28	32		
BS 0296-24	30	34	1.4	2.4
BS 0316-24	32	36		
BS 0346-24	35	39		
BS 0356-24	36	40		
BS 0376-24	38	42		
BS 0396-24	40	44		
BS 0416-24	42	46		
BS 0446-24	45	49		
BS 0456-24	46	50		
BS 0476-24	48	52		
BS 0496-24	50	54		
BS 0516-24	52	56		
BS 0536-24	54	58		
BS 0546-24	55	59		
BS 0576-24	58	62		
BS 0586-24	59	63		
BS 0596-24	60	64		
BS 0616-24	62	66		
BS 0626-24	63	67		
BS 0646-24	65	69		
BS 0676-24	68	72		
BS 0696-24	70	74		

Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 0195-30	20	25		
BS 0215-30	22	27		
BS 0225-30	23	28		
BS 0245-30	25	30		
BS 0255-30	26	31		
BS 0265-30	27	32		
BS 0275-30	28	33		
BS 0295-30	30	35		
BS 0315-30	32	37		
BS 0325-30	33	38		
BS 0345-30	35	40		
BS 0355-30	36	41		
BS 0365-30	37	42		
BS 0375-30	38	43		
BS 0395-30	40	45		
BS 0415-30	42	47		
BS 0425-30	43	48		
BS 0445-30	45	50		
BS 0495-30	50	55		
BS 0545-30	55	60		
BS 0555-30	56	61		
BS 0575-30	58	63		
BS 0595-30	60	65		
BS 0635-30	64	69		
BS 0645-30	65	70		
BS 0695-30	70	75		
BS 0745-30	75	80		
BS 0795-30	80	85		
BS 0845-30	85	90	1.4	3.0
BS 0895-30	90	95		
BS 0945-30	95	100		
BS 0995-30	100	105		
BS 1045-30	105	110		
BS 1095-30	110	115		
BS 1145-30	115	120		
BS 1195-30	120	125		
BS 1245-30	125	130		
BS 1295-30	130	135		
BS 1345-30	135	140		
BS 1395-30	140	145		
BS 1445-30	145	150		
BS 1495-30	150	155		
BS 1545-30	155	160		
BS 1595-30	160	165		
BS 1645-30	165	170		
BS 1695-30	170	175		
BS 1745-30	175	180		
BS 1795-30	180	185		
BS 1845-30	185	190		
BS 1895-30	190	195		
BS 1945-30	195	200		
BS 1995-30	200	205		
BS 2045-30	205	210		
BS 2095-30	210	215		
BS 2195-30	220	225		
BS 2295-30	230	235		
BS 2395-30	240	245		
BS 2495-30	250	255		


Spiral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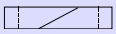
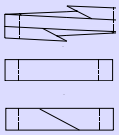

Solid Split. ES

PTFE Back-Up Rings
To Suit O-Rings to BS 4518

Metric



Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 0443-57	45	55		
BS 0453-57	46	56		
BS 0493-57	50	60		
BS 0523-57	53	63		
BS 0543-57	55	65		
BS 0553-57	56	66		
BS 0593-57	60	70		
BS 0623-57	63	73		
BS 0643-57	65	75		
BS 0693-57	70	80		
BS 0743-57	75	85		
BS 0793-57	80	90		
BS 0843-57	85	95		
BS 0893-57	90	100		
BS 0943-57	95	105		
BS 0993-57	100	110	1.8	5.7
BS 1043-57	105	115		
BS 1093-57	110	120		
BS 1143-57	115	125		
BS 1193-57	120	130		
BS 1243-57	125	135		
BS 1293-57	130	140		
BS 1343-57	135	145		
BS 1393-57	140	150		
BS 1443-57	145	155		
BS 1493-57	150	160		
BS 1543-57	155	165		
BS 1593-57	160	170		
BS 1643-57	165	175		
BS 1693-57	170	180		

Claron Part Number	Nominal Dimensions Ød$_1$	ØD$_1$	T Max.	O-Ring Section
BS 1743-57	175	185		
BS 1793-57	180	190		
BS 1843-57	185	195		
BS 1893-57	190	200		
BS 1943-57	195	205		
BS 1993-57	200	210		
BS 2043-57	205	215		
BS 2093-57	210	220		
BS 2143-57	215	225		
BS 2193-57	220	230		
BS 2293-57	230	240		
BS 2393-57	240	250		
BS 2493-57	250	260		
BS 2593-57	260	270		
BS 2693-57	270	280		
BS 2793-57	280	290	1.8	5.7
BS 2893-57	290	300		
BS 2993-57	300	310		
BS 3193-57	320	330		
BS 3393-57	340	350		
BS 3593-57	360	370		
BS 3793-57	380	390		
BS 3993-57	400	410		
BS 4193-57	420	430		
BS 4393-57	440	450		
BS 4593-57	460	470		
BS 4793-57	480	490		
BS 4893-57	490	500		
BS 4993-57	500	510		

Design

Claron style CFS flange seal is designed to suit the SAE J518 range of flanges, and common metric flange sizes. The seal is manufactured in Claron's high performance grade of Polyurethane with excellent resistance to extrusion and compression set over a wide temperature range. The design offers many performance advantages over common o-ring, or rubber based flange seals, including the elimination of the 'pumping effect'.

Operating Conditions

Max. Pressure	Temp Range
400 Bar	-40 to 110°C

These range perameters are Maximum simultaneous conditions. Optimum service conditions are affected by temperature, pressure, surface finish and extrusion gaps. Refer to Appendix 1 for further information.

Continuous operating temperature for various Fluids

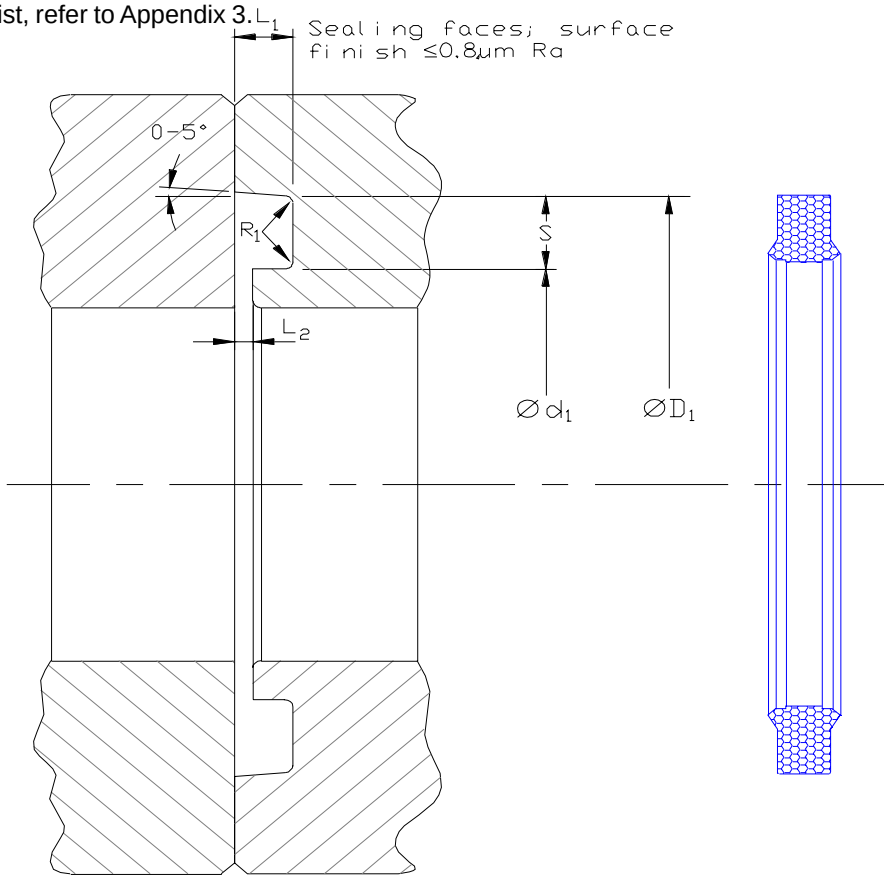
AU Polyurethane		
DIN	Hydraulic Fluid Description	°C
H	Mineral oil without additives	100
H-L	Mineral Fluid with anti corrosion and anti ageing additives	100
H-LP	Mineral oil as HL plus additives reducing wear, raising load	100
H-LPD	Mineral oil as H-LP but with detergents and dispersants	100
H-V	Mineral oil as H-LP plus improved viscosity temp.	100
HFA E	Emulsions of mineral oil in water. Water content 80-95%	40
HFA S	Synthetic oil in water. Water content 80-95%	40
HFB	Emulsions of water in mineral oil. Water content 40%	40
HFC	Aqueous polymer solutions. Water content 35%	ns
HFD R	Phosphoric acid ester based	ns
HFD S	Chlorinated hydrocarbon based	ns
HFD T	Mixtures of HFD R and HFD S	ns
HEPG	Polyglycol based	ns
HETG	Vegetable Oil based	60
HEES	Fully synthetic ester based	60

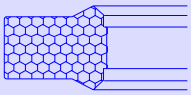
Housing

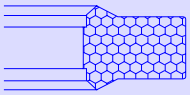
For surface finish and recommended lead in chamfers refer to the illustration below. For housing dimensions and machining tolerances refer to the catalogue page of selected seal.

Fitting

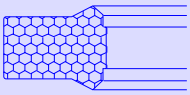
For the seal to function correctly, it is important that care be taken in fitting the seal within its housing. For a detailed checklist, refer to Appendix 3.





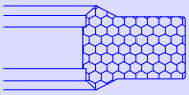


Claron Part Number	Nominal Dimensions & Machining Tolerances						
	Nominal Flange Size	+0.10 -0.10 $ØD_1$	Nominal $Ød_1$	+0.05 -0.05 L_1	+0.00 -0.25 L_2	+0.25 -0.25 S	Max. R_1
CFSM 0335-0263	-	33.5	26.3	2.2	0.25	3.6	0.5
CFSM 0450-0362	-	45.0	36.2	3.3	0.25	4.4	0.5



Static Flange Seal
CFS

Imperial
SAE J518



Claron Part Number	Nominal Dimensions & Machining Tolerances						
	Nominal Flange Size	+0.005 -0.005 $ØD_1$	Nominal $Ød_1$	+0.005 -0.005 L_1	+0.000 -0.010 L_2	+0.010 -0.010 S	Max. R_1
CFS 0500	0.500	1.000	0.670	0.110	0.010	0.165	0.030
CFS 0750	0.750	1.250	0.920	0.110	0.010	0.165	0.030
CFS 1000	1.000	1.560	1.230	0.110	0.010	0.165	0.030
CFS 1250	1.250	1.750	1.420	0.110	0.010	0.165	0.030
CFS 1500	1.500	2.125	1.785	0.110	0.010	0.165	0.030
CFS 2000	2.000	2.500	2.160	0.110	0.010	0.165	0.030

Other Claron Group Products

Website www.claron.co.uk

Claron (Plastics) Ltd.

Claron (Plastics) Ltd. is the U.K.'s largest manufacturer of stock shapes based on P.T.F.E. compounds specifically developed for sealing systems. The quality of this range has also gained the approval and wide spread use of many other industries, including chemical and process plant. Typical machined products include bellows, balls, lantern rings, valve seats, and dip pipes. For further detailed information on the above, or technical design details of specific products, contact:-

Claron (Plastics) Ltd.
Alders Way, Yalberton Industrial Estate, Paignton,
Devon TQ4 7QL. U.K.
Tel: +44 (0)1803 528677
Fax: +44 (0)1803 525134
E-mail: plastics@claron.co.uk

Claron Hydraulic Services

Claron Hydraulic Services manufacture an extensive range of 'standard seals', Bearing rings, Back-up rings, and PTFE O-Rings supplemented by an unsurpassed capability for custom designed products and the high quality production of complex components to customer specification.
Claron's knowledge and expertise also includes the use of other specialist engineering plastics such as PCTFE, PEEK, UHMWPE, POM, PA, etc. and the production of various products in designs and sizes to meet other European, Asian, and American housing standards. For further information on these and any other plastic sealing products, contact:-

Claron Hydraulic Services.
Alders Way, Yalberton Industrial Estate, Paignton,
Devon TQ4 7QL. U.K.
Tel: +44 (0)1803 528852
Fax: +44 (0)1803 525134
E-mail: services@claron.co.uk

Claron Hydraulic Seals Ltd

Claron Hydraulic Seals Ltd. manufacture a comprehensive range of high quality hydraulic and pneumatic sealing systems. The range encompasses the latest modern designs including one piece piston seals, Polyurethane rod seals, and wiper seals. The product ranges meet European, American, and Asian housing standards and are manufactured in materials including rubber fabric, Polyurethane, modified P.T.F.E.'s and other high performance compounds. Claron also provides a range of customer related services including the supply of seal kits packaged to meet the requirements of both production and after market sales.

Contact:-

Claron Hydraulic Seals Ltd.
Station Road, Cradley Heath, Warley,
West Midlands. B64 6PN U.K.
Tel: +44 (0)121 559 9711
Fax: +44 (0)121 559 1036
E-mail: sales@claron-seals.co.uk

Appendix -1-
Seal selection Guide

Seal selection

At first glance, there are almost as many seal designs as there are applications. In practice there are only a few principles to apply to any application design and thereafter the constraints of material choice, production technique and acceptable cost designate a suitable type of seal. Refinements to various aspects of seal geometry, material properties and housing designs can however have a significant effect on the performance and capability of the seal.

Claron as a manufacturer of hydraulic pressure seals in a huge variety of designs and materials ensure that the products offered are based upon the sound knowledge of performance and suitability for any given application, rather than upon the limitations of availability.
Whatever the demand and complexity of the required sealing system every seal has the same basic function, to prevent or minimise leakage between the two parts.
When selecting a seal a series of requirements are made by those using seals and these should be given consideration before final selection is made.

- Environmental Serviceability
- Simple Installation
- Operational Reliability
- Tolerance to the sealing media
- Frictional requirements
- Ability to function within a temperature range
- Good sealing at high and low pressures
- Resistance to extrusion between mating parts

Consideration and evaluation of these demands within the seals operating conditions is important as are the influencing factors of pressure, temperature, speed, and surface finish.

influencing Factors

effect of Pressure

Pressure affects the seal by forcing it into the gap which exists between toleranced machined parts at the non pressure side of the seal. When the gap is too large the heel of the seal will show “nibbling” and result in premature seal failure. This extrusion will increase if the seal is in a condition of side loading. To minimise extrusion whilst maintaining reasonable machining tolerances seals fitted with
anti-extrusion wear rings should be selected. The use of bearing rings will also reduce potential maximum extrusion gaps. Permissible extrusion gaps / pressure graphs are shown for all piston and rod seals within this catalogue.

effect of Temperature

The operating temperature of the sealing media affects the choice of sealing materials. Normal operating temperatures are usually between 80°C and sometimes 100°C. The optimum functional temperature for seals and oil stability is between 40°C and 50°C. At low temperatures the seal material will stiffen and may become brittle although it will relax as the temperature rises. With high temperatures the seal material will become more elastic and lose compression set. The higher temperatures will also reduce the viscosity of the oil resulting in accelerated wear of the seals. For PTFE seals the effect of temperature will be based on the seals energiser.

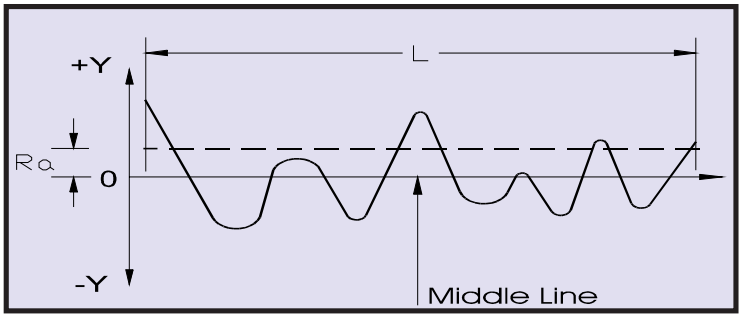
effect of Velocity

Seals ride on a film of lubricant between the seal lip and moving surface. The fluid is drawn under by movement and is known as hydrodynamic drag. Friction will depend upon the thickness of this lubricating film which will be squeezed to its minimum thickness when there is no movement, and creates stiction. Frictional force begins to decrease with an increase in velocity as more lubricating fluid is then drawn between the seal and moving surface. There is a point reached with increasing velocity that the frictional force again rises and the seal will begin to wear. PTFE seals have an extremely low coefficient of friction when moving on other surfaces and may be a possible exception to this rule.

effect of Surface Finish

The operating life of a seal is greatly influenced by the considerations of the dynamic surface and the method used to produce this surface texture. For instance honing and roller burnishing may give the same surface finish value but the surface profile would differ. The aim of all types of surface finish is to provide a surface which causes the minimum wear to the seal. Rod seals because of their position in the sealing system are prone to contaminants entering from the atmosphere and therefore rods should have a surface resistance to corrosion and similar to the best hard chrome. The static surfaces of the seal housing are important as the sealing media may pass over the seal if not within the recommended surface finish.
Figure 2 shows a diagrammatic representation of average roughness value Ra.

Figure 2



These characteristics are defined in DIN EN ISO 4287 along with Rmr, mating surface ratio, which should be 50-70% for optimum performance.

The average roughness Ra (CLA an abbreviation of centre line average height) is the arithmetic and geometric average value of the profile variation in Y direction from the middle line within the reference length L
The optimum values of surface roughness for various seal types is summarised below:-

PTFE Seals optimum Ra : 0.1 - 0.25 µm
Above 0.3µm : Effect dependant upon Rsk (skewness)
Rsk -1: Higher leakage, little wear
Rsk < -1: High friction and wear
Below 0.1µm : Friction and wear increases

Rubber Seals Dynamic optimum Ra : 0.1 - 0.25 µm
upto 0.4 µm : Slight increase in wear
above 0.4 µm : Wear leakage and friction increase
below 0.05 µm : High friction and wear
Rubber Seals Static optimum Ra :< 0.8 µm

Polyurethane Seals optimum Ra: <0.25 µm
above 0.3 µm : Expect high wear and leakage
Axial scores : Do not effect seal performance if less than 0.05 µm in depth

effect of Contamination

Contamination within the system can occur due to inadequate cleaning of parts before assembly or/and due to operational debris from the seal and bearings. With levels of contamination more intensive around the seal area than in the system generally. The effect of contamination is that of seal wear and damage usually in the form of axial scores. The extent of probability of leakage will depend upon seal materials with PTFE being more prone to leakage when scored. Containments may also lodge under the sealing lip allowing a leak path. Bearing materials used in conjunction with seals may also effect oil contamination due to wear debris with metal bearings producing an increase in leakage probability although reducing the surface roughness slightly when used with rods.

effect of Vapour

Hydraulic fluids contain molecules of air which is liberated by agitation. Air bubbles then occur and an oil vapour collects usually at the highest point in the system. Compression of this mixture will result in a temperature rise causing compression ignition. This process is repeatable and is known as Diesel effect destroying the seal if repeated frequently. The sealing arrangement may be protected with the use of Phenolic or phosphor bronze rings strategically housed. Sometimes air bubbles will be forced over the seal face expanding as they move to the low pressure side of the seal manifesting itself as axial grooves and resulting in subsequent seal failure.

PTFE Seal selection

Why choose P.T.F.E Composite Seals?
Composite Seals were originally designed for low- friction or high-temperature applications. The development of **PTFE and PTFE Compounds** in particular, with these capabilities, has greatly extended the useful range of these seals far beyond that of conventional Rubber / Elastomer based Lip-seals. Designs based upon an understanding of lip-geometry and use of the latest developments in material technology have allowed **Composite Seals** to become acceptable in the normal sphere of operation of Lip-seals, not just in the extremes of duty for which they were originally intended.

Speed & Friction

The optimum speed range for conventional Lip-seals is 0.1 - 0.5 m/sec. and whilst speeds of up to 4 m/sec. can be accommodated this, is only at the expense of performance and life. Below 0.1 m/sec. and above 0.5 m/sec the friction values rise sharply due to the breakdown of the lubricant film, causing friction and a build-up of heat. At temperatures above 50°C this additional heat can also adversely affect the sealing material, causing swell, hardness and mechanical property changes, with a resultant loss of performance.
Low-Friction seals are obviously desirable at these extremes of speed or even through the optimum working range of Lip-seals when other factors are taken into account.

Frictional heat

The Frictional Heat developed per second within sliding contact is :-

$$Pf = f.p.v.A(Watt)$$

Where:-
f = coefficient of friction
v = speed (m/sec.)
p = load (N/mm²)
A = dynamic contact area (mm²)

Frictional Loss

Typical examples of the frictional loss of a Hydraulic Cylinder at various pressures is as follows :-
100mm Ø Piston (fitted with **DPW** style seal), **60 mm** Ø Rod, **0.1** m/sec. speed
Within the range 50 - 200 bar the loss attributable to the **DPW** seal is fairly constant at around 0.8% of the theoretical pulling power of the cylinder. The loss attributable to the rod seals is as follows :-

Rod seal	Pressure	Frictional Loss
Style **CPI**	**200 bar**	**180 Kg**
	150 bar	**120 Kg**
	50 bar	**75 Kg**
Style CPU	**200 bar**	**280 Kg**
Style CS6	**200 bar**	**130 Kg**

Style	Frictional Loss
CPI	1%
CPU	2%
CS6	0.5%

From this example it can be seen that the **CS6** Style **Composite Seals** have distinct advantages over conventional lip seals in terms of frictional loss.
Fluid Transport
It must be emphasised that Composite Seals do not give as dry a rod as conventional Lip-Seals operating within their optimum conditions.
The fitting of two single-acting Composite Seals in tandem or the use of a double-acting wiper seal Style 941 will significantly contribute towards ultimate performance.
From a practical point of view an absolutely dry rod cannot be achieved without an increase in friction causing a considerable reduction in seal life. For any seal type, oil transport is essential but also variable dependant upon the velocity, viscosity of the oil and the surface finish of the contact surfaces.
Careful seal design, particularly in relation to the contact area profile, optimises the amount of oil that is transported back to the pressure side on the return stroke..

Surface Finish

Surface finish is an influencing factor on the performance of a seal. For **Composite Seals**, Cylinder bores and Rods should have a surface finish between 0.1 - 0.4µm Ra.
Within the housing, static sealing surfaces should have a finish better than 0.8µm Ra.
Even after prolonged use, Bronze Filled PTFE will not have any significant effect on surface finish values.
Carbon and Glass filled PTFE are more abrasive and will slightly reduce the surface roughness.
Surface finish can be affected by the use of hard bearing materials such as Meehanite, Phosphor-Bronze or Polyester-Fabric.
It is generally recommended that **PTFE Bearing Tape** should be used with **Composite Seals.**

The optimum values of surface roughness for various seal types is shown in the previous section.

Bearing Material

P.T.F.E. Bearing Tape is specifically designed for use with P.T.F.E. Composite Seals. The nature of P.T.F.E. allows for a manufactured size giving a tighter fit than 'harder' materials such as Phosphor-Bronze, Meehanite or Polyester Fabric. This reduction in radial clearance gives a marginal improvement to the pressure capability of the seal but, more importantly, protects the seal from contaminant particles within the system.
A combination of the design of the bearing and the characteristics of P.T.F.E. allow the particles to become embedded in the P.T.F.E. on the non-working face, thus also protecting the steel counterface from scoring.
During use, bearing materials wear, causing debris and contamination of the fluid. Extensive tests have shown that particulate contamination **>**15µm within the fluid, increases with the use of Phosphor-Bronze or Meehanite, and tends to decrease with the use of P.T.F.E. The harder debris created by these bearings also has a greater effect upon seal performance. Particulate contamination in the fluid surrounding the seal can be over 100 times that in the main system due to the bearing preventing flushing of the seal space. Increased contamination in this area will increase the probability of a large enough particle gaining access to the seal interface, causing damage and leakage.

Appendix -2-
Material Properties, Compatibility And Storage

Compound Suitability For Fluids Gases & Chemicals

The following data and information has been derived from many sources but should be regarded as a general guide only. Consideration of compound selection for any given application should be in association with pressure, temperature and media requirements.

Key To Symbols	
AU	Polyurethane
EPM	Ethylene Propylene
FKM	Flourocarbon
IIR	Butyl
VMQ	Silicone
NBR	Medium Nitrile

Key To Rating Guide	
A	Satisfactory
B	Fair
C	Doubtful
D	Unsatisfactory
-	No Data

Immersion Medium	AU	EPDM	FKM	IIR	VMQ	NBR
Acetaldehyde	-	-	D	A	A	D
Acetic Acid Gas at 70°C	C	-	D	B	B	D
Acetic Acid Glacial	D	-	D	A	A	D
Acetic Acid Diluted	B	A	D	A	A	D
Acetone	D	A	D	A	C	D
Acetylene	D	A	A	A	B	A
Acrylonitrile	D	D	D	B	B	D
Air	A	A	A	A	A	A
Air at 180°C	D	D	A	D	A	D
Air With Oil Mist	A	D	A	D	A	A
Ammonia	D	A	D	A	D	B
Ammonium Hydroxide	D	A	B	A	B	B
Aniline	D	D	A	B	B	D
Asphalt	C	D	A	D	B	D
Beer	A	A	A	A	A	A
Benzene/Benzol	D	D	A	D	D	D
Benzaldehyde	C	B	C	B	B	D
Blast Furnace Gas	C	C	A	C	A	B
Brake Fluid veg.	D	A	D	A	C	D
Bromine Water	D	D	A	D	D	D
Bunker Oil	C	D	A	D	B	A
Butane	B	D	A	D	D	A
Calcium Hydroxide	D	A	A	A	A	A
Calcium Hypochlorite	D	A	A	C	C	A
Carbolic Acid (phenol)	D	D	B	C	D	D
Carbon Bisulphide	D	D	A	D	D	D
Carbon Dioxide	D	A	A	A	A	A
Carbon Monoxide at 70°C	C	A	B	A	A	B
Castor Oil	B	B	C	B	A	D
Chlorine	C	A	B	C	D	D
Chlorinated Solvents	D	D	A	D	D	D
Copper Sulphate	D	A	A	A	C	A
Cotton Seed Oil	A	D	A	D	C	A
Creosote	C	D	A	D	D	D
Cyclohexane	A	D	A	D	D	D
Diacetone Alcohol	C	A	C	A	C	D
Dibutyl Phthalate	A	C	B	C	A	D
Dichlorobenzene	C	D	A	D	D	D
Diethylene Glycol	A	A	A	A	B	A
Diethyl Ether	D	B	D	B	D	D

Immersion Medium	AU	EPDM	FKM	IIR	VMQ	NBR
Diethyl Sebacate	D	D	C	C	C	D
Dioctyl Phthalate	D	D	B	C	A	D
Dioxane	D	A	D	A	D	D
Dipentene	C	D	A	D	C	B
Diphenyl	C	D	C	D	C	D
Epichlorohydrin	-	B	D	-	-	D
Ethylene	-	-	A	-	-	
Ethylacetate	D	B	D	A	D	D
Ethyl Alcohol	A	A	A	A	A	A
Ethyl Benzene	C	D	B	D	D	D
Ethylene Oxide at -20°C	D	A	D	B	C	D
Ethylene Glycol	D	A	A	A	A	A
Fatty Acids	A	D	A	D	B	B
Ferric Chloride	C	A	A	A	C	A
Ferric Sulphate	C	A	A	A	B	A
Fluorine (Gas)	D	D	A	C	D	D
Fluorobenzene	D	D	A	D	D	D
Formaldehyde	D	A	A	A	C	A
Formic Acid	D	B	D	B	C	D
Freon 11	B	B	B	D	C	B
Freon 12	A	-	A	A	D	B
Freon 21	C	D	D	C	D	D
Freon 22	D	D	D	A	D	D
Freon 113	A	D	B	D	C	B
Freon 114	C	-	B	A	C	A
Furan	D	C	D	C	C	D
Furfural	D	D	D	C	B	D
Gasoline U.S. spec	B	D	A	D	D	B
Glucose	D	A	A	A	A	A
Glycerine	D	A	A	A	A	A
Glycols	D	A	A	A	A	A
Hexane	A	D	A	D	B	A
Hydrazine	B	A	A	A	D	B
Hydrochloric Acid diluted	D	A	A	A	A	A
Hydrochloric Acid (dil) 70°C	D	A	A	A	D	D
Hydrochloric Acid conc.	D	B	B	A	B	A
Hydrogen	A	A	A	A	A	A
Hydrogen Peroxide	D	A	A	A	A	A
Linseed Oil	B	D	A	A	D	A
Lubricating Oil	B	D	A	D	B	A

Compound Suitability For Fluids Gases & Chemicals

The following data and information has been derived from many sources but should be regarded as a general guide only. Consideration of compound selection for any given application should be in association with pressure, temperature and media requirements.

Key To Symbols	
AU	Polyurethane
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FKM	Flourocarbon
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NBR	Medium Nitrile

Key To Rating Guide	
A	Satisfactory
B	Fair
C	Doubtful
D	Unsatisfactory
-	No Data

Immersion Medium	AU	EPDM	FKM	IIR	VMQ	NBR
Mercuric Chloride	D	A	A	A	A	A
Mercury	A	A	A	A	A	A
Methyl Chloride	D	D	A	D	D	C
Methyl Ethyl Ketone	D	B	D	B	A	D
Methylene Dichloride	D	D	B	D	D	D
Milk	A	A	A	A	A	A
Mineral Oil	A	D	A	D	A	A
Naphtha	C	D	A	D	C	B
Naphthalene	B	D	A	D	C	D
Natural Gas	A	B	A	D	B	A
Nitric Acid concentrated	D	D	B	D	D	D
Nitric Acid diluted	D	B	A	B	B	C
Nitro Benzene	D	D	B	C	C	D
Nitro Propane	D	B	D	B	C	D
Nitrogen	A	A	A	A	A	A
Oleic Acid	D	D	A	D	B	A
Oxygen at -40°C	B	A	A	B	A	B
Oxygen at 200°C	C	B	B	D	A	D
Ozone	C	B	B	B	A	D
Palmitic Acid	D	C	A	C	D	A
Paraffin	D	D	A	D	D	A
Petroleum Oils	A	D	A	D	B	A
Phenol	D	D	B	D	D	D
Phenyl Benzene	D	C	A	D	D	D
Phenyl Ethyl Ether	D	C	D	D	D	D
Phenyl Hydrazine	D	D	A	C	D	D
Phorone	-	-	-	A	A	D
Phosphoric Acid 45%	D	A	A	A	D	B
Phosphoric Acid 45%170°C	D	A	A	A	D	B
Picric Acid diluted	D	A	A	A	D	A
Piperdine	D	C	D	C	D	D
Plating Solution (Chrome)	D	-	C	-	C	D
Plating Solution (Others)	C	-	A	A	C	A
Potassium Hydroxide	D	A	A	A	D	B
Producer Gas	C	A	A	A	A	A
Propane Gas	B	D	A	D	C	A
Propylene	-	-	A	D	-	B
Pyridine	D	B	D	B	D	D
Pyrrole	-	C	-	D	-	D
Sal-Ammoniac	C	A	-	A	B	A

Immersion Medium	AU	EPDM	FKM	IIR	VMQ	NBR
Sewage	C	A	A	A	A	A
Silicone Oils & Greases	A	A	A	A	A	A
Silver Nitrate	D	A	A	A	A	A
Soap Solution	A	A	A	A	C	A
Sodium Salts	D	A	A	A	C	A
Steam below 120°C	D	A	B	A	A	D
Steam above 120°C	D	A	B	B	B	D
Stearic Acid	C	B	A	B	C	A
Styrene	D	D	B	D	D	D
Sulphur Chloride	D	D	D	D	D	D
Sulphur Dioxide dry	D	A	A	A	D	D
Sulphur Acid diluted	D	A	A	A	A	D
Sulphuric Acid conc.	D	B	A	B	D	D
Sulphuric Acid Fuming	D	D	B	D	D	D
Tar	D	D	A	D	D	D
Terpinol	D	D	A	D	D	B
Toluene	D	D	A	D	D	D
Transformer Oil	C	D	A	D	D	B
Trichlorethylene triad	D	D	A	D	D	D
Turpentine	D	D	A	D	D	A
Vaseline	D	B	A	D	D	A
Vegetable Oil	B	C	A	B	D	B
Vinegar	C	A	D	A	D	D
Wines & Spirits	D	A	A	A	A	A
Xylene	D	D	A	D	D	D
Zinc Salts	D	A	A	A	D	A

Seal Selection Materials - Plastic Faced Seals

The following tables are designed as a guide to the correct selection of the sealing element and energiser materials for your particular application. The sealing element is dynamic making it's mechanical properties the priority in selection. More detailed capabilities relevent to individual seal types are given within the catalogue.
The static energisers are rubber based compounds therefore fluid compatibility and temperature range are the main criteria for selection.

Materials For Sealing Element

Material suffix	Description	Colour	Material Properties & Application
B	Bronze PTFE with additives	Brown	Very high mechanical duties. Good compressive strength for oil hydraulics. (Standard Material for styles CS5, 841, 851, CS6, 751 & 741)
C	Carbon PTFE	Black	Medium Mechanical duties. Generally for pneumatic applications and water based fluids (Not Seawater). For soft mating surfaces and unlubricated conditions.
G	Glass PTFE	Black	High mechanical duties. For water and oil hydraulics, pneumatics and unlubricated applications.
V	Virgin PTFE	White	Light mechanical duties. For anti-extrusion rings and pressure seals. Low friction and almost totaly inert. Suitable for food and potable water applications. (NWC approved) Standard material for anti-extrusion rings, CS1, CS2, CS4
VM	Modified PTFE	Blue	Medium mechanical duties. Much lower wear rate than Virgin PTFE. Very good chemical resistance Standard material for styles 931, 941, 951
UH	UHMWPE	Off White	Medium mechanical duties. For water and oil hydraulics, pneumatics, and unlubricated applications. Lower temperature and speed range than PTFE but very good abrasion resistance. Suitable for soft mating surfaces.

Materials For Energiser

Compound	Temp Range (Intermitant) °C	Recommended For	NOT Recommended For
NBR Nitrile (Standard Material)	-40 to +120	Petroleum based oils and fluids, cold water, Silicone greases and oils, ethylene glycol based fluids, Di-ester based lubricants.	Automotive brake fluid, Phosphate ester fluids.
EPM, EPDM Ethylene Propylene	-50 to +150	Phosphate ester based fluids, Automotive brake fluid, Water, Steam.	Petroleum based oils and fluids, Di-ester based lubricants.
IIR Butyl	-40 to +150	Phosphate ester fluids, Silicone greases and fluids.	Petroleum based oils and fluids, Di-ester based lubricants.
FKM Flurocarbon	-50 to +200	Petroleum oils, Di-ester based lubricants, Silicate ester lubricants,Silicone greases & fluids, Certain phosphate ester fluids.	Skydrol Fluids, Low molecular weight esters & ethers.
Si Silicone	-90 to +240	High analine point oils, Chlorinated di-phenyls, Dry heat.	Most petroleum based fluids, Water and steam.
Note: If Energiser Materials Other Than Nitrile Are Required, Consult CLARON For Part Number.			

Storage:

Deterioration of rubber products will be minimised if stored in accordance with BS 3574:1989
P.T.F.E. is regarded as having no restrictions in terms of shelf life.

Compound Suitability For Hydraulic Fluids

				Continuous Operating Temp. °C with Seal Materials						
DIN Class	**ISO Class**	**Type**	**Description**	**NBR**	**FKM**	**AU**	**EPDM**	**POM**	**PTFE**	**PA**
H	HH	Mineral Fluid	Mineral Oil without additives	100	150	100	NS	100	200	120
H-L	HL		Mineral Fluid with anti-corrosion and anti-ageing additives	100	150	100	NS	100	200	120
H-LP	HM		As HL plus additives reducing wear, and raising load capacity	100	150	100	NS	100	200	120
H-LPD	-		As H-LP but with detergents and dispersants	100	150	100	NS	100	200	120
H-V	HV		As H-LP but with improved viscosity temperature behaviour	100	150	100	NS	100	200	120
HFA E		Flame Retardent with Water	Emulsions of mineral oil in water. Water content 80-95%	55	60	40	NS	55	55	55
HFA S			Synthetic oil in water Water content 80-95%	55	60	40	NS	55	55	55
HFB			Emulsions of water in mineral oil.. Water content 40%	60	60	40	NS	60	60	60
HFC			Aqueous polymer solutions. Water content 35%	60	60	NS	60	60	60	60
HFD R		Flame Retardent without Water	Phosphoric acid ester based	NS	150	NS	120	80	150	80
HFD S			Chlorinated hydrocarbon based	NS	150	NS	120	80	150	80
HFD T			Mixtures of HFD R and HFD S	NS	150	NS	120	80	150	80
HEPG		Biodegra-dable	Polyglycol based	NS	100	NS	120	80	150	80
HETG			Vegetable Oil basec	60	60	60	NS	60	60	60
HEES			Fully synthetic ester based	NS	100	60	NS	100	100	100

NS = Not Suitable

Storage and Packaging of Rubber and Plastic products

Packaging

The requirements of packaging form an integral part of storage procedures as well as providing accurate identification. With the exception of Silicone Rubbers which may deteriorate if totally enclosed, all vulcanized rubbers should be sealed or wrapped to avoid the free access of air.
The packaging materials should preferably be opaque and free from such substances as copper naphthenates, creosote preservatives or any film containing plasticizer.
The product should be packaged in such a manner as to avoid distortion.
Some suitable materials are:-
Polyethylene coated Kraft paper, aluminium foil / paper / polyethylene laminate and opaque polyethylene film.

Storage

1) ***Temperature.*** The storage temperature should be maintained below 25°C, however below 15°C extra care should be taken to avoid distortion.
2) ***Humidity.*** The relative humidity shall be less than 65 % r.h and such that, given the variations in temperature, condensation is avoided.
3) ***Light.*** Protect from light sources, particularly direct sunlight and intense artificial light with high U.V
4) ***Radiation.*** Protect from all sources of ionizing radiation (refer to BS3664, BS4094 and BS4513)
5) ***Ozone.*** Protect from ozone and avoid organic vapour, combustion gases, mercury vapour lamps and any high voltage electrical equipment which may generate ozone in the storage area.
6) ***Deformation.*** Articles should be stored in strain-free conditions to avoid permanent deformation of the article or indentations on the sealing surfaces. Rings of large diameter, such as O-Rings may be stored by forming into three loops to avoid creasing or twisting.
7) ***Contact with fluids.*** Articles must be stored free from contaminants such as petrol, grease, acids and cleaning fluids or their vapours.

Correct packaging of the stored articles will avoid many of the problems associated with unavoidable environmental conditions and rotation of stocks will keep these harmful effects to a minimum.

Shelf Life Control

All articles with a limitation to their Shelf Life are marked by Claron with a cure date/batch date on the packaging.
All Claron cure dates are traceable through the batch number for a minimum period of 10 years

All Claron materials with a restriction to their shelf life fall into three basic groups, A, B and C.
A fourth group, U, is designated as being of unlimited shelf life if stored in accordance with these packaging and storage requirements.

Each group has an initial period of safe storage followed by further storage periods after re-inspection and assessment.

PERIODIC INSPECTION CRITERIA

Before any component is stored for any extension period or further extension period, the following inspection criteria is mandatory

Visual inspection - Inspection of the items or components in a representative sample for

a) Permanent distortion, mechanical damage, flats or other defects
b) Tackiness or noticeable surface softening or hardening
c) Cracks (Extend or flex the material and check with a 10x magnifier)

If any of the above are found, the product must be removed from stock and destroyed.

Testing - Providing that the representative items or components inspected are satisfactory then the products shall be tested to ascertain that their performance characteristics are maintained

All initial Shelf Life dates are calculated from the Cure Date / Batch Date and are categorised as follows for unassembled products:-

GROUP A Initial period 5 years , possible extension periods every 2 years

Natural (NR)
Polyisoprene (IR)
Polyurethane (AU)
Styrene-Butadiene (SBR)

GROUP B Initial period 7 years , possible extension periods every 3 years

Acrylonitrile-Butadiene (Nitrile) (NBR)
Blends of Acrylonitrile-Butadiene and Polyvinylchloride (PVC)
Epichlorohydrin (CO)
Polyacrylate (ACM)
Polychloroprene (Neoprene) (CR)
Polyisobutylene-Isoprene (Butyl) (IIR)

GROUP C Initial period 10 years , possible extension periods every 5 years

Chlorsulphonated Polyethylene (eg. Hypalon®) (CSM)
Ethylene Propylene (EPM)
Terpolymer of Ethylene Propylene (EPDM)
Fluoroelastomer (eg. Viton®) (FKM)
Silicone (SI)

GROUP U Unlimited Storage period if packaged and stored in accordance with these requirements and the further detail recorded in BS 3574 :1989

Polyoxymethylene or Polyacetal (POM)
Polyester Elastomer (eg.Hytrel®) (TEEE)
Polyamide (eg.Nylon) (PA 66)
Polytetrafluoroethylene (PTFE)
(Consult Claron for storage conditions relative to etched PTFE)
Polyetheretherketone (PEEK™)
Ultra-High Molecular Weight Polyethylene (UHMWPE)
Phenolic Resin (SRBF)

GENERAL NOTES

When stored under low temperature conditions, stiffening of the material must be expected, heat soaking at a temperature higher than ambient for several hours will return the material to a normal state.
No materials should be inspected in the cold stiff state. Do not use ovens or hot water to achieve this condition.
The appearance of a “Bloom” is unimportant and is no evidence of degradation
Records of Shelf Life Extensions should be kept in a register and a new Shelf Life Expiry Date recorded.

Appendix -3-
Seal Installation

Seal Installation

SEAL ASSEMBLY

Careful fitting and assembling of the seals will assist in preventing seal failure. The following check list is advisable

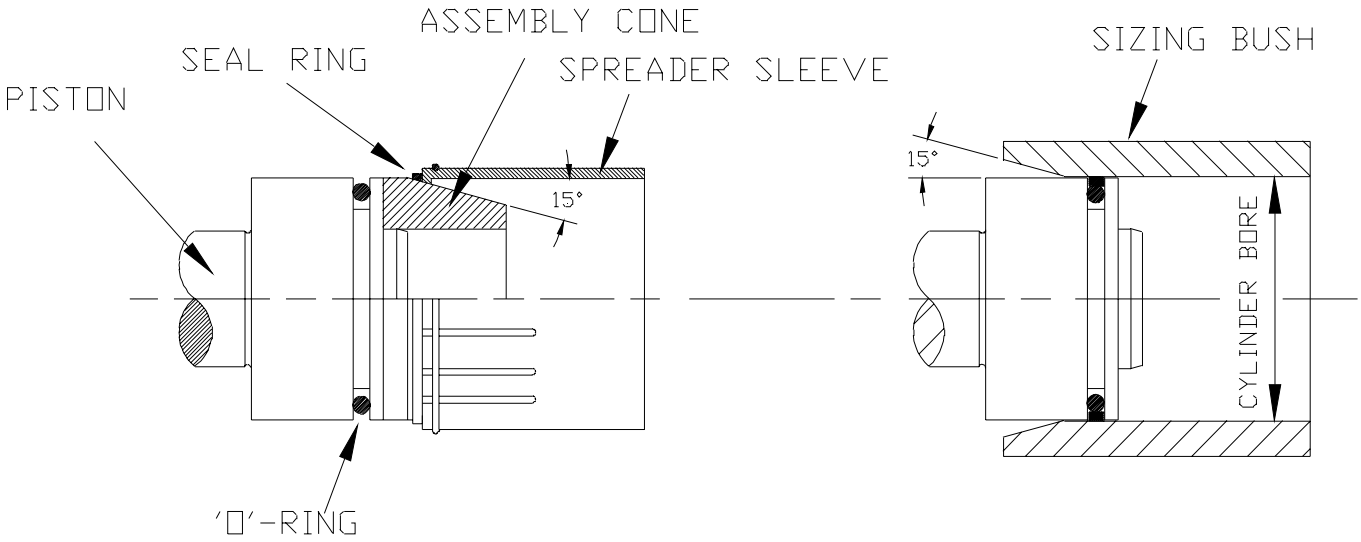
- Ensure all metal parts are clean and free from contamination.
- Check that the seal housing is free of sharp edges and burrs.
- Where seals are to pass over threads, undercuts, etc. some form of protective sleeve should be used.
- Ensure that the seal is the correct type, part number, and size as that specified.
- When fitting single-acting seals particularly make certain that the pressure side of the seal is installed correctly.
- Check that lead in chamfers available.
- Oil the seal and surrounding metal components before fitting.
- Certain seal types may require appropriate fitting tools to assist in damage free assembly.

Composite Seal Installation

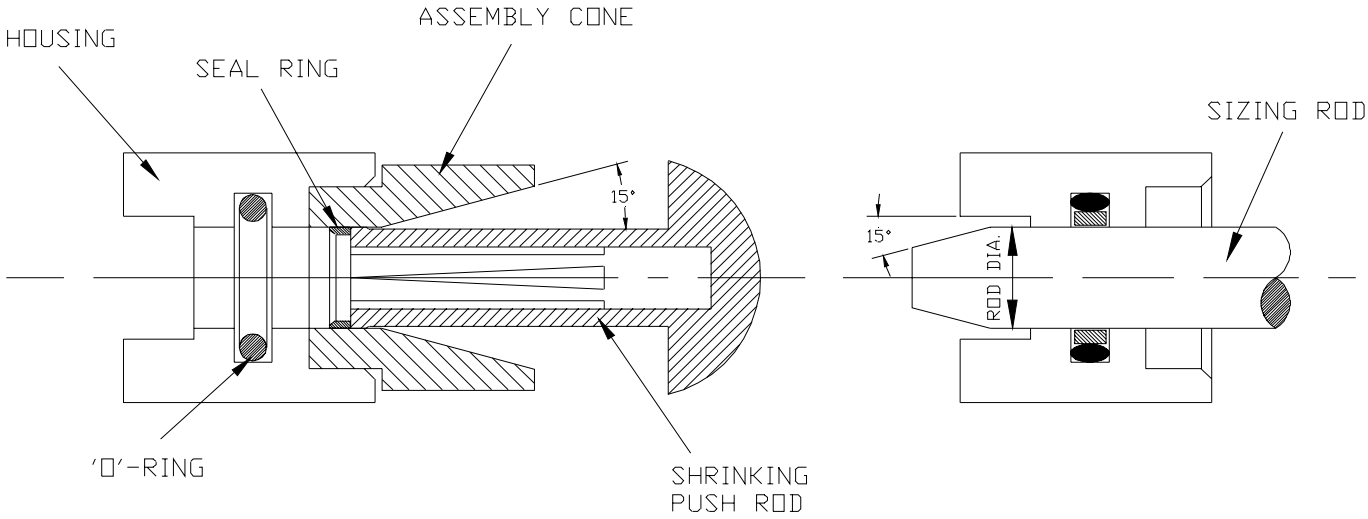
Composite Seals can be assembled easily onto one piece pistons and into internal grooves. The material will stretch, deform and compress to allow assembly and will return to its original dimension after a period of time. If this period is unacceptable the ring can be reverted to its original size immediately by exerting a force opposite to that used to assemble in the first instance. This reversal of strain can be carried out many times with no deterioration of the material properties.

Assembly can be carried out in many ways and we show some suggestions for tools to facilitate the simplest assembly. It is recommended that the tools should be made from plastic material (POM, PA, P.V.C., etc.) to reduce the risk of any damage to the seal.

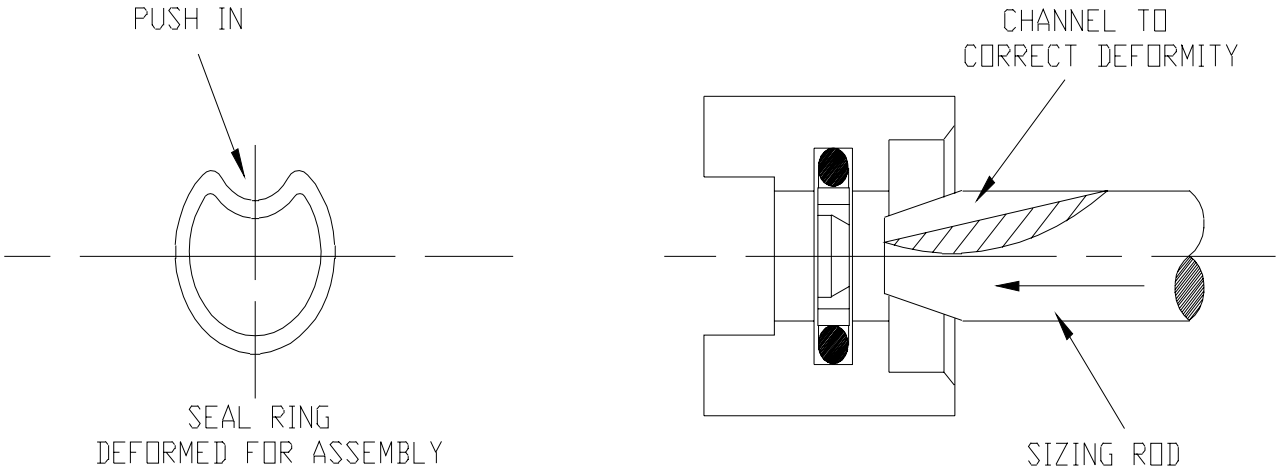
Piston Seal Assembly



Rod Seal Assembly



Small Diameters Or Deep Bores



Larger Diameters

Appendix - 4 - Tolerance Tables

Specified Tolerances

Imperial

Nominal Sizes inch		SHAFTS (outside diameters) units 0.001 inch									BORES (inside diameters) units 0.001 inch				
over	to	e9	f8	f9	h8	h9	h10	h11	js10	js11	H8	H9	H10	H11	Js11
0.04	0.12	-0.6 -1.6	-0.3 -0.9	-0.3 -1.2	0 -0.6	0 -1.0	0 -1.6	0 -2.5	+0.8 -0.8	+1.3 -1.3	+0.6 0	+1.0 0	+1.6 0	+2.5 0	+1.3 -1.3
0.12	0.24	-0.8 -2.0	-0.4 -1.1	-0.4 -1.6	0 -0.7	0 -1.2	0 -1.8	0 -3.0	+0.9 -0.9	+1.5 -1.5	+0.7 0	+1.2 0	+1.8 0	+3.0 0	+1.5 -1.5
0.24	0.40	-1.0 -2.4	-0.5 -1.4	-0.5 -1.9	0 -0.9	0 -1.4	0 -2.2	0 -3.5	+1.1 -1.1	+1.8 -1.8	+0.9 0	+1.4 0	+2.2 0	+3.5 0	+1.8 -1.8
0.40	0.71	-1.2 -2.8	-0.6 -1.6	-0.6 -2.3	0 -1.0	0 -1.6	0 -2.8	0 -4.0	+1.4 -1.4	+2.0 -2.0	+1.0 0	+1.6 0	+2.8 0	+4.0 0	+2.0 -2.0
0.71	1.19	-1.6 -3.6	-0.8 -2.0	-0.8 -2.8	0 -1.2	0 -2.0	0 -3.5	0 -5.0	+1.8 -1.8	+2.5 -2.5	+1.2 0	+2.0 0	+3.5 0	+5.0 0	+2.5 -2.5
1.19	1.97	-2.0 -4.5	-1.0 -2.6	-1.0 -3.4	0 -1.6	0 -2.5	0 -4.0	0 -6.0	+2.0 -2.0	+3.0 -3.0	+1.6 0	+2.5 0	+4.0 0	+6.0 0	+3.0 -3.0
1.97	3.15	-2.5 -5.5	-1.2 -3.0	-1.2 -4.1	0 -1.8	0 -3.0	0 -4.5	0 -7.0	+2.3 -2.3	+3.5 -3.5	+1.8 0	+3.0 0	+4.5 0	+7.0 0	+3.5 -3.5
3.15	4.73	-3.0 -6.5	-1.4 -3.6	-1.4 -4.8	0 -2.2	0 -3.5	0 -5.0	0 -9.0	+2.5 -2.5	+4.5 -4.5	+2.2 0	+3.5 0	+5.0 0	+9.0 0	+4.5 -4.5
4.73	7.09	-3.5 -7.5	-1.6 -4.1	-1.6 -5.6	0 -2.5	0 -4.0	0 -6.0	0 -10.0	+3.0 -3.0	+5.0 -5.0	+2.5 0	+4.0 0	+6.0 0	+10.0 0	+5.0 -5.0
7.09	9.85	-4.0 -8.5	-2.0 -4.8	-2.0 -6.5	0 -2.8	0 -4.5	0 -7.0	0 -12.0	+3.5 -3.5	+6.0 -6.0	+2.8 0	+4.5 0	+7.0 0	+12.0 0	+6.0 -6.0
9.85	12.41	-4.5 -9.5	-2.2 -5.2	-2.2 -7.3	0 -3.0	0 -5.0	0 -8.0	0 -12.0	+4.0 -4.0	+6.0 -6.0	+3.0 0	+5.0 0	+8.0 0	+12.0 0	+6.0 -6.0

Tolerances extracted from BS1916 with kind permission of British Standards Institution.

Metric

Nominal Sizes mm		SHAFTS (outside diameters) units 0.001 mm									BORES (inside diameters) units 0.001 mm				
over	to	e9	f8	f9	h8	h9	h10	h11	js10	js11	H8	H9	H10	H11	Js11
1.6	3	-14 -39	-6 -20	-6 -31	0 -14	0 -25	0 -40	0 -60	+20 -20	+30 -30	+14 0	+25 0	+40 0	+60 0	+30 -30
3	6	-20 -50	-10 -28	-10 -40	0 -18	0 -30	0 -48	0 -75	+24 -24	+37.5 -37.5	+18 0	+30 0	+48 0	+75 0	+37.5 -37.5
6	10	-25 -61	-13 -35	-13 -49	0 -22	0 -36	0 -58	0 -90	+29 -29	+45 -45	+22 0	+36 0	+58 0	+90 0	+45 -45
10	18	-32 -75	-16 -43	-16 -59	0 -27	0 -43	0 -70	0 -110	+35 -35	+55 -55	+27 0	+43 0	+70 0	+110 0	+55 -55
18	30	-40 -92	-20 -53	-20 -72	0 -33	0 -52	0 -84	0 -130	+42 -42	+65 -65	+33 0	+52 0	+84 0	+130 0	+65 -65
30	50	-50 -112	-25 -64	-25 -87	0 -39	0 -62	0 -100	0 -160	+50 -50	+80 -80	+39 0	+62 0	+100 0	+160 0	+80 -80
50	80	-60 -134	-30 -76	-30 -104	0 -46	0 -74	0 -120	0 -190	+60 -60	+95 -95	+46 0	+74 0	+120 0	+190 0	+95 -95
80	120	-72 -159	-36 -90	-36 -123	0 -54	0 -87	0 -140	0 -220	+70 -70	+110 -110	+54 0	+87 0	+140 0	+220 0	+110 -110
120	180	-85 -185	-43 -106	-43 -143	0 -63	0 -100	0 -160	0 -250	+80 -80	+125 -125	+63 0	+100 0	+160 0	+250 0	+125 -125
180	250	-100 -215	-50 -122	-50 -165	0 -72	0 -115	0 -185	0 -290	+92 -92	+145 -145	+72 0	+115 0	+185 0	+290 0	+145 -145
250	315	-110 -240	-56 -137	-56 -186	0 -81	0 -130	0 -210	0 -320	+105 -105	+160 -160	+81 0	+130 0	+210 0	+320 0	+160 -160
315	400	-125 -265	-62 -151	-62 -212	0 -89	0 -140	0 -230	0 -360	+115 -115	+180 -180	+89 0	+140 0	+230 0	+360 0	+180 -180

Tolerances extracted from BS4500 (ISO286) with kind permission of British Standards Institution.

Appendix -5-
Terms & Conditions of Sale
Health & Safety

CONDITIONS OF SALE
for
Claron Hydraulic Seals Ltd
Claron Hydraulic Services
Claron (Plastics) Ltd

1. DEFINITIONS

1.1 These conditions of sale shall apply to all orders given to and accepted by Claron Hydraulic Services or Claron Hydraulic Seals Ltd or Claron (Plastics) Ltd. In these conditions "the seller" means Claron Hydraulic Services or Claron Hydraulic Seals Ltd or Claron (Plastics) Ltd. "the buyer" means the person, firm or company purchasing the Goods, "the Goods" means the goods or materials which shall be the subject of the contract.

2. INCORPORATION OF CONDITIONS OF SALE

2.1 These terms and conditions are the only ones to which the contract for the sale or supply of the Goods by the Seller to the Buyer is subject. Any other conditions proposed or stipulated by the Buyer in whatever form, written or oral, are hereby expressly waived and excluded. These terms and conditions may not be varied except by the written consent of a duly authorised representative of the Seller. An acceptance of the Seller's quotation for the sale or supply of the goods or of the delivery of the Goods implies an unconditional acceptance of these terms and conditions.

3. PRICES

3.1 An order given by the Buyer is not binding on the Seller until accepted by the Seller in writing.

3.2 The Goods will be charged at the price ruling at the date of delivery, and will be subject to Value Added Tax. This is irrespective of any quotation given prior to that date, or of any price charged for similar goods previously delivered unless the sale is specifically stated in writing by the Seller to be at a fixed price or the quotation was in writing and stated to be open for a fixed period and an order was accepted by the Seller within that fixed period.

3.3 The prices quoted or charged exclude carriage and packing costs.

4. PAYMENT

4.1 Payment is due not later than the last day of the month following the date of the Seller's invoice to the Buyer, or before if required by the Seller.

4.2 If any payments due to the Seller are not made on the due date(s), the Seller reserves the right to suspend any or all deliveries of goods ordered by the Buyer and /or, by notice in writing to the Buyer, cancel the contract without being liable for any consequential loss.

4.3 The Seller reserves the right to charge the Buyer interest on any sum outstanding beyond the period of credit allowed at the rate of 2% per month or part of a month.

4.4 Accounts are strictly net and remittances by cheque, which should be accompanied by the remittance advice, are to be made payable to the Seller and sent to the sellers registered address.

4.5 No allowance will be made at settlement unless previously acknowledged by the Seller's official Credit Note.

4.6 Under no circumstances shall the Buyer withhold payment of any amount due to the Seller because of a disputed claim of any nature nor shall the Buyer be entitled to claim a right of set off, claim or counterclaim in rspect of any of the Seller's obligations arising in respect of matters other than this contract.

5. DELIVERY

5.1 The time for delivery shall not be of the essence of the contract. The Seller shall not be liable for any loss or damage whether arising directly or indirectly from delay in delivery.

5.2 Delivery of the Goods shall take place:-

5.2.1 where the Seller undertakes delivery of the Goods, when they are loaded off the Seller's vehicle, ship or other transport at the station, port or address specified by the Buyer;

5.2.2 where the Buyer undertakes to collect the Goods, when they are loaded on the Buyer's vehicle or other transport at the address of the Seller or the address of any storage or warehouse facility used by the Seller for storage of goods.

5.3.1 The buyer shall be deemed to have examined the Goods at the time of delivery unless notice of any loss or damage in transit is given by the Buyer and received by the Seller with 5 days after delivery the Seller shall be relieved and discharged from all liability in respect thereof.

5.3.2 The Seller's liability in the case of loss or damage in transit shall be limited to repairing or replacing the damaged Goods or, as the case may be, the lost Goods and the Seller shall not be under any other liability whatsoever, including indirect or consequential loss and loss of profit.

5.4 The Seller may deliver against an order an excess or deficiency up to 10% of the quantity ordered. The quantity actually delivered will be stated on the invoice.

5.5 The Seller shall be entitled to deliver the goods by instalments and to invoice the Buyer for each instalment. Each instalment will be considered a separate transaction and the failure of any one delivery shall not affect the due performance of the contract as a whole.

6. FORCE MAJEURE

6.1 This contract is subject to cancellation by the Seller or to such variations as may be reasonably necessary by reason of inability to secure labour, material, transport or supplies or by reason of strike, lock-out, trade dispute, weather conditions, hostilities, legislation, Act of God or any cause whatsoever beyond the control of the Seller.

7. WARRANTY AND LIABILITY

7.1 The Seller warrants that the Goods are manufactured with all reasonable care and skill and where applicable comply with the standard specifications set out in the Seller's published literature in relation to the Goods current at the date hereof and made available to the Buyer and that the Goods are of satisfactory quality. Subject to the provision of sub-paragraphs 7.2 to 7.3 and to the extent permitted by law, all other conditions, warranties or obligations whether express or implied by statute, common law or otherwise and relating to the Goods are excluded, and the remaining provisions of this condition shall apply on lieu thereof. The seller shall not be liable for any indirect or consequential loss or loss of profit whatever and however arising .

7.2 If any of the Goods shall be found to be defective and such defects are reported by the Buyer in writing to the Seller in the case of apparent defects within 14 days of delivery. The Seller may, at its opinion, either rectify or replace the defective part of the Goods at the place of delivery and in the condition originally specified or credit the Buyer with a corresponding proportion of the original invoice

price but shall not be under any other liability in respect of either the original or any replacement Goods.

7.3 The Seller shall be under no liability in respect of alleged defective Goods unless:

7.3.1 the Buyer gives to the Seller written notice and details of the defect within the periods mentioned in sub-paragraph 7.2:

7.3.2 the Buyer gives the Seller's representative adequate opportunity to inspect the Goods and remove samples for analysis:

7.3.3 the Buyer has used, kept, maintained or dealt with the Goods properly and carried out no modifications.

7.4 All descriptions and other particulars supplied by the Seller in catalogues, price lists or other documents issued by the Seller or statements made orally are given for general information purposes only and the Buyer acknowledges that it is not entering into the contract in reliance thereupon.

7.5 The Buyer shall have sole responsibility for ensuring that the goods are suitable for its particular purpose and the Seller shall have no responsibility whatsoever to the Buyer for any damage liability cost claims or expenses suffered by the Buyer or any third party through following such recommendations .

7.6 The Seller reserves the right to alter the specifications of any goods without prior reference to the Buyer provided that such alteration does not reduce the standard of the previous specification or conflict with the special requirements in the Buyers order .

8. CONSUMER PROTECTION ACT

8.1 All warnings, data sheets, diagrams and other information as to the use, storage, or disposal or the Goods which are made available to the Buyer before, at the time of or after the time of supply of the Goods to the Buyer ("the data") shall be complied with by the Buyer or, as the case may be, supplied by the Buyer to any person to whom the Buyer supplies the Goods or any product in which the Goods are incorporated, and the Buyer shall impose a similar requirement on such person. The buyer shall indemnify the Seller in full against all liabilities, costs, claims, demands and expenses resulting from any failure by any person other than the Seller to comply with the data or to make the data available to any other person.

8.2 Where an indication as to time limit for the use of the Goods has been supplied to the Buyer, the Buyer shall procure that all persons into whose hands the Goods may come are aware of such time limits and shall not supply the Goods after such time limits have been exceeded.

8.3 The Buyer will notify the seller of any intended application of the Goods other than that contemplated in the data referred to in sub-paragraph 8.1 above so as to enable the Seller to verify that the Goods will be safe for use in such application.

8.4 The Seller shall not be liable to the Buyer in respect of any defect in the goods (under the provisions of the Consumer Protection Act 1987 or otherwise) where such defect is attributable to any act or default of a person other than the Seller.

9. PASSING OF PROPERTY AND RISK

9.1 The property in any Goods delivered by the Seller to the Buyer shall remain in the Seller until such time as the Buyer has paid in full in cleared funds for those Goods and for any other Goods delivered by the Seller to the Buyer.

9.2 Notwithstanding this reservation of ownership, and subject to sub-paragraph 9.3 the Buyer has the Seller's consent to re-sell any Goods which remain the property of the seller in which event the Buyer shall remit the proceeds of such sale to the Seller up to the amount of any sums then owing under sub-paragraph 9.1 and until so doing shall hold such proceeds of sale on behalf of the Seller in such a way that they are kept separate and are readily identifiable.

9.3 If the Buyer:

9.3.1 has any distress or execution levied against the Goods or any of the Buyer's assets: or

9.3.2 has a bankruptcy order made against the Buyer; or

9.3.3 goes into liquidation whether voluntary or compulsory (except solely for the purposes of a reorganisation); or

9.3.4 makes an arrangement with the Buyers creditors; or

9.3.5 has an administrator or administrative receiver appointed over any of the Buyer's assets; or

9.3.6 receives a written demand from the Seller to pay overdue sums owed to the Seller.

The Buyer's consent from the Seller to do the acts referred to in sub-paragraph 9.2 shall determine and the buyer shall forthwith cease to have the right to deal with the goods and the Buyer shall not thereafter sell or use the goods belonging to the Seller, save with the consent in writing of the Seller, until the Seller has been paid in full in accordance with sub-paragraph 9.1.

9.4 The Seller shall be entitled at anytime to revoke the Buyers power to deal with the Goods.

9.5 Upon determination of the Buyers power to deal with the goods under condition 9.3 or 9.4, the Buyer shall place the goods at the disposal of the Seller and the Seller and its servants and agents are hereby irrevocably authorised without the need for consent of any third party using only such force as may be necessary, to enter upon any premises of the Buyer for the purpose of removing the goods.

9.6 Until such time as property in the title to the Goods passes to the Buyer, the Buyer shall hold the Goods on trust for the Seller as bailee for the letter. The Buyer agrees to store or move all Goods that are the property of the Seller in such a way that they are readily identifiable as such, to insure the same for their full value and to make a note in its accounting records that the Goods are the property of the seller.

9.7 Notwithstanding the provisions in sub-paragraph 9.1 the Goods shall be at the risk of the Buyer from the time when they are delivered in accordance with clause 5.

9.8 Where the property in the Goods has not been passed the Seller may nevertheless maintain an action against the Buyer for the purchase price and all other monies owing to the Seller in relation to the Goods notwithstanding Section 49 of the Sale of Goods Act 1979.

10. DEFAULT

10.1 If the Buyer commits any breach of these conditions or if, in the opinion of the Seller, the financial standing of the Buyer becomes unsatisfactory the Seller may, without prejudice to his other rights and remedies, terminate this contract and any other contract between the Buyer and the Seller by notice in writing to the Buyer. The seller shall also be entitled to require immediate payment for all Good delivered under this and any other contracts subsisting between the parties or (at the Seller's option) security for payment satisfactory to the seller. In the event of termination under the provisions of this clause the Seller shall be relieved of all liability under this contract and any other contract so terminated but such termination shall be without prejudice to

any claim or right the Seller might otherwise have against the Buyer.

11. PATENTS AND TRADEMARKS

11.1 No warranty or representation is given by the Seller that the Goods do not infringe any letters patent, trademarks, registered designs or other industrial rights.

11.2 The Buyer indemnify's the Seller for any infringements of any letters patents, trademarks, registered designs or other industrial rights for goods manufactured by the Seller to the Buyer's specifications.

12. GENERAL

12.1 Any notice required to be given in writing under the contract shall be given, where possible, by facsimile transmission and otherwise by first class post, addressed to the registered office of the party for which it is intended, or to such other address as may be notified in writing in accordance herewith for the purpose, and shall be deemed to have been received, in the case of a facsimile transmission, upon transmission and, in the case of a letter 48 hours after posting.

12.2 No failure or delay by the Seller in exercising any of its rights under the contract shall operate as a waiver thereof.

12.3 The Buyer may not assign any of its rights or obligations under the contract.

12.4 In the event that any of these terms and conditions shall become or shall be declared by any court of competent jurisdiction to be invalid or unenforceable in any way, such invalidity or unenforceability shall in no way impair or affect any of the other conditions hereof, all of which shall remain in full force and effect.

12.5 In these conditions "Incoterms" means International rules for interpretation of trade terms of the International Chamber of Commerce as in force at the date when the contract is made, unless the context otherwise requires, any term or expression which is defined in, or given a particular meaning by the provisions of Incoterms shall have the same meaning in these conditions, but if there is any conflict between the provisions of Incoterms and these conditions, the latter shall prevail.

12.6 It shall be the responsibility of the Buyer to ensure that all requirements applicable to the contract, whether statutory, regulatory, municipal and/or otherwise howsoever, (including without limitation any relating to the importation or use of the Goods in the country of destination and for the payment of duties thereon) are duly complied with. It shall be a condition precedent to the performance by the Seller of its obligations under the contract that all necessary licenses, permits and consents shall have been obtained by the Buyer.

12.7 Without prejudice to the generality of condition 12.6 the obtaining of any relevant exchange control consents shall be a condition precedent to the performance by the Seller of any of its obligations under the contract.

12.8 The conditions and contract shall not create or evidence, any agency or partnership between the Seller on the one hand and the Buyer or any third party on the other.

12.9 Any liability of the Seller under the contract shall be subject to and conditional upon the due performance and observance by the Buyer of all its obligations under these conditions, and subject to these conditions, the Buyer shall not be entitled to withhold or delay payment or, exercise any rights of set off whatsoever and howsoever arising or arisen which might otherwise be available to it.

13. PROPER LAW

13.1 The contract shall be deemed to have been made in England and shall be governed by the construed in accordance with English Law and both parties shall submit to the jurisdiction of the English Courts.

APRIL 1995.

Health & Safety at work act 1974

The act states that it is the duty of the manufacturers and suppliers to ensure so far as is reasonably practicable, any product supplied for use ata place of work is safe and without risk to health when properly used. The act also requires that adequate information be readily available to the user regarding the function for which the product is designed.

The information contained within this brochure ensures that, when correctly installed, the products will operate safely under normal conditions.

If in doubt with regard to a particular application and/or working conditions please consult our technical department.