

SEALS ON DEMAND





Seals On Demand – engineered, machined, delivered.

Hercules® Seals On Demand offers you a wide selection of custom, cost-effective sealing solutions, using advanced rapid-prototype technology. Our programmable CNC production cells can manufacture both hydraulic and pneumatic styles of anything you need – O-Rings, rod seals, piston seals, wipers, back-up rings, rotary seals, swivel seals and static seals. Choose from both imperial and metric sizes for almost any fluid power application, including agriculture, automotive, heavy construction, material handling, manufacturing, mining, logging, fluid handling and refuse.

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The following technical information illustrates common housings for each seal profile. Included in each seal application is a chart detailing the recommended dimensions for typical housing sizes. Hercules Sealing Products offers design assistance for non-standard and custom application needs, which may exceed the size ranges in these recommended charts.

MATERIAL INDEX

Material Specifications:

- 85A NBR (Black)
- 85A Fluorocarbon / Viton (Brown)
- 85A HNBR (Green)
- 85A EPDM (Black)
- 55D Virgin PTFE (White)
- 40% Bronze/PTFE (Bronze)
- 15% Glass/5% Moly PTFE (Black)
- 85D Polyacetal (POM) (White)
- 86D Virgin PEEK (Cream)
- 96A Hydrolysis Resistant Polyurethane (Red)
- 94A Cast Hydrolysis Resistant Polyurethane (Red)
- 55D Hytrel (Orange)
- 61D UHMW (White)
- 77D Polyamide (PA) (Black)
- 86D Synthetic Fabric Thermoset Resin (SFTR) (Turquoise)

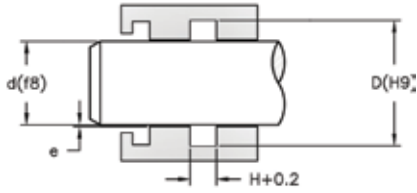
MATERIAL			HPU	C-HPU Cast	Hytrel	NBR	HNBR	FPM	EPDM
Property	Specification	Unit							
Color			Red	Red	Orange	Black	Green	Brown	Black
Min Service Temp		°F	-5	-35	-65	-35	-30	-30	-50
Max Service Temp		°F	240	230	275	230	300	425	300
Max Temp - Water/Steam		°F	195	195			245	300	300
Max Temp - Hot Air (short)		°F					355	570	355
Hardness	ASTM D 2240	Shore A	96±2	94±1		85±5	85±5	85±5	85±5
Hardness	ASTM D 2240	Shore D	47±3	44±3	55				
Modulus 100%	ASTM D 412	psi	2900	2175	2250	1740	1450	1160	
Modulus 300%	ASTM D 412	psi	5800	4160					
Tensile Strength	ASTM D 412	psi	6200	7250	6100 ▲	2300	2900	1450	1740
Elongation at break	ASTM D 412	%	300	350	520 ▲	150	200	200	80
Tear Strength	ASTM D 624 die C	lbf/inch	570	560		140	170	34	50
Abrasion	ASTM D 1630	mm3	17	20		130	130	200	140
Specific Gravity	ASTM D 792	g/cm3	1.19	1.19	1.19	1.32	1.32	2.51	1.23
Rebound Elasticity	DIN 53512	%				20		7	37
Modulus of Elasticity	DIN 53457	N/mm2							
Compressive Strength	ASTM D 695	psi							
Compressive Modulus	ASTM D 695	psi							
Compression Set									
70°C/24hr @ 20% def	ASTM D 395 Meth B	%	25	27	40%	6	14	8	7
100°C/24hr @ 20% def	ASTM D 395 Meth B	%	30	33		5	22	10	

MATERIAL			PTFE Virgin	PTFE 15% Glass	PTFE 40% Bronze	POM	PA Nylon	UHMW-PE*	PEEK*	SFTR
Property	Specification	Unit								
Color			White	Grey	Brown	White	Black	Natural	Cream	Turquoise
Min Service Temp		°F	-325	-325	-325	-50	-40	-325		-40
Max Service Temp		°F	500	500	500	210	210	175	500	309
Max Temp - Water/Steam		°F								
Max Temp - Hot Air (short)		°F								
Hardness	ASTM D 2240	Shore A								
Hardness	ASTM D 2240	Shore D	50-65	58-63	61-67	85±3	77	61	86	86
Modulus 100%	ASTM D 412	psi								
Modulus 300%	ASTM D 412	psi								
Tensile Strength	ASTM D 412	psi	6000 ▲	3000 ▲	3300 ▲	10100	9400 ◀	5800 ▲	14000 ◀	
Elongation at break	ASTM D 412	%	300 ▲	280 ▲	250 ▲	40	120 ◀	350 ▲	50 ◀	
Tear Strength	ASTM D 624 die C	lbf/inch								
Abrasion	ASTM D 1630	mm3								
Specific Gravity	ASTM D 792	g/cm3	2.2	2.2	3.13	1.41	1.15●	0.93●	1.32●	1.3
Rebound Elasticity	DIN 53512	%								
Modulus of Elasticity	DIN 53457	N/mm2				3000	1800	98000	3600	
Compressive Strength	ASTM D 695	psi	3500	1055	1470	12800				54375
Compressive Modulus	ASTM D 695	psi	70000	63000	66000					406105
Compression Set										
70°C/24hr @ 20% def	ASTM D 395 Meth B	%								
100°C/24hr @ 20% def	ASTM D 395 Meth B	%								

* Lead time required ▲ Spec - ASTM D 638 ► Spec - DIN 53455 ▼ Spec - DIN 53505 ◀ Spec - DIN 53504 ● Spec - DIN 53479

ROD SEALS

U-SEALS



D (RANGE)	d	H
8 - 25	d + 8	6
25.1 - 50	d + 10	8
50.1 - 150	d + 15	10
150.1 - 300	d + 20	14
300.1 - 450	d + 25	17
450.1 - 575	d + 30	20

Standard recommended dimensions, in millimeters

Application: Hydraulic single acting rod seals
Material: Urethane, NBR, PTFE, Fluorocarbon

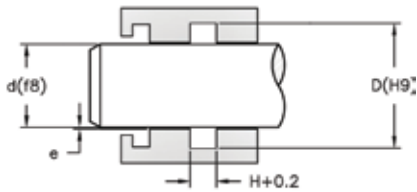
PNEUMATIC U-SEALS



Application: Hydraulic single acting rod seals
Material: Urethane, NBR, PTFE, Fluorocarbon

Pressure: 350 psi max

ONE & TWO PIECE SHAFT SEALS

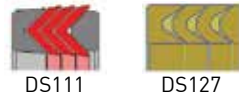
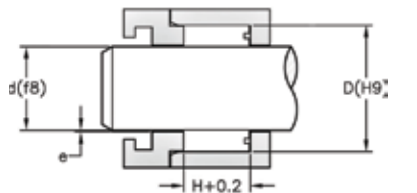


D (RANGE)	d	H
8 - 10	d + 4.9	2.2
10.1 - 39	d + 10.7	4.2
39.1 - 199	d + 15.1	6.3
199.1 - 259	d + 20.5	8.1
259.1 - 575	d + 24	8.1

Standard recommended dimensions, in millimeters

Application: Hydraulic double acting rod seals
Material: Urethane, NBR, PTFE, Fluorocarbon

VEE PACKING

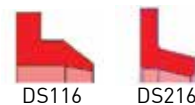
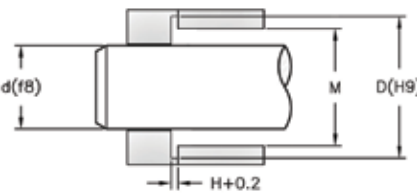


Application: Hydraulic single acting seals
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
10 - 40	d + 10	16
40.1 - 75	d + 15	25
75.1 - 150	d + 20	32
150.1 - 200	d + 25	40
200.1 - 300	d + 30	50
300.1 - 575	d + 40	63

Standard recommended dimensions, in millimeters

ROD CUP - SEAL



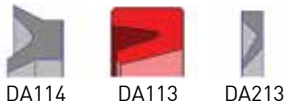
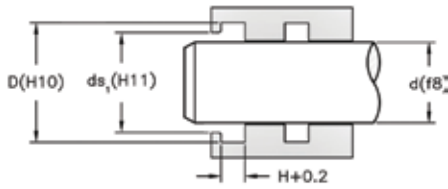
Application: Hydraulic single acting seals
Material: Urethane, NBR, PTFE, Fluorocarbon

GASKET / BACK-UP RINGS



WIPERS

SINGLE ACTING WIPERS

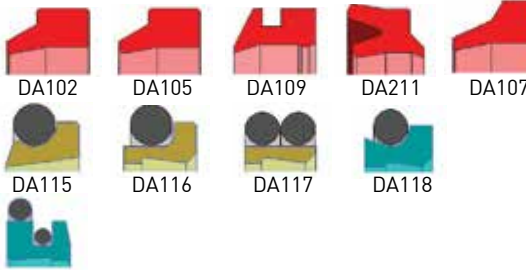
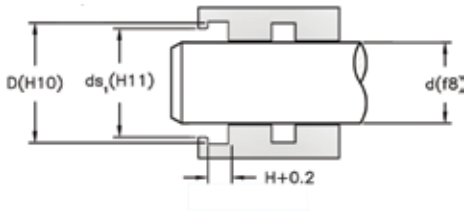


Application: Single acting wiper
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
8 - 50	d + 4	5
50.1 - 100	d + 5	5
100.1 - 575	d + 7.5	7

Standard recommended dimensions, in millimeters

SINGLE & DOUBLE ACTING WIPERS

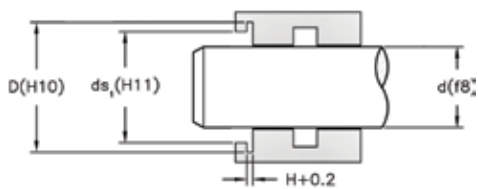


Application: W102, W105, W115 - Single acting wiper
 W111, W211, W116, W117 - Single and double acting wiper
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
8 - 50	d + 4	5
50.1 - 100	d + 5	5
100.1 - 575	d + 7.5	7

Standard recommended dimensions, in millimeters

SINGLE ACTING WIPERS

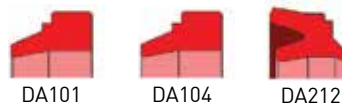
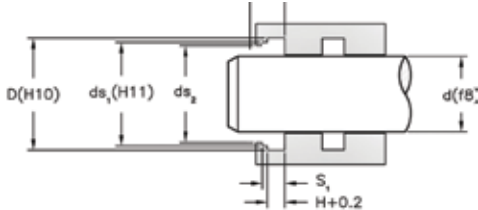


Application: Single acting wiper
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
8 - 50	d + 4	5
50.1 - 100	d + 5	5
100.1 - 575	d + 7.5	7

Standard recommended dimensions, in millimeters

SINGLE & DOUBLE ACTING WIPERS

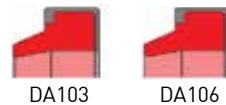
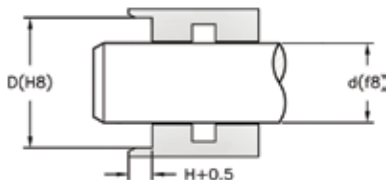


Application: Single acting wiper
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
8 - 100	d + 8	4
100.1 - 150	d + 9	5.5
150.1 - 575	d + 11	6.5

Standard recommended dimensions, in millimeters

SINGLE ACTING WIPERS



Application: Single acting wiper
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
8 - 10	d + 8	5
10.1 - 100	d + 9	7
100.1 - 200	d + 15	9
200.1 - 575	d + 20	12

Standard recommended dimensions, in millimeters

GUIDE RINGS



DF102

DF103

DF104

DF105

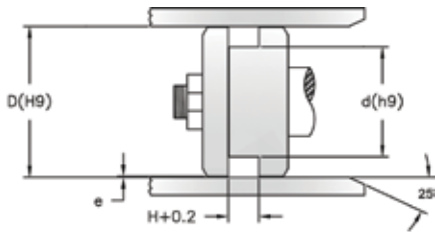
DF106

DF107

DF108

ROTARY PISTON SEALS

PISTON ROTARY SEALS



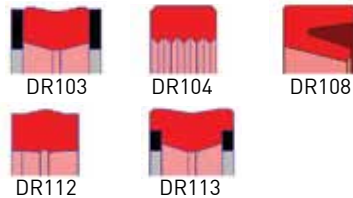
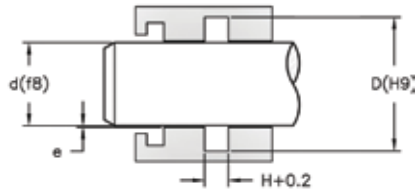
Application: Hydraulic double acting piston seals
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
10 - 20	D - 4.9	2.2
20.1 - 50	D - 7.5	3.2
50.1 - 150	D - 11	4.2
150.1 - 300	D - 15.5	6.3
300 - 600	D - 21	8.1

Standard recommended dimensions, in millimeters

ROTARY SHAFT SEALS

ROD ROTARY SEALS

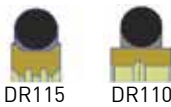
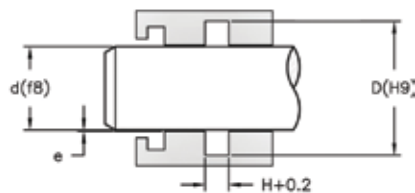


Application: Hydraulic double acting rod seals
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	D	H
8 - 10	d + 4.9	2.2
10.1 - 39	d + 10.7	4.2
39.1 - 199	d + 15.1	6.3
199.1 - 259	d + 20.5	8.1
259 - 575	d + 25	8.1

Standard recommended dimensions, in millimeters

ROD ROTARY SEALS

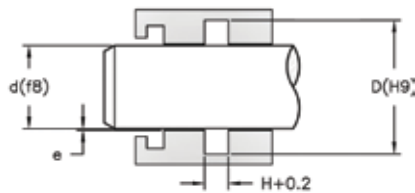


Application: Hydraulic double acting rod seals
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	D	H
8 - 20	d + 4.9	2.2
20.1 - 50	d + 7.5	3.2
50.1 - 150	d + 11	4.2
150.1 - 300	d + 15.5	6.3
300.1 - 575	d + 21	8.1

Standard recommended dimensions, in millimeters

SHAFT SEALS

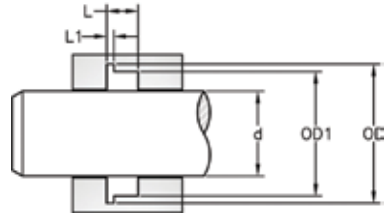


Application: Hydraulic single acting shaft seals
Material: NBR, PTFE, Fluorocarbon

D (RANGE)	D	H
10 - 60	d + 12	7
60.1 - 140	d + 15	8
14.1 - 300	d + 20	10
300.1 - 450	d + 30	12
450.1 - 575	D + 40	20

Standard recommended dimensions, in millimeters

SPRING ACTIVATED SHAFT SEALS



Application: Hydraulic single acting shaft seals
Material: PTFE

D (RANGE)	OD	OD ₁	L	L ₁
8 - 20	d + 9	d + 5	36	0.85
50.1 - 80	d + 12.5	d + 7	4.8	1.35
80.1 - 150	d + 17.5	d + 10.5	7.1	1.8
150.1 - 300	d + 22	d + 14	9.5	2.8

Standard recommended dimensions, in millimeters

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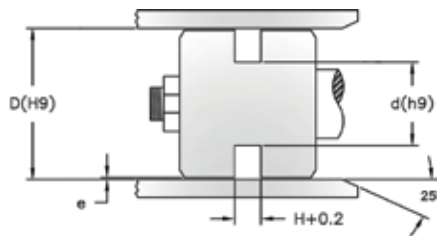
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Provide groove dimensions, seal profile, and seal material.

Formerly listed repair parts are available online at www.HerculesCA.ca or by contacting your Hercules Sales Team.

PISTON SEALS

TWO PIECE SEAL

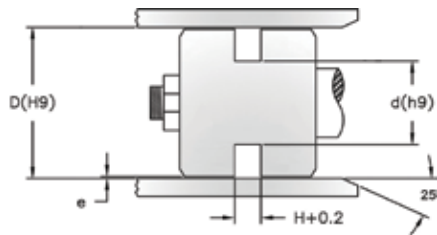


Application: Hydraulic double acting piston seals
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
10 - 15	D - 4.9	2.2
15.1 - 40	D - 7.5	3.2
40.1 - 80	D - 11	4.2
80.1 - 135	D - 15.5	6.3
135.1 - 300	D - 21	18.1
300.1 - 575	D - 24.5	8.1

Standard recommended dimensions, in millimeters

TWO PIECE SEAL STEP CUT

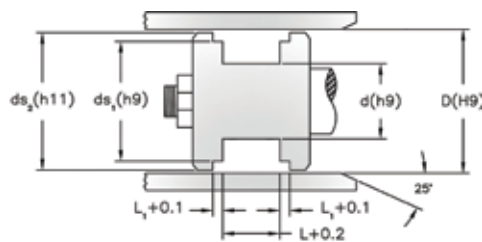


DK138
STEP CUT

D (RANGE)	d	H
38 - 40	D - 7.5	3.2
40.1 - 80	D - 11	4.2
80.1 - 135	D - 15.5	6.3
135.1 - 300	D - 21	8.1
300.1 - 394	D - 24.5	8.1

Standard recommended dimensions, in millimeters

COMPACT SEAL

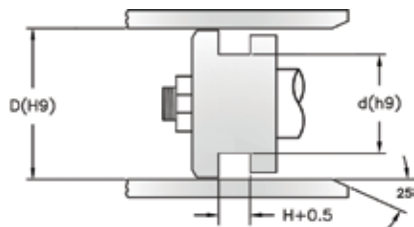


Application: Hydraulic double acting piston seals
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	OD	OD ₁	L	L ₁
20 - 50	D - 10	D - 3	12.5	4
50.1 - 80	D - 15	D - 4	20	4
80.1 - 150	D - 20	D - 5	25	5.5
150.1 - 300	D - 25	D - 6	32	7
300.1 - 600	D - 30	D - 8	36	2.8

Standard recommended dimensions, in millimeters

PNEUMATIC U-SEAL

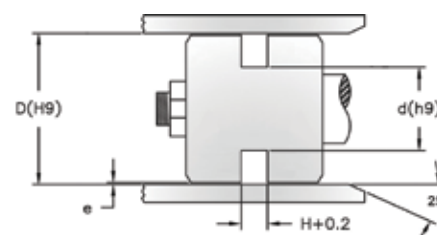


Pressure: 350 psi max
Application: Hydraulic and Pneumatic single acting piston seals
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
15 - 25	d - 8	6
25.1 - 50	d - 10	7
50.1 - 150	d - 12	8
75.1 - 150	d - 15	10
150.1 - 300	d - 20	12
300.1 - 450	d - 25	18
450.1 - 575	d - 30	20

Standard recommended dimensions, in millimeters

U-SEAL

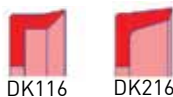
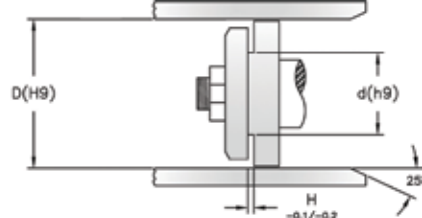


Application: Hydraulic single acting piston seals
Material: Urethane, NBR, PTFE, Fluorocarbon

D (RANGE)	d	H
15 - 25	D - 8	6
25.1 - 50	D - 10	7
50.1 - 75	D - 12	8
75.1 - 150	D - 15	10
150.1 - 300	D - 20	12
300.1 - 450	D - 25	18
450.1 - 575	D - 30	20

Standard recommended dimensions, in millimeters

PISTON CUP



Application: Hydraulic single acting piston seals
Material: Urethane, NBR, PTFE, Fluorocarbon



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Ontario & West
226 Lockhart Rd
Barrie, ON L4N9G8
Canada
Tel:800.665.7325
Fax:800.565.6990
barrie@herculesca.ca

Quebec & East
5910 Henri Bourassa Blvd. W.
St. Laurent, QC H4R1V9
Canada
Tel:800.565.6534
Fax:800.263.9533
montreal@herculesca.ca

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