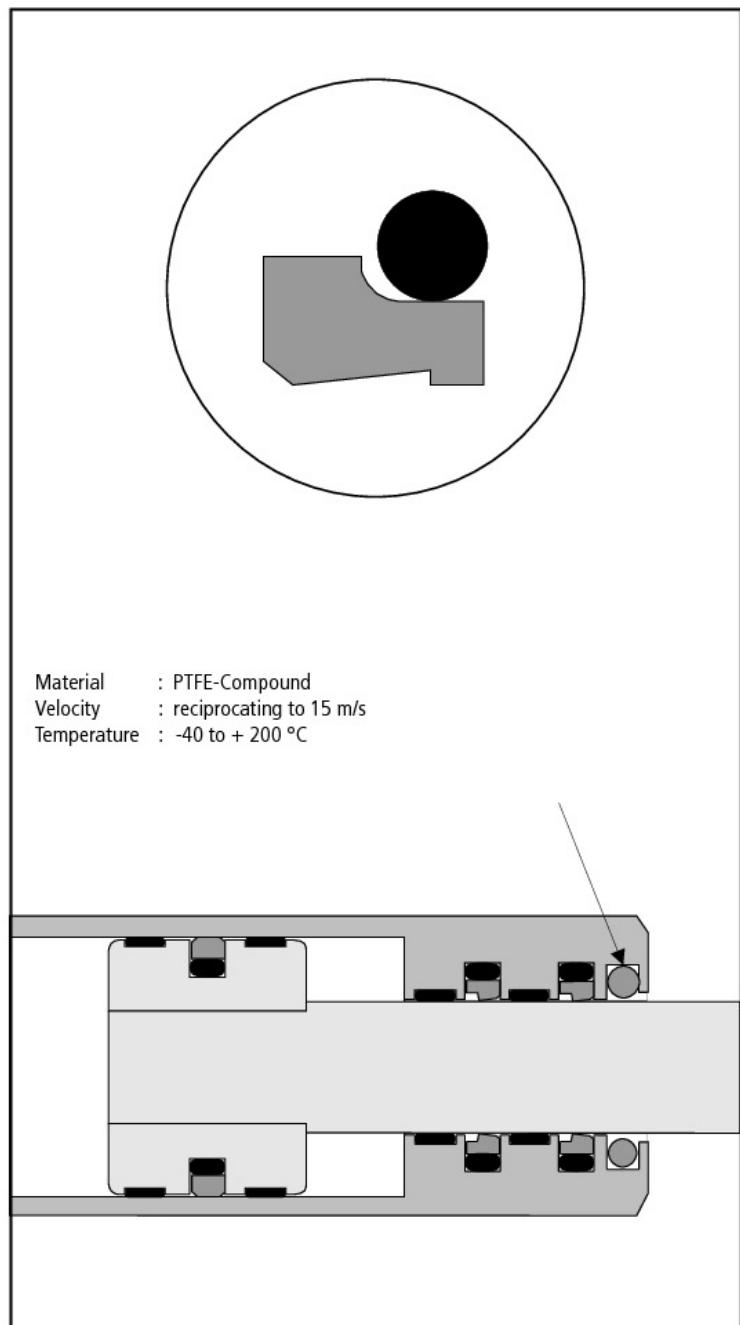


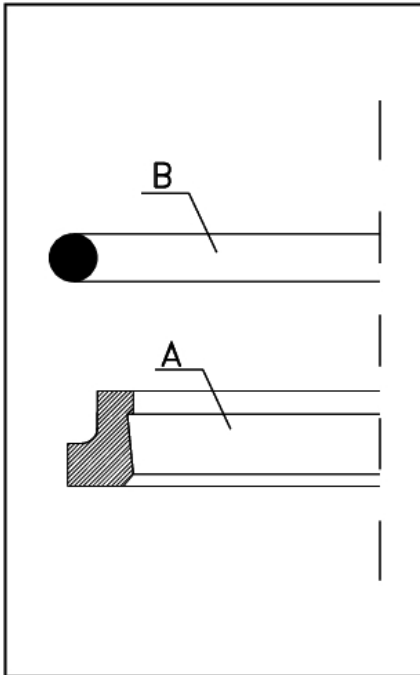
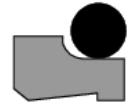
Double acting wiper HA 356 is used in hydraulic cylinders to wipe the incoming piston rod clean of dirt. It also holds back the residual oil film on the outgoing piston rod. Various material combinations guarantee a high functional security and service life over the entire velocity range at low friction, various temperatures and media..

Special Features:

- Two part composition consisting of wiper ring and O-ring
- Very good external wiper action, even with adhering dirt
- Very good internal wiper action on the residual oil film that accumulates on the piston rod
- Outstanding shear characteristics, no stick slip effect
- Large abrasion resistance, long life
- Wide temperature range and chemical resistance depending on O-ring material
- Available for all rod diameters up to approx. 2500 mm.



Material : PTFE-Compound
 Velocity : reciprocating to 15 m/s
 Temperature : -40 to + 200 °C



Wiper Ring (Part A)

The wiper possess two geometrically different wiper lips which are arranged in an opposite way. There exists a recess on the outermost circumference in order to be able to incorporate O-ring.

Wiper rings are manufactured from specially modified PTFE materials. Compound 55 (PTFE bronze) is the standard material of construction (MOC) that is used in hydraulics applications. This material is particularly superior in respect of very high abrasion resistance, inherent stability, very good shearing characteristics and very good thermal and chemical resistance.

O-Ring (Part B)

O-rings are standard sealing elements with circular cross section. Those used in the present application conform to the series of dimensions as per AS 568 A (American norm). Standard MOC for hydraulics applications is NBR with 70 Shore A, which guarantees particularly good resistance to hydraulic fluids.

Materials Overview: Wiper Ring

- 01:** Pure PTFE - Outstanding chemical resistance - Used in chemical, foodstuffs and pharmaceutical industry with mechanical stress.
- 12:** Modified PTFE - Very good chemical resistance, outstanding shear characteristics - Used for special purpose and intermediate stress applications.
- 25:** Modified PTFE + glass fiber - High abrasion resistance and inherent stability, good chemical resistance - Used in various areas of industry and intermediate-stress hydraulic applications.
- 30:** Modified PTFE + carbon - Good abrasion resistance and inherent stability, good chemical resistance - Used in water and water-oil emulsions with intermediate stress. Also designed for dry runs.
- 55:** Modified PTFE + bronze - High abrasion resistance and inherent stability, very good shear characteristics, good chemical resistance - Used in intermediate to high stress hydraulics application.
- 67:** Modified PTFE - Very high abrasion resistance and inherent stability - Used in hydraulics and abrasive pressure fluids.
- 83:** Modified polyurethane - Very high abrasion resistance and inherent stability - Used primarily in intermediate-stress hydraulics applications.

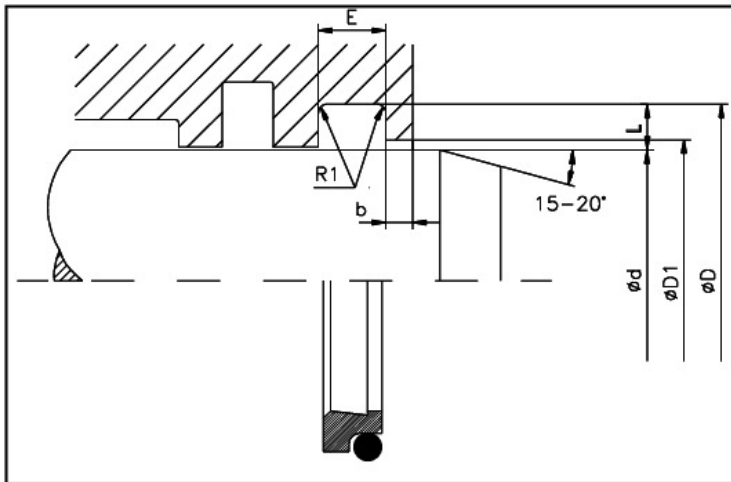
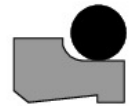
Materials Overview: O-Ring

- N:** Acrylonitrile butadiene rubber - Used in general machine construction, hydraulics, pneumatics. Resistant to mineral oil based pressure fluids, HFA, HFB and HFC fluids and water.
- F:** Fluorine containing rubbers - Used at high temperatures and aggressive surrounding media, resistant to mineral based and synthetic pressure fluids, aliphatic, aromatic and chlorated hydrocarbons, phosphate-ester based poorly inflammable fluids.
- E:** Ethylene propylene diene rubbers - Used in armature and pump industry. Resistant to hot water, steam, phosphate-ester based poorly inflammable fluids but is not resistant to mineral oils!
- S:** Silicon rubbers.
- C:** Chloroprene rubbers

The wiper series HA 355 has been used for many years in hydraulic cylinders. On the basis of its double function as a wiper both on the inside and on the outside, it is basically used on the rod seal HS 250.

The sealing and wiper function allows a nearly leakage free rod sealing, even in the case of highly loaded hydraulic cylinders and rough service environments.

The wiper can be used in divided and undivided (rod diameter approx. 30 mm onwards) grooves. For use in an undivided groove, the profile ring must be carefully bent to a kidney shape. The ring is then further prised apart through the chamfered piston rod.



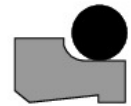
Limitations on Use	
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C (depending on O-ring material)

Media for Use	
Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air and other media (depending O-ring material).	

Surface Finish			
Surfaces	Rmax	Rz	Ra
Faces	2,5 µm	1,6 µm	0,4 µm
Groove root	10,0 µm	6,3 µm	1,6 µm
Groove flanks	16,0 µm	10,0 µm	3,2 µm

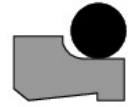
Recommended Sizes for Installation						
Section	O-Ring Cord- ϕ mm	Recommended Diameter Standard D mm	Groove Width E mm	Groove Depth L mm	Radius R1 max. mm	Bar Width b mm
01	2,62	19 - 39,9	4,2	3,8	0,8	3,0
02	2,62	40 - 69,9	6,3	4,4	0,8	3,0
03	3,53	70 - 139,9	8,1	6,1	1,5	4,0
04	5,33	140 - 399,9	9,5	8,0	1,5	5,0
05	7,00	400 - 649,9	14,0	12,0	1,5	8,0

d f8/h9	D H9	E +0,2	D1 H11	O-Ring	Part N°.
20,00	27,60	4,20	21,50	118	HA356 0200-01-55N
22,00	29,60	4,20	23,50	120	HA356 0220-01-55N
25,00	32,60	4,20	26,50	122	HA356 0250-01-55N
26,00	33,60	4,20	27,50	122	HA356 0260-01-55N
28,00	35,60	4,20	29,50	123	HA356 0280-01-55N
30,00	37,60	4,20	31,50	125	HA356 0300-01-55N
32,00	39,60	4,20	33,50	126	HA356 0320-01-55N
35,00	42,60	4,20	36,50	128	HA356 0350-01-55N
36,00	43,60	4,20	37,50	129	HA356 0360-01-55N
37,00	44,60	4,20	38,50	129	HA356 0370-01-55N
38,00	45,60	4,20	39,50	130	HA356 0380-01-55N
40,00	48,80	6,30	41,50	132	HA356 0400-02-55N
42,00	50,80	6,30	43,50	133	HA356 0420-02-55N
45,00	53,80	6,30	46,50	135	HA356 0450-02-55N
48,00	56,80	6,30	49,50	137	HA356 0480-02-55N
50,00	58,80	6,30	51,50	138	HA356 0500-02-55N
52,00	60,80	6,30	53,50	139	HA356 0520-02-55N
55,00	63,80	6,30	56,50	141	HA356 0550-02-55N
56,00	64,80	6,30	57,50	142	HA356 0560-02-55N
58,00	66,80	6,30	59,50	143	HA356 0580-02-55N
60,00	68,80	6,30	61,50	144	HA356 0600-02-55N
63,00	71,80	6,30	64,50	146	HA356 0630-02-55N
65,00	73,80	6,30	66,50	147	HA356 0650-02-55N
70,00	82,20	8,10	72,00	234	HA356 0700-03-55N
75,00	87,20	8,10	77,00	235	HA356 0750-03-55N
80,00	92,20	8,10	82,00	237	HA356 0800-03-55N
85,00	97,20	8,10	87,00	239	HA356 0850-03-55N

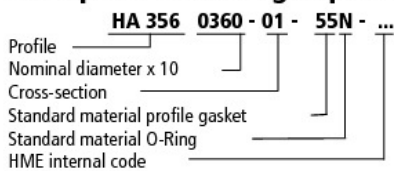


d f8/h9	D H9	E +0,2	D1 H11	O-Ring	Part N°.
90,00	102,20	8,10	92,00	240	HA356 0900-03-55N
95,00	107,20	8,10	67,00	242	HA356 0950-03-55N
100,00	112,20	8,10	102,00	243	HA356 1000-03-55N
105,00	117,20	8,10	107,00	245	HA356 1050-03-55N
110,00	122,20	8,10	112,00	246	HA356 1100-03-55N
115,00	127,20	8,10	117,00	248	HA356 1150-03-55N
120,00	132,20	8,10	122,00	249	HA356 1200-03-55N
125,00	137,20	8,10	127,00	251	HA356 1250-03-55N
130,00	142,20	8,10	132,00	253	HA356 1300-03-55N
135,00	147,20	8,10	137,00	254	HA356 1350-03-55N
140,00	156,00	9,50	142,50	359	HA356 1400-04-55N
150,00	166,00	9,50	152,50	361	HA356 1500-04-55N
155,00	171,00	9,50	157,50	362	HA356 1550-04-55N
160,00	176,00	9,50	162,50	363	HA356 1600-04-55N
170,00	186,00	9,50	172,50	365	HA356 1700-04-55N
175,00	191,00	9,50	177,50	365	HA356 1750-04-55N
180,00	196,00	9,50	182,50	366	HA356 1800-04-55N
185,00	201,00	9,50	187,50	366	HA356 1850-04-55N
190,00	206,00	9,50	192,50	368	HA356 1900-04-55N
195,00	211,00	9,50	197,50	368	HA356 1950-04-55N
200,00	216,00	9,50	202,50	369	HA356 2000-04-55N
210,00	226,00	9,50	212,50	371	HA356 2100-04-55N
220,00	236,00	9,50	222,50	373	HA356 2200-04-55N
225,00	241,00	9,50	227,50	374	HA356 2250-04-55N
230,00	246,00	9,50	232,50	374	HA356 2300-04-55N
240,00	256,00	9,50	242,50	376	HA356 2400-04-55N
250,00	266,00	9,50	252,50	377	HA356 2500-04-55N
260,00	276,00	9,50	262,50	378	HA356 2600-04-55N
270,00	286,00	9,50	272,50	379	HA356 2700-04-55N
280,00	296,00	9,50	282,50	379	HA356 2800-04-55N
290,00	306,00	9,50	292,50	380	HA356 2900-04-55N
300,00	316,00	9,50	302,50	381	HA356 3000-04-55N
310,00	326,00	9,50	312,50	381	HA356 3100-04-55N
320,00	336,00	9,50	322,50	382	HA356 3200-04-55N
330,00	346,00	9,50	332,50	382	HA356 3300-04-55N
340,00	356,00	9,50	342,50	383	HA356 3400-04-55N
350,00	366,00	9,50	352,50	383	HA356 3500-04-55N
360,00	376,00	9,50	362,50	383	HA356 3600-04-55N
370,00	386,00	9,50	372,50	384	HA356 3700-04-55N
380,00	396,00	9,50	382,50	384	HA356 3800-04-55N
390,00	406,00	9,50	392,50	385	HA356 3900-04-55N
400,00	424,00	14,00	402,50	461	HA356 4000-05-55N
410,00	434,00	14,00	412,50	462	HA356 4100-05-55N
420,00	444,00	14,00	422,50	463	HA356 4200-05-55N
430,00	454,00	14,00	432,50	463	HA356 4300-05-55N
440,00	464,00	14,00	442,50	464	HA356 4400-05-55N
450,00	474,00	14,00	452,50	465	HA356 4500-05-55N
460,00	484,00	14,00	462,50	466	HA356 4600-05-55N
470,00	494,00	14,00	472,50	467	HA356 4700-05-55N
480,00	504,00	14,00	482,50	468	HA356 4800-05-55N
490,00	514,00	14,00	492,50	469	HA356 4900-05-55N
500,00	524,00	14,00	502,50	469	HA356 5000-05-55N

Further sizes up to Ø 2500 mm available on request.
 Sizes in bold correspond to rod diameter as per DIN ISO 3320.



Example for ordering Wipers:



Material Key:

Wiper Ring

- 01 - pure PTFE
- 12 - modified PTFE
- 25 - PTFE glass fiber
- 30 - PTFE carbon
- 55 - PTFE bronze
- 67 - modified PTFE
- 83 - modified PU

O-Ring

- N -NBR
- F - FPM
- E - EPDM
- S - Silicon
- C - Chloropren

WARNING: Limits of application stated herein are standard values. They could be individually transgressed with due consideration to respective service conditions. In the event of a large duty cycle, pulsating operation and other complex operational conditions, simultaneous transgression of these values is not recommended. Due to a large variety of service conditions that may arise in course of actual use, the company does not take responsibility of or guarantee the functional accuracy of the individual components. Rights for changes are reserved.

Issue

01	05
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