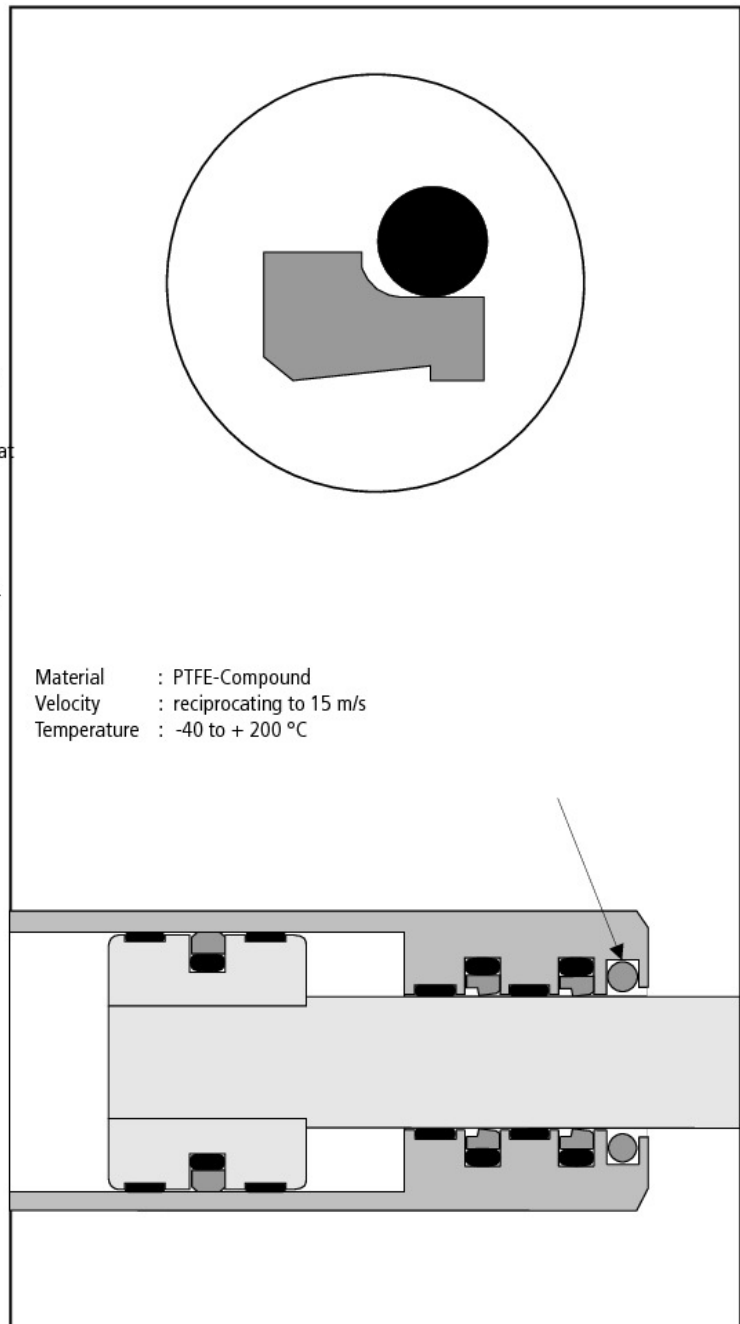


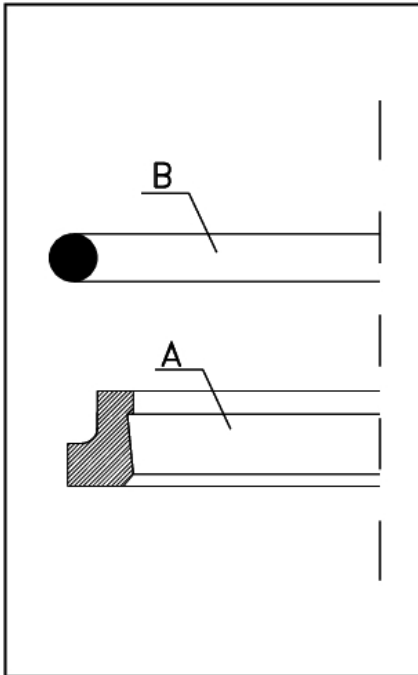
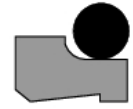
Double acting wiper HA 355 is used in hydraulic cylinders to wipe the incoming piston rod clean of dirt. Various material combinations guarantee a high functional security and service life over the entire velocity range at low friction, various temperatures and media.

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 possesses a sturdy profile with a wiper lip protruding on one side. 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.

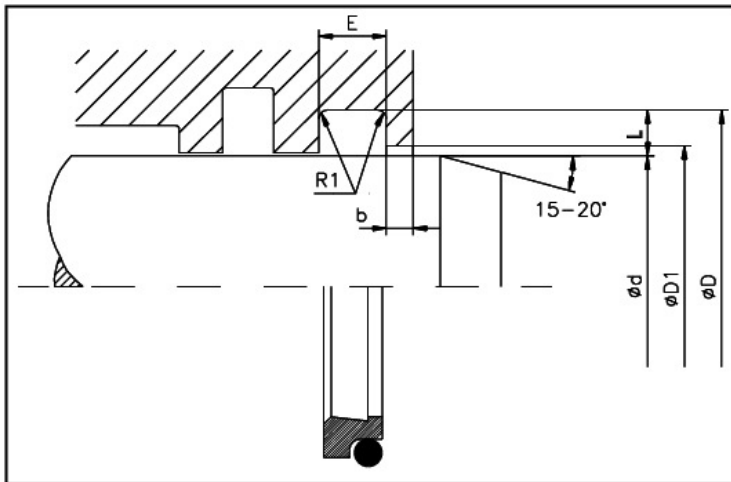
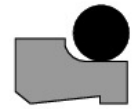
The wiper series HA 355 has been used for many years in hydraulic cylinders. On the basis of its double function as a wiper both on the inside and on the outside, it is basically used on the rod seal HS 250.

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.

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.



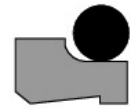
Limitations on Use	
Velocity	: reciprocating to 15 m/s
Temperature	: -40 to +200 °C (depending on O-ring material)

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-ø mm	Recommended Diameter Standard D mm	Groove Width E mm	Groove Depth L mm	Radius R1 max. mm	Bar Width b mm
01	1,78	6 - 11,9	3,7	2,4	0,2	2,0
02	2,62	12 - 64,9	5,0	3,4	0,2	2,0
03	3,53	65 - 250,9	6,0	4,4	0,2	3,0
04	5,33	251 - 420,9	8,4	6,1	0,2	4,0
05	7,00	421 - 650,9	11,0	8,0	0,2	5,0

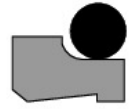
d f8/h9	D H10	E +0,2	D1 +0,2	O-Ring	Part N°.
6,00	10,80	3,70	7,50	011	HA355 0060-01-55N
8,00	12,80	3,70	9,50	012	HA355 0080-01-55N
10,00	14,80	3,70	11,50	013	HA355 0100-01-55N
12,00	18,80	5,00	13,50	113	HA355 0120-02-55N
14,00	20,80	5,00	15,50	115	HA355 0140-02-55N
15,00	21,80	5,00	16,50	115	HA355 0150-02-55N
16,00	22,80	5,00	17,50	116	HA355 0160-02-55N
18,00	24,80	5,00	19,50	117	HA355 0180-02-55N
20,00	26,80	5,00	21,50	118	HA355 0200-02-55N
22,00	28,80	5,00	23,50	120	HA355 0220-02-55N
25,00	31,80	5,00	26,50	122	HA355 0250-02-55N
26,00	32,80	5,00	27,50	122	HA355 0260-02-55N
28,00	34,80	5,00	29,50	123	HA355 0280-02-55N
30,00	36,80	5,00	31,50	125	HA355 0300-02-55N
32,00	38,80	5,00	33,50	126	HA355 0320-02-55N
35,00	41,80	5,00	36,50	128	HA355 0350-02-55N
36,00	42,80	5,00	37,50	129	HA355 0360-02-55N
37,00	43,80	5,00	38,50	129	HA355 0370-02-55N
38,00	44,80	5,00	39,50	130	HA355 0380-02-55N
40,00	46,80	5,00	41,50	131	HA355 0400-02-55N
42,00	48,80	5,00	43,50	132	HA355 0420-02-55N
45,00	51,80	5,00	46,50	134	HA355 0450-02-55N
48,00	54,80	5,00	49,50	136	HA355 0480-02-55N
50,00	56,80	5,00	51,50	137	HA355 0500-02-55N
52,00	58,80	5,00	53,50	138	HA355 0520-02-55N
55,00	61,80	5,00	56,50	140	HA355 0550-02-55N
56,00	62,80	5,00	57,50	141	HA355 0560-02-55N
58,00	64,80	5,00	59,50	142	HA355 0580-02-55N



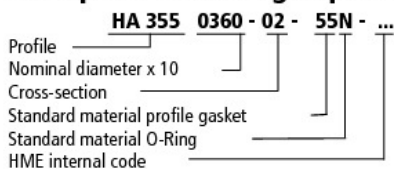
d f8/h9	D H10	E +0,2	D1 +0,2	O-Ring	Part N°.
60,00	66,80	5,00	61,50	143	HA355 0600-02-55N
63,00	69,80	5,00	64,50	145	HA355 0630-02-55N
65,00	73,80	6,00	66,50	231	HA355 0650-03-55N
70,00	78,80	6,00	71,50	233	HA355 0700-03-55N
75,00	83,80	6,00	76,50	235	HA355 0750-03-55N
80,00	88,80	6,00	81,50	236	HA355 0800-03-55N
85,00	93,80	6,00	86,50	238	HA355 0850-03-55N
90,00	98,80	6,00	91,50	239	HA355 0900-03-55N
95,00	103,80	6,00	96,50	241	HA355 0950-03-55N
100,00	108,80	6,00	101,50	243	HA355 1000-03-55N
105,00	113,80	6,00	106,50	244	HA355 1050-03-55N
110,00	118,80	6,00	111,50	246	HA355 1100-03-55N
115,00	123,80	6,00	116,50	247	HA355 1150-03-55N
120,00	128,80	6,00	121,50	249	HA355 1200-03-55N
125,00	133,80	6,00	126,50	250	HA355 1250-03-55N
130,00	138,80	6,00	131,50	252	HA355 1300-03-55N
135,00	143,80	6,00	136,50	253	HA355 1350-03-55N
140,00	148,80	6,00	141,50	255	HA355 1400-03-55N
150,00	158,80	6,00	151,50	258	HA355 1500-03-55N
155,00	163,80	6,00	156,50	259	HA355 1550-03-55N
160,00	168,80	6,00	161,50	260	HA355 1600-03-55N
170,00	178,80	6,00	171,50	261	HA355 1700-03-55N
175,00	183,80	6,00	176,50	262	HA355 1750-03-55N
180,00	188,80	6,00	181,50	263	HA355 1800-03-55N
185,00	193,80	6,00	186,50	263	HA355 1850-03-55N
190,00	198,80	6,00	191,50	264	HA355 1900-03-55N
195,00	203,80	6,00	196,50	265	HA355 1950-03-55N
200,00	208,80	6,00	201,50	266	HA355 2000-03-55N
210,00	218,80	6,00	211,50	267	HA355 2100-03-55N
220,00	228,80	6,00	221,50	269	HA355 2200-03-55N
225,00	233,80	6,00	226,50	270	HA355 2250-03-55N
230,00	238,80	6,00	231,50	271	HA355 2300-03-55N
240,00	248,80	6,00	241,50	272	HA355 2400-03-55N
250,00	258,80	6,00	251,50	274	HA355 2500-03-55N
260,00	272,20	8,40	262,00	378	HA355 2600-04-55N
270,00	282,20	8,40	272,00	378	HA355 2700-04-55N
280,00	292,20	8,40	282,00	379	HA355 2800-04-55N
290,00	302,20	8,40	292,00	380	HA355 2900-04-55N
300,00	312,20	8,40	302,00	381	HA355 3000-04-55N
310,00	322,20	8,40	312,00	381	HA355 3100-04-55N
320,00	332,20	8,40	322,00	382	HA355 3200-04-55N
330,00	342,20	8,40	332,00	382	HA355 3300-04-55N
340,00	352,20	8,40	342,00	382	HA355 3400-04-55N
350,00	362,20	8,40	352,00	383	HA355 3500-04-55N
360,00	372,20	8,40	362,00	383	HA355 3600-04-55N
370,00	382,20	8,40	372,00	383	HA355 3700-04-55N
380,00	392,20	8,40	382,00	384	HA355 3800-04-55N
390,00	402,20	8,40	392,00	384	HA355 3900-04-55N
400,00	412,20	8,40	402,00	385	HA355 4000-04-55N
410,00	422,20	8,40	412,00	385	HA355 4100-04-55N
420,00	432,20	8,40	422,00	386	HA355 4200-04-55N
430,00	446,00	11,00	432,00	463	HA355 4300-05-55N
440,00	456,00	11,00	442,00	464	HA355 4400-05-55N
450,00	466,00	11,00	452,00	465	HA355 4500-05-55N
460,00	476,00	11,00	462,00	466	HA355 4600-05-55N
470,00	486,00	11,00	472,00	466	HA355 4700-05-55N
480,00	496,00	11,00	482,00	467	HA355 4800-05-55N
490,00	506,00	11,00	492,00	468	HA355 4900-05-55N
500,00	516,00	11,00	502,00	469	HA355 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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