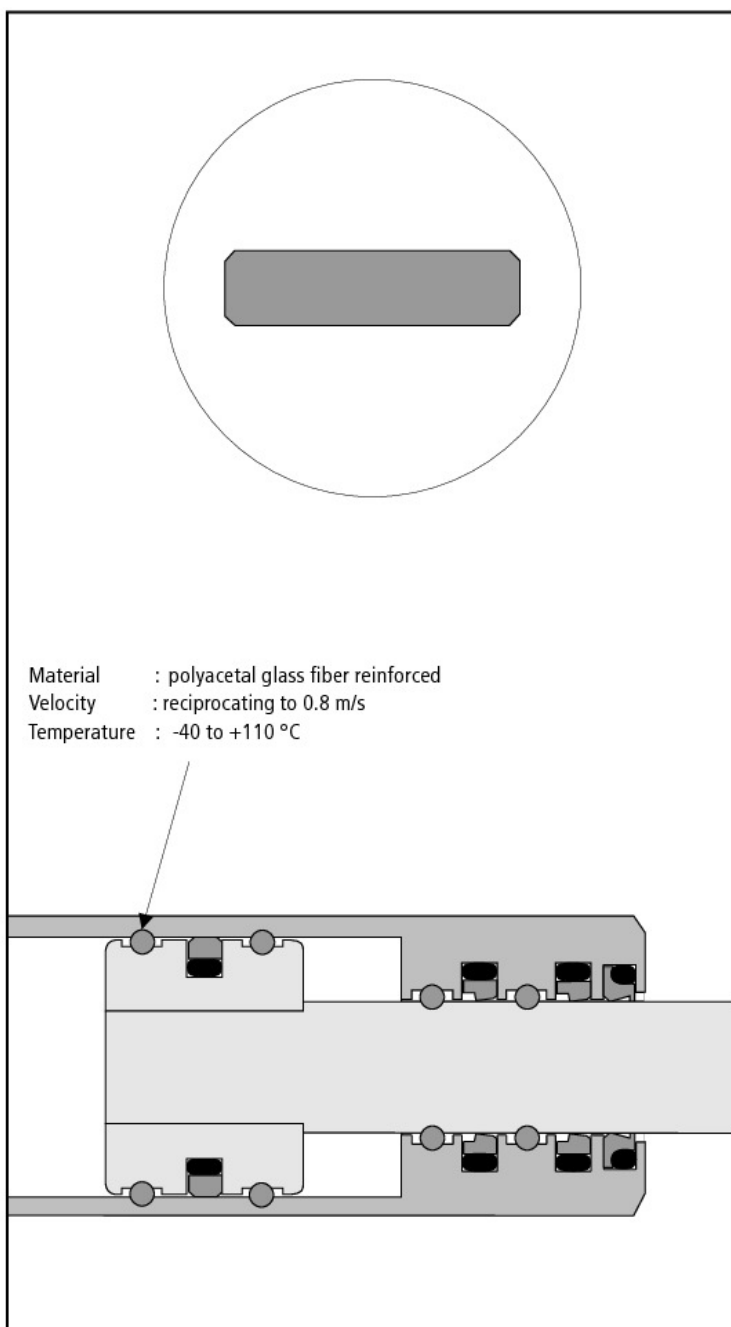


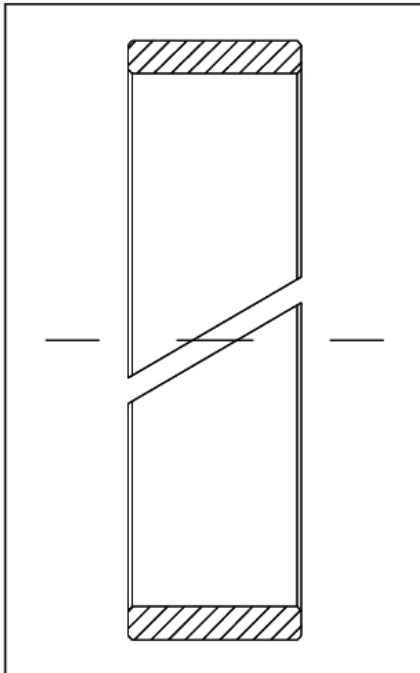
Slide rings HF 450 to HF 453 from filled polyacetal successfully reduce metallic contact between sliding parts, i.e. rod and cylinder walls or connecting piece. For the case of intermediate duty applications, they represent an alternative to hard fabric slide rings.

They are supplied in open design with slanted slot.

Special Features:

- Very good shear characteristics, no stick slip effect
- Exact tolerances through injection process
- No swelling
- Avoids metallic contact of sliding parts
- Easy to manufacture groove geometry
- Easy snap-on assembly in the groove
- Alternative to PTFE and hard fabric slide rings on a price basis.





Slide Ring

The slide ring has a rectangular cross-section and is provided with a chamfer on all edges. Thus non-permissible edge pressures in the groove corners are avoided. The chamfer also serves to simplify assembly.

Slide rings are basically preformed with a bevel cut. The split "m" is specially taken into account to ensure safe function and undisturbed operation of the seal.

Materials Overview

The material Wearite (fiber glass reinforced polyacetal) excels in wear resistance and high load bearing capacity over the entire temperature range of application. Good media compatibility and low frictional coefficient of the material make it suitable for both hydraulics and pneumatics.

Material Data

Max. compressive strength static	[N/mm ²]	40
Max. compressive strength dynamic	[N/mm ²]	20

Calculation

Designing and sizing of slide ring for dynamic applications is dependent to a large extent on the radial force and the associated deformation of the slide material, slide gap and service temperature. The value of the dynamic compressive strength is to be considered, taking the above factors into account. In practise, it is advantageous to include a factor of safety.

$$B_{min} \geq \frac{F_R \cdot S}{\sigma_{zul.dyn} \cdot D_n} [mm]$$

Where:

B_{min} = min. width of slide ring [mm]

F_R = max. radial load [N]

$\sigma_{zul.dyn}$ = permissible dynamic compression strength [N/mm²]

S = safety factor

Example:

$$B_{min} \geq \frac{5000 \cdot 2}{20 \cdot 63} \approx 8$$

Rod diameter D_n = 63 mm

Max. radial load F_R = 4 kN

dyn. compress. strength $\sigma_{zul.dyn}$ = 15 N/mm²

Safety factor S = 2

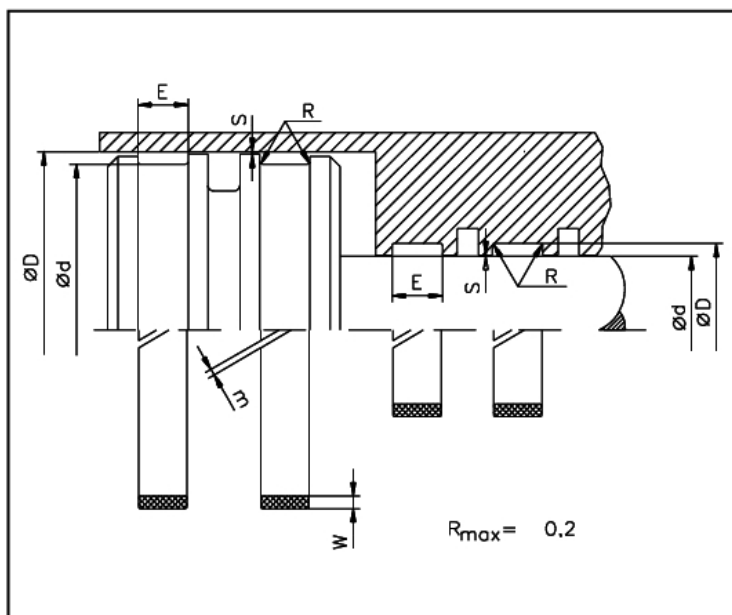
In accordance with above calculations, a choice can be made as

1 Slide ring for groove width of 9.7 mm (part N°. HF450 0630-16-520)

2 Slide rings for groove width of 5.6 mm (part N°. HF450 0630-14-520)

To achieve as much of a slide in length as possible, incorporation of two slide rings is recommended.

For the use of plunger cylinders, please also consider our slide rings of series HF 455 from the same material.



Limitations on Use

Velocity	: reciprocating to 0.8 m/s
Temperature	: -40 to +110 °C
Compress. strength, dyn.	: up to 20 N/mm ²

Media for Use

Mineral oil based pressure fluids, flame resistant fluids (HFA, HFB, HFC), non-polluting pressure fluids (Bio Oils), water, air, etc.

Split Sizes

Radial split "s" is dependent on the included sealing variant.

Recommended ring split "m" as per following table:

Bore diameter mm	Rod diameter mm	Ring split m mm
≤ 45	≤ 50	1,5
50 - 145	55 - 150	2,0
150 - 220	155 - 230	2,5
230 - 300	240 - 300	3,0

Piston Slides

D H9	d h8	E +0,2	Part N°.
16,0	12,0	9,6	HF452 0120-69-520
18,0	14,0	9,6	HF452 0140-69-520
20,0	16,0	9,6	HF452 0160-69-520
22,0	18,0	9,6	HF452 0180-69-520
24,0	20,0	9,6	HF452 0200-69-520
25,0	21,0	9,6	HF452 0210-69-520
25,0	20,0	5,6	HF450 0200-14-520
25,0	20,0	9,7	HF450 0200-16-520
27,0	22,0	5,6	HF450 0220-14-520
27,0	22,0	9,7	HF450 0220-16-520
27,0	23,0	9,6	HF452 0230-69-520
28,0	24,0	9,6	HF452 0240-69-520
30,0	25,0	5,6	HF450 0250-14-520
30,0	25,0	9,7	HF450 0250-16-520
30,0	26,0	9,6	HF452 0260-69-520
32,0	27,0	5,6	HF450 0270-14-520
32,0	27,0	9,7	HF450 0270-16-520
32,0	28,0	9,6	HF452 0280-69-520
35,0	30,0	5,6	HF450 0300-14-520
35,0	30,0	9,7	HF450 0300-16-520
35,0	31,0	9,6	HF452 0310-69-520
36,0	32,0	9,6	HF452 0320-69-520
37,0	32,0	5,6	HF450 0320-14-520
37,0	32,0	9,7	HF450 0320-16-520
38,0	34,0	9,6	HF452 0340-69-520
40,0	35,0	5,6	HF450 0350-14-520
40,0	35,0	9,7	HF450 0350-16-520
40,0	36,0	9,6	HF452 0360-69-520
42,0	38,0	9,6	HF452 0380-69-520
45,0	40,0	5,6	HF450 0400-14-520
45,0	40,0	9,7	HF450 0400-16-520
45,0	41,0	9,6	HF452 0410-69-520
50,0	44,0	9,6	HF453 0440-69-520

Rod Slides

d f8/h9	D H8	E +0,2	Part N°.
12,0	16,0	9,6	HF452 0120-69-520
14,0	18,0	9,6	HF452 0140-69-520
15,0	19,0	9,6	HF452 0150-69-520
16,0	20,0	9,6	HF452 0160-69-520
18,0	22,0	9,6	HF452 0180-69-520
20,0	24,0	9,6	HF452 0200-69-520
20,0	25,0	5,6	HF450 0200-14-520
20,0	25,0	9,7	HF450 0200-16-520
22,0	26,0	9,6	HF452 0220-69-520
24,0	28,0	9,6	HF452 0240-69-520
25,0	29,0	9,6	HF452 0250-69-520
25,0	30,0	5,6	HF450 0250-14-520
25,0	30,0	9,7	HF450 0250-16-520
28,0	32,0	9,6	HF452 0280-69-520
30,0	34,0	9,6	HF452 0300-69-520
30,0	35,0	5,6	HF450 0300-14-520
30,0	35,0	9,7	HF450 0300-16-520
32,0	36,0	9,6	HF452 0320-69-520
32,0	37,0	5,6	HF450 0320-14-520
32,0	37,0	9,7	HF450 0320-16-520
34,0	38,0	9,6	HF452 0340-69-520
35,0	39,0	9,6	HF452 0350-69-520
35,0	40,0	5,6	HF450 0350-14-520
35,0	40,0	9,7	HF450 0350-16-520
36,0	40,0	9,6	HF452 0360-69-520
36,0	41,0	5,6	HF450 0360-14-520
36,0	41,0	9,7	HF450 0360-16-520
37,0	41,0	9,6	HF452 0370-69-520
38,0	42,0	9,6	HF452 0380-69-520
40,0	44,0	9,6	HF452 0400-69-520
40,0	45,0	5,6	HF450 0400-14-520
40,0	45,0	9,7	HF450 0400-16-520
42,0	46,0	9,6	HF452 0420-69-520

Piston Slides

D H9	d h8	E +0,2	Part N°.
50,0	45,0	5,6	HF450 0450-14-520
50,0	45,0	9,7	HF450 0450-16-520
52,0	46,0	12,8	HF453 0460-75-520
55,0	49,0	12,8	HF453 0490-75-520
55,0	50,0	5,6	HF450 0500-14-520
55,0	50,0	9,7	HF450 0500-16-520
60,0	54,0	12,8	HF453 0540-75-520
60,0	55,0	5,6	HF450 0550-14-520
60,0	55,0	9,7	HF450 0550-16-520
62,0	56,0	12,8	HF453 0560-75-520
63,0	57,0	12,8	HF453 0570-75-520
63,0	58,0	5,6	HF450 0580-14-520
63,0	58,0	9,7	HF450 0580-16-520
65,0	59,0	12,8	HF453 0590-75-520
68,0	63,0	5,6	HF450 0630-14-520
68,0	63,0	9,7	HF450 0630-16-520
70,0	64,0	12,8	HF453 0640-75-520
70,0	65,0	9,7	HF450 0650-16-520
75,0	69,0	12,8	HF453 0690-75-520
75,0	70,0	5,6	HF450 0700-14-520
75,0	70,0	9,7	HF450 0700-16-520
80,0	74,0	12,8	HF453 0740-75-520
80,0	75,0	5,6	HF450 0750-14-520
80,0	75,0	9,7	HF450 0750-16-520
85,0	79,0	12,8	HF453 0790-75-520
85,0	80,0	5,6	HF450 0800-14-520
85,0	80,0	9,7	HF450 0800-16-520
90,0	84,0	12,8	HF453 0840-75-520
90,0	85,0	5,6	HF450 0850-14-520
90,0	85,0	9,7	HF450 0850-16-520
93,0	87,0	12,8	HF453 0870-75-520
95,0	89,0	12,8	HF453 0890-75-520
95,0	90,0	5,6	HF450 0900-14-520
95,0	90,0	9,7	HF450 0900-16-520
100,0	95,0	5,6	HF450 0950-14-520
100,0	95,0	9,7	HF450 0950-16-520
105,0	99,0	12,8	HF453 0990-75-520
105,0	100,0	5,6	HF450 1000-14-520
105,0	100,0	9,7	HF450 1000-16-520
110,0	104,0	12,8	HF453 1040-75-520
110,0	105,6	5,6	HF450 1050-14-520
110,0	105,0	9,7	HF450 1050-16-520
115,0	109,0	12,8	HF453 1090-75-520
115,0	110,0	5,6	HF450 1100-14-520
115,0	110,0	9,7	HF450 1100-16-520
120,0	114,0	12,8	HF453 1140-75-520
125,0	119,0	12,8	HF453 1190-75-520
125,0	120,0	5,6	HF450 1200-14-520
125,0	120,0	9,7	HF450 1200-16-520
130,0	124,0	12,8	HF453 1240-75-520
135,0	129,0	12,8	HF453 1290-75-520
140,0	134,0	12,8	HF453 1340-75-520
140,0	135,0	5,6	HF450 1350-14-520
140,0	135,0	9,7	HF450 1350-16-520
145,0	139,0	12,8	HF453 1390-75-520
150,0	144,0	12,8	HF453 1440-75-520
155,0	149,0	19,2	HF453 1490-77-520
160,0	154,0	19,2	HF453 1540-77-520
165,0	159,0	19,2	HF453 1590-77-520

Rod Slides

d f8/h9	D H8	E +0,2	Part N°.
45,0	50,0	5,6	HF450 0450-14-520
45,0	50,0	9,7	HF450 0450-16-520
45,0	51,0	9,6	HF453 0450-69-520
46,0	52,0	9,6	HF453 0460-69-520
50,0	55,0	5,6	HF450 0500-14-520
50,0	55,0	9,7	HF450 0500-16-520
50,0	56,0	9,6	HF453 0500-69-520
52,0	58,0	9,6	HF453 0520-69-520
55,0	60,0	5,6	HF450 0550-14-520
55,0	60,0	9,7	HF450 0550-16-520
55,0	61,0	9,6	HF453 0550-69-520
56,0	61,0	5,6	HF450 0560-14-520
56,0	61,0	9,7	HF450 0560-16-520
56,0	62,0	12,8	HF453 0560-75-520
60,0	66,0	12,8	HF453 0600-75-520
61,0	67,0	12,8	HF453 0610-75-520
62,0	68,0	12,8	HF453 0620-75-520
63,0	68,0	5,6	HF450 0630-14-520
63,0	68,0	9,7	HF450 0630-16-520
63,0	69,0	12,8	HF453 0630-75-520
65,0	70,0	5,6	HF450 0650-14-520
65,0	70,0	9,7	HF450 0650-16-520
65,0	71,0	12,8	HF453 0650-75-520
70,0	75,0	5,6	HF450 0700-14-520
70,0	75,0	9,7	HF450 0700-16-520
70,0	76,0	12,8	HF453 0700-75-520
72,0	78,0	12,8	HF453 0720-75-520
73,0	79,0	12,8	HF453 0730-75-520
75,0	80,0	5,6	HF450 0750-14-520
75,0	80,0	9,7	HF450 0750-16-520
75,0	81,0	12,8	HF453 0750-75-520
76,0	82,0	12,8	HF453 0760-75-520
78,0	84,0	12,8	HF453 0780-75-520
80,0	85,0	5,6	HF450 0800-14-520
80,0	86,0	12,8	HF453 0800-75-520
85,0	91,0	12,8	HF453 0850-75-520
86,0	92,0	12,8	HF453 0860-75-520
90,0	95,0	5,6	HF450 0900-14-520
90,0	95,0	9,7	HF450 0900-16-520
90,0	96,0	12,8	HF453 0900-75-520
91,0	97,0	12,8	HF453 0910-75-520
95,0	100,0	5,6	HF450 0950-14-520
95,0	100,0	9,7	HF450 0950-16-520
95,0	101,0	12,8	HF453 0950-75-520
100,0	105,0	5,6	HF450 1000-14-520
100,0	105,0	9,7	HF450 1000-16-520
100,0	106,0	12,8	HF453 1000-75-520
105,0	111,0	12,8	HF453 1050-75-520
110,0	116,0	12,8	HF453 1100-75-520
115,0	121,0	12,8	HF453 1150-75-520
120,0	125,0	5,6	HF450 1200-14-520
120,0	125,0	9,7	HF450 1200-16-520
120,0	126,0	12,8	HF453 1200-75-520
125,0	131,0	12,8	HF453 1250-75-520
130,0	136,0	12,8	HF453 1300-75-520
135,0	140,0	5,6	HF450 1350-14-520
135,0	140,0	9,7	HF450 1350-16-520
135,0	141,0	12,8	HF453 1350-75-520
140,0	146,0	12,8	HF453 1400-75-520

Piston Slides

D H9	d h8	E +0,2	Part N°.
170,0	164,0	19,2	HF453 1640-77-520
175,0	169,0	19,2	HF453 1690-77-520
180,0	174,0	19,2	HF453 1740-77-520
185,0	179,0	19,2	HF453 1790-77-520
190,0	184,0	19,2	HF453 1840-77-520
195,0	189,0	19,2	HF453 1890-77-520
200,0	194,0	19,2	HF453 1940-77-520
205,0	199,0	19,2	HF453 1990-77-520
210,0	204,0	19,2	HF453 2040-77-520
220,0	214,0	19,2	HF453 2140-77-520
230,0	224,0	19,2	HF453 2240-77-520
240,0	234,0	19,2	HF453 2340-77-520
250,0	244,0	19,2	HF453 2440-77-520
260,0	254,0	19,2	HF453 2540-77-520
270,0	264,0	19,2	HF453 2640-77-520
280,0	274,0	19,2	HF453 2740-77-520
290,0	284,0	19,2	HF453 2840-77-520
300,0	294,0	19,2	HF453 2940-77-520

Rod Slides

d f8/h9	D H8	E +0,2	Part N°.
141,0	147,0	12,8	HF453 1410-75-520
143,0	149,0	12,8	HF453 1430-75-520
145,0	151,0	12,8	HF453 1450-75-520
150,0	156,0	12,8	HF453 1500-75-520
154,0	160,0	19,2	HF453 1540-77-520
160,0	166,0	19,2	HF453 1600-77-520
162,0	168,0	19,2	HF453 1620-77-520
170,0	176,0	19,2	HF453 1700-77-520
180,0	186,0	19,2	HF453 1800-77-520
190,0	196,0	19,2	HF453 1900-77-520
200,0	206,0	19,2	HF453 2000-77-520
210,0	216,0	19,2	HF453 2100-77-520
220,0	226,0	19,2	HF453 2200-77-520
230,0	236,0	19,2	HF453 2300-77-520
240,0	246,0	19,2	HF453 2400-77-520
250,0	256,0	19,2	HF453 2500-77-520
260,0	266,0	19,2	HF453 2600-77-520
270,0	276,0	19,2	HF453 2700-77-520
280,0	286,0	19,2	HF453 2800-77-520
290,0	296,0	19,2	HF453 2900-77-520

Dimensions in bold correspond to mounting spaces as per ISO/DIN 10766.

Example for ordering :

HF 450 0630 - 16 - 520 - ...
 Profile _____
 Internal diameter x 10 _____
 Code for groove width _____
 Material _____
 HME internal code _____

Profile:

HF 450 - 2.5 mm radial strength
 HF 452 - 2.0 mm radial strength
 HF 453 - 3.0 mm radial strength

Code Groove Width:

14 - 5.6 mm
 16 - 9.7 mm
 69 - 9.6 mm
 75 - 12.8 mm
 77 - 19.2 mm

Issue

01 05

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.