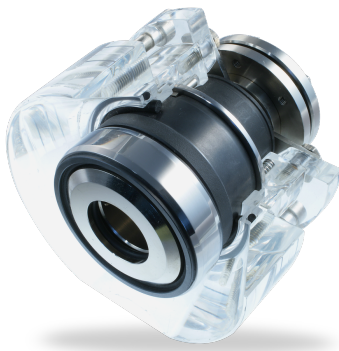


RELY ON EXCELLENCE

HR

Mechanical seals | Mechanical seals for pumps | Engineered seals



Features

- Single seal
- Balanced
- Independent of direction of rotation
- Multiple springs stationary
- Seat rotating
- Seat arranged directly behind the impeller
- Spring protection sleeve
- Variant with cylindrical spring and acc. EN 12756 (HRZ1) available
- Variant as cartridge with/without guide sleeve for application with/without quench (HR2, HR3)
- Dual seal as cartridge unit (HRKS-D) available

Advantages

- Especially for application in solids containing media without external flush or internal product circulation. Solids content 40 % (single seal) and 60 % (double seal)
- Operation under vacuum without seat locking possible
- Pumping screw for increased circulation available
- Springs are protected from product and leakage

Operating range

Shaft diameter:

dN = 36 ... 270 mm (1.4" ... 10.63")

Pressure: p1* = 16 bar (230 PSI)

Temperature:

t = -20 °C ... +160 °C (-4 °F ... +320 °F)

Sliding velocity: vg = 10 m/s (33 ft/s)

* For operation under vacuum it is necessary to arrange for quenching on the atmosphere side.

Materials

Seal face: Silicon carbide (Q1, Q2)

Seat: Silicon carbide (Q1, Q2)

Standards and approvals

- EN 12756

Notes

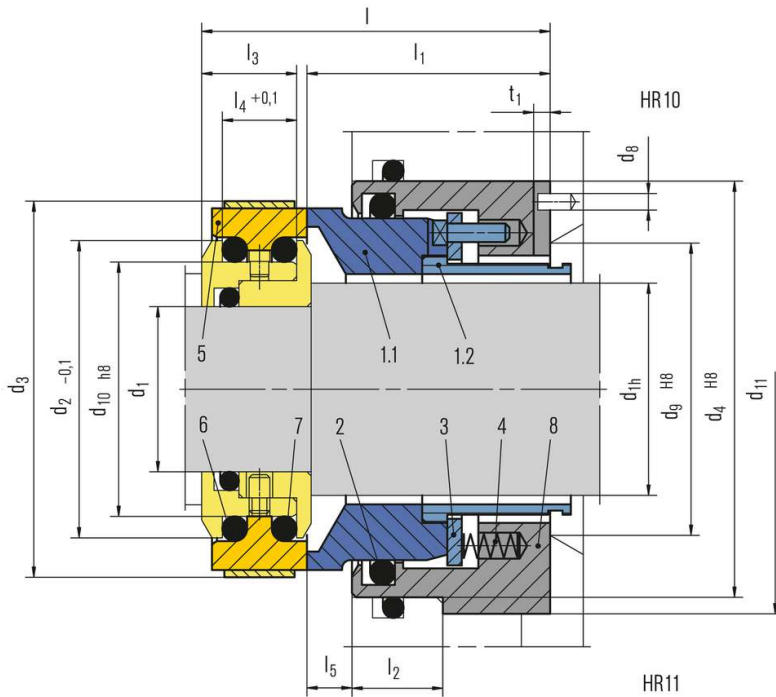
Direction of installation:

- From the impeller side: HR10
- From the bearing side: HR11

Recommended applications

- Process industry
- Oil and gas industry
- Refining technology
- Chemical industry
- Power plant technology
- Pulp and paper industry
- Water and waste water technology
- Mining industry
- Sugar industry
- Cement industry
- Contaminated, abrasive and solids containing media
- Sewage water pumps
- Dredger pumps
- Oil sand extraction
- Suspension pumps of flue-gas desulphurization plants (FGD)

RELY ON EXCELLENCE



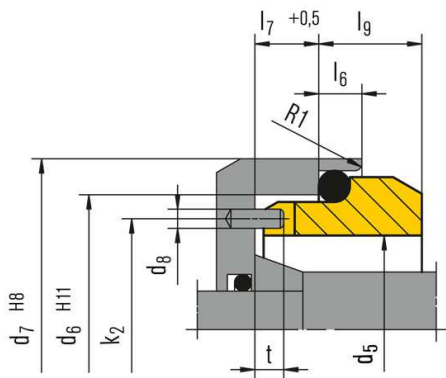
Item	Part no.	Description
DIN 24250		

1.1	472	Seal face
1.2	520	Sleeve
2	412.1	O-Ring
3	474	Thrust ring
4	477	Spring
5	475	Seat (G11)
6	412.2	O-Ring
7	412.3	O-Ring
8	441	Housing

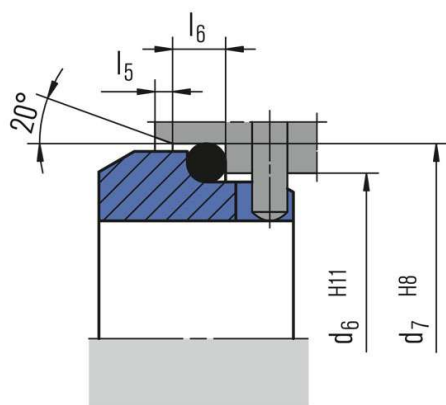
Direction of installation: - from the impeller side
 HR10 - from the bearing side HR11

RELY ON EXCELLENCE

Seat alternatives



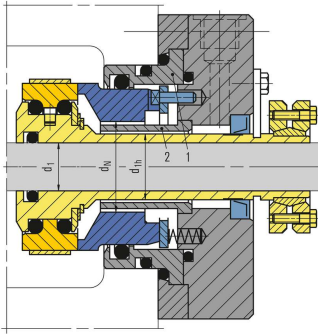
G2
(dN 36 ... 90 mm)



G9
(dN 95 ... 180 mm)

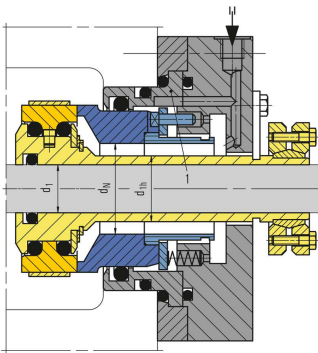
RELY ON EXCELLENCE

Product variants



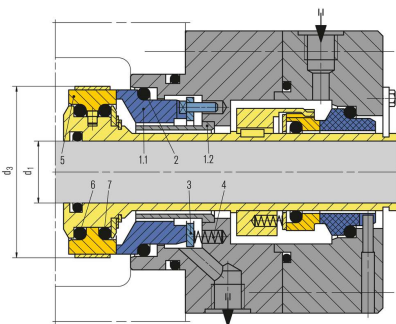
HR2

Cartridge-type single seal with guide sleeve (Item no. 2) for use with quench. Insert (Item no. 1) either metal or silicon carbide.



HR3

Cartridge-type single seal. Insert (Item no. 1) either metal or silicon carbide. Optional without maintenance rinsing.



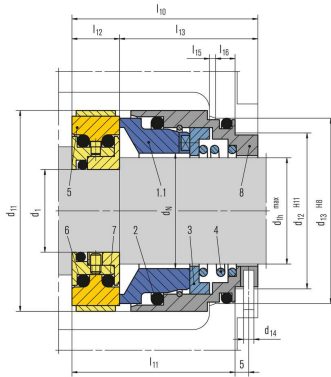
HRKS-D

Double seal in cartridge design for operation in barrier or buffer pressure (does not open if barrier pressure fails), available alternatively with a pumping screw for a higher rate of circulation. Torque transmission e.g. by shrink disk.

RELY ON EXCELLENCE

HR21

Single seal with cylindrical spring and type G76 seat. For installation in covers with installation dimensions according to EN 12756 B or U. Installation length l_{11} corresponds to max. l_{1k} . Intermediate sizes on request.



Dimensions

d ₁	d _{1h}	d _N	d ₂	d ₃	d ₄	d ₅	d ₆	d ₇	d ₈	d ₉	d ₁₀	d ₁₁ +0.2 min	l	l ₁	l ₂	l ₃	l ₄	l ₅	l ₆	l ₇	l ₈	l ₉	k ₂	t	t ₁
20	28	36	47.1	65	70	46	56.0	63.0	4	40	38	75	75	53	20	19.5	17	10.5	6	9	8.0	51.0	4.5	3	
25	33	41	52.1	70	75	51	62.0	70.0	4	45	43	80	75	53	20	19.5	17	10.5	6	9	9.5	56.5	4.5	3	
28	38	46	57.1	75	80	56	67.0	75.0	4	50	48	85	75	53	20	19.5	17	10.5	6	9	9.5	61.5	4.5	3	
33	43	51	62.1	80	85	61	72.0	80.0	4	55	53	90	75	53	20	19.5	17	10.5	6	9	10.5	66.5	4.5	3	
38	48	56	67.1	85	90	66	77.0	85.0	4	60	58	95	75	53	20	19.5	17	10.5	6	9	10.5	71.5	4.5	3	
43	53	61	72.1	90	95	69	81.0	90.0	4	65	63	100	75	53	20	19.5	17	10.5	7	9	11.0	75.0	4.5	3	
48	58	66	77.1	95	100	76	88.0	97.0	4	70	68	105	75	53	20	19.5	17	10.5	7	9	11.5	82.0	4.5	3	
53	63	71	82.1	101	105	81	95.0	105.0	4	75	73	110	75	53	20	19.5	17	10.5	7	9	11.5	88.0	4.5	3	
55	65	75	87.1	106	110	86	100.0	110.0	4	79	78	115	75	53	20	19.5	17	10.5	7	9	11.5	93.0	4.5	3	
60	70	80	92.1	111	115	91	105.0	115.0	4	84	83	120	75	53	20	19.5	17	10.5	7	9	13.0	98.0	4.5	3	
65	75	85	97.1	116	120	96	110.0	120.0	4	89	88	125	75	53	20	19.5	17	10.5	7	9	13.0	103.0	4.5	3	
70	80	90	102.1	121	125	101	115.0	125.0	4	94	93	130	75	53	20	19.5	17	10.5	7	9	13.0	108.0	4.5	3	
75	85	95	107.1	126	130	107	122.2	134.3	5	99	98	135	75	53	20	19.5	17	10.5	10	12	20.0	114.5	7.0	3	
80	90	100	112.1	131	135	107	122.2	134.3	5	104	103	140	75	53	20	19.5	17	10.5	10	12	20.0	114.5	7.0	3	
90	100	110	126.1	147	155	117	136.2	148.3	5	116	117	163	98	73	30	22.0	19	16.0	10	12	20.0	126.5	7.0	4	
100	110	120	136.1	157	165	132	146.2	158.3	5	126	127	173	98	73	30	22.0	19	16.0	10	12	20.0	139.0	7.0	4	
110	120	130	145.1	167	175	142	156.2	168.3	5	136	136	183	98	73	30	22.0	19	16.0	10	12	20.0	149.0	7.0	4	
120	130	140	154.1	177	185	152	168.2	180.3	5	146	145	193	98	73	30	22.0	19	16.0	10	12	22.0	160.0	7.0	4	
130	140	150	163.9	188	195	162	178.2	190.3	5	156	155	203	98	73	30	22.0	19	16.0	12	12	24.0	170.0	7.0	4	
140	150	160	174.9	189	205	172	188.2	200.3	5	166	166	213	98	73	30	22.0	19	16.0	12	12	24.0	180.0	7.0	4	
160	170	180	193.9	220	230	187	212.5	224.3	5	186	185	238	98	73	30	22.0	19	16.0	12	12	28.0	199.5	7.0	4	
180	190	200	213.9	240	255	-	-	-	-	206	205	265	98	73	30	22.0	19	16.0	-	-	-	-	-	4	
190	200	210	231.9	255	270	-	-	-	-	218	220	280	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5	
200	210	220	241.9	265	280	-	-	-	-	228	230	290	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5	
210	220	230	251.9	275	290	-	-	-	-	238	240	300	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5	
220	230	240	261.9	285	300	-	-	-	-	248	250	310	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5	
230	240	250	271.9	295	310	-	-	-	-	258	260	320	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5	
250	260	270	291.9	315	330	-	-	-	-	278	280	340	115	83	40	28.35	24.7	19.0	-	-	-	-	-	5	

Dimensions in Millimeter. Dimensions for shaft diameters up to 300 mm on request.

RELY ON EXCELLENCE

Dimensions

d _N	d _{1h}	d ₁	d ₁₁	d ₁₂	d ₁₃	d ₁₄	l ₁₀	l ₁₁	l ₁₂	l ₁₃	l ₁₅	l ₁₆								
35	33	20	56	42	48	3	57.7	49.2	15.0	42.7	2.0	5								
43	39	27	67	54	61	4	57.7	49.2	15.0	42.7	2.0	6								
54	50	35	78	65	73	4	59.8	52.1	15.5	44.3	2.5	6								
66	60	47	91	77	85	4	66.0	58.0	16.5	49.5	2.5	6								
77	72	55	103	88	97	4	74.5	66.0	17.5	57.0	2.5	7								
100	90	70	125	110	120	4	82.0	73.0	21.0	61.0	3.0	7								

HRZ1 - Dimensions in millimeter