

Merkel U-Ring TM 21

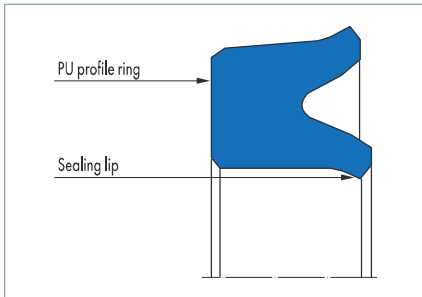


Fig. 1 Merkel U-Ring TM 21

Product description

Merkel U-ring with asymmetrical profile, inner lip set back and press fit at the outer diameter.

Product advantages

Single-acting piston seal for hydraulic cylinders used in heavy machinery areas. The highly wear-resistant polyurethane material allows for use under high operating requirements

- Good media resistance
- Broad range of temperatures
- Very good static and dynamic tightness
- No mould tools required
- Large range of dimensions.

Application

Injection moulding machines, presses, heavy machinery manufacture, large cylinders.

Material

Ø range <500

Material	Code	Hardness
Polyurethane	95 AU V142	95 Shore A

Ø range >500

Material	Code	Hardness
Polyurethane	93 AU V167	93 Shore A

Operating conditions

Material	95 AU V142	93 AU V167
	Temperature range in °C	
Hydraulic oils HL, HLP	-30 ... +110	-25 ... +100
HFA fluids	+5 ... +50	+5 ... +60
HFB fluids	+5 ... +50	+5 ... +60
HFC fluids	-30 ... +40	-25 ... +40
HFD fluids	-	-
Water	+5 ... +50	+5 ... +60
HETG (rapeseed oil)	-30 ... +60	-25 ... +60
HEES (synthetic esters)	-30 ... +80	-25 ... +80
HEPG (glycol)	-30 ... +50	-25 ... +50
Mineral greases	-30 ... +110	-25 ... +100
Pressure p in MPa	40	
Running speed v in m/s	0,5	

Surface quality

Surface roughness	R _a	R _{max}
Sliding surface	0,05 ... 0,3 µm	≤2,5 µm
Groove base	≤1,6 µm	≤6,3 µm
Groove flanks	≤3,0 µm	≤15,0 µm

Percentage contact area M_v >50% to max. 90% at cutting depth c = Rz/2 and reference line C ref = 0%.

Design notes

Please observe our general design notes in → Technical Manual.

Tolerance recommendation and dimension d2

The admissible gap width, tolerances, guide play and deflection of the guide under load are to be taken into account when designing D2. → Technical Manual.

Housing recommendations for new designs

Primary seal TM 20

D	d	L	c
>200 ... 630	D -30	25	9
>630 ... 800	D -40	32	11
>800 ... 2000	D -50	40	13

Recommended tolerances* for Merkel Guide Ring KB

D	16 MPa				26 MPa				
	Ø D	S	D	d	X2	S	D	d	X2
... 250	15	H8	h11	0,65	15	H8	h11	0,55	
... 500	15	H8	h11	0,65	15	H8	h11	0,55	
... 560	15	H8	h11	0,65	15	H8	h11	0,55	
... 450	20	H8	h11	0,67	20	H8	h11	0,57	
... 600	20	H8	h11	0,67	20	H8	h11	0,57	
... 750	20	H8	h11	0,67	20	H8	h11	0,57	
... 1000	25	H8	h11	0,70	25	H8	h11	0,60	
... 1400	25	H7	h11	0,70	25	H7	h11	0,60	

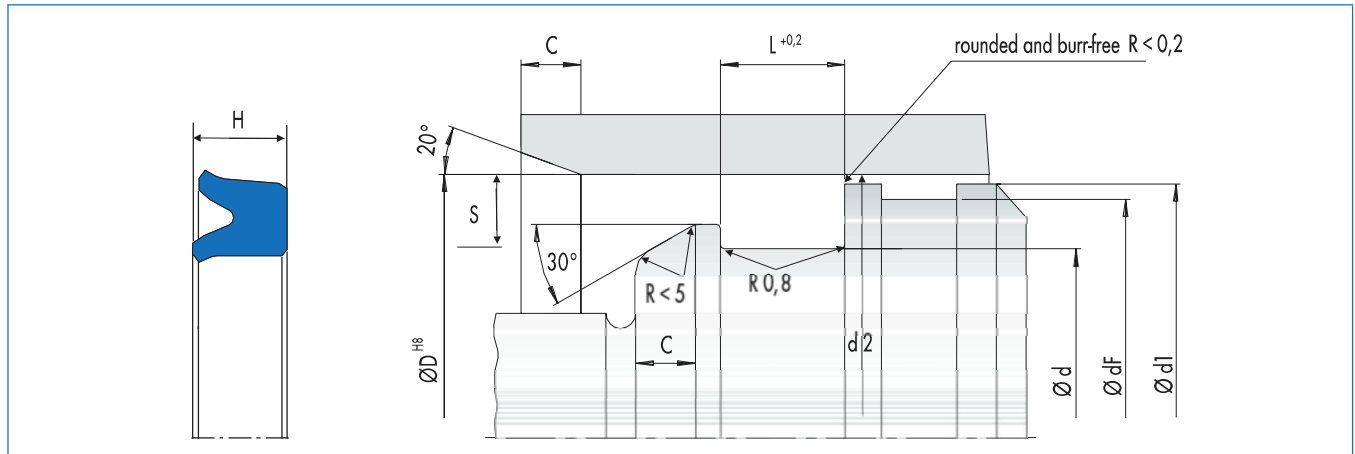
D	32 MPa				40 MPa				
	Ø D	S	D	d	X2	S	D	d	X2
... 250	15	H8	h11	0,45	15	H8	h11	0,40	
... 500	15	H8	h11	0,45	15	H7	h11	0,40	
... 560	15	H7	h11	0,45	15	H7	h11	0,40	
... 450	20	H8	h11	0,47	20	H8	h11	0,42	
... 600	20	H7	h11	0,47	20	H7	h11	0,42	
... 750	20	H7	h11	0,47	20	H7	h11	0,42	
... 1000	25	H7	h11	0,47	25	H7	h11	0,42	
... 1400	25	H7	h11	0,47	25	H7	h11	0,42	

* Profiles in accordance with "Housing recommendations for new designs".

Fitting & installation

An axially accessible housing is necessary for articles with the "M" marking.
For different housings, e. g. in old plants, please consult our advisory service.

Article list



D	d	H	L	Profile	C	Material	Article No.	
160	130	17,2	19	15	9	95 AU V142	24370477	D
180	150	17,2	19	15	9	95 AU V142	24370478	D
210	180	20,9	23	15	9	95 AU V142	24370479	D
220	190	20,9	23	15	9	95 AU V142	24368168	D
230	200	20,9	23	15	9	95 AU V142	24368169	D
240	210	20,9	23	15	9	95 AU V142	24368170	D
250	220	20,9	23	15	9	95 AU V142	24368171	D
280	250	20,9	23	15	9	95 AU V142	24367971	D
300	270	20,9	23	15	9	95 AU V142	24368173	D
310	280	20,9	23	15	9	95 AU V142	24368174	D
320	280	29,1	32	20	11	95 AU V142	24373867	D
330	300	20,9	23	15	9	95 AU V142	24368175	D
340	310	20,9	23	15	9	95 AU V142	529099	D
350	320	20,9	23	15	9	95 AU V142	24370480	D
360	320	29,1	32	20	11	95 AU V142	24368208	D
360	330	23,7	26	15	9	95 AU V142	24370481	D
380	350	23,7	26	15	9	95 AU V142	24363187	D
400	360	29,1	32	20	11	95 AU V142	24368177	D
400	370	23,7	26	15	9	95 AU V142	24362505	D
420	390	23,7	26	15	9	95 AU V142	24368178	D
430	400	23,7	26	15	9	95 AU V142	24368179	D
450	420	23,7	26	15	9	95 AU V142	24368180	D
460	420	29,1	32	20	11	95 AU V142	24371311	D
470	440	23,7	26	15	9	95 AU V142	24368182	D
480	450	23,7	26	15	9	95 AU V142	24368183	D
500	470	23,7	26	15	9	95 AU V142	24368184	D
560	530	23,7	26	15	9	93 AU V168	24370483	D
600	560	23,7	26	20	11	93 AU V168	24368186	D
680	640	29,1	32	20	11	93 AU V168	24368188	D
710	670	23,7	26	20	11	93 AU V168	24377403	D
800	750	30,5	33,5	25	13	93 AU V168	24372489	D
950	900	30,9	34	25	13	93 AU V168	24368191	D
1160	1110	31,9	35	25	13	93 AU V168	24359833	D

B Available from stock D On request: Tool is available, delivery at short notice

