

Merkel Guide Ring Guivex SBK

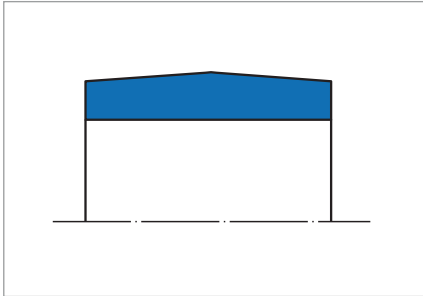


Fig. 1 Merkel Guide Ring Guivex SBK

Product description

Profiled Merkel Guide Ring Guivex SBK made from fabric-base laminate. Patented product design (patent-no.: PCT/EP95/03874).

Product advantages

Merkel SBK guide rings offer clear advantages over conventional guide strips/rings, designed for standardised housings according to ISO 10766 amongst others

- Interchangeable to existing operating environments of the types SB and SF
- High radial load
- Very good utilisation of the guide length through even distribution of stress
- Improved drawing-in of lubricating medium through optimised distribution of stress in the contact zone between guide ring and counter-acting surface
- Reduced stick-slip tendency
- Outstanding running behaviour with short guide distances (no clamping).

Application

Long stroke cylinders (piston rod bowing under load), short guide distances (lateral buckling of the piston rod), short stroke (inadequate lubrication) friction-optimised sealing systems, additional item for metal guides, mobile hydraulics, heavy-duty hydraulics.

Material

Ø range ≤300

Material	Code	Colour
Fabric-base laminate	HGW HG517	Dark grey
Fabric-base laminate	HGW HG650	Red

Ø range >300

Material	Code	Colour
Fabric-base laminate	HGW HG650	Red

Operating conditions

Material	HGW HG517/HGW HG650
Temperature range in °C	
Hydraulic oils HL, HLP	-40 ... +120
HFA fluids	+5 ... +60
HFB fluids	+5 ... +60
HFC fluids	-40 ... +60
HFD fluids	-40 ... +120
Water	+5 ... +60
HETG (rapeseed oil)	-40 ... +80
HEES (synthetic ester)	-40 ... +100
HEPG (glycol)	-40 ... +80
Mineral greases	-40 ... +120

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

The long-term behaviour of the sealing component as well as the security against early failures are primarily determined by the quality of the counter-acting surface. This means that the surface must be precisely described and evaluated. Based on current knowledge we recommend supplementing the above definition of the surface quality of the

sliding surface with the quantities in the following table. The previous general description of the material component is significantly improved with the new quantities from the material component, particularly with reference to the abrasiveness of the surface.
→ Technical Manual.

Design notes

The diameter D1 given in the table of dimensions is to be considered exclusively in relation to the guide bush. The corresponding diameter for the adjacent seal housing is to be matched to the sealing component.

Sliding surfaces

Characteristic value	Limit position
R_a	>0,05 mm ... 0,30 mm
R_{max}	<2,50 mm
R_{pkx}	<0,50 mm
R_{pk}	<0,50 mm
R_k	>0,25 mm ... 0,70 mm
R_{vk}	>0,20 mm ... 0,65 mm
R_{vkk}	>0,20 mm ... 2,00 mm

The limit values listed in the table are not currently applicable for ceramic or partial ceramic counter-surfaces.

Tolerance

Production tolerance profile thickness S
-0,01 ... -0,06

Surface load

The value for the specific compression per unit area is dependent on the operating temperature and the size of the elastic deformation (deflection) of the guide element. The maximum possible deflection is limited in a sealing system by the smallest gap dimension behind the primary seal. → Technical Manual.

Deflection

- $e1 = 0,10$ for $s = 2,5$
- $e1 = 0,15$ for $s = 4,0$
- $e2 = 0,15$ for $s = 2,5$
- $e2 = 0,20$ for $s = 4,0$

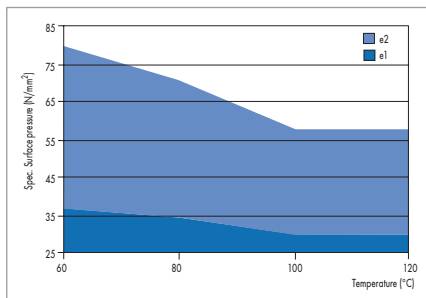
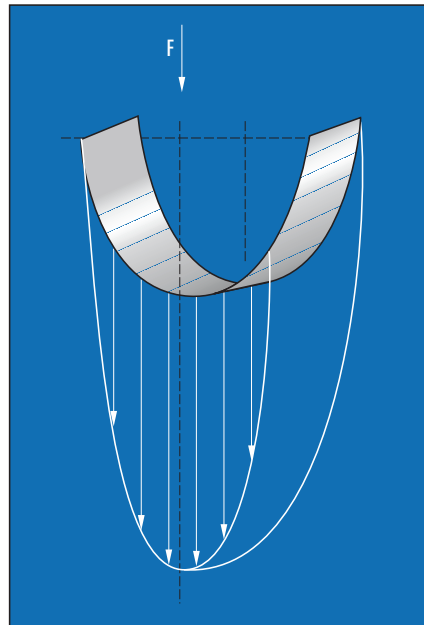


Fig. 2 Special surface pressure for parallel load

Radial load

The pressure distribution on the guide rings is non-linear. The non-linear pressure curve over the contact range was taken into account when calculating the permissible specific surface pressure. The required guide width can be calculated

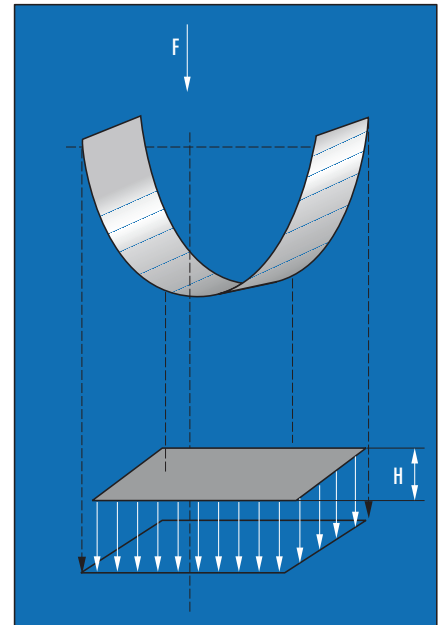


$$F = P \times A$$

$$H = F / (d \times P)$$

H = guide strip width [mm]
 F = radial load [N]
 A = projected area [mm²]

using the following formulas. Taking the increased service life into consideration, a reduction of the load by selection of a wide guide can make sense in individual cases.



$$P = \text{perm. compression per unit area [N/mm}^2]$$

$$d = \text{rod diameter with rod guidance; piston diameter with piston guidance [mm].}$$

Mode of operation

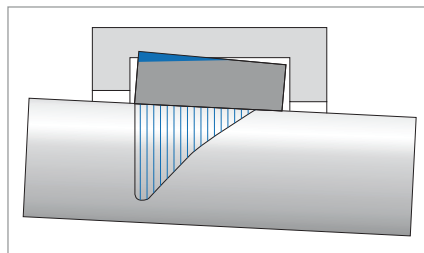


Fig. 3 Rectangular guide ring: stress peaks in the edge area

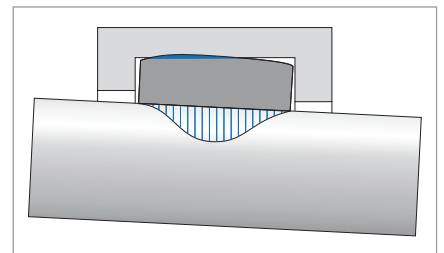
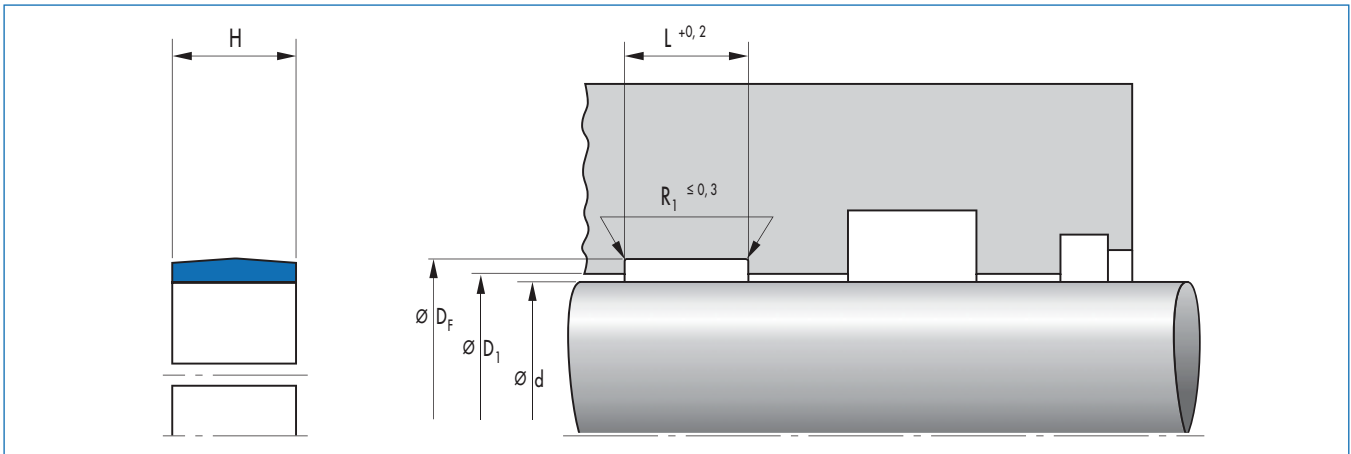


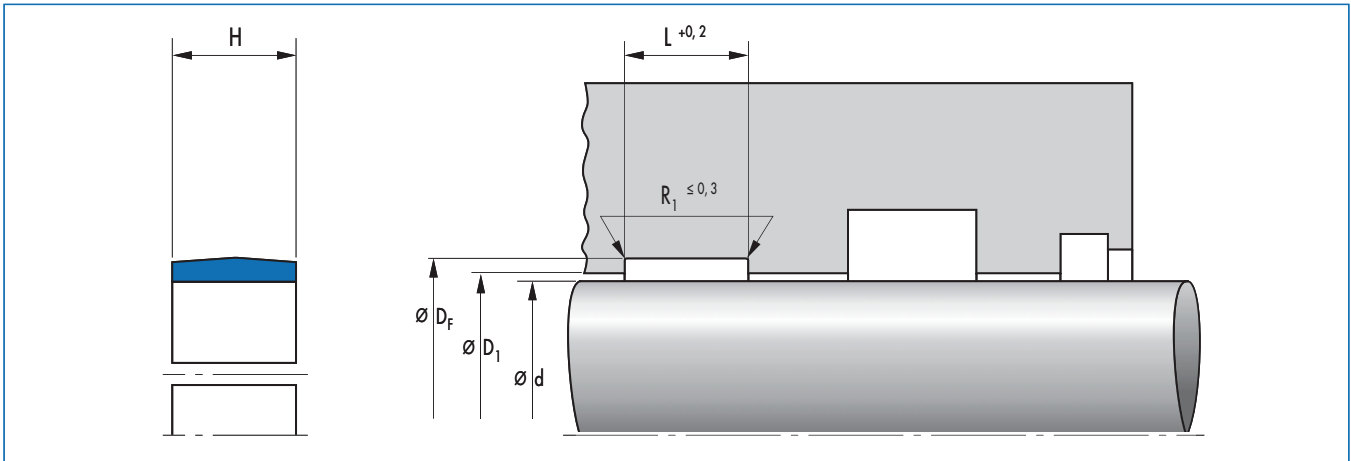
Fig. 4 Merkel Guide Ring Guivex SBK: even distribution of stress

Article list



d	D _F	D ₁	H	L	Profile	Material	Article No.	
25	30	30	9,5	9,7	2,5	HGW HG517	533551	○
28	31	29	5,5	5,6	1,5	HGW HG517	24375389	○
40	45	41,6	9,6	9,7	2,5	HGW HG517	24370469	●
45	50	46,6	9,6	9,7	2,5	HGW HG517	24375662	●
45	50	46,6	14,8	15	2,5	HGW HG517	24380507	○
50	55	51,6	9,6	9,7	2,5	HGW HG517	24367539	●
55	60	56,6	9,6	9,7	2,5	HGW HG517	524832	●
55	60	56,6	14,8	15	2,5	HGW HG517	24380889	○
60	65	61,6	14,8	15	2,5	HGW HG517	24375946	●
63	68	68	9,5	9,7	2,5	HGW HG517	49000672	○
65	70	66,6	9,5	9,7	2,5	HGW HG517	24367540	○
65	70	66,6	14,8	15	2,5	HGW HG517	24380160	○
70	75	71,6	9,6	9,7	2,5	HGW HG517	24367541	●
75	80	76,6	9,5	9,7	2,5	HGW HG517	528479	○
75	80	76,6	14,8	15	2,5	HGW HG517	529802	○
75	83	83	14,8	15	4	HGW HG517	49004925	○
78	83	83	19,8	20	2,5	HGW HG517	49002107	○
80	85	81,6	9,5	9,7	2,5	HGW HG517	24380101	●
80	85	81,6	14,8	15	2,5	HGW HG517	24370470	●
80	85	81,6	24,5	25	2,5	HGW HG517	24373284	●
80	88	88	14,8	15	4	HGW HG517	49004810	○
85	90	86,6	14,8	15	2,5	HGW HG517	24380161	○
90	95	91,6	14,8	15	2,5	HGW HG517	24379371	●
90	95	91,6	24,5	25	2,5	HGW HG517	528119	○
90	95	91,6	34,5	35	2,5	HGW HG517	24380556	○
90	98	92,5	19,8	20	4	HGW HG517	24359046	○
93	98	98	19,8	20	2,5	HGW HG517	49002108	○
95	100	96,6	14,8	15	2,5	HGW HG517	24379355	○
100	105	101,6	14,8	15	2,5	HGW HG517	24380162	●
100	105	101,6	19,8	20	2,5	HGW HG517	24379370	●
100	108	108	24,5	25	4	HGW HG517	49005018	○
110	113,2	111,6	14,5	15	1,6	HGW HG517	24358241	●
110	115	111,6	19,8	20	2,5	HGW HG517	24379369	○
110	115	111,6	24,5	25	2,5	HGW HG517	24377187	●
110	118	112,5	14,8	15	4	HGW HG517	24358242	○
112	117	117	19,8	20	2,5	HGW HG517	49000534	○

● Available from stock ○ On request: Tool is available, delivery at short notice

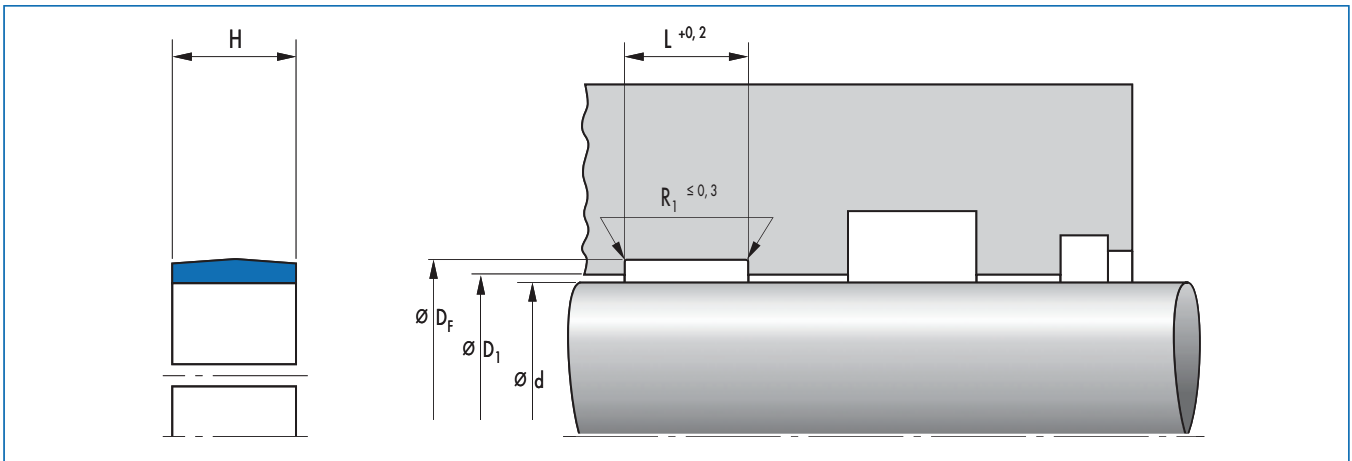


d	D _F	D ₁	H	L	Profile	Material	Article No.	
120	125	121,6	14,8	15	2,5	HGW HG517	525470	○
120	125	121,6	19,8	20	2,5	HGW HG517	529483	○
120	125	121,6	34,5	35	2,5	HGW HG517	24380557	○
125	130	126,6	14,8	15	2,5	HGW HG517	24380163	○
125	130	126,6	24,5	25	2,5	HGW HG517	24379074	○
140	145	141,6	24,5	25	2,5	HGW HG517	528820	●
140	148	142,5	39,5	40	4	HGW HG517	528995	○
145	150	146,6	14,8	15	2,5	HGW HG517	24380690	●
155	160	156,6	14,8	15	2,5	HGW HG517	24380691	●
160	165	161,6	14,8	15	2,5	HGW HG517	24380782	○
160	165	161,6	24,5	25	2,5	HGW HG517	24375641	●
160	168	162,5	39,5	40	4	HGW HG517	24370365	●
170	175	171,6	14,8	15	2,5	HGW HG517	24380692	●
170	175	171,6	24,5	25	2,5	HGW HG517	524993	○
170	178	172,5	24,5	25	4	HGW HG517	530870	○
170	178	172,5	39,5	40	4	HGW HG517	24378034	○
180	185	181,6	14,8	15	2,5	HGW HG517	24380693	●
180	185	181,6	24,5	25	2,5	HGW HG517	24379035	○
180	185	181,6	29,5	30	2,5	HGW HG517	526594	○
180	185	181,6	39,5	40	2,5	HGW HG517	530602	○
180	188	182,5	39,5	40	4	HGW HG517	24378035	○
190	195	191,6	14,8	15	2,5	HGW HG517	24380270	○
190	198	198	34,5	35	4	HGW HG517	49002019	○
200	205	201,6	14,8	15	2,5	HGW HG517	24380775	○
200	205	201,6	24,5	25	2,5	HGW HG517	24379075	○
200	205	201,6	34,5	35	2,5	HGW HG517	24378003	○
200	208	202,5	39,5	40	4	HGW HG517	24378036	○
210	215	211,6	14,8	15	2,5	HGW HG517	24380694	●
210	218	212,5	24,5	25	4	HGW HG517	530265	○
220	225	221,6	14,8	15	2,5	HGW HG517	24372435	○
220	225	221,6	24,5	25	2,5	HGW HG517	24379036	○
220	228	222,5	39,5	40	4	HGW HG517	24378037	○
230	235	231,6	14,8	15	2,5	HGW HG517	24380269	○
230	235	231,6	24,5	25	2,5	HGW HG517	24379253	○
240	245	241,6	14,8	15	2,5	HGW HG517	24380255	○
240	245	241,6	24,5	25	2,5	HGW HG517	530267	○
240	248	242,5	39,5	40	4	HGW HG517	24378038	○

● Available from stock ○ On request: Tool is available, delivery at short notice

d	D _F	D ₁	H	L	Profile	Material	Article No.	
250	255	251,6	14,8	15	2,5	HGW HG517	24380273	○
250	255	251,6	24,5	25	2,5	HGW HG517	24379037	○
250	256	251,6	24,5	25	3	HGW HG517	49002878	○
255	260	260	24,5	25	2,5	HGW HG517	49002907	○
260	268	262,5	39,5	40	4	HGW HG517	24378039	○
260	268	268	24,5	25	4	HGW HG517	49003297	○
270	275	271,6	24,5	25	2,5	HGW HG517	24380271	●
280	285	281,6	14,8	15	2,5	HGW HG517	24380777	○
280	285	281,6	24,5	25	2,5	HGW HG517	24379038	●
280	288	282,5	34,5	35	4	HGW HG517	24379347	○
280	288	282,5	39,5	40	4	HGW HG517	24378040	○
280	288	288	14,8	15	4	HGW HG517	24379158	○
290	298	292,5	24,5	25	4	HGW HG517	24379491	○
292	297	293,6	24,5	25	2,5	HGW HG517	528857	○
300	308	302,5	24,5	25	4	HGW HG600	24380482	●
300	308	302,5	39,5	40	4	HGW HG600	24379155	●
320	325	321,6	14,8	15	2,5	HGW HG600	24380778	○
320	325	321,6	24,5	25	2,5	HGW HG600	24380272	●
320	328	322,5	24,5	25	4	HGW HG600	24379076	○
320	328	322,5	29,5	30	4	HGW HG600	528486	○
320	328	328	39,5	40	4	HGW HG600	532132	○
330	338	332,5	24,5	25	4	HGW HG600	24379040	○
350	355	351,6	14,8	15	2,5	HGW HG600	24380779	○
350	358	352,5	24,5	25	4	HGW HG600	24379041	○
360	365	361,6	24,5	25	2,5	HGW HG600	24380275	○
360	368	362,5	24,5	25	4	HGW HG600	24375318	●
360	368	368	39,5	40	4	HGW HG600	531873	○
370	378	372,5	24,5	25	4	HGW HG600	24379042	○
370	378	378	34,5	35	4	HGW HG600	49000975	○
380	385	385	24,5	25	2,5	HGW HG600	531516	○
380	388	382,5	24,5	25	4	HGW HG600	24379138	○
380	388	382,5	39,5	40	4	HGW HG600	24379245	●
390	395	391,6	24,5	25	2,5	HGW HG600	24380276	○
400	405	401,6	14,8	15	2,5	HGW HG600	24380781	○
400	405	405	24,5	25	2,5	HGW HG600	49012525	○
400	408	402,5	24,5	25	4	HGW HG600	24375319	●
400	408	402,5	39,5	40	4	HGW HG600	526027	○
420	425	421,5	24,5	25	2,5	HGW HG600	527921	●
420	428	422,5	39,5	40	4	HGW HG600	24379322	○
440	448	442,5	19,8	20	4	HGW HG600	24378391	○
440	448	442,5	24,5	25	4	HGW HG600	24375320	●
440	448	442,5	39,5	40	4	HGW HG600	526028	●
445	453	453	39,5	40	4	HGW HG600	49004008	○
450	458	452,5	24,5	25	4	HGW HG600	24380453	○
460	465	465	24,5	25	2,5	HGW HG600	49001818	○
460	468	462,5	24,5	25	4	HGW HG600	24375321	●
500	508	502,5	19,8	20	4	HGW HG600	24378392	○
500	508	502,5	24,5	25	4	HGW HG600	24375322	●
500	508	502,5	39,5	40	4	HGW HG600	24379324	○
510	518	512,5	24,5	25	4	HGW HG600	530266	○

● Available from stock ○ On request: Tool is available, delivery at short notice



d	DF	D1	H	L	Profile	Material	Article No.	
530	538	532,5	24,5	25	4	HGW HG600	24375323	●
530	538	538	39,5	40	4	HGW HG600	49004922	○
540	548	548	39,5	40	4	HGW HG600	49018518	○
550	558	558	24,5	25	4	HGW HG600	49016779	○
550	558	558	39,5	40	4	HGW HG600	49005155	○
560	568	562,5	24,5	25	4	HGW HG600	24375324	●
600	605	601,5	24,5	25	2,5	HGW HG600	528326	●
600	608	602,5	24,5	25	4	HGW HG600	24375325	●
600	608	608	39,5	40	4	HGW HG600	49003964	○
630	638	632,5	24,5	15	4	HGW HG600	524927	●
650	658	652,5	34,5	35	4	HGW HG600	24378494	○
700	708	702,5	39,5	40	4	HGW HG600	529519	●
710	718	718	24,5	25	4	HGW HG600	49017422	○
710	718	718	39,5	40	4	HGW HG600	49012632	○
730	738	738	39,5	40	4	HGW HG600	49015646	○
740	748	748	24,5	25	4	HGW HG600	49000239	○
760	768	762,5	24,5	25	4	HGW HG600	24380545	○
790	798	798	19,8	20	4	HGW HG600	531677	○
790	798	798	34,5	35	4	HGW HG600	49003032	○
790	798	798	39,5	40	4	HGW HG600	49015647	○
800	808	802,5	24,5	25	4	HGW HG600	526190	●
820	828	822,5	24,5	25	4	HGW HG600	528715	●
820	828	822,5	39,5	40	4	HGW HG600	528716	●
890	898	898	19,8	20	4	HGW HG600	49003043	○
890	898	898	34,5	35	4	HGW HG600	49020525	○
970	978	972,5	24,5	25	4	HGW HG600	24376186	○
990	996,3	991,6	29,5	30	3,15	HGW HG600	49004975	○
1000	1008	1008	24,5	25	4	HGW HG600	49017423	○
1100	1108	1108	24,5	25	4	HGW HG600	49017424	○
1100	1108	1108	34,5	35	4	HGW HG600	533289	○
1130	1138	1132,5	24,5	25	4	HGW HG600	530019	●
1145	1153	1153	39,5	40	4	HGW HG600	49002141	○
1340	1348	1342,5	39,5	40	4	HGW HG600	531144	○
1350	1358	1358	39,5	40	4	HGW HG600	531904	○
1625,6	1633,6	1628,1	39,5	40	4	HGW HG600	528780	○
1626	1634	1628,5	39,5	40	4	HGW HG600	527116	○

● Available from stock ○ On request: Tool is available, delivery at short notice