

Vertical Bearings Type WV

Diameter Range 125...710 mm

Vertical bearings type WV are self-lubricated tilting pad bearings with or without thrust capability. They are applied in vertical hydrounits such as generators, turbines or pumps.

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Applications

Vertical bearings type WV are successfully applied in vertical hydrounits such as:

- Generators
- Turbines
- Pumps

Materials

Standard material for the radial tilting pads is C10/C15 steel, lined with a babbit layer of GTW 89. Axial tilting pads are steel S235 lined with GTW 89. Bearing bodies are cast from ductile graphite iron EN-GJS-400-15.

Machine Interface

Vertical bearings type WV are fixed to the machine frame from above or below. In case of large shaft flanges, it is possible to split the bearing bodies to enable mounting. For non-locating bearings, it is possible to implement the runner as part of the shaft.

Seals

In bearings of type WV, the seals are implemented as floating rings to allow for shaft movement and narrow sealing gaps.

Oil Pot

In standard design, oil pot, oil pot wall, standpipe and oil pot cover are not scope of GTW. Sketches of the same can be supplied. Oil pots and standpipes are available on special request.

Special Designs

Modifications in size, design and materials to the bearings of the WV series are available to optimally suit your machine design and application. The majority of WV bearings is specially adapted to the customers' specifications.

Oil Supply

Vertical bearings type WV are self-lubricated bearings. Lubrication is achieved via an internal centrifugal pump.

Heat Dissipation

The friction heat is dissipated by convection via an oil cooler inside the bearing. Bearings without cooler equipped for external oil cooling are available on request.

Instrumentation

Provision for temperature measurements is made in the radial and axial tilting pads. Additional temperature measurement in the oil pot is recommended. Temperature readings may help in determining bearing failure when evaluating transient temperature changes. Vibration monitoring devices for both shaft and bearing are also available.

Bearing Selection

A bearing selection tool based on DIN 31653 and DIN 31657 for bearing pre-selection is available on request. Specified load cases will be calculated by GTW with specialized calculation software able to model bearing behaviour more precisely. Design of cooler and pump are part of this calculation process.

Designation of Bearing Types

1.) **Manufacturer**

W Gleitlagertechnik Weißbacher GmbH

2.) **Type**

V Vertical bearing

3.) **Load Capability**

B Thrust and guide bearing for large thrust loads with thrust part for temporary upwards load condition

C Thrust and guide bearing for large thrust loads without thrust part for temporary upwards load condition

D Thrust and guide bearing with thrust part for temporary upwards load condition

E Thrust and guide bearing without thrust part for temporary upwards load condition

F Guide bearing

4.) **Active Parts**

K Radial and axial tilting pads

5.) **Mounting**

O Mounted from below

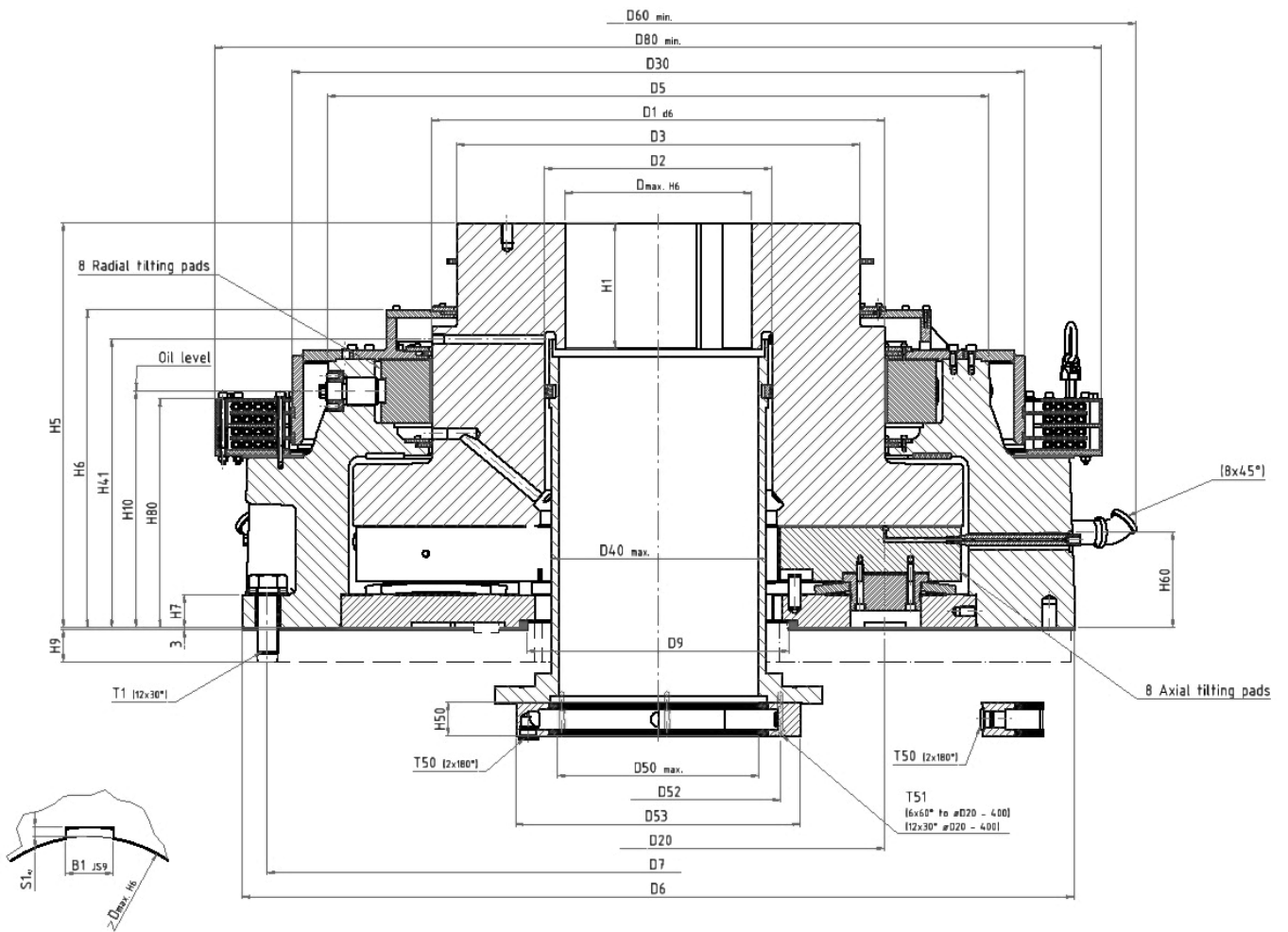
U Mounted from above

6.) **Size**

Example **Vertical thrust and guide bearing size 15 without thrust part for temporary upwards load condition, mounted from above.**

Vertical bearing WVEKU 15

Dimensions of Bearings Type WVBKU and WVCKU 8 Radial Tilting Pads, 8 Axial Tilting Pads



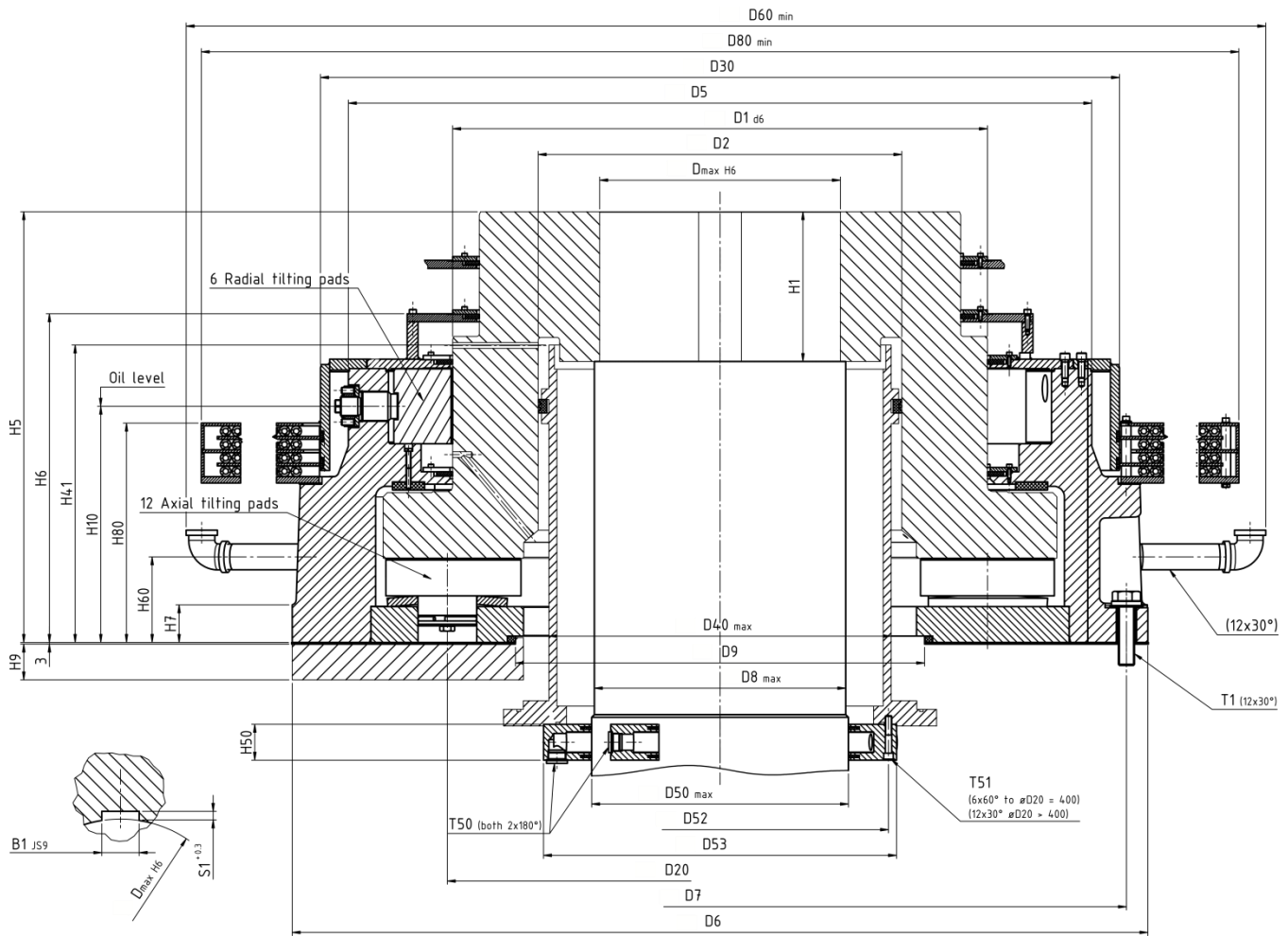
Size	D H6 max.	D1 d6	D2	D5	D6	D7	D9	D20	D30	D40 max.	D50 max.	D52	D53	D60 min.	D80 min.	B1 JS9
16	280	710	360	1045	1280	1200	430	720	1230	330	315	430	455	1660	1480	50
19	315	800	420	1165	1400	1310	490	800	1340	380	355	465	490	1780	1540	56
20	355	900	450	1310	1650	1550	520	900	1455	425	400	540	565	2030	1760	63
21	400	1000	500	1450	1750	1800	580	1000	1640	475	450	605	635	2280	1980	71
22	450	1120	560	1560	2000	1900	640	1120	1705	520	485	640	665	2410	2160	80

H1	H5	H6	H7	H9	H10	H41	H50	H60	H80	S1 +0.3	T1	T50	T51	Mass [kg]	
														Bearing	Runner
200	685	530	61	50	385	475	57	170	382	11.3	16 x M30	4 x G1	6 x M10	2450	1380
225	735	580	68	60	435	525	57	193	411	12.4	16 x M36	4 x G1	6 x M10	3000	1830
250	805	630	68	65	470	575	67	203	455	12.4	16 x M42	4 x G1	6 x M10	4400	2600
280	905	700	72	65	525	650	67	228	505	13.6	16 x M48	4 x G1	6 x M10	5300	3700
315	950	740	72	65	570	700	67	249	520	13.6	16 x M48	4 x G1	6 x M10	6210	5270

All dimensions in mm, dimension H may vary due to increased radial load capability

We reserve the right to introduce modifications

Dimensions of Bearings Type WVDKU and WVEKU 6 Radial Tilting Pads, 12 Axial Tilting Pads



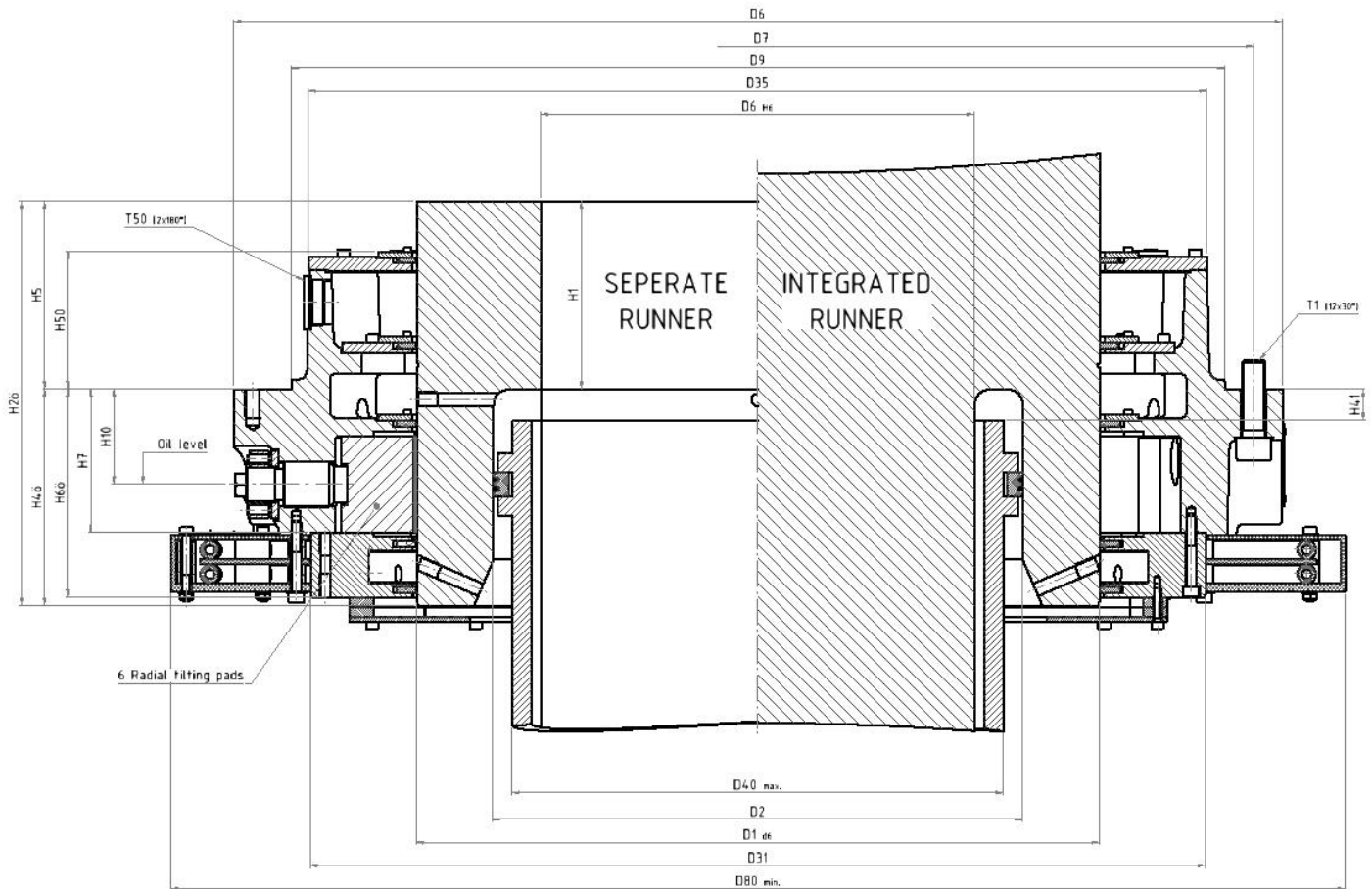
Size	D H6 max.	D1 d6	D2	D5	D6	D7	D8 max.	D9	D20	D30	D40 max.	D50 max.	D52	D53	D60 min.	D80 min.	B1 JS9
06	125	250	178	394	465	435	135	204	260	490	155	140	225	240	740	690	16
07	140	280	196	424	495	465	152	220	286	520	172	160	245	260	770	720	20
08	160	300	216	440	540	495	172	240	305	550	192	180	265	280	810	760	20
09	180	335	240	485	585	540	194	260	335	590	216	200	285	300	850	800	22
10	200	355	260	535	655	600	214	284	360	640	238	225	330	350	915	840	25
11	225	400	290	590	715	660	240	325	405	697	264	250	360	380	970	900	28
12	250	450	320	660	785	730	270	364	455	775	292	280	390	410	1090	1000	32
13	280	500	362	730	880	810	300	410	510	845	332	300	430	455	1080	1050	36
14	315	560	400	830	980	910	335	455	570	950	364	335	465	490	1280	1200	40
15	355	630	450	920	1070	1000	410	500	640	1045	410	375	505	530	1370	1295	45
16	400	710	500	1020	1200	1120	425	560	720	1154	465	425	565	590	1555	1450	50
19	450	800	570	1120	1300	1220	470	634	800	1265	530	470	630	660	1700	1560	56
20	500	900	624	1275	1455	1375	530	695	900	1420	584	530	705	735	1850	1715	63
21	560	1000	680	1400	1600	1520	580	765	1000	1494	640	600	775	805	2056	1857	70
22	630	1120	776	1560	1780	1680	670	870	1120	1710	734	670	865	895	2200	2020	80

H1	H5	H6	H7	H9	H10	H41	H50	H60	H80	S1 +0.3	T1	T50	T51	Mass [kg]	
														Bearing	Runner
75	265	204	52	20	140	186	47	40	128	4.3	M10	G $\frac{3}{8}$	M6	135	65
80	280	216	52	25	147	196	47	42	128	4.9	M10	G $\frac{3}{8}$	M6	160	80
85	300	231	62	30	160	210	47	46	148	4.9	M16	G $\frac{3}{8}$	M6	200	95
95	320	246	62	35	168	220	47	50	148	5.4	M16	G $\frac{3}{8}$	M6	230	125
100	360	277	35	40	190	254	47	66	180	5.4	M20	G $\frac{1}{2}$	M8	300	140
115	385	296	35	40	198	263	57	66	180	6.4	M20	G $\frac{1}{2}$	M8	350	200
130	420	327	35	40	215	283	57	70	200	7.4	M20	G $\frac{1}{2}$	M8	440	290
140	460	353	45	47	238	310	57	81	225	8.4	M24	G $\frac{3}{4}$	M10	560	370
160	525	399	55	47	275	354	57	103	255	9.4	M24	G $\frac{3}{4}$	M10	810	540
180	580	445	55	47	305	390	57	107	280	10.4	M24	G $\frac{3}{4}$	M10	920	750
200	634	463	55	47	335	423	67	115	306	11.4	M30	G1	M10	1300	1080
225	662	510	65	57	365	465	67	129	342	12.4	M30	G1 $\frac{1}{4}$	M10	1980	1380
250	730	562	65	57	402	512	77	136	360	12.4	M30	G1 $\frac{1}{4}$	M12	2620	2010
280	805	616	65	67	440	556	77	136	412	14.4	M30	G1 $\frac{1}{4}$	M12	3600	2800
320	900	672	75	67	486	617	87	159	471	15.4	M36	G1 $\frac{1}{2}$	M16	4400	3850

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Dimensions of Bearings Type WVFKO 6 Radial Tilting Pads



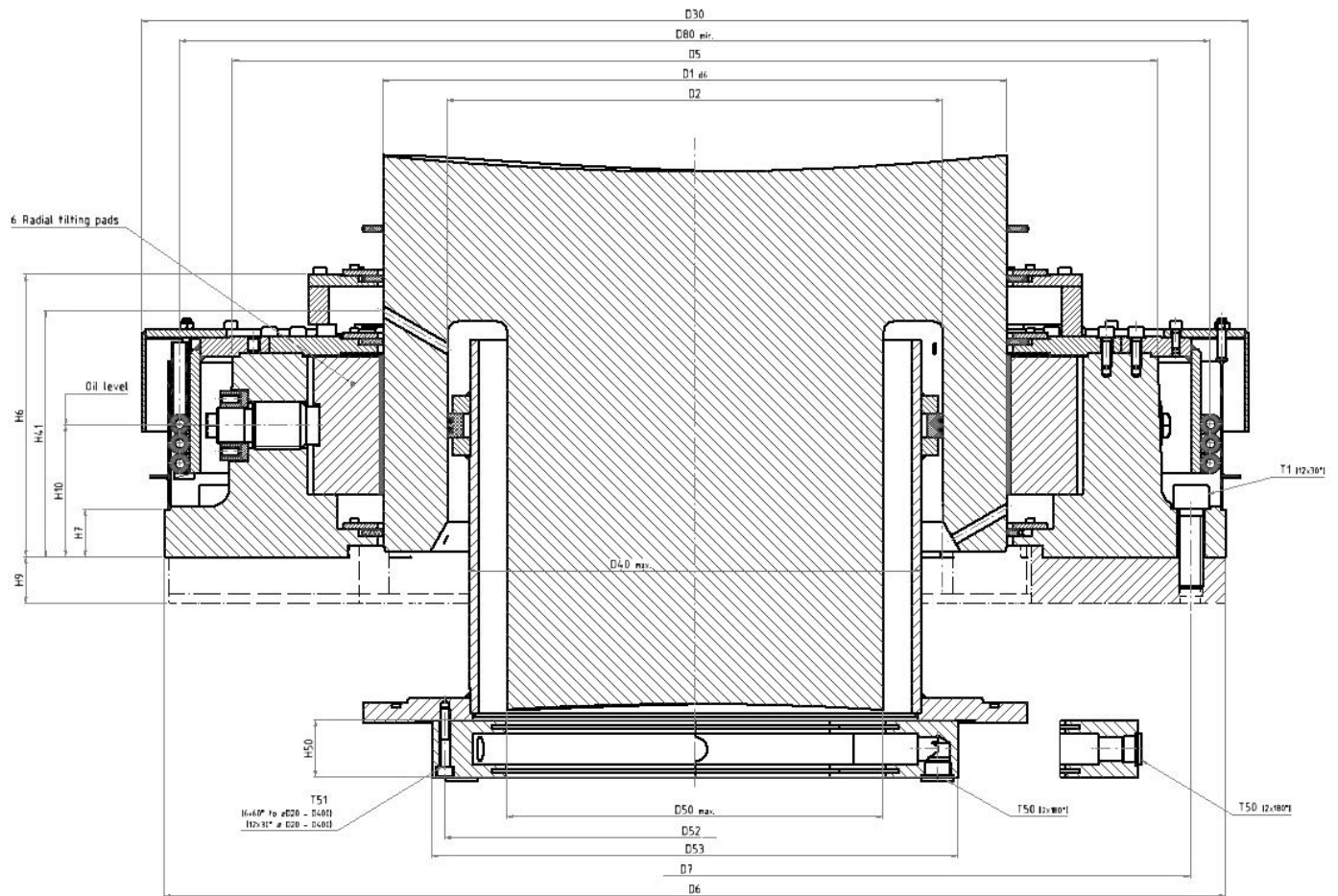
Size	D H6 max.	D1 d6	D2 max.	D6	D7	D9	D31	D40 max.	D35	D80 min.	H1	H26	H46	H5	H66	H7	H10
06	140	250	200	460	430	400	350	190	380	625	75	220	145	75	137	77	57
07	160	280	222	490	460	430	386	212	410	655	80	230	150	80	142	82	60
08	180	300	242	540	505	475	416	232	455	705	95	255	160	95	151	91	66
09	200	335	263	575	540	510	455	252	490	740	105	270	165	105	157	97	69
10	225	355	287	600	565	530	485	277	510	765	115	290	175	115	167	107	73
11	250	400	320	660	625	600	545	308	565	840	125	315	185	130	176	109	78
12	280	450	360	740	700	650	615	346	615	910	140	330	195	135	186	119	83
13	315	500	395	800	750	700	665	382	665	960	160	350	195	155	186	119	83
14	355	560	450	930	880	820	756	430	765	1070	180	390	205	185	196	128	88
15	400	630	500	1000	950	890	840	480	835	1175	200	415	215	200	205	138	93
16	450	710	550	1090	1030	970	930	525	935	1300	225	450	225	225	215	148	98
19	500	800	620	1220	1160	1100	1050	605	1060	1400	250	507.5	236.5	248.5	242	165	110
20	560	900	700	1350	1290	1220	1170	680	1120	1500	280	520	271	249	262	185	122
21	630	1000	790	1500	1420	1320	1300	760	1280	1670	315	610	310	300	297	213	140
22	710	1120	890	1680	1600	1480	1460	850	1440	1880	355	680	350	340	335	240	158

H41	H50	T1	T50	Mass [kg]
6	55	M12	G $\frac{1}{2}$	90
6	55	M12	G $\frac{1}{2}$	105
6	65	M16	G $\frac{3}{4}$	130
6	65	M16	G $\frac{3}{4}$	150
6	85	M16	G $\frac{3}{4}$	180
3	85	M16	G1	200
15	85	M20	G1	270
15	120	M20	G1	330
7	120	M20	G1 $\frac{1}{4}$	450
12	145	M24	G1 $\frac{1}{4}$	500
12	145	M24	G1 $\frac{1}{2}$	600
9.5	145	M24	G1 $\frac{1}{2}$	800
6	150	M30	G1 $\frac{1}{2}$	1200
7	145	M30	G1 $\frac{1}{2}$	1480
8	150	M30	G1 $\frac{1}{2}$	2000

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Dimensions of Bearings Type WVFKU 6 Radial Tilting Pads



Size	D H6 max.	D1 d6	D2 max.	D5	D6	D7	D30	D40 max.	D50	D52	D53	D80 min.	H6	H7	H9	H10	H41	H50
06	140	250	200	400	465	435	465	190	140	225	240	420	110	20	20	60	95	47
07	160	280	222	435	495	465	520	212	160	245	260	470	125	25	25	65	105	47
08	180	300	242	455	540	495	590	232	180	265	280	525	140	30	30	70	115	47
09	200	335	263	495	585	540	660	252	200	285	300	590	155	35	35	75	130	47
10	225	355	287	550	655	600	710	277	225	330	350	630	180	35	40	85	160	47
11	250	400	320	610	715	660	765	308	250	360	380	680	210	40	40	100	195	57
12	280	450	360	680	785	730	860	346	280	390	410	765	230	40	40	110	210	57
13	315	500	395	750	880	810	920	382	315	430	455	850	250	45	47	120	225	57
14	355	560	450	855	980	910	990	430	355	465	490	940	265	50	47	130	235	57
15	400	630	500	935	1070	1000	1115	480	400	505	530	1040	285	50	47	135	245	57
16	450	710	550	1040	1200	1120	1250	525	450	565	590	1170	320	50	47	145	265	67
19	500	800	620	1140	1300	1220	1400	595	500	630	660	1320	355	60	57	160	300	67
20	560	900	700	1300	1455	1375	1590	680	560	705	735	1480	400	65	57	180	330	77
21	630	1000	790	1400	1600	1520	1780	760	600	775	805	1660	450	65	67	200	370	77
22	710	1120	890	1560	1780	1680	2000	850	670	865	895	1860	500	75	67	225	420	87

T1	T50	T51	Mass [kg]
12 x M12	4 x G $\frac{3}{8}$	6 x M6	95
12 x M12	4 x G $\frac{3}{8}$	6 x M6	110
12 x M16	4 x G $\frac{3}{8}$	6 x M6	140
12 x M16	4 x G $\frac{1}{2}$	6 x M8	160
12 x M16	4 x G $\frac{1}{2}$	6 x M8	190
12 x M16	4 x G $\frac{3}{4}$	6 x M8	210
12 x M20	4 x G $\frac{3}{4}$	6 x M8	285
12 x M24	4 x G $\frac{3}{4}$	6 x M8	350
12 x M24	4 x G1	12 x M10	475
12 x M24	4 x G1	12 x M10	530
12 x M30	4 x G1	12 x M10	630
12 x M30	4 x G1 $\frac{1}{2}$	12 x M12	840
12 x M30	4 x G1 $\frac{1}{2}$	12 x M12	1260
12 x M30	G1 $\frac{1}{4}$	M12	1800
12 x M30	G1 $\frac{1}{2}$	M16	2500

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