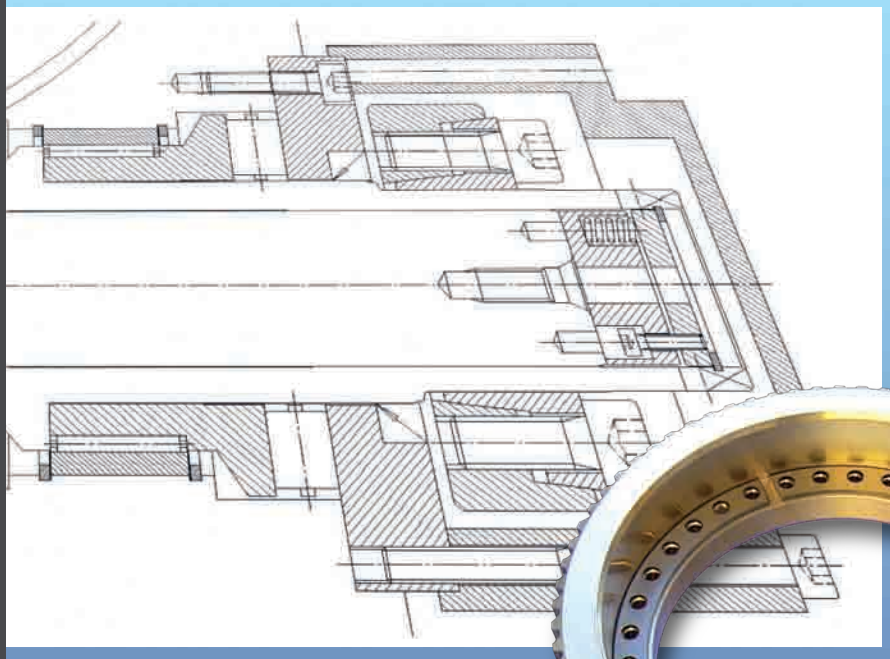
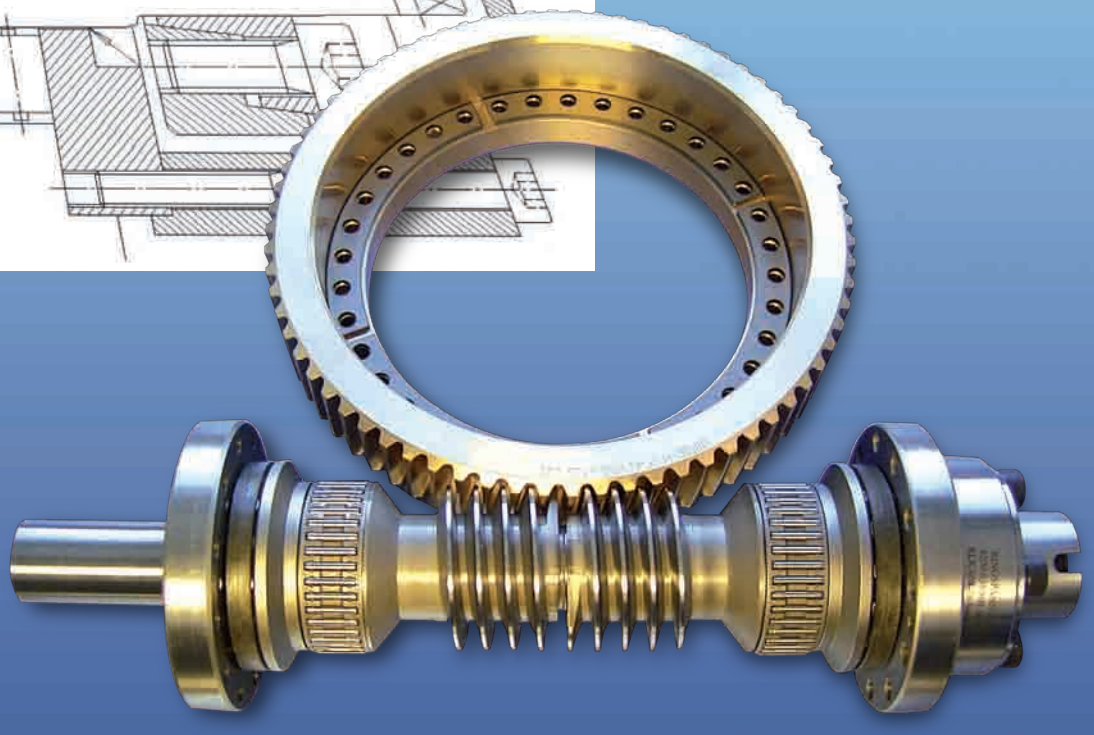
Zahnradfertigung OTT

...toothed innovations!

OTT – Worm Gears

PATENTED PRECISION WORM GEAR





Type G1 Catalogue

Zahnradfertigung OTT GmbH & Co. KG

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Last updated: 2007

Company profile

Zahnradfertigung Ott is a family business founded in 1957.
Top quality, reliability and expert advice are basic values for our company. At Ott, our top priority is to implement such aims in daily business with our customers. This applies not just to standard manufacturing processes, but also to customised designs.
Our services include the cutting of your gears, shafts, coupling components and hollow gears, and the complete manufacture of these components to your drawing or sample. You will find our manufacturing options in the manufacturing programme.
With our range of worm gear pairs, we can offer you very special solutions and manufacturing designs.
We can supply any conceivable power transmissions in this field - from "standard" worm gear pairs to duplex models, to OTT worm gears with adjustable flank clearances.

Zahnradfertigung Ott GmbH & Co.KG
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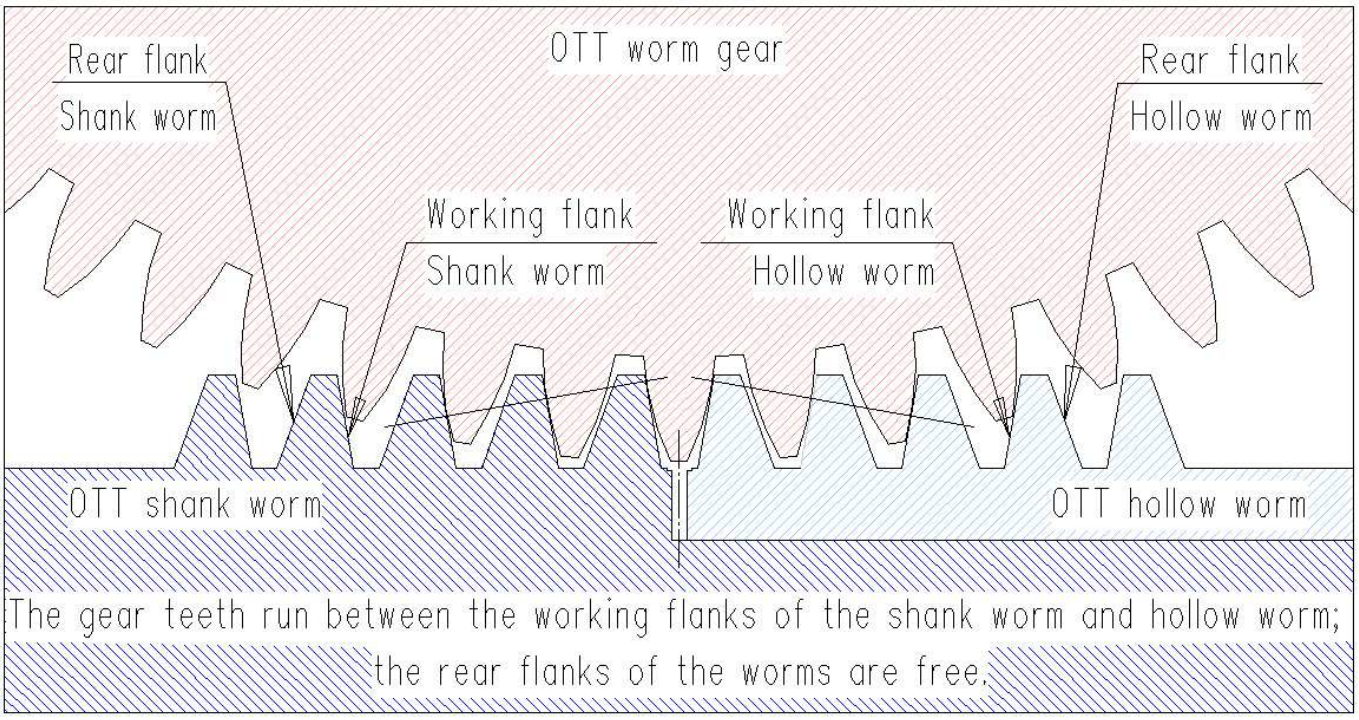
OTT worm gear classification

OTT worm gears are characterised by their extremely high rotational accuracy. To achieve this requirement, the gear must have a high contact factor. That means many teeth and faces on the gear and worm parts being in contact. This is achieved in gear manufacturing by choosing a low pressure angle and high tooth flanks (high toothing).

The flank clearance of OTT worm gears is also easy to adjust during new installation or after flank wear, without changing the centre distance.
The worm in OTT worm gears consists of 2 parts, the shank worm and the hollow worm. The tooth flanks of the worm gear have a very positive addendum modification coefficient. This allows the lines of action of the shank worm and hollow worm to disengage. The shank worm adopts the direction of rotation of the worm gear, and the hollow worm the opposite direction. One half of the worm drives, while the other half absorbs the return stroke on the gear, something that is very important in many rotational processes, especially in machine tool manufacture.
Only the working flanks of the worms make contact with the gear flanks. The rear flanks of the worms do not make contact and remain free. The back angle of the worm is much greater than that of the working flank, and serves to strengthen the helix. See section in plane of rotation of worm gear.
Rotating the shank worm in relation to the hollow worm and subsequently locating it in position allows the tooth flank clearance to be changed over a wide range.

Strong and rigid teeth are obtained as a result of the large positive addendum modification coefficient and the large back angle of the worm. The large contact factor of the teeth means that high torques are possible on the worm gear.



Section in plane of rotation of worm gear with line of action

OTT worm gears materials in this catalogue

The shank worm and hollow worm are machined in 31CrMoV9 steel and are plasma nitrided.

The worm gears themselves are generally made of GZ-CuSn12Ni bronze.

Note: In the case of larger centre distances, especially, the worm bearings limit the permitted load on the gears. If this is the case, appropriate worm shanks and bearings need to be developed.

YRT gear bearings

Important: In this catalogue, gear bearings are based on the YRT bearing from INA. Before selecting a YRT bearing, please check on availability and delivery.

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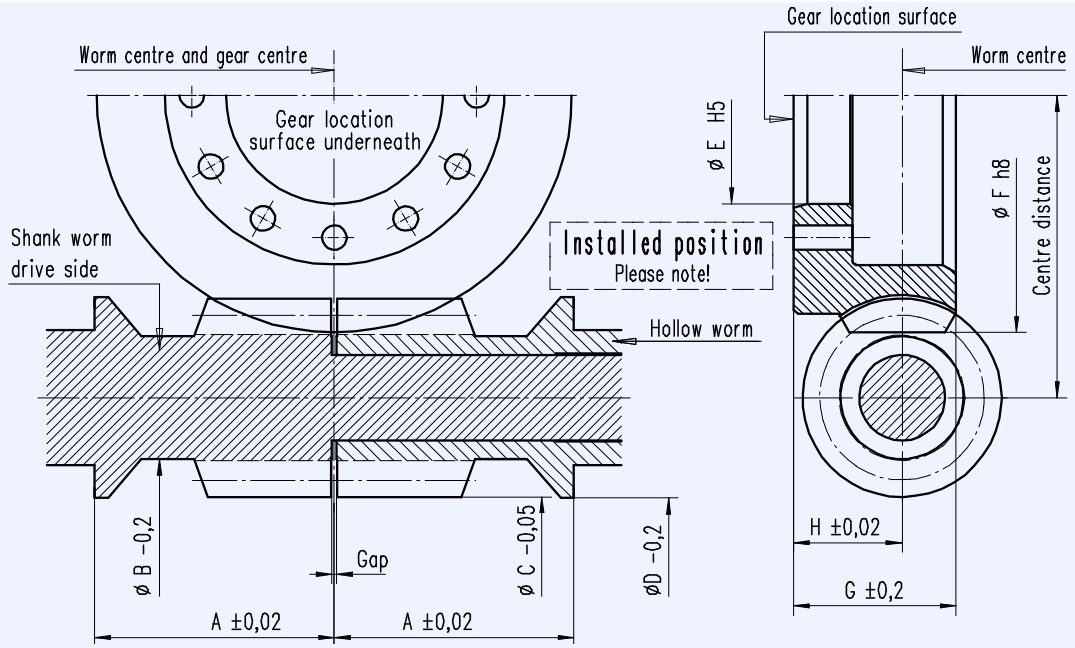
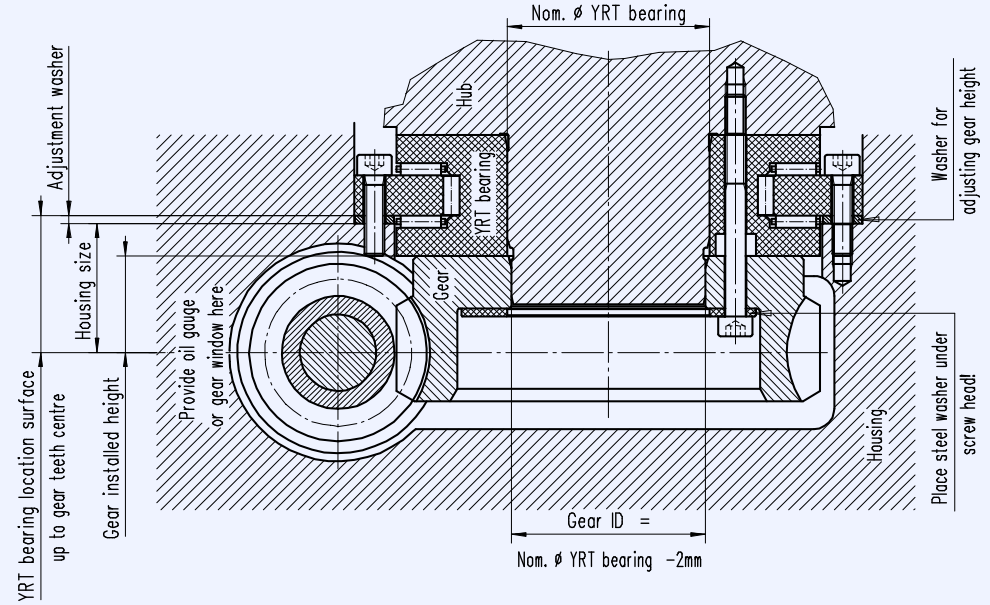
OTT worm gears - centre distance 67 mm

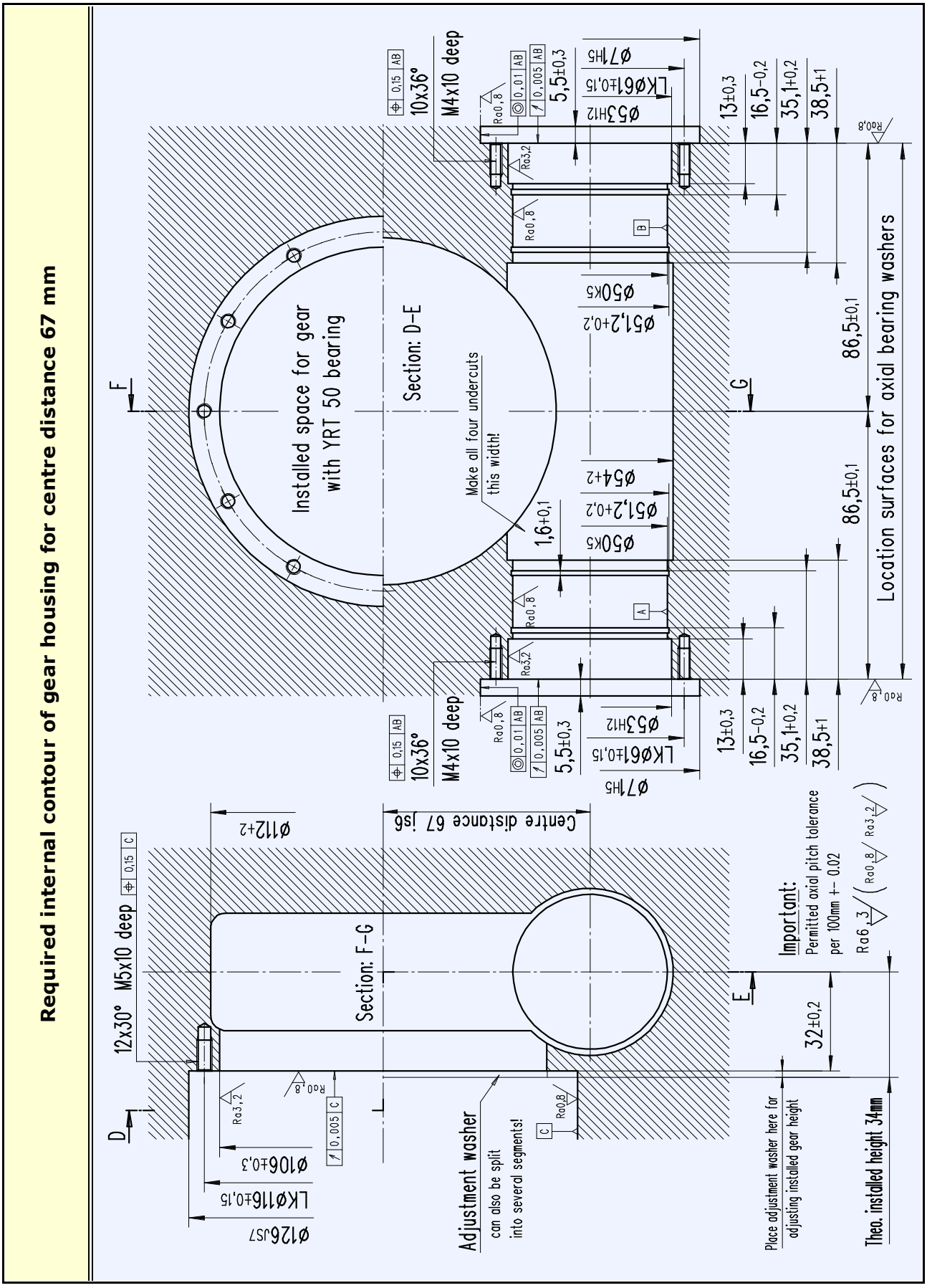
Main dimensions



OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4849 SSR	1	36	53	27,2	44,0	44,6	50	48	105	36	24
4866 SSR	1	45		27,5	41,0						
4859 SSR	1	60		27,8	38,8						
4830 SSR	1	72		28,0	37,4						
4812 SSR	1	90		28,2	36,0						
4831 SSR	1	120		28,4	34,2						
							See comments page 5!				



Gear housing - required internal contour



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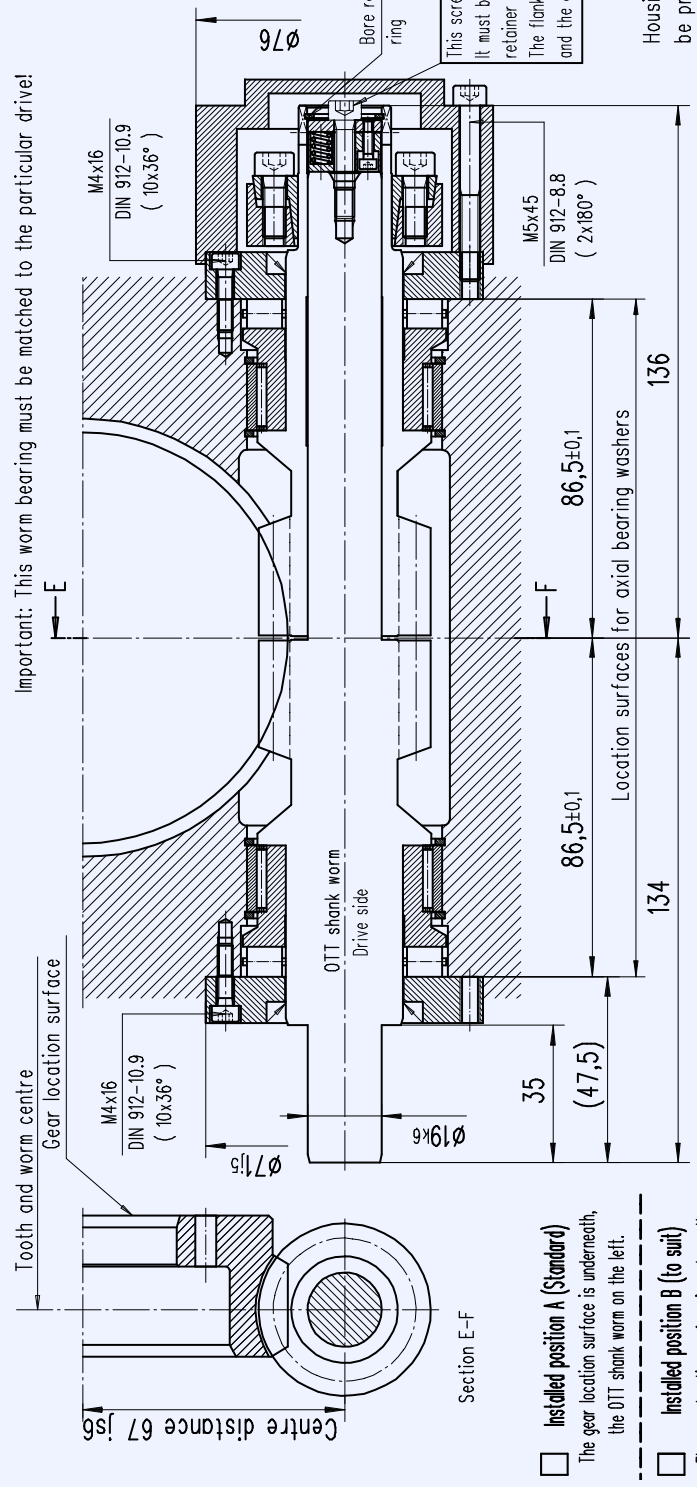
Worm bearings

Worm bearing for centre distance 67 mm



OTT worm gear					Bearing parts per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Qty	Name	Typ/Dwg no.
☐ 4849 SSR	T00407-G-RAO	T00237-G-SSC	T00238-G-HSC	2	Axial cylinder roller bearing	K812 06 TV
☐ 4866 SSR	T00408-G-RAO	T00239-G-SSC	T00240-G-HSC	2	Radial needle bearing	RNAO 40x50x17
☐ 4859 SSR	T00409-G-RAO	T00241-G-SSC	T00242-G-HSC	2	Shaft seal	30x40x5
☐ 4830 SSR	T00410-G-RAO	T00243-G-SSC	T00244-G-HSC	1	Shrink disc	HSD 24-22
☐ 4812 SSR	T00411-G-RAO	T00245-G-SSC	T00246-G-HSC	4	Circlip	SB 50
☐ 4831 SSR	T00412-G-RAO	T00247-G-SSC	T00248-G-HSC	20	Cylinder bolt DIN 912	M4x16 - 10.9
				2	Cylinder bolt DIN 912	M5x45 - 8.8
				1	Cylinder bolt DIN 912	M5x25 - 8.8
				1	Retainer ring DIN 472	19
				2	Bearing sleeve	T00220-G-LHÜ
				2	Axial bearing washer	T00231-G-LDX
				1	Cover	T00214-G-ADH
				1	Thrust piece	B00007-G-DST

☐ REQUEST Date: Name:

☐ ORDER

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

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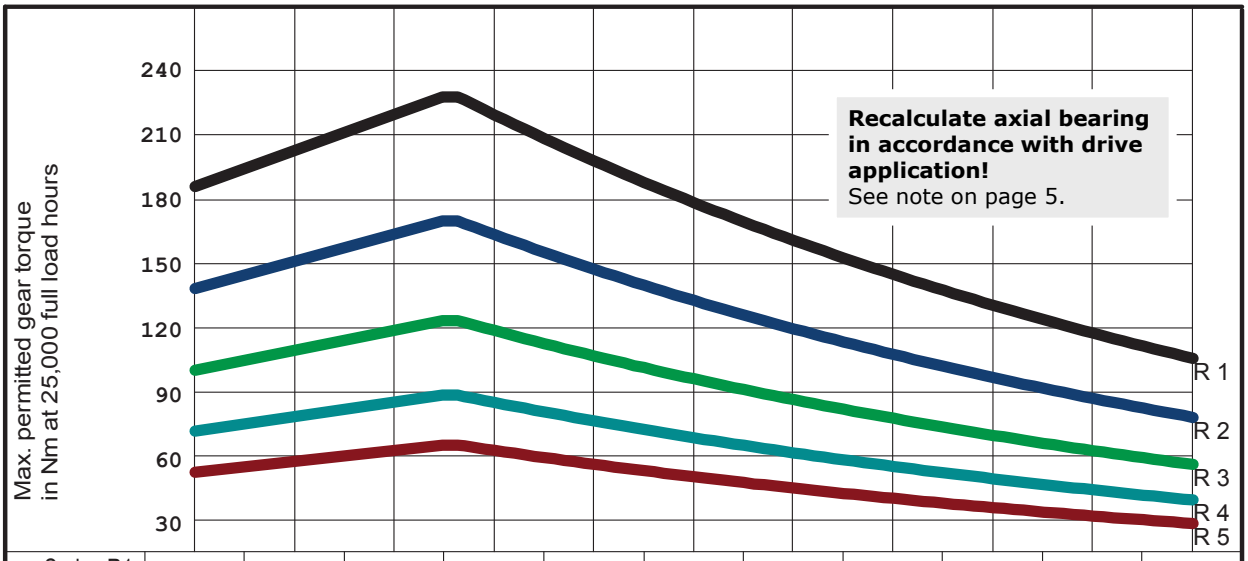
Operational characteristics

Centre distance	67.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	44.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	105.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	38.90	mm
No. teeth, gear	36		Lead angle at Bks	3.7522	°

Operating characteristics

Ott worm gear

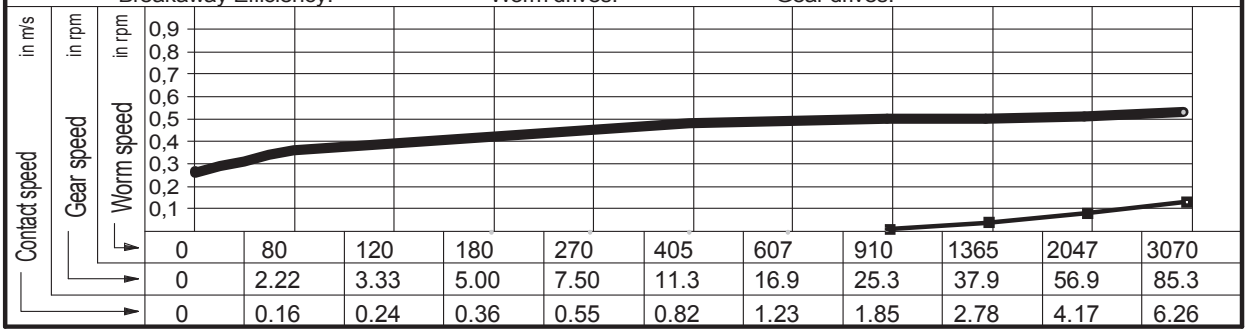
OTT no: 4849 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	184	200	216	215	194	176	159	144	130	117	106
Series R2	138	150	162	161	146	132	119	108	97	88	79
Series R3	101	110	119	118	107	97	87	79	71	64	58
Series R4	73	80	87	86	78	70	64	57	52	47	42
Series R5	55	60	65	65	58	53	48	43	39	35	32

Breakaway Efficiency: 0.26 Worm drives: Gear drives:



Worm speed in rpm	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed in rpm	0	2.22	3.33	5.00	7.50	11.3	16.9	25.3	37.9	56.9	85.3
Contact speed in m/s	0	0.16	0.24	0.36	0.55	0.82	1.23	1.85	2.78	4.17	6.26

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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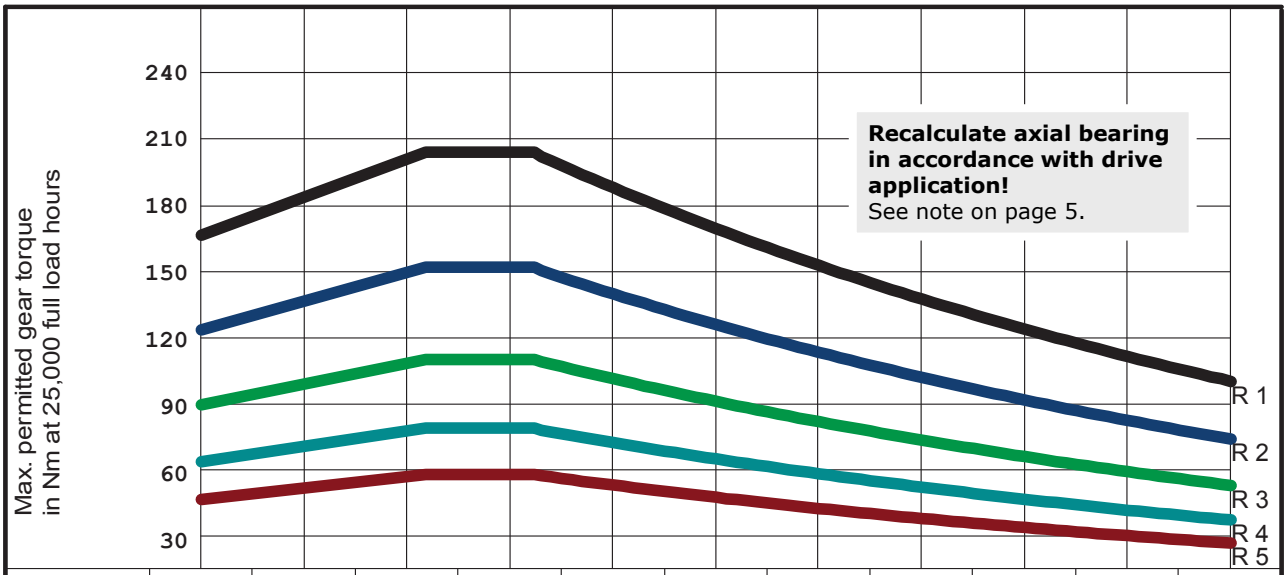
Centre distance	67.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	41.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	105.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	36.68	mm
No. teeth, gear	45		Lead angle at Bks	3.2778	°

Operating characteristics

Ott worm gear

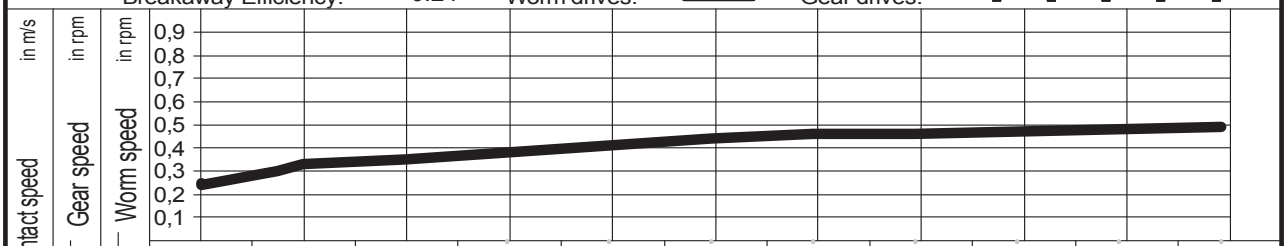
OTT no: 4866 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	165	182	198	201	185	167	151	136	123	111	101
Series R2	124	136	149	151	138	125	113	102	92	83	75
Series R3	91	100	109	111	102	92	83	75	68	61	55
Series R4	66	73	79	81	74	67	60	55	49	45	40
Series R5	49	54	60	60	55	50	45	41	37	33	30

Breakaway Efficiency: 0.24 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.77	2.66	4.00	6.00	9.00	13.5	20.2	30.3	45.5	68.2
0	0.15	0.23	0.34	0.51	0.77	1.16	1.75	2.62	3.93	5.90

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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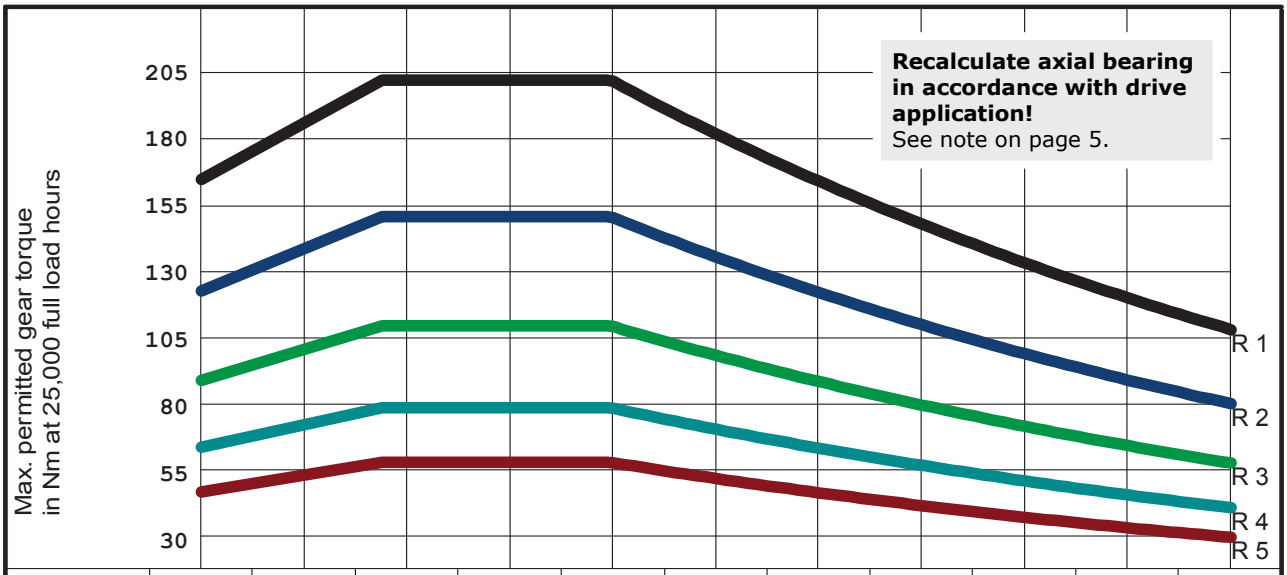
Centre distance	67.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	38.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	105.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	35.18	mm
No. teeth, gear	60		Lead angle at Bks	2.6142	°

Operating characteristics

Ott worm gear

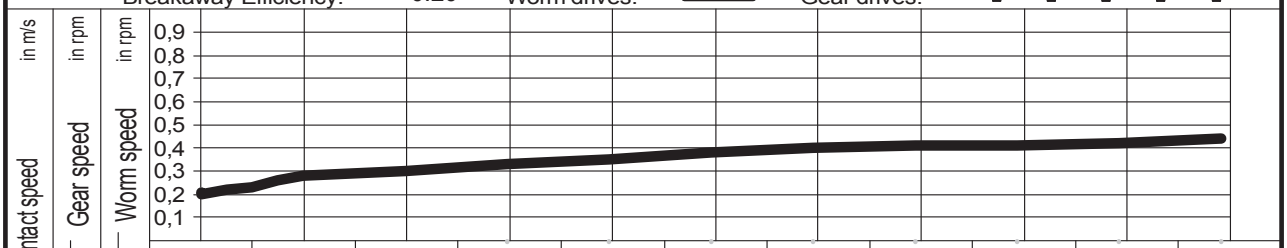
OTT no: 4859 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	163	183	199	199	199	177	160	145	131	118	107
Series R2	122	138	149	149	149	133	120	108	98	89	80
Series R3	90	101	109	109	109	97	88	80	72	65	59
Series R4	65	73	80	80	80	71	64	58	52	47	43
Series R5	49	55	60	60	60	53	48	43	39	35	32

Breakaway Efficiency: 0.20 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
0	0.14	0.22	0.33	0.49	0.74	1.11	1.67	2.51	3.77	5.66

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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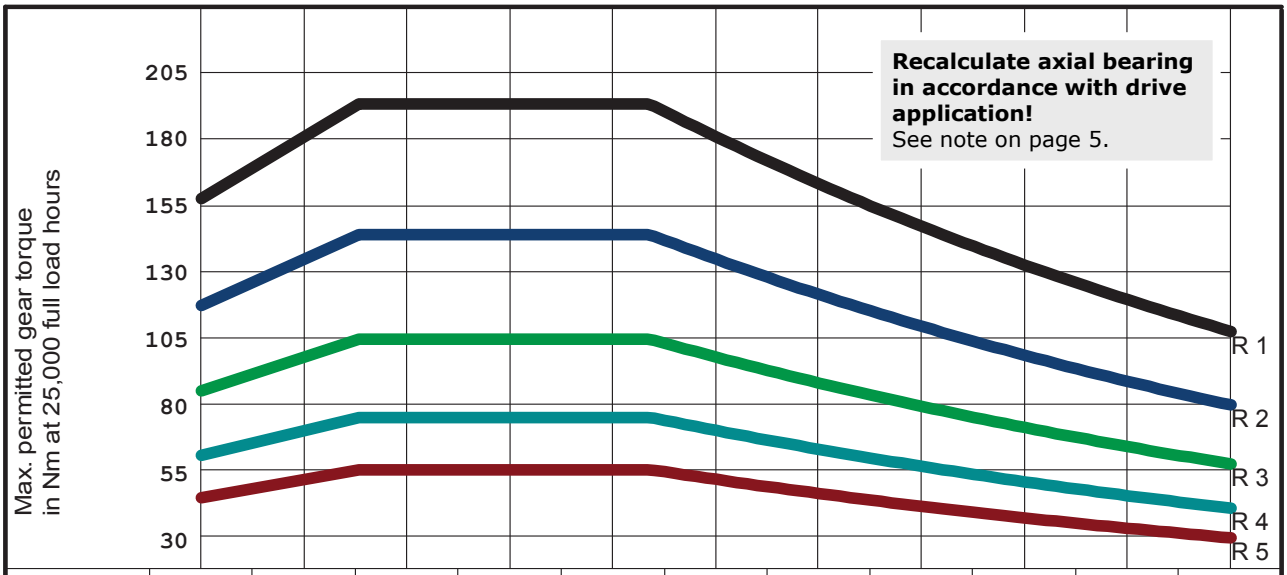
Centre distance	67.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	37.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	105.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	34.21	mm
No. teeth, gear	72		Lead angle at Bks	2.2689	°

Operating characteristics

Ott worm gear

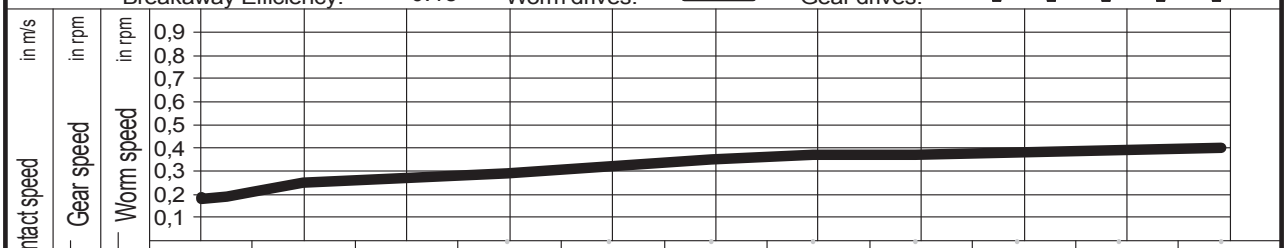
OTT no: 4830 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	156	178	190	190	190	177	160	145	131	118	107
Series R2	117	134	143	143	143	133	120	109	98	89	80
Series R3	86	98	105	105	105	98	88	80	72	65	59
Series R4	62	71	76	76	76	71	64	58	52	47	43
Series R5	47	54	57	57	57	53	48	43	39	35	32

Breakaway Efficiency: 0.18 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.11	1.66	2.50	3.75	5.62	8.43	12.6	19.0	28.4	42.6
0	0.14	0.21	0.32	0.48	0.72	1.08	1.63	2.44	3.66	5.50

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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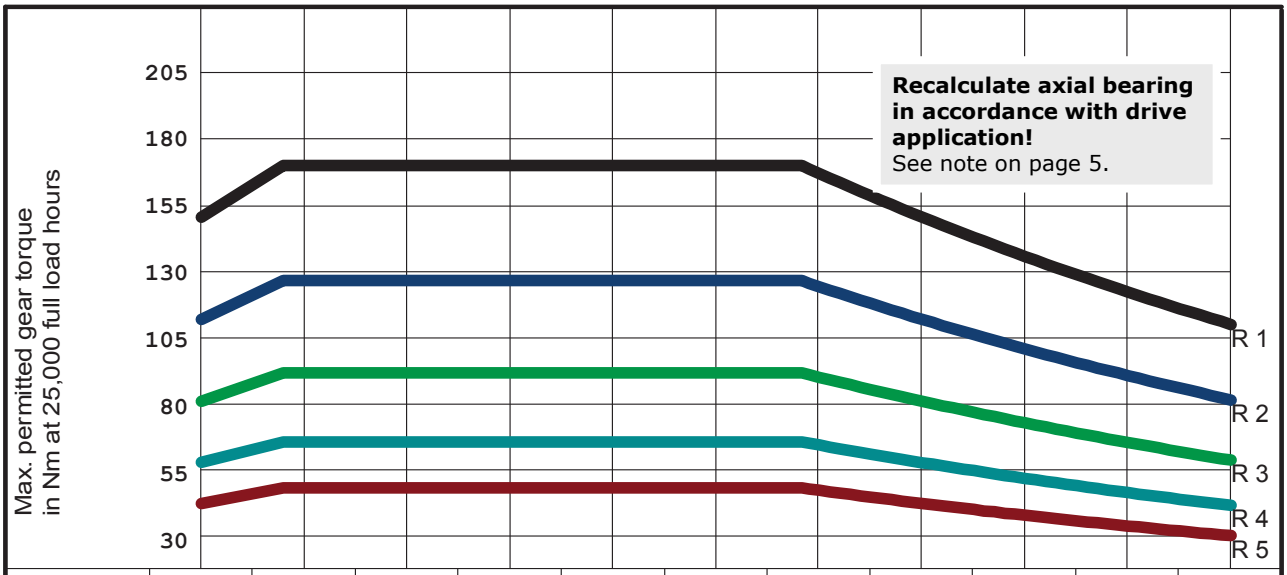
Centre distance	67.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	36.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	105.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	33.26	mm
No. teeth, gear	90		Lead angle at Bks	1.8904	°

Operating characteristics

Ott worm gear

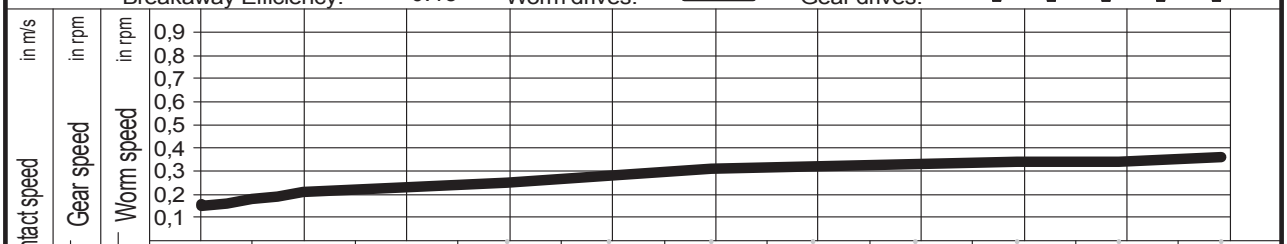
OTT no: 4812 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	149	168	168	168	168	168	162	147	132	120	108
Series R2	112	126	126	126	126	126	122	110	99	90	81
Series R3	82	92	92	92	92	92	89	81	73	66	59
Series R4	60	67	67	67	67	67	65	59	53	48	43
Series R5	45	50	50	50	50	50	49	44	40	36	32

Breakaway Efficiency: 0.15 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
0	0.13	0.20	0.31	0.47	0.70	1.05	1.58	2.37	3.56	5.34

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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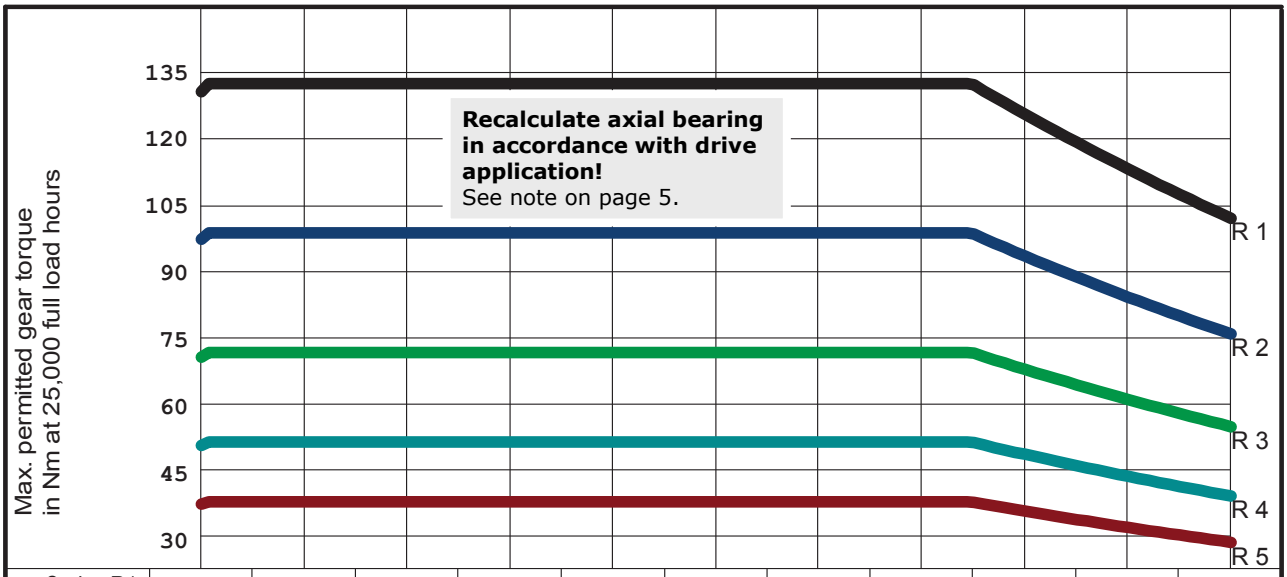
Centre distance	67.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	34.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	105.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	32.04	mm
No. teeth, gear	120		Lead angle at Bks	1.4958	°

Operating characteristics

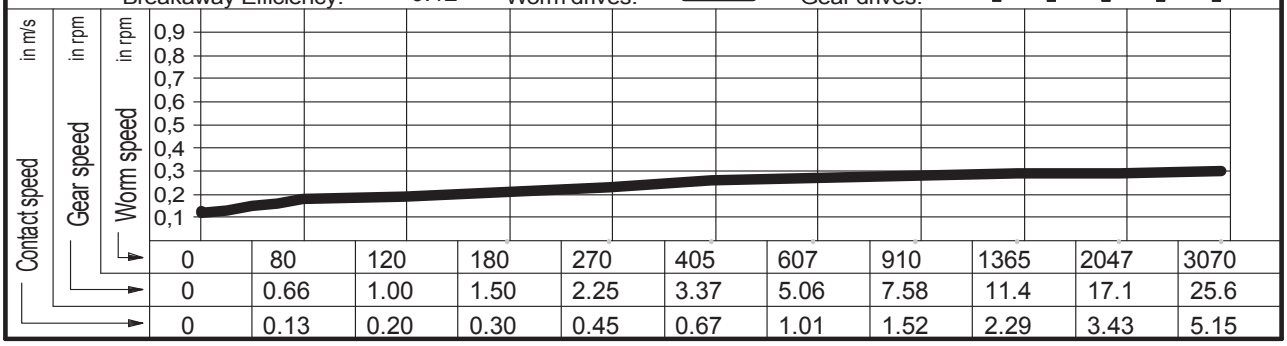
Ott worm gear

OTT no: 4831 SSR



Series R1	129	131	131	131	131	131	131	131	123	111	100
Series R2	97	98	98	98	98	98	98	98	92	83	75
Series R3	71	72	72	72	72	72	72	72	68	61	55
Series R4	52	52	52	52	52	52	52	52	49	44	40
Series R5	39	39	39	39	39	39	39	39	37	33	30

Breakaway Efficiency: 0.12 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
0	0.13	0.20	0.30	0.45	0.67	1.01	1.52	2.29	3.43	5.15

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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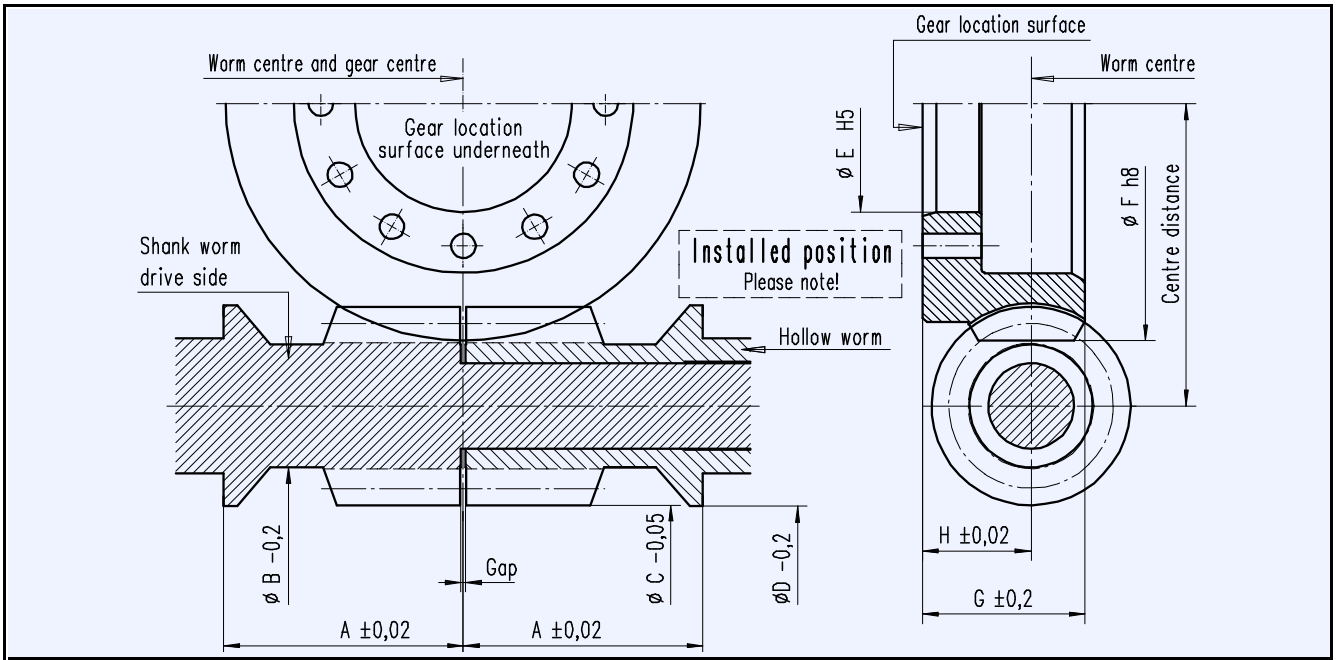
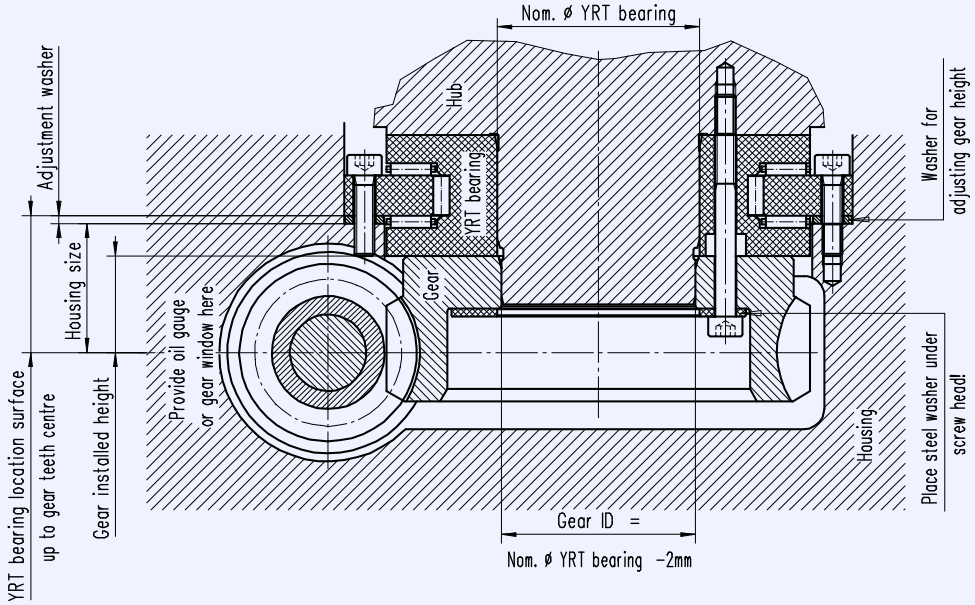
OTT worm gears - centre distance 75 mm

Main dimensions



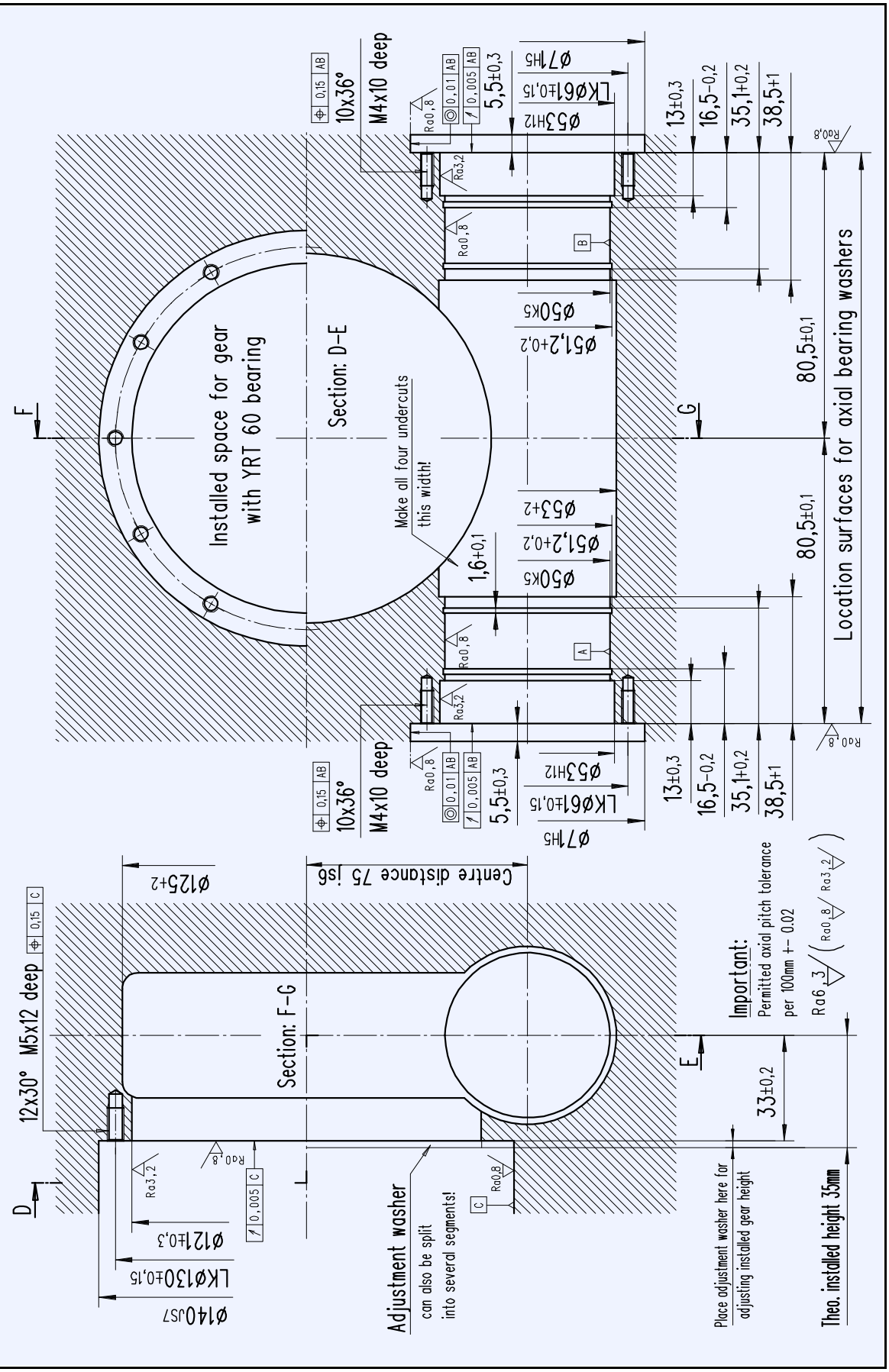
OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4863 SSR	2	60	47	28,7	41,2	44,6	60	58	120	37	25
5422 SSR	2	72		28,9	39,6						
4885 SSR	2	90		29,1	38,0						
4871 SSR	1	60		28,7	41,2						
4872 SSR	1	72		28,9	39,6						
4873 SSR	1	90		29,1	38,0						
4813 SSR	1	120		29,3	35,8						

See comments page 5!



Gear housing - required internal contour

Required internal contour of gear housing for centre distance 75 mm



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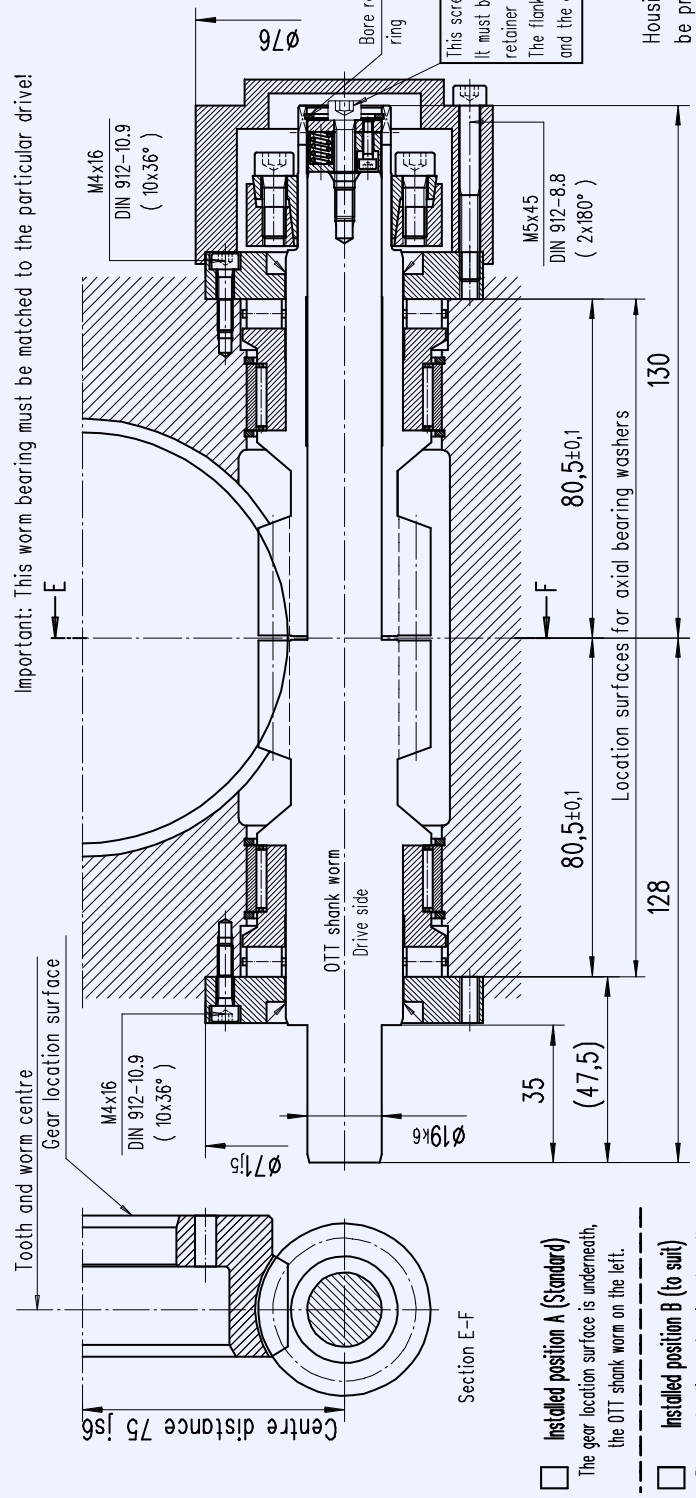
Worm bearings

Worm bearing for centre distance 75 mm



OTT worm gear					Bearing parts per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no .
4863 SSR	T00413-G-RAO	T00249-G-SSC	T00250-G-HSC	2	Axial cylinder roller bearing	K812 06 TV
5422 SSR	T00414-G-RAO	T00251-G-SSC	T00252-G-HSC	2	Radial needle bearing	RNAO 40x50x17
4885 SSR	T00415-G-RAO	T00253-G-SSC	T00254-G-HSC	2	Shaft seal	30x40x5
4871 SSR	T00416-G-RAO	T00255-G-SSC	T00256-G-HSC	1	Shrink disc	HSD 24-22
4872 SSR	T00417-G-RAO	T00257-G-SSC	T00258-G-HSC	4	Circlip	SB 50
4873 SSR	T00418-G-RAO	T00259-G-SSC	T00260-G-HSC	20	Cylinder bolt DIN 912	M4x16 - 10.9
4813 SSR	T00419-G-RAO	T00261-G-SSC	T00262-G-HSC	2	Cylinder bolt DIN 912	M5x45 - 8.8
				1	Cylinder bolt DIN 912	M5x25 - 8.8
				1	Retainer ring DIN 472	19
				2	Bearing sleeve	T00220-G-LHÜ
				2	Axial bearing washer	T00231-G-LDX
				1	Cover	T00214-G-ADH
				1	Thrust piece	B00007-G-DST

☐ REQUEST Date: Name:

☐ ORDER

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

Zahnradfertigung Ott
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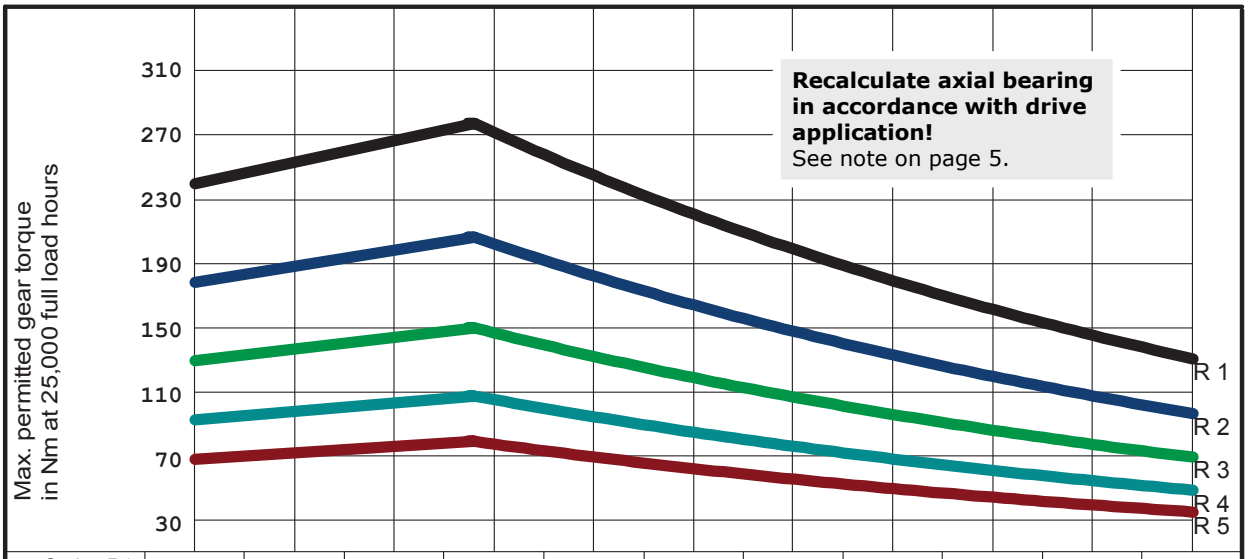
Operational characteristics

Centre distance	75.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	41.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	120.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	37.06	mm
No. teeth, gear	60		Lead angle at Bks	5.6576	°

Operating characteristics

Ott worm gear

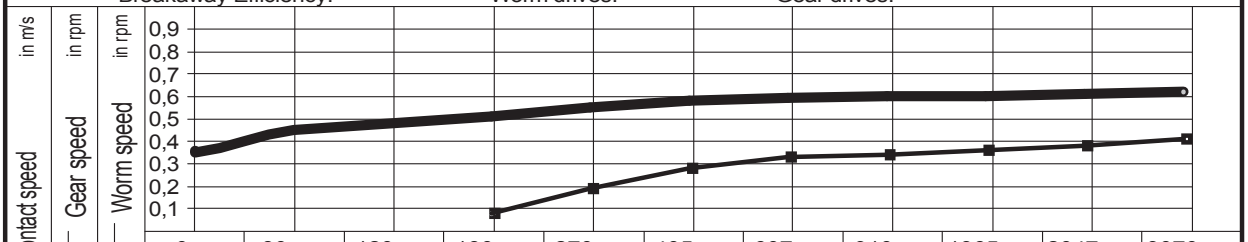
OTT no: 4863 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	237	250	263	265	240	217	196	177	160	144	130
Series R2	178	187	197	199	180	162	147	133	120	108	98
Series R3	130	137	144	146	132	119	108	97	88	79	72
Series R4	95	100	105	106	96	87	78	71	64	58	52
Series R5	71	75	79	80	72	65	59	53	48	43	39

Breakaway Efficiency: 0.35 Worm drives: Gear drives:



Worm speed in rpm	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed in rpm	0	2.66	4.00	6.00	9.00	13.5	20.3	30.4	45.5	68.3	102
Contact speed in m/s	0	0.15	0.23	0.35	0.52	0.78	1.18	1.77	2.66	3.99	5.98

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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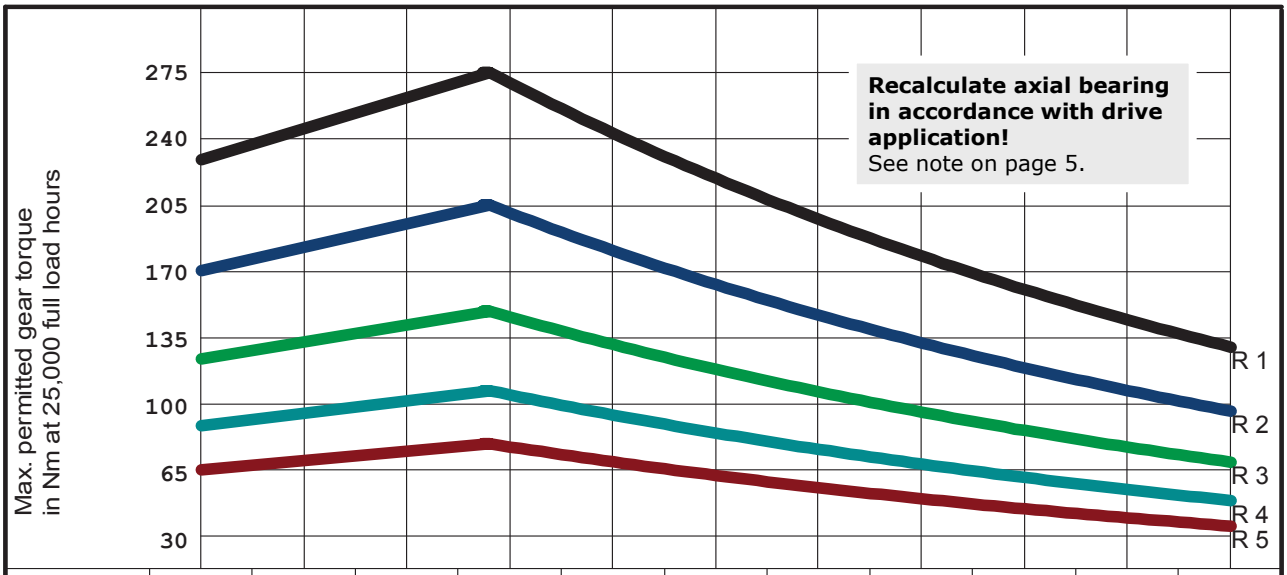
Centre distance	75.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	39.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	120.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	35.95	mm
No. teeth, gear	72		Lead angle at Bks	4.9252	°

Operating characteristics

Ott worm gear

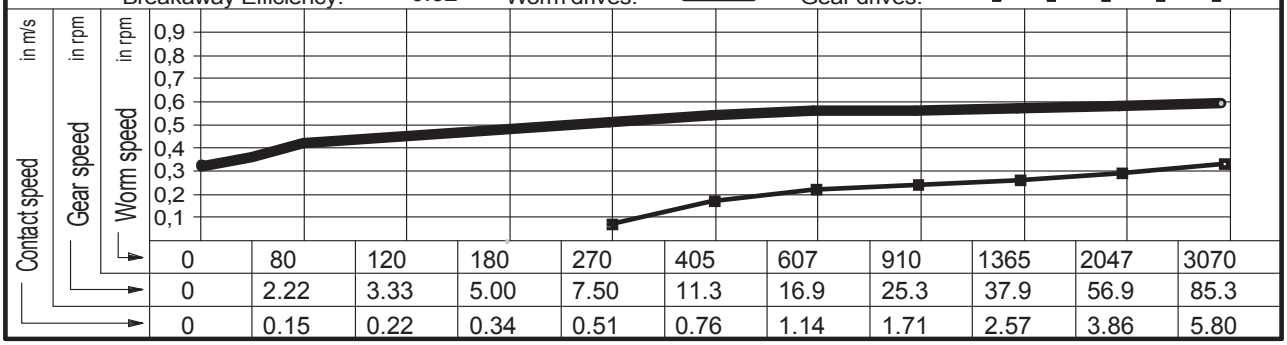
OTT no: 5422 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	226	242	258	265	239	216	195	177	160	144	130
Series R2	170	181	193	199	179	162	147	132	120	108	98
Series R3	124	133	142	146	132	119	107	97	88	79	72
Series R4	90	97	103	106	96	86	78	71	64	58	52
Series R5	68	73	77	79	72	65	59	53	48	43	39

Breakaway Efficiency: 0.32 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	2.22	3.33	5.00	7.50	11.3	16.9	25.3	37.9	56.9	85.3
Contact speed	0	0.15	0.22	0.34	0.51	0.76	1.14	1.71	2.57	3.86	5.80

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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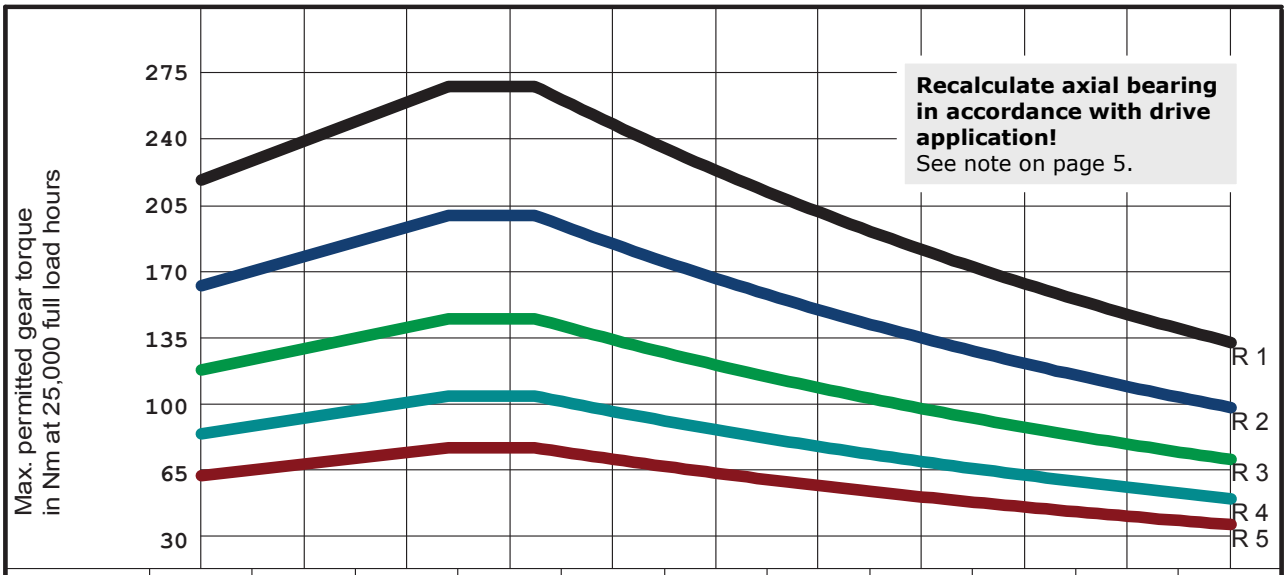
Centre distance	75.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	38.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	120.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	34.87	mm
No. teeth, gear	90		Lead angle at Bks	4.1160	°

Operating characteristics

Ott worm gear

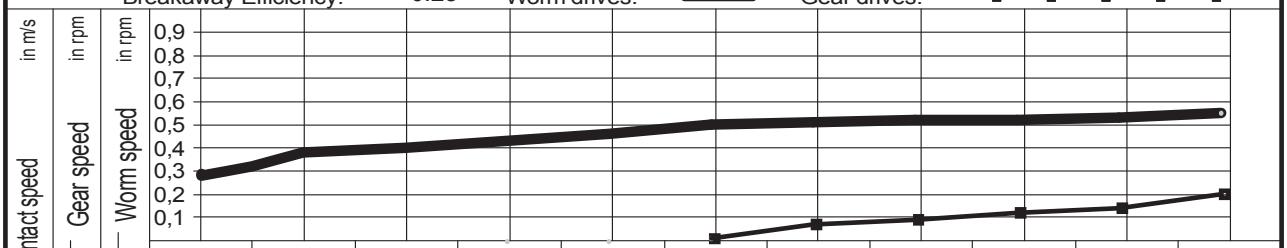
OTT no: 4885 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	216	236	255	263	241	218	197	178	161	145	131
Series R2	162	177	192	198	181	164	148	134	121	109	99
Series R3	119	130	141	145	133	120	108	98	89	80	72
Series R4	86	94	102	105	97	87	79	71	64	58	53
Series R5	65	71	77	79	72	65	59	53	48	44	39

Breakaway Efficiency: 0.28 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.77	2.66	4.00	6.00	9.00	13.5	20.2	30.3	45.5	68.2
0	0.14	0.21	0.32	0.49	0.74	1.11	1.66	2.49	3.74	5.61

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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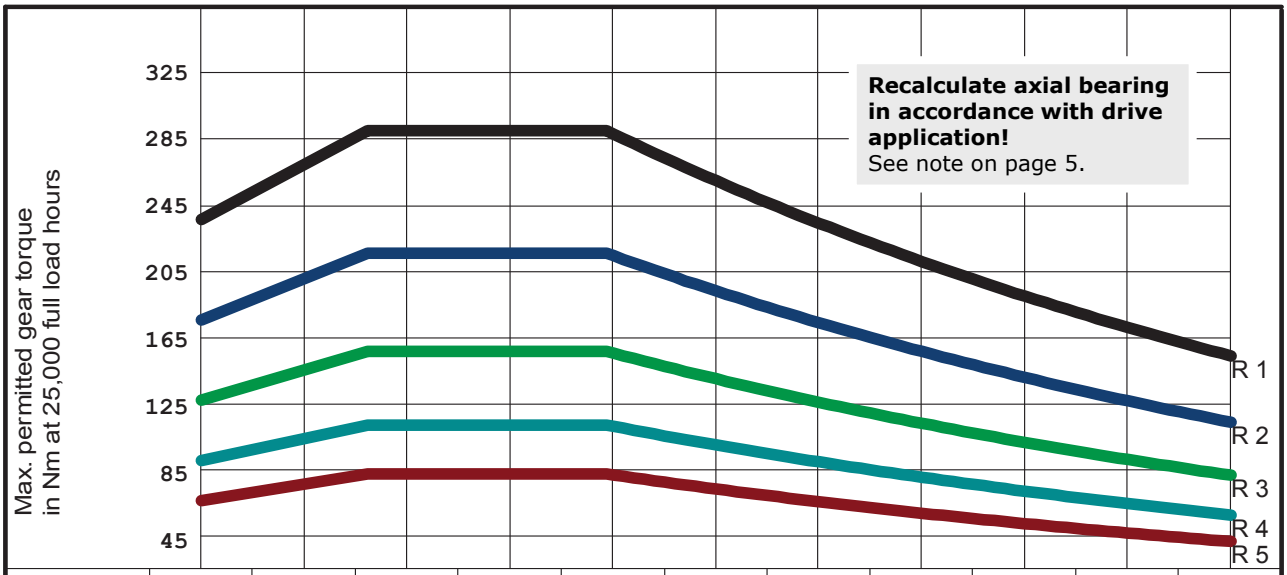
Centre distance	75.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	41.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	120.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	37.06	mm
No. teeth, gear	60		Lead angle at Bks	2.8352	°

Operating characteristics

Ott worm gear

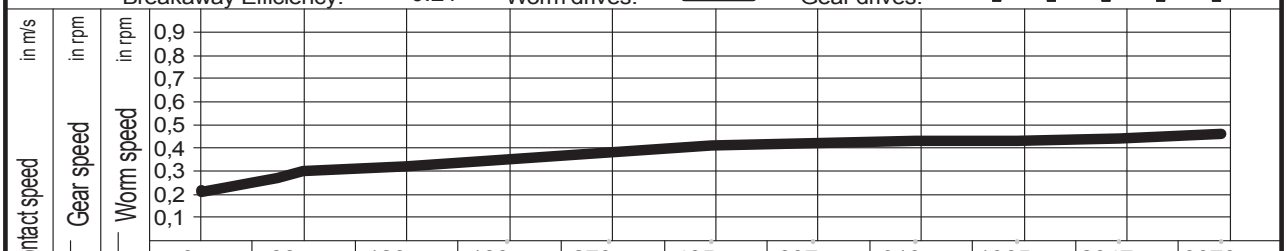
OTT no: 4871 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	234	266	286	286	286	254	230	208	188	170	153
Series R2	176	200	214	214	214	191	172	156	141	127	115
Series R3	129	146	157	157	157	140	126	114	103	93	84
Series R4	94	106	114	114	114	102	92	83	75	68	61
Series R5	70	80	86	86	86	76	69	62	56	51	46

Breakaway Efficiency: 0.21 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
0	0.15	0.23	0.34	0.52	0.78	1.17	1.76	2.65	3.97	5.96

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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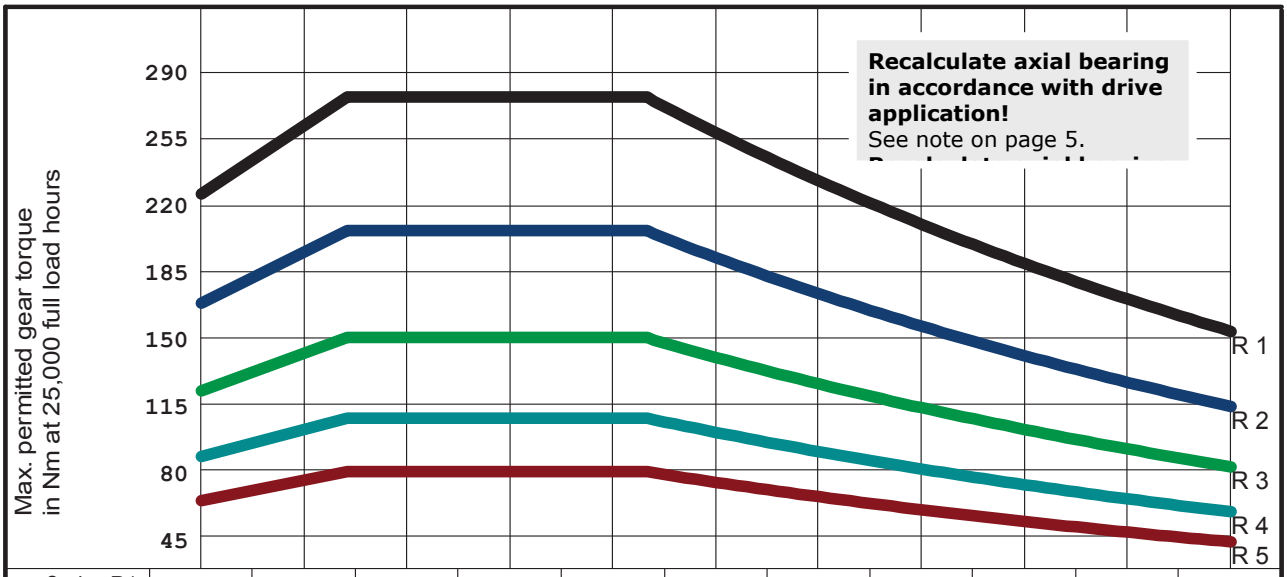
Centre distance	75.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	39.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	120.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	35.96	mm
No. teeth, gear	72		Lead angle at Bks	2.4669	°

Operating characteristics

Ott worm gear

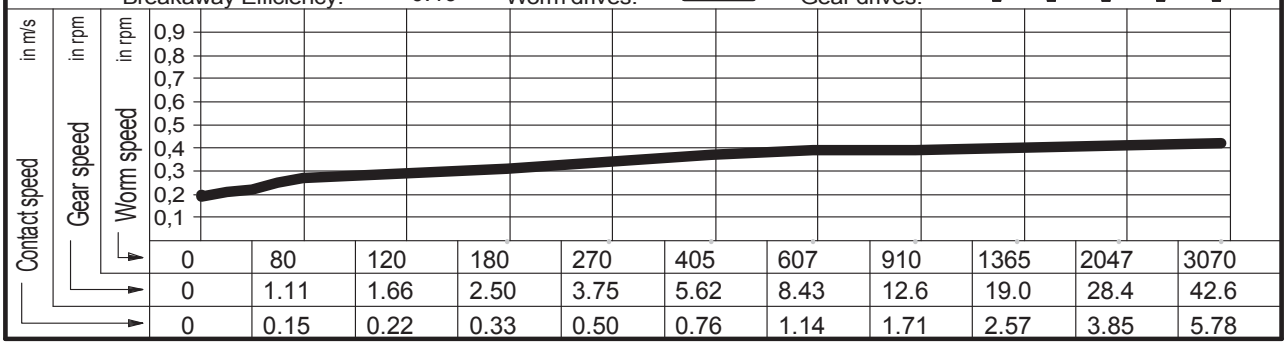
OTT no: 4872 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	224	259	273	273	273	255	230	208	188	170	153
Series R2	168	194	205	205	205	191	172	156	141	127	115
Series R3	123	142	150	150	150	140	126	114	103	93	84
Series R4	89	103	109	109	109	102	92	83	75	68	61
Series R5	67	78	82	82	82	76	69	62	56	51	46

Breakaway Efficiency: 0.19 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	1.11	1.66	2.50	3.75	5.62	8.43	12.6	19.0	28.4	42.6
Contact speed	0	0.15	0.22	0.33	0.50	0.76	1.14	1.71	2.57	3.85	5.78

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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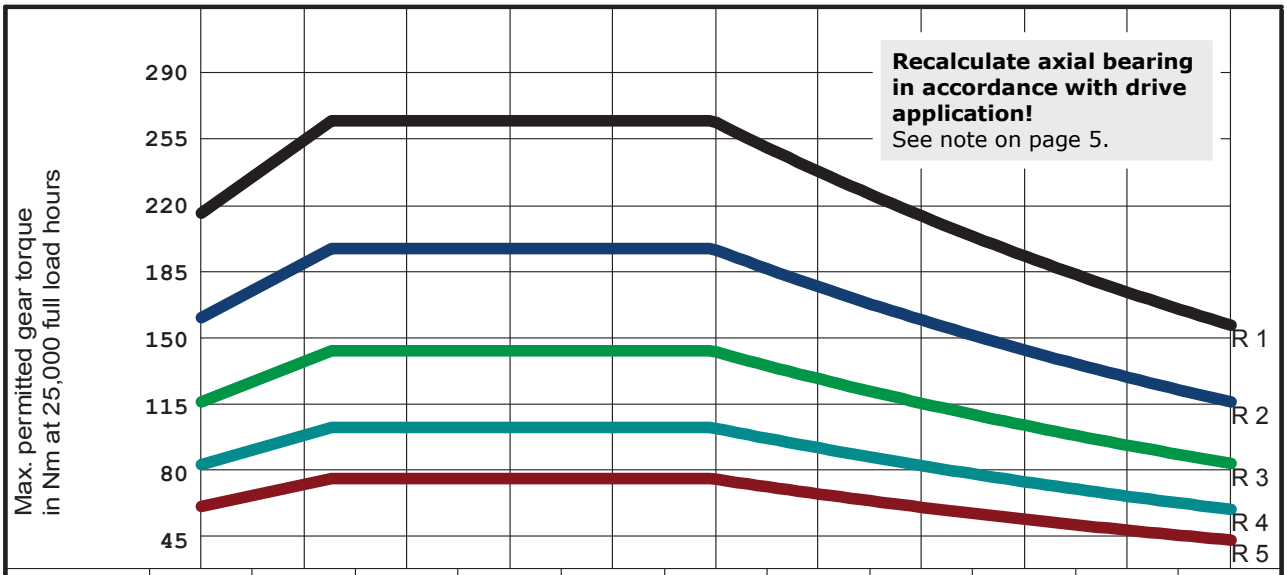
Centre distance	75.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	38.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	120.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	34.87	mm
No. teeth, gear	90		Lead angle at Bks	2.0605	°

Operating characteristics

Ott worm gear

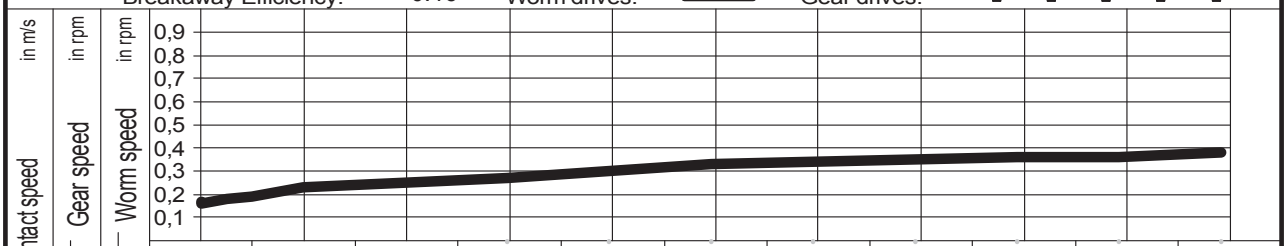
OTT no: 4873 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	214	251	261	261	261	261	232	210	190	171	155
Series R2	160	188	196	196	196	196	174	158	142	129	116
Series R3	118	138	144	144	144	144	128	116	104	94	85
Series R4	86	100	104	104	104	104	93	84	76	69	62
Series R5	64	75	78	78	78	78	70	63	57	51	46

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
0	0.14	0.21	0.32	0.49	0.73	1.10	1.66	2.49	3.73	5.60

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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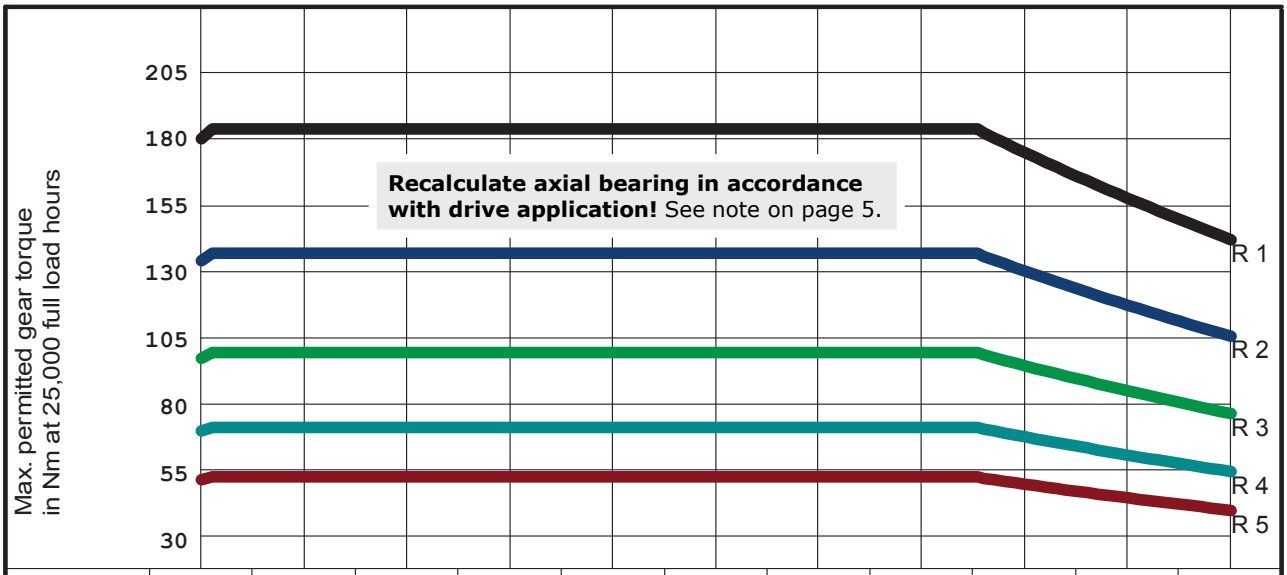
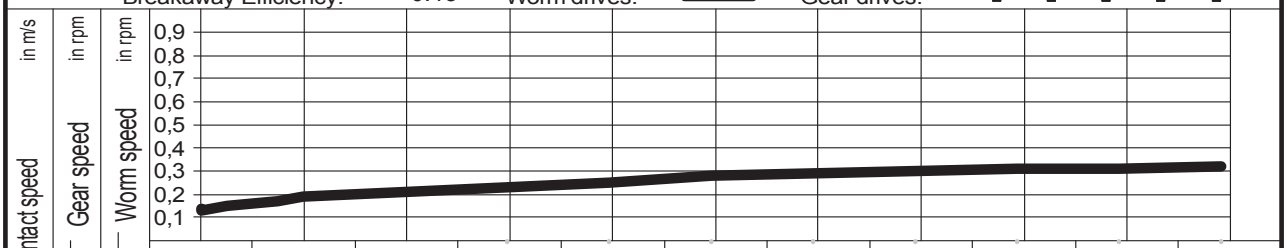
Centre distance	75.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	35.80 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	120.00 mm	Pressure angle in NS	10 °	OTT no:	4813 SSR
No. starts, worm	1	Back angle in NS	15 °		
Worm direction	right	Calculated circle Ø	33.36 mm		
No. teeth, gear	120	Lead angle at Bks	1.6439 °		



Series R1	178	181	181	181	181	181	181	181	170	153	138
Series R2	133	136	136	136	136	136	136	136	127	115	104
Series R3	98	100	100	100	100	100	100	100	93	84	76
Series R4	71	73	73	73	73	73	73	73	68	61	55
Series R5	53	54	54	54	54	54	54	54	51	46	42

Breakaway Efficiency: 0.13 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
0	0.13	0.20	0.31	0.47	0.70	1.06	1.59	2.38	3.57	5.36

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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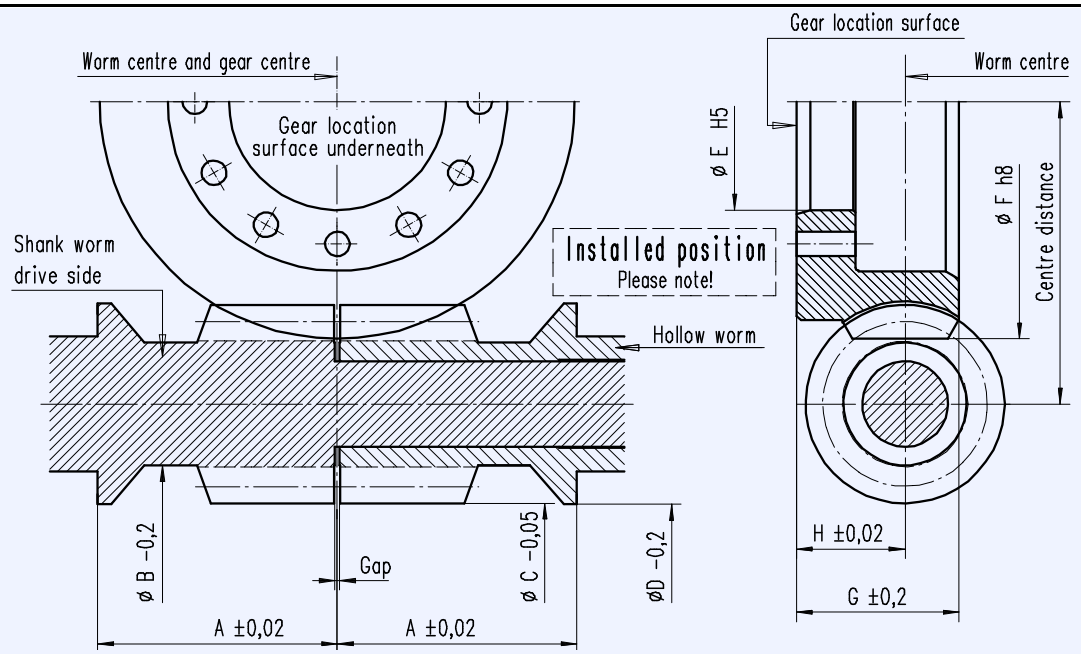
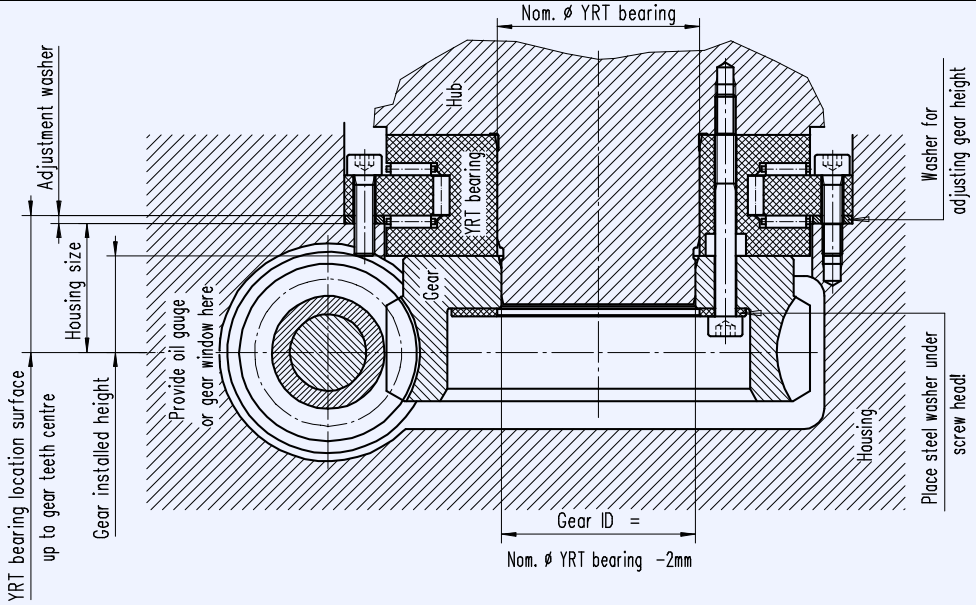
OTT worm gears - centre distance 82 mm

Main dimensions

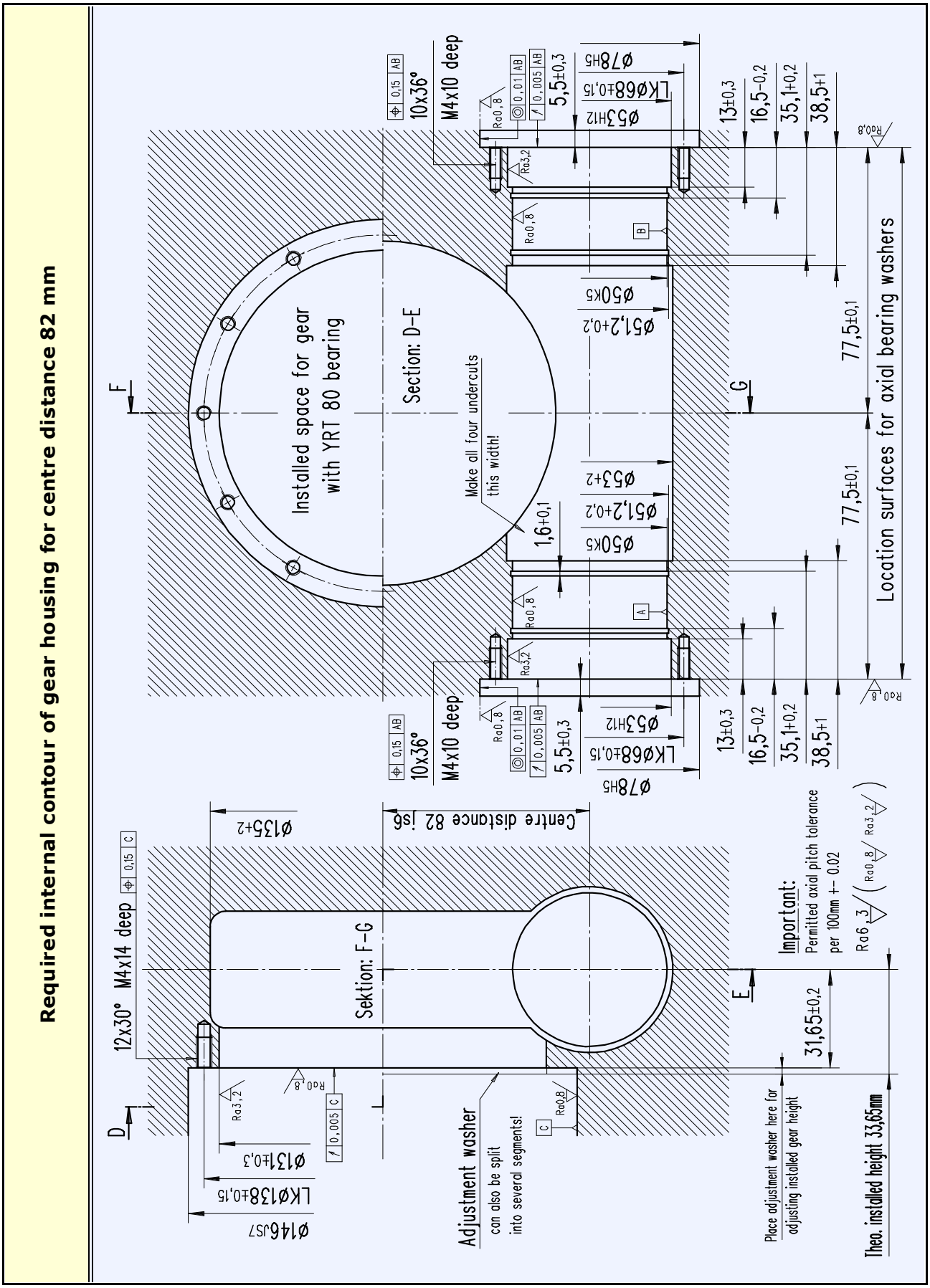


OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4801 SSR	6	66	44	32,7	44,6	44,6	80	78	130	35	22
2833 SSR	3	72		32,8	44,4						
4835 SSR	3	90		33,0	42,6						
5266 SSR	2	72		32,8	44,4						
4884 SSR	2	90		33,0	42,6						
4824 SSR	1	72		32,8	44,4						
2735 SSR	1	90		33,0	42,8						
4833 SSR	1	120		33,2	40,8						

See comments page 5!



Gear housing - required internal contour



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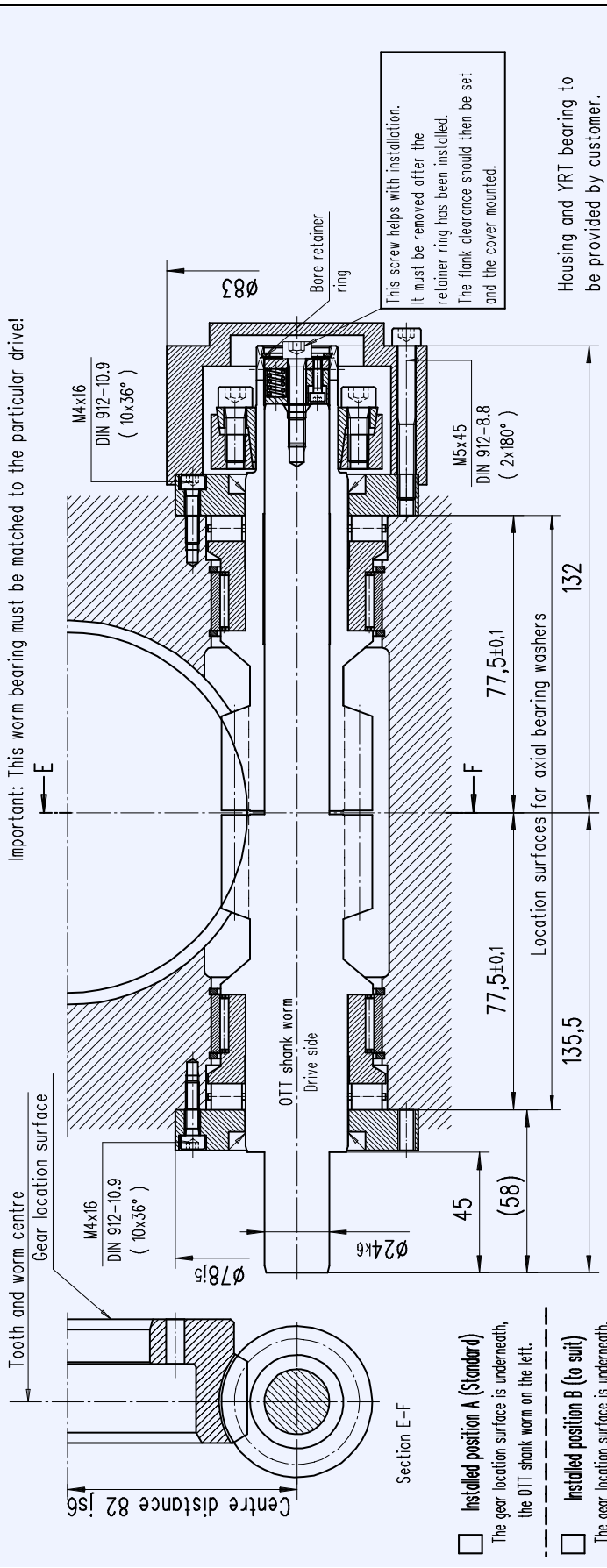
Worm bearings

Worm bearing for centre distance 82 mm



OTT worm gear

OTT no.	Worm gear	Shank worm	Hollow worm
4801 SSR	T00420-G-RAO	T00263-G-SSC	T00264-G-HSC
2833 SSR	T00421-G-RAO	T00265-G-SSC	T00266-G-HSC
4835 SSR	T00422-G-RAO	T00267-G-SSC	T00268-G-HSC
5266 SSR	T00423-G-RAO	T00269-G-SSC	T00270-G-HSC
4884 SSR	T00424-G-RAO	T00271-G-SSC	T00272-G-HSC
4824 SSR	T00425-G-RAO	T00273-G-SSC	T00274-G-HSC
2735 SSR	T00426-G-RAO	T00275-G-SSC	T00276-G-HSC
4833 SSR	T00427-G-RAO	T00277-G-SSC	T00278-G-HSC

Bearing parts per gear

Q'ty	Name	Typ/Dwg no.
2	Axial cylinder roller bearing	K812 06 TV
2	Radial needle bearing	RNAO 40x50x17
2	Shaft seal	30x40x5
1	Shrink disc	HSD 30-22
4	Circlip	SB 50
20	Cylinder bolt DIN 912	M4x16 - 10.9
2	Cylinder bolt DIN 912	M5x45 - 8.8
1	Cylinder bolt DIN 912	M5x25 - 8.8
1	Retainer ring DIN 472	24
2	Bearing sleeve	T00220-G-LHÜ
2	Axial bearing washer	T00232-G-LDX
1	Cover	T00215-G-ADH
1	Thrust piece	B00008-G-DST

☐ REQUEST Date: Name:

☐ ORDER

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

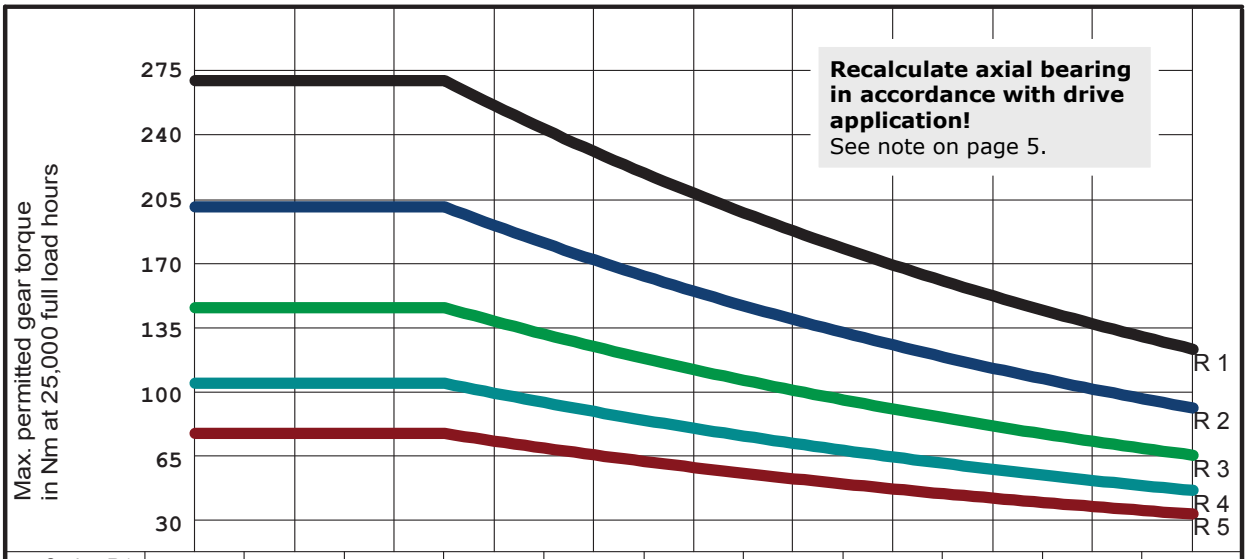
Operational characteristics

Centre distance	82.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	44.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	130.00	mm	Pressure angle in NS	10	°
No. starts, worm	6		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	40.46	mm
No. teeth, gear	66		Lead angle at Bks	15.1767	°

Operating characteristics

Ott worm gear

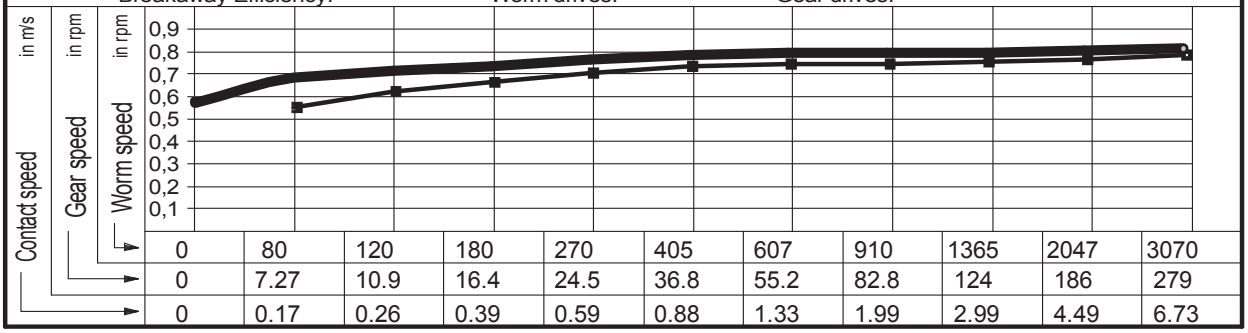
OTT no: 4801 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	268	268	268	252	228	206	186	168	152	137	124
Series R2	201	201	201	189	171	154	140	126	114	103	93
Series R3	147	147	147	139	125	113	102	93	84	76	68
Series R4	107	107	107	101	91	82	74	67	61	55	50
Series R5	80	80	80	76	68	62	56	50	46	41	37

Breakaway Efficiency: 0.57 Worm drives: Gear drives:



Worm speed in rpm	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed in rpm	0	7.27	10.9	16.4	24.5	36.8	55.2	82.8	124	186	279
Contact speed in m/s	0	0.17	0.26	0.39	0.59	0.88	1.33	1.99	2.99	4.49	6.73

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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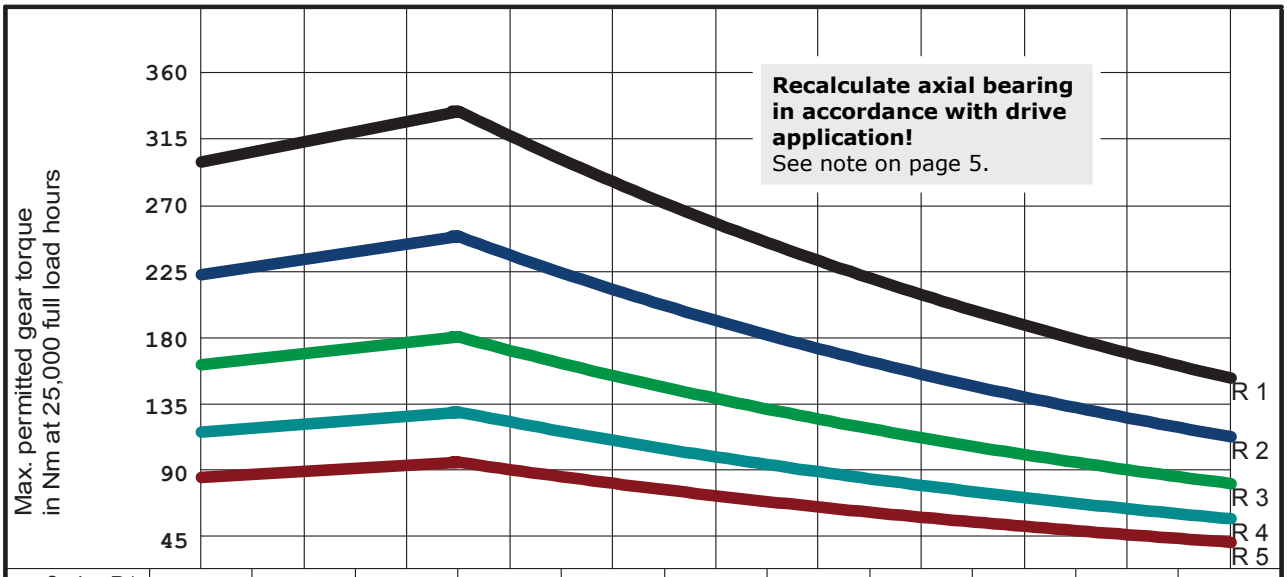
Centre distance	82.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	44.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	130.00	mm	Pressure angle in NS	10	°
No. starts, worm	3		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	40.44	mm
No. teeth, gear	72		Lead angle at Bks	7.0963	°

Operating characteristics

Ott worm gear

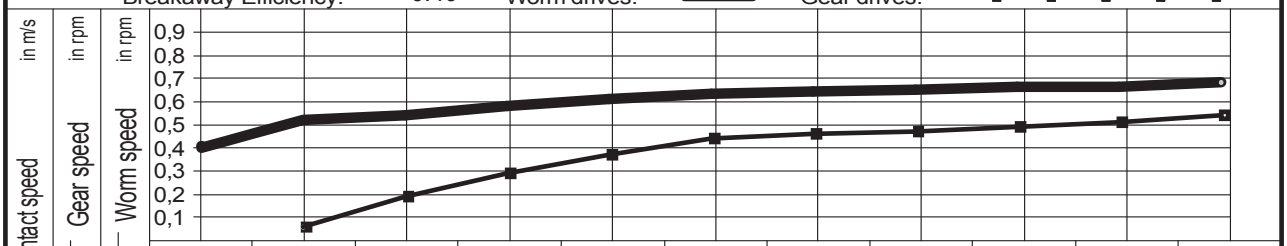
OTT no: 2833 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	296	309	322	313	283	255	231	209	189	170	154
Series R2	222	232	242	235	212	192	173	156	141	128	115
Series R3	163	170	177	172	155	141	127	115	104	94	85
Series R4	118	124	129	125	113	102	92	83	75	68	62
Series R5	89	93	97	94	85	77	69	63	57	51	46

Breakaway Efficiency: 0.40 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	3.33	5.00	7.50	11.3	16.9	25.3	37.9	56.9	85.3	128
0	0.17	0.25	0.38	0.57	0.86	1.29	1.94	2.91	4.36	6.55

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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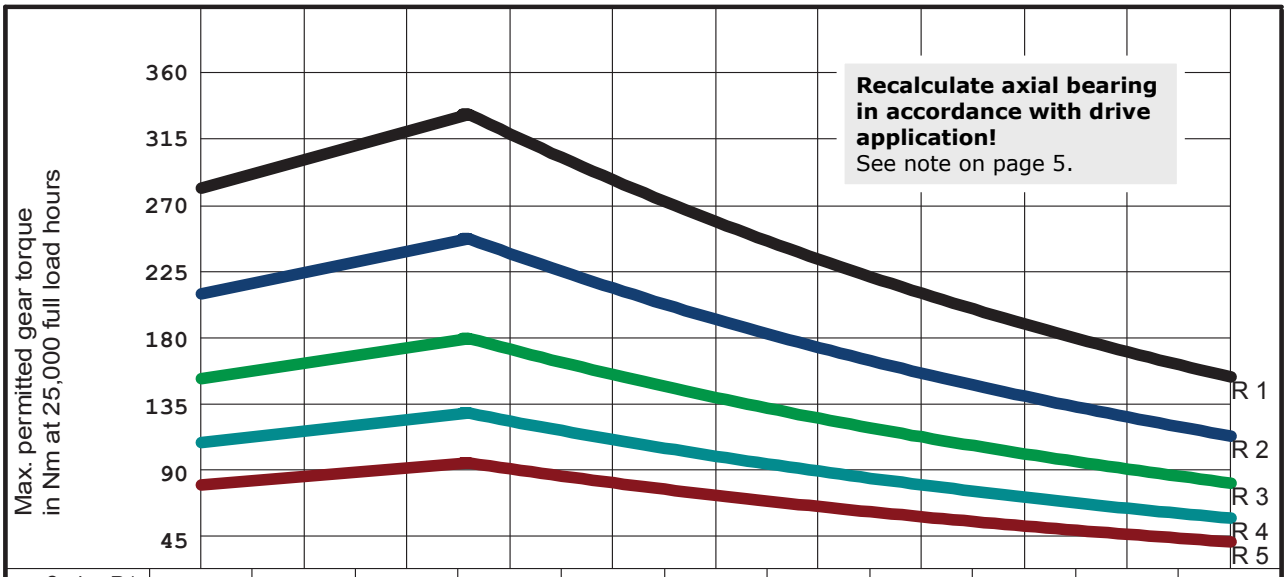
Centre distance	82.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	42.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	130.00	mm	Pressure angle in NS	10	°
No. starts, worm	3		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	39.22	mm
No. teeth, gear	90		Lead angle at Bks	5.9389	°

Operating characteristics

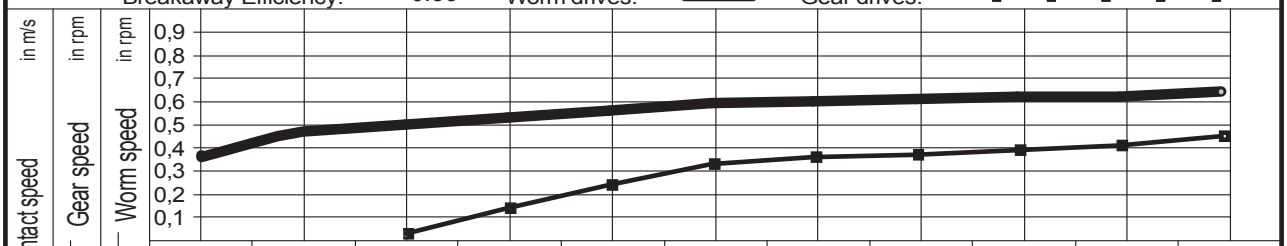
Ott worm gear

OTT no: 4835 SSR



Series R1	279	297	316	312	282	255	230	208	188	170	153
Series R2	209	223	237	234	211	191	173	156	141	127	115
Series R3	153	163	174	172	155	140	127	114	103	93	84
Series R4	111	119	126	125	113	102	92	83	75	68	61
Series R5	84	89	95	94	85	76	69	62	56	51	46

Breakaway Efficiency: 0.36 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	2.66	4.00	6.00	9.00	13.5	20.3	30.4	45.5	68.3	102
Contact speed	0	0.16	0.24	0.37	0.55	0.83	1.25	1.87	2.81	4.22	6.33

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

Zahnradfertigung OTT
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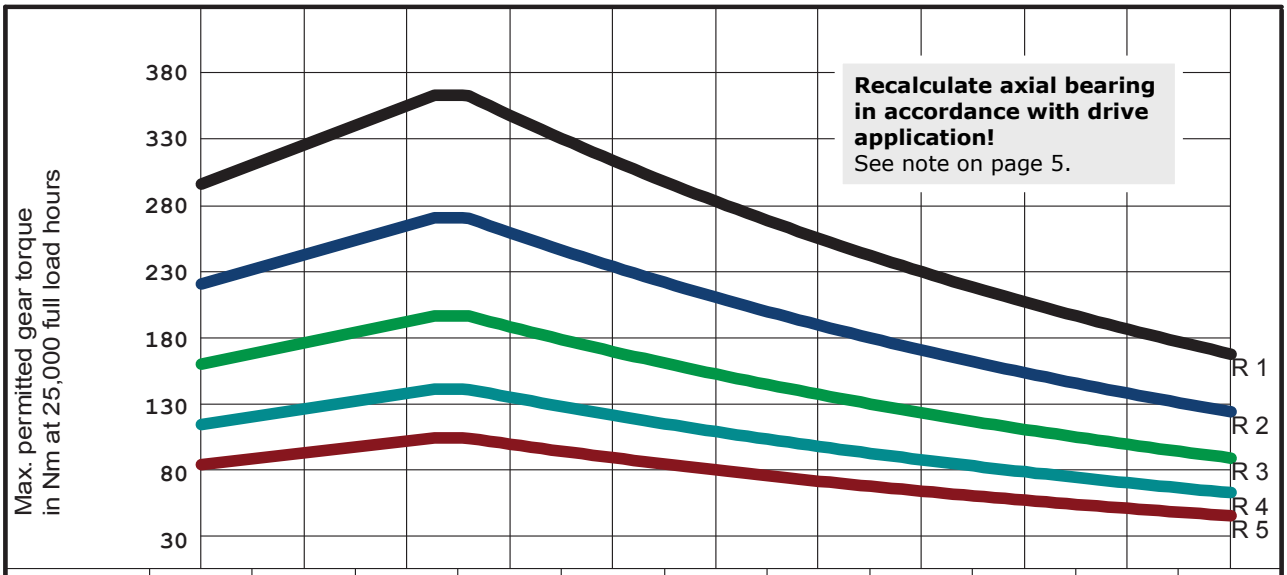
Centre distance	82.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	44.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	130.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	40.45	mm
No. teeth, gear	72		Lead angle at Bks	4.7435	°

Operating characteristics

Ott worm gear

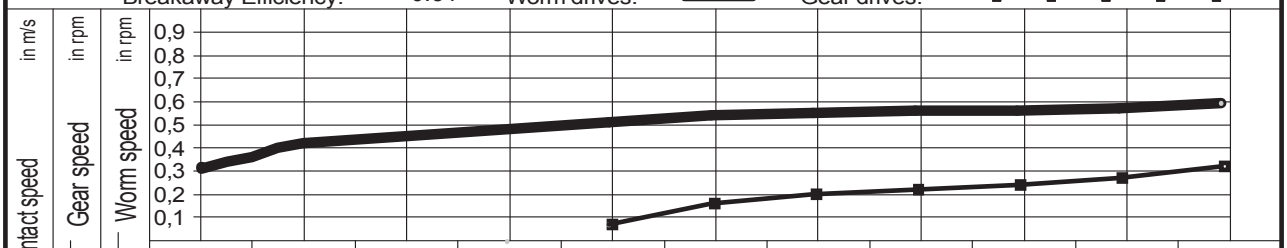
OTT no: 5266 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	292	321	350	343	310	280	253	228	206	187	169
Series R2	219	241	262	257	232	210	190	171	155	140	126
Series R3	161	177	192	188	170	154	139	126	114	103	93
Series R4	117	128	140	137	124	112	101	91	83	75	67
Series R5	88	96	105	103	93	84	76	69	62	56	51

Breakaway Efficiency: 0.31 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	2.22	3.33	5.00	7.50	11.3	16.9	25.3	37.9	56.9	85.3
0	0.17	0.25	0.38	0.57	0.86	1.28	1.93	2.90	4.34	6.52

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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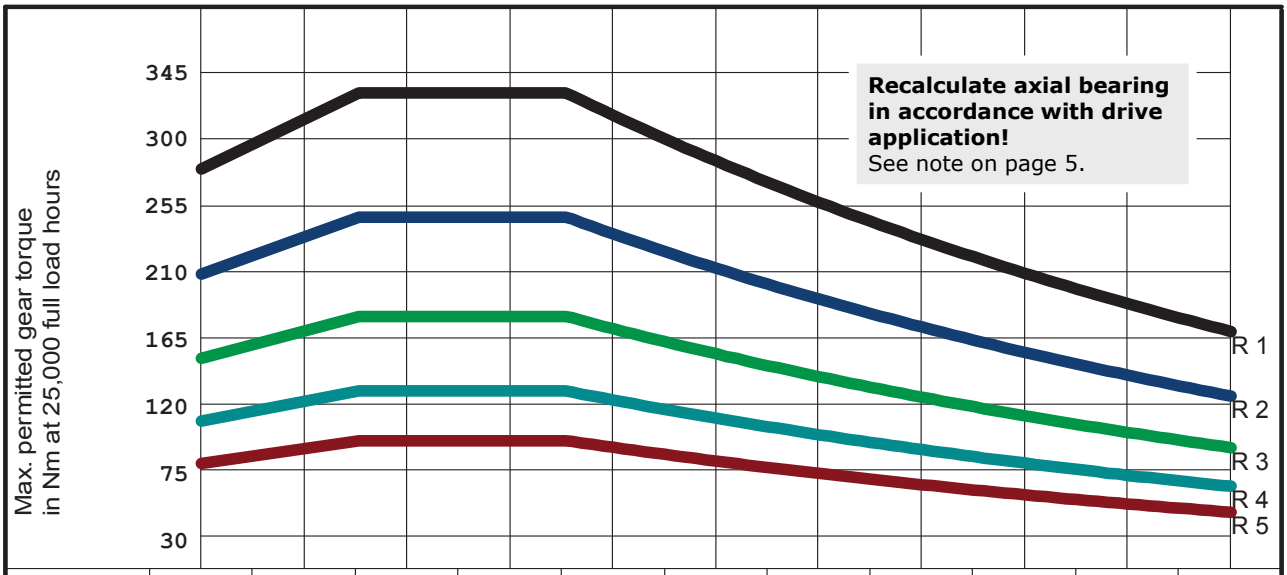
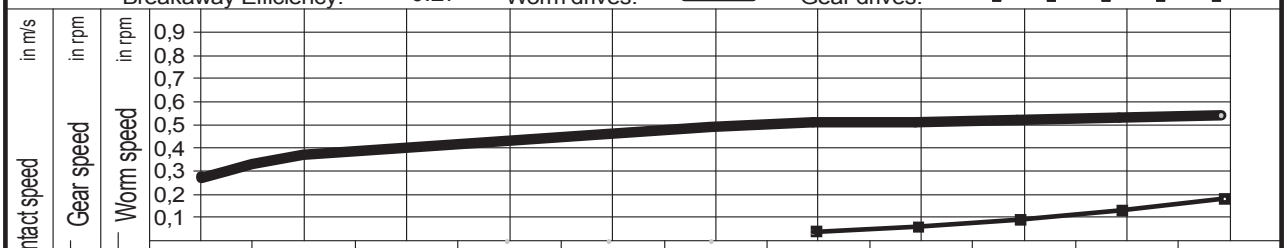
Centre distance	82.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	42.60 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	130.00 mm	Pressure angle in NS	10 °	OTT no:	4884 SSR
No. starts, worm	2	Back angle in NS	20 °		
Worm direction	right	Calculated circle Ø	39.22 mm		
No. teeth, gear	90	Lead angle at Bks	3.9667 °		



Series R1	276	309	326	326	309	279	252	228	206	186	168
Series R2	207	231	244	244	232	209	189	171	155	140	126
Series R3	152	170	179	179	170	154	139	125	113	102	93
Series R4	110	123	130	130	124	112	101	91	82	75	67
Series R5	83	93	98	98	93	84	76	68	62	56	50

Breakaway Efficiency: 0.27 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.77	2.66	4.00	6.00	9.00	13.5	20.2	30.3	45.5	68.2
0	0.16	0.24	0.37	0.55	0.83	1.24	1.87	2.80	4.21	6.31

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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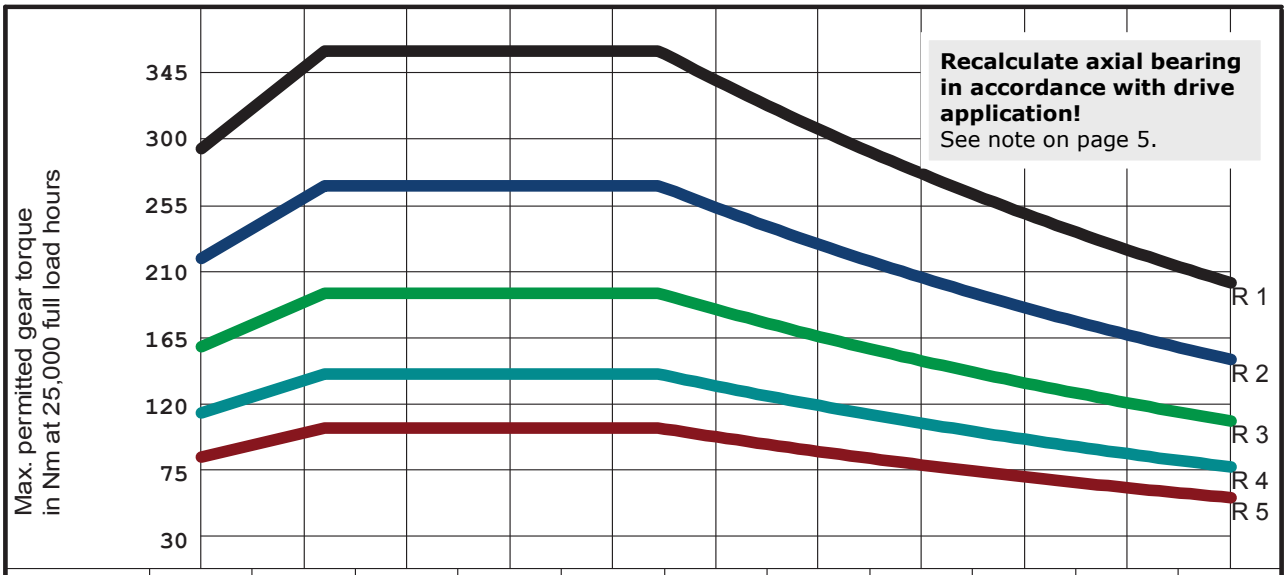
Centre distance	82.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	44.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	130.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	40.45	mm
No. teeth, gear	72		Lead angle at Bks	2.3756	°

Operating characteristics

Ott worm gear

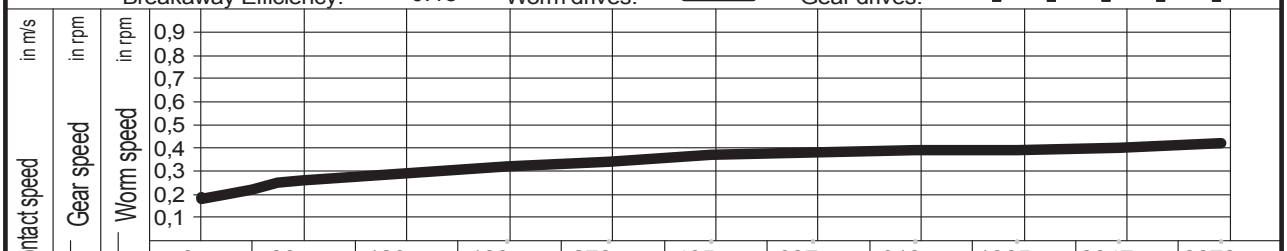
OTT no: 4824 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	289	343	353	353	353	329	298	269	243	220	198
Series R2	217	257	265	265	265	247	223	202	182	165	149
Series R3	159	189	194	194	194	181	164	148	134	121	109
Series R4	116	137	141	141	141	132	119	108	97	88	79
Series R5	87	103	106	106	106	99	89	81	73	66	60

Breakaway Efficiency: 0.18 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.11	1.66	2.50	3.75	5.62	8.43	12.6	19.0	28.4	42.6
0	0.16	0.25	0.38	0.57	0.85	1.28	1.92	2.89	4.33	6.50

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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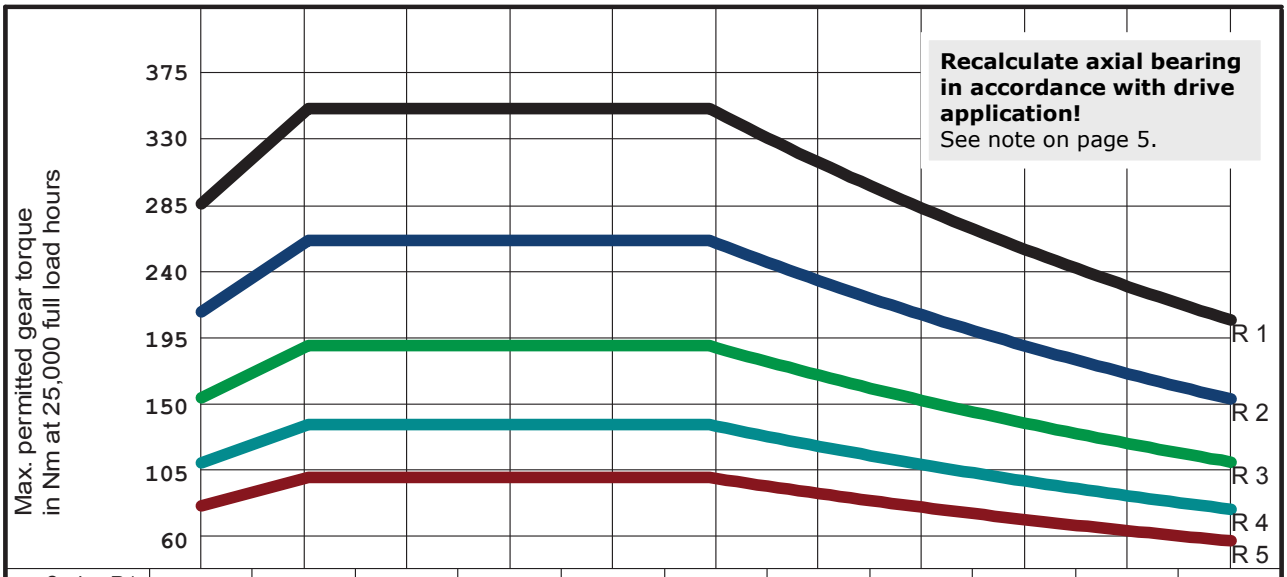
Centre distance	82.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	42.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	130.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	39.38	mm
No. teeth, gear	90		Lead angle at Bks	1.9747	°

Operating characteristics

Ott worm gear

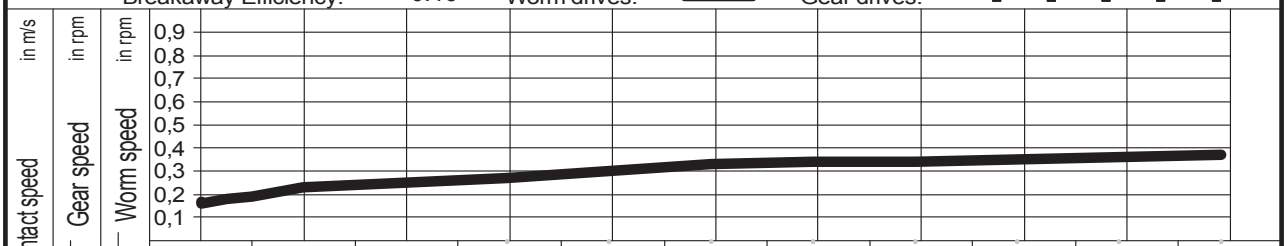
OTT no: 2735 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	283	343	346	346	346	346	308	278	251	227	205
Series R2	212	258	259	259	259	259	231	209	189	170	154
Series R3	156	189	190	190	190	190	169	153	138	125	113
Series R4	113	137	138	138	138	138	123	111	101	91	82
Series R5	85	103	104	104	104	104	92	83	75	68	62

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
0	0.16	0.24	0.37	0.55	0.83	1.25	1.87	2.81	4.22	6.33

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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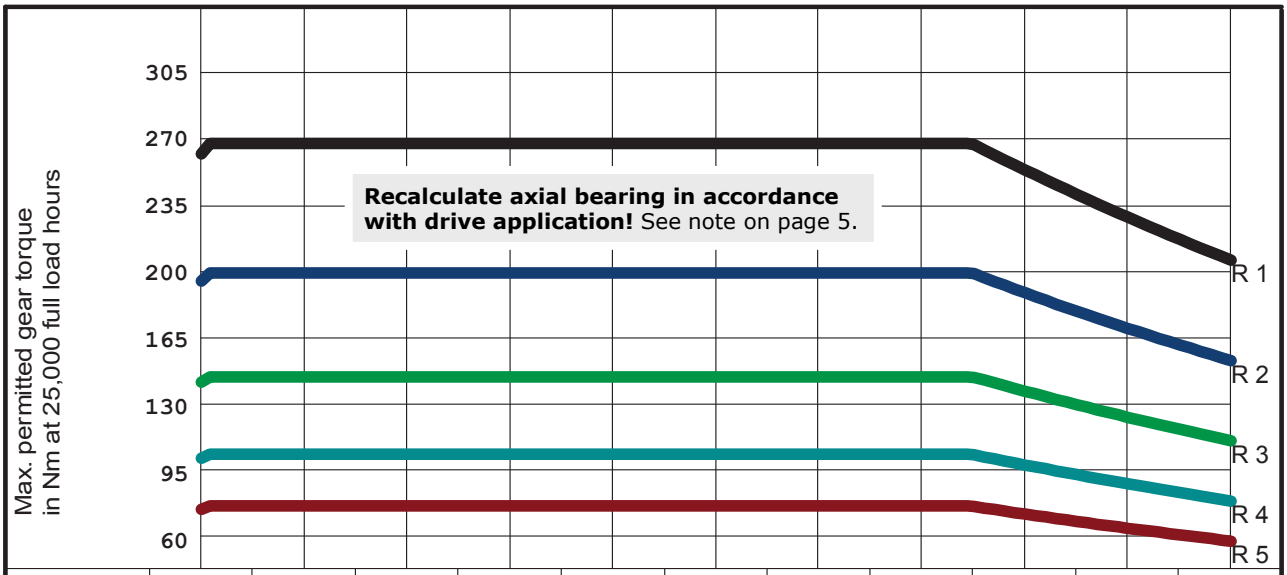
Centre distance	82.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	40.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	130.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	38.04	mm
No. teeth, gear	120		Lead angle at Bks	1.5555	°

Operating characteristics

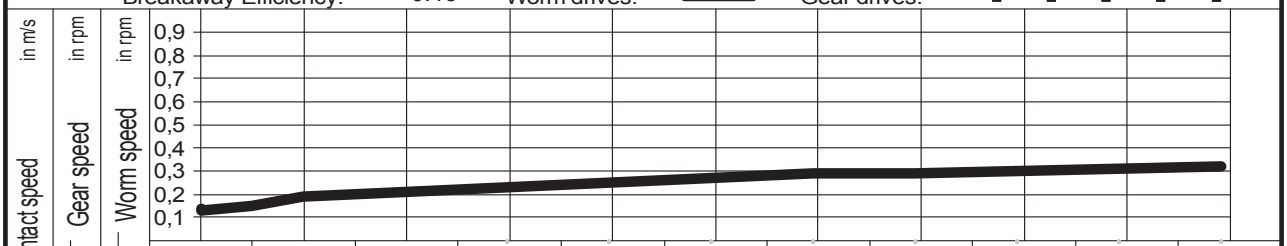
Ott worm gear

OTT no: 4833 SSR



Series R1	259	264	264	264	264	264	264	264	247	223	202
Series R2	194	198	198	198	198	198	198	198	185	167	151
Series R3	142	145	145	145	145	145	145	145	136	123	111
Series R4	104	106	106	106	106	106	106	106	99	89	81
Series R5	78	79	79	79	79	79	79	79	74	67	61

Breakaway Efficiency: 0.13 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
0	0.15	0.23	0.35	0.53	0.80	1.20	1.81	2.71	4.07	6.11

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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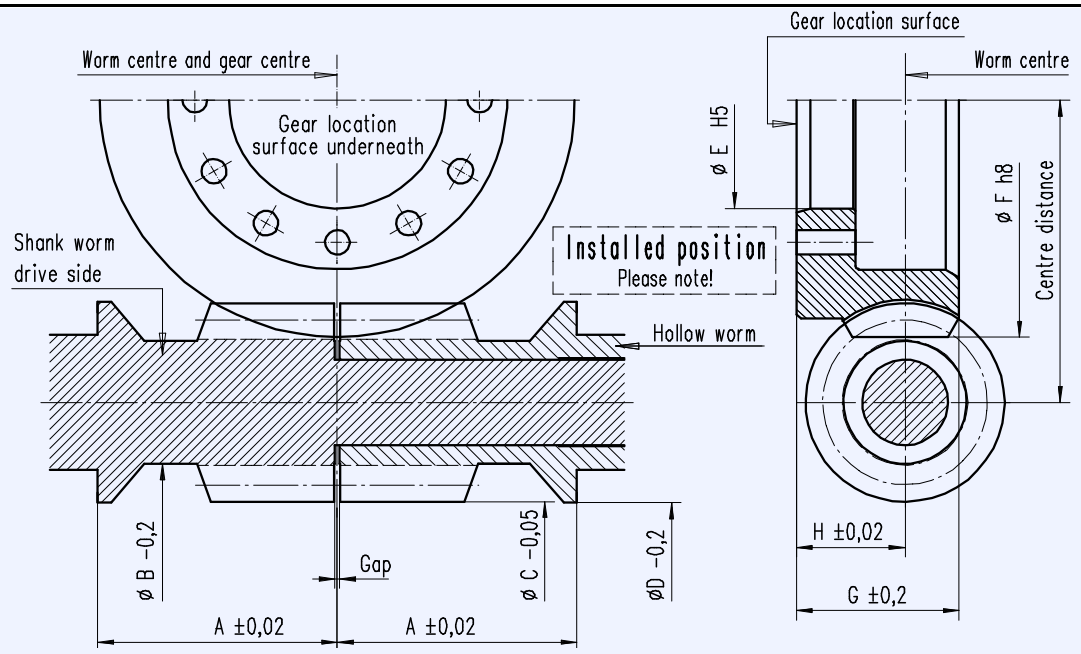
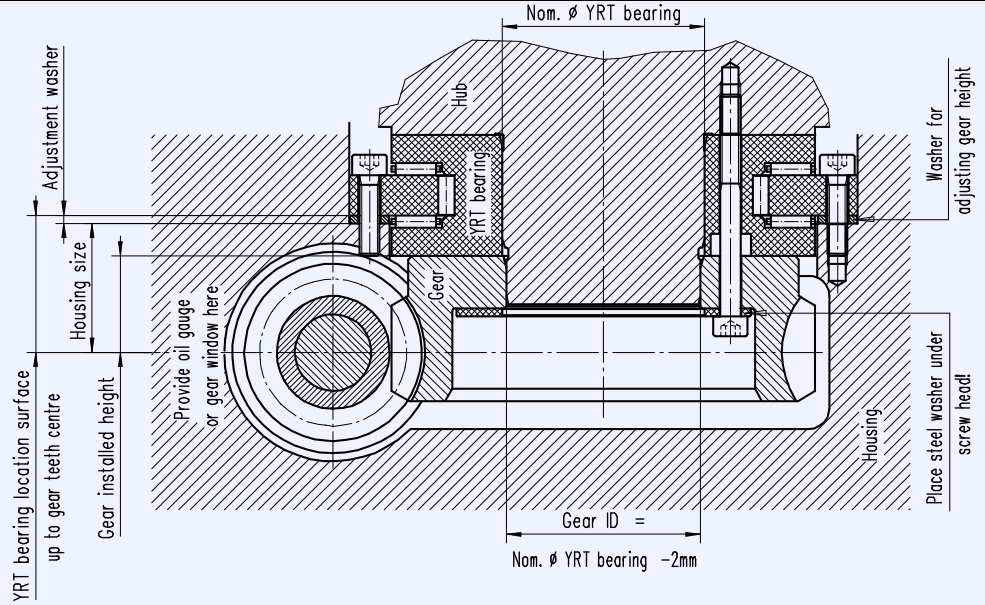
OTT worm gears - centre distance 96 mm

Main dimensions

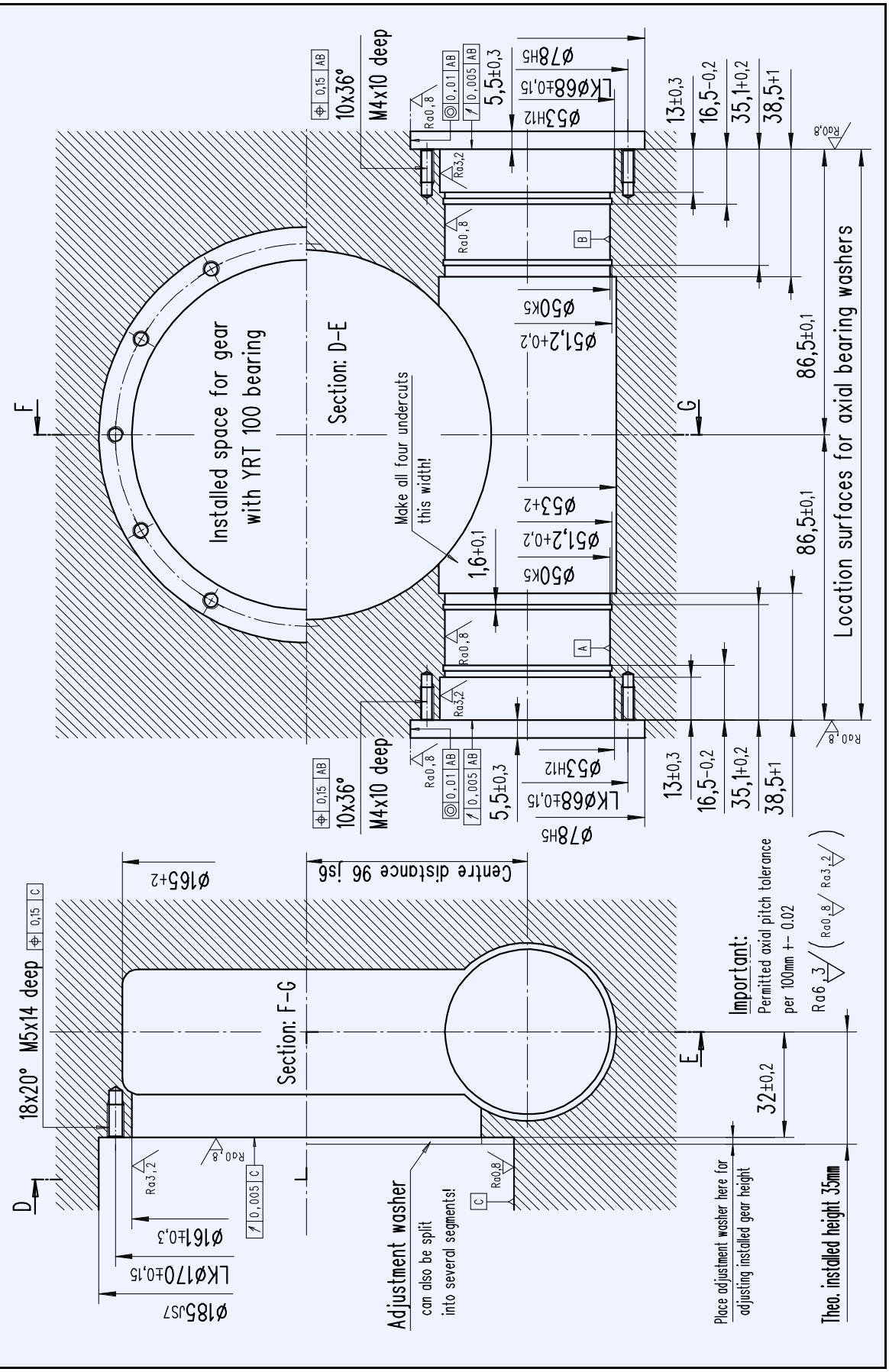


OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4837 SSR	3	90	53	30,8	42,8	44,6	100	98	160	37	22
4856 SSR	2	72		30,5	44,6						
4803 SSR	2	90		30,8	42,6						
4848 SSR	1	72		30,5	44,6						
4802 SSR	1	90		30,8	42,6						
4823 SSR	1	120		31,1	40,6						
							See comments page 5!				



Gear housing - required internal contour

Required internal contour of gear housing for centre distance 96 mm



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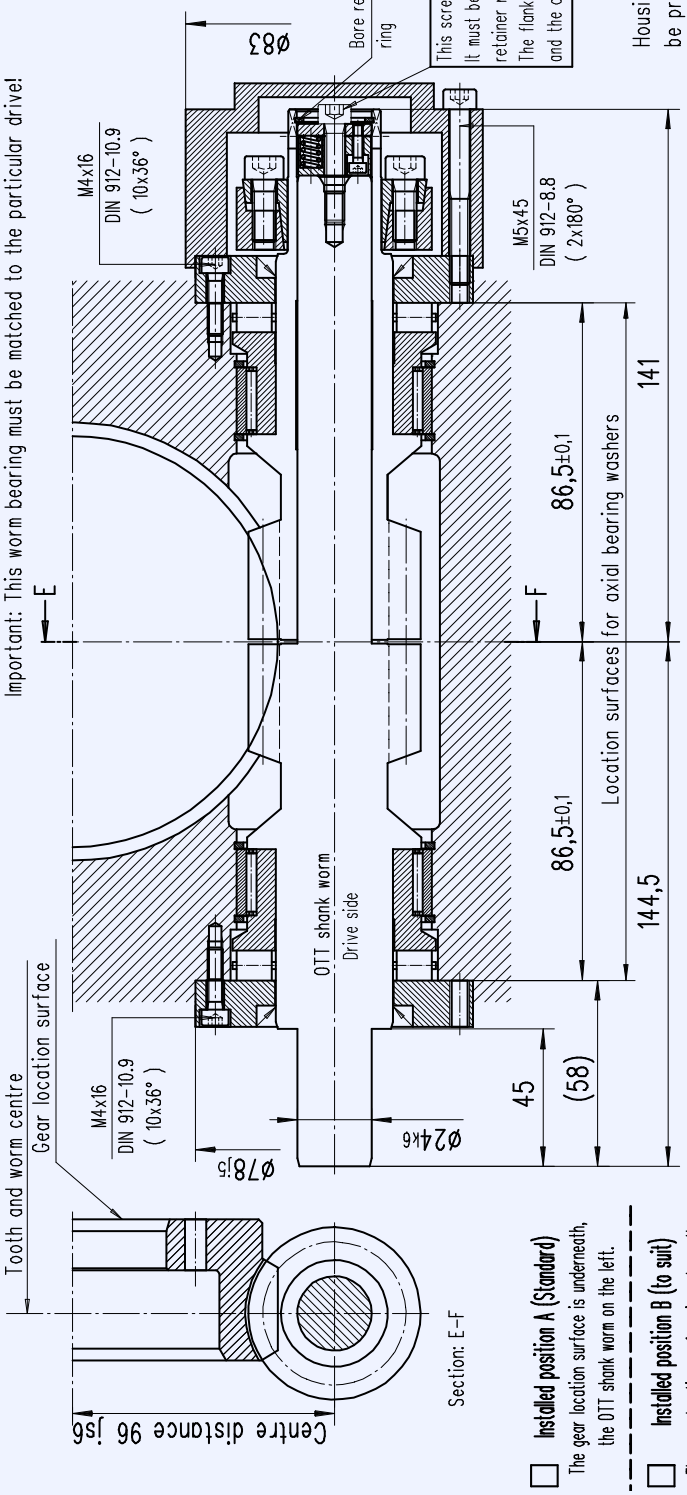
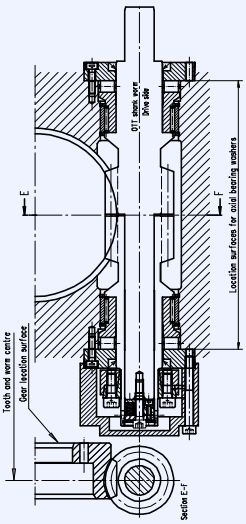
Worm bearings

Worm bearing for centre distance 96 mm



☐ **Installed position A (Standard)**
The gear location surface is underneath, the OTT shank worm on the left.

☐ **Installed position B (to suit)**
The gear location surface is underneath, the OTT shank worm on the right.



OTT worm gear					**Bearing parts** per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
☐ 4837 SSR	T00428-G-RAO	T00279-G-SSC	T00280-G-HSC	2	Axial cylinder roller bearing	K812 06 TV
☐ 4856 SSR	T00429-G-RAO	T00281-G-SSC	T00282-G-HSC	2	Radial needle bearing	RNAO 40x50x17
☐ 4803 SSR	T00430-G-RAO	T00283-G-SSC	T00284-G-HSC	2	Shaft seal	30x40x5
☐ 4848 SSR	T00431-G-RAO	T00285-G-SSC	T00286-G-HSC	1	Shrink disc	HSD 30-22
☐ 4802 SSR	T00432-G-RAO	T00287-G-SSC	T00288-G-HSC	4	Circlip	SB 50
☐ 4823 SSR	T00433-G-RAO	T00289-G-SSC	T00290-G-HSC	20	Cylinder bolt DIN 912	M4x16 - 10.9
				2	Cylinder bolt DIN 912	M5x45 - 8.8
				1	Cylinder bolt DIN 912	M5x25 - 8.8
				1	Retainer ring DIN 472	24
				2	Bearing sleeve	T00220-G-LHÜ
				2	Axial bearing washer	T00232-G-LDX
				1	Cover	T00215-G-ADH
				1	Thrust piece	B00008-G-DST

☐ REQUEST Date: Name:

☐ ORDER

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

Zahnradfertigung Ott
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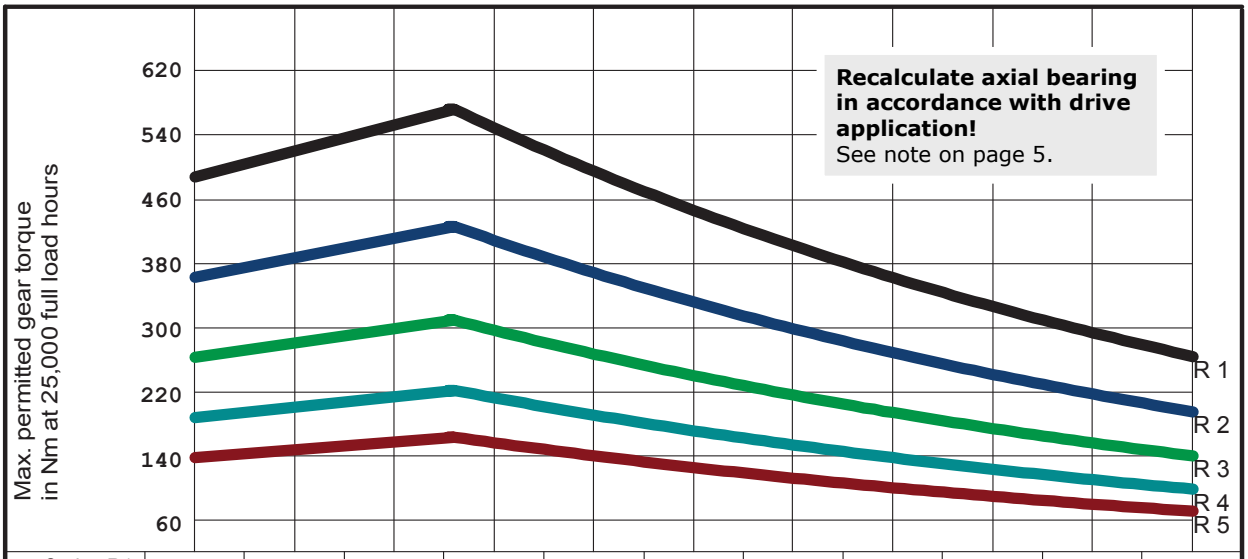
Operational characteristics

Centre distance	96.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	42.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	160.00	mm	Pressure angle in NS	10	°
No. starts, worm	3		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	38.58	mm
No. teeth, gear	90		Lead angle at Bks	7.4054	°

Operating characteristics

Ott worm gear

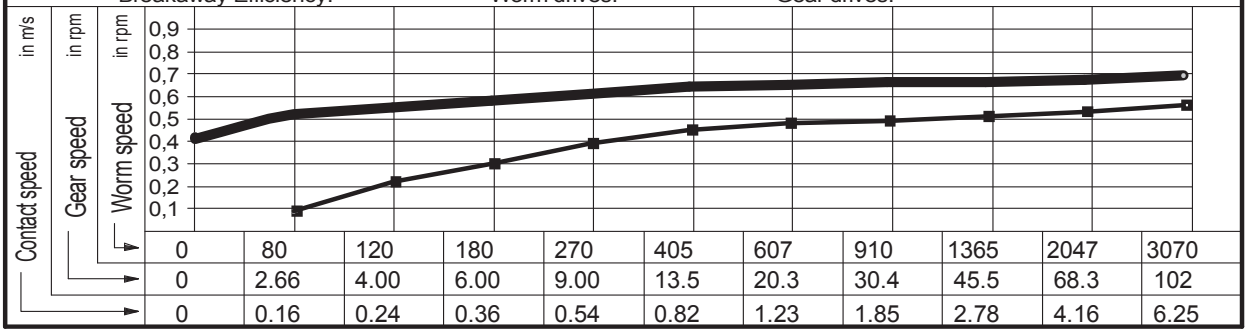
OTT no: 4837 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	482	513	544	539	487	440	398	360	325	294	265
Series R2	361	385	408	404	365	330	298	270	244	220	199
Series R3	265	282	299	297	268	242	219	198	179	162	146
Series R4	193	205	218	216	195	176	159	144	130	117	106
Series R5	145	154	163	162	146	132	119	108	97	88	80

Breakaway Efficiency: 0.41 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	2.66	4.00	6.00	9.00	13.5	20.3	30.4	45.5	68.3	102
0	0.16	0.24	0.36	0.54	0.82	1.23	1.85	2.78	4.16	6.25

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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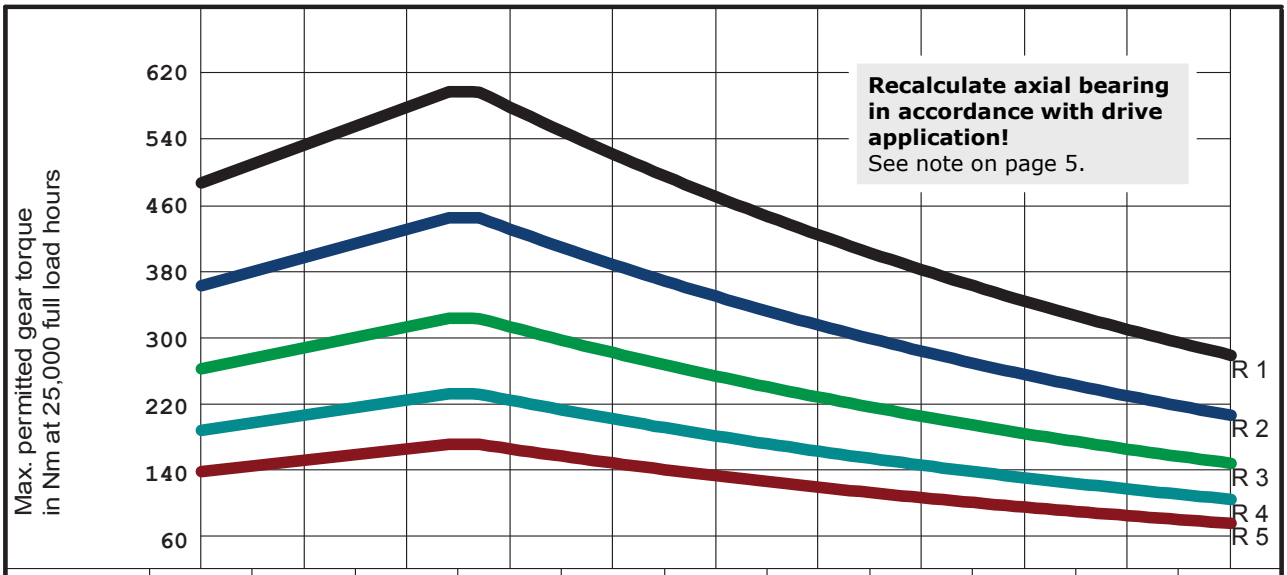
Centre distance	96.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	44.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	160.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	39.77	mm
No. teeth, gear	72		Lead angle at Bks	5.9382	°

Operating characteristics

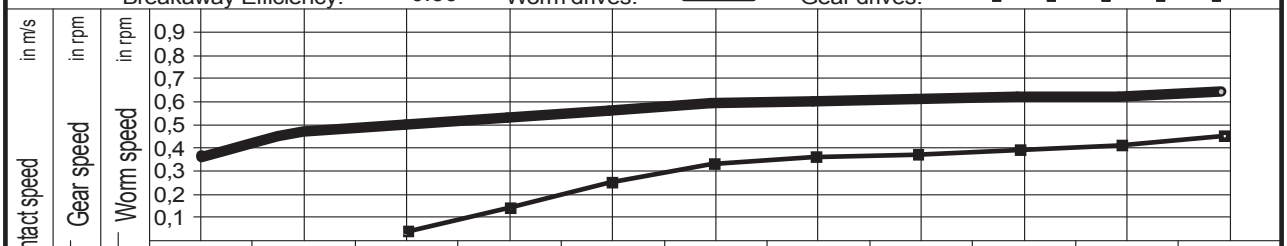
Ott worm gear

OTT no: 4856 SSR



Series R1	481	525	569	564	509	460	416	376	340	307	277
Series R2	361	394	427	423	382	345	312	282	255	230	208
Series R3	265	289	313	310	280	253	229	207	187	169	153
Series R4	192	210	228	225	204	184	166	150	136	123	111
Series R5	144	158	171	169	153	138	125	113	102	92	83

Breakaway Efficiency: 0.36 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	2.22	3.33	5.00	7.50	11.3	16.9	25.3	37.9	56.9	85.3
0	0.16	0.25	0.37	0.56	0.84	1.27	1.90	2.85	4.28	6.42

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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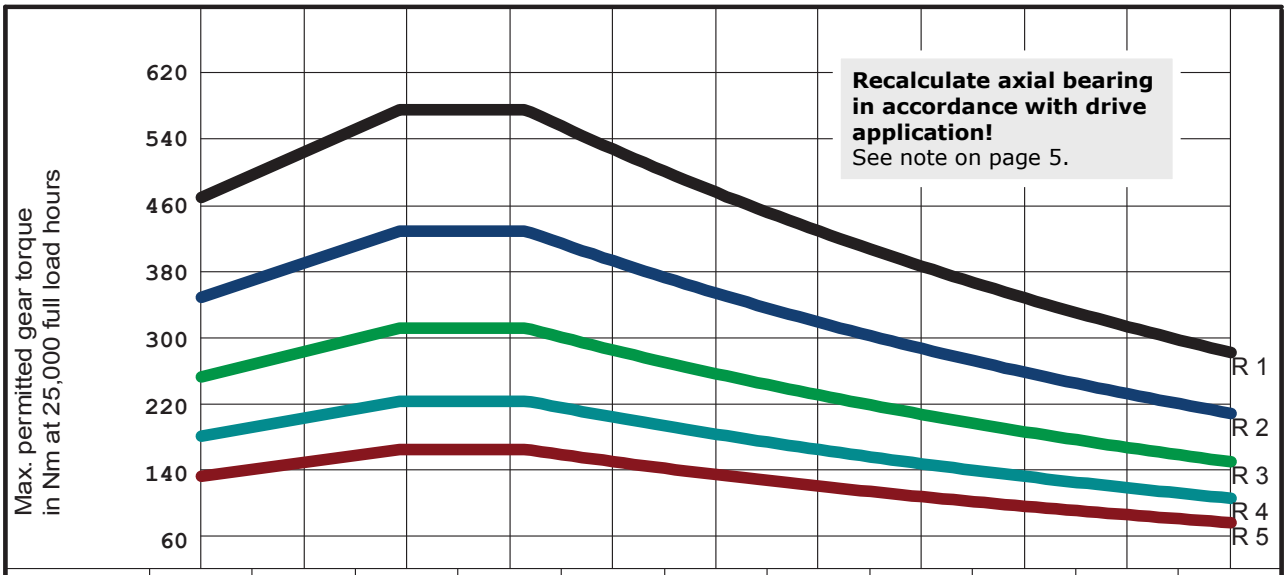
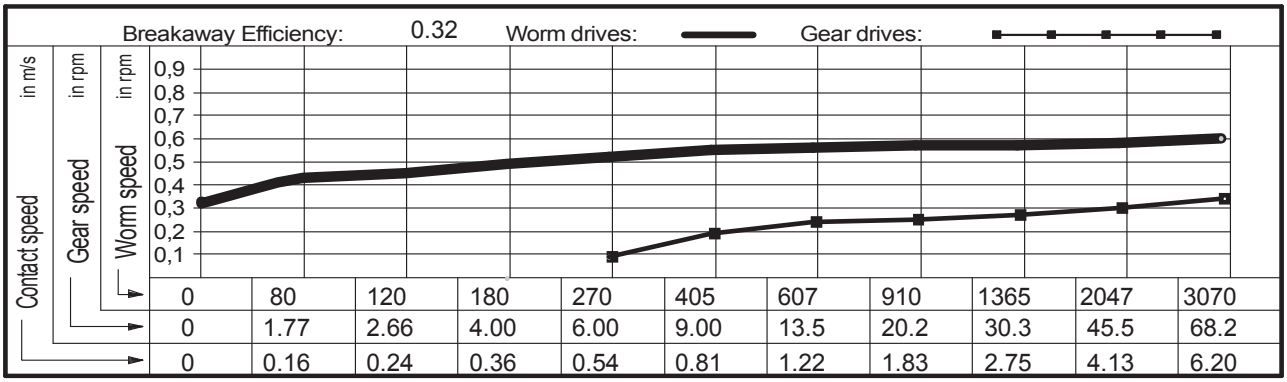
Centre distance	96.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	42.60 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	160.00 mm	Pressure angle in NS	10 °	OTT no:	4803 SSR
No. starts, worm	2	Back angle in NS	15 °		
Worm direction	right	Calculated circle Ø	38.43 mm		
No. teeth, gear	90	Lead angle at Bks	4.9774 °		



Series R1	464	517	566	566	519	469	424	383	346	313	283
Series R2	348	388	425	425	389	352	318	287	260	235	212
Series R3	255	284	311	311	286	258	233	211	190	172	156
Series R4	186	207	227	227	208	188	170	153	139	125	113
Series R5	139	155	170	170	156	141	127	115	104	94	85



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.77	2.66	4.00	6.00	9.00	13.5	20.2	30.3	45.5	68.2
0	0.16	0.24	0.36	0.54	0.81	1.22	1.83	2.75	4.13	6.20

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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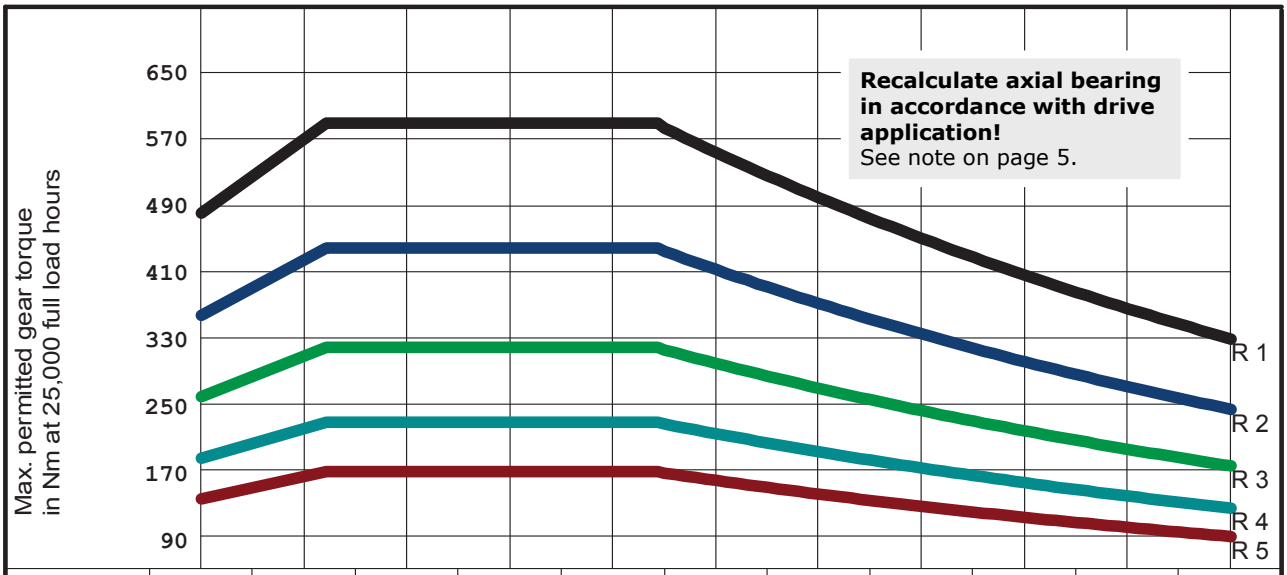
Centre distance	96.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	44.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	160.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	39.78	mm
No. teeth, gear	72		Lead angle at Bks	2.9765	°

Operating characteristics

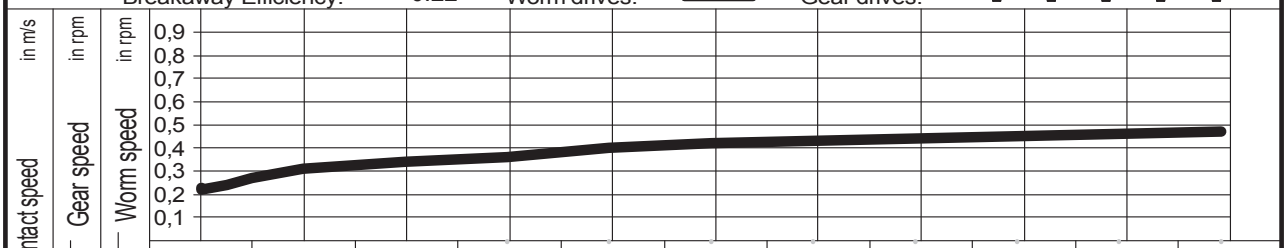
Ott worm gear

OTT no: 4848 SSR



Series R1	475	562	581	581	581	541	489	442	399	361	326
Series R2	357	421	435	435	435	406	367	331	299	271	244
Series R3	261	309	319	319	319	298	269	243	220	198	179
Series R4	190	225	232	232	232	216	196	177	160	144	130
Series R5	143	169	174	174	174	162	147	133	120	108	98

Breakaway Efficiency: 0.22 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	1.11	1.66	2.50	3.75	5.62	8.43	12.6	19.0	28.4	42.6
Contact speed	0	0.16	0.25	0.37	0.56	0.84	1.26	1.89	2.84	4.26	6.40

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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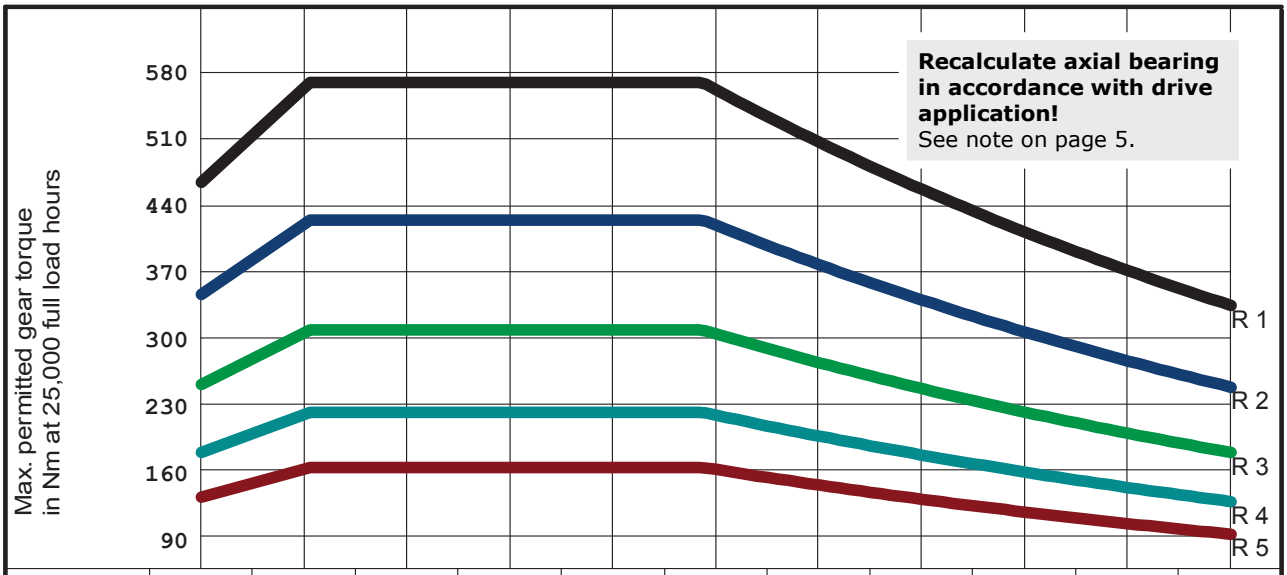
Centre distance	96.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	42.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	160.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	38.44	mm
No. teeth, gear	90		Lead angle at Bks	2.4931	°

Operating characteristics

Ott worm gear

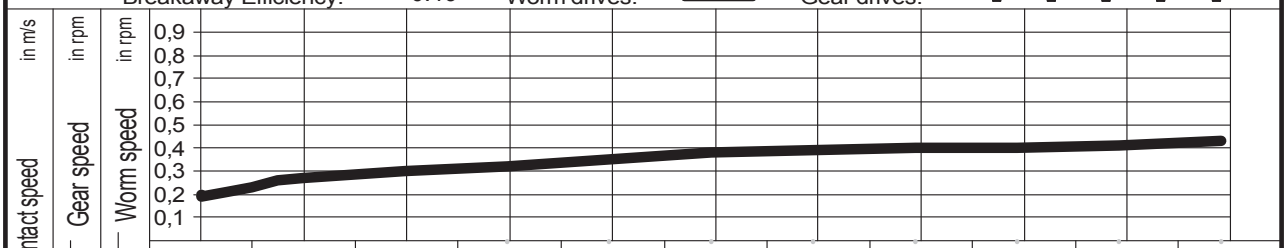
OTT no: 4802 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	459	555	561	561	561	552	499	451	408	368	333
Series R2	344	417	421	421	421	414	374	338	306	276	250
Series R3	253	305	308	308	308	304	275	248	224	203	183
Series R4	184	222	224	224	224	221	200	180	163	147	133
Series R5	138	167	168	168	168	166	150	135	122	111	100

Breakaway Efficiency: 0.19 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
0	0.16	0.24	0.36	0.54	0.81	1.22	1.83	2.74	4.12	6.18

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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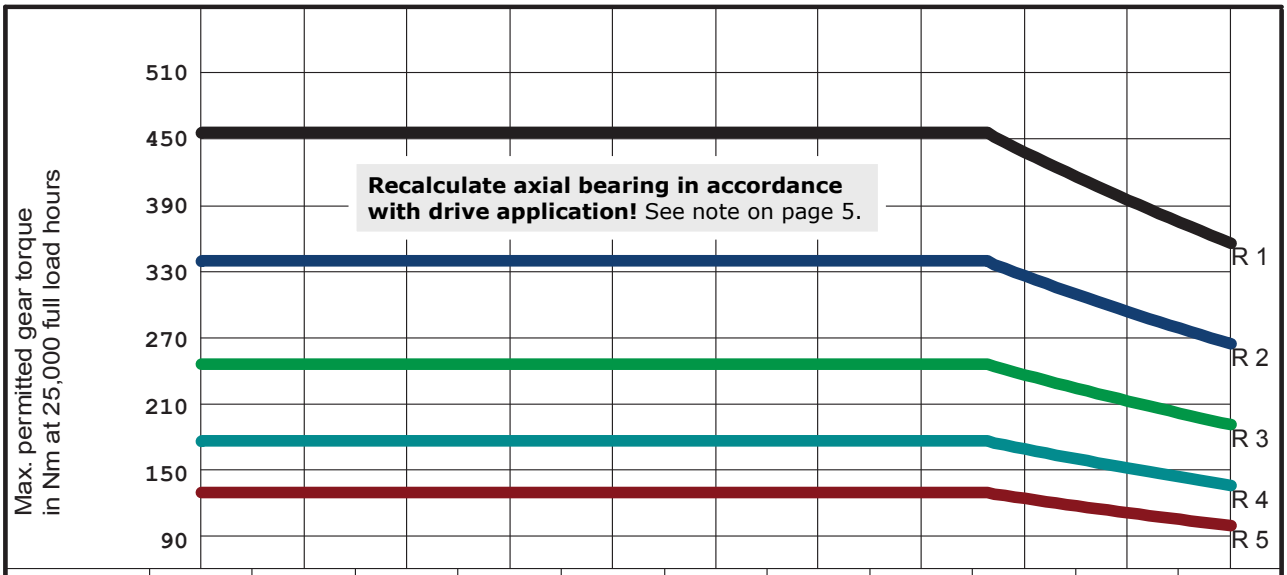
Centre distance	96.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	40.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	160.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	37.14	mm
No. teeth, gear	120		Lead angle at Bks	1.9577	°

Operating characteristics

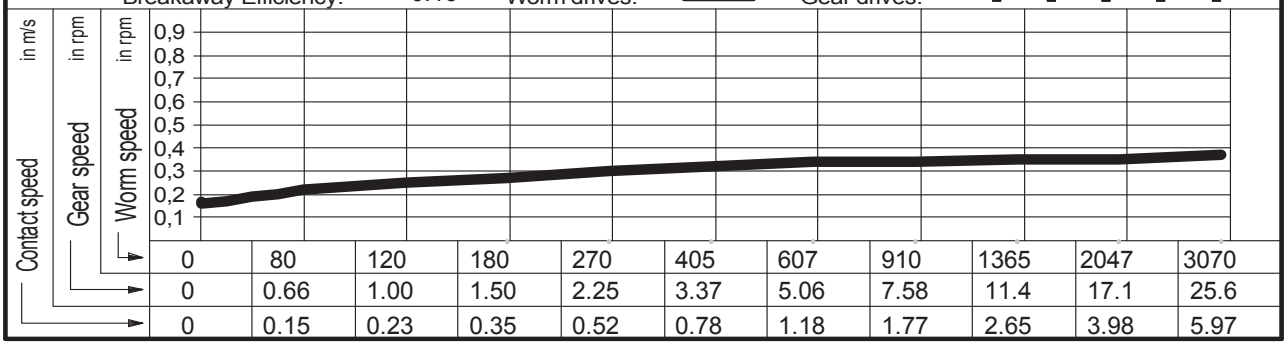
Ott worm gear

OTT no: 4823 SSR



Series R1	450	450	450	450	450	450	450	450	429	387	350
Series R2	337	337	337	337	337	337	337	337	321	290	263
Series R3	247	247	247	247	247	247	247	247	236	213	193
Series R4	180	180	180	180	180	180	180	180	171	155	140
Series R5	135	135	135	135	135	135	135	135	129	116	105

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
0	0.15	0.23	0.35	0.52	0.78	1.18	1.77	2.65	3.98	5.97

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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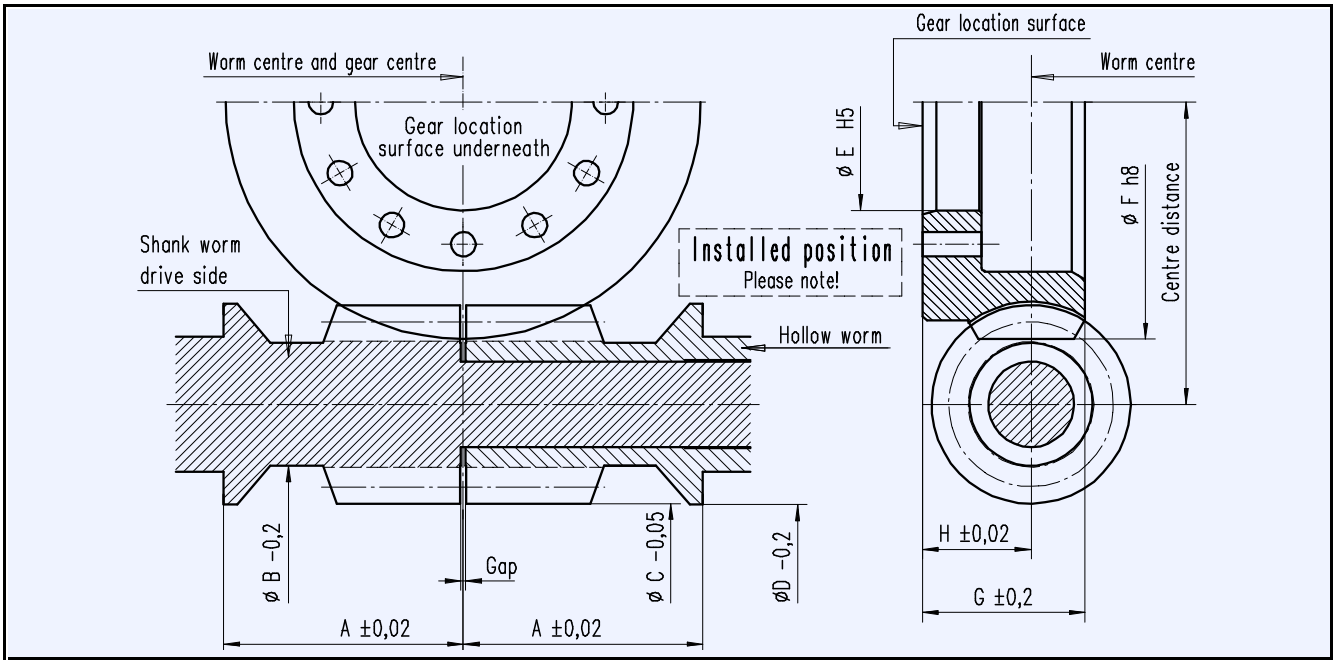
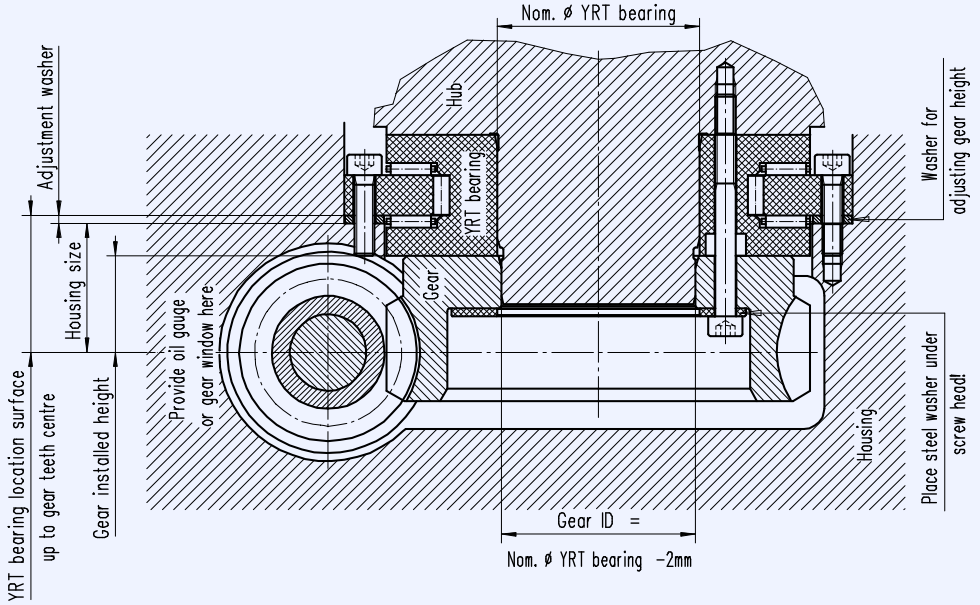
OTT worm gears - centre distance 110 mm

Main dimensions



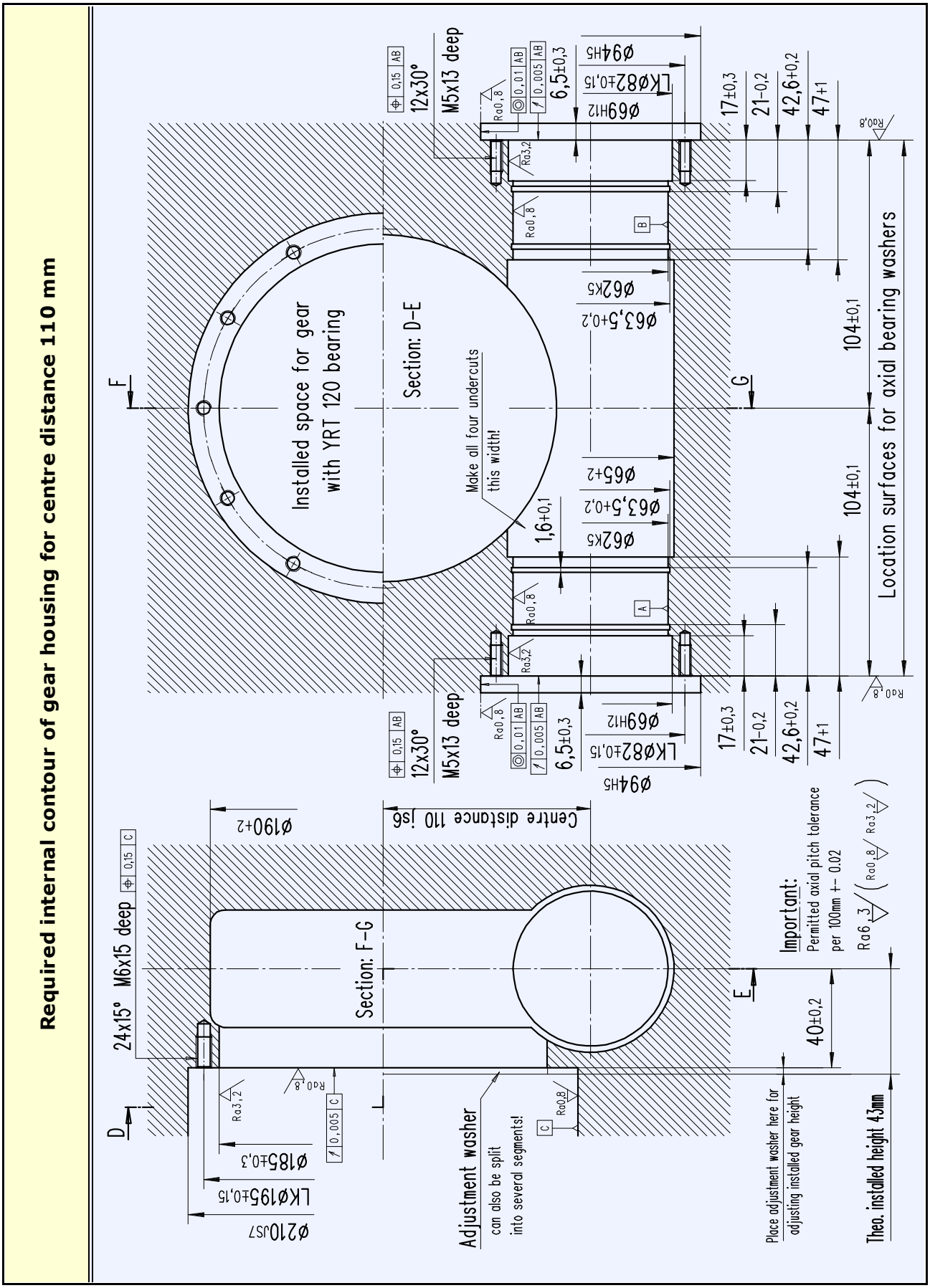
OTT gear no.	Ratio		Worm				YRT gear bearing	Rad			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
5448 SSR	2	80	63	35,1	49,4	54,6	120	118	184	45	29
4867 SSR	2	120		34,9	45,6						
4847 SSR	1	72		34,3	50,8						
4817 SSR	1	90		34,6	48,3						
4800 SSR	1	120		34,9	45,6						
4814 SSR	1	144		35,1	44,6						
1664 SSR	1	180		35,3	42						

See comments page 5!



Gear housing - required internal contour

Required internal contour of gear housing for centre distance 110 mm



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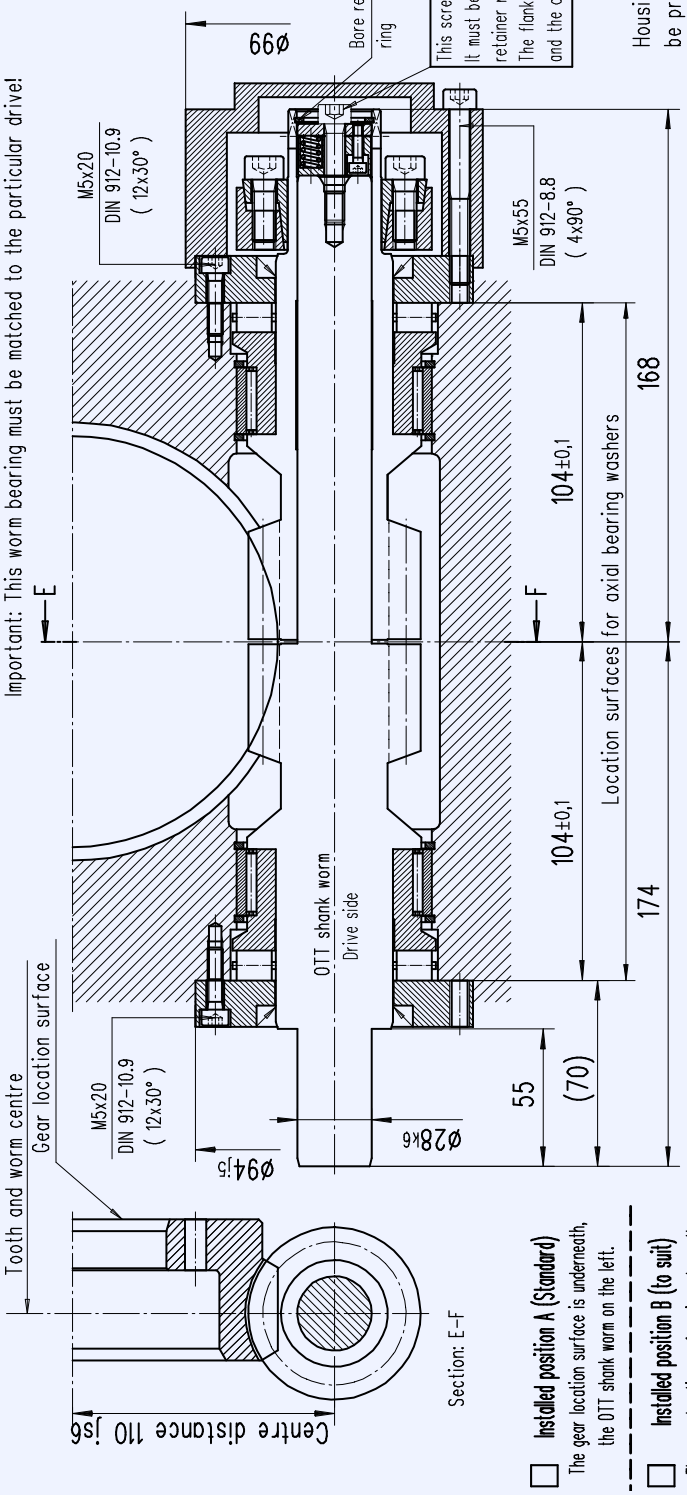
Worm bearings

Worm bearing for centre distance 110 mm



OTT worm gear					Bearing parts per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
5448 SSR	T00434-G-RAO	T00291-G-SSC	T00292-G-HSC	2	Axial cylinder roller bearing	K812 08 TV
4867 SSR	T00435-G-RAO	T00293-G-SSC	T00294-G-HSC	2	Radial needle bearing	RNAO 50x62x20
4847 SSR	T00436-G-RAO	T00295-G-SSC	T00296-G-HSC	2	Shaft seal	40x52x6
4817 SSR	T00437-G-RAO	T00297-G-SSC	T00298-G-HSC	1	Shrink disc	HSD 36-22
4800 SSR	T00438-G-RAO	T00299-G-SSC	T00300-G-HSC	4	Circlip	SB 62
4814 SSR	T00439-G-RAO	T00301-G-SSC	T00302-G-HSC	24	Cylinder bolt DIN 912	M5x20 - 10.9
1664 SSR	T00440-G-RAO	T00303-G-SSC	T00304-G-HSC	4	Cylinder bolt DIN 912	M5x55 - 8.8
				1	Cylinder bolt DIN 912	M6x30 - 8.8
				1	Retainer ring DIN 472	28
				2	Bearing sleeve	T00221-G-LHÜ
				2	Axial bearing washer	T00233-G-LDX
				1	Cover	T00216-G-ADH
				1	Thrust piece	B00009-G-DST

☐ REQUEST Date: Name:

☐ ORDER

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

Zahnradfertigung Ott
Blöhsteinstraße 20
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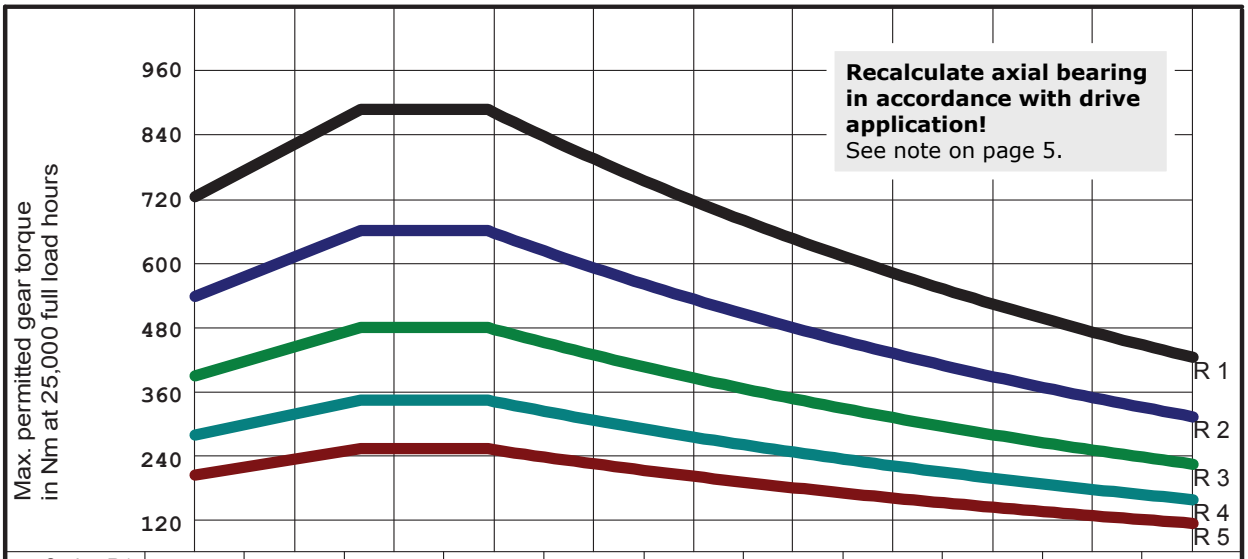
Operational characteristics

Centre distance	110.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	49.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	184.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	44.21	mm
No. teeth, gear	80		Lead angle at Bks	5.5615	°

Operating characteristics

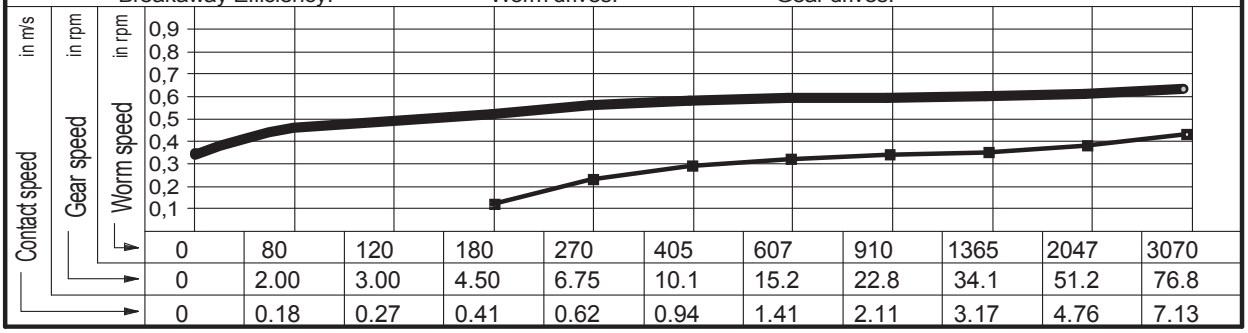
Ott worm gear

OTT no: 5448 SSR



Series R1	717	812	875	875	779	704	636	575	519	469	424
Series R2	537	609	656	656	584	528	477	431	390	352	318
Series R3	394	447	481	481	428	387	350	316	286	258	233
Series R4	287	325	350	350	312	282	254	230	208	188	170
Series R5	215	244	263	263	234	211	191	172	156	141	127

Breakaway Efficiency: 0.34 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2	76.8
Contact speed	0	0.18	0.27	0.41	0.62	0.94	1.41	2.11	3.17	4.76	7.13

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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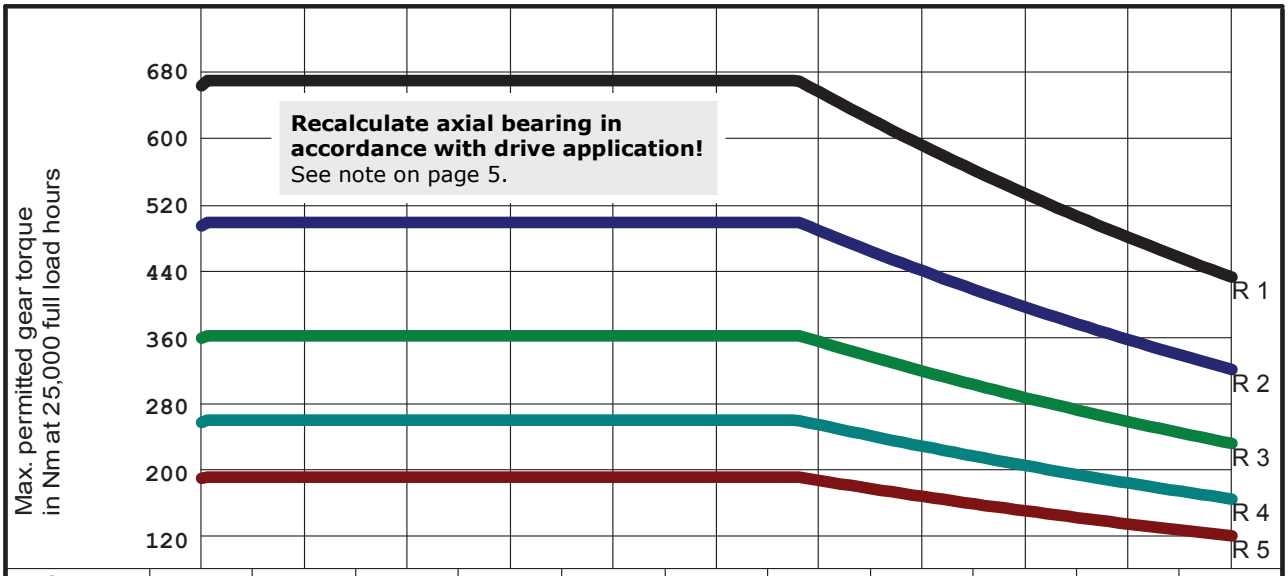
Centre distance	110.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	45.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	184.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	41.69	mm
No. teeth, gear	120		Lead angle at Bks	4.0126	°

Operating characteristics

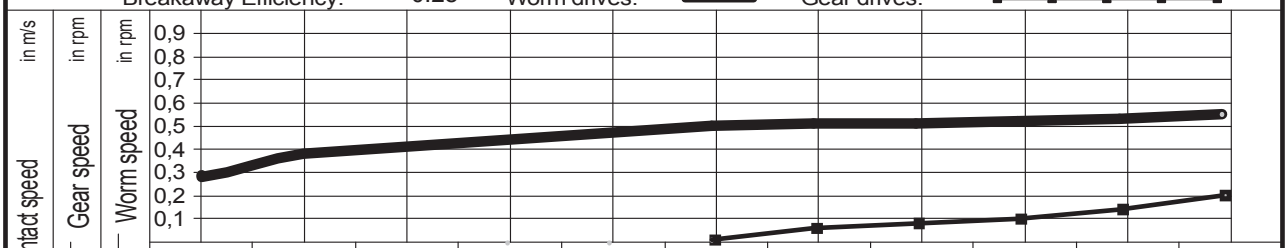
Ott worm gear

OTT no: 4867 SSR



Series R1	653	659	659	659	659	659	642	580	524	473	428
Series R2	490	494	494	494	494	494	481	435	393	355	321
Series R3	359	363	363	363	363	363	353	319	288	260	235
Series R4	261	264	264	264	264	264	257	232	210	189	171
Series R5	196	198	198	198	198	198	192	174	157	142	128

Breakaway Efficiency: 0.28 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
0	0.17	0.26	0.39	0.59	0.88	1.32	1.99	2.98	4.47	6.71

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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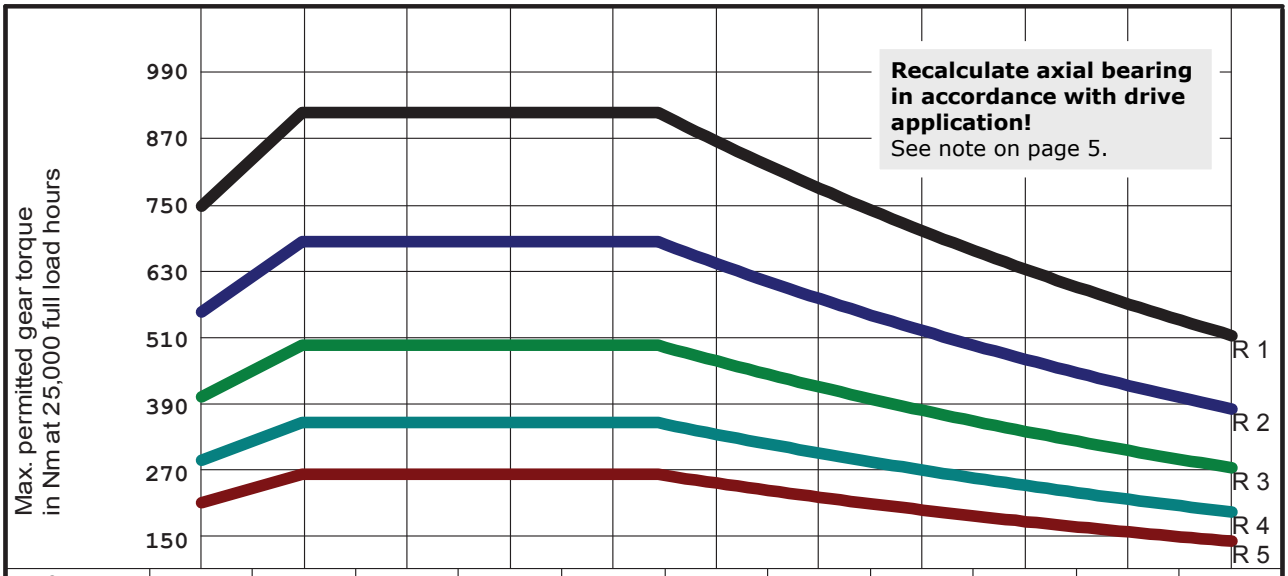
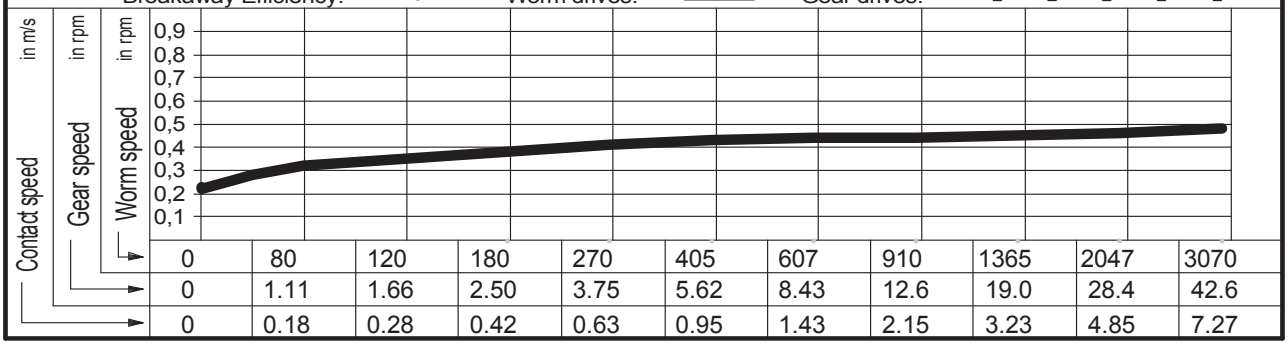
Centre distance	110.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	50.80 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	184.00 mm	Pressure angle in NS	10 °	OTT no:	4847 SSR
No. starts, worm	1	Back angle in NS	20 °		
Worm direction	right	Calculated circle Ø	45.19 mm		
No. teeth, gear	72	Lead angle at Bks	3.0074 °		



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	740	904	904	904	904	842	761	688	622	562	508
Series R2	555	678	678	678	678	632	571	516	466	421	381
Series R3	407	497	497	497	497	463	419	378	342	309	279
Series R4	296	362	362	362	362	337	304	275	249	225	203
Series R5	222	271	271	271	271	253	228	206	186	169	152

Breakaway Efficiency: 0.22 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	1.11	1.66	2.50	3.75	5.62	8.43	12.6	19.0	28.4	42.6
Contact speed	0	0.18	0.28	0.42	0.63	0.95	1.43	2.15	3.23	4.85	7.27

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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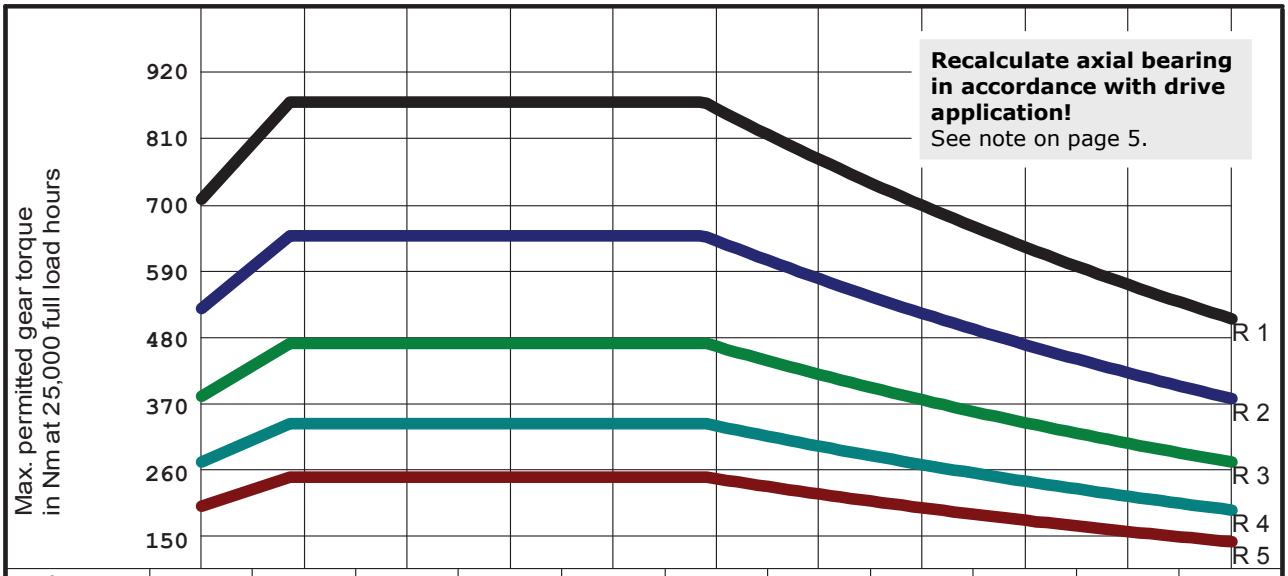
Centre distance	110.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	48.30	mm	Material, worm	31CrMoV9	
Outer Ø gear	184.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	43.49	mm
No. teeth, gear	90		Lead angle at Bks	2.5323	°

Operating characteristics

Ott worm gear

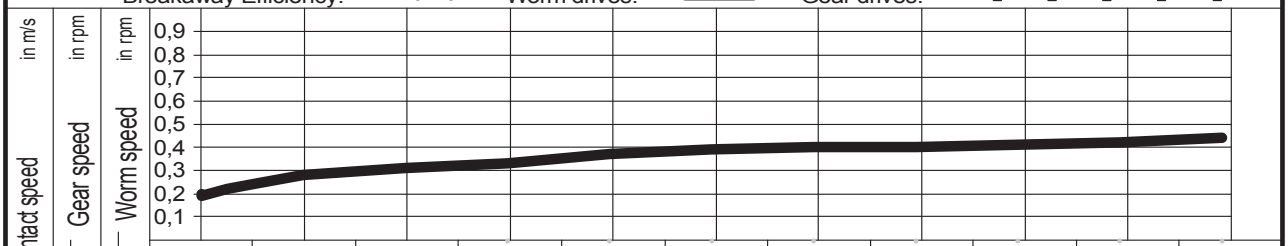
OTT no: 4817 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	702	857	857	857	857	844	763	690	623	563	509
Series R2	526	643	643	643	643	633	572	517	467	422	382
Series R3	386	471	471	471	471	464	420	379	343	310	280
Series R4	281	343	343	343	343	338	305	276	249	225	204
Series R5	211	257	257	257	257	253	229	207	187	169	153

Breakaway Efficiency: 0.19 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
Contact speed	0	0.18	0.27	0.41	0.61	0.92	1.38	2.07	3.11	4.66	6.99

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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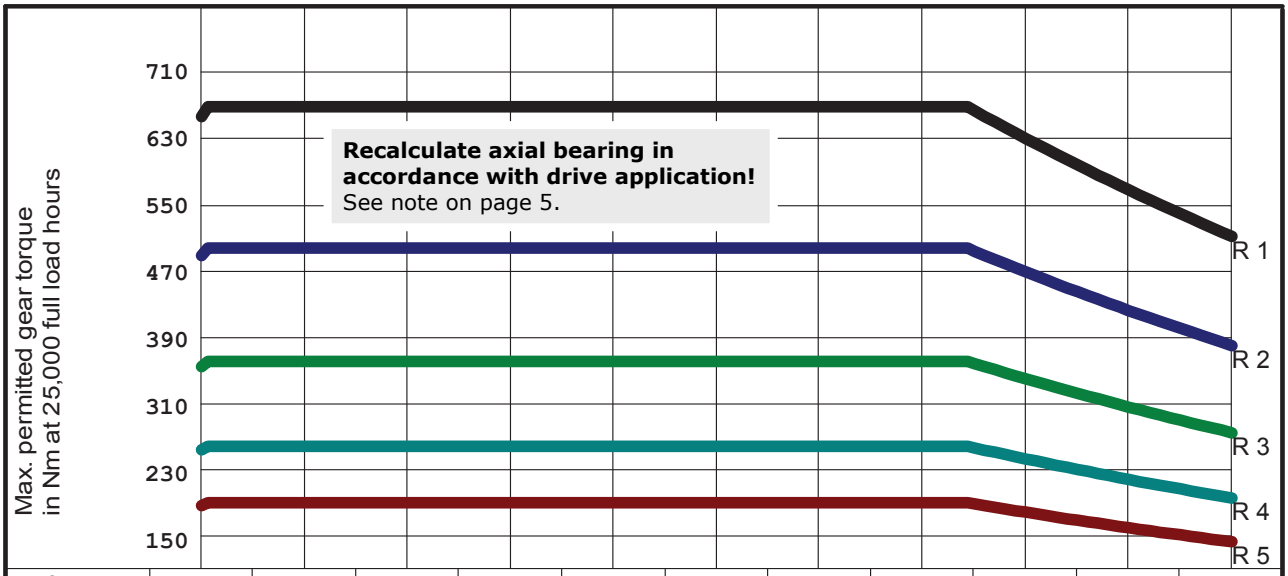
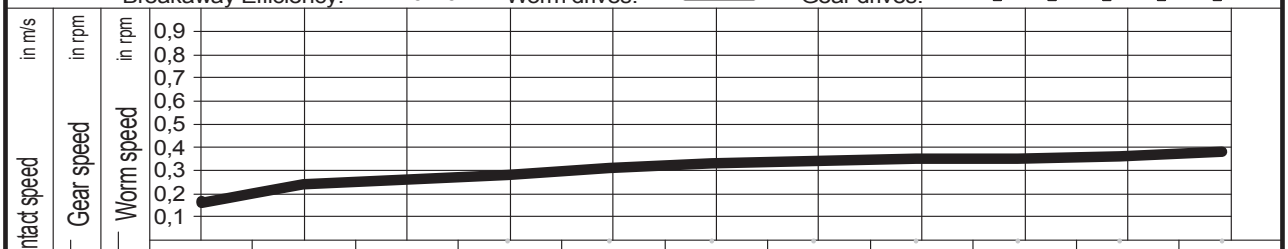
Centre distance	110.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	45.60 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	184.00 mm	Pressure angle in NS	10 °	OTT no:	4800 SSR
No. starts, worm	1	Back angle in NS	15 °		
Worm direction	right	Calculated circle Ø	41.69 mm		
No. teeth, gear	120	Lead angle at Bks	2.0086 °		



Series R1	648	659	659	659	659	659	659	659	618	558	505
Series R2	486	494	494	494	494	494	494	494	464	419	378
Series R3	356	362	362	362	362	362	362	362	340	307	278
Series R4	259	264	264	264	264	264	264	264	247	223	202
Series R5	194	198	198	198	198	198	198	198	185	168	151

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
Contact speed	0	0.17	0.26	0.39	0.58	0.88	1.32	1.98	2.98	4.47	6.70

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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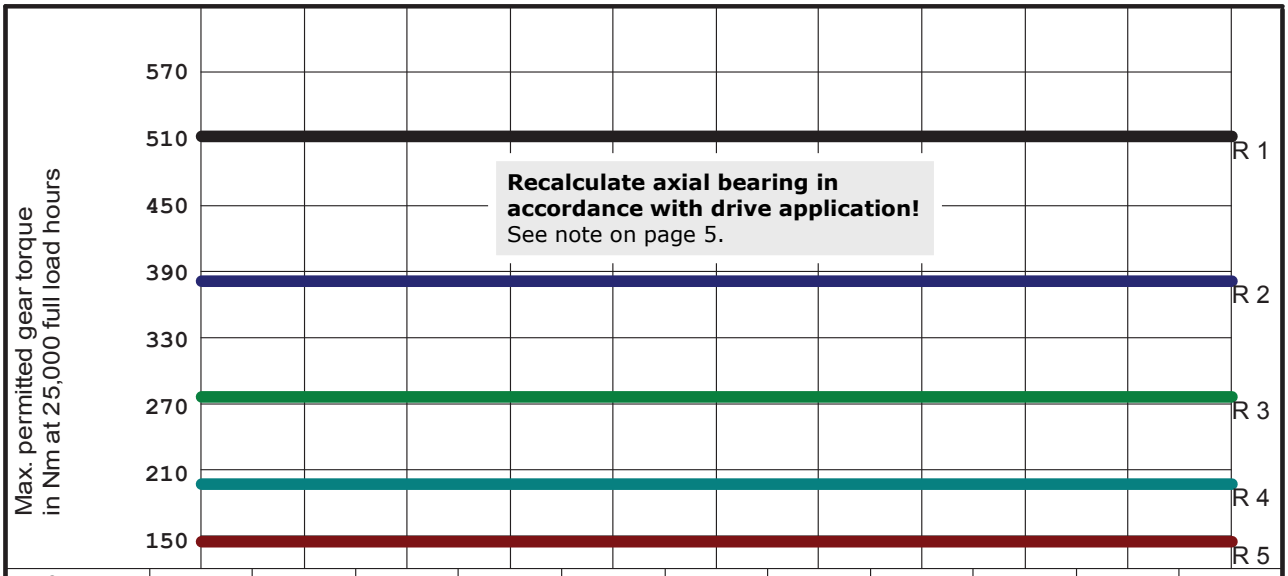
Centre distance	110.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	44.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	184.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	41.07	mm
No. teeth, gear	144		Lead angle at Bks	1.7075	°

Operating characteristics

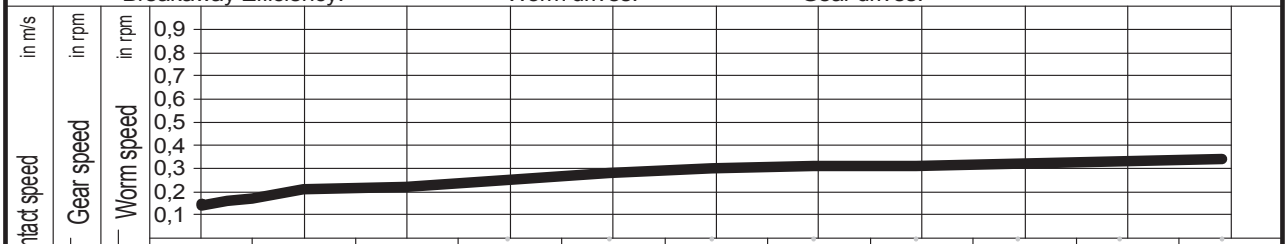
Ott worm gear

OTT no: 4814 SSR



Series R1	506	506	506	506	506	506	506	506	506	506	506
Series R2	379	379	379	379	379	379	379	379	379	379	379
Series R3	278	278	278	278	278	278	278	278	278	278	278
Series R4	202	202	202	202	202	202	202	202	202	202	202
Series R5	152	152	152	152	152	152	152	152	152	152	152

Breakaway Efficiency: 0.14 Worm drives: Gear drives:



Worm speed in rpm	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed in rpm	0	0.55	0.83	1.25	1.87	2.81	4.21	6.32	9.47	14.2	21.3
Contact speed in m/s	0	0.17	0.25	0.38	0.58	0.87	1.30	1.95	2.93	4.40	6.60

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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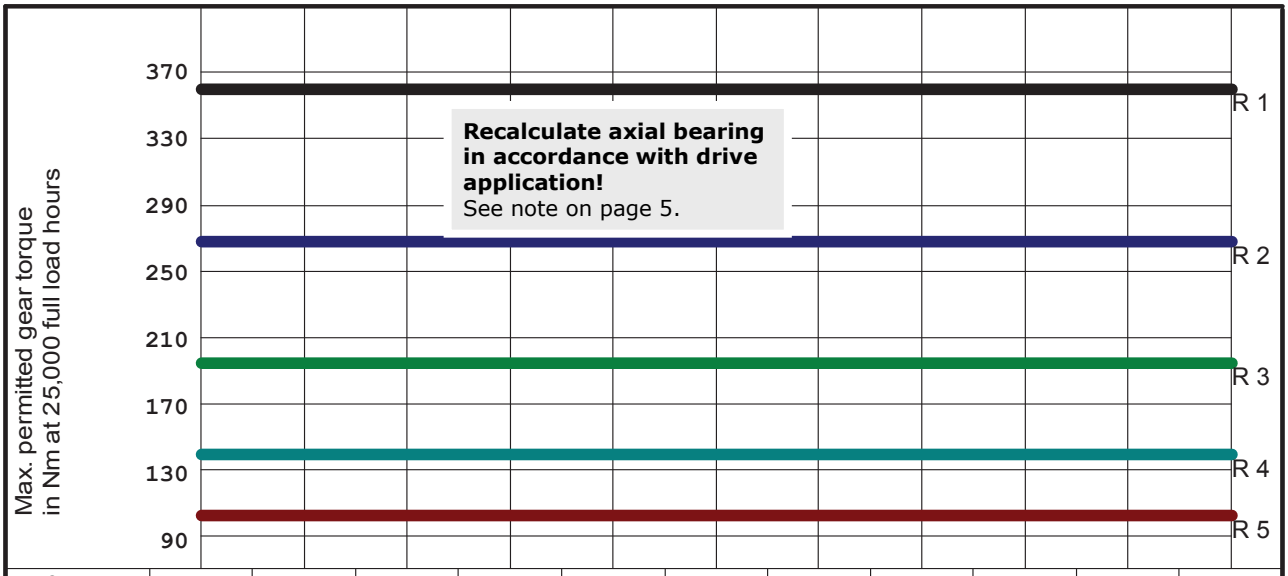
Centre distance	110.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	42.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	184.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	39.31	mm
No. teeth, gear	180		Lead angle at Bks	1.4467	°

Operating characteristics

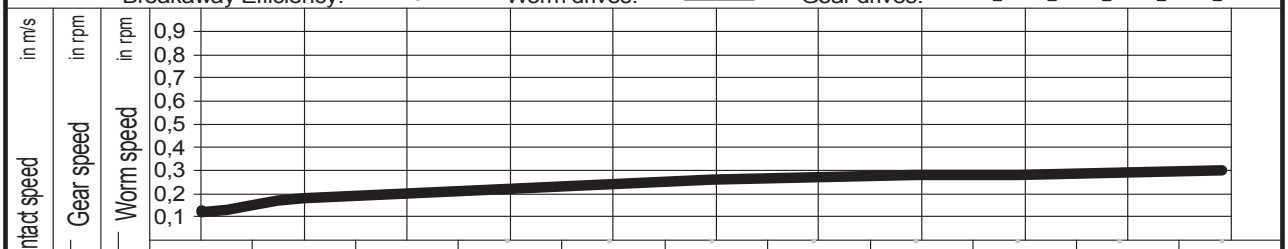
Ott worm gear

OTT no: 1664 SSR



Series R1	355	355	355	355	355	355	355	355	355	355	355
Series R2	266	266	266	266	266	266	266	266	266	266	266
Series R3	195	195	195	195	195	195	195	195	195	195	195
Series R4	142	142	142	142	142	142	142	142	142	142	142
Series R5	106	106	106	106	106	106	106	106	106	106	106

Breakaway Efficiency: 0.12 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	0.44	0.66	1.00	1.50	2.25	3.37	5.05	7.58	11.4	17.1
Contact speed	0	0.16	0.24	0.37	0.55	0.83	1.24	1.87	2.81	4.21	6.32

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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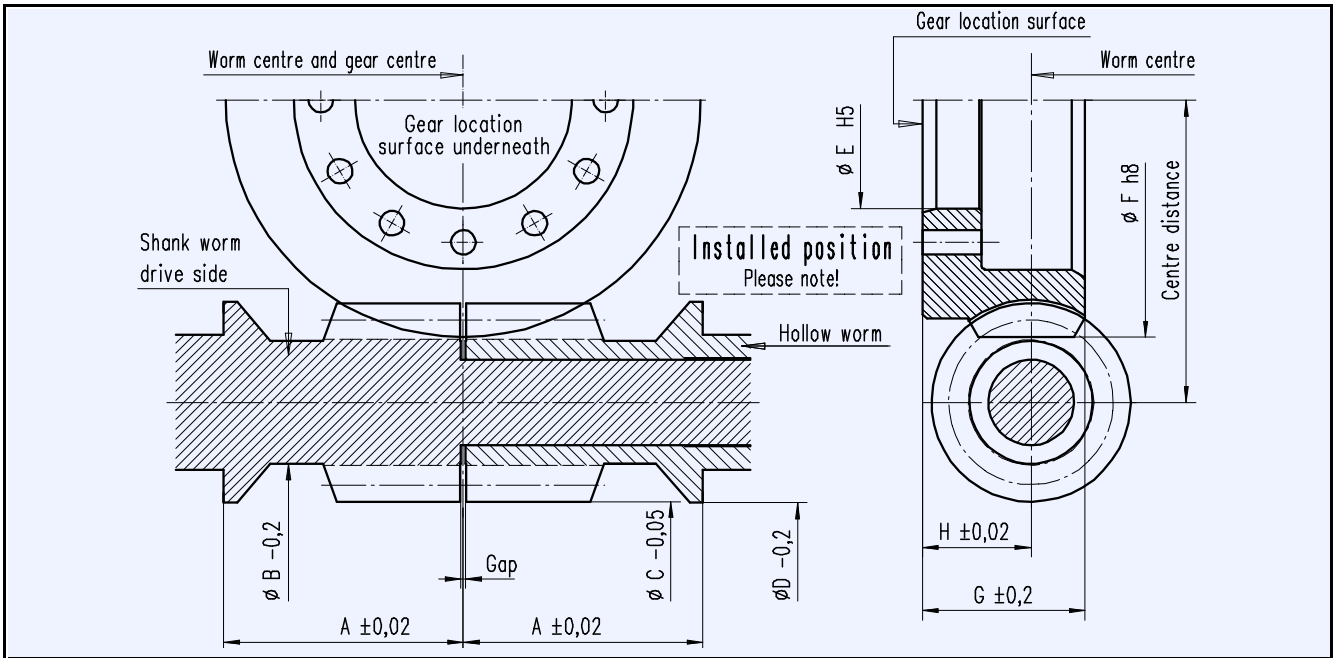
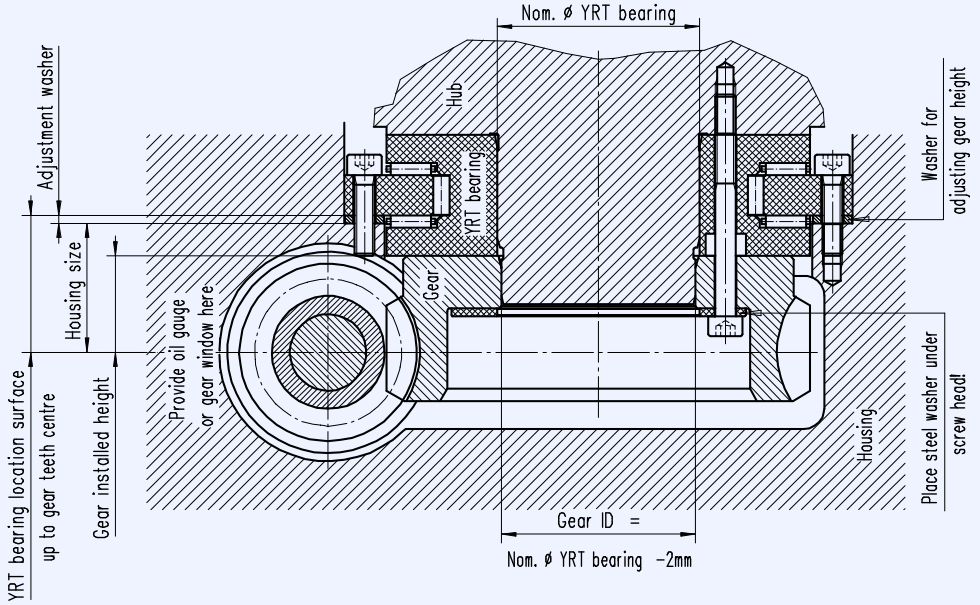
OTT worm gears - centre distance 125 mm

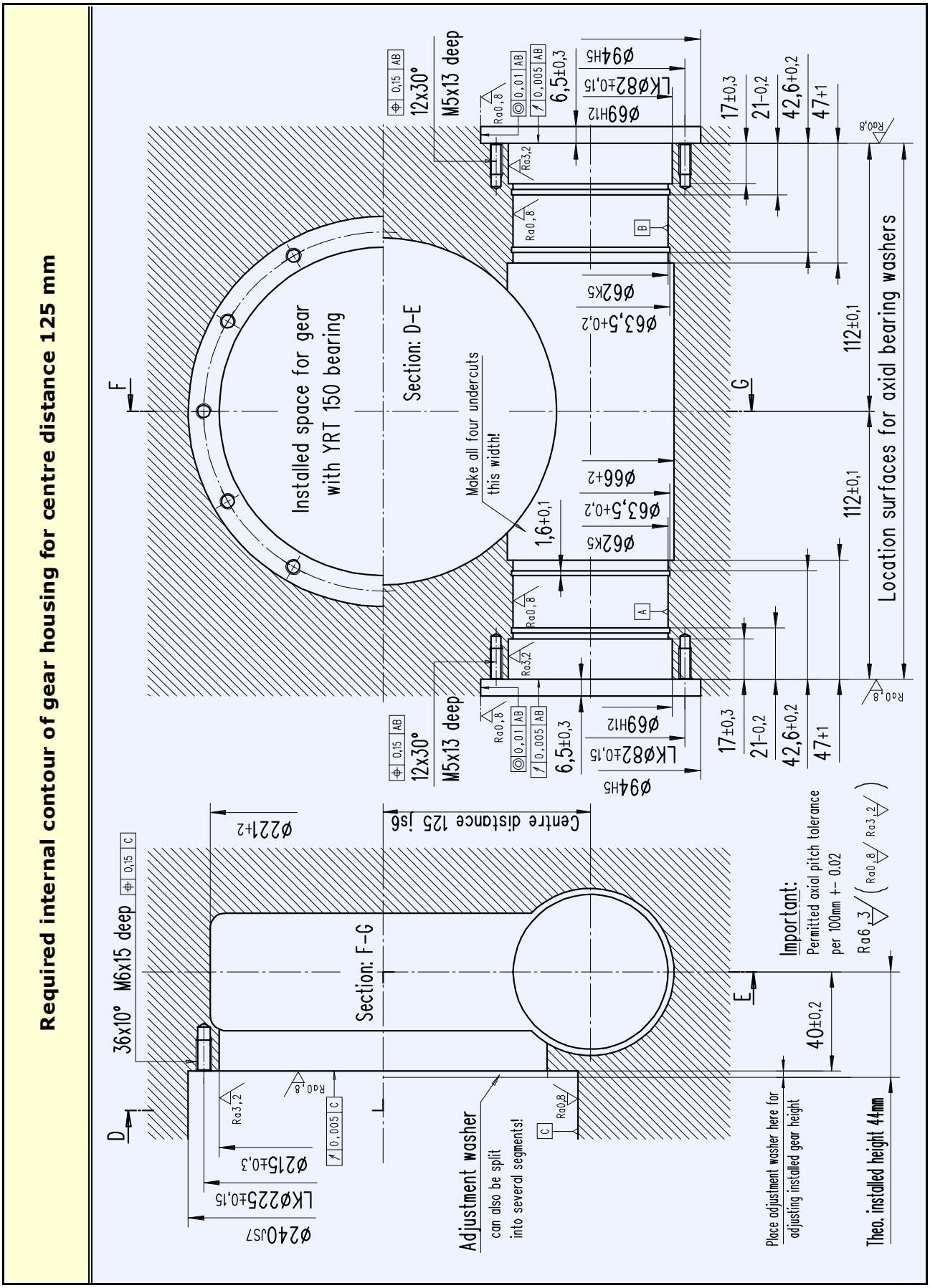
Main dimensions



OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
5549 SSR	2	80	71	34,2	51,7	54,6	150	148	214	48	30
4879 SSR	2	100		34,5	49,2						
4877 SSR	2	120		34,8	47,4						
4804 SSR	1	70		34,0	53,6						
5741 SSR	1	72		34,0	53,2						
4853 SSR	1	90		34,4	50,4						
4861 SSR	1	120		34,8	47,4						
4846 SSR	1	144		35	46						
							See comments page 5!				



Gear housing - required internal contour



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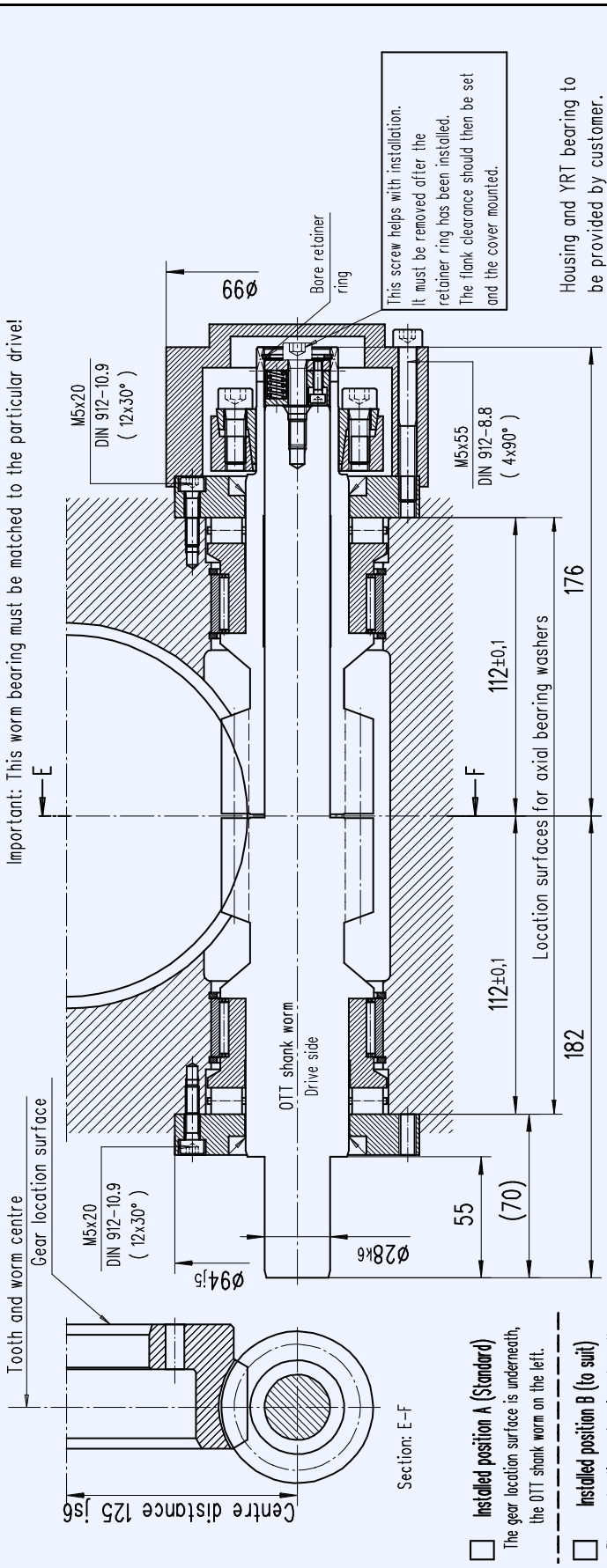
Worm bearings

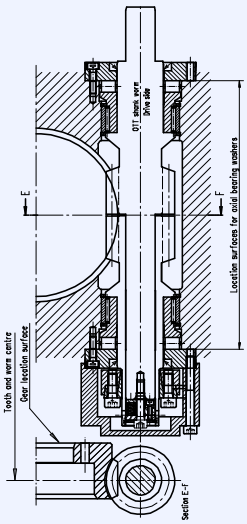
Worm bearing for centre distance 125 mm



☐ **Installed position A (Standard)**
The gear location surface is underneath, the OTT shank worm on the left.

☐ **Installed position B (to suit)**
The gear location surface is underneath, the OTT shank worm on the right.

OTT worm gear					**Bearing parts** per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
☐ 5549 SSR	T00441-G-RAO	T00305-G-SSC	T00306-G-HSC	2	Axial cylinder roller bearing	K812 08 TV
☐ 4879 SSR	T00442-G-RAO	T00307-G-SSC	T00308-G-HSC	2	Radial needle bearing	RNAO 50x62x20
☐ 4877 SSR	T00443-G-RAO	T00309-G-SSC	T00310-G-HSC	2	Shaft seal	40x52x6
☐ 4804 SSR	T00444-G-RAO	T00311-G-SSC	T00312-G-HSC	1	Shrink disc	HSD 36-22
☐ 5741 SSR	T00445-G-RAO	T00313-G-SSC	T00314-G-HSC	4	Circlip	SB 62
☐ 4853 SSR	T00446-G-RAO	T00315-G-SSC	T00316-G-HSC	24	Cylinder bolt DIN 912	M5x20 - 10.9
☐ 4861 SSR	T00447-G-RAO	T00317-G-SSC	T00318-G-HSC	4	Cylinder bolt DIN 912	M5x55 - 8.8
☐ 4846 SSR	T00448-G-RAO	T00319-G-SSC	T00320-G-HSC	1	Cylinder bolt DIN 912	M6x30 - 8.8
				1	Retainer ring DIN 472	28
				2	Bearing sleeve	T00221-G-LHÜ
				2	Axial bearing washer	T00233-G-LDX
				1	Cover	T00216-G-ADH
				1	Thrust piece	B00009-G-DST



Order using ..... set of OTT worm gears
☐ Gearset incl. thrust piece without bearing parts
☐ Gearset incl. all bearing parts

☐ REQUEST Date: Name:
☐ ORDER

Zahnradfertigung Ott
Blöhsteinstraße 20
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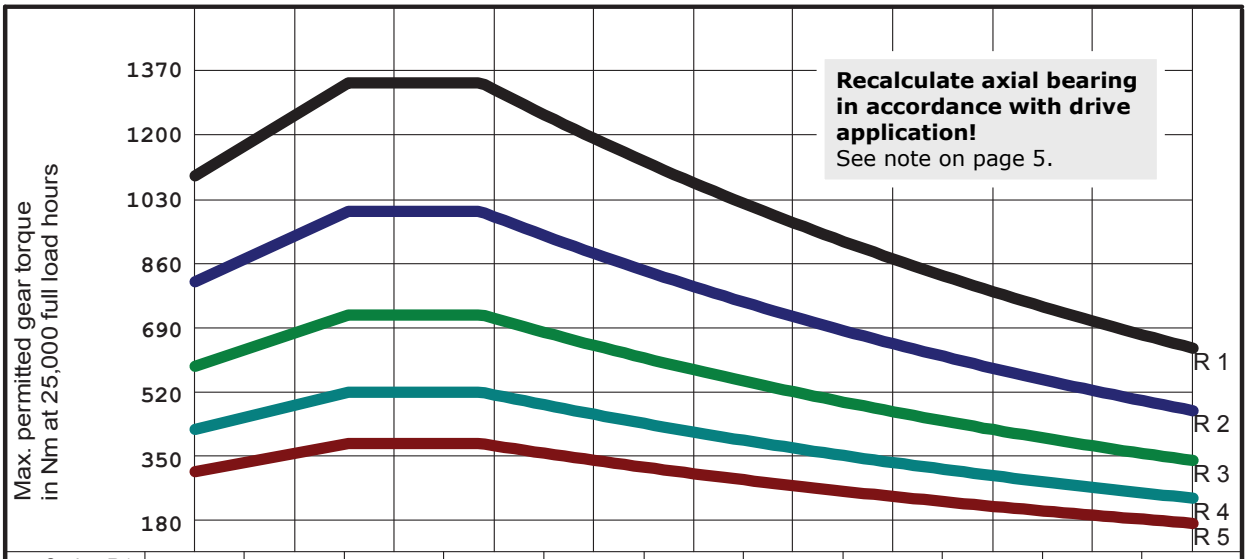
Operational characteristics

Centre distance	125.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	51.70	mm	Material, worm	31CrMoV9	
Outer Ø gear	214.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	45.63	mm
No. teeth, gear	80		Lead angle at Bks	6.2567	°

Operating characteristics

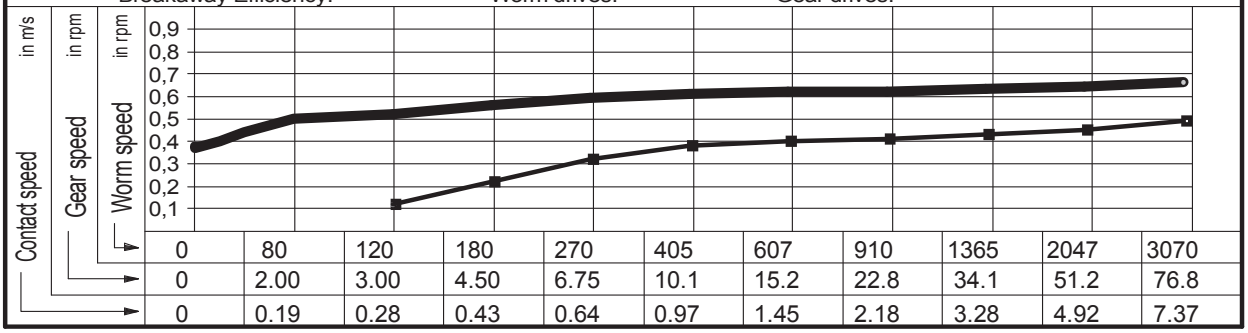
Ott worm gear

OTT no: 5549 SSR



Series R1	1079	1234	1317	1297	1172	1059	957	865	782	706	638
Series R2	809	925	988	973	879	795	718	649	586	530	479
Series R3	593	678	724	714	645	583	527	476	430	389	351
Series R4	431	493	527	519	469	424	383	346	313	283	255
Series R5	324	370	395	389	352	318	287	260	235	212	192

Breakaway Efficiency: 0.37 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2	76.8
0	0.19	0.28	0.43	0.64	0.97	1.45	2.18	3.28	4.92	7.37

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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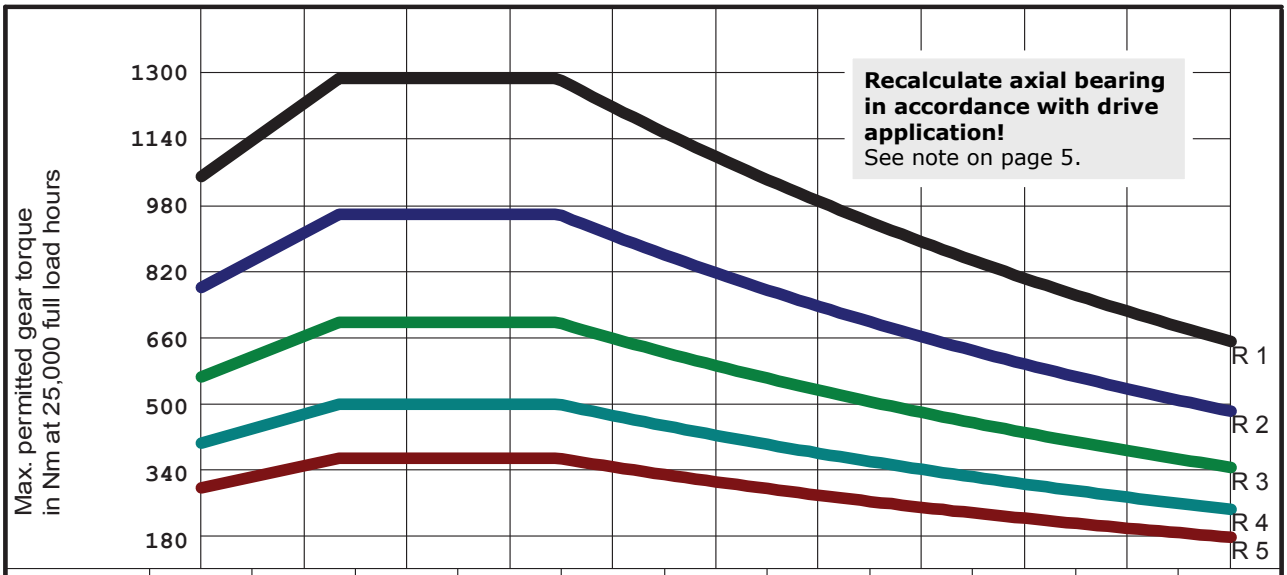
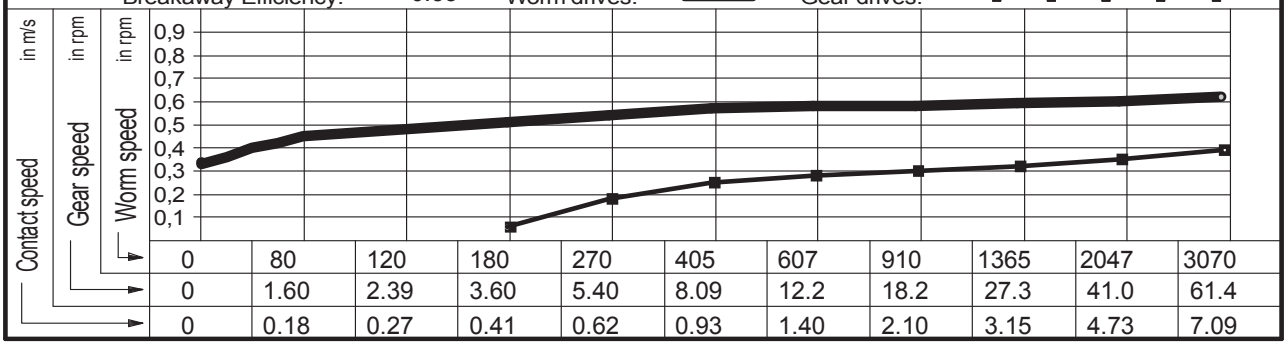
Centre distance	125.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	49.20 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	214.00 mm	Pressure angle in NS	10 °	OTT no:	4879 SSR
No. starts, worm	2	Back angle in NS	15 °		
Worm direction	right	Calculated circle Ø	43.97 mm		
No. teeth, gear	100	Lead angle at Bks	5.2566 °		



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	1037	1208	1266	1266	1192	1077	973	879	795	718	649
Series R2	778	906	949	949	894	808	730	659	596	539	487
Series R3	570	664	696	696	655	592	535	484	437	395	357
Series R4	415	483	506	506	477	431	389	352	318	287	260
Series R5	311	362	380	380	357	323	292	264	238	215	195

Breakaway Efficiency: 0.33 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.60	2.39	3.60	5.40	8.09	12.2	18.2	27.3	41.0	61.4
0	0.18	0.27	0.41	0.62	0.93	1.40	2.10	3.15	4.73	7.09

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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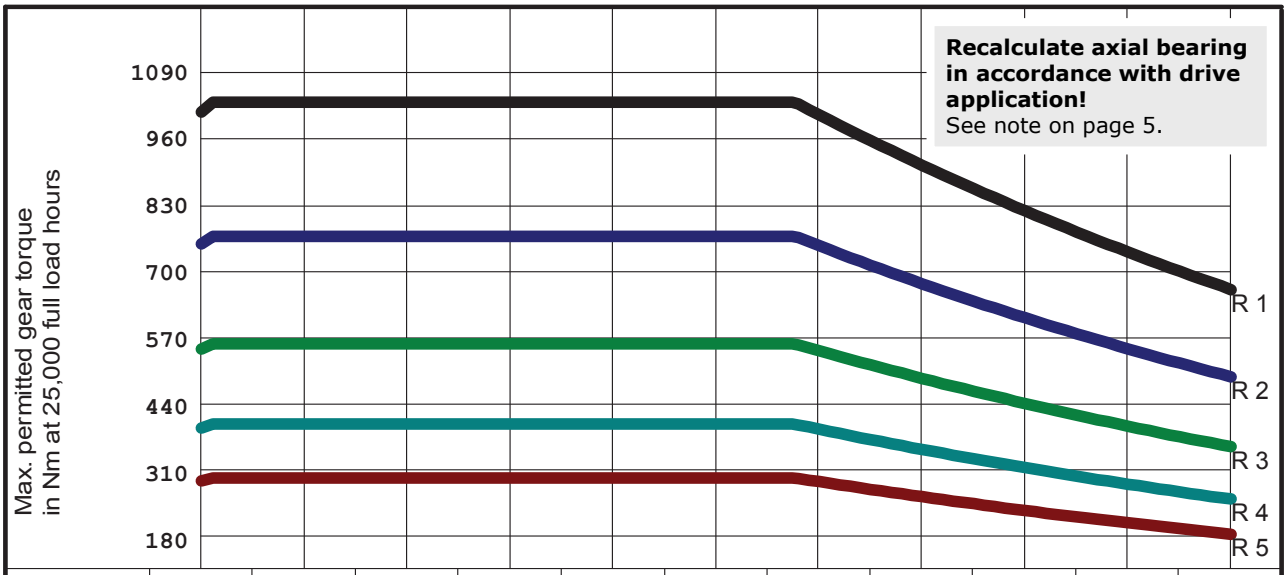
Centre distance	125.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	47.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	214.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	42.79	mm
No. teeth, gear	120		Lead angle at Bks	4.5399	°

Operating characteristics

Ott worm gear

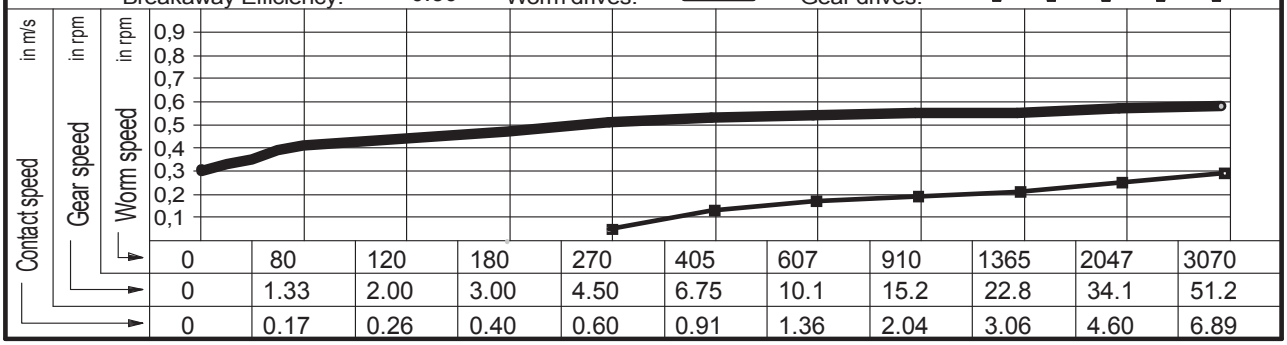
OTT no: 4877 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	998	1018	1018	1018	1018	1018	980	886	801	724	654
Series R2	749	763	763	763	763	763	735	665	601	543	490
Series R3	549	560	560	560	560	560	539	487	440	398	360
Series R4	399	407	407	407	407	407	392	354	320	289	262
Series R5	299	305	305	305	305	305	294	266	240	217	196

Breakaway Efficiency: 0.30 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
0	0.17	0.26	0.40	0.60	0.91	1.36	2.04	3.06	4.60	6.89

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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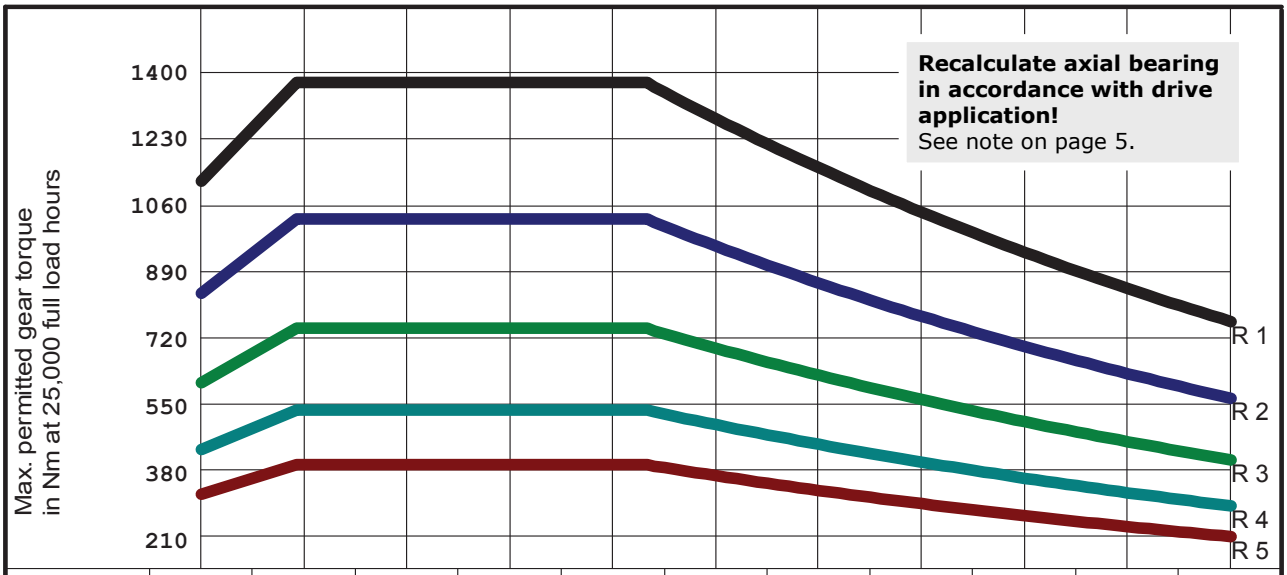
Centre distance	125.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	53.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	214.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	46.95	mm
No. teeth, gear	70		Lead angle at Bks	3.4559	°

Operating characteristics

Ott worm gear

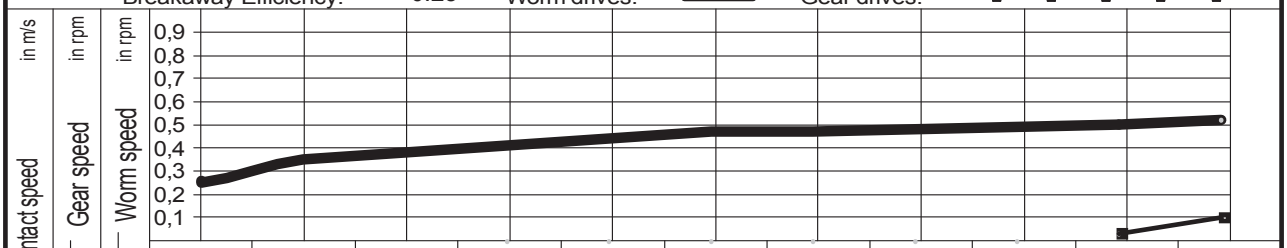
OTT no: 4804 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	1109	1354	1354	1354	1354	1253	1132	1023	924	835	755
Series R2	832	1015	1015	1015	1015	940	849	767	693	626	566
Series R3	610	745	745	745	745	689	623	563	508	459	415
Series R4	443	541	541	541	541	501	453	409	370	334	302
Series R5	333	406	406	406	406	376	340	307	277	251	226

Breakaway Efficiency: 0.25 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.14	1.71	2.57	3.85	5.78	8.67	13.0	19.5	29.3	43.9
0	0.19	0.29	0.44	0.66	0.99	1.49	2.24	3.36	5.04	7.56

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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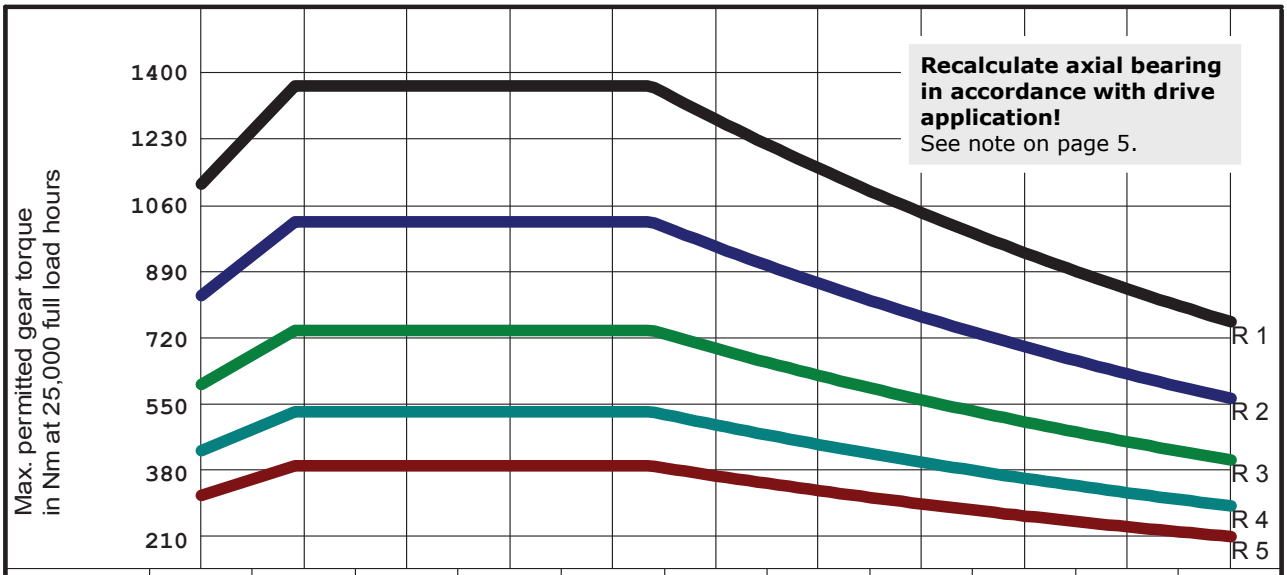
Centre distance	125.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	53.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	214.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	46.67	mm
No. teeth, gear	72		Lead angle at Bks	3.3859	°

Operating characteristics

Ott worm gear

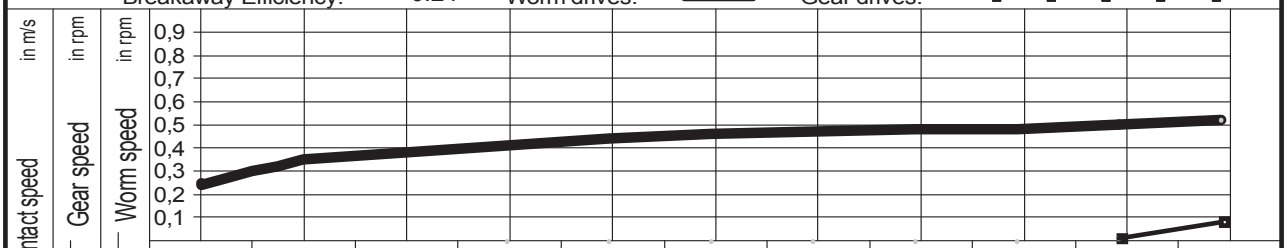
OTT no: 5741 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	1101	1345	1345	1345	1345	1253	1132	1023	925	836	755
Series R2	826	1008	1008	1008	1008	940	849	767	694	627	566
Series R3	606	740	740	740	740	689	623	563	509	460	415
Series R4	441	538	538	538	538	501	453	409	370	334	302
Series R5	330	403	403	403	403	376	340	307	277	251	227

Breakaway Efficiency: 0.24 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.11	1.66	2.50	3.75	5.62	8.43	12.6	19.0	28.4	42.6
0	0.19	0.29	0.44	0.66	0.99	1.48	2.22	3.34	5.01	7.51

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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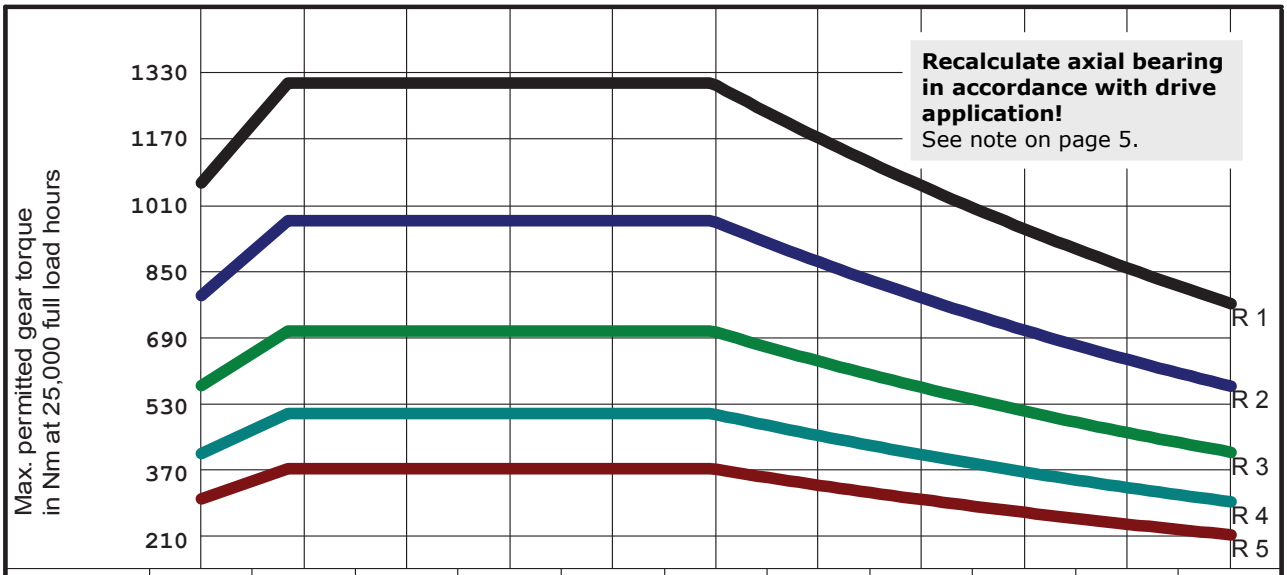
Centre distance	125.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	50.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	214.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	44.78	mm
No. teeth, gear	90		Lead angle at Bks	2.8585	°

Operating characteristics

Ott worm gear

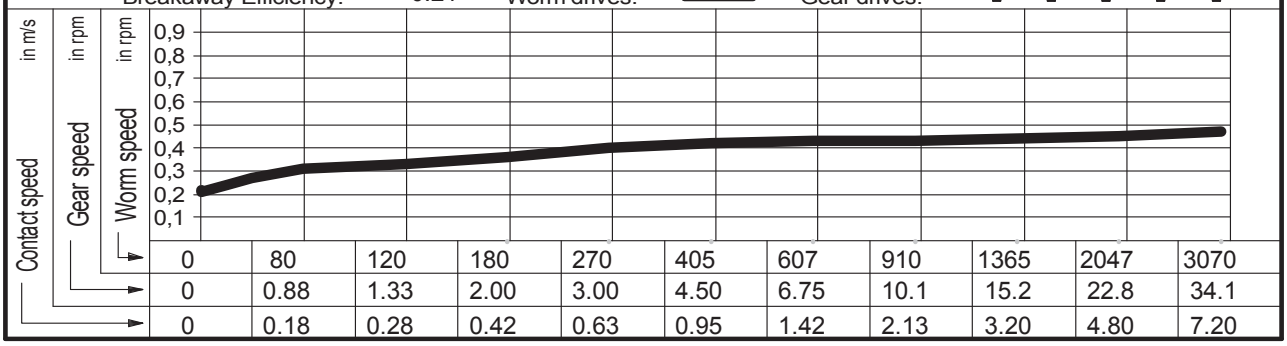
OTT no: 4853 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	1053	1285	1285	1285	1285	1285	1144	1034	935	845	763
Series R2	790	964	964	964	964	964	858	776	701	633	572
Series R3	579	707	707	707	707	707	629	569	514	464	420
Series R4	421	514	514	514	514	514	458	414	374	338	305
Series R5	316	386	386	386	386	386	343	310	280	253	229

Breakaway Efficiency: 0.21 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
0	0.18	0.28	0.42	0.63	0.95	1.42	2.13	3.20	4.80	7.20

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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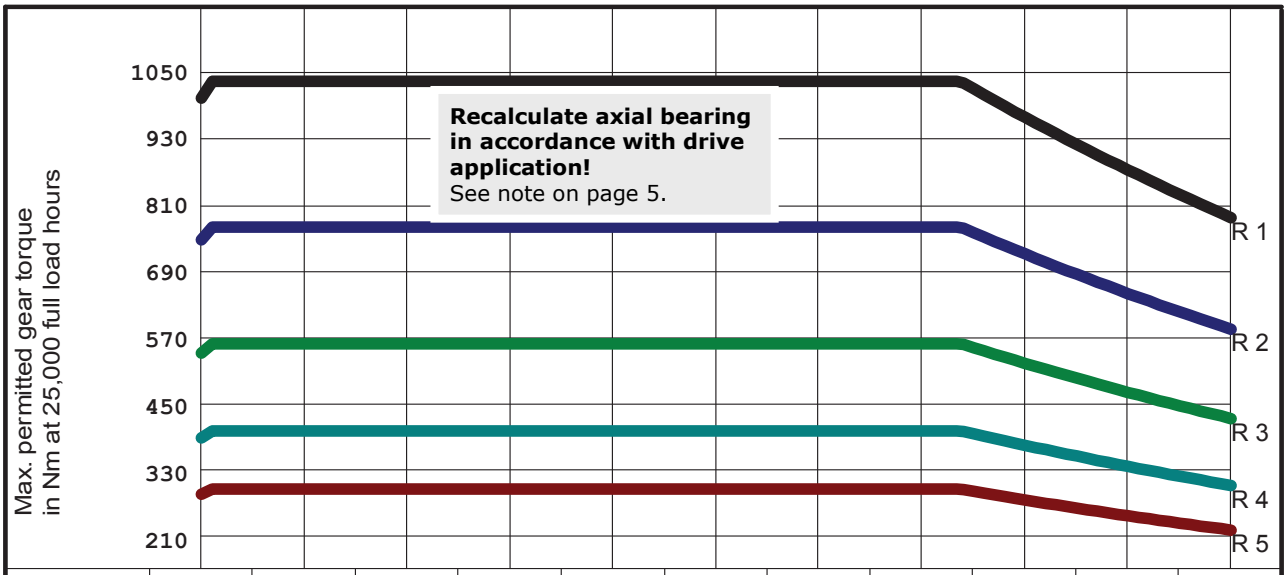
Centre distance	125.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	47.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	214.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	42.79	mm
No. teeth, gear	120		Lead angle at Bks	2.2733	°

Operating characteristics

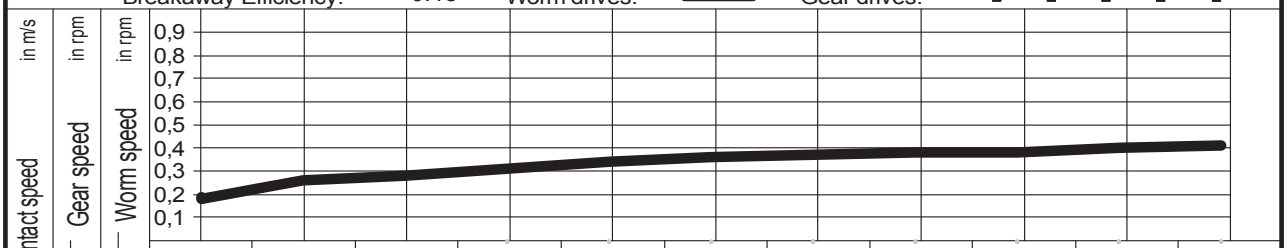
Ott worm gear

OTT no: 4861 SSR



Series R1	989	1019	1019	1019	1019	1019	1019	1019	944	853	771
Series R2	742	764	764	764	764	764	764	764	708	640	578
Series R3	544	560	560	560	560	560	560	560	519	469	424
Series R4	396	408	408	408	408	408	408	408	378	341	308
Series R5	297	306	306	306	306	306	306	306	283	256	231

Breakaway Efficiency: 0.18 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
Contact speed	0	0.17	0.26	0.40	0.60	0.90	1.36	2.04	3.06	4.58	6.88

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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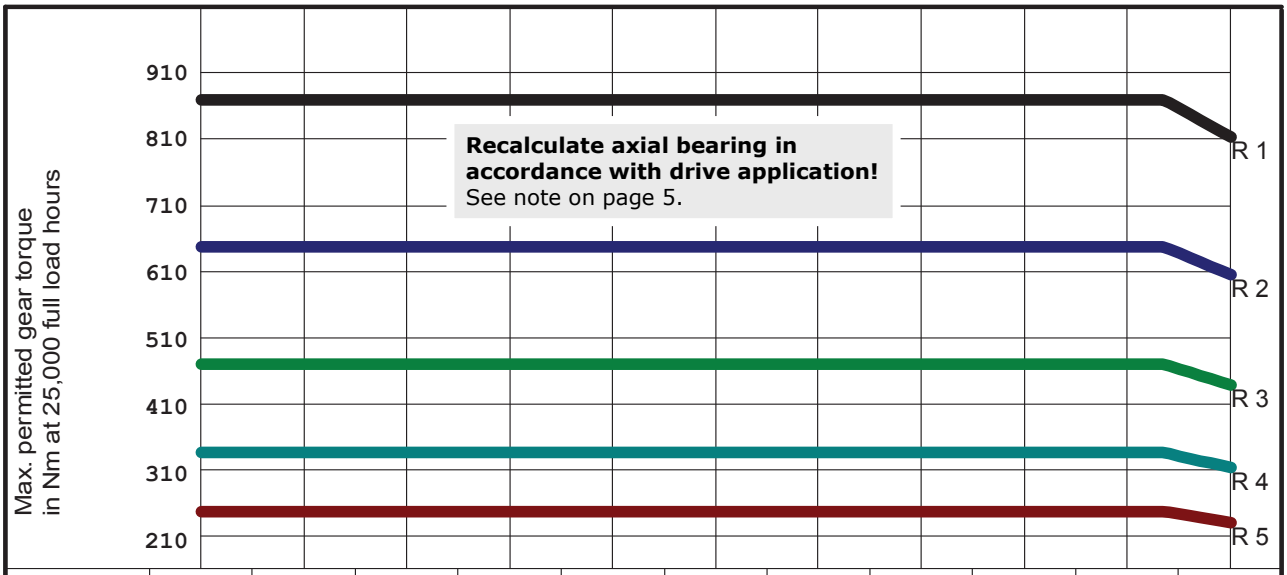
Centre distance	125.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	46.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	214.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	16	°
Worm direction	right		Calculated circle Ø	41.90	mm
No. teeth, gear	144		Lead angle at Bks	1.9465	°

Operating characteristics

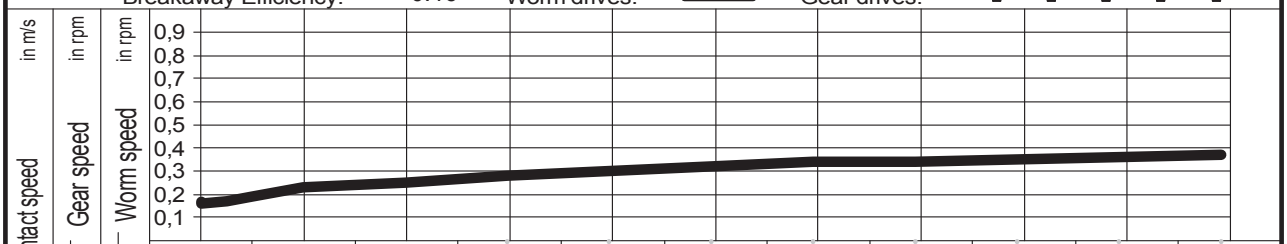
Ott worm gear

OTT no: 4846 SSR



Series R1	858	858	858	858	858	858	858	858	858	858	797
Series R2	643	643	643	643	643	643	643	643	643	643	598
Series R3	472	472	472	472	472	472	472	472	472	472	438
Series R4	343	343	343	343	343	343	343	343	343	343	319
Series R5	257	257	257	257	257	257	257	257	257	257	239

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.55	0.83	1.25	1.87	2.81	4.21	6.32	9.47	14.2	21.3
0	0.17	0.26	0.39	0.59	0.88	1.33	1.99	2.99	4.49	6.73

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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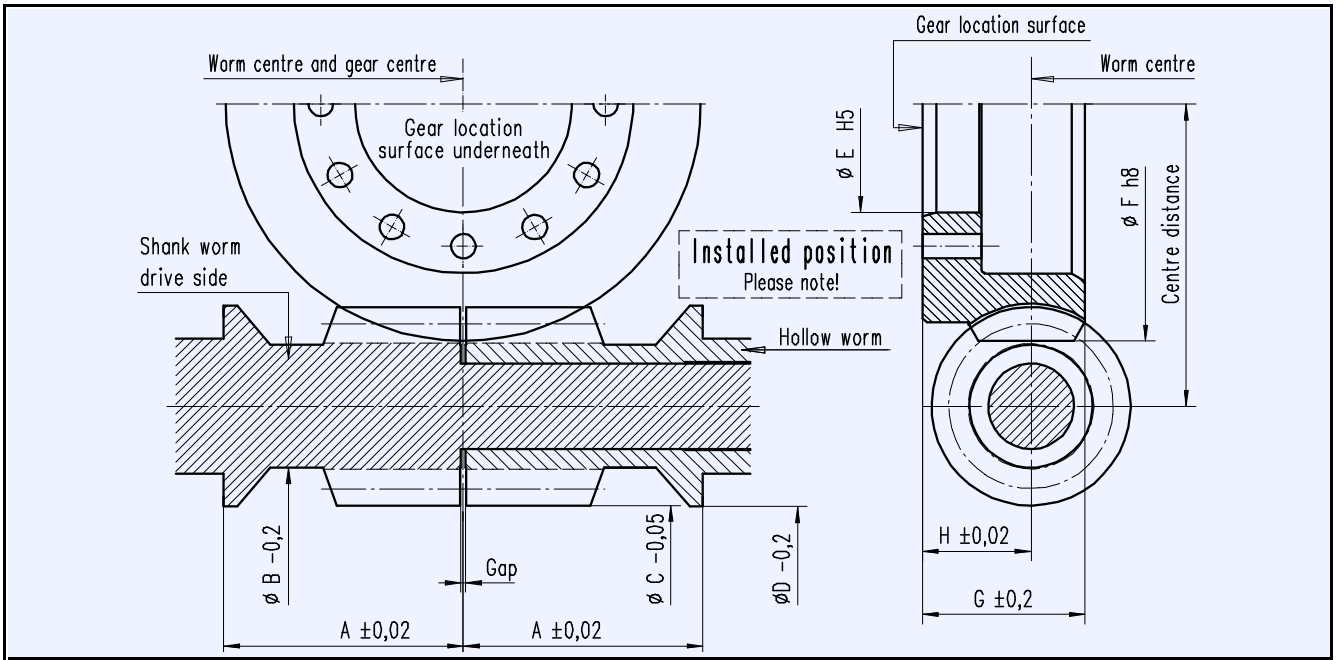
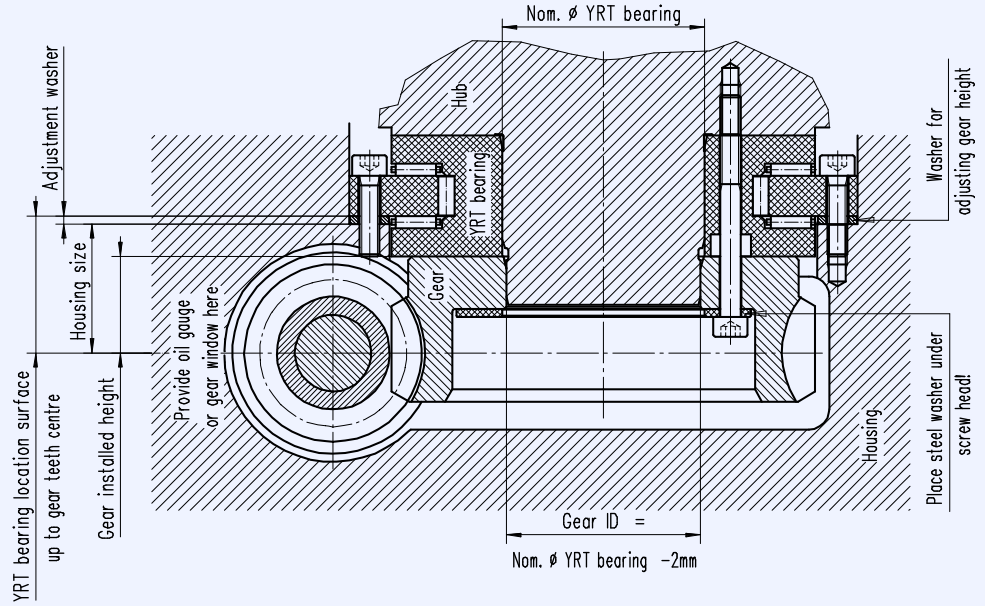
OTT worm gears - centre distance 145 mm

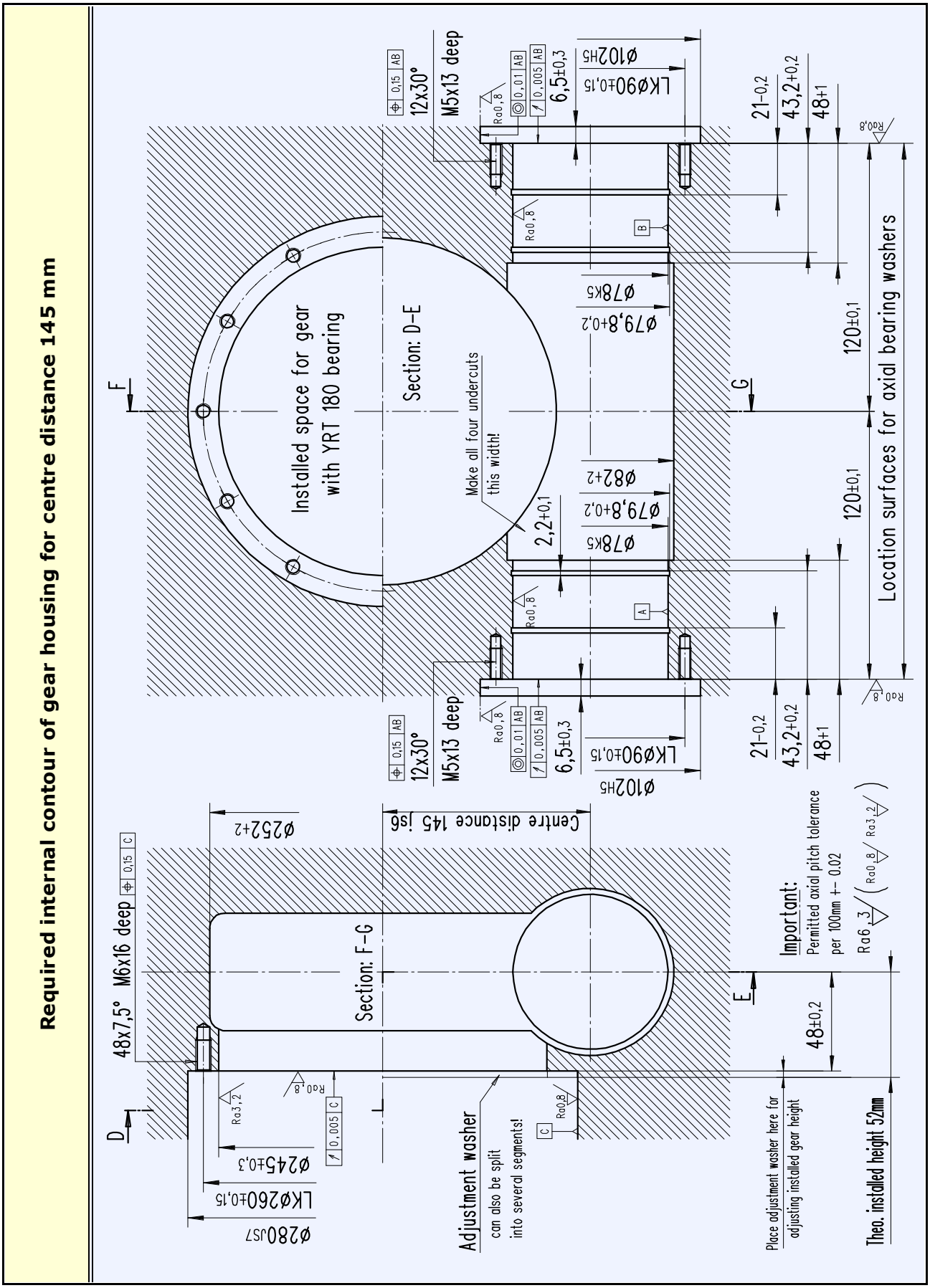
Main dimensions



OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
5834 SSR	2	89	79	44,1	62,0	67,6	180	178	244	58	38
5722 SSR	2	91		44,2	62,0						
4875 SSR	2	120		44,6	59,0						
2788 SSR	1	72		43,7	65,6						
5721 SSR	1	90		44,2	62,0						
4815 SSR	1	120		44,6	59,0						
4821 SSR	1	144		44,8	57,6						
4842 SSR	1	180		45	55,8						
							See comments page 5!				



Gear housing - required internal contour



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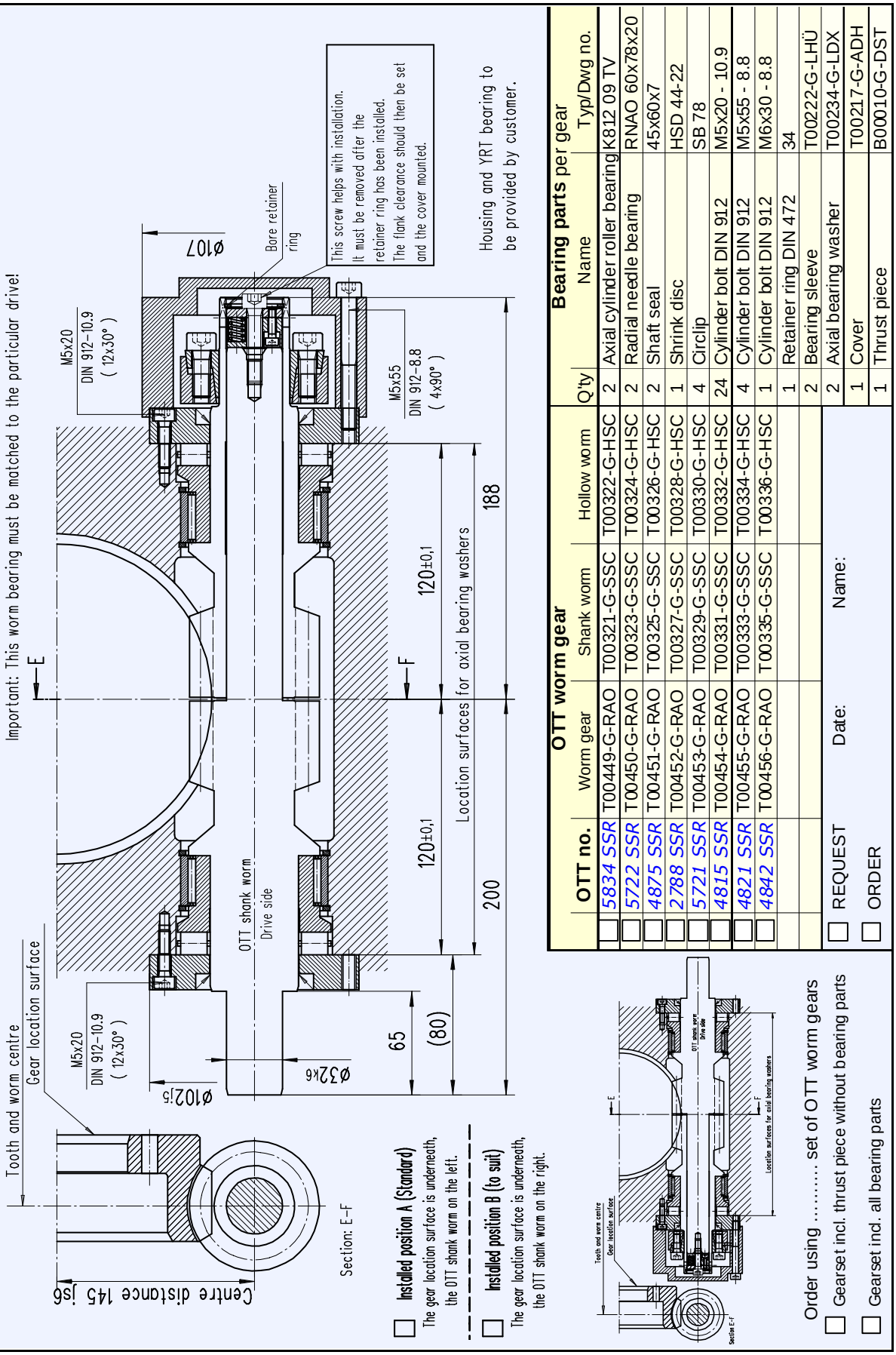
Worm bearings

Worm bearing for centre distance 145 mm



OTT worm gear					Bearing parts per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
5834 SSR	T00449-G-RAO	T00321-G-SSC	T00322-G-HSC	2	Axial cylinder roller bearing	K812 09 TV
5722 SSR	T00450-G-RAO	T00323-G-SSC	T00324-G-HSC	2	Radial needle bearing	RNAO 60x78x20
4875 SSR	T00451-G-RAO	T00325-G-SSC	T00326-G-HSC	2	Shaft seal	45x60x7
2788 SSR	T00452-G-RAO	T00327-G-SSC	T00328-G-HSC	1	Shrink disc	HSD 44-22
5721 SSR	T00453-G-RAO	T00329-G-SSC	T00330-G-HSC	4	Circlip	SB 78
4815 SSR	T00454-G-RAO	T00331-G-SSC	T00332-G-HSC	24	Cylinder bolt DIN 912	M5x20 - 10.9
4821 SSR	T00455-G-RAO	T00333-G-SSC	T00334-G-HSC	4	Cylinder bolt DIN 912	M5x55 - 8.8
4842 SSR	T00456-G-RAO	T00335-G-SSC	T00336-G-HSC	1	Cylinder bolt DIN 912	M6x30 - 8.8
				1	Retainer ring DIN 472	34
				2	Bearing sleeve	T00222-G-LHÜ
				2	Axial bearing washer	T00234-G-LDX
				1	Cover	T00217-G-ADH
				1	Thrust piece	B00010-G-DST

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

☐ REQUEST Date: Name:

☐ ORDER

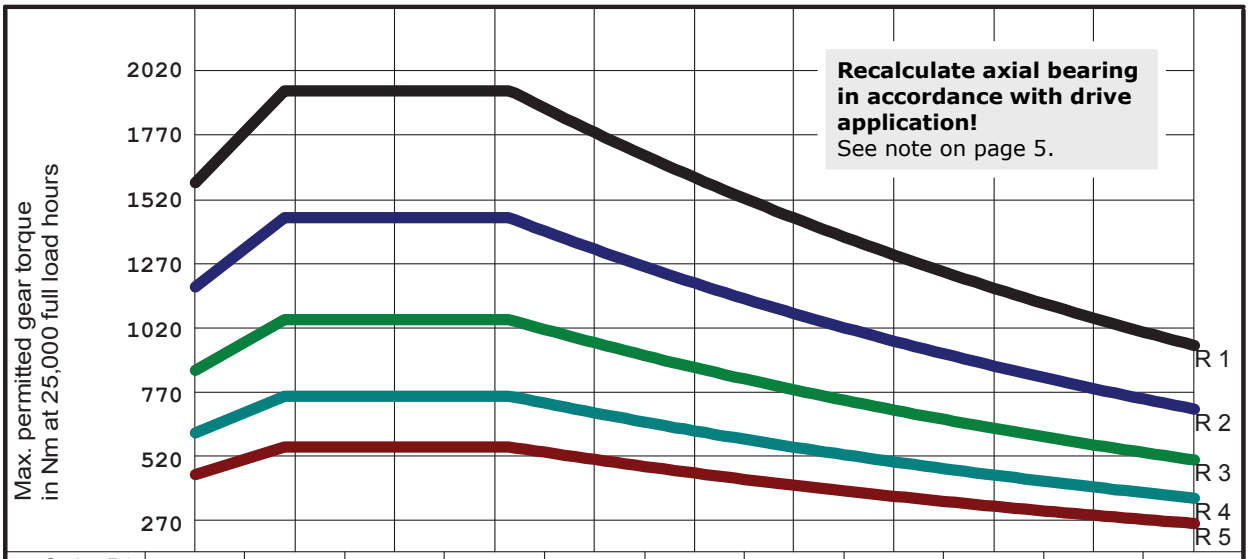
Operational characteristics

Centre distance	145.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	62.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	244.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	55.67	mm
No. teeth, gear	89		Lead angle at Bks	5.3020	°

Operating characteristics

Ott worm gear

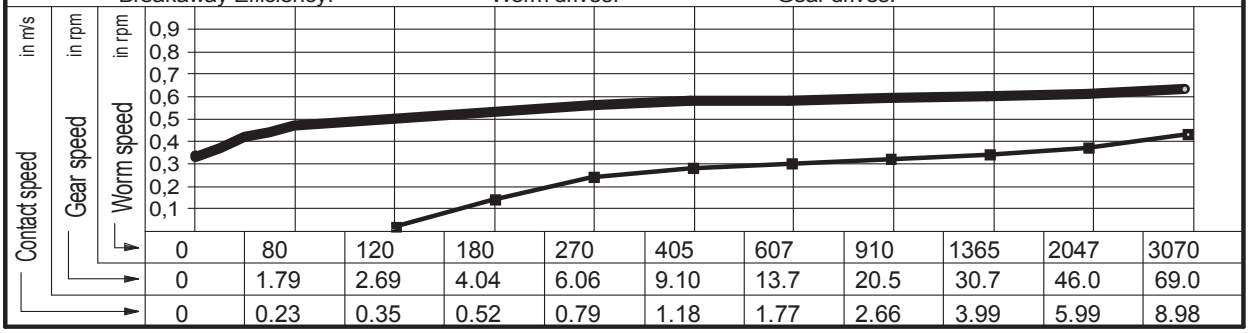
OTT no: 5834 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	1566	1912	1912	1912	1749	1580	1428	1290	1166	1054	952
Series R2	1175	1434	1434	1434	1312	1185	1071	968	874	790	714
Series R3	861	1052	1052	1052	962	869	785	710	641	579	524
Series R4	626	765	765	765	700	632	571	516	466	421	381
Series R5	470	574	574	574	525	474	428	387	350	316	286

Breakaway Efficiency: 0.33 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.79	2.69	4.04	6.06	9.10	13.7	20.5	30.7	46.0	69.0
0	0.23	0.35	0.52	0.79	1.18	1.77	2.66	3.99	5.99	8.98

Gear selection by load type and application

Series R1
a) random even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) random even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) random changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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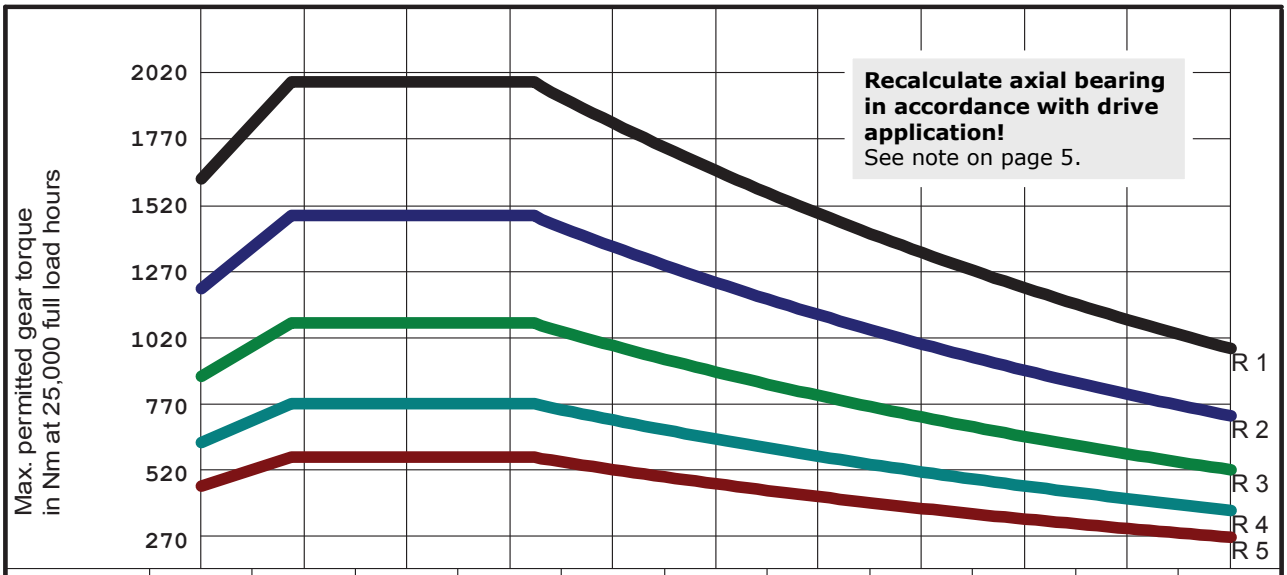
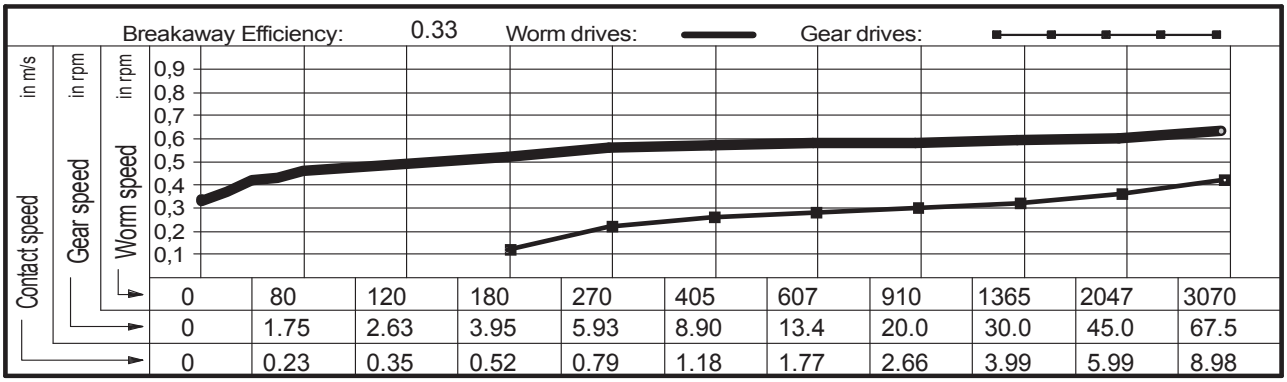
Centre distance	145.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	62.00 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	244.00 mm	Pressure angle in NS	10 °	OTT no:	5722 SSR
No. starts, worm	2	Back angle in NS	20 °		
Worm direction	right	Calculated circle Ø	55.70 mm		
No. teeth, gear	91	Lead angle at Bks	5.1824 °		



Series R1	1601	1955	1955	1955	1798	1624	1468	1326	1199	1083	979
Series R2	1201	1466	1466	1466	1348	1218	1101	995	899	812	734
Series R3	881	1075	1075	1075	989	893	807	729	659	596	538
Series R4	640	782	782	782	719	650	587	531	479	433	392
Series R5	480	587	587	587	539	487	440	398	360	325	294



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.75	2.63	3.95	5.93	8.90	13.4	20.0	30.0	45.0	67.5
0	0.23	0.35	0.52	0.79	1.18	1.77	2.66	3.99	5.99	8.98

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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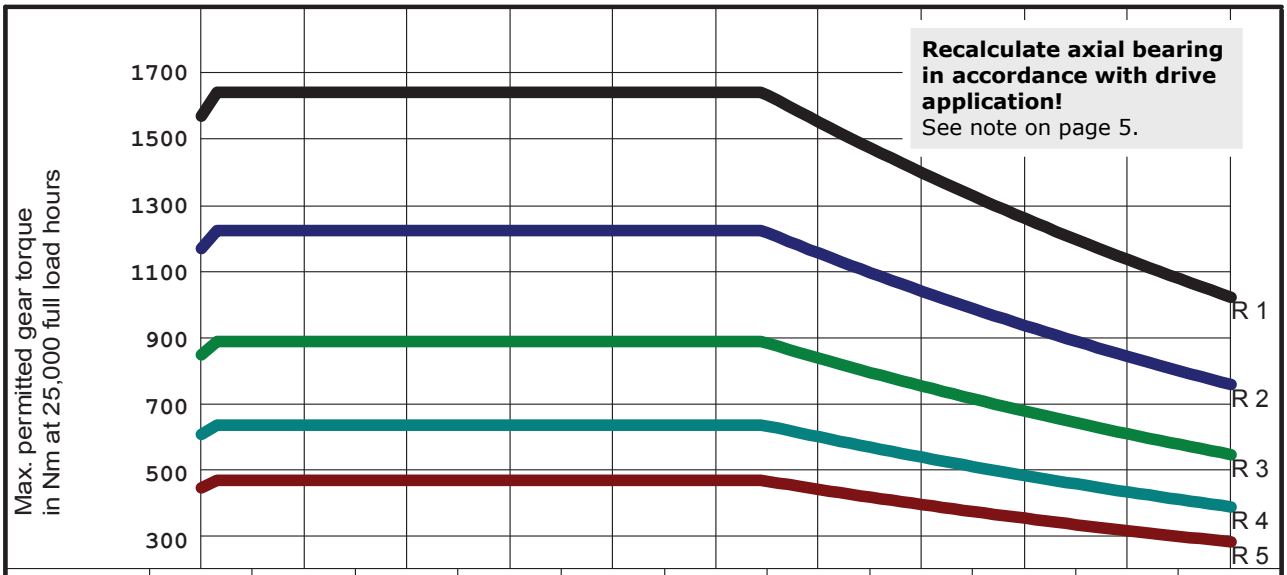
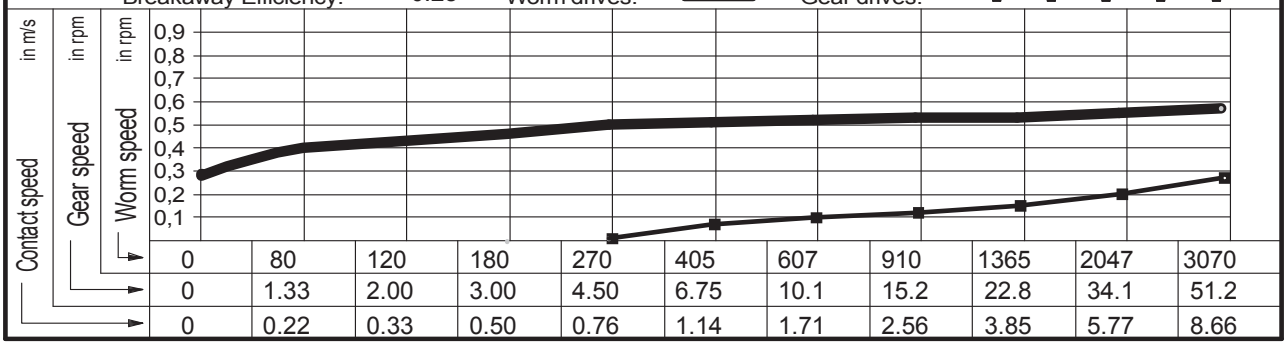
Centre distance	145.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	59.00 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	244.00 mm	Pressure angle in NS	10 °	OTT no:	4875 SSR
No. starts, worm	2	Back angle in NS	15 °		
Worm direction	right	Calculated circle Ø	53.74 mm		
No. teeth, gear	120	Lead angle at Bks	4.1226 °		



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	1548	1618	1618	1618	1618	1618	1521	1374	1242	1122	1014
Series R2	1161	1213	1213	1213	1213	1213	1140	1031	931	842	761
Series R3	851	890	890	890	890	890	836	756	683	617	558
Series R4	619	647	647	647	647	647	608	550	497	449	406
Series R5	464	485	485	485	485	485	456	412	373	337	304

Breakaway Efficiency: 0.28 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
0	0.22	0.33	0.50	0.76	1.14	1.71	2.56	3.85	5.77	8.66

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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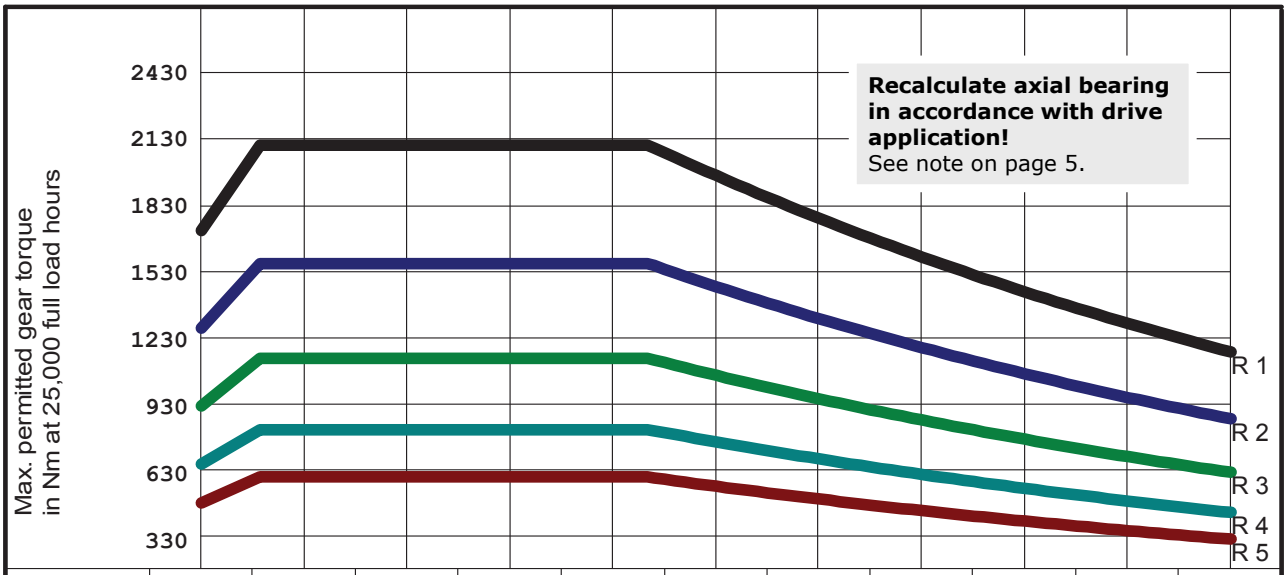
Centre distance	145.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	65.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	244.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	58.17	mm
No. teeth, gear	72		Lead angle at Bks	3.0985	°

Operating characteristics

Ott worm gear

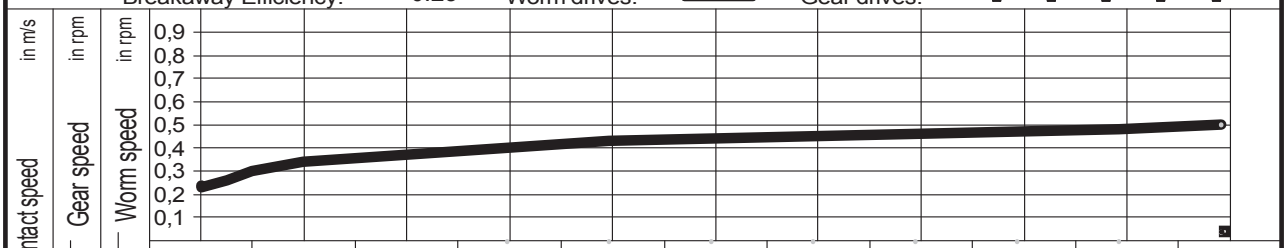
OTT no: 2788 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	1699	2075	2075	2075	2075	1934	1747	1579	1427	1289	1165
Series R2	1275	1556	1556	1556	1556	1450	1311	1184	1070	967	874
Series R3	935	1141	1141	1141	1141	1064	961	869	785	709	641
Series R4	680	830	830	830	830	774	699	632	571	516	466
Series R5	510	623	623	623	623	580	524	474	428	387	350

Breakaway Efficiency: 0.23 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.11	1.66	2.50	3.75	5.62	8.43	12.6	19.0	28.4	42.6
0	0.24	0.36	0.54	0.82	1.23	1.85	2.77	4.16	6.24	9.36

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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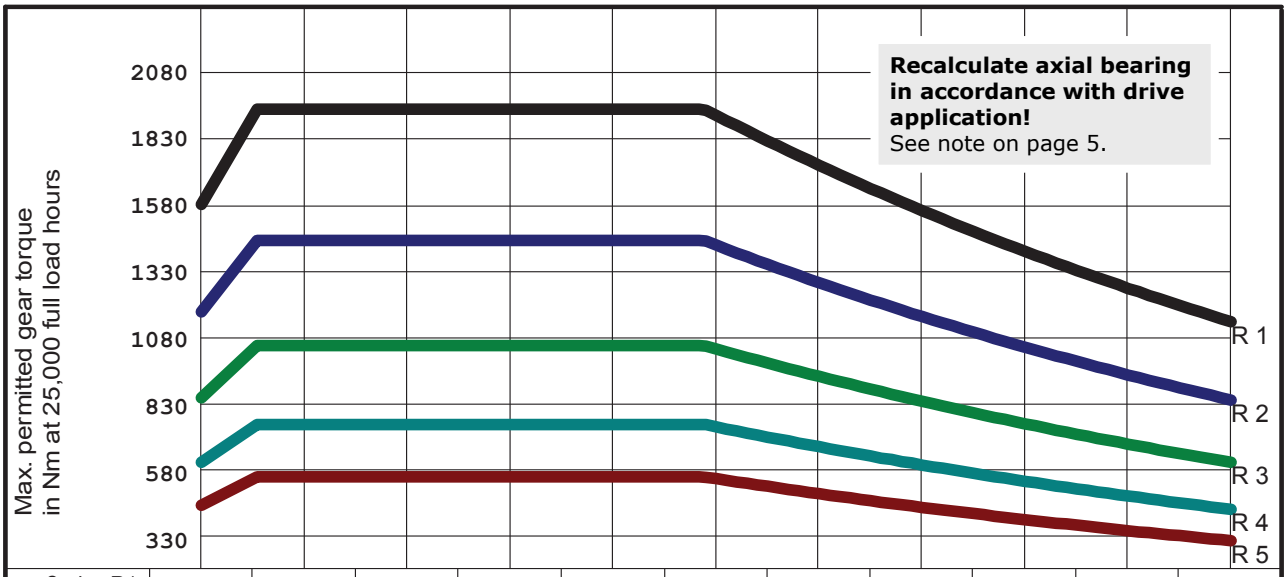
Centre distance	145.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	62.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	244.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	55.69	mm
No. teeth, gear	90		Lead angle at Bks	2.6260	°

Operating characteristics

Ott worm gear

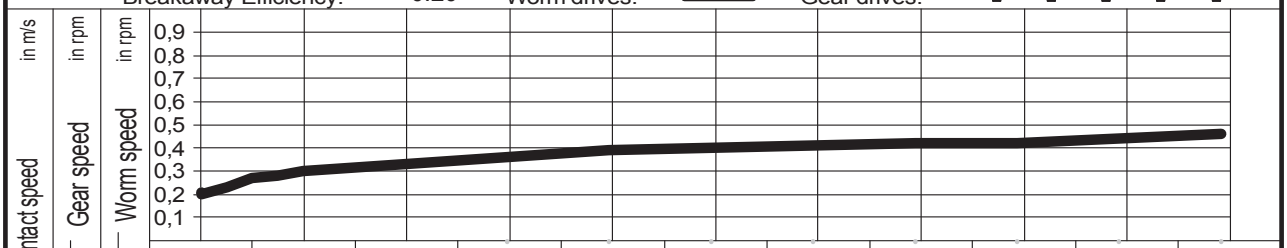
OTT no: 5721 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	1567	1914	1914	1914	1914	1885	1704	1540	1392	1257	1136
Series R2	1176	1435	1435	1435	1435	1414	1278	1155	1044	943	852
Series R3	862	1053	1053	1053	1053	1037	937	847	765	692	625
Series R4	627	766	766	766	766	754	681	616	557	503	455
Series R5	470	574	574	574	574	566	511	462	417	377	341

Breakaway Efficiency: 0.20 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
0	0.23	0.35	0.52	0.78	1.18	1.77	2.65	3.98	5.97	8.96

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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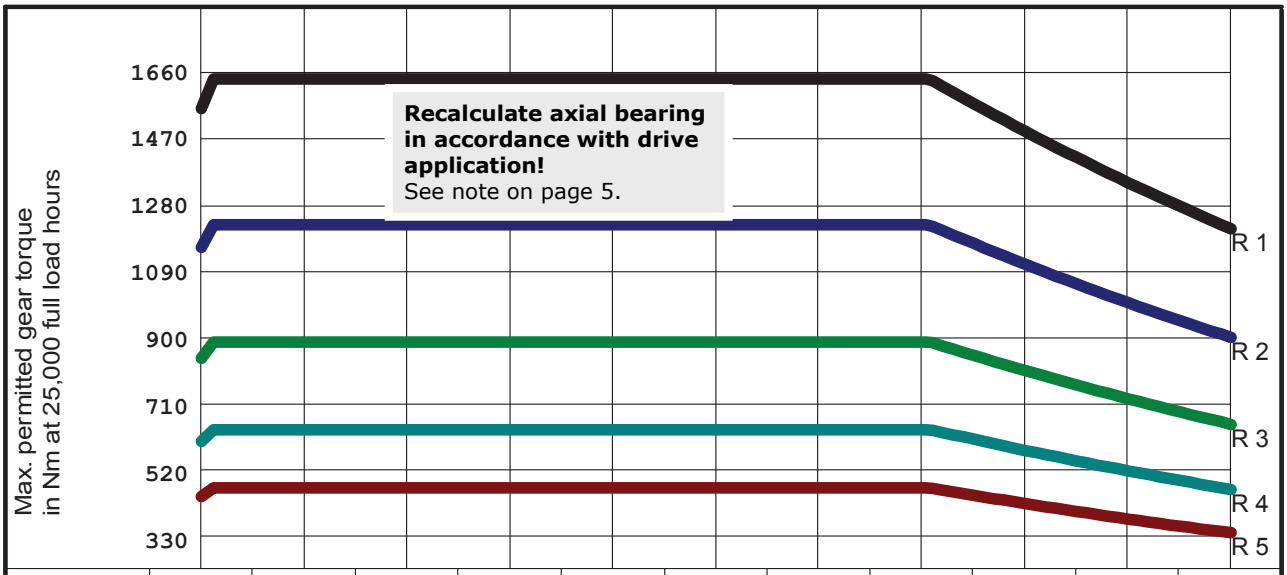
Centre distance	145.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	59.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	244.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	53.75	mm
No. teeth, gear	120		Lead angle at Bks	2.0638	°

Operating characteristics

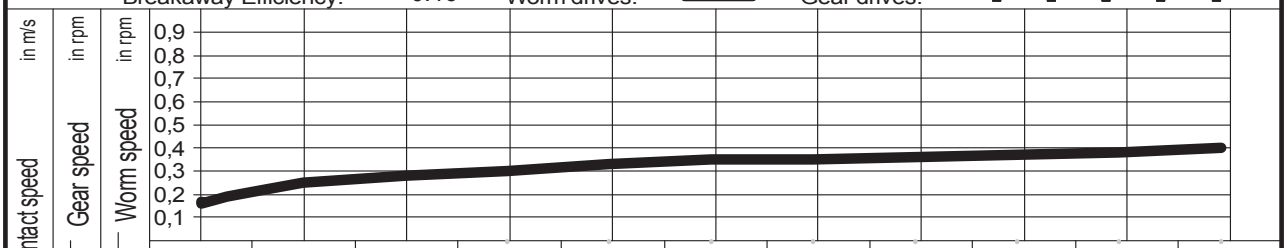
Ott worm gear

OTT no: 4815 SSR



Series R1	1535	1618	1618	1618	1618	1618	1618	1618	1465	1323	1196
Series R2	1151	1213	1213	1213	1213	1213	1213	1213	1099	993	897
Series R3	844	890	890	890	890	890	890	890	806	728	658
Series R4	614	647	647	647	647	647	647	647	586	529	478
Series R5	461	485	485	485	485	485	485	485	439	397	359

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
0	0.22	0.33	0.50	0.76	1.14	1.70	2.56	3.84	5.76	8.64

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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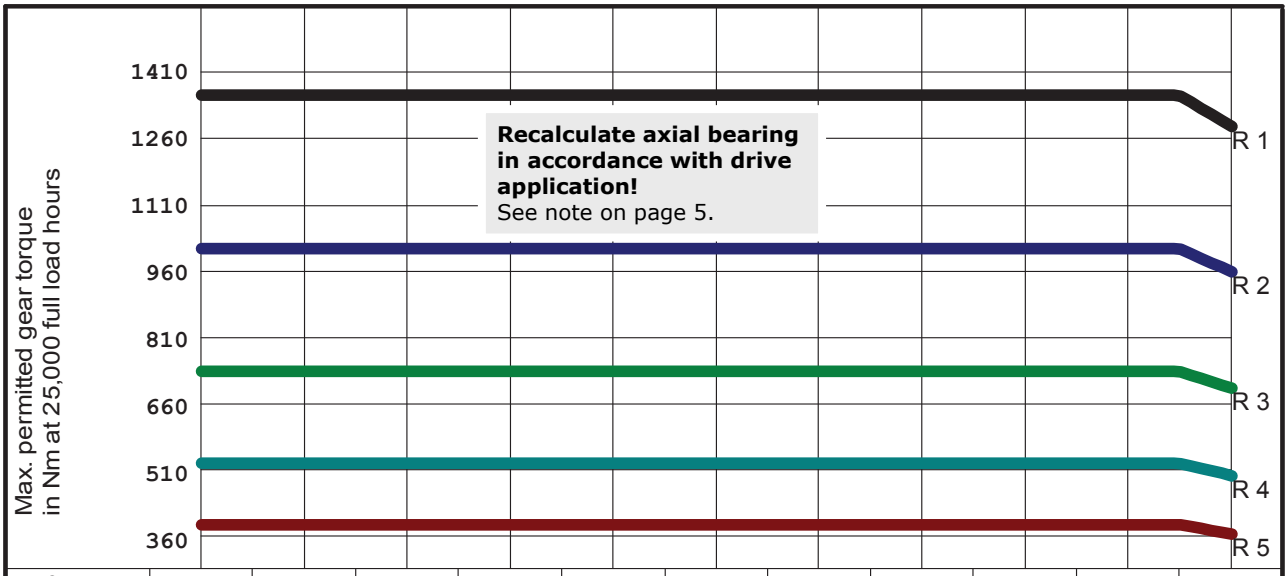
Centre distance	145.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	57.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	244.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	52.87	mm
No. teeth, gear	144		Lead angle at Bks	1.7572	°

Operating characteristics

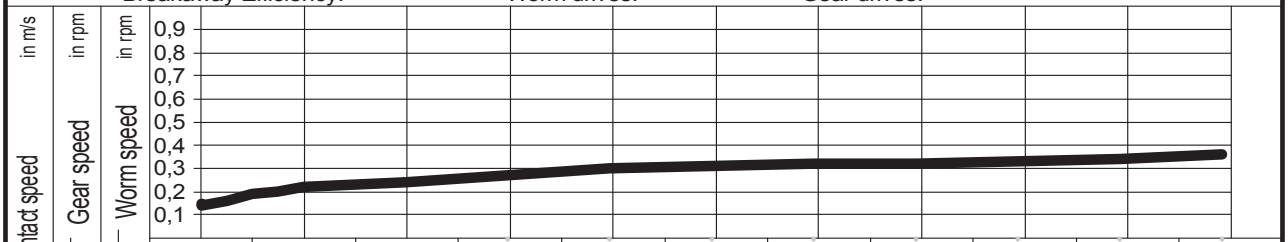
Ott worm gear

OTT no: 4821 SSR



Series R1	1340	1340	1340	1340	1340	1340	1340	1340	1340	1340	1270
Series R2	1005	1005	1005	1005	1005	1005	1005	1005	1005	1005	953
Series R3	737	737	737	737	737	737	737	737	737	737	699
Series R4	536	536	536	536	536	536	536	536	536	536	508
Series R5	402	402	402	402	402	402	402	402	402	402	381

Breakaway Efficiency: 0.14 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.55	0.83	1.25	1.87	2.81	4.21	6.32	9.47	14.2	21.3
0	0.22	0.33	0.49	0.74	1.12	1.68	2.52	3.78	5.66	8.50

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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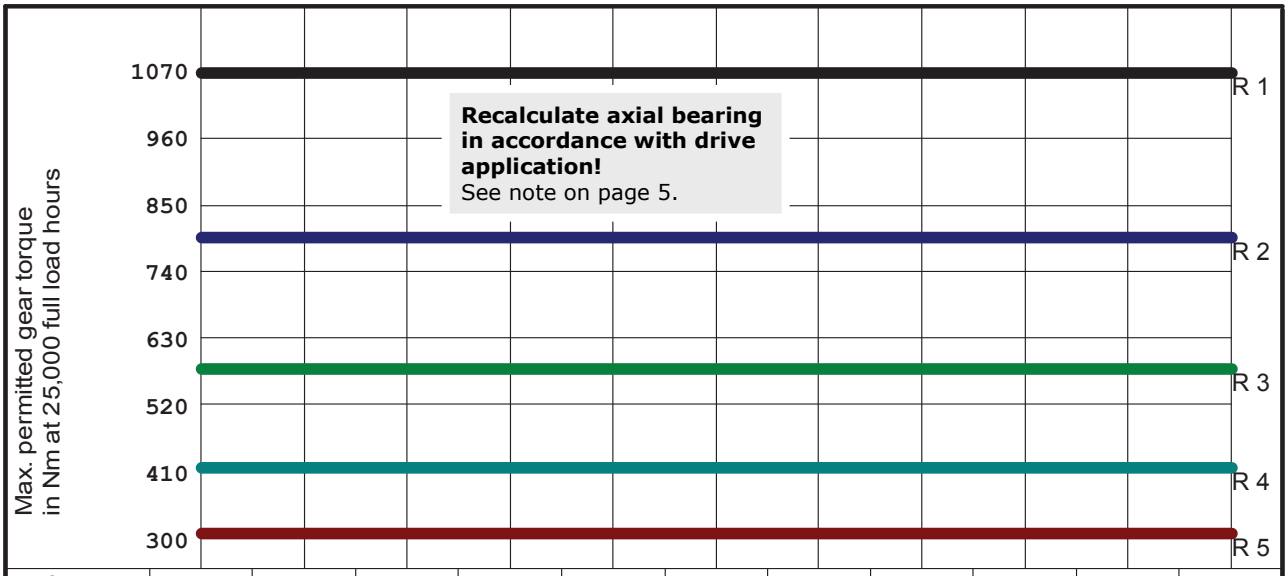
Centre distance	145.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	55.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	244.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	51.72	mm
No. teeth, gear	180		Lead angle at Bks	1.4469	°

Operating characteristics

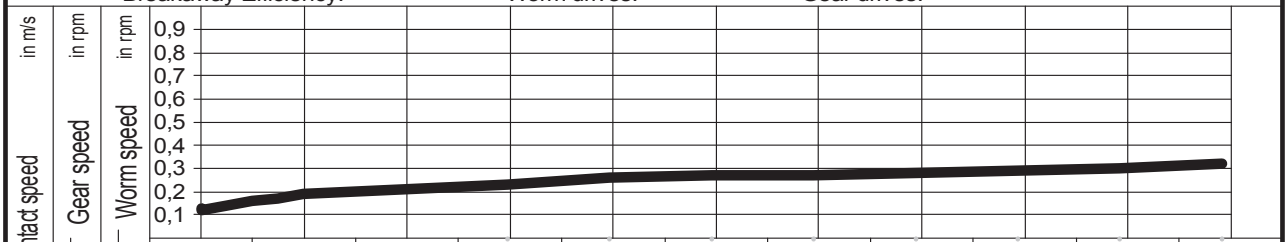
Ott worm gear

OTT no: 4842 SSR



Series R1	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054
Series R2	791	791	791	791	791	791	791	791	791	791	791
Series R3	580	580	580	580	580	580	580	580	580	580	580
Series R4	422	422	422	422	422	422	422	422	422	422	422
Series R5	316	316	316	316	316	316	316	316	316	316	316

Breakaway Efficiency: 0.12 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.44	0.66	1.00	1.50	2.25	3.37	5.05	7.58	11.4	17.1
0	0.21	0.32	0.48	0.73	1.09	1.64	2.46	3.69	5.54	8.31

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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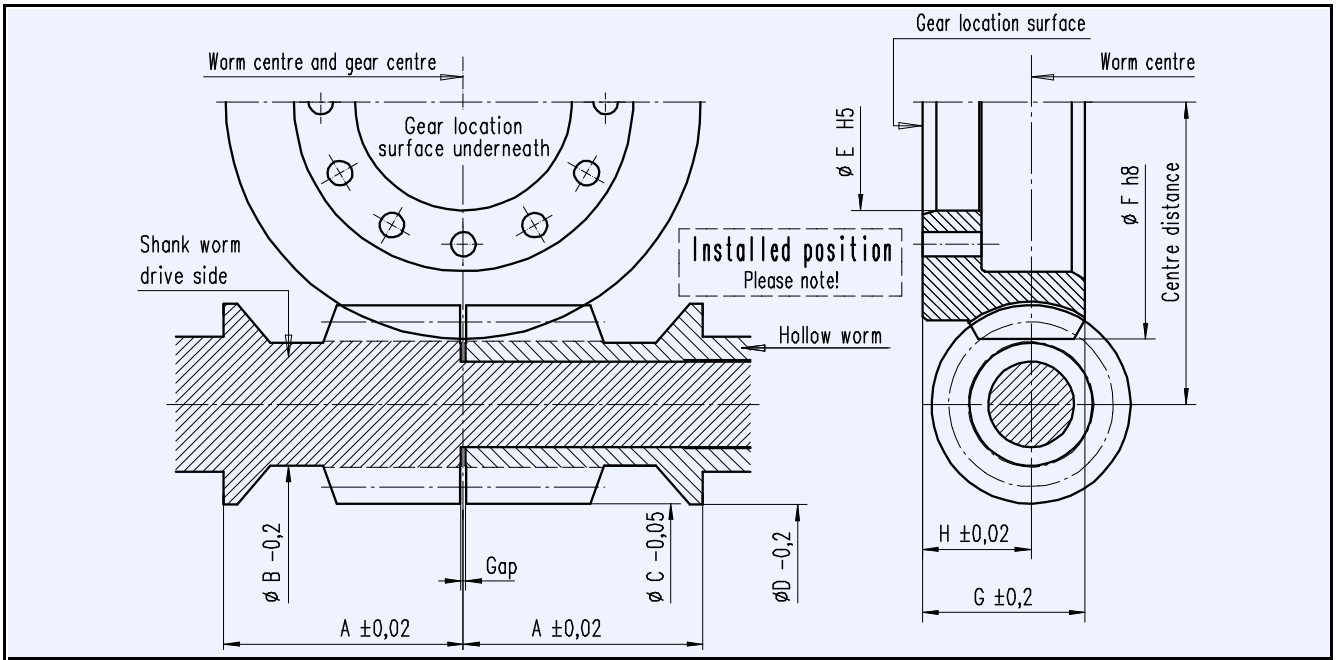
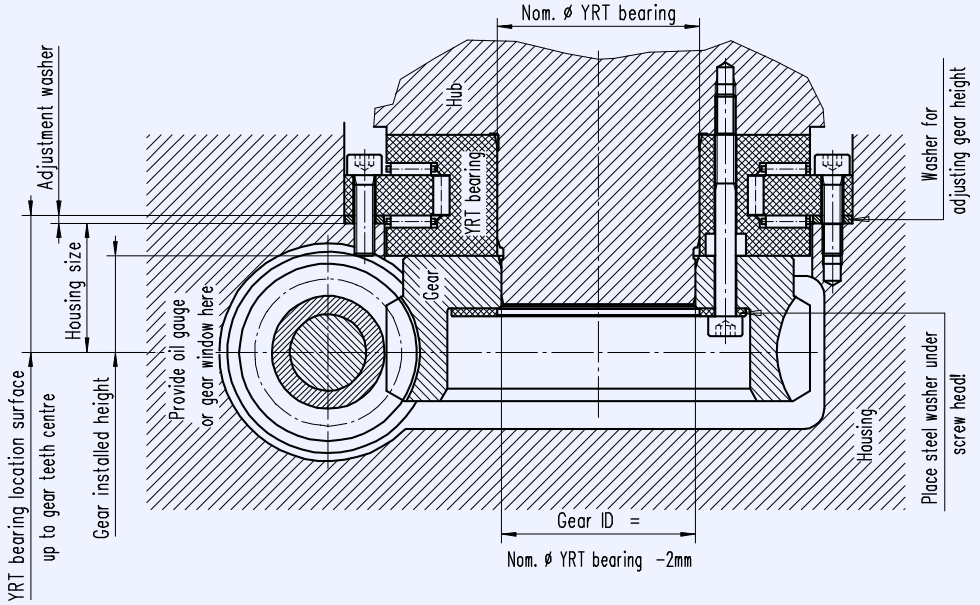
OTT worm gears - centre distance 165 mm

Main dimensions



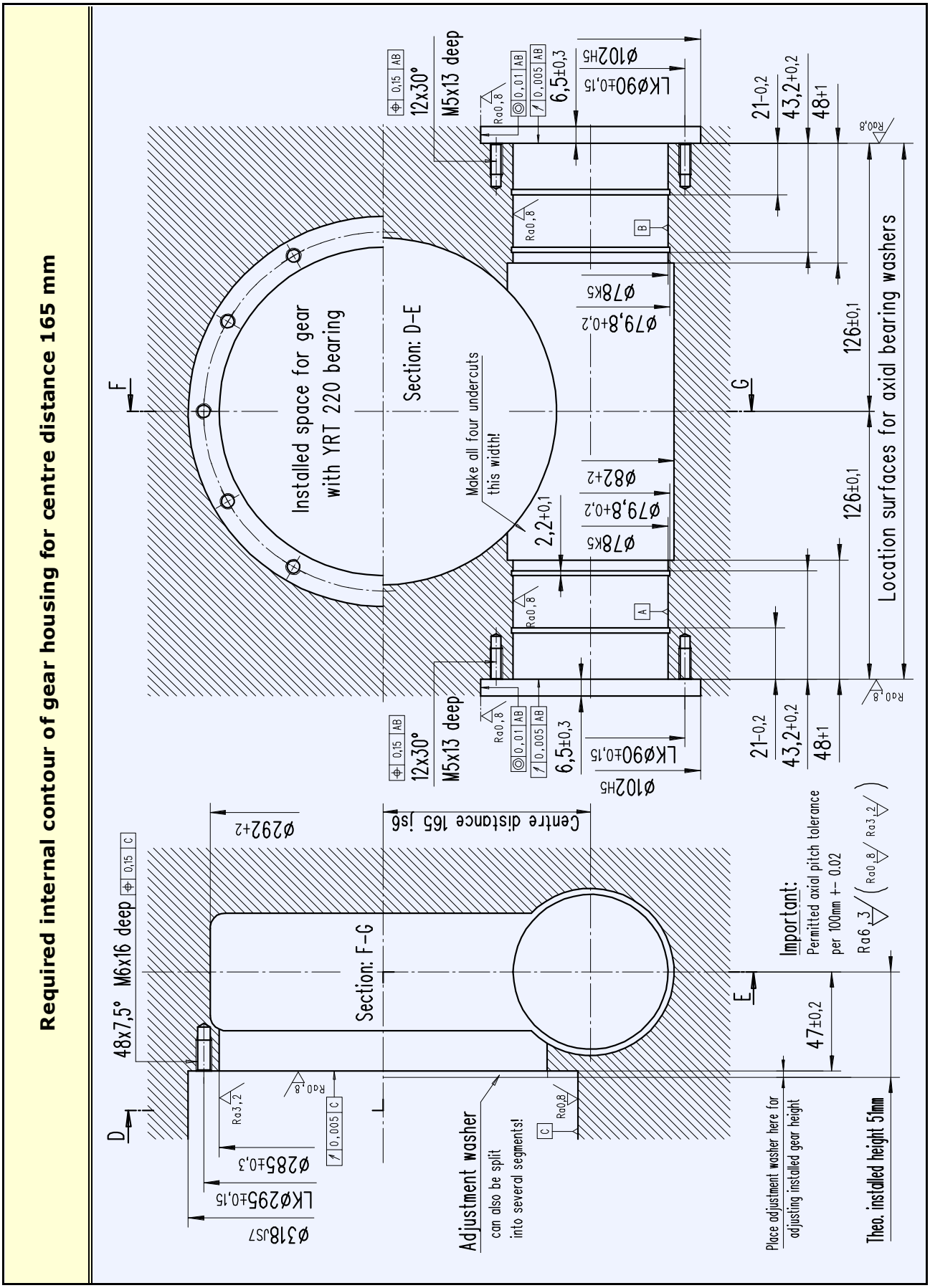
OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4860 SSR	2	120	85	44,4	62,0	67,6	220	218	284	57	36
4876 SSR	1	90		43,9	65,0						
4854 SSR	1	120		44,4	62,0						
4827 SSR	1	144		44,6	59,2						
4819 SSR	1	180		44,9	57,2						

See comments page 5!



Gear housing - required internal contour

Required internal contour of gear housing for centre distance 165 mm



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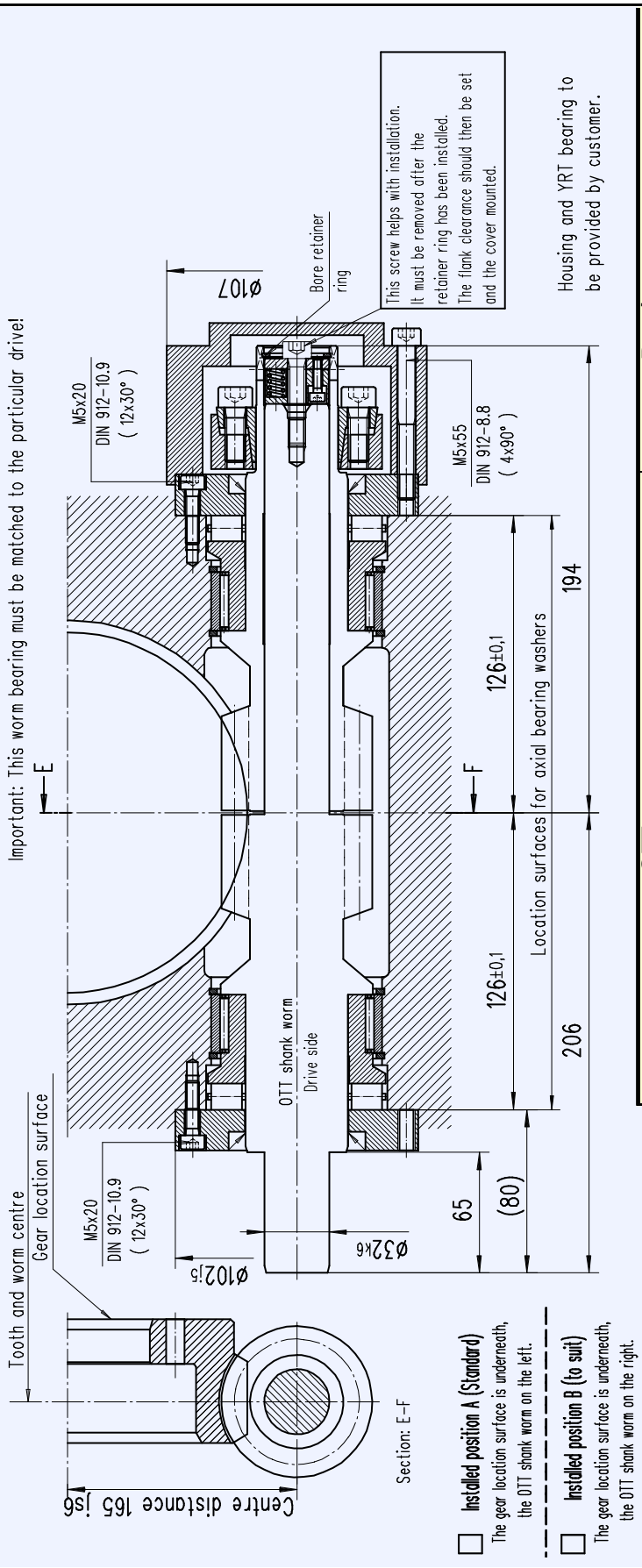
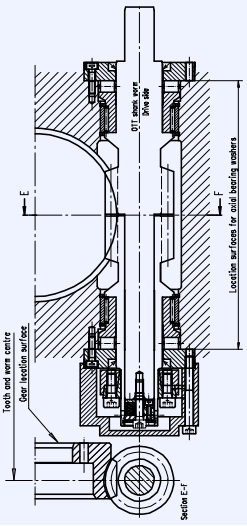
Worm bearings

Worm bearing for centre distance 165 mm



☐ **Installed position A (Standard)**
The gear location surface is underneath, the OTT shank worm on the left.

☐ **Installed position B (to suit)**
The gear location surface is underneath, the OTT shank worm on the right.



	OTT worm gear				Bearing parts per gear		
	OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
☐	*4860 SSR*	T00457-G-RAO	T00337-G-SSC	T00338-G-HSC	2	Axial cylinder roller bearing	K812 09 TV
☐	*4876 SSR*	T00458-G-RAO	T00339-G-SSC	T00340-G-HSC	2	Radial needle bearing	RNAO 60x78x20
☐	*4854 SSR*	T00459-G-RAO	T00341-G-SSC	T00342-G-HSC	2	Shaft seal	45x60x7
☐	*4827 SSR*	T00460-G-RAO	T00343-G-SSC	T00344-G-HSC	1	Shrink disc	HSD 44-22
☐	*4819 SSR*	T00461-G-RAO	T00345-G-SSC	T00346-G-HSC	4	Circlip	SB 78
					24	Cylinder bolt DIN 912	M5x20 - 10.9
					4	Cylinder bolt DIN 912	M5x55 - 8.8
					1	Cylinder bolt DIN 912	M6x30 - 8.8
					1	Retainer ring DIN 472	34
					2	Bearing sleeve	T00222-G-LHÜ
					2	Axial bearing washer	T00234-G-LDX
					1	Cover	T00217-G-ADH
					1	Thrust piece	B00010-G-DST

☐ REQUEST Date: Name:

☐ Cover

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

Zahnradfertigung Ott
Blöhsteinstraße 20
D-72411 Bodelshausen

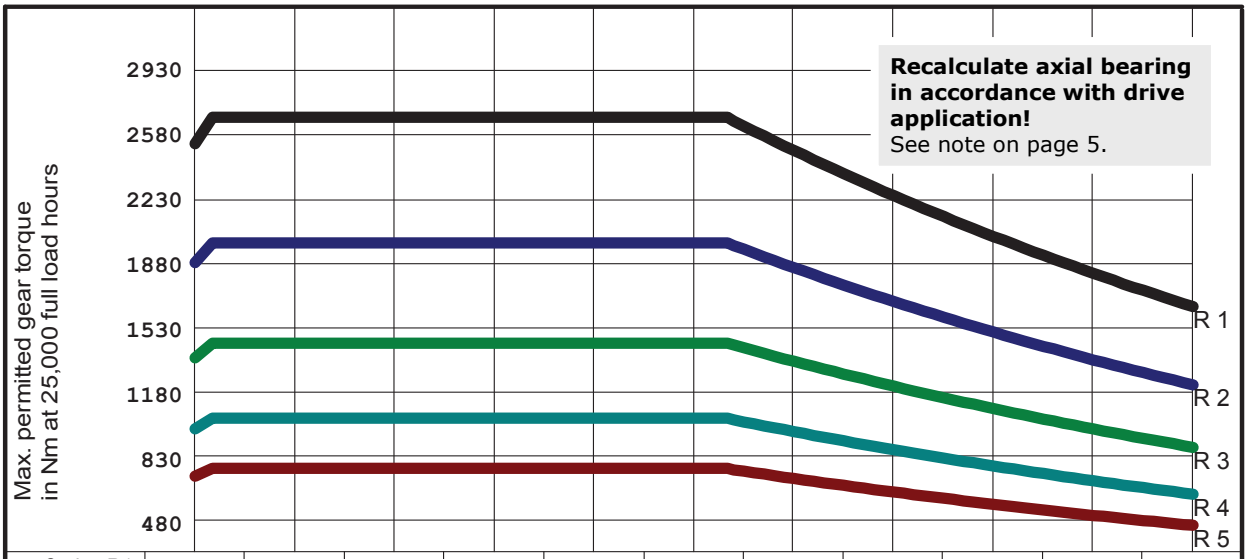
Operational characteristics

Centre distance	165.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	62.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	284.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	55.66	mm
No. teeth, gear	120		Lead angle at Bks	4.6160	°

Operating characteristics

Ott worm gear

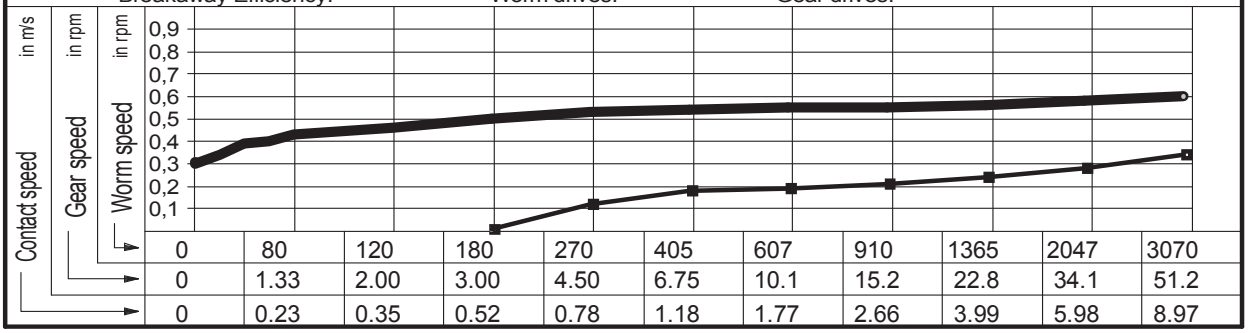
OTT no: 4860 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	2500	2638	2638	2638	2638	2638	2456	2220	2006	1812	1638
Series R2	1875	1978	1978	1978	1978	1978	1842	1665	1504	1359	1228
Series R3	1375	1451	1451	1451	1451	1451	1351	1221	1103	997	901
Series R4	1000	1055	1055	1055	1055	1055	982	888	802	725	655
Series R5	750	791	791	791	791	791	737	666	602	544	491

Breakaway Efficiency: 0.30 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
0	0.23	0.35	0.52	0.78	1.18	1.77	2.66	3.99	5.98	8.97

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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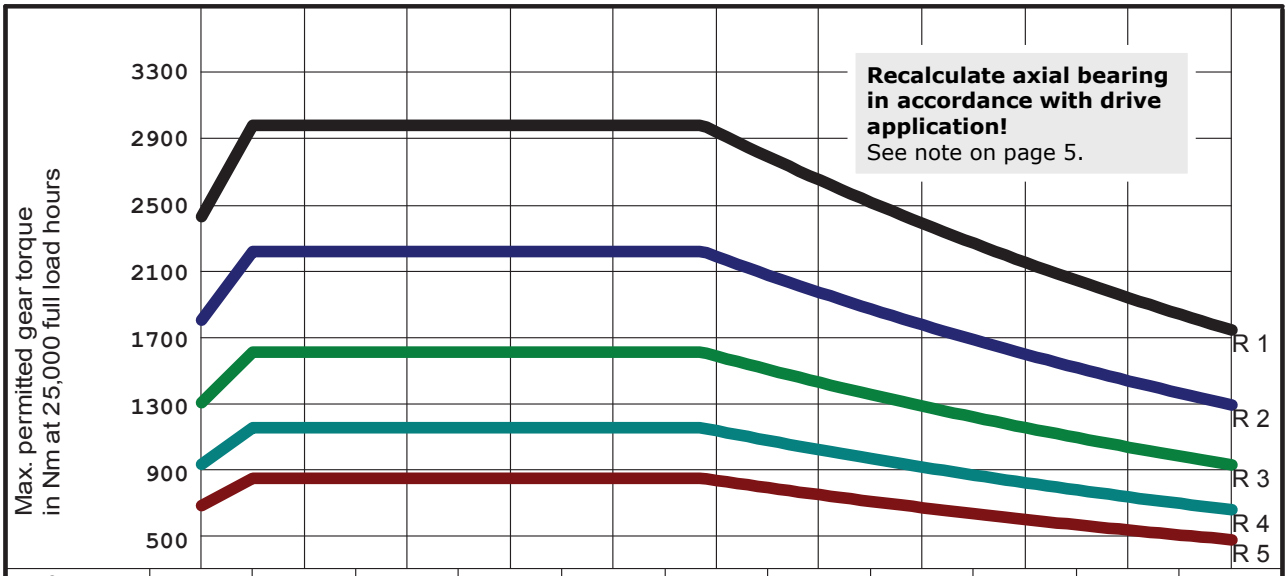
Centre distance	165.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	65.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	284.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	20	°
Worm direction	right		Calculated circle Ø	57.57	mm
No. teeth, gear	90		Lead angle at Bks	2.9519	°

Operating characteristics

Ott worm gear

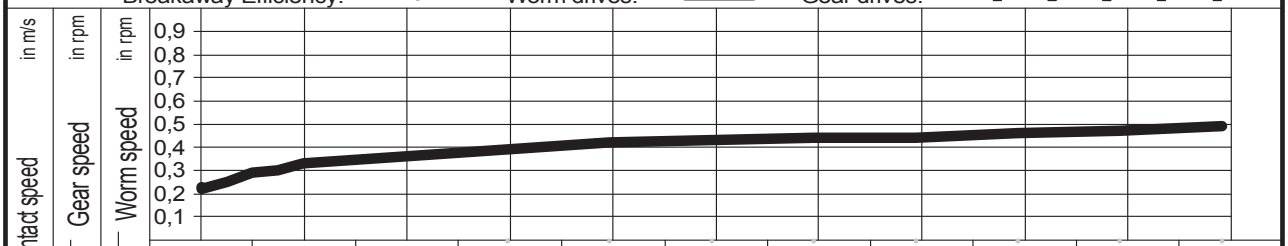
OTT no: 4876 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	2405	2937	2937	2937	2937	2893	2614	2363	2135	1929	1744
Series R2	1804	2202	2202	2202	2202	2170	1961	1772	1602	1447	1308
Series R3	1323	1615	1615	1615	1615	1591	1438	1300	1174	1061	959
Series R4	962	1175	1175	1175	1175	1157	1046	945	854	772	697
Series R5	722	881	881	881	881	868	784	709	641	579	523

Breakaway Efficiency: 0.22 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
0	0.24	0.36	0.54	0.81	1.22	1.83	2.74	4.11	6.17	9.26

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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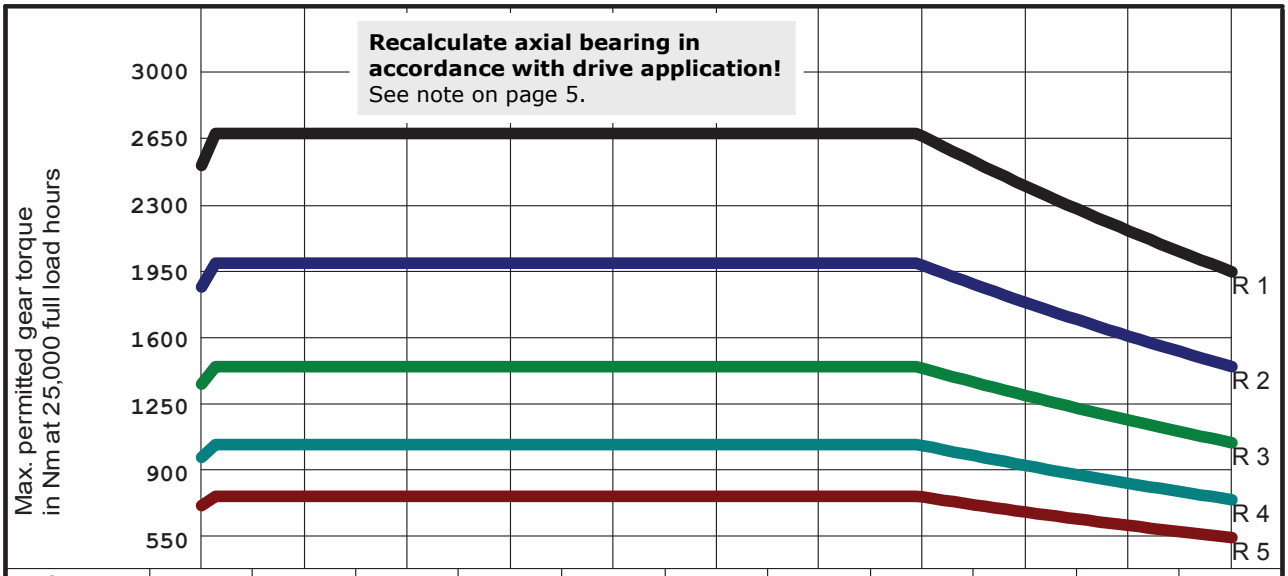
Centre distance	165.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	62.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	284.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	55.67	mm
No. teeth, gear	120		Lead angle at Bks	2.3115	°

Operating characteristics

Ott worm gear

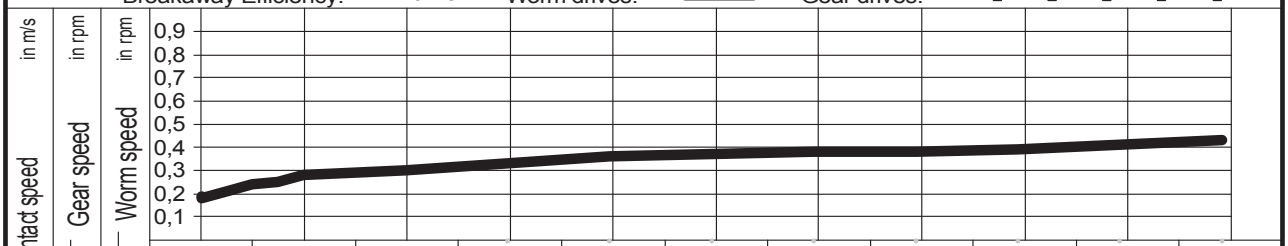
OTT no: 4854 SSR

Recalculate axial bearing in accordance with drive application!
See note on page 5.



Series R1	2479	2642	2642	2642	2642	2642	2642	2642	2365	2137	1931
Series R2	1859	1982	1982	1982	1982	1982	1982	1982	1774	1603	1448
Series R3	1363	1453	1453	1453	1453	1453	1453	1453	1301	1175	1062
Series R4	991	1057	1057	1057	1057	1057	1057	1057	946	855	772
Series R5	744	793	793	793	793	793	793	793	709	641	579

Breakaway Efficiency: 0.18 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
0	0.23	0.35	0.52	0.78	1.18	1.77	2.65	3.98	5.97	8.95

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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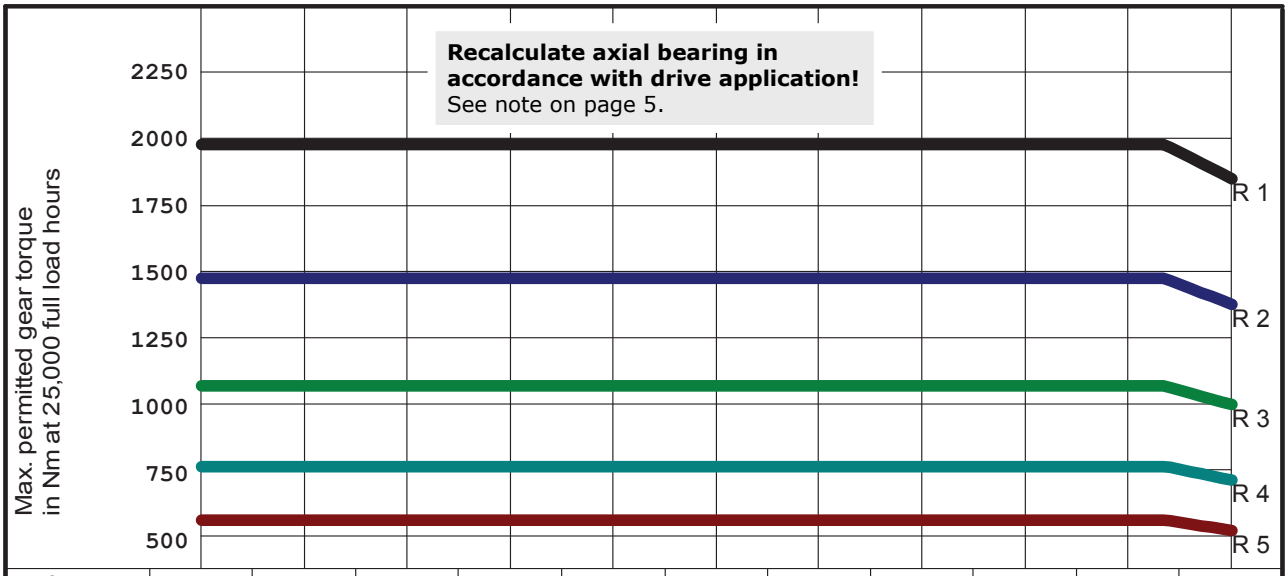
Centre distance	165.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	59.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	284.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	53.77	mm
No. teeth, gear	144		Lead angle at Bks	2.0134	°

Operating characteristics

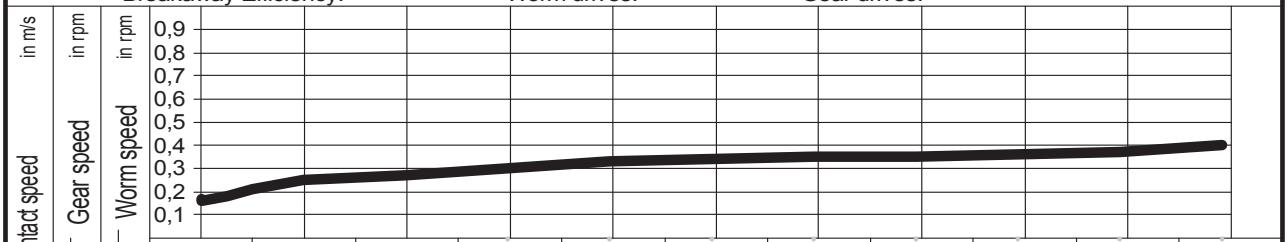
Ott worm gear

OTT no: 4827 SSR



Series R1	1954	1954	1954	1954	1954	1954	1954	1954	1954	1954	1819
Series R2	1466	1466	1466	1466	1466	1466	1466	1466	1466	1466	1364
Series R3	1075	1075	1075	1075	1075	1075	1075	1075	1075	1075	1001
Series R4	782	782	782	782	782	782	782	782	782	782	728
Series R5	586	586	586	586	586	586	586	586	586	586	546

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.55	0.83	1.25	1.87	2.81	4.21	6.32	9.47	14.2	21.3
0	0.22	0.33	0.50	0.76	1.14	1.70	2.56	3.84	5.76	8.64

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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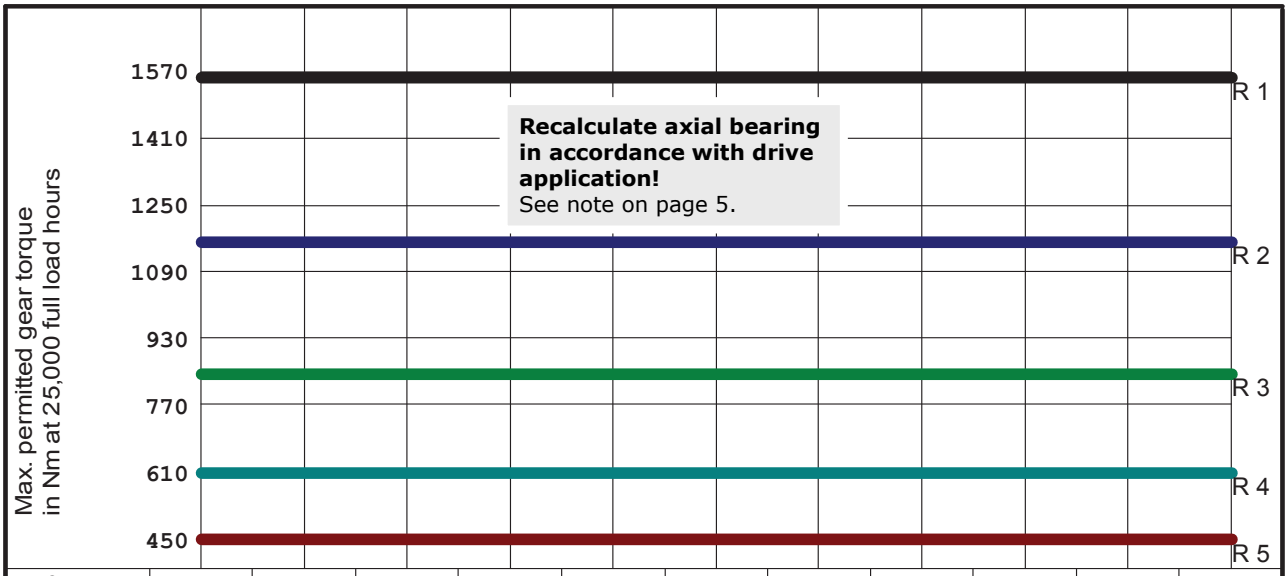
Centre distance	165.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	57.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	284.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	52.51	mm
No. teeth, gear	180		Lead angle at Bks	1.6600	°

Operating characteristics

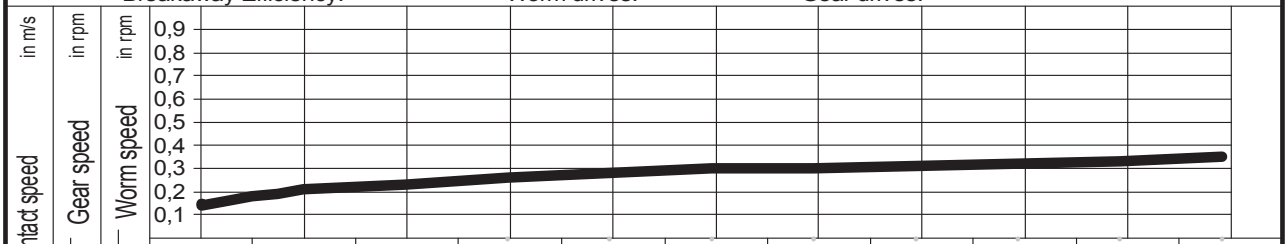
Ott worm gear

OTT no: 4819 SSR



Series R1	1536	1536	1536	1536	1536	1536	1536	1536	1536	1536	1536
Series R2	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152	1152
Series R3	845	845	845	845	845	845	845	845	845	845	845
Series R4	614	614	614	614	614	614	614	614	614	614	614
Series R5	461	461	461	461	461	461	461	461	461	461	461

Breakaway Efficiency: 0.14 Worm drives: Gear drives:



Worm speed in rpm	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed in rpm	0	0.44	0.66	1.00	1.50	2.25	3.37	5.05	7.58	11.4	17.1
Contact speed in m/s	0	0.22	0.33	0.49	0.74	1.11	1.66	2.50	3.75	5.63	8.44

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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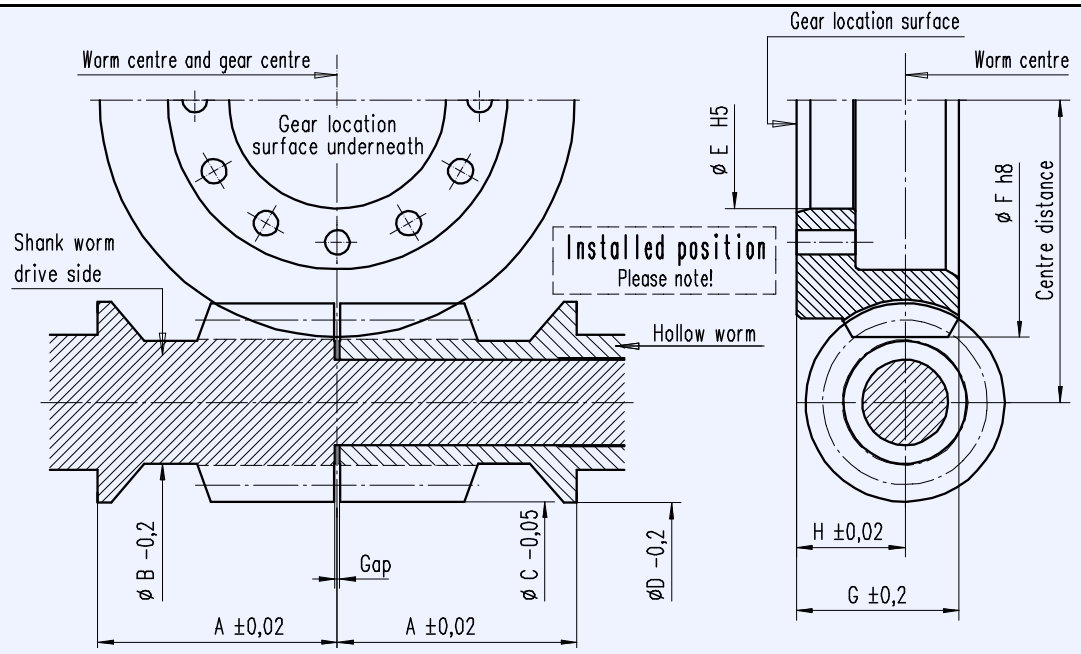
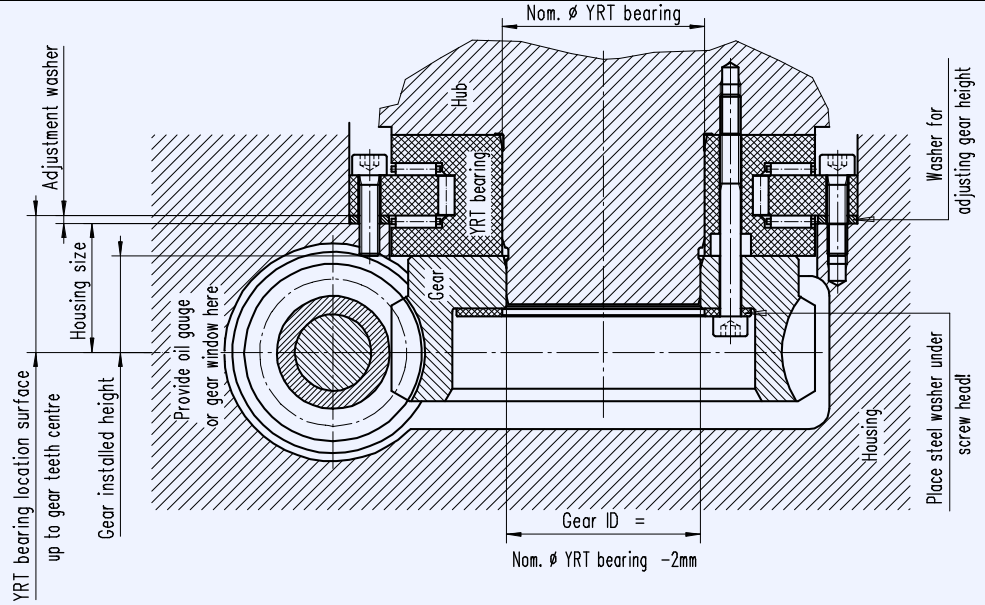
OTT worm gears - centre distance 195 mm

Main dimensions

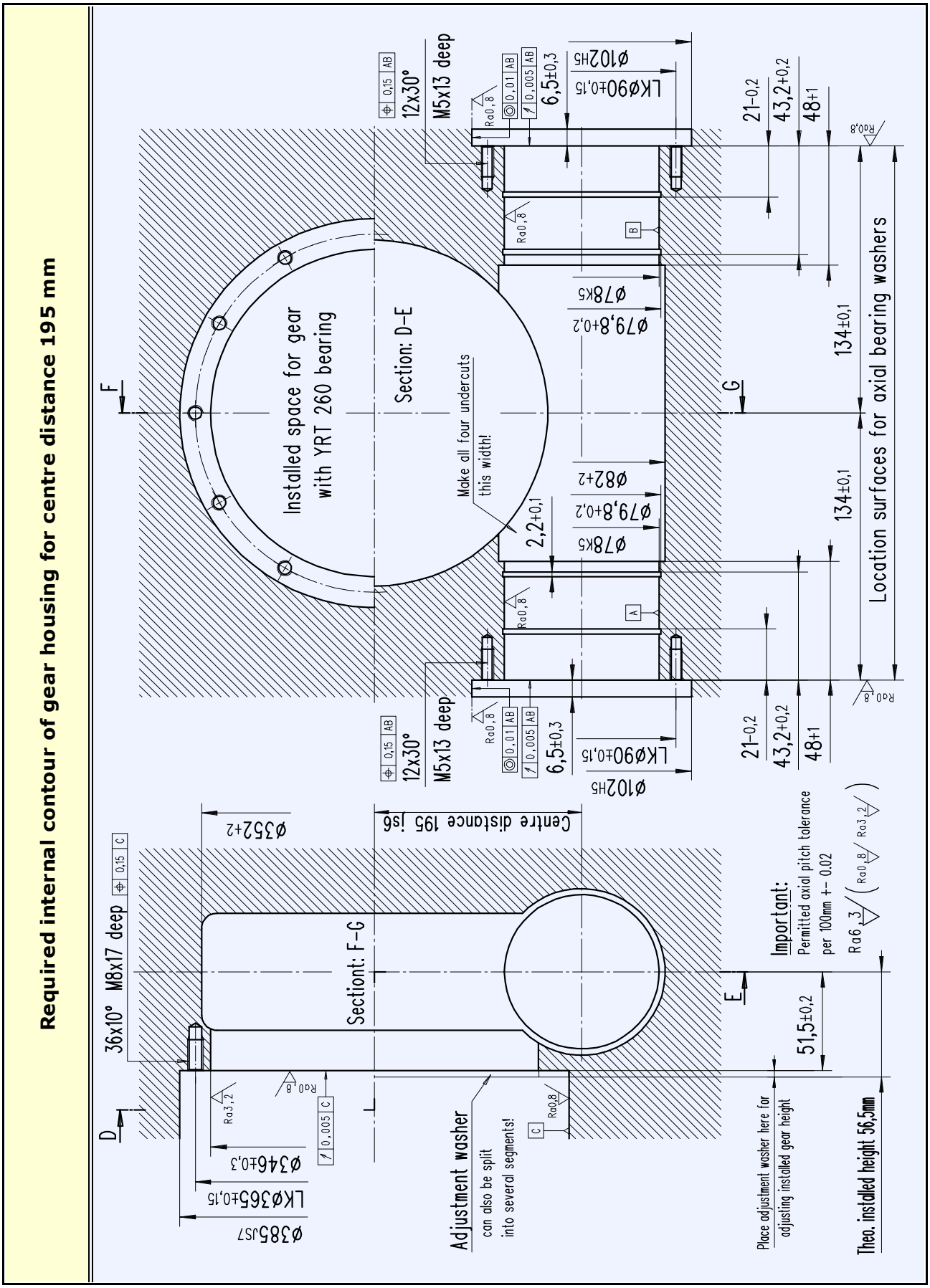


OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4864 SSR	2	120	93	43,0	63,4	67,6	260	258	345	61	38
5362 SSR	2	165		43,5	59,5						
4845 SSR	1	120		43,0	63,4						
4805 SSR	1	144		43,3	61,0						
4822 SSR	1	180		43,7	58,6						
4865 SSR	1	200		43,8	57,6						

See comments page 5!



Gear housing - required internal contour



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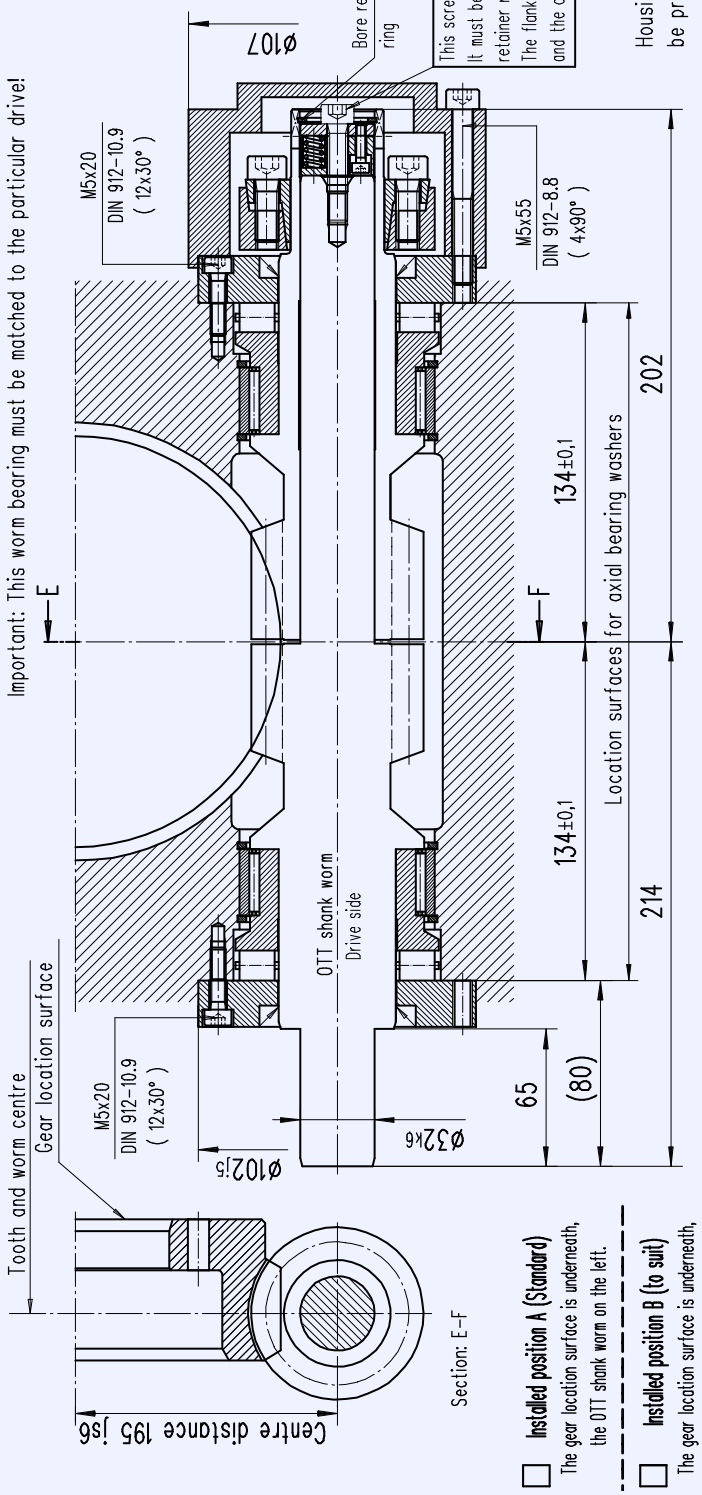
Worm bearings

Worm bearing for centre distance 195 mm



OTT worm gear				
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty
4864 SSR	T00462-G-RAO	T00347-G-SSC	T00348-G-HSC	2
5362 SSR	T00463-G-RAO	T00349-G-SSC	T00350-G-HSC	2
4845 SSR	T00464-G-RAO	T00351-G-SSC	T00352-G-HSC	2
4805 SSR	T00465-G-RAO	T00353-G-SSC	T00354-G-HSC	1
4822 SSR	T00466-G-RAO	T00355-G-SSC	T00356-G-HSC	4
4865 SSR	T00467-G-RAO	T00357-G-SSC	T00358-G-HSC	24

Bearing parts per gear		
	Name	Typ/Dwg no.
2	Axial cylinder roller bearing	K812 09 TV
2	Radial needle bearing	RNAO 60x78x20
2	Shaft seal	45x60x7
1	Shrink disc	HSD 44-22
4	Circlip	SB 78
24	Cylinder bolt DIN 912	M5x20 - 10.9
4	Cylinder bolt DIN 912	M5x55 - 8.8
1	Cylinder bolt DIN 912	M6x30 - 8.8
1	Retainer ring DIN 472	34
2	Bearing sleeve	T00222-G-LHÜ
2	Axial bearing washer	T00234-G-LDX
1	Cover	T00217-G-ADH
1	Thrust piece	B00010-G-DST

☐ REQUEST Date: Name:

☐ ORDER

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

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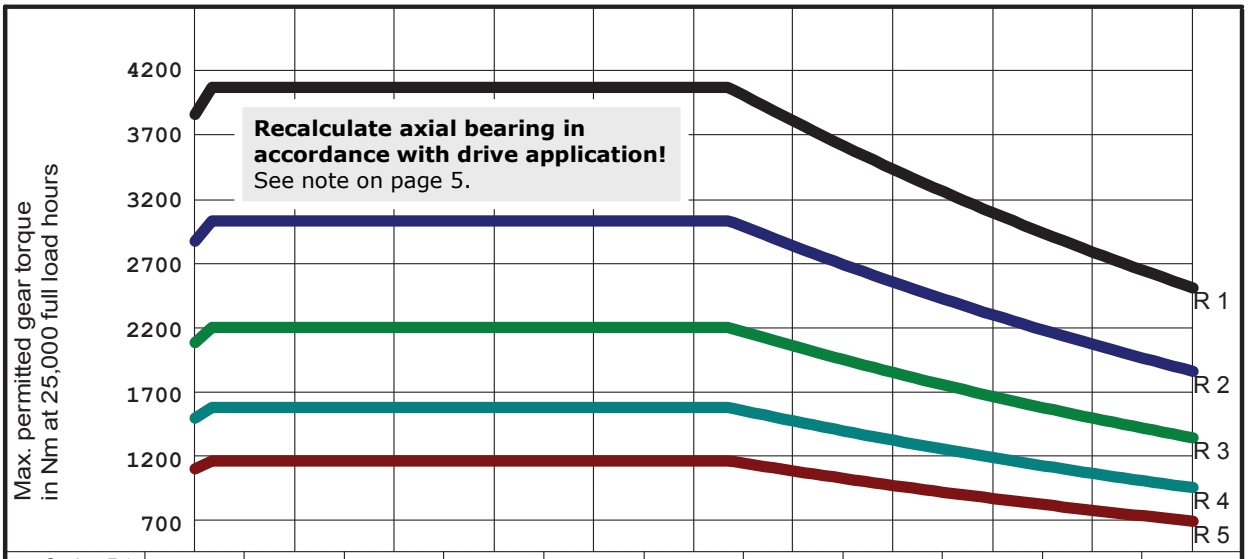
Operational characteristics

Centre distance	195.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	63.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	345.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	55.95	mm
No. teeth, gear	120		Lead angle at Bks	5.5907	°

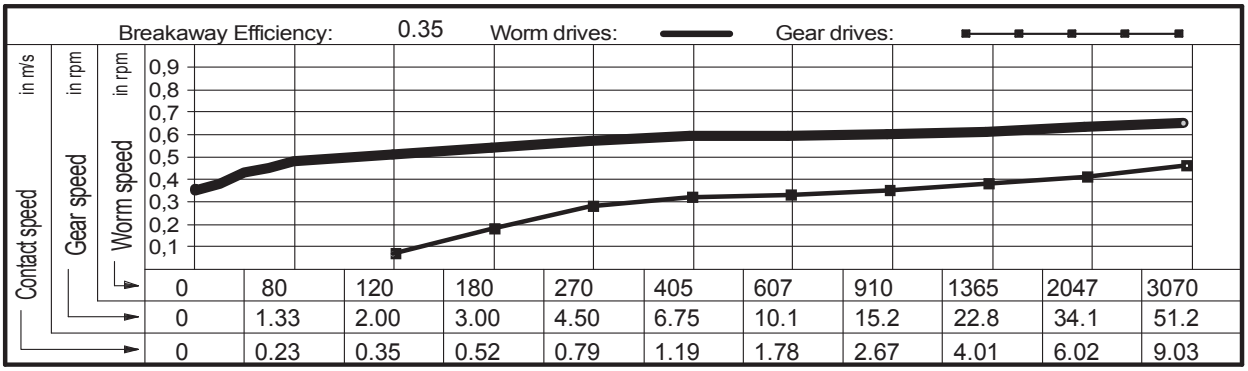
Operating characteristics

Ott worm gear

OTT no: 4864 SSR



Series R1	3804	4008	4008	4008	4008	4008	3736	3377	3051	2757	2492
Series R2	2853	3006	3006	3006	3006	3006	2802	2533	2289	2068	1869
Series R3	2092	2205	2205	2205	2205	2205	2055	1857	1678	1517	1370
Series R4	1521	1603	1603	1603	1603	1603	1495	1351	1221	1103	997
Series R5	1141	1202	1202	1202	1202	1202	1121	1013	915	827	747



Worm speed in rpm	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed in rpm	0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
Contact speed in m/s	0	0.23	0.35	0.52	0.79	1.19	1.78	2.67	4.01	6.02	9.03

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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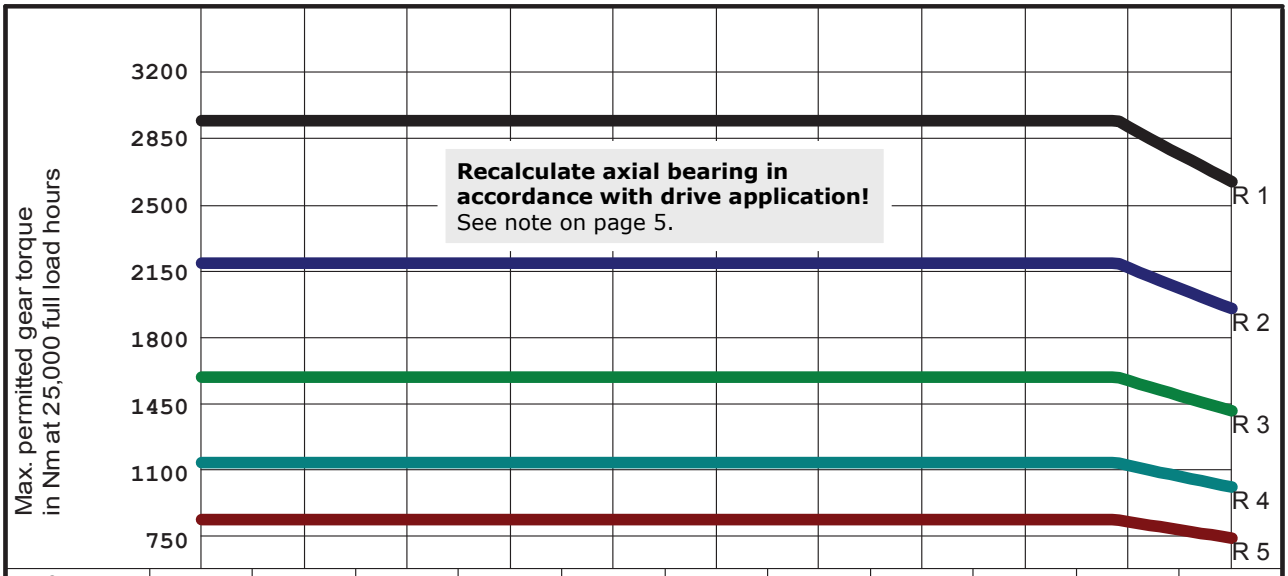
Centre distance	195.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	59.50	mm	Material, worm	31CrMoV9	
Outer Ø gear	345.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	53.45	mm
No. teeth, gear	165		Lead angle at Bks	4.3051	°

Operating characteristics

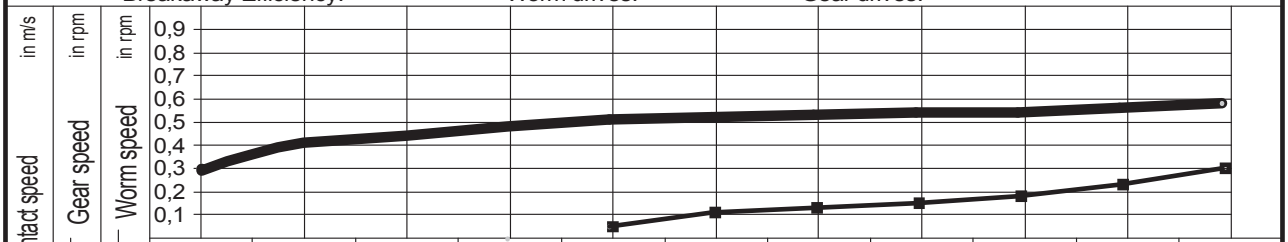
Ott worm gear

OTT no: 5362 SSR



Series R1	2906	2906	2906	2906	2906	2906	2906	2906	2906	2862	2586
Series R2	2180	2180	2180	2180	2180	2180	2180	2180	2180	2147	1940
Series R3	1598	1598	1598	1598	1598	1598	1598	1598	1598	1574	1422
Series R4	1163	1163	1163	1163	1163	1163	1163	1163	1163	1145	1034
Series R5	872	872	872	872	872	872	872	872	872	859	776

Breakaway Efficiency: 0.29 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.96	1.45	2.18	3.27	4.90	7.36	11.0	16.5	24.8	37.2
0	0.22	0.33	0.50	0.75	1.13	1.70	2.55	3.83	5.74	8.61

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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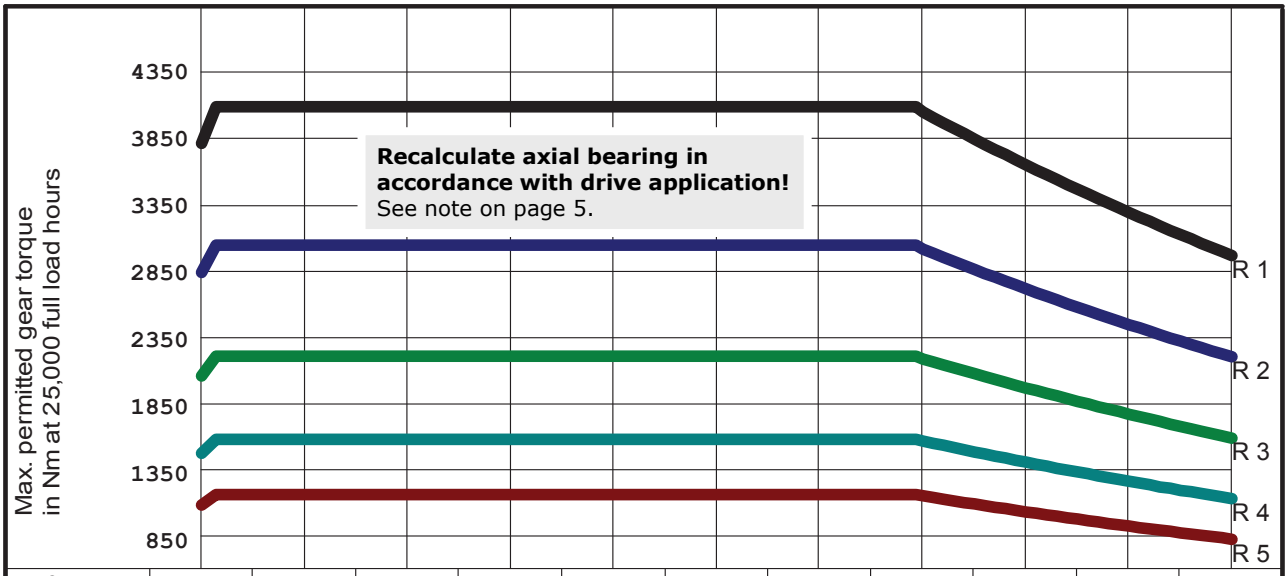
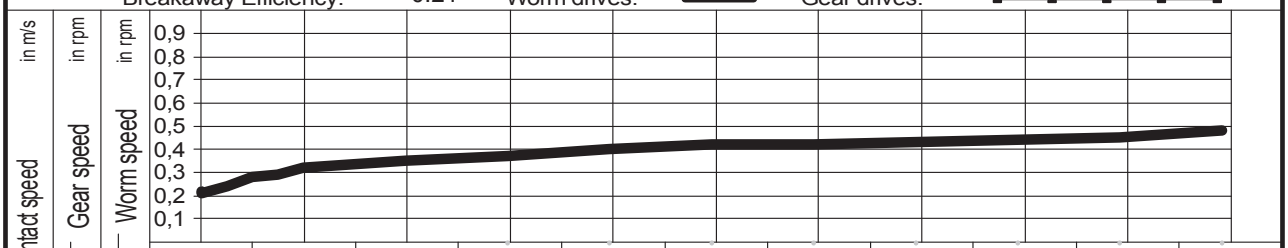
Centre distance	195.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	63.40 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	345.00 mm	Pressure angle in NS	10 °	OTT no:	4845 SSR
No. starts, worm	1	Back angle in NS	15 °		
Worm direction	right	Calculated circle Ø	55.96 mm		
No. teeth, gear	120	Lead angle at Bks	2.8015 °		



Series R1	3766	4030	4030	4030	4030	4030	4030	4030	3593	3247	2934
Series R2	2825	3023	3023	3023	3023	3023	3023	3023	2695	2435	2200
Series R3	2071	2217	2217	2217	2217	2217	2217	2217	1976	1786	1614
Series R4	1506	1612	1612	1612	1612	1612	1612	1612	1437	1299	1174
Series R5	1130	1209	1209	1209	1209	1209	1209	1209	1078	974	880

Breakaway Efficiency: 0.21 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
0	0.23	0.35	0.52	0.79	1.18	1.78	2.66	4.00	6.00	9.00

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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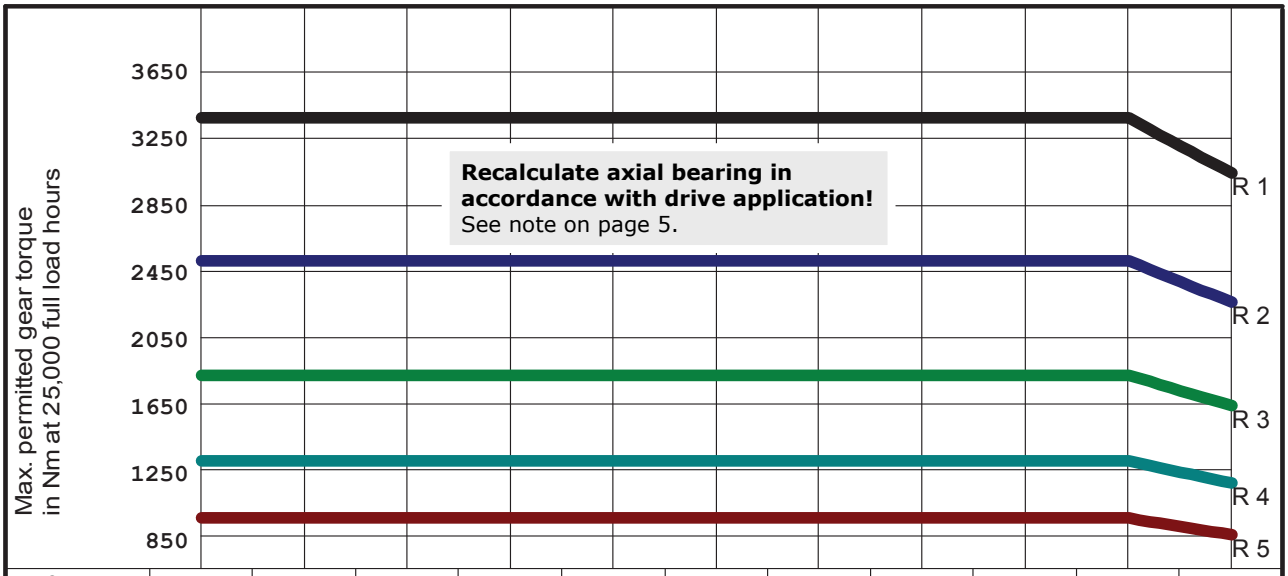
Centre distance	195.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	61.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	345.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	54.41	mm
No. teeth, gear	144		Lead angle at Bks	2.4166	°

Operating characteristics

Ott worm gear

OTT no: 4805 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	3331	3331	3331	3331	3331	3331	3331	3331	3331	3331	2984
Series R2	2498	2498	2498	2498	2498	2498	2498	2498	2498	2498	2238
Series R3	1832	1832	1832	1832	1832	1832	1832	1832	1832	1832	1641
Series R4	1332	1332	1332	1332	1332	1332	1332	1332	1332	1332	1194
Series R5	999	999	999	999	999	999	999	999	999	999	895

Breakaway Efficiency: 0.19 Worm drives: Gear drives:

0	80	120	180	270	405	607	910	1365	2047	3070
0	0.55	0.83	1.25	1.87	2.81	4.21	6.32	9.47	14.2	21.3
0	0.22	0.34	0.51	0.76	1.15	1.73	2.59	3.89	5.83	8.75

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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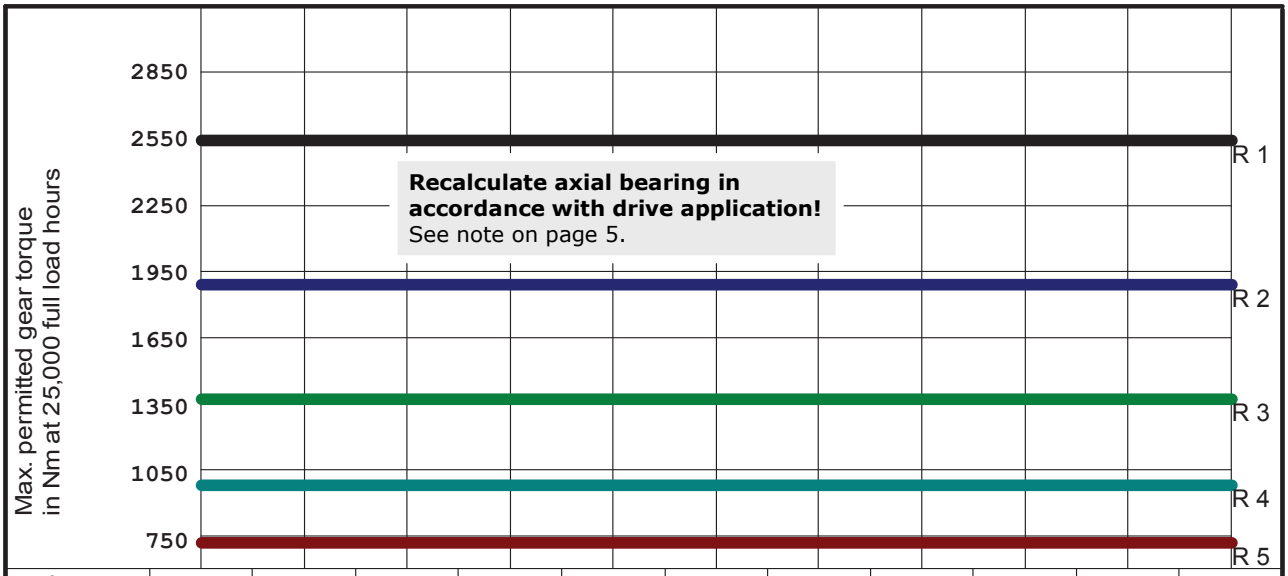
Centre distance	195.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	58.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	345.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	52.90	mm
No. teeth, gear	180		Lead angle at Bks	2.0014	°

Operating characteristics

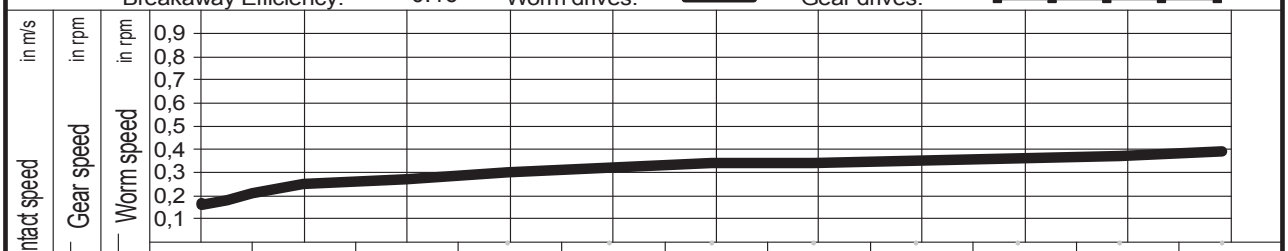
Ott worm gear

OTT no: 4822 SSR



Series R1	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511	2511
Series R2	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883	1883
Series R3	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381	1381
Series R4	1004	1004	1004	1004	1004	1004	1004	1004	1004	1004	1004
Series R5	753	753	753	753	753	753	753	753	753	753	753

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.44	0.66	1.00	1.50	2.25	3.37	5.05	7.58	11.4	17.1
0	0.22	0.33	0.49	0.74	1.12	1.68	2.52	3.78	5.67	8.50

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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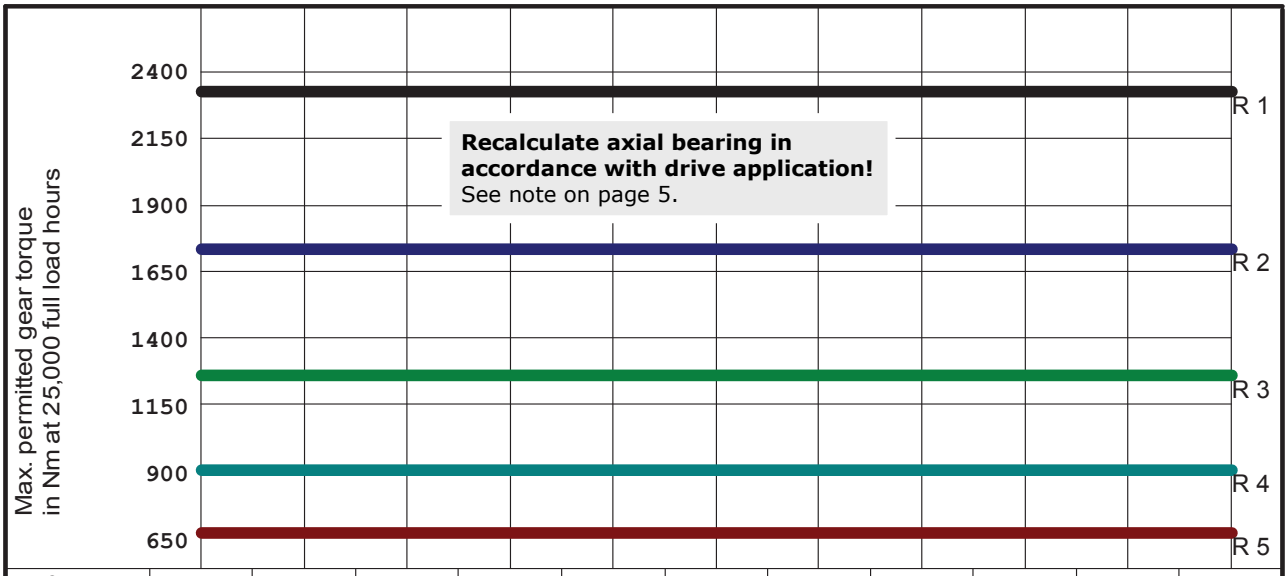
Centre distance	195.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	57.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	345.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	52.27	mm
No. teeth, gear	200		Lead angle at Bks	1.8279	°

Operating characteristics

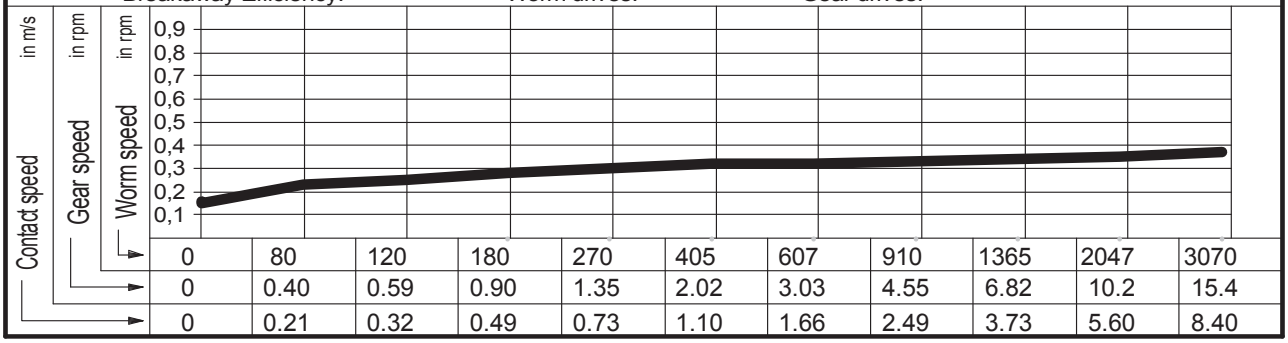
Ott worm gear

OTT no: 4865 SSR



Series R1	2296	2296	2296	2296	2296	2296	2296	2296	2296	2296	2296
Series R2	1722	1722	1722	1722	1722	1722	1722	1722	1722	1722	1722
Series R3	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263	1263
Series R4	919	919	919	919	919	919	919	919	919	919	919
Series R5	689	689	689	689	689	689	689	689	689	689	689

Breakaway Efficiency: 0.15 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.40	0.59	0.90	1.35	2.02	3.03	4.55	6.82	10.2	15.4
0	0.21	0.32	0.49	0.73	1.10	1.66	2.49	3.73	5.60	8.40

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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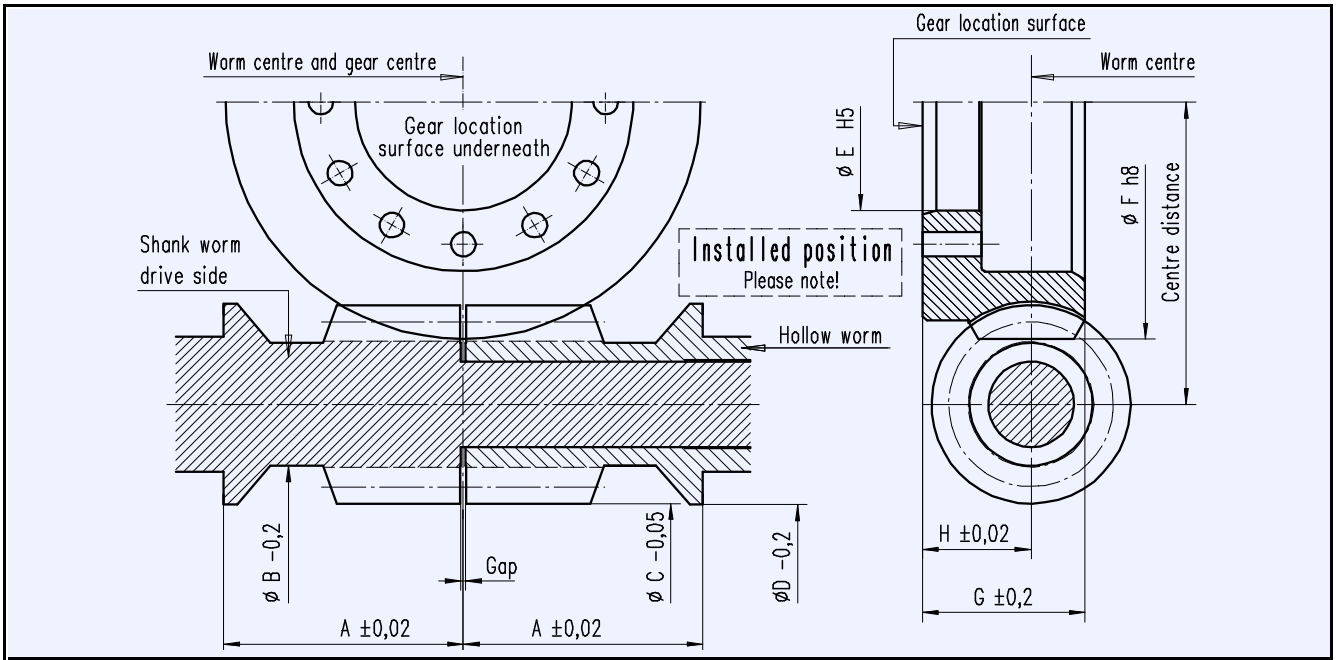
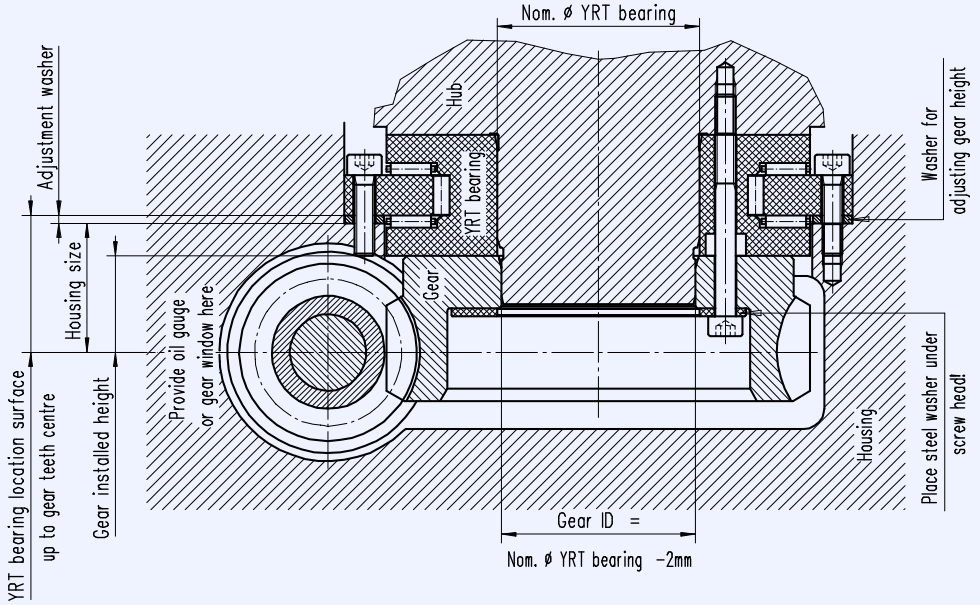
OTT worm gears - centre distance 235 mm

Main dimensions

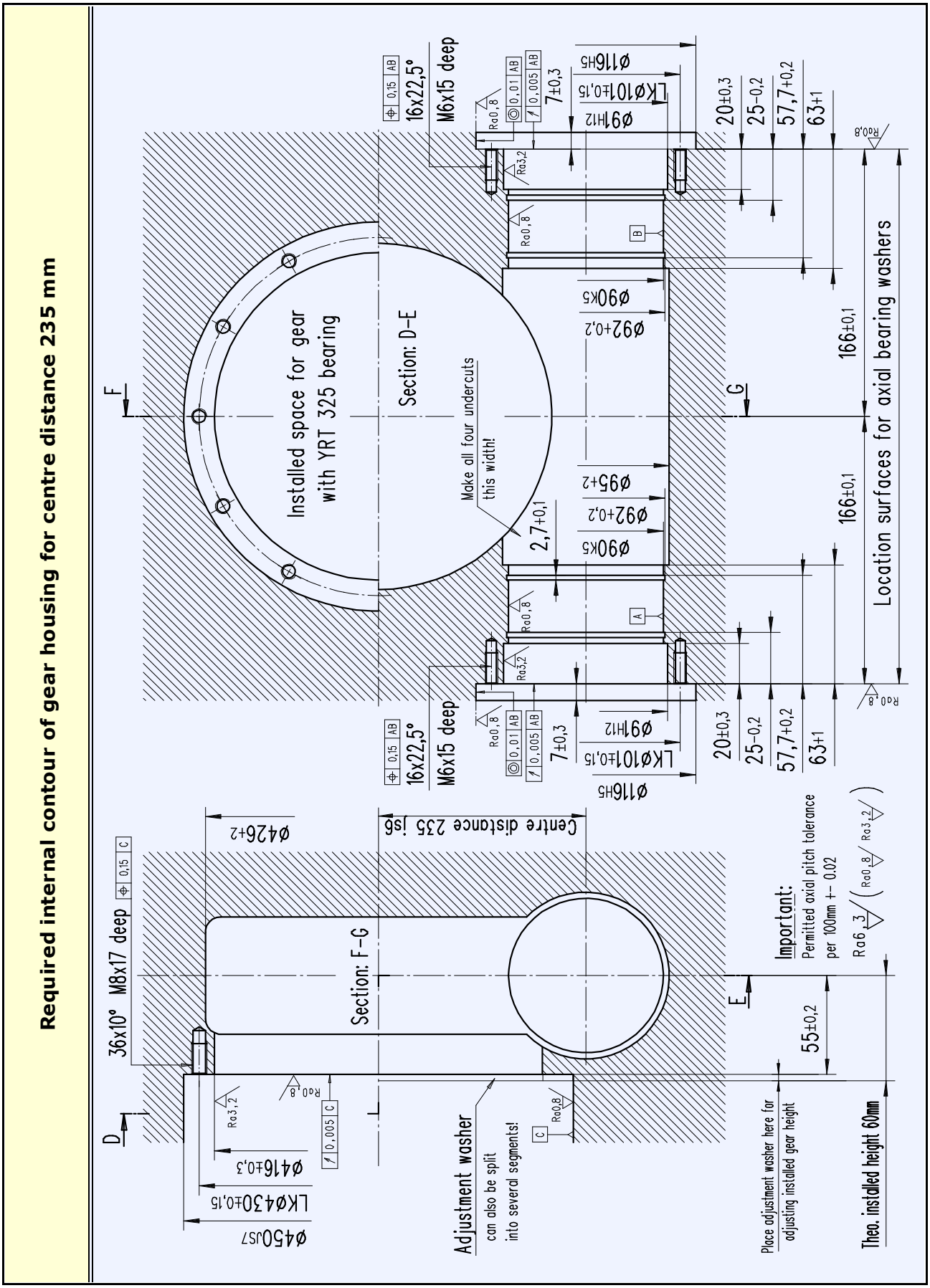


OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4870 SSR	2	120	111	52,6	77,2	77,6	325	323	415	66	40
4806 SSR	1	90		51,9	77,6						
4808 SSR	1	120		52,6	77,2						
4843 SSR	1	144		53,0	74,4						
5655 SSR	1	150		53,1	73,8						
4807 SSR	1	180		53,4	71,4						

See comments page 5!



Gear housing - required internal contour



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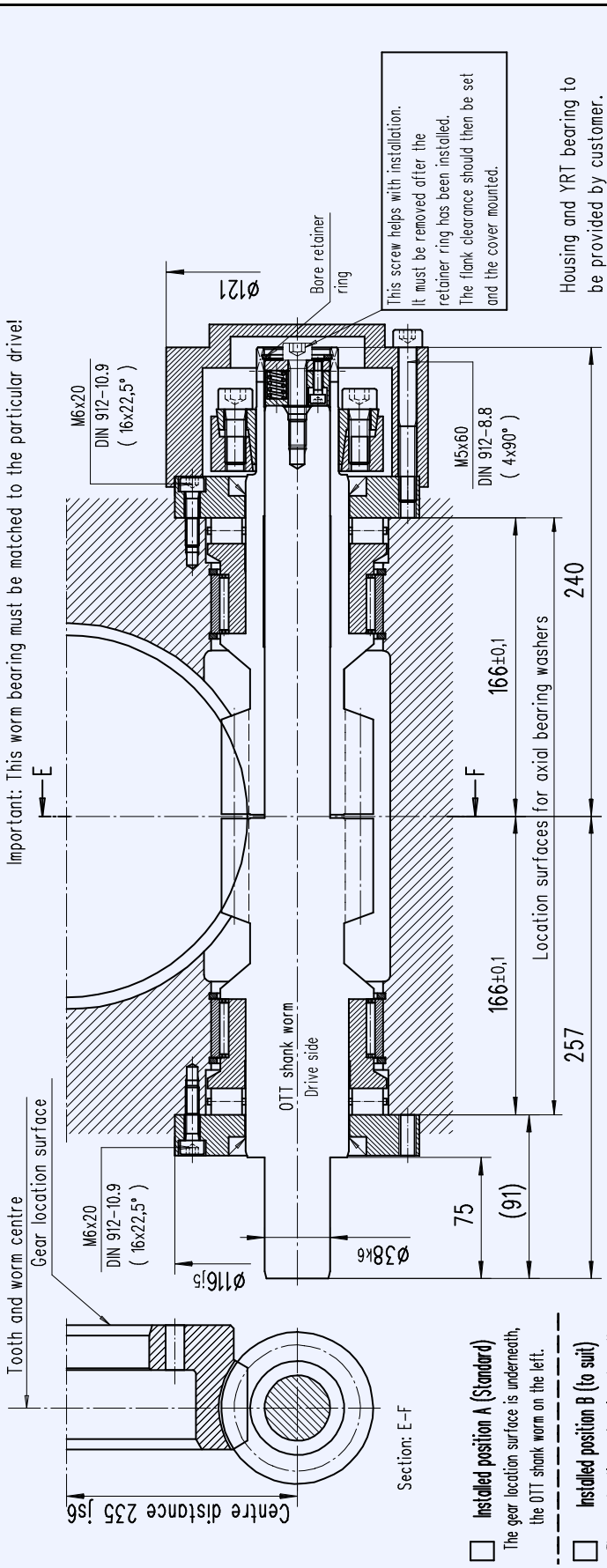
Worm bearings

Worm bearing for centre distance 235 mm



OTT worm gear					Bearing parts per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
4870 SSR	T00468-G-RAO	T00359-G-SSC	T00360-G-HSC	2	Axial cylinder roller bearing	K812 11 TV
4806 SSR	T00469-G-RAO	T00361-G-SSC	T00362-G-HSC	2	Radial needle bearing	RNAO 70x90x30
4808 SSR	T00470-G-RAO	T00363-G-SSC	T00364-G-HSC	2	Shaft seal	55x70x8
4843 SSR	T00471-G-RAO	T00365-G-SSC	T00366-G-HSC	1	Shrink disc	HSD 50-22
5655 SSR	T00472-G-RAO	T00367-G-SSC	T00368-G-HSC	4	Circlip	SB 90
4807 SSR	T00473-G-RAO	T00369-G-SSC	T00370-G-HSC	32	Cylinder bolt DIN 912	M6x20 - 10.9
				4	Cylinder bolt DIN 912	M5x60 - 8.8
				1	Cylinder bolt DIN 912	M6x30 - 8.8
				1	Retainer ring DIN 472	38
				2	Bearing sleeve	T00223-G-LHÜ
				2	Axial bearing washer	T00235-G-LDX
				1	Cover	T00218-G-ADH
				1	Thrust piece	B00011-G-DST

Order using ..... set of OTT worm gears
- ☐ Gearset incl. thrust piece without bearing parts
- ☐ Gearset incl. all bearing parts

☐ REQUEST Date: Name:
☐ ORDER

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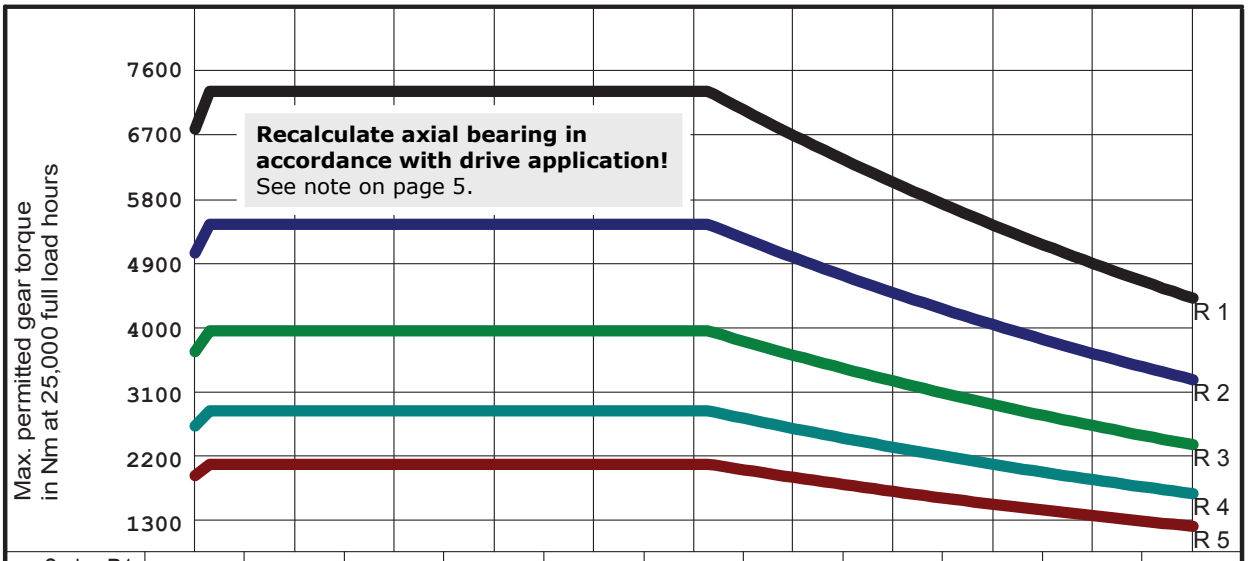
Operational characteristics

Centre distance	235.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	77.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	415.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	68.22	mm
No. teeth, gear	120		Lead angle at Bks	5.5151	°

Operating characteristics

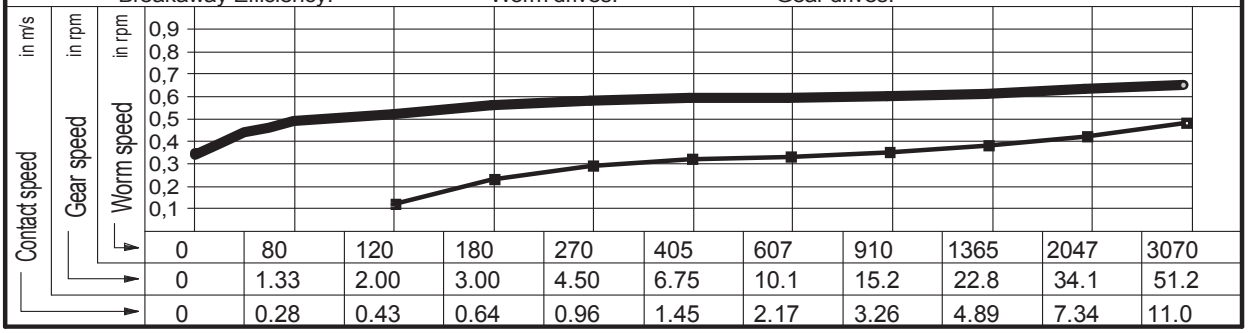
Ott worm gear

OTT no: 4870 SSR



Series R1	6690	7202	7202	7202	7202	7202	6571	5939	5367	4849	4382
Series R2	5017	5401	5401	5401	5401	5401	4928	4454	4025	3637	3287
Series R3	3679	3961	3961	3961	3961	3961	3614	3266	2952	2667	2410
Series R4	2676	2881	2881	2881	2881	2881	2629	2376	2147	1940	1753
Series R5	2007	2161	2161	2161	2161	2161	1971	1782	1610	1455	1315

Breakaway Efficiency: 0.34 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
0	0.28	0.43	0.64	0.96	1.45	2.17	3.26	4.89	7.34	11.0

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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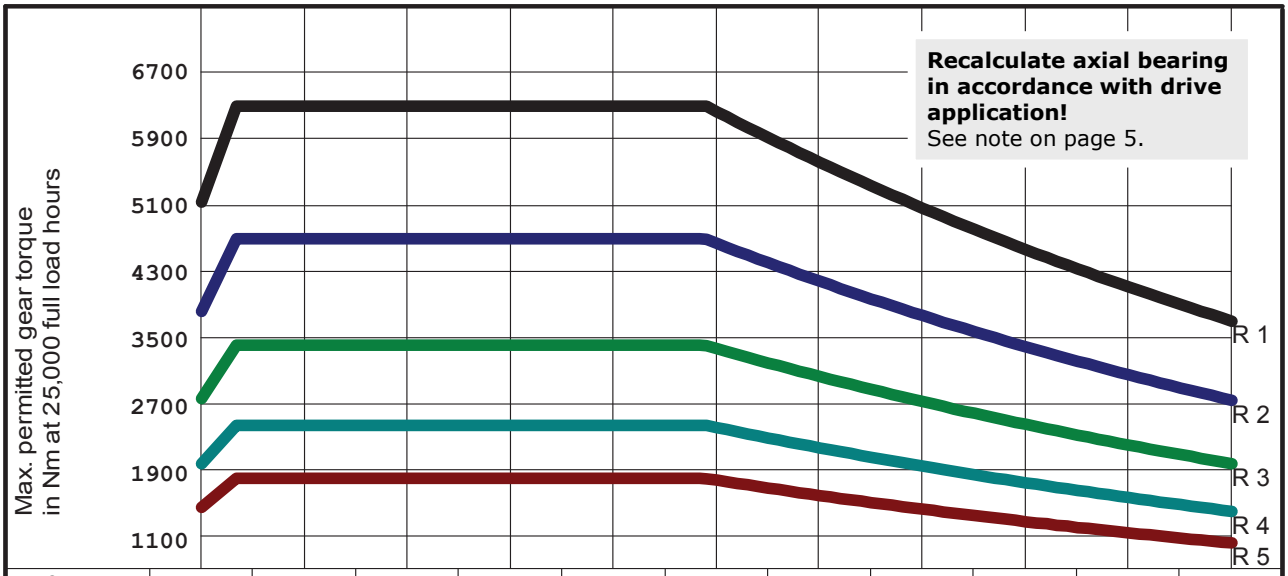
Centre distance	235.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	77.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	415.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	67.93	mm
No. teeth, gear	90		Lead angle at Bks	3.7027	°

Operating characteristics

Ott worm gear

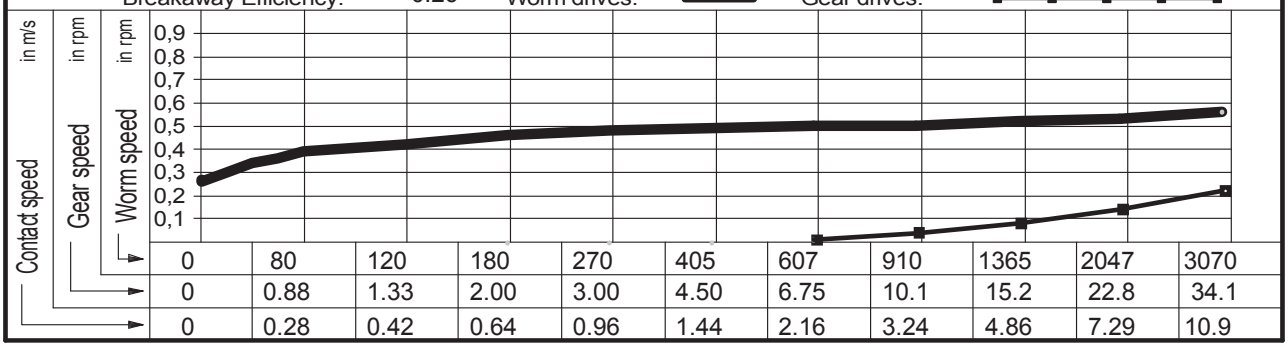
OTT no: 4806 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	5079	6201	6201	6201	6201	6109	5520	4990	4509	4074	3682
Series R2	3809	4651	4651	4651	4651	4582	4140	3742	3382	3056	2761
Series R3	2793	3411	3411	3411	3411	3360	3036	2744	2480	2241	2025
Series R4	2031	2480	2480	2480	2480	2444	2208	1996	1804	1630	1473
Series R5	1524	1860	1860	1860	1860	1833	1656	1497	1353	1222	1105

Breakaway Efficiency: 0.26 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.88	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1
0	0.28	0.42	0.64	0.96	1.44	2.16	3.24	4.86	7.29	10.9

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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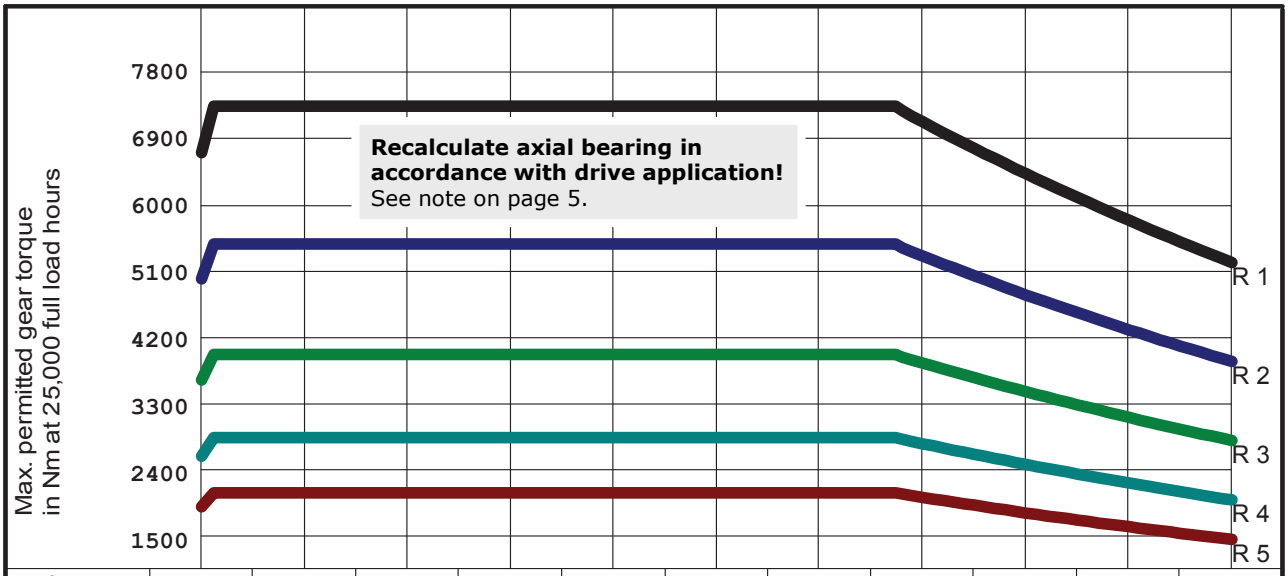
Centre distance	235.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	77.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	415.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	68.23	mm
No. teeth, gear	120		Lead angle at Bks	2.7635	°

Operating characteristics

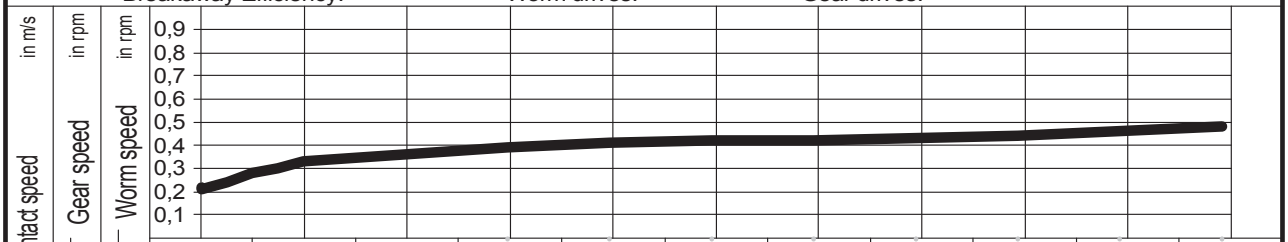
Ott worm gear

OTT no: 4808 SSR



Series R1	6624	7238	7238	7238	7238	7238	7238	6994	6320	5711	5161
Series R2	4968	5428	5428	5428	5428	5428	5428	5246	4740	4283	3870
Series R3	3643	3981	3981	3981	3981	3981	3981	3847	3476	3141	2838
Series R4	2650	2895	2895	2895	2895	2895	2895	2798	2528	2284	2064
Series R5	1987	2171	2171	2171	2171	2171	2171	2098	1896	1713	1548

Breakaway Efficiency: 0.21 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
Contact speed	0	0.28	0.42	0.64	0.96	1.44	2.17	3.25	4.88	7.32	11.0

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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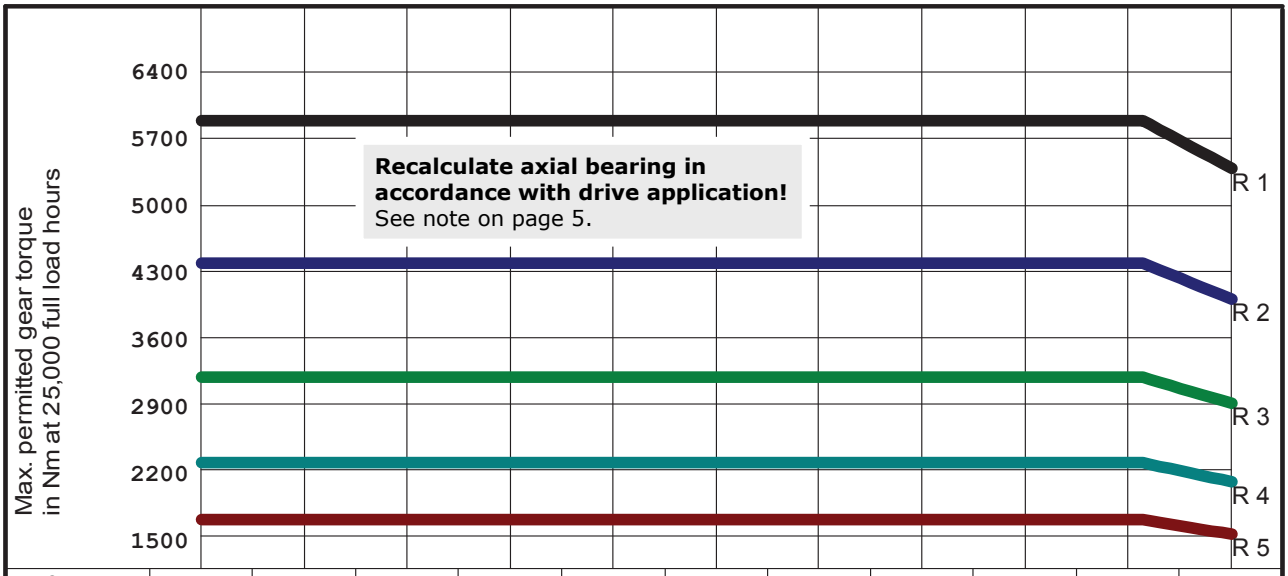
Centre distance	235.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	74.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	415.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	66.43	mm
No. teeth, gear	144		Lead angle at Bks	2.3801	°

Operating characteristics

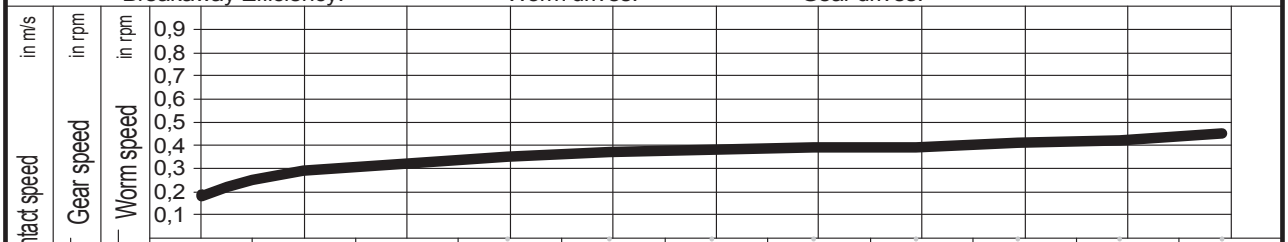
Ott worm gear

OTT no: 4843 SSR



Series R1	5812	5812	5812	5812	5812	5812	5812	5812	5812	5812	5289
Series R2	4359	4359	4359	4359	4359	4359	4359	4359	4359	4359	3967
Series R3	3197	3197	3197	3197	3197	3197	3197	3197	3197	3197	2909
Series R4	2325	2325	2325	2325	2325	2325	2325	2325	2325	2325	2116
Series R5	1744	1744	1744	1744	1744	1744	1744	1744	1744	1744	1587

Breakaway Efficiency: 0.18 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.55	0.83	1.25	1.87	2.81	4.21	6.32	9.47	14.2	21.3
0	0.27	0.41	0.62	0.93	1.40	2.11	3.16	4.75	7.12	10.7

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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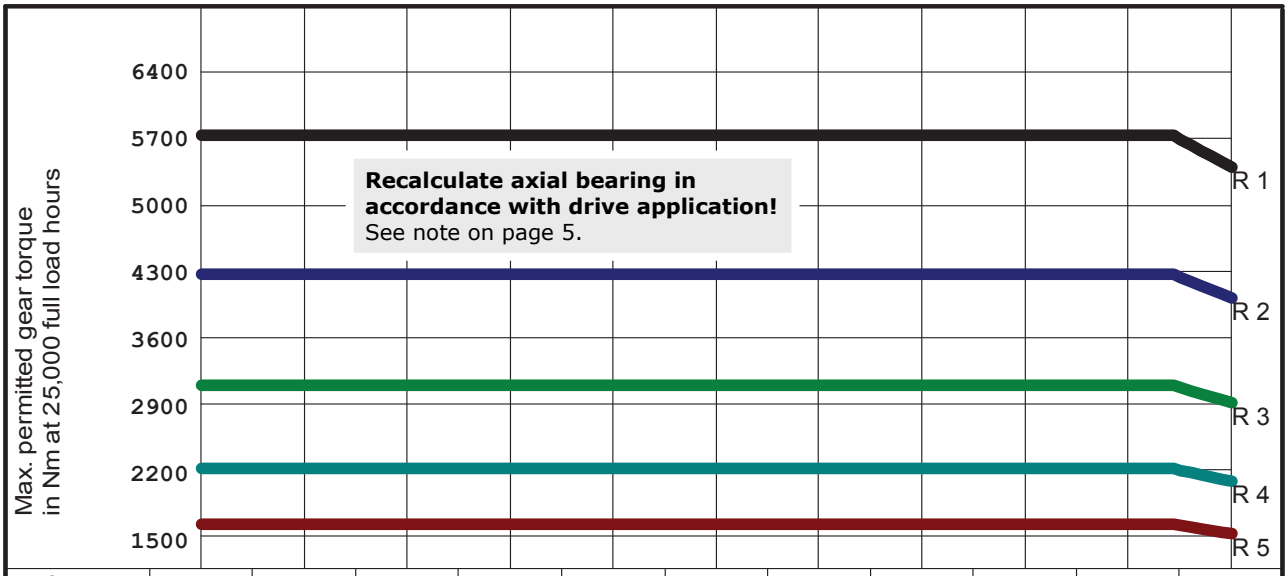
Centre distance	235.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	73.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	415.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	66.05	mm
No. teeth, gear	150		Lead angle at Bks	2.3012	°

Operating characteristics

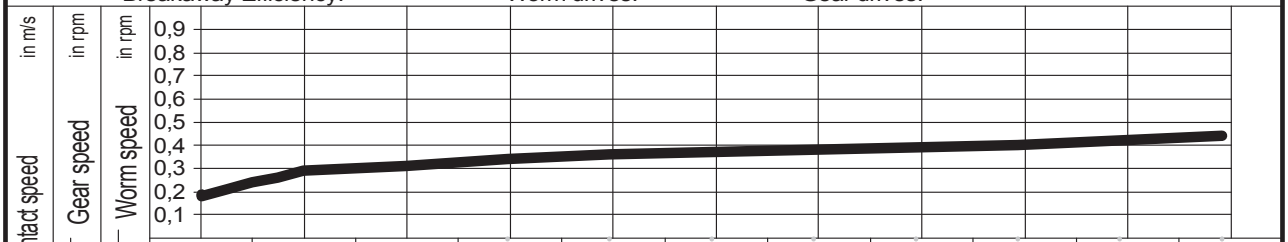
Ott worm gear

OTT no: 5655 SSR



Series R1	5662	5662	5662	5662	5662	5662	5662	5662	5662	5662	5310
Series R2	4247	4247	4247	4247	4247	4247	4247	4247	4247	4247	3983
Series R3	3114	3114	3114	3114	3114	3114	3114	3114	3114	3114	2921
Series R4	2265	2265	2265	2265	2265	2265	2265	2265	2265	2265	2124
Series R5	1699	1699	1699	1699	1699	1699	1699	1699	1699	1699	1593

Breakaway Efficiency: 0.18 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.53	0.80	1.19	1.80	2.70	4.04	6.07	9.09	13.7	20.5
0	0.27	0.41	0.62	0.93	1.40	2.10	3.14	4.72	7.08	10.6

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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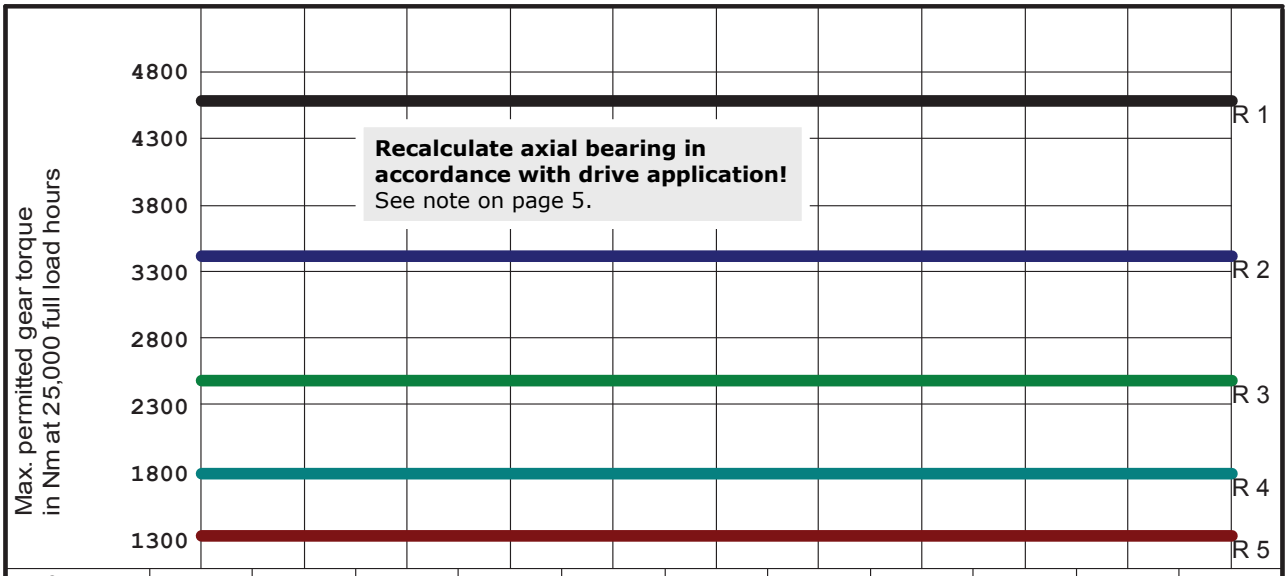
Centre distance	235.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	71.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	415.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	64.53	mm
No. teeth, gear	180		Lead angle at Bks	1.9736	°

Operating characteristics

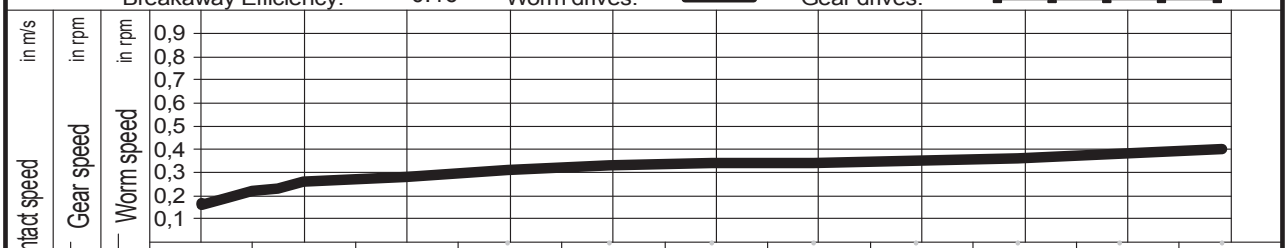
Ott worm gear

OTT no: 4807 SSR



Series R1	4524	4524	4524	4524	4524	4524	4524	4524	4524	4524	4524
Series R2	3393	3393	3393	3393	3393	3393	3393	3393	3393	3393	3393
Series R3	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488	2488
Series R4	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810	1810
Series R5	1357	1357	1357	1357	1357	1357	1357	1357	1357	1357	1357

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.44	0.66	1.00	1.50	2.25	3.37	5.05	7.58	11.4	17.1
0	0.27	0.40	0.60	0.91	1.36	2.05	3.07	4.61	6.91	10.4

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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Zahnradfertigung Ott
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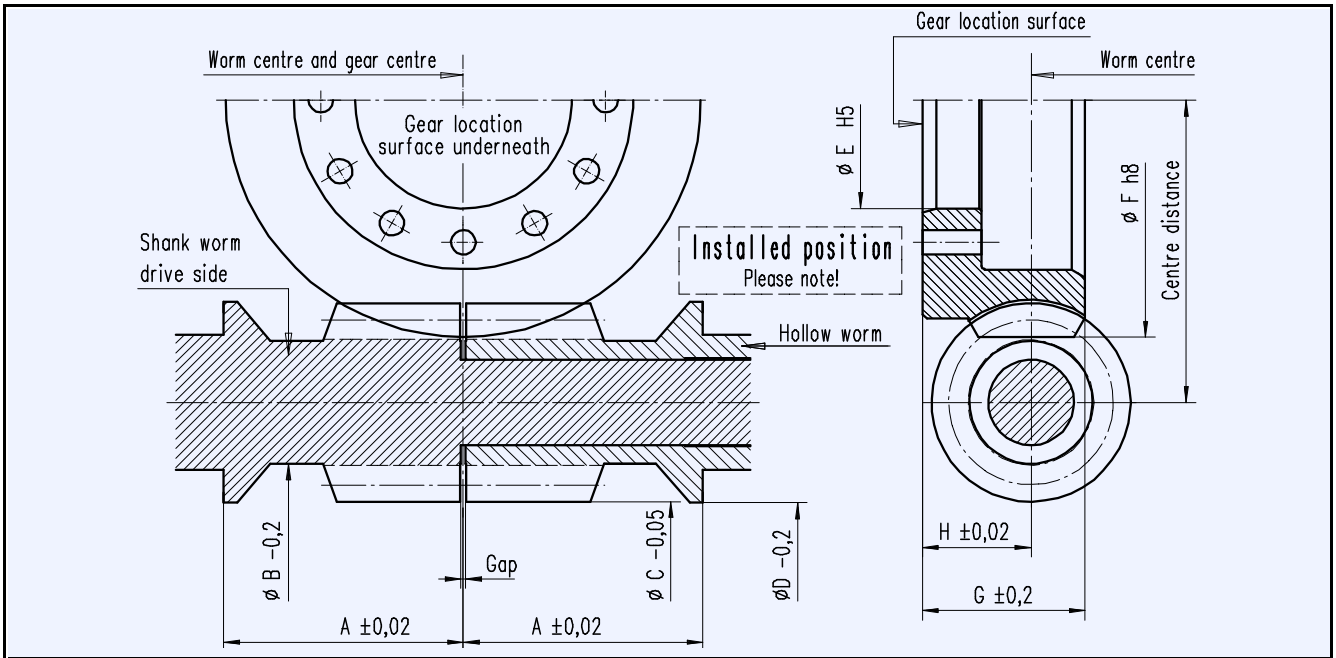
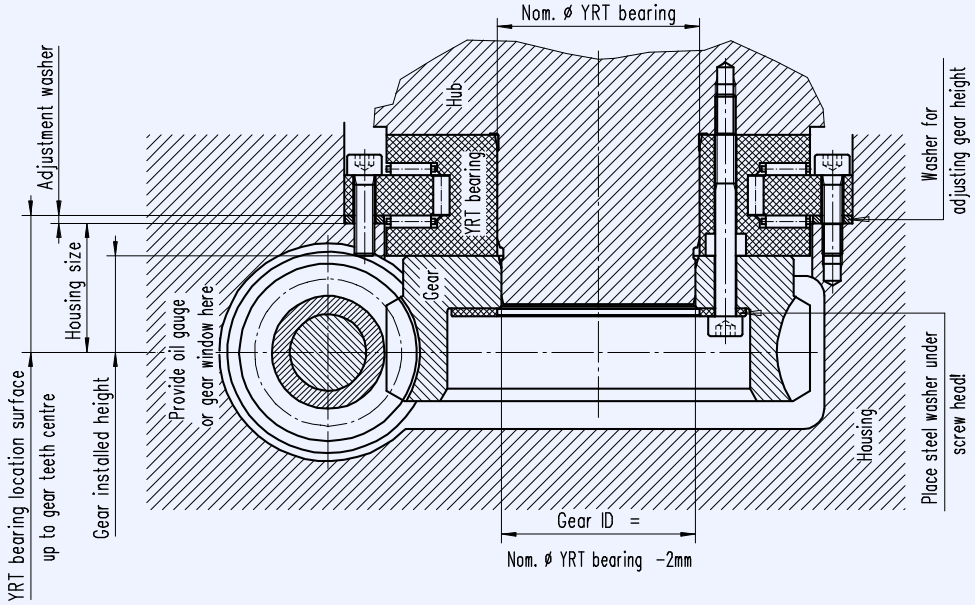
OTT worm gears - centre distance 270 mm

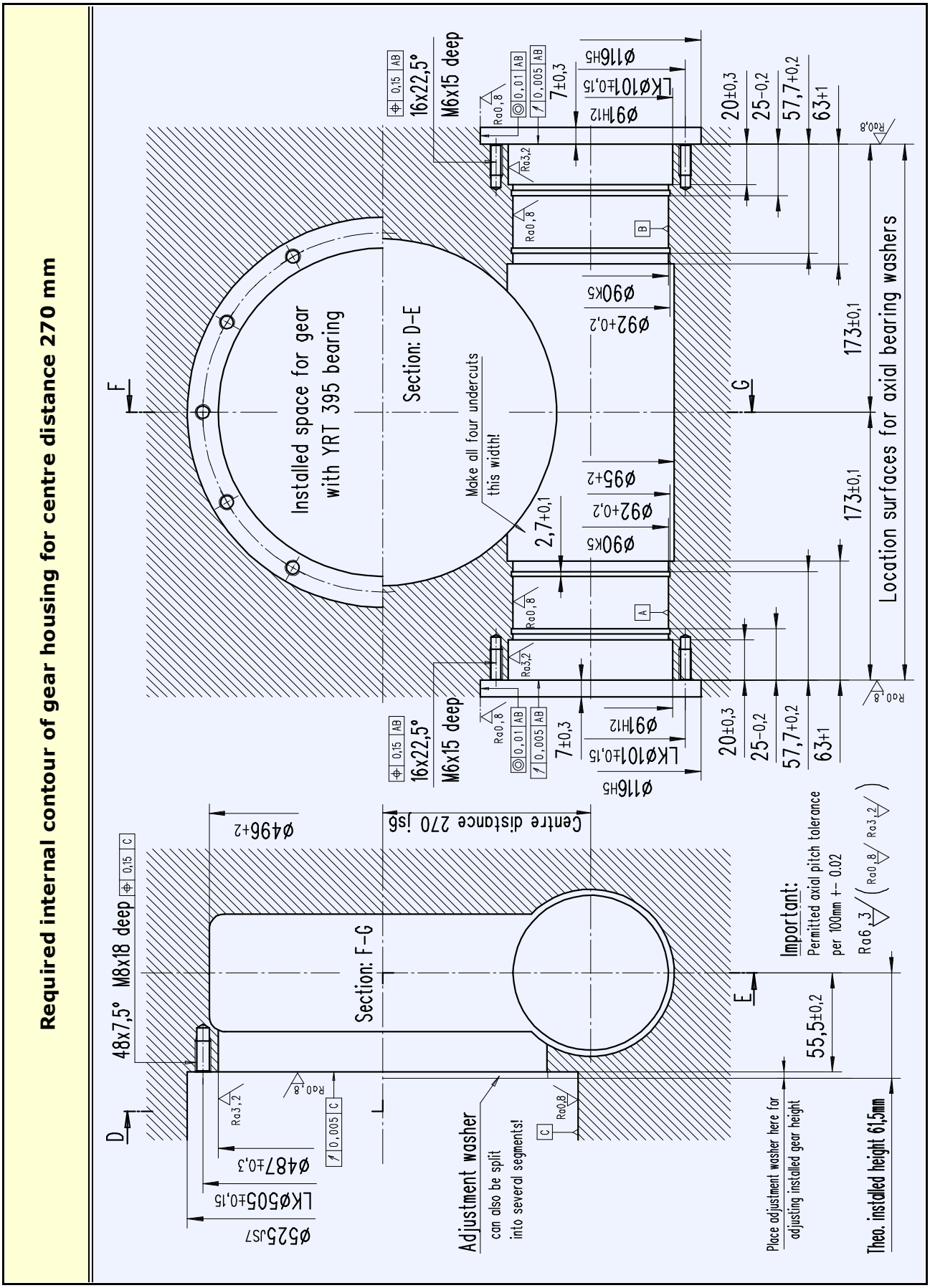
Main dimensions



Ott gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4883 SSR	2	120	118	51,2	77,6	77,6	395	393	486	65	39
4882 SSR	1	120		51,2	77,6						
4880 SSR	1	144		51,7	76,6						
4809 SSR	1	180		52,1	73,2						
							See comments page 5!				



Gear housing - required internal contour



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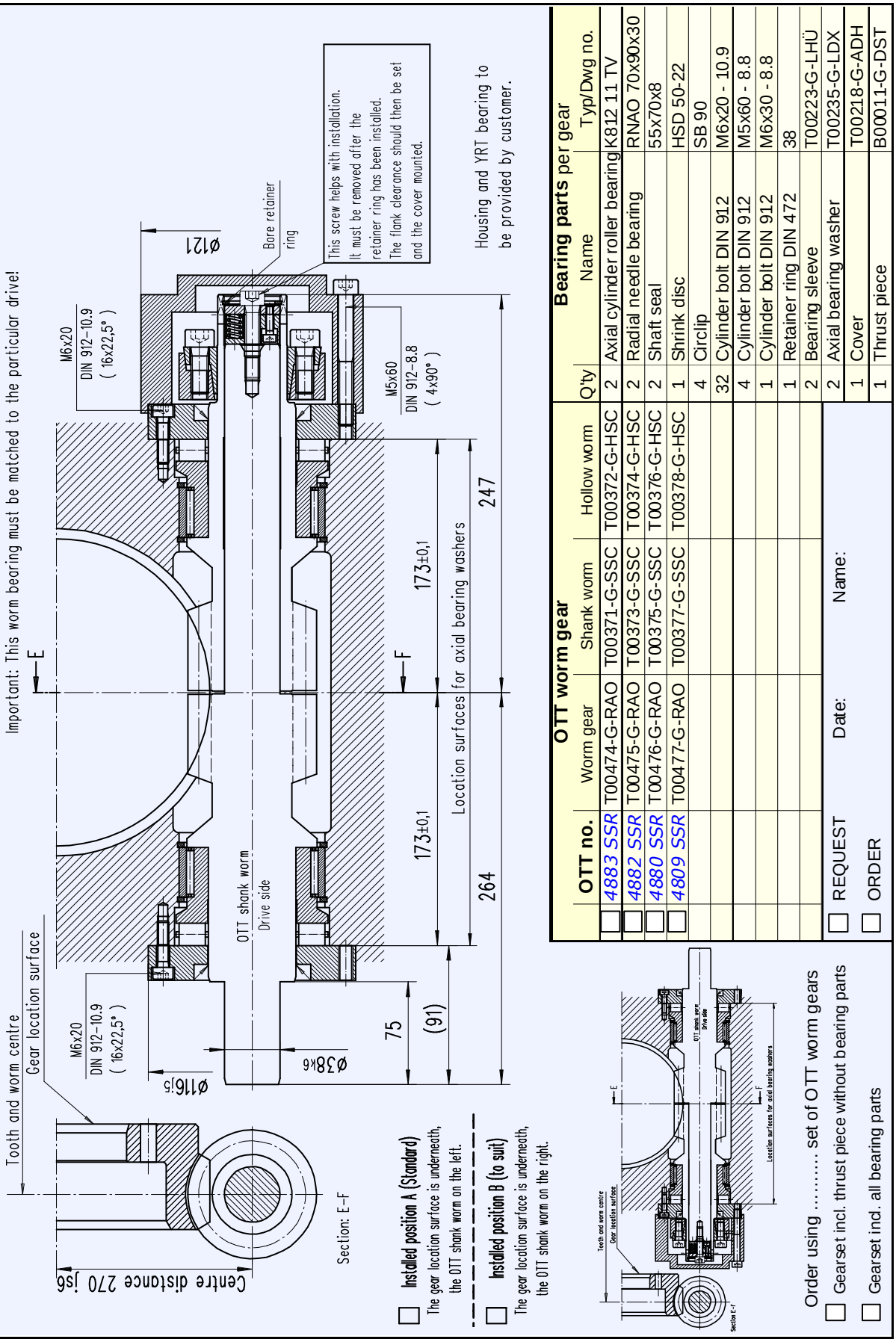
Worm bearings

Worm bearing for centre distance 270 mm



OTT worm gear				Bearing parts per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
☐ 4883 SSR	T00474-G-RAO	T00371-G-SSC	T00372-G-HSC	2	Axial cylinder roller bearing	K812 11 TV
☐ 4882 SSR	T00475-G-RAO	T00373-G-SSC	T00374-G-HSC	2	Radial needle bearing	RNAO 70x90x30
☐ 4880 SSR	T00476-G-RAO	T00375-G-SSC	T00376-G-HSC	2	Shaft seal	55x70x8
☐ 4809 SSR	T00477-G-RAO	T00377-G-SSC	T00378-G-HSC	1	Shrink disc	HSD 50-22
				4	Circlip	SB 90
				32	Cylinder bolt DIN 912	M6x20 - 10.9
				4	Cylinder bolt DIN 912	M5x60 - 8.8
				1	Cylinder bolt DIN 912	M6x30 - 8.8
				1	Retainer ring DIN 472	38
				2	Bearing sleeve	T00223-G-LHÜ
				2	Axial bearing washer	T00235-G-LDX
				1	Cover	T00218-G-ADH
				1	Thrust piece	B00011-G-DST

☐ REQUEST Date: Name:

☐ ORDER

Order using ..... set of OTT worm gears

☐ Gearset incl. thrust piece without bearing parts

☐ Gearset incl. all bearing parts

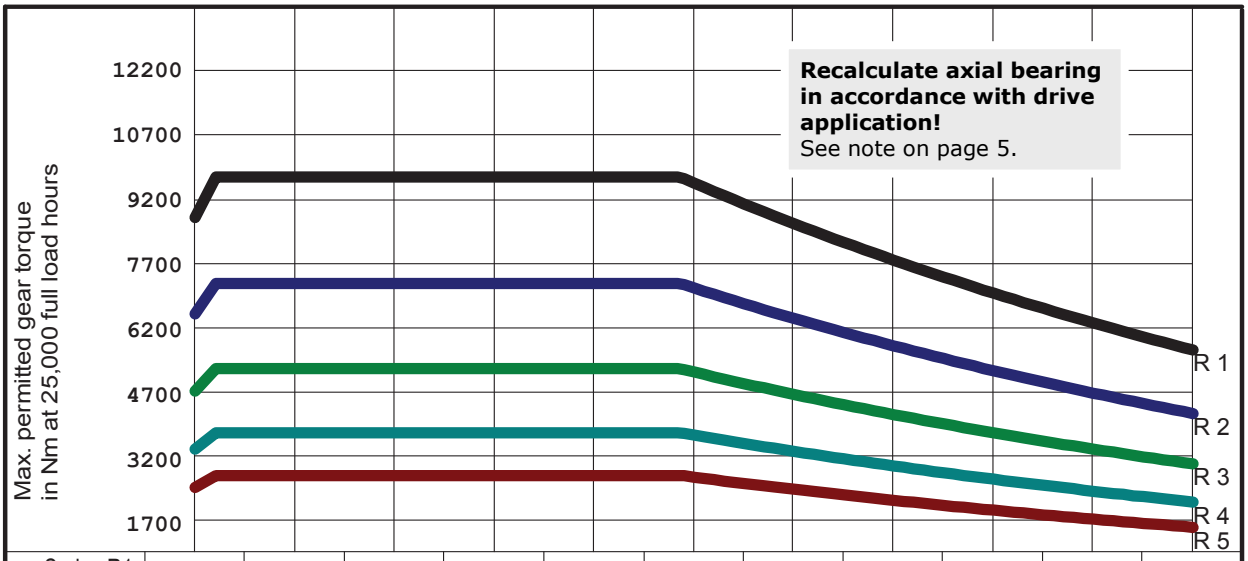
Operational characteristics

Centre distance	270.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	77.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	486.00	mm	Pressure angle in NS	10	°
No. starts, worm	2		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	67.68	mm
No. teeth, gear	120		Lead angle at Bks	6.5361	°

Operating characteristics

Ott worm gear

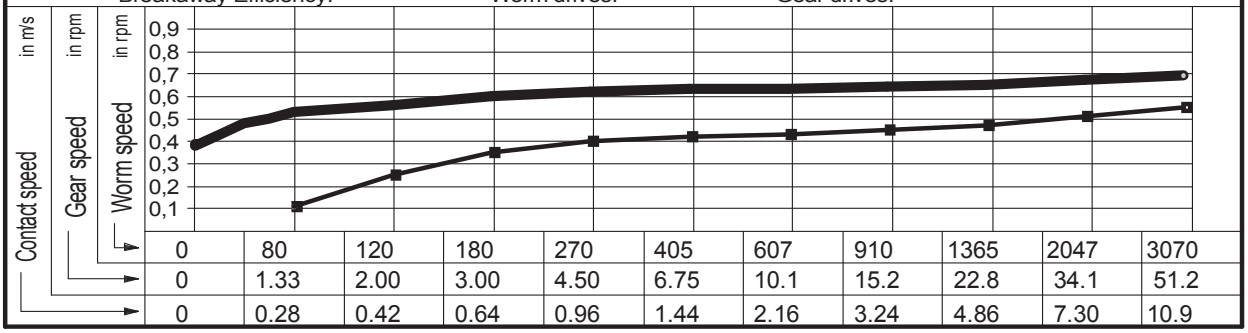
OTT no: 4883 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	8686	9605	9605	9605	9605	9441	8532	7710	6968	6296	5689
Series R2	6514	7204	7204	7204	7204	7080	6399	5783	5226	4722	4267
Series R3	4777	5283	5283	5283	5283	5192	4692	4241	3832	3463	3129
Series R4	3474	3842	3842	3842	3842	3776	3413	3084	2787	2518	2276
Series R5	2606	2882	2882	2882	2882	2832	2559	2313	2090	1889	1707

Breakaway Efficiency: 0.38 Worm drives: Gear drives:



Worm speed in rpm	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed in rpm	0	1.33	2.00	3.00	4.50	6.75	10.1	15.2	22.8	34.1	51.2
Contact speed in m/s	0	0.28	0.42	0.64	0.96	1.44	2.16	3.24	4.86	7.30	10.9

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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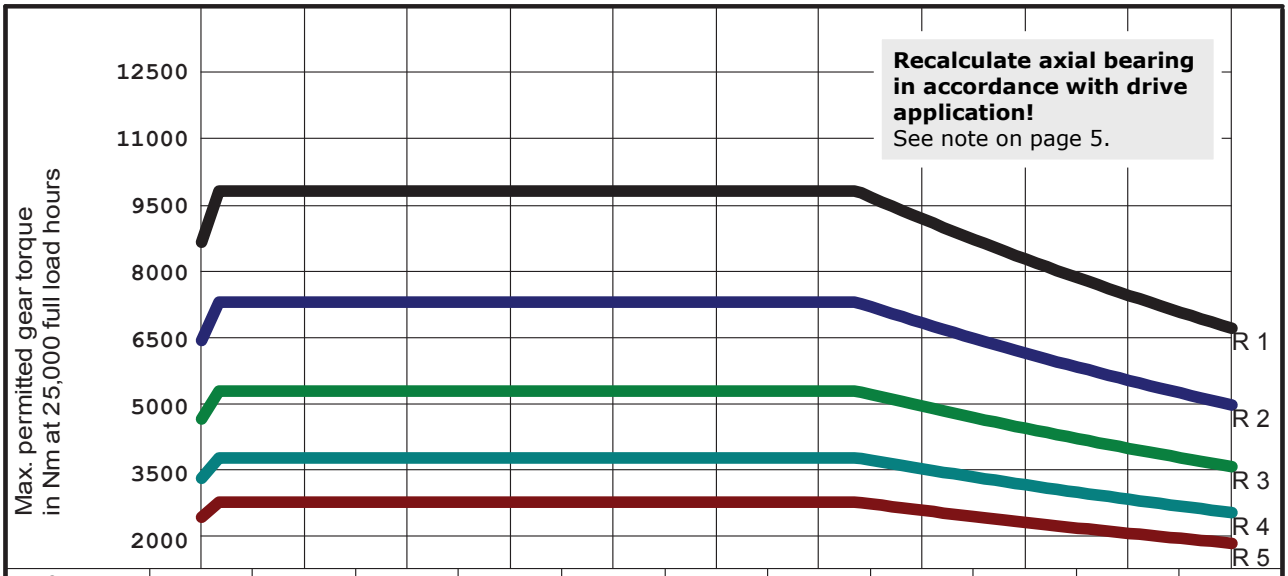
Centre distance	270.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	77.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	486.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	67.69	mm
No. teeth, gear	120		Lead angle at Bks	3.2779	°

Operating characteristics

Ott worm gear

OTT no: 4882 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	8587	9702	9702	9702	9702	9702	9702	9066	8193	7402	6689
Series R2	6440	7277	7277	7277	7277	7277	7277	6800	6144	5552	5017
Series R3	4723	5336	5336	5336	5336	5336	5336	4987	4506	4071	3679
Series R4	3435	3881	3881	3881	3881	3881	3881	3627	3277	2961	2676
Series R5	2576	2911	2911	2911	2911	2911	2911	2720	2458	2221	2007

Breakaway Efficiency: 0.24 Worm drives: Gear drives:

0	80	120	180	270	405	607	910	1365	2047	3070
0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
0	0.28	0.42	0.63	0.95	1.43	2.15	3.23	4.84	7.26	10.9

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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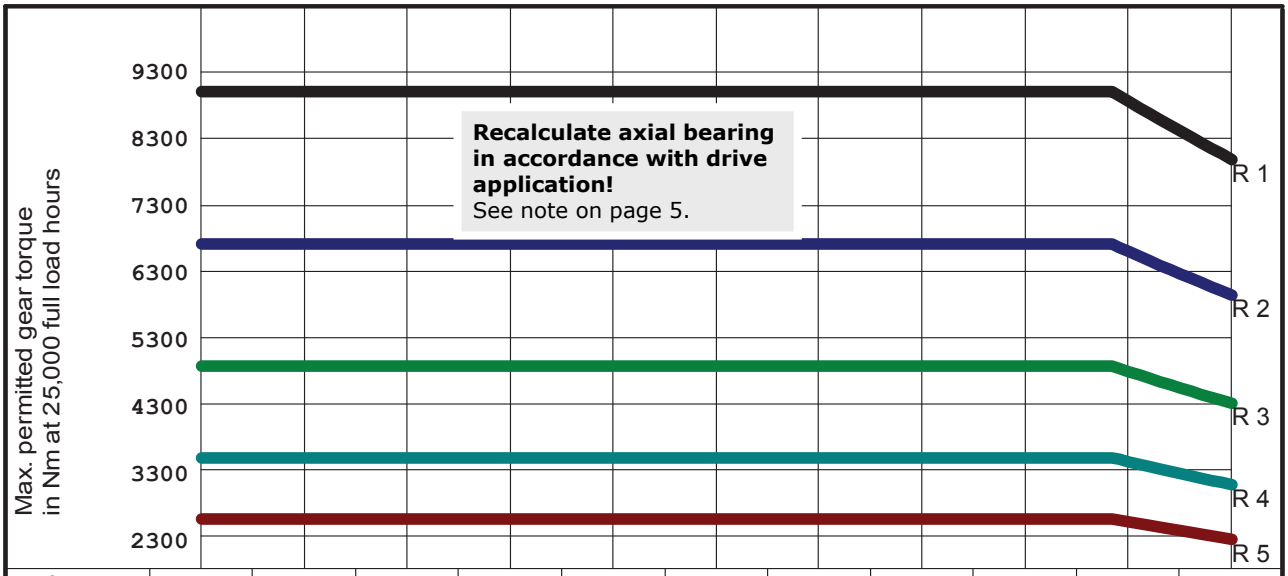
Centre distance	270.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	76.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	486.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	67.30	mm
No. teeth, gear	144		Lead angle at Bks	2.7514	°

Operating characteristics

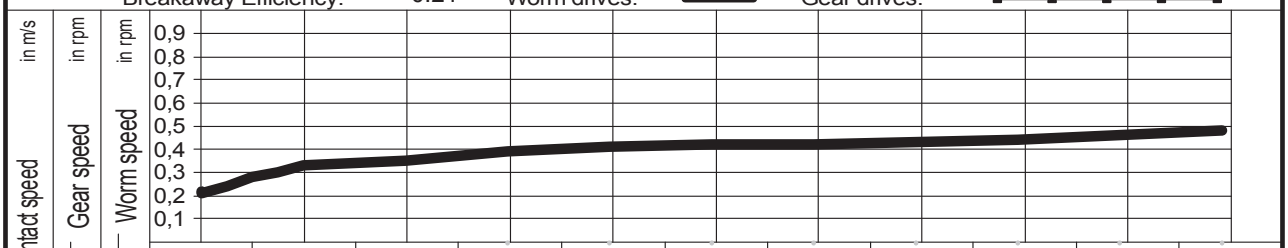
Ott worm gear

OTT no: 4880 SSR



Series R1	8883	8883	8883	8883	8883	8883	8883	8883	8883	8724	7883
Series R2	6662	6662	6662	6662	6662	6662	6662	6662	6662	6543	5912
Series R3	4885	4885	4885	4885	4885	4885	4885	4885	4885	4798	4336
Series R4	3553	3553	3553	3553	3553	3553	3553	3553	3553	3490	3153
Series R5	2665	2665	2665	2665	2665	2665	2665	2665	2665	2617	2365

Breakaway Efficiency: 0.21 Worm drives: Gear drives:



Worm speed	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed	0	0.55	0.83	1.25	1.87	2.81	4.21	6.32	9.47	14.2	21.3
Contact speed	0	0.28	0.42	0.63	0.95	1.42	2.14	3.21	4.81	7.22	10.8

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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Centre distance	270.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	73.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	486.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	65.16	mm
No. teeth, gear	180		Lead angle at Bks	2.2886	°

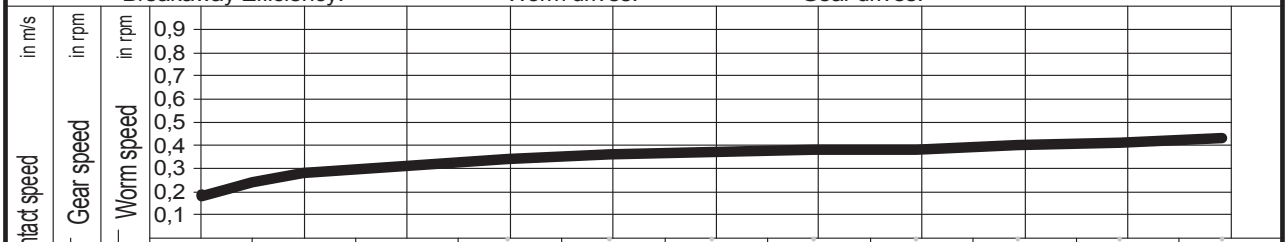
Operating characteristics

Ott worm gear

OTT no: 4809 SSR

Series R1	6914	6914	6914	6914	6914	6914	6914	6914	6914	6914	6914
Series R2	5185	5185	5185	5185	5185	5185	5185	5185	5185	5185	5185
Series R3	3802	3802	3802	3802	3802	3802	3802	3802	3802	3802	3802
Series R4	2765	2765	2765	2765	2765	2765	2765	2765	2765	2765	2765
Series R5	2074	2074	2074	2074	2074	2074	2074	2074	2074	2074	2074

Breakaway Efficiency: 0.18 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.44	0.66	1.00	1.50	2.25	3.37	5.05	7.58	11.4	17.1
0	0.27	0.40	0.61	0.92	1.38	2.07	3.10	4.66	6.98	10.5

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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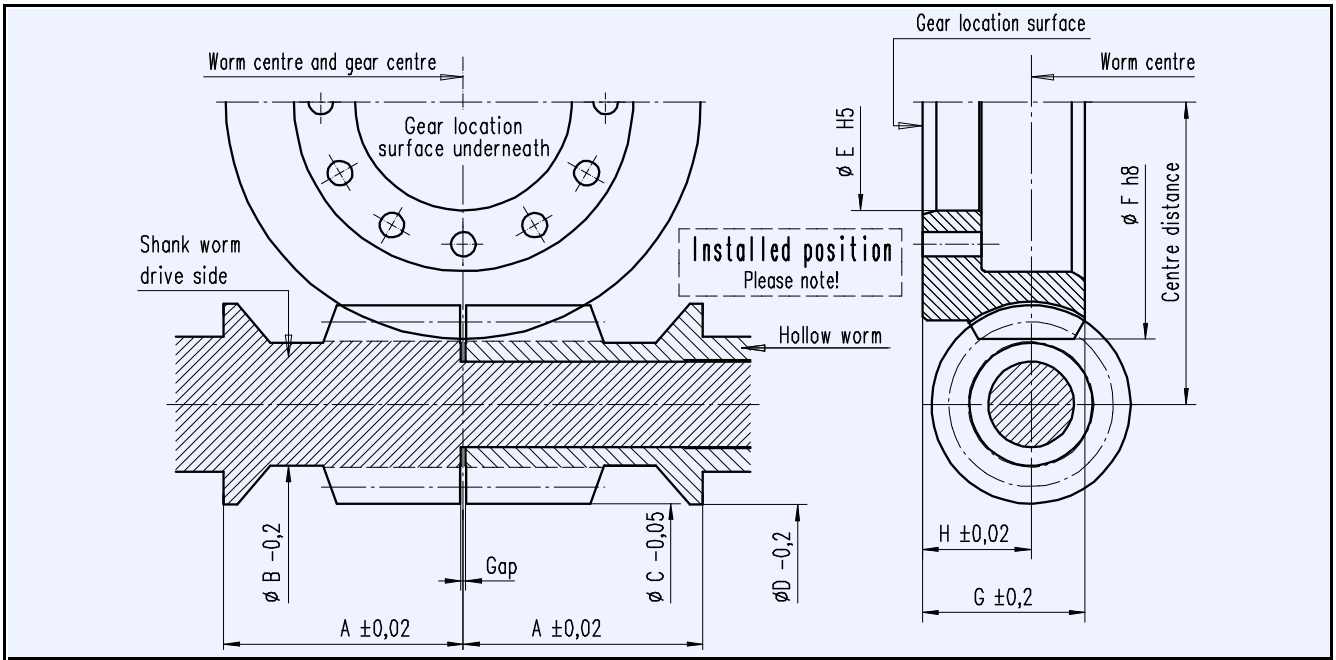
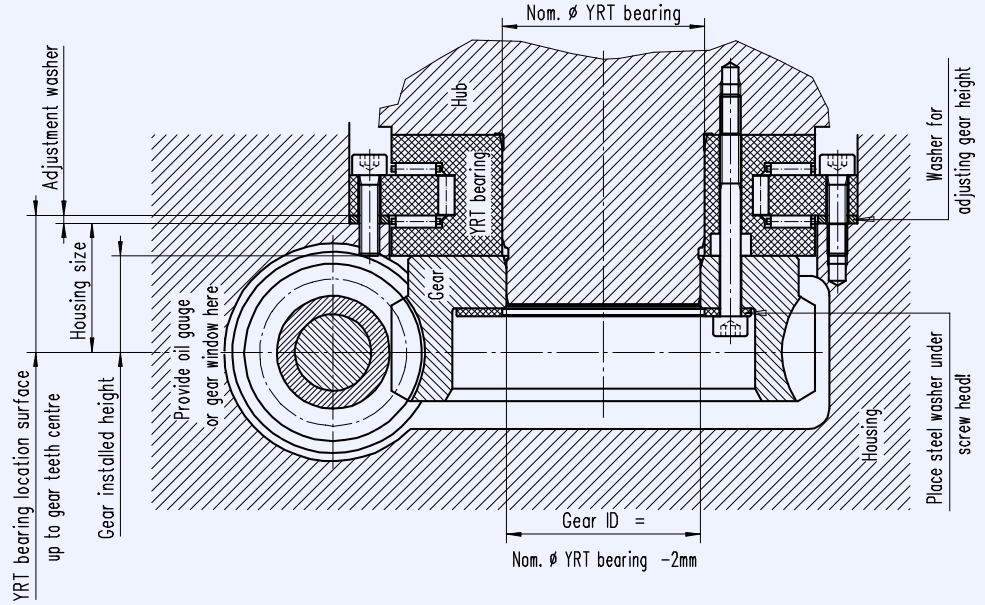
OTT worm gears - centre distance 305 mm

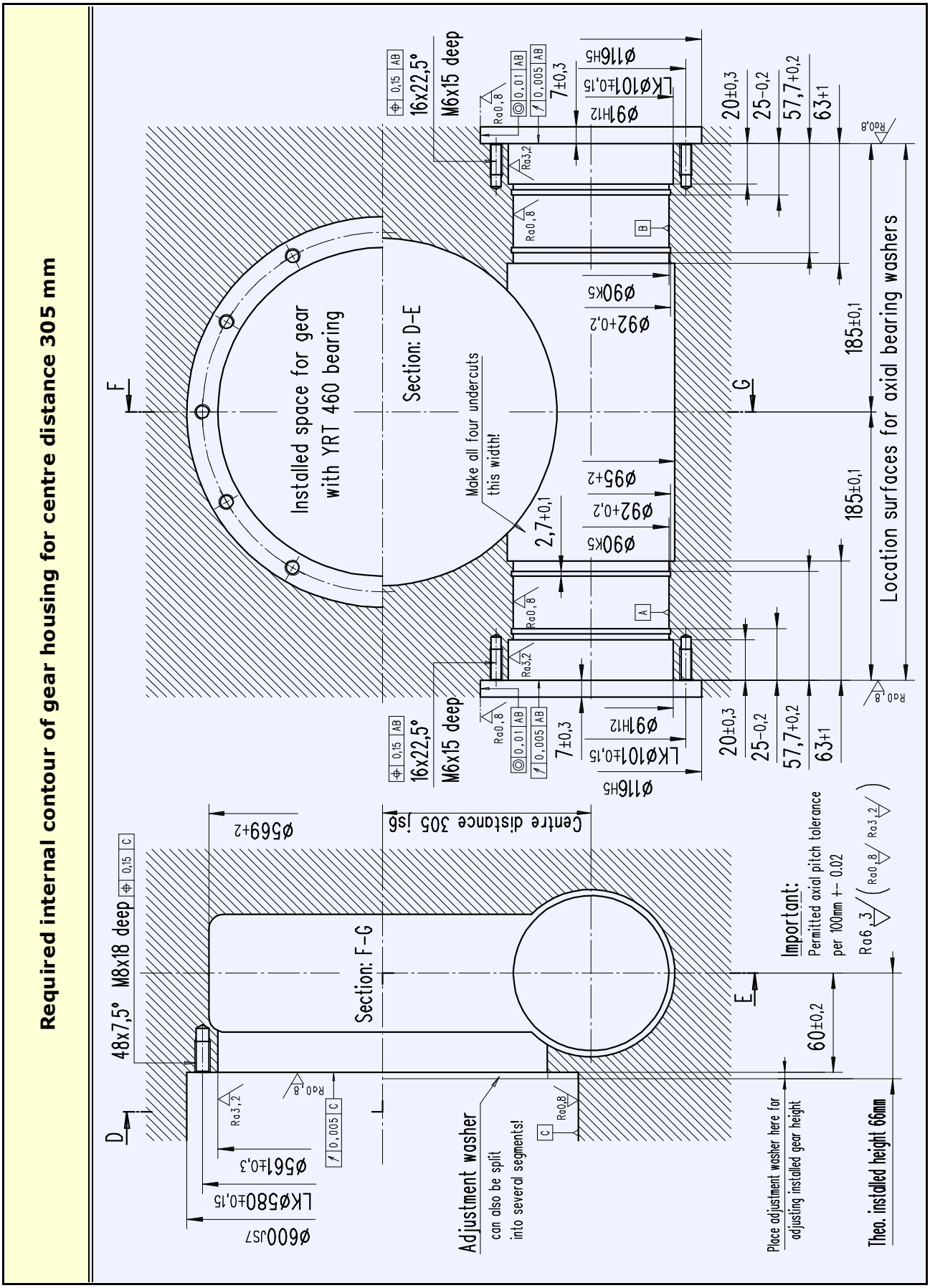
Main dimensions



OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4829 SSR	1	120	130	46,8	77,5	77,6	460	458	560	69	42
4851 SSR	1	144		47,3	76,0						
4816 SSR	1	180		47,9	72,2						
4828 SSR	1	240		48,4	67,8						
							See comments page 5!				



Gear housing - required internal contour



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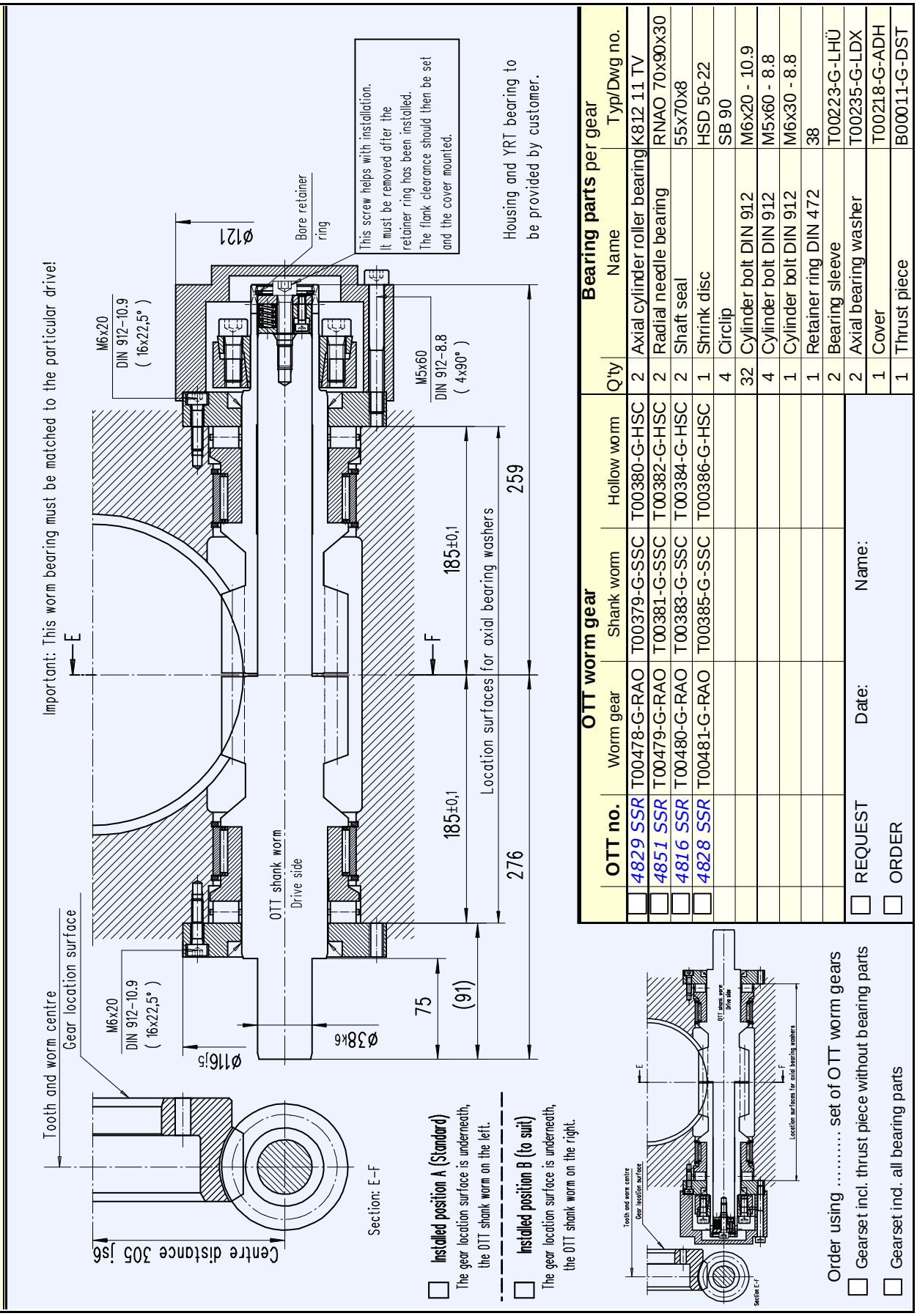
Worm bearings

Worm bearing for centre distance 305 mm



OTT worm gear					Bearing parts per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
☐ 4829 SSR	T00478-G-RAO	T00379-G-SSC	T00380-G-HSC	2	Axial cylinder roller bearing	K812 11 TV
☐ 4851 SSR	T00479-G-RAO	T00381-G-SSC	T00382-G-HSC	2	Radial needle bearing	RNAO 70x90x30
☐ 4816 SSR	T00480-G-RAO	T00383-G-SSC	T00384-G-HSC	2	Shaft seal	55x70x8
☐ 4828 SSR	T00481-G-RAO	T00385-G-SSC	T00386-G-HSC	1	Shrink disc	HSD 50-22
				4	Circlip	SB 90
				32	Cylinder bolt DIN 912	M6x20 - 10.9
				4	Cylinder bolt DIN 912	M5x60 - 8.8
				1	Cylinder bolt DIN 912	M6x30 - 8.8
				1	Retainer ring DIN 472	38
				2	Bearing sleeve	T00223-G-LHÜ
				2	Axial bearing washer	T00235-G-LDX
				1	Cover	T00218-G-ADH
				1	Thrust piece	B00011-G-DST

Order using ..... set of OTT worm gears
☐ Gearset incl. thrust piece without bearing parts
☐ Gearset incl. all bearing parts

☐ REQUEST Date: Name:
☐ ORDER

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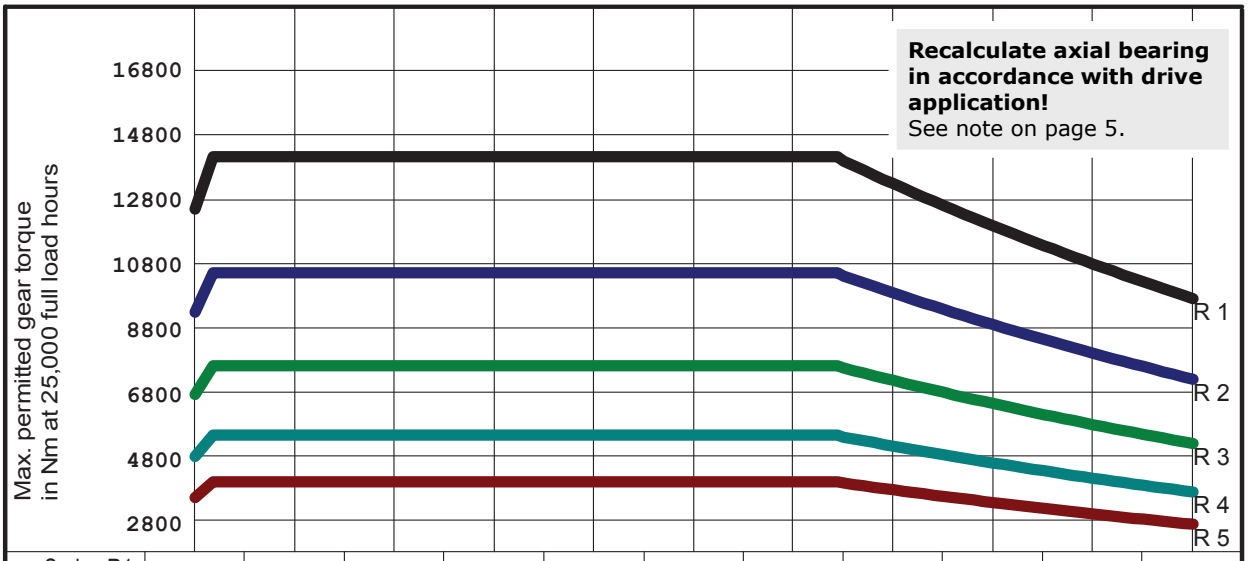
Operational characteristics

Centre distance	305.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	77.50	mm	Material, worm	31CrMoV9	
Outer Ø gear	560.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	66.00	mm
No. teeth, gear	120		Lead angle at Bks	3.8699	°

Operating characteristics

Ott worm gear

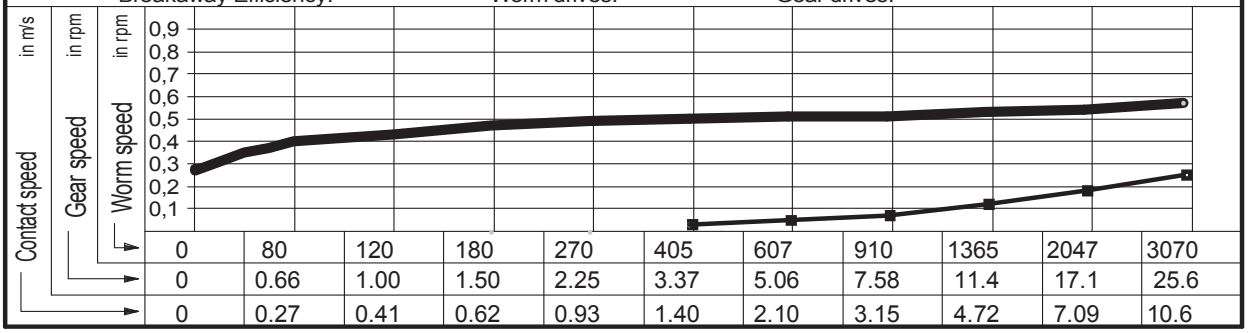
OTT no: 4829 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	12369	13946	13946	13946	13946	13946	13946	13061	11802	10663	9636
Series R2	9277	10459	10459	10459	10459	10459	10459	9795	8851	7997	7227
Series R3	6803	7670	7670	7670	7670	7670	7670	7183	6491	5865	5300
Series R4	4948	5578	5578	5578	5578	5578	5578	5224	4721	4265	3854
Series R5	3711	4184	4184	4184	4184	4184	4184	3918	3540	3199	2891

Breakaway Efficiency: 0.27 Worm drives: Gear drives:



Worm speed in rpm	0	80	120	180	270	405	607	910	1365	2047	3070
Gear speed in rpm	0	0.66	1.00	1.50	2.25	3.37	5.06	7.58	11.4	17.1	25.6
Contact speed in m/s	0	0.27	0.41	0.62	0.93	1.40	2.10	3.15	4.72	7.09	10.6

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

Zahnradfertigung OTT
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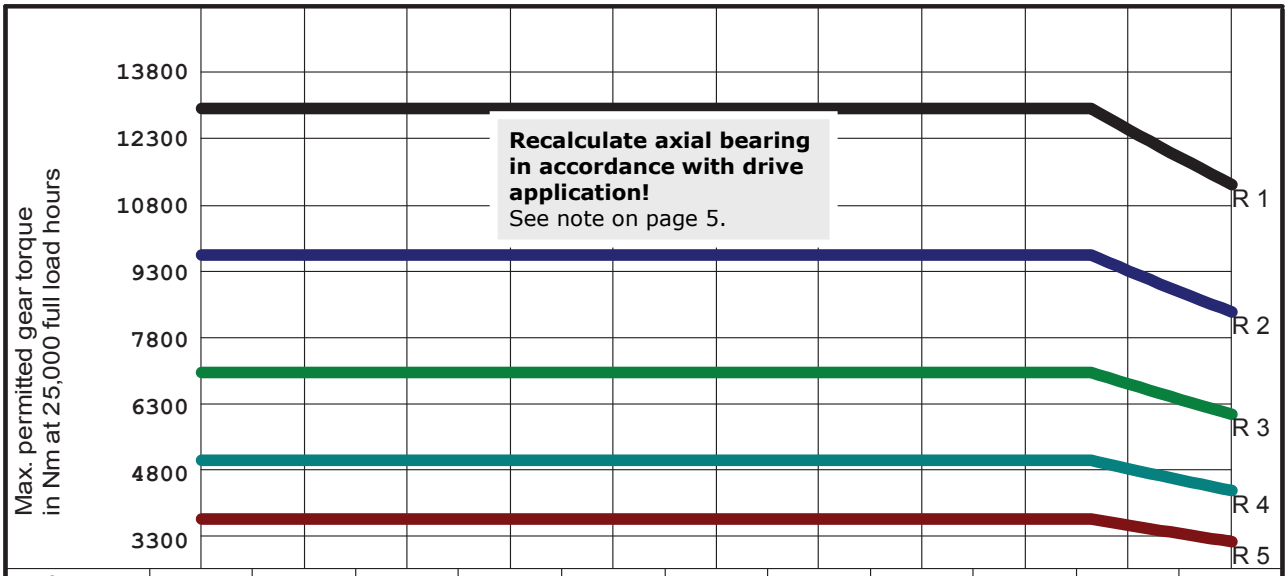
Centre distance	305.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	76.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	560.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	65.30	mm
No. teeth, gear	144		Lead angle at Bks	3.2671	°

Operating characteristics

Ott worm gear

OTT no: 4851 SSR



Series R1	12804	12804	12804	12804	12804	12804	12804	12804	12804	12305	11118
Series R2	9603	9603	9603	9603	9603	9603	9603	9603	9603	9229	8339
Series R3	7042	7042	7042	7042	7042	7042	7042	7042	7042	6768	6115
Series R4	5122	5122	5122	5122	5122	5122	5122	5122	5122	4922	4447
Series R5	3841	3841	3841	3841	3841	3841	3841	3841	3841	3691	3335

Breakaway Efficiency: 0.24 Worm drives: Gear drives:

0	80	120	180	270	405	607	910	1365	2047	3070
0	0.55	0.83	1.25	1.87	2.81	4.21	6.32	9.47	14.2	21.3
0	0.27	0.41	0.61	0.92	1.38	2.07	3.11	4.67	7.00	10.5

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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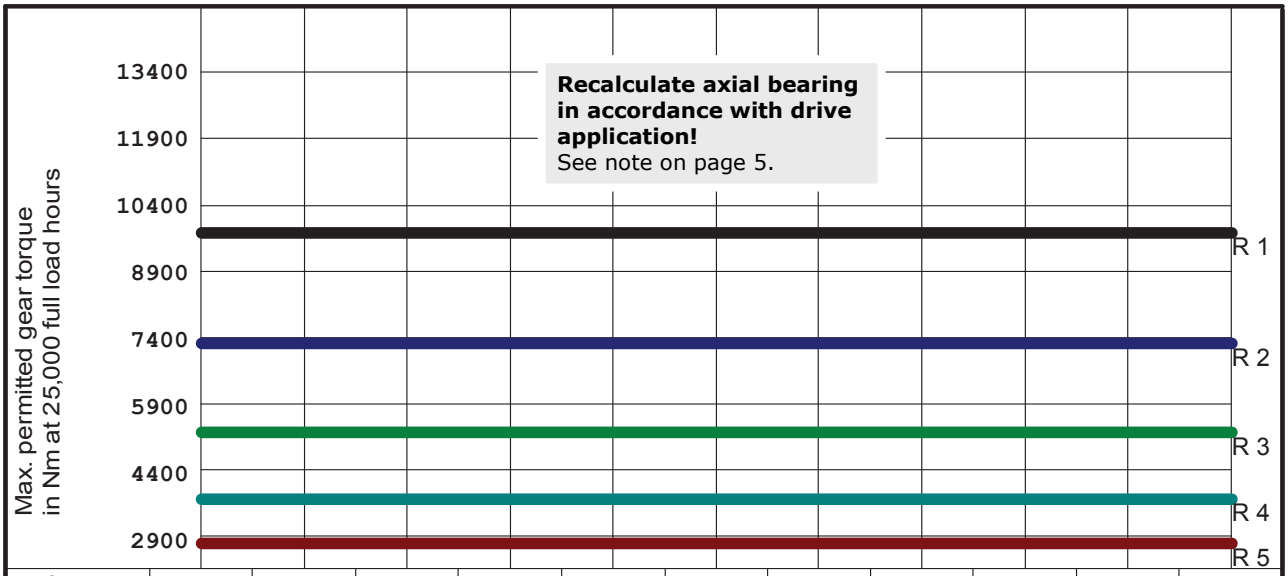
Centre distance	305.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	72.20	mm	Material, worm	31CrMoV9	
Outer Ø gear	560.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	62.90	mm
No. teeth, gear	180		Lead angle at Bks	2.7306	°

Operating characteristics

Ott worm gear

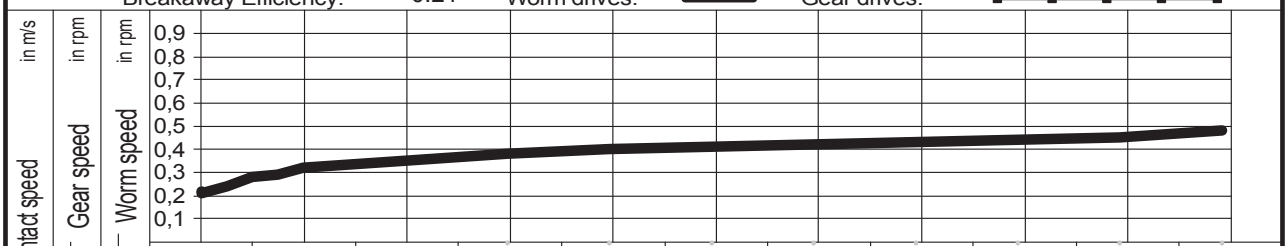
OTT no: 4816 SSR



Recalculate axial bearing in accordance with drive application!
See note on page 5.

Series R1	9692	9692	9692	9692	9692	9692	9692	9692	9692	9692	9692
Series R2	7269	7269	7269	7269	7269	7269	7269	7269	7269	7269	7269
Series R3	5331	5331	5331	5331	5331	5331	5331	5331	5331	5331	5331
Series R4	3877	3877	3877	3877	3877	3877	3877	3877	3877	3877	3877
Series R5	2908	2908	2908	2908	2908	2908	2908	2908	2908	2908	2908

Breakaway Efficiency: 0.21 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.44	0.66	1.00	1.50	2.25	3.37	5.05	7.58	11.4	17.1
0	0.26	0.39	0.59	0.89	1.33	2.00	3.00	4.50	6.74	10.1

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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Centre distance	305.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	67.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	560.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	60.14	mm
No. teeth, gear	240		Lead angle at Bks	2.1580	°

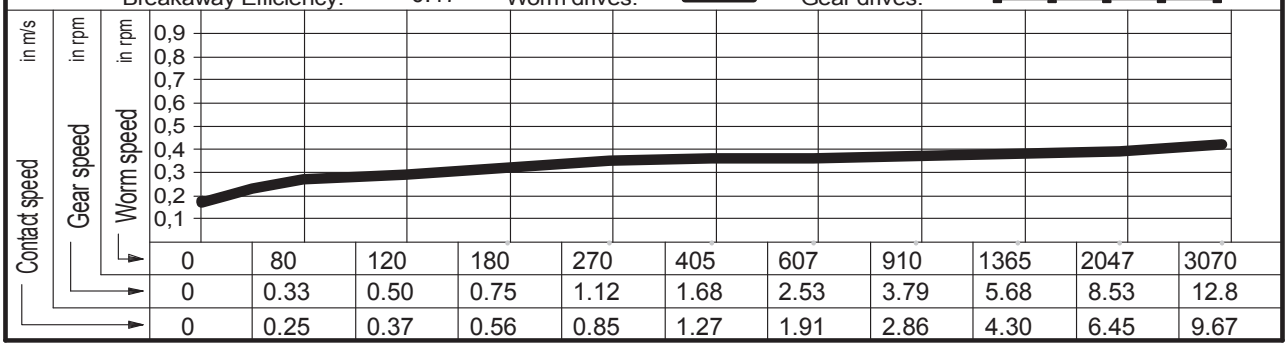
Operating characteristics

Ott worm gear

OTT no: 4828 SSR

Series R1	6890	6890	6890	6890	6890	6890	6890	6890	6890	6890	6890
Series R2	5168	5168	5168	5168	5168	5168	5168	5168	5168	5168	5168
Series R3	3790	3790	3790	3790	3790	3790	3790	3790	3790	3790	3790
Series R4	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756	2756
Series R5	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067	2067

Breakaway Efficiency: 0.17 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.33	0.50	0.75	1.12	1.68	2.53	3.79	5.68	8.53	12.8
0	0.25	0.37	0.56	0.85	1.27	1.91	2.86	4.30	6.45	9.67

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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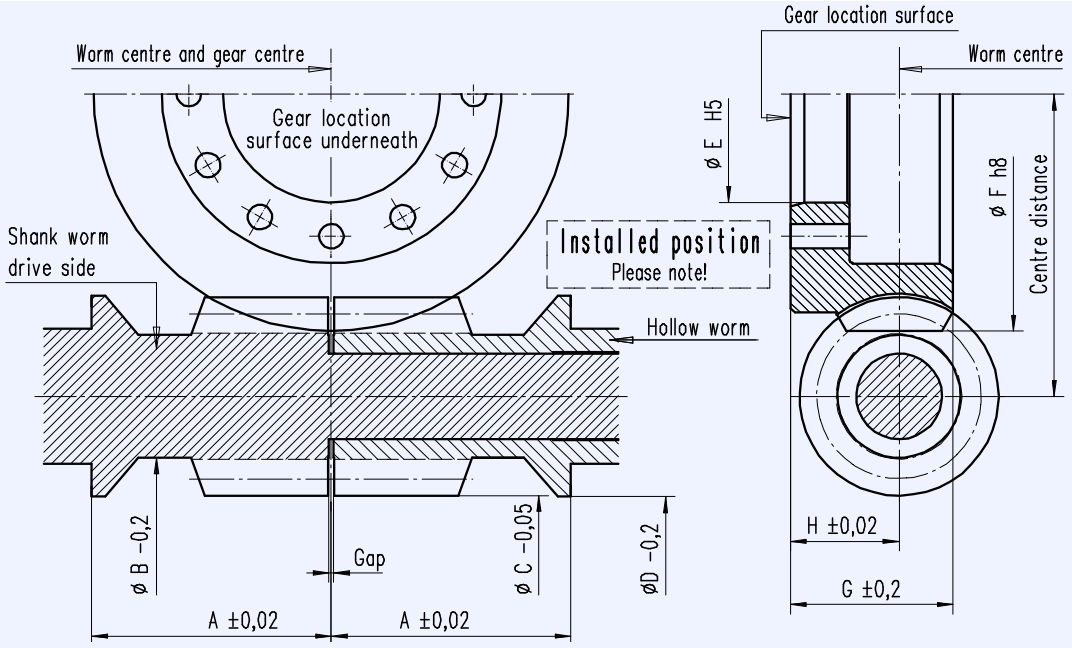
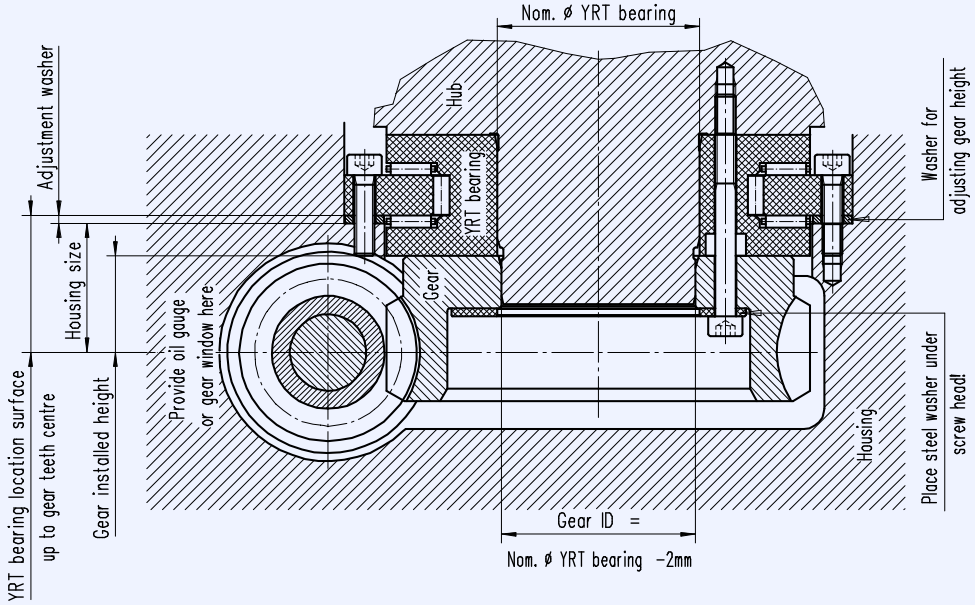
OTT worm gears - centre distance 340 mm

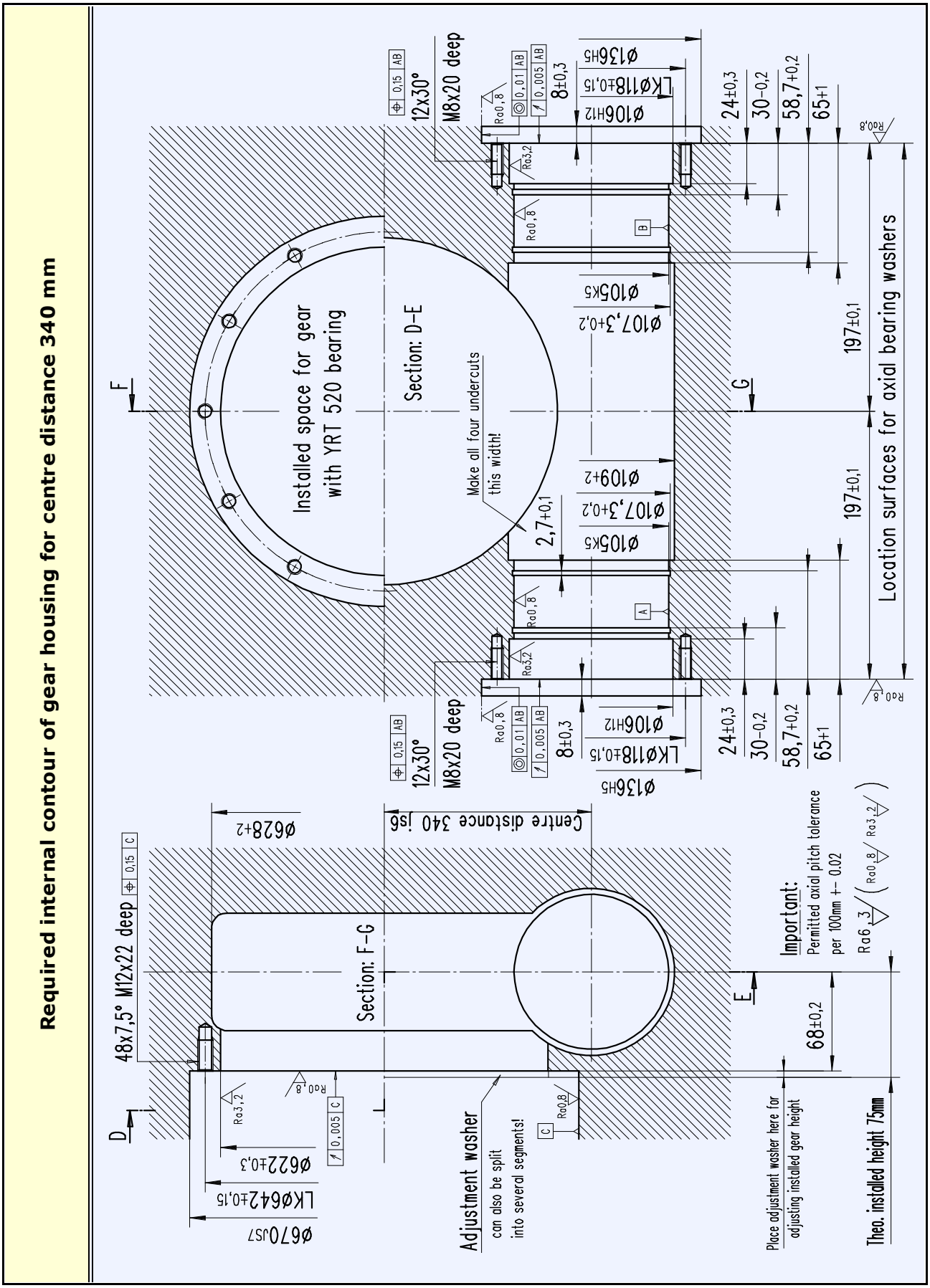
Main dimensions



OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4818 SSR	1	180	141	57,6	86,0	97,0	520	518	620	78	48
4810 SSR	1	240		58,2	80,4						
5489 SSR	1	360		58,8	72,0						
							See comments page 5!				



Gear housing - required internal contour



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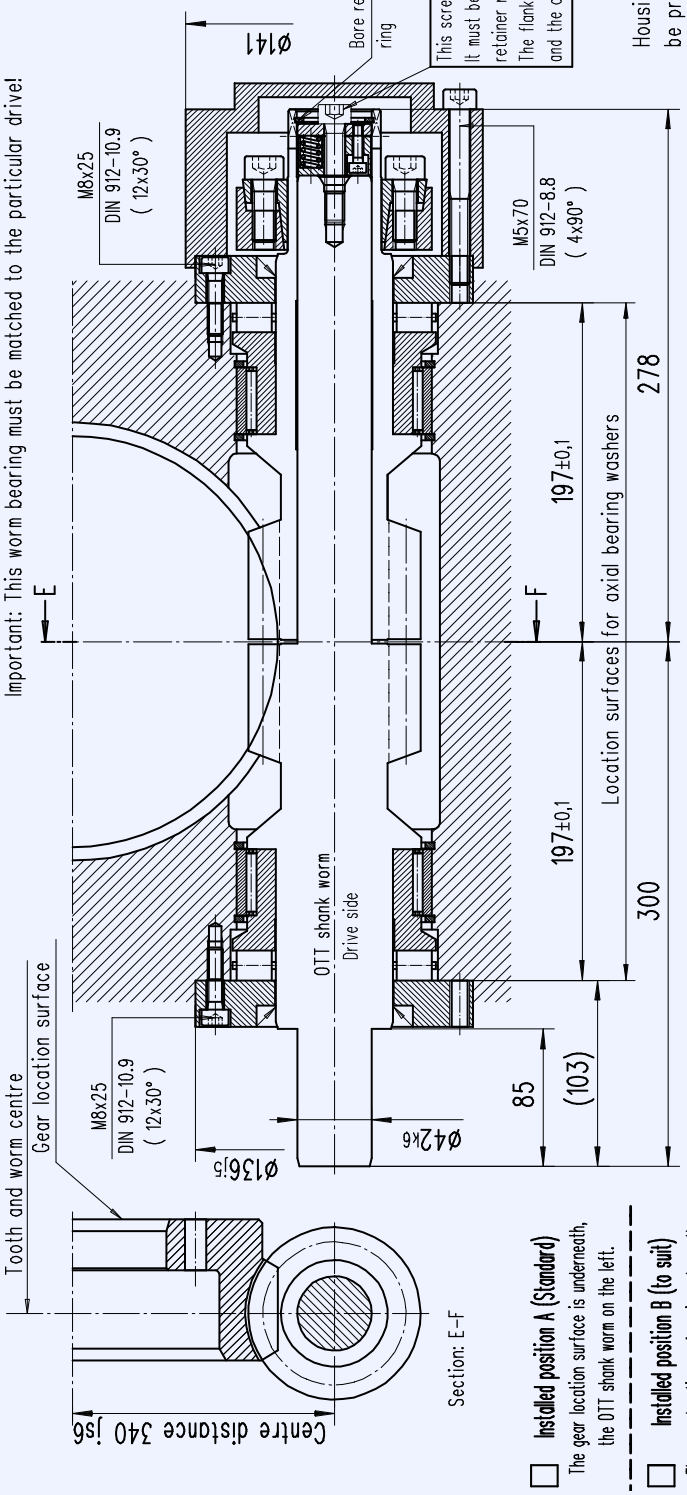
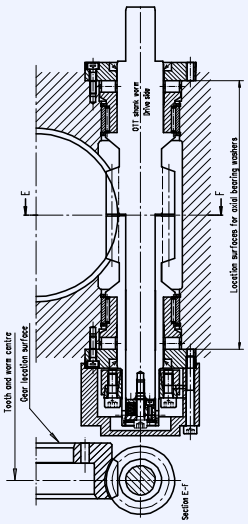
Worm bearings

Worm bearing for centre distance 340 mm



☐ **Installed position A (Standard)**
The gear location surface is underneath, the OTT shank worm on the left.

☐ **Installed position B (to suit)**
The gear location surface is underneath, the OTT shank worm on the right.



OTT worm gear					**Bearing parts** per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
☐ *4818 SSR*	T00482-G-RAO	T00387-G-SSC	T00388-G-HSC	2	Axial cylinder roller bearing	K812 14 TV
☐ *4810 SSR*	T00483-G-RAO	T00389-G-SSC	T00390-G-HSC	2	Radial needle bearing	RNAO 90x105x26
☐ *5489 SSR*	T00484-G-RAO	T00391-G-SSC	T00392-G-HSC	2	Shaft seal	70x85x8
				1	Shrink disc	HSD 55-22
				4	Circlip	SB 105
				24	Cylinder bolt DIN 912	M8x25 - 10.9
				4	Cylinder bolt DIN 912	M5x70 - 8.8
				1	Cylinder bolt DIN 912	M6x30 - 8.8
				1	Retainer ring DIN 472	42
				2	Bearing sleeve	T00224-G-LHÜ
				2	Axial bearing washer	T00236-G-LDX
				1	Cover	T00219-G-ADH
				1	Thrust piece	B00012-G-DST

Order using ..... set of OTT worm gears
☐ Gearset incl. thrust piece without bearing parts
☐ Gearset incl. all bearing parts

☐ REQUEST Date. Name:
☐ ORDER

Zahnradfertigung Ott
Blöhsteinstraße 20
D-72411 Bodelshausen

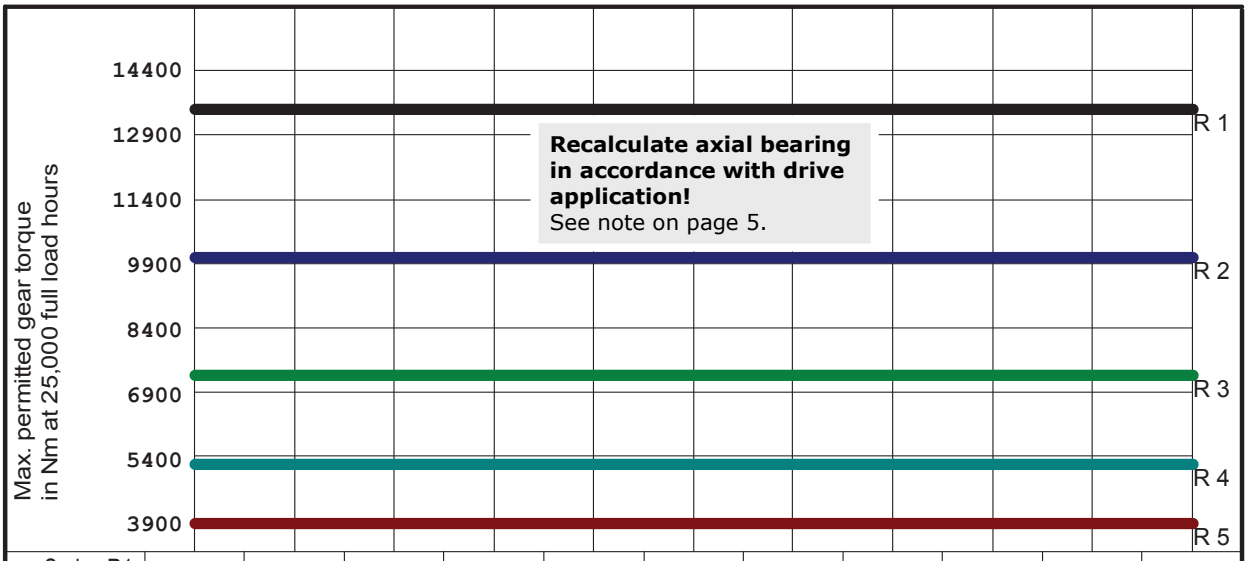
Operational characteristics

Centre distance	340.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	86.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	620.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	75.32	mm
No. teeth, gear	180		Lead angle at Bks	2.5188	°

Operating characteristics

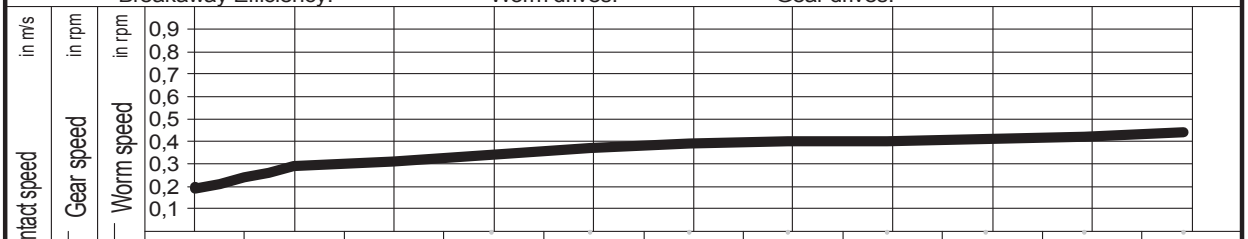
Ott worm gear

OTT no: 4818 SSR



Series R1	13326	13326	13326	13326	13326	13326	13326	13326	13326	13326	13326
Series R2	9995	9995	9995	9995	9995	9995	9995	9995	9995	9995	9995
Series R3	7329	7329	7329	7329	7329	7329	7329	7329	7329	7329	7329
Series R4	5331	5331	5331	5331	5331	5331	5331	5331	5331	5331	5331
Series R5	3998	3998	3998	3998	3998	3998	3998	3998	3998	3998	3998

Breakaway Efficiency: 0.19 Worm drives: Gear drives:



Worm speed in rpm	0	53	80	119	178	267	400	600	900	1350	2025
Gear speed in rpm	0	0.29	0.44	0.66	0.99	1.48	2.22	3.33	5.00	7.50	11.3
Contact speed in m/s	0	0.20	0.31	0.46	0.70	1.05	1.57	2.36	3.55	5.32	7.99

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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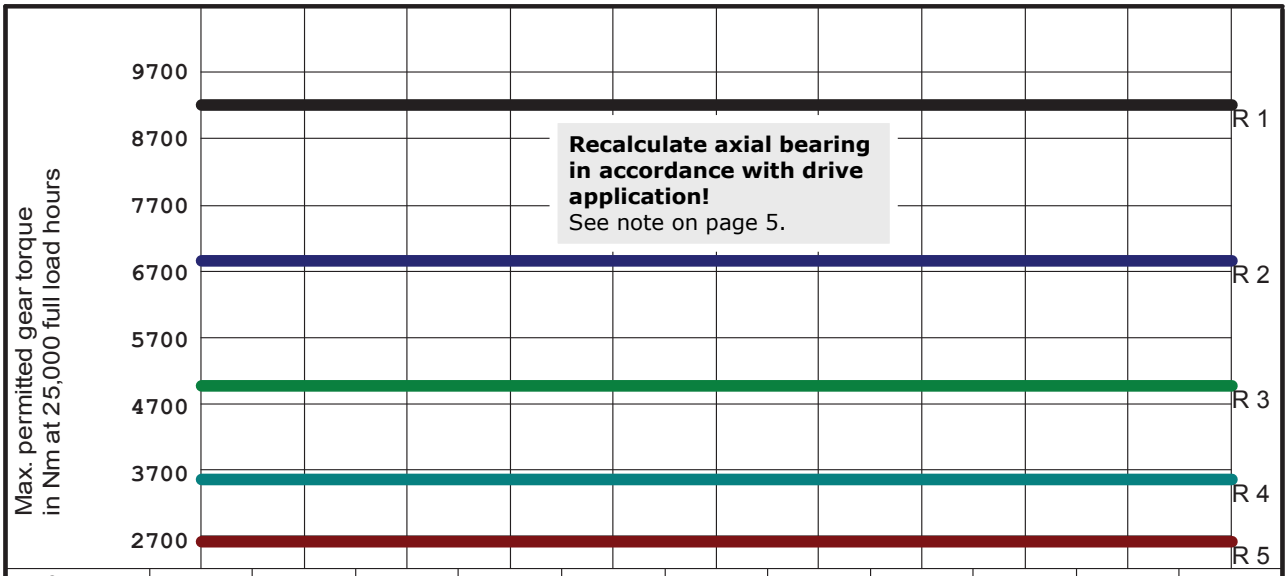
Centre distance	340.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	80.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	620.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	71.72	mm
No. teeth, gear	240		Lead angle at Bks	2.0013	°

Operating characteristics

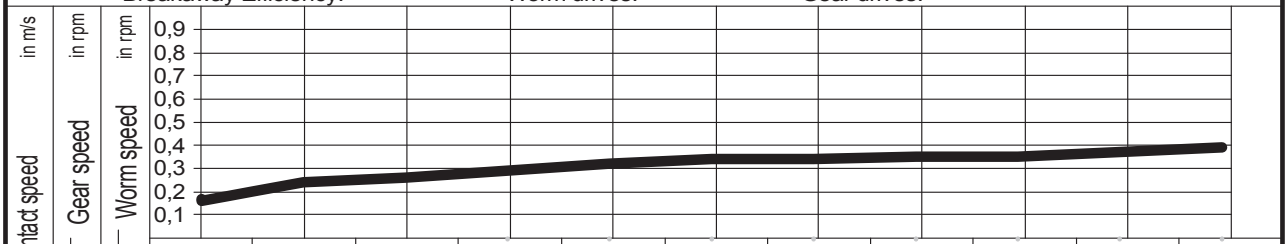
Ott worm gear

OTT no: 4810 SSR



Series R1	9089	9089	9089	9089	9089	9089	9089	9089	9089	9089	9089
Series R2	6817	6817	6817	6817	6817	6817	6817	6817	6817	6817	6817
Series R3	4999	4999	4999	4999	4999	4999	4999	4999	4999	4999	4999
Series R4	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636	3636
Series R5	2727	2727	2727	2727	2727	2727	2727	2727	2727	2727	2727

Breakaway Efficiency: 0.16 Worm drives: Gear drives:



0	53	80	119	178	267	400	600	900	1350	2025
0	0.22	0.33	0.49	0.74	1.11	1.66	2.50	3.75	5.62	8.43
0	0.19	0.29	0.44	0.66	1.00	1.50	2.25	3.38	5.07	7.60

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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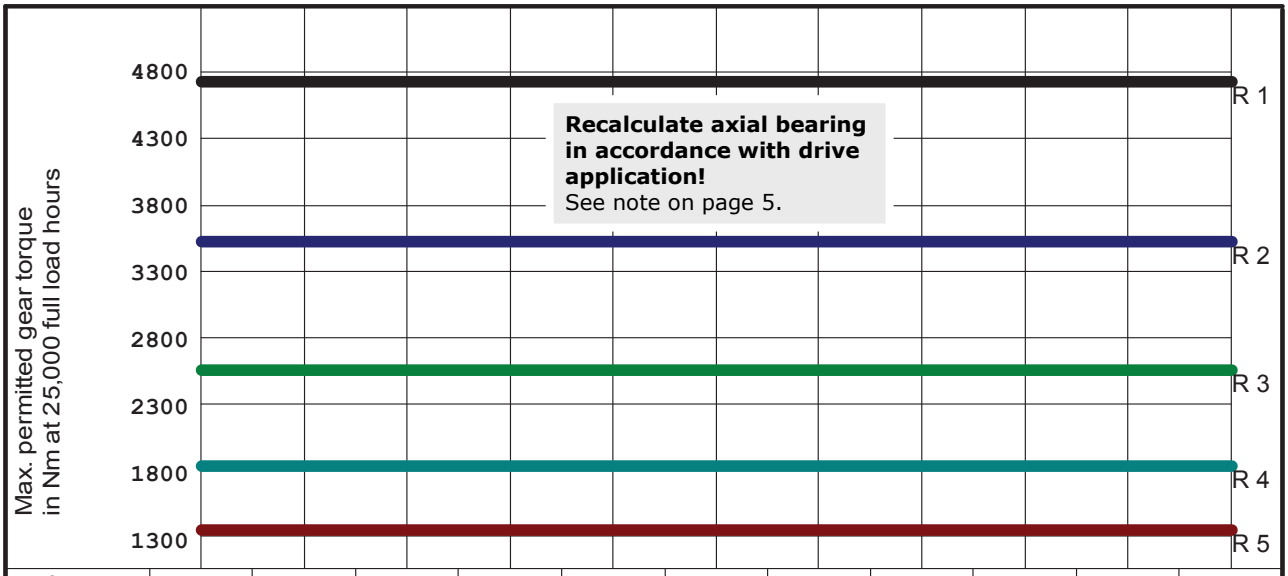
Centre distance	340.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	72.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	620.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	66.39	mm
No. teeth, gear	360		Lead angle at Bks	1.4603	°

Operating characteristics

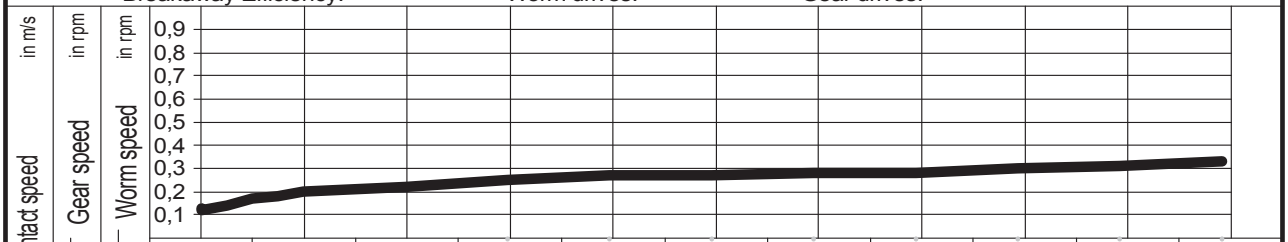
Ott worm gear

OTT no: 5489 SSR



Series R1	4663	4663	4663	4663	4663	4663	4663	4663	4663	4663	4663
Series R2	3497	3497	3497	3497	3497	3497	3497	3497	3497	3497	3497
Series R3	2565	2565	2565	2565	2565	2565	2565	2565	2565	2565	2565
Series R4	1865	1865	1865	1865	1865	1865	1865	1865	1865	1865	1865
Series R5	1399	1399	1399	1399	1399	1399	1399	1399	1399	1399	1399

Breakaway Efficiency: 0.12 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.22	0.33	0.50	0.75	1.12	1.68	2.52	3.79	5.68	8.52
0	0.27	0.41	0.62	0.93	1.40	2.11	3.16	4.74	7.11	10.7

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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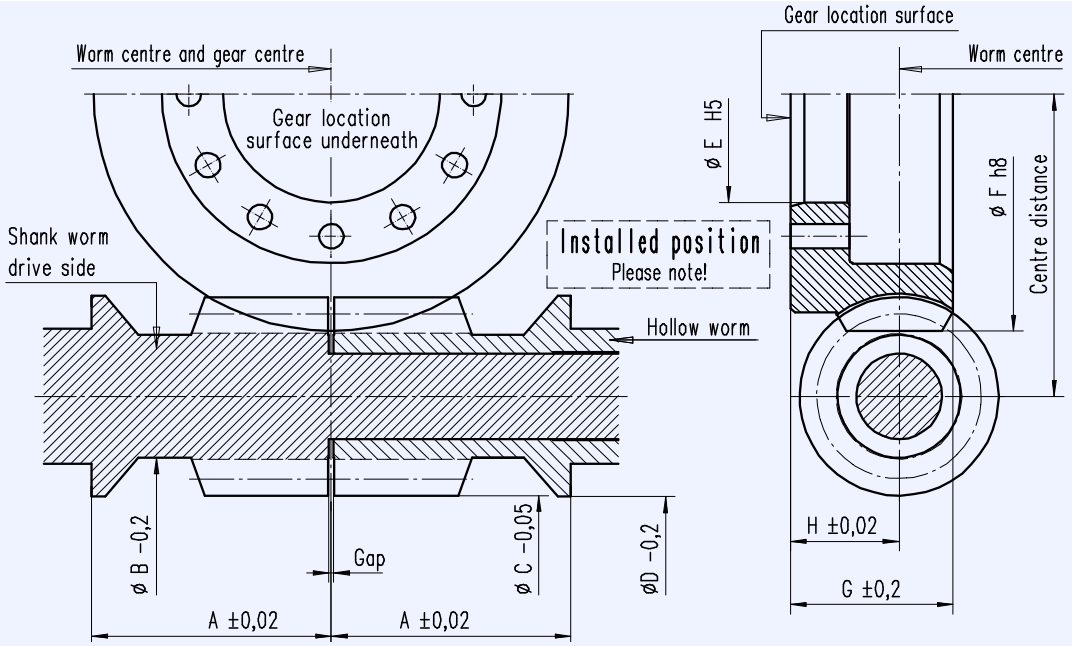
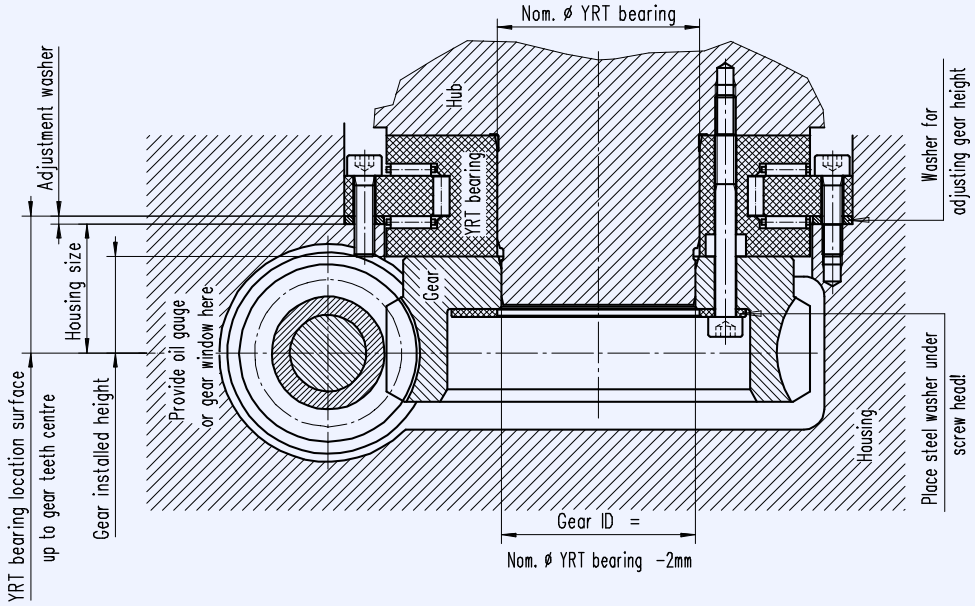
OTT worm gears - centre distance 380 mm

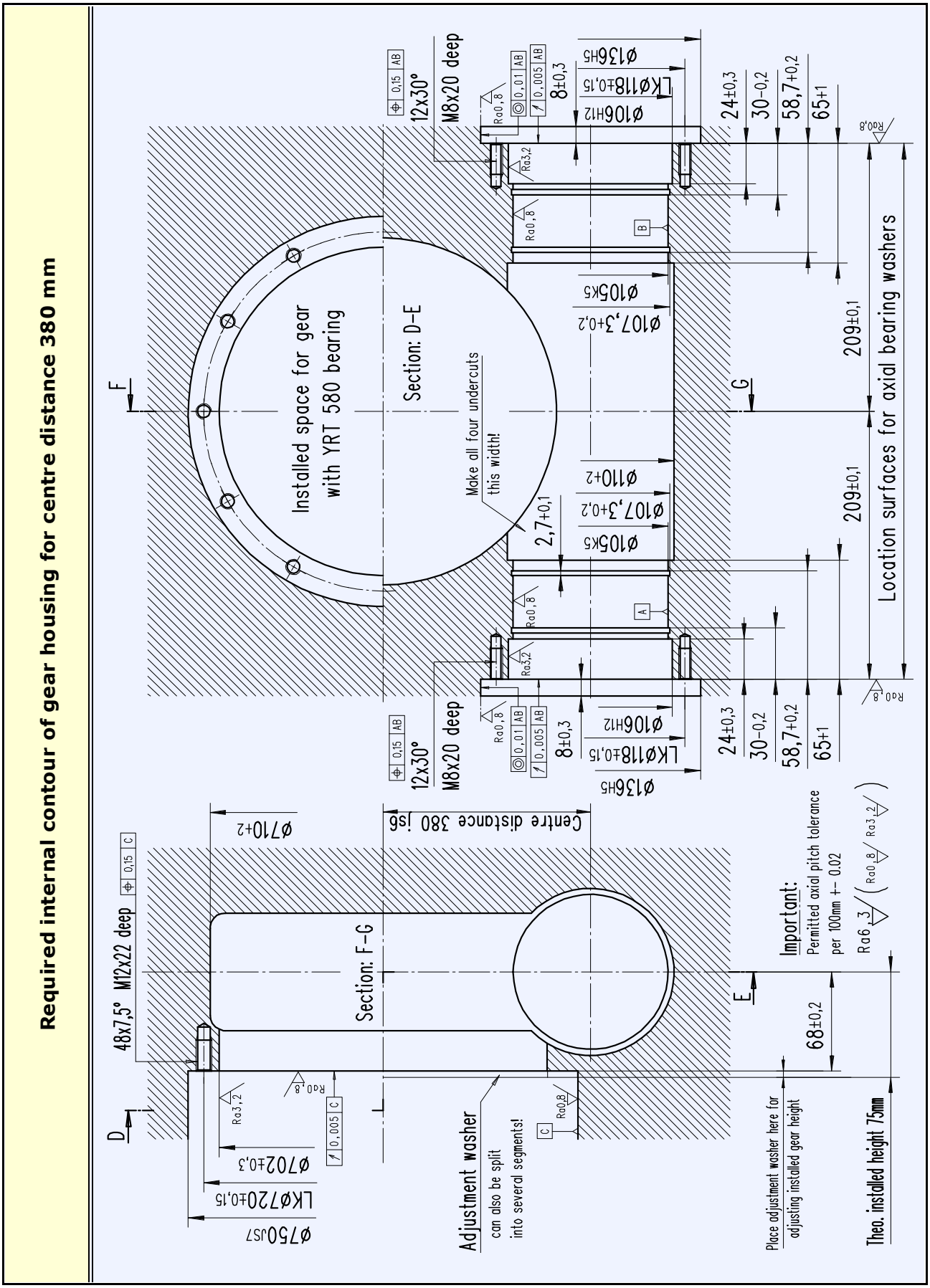
Main dimensions



OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4811 SSR	1	180	153	57,3	87,6	97,0	580	578	700	73	45
4855 SSR	1	240		58,0	82,8						
4825 SSR	1	288		58,3	79,0						
4869 SSR	1	360		58,6	74,4						
							See comments page 5!				



Gear housing - required internal contour



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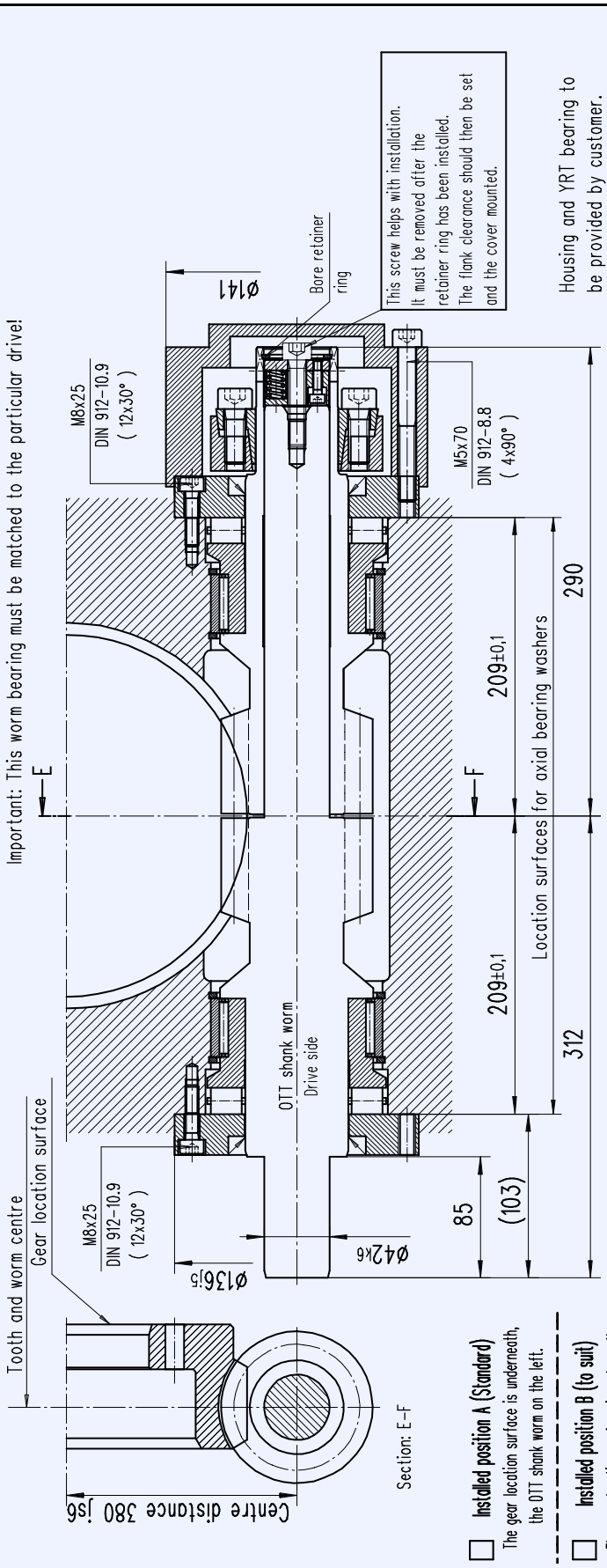
Worm bearings

Worm bearing for centre distance 380 mm



OTT worm gear				
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty
☐ 4811 SSR	T00485-G-RAO	T00393-G-SSC	T00394-G-HSC	2
☐ 4855 SSR	T00486-G-RAO	T00395-G-SSC	T00396-G-HSC	2
☐ 4825 SSR	T00487-G-RAO	T00397-G-SSC	T00398-G-HSC	2
☐ 4869 SSR	T00488-G-RAO	T00399-G-SSC	T00400-G-HSC	1

Bearing parts per gear		
	Name	Typ/Dwg no.
2	Axial cylinder roller bearing	K812 14 TV
2	Radial needle bearing	RNAO 90x105x26
2	Shaft seal	70x85x8
1	Shrink disc	HSD 55-22
4	Circlip	SB 105
24	Cylinder bolt DIN 912	M8x25 - 10.9
4	Cylinder bolt DIN 912	M5x70 - 8.8
1	Cylinder bolt DIN 912	M6x30 - 8.8
1	Retainer ring DIN 472	42
2	Bearing sleeve	T00224-G-LHÜ
2	Axial bearing washer	T00236-G-LDX
1	Cover	T00219-G-ADH
1	Thrust piece	B00012-G-DST

Order using ..... set of OTT worm gears
☐ Gearset incl. thrust piece without bearing parts
☐ Gearset incl. all bearing parts

☐ REQUEST Date: Name:
☐ ORDER

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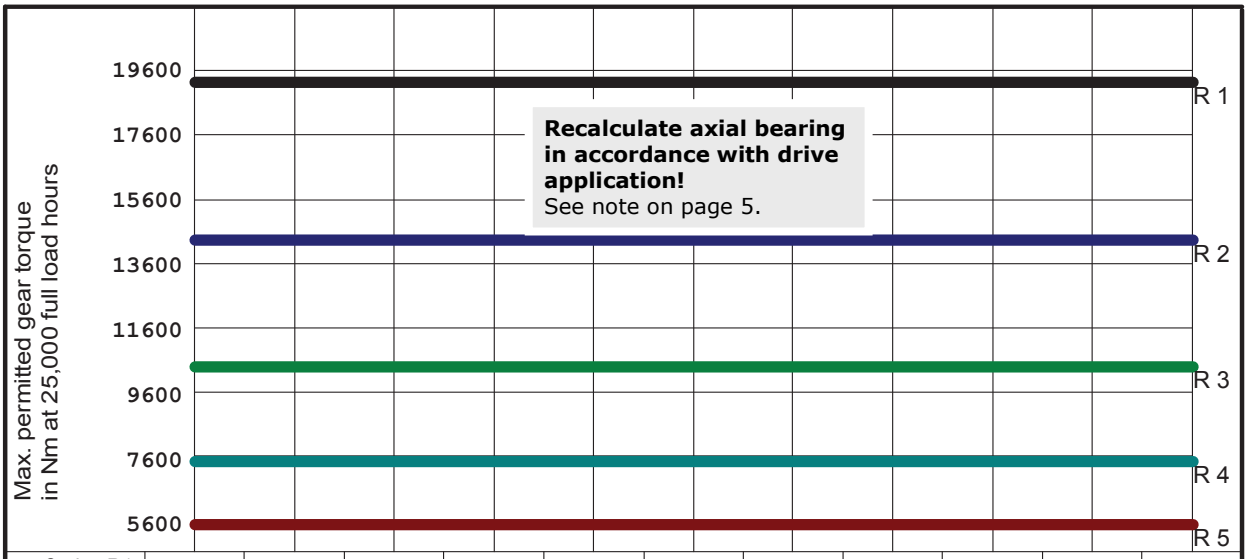
Operational characteristics

Centre distance	380.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	87.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	700.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	76.01	mm
No. teeth, gear	180		Lead angle at Bks	2.8251	°

Operating characteristics

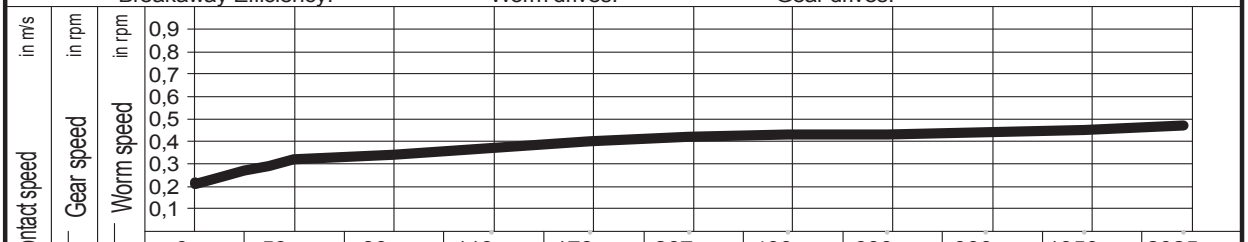
Ott worm gear

OTT no: 4811 SSR



Series R1	18983	18983	18983	18983	18983	18983	18983	18983	18983	18983	18983
Series R2	14237	14237	14237	14237	14237	14237	14237	14237	14237	14237	14237
Series R3	10441	10441	10441	10441	10441	10441	10441	10441	10441	10441	10441
Series R4	7593	7593	7593	7593	7593	7593	7593	7593	7593	7593	7593
Series R5	5695	5695	5695	5695	5695	5695	5695	5695	5695	5695	5695

Breakaway Efficiency: 0.21 Worm drives: Gear drives:



Worm speed in rpm	0	53	80	119	178	267	400	600	900	1350	2025
Gear speed in rpm	0	0.29	0.44	0.66	0.99	1.48	2.22	3.33	5.00	7.50	11.3
Contact speed in m/s	0	0.21	0.31	0.47	0.70	1.06	1.59	2.39	3.58	5.37	8.06

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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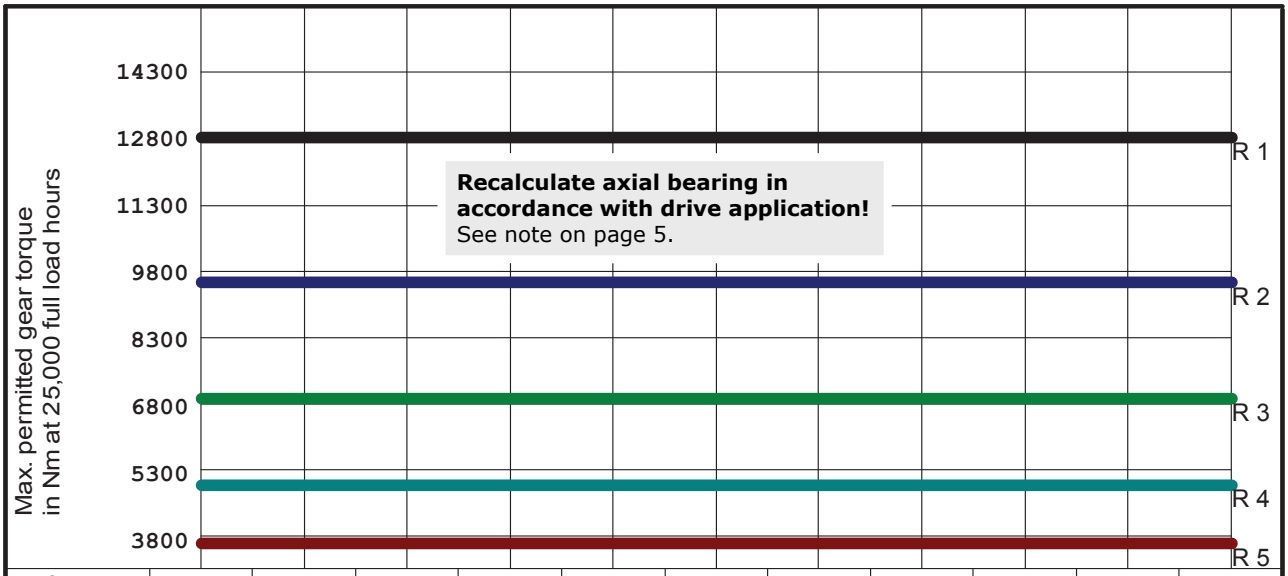
Centre distance	380.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	82.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	700.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	73.07	mm
No. teeth, gear	240		Lead angle at Bks	2.2183	°

Operating characteristics

Ott worm gear

OTT no: 4855 SSR



Series R1	12676	12676	12676	12676	12676	12676	12676	12676	12676	12676	12676
Series R2	9507	9507	9507	9507	9507	9507	9507	9507	9507	9507	9507
Series R3	6972	6972	6972	6972	6972	6972	6972	6972	6972	6972	6972
Series R4	5070	5070	5070	5070	5070	5070	5070	5070	5070	5070	5070
Series R5	3803	3803	3803	3803	3803	3803	3803	3803	3803	3803	3803

Breakaway Efficiency: 0.17 Worm drives: Gear drives:

0	53	80	119	178	267	400	600	900	1350	2025
0	0.22	0.33	0.49	0.74	1.11	1.66	2.50	3.75	5.62	8.43
0	0.20	0.30	0.45	0.68	1.02	1.53	2.29	3.44	5.16	7.75

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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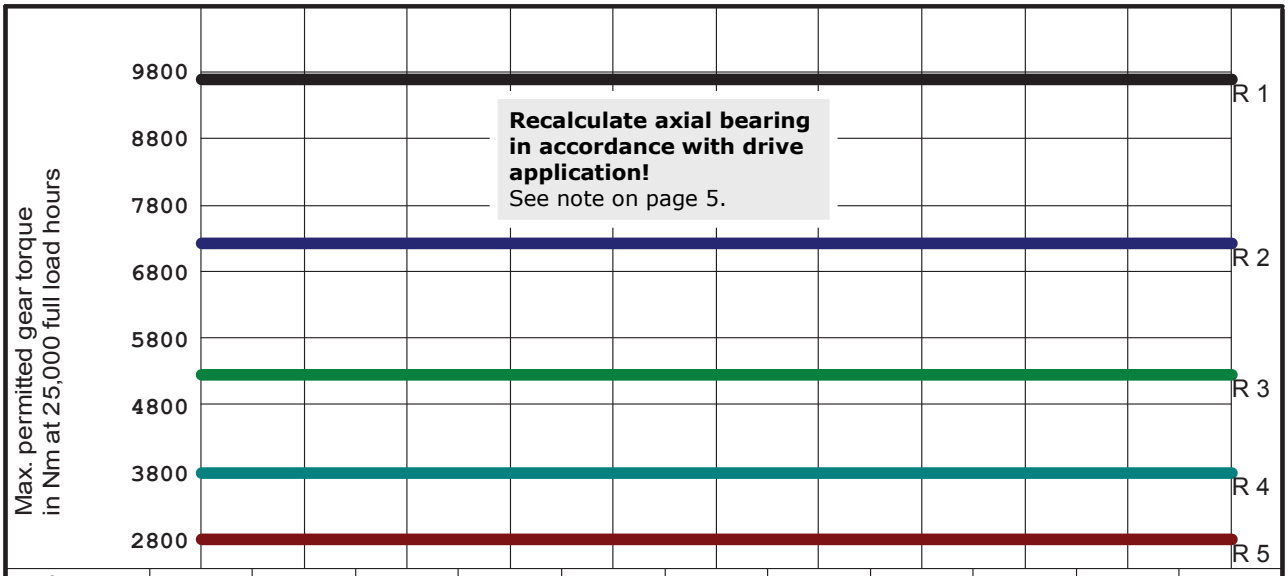
Centre distance	380.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	79.00	mm	Material, worm	31CrMoV9	
Outer Ø gear	700.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	70.65	mm
No. teeth, gear	288		Lead angle at Bks	1.9218	°

Operating characteristics

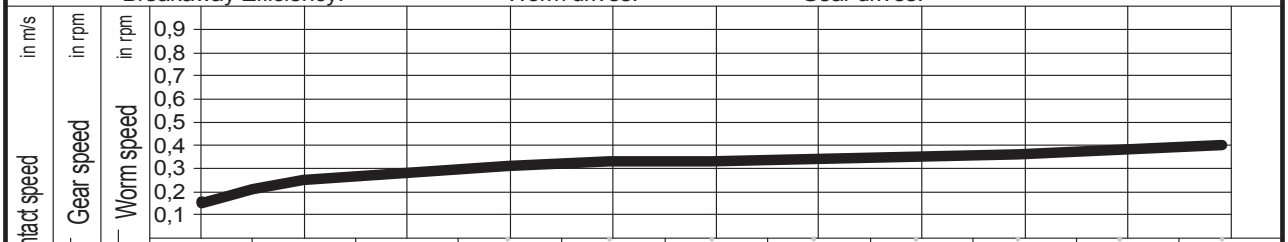
Ott worm gear

OTT no: 4825 SSR



Series R1	9563	9563	9563	9563	9563	9563	9563	9563	9563	9563	9563
Series R2	7172	7172	7172	7172	7172	7172	7172	7172	7172	7172	7172
Series R3	5260	5260	5260	5260	5260	5260	5260	5260	5260	5260	5260
Series R4	3825	3825	3825	3825	3825	3825	3825	3825	3825	3825	3825
Series R5	2869	2869	2869	2869	2869	2869	2869	2869	2869	2869	2869

Breakaway Efficiency: 0.15 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.27	0.41	0.62	0.93	1.40	2.10	3.16	4.73	7.10	10.7
0	0.29	0.44	0.66	0.99	1.49	2.24	3.36	5.05	7.57	11.4

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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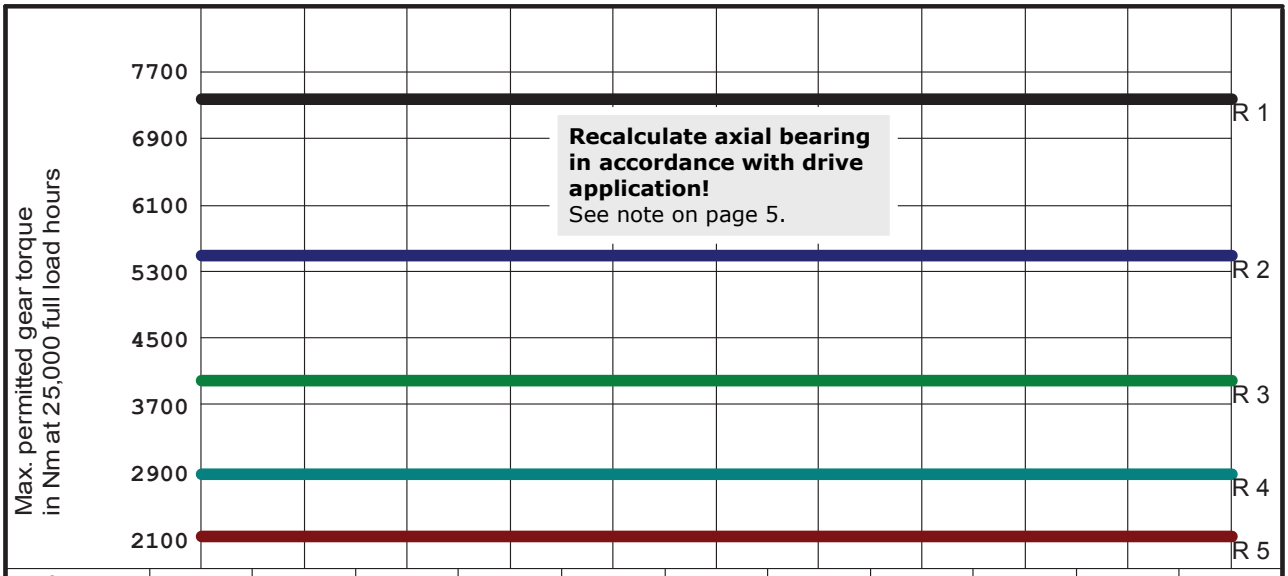
Centre distance	380.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	74.40	mm	Material, worm	31CrMoV9	
Outer Ø gear	700.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	67.77	mm
No. teeth, gear	360		Lead angle at Bks	1.6129	°

Operating characteristics

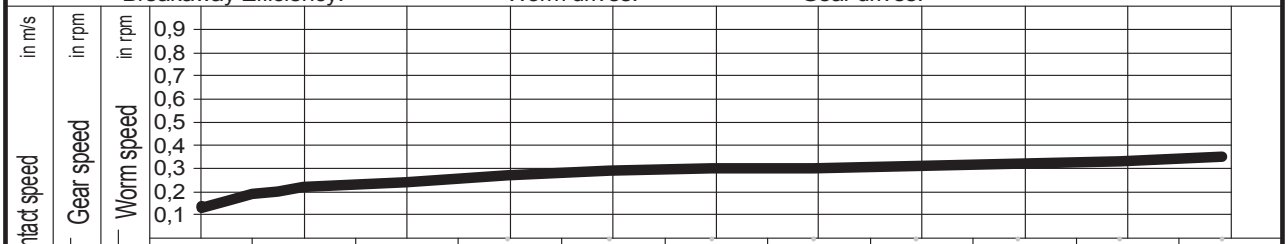
Ott worm gear

OTT no: 4869 SSR



Series R1	7279	7279	7279	7279	7279	7279	7279	7279	7279	7279	7279
Series R2	5459	5459	5459	5459	5459	5459	5459	5459	5459	5459	5459
Series R3	4004	4004	4004	4004	4004	4004	4004	4004	4004	4004	4004
Series R4	2912	2912	2912	2912	2912	2912	2912	2912	2912	2912	2912
Series R5	2184	2184	2184	2184	2184	2184	2184	2184	2184	2184	2184

Breakaway Efficiency: 0.13 Worm drives: Gear drives:



0	80	120	180	270	405	607	910	1365	2047	3070
0	0.22	0.33	0.50	0.75	1.12	1.68	2.52	3.79	5.68	8.52
0	0.28	0.42	0.63	0.95	1.43	2.15	3.23	4.84	7.26	10.9

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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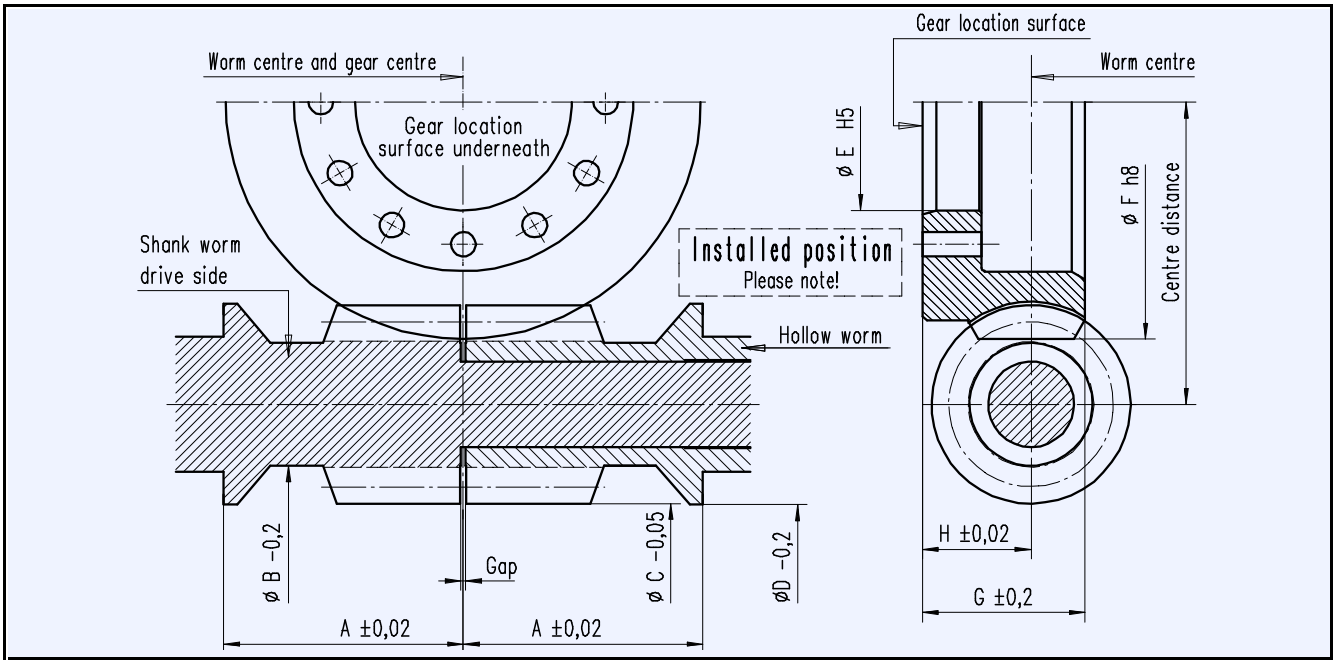
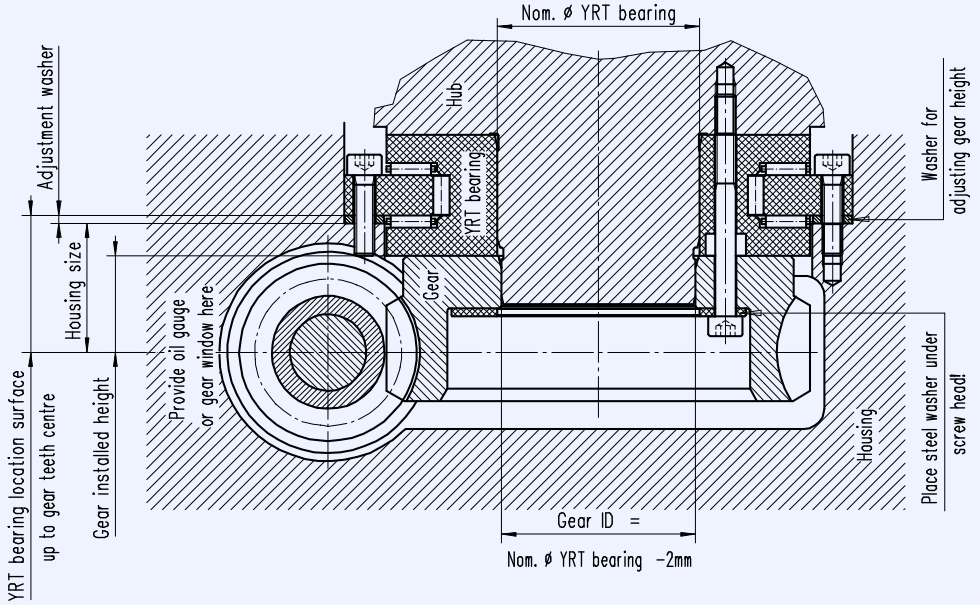
OTT worm gears - centre distance 430 mm

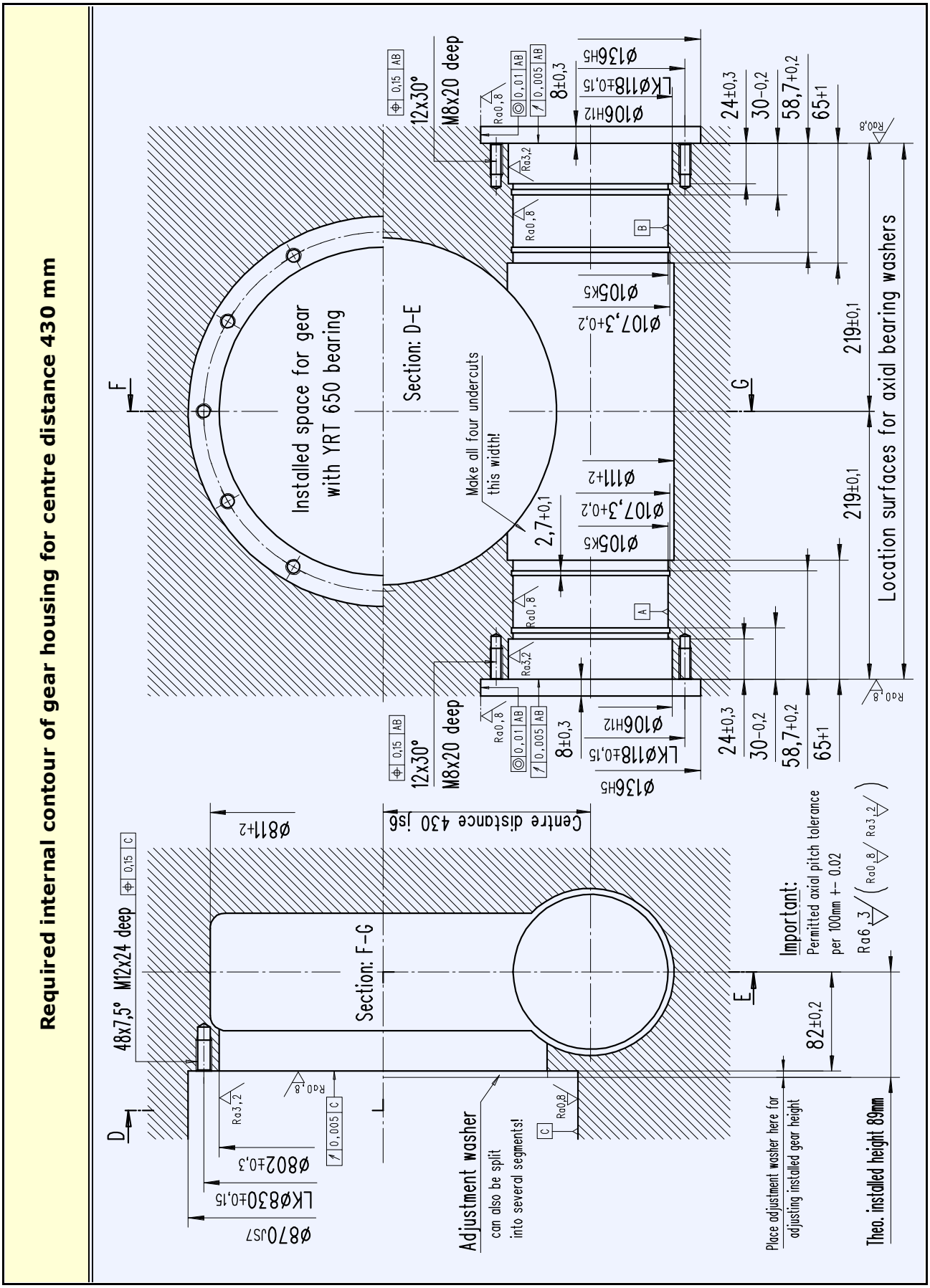
Main dimensions



OTT gear no.	Ratio		Worm				YRT gear bearing	Gear			
	No. starts Z1	No. teeth Z2	Distance A	Undercut Ø B	Head Ø C	Collar Ø D		Internal Ø E	Head Ø F	Width G	Height H
4850 SSR	1	180	163	56,9	91,6	97,0	650	648	800	75	45
4820 SSR	1	240		57,7	85,8						
4862 SSR	1	288		58,1	81,8						
							See comments page 5!				



Gear housing - required internal contour



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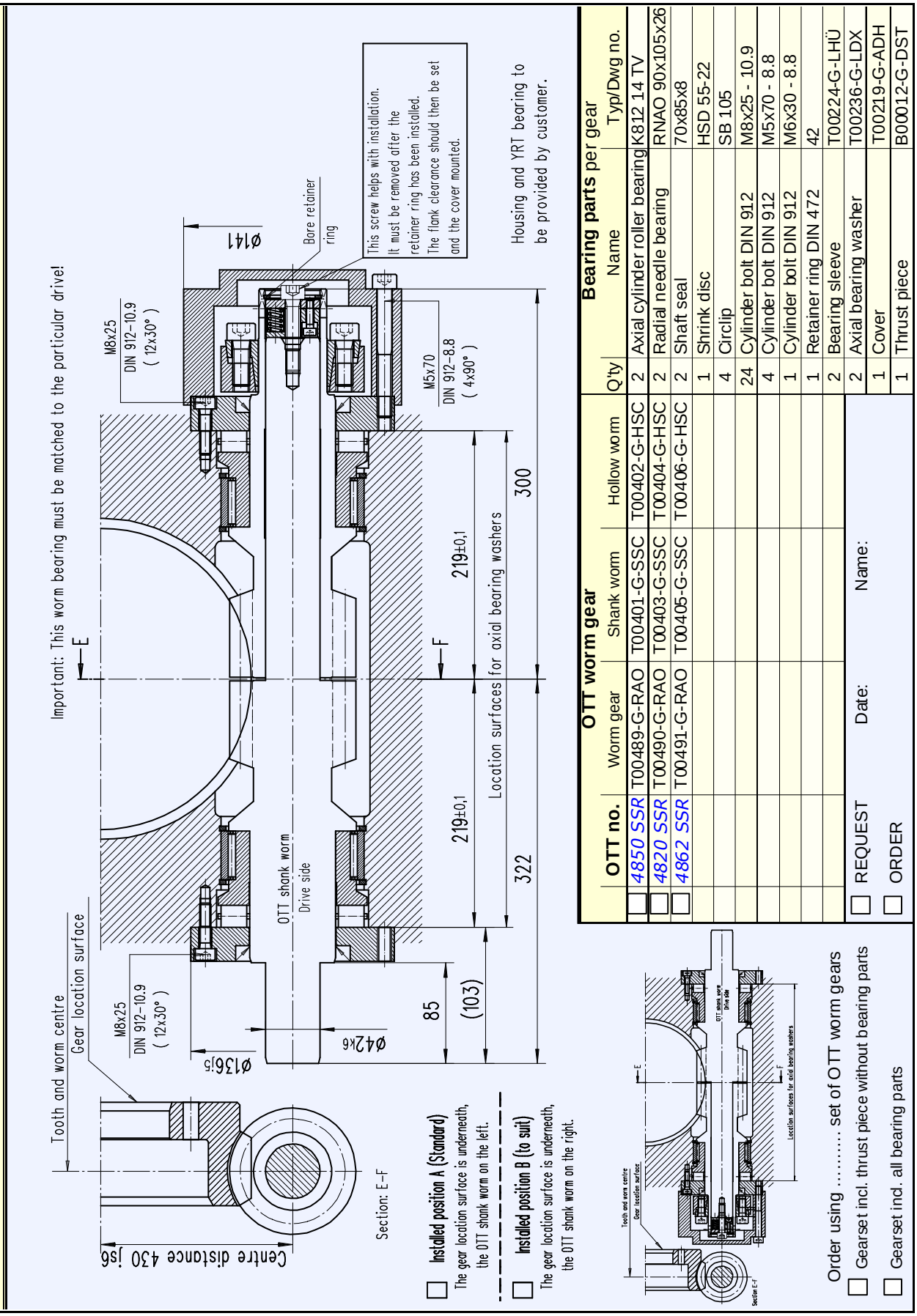
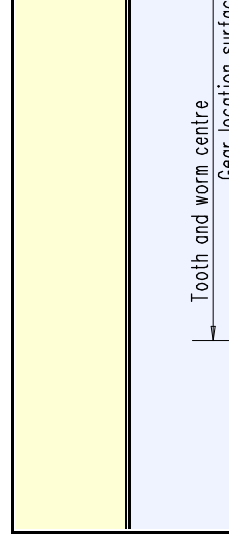
Worm bearings

Worm bearing for centre distance 430 mm



OTT worm gear					Bearing parts per gear		
OTT no.	Worm gear	Shank worm	Hollow worm	Q'ty	Name	Typ/Dwg no.
☐ 4850 SSR	T00489-G-RAO	T00401-G-SSC	T00402-G-HSC	2	Axial cylinder roller bearing	K812 14 TV
☐ 4820 SSR	T00490-G-RAO	T00403-G-SSC	T00404-G-HSC	2	Radial needle bearing	RNAO 90x105x26
☐ 4862 SSR	T00491-G-RAO	T00405-G-SSC	T00406-G-HSC	2	Shaft seal	70x85x8
				1	Shrink disc	HSD 55-22
				4	Circlip	SB 105
				24	Cylinder bolt DIN 912	M8x25 - 10.9
				4	Cylinder bolt DIN 912	M5x70 - 8.8
				1	Cylinder bolt DIN 912	M6x30 - 8.8
				1	Retainer ring DIN 472	42
				2	Bearing sleeve	T00224-G-LHÜ
				2	Axial bearing washer	T00236-G-LDX
				1	Cover	T00219-G-ADH
				1	Thrust piece	B00012-G-DST



Order using ..... set of OTT worm gears
☐ Gearset incl. thrust piece without bearing parts
☐ Gearset incl. all bearing parts

☐ REQUEST Date: Name:
☐ ORDER

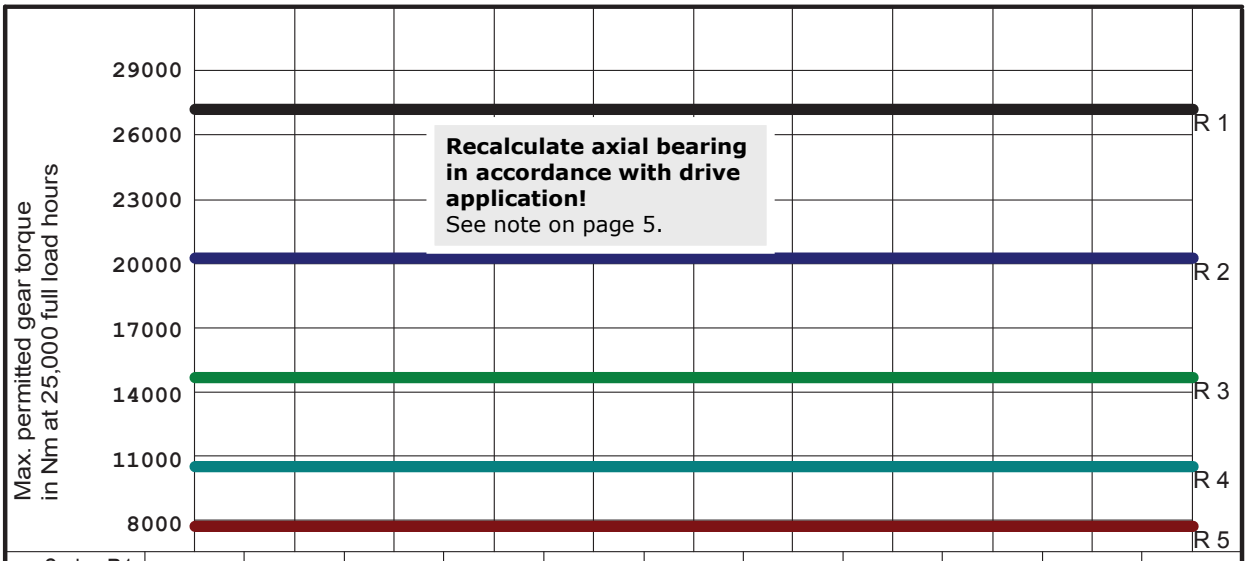
Operational characteristics

Centre distance	430.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	91.60	mm	Material, worm	31CrMoV9	
Outer Ø gear	800.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	78.34	mm
No. teeth, gear	180		Lead angle at Bks	3.1318	°

Operating characteristics

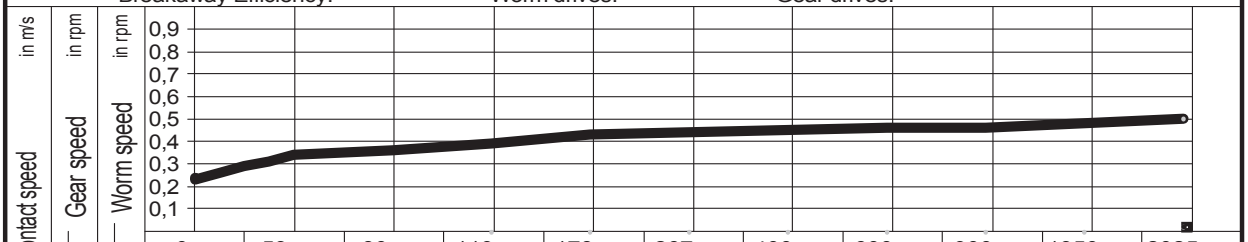
Ott worm gear

OTT no: 4850 SSR



Series R1	26874	26874	26874	26874	26874	26874	26874	26874	26874	26874	26874
Series R2	20156	20156	20156	20156	20156	20156	20156	20156	20156	20156	20156
Series R3	14781	14781	14781	14781	14781	14781	14781	14781	14781	14781	14781
Series R4	10750	10750	10750	10750	10750	10750	10750	10750	10750	10750	10750
Series R5	8062	8062	8062	8062	8062	8062	8062	8062	8062	8062	8062

Breakaway Efficiency: 0.23 Worm drives: Gear drives:



Worm speed in rpm	0	53	80	119	178	267	400	600	900	1350	2025
Gear speed in rpm	0	0.29	0.44	0.66	0.99	1.48	2.22	3.33	5.00	7.50	11.3
Contact speed in m/s	0	0.21	0.32	0.48	0.73	1.09	1.64	2.46	3.69	5.54	8.31

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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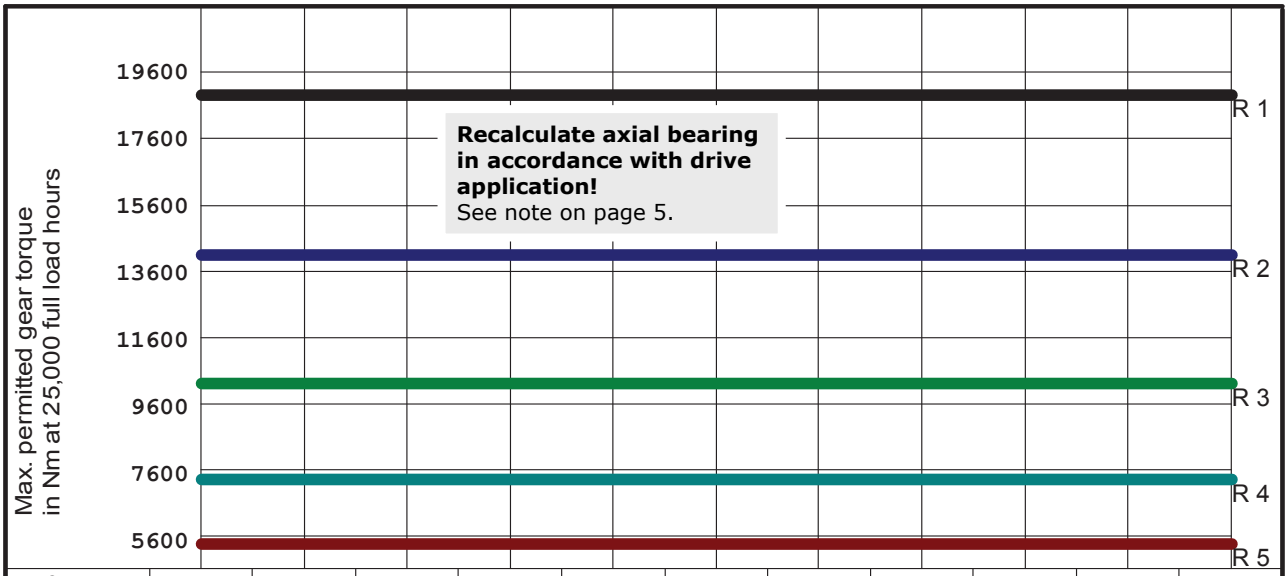
Centre distance	430.00	mm	Material, gear	GZ-CuSn12Ni	
Outer Ø worm	85.80	mm	Material, worm	31CrMoV9	
Outer Ø gear	800.00	mm	Pressure angle in NS	10	°
No. starts, worm	1		Back angle in NS	15	°
Worm direction	right		Calculated circle Ø	74.75	mm
No. teeth, gear	240		Lead angle at Bks	2.4786	°

Operating characteristics

Ott worm gear

OTT no: 4820 SSR



Series R1	18668	18668	18668	18668	18668	18668	18668	18668	18668	18668	18668
Series R2	14001	14001	14001	14001	14001	14001	14001	14001	14001	14001	14001
Series R3	10267	10267	10267	10267	10267	10267	10267	10267	10267	10267	10267
Series R4	7467	7467	7467	7467	7467	7467	7467	7467	7467	7467	7467
Series R5	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600	5600

Breakaway Efficiency: 0.19 Worm drives: Gear drives:

0	53	80	119	178	267	400	600	900	1350	2025
0	0.22	0.33	0.49	0.74	1.11	1.66	2.50	3.75	5.62	8.43
0	0.20	0.31	0.46	0.69	1.04	1.56	2.35	3.52	5.28	7.93

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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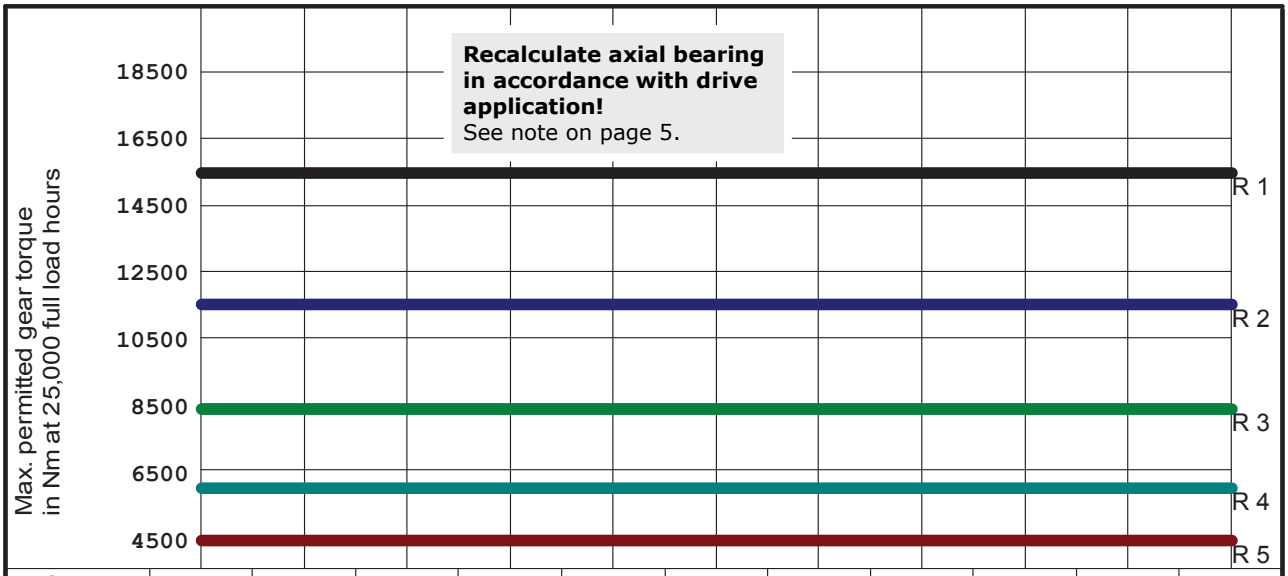
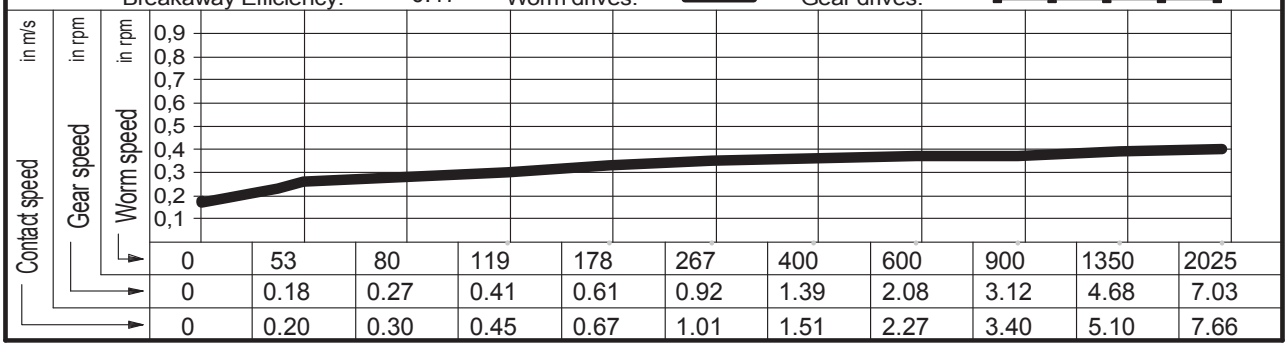
Centre distance	430.00 mm	Material, gear	GZ-CuSn12Ni	Operating characteristics	
Outer Ø worm	81.80 mm	Material, worm	31CrMoV9	Ott worm gear	
Outer Ø gear	800.00 mm	Pressure angle in NS	10 °	OTT no:	4862 SSR
No. starts, worm	1	Back angle in NS	15 °		
Worm direction	right	Calculated circle Ø	72.22 mm		
No. teeth, gear	288	Lead angle at Bks	2.1481 °		



Series R1	15299	15299	15299	15299	15299	15299	15299	15299	15299	15299	15299
Series R2	11474	11474	11474	11474	11474	11474	11474	11474	11474	11474	11474
Series R3	8415	8415	8415	8415	8415	8415	8415	8415	8415	8415	8415
Series R4	6120	6120	6120	6120	6120	6120	6120	6120	6120	6120	6120
Series R5	4590	4590	4590	4590	4590	4590	4590	4590	4590	4590	4590

Breakaway Efficiency: 0.17 Worm drives: Gear drives:



0	53	80	119	178	267	400	600	900	1350	2025
0	0.18	0.27	0.41	0.61	0.92	1.39	2.08	3.12	4.68	7.03
0	0.20	0.30	0.45	0.67	1.01	1.51	2.27	3.40	5.10	7.66

Gear selection by load type and application

Series R1
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 1 start per minute (60 per hour)
e) up to 10% operating time per hour (6 minutes)
Application: Measurement and test machinery drives, CNC axes

Series R2
a) randum even load around gear
b) absolutely smooth operation
c) minimal acceleration and deceleration moments
d) maximum 6 starts per minute (360 per hour)
e) up to 25% operating time per hour (15 minutes)
Application: Index tables, circular feed drives and CNC axes for mainly smooth, controlled applications

Series R3
a) randum changing load on gear
b) small shock loads
c) large acceleration and deceleration moments
d) maximum 20 starts per minute (1200 per hour)
e) up to 50% operating time per hour (30 minutes)
Application: Index tables, rotary tables for circular milling with relatively favourable cutting conditions, CNC axes

Series R4
a) segmental varying load on gear
b) with uneven shock loads
c) large acceleration and deceleration moments
d) maximum 60 starts per minute (3600 per hour)
e) up to 75% operating time per hour (45 minutes)
Application: Rotary tables with unfavourable cutting conditions. Trunion axes, CNC axes, milling spindles

Series R5
a) loads limited only to eccentric gear segment
b) heavy, uneven shock loads
c) largest acceleration and deceleration moments
d) maximum 180 starts per minute (10,800 per hour)
e) up to 100% operating time per hour (60 minutes)
Application: Heavy milling and trunion drives, CNC axes with unfavourable conditions

Lubricant: Synthetic oil

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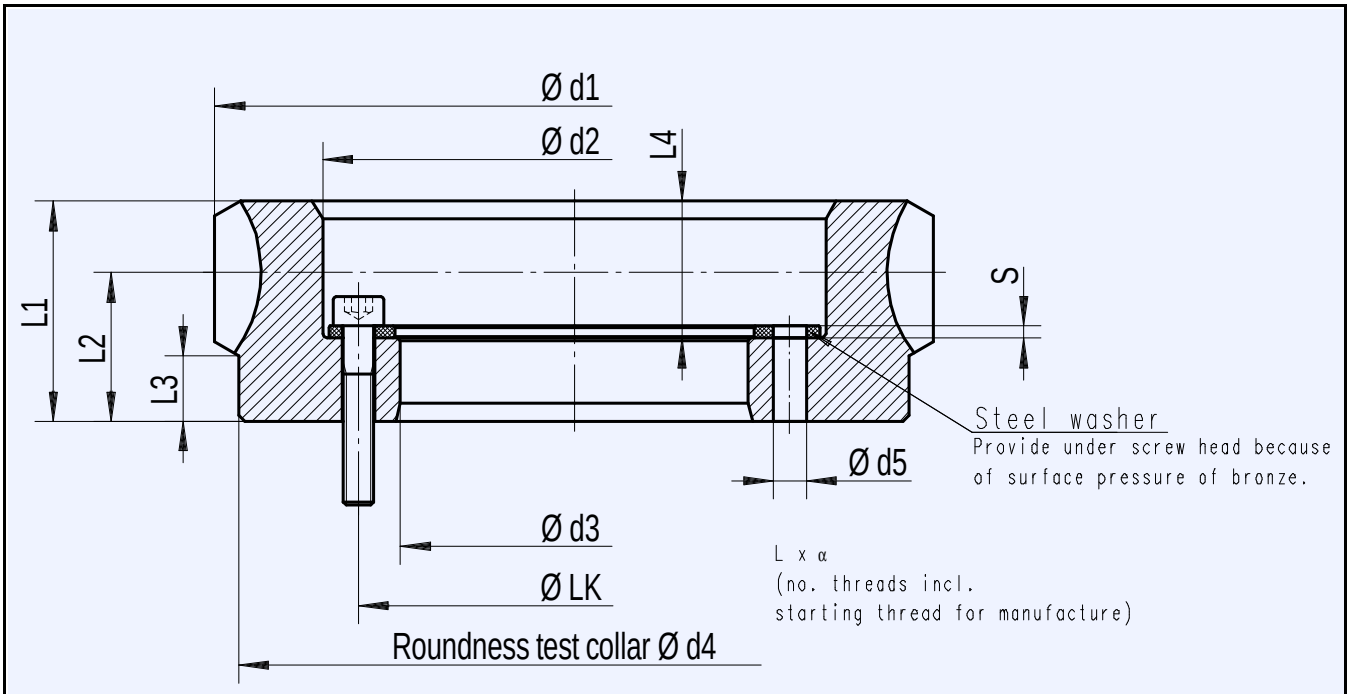
Info on OTT worm gears

OTT worm gear



Centre distance	L1	L2	L3	L4	d1	d2	d3	d4	d5	Lxα	LK	S
67	36	24	10	23	105	75	48	97	5,5	12x30°	63	2
75	37	25	11	23	120	84	58	112	5,5	12x30°	72	2
82	35	22	9	24	130	104	78	125	5,5	12x30°	92	2
96	37	22	6	27	160	124	98	156	5,5	18x20°	112	2
110	45	29	12	30	184	148	118	174	6,6	24x15°	135	2
125	48	30	11	32	214	178	148	206	6,6	36x10°	165	2
145	58	38	16	36	244	207	178	234	6,6	48x7,5°	194	3
165	57	36	13	37	284	245	218	274	6,6	48x7,5°	232	3
195	61	38	14	31	345	297	258	335	9	36x10°	280	3
235	66	40	13	35	415	359	323	405	9	36x10°	342	3
270	65	39	12	35	486	432	393	476	9	48x7,5°	415	3
305	69	42	14	36	560	499	458	550	9	48x7,5°	482	3
340	78	48	15	40	620	564	518	602	11	48x7,5°	544	3
380	73	45	14	37	700	630	578	680	11	48x7,5°	610	3
430	75	45	13	40	800	704	648	782	13,5	48x7,5°	680	3

Zahnradfertigung Ott
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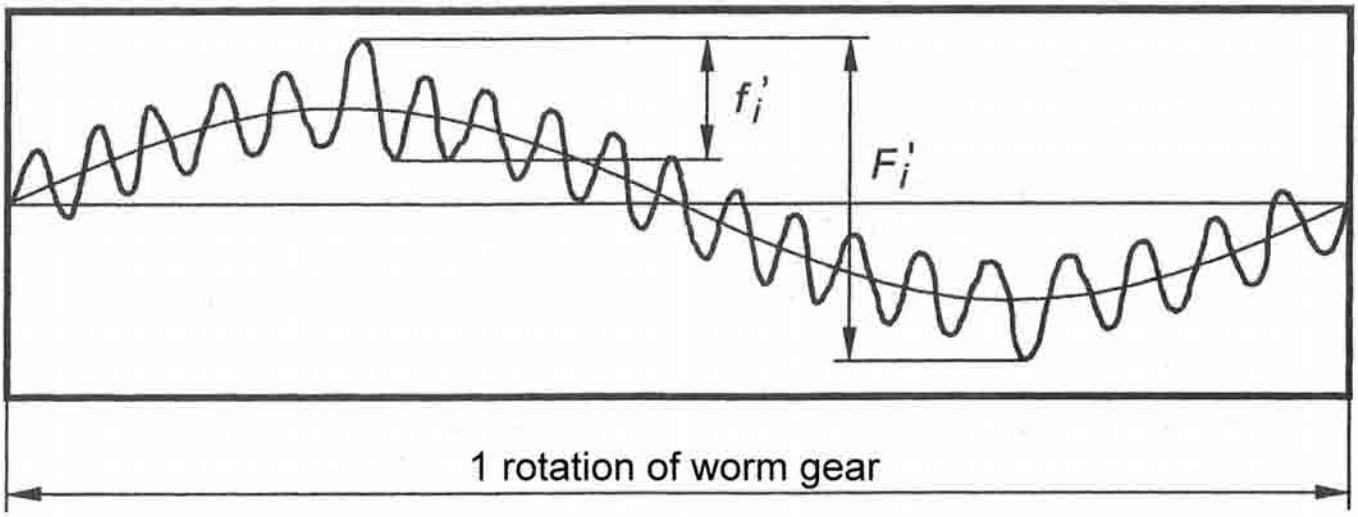
Single flank tangential composite error testing of OTT worm gears as per DIN 3974

Our OTT worm gears are subjected to extensive testing. In the single flank test, the worm drives the worm gear below the recommended centre distance. A small tooth flank clearance is set. Here, either the right or left flanks are in constant contact, brought about by slight braking of the worm gear.
Measurements are taken of the deviations from constant motion transfer caused by the teeth ratios of the driving worm and the driven worm gear. The rotational error, so to speak, between worm and worm gear is measured.
The diagram of the flank test shows by how many angular seconds or µm the worm gear advances or decreases in relation to the nominal rotation.

To convert µm to angular seconds or vice versa:
In the case of a worm gear working circle of 412 mm 1 µm equals 1 angular second. The conversion of angular seconds into µm or vice versa can easily be done using the rule of three. In the case of a worm gear working circle of, for example, 206 mm 1 µm equals 2 angular seconds.

The permissible error for the gears given in this catalogue can be found on the following page, in both angular seconds and µm.



Fi’ = Tangential composite error (largest rotation error within one worm gear revolution)
fi’ = Tangential tooth-to-tooth composite error (largest rotation error within the duration on one tooth meshing)

The **OTT worm gear** is made in its standard form in **Quality 3** as per **DIN 3974** Tangential composite error test carried out. Better qualities are possible upon request.

OTT-Nr.	Fi' [wsec]	fi'_m [wsec]	Fi' [µm]	fi'_m [µm]
4849 SSR	59,0	28,0	14,0	6,5
4866 SSR	58,0	27,0	14,0	6,5
4859 SSR	50,0	23,0	12,0	5,5
4830 SSR	49,0	22,0	12,0	5,5
4812 SSR	49,0	22,0	12,0	5,5
4831 SSR	48,0	22,0	12,0	5,5
4863 SSR	43,0	20,0	12,0	5,5
5422 SSR	43,0	20,0	12,0	5,5
4885 SSR	43,0	20,0	12,0	5,5
4871 SSR	43,0	20,0	12,0	5,5
4872 SSR	43,0	20,0	12,0	5,5
4873 SSR	43,0	20,0	12,0	5,5
4813 SSR	42,0	19,0	12,0	5,5
4801 SSR	40,0	18,0	12,0	5,5
2833 SSR	40,0	18,0	12,0	5,5
4835 SSR	43,0	18,0	13,0	5,5
5266 SSR	40,0	18,0	12,0	5,5
4884 SSR	43,0	18,0	13,0	5,5
4824 SSR	40,0	18,0	12,0	5,5
2735 SSR	43,0	18,0	13,0	5,5
4833 SSR	42,0	18,0	13,0	5,5
4837 SSR	35,0	15,0	13,0	5,5
4856 SSR	43,0	17,0	16,0	6,5
4803 SSR	35,0	15,0	13,0	5,5
4848 SSR	43,0	17,0	16,0	6,5
4802 SSR	35,0	15,0	13,0	5,5
4823 SSR	34,0	15,0	13,0	5,5
5448 SSR	37,0	15,0	16,0	6,5
4867 SSR	30,0	13,0	13,0	5,5
4847 SSR	37,0	15,0	16,0	6,5
4817 SSR	30,0	13,0	13,0	5,5
4800 SSR	30,0	13,0	13,0	5,5
4814 SSR	30,0	13,0	13,0	5,5
1664 SSR	30,0	12,0	13,0	5,5
5549 SSR	32,0	13,0	16,0	6,5
4879 SSR	32,0	13,0	16,0	6,5
4877 SSR	26,0	11,0	13,0	5,5
4804 SSR	32,0	13,0	16,0	6,5
5741 SSR	32,0	13,0	16,0	6,5
4853 SSR	32,0	13,0	16,0	6,5
4861 SSR	26,0	11,0	13,0	5,5
4846 SSR	26,0	11,0	13,0	5,5

OTT-Nr.	Fi' [wsec]	fi'_m [wsec]	Fi' [µm]	fi'_m [µm]
5834 SSR	30,0	11,0	17,0	6,5
5722 SSR	30,0	11,0	17,0	6,5
4875 SSR	24,0	9,5	14,0	5,5
2788 SSR	30,0	11,0	17,0	6,5
5721 SSR	30,0	11,0	17,0	6,5
4815 SSR	24,0	9,5	14,0	5,5
4821 SSR	24,0	9,5	14,0	5,5
4842 SSR	24,0	9,5	14,0	5,5
4860 SSR	25,0	9,5	17,0	6,5
4876 SSR	26,0	10,0	17,0	6,5
4854 SSR	25,0	9,5	17,0	6,5
4827 SSR	21,0	8,0	14,0	5,5
4819 SSR	21,0	8,0	14,0	5,5
4864 SSR	22,0	8,0	18,0	6,5
5362 SSR	22,0	8,0	18,0	6,5
4845 SSR	22,0	8,0	18,0	6,5
4805 SSR	22,0	8,0	18,0	6,5
4822 SSR	18,0	6,5	15,0	5,5
4865 SSR	18,0	6,5	15,0	5,5
4870 SSR	18,0	6,5	18,0	6,5
4806 SSR	22,0	8,0	21,0	8,0
4808 SSR	18,0	6,5	18,0	6,5
4843 SSR	18,0	6,5	18,0	6,5
5655 SSR	18,0	6,5	18,0	6,5
4807 SSR	18,0	6,5	18,0	6,5
4883 SSR	18,0	7,0	21,0	8,0
4882 SSR	18,0	7,0	21,0	8,0
4880 SSR	16,0	5,5	18,0	6,5
4809 SSR	16,0	5,5	18,0	6,5
4829 SSR	16,0	6,0	21,0	8,0
4851 SSR	16,0	6,0	21,0	8,0
4816 SSR	14,0	5,0	18,0	6,5
4828 SSR	14,0	5,0	18,0	6,5
4818 SSR	13,0	4,5	19,0	6,5
4810 SSR	13,0	4,5	19,0	6,5
5489 SSR	11,0	4,0	16,0	6,0
4811 SSR	13,0	5,0	22,0	8,0
4855 SSR	11,0	4,0	19,0	6,5
4825 SSR	11,0	4,0	19,0	6,5
4869 SSR	9,5	3,5	16,0	6,0
4850 SSR	12,0	4,0	22,0	8,0
4820 SSR	10,0	3,5	19,0	6,5
4862 SSR	10,0	3,5	19,0	6,5

Selecting a lubricant

The more pressure-resistant the oil in each application,
the less metal contact and wear.

- The goal is hydrodynamic lubrication -

However, the choice of a suitable lubricant viscosity depends on many factors and differs from application to application.

Greater operational loading	**-**	**Greater lubricant viscosity**
Lower operational loading	**-**	**Lower lubricant viscosity**
Greater contact velocity	**-**	**Lower lubricant viscosity**
Lower contact velocity	**-**	**Greater lubricant viscosity**

Acceleration, bearing type and design, switch-on duration, oil quantity, installation location, operating temperature, housing design, application, etc. also play a major role in the selection of a lubricant and its viscosity.

This applies not only to OTT worm gears,
but also to worm gears in general.

We assume that the system supplier will know the application and usage and take this into account when choosing the lubricant and/or its viscosity.

Advantages of grease over oil lubrication

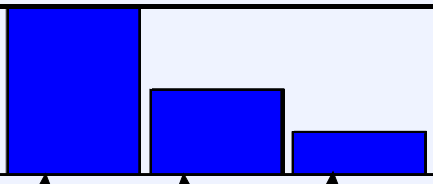
- less structural outlay
- simple gasket design and less risk of leaks
- effective support for seals through grease escape or "grease rim formation"
- life-long lubrication possible, so less frequent servicing is needed
- with high-speed greases, dispensed quantities of grease and running-in, lower bearing temperatures can be achieved at higher revolutions

Disadvantages of grease over oil lubrication

- no removal of impurities possible, especially with minimal grease lubrication
- lower threshold speeds and/or permissible speed values
- no heat dispersal possible

Recommended lubrication

Oil viscosity and lubrication type for Ott worm gears, as a factor of the contact velocity and the expected operating temperature

Contact velocity [m/s]	possible lubrication type	Lubricating oil as per ISO VG DIN 51519				
> 18 -		68	80	100	150	220
> 9 - 18		80	100	150	220	320
> 3 - 9		100	150	220	320	460
0 - 3		150	220	320	460	680
	Oil spray lubrication	23°	30°	40°	50°	60°
	Oil immersion lubrication	expected operating temperature in °C				
	Liquid grease					

DIN 51561	Kinemat. viscosity in mm²/s in			e.g. Synthetic lubricants		
				Klüber gear lubricants		
	20°C	40°C	100°C	Gear oils	Liquid grease	
CLP PG 80	205	80	16	Klübersynth GH 6-80	Klübersynth GE 46-1200	**GH 6 oils** are high-temperature gear oils offering high scuffing load capacity and wear resistance. They are especially resistant to ageing and oxidisation. They were developed for lubricating worm gears in steel/bronze. ***Not for aluminium/bronze!*** **GH 6 oils do not mix with mineral oil!** Their compatibility with colour coatings and seals should be checked.
CLP PG 100	270	100	20	Klübersynth GH 6-100		
CLP PG 150	400	150	28	Klübersynth GH 6-150		
CLP PG 220	630	220	41	Klübersynth GH 6-220		
CLP PG 320	880	320	58	Klübersynth GH 6-320	Structovis P LIQUID	
CLP PG 460	1240	460	79	Klübersynth GH 6-460		

DIN 51561	Kinemat. viscosity in mm²/s in			e.g. Synthetic lubricants		
				Klüber gear lubricants		
	20°C	40°C	100°C	Gear oils	Liquid grease	
CLP HC 150		150	18	Klübersynth EG 4-150	KLÜBERPLEX GE 11 - 680 (this grease is a mineral lubricant)	**EG - 4 oils** are high-performance gear oils which are also suitable for worm gear lubrication with aluminium/bronze worm gears. **EG - 4 oils are miscible with mineral oil** and react neutrally with seal materials and colour coatings. They have excellent wear anti wear and corrosion properties.
CLP HC 220		220	24	Klübersynth EG 4-220		
CLP HC 320		320	30	Klübersynth EG 4-320		
CLP HC 460		460	38	Klübersynth EG 4-460		
CLP HC 680		680	50	Klübersynth EG 4-680		
CLP HC 1000		1000	65	Klübersynth EG 4-1000		

DIN 51561	Kinemat. viscosity in mm²/s in			e.g. Mineral lubricants		
				Klüber gear lubricants		
	20°C	40°C	100°C	Gear oils	Liquid grease	
CLP 68	200	68	8	Klüberoil GEM 1-68 N	KLÜBERPLEX GE 11-680	**GEM 1 oils** are mineral high-performance gear and multipurpose oils.
CLP 100	330	100	11	Klüberoil GEM 1-100 N		
CLP 150	570	150	15	Klüberoil GEM 1-150 N		
CLP 220	820	220	18	Klüberoil GEM 1-220 N		They meet the criteria for CLP gear oils as per DIN 51 517 T3
CLP 320	1350	320	24	Klüberoil GEM 1-320 N		
CLP 460	1970	460	29	Klüberoil GEM 1-460 N		

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Installation Instructions

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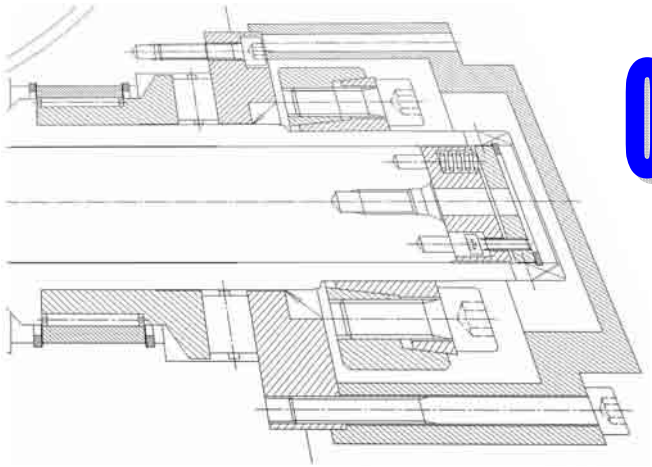
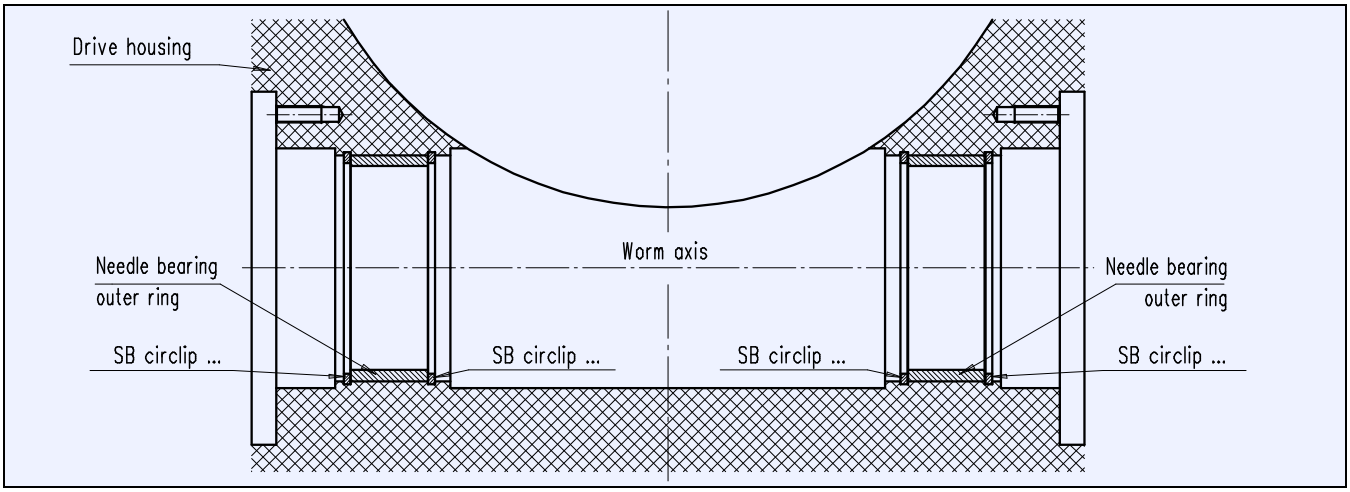
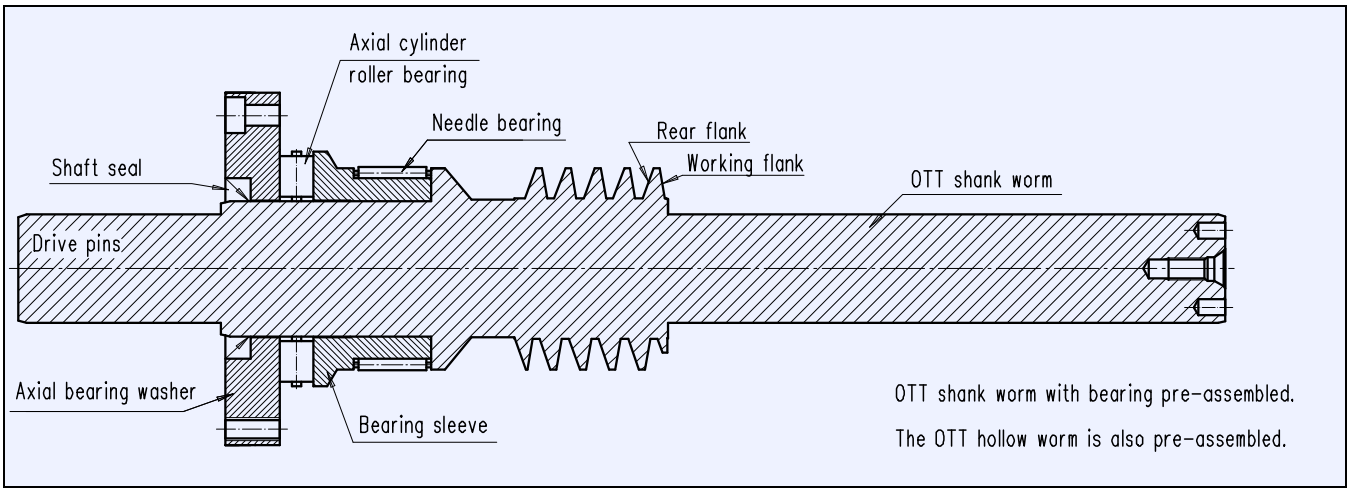


OTT Worm Gears Type G1

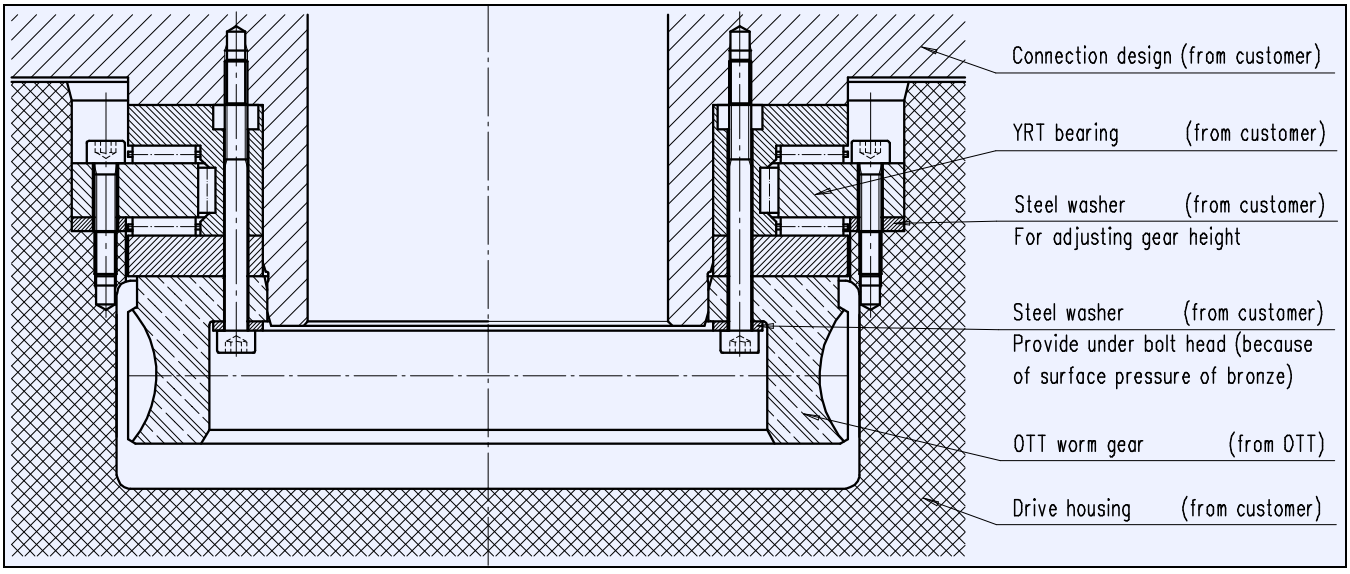


1.) Install rear SB circlip in gear housing.

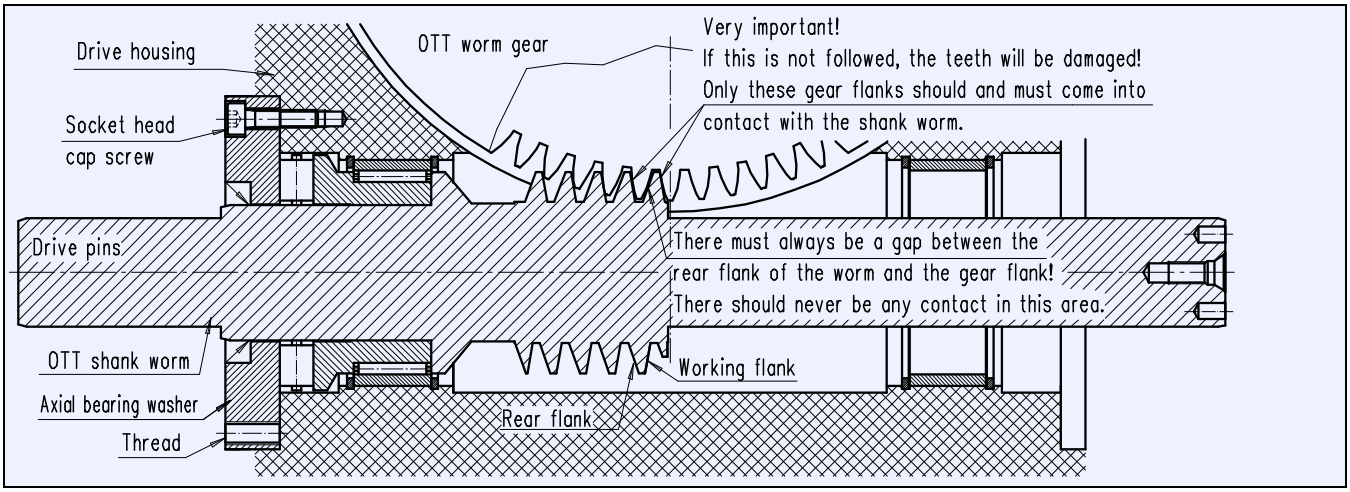
2.) Insert needle bearing outer ring and secure with front SB circlip.



3.) Pre-assemble shank worm and hollow worm with bearing sleeve and radial needle bearing.



4.) Install worm gear - at suitable installed height of gear - in the gear housing.



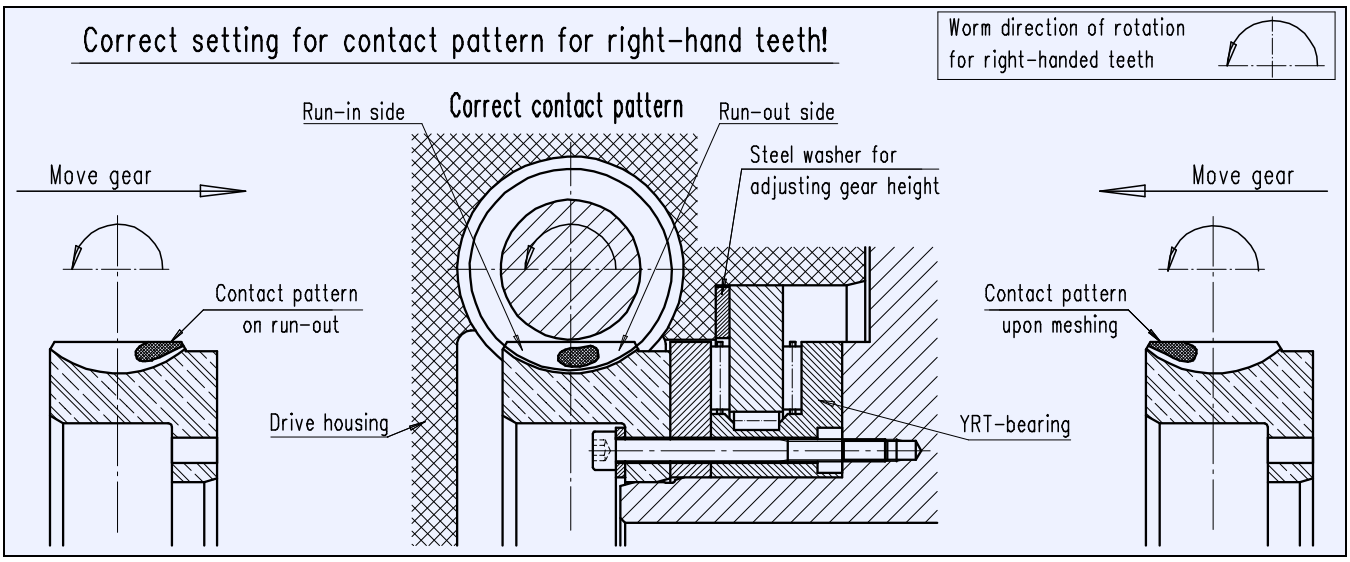
5.) Lubricate working flank of shank worm.

Important: Right-turning worms are attached to gear by turning clockwise!
Left-turning worms are attached to gear by turning anticlockwise!

6.) Press shank worm against gear face. **Do not draw in!**

7.) Important: Screw in shank worm up to the centre of the gear, not beyond it.

8.) Mount axial bearing on shank worm and screw to axial bearing end cover, using a torque wrench to tighten the screws.

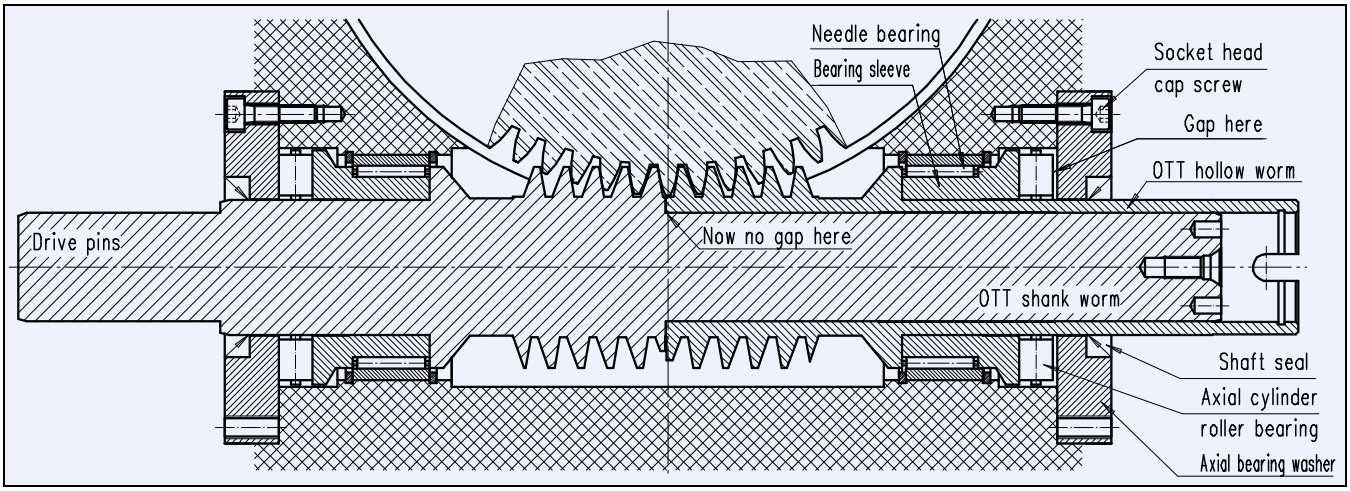


9.) Press worm gear against the shank worm and thus against its axial bearing.

10.) When the shank worm is drawn slowly back and there is a simultaneous torsional load by the gear on the shank worm, the gear flank contacts the working flank of the shank worm and is spot-lubricated by it.

11.) Check contact pattern on the gear flank (see Fig.).

12.) **If necessary, correct the contact pattern by adjusting the height of the gear,** then check again. The amount of steel washer depth adjustment to change the height depends on the pitch of the individual gear!

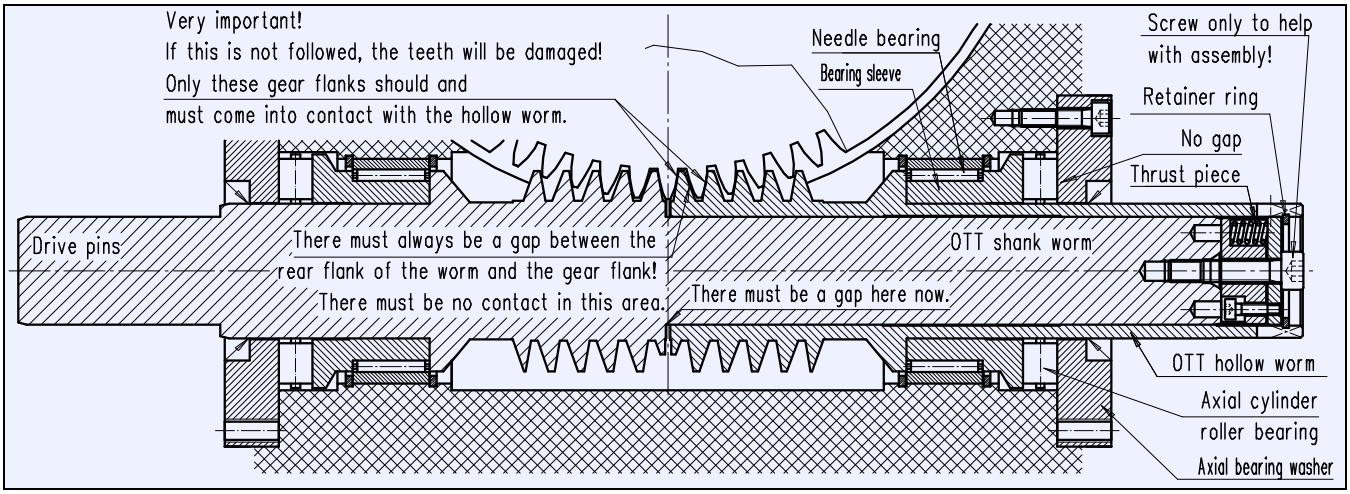


13.) Place hollow worm on shank worm, and press shank worm on to gear flank. **Do not draw in!**

14.) The shank worm should not rotate, and the gear must be pressed against the working flank.

Important: The rear flank of the worm should not touch the gear flank.

15.) Mount axial bearing on hollow worm and screw on to axial bearing end cover, using a torque wrench to tighten the screws.



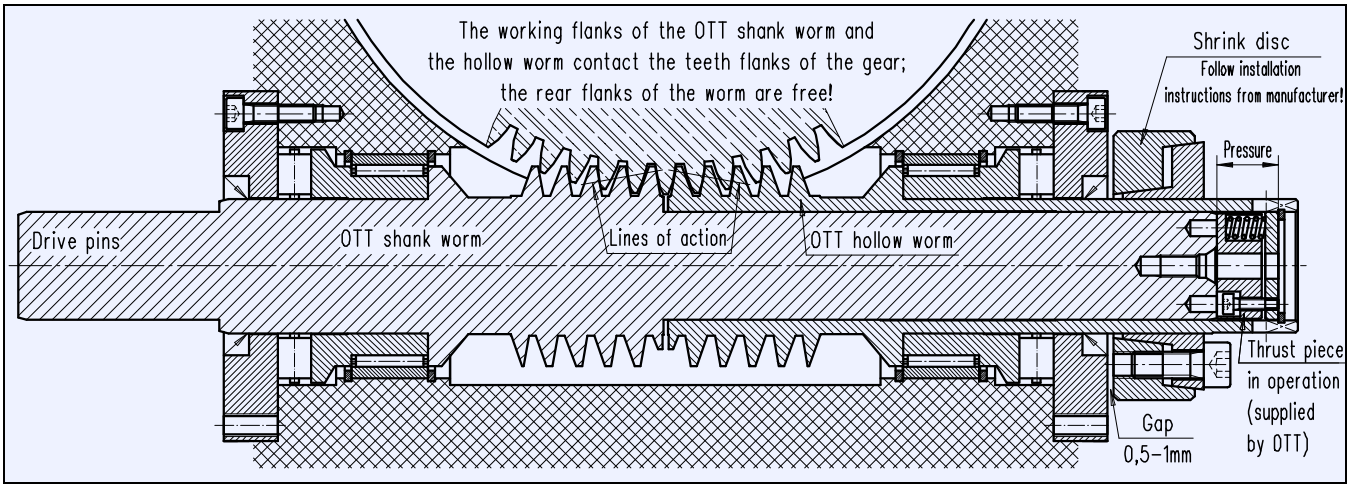
16.) Hold the shank worm firmly and turn the hollow worm in the opposite direction to slide the worm halves against the working flank. There will be an even clearance of the flanks and axial bearing. There will now be a gap between the shank worm and the hollow worm.

Important: The flank clearance is reduced by turning right-turning worms to the left.
It is reduced in the case of left-turning worms by turning them to the right.

17.) Screw the thrust piece to the shank worm.

18.) Insert SB spring ring in the hollow worm bore.

19.) The mounting screw must now be removed from the thrust piece.



20.) Place shrink disc on the hollow worm. There must be a gap between the shrink disc and the axial bearing end cover.

21.) A larger flank clearance must be set because the clearance is reduced by heating.

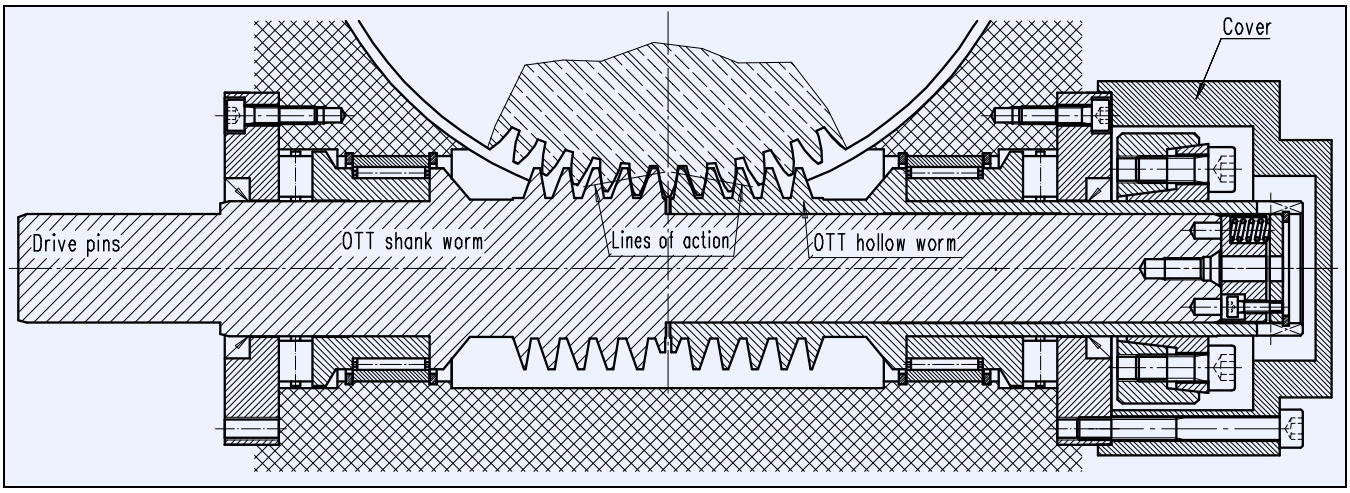
22.) Install shrink disc according to manufacturer's instructions.

23.) Check axial bearing **and set flank clearances** after tightening the shrink disc.

24.) Fill with suitable gear oil.

25.) Test-run gear, monitoring temperature and flank clearance changes.

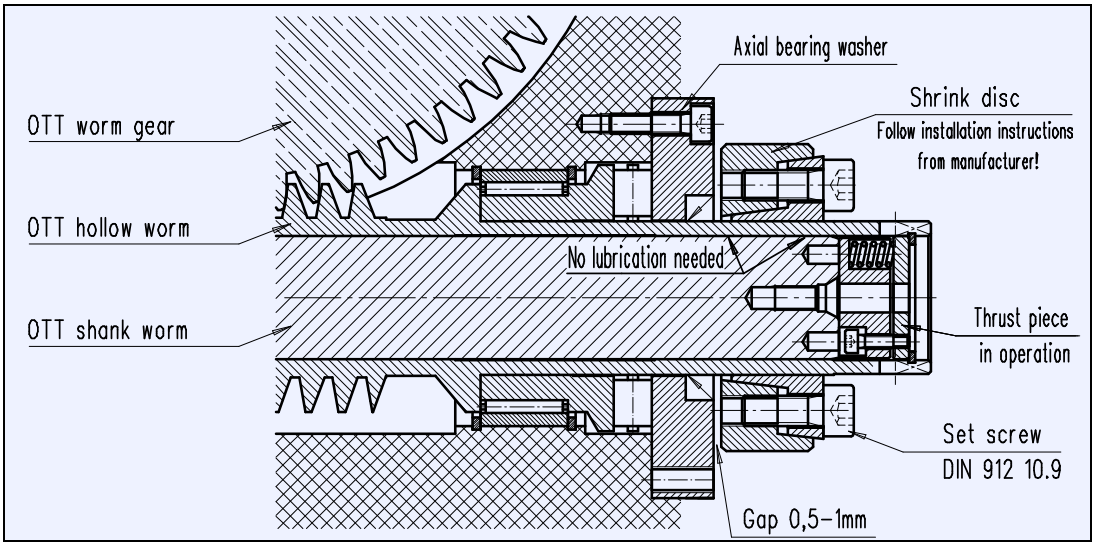
26.) Once the maximum operating temperature has been reached, the residual flank clearance can be set to 0.00 while the gear is warm.



27.) The cover can be put in place after the final flank clearance adjustment.

Your OTT worm gear is now ready for use!

Mounting and demounting the shrink disc



Mounting

The shrink discs are supplied ready-to-install They should not be removed before the initial tightening.

1 **Degrease the hub bore and the shaft!**

2 Slip the shrink disc onto the hub. The outer surface of the hub can be greased near the shrink disc seat.

WARNING!
Never torque the bolts before the shaft has been inserted.

3 Insertion of shaft and sliding hub onto shaft

4 **Torque all bolts slowly until the front-side faces of the outer and inner rings align.**

5 The correct tightness can then be checked visually.

Demounting

The loosening process is similar to the tightening process.

1 The bolts should be undone evenly and in sequence in order to release the stored energy in the outer ring slowly during demounting.

Start with just a quarter turn.

WARNING!

Under no circumstances should the bolts be withdrawn one after the other.

If the outer ring does not come away by itself after approx. one turn of all bolts, it can be detensioned using a kickback thread by screwing some of the adjacent bolts into the thread.

The outer ring will be supported by the remaining bolts while it is being released.

This procedure must be repeated until the outer ring comes off.

2 Removal of shaft and hub from shaft

Any rust which may have formed on the shaft in front of the hub must be removed first.

3 Remove the shrink disc from the hub.

Tightening bolts

DIN 912 inner-hex head bolts are normally used, quality 10.9!

Notes

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Notes

Notes

Zahnradfertigung OTT

...toothed innovations!

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