radicon
with you at every turn

benzlers
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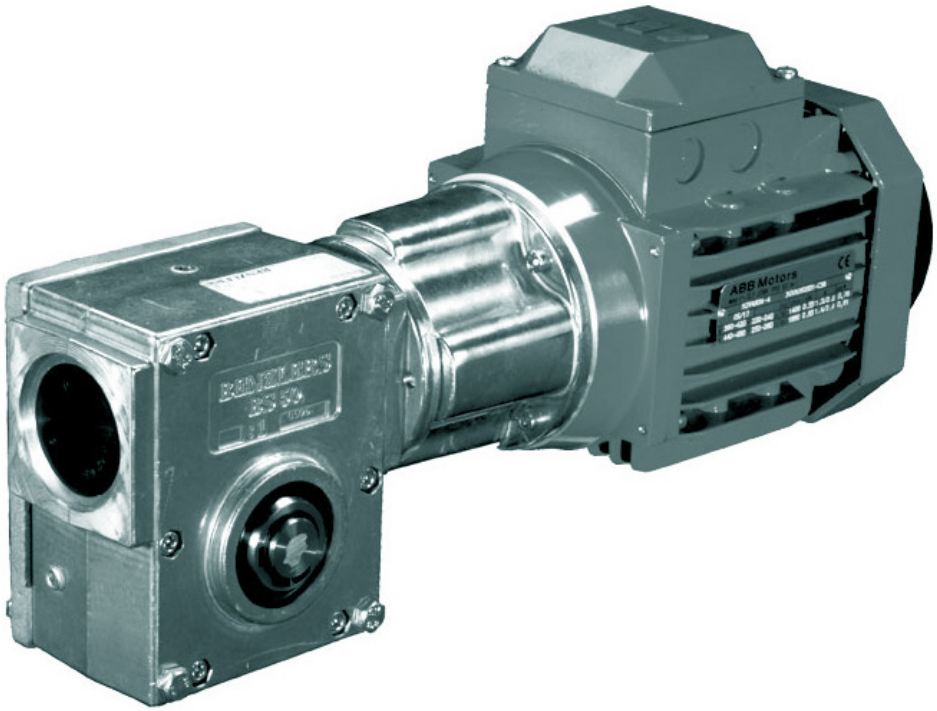
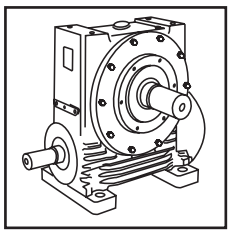
Series BS Compact Worm Gear

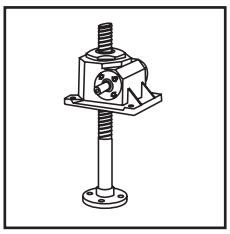


Technical
Up to - 4kW / 315 Nm
Worm Gearbox
CBS-2.01GB0323

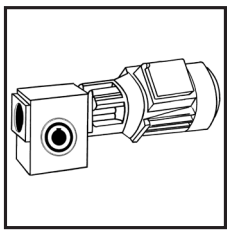
PRODUCTS IN THE RANGE



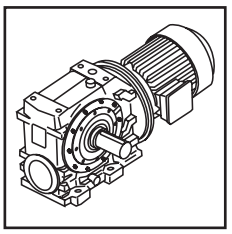
Series A
Worm Gear units and geared motors in single & double reduction types



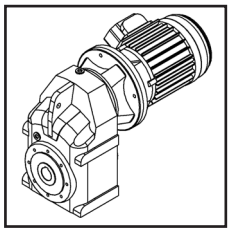
Series BD
Screwjack worm gear unit



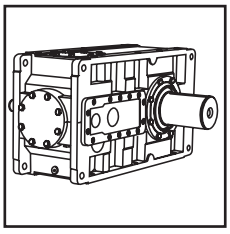
Series BS
Worm gear unit



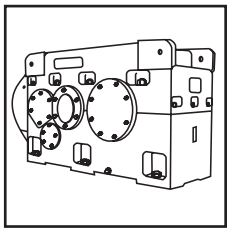
Series C
Right angle drive helical worm geared motors & reducers



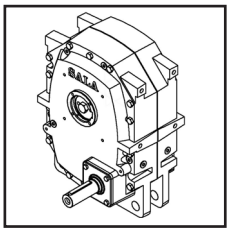
Series F
Parallel shaft helical geared motors & reducers



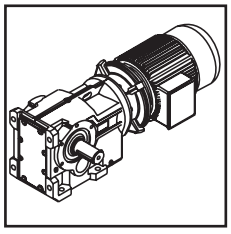
Series G
Helical parallel shaft & bevel helical right angle drive gear units



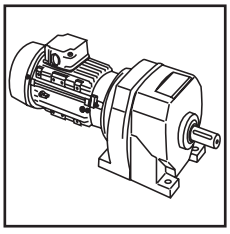
Series H
Large helical parallel shaft & bevel helical right angle drive units



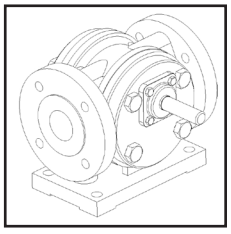
Series J
Shaft mounted helical speed reducers



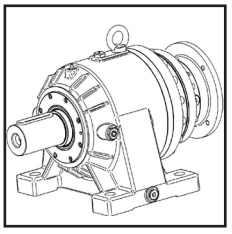
Series K
Right angle helical bevel helical geared motors & reducers



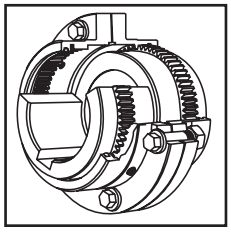
Series M
In-line helical geared motors & reducers



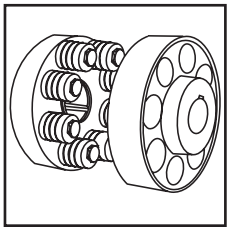
Roloid Gear Pump
Lubrication and fluid transportation pump



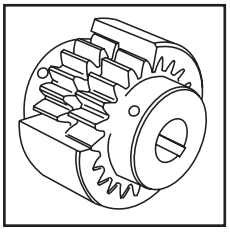
Series P
Planetary
Foot and flange mounted planetary units



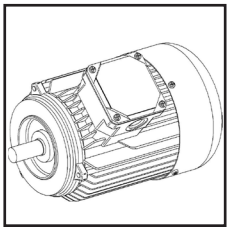
Series X
Elign Gear
Torsionally rigid, high torque coupling



Series X
Elflex
Pin and bush elastomer coupling



Series X
Nylicon
Gear coupling with nylon sleeve



Motors
Full range of IEC motors

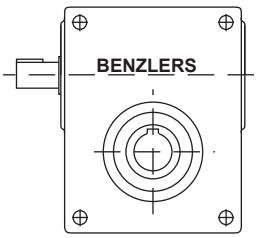
We offer a wide range of repair services and many years experience of repairing demanding and highly critical transmissions in numerous industries.

We can create custom engineered transmission solutions of any size and configuration.

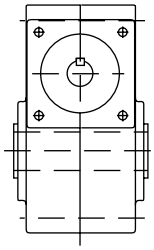
CONTENTS

NOTES

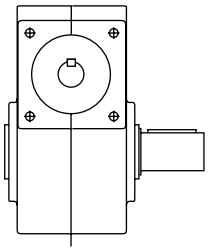
THE PROGRAMME



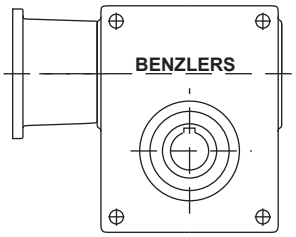
Single input shaft



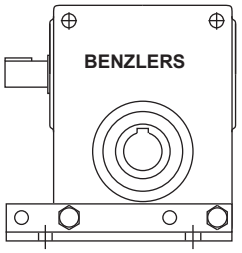
Hollow shaft



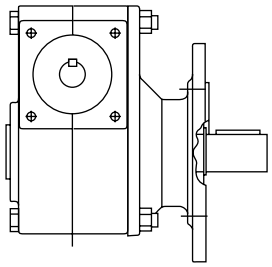
Output shaft



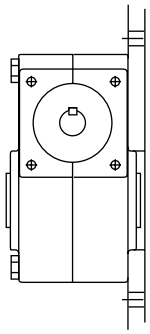
Motor flange



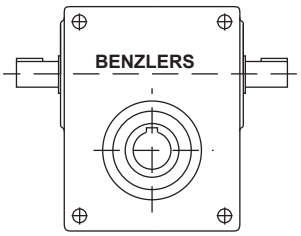
Feet



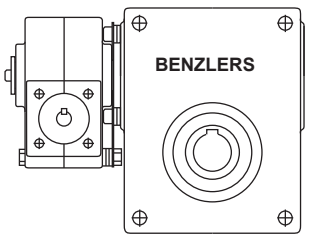
Output flange



Bolt the gear to a wall or foundation without feet or flange



Double input shaft



Double worm gear

TECHNICAL INFORMATION

Benzler worm gears BS 40-71 have a symmetrical gear-housing manufactured in aluminium.

The worm wheel is made of centrifugal cast tinbronze and the worm screw is case-hardened and ground.

All motor connections are according to IEC-standard with elastic coupling. This means the following advantages:

- The worm screw is mounted with two separate bearings and are not connected with the motor bearings. This means longer lifetime and a smoother drive.
- Soft start and stop with elastic coupling.
- No oil leakage into the motor.
- Possible to change motor without dismounting the gear.
- Any type of motor with IEC-flange can be used.

The worm geared motor is available for mounting on a base, flange or shaft and can be installed in any position.

The gear can be combined with Benzlers' remaining range of gears to provide very low output speeds. All data given in this catalogue applies to ABB standard motors and Benzlers brake motors.

Motorflanges

The motorflanges up to IEC-size 112 are made of aluminium and are available in B5 and B14; larger motorflanges are made of cast-iron and available in B5. A finished bore shaft coupling is always delivered together with the motorflange.

Feet

The feet can be mounted without modification.

Output shaft

Single or double output shaft can be mounted into the hollow shaft. The output shafts are locked into position with keys and retaining rings.

Output flange

An output flange can easily be mounted onto the gear. The gear casing can also be mounted onto a wall or foundation and bolted through the 4 bolt holes in the gear casing.

Torque arm bracket

The hollow shaft gearboxes can be supplied with torque arm bracket and torque arm.

Coating

The worm gear is, by default, delivered without coating, and can be delivered according to environmental classification M2-M3, see page 36-37.

SELECTION OF GEARS AND GEARMOTORS

Power and torque ratings for gears on page 23-27 apply to service factor 1.0. Service factor for geared motors can be found after the output speeds. Service factor 1.0 is valid for continous operation 8 hours/ day without shocks and with 10-200 starts per hour. The inertia of the driven machine is less than 20% of the electric motor. Occasional shock loads may not exceed 1.8 times the gear rating at service factor 1.0.

Definition of sizes

1. Determine the demand power or torque, P_e or T_{2b} ratio (i) or output speed (n2).
2. Based on type of load/driven machine, operating hours/day and number of starts/hour, select service factor fb (page 3-4).
3. Calculate $T_2 \geq T_{2b} \times f_b$.
4. Choose gear on page 23-27 according to following: $T_2 \geq T_{2b} \times f_b$ at required ratio (i) or speed (n2).
   Note the efficiency.
   For example BS40 ratio 6,67:1, code A
   η = 86% at n1 = 1430 rpm.
5. Calculate $P_1 = P_e \times f_b \times \frac{1}{\eta}$

   Choose a size larger motor Pm ≥ P1
   For example $P_1 \geq 0{,}42$ kW choose 0,55 kW.
6. Choose a worm gear motor on pages 9-16.
   For example BS40A with a motor size 80A4.
7. Check that occasional shock loads do not exceed 1.8 times the gear rating at service factor 1.0.
   $T_{2max} \geq T_2 \times 1.8$
8. Check that the thrust and overhung loads are not exceeded, page 4,5 and 23-27.
9. Check that maximum input speeds and thermal ratings are not exceeded, page 9 and 23-27.
10. For conditions other than above described, for instance extreme environments, high inertia systems or other, please contact our application engineers.

Formulas:

$$T_{2b} = \frac{P_e \times 9550}{n2} \quad \text{(Nm)}$$

$$T_2 \geq T_{2b} \times f_b \quad \text{(Nm)}$$

$$P_1 = P_e \times f_b \times \frac{1}{\eta} \quad \text{(kW)}$$

$$P_m \geq P_1 \quad \text{(kW)}$$

$$T_{2max} \geq T_2 \times 1{,}8 \quad \text{(Nm)}$$

$$J_{e,\,red} = J_e \times \left(\frac{n2}{n1}\right)^2 \quad (\text{kgm}^2)$$

T_2 = Output torque rating, Nm page 9-16, 23-27)
T_{2b} = Demand torque, Nm
T_{2max} = Occasional maximum torque, Nm
P_1 = Demand input power, kW
P_e = Demand power driven machine, kW
P_m = Motor power
n_1 = Input speed, rpm
n_2 = Output speed, rpm
f_b = Service factor
η = Efficiency of the gear
$J_{e,\,red}$ = Reduced inertia, kgm²
J_e = Inertia driven machine, kgm²
J_m = Inertia motor, kgm²

Load classification	Description Moment of inertia	Example
I	$J_{e,\,red} \leq 0.2 \times J_m$ Machines with uniform load and no shocks	Uniform loaded conveyors and elevators. Centrifugal pumps and fans. Agitators and mixers for liquids and semiliquids without solid particles.
I a	$J_{e,\,red} \leq J_m$ Machines with small shocks and small variations in load	Medium sized conveyors. Displacement pumps. Agitators and mixers for media with moderate viscosity and/or small content of solid parts.
II	$J_{e,\,red} \leq 3 \times J_m$ Machines with moderate shocks and variable load	Larger conveyors. Reciprocating pumps with 3 or more cylinders. Agitators and mixers for media with high viscosity and/or solid particles
III	$J_{e,\,red} \leq 10 \times J_m$ Machines with very heavy shocks and large masses to be accelerated	Heavy agitators and mixers. Reciprocating pumps with 1 or 2 cylinders. Crushers, mills and presses. Vibrators and shakers

SELECTION OF GEARS AND GEARMOTORS

Service factors

Table 1. Service factor f_b

Daily operations in hours	4 hours			8 hours			16 hours			24 hours		
Starts per hour	<10	10-200	>200	<10	10-200	>200	<10	10-200	>200	<10	10-200	>200
Load classification												
I	0.8	0.9	1.0	0.9	1.0	1.1	1.1	1.2	1.3	1.3	1.4	1.5
Ia	1.1	1.2	1.3	1.1	1.3	1.5	1.3	1.5	1.6	1.4	1.6	1.8
II	1.3	1.4	1.6	1.3	1.6	1.8	1.4	1.7	1.9	1.5	1.8	2.0
III	1.5	1.6	1.8	1.6	1.8	2.0	1.7	1.9	2.1	1.8	2.0	2.2

Table 2. Ambient temperature factor f_t

For other ambient temperatures then 20° C, always multiply the thermal rating with the following factors.

°C Celsius	-40	-30	-20	-10	+/- 0	10	20	30	40	50
f_t	1.80	1.67	1.53	1.40	1.27	1.13	1.00	0.87	0.73	0.60

Table 3. Fan factor f_f

If the gearbox has no fan and the motor is not directly flanged to the gearbox, multiply the thermal rating with the following factors.

Input speed n1 (rpm)	10	100	300	750	1000	1500	3000
f_f	1	0.95	0.74	0.63	0.65	0.69	0.77

Control Points

The forces allowed on the gear shafts are determined by bearing life and strength on gear shafts and housing. Equations for radial forces are valid when no thrust load is present.In the power ratings page 9-16, max. allowed radial force on output shaft is given for each output speed. The value is only valid if the force is applied at the centre of the output shaft; if the force is applied at another position the allowed radial force is given by the following:

Radial Forces

Bearing life: $F_{r,x} = \frac{a}{(f + x)} F_{r2}$

Strength on shaft $F_{r,x} = \frac{c}{x} F_{r2}$

Strength on gear housing: $F_{r,x} = \frac{d}{(g + x)} F_{r2max}$

$F_{r,x}$ = Max. radial force (N)

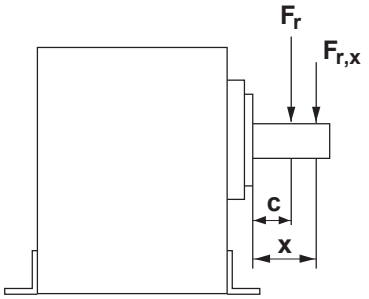
F_{r2} = Radial force acc to power ratings (N).

F_{r2max} = Upper limit, for radial force. Can not be exceeded (N)

a, d, f, g = Internal measures (mm)

x = Distance to radial force (mm)

c = Half shaft length (mm)



Gear size	a	c	d	f	g	F_{r2max} (N)
40	90.5	18	101.5	72.5	83.5	2 000
50	96.5	21	110.0	75.5	89.0	2 700
63	107.0	29	122.0	78.0	93.0	4 000
71	127.5	29	142.5	98.5	113.5	5 000

SELECTION OF GEARS AND GEARMOTORS

Overhung load

If a sprocket, gear wheel or pulley is mounted on a shaft, a load check must be made. The overhung load in the middle of the shaft may not exceed values shown in tables below. For calculation of minimum permissible diameter, the following formula should be used.

$$D_{min} = \frac{2000 \times T_{2b} \times f_e \times f_b}{F_{r2}} \quad (mm)$$

T_{2b} = Torque required (Nm)

$$T_{2b} = \frac{P_e \times 9\,550}{n_2} \quad (Nm)$$

P_e = Power kW

n_2 = Output speed (rpm)

F_{r2} = Permissible overhung load (N)

f_b = Service factor (tables page 7)

f_e = 1.10 for sprockets

= 1.30 for gearwheels

= 1.50 for pulleys

D_{min} = Minimum permissible diameter (mm)

Max overhung load in the middle of input shaft (N)

Fr1	Ratio													
Gear size	A	B	C	D	E	F	Fx	G	H	I	J	K	L	M
40	180	135	100	95	80	70	-	50	45	45	40	30	-	-
50	215	190	155	115	100	80	70	65	55	55	40	-	-	-
63	385	305	255	210	165	155	125	115	100	100	75	45	-	-
71	400	350	285	240	180	150	-	115	100	100	60	45	-	-

Max thrust load on output shaft (N)

Gear size	Ratio													
	A	B	C	D	E	F	Fx	G	H	I	J	K	L	M
40	2000	2000	2000	2000	2000	2000	-	2000	2000	2000	2000	2000	-	-
50	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	-	-	-
63	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500	-	-
71	4500	4500	4500	4500	4500	4500	-	4500	4500	4500	4500	4500	-	-

Self-locking

Dynamic self-locking means that a force applied on the output shaft of the gear cannot continue to drive the gear when the motor has been stopped.

Dynamic self-locking is only possible at very high ratios and low output speeds. None of the worm gears produced by BENZLERS is dynamic totally self locking.

Static self-locking means that a force applied on the output shaft of the gear cannot start a movement.

When driving loads with high inertia care must be taken to achieve a braking time long enough to prevent overload on the gear.

When a worm gear is used in an application with short braking time, a worm gear that is “dynamically non self-locking” is normally the best selection to avoid overload.

Information regarding lead angle for BENZLERS worm gears are given on the following page.

Self-locking as a function of the lead angle for worm gears in general

γ	
≥25°	No self-locking
12° - 25°	Statically not self-locking
8° - 12°	Variable statically self-locking Quick return in case of vibrations Dynamically not self-locking
5° - 8°	Statically self-locking Return in case of vibrations High self-locking function
3°- 5°	Statically self-locking. Slow movement return in case of vibrations. High dynamic self-locking function
1°- 3°	Statically self-locking No return Very high self-locking function

SELECTION OF GEARS AND GEARMOTORS

Benzlers Worm gear BS, Wormwheel and Wormscrew data

i = Ratio
γ = Lead angle
z = Starts of worm shaft
m = Module
ηs = Starting efficiency
η = Running efficiency n1=1430 rpm

	i	γ	z	m	ηs	η
B S 4 0	6.67 A	15.52	3	2.5	60	86
	10 B	16.70	3	2	62	85
	15 C	11.31	2	2	53	79
	20 D	8.53	1	3	47	75
	24 E	7.13	1	2.5	43	71
	30 F	5.71	1	2	37	67
	40 G	4.02	1	1.45	30	59
	48 H	3.58	1	1.25	27	56
	60 I	2.86	1	1	23	49
	70 J	3.03	1	0.9	24	44
	84 K	2.53	1	0.75	21	36
BS 5 0	8 A	17.82	3	3	63	88
	10.5 B	15.07	2	3.5	60	87
	14 C	12.19	2	2.7	55	84
	21 D	7.67	1	3.5	44	77
	24 E	7.07	1	3	39	74
	32 F	5.71	1	2.4	37	71
	37 FX	4.40	1	2	32	66
	42 G	4.29	1	1.8	31	65
	54 H	3 34	1	1.4	26	59
	64 I	2.99	1	1.2	24	55
	80 J	2.86	1	1	23	49
B S 6 3	7.75 A	18.43	4	3	64	90
	11 B	17.82	3	3	63	88
	14 C	15.07	2	3.5	60	87
	18 D	10.20	2	2.7	51	83
	24.5 E	9 93	2	2.1	50	81
	29 F	7.67	1	3 5	44	77
	37 FX	4 47	1	2.5	32	70
	43 G	5 71	1	2.4	37	71
	51 H	4.76	1	2	33	67
	57 I	4.29	1	1.8	31	65
	73 J	3.34	1	1.4	26	59
	104 K	2.60	1	1	22	46

	i	γ	z	m	ηs	η
B S 71	7.5 A	18.29	4	3.5	64	92
	9.33 B	19.98	3	4	65	91
	12 C	14.04	3	3	58	88
	16 D	12.34	2	3.5	55	87
	21 E	10.20	2	2.7	51	84
	28 F	6.91	1	4	42	79
	37 G	6.12	1	3	39	76
	48 H	4.73	1	2.4	33	71
	63 1	3.55	1	1.8	27	65
	82 J	2.86	1	1.4	23	58
	100 K	2.99	1	1.2	24	54

Efficiency

The efficiency of the gear has to be considered when a worm gear or a worm geared motor is chosen. For intermittent duties, it is necessary to increase the motor power to be able to compensate for the low efficiency during start.

Also consider that the highest efficiency is reached after run-in period and under continuous duty.

All values given in the catalogue are only valid for a gear after running-in period under continuous duty with service factor 1.

If the gear is driven from the output shaft, the back driving efficiency is calculated as follows:

$$\eta^{-} = 2 - \frac{1}{\eta}$$

	Gear sizes			
n1, max	40	50	63	71
rpm	6000	5500	5000	4500

QUESTIONAIRE

To specify a drive precisely, certain data are essential. The most important questions are listed in the table below. If you do not have the required data available in this form, we advice you to use a technical handbook or other suitable documentation. Should you have any question, please do not hesitate to contact us; Benzlers specialists will be pleased to assist you.

Load designation

Output power (kW): P_e at n_{max} at n_{min}

Output speed (RPM): n_{2max} n_{2min}

Output torque (Nm): T_{2b} at n_{2max} at n_{2min}

Overhung load (N): F_r at output shaft at input shaft

Axial thrust load (N): F_a at output shaft at input shaft

(away + / towards -)

Moment of inertia (kgm^2): at output shaft at input shaft

Unit type and mounting position (see page 8)

Motor
Enclosure IP

Operating voltage motor (V) brake (V) frequency (Hz)

Brake torque (Nm)

Ambient factors
Ambient temperature (°C)

Load cycle / Duty cycle S / % ED

Starting frequency (1/h)

Gears and geared motors are described by a code consisting of 10 positions. Positions that aren't used are left empty.
Additional information is written clearly.
Example of such information is:
Output speed, Motor power
Connecting voltage for motor and brake (if used)
Type of motor at specific request
All nonstandard executions that are not described in this catalogue.

Example on ordering text: (explanations, see page 8):

Gear						**Motor**			
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
BS	**40**	**A**	**2,0H, M=115**	**-**	**4**	**80A4**	**-**	**180**	**B5**
Additional info:			**214 rpm, 0,37 kW, 220-240/380-420V, 50 Hz**						

Additional information:

MOUNTING POSITIONS

1 Gear type
BS (Worm gear and worm geared motor)

2 Gear size
Standard sizes 40, 50, 63, 71, 50/40, 63/40, 71/40.
Other combinations and sizes can be achieved.
Check with Benzlers.

3 Ratio code
A, B, C....FA, FB, FC (2 letters for double wormgears).

4 Mounting position
See picture *For execution - code 2 and 3 state flange size, for example M=115, see page 33.

5 Gear Accessories
VM = distance ring for different position of terminal box
EB = brake on gear
KEB = coupling/brake unit (specify type and voltage)
DP = double input shaft

6 Input design
2 = free high speed shaft (no motor or flange for motor)
3 = prepared for motor (specify flange and shaft diametres or IEC-standard size)
4 = with motor

7 Motor
Acc. to IEC (71A, 71B)

8 Accessories for the motor
B = Brake
TB = Thermostat protection
Th = Thermistor protection
FS = Fitted with forced cooling
TG = Tachogenerator
PG = Encoder

9 Terminal box position
Positions acc to picture

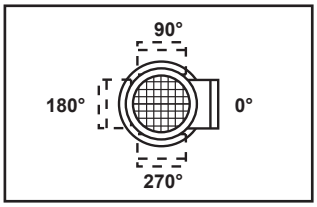
10 Motorflange
B14 = Small flange
B5 = Large flange

Mounting Positions

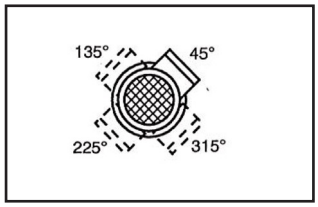
Hollow shaft gear Execution - code 0	U	O	H-A	H-B
Feet and output shaft Execution - code 1	OV	OH	OD	
Only output shaft Execution - code 8	UV	UH	UD	
Only feet Execution - code 9	VV	VH	VD	
	HU-A	HN-A	HD-A	
	HU-B	HN-B	HD-B	
Output flange and shaft Execution - code 2* (page 33)	OH	OV		
Output flange and hollow shaft Execution - code 3* (page 33)	BS 40-71 OH	BS 40-71 OV		
Double gears (prestep gear position P7 is shown in picture)	P_1	P_2	P_3	
	P_4	P_5	P_6	
Execution - code 4	P_7	P_8		
Gear with hollow shaft, torque arm and connection Execution - code 5	O	V		

Position of terminal box

Standard position 0



Standard position 45°



Motor flange B5

Position of terminal box

Motor sizes

	63	71	80	90	100	112
Gear size						
40	45	45*	45*	45		
50		0	0	0		
63		0	0	0	0	
71			45+	45+	45+	45+

Motor flange B14

Position of terminal box

Motor sizes

	63	71	80	90	100	112
Gear size						
40	45*	45*	45*	45*		
50		45*	45*	45*		
63		45*	45*	45*	45*	
71			0+	0+	0+	0+

* = Can be changed to 0 with distance ring, VM
+ = Distance ring is included as standard (mandatory)

WORM GEARED MOTORS POWER RATINGS

0.12 kW

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
0.69	1960.00 FJ	0.76	524	5.0	BS 71/40 63A-4	19	21 - 22
0.81	1680.00 FI	0.86	463	5.0			
1.01	1344.00 FH	0.99	403	5.0			
1.21	1120.00 FG	1.13	354	5.0			
1.62	840.00 FF	1.34	299	5.0			
2.02	672.00 FE	1.57	255	5.0			
2.43	560.00 FD	1.77	226	5.0			
3.24	420.00 FC	2.2	182	5.0			
4.86	280.00 FB	3	133	5.0			
2.34	580.00 FD	0.76	234	4.0	BS 63/40 63A-4	16	21 - 22
3.13	435.00 FC	0.96	189	4.0			
4.69	290.00 FB	1.33	138	4.0			
7.03	193.43 FA	1.96	95	4.0			
2.83	480.00 ED	1.3	113	2.7	BS 50/40 63A-4	14	21 - 22
3.78	360.00 EC	0.99	146	2.7			
5.67	240.00 EB	1.33	108	2.7			
8.50	160.00 EA	1.93	75	2.7			
6.44	104.00 K	1.47	73	4.0	BS 63 71 B-8	15	17 - 20
9.18	73.00 J	3.1	58	4.0			
11.75	57.00 I	3.91	49	4.0			
8.94	104.00 K	2.09	50	4.0	BS 63 71-6	13	17 - 20
8.38	80.00 J	1.24	62	2.7	BS 50 71B-8	13	17 - 20
10.47	64.00 I	1.99	51	2.7			
11.63	80.00 J	1.94	39	2.7	BS 50 71-6	11	17 - 20
14.53	64.00 I	3.03	33	2.7			
17.22	54.00 H	3.73	29	2.7			
7.98	84.00 K	0.75	48	2.0	BS 40 71B-8	11	17 - 20
9.57	70.00 J	0.87	54	2.0			
11.17	60.00 I	1.2	46	2.0			
11.07	84.00 K	0.83	42	2.0	BS 40 71-6	9	17 - 20
13.29	70.00 J	1.22	38	2.0			
15.50	60.00 I	1.66	32	2.0			
16.19	84.00 K	1.6	21	2.0	BS 40 63A-4	9	17 - 20
19.43	70.00 J	2.36	19	2.0			
22.67	60.00 I	3.21	16	2.0			
28.33	48.00 H	4.15	14	2.0			
34.00	40.00 G	4.84	12	2.0			
45.33	30.00 F	5.97	10	2.0			
56.67	24.00 E	7.07	8	2.0			
68.00	20.00 D	8.18	7	2.0			
90.67	15.00 C	10.53	6	2.0			
136.00	10.00 B	14.84	4	2.0			
203.90	6.67 A	19.52	3	1.7			

WORM GEARED MOTORS POWER RATINGS

0.18 kW

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
1.22	1120 FG	0.76	529	5.0	BS 71/40 63B-4	19	21 - 22
1.63	840 FF	0.89	448	5.0			
2.04	672 FE	1.04	383	5.0			
2.45	560 FD	1.18	339	5.0			
3.26	420 FC	1.46	274	5.0			
4.89	280 FB	1.98	202	5.0			
7.34	186.76 FA	2.91	137	5.0			
4.72	290 FB	0.88	209	4.0	BS 63/40 63B-4	16	21 - 22
7.08	193.43 FA	1.29	144	4.0			
5.71	240 EB	0.89	163	2.7	BS 50/40 63B-4	14	21 - 22
8.56	160 EA	1.27	114	2.7			
7.00	100 K	1.4	118	5.0	BS 71 80A-8	21	21 - 22
8.54	82 J	2.15	100	5.0			
11.11	63 I	3.71	83	5.0			
6.73	104 K	0.92	117	4.0	BS 63 80A-8	18	17 - 20
9.59	73 J	1.94	92	4.0			
8.85	104 K	1.19	88	4.0	BS 63 71A-6	14	17 - 20
12.60	73 J	2.5	69	4.0			
16.14	57 I	3.3	58	4.0			
8.75	80 J	0.8	96	2.7	BS 50 80A-8	16	17 - 20
10.94	64 I	1.28	80	2.7			
12.96	54 H	1.67	72	2.7			
11.50	80 J	1.1	68	2.7	BS 50 71A-6	12	17 - 20
14.38	64 I	1.72	58	2.7			
17.04	54 H	2.12	51	2.7			
21.90	42 G	2.53	43	2.7			
24.86	37 Fx	2.76	38	2.7			
11.67	60 I	0.78	72	2.0	BS 40 80A-8	14	17 - 20
15.33	60 I	0.99	54	2.0	BS 40 71A-6	10	17 - 20
19.17	48 H	1.37	48	2.0			
16.31	84 K	0.81	41	2.0	BS 40 63B-4	9	17 - 20
19.57	70 J	1.19	37	2.0			
22.83	60 I	1.62	32	2.0			
28.54	48 H	2.09	28	2.0			
34.25	40 G	2.44	24	2.0			
45.67	30 F	3.01	20	2.0			
57.08	24 E	3.56	16	2.0			
68.50	20 D	4.12	14	2.0			
91.33	15 C	5.31	11	2.0			
137.00	10 B	7.48	8	2.0			
205.40	6.67 A	9.84	5	1.7	BS 40 63B-4	9	17 - 20
184.00	15 C	31.13	1	1.9	BS 40 63K-2	9	17 - 20
276.00	10 B	44.16	1	1.6			
413.79	6.67 A	56.96	1	1.3			

WORM GEARED MOTORS POWER RATINGS

0.25 kW

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
2.08	672 FE	0.77	522	5.0	BS 71/40 71 A-4	20	21 - 22
2.50	560 FD	0.86	463	5.0			
3.33	420 FC	1.07	374	5.0			
5.00	280 FB	1.45	276	5.0			
7.50	186.76 FA	2.11	190	5.0			
7.24	193.43 FA	0.94	198	4.0	BS 63/40 71A-4	17	21 - 22
8.75	160.08 EA	0.92	156	2.7	BS 50/40 71A-4	15	21 - 22
8.85	104 K	0.79	132	4.0	BS 63 71 B-6	15	17 - 20
12.60	73 J	1.67	104	4.0	BS 63 B-6	15	17 - 20
16.14	57 I	2.21	87	4.0			
18.04	51 H	2.29	80	4.0			
21.40	43 G	2.32	72	4.0			
13.46	104 K	1.30	77	4.0	BS 63 71A-4	14	17 - 20
19.18	73 J	2.69	60	4.0			
24.56	57 I	3.18	50	4.0			
27.45	51 H	3.46	46	4.0			
14.38	64 I	1.15	87	2.7	BS 50 71B 6	13	17 - 20
17.04	54 H	1.42	77	2.7			
17.50	80 J	1.07	66	2.7	BS 50 71A-4	12	17 - 20
21.88	64 I	1.70	55	2.7			
25.93	54 H	1.86	48	2.7			
33.33	42 G	2.23	40	2.7			
37.84	37 Fx	2.45	36	2.7			
43.75	32 F	2.75	33	2.7			
19.17	48 H	0.94	70	2.0	BS 40 71B 6	11	17 - 20
23.00	40 G	1.12	61	2.0			
20.00	70 J	0.77	57	2.0	BS 40 71A-4	10	17 - 20
23.33	60 I	1.04	50	2.0			
29.17	48 H	1.35	43	2.0			
35.00	40 G	1.57	37	2.0			
46.67	30 F	1.94	30	2.0			
58.33	24 E	2.30	25	2.0			
70.00	20 D	2.66	22	2.0			
93.33	15 C	3.43	17	2.0			
140.00	10 B	4.83	12	2.0			
209.90	6.67 A	6.35	8	1.7			
183.33	15 C	9.36	5	1.9	BS 40 63B-2	9	17 - 20
275.00	10 B	13.28	3	1.6			
412.29	6.67 A	17.13	2	1.3			

WORM GEARED MOTORS POWER RATINGS

0.37 kW

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
5.00	280 FB	0.97	411	5.0	BS 71/40 71B-4	21	21 - 22
7.50	186.76 FA	1.41	284	5.0			
8.54	82 J	0.95	228	5.0	BS 71 90S-8	24	17 - 20
9.20	100 K	0.78	207	5.0	BS 71 80A-6	20	17 - 20
11.22	82 J	1.22	172	5.0			
14.60	63 I	1.97	143	5.0			
19.17	48 H	2.37	118	5.0			
9.59	73 J	0.85	210	4.0	BS 63 90S-8	21	17 - 20
12.60	73 J	1.07	163	4.0	BS 63 80A-6	17	17 - 20
16.14	57 I	1.41	137	4.0			
18.04	51 H	1.46	126	4.0			
13.46	104 K	0.77	130	4.0	BS 63 71B-4	15	17 - 20
19.18	73 J	1.60	101	4.0			
24.56	57 I	1.88	85	4.0			
27.45	51 H	2.05	78	4.0			
32.56	43 G	2.34	68	4.0			
37.84	37 Fx	2.56	57	4.0			
48.28	29 F	3.18	49	4.0			
12.96	54 H	0.76	159	2.7	BS 50 90S-8	19	17 - 20
17.04	54 H	0.90	121	2.7	BS 50 80A-6	15.0	17 - 20
21.88	64 I	1.04	89	2.7	BS 50 71B-4	13	17 - 20
25.93	54 H	1.14	79	2.7			
33.33	42 G	1.37	66	2.7			
37.84	37 Fx	1.50	59	2.7			
43.75	32 F	1.68	53	2.7			
58.33	24 E	2.07	41	2.7			
66.67	21 D	2.33	37	2.7			
100.00	14 C	3.34	26	2.7			

0.55 kW

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
7.55	186.76 FA	0.94	424	5.0	BS 71/40 80A-4	23	21 - 22
11.11	63.00 I	1.07	290	5.0	BS 71 90L-8	27	17 - 20
11.22	82.00 J	0.78	269	5.0	BS 71 80B-6	21	17 - 20
14.60	63.00 I	1.26	223	5.0			
19.17	48.00 H	1.52	185	5.0			
17.20	82.00 J	1.14	177	5.0	BS 71 80A 4	20	17 - 20
22.38	63.00 I	1.60	146	5.0			
29.38	48.00 H	1.97	119	5.0			
38.11	37.00 G	2.47	96	5.0			
50.36	28.00 F	2.97	76	5.0			
67.14	21.00 E	3.87	59	4.6			
16.14	57.00 I	0.91	212	4.0	BS 63 80B-6	18	17 - 20
18.04	51.00 H	0.94	195	4.0			
21.40	43.00 G	0.96	173	4.0			
19.32	73.00 J	1.00	162	4.0	BS 63 80A-4	17	17 - 20
24.74	57.00 I	1.18	136	4.0			
27.65	51.00 H	1.28	125	4.0			
32.79	43.00 G	1.46	109	4.0			
38.11	37.00 Fx	1.60	92	4.0			
48.62	29.00 F	1.99	78	4.0			
57.55	24.50 E	2.33	69	4.0			
78.33	18.00 D	2.92	51	3.9			

WORM GEARED MOTORS POWER RATINGS

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
0.55 kW							
33.57	42 G	0.87	103	2.7	BS 50 80A-4	15	17 - 20
38.11	37 Fx	0.96	92	2.7			
44.06	32 F	1.07	84	2.7			
58.75	24 E	1.32	65	2.7			
67.14	21 D	1.49	59	2.7			
100.71	14 C	2.13	41	2.7			
134.29	10.5 B	2.74	32	2.7			
176.25	8 A	3.40	24	2.4			
201.43	14 C	3.82	17	2.5	BS 50 71B-2	13	17 - 20
58.75	24 E	0.90	65	2.0	BS 40 80A-4	13	17 - 20
70.50	20 D	1.04	56	2.0	BS 40 80A-4	13	17 - 20
94.00	15 C	1.34	43	2.0			
141.00	10 B	1.89	30	2.0			
211.39	6.67 A	2.48	20	1.7			
188.00	15 C	2.40	18	1.9	BS 40 71B-2	11	17 - 20
282.00	10 B	3.41	13	1.6			
422.79	6.67 A	4.40	8	1.3			
0.75 kW							
14.58	48 H	0.91	339	5.0	BS 71 100LA-8	31	17 - 20
19.17	48 H	1.09	259	5.0	BS 71 90S-6	24	17 - 20
17.20	82 J	0.80	251	5.0	BS 71 80B-4	21	17 - 20
22.38	63 I	1.13	207	5.0			
29.38	48 H	1.38	169	5.0			
38.11	37 G	1.74	137	5.0			
50.36	28 F	2.09	108	5.0			
67.14	21 E	2.72	85	4.6			
88.13	16 D	3.40	66	4.0			

WORM GEARED MOTORS POWER RATINGS

0.75 kW

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
24.74	57 I	0.83	193	4.0	BS 63 80B-4	18	17 - 20
27.65	51 H	0.90	177	4.0			
32.79	43 G	1.03	155	4.0			
38.11	37 Fx	1.13	130	4.0			
48.62	29 F	1.40	111	4.0			
57.55	24.5 E	1.64	97	4.0			
78.33	18 D	2.06	72	3.9			
100.71	14 C	2.64	58	3.4			
128.18	11 B	3.22	46	3.0			
158.33	18 D	3.59	31	3.1	BS 63 80A-2	17	17 - 20
44.06	32 F	0.76	118	2.7	BS 50 80B-4	16	17 - 20
58.75	24 E	0.94	91	2.7			
67.14	21 D	1.06	82	2.7			
100.71	14 C	1.51	58	2.7			
134.29	10.5 B	1.95	45	2.7			
176.25	8 A	2.41	34	2.4			
203.57	14 C	2.58	26	2.5	BS 50 80A-2	15	17 - 20
271.43	10.5 B	3.31	20	2.2			
94.00	15 C	0.95	61	2.0	BS 40 80B-4	14	17 - 20
141.00	10 B	1.34	43	2.0			
211.39	6.67 A	1.76	28	1.7			
190.00	15 C	1.62	27	1.9	BS 40 80A-2	13	17 - 20
285.00	10 B	2.30	19	1.6			
427.29	6.67 A	2.97	12	1.3			

1.1 kW

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
29.38	48 H	0.91	257	5.0	BS 71 90S 4	24	17 - 20
38.11	37 G	1.14	208	5.0			
50.36	28 F	1.38	163	5.0			
67.14	21 E	1.79	128	4.6			
88.13	16 D	2.24	100	4.0			
117.50	12 C	2.84	76	3.5			
151.13	9.33 B	3.62	60	3.0			
48.62	29 F	0.92	169	4.0	BS 63 90S-4	21	17 - 20
57.55	24.5 E	1.08	148	4.0			
78.33	18 D	1.35	110	3.9			
100.71	14 C	1.74	88	3.4			
128.18	11 B	2.12	70	3.0			
181.94	7.75 A	2.68	50	2.6			
158.33	18 D	2.22	50	3.1	BS 63 80B-2	18	17 - 20
203.57	14 C	2.86	40	2.7			
259.09	11.00 B	3.51	32	2.4			

WORM GEARED MOTORS POWER RATINGS

1.1 kW

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
100.71	14 C	1.00	88	2.7	BS 50 90S-4	19	17 - 20
134.29	10.5 B	1.29	67	2.7			
176.25	8 A	1.60	52	2.4			
203.57	14 C	1.63	41	2.5	BS 50 80B-2	16	17 - 20
271.43	10.5 B	2.09	31	2.2			
356.25	8 A	2.59	24	1.9			
285.00	10 B	1.45	30	1.6	BS 40 80B-2	14	17 - 20
427.29	6.67 A	1.87	20	1.3			

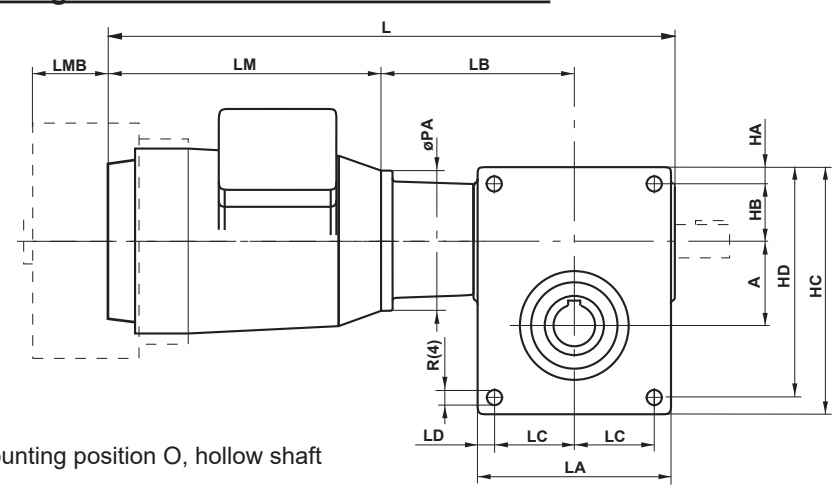
1.5 kW

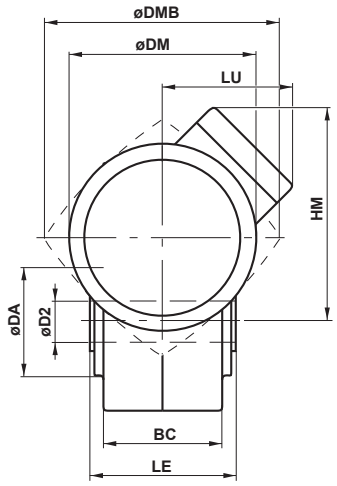
Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
50.71	28 F	1.00	225	5.0	BS 71 90L-4	27	17 - 20
67.62	21 E	1.30	177	4.6			
88.75	16 D	1.62	138	4.0			
118.33	12 C	2.05	105	3.5			
152.20	9.33 B	2.62	83	3.0			
189.33	7.5 A	2.97	68	2.7			
238.33	12 C	3.25	49	2.9	BS 71 90S-2	24	17 - 20
57.96	24.5 E	0.78	204	4.0	BS 63 90L-4	24	17 - 20
78.89	18 D	0.98	152	3.9			
101.43	14 C	1.26	122	3.4			
129.09	11 B	1.54	97	3.0			
183.23	7.75 A	1.94	69	2.6			
158.89	18 D	1.55	71	3.1	BS 63 90S-2	21	17 - 20
204.29	14 C	2.00	57	2.7			
260.00	11 B	2.46	46	2.4			
369.03	7.75 A	3.11	32	2.1			
135.24	10.5 B	0.94	93	2.7	BS 50 90L-4	22	17 - 20
177.50	8 A	1.16	71	2.4			
204.29	14 C	1.15	57	2.5	BS 50 90S-2	19	17 - 20
272.38	10.5 B	1.48	44	2.2			
357.50	8 A	1.83	34	1.9			

WORM GEARED MOTORS POWER RATINGS

Output speed n_2 rpm	Ratio i	Service factor f_{bp}	Output torque T_2 Nm	Permissable overhung load Fr_2 kN	Size	Weight kg	Dim. page
2.2 Kw							
89.38	16 D	1.10	204	4.0	BS 71 100LA-4	32	17 - 20
119.17	12 C	1.39	155	3.5			
153.27	9.33 B	1.77	123	3.0			
190.67	7.5 A	2.01	100	2.7			
239.17	12 C	2.13	75	2.9	BS 71 90L-2	27	17 - 20
307.61	9.33 B	2.74	60	2.4			
382.67	7.5 A	3.15	48	2.2			
102.14	14 C	0.85	181	3.4	BS 63 100LA-4	29	17 - 20
130.00	11 B	1.04	144	3.0			
184.52	7.75 A	1.31	102	2.6			
205.00	14 C	1.31	88	2.7	BS 63 90L-2	24	17 - 20
260.91	11 B	1.61	70	2.4			
370.32	7.75 A	2.04	50	2.1			
358.75	8 A	1.21	51	1.9	BS 50 90L-2	22	17 - 20
3 kW							
153.27	9.33 B	1.29	170	3.0	BS 71 100LB-4	35	17 - 20
190.67	7.5 A	1.46	138	2.7			
240.83	12 C	1.54	104	2.9	BS 71 100L-2	32	17 - 20
309.75	9.33 B	1.97	83	2.4			
385.33	7.5 A	2.27	66	2.2			
184.52	7.75 A	0.95	141	2.6	BS 63 100LB-4	32	17 - 20
262.73	11 B	1.16	96	2.4	BS 63 100L-2	29	17 - 20
372.90	7.75 A	1.47	69	2.1			
3 kW							
304.39	9.33 B	1.43	114	2.4	BS 71 112M-2	41	17 - 20
378.67	7.5 A	1.65	92	2.2			

Worm geared motors BS40-71 Shaftmounted





Mounting position O, hollow shaft

Position of terminal box, see page 8
Shaft tolerance, see page 35

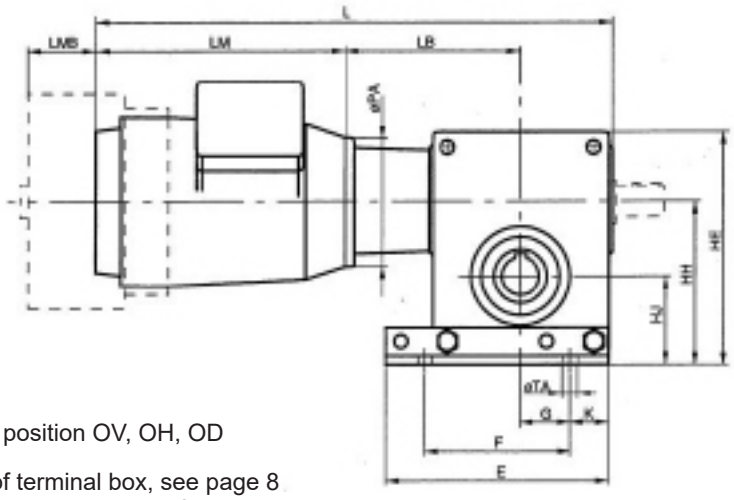
BS 40-71

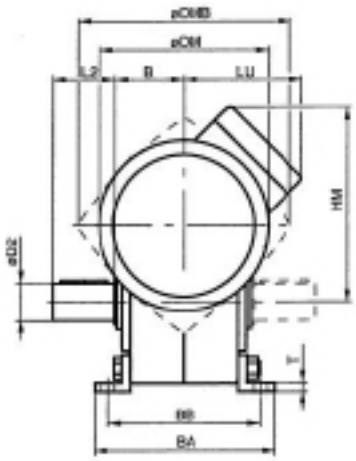
BS	Motor-size	Motor dimensions B14 L	B14 LB	B5 L	B5 LB	Gear unit dimensions A	BC	øDA	HA	HB	HC	HD	LD	LA	LC	øR
40	63	355	112	355	112											
	71	388	118	388	118											
	80	420	128	420	128	40	73	58	10	36	140	130	10	100	40	8.3
	90 S	443	138	443	138											
	90 L	468	138	468	138											
50	71	421	140	421	140											
	80	453	150	463	160											
	90 S	476	160	476	160	50	78	68	10	38	155	145	10	124	52	8.3
	90 L	501	160	501	160											
63	71	443	151	443	151											
	80	475	161	485	171											
	90 S	498	171	498	171	63	82	80	10	43	183	173	10	146	63	10.3
	90 L	523	171	523	171											
	100	561.5	181.5	561.5	181.5											
71	80	495	177	505	187											
	90 S	518	187	518	187											
	90L	543	187	543	187	71	101.4	92	14	49	209	195	14	165	68.5	12.3
	100	581.5	197.5	581.5	197.5											
	112	595.5	197.5	595.5	197.5											

BS	Motor-size	Shaft dimensions øD2	LE	Motor dimensions DM	HM	LM	LU	PA-B14	PA-B5	With brake motor DMB	LMB
40	63			120	125	183	92	90	140		
	71			140	140	210	102	105	160	185	73
	80	80	92	158	152	232	113	120	200	201	72
	90 S			178	161	245	122	140	200	220	75
	90 L			178	161	270	122	140	200	220	75
50	71			140	150	210	102	105	160	185	73
	80	25	98	158	162	232	113	120	200	201	72
	90 S			178	172	245	122	140	200	220	75
	90 L			178	172	270	122	140	200	220	75
63	71			140	163	210	102	105	160	185	73
	80			158	175	232	113	120	200	201	72
	90 S	30	101	178	184	245	122	140	200	220	75
	90 L			178	184	270	122	140	200	220	75
	100			198	204	298	136	160	250	255	106
71	80			158	183	232	113	120	200	201	72
	90 S			178	192	245	122	140	200	220	75
	90L	35	122	178	192	270	122	140	200	220	75
	100			198	212	298	136	160	250	255	106
	112			221	231	312	155	160	250	278	109

DIMENSIONS

Worm geared motors BS40-71 Footmounted





BS 40-71

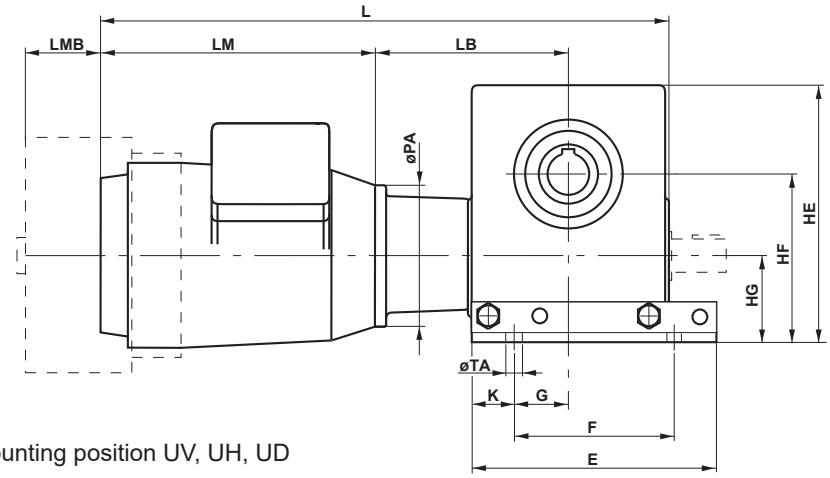
Mounting position OV, OH, OD

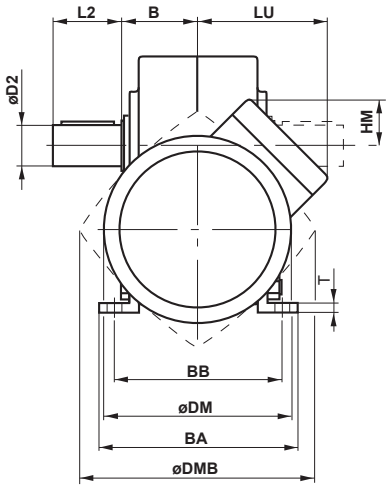
Position of terminal box, see page 8
Shaft tolerance, see page 35

BS	Motor-size	B14 Motor dimensions L	LB	B5 L	LB	Gear unit dimensions B	HE	HH	HJ	BA	BB	E	F	G	K	T	TA
40	63	355	112	355	112												
	71	388	118	388	118												
	80	420	128	420	128	47	152	106	66	133	108	140	80	20	30	5	9
	90 S	443	138	443	138												
	90 L	468	138	468	138												
50	71	421	140	421	140												
	80	453	150	463	160												
	90 S	476	160	476	160	50	167	119	69	138	113	155	104	36.5	25.5	5	9
	90 L	501	160	501	160												
63	71	443	151	443	151												
	80	475	161	485	171												
	90 S	498	171	498	171	52	195	142	79	146	121	183	126	44.5	28.5	7	11
	90 L	523	171	523	171												
	100	561.5	181.5	561.5	181.5												
71	80	495	177	505	187												
	90 S	518	187	518	187												
	90L	543	187	543	187	62.5	216.5	153.5	82.5	170	144	209	137	46.5	36	8	14
	100	581.5	197.5	581.5	197.5												
	112	595.5	197.5	595.5	197.5												

BS	Motor-size	Shaft dimensions øD2	L2	Motor dimensions DM	HM	LM	LU	PA-B14	PA-B5	With brake motor DMB	LMB
40	63			120	125	183	85	90	140		
	71			140	140	210	100	105	160	185	73
	80	20	36	158	152	232	112	120	200	201	72
	90 S			178	161	245	121	140	200	220	75
	90 L			178	161	270	121	140	200	220	75
50	71			140	135	210	100	105	160	185	73
	80	25	42	158	150	232	112	120	200	201	72
	90 S			178	171	245	121	140	200	220	75
	90 L			178	171	270	121	140	200	220	75
63	71			140	163	210	100	105	160	185	73
	80			158	175	232	112	120	200	201	72
	90 S	30	58	178	184	245	121	140	200	220	75
	90 L			178	184	270	121	140	200	220	75
	100			198	204	298	141	160	250	255	106
71	80			158	183	232	112	120	200	201	72
	90 S			178	192	245	121	140	200	220	75
	90L	35	58	178	192	270	121	140	200	220	75
	100			198	212	298	141	160	250	255	106
	112			221	231	312	160	160	250	278	109

Worm geared motors BS40-71 Footmounted





Mounting position UV, UH, UD

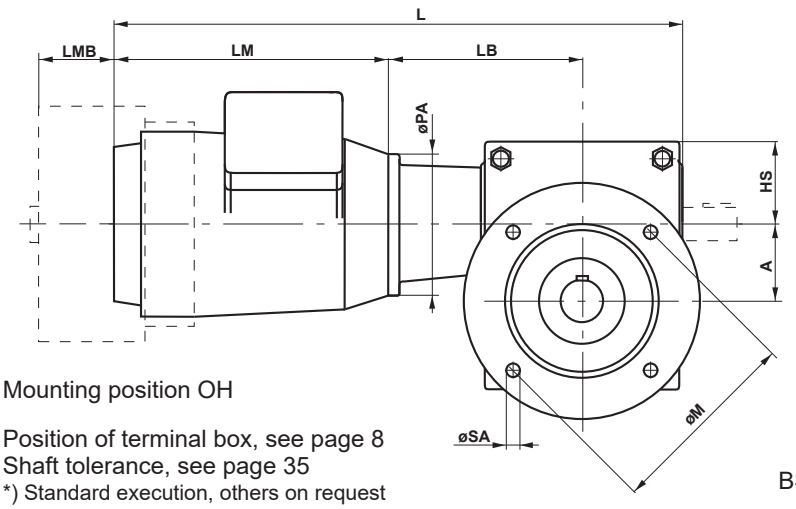
Position of terminal box, see page 8
Shaft tolerance, see page 35

BS 40-71

BS	Motor-size	Motor dimensions B14 L	B14 LB	B5 L	B5 LB	Gear unit dimensions B	HE	HF	HG	BA	BB	E	F	G	K	T	TA
40	63	355	112	355	112												
	71	388	117	388	118												
	80	420	128	420	128	47	152	98	58	133	108	140	80	20	30	5	9
	90 S	443	138	443	138												
	90 L	468	138	468	138												
50	71	421	140	421	140												
	80	453	150	463	160												
	90 S	476	160	476	160	50	167	110	60	138	113	155	104	36.5	25.5	5	9
	90 L	501	160	501	160												
63	71	443	151	443	151												
	80	475	161	485	171												
	90 S	498	171	498	171	52	195	128	65	146	121	183	126	44.5	28.5	7	11
	90 L	523	171	523	171												
	100	561.5	181.5	561.5	181.5												
71	80	495	177	505	187												
	90 S	518	187	518	187												
	90L	543	187	543	187	62.5	216.5	141.5	70.5	169.4	143.4	209	137	46.5	36	8	14
	100	581.5	197.5	581.5	197.5												
	112	595.5	197.5	595.5	197.5												

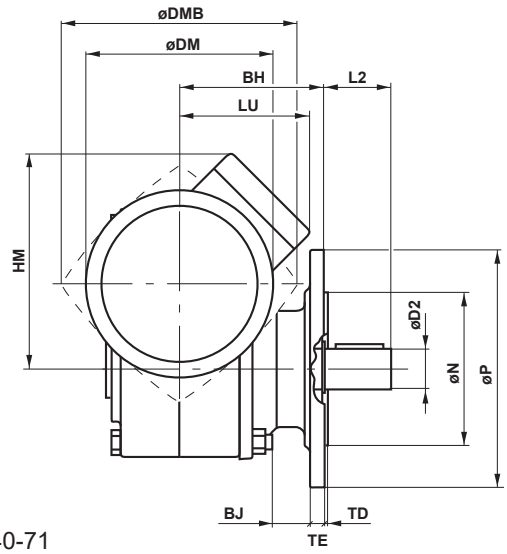
BS	Motor-size	Shaft dimensions øD2	L2	Motor dimensions DM	HM	LM	LU	PA-B14	PA-B5	With brake motor DMB	LMB
40	63			120	45	183	85	90	140		
	71			140	60	210	100	105	160	185	73
	80	20	36	158	72	232	112	120	200	201	72
	90 S			178	81	245	121	140	200	220	75
	90 L			178	81	270	121	140	200	220	75
50	71			140	50	210	100	105	160	185	73
	80	25	42	158	62	232	112	120	200	201	72
	90 S			178	71	245	121	140	200	220	75
	90 L			178	71	270	121	140	200	220	75
63	71			140	37	210	100	105	160	185	73
	80			158	49	232	112	120	200	201	72
	90 S	30	58	178	58	245	121	140	200	220	75
	90 L			178	58	270	121	140	200	220	75
	100			198	78	298	141	160	250	255	106
71	80			158	41	232	112	120	200	201	72
	90 S			178	50	245	121	140	200	220	75
	90L	35	58	178	50	270	121	140	200	220	75
	100			198	70	298	141	160	250	255	106
	112			221	89	312	160	160	250	278	109

Worm geared motors BS40-71 Flangemounted



Mounting position OH

Position of terminal box, see page 8
Shaft tolerance, see page 35
*) Standard execution, others on request

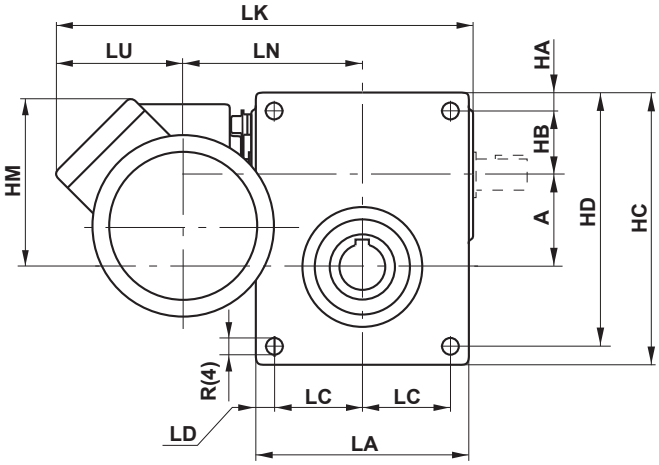


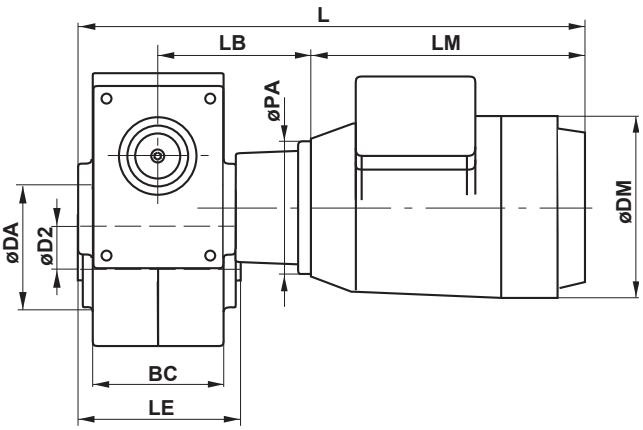
BS 40-71

BS	Motor-size	Motor dimensions B14 L	B14 LB	B5 L	B5 LB	Gear unit dimensions A	HS	BJ	M	N	P	øSA	TE	TD	BH
40	63	355	112	355	112										
	71	388	117	388	118				100	80	118				
	80	420	128	420	128	40	46	28	115*	951	140*	9	10	3	91.5
	90 S	443	138	443	138				130	110	160				
	90 L	463	138	468	138				165	130	200				
50	71	421	140	421	140				100	80	118				
	80	453	150	463	160				115	95	140				
	90 S	476	160	476	160	50	48	28	130*	110*	160*	9	10	3.5	99
	90 L	501	160	501	160				165	130	200				
63	71	443	151	443	151										
	80	475	161	485	171				130	110	160				
	90 S	498	171	498	171	63	53	35	165*	130*	200*	11	12	3.5	106
	90 L	523	171	523	171										
	100	561.5	181.5	561.5	181.5										
71	80	495	177	505	187										
	90 S	518	187	518	187										
	90L	543	187	543	187	71	63	32	165	130	200	11	12	3.5	122.4
	100	581.5	197.5	581.5	197.5										
	112	595.5	197.5	595.5	197.5										

BS	Motor-size	Shaft dimensions øD2	L2	Motor dimensions DM	HM	LM	LU	PA-B14	PA-B5	With brake motor DMB	LMB
40	63			120	125	183	85	90	140		
	71			140	140	210	100	105	160	185	73
	80	20	36	158	152	232	112	120	200	201	72
	90 S			178	161	245	121	140	200	220	75
	90 L			178	161	270	121	140	200	220	75
50	71			140	150	210	100	105	160	185	73
	80	25	42	158	162	232	112	120	200	201	72
	90 S			178	171	245	121	140	200	220	75
	90 L			178	171	270	121	140	200	220	75
63	71			140	163	210	100	105	160	185	73
	80			158	175	232	112	120	200	201	72
	90 S	30	58	178	184	245	121	140	200	220	75
	90 L			178	184	270	121	140	200	220	75
	100			198	204	298	141	160	250	255	106
71	80			158	183	232	112	120	200	201	72
	90 S			178	192	245	121	140	200	220	75
	90L	35	58	178	192	270	121	140	200	220	75
	100			198	212	298	141	160	250	255	106
	112			221	231	312	160	160	250	278	109

Worm geared motors BS 50/40 - BS71/40 Shaftmounted





BS 50/40 - 71/40

Mounting position OV - P7

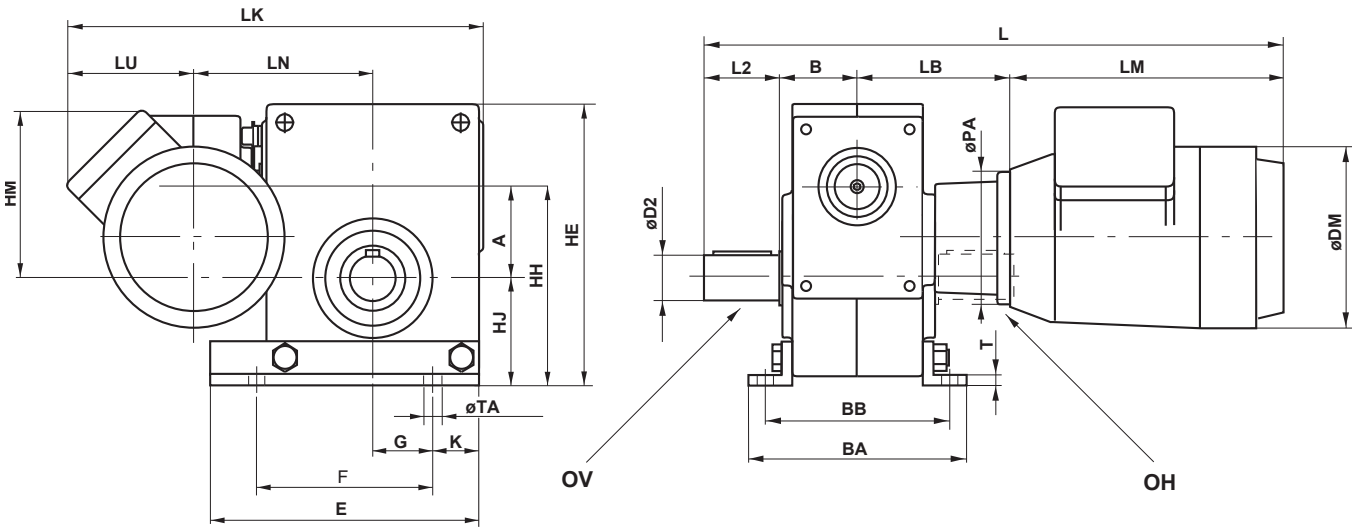
Mounting position O, U -P7

Position of terminal box, see page 8
Shaft tolerance, see page 35

BS	Motor-size	Motor dimensions B14 L	LK	LB	L B5	LK	LB	Gear unit dimensions A	BC	DA	HA	HB	HC	HD	LA	LC	LD	LN	R
50/40	63	355	280	112	355	280	112												
	71	387	295	118	388	295	118	50	78	68	10	38	155	145	124	52	10	124	8.3
	80	420	307	128	420	307	128												
63/40	63	355	302	112	355	302	112												
	71	387	317	118	388	317	118	63	82	80	10	43	183	173	146	63	10	135	8.3
	80	420	329	128	420	329	128												
71/40	63	355	310	112	355	310	112												
	71	387	325	118	388	325	118	71	101.4	92	14	49	209	195	165	68.5	14	139	10.3
	80	420	337	128	420	337	128												

BS		Shaft dimensions D2	L2	LE	Motor dimensions DM	HM	LM	LU	PA
50/40	63				120	95	183	85	90
	71	25	42	98	140	110	210	100	105
	80				158	122	232	112	120
63/40	63				120	108	183	85	90
	71	30	58	101	140	123	210	100	105
	80				158	135	232	112	120
71/40	63				120	116	183	85	90
	71	35	58	121	140	131	210	100	105
	80				158	143	232	112	120

Worm geared motors BS50/40 - BS 71/40 Footmounted



BS 50/40 - 71/40

Mounting position OV - P7

Mounting position OV, OH, OO - P7

Position of terminal box, see page 8
Shaft tolerance, see page 35

BS	Motor-size	Motor dimensions B14 L	LK	LB	B5 L	LK	LB	Gear unit dimensions A	B	HE	HH	HJ	LN
50/40	63	387	280	112	387	280	112						
	71	420	295	118	420	295	118	50	50	167	119	69	124
	80	452	307	128	452	307	128						
63/40	63	405	302	112	405	302	112						
	71	438	317	118	438	317	118	63	52	195	142	79	135
	80	470	329	128	470	329	128						
71/40	63	415.5	310	112	415.5	310	112						
	71	448.5	325	118	448.5	325	118	71	62.5	216.5	153.5	82.5	139
	80	480.5	337	128	480.5	337	128						

BS		Gear unit dimensions BA	BB	E	F	G	K	T	TA	Shaft dimensions D2	L2	Motor dimensions DM	HM	LM	LU	PA
50/40	63											120	95	183	85	90
	71	138	113	155	104	36.5	25.5	4	9	25	42	140	110	210	100	105
	80											158	122	232	112	120
63/40	63											120	108	183	85	90
	71	146	121	183	126	44.5	28.5	5	11	30	58	140	123	210	100	105
	80											158	135	232	112	120
71/40	63											120	116	183	85	90
	71	170	144	209	137	46.5	36	6	14	35	58	140	131	210	100	105
	80											158	143	232	112	120

BS 40 POWER RATINGS

Ratio and code	Intput speed	Output speed	Intput power	Output torque	Efficiency	Thermal rating 1)		Overhung load
i	n_1 rpm	n_2 rpm	P_1 kW	T_2 Nm	η %	Shaft-mount kW	Foot-mount kW	F_{r2} N
	2860	429	1.9	37	85	.89	1.2	1300
6.67	1430	214	1.3	50	86	1.1	1.3	1700
(20/3)	930	139	.99	59	87	.84	1.0	1900
A	730	109	.87	66	86	.73	.92	2000
	2860	286	1.5	43	83	.86	1.1	1600
10	1430	143	1.0	57	85	1.0	1.2	2000
(20/2)	930	93	.78	69	85	.79	.99	2000
B	730	73	.68	76	85	.69	.86	2000
	2860	191	1.1	44	78	.65	.87	1900
15	1430	95	.73	58	79	.75	.92	2000
(30/2)	930	62	.56	70	80	.58	.73	2000
C	730	49	.50	77	79	.51	.64	2000
	2860	143	.91	44	72	.53	.70	2000
20	1430	72	.58	58	75	.60	.73	2000
(20/1)	930	46	.45	70	75	.47	.58	2000
D	730	36	.40	78	74	.41	.52	2000
	2860	119	.80	44	69	.47	.62	2000
24	1430	60	.51	58	71	.53	.65	2000
(24/1)	930	39	.39	70	72	.41	.51	2000
	730	30	.35	78	71	.36	.45	2000
	2860	95	.69	44	64	.41	.53	2000
30	1430	48	.44	59	67	.45	.54	2000
(30/1)	930	31	.34	70	67	.35	.44	2000
F	730	24	.30	78	66	.31	.39	2000
	2860	72	.57	43	56	.34	.44	2000
40	1430	36	.37	58	59	.36	.44	2000
(40/1)	930	23	.28	69	60	.28	.35	2000
G	730	18	.25	76	58	.25	.31	2000
	2860	60	.52	44	52	.32	.41	2000
48	1430	30	.32	58	56	.33	.40	2000
(48/1)	930	19	.24	66	56	.26	.33	2000
H	730	15	.21	71	55	.23	.29	2000
	2860	48	.45	42	46	.29	.37	2000
60	1430	24	.26	52	49	.29	.35	2000
(60/1)	930	16	.18	54	49	.23	.29	2000
I	730	12	.15	56	47	.21	.26	2000
	2860	41	.39	40	43	.29	.36	2000
70	1430	20	.21	44	44	.29	.35	2000
(70/1)	930	13	.14	46	46	.23	.28	2000
J	730	10	.11	47	44	.20	.25	2000
	2860	34	.32	31	34	.27	.33	2000
84	1430	17	.16	33	36	.27	.32	2000
(84/1)	930	11	.10	35	38	.21	.26	2000
K	730	8.7	.09	36	37	.19	.23	2000

1) Motor with fan flange mounted on the gearbox.

BS 50 POWER RATINGS

Ratio and code i	Intput speed n_1 rpm	Output speed n_2 rpm	Intput power P_1 kW	Output torque T_2 Nm	Efficiency η %	Thermal rating 1)		Overhung load F_{r2} N
						Shaft-mount kW	Foot-mount kW	
8	2860	358	2.6	62	88	1.7	2.2	1900
(24/3)	1430	179	1.7	83	88	1.7	2.1	2400
A	930	116	1.4	99	88	1.3	1.6	2700
	730	91	1.2	110	88	1.1	1.4	2700
10.5	2860	272	2.1	65	86	1.4	1.8	2200
(21/2)	1430	136	1.4	87	87	1.4	1.7	2700
B	930	89	1.1	103	85	1.1	1.4	2700
	730	70	.97	114	85	.94	1 .2	2700
14	2860	204	1.7	66	82	1.2	1.5	2500
(28/2)	1430	102	1.1	88	84	1.2	1.5	2700
C	930	66	.88	105	83	.91	1.1	2700
	730	52	.77	117	83	.78	.97	2700
21	2860	136	1.2	66	76	.86	1.1	2700
(21/1)	1430	68	.80	87	77	.84	1.0	2700
D	930	44	.63	104	76	.64	.80	2700
	730	35	.56	116	75	.56	.69	2700
24	2860	119	1.1	63	73	.74	.93	2700
(24/1)	1430	60	.71	85	74	.72	.87	2700
E	930	39	.57	102	72	.55	.69	2700
	730	30	.49	112	72	.48	.60	2700
32	2860	89	.92	68	69	.69	.86	2700
(32/1)	1430	45	.59	90	71	.65	.79	2700
F	930	29	.47	108	69	.50	.62	2700
	730	23	.41	120	69	.43	.54	2700
37	2860	77	.82	66	65	.59	.73	2700
(37/1)	1430	39	.53	88	66	.56	.67	2700
Fx	930	25	.43	106	64	.43	.53	2700
	730	20	.37	116	64	.37	.47	2700
42	2860	68	.76	68	63	.57	.70	2700
(42/1)	1430	34	.49	90	65	.54	.65	2700
G	930	22	.40	109	63	.42	.51	2700
	730	17	.34	120	63	.36	.45	2700
54	2860	53	.66	68	57	.49	.61	2700
(54/1)	1430	26	.42	90	59	.46	.55	2700
H	930	17	.34	109	57	.35	.43	2700
	730	14	.30	120	57	.31	.38	2700
64	2860	45	.60	69	53	.46	.56	2700
(64/1)	1430	22	.39	93	55	.42	.51	2700
I	930	15	.28	100	53	.33	.40	2700
	730	11	.23	102	53	.29	.36	2700
80	2860	36	.50	66	49	.44	.53	2700
(80/1)	1430	18	.27	71	49	.40	.47	2700
J	930	12	.19	75	47	.31	.38	2700

1) Motor with fan flange mounted on the gearbox.

BS 63 POWER RATINGS

Ratio and code	Intput speed	Output speed	Intput power	Output torque	Efficiency	Thermal rating 1)		Overhung load
						Shaft-mount	Foot-mount	
i	n_1 rpm	n_2 rpm	P_1 kW	T_2 Nm	η %	kW	kW	F_{r2} N
7.75	2860	369	4.3	101	91	2.8	3.5	2100
(31/4)	1430	185	2.9	134	90	2.6	3.2	2600
A	930	120	2.3	162	90	2.0	2.4	2900
	730	94	2.0	178	89	1.7	2.1	3200
11	2860	260	3.4	112	89	2.6	3.2	2400
(33/3)	1430	130	2.3	149	88	2.3	2.8	3000
B	930	85	1.8	178	88	1.7	2.1	3400
	730	66	1.6	197	88	1.5	1.8	3700
14	2860	204	2.8	115	87	2.2	2.7	2700
(28/2)	1430	102	1.9	154	87	2.0	2.4	3400
C	930	66	1.3	160	86	1.5	1.8	4000
	730	52	1.0	160	85	1.2	1.6	4000
18	2860	159	2.2	111	82	1.7	2.1	3100
(36/2)	1430	79	1.5	149	83	1.5	1.8	3900
D	930	52	1.2	178	83	1.1	1.4	4000
	730	41	1.0	196	81	.97	1.2	4000
24.5	2860	117	1.8	119	80	1.5	1.9	3500
(49/2)	1430	58	1.2	160	81	1.4	1.6	4000
E	930	38	.81	162	79	1.0	1.3	4000
	730	30	.64	162	79	.87	1.1	4000
29	2860	99	1.6	117	77	1.3	1.6	3800
(29/1)	1430	49	1.0	156	77	1.1	1.4	4000
F	930	32	.82	188	77	.86	1.1	4000
	730	25	.67	192	75	.74	.92	4000
37	2860	77	1.3	109	69	.92	1.1	4000
(37/1)	1430	39	.85	147	70	.81	.97	4000
Fx	930	25	.67	175	68	.62	.77	4000
	730	20	.60	194	67	.54	.67	4000
43	2860	67	1.2	121	70	1.0	1.2	4000
(43/1)	1430	33	.78	160	71	.89	1.1	4000
G	930	22	.53	166	70	.67	.82	4000
	730	17	.43	165	68	.57	.71	4000
51	2860	56	1.1	121	67	.89	1.1	4000
(51/1)	1430	28	.69	160	67	.78	.93	4000
H	930	18	.53	184	66	.59	.73	4000
	730	14	.42	183	65	.51	.63	4000
57	2860	50	.98	121	64	.83	1.0	4000
(57/1)	1430	25	.64	160	65	.73	.87	4000
I	930	16	.51	193	64	.55	.68	4000
	730	13	.41	193	62	.47	.59	4000
73	2860	39	.85	121	58	.72	.87	4000
(73/1)	1430	20	.56	162	59	.61	.74	4000
J	930	13	.40	174	58	.47	.57	4000
	730	10	.33	179	56	.41	.51	4000
104	2860	28	.56	92	47	.61	.73	4000
(104/1)	1430	14	.31	100	46	.52	.62	4000
K	930	8.9	.21	105	47	.40	.49	4000
	730	7	.17	107	45	.35	.43	4000

1) Motor with fan flange mounted on the gearbox.

BS 71 POWER RATINGS

Ratio and code i	Intput speed n_1 rpm	Output speed n_2 rpm	Intput power P_1 kW	Output torque T_2 Nm	Efficiency η %	Thermal rating 1)		Overhung load F_{r2} N
						Shaft-mount kW	Foot-mount kW	
7.5	2860	381	6.5	151	92	3.2	4.4	2200
(30/4)	1430	191	4.3	201	92	3.6	3.8	2700
A	930	124	3.4	242	91	2.4	2.9	3100
	730	97	3.0	267	91	2.0	2.5	3300
9.33	2860	307	5.7	163	91	3.4	4.2	2400
(28/3)	1430	153	3.8	218	91	3.1	3.7	3000
B	930	100	3.0	260	90	2.3	2.8	3400
	730	78	2.6	288	89	1.9	2.4	3600
12	2860	238	4.5	160	89	2.7	3.3	2900
(36/3)	1430	119	3.0	215	88	2.4	2.9	3500
C	930	78	2.3	255	88	1.8	2.2	4000
	730	61	2.0	282	87	1.5	1.9	4300
16	2860	179	3.6	169	87	2.3	2.8	3300
(32/2)	1430	89	2.4	224	87	2.0	2.5	4000
D	930	58	1.9	269	85	1.5	1.9	4600
	730	46	1.7	297	85	1.3	1.6	5000
21	2860	136	2.9	173	84	2.0	2.4	3700
(42/2)	1430	68	1.9	230	84	1.7	2.0	4600
E	930	44	1.5	276	83	1.3	1.6	5000
	730	35	1.4	305	82	1.1	1.4	5000
28	2860	102	2.2	168	80	1.5	1 .8	4200
(28/1)	1430	51	1.5	225	79	1.3	1.5	5000
F	930	33	1.2	267	77	.97	1.2	5000
	730	26	1.0	298	77	.83	1.0	5000
37	2860	77	1.9	178	76	1.3	1.6	4700
(37/1)	1430	39	1.3	238	76	1.1	1.3	5000
G	930	25	1.0	283	74	.84	1.0	5000
	730	20	.89	315	73	.72	.89	5000
48	2860	60	1.5	175	71	1.1	1.3	5000
(48/1)	1430	30	1.0	234	71	.93	1.1	5000
H	930	19	.82	281	69	.70	.86	5000
	730	15	.72	310	68	.60	.75	5000
63	2860	45	1.3	175	66	.89	1.1	5000
(63/1)	1430	23	.85	234	65	.76	.91	5000
I	930	15	.69	281	63	.58	.71	5000
	730	12	.61	310	61	.51	.63	5000
82	2860	35	1.1	178	60	.77	.92	5000
(82/1)	1430	17	.62	201	58	.66	.79	5000
J	930	11	.45	211	56	.50	.61	5000
	730	8.9	.37	216	54	.44	.54	5000
100	2860	29	.77	143	56	.76	.91	5000
(100/1)	1430	14	.42	154	54	.64	.77	5000
K	930	9.3	.30	162	49	.49	.60	5000
	730	7.3	.25	166	43	.43	.53	5000

1) Motor with fan flange mounted on the gearbox.

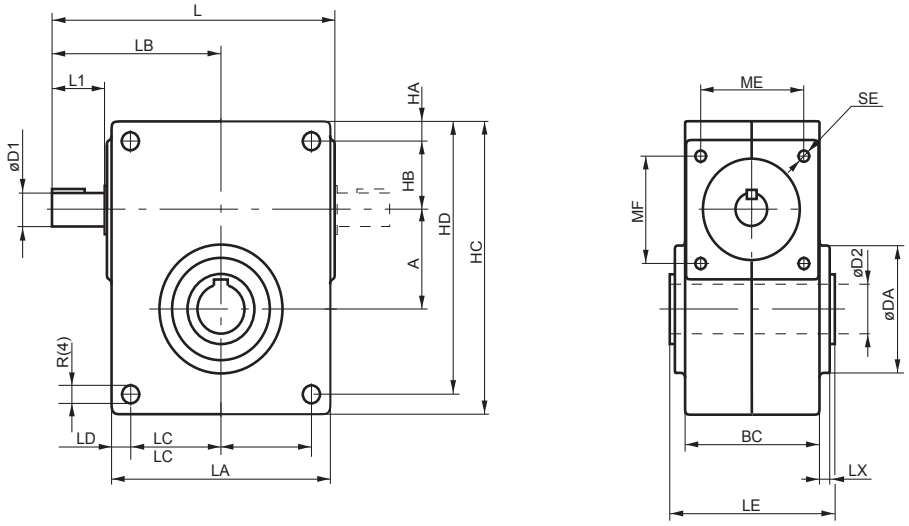
DOUBLE WORM GEARS POWER RATINGS

Ratio and code Code	i	Intput speed n_1 rpm	Output speed n_2 rpm	Intput power P_1 kW	Output torque T_2 Nm	Efficiency η %	Thermal rating 1) Shaft-mount kW	Thermal rating 1) Foot-mount kW	Overhung load F_{r2} N
					BS 50/40				
EA	160	1430	8.9	.31	150	45	.30	.38	2700
EB	240	1430	6	.24	150	39	.27	.34	2700
EC	360	1430	4	.20	150	32	.25	.31	2700
ED	480	1430	3	.17	150	28	.23	.30	2700
EE	576	1430	2.5	.16	150	25	.23	.29	2700
EF	720	1430	2	.14	150	22	.22	.28	2700
EG	960	1430	1.5	.13	150	18	.21	.27	2700
EH	1152	1430	1.2	.12	150	16	.21	.27	2700
EI	1440	1430	1	.12	150	13	.20	.26	2700
EJ	1680	1430	0.9	.12	150	12	.20	.26	2700
EK	2016	1430	0.7	.11	150	10	.20	.26	2700
					BS 63/40				
FA	193	1430	7.4	.40	250	48	.44	.56	4000
FB	290	1430	4.9	.31	250	42	.40	.51	4000
FC	435	1430	3.3	.25	250	34	.36	.46	4000
FD	580	1430	2.5	.23	250	29	.35	.44	4000
FE	696	1430	2.1	.21	250	26	.33	.42	4000
FF	870	1430	1.6	.18	250	23	.32	.41	4000
FG	1160	1430	1.2	.17	250	19	.31	.39	4000
FH	1392	1430	1	.16	250	16	.30	.39	4000
FI	1740	1430	0.8	.15	250	14	.29	.35	4000
FJ	2030	1430	0.7	.15	250	12	.29	.35	4000
FK	2436	1430	0.6	.14	250	11	.27	.32	4000
					BS 71/40				
FA	187	1430	7.7	.58	400	55	.50	.63	5000
FB	280	1430	5.1	.43	400	50	.44	.56	5000
FC	420	1430	3.4	.33	400	42	.40	.51	5000
FD	560	1430	2.6	.28	400	38	.38	.48	5000
FE	672	1430	2.1	.26	400	34	.37	.47	5000
FF	840	1430	1.7	.23	400	31	.35	.45	5000
FG	1120	1430	1.3	.20	400	26	.34	.43	5000
FH	1344	1430	1.1	.18	400	24	.33	.40	5000
FI	1680	1430	0.9	.17	400	21	.29	.35	5000
FJ	1960	1430	0.7	.16	400	19	.29	.35	5000
FK	2352	1430	0.6	.15	400	17	.27	.32	5000

1) Motor motor with fan, flange mounted on the gearbox.

DIMENSIONS

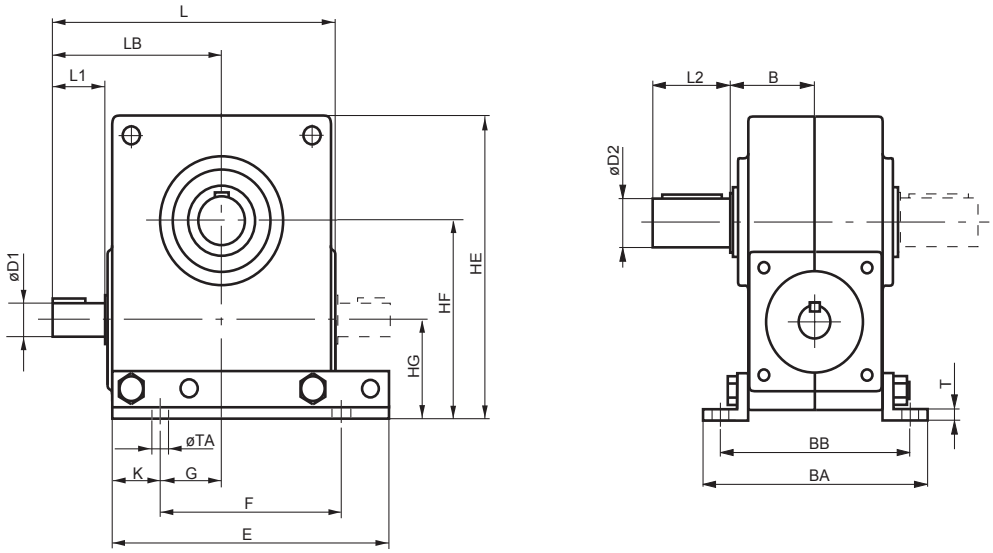
Standard execution BS40-71



Mounting position O, hollow shaft

BS	A	BC	D1	D2	DA	HA	HB	HC	HD	L	L1	LA	LB	LC	LD	LE	LX	ME	MF	øR	SE	Kg
40	40	73	14	20	58	10	36	140	130	146	25	100	86	40	10	92	8.5	46	46	8.1	M8x12	3.0
50	50	78	19	25	68	10	38	155	145	179	35	124	108	52	10	98	8	56.6	56.6	8.3	M8x12	4.8
63	63	82	19	30	80	10	43	183	173	200.5	35	146	118.5	63	10	101	7	56.6	56.6	10.3	M8x12	6.5
71	71	101.4	24	35	92	14	49	209	195	214	40	165	128	68.5	14	122	7.3	76.4	76.4	12.5	M8x14	9.6

Underdriven worm gear with feet and output shaft



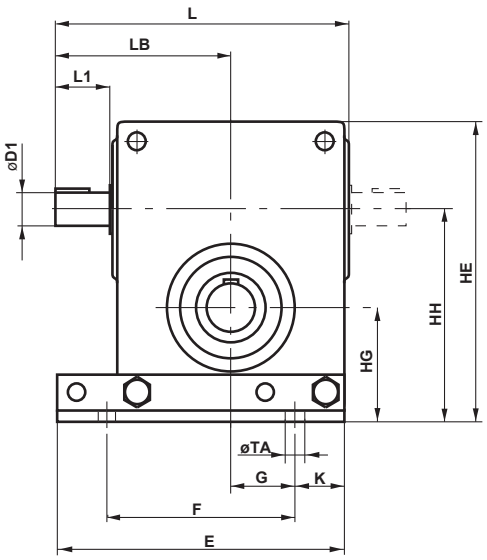
Mounting position UV, UH, UD

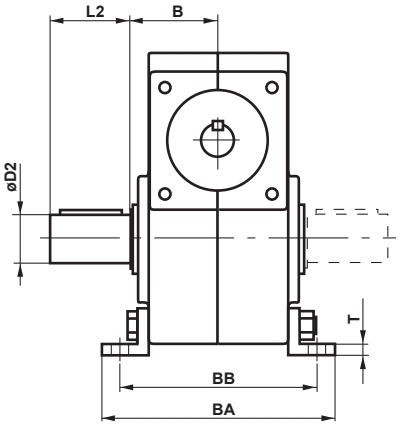
Mounting position UV

BS	B	BA	BB	D1	D2	E	F	G	HE	HF	HG	K	L	L1	L2	LB	T	TA	Kg
40	47	133	108	14	20	140	80	20	152	98	58	30	146	25	36	86	5	9	3.0
50	50	138	113	19	25	155	104	36.5	167	110	60	25.5	179	35	42	108	5	9	4.8
63	52	146	121	19	30	183	126	44.5	195	128	65	28.5	200.5	35	58	118.5	7	11	6.5
71	62.5	169.4	143.4	24	35	209	137	46.5	216.5	141.5	70.5	36	214	40	58	128	8	14	9.6

Shaft tolerance, see page 35

Overdriven worm gear with feet and output shaft



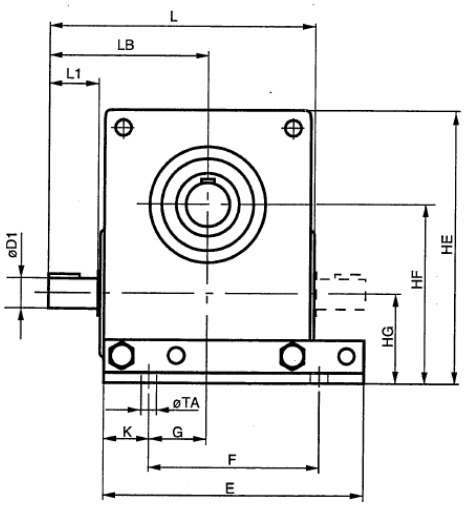


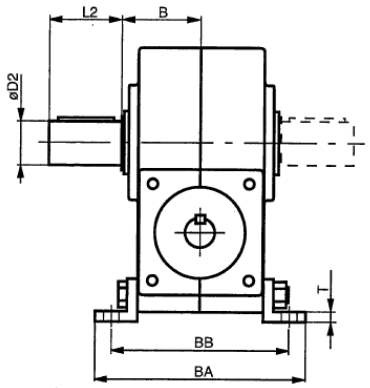
Mounting position OV, OH, OD

Mounting position OV

BS	B	BA	BB	D1	D2	E	F	G	HE	HH	HG	K	L	L1	L2	LB	T	TA	Kg
40	47	133	108	14	20	140	80	20	152	106	66	30	146	25	36	86	5	9	3.0
50	50	138	113	19	25	155	104	36.5	167	119	69	25.5	179	35	42	108	5	9	4.8
63	52	146	121	19	30	183	126	44.5	195	142	79	28.5	200.5	35	58	118.5	7	11	6.5
71	62.5	169.4	143.4	24	35	209	137	46.5	216.5	153.5	82.5	36	214	40	58	128	8	14	9.6

Worm gear with vertical worm screw, feet and output shaft





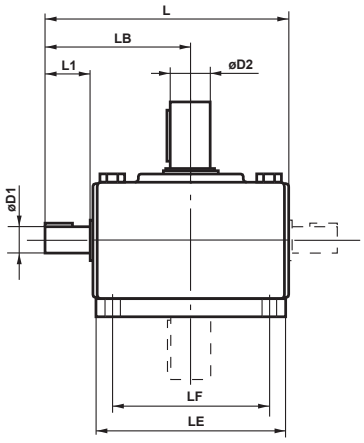
Mounting position VV, VH, VD

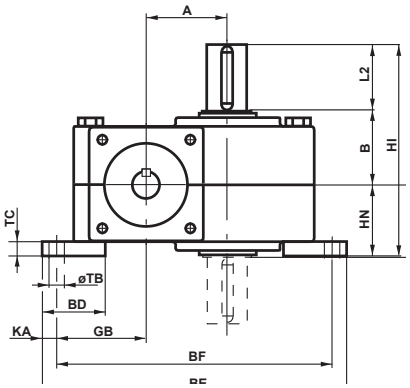
Mounting position VV

BS	B	BA	BB	D1	D2	E	F	GA	HE	HK	K	L1	L2	LB	T	TA	Kg
40	47	133	108	14	20	140	80	24	62	148	30	25	36	86	5	9	3.9
50	50	138	113	19	25	155	104	31.5	74	182	25.5	35	42	108	5	9	6.1
63	52	146	121	19	30	183	126	38.5	85	203.5	28.5	35	58	118.5	7	11	8.3
71	62.5	169.4	143.4	24	35	209	137	39	90	218	36	40	58	128	8	14	12.0

Shaft tolerance, see page 35

Worm gear with horizontal input shaft and feet

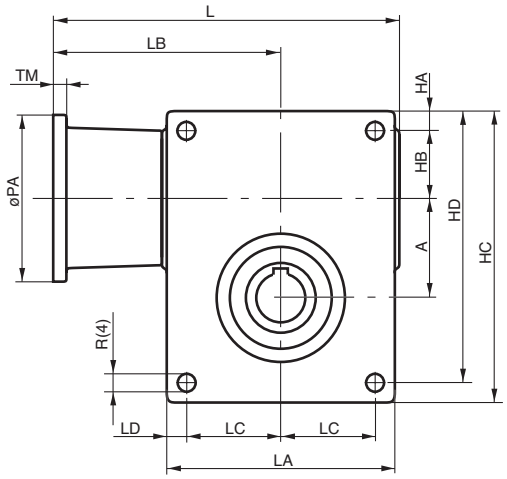


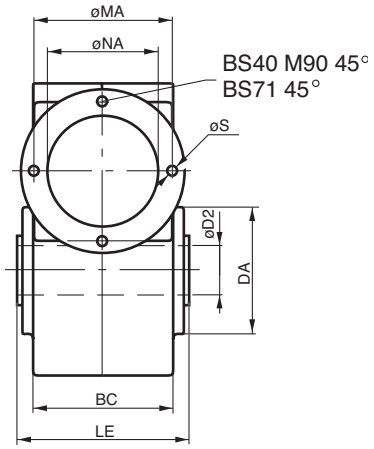


Mounting position HU, HN, HD. Also state position of input shaft ☐○ A or ☐○ B. Mounting position HU-B

BS	A	B	BD	BE	BF	D1	D2	GB	HI	HN	KA	L	L1	L2	LB	LE	LF	TB	TC	X	Kg
40	40	47	40	181	162	14	20	57	131.5	48.5	9.5	146	25	36	86	100	80	9	12	49	4.1
50	50	50	40	196	177	19	25	59	143	51	9.5	179	35	42	108	124	104	9	12	52	6.4
63	63	52	45	233	213	19	30	68	163	53	10	200.5	35	58	118.5	146	126	11	12	54	8.7
71	71	62.5	55	266	241	24	35	79	186.5	66	12.5	214	40	58	128	165	137	12.5	15	64.5	12.7

Standard execution with motorflange





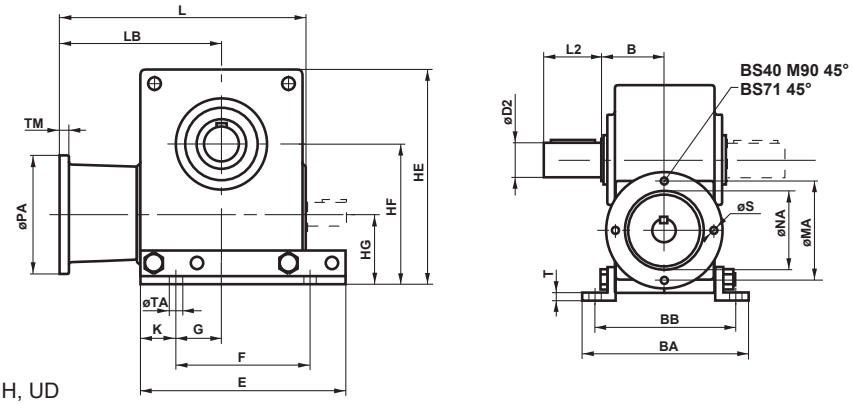
Mounting position O- or U-hollow shaft

Size	Motor-size	Flange type	A	BC	D2	DA	HA	HB	HC	HD	L	LA	LB	LC	LD	LE	MA	NA	PA	øR	S	TM	Kg
	63	B14									172		112				75	60	92		6	8	3.6
40	71	B14	40	73	20	58	10	36	140	130	178	100	118	40	10	92	85	70	102	8.3	7	9	3.6
	80	B14									188		128				100	80	118		7	10	3.6
	90	B14									198		138				115	95	140		9	12	3.6
	71	B14									211		140				85	70	108		7	10	5.5
50	80	B14	50	78	25	68	10	38	155	145	221	124	150	52	10	98	100	80	118	8.3	7	10	5.7
	90	B14									231		160				115	95	140		9	12	5.9
	71	B14									233		151				85	70	108		7	10	7.2
63	80	B14	63	82	30	80	10	43	183	173	243	146	161	63	10	101	100	80	118	10.3	7	10	7.4
	90	B14									253		171				115	95	140		9	12	7.6
	100	B14									263.5		181.5				130	110	160		9	12	7.8
	80	B14									263		177				100	80	118		7	10	10.6
71	90	B14	71	104.5	35	92	14	49	209	195	273	165	187	68.5	14	122	115	95	140	12.3	9	12	10.8
	100/112	B14									283.5		197.5				130	110	160		9	12	11.0

Shaft tolerance, see page 35

DIMENSIONS

Underdriven worm gear with feet, output shaft and motorflange

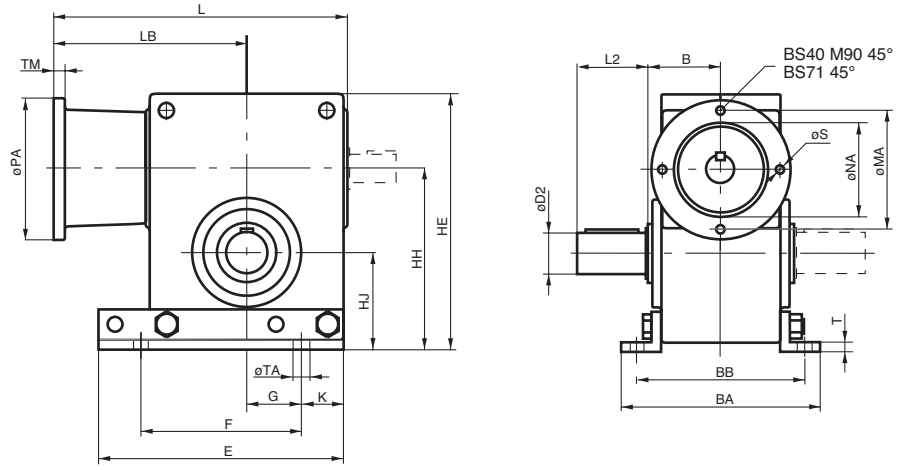


Mounting position UV, UH, UD

Mounting position UV

Size	Motor-size	Flange type	B	BA	BB	D2	E	F	G	HE	HF	HG	K	L	L2	LB	MA	NA	PA	TA	TM	S	T
	63	B14												172		112	75	60	92		8	6	
40	71	B14	47	133	108	20	140	80	20	152	98	58	30	178	36	118	85	70	102	9	9	7	5
	80	B14												188		128	100	80	118		10	7	
	90	B14												198		138	115	95	140		10	9	
	71	B14												211		140	85	70	108		10	7	
50	80	B14	50	138	113	25	155	104	36.5	167	110	60	25.5	221	42	150	100	80	118	9	10	7	5
	90	B14												231		160	115	95	140		12	9	
	71	B14												233		151	85	70	108		10	7	
63	80	B14	52	146	121	30	183	126	44.5	195	128	65	28.5	243	58	161	100	80	118	11	10	7	7
	90	B14												253		171	115	95	140		12	9	
	100	B14												263.5		181.5	130	110	160		12	9	
	80	B14												263		177	100	80	118		10	7	
71	90	B14	62.5	169.4	143.4	35	209	137	46.5	217	142	71	36	273	58	187	115	95	140	14	12	9	8
	100/112	B14												283.5		197.5	130	110	160		12	9	

Overdriven worm gear with feet, output shaft and motorflange



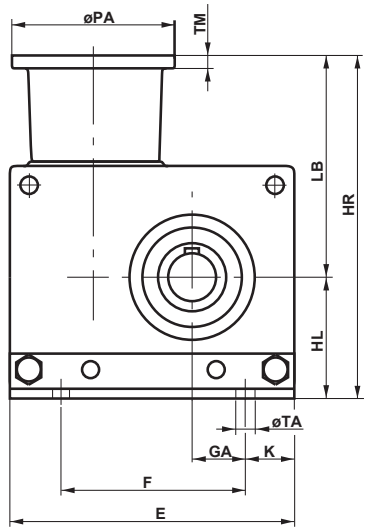
Mounting position OV

Size	Motor-size	Flange type	B	BA	BB	D2	E	F	G	HE	HH	HJ	K	L	L2	LB	MA	NA	PA	S	T	TA	TM
	63	B14												172		112	75	60	92	6			8
40	71	B14	47	133	108	20	140	80	20	152	106	66	30	178	36	118	85	70	102	7	5	9	9
	80	B14												188		128	100	80	118	7			10
	90	B14												198		138	115	95	140	9			10
	71	B14												211		140	85	70	108	7			10
50	80	B14	50	138	113	25	155	104	36.5	167	110	60	25.5	221	42	150	100	80	118	7	5	9	10
	90	B14												231		160	115	95	140	9			12
	71	B14												233		151	85	70	108	7			10
63	80	B14	52	146	121	30	183	126	44.5	195	142	79	28.5	243	58	161	100	80	118	7	5	11	12
	90	B14												253		171	115	95	140	9			12
	100	B14												263.5		181.5	130	110	160	9			12
	80	B14												263		177	100	80	118	7			10
71	90	B14	62.5	169.4	143.4	35	209	137	46.5	216.5	153.5	82.5	36	273	58	187	115	95	140	9	8	14	12
	100/112	B14												283.5		197.5	130	110	160	9			12

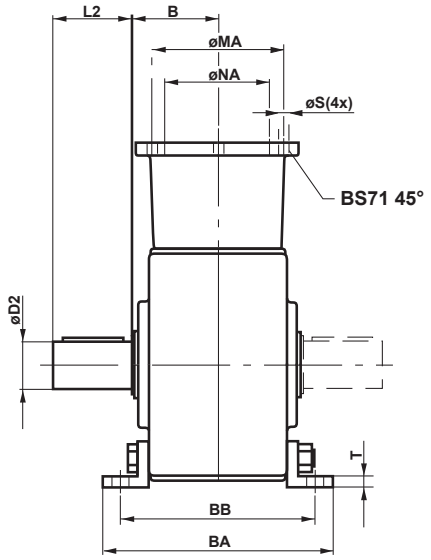
Shaft tolerance, see page 35

DIMENSIONS

Worm gear with vertical worm screw, feet, output shaft and motorflange



Mounting position VV, VH, VD

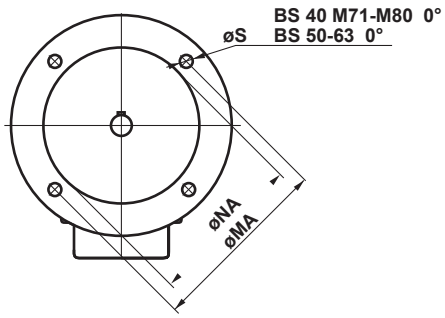


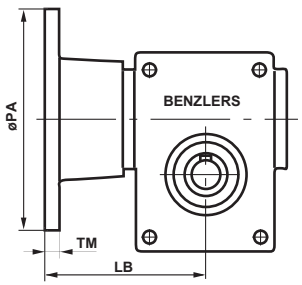
Mounting position VV

Size	Motor-size	Flange type	B	BA	BB	D2	E	F	GA	HR	HL		K	L2	LB	MA	NA	PA	S	T	TA	TM	Kg
40	63	B14									174				112	75	60	92	6			8	4.5
	71	B14	47	133	108	20	140	80	24	180	62	30	36	118	85	70	102	7	5	9	9	4.5
	80	B14								190				128	100	80	118	7			10	4.5
	90	B14								200				138	115	95	140	9			10	4.5
	71	B14								214				140	85	70	108	7			10	6.8
50	80	B14	50	138	113	25	155	104	31.5	224	74	25.5	42	150	100	80	118	7	5	9	10	7.0
	90	B14								234				160	115	95	140	9			12	7.2
	71	B14								236				151	85	70	108				10	9.0
63	80	B14	52	146	121	30	183	126	38.5	246	85	28.5	58	161	100	80	118	7		11	10	9.2
	90	B14								256				171	115	95	140	9	7		12	9.4
	100	B14								266.5				181.5	130	110	160	9			12	9.6
71	80	B14								267				177	100	80	118	7			10	13.0
	90	B14	62.5	169.4	143.4	35	209	137	39	277	90	36	58	187	115	95	140	9	8	14	12	13.2
	100/112	B14								287.5				197.5	130	110	160	9			12	13.4

Motorflange type B5

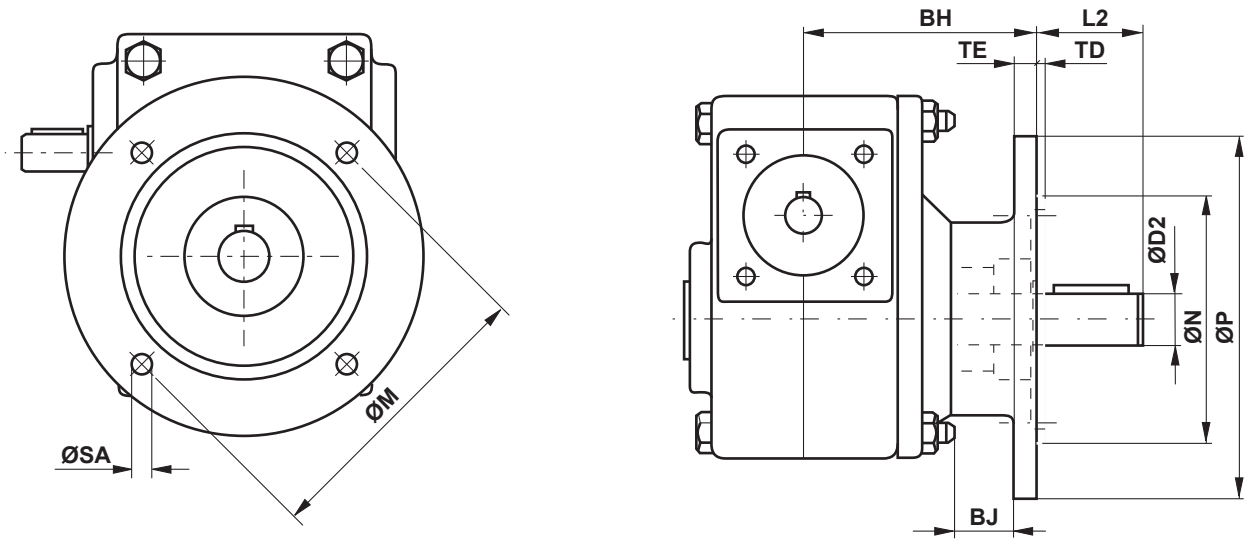
Size	Motorsize	LB	MA	NA	PA	S	TM
	63	112	115	95	140	9	9
BS 40	71	118	130	110	160	9	9
	80	128	165	130	200	11.5	10
	90	138	165	130	200	11.5	10
	71	140	130	110	160	9	10
BS 50	80	160	165	130	200	11.5	12
	90	160	165	130	200	11.5	12
	71	151	130	110	160	9	10
BS 63	80	171	165	130	200	11.5	12
	90	171	165	130	200	11.5	12
	100	181.5	215	180	250	14	12
	80	187	165	130	200	11.5	12
BS 71	90	187	165	130	200	11.5	12
	100/112	197.5	215	180	250	14	12





DIMENSIONS

Execution with output flange and shaft BS40-71



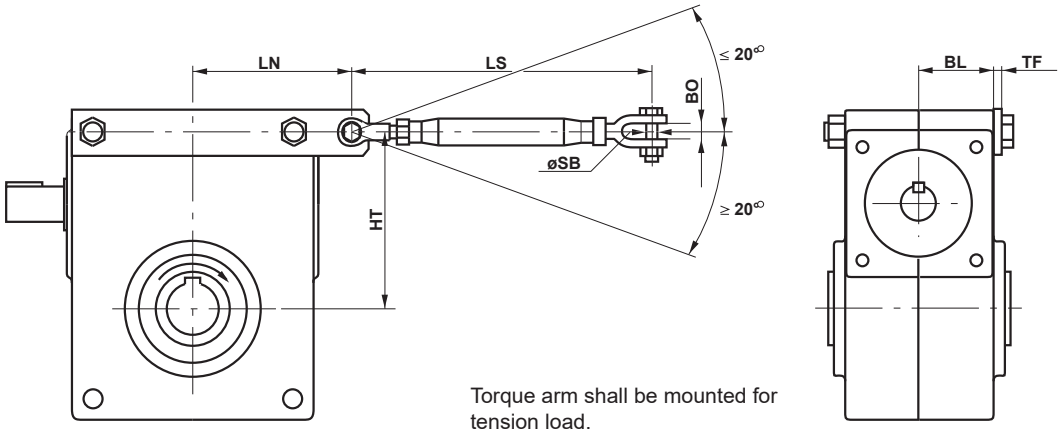
Size	BH	D2	L2	BJ	M	N	P	SA	TE	TD	Kg
BS 40	91.5	20	36	28	100 115* 130 165	80h7 95h7* 110h7 130h7	118 1401 160 200	7 9 9 11	10	3	4.1
BS 50	99	25	42	28	100 115 130* 165	80h7 95h7 110h7* 130h7	118 140 1601 200	7 9 9 11	10	3.5	6.6
BS 63	106	30	58	35	130 165*	110h7 130h7*	160 2001	9 11	12	3.5	9.3
BS 71	122.4	35	58	32	165	130h7	200	11	12	3.5	13.9

Shaft tolerance, see page 35

*) Standard execution, others on request

DIMENSIONS

Execution with torque arm

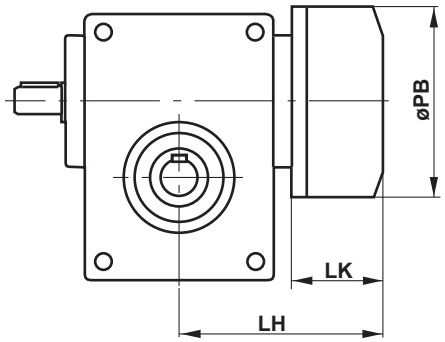


Torque arm shall be mounted for tension load.

Size	BO	HT	BL	LN	LS min/max	SB	TF	Kg
BS 40	9	76	36.5	70	165/245	8	4	4.0
BS 50	9	88	39	85	165/245	8	5	5.8
BS 63	11	106	41	103	190/290	3/8”	5	7.5
BS 71	11	120	50.7	107.5	190/290	3/8”	5	10.7

DIMENSIONS

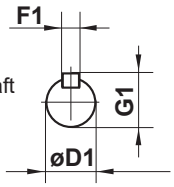
Execution with electromagnetic brake



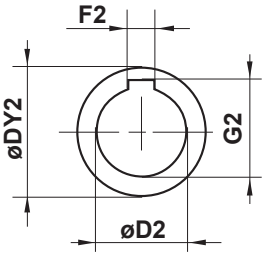
Size	Brake size	Brake torque Nm	øPB	LH	LK	Kg
BS 40	02	3	85	115	55	4.6
	03	5.7	100	120	60	5.2
	04	12.6	116	126	66	6.3
BS 50	03	6.4	100	131	60	7
	04	14.4	116	137	66	8.1
	05	24	137	146	75	10.4
BS 63	03	6.4	100	142	60	8.7
	04	14.4	116	148	66	9.8
	05	24	137	157	75	12.1
BS 71	04	16	116	160	74	12.3
	05	26	137	161	75	14.3

Shaftdimensions and tolerances

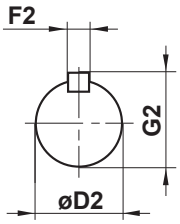
Input shaft



Hollow shaft



Output shaft



Size	Input shaft			Hollow shaft				Output shaft		
	D1	F1	G1	DY2	D2	F2	G2	D2	F2	G2
BS 40	14j6	5h9	16	37d9	20H7	6JS9	22.8	20j6	6h9	22.5
BS 50	19j6	6h9	21.5	40d9	25H7	8JS9	28.3	25j6	8h9	28.0
BS 63	19j6	6h9	21.5	45d9	30H7	8JS9	33.3	30j6	8h9	33 0
BS 71	24j6	8h9	27	50d9	35H7	10JS9	38.3	35j6	10h9	38.0

Keyway acc. to Swedish Standard SMS 2305

Maximum input speed n1

	Gear Size			
	40	50	63	71
n1, max rpm	6000	5500	5000	4500

SERIES BS
WORM GEAR
WITH ENVIRONMENTAL CLASSIFICATION

With BS gears classified acc. to environmental class, we are able to recommend the gears for installation in ambient conditions where normally only materials in stainless steel are accepted. The gears are classified acc. to environmental class M2-M3, Swedish standard stBK-N4.

Advantages:

- No corrosion
- Low weight (aluminium)
- High rating
- IEC-standard
- High surface finish
- No maintenance
- Large number of motor alternatives
- Modern design
- Easy handling

Product specification

- coated gear case, flanges and feet
- stainless steel bolts in gear housing
- stainless steel hollow shaft (SS 2346 alt. 2382)
- stainless steel output shaft
- surface for seal ring protected by stainless steel sleeve (SS 2333)
- Seal rings of viton
- ratings acc to catalogue

Type of coating

The coating means that the material surface is, by a chemical process, converted into an aluminium oxide, which gives a very hard ceramic surface finish.

The oxide layer is then impregnated and coated with plastic. With heat treatment a very strong and resistant connection between oxide and plastic is created.

Unique coating qualities

- high resistance against corrosion
- very hard and resistant against wear
- low tendency to be sticky
- hygienic

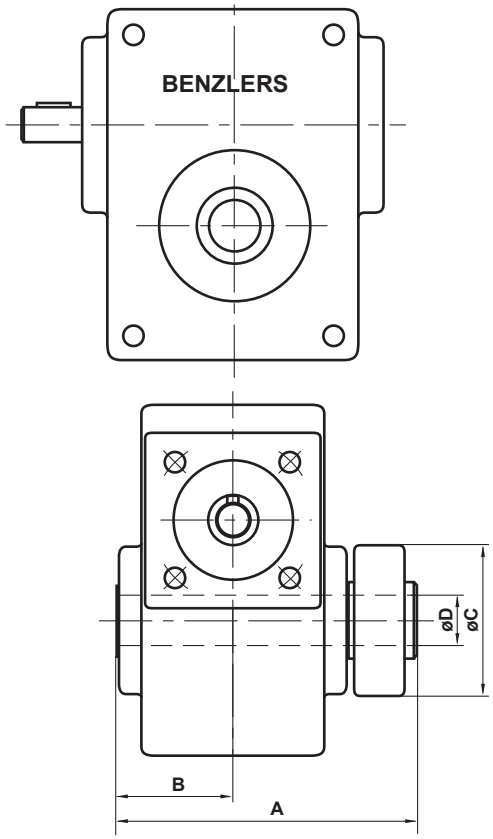
Application examples

- food industry
- paper and cellulose industry
- pharmaceutical industry
- chemical industry
- defence industry
- marine and mobile installations
- all outdoor installations

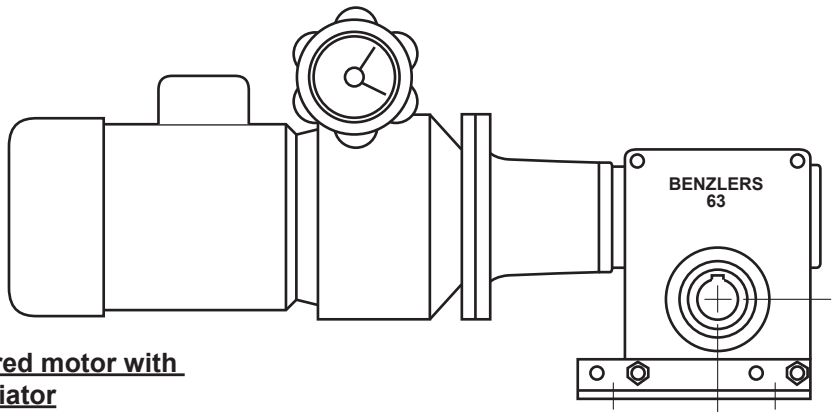
Gear		BS 40	BS 50	BS 63	BS 71
Catalogue rating, Nm	max min	78 31	120 62	197 92	315 143
Output speed, rpm	max min	429 9	358 9	369 7	381 7
Max static load, Nm		93	150	250	400
Radial force on output shaft, N		2000	2700	4000	5000
Thrust load on output shaft, N		2000	2500	3500	4500

APPLICATIONS

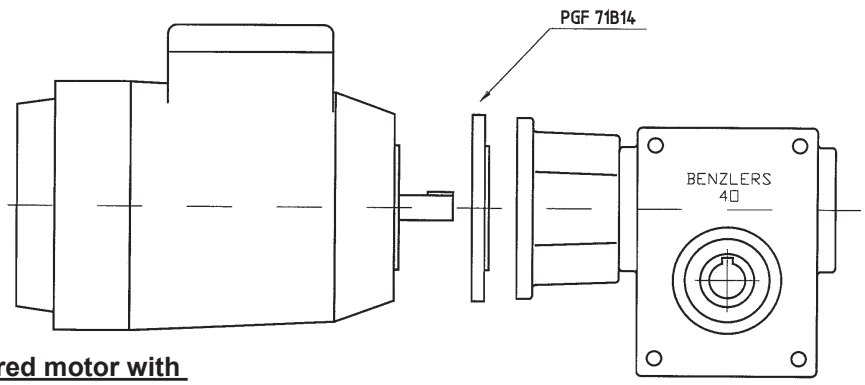
Worm gear with shrink fit



Size	Shrink disc	A	B	øC	øD	Nm
BS 40	HSD 30-22	119	46	60	20	155
BS 50	HSD 36-22	128	49	72	25	350
BS 63	HSD 44-22	133	50.5	80	30	440
BS 71	HSD 44-22	154	61	80	35	770



Wormed geared motor with planetary variator



Wormed geared motor with encoder flange

MOUNTING

General:

1. The gear should be placed on a flat and solid foundation.
2. Sprocket, pulley or coupling on shaft can not be mounted with force. This will damage the gear.
3. To avoid increasing load on shafts and bearings, the gear and the driven machine should be carefully aligned, even if an elastic coupling is used.
4. If sprockets are used on the output shaft, the prefered direction of pull should be such that the gear housing will be pressed towards the foundation.
5. When situated outdoors or working under adverse conditions (e.g. heat, dust or damp), the gear must be provided with sufficient protection; however, the cooling air circulation must not be unduly restricted.

Hollow shaft gears

1. The gear is normally mounted on a shaft with tolerance js6. The hollow shaft have tolerance H7.

   Grease the shaft with Molykote BR2 or equivalent before the gear is mounted. The gear should not be mounted with force.

   The gear must be locked against axiel movement.

Lubrication

Before delivery, the gear unit is filled with synthetic oil - Mobil SHC 634. This type of lubrication is extra suitable for worm gears.

At normal condition the oil never needs to be changed.

Ambient temperature -30°C - +30°C.

Maintenance

1. Benzlers worm gears are lubricated for life with synthetic oil/grease and are therefore maintenance free.
2. Check that there are no leakage.
3. The worm gears may under no circumstances be entirely filled with oil or grease.

Running in

1.The gear should be run under low load conditions during the first 10-30 hours. The load should then gradually be increased to full load.

2.The length of the running-in period depends on the size of the gear and the actual working conditions.

3. When increasing the load, the temperature of the gear can exceed the ambient temperature by 60-70° C. Oil- and gear temperatures of 95-100° C are harmless and have no influence on the function af the gear. When the temperature exceeds 100° C, special seal rings must be used.
4. Gears which are not used for a long period should be run for short periods, approximately every third month.

NOTES

PRODUCT SAFETY

IMPORTANT

Product Safety Information

General - The following information is important in ensuring safety. It must be brought to the attention of personnel involved in the selection of power transmission equipment, those responsible for the design of the machinery in which it is to be incorporated and those involved in its installation, use and maintenance.

Our equipment will operate safely provided it is selected, installed, used and maintained properly. As with any power transmission equipment proper precautions must be taken as indicated in the following paragraphs, to ensure safety.

Potential Hazards - these are not necessarily listed in any order of severity as the degree of danger varies in individual circumstances. It is important therefore that the list is studied in its entirety:-

1) Fire/Explosion
   (a) Oil mists and vapour are generated within gear units. It is therefore dangerous to use naked lights in the proximity of gearbox openings, due to the risk of fire or explosion.
   (b) In the event of fire or serious overheating (over 300 oC), certain materials (rubber, plastics, etc.) may decompose and produce fumes. Care should be taken to avoid exposure to the fumes, and the remains of burned or overheated plastic/rubber materials should be handled with rubber gloves.
2) Guards - Rotating shafts and couplings must be guarded to eliminate the possibility of physical contact or entanglement of clothing. It should be of rigid construction and firmly secured.
3) Noise - High speed gearboxes and gearbox driven machinery may produce noise levels which are damaging to the hearing with prolonged exposure. Ear defenders should be provided for personnel in these circumstances. Reference should be made to the Department of Employment Code of Practice for reducing exposure of employed persons to noise.
4) Lifting - Where provided (on larger units) only the lifting points or eyebolts must be used for lifting operations (see maintenance manual or general arrangement drawing for lifting point positions). Failure to use the lifting points provided may result in personal injury and/or damage to the product or surrounding equipment. Keep clear of raised equipment.
5) Lubricants and Lubrication
   (a) Prolonged contact with lubricants can be detrimental to the skin. The manufacturer's instruction must be followed when handling lubricants.
   (b) The lubrication status of the equipment must be checked before commissioning. Read and carry out all instructions on the lubricant plate and in the installation and maintenance literature. Heed all warning tags. Failure to do so could result in mechanical damage and in extreme cases risk of injury to personnel.
6) Electrical Equipment - Observe hazard warnings on electrical equipment and isolate power before working on the gearbox or associated equipment, in order to prevent the machinery being started.
7) Installation, Maintenance and Storage
   (a) In the event that equipment is to be held in storage, for a period exceeding 6 months, prior to installation or commissioning, we must be consulted regarding special preservation requirements. Unless otherwise agreed, equipment must be stored in a building protected from extremes of temperature and humidity to prevent deterioration.

   The rotating components (gears and shafts) must be turned a few revolutions once a month (to prevent bearings brinelling).
   (b) External gearbox components may be supplied with preservative materials applied, in the form of a "waxed" tape overwrap or wax film preservative. Gloves should be worn when removing these materials. The former can be removed manually, the latter using white spirit as a solvent.

   Preservatives applied to the internal parts of the gear units do not require removal prior to operation.
   (c) Installation must be performed in accordance with the manufacturer's instructions and be undertaken by suitably qualified personnel.
   (d) Before working on a gearbox or associated equipment, ensure that the load has been removed from the system to eliminate the possibility of any movement of the machinery and isolate power supply. Where necessary, provide mechanical means to ensure the machinery cannot move or rotate. Ensure removal of such devices after work is complete.
   (e) Ensure the proper maintenance of gearboxes in operation. Use only the correct tools and our approved spare parts for repair and maintenance. Consult the Maintenance Manual before dismantling or performing maintenance work.
8) Hot Surfaces and Lubricants
   (a) During operation, gear units may become sufficiently hot to cause skin burns. Care must be taken to avoid accidental contact.
   (b) After extended running the lubricant in gear units and lubrication systems may reach temperatures sufficient to cause burns. Allow equipment to cool before servicing or performing adjustments.
9) Selection and Design
   (a) Where gear units provide a backstop facility, ensure that back-up systems are provided if failure of the backstop device would endanger personnel or result in damage.
   (b) The driving and driven equipment must be correctly selected to ensure that the complete machinery installation will perform satisfactorily, avoiding system critical speeds, system torsional vibration, etc.
   (c) The equipment must not be operated in an environment or at speeds, powers, torques or with external loads beyond those for which it was designed.
   (d) As improvements in design are being made continually the contents of this catalogue are not to be regarded as binding in detail, and drawings and capacities are subject to alterations without notice.

The above guidance is based on the current state of knowledge and our best assessment of the potential hazards in the operation of the gear units.

Any further information or clarification required may be obtained by contacting our Application Engineers.

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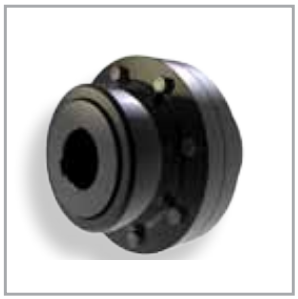

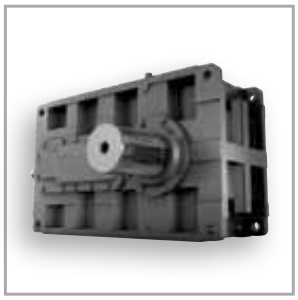



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