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Lenze

Simplabloc®
Electromagnetic
Clutch-brake units

Lenze GmbH & Co KG, Postfach 10 13 52, D-31763 Hameln
Wülmser Weg 5, D-31855 Aerzen, Phone ++49 (0) 5154 82-14 53, Telefax ++49 (0) 5154 82-11 04
E-Mail : Bremsen@Lenze.de · Internet : http://www.Lenze.com

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No matter which drive solution you imagine – we make your dreams come true.

According to our maxim “one stop shopping” we offer you a complete programme of electronic and mechanical drive systems which are distinguished by reliability and efficiency.
Our supply range includes frequency inverters, speed controllers, variable speed drives, gearboxes and motors as well as clutches and brakes.
Lenze is thus the competent partner for your application – not only as supplier for single components but also for complete drive systems including planning, execution and commissioning.

Furthermore, a world-wide service and distribution network allows a qualified customer advisory service on site and a fast and extensive after sales service. Our quality assurance system for development, production, sales and service is certified to DIN ISO 9001 and ISO 14001.
Our customers set the scale for measuring the quality of our products. Our task is to meet your requirements. Customer orientation as a Lenze principle means the highest quality.

See for yourself.

Simplabloc Clutch-brake units

The electromagnetic clutch-brake units have been proven to be successful drive units which are used in all branches of mechanical engineering, where a production process is run in cycles. Since the drive runs continuously with the clutch rotor, the energies of the input can be used to accelerate the output.

Clutch-brake units consist of electromagnetic clutches and brakes of the 14.105/115 series which are operated alternately. The torque is generated through friction. Connection to the AC voltage mains via rectifier.

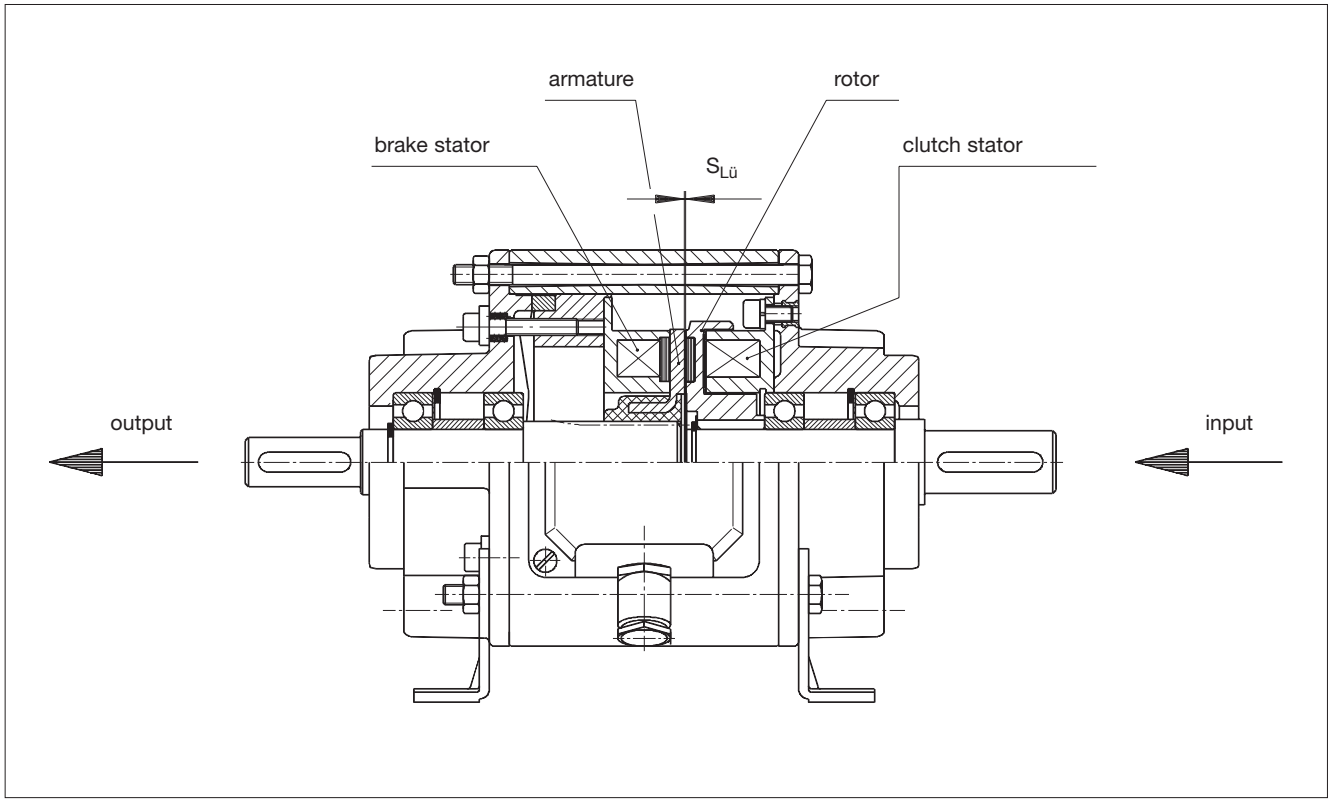
Apart from the basic designs with free input and output shafts as well as hollows shafts, the clutch-brake units are available with fitted three-phase motors and with helical or worm gearboxes mounted at the output side. The drives can be mounted in horizontal or vertical position. By using units which are ready to be installed, expenses for new designs and assembly time are considerably reduced.

For clutches and brakes which use friction, the wear depends on the friction work. Since wear-resistant and asbestos-free friction linings are used, an automatic adjustment device was omitted to avoid disturbances.

Due to the patented wear adjustment, the airgap can be corrected fast and without dismantling the clutch-brake units. The low inertias of the wear-resistant armature parts ensure high switching frequencies, which can even be increased by the fast excitation devices, if necessary.

Design features

- 5 sizes from 7.5 to 120 Nm
- Asbestos-free friction linings
- Patented airgap adjustment from outside without dismantling the unit
- No overlay of operating times of clutch and brake
- Zero-backlash design available as standard on request
- For each size 2 shaft diameters, 2 hollow shaft diameters and 2 flange diameters in IEC dimensions available as standard
- 2 axis heights available for each size
- Insulation class B
- Dimensioning for 100 % duty time
- Enclosure IP 44, higher enclosures on request
- Rated voltage 24 V DC, other voltages on request
- Variable terminal box position, standard position l.h.s. when viewing to the input side
- VDE 0580


armature
rotor
brake stator
$S_{Lü}$
clutch stator
output
input

Airgap setting device types 14.800 to 867

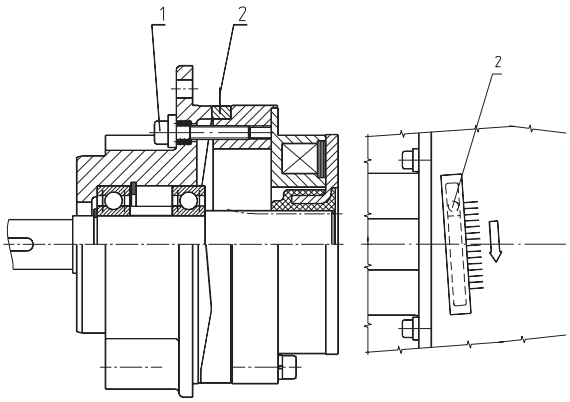


Fig. 1

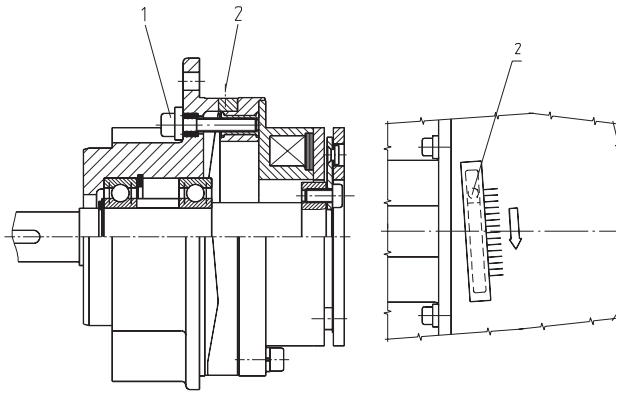


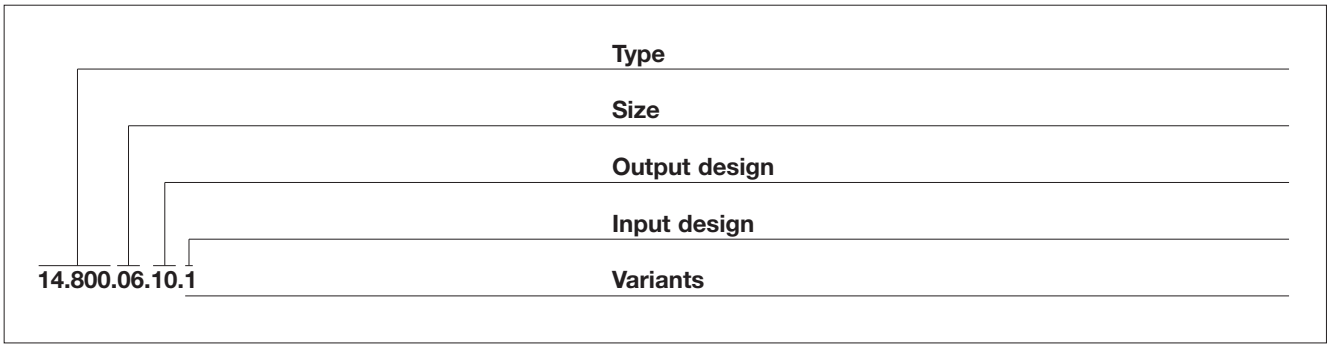
Fig. 2

Output cover with airgap setting device and splined armature (fig. 1).
Output cover with airgap setting device and backlash free armature (fig. 2).
The output cover (fig. 1 + 2) always has the same airgap setting device. It works as follows: The description of the patented Simplabloc airgap setting device is valid for both designs. The airgap can be corrected as follows, if necessary:

– The four screws (1) in the output cover must be loosened until the underlying pressure springs are released. They must, however, not be completely removed.
– The small cover in the casing slot has to be removed. You will see a radial hole into which you can insert a cylindrical rod and can now rotate the cam ring (2).
– The cam ring has to be rotated to its stop in the arrow direction. Thereafter, rotate the ring by one graduation and this now has set the nominal airgap.

After the airgap correction, the screws (1) have to be re-tightened and also refit the slot cover in the unit's body. This very simple airgap setting method can also be carried out when the unit is fitted into a machine.

Types 14.800 to 14.810



Type
14.800 - without motor, with electromagnetic brake
14.810 - with motor, with electromagnetic brake

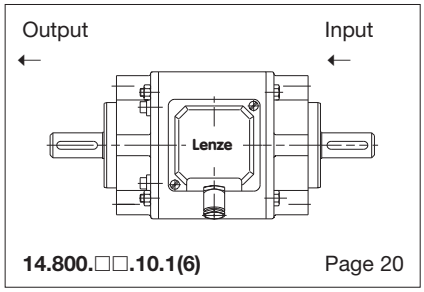
Output design
10 - free output shaft, no feet, no flange
11 - free output shaft, with feet, no flange
12 - free output shaft, with flange, no feet
13 - free output shaft, with feet and flange
20 - with hollow output shaft, no feet or flange
21 - with hollow output shaft, with flange, no feet
22 - with hollow output shaft, no flange, with feet
23 - with hollow output shaft, with flange and feet

Input design
1 - splined armature, free input shaft
2 - splined armature, free input shaft and flange
3 - splined armature, hollow shaft and B5 input flange
4 - splined armature, hollow shaft and B14 input flange
6 - backlash free armature, free input shaft
7 - backlash free armature, free input shaft and flange
8 - backlash free armature, hollow shaft and B5 input flange
9 - backlash free armature, hollow shaft and B14 input flange

Variants
Voltage clutch / brake
Shaft diameter / bore diameter /
Flange diameter / height of feet / terminal box position
Motor:
Power - Voltage
Speed - Frequency
Enclosure
For motor sizes available see page 13

Simplabloc type 14.800

	Designs with splined armature				Designs with backlash free armature			
Design	**10.1**	**10.2**	**10.3**	**10.4**	**10.6**	**10.7**	**10.8**	**10.9**
Input	free shaft	free shaft and B5 flange	hollow shaft and B5 flange	hollow shaft and B14 flange	corresponds to	corresponds to	corresponds to	corresponds to
Output	free shaft	free shaft	free shaft	free shaft	10.1	10.2	10.3	10.4
Feet design	-	-	-	-				
Design	**11.1**	**11.2**		**11.4**	**11.6**	**11.7**		**11.9**
Input	free shaft	free shaft and B5 flange		hollow shaft and B14 flange	corresponds to	corresponds to		corresponds to
Output	free shaft	free shaft		free shaft	11.1	11.2		11.4
Feet design	with feet	with feet		with feet				
Design	**12.1**	**12.2**	**12.3**	**12.4**	**12.6**	**12.7**	**12.8**	**12.9**
Input	free shaft	free shaft and B5 flange	hollow shaft and B5 flange	hollow shaft and B14 flange	corresponds to	corresponds to	corresponds to	corresponds to
Output	free shaft and B5 flange	free shaft and B5 flange	free shaft and B5 flange	free shaft and B5 flange	12.1	12.2	12.3	12.4
Feet design	-	-	-	-				
Design	**13.1**	**13.2**		**13.4**	**13.6**	**13.7**		**13.9**
Input	free shaft	free shaft and B5 flange		hollow shaft and B14 flange	corresponds to	corresponds to		corresponds to
Output	free shaft and B5 flange	free shaft and B5 flange		free shaft and B5 flange	13.1	13.2		13.4
Feet design	with feet	with feet		with feet				
Design	**20.1**	**20.2**	**20.3**	**20.4**	**20.6**	**20.7**	**20.8**	**20.9**
Input	free shaft	free shaft and B5 flange	hollow shaft and B5 flange	hollow shaft and B14 flange	corresponds to	corresponds to	corresponds to	corresponds to
Output	hollow shaft	hollow shaft	hollow shaft	hollow shaft	20.1	20.2	20.3	20.4
Feet design	-	-	-	-				
Design	**21.1**	**21.2**	**21.3**	**21.4**	**21.6**	**21.7**	**21.8**	**21.9**
Input	free shaft	free shaft and B5 flange	hollow shaft and B5 flange	hollow shaft and B14 flange	corresponds to	corresponds to	corresponds to	corresponds to
Output	hollow shaft and B5 flange	hollow shaft and B5 flange	hollow shaft and B5 flange	hollow shaft and B14 flange	21.1	21.2	21.3	21.4
Feet design	-	-	-	-				
Design	**22.1**	**22.2**		**22.4**	**22.6**	**22.7**		**22.9**
Input	free shaft	free shaft and B5 flange		hollow shaft and B14 flange	corresponds to	corresponds to		corresponds to
Output	hollow shaft	hollow shaft		hollow shaft	22.1	22.2		22.4
Feet design	with feet	with feet		with feet				
Design	**23.1**	**23.2**		**23.4**	**23.6**	**23.7**		**23.9**
Input	free shaft	free shaft and B5 flange		hollow shaft and B14 flange	corresponds to	corresponds to		corresponds to
Output	hollow shaft and B5 flange	hollow shaft and B5 flange		hollow entshaft and B5 flange	23.1	23.2		23.4
Feet design	with feet	with feet		with feet				



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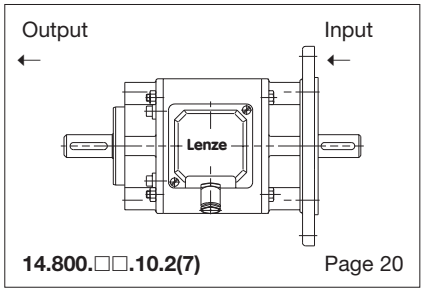

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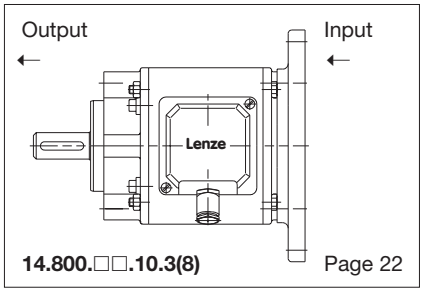

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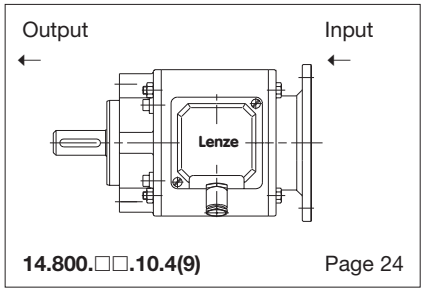

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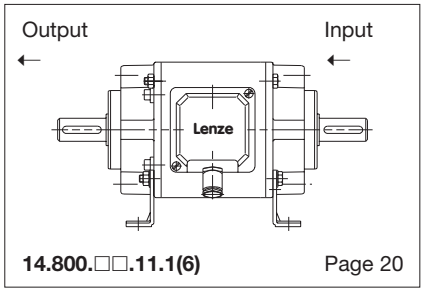

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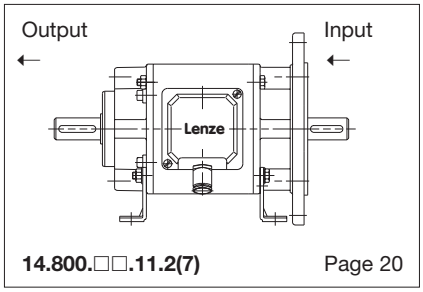

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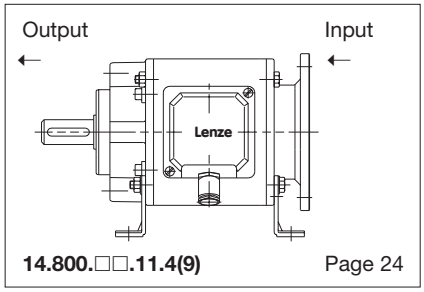

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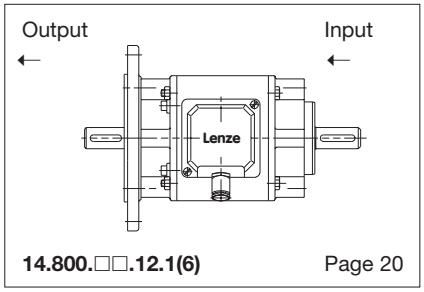

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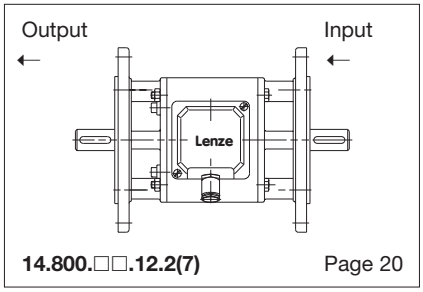

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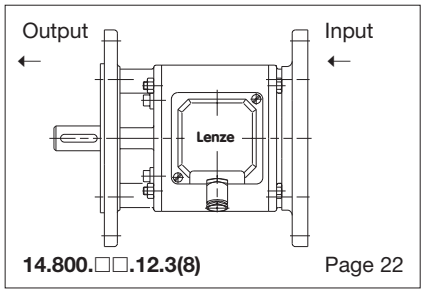

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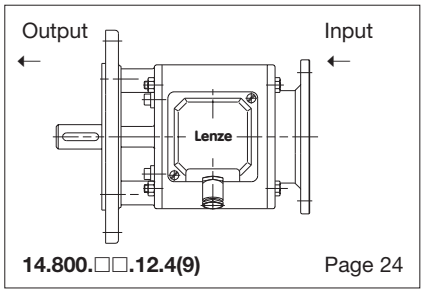

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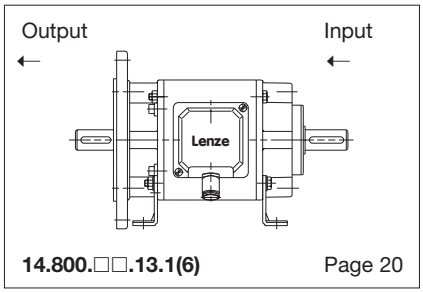

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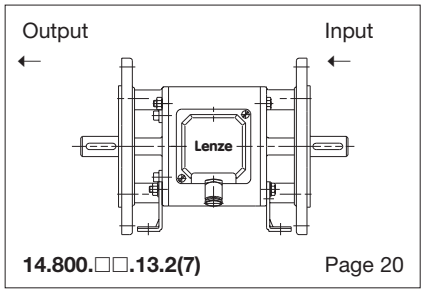

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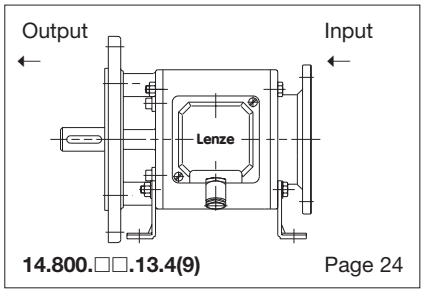

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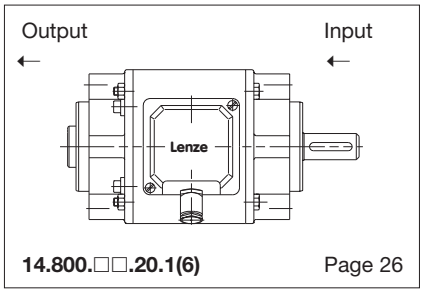

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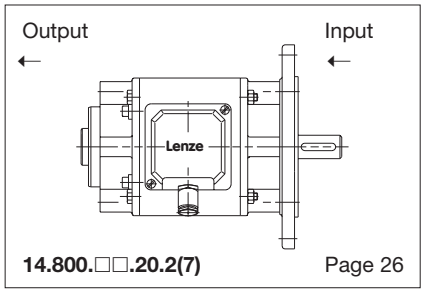

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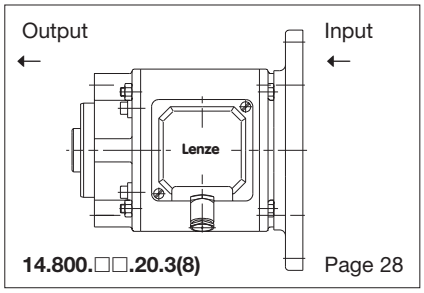

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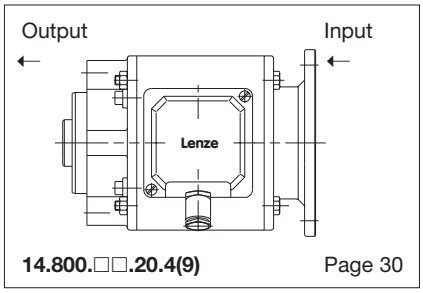

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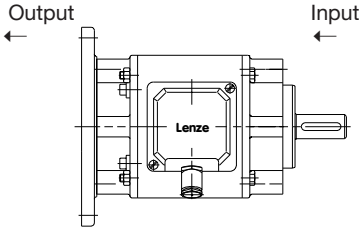

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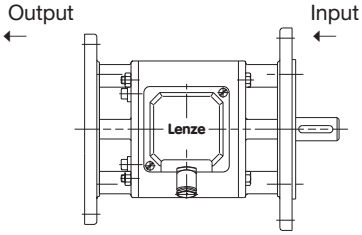

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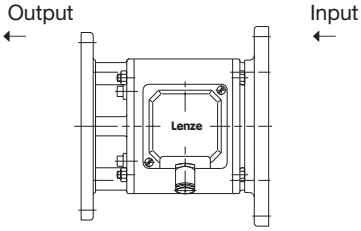

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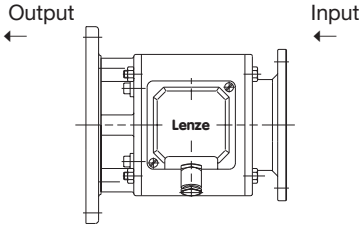

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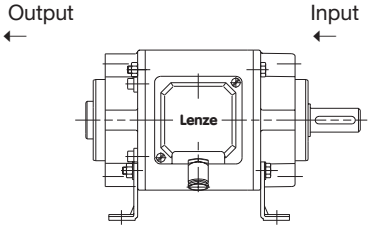

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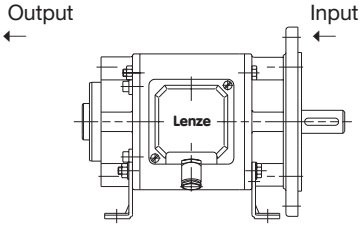

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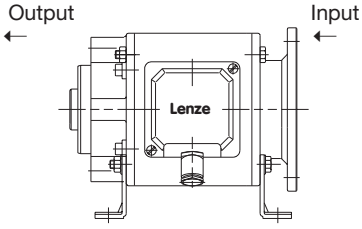

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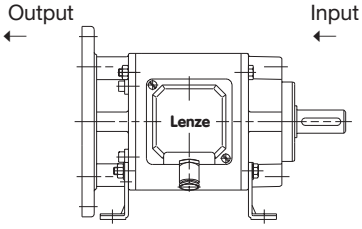

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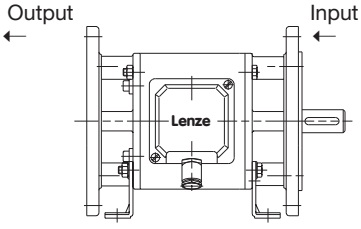

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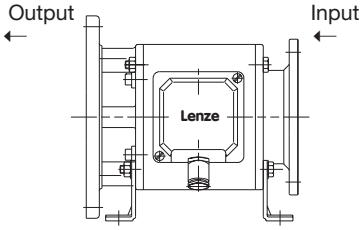

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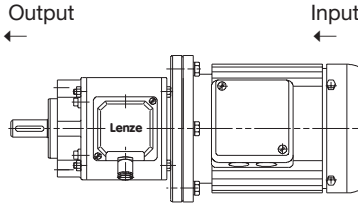

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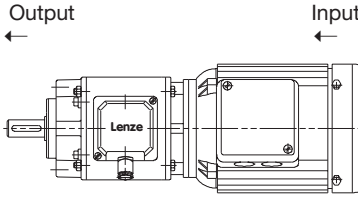

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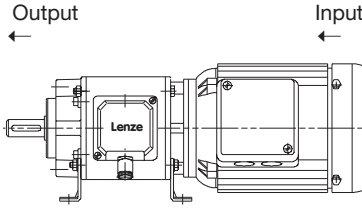

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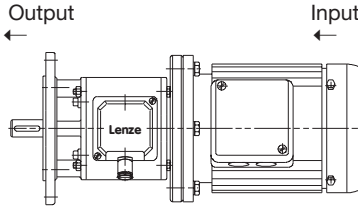

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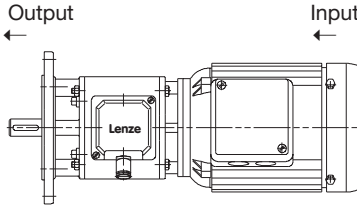
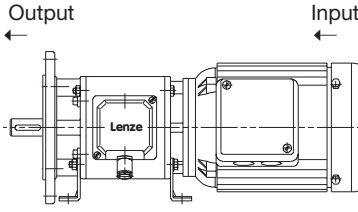
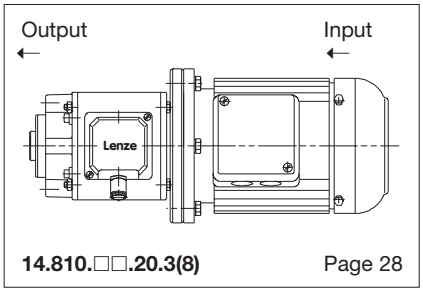


14.810.□□.12.4(9) Page 24

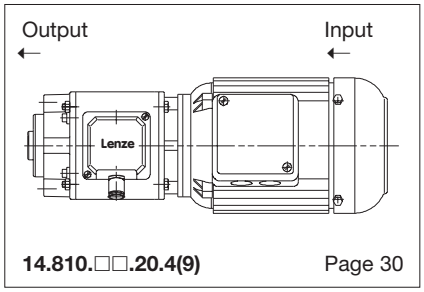


14.810.□□.13.4(9) Page 24

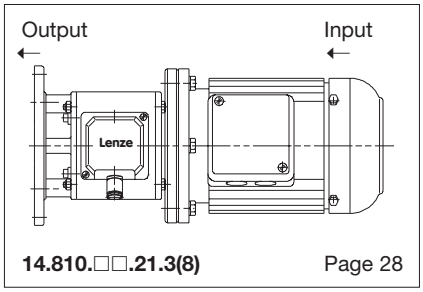
Lenze



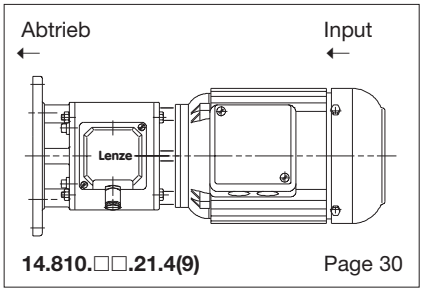
14.810.□□.20.3(8) Page 28



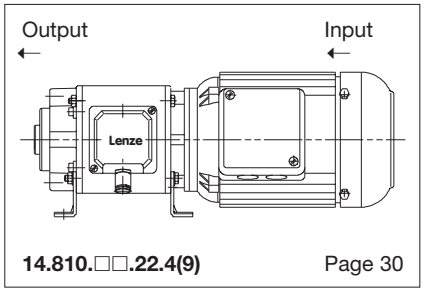
14.810.□□.20.4(9) Page 30



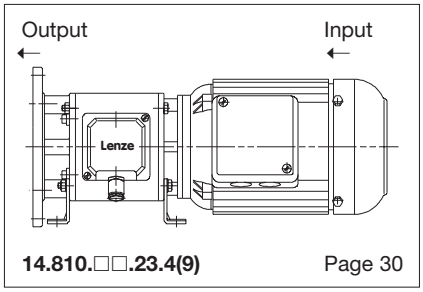
14.810.□□.21.3(8) Page 28



14.810.□□.21.4(9) Page 30



14.810.□□.22.4(9) Page 30



14.810.□□.23.4(9) Page 30

The 14.810 series is supplied with completely assembled three-phase motor, but it is not shown in extra dimensional drawings. The dimensions of these clutch-brake units can be obtained from the tables 14.800. For example, the dimensions of the design 14.810.06.12.4 can be obtained from the table 14.800.06.12.4 on page 24/25.
The possible combination of motor sizes and mountings is listed in the following table.

	Motor		
Type	Size	Mounting	Flange
14.810.06.□□.3(8) 14.810.06.□□.4(9)	71 71	B5 B14	160 C105
14.810.08.□□.3(8) 14.810.08.□□.4(9)	80 80	B5 B14	200 C120
14.810.10.□□.3(8) 14.810.10.□□.4(9)	90 90	B5 B14	200 C140
14.810.12.□□.3(8) 14.810.12.□□.4(9)	100 100	B5 B14	250 C160
14.810.16.□□.3(8) 14.810.16.□□.4(9)	132 132	B5 B14	300 C200

Selecting the size

The size is determined under consideration of VDI rule 2241.

Explanation of terms used in the calculations:

M_r = Rated torque of the clutch or brake in Nm
M_L = Load torque in Nm
M_a = Acceleration or deceleration torque in Nm
M_{req} = Required torque in Nm
P = Input power in kW
Δn_o = Relative initial speed of clutch or brake in rpm
J_I = Inertia of all output parts reduced to clutch or brake shaft in kgm²
t_3 = Slipping time in s during which there is relative motion between input and output and with the clutch or brake closed
t_{11} = Reaction delay during engaging in s, that is the time from switching on the voltage to the beginning of the torque rise
t_{12} = Torque rise time in s, that is time from the beginning of the torque rise to reaching the rated torque M_r
t_1 = Engagement time in s, that is the sum of $t_{11} + t_{12}$
t_2 = Disengagement time in s, that is the time from switching off to reaching 10% of the rated torque M_r
K = Safety factor ≧ 2
Q = Calculated friction work per operation in J
Q_E = Max. permissible friction work per single operation in J according to diagram page 18
Q_{perm} = Max. permissible friction work in J
Q_{NA} = Max. permissible friction work in kWh until first airgap resetting is required
O_f = Operating frequency in 1/ h, that is the number of periodical operations
N_{AS} = Number of operations until airgap setting

The size is mainly determined according to the required clutch or brake torques. The masses to be accelerated or braked (inertias), the relative speeds, the acceleration or braking times, the required operating frequencies as well as the required lifetime have to be considered when calculating. Other conditions as for example unusually high ambient temperature, extremely high humidity or very dusty environment should be known for the operation location of the encased units.

In any case, the friction surfaces must be kept completely free of oil or grease.

Safety factor
To ensure reliable transmission even under extreme operating conditions, the calculated torque is multiplied by the safety factor *K*, the size of which depends on the operating conditions.

$$K \geqq 2$$

Load types:
In practical applications, it is mainly distinguished between the following loads:

Purely dynamic load:
A load is purely dynamic when flywheels, rollers or similar components are to be accelerated or decelerated and the static load torque can be neglected.

$$M_{req} = M_a \cdot K \leqq M_r \qquad M_a = \frac{J_L \cdot \Delta n_0}{9.55 \cdot \left(t_3 - \frac{t_{12}}{2}\right)} \qquad M_{req} = \frac{J_L \cdot \Delta n_0}{9.55 \cdot \left(t_3 - \frac{t_{12}}{2}\right)} \cdot K$$

Dynamic plus static load:
Most applications belong into this category, as in most cases there is not only a static load torque but also a dynamic load.

$$M_{req} = (M_a \pm M_L) \cdot K \leqq M_r \qquad M_{req} = \left[\frac{J_L \cdot \Delta n_0}{9.55 \cdot \left(t_3 - \frac{t_{12}}{2}\right)} \pm M_L\right] \cdot K$$

$+M_L$ = engage a clutch or accelerate
$-M_L$ = brake or decelerate

Approximate determination of the required torque or unit size
If only the input power to be transmitted is known, the required brake or clutch torque can be determined as follows:

$$M_{req} = 9550\frac{P}{n} \cdot K \leqq M_r$$

Acceleration and deceleration time
When the rated torque and the inertia and load torque are known, the acceleration and deceleration time can be determined as follows:

$$t_3 = \frac{J_L \cdot \Delta n_0}{9.55 \cdot (M_r \pm M_L)} + \frac{t_{12}}{2}$$

$-M_L$ = engage a clutch or accelerate
$+M_L$ = brake or decelerate

Thermal load
When determining the size of clutches and brakes, other important factors such as friction work per operation and the operating frequency must be considered.
The actual friction work per operation is calculated according to the following formula:

$$Q = \frac{J_L \cdot \Delta n_0^2}{182.5} \cdot \frac{M_r}{M_r \pm M_L}$$

$-M_L$ = engage a clutch or accelerate
$+M_L$ = brake or decelerate

The permissible friction work per operation with given operating frequency can be obtained from the diagram on page 18. If the friction work per operation is known, the permissible operating frequency can also be obtained from the diagram.

Wear adjustment
Number of operations until adjustment:

$$Z_{NA} = \frac{Q_{NA} \cdot 3.6 \cdot 10^6}{Q}$$

Example
For the positioning drive of a packing machine the following technical data are available:

J_L = 0.01 kgm² total
M_L = 6 Nm
Δn_o = 700 min^{-1}
t_3 = 0.15 s
S_h = 5000 operations per hour

$$M_a = \frac{J_L \cdot \Delta n_0}{9.55 \cdot \left(t_3 - \frac{t_{12}}{2}\right)} = \frac{0.01 \cdot 700}{9.55 \cdot (0.15 - 0.03)}$$

$\frac{t_{12}}{2}$ assumed with 0.03 s

$$M_a = 6.1 \text{ Nm} \qquad M_{req} = (M_a + M_L) \cdot K = (6.1 + 6) \cdot 2 \qquad M_{req} = 24.2 \text{ Nm}$$

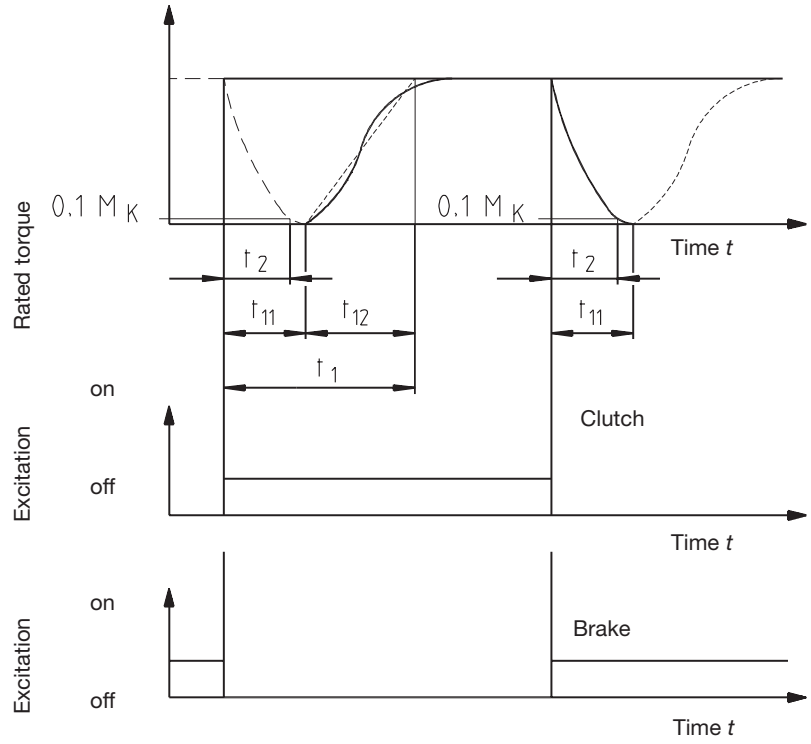
Selected clutch-brake unit:
Type 14.800.10.11.1
with M_K = 30 Nm
How to calculate the friction work per operation:

$$Q = \frac{J_L \cdot \Delta n_0^2}{182.5} \cdot \frac{M_r}{M_r - M_L} \qquad Q = \frac{0.01 \cdot 700^2}{182.5} \cdot \frac{30}{30 - 6} \qquad Q = 33.6 \text{ J}$$

S_{perm} The permissible operating frequency depends on the friction work and can be obtained from the diagram on page 18.
For the selected size 10 the desired operating frequency is permitted for the calculated friction work.

Order example
Type 14.800.10.11.1
24V DC, Shaft Ø 19 mm / 19 mm

Operating times:
The operating times listed in the tables are valid for dc switching at nominal airgap and coil at nominal temperature. These are average values which underlie deviations that may depend on the method of rectification and the required release distance $S_{lü}$.



Description of times when engaging and disengaging
t_{11} = Delay time when engaging
t_{12} = Torque rise time
t_1 = Engagement time
t_2 = Disengagement time:
$t_{2\ brake} \approx t_{11\ clutch}$
$t_{2\ clutch} \approx t_{11\ brake}$

Operating times in ms

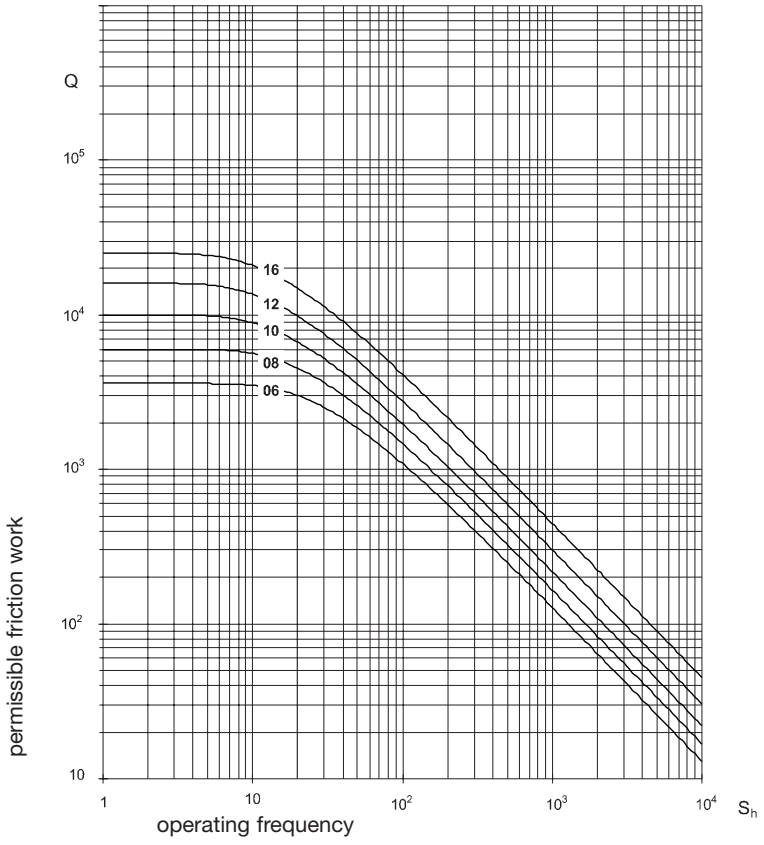
Size	Type 14.800/810/852 to 867 and 14.137/138				
		Clutch		Brake	
	$t_{11} \approx t_2$	t_{12}	t_1	t_{12}	t_1
06	20	35	55	25	45
08	25	70	95	30	55
10	35	85	120	50	85
12	50	120	170	75	125
16	65	145	210	85	150

Selection table

Type 14.800-867		M_r[1]) Nm	P_{20}[2]) W		n_{max} 1/min	Q_E J	Q_{NA} kWh	Inertia $J \times 10^{-5}$, kgm^2		
Armature design	Size	14.105 14.115	Clutch	Brake				Rotor	Armature	Output shaft
with splined armature	06	7.5	15	11.5	3000	3.6×10^3	6.5	11.9	4.2	0.7
	08	15	20	16		6×10^3	11	26.6	13.9	2.4
	10	30	28	21		10×10^3	17	78	41.4	6.5
	12	60	35	28		16×10^3	42	226	120	15.8
	16	120	50	38		25×10^3	68	630	378	64
with backlash-free armature	06	7.5	15	11.5	3000	3.6×10^3	6.5	11.9	6.5	1.2
	08	15	20	16		6×10^3	11	26.6	25.3	3.7
	10	30	28	21		10×10^3	17	78	82.1	10.2
	12	60	35	28		16×10^3	42	226	241	23.3
	16	120	50	38		25×10^3	68	630	800	85

Standard voltage 24 V DC
1) M_r at n = 100 min^{-1}
2) at 20° C

14.800/810/852 ÷ 867 and 14.137/138

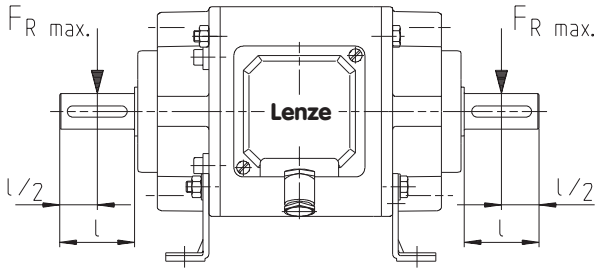


Lenze

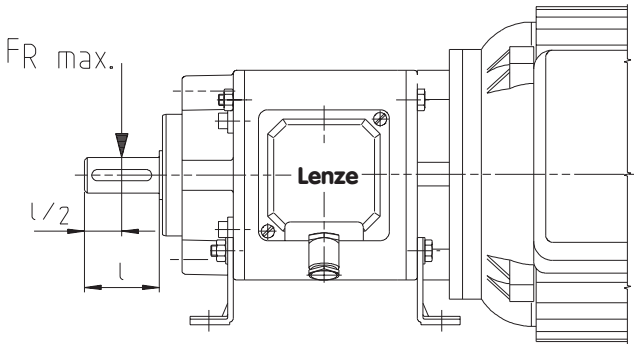
The radial forces stated in the table below refer to the middle of the shaft. $F_{R\,max.}$ is the max. permissible radial force with regard to the strength of the shafts.
The force F_N is based on a lifetime of the bearings of L_h = 10000 h with n = 1500 min^{-1}.

Please refer to the diagram to convert the force to other lifetimes and speeds. The max. permissible radial force $F_{R\,max.}$ must, however, not be exceeded. In case of additional axial forces, further calculations have to be made.

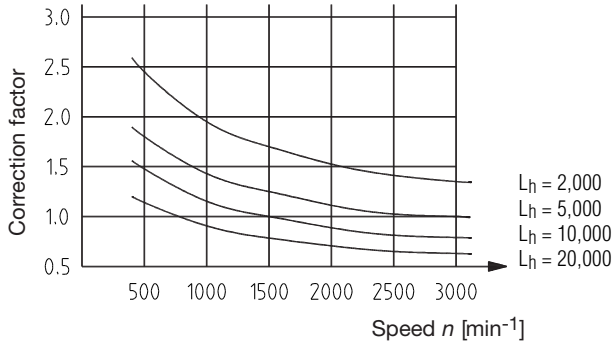
Type 14.800



Type 14.810



Size	Force $F_{R\,max.}$ [N]	Force F_N [N]
06	600	325
08	900	425
10	1300	590
12	1900	870
16	2300	1350



$$F = F_N \cdot k \leqq F_{R\,max.}$$

F = permissible radial force in N
$F_{R\,max.}$ = max. permissible radial force in N referred to the shaft strength
F_N = permissible radial force in N for L_h = 10000 h and n = 1500 min^{-1}
k = correction factor (see diagram)

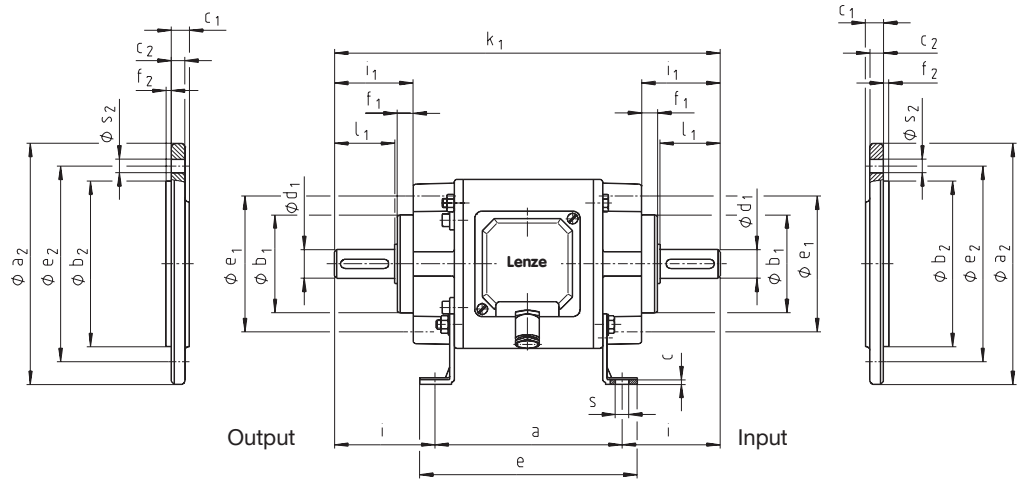
Example:
Size 08
Speed n = 500 min^{-1}
Lifetime L_h = 5000 h

F = 425 · 1.8 = 765 N < $F_{R\,max.}$ = 900 N

Dimensions

Simplabloc® Clutch-brake units

Free input and output shaft



Keys according to DIN 6885/1
Centrings according to DR DIN 332

Basic design 14.800.□□.11.1(6)

Size	M_r Nm	Clutch	Brake	b_1 h8	e_1	d_1 k6	f_1	g_1	g_2	h	i_1	k_1	l_1	s_1	*m* kg
		P_{20}													
		W	W												
06	7.5	15	11.5	52	67	11	10	90	89	63	35	183	23	M6	3
						14				71	42	197	30		
08	15	20	16	65	90	14	10	112	95	71	42	230	30	M8	4.5
						19				80	52	250	40		
10	30	28	21	78	115	19	19	140	110	80	62	280	40	M10	8
						24				90	72	300	50		
12	60	35	28	78	115	24	20	167	136	100	72	324	50	M10	13
						28				112	82	344	60		
16	120	50	38	98	145	28	20	210	158	112	82	380	60	M12	25
						38				132	102	420	80		

Feet

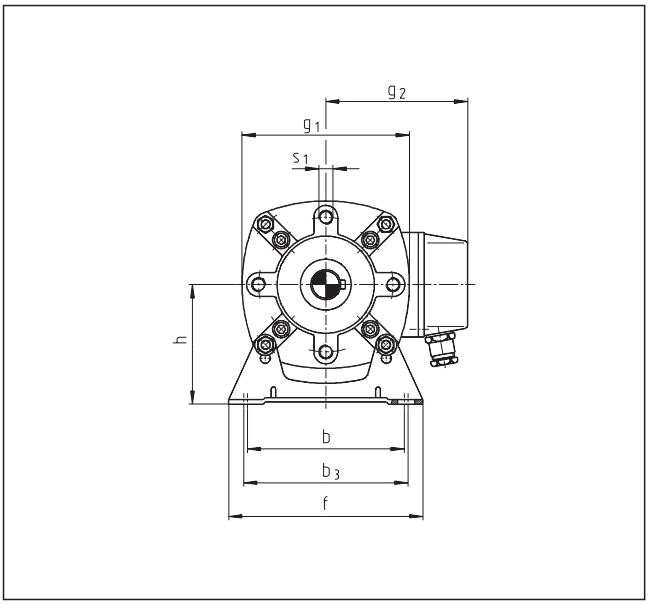
Size	a	b	b_3	c	e	f	i	s	*m* kg
06	100	80	85	3	115	100	41.5	7	0.2
							48.5		
08	120	105	110	3	140	130	55	9	0.3
							65		
10	140	130	140	4	165	160	70	9	0.4
							80		
12	160	150	160	5	184	180	82	11	0.7
							92		
16	185	185	195	6	215	223	97.5	13	1.2
							117.5		

Flange

Size	a_2	b_2 j7	c_1	c_2	e_2	f_2	s_2	*m* kg
06	140	95	12	10	115	3	9	0.4
	160	110			130	3.5		0.5
08	160	110	12	9	130	3.5	9	0.5
	200	130			165		11.5	0.7
10	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
12	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
16	250	180	22	15	215	4	13.5	1.3
	300	230			265			2.0

Lenze

Free input and output shaft



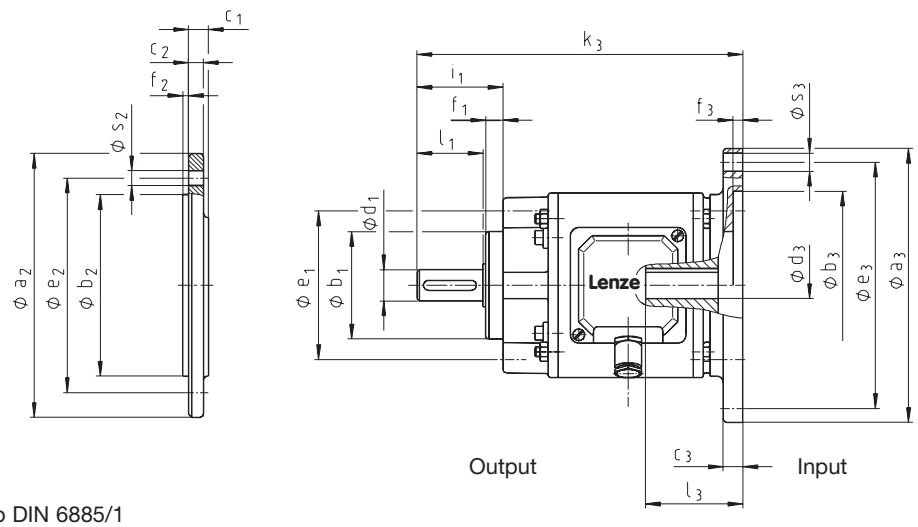
Type description	Feet	Input B5 flange	Output B5 flange
14.800.□□.10.1[6]			
14.800.□□.10.2[7]		■	
14.800.□□.11.1[6]	■		
14.800.□□.11.2[7]	■	■	
14.800.□□.12.1[6]			■
14.800.□□.12.2[7]		■	■
14.800.□□.13.1[6]	■		■
14.800.□□.13.2[7]	■	■	■

Ordering data

in general – Type description indicating size and nominal voltage
Input and output shaft diameter

on request– Input and output flange diameter
Feet height
Backlash free armature
[indicated in brackets]

Input hollow shaft B5 flange – Free output shaft



Keys according to DIN 6885/1
Key ways according to DIN 6885/1JS9
Centrings according to DR DIN 332

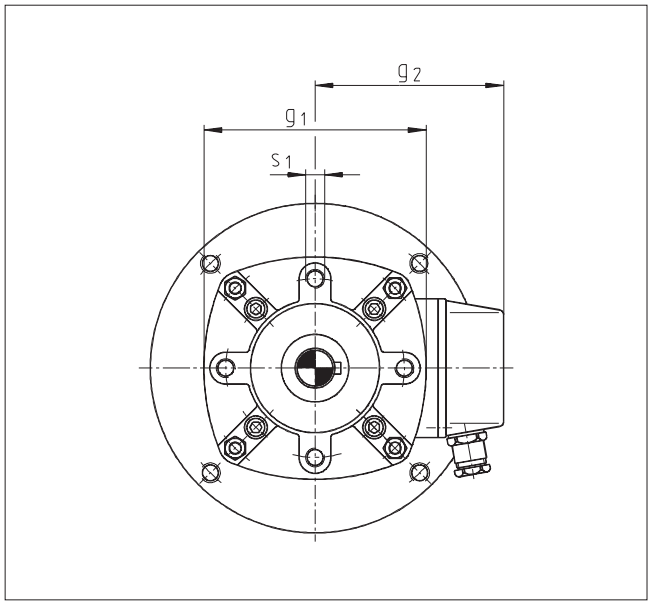
Basic design 14.800.□□.10.3[8]

Size	M_r Nm	Clutch P_{20} W	Brake P_{20} W	a_3	b_1 h8	b_3 H9	c_3	d_1 k6	d_3 G7	e_1	e_3	f_1	f_3	g_1	g_2	i_1	k_3	l_1	l_3	s_1	s_3	g	m kg
06	7.5	15	11.5	140	52	95.2	10	11	11	67	115	10	4	90	89	35	146	23	40	M6	M8	9	2.5
				160		110.2		14	14		130					42	153	30			10		
08	15	20	16	160	65	110.2	14	14	14	90	130	10	4	112	95	42	184	30	50	M8	M8	9	4.5
				200		130.2		19	19		165					52	194	40			11.5		
10	30	28	21	200	78	130.2	13	19	19	115	165	19	4	140	110	62	217	40	60	M10	M10	9	7.5
				250		180.2		24	24		215		5			72	227	50			13.5		
12	60	35	28	200	78	130.2	16	24	24	115	165	20	4	167	136	72	251	50	70	M10	M10	11	12
				250		180.2		28	28		215		5			82	261	60			M12		
16	120	50	38	250	98	180.2	20	28	28	145	215	20	5	210	158	82	294	60	80	M12	M12	11	22
				300		230.2		38	38		265					102	314	80					

Output flange

Size	a_2	b_2 j7	c_1	c_2	e_2	f_2	s_2	m kg
06	140	95	12	10	115	3	9	0.4
	160	110			130	3.5		0.5
08	160	110	12	9	130	3.5	9	0.5
	200	130			165		11.5	0.7
10	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
12	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
16	250	180	22	15	215	4	13.5	1.3
	300	230			265			2.0

Input hollow shaft B5 flange – Free output shaft



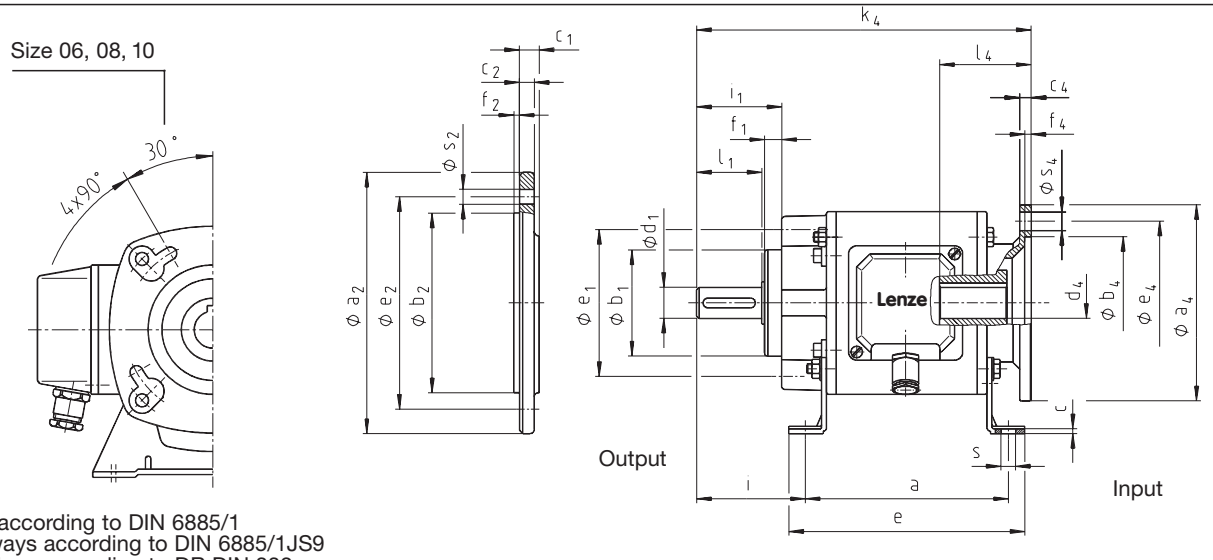
TType description	Input B5 flange	Output B5 flange
14.800.□□.10.3[8]	■	
14.800.□□.12.3[8]	■	■

Ordering data

in general – Type description indicating size and nominal voltage
Input hollow shaft diameter
Input flange diameter
Output shaft diameter

on request – Output flange diameter
Backlash free armature
[indicated in brackets]

Input hollow shaft B14 flange – Free output shaft



Keys according to DIN 6885/1
Key ways according to DIN 6885/1JS9
Centrings according to DR DIN 332

Basic design 14.800.□□.11.4[9]

Size	M_r Nm	Clutch P_{20} W	Brake P_{20} W	a_4	b_1 h8	b_4 H9	c_4	d_1 k6	d_4 G7	e_1	e_4	f_1	f_4	g_1	g_2	h	i_1	k_4	l_1	l_4	s_1	s_4	g	*m* kg
06	7.5	15	11.5	105	52	70.2	5.5	11	11	67	85	10	3	90	89	63	35	152	23	50	M6	7	9	3
								14	14							71	42	159	30					
08	15	20	16	120	65	80.2	7	14	14	90	100	10	4	112	95	71	42	186	30	58	M8	7	9	4.5
								19	19							80	52	196	40					
10	30	28	21	140	78	95.2	8	19	19	115	115	19	4	140	110	80	62	225	40	70	M10	9	9	8
								24	24							90	72	235	50					
12	60	35	28	160	78	110.2	8	24	24	115	130	20	4	167	136	100	72	261	50	80	M10	9	11	13
								28	28							112	82	271	60					
16	120	50	38	200	98	130.2	10	28	28	145	165	20	5	210	158	112	82	309	60	97	M12	12	11	24
								38	38							132	102	329	80					

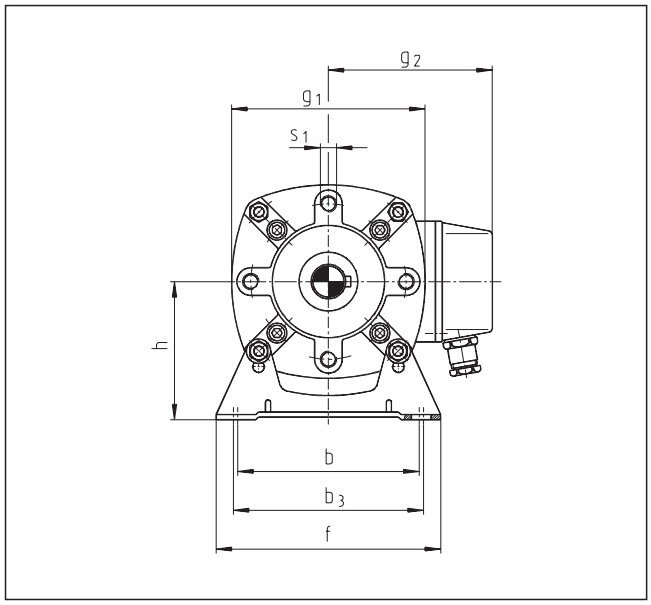
Feet

Size	a	b	b_3	c	e	f	i	s	*m* kg
06	100	80	85	3	115	100	41.5	7	0.2
							48.5		
08	120	105	110	3	140	130	55	9	0.3
							65		
10	140	130	140	4	165	160	70	9	0.4
							80		
12	160	150	160	5	184	180	82	11	0.7
							92		
16	185	185	195	6	215	223	97.5	13	1.2
							117.5		

Output flange

Size	a_2	b_2 j7	c_1	c_2	e_2	f_2	s_2	*m* kg
06	140	95	12	10	115	3	9	0.4
	160	110			130	3.5		0.5
08	160	110	12	9	130	3.5	9	0.5
	200	130			165		11.5	0.7
10	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
12	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
16	250	180	22	15	215	4	13.5	1.3
	300	230			265			2.0

Input hollow shaft B14 flange – Free output shaft



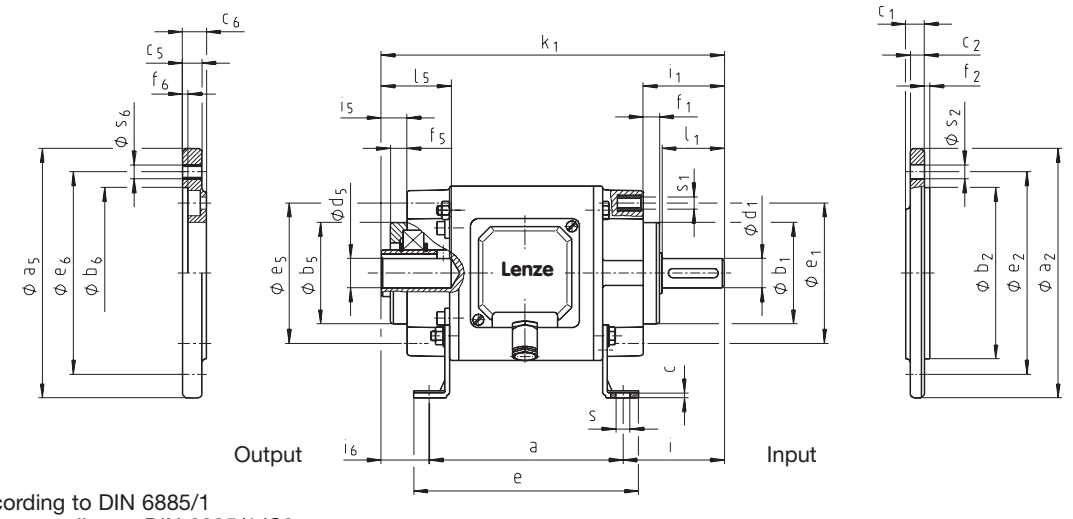
Type description	Feet	Output B5 flange
14.800.□□.10.4[9]		
14.800.□□.11.4[9]	■	
14.800.□□.12.4[9]		■
14.800.□□.13.4[9]	■	■

Ordering data

in general – Type description indicating size and nominal voltage
Input hollow shaft diameter
Output shaft diameter

on request – Output flange diameter
Foot height
Backlash free armature
[indicated in brackets]

Free input shaft – Output hollow shaft



Keys according to DIN 6885/1
Key ways according to DIN 6885/1JS9
Centrings according to DR DIN 332

Basic design 14.800.□□.22.1[6]

Size	M_r Nm	Clutch P_{20} W	Brake P_{20} W	b_1 h8	b_5 h8	d_1 k6	d_5 G7	e_1	e_5	f_1	f_5	g_1	g_2	h	i_1	i_5	k_1	l_1	l_5	s_1	s_5	*m* kg
06	7.5	15	11.5	52	52	11	11	67	67	10	10	90	89	63	35	14	162	23	23	M6	M6	2.8
						14	14							71	42		169	30	30			
08	15	20	16	65	65	14	14	90	90	10	10	112	95	71	42	17	205	30	30	M8	M8	4.5
						19	19							80	52		216	40	40			
10	30	28	21	78	86	19	19	115	115	19	17	140	110	80	62	17	237	40	40	M10	M10	8
						24	24							90	72		247	50	50			
12	60	35	28	78	98	24	24	115	115	20	20	167	136	100	72	20	273	50	50	M10	M10	13
						28	28							112	82		283	60	60			
16	120	50	38	98	120	28	28	145	145	20	21	210	158	112	82	25.5	324	60	60	M12	M12	25
						38	38							132	102		344	80	80			

Feet

Size	a	b	b_3	c	e	f	i	i_6	s	*m* kg
06	100	80	85	3	115	100	41.5		7	0.2
							48.5			
08	120	105	110	3	140	130	55		9	0.3
							65			
10	140	130	140	4	165	160	70		9	0.4
							80			
12	160	150	160	5	184	180	82		11	0.7
							92			
16	185	185	195	6	215	223	97.5		13	1.2
							117.5			

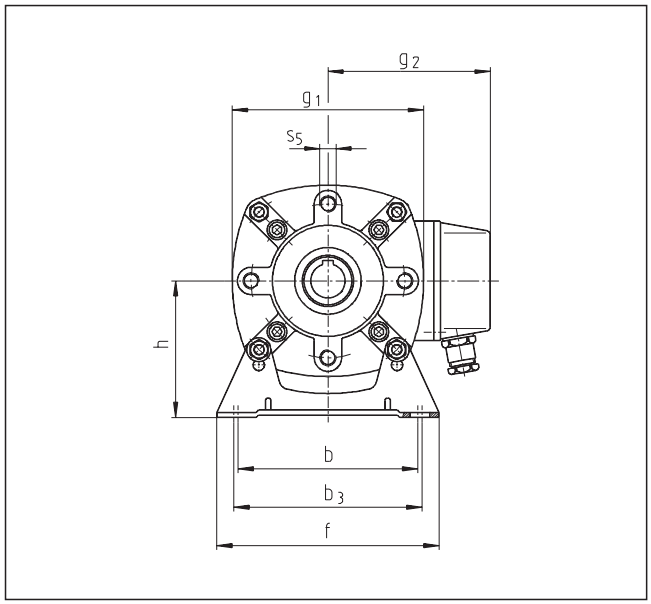
Input flange

Size	a_2	b_2 j7	c_1	c_2	e_2	f_2	s_2	*m* kg
06	140	95	12	10	115	3	9	0.4
	160	110			130	3.5		0.5
08	160	110	12	9	130	3.5	9	0.5
	200	130			165		11.5	0.7
10	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
12	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
16	250	180	22	15	215	4	13.5	1.3
	300	230			265			2.0

Output flange

Size	a_5	b_6 H9	c_5	c_6	e_6	f_6	s_6	*m* kg
06	140	95.2	13	15	115	4	9	0.4
	160	110.2			130			0.5
08	160	110.2	14	18	130	4	M8	0.5
	200	130.2			165		11.5	0.7
10	200	130.2	13	18	165	4	M10	0.8
	250	180.2			215	5	13.5	1.1
12	200	130.2	16	21	165	4	M10	0.8
	250	180.2			215	5	M12	1.1
16	250	180.2	20	27	215	5	M12	1.3
	300	230.2			265			2.0

Free input shaft – Output hollow shaft



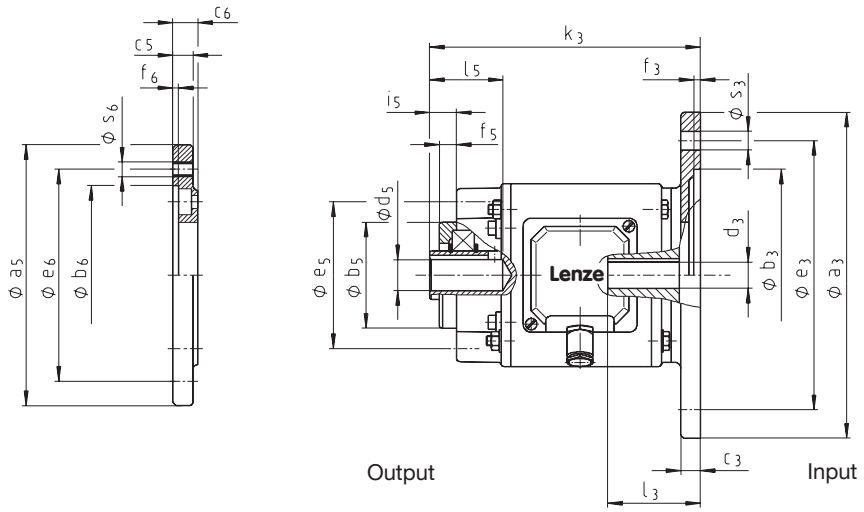
Type description	Feet	Input B5 flange	Output B5 flange
14.800.□□.20.1[6]			
14.800.□□.20.2[7]		■	
14.800.□□.21.1[6]			■
14.800.□□.21.2[7]		■	■
14.800.□□.22.1[6]	■		
14.800.□□.22.2[7]	■	■	
14.800.□□.23.1[6]	■		■
14.800.□□.23.2[7]	■	■	■

Ordering data

in general – Type description indicating size and nominal voltage
Input shaft and output hollow shaft diameter

on request – Input and output flange diameter
Foot height
Backlash free armature
[indicated in brackets]

Input hollow shaft B5 flange – Output hollow shaft



Key ways according to DIN 6885/1JS9

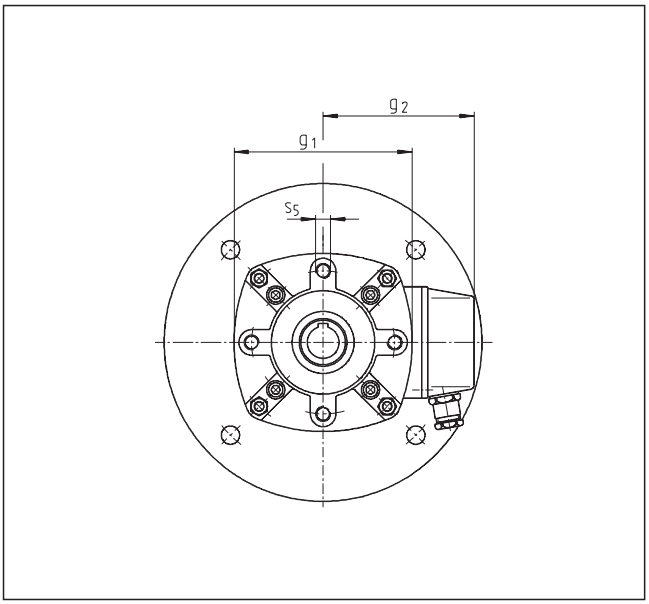
Basic design 14.800.□□.20.3[8]

Size	M_r Nm	Clutch P_{20} W	Brake P_{20} W	a_3	b_3 H9	b_5 h8	c_3	d_3 G7	d_5 G7	e_3	e_5	f_3	f_5	g_1	g_2	i_5	k_3	l_3	l_5	s_3	s_5	m kg
06	7.5	15	11.5	140	95.2	52	10	11	11	115	67	5	10	90	89	14	125	40	23	M8	M6	2.5
				160	110.2			14	14	130									30	10		
08	15	20	16	160	110.2	65	14	14	14	130	90	4	10	112	95	17	159	50	30	M8	M8	4.5
				200	130.2			19	19	165									40	11.5		
10	30	28	21	200	130.2	86	13	19	19	165	115	4	17	140	110	17	174	60	40	M10	M10	7.5
				250	180.2			24	24	215		5							50	13.5		
12	60	35	28	200	130.2	98	16	24	24	165	115	4	20	167	136	20	201	70	50	M10	M10	12
				250	180.2			28	28	215		5							60	M12		
16	120	50	38	250	180.2	120	20	28	28	215	145	5	21	210	158	25.5	238	80	60	M12	M12	22
				300	230.2			38	38	265									80			

Output flange

Size	a_5	b_6 H9	c_5	c_6	e_6	f_6	s_6	m kg
06	140	95.2	13	15	115	4	9	0.4
	160	110.2			130			0.5
08	160	110.2	14	18	130	4	M8	0.5
	200	130.2			165		11.5	0.7
10	200	130.2	13	18	165	4	M10	0.8
	250	180.2			215	5	13.5	1.1
12	200	130.2	16	21	165	4	M10	0.8
	250	180.2			215	5	M12	1.1
16	250	180.2	20	27	215	5	M12	1.3
	300	230.2			265			2.0

Input hollow shaft B14 flange – Output hollow shaft



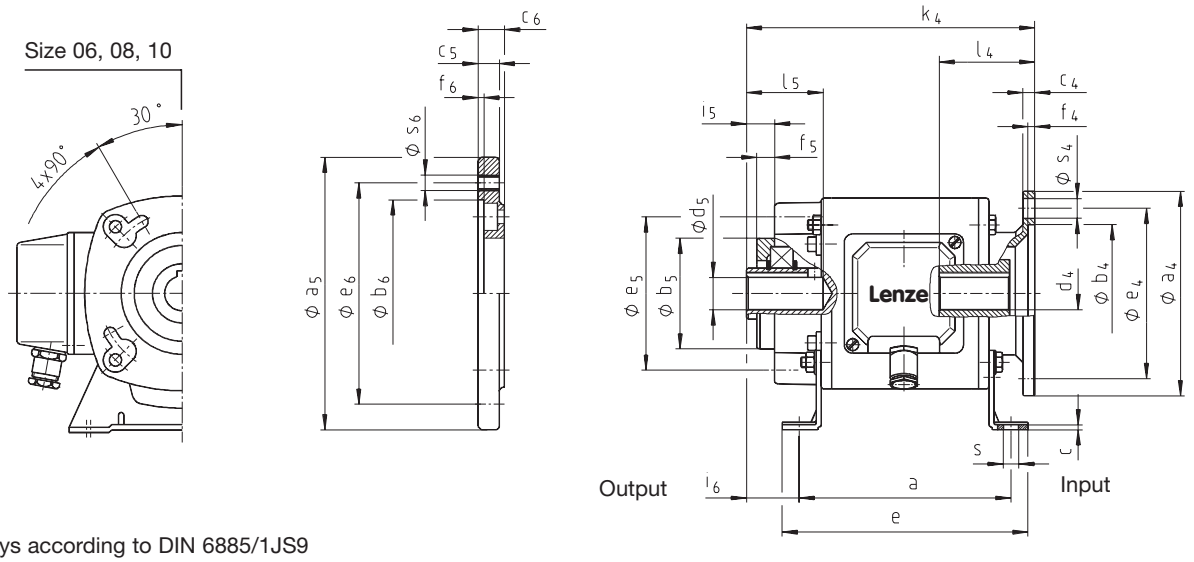
Type description	Input B5 flange	Output B5 flange
14.800.□□.20.3[8]	■	
14.800.□□.21.3[8]	■	■

Ordering data

in general – Type description indicating size and nominal voltage
Input hollow shaft diameter
Input flange diameter
Output hollow shaft diameter

on request – Output flange diameter
Backlash free armature
[indicated in brackets]

Input hollow shaft B14 flange – Output hollow shaft



Key ways according to DIN 6885/1JS9

Basic design 14.800.□□.22.4[9]

Size	M_r Nm	Clutch	Brake	a_4	b_4 H9	b_5 h8	c_4	d_4 G7	d_5 G7	e_4	e_5	f_4	f_5	g_1	g_2	h	i_5	k_4	l_4	l_5	s_4	s_5	*m* kg
		P_{20}																					
		W	W																				
06	7.5	15	11.5	105	70.5	52	5.5	11	11	85	67	3	10	90	89	63	14	131	50	23	7	M6	2.8
								14	14							71				30			
08	15	20	16	120	80.2	65	7	14	14	100	90	4	10	112	95	71	17	161	58	30	7	M8	4.5
								19	19							80				40			
10	30	28	21	140	95.2	86	8	19	19	115	115	4	17	140	110	80	17	182	70	40	9	M10	8
								24	24							90				50			
12	60	35	28	160	110.2	98	8	24	24	130	115	4	20	167	136	100	20	211	80	50	9	M10	1.3
								28	28							112				60			
16	120	50	38	200	130.2	120	10	28	28	165	145	5	21	210	158	112	25.5	253	97	60	12	M12	2.4
								38	38							132				80			

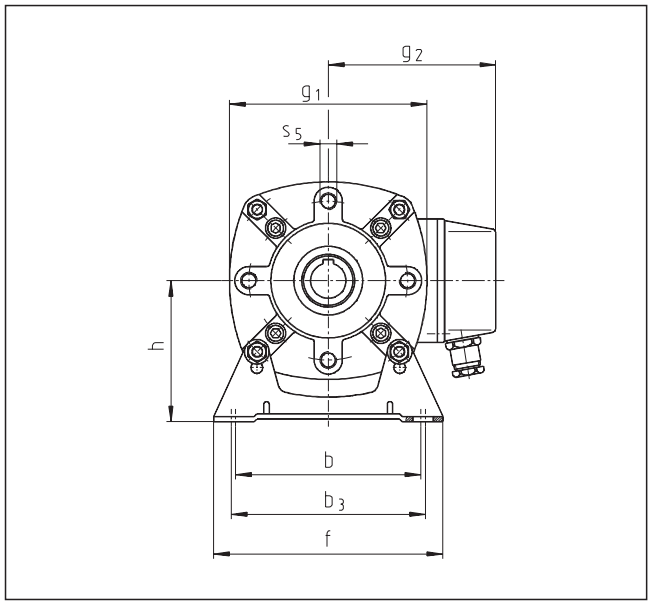
Feet

Size	a	b	b_3	c	e	f	i_6	s	*m* kg
06	100	80	85	3	115	100	20.5	7	0.2
08	120	105	110	3	140	130	30	9	0.3
10	140	130	140	4	165	160	27	9	0.4
12	160	150	160	5	184	180	31	11	0.7
16	185	185	195	6	215	223	41.5	13	1.2

Output flange

Size	a_5	b_6 H9	c_5	c_6	e_6	f_6	s_6	*m* kg
06	140	95.2	13	15	115	4	9	0.4
	160	110.2			130			0.5
08	160	110.2	14	18	130	4	M8	0.5
	200	130.2			165		11.5	0.7
10	200	130.2	13	18	165	4	M10	0.8
	250	180.2			215	5	13.5	1.1
12	200	130.2	16	21	165	4	M10	0.8
	250	180.2			215	5	M12	1.1
16	250	180.2	20	27	215	5	M12	1.3
	300	230.2			265			2.0

Input hollow shaft B14 flange – Output hollow shaft



Type description	Feet	Output B5 flange
14.800.☐☐.20.4[9]		
14.800.☐☐.21.4[9]		■
14.800.☐☐.22.4[9]	■	
14.800.☐☐.23.4[9]	■	■

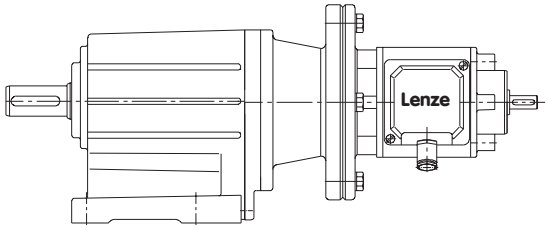
Ordering data

in general – Type description indicating size and nominal voltage
Input hollow shaft diameter
Output hollow shaft diameter

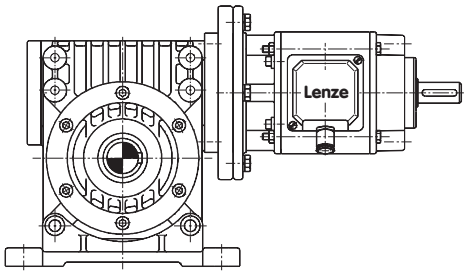
on request – Output flange diameter
Foot height
Backlash free armature
[indicated in brackets]

14.852/853/855/856/857 series

Type 14.852



Type 14.855

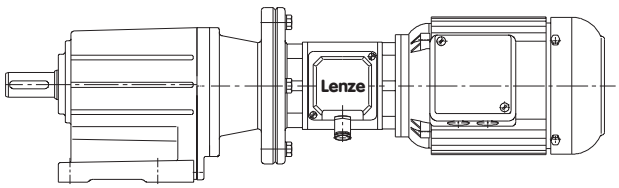


This series of clutch-brake units with free input shaft already includes a helical or worm gearbox. The connection between the clutch-brake units and the gearbox has zero backlash because of the often required high frequency switching. The possible output speeds and ratios can be obtained from the following selection tables.

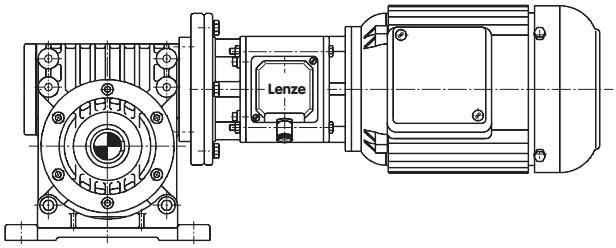
The input of these units can be via flexible couplings and pulleys or chain wheels.

14.862/863/865/866/867 series

Type 14.862



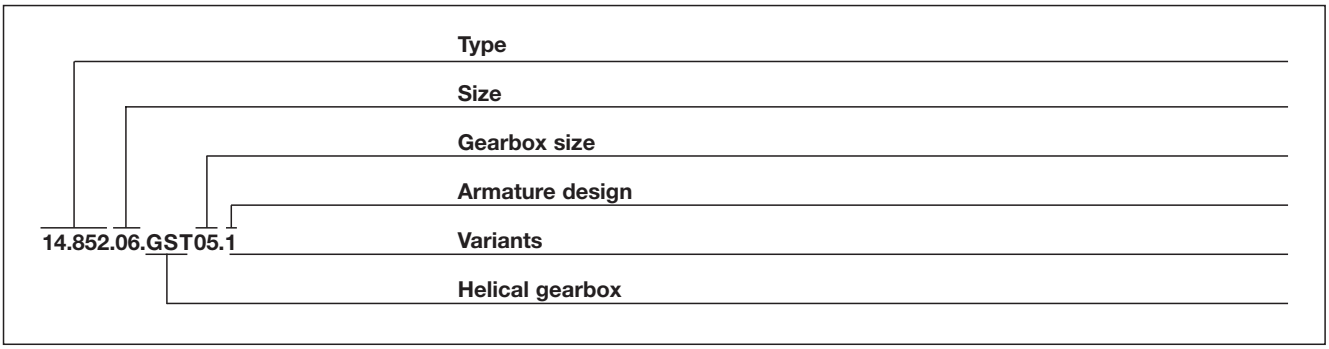
Type 14.865



This series is largely identical with the above-described series. Instead of a free input shaft, these units are supplied with mounted three-phase motors in B14 mounting.

The way of wear adjustment and the technical data are identical with the 14.800 and 810 series.

Types 14.852 to 14.867



Type
14.852 - free input shaft and helical gearbox in B3
14.853 - free input shaft and helical gearbox in B5

14.855 - free input shaft and worm gearbox in B3
14.856 - free input shaft and worm gearbox in B5
14.857 - free input shaft and worm gearbox with hollow shaft

14.862 - B14 motor and helical gearbox in B3
14.863 - B14 motor and helical gearbox in B5

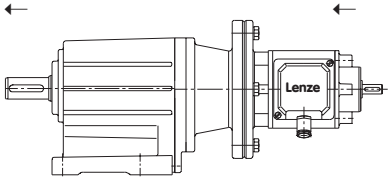
14.865 - B14 motor and worm gearbox in B3
14.866 - B14 motor and worm gearbox in B5
14.867 - B14 motor and worm gearbox with hollow shaft

Armature design
1 splined armature

Variants
Mounting
Voltage clutch/voltage brake
Input shaft diameter
Motor:
Power - voltage
Speed - frequency
Enclosure
Gearbox:
Ratio
Flange diameter (only with helical gearboxes in flange design)

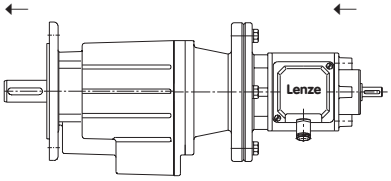
List of types

Output ← Input ←



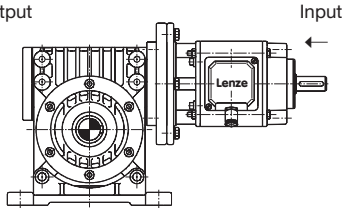
Foot mounted design
14.852.□□. Page 38

Output ← Input ←



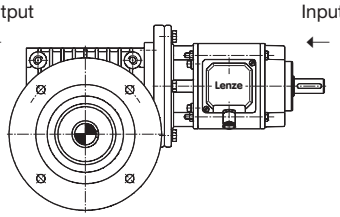
Flange mounted design
14.853.□□. Page 38

Output ← Input ←



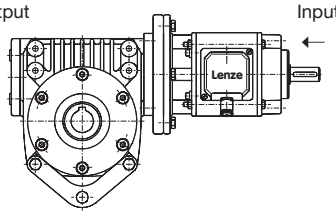
Foot mounted design
14.855.□□. Page 40

Output ← Input ←



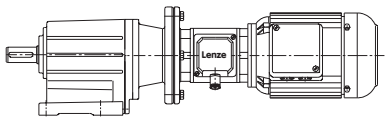
Flange mounted design
14.856.□□. Page 40

Output ← Input ←



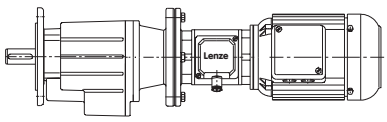
Hollow shaft design
14.857.□□. Page 40

Output ← Input ←



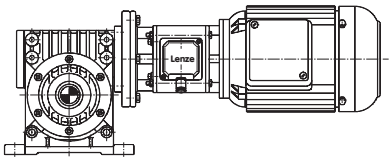
Foot mounted design
14.862.□□. Page 42

Output ← Input ←



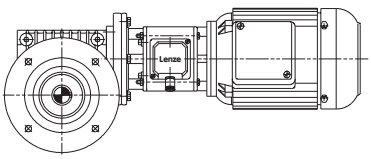
Flange mounted design
14.863.□□. Page 42

Output ← Input ←



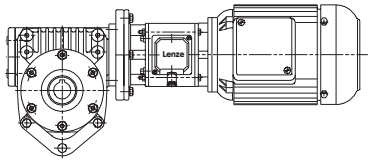
Foot mounted design
14.865.□□. Page 44

Output ← Input ←



Flange mounted design
14.866.□□. Page 44

Output ← Input ←



Hollow shaft design
14.867.□□. Page 44

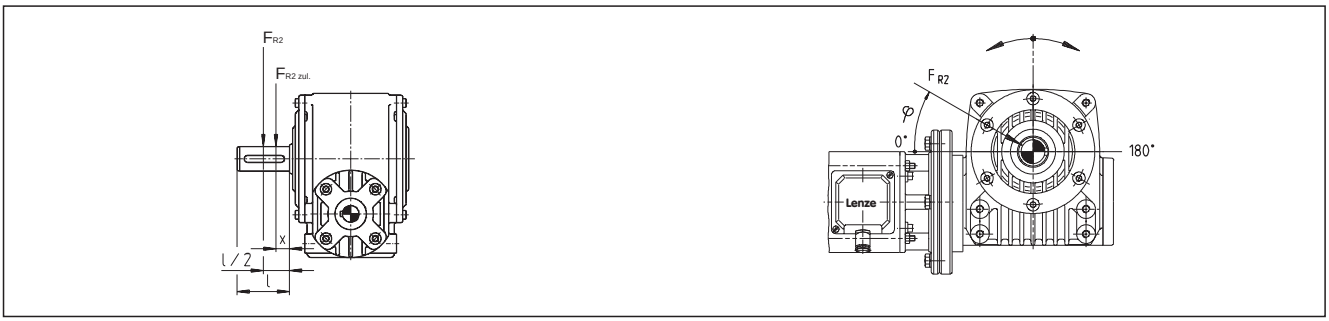
Lenze

The values for the radial force F_R stated in the tables below refer to the middle of the shaft end. The permissible radial force must be determined according to the following formula:

$$F_{R2\ perm.} = F_{R2} \cdot f\varphi \cdot f_W \leqq F_{R2\ max.} \cdot f_W$$

F_{R2} = Radial force in N acting upon middle of the output shaft
$f\varphi$ = Radial load direction factor
f_W = Load application factor

Worm gearbox



Size	05	06	08	10	12
n_{R2} min^{-1}	F_{R2} N				
≧ 125	2360	3150	3750	4000	5300
80	2800	3750	4500	4750	6300
50	3350	4500	5300	5600	7500
32	4000	5200	6300	6700	9000
20	4750	5200	7500	8000	10600
12.5	4800	5200	8500	9500	12500
8	4800	5200	8500	11200	15000
≦ 5	4800	5200	8500	13200	16000
max.1)	4800	5200	8500	14000	16000

Rotation	φ							
	0°	45°	90°	135°	180°	225°	270°	315°
	$f\varphi$							
	1.12	1.32	1.5	1.6	1.6	1.4	1.12	1
	1.6	1.5	1.32	1.18	1.12	1.18	1.32	1.5

x/l	0	0.2	0.4	0.6	0.8	1
f_w	1.32	1.18	1.05	0.95	0.86	0.8

Helical gearbox

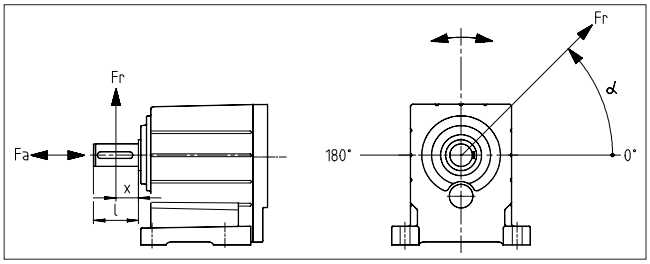
– permissible radial force

$F_{r_{perm}} = f_w \cdot f_\alpha \cdot F_{r_{Tab}} \leq f_w \cdot F_{r_{max}}$

– permissible axial force

$F_{a_{perm}} = F_{a_{Tab}}$ with $F_r = 0$

Consult factory with F_r **and** $F_a \neq 0$



Rotation	α							
	0°	45°	90°	135°	180°	225°	270°	315°
	$f\alpha$							
	2.24	2.0	1.6	1.25	1.12	1.25	1.6	2.0
	1.0	1.0	1.0	1.4	2.0	2.24	2.0	1.4

x/l	0	0.2	0.4	0.6	0.8	1
f_w	1.44	1.22	1.06	0.94	0.85	0.75

GST □□-2, 3 with standard bearing

V □□	F_{rTab}: acts on middle of shaft end (x = l/2), F_{aTab} only valid for F_r = 0									
	GST 05		GST 06		GST 07		GST 09		GST 11	
n_2 [min^{-1}]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]
400	1950	2000	2350	850	3400	1900	6800	2300	17000	9500
250	2200	2300	2600	900	3800	2200	7600	2800	19000	10000
160	2600	2650	3100	1250	4500	2900	9400	4000	21000	11000
100	3000	3100	3600	1800	5400	3900	11500	5600	21000	14000
63	3500	3600	4300	2600	6400	5300	11500	8900	21000	16000
40	3800	3600	4350	3600	7600	7000	11500	11000	21000	16000
25	3900	3600	4350	4800	9100	7000	11500	12000	21000	16000
<16	3900	3600	4350	4800	9500	7000	11500	12000	21000	16000
$F_{r\ max.}$	3900	–	4350	–	9500	–	11500	–	21000	–

Selection table

Clutch-brake units

Type 14.852/853/862/863

P Input power
n_1 Input speed
i Rated ratio of the helical gearbox
n_2 Output speed
M_2 Output torque

n_2	M_2	Free output shaft		Directly mounted motor		Frame size	n_1	i
min^{-1}	Nm	Type	Dimensions see page	Type	Dimensions see page		min^{-1}	
P = 0.37 kW								
266 215 169 138 106 85 68	13 16 21 26 33 41 51	14.852(3).06.GST05.1	38/39	14.862(3).06.GST05.1	42/43	71	1380	5.187 6.4 8.163 10.000 13.016 16.191 20.044
55 42 35	64 82 100	14.852(3).06.GST06.1	38/39	14.862(3).06.GST06.1	42/43	71	1380	24.933 32.267 39.160
P = 0.55 kW								
259 215 169 138 109 89 68	20 24 31 38 47 58 76	14.852(3).08.GST06.1	38/39	14.862(3).08.GST06.1	42/43	80	1380	5.324 6.4 8.163 10.000 12.571 15.4 20.044
56 42 35	94 122 149	14.852(3).08.GST07.1	38/39	14.862(3).08.GST07.1	42/43	80	1380	24.567 32.267 39.160
P = 1.1 kW								
261 217 170 139 110 90 69	40 48 61 75 95 116 151	14.852(3).10.GST07.1	38/39	14.862(3).10.GST07.1	42/43	90	1390	5.324 6.4 8.167 10.000 12.751 15.4 20.044
55 43 35	188 243 295	14.852(3).10.GST09.1	38/39	14.862(3).10.GST09.1	42/43	90	1390	24.933 32.267 39.160
P = 2.2 kW								
264 211 175 137 114 93 68	79 99 119 152 184 225 305	14.852(3).12.GST09.1	38/39	14.862(3).12.GST09.1	42/43	100	1410	5.324 6.667 8.027 10.267 12.362 15.156 20.533
49 43 36	422 480 583	14.852(3).12.GST11.1	38/39	14.862(3).12.GST11.1	42/43	100	1410	28.333 32.267 39.160

Please contact us for other input power and speed

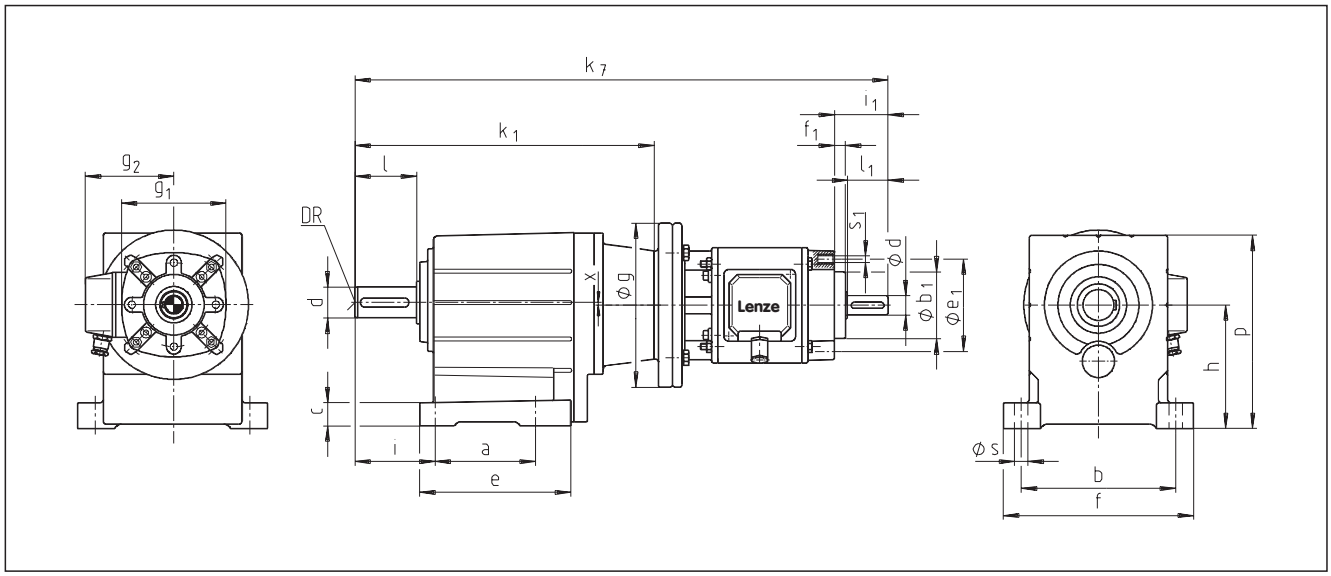
Type 14.855/856/857
Type 14.865/866/867

P Input power
n_1 Input power
i Rated ratio of the helical gearbox
n_2 Output speed
M_2 Output torque

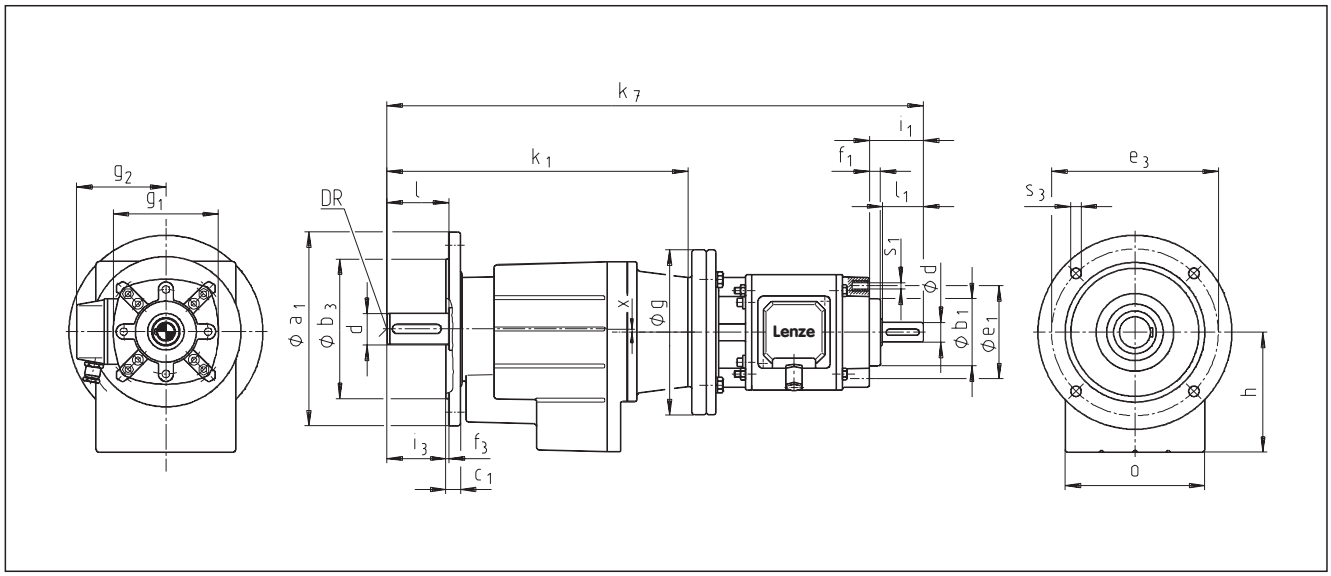
n_2	M_2	Free input shaft		Directly mounted motor		Frame size	n_1	i
min^{-1}	Nm	Type	Dimensions see page	Type	Dimensions see page		min^{-1}	
P = 0.37 kW								
190 145 95 73 48	15 20 28 36 47	14.855/856/857.06.05.□	40/41	14.865/866/867.06.05.□	44/45	71	1380	7 10 15 20 30
35 27 23	57 70 72	14.855/856/857.06.06.□	40/41	14.865/866/867.06.06.□	44/45	71	1380	40 53 60
P = 0.55 kW								
184 138 92 69	22 28 40 52	14.855/856/857.08.06.□	40/41	14.865/866/867.08.06.□	44/45	80	1380	7 10 15 20
46 35 26	69 87 109	14.855/856/857.08.08.□	40/41	14.865/866/867.08.08.□	44/45	80	1380	30 40 53
P = 1.1 kW								
185 139 93 70	45 59 83 109	14.855/856/857.10.08.□	40/41	14.865/866/867.10.08.□	44/45	90	1390	7 10 15 20
46	146	14.855/856/857.10.10.□	40/41	14.865/866/867.10.10.□	44/45	90	1390	30
P = 2.2 kW								
194 141	87 119	14.855/856/857.12.10.□	40/41	14.865/866/867.12.10.□	44/45	100	1410	7 10
97 71 49	164 223 292	14.855/856/857.12.12.□	40/41	14.865/866/867.12.12.□	44/45	100	1410	15 20 30

Please contact us for other input power and speed

Type 14.852, foot mounted design



Type 14.853, flange mounted design

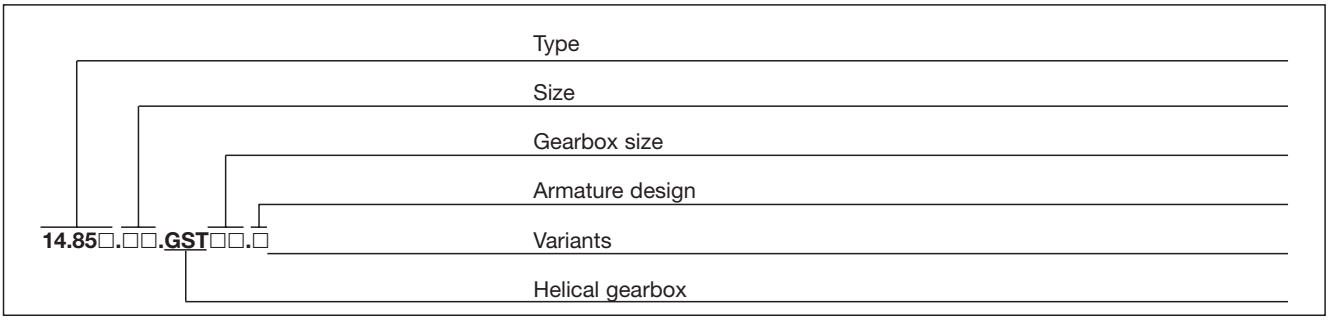


Keys according to DIN 6885/1
Centrings according to DR DIN 332

Type	M_r Nm	Clutch	Brake	a	a_1	b	b_1 h8	b_3 j7	c	c_1	d k6	d_1 k6	e	e_1	e_3	f	f_1	f_3	g
		P_{20} [w]																	
14.85□.06.GST05.1	7.5	15	11.5	90	120 140 160	125	52	80 95 110	20	10 10 10	25	11 14	139	67	100 115 130	158	10	3 3 3.5	160
14.85□.06.GST06.1	7.5	15	11.5	106	160 200	160	52	110 130	25	12 12	30	11 14	157	67	130 165	200	10	3.5 3.5	160
14.85□.08.GST06.1	15	20	16	106	160 200	160	65	110 130	25	12 12	30	14 19	157	90	130 165	200	10	3.5 3.5	160
14.85□.08.GST07.1	15	20	16	130	200 250	200	65	130 180	30	14 15	40	14 19	196	90	165 215	250	10	3.5 4	160
14.85□.10.GST07.1	30	28	21	130	200 250	200	78	130 180	30	14 15	40	19 24	196	115	165 215	250	19	3.5 4	200
14.85□.10.GST09.1	30	28	21	165	250 300	245	78	180 230	40	16 18	50	19 24	239	115	215 265	304	19	4 4	200
14.85□.12.GST09.1	60	35	28	165	250 300	245	78	180 230	40	16 18	50	24 28	239	115	215 265	304	20	4 4	250
14.85□.12.GST11.1	60	35	28	200	300 350	300	78	230 250	50	18 20	60 m6	24 28	280	115	265 300	375	20	4 5	250

Type	g_1	g_2	h	h_1	i	i_1	i_3	k_1	k_7	l	l_1	o	p	s	s_1	s_3	DIN 332 DR	*m* [kg]	
																		14.852	14.853
14.85□.06.GST05.1	90	89	100	98	66	35 42	50	269	447 454	50	23 30	115	156	11	M6	7 9 9	M10	18	11 11.5 12
14.85□.06.GST06.1	90	89	121	124	79	35 42	60	295	482 489	60	23 30	145	198	13.5	M6	9 11	M10	25	19 20
14.85□.08.GST06.1	112	95	121	124	79	42 52	60	313	531 541	60	30 40	145	198	13.5	M8	9 11	M10	30	21 22
14.85□.08.GST07.1	112	95	155	158	104	42 52	80	369	605 615	80	30 40	180	251	17.5	M8	11 14	M16	45	37 39
14.85□.10.GST07.1	140	110	155	158	104	62 72	80	389	649 659	80	40 50	180	251	17.5	M10	11 14	M16	52	42 44
14.85□.10.GST09.1	140	110	194	198	127.5	62 72	100	452	732 742	100	40 50	222	311	17.5	M10	14 14	M16	79	70 72
14.85□.12.GST09.1	167	136	194	198	127.5	72 82	100	452	753 763	100	50 60	222	311	22	M10	14 14	M16	92	75 77
14.85□.12.GST11.1	167	136	243	247	155	72 82	120	509	840 850	120	50 60	270	385	22	M10	14 18	M20	138	111 115

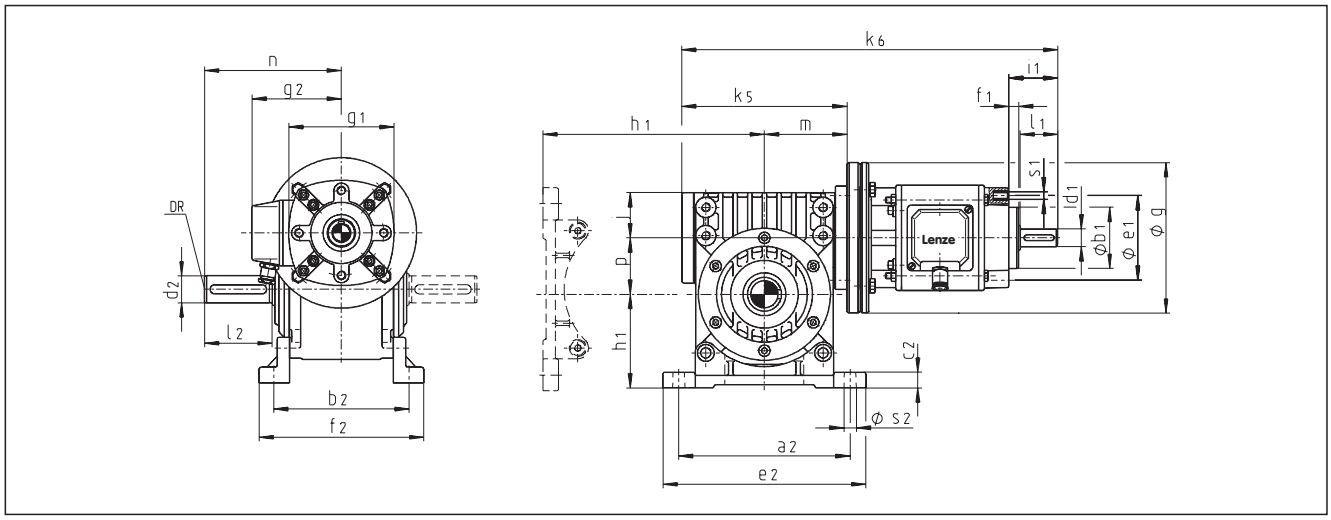
Ordering example
Type 14.852 with helical gearbox, foot mounted design
Type 14.853 with helical gearbox, flange mounted design



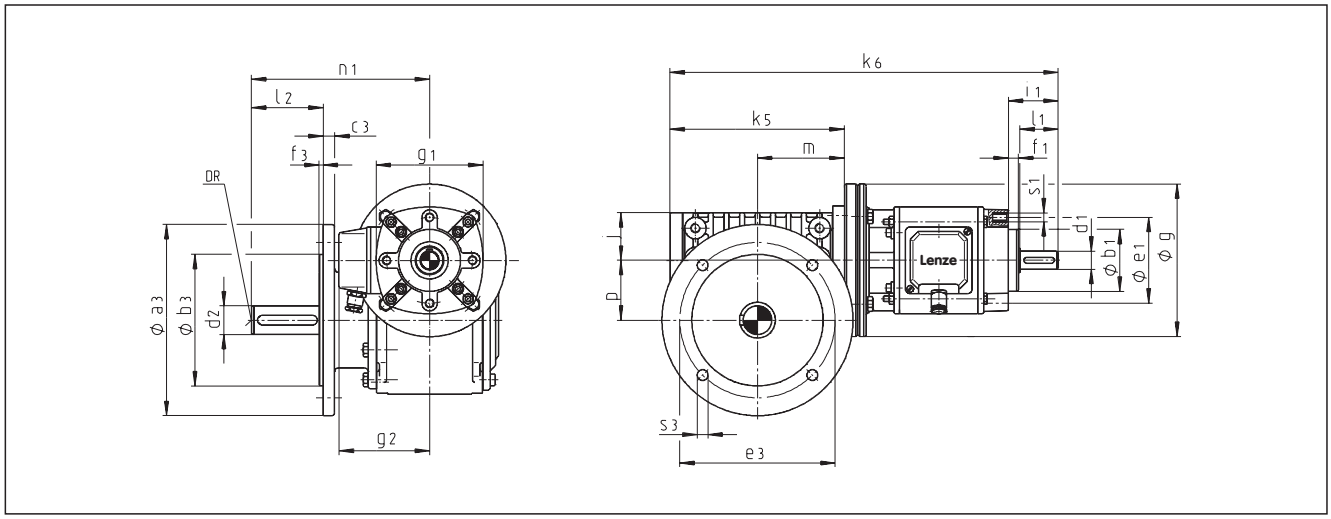
Ordering data:
Type description: Size, gearbox size, armature design (page 33)

Variants: Overall mounting (page 46)
Voltage of clutch/brake,
Input shaft diameter,
Gearbox ratio (page 36),
Flange diameter for type 14.853

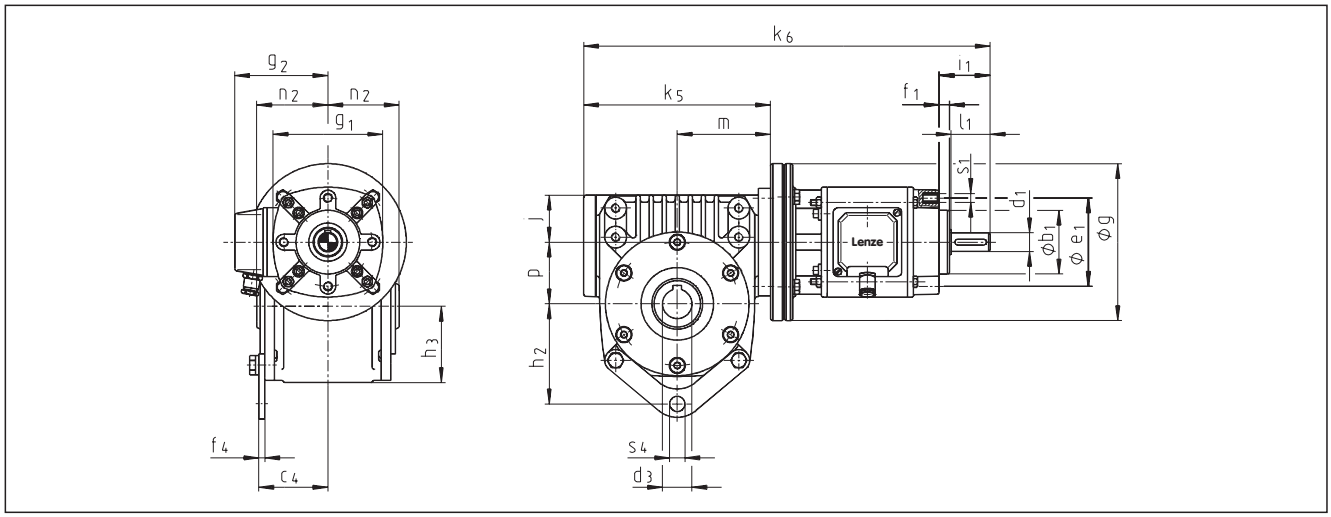
Type 14.855, foot mounted design



Type 14.856, flange mounted design



Type 14.857, hollow shaft mounted design

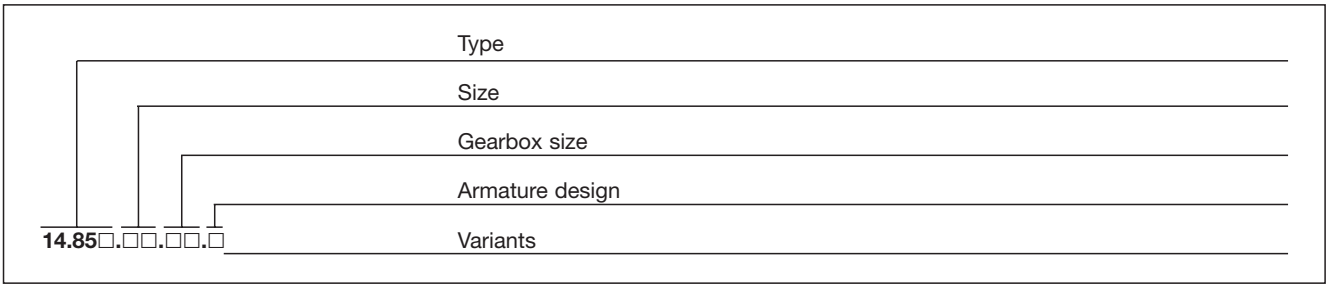


Keys according to DIN 6885/1
Centrings according to DR DIN 332

Type	M_r Nm	Clutch	Brake	a_2	a_3	b_1 h8	b_2	b_3 j6	c_2	c_3	c_4	d_1 k6	d_2 k6	d_3 H7	e_1	e_2	e_3	f_1	f_2	f_3	f_4	g
		P_{20} [W]																				
14.85□.06.05.□	7.5	15	11.5	152	160	52	114	110	14	10	50	11 14	24	25	67	180	130	10	146	3.5	6	160
14.85□.06.06.□	7.5	15	11.5	174	200	52	136	130	17	12	59	11 14	28	30	67	205	165	10	175	3.5	6	160
14.85□.08.06.□	15	20	16	174	200	65	136	130	17	12	59	14 19	28	30	90	205	165	10	175	3.5	6	160
14.85□.08.08.□	15	20	16	212	250	65	166	180	19	14	71	14 19	38	40	90	245	215	10	200	4	6	200
14.85□.10.08.□	30	28	21	212	250	78	166	180	19	14	71	19 24	38	40	115	245	215	19	200	4	6	200
14.85□.10.10.□	30	28	21	240	300	78	194	230	22	16	75	19 24	48	50	115	280	265	19	234	4	7	250
14.85□.12.10.□	60	35	28	240	300	78	194	230	22	16	75	24 28	48	50	115	280	265	20	234	4	7	250
14.85□.12.12.□	60	35	28	300	350	78	235	250 h6	25	20	93	24 28	55 m6	70	115	350	300	20	286	5	7	250

Type	g_1	g_2	h_1	h_2	h_3	i_1	i_2	j	k_5	k_6	l_1	l_2	m	n	n_1	n_2	p	s_1	s_2	s_3	s_4	DIN 332 DR	*m* [kg]		
																							14.855	14.856	14.857
14.85□.06.05.□	90	89	83	82	62	35 42	27	41	147	325 332	23 30	60	74	120	149	60	50	M6	10	9	13	M8	14.5	15.5	12.5
14.85□.06.06.□	90	89	100	97	75	35 42	32	52	177	355 362	23 30	70	89	140	172	70	63	M6	12	11	17	M10	21.5	23.5	19.5
14.85□.08.06.□	112	95	100	97	75	42 52	32	52	177	395 405	30 40	70	89	140	172	70	63	M8	12	11	17	M10	23.5	25.5	21.5
14.85□.08.08.□	112	95	121	114	90	42 52	32	57	208	426 436	30 40	80	105	165	207	85	80	M8	14	14	17	M12	36.5	39.5	32.5
14.85□.10.08.□	140	110	121	114	90	62 72	32	57	208	468 478	40 50	80	105	165	207	85	80	M10	14	14	17	M12	41	44	37
14.85□.10.10.□	140	110	150	138	110	62 72	40	65	237	504 514	40 50	100	120	190	234	90	100	M10	18	14	21	M16	53	58	52
14.85□.12.10.□	167	136	150	138	110	72 82	40	65	237	538 548	50 60	100	120	190	234	90	100	M10	18	14	21	M16	58	63	57
14.85□.12.12.□	167	136	186	167	141	72 82	48	74	296	597 607	50 60	110	150	218	272	107.5	125	M10	22	18	21	M20	95	97	95

Ordering example
Type 14.855 with worm gearbox, foot mounted design
Type 14.856 with worm gearbox, flange mounted design
Type 14.857 with worm gearbox, hollow shaft mounted design



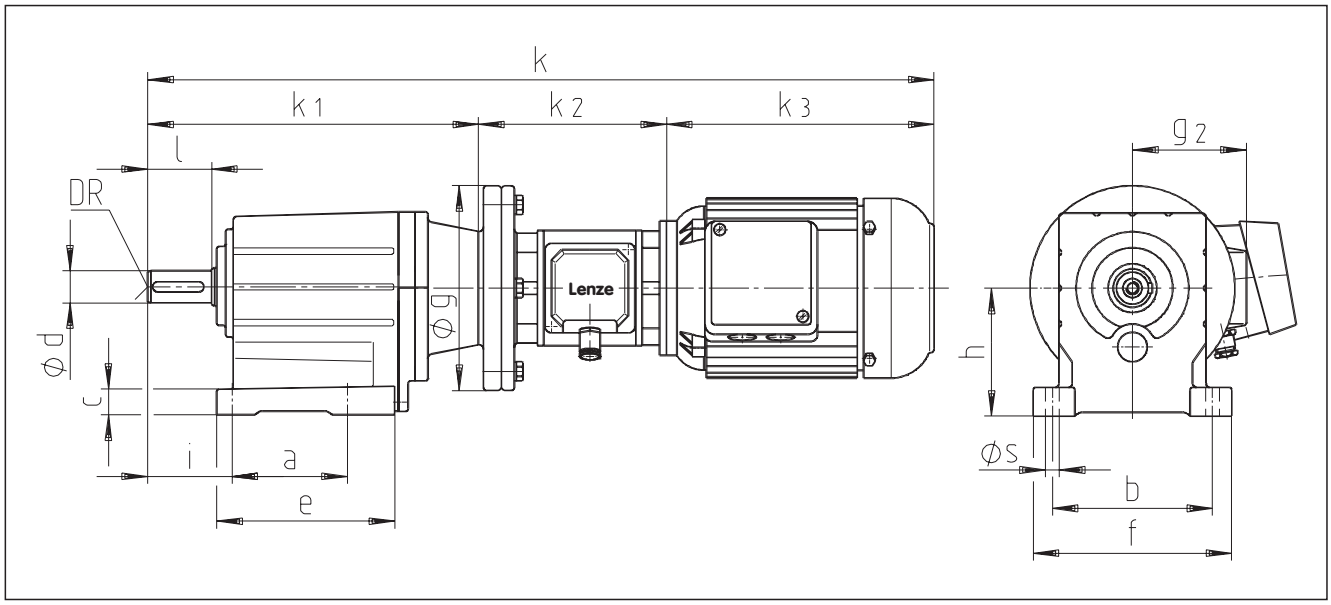
Ordering data:
Type description: Size, gearbox size,
armature design (page 33)

Variants: Overall mounting (page 47)
Voltage of clutch / brake,
Input shaft diameter,
Gearbox ratio (page 37)

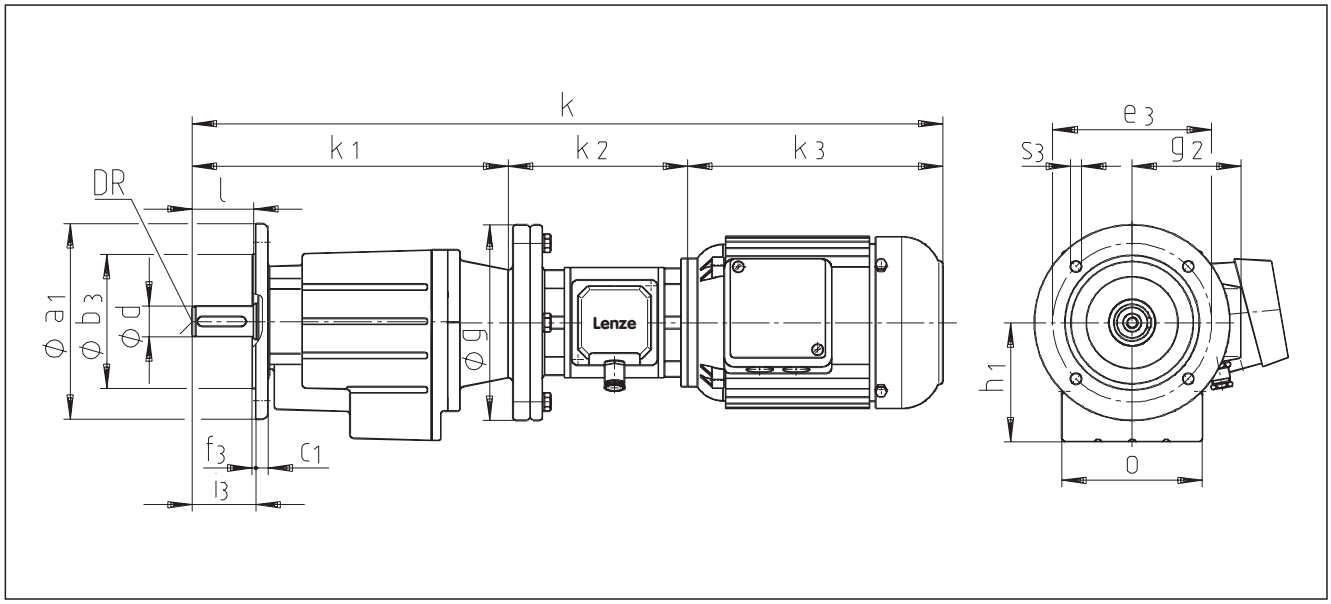
Clutch-brake unit

with helical gearbox and motor

Type 14.862, foot mounted design



Type 14.863, flange mounted design



Keys according to DIN 6885/1
Centrings according to DR DIN 332

Lenze

Type	B14 Motor		M_r Nm	Clutch	Brake	a	a_1	b	b_3 j7	c	c_1	d k6	e	e_3	f	f_3
	Size	Flange		P_{20} [W]												
14.86□.06.GST05.1	71	C 105	7.5	15	11.5	90	120 140 160	125	80 95 110	20	10 10 10	25	139	100 115 130	158	3 3 3.5
14.86□.06.GST06.1	71	C 105	7.5	15	11.5	106	160 200	160	110 130	25	12 12	30	157	130 165	200	3.5 3.5
14.86□.08.GST06.1	80	C 120	15	20	16	106	160 200	160	110 130	25	12 12	30	157	130 165	200	3.5 3.5
14.86□.06.GST07.1	80	C 120	15	20	16	130	200 250	200	130 180	30	14 15	40	196	165 215	250	3.5 4
14.86□.10.GST07.1	90	C 140	30	28	21	130	200 250	200	130 180	30	14 15	40	196	165 215	250	3.5 4
14.86□.10.GST09.1	90	C 140	30	28	21	165	250 300	245	180 230	40	16 18	50	239	215 265	304	4 4
14.86□.12.GST09.1	100	C 160	60	35	28	165	250 300	245	180 230	40	16 18	50	239	215 265	304	4 4
14.86□.12.GST11.1	100	C 160	60	35	28	200	300 350	300	230 250	50	18 20	60 m6	280	265 300	375	4 5

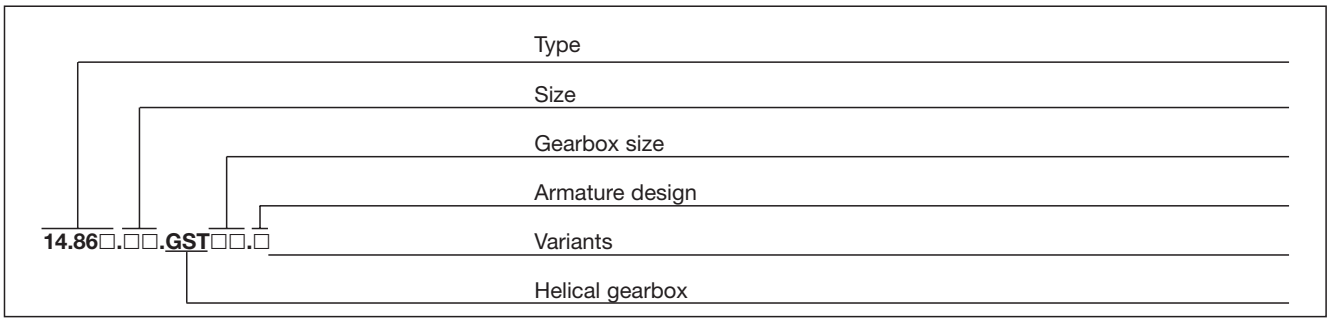
1) according to motor brand

Type	g	g_2	h	h_1	i	i_3 1)	k	k_1	k_2	k_3 1)	k_3	l	o	p	s	s_3	DIN 332 DR	*m* [kg1]	
																		14.862	14.863
14.86□.06.GST05.1	160	89	100	98	66	50	628	269	147	147	212	50	115	162	11	7 9 9	M10	25	25
14.86□.06.GST06.1	160	89	125	121	79	60	654	295	147	156	212	60	145	200	13.5	9 11	M10	37	37
14.86□.08.GST06.1	160	95	125	121	79	60	720	313	174	174	233	60	145	200	13.5	9 11	M10	42	43
14.86□.06.GST07.1	160	95	160	155	104	80	776	369	174	192	233	80	180	255	17.5	11 14	M16	53	53
14.86□.10.GST07.1	200	110	160	155	104	80	844	389	205	205	250	80	180	255	17.5	11 14	M16	65	65
14.86□.10.GST09.1	200	110	200	194	127.5	100	907	452	205	225	250	100	222	315	17.5	14 14	M16	91	89
14.86□.12.GST09.1	250	136	200	194	127.5	100	996	452	238	238	306	100	222	315	17.5	14 14	M16	112	111
14.86□.12.GST11.1	250	136	250	243	155	120	1053	509	238	268	306	120	270	391	17.5	14 18	M20	160	156

Ordering example

Type 14.862 with motor and helical gearbox, foot mounted design

Type 14.863 with motor and helical gearbox, flange mounted design



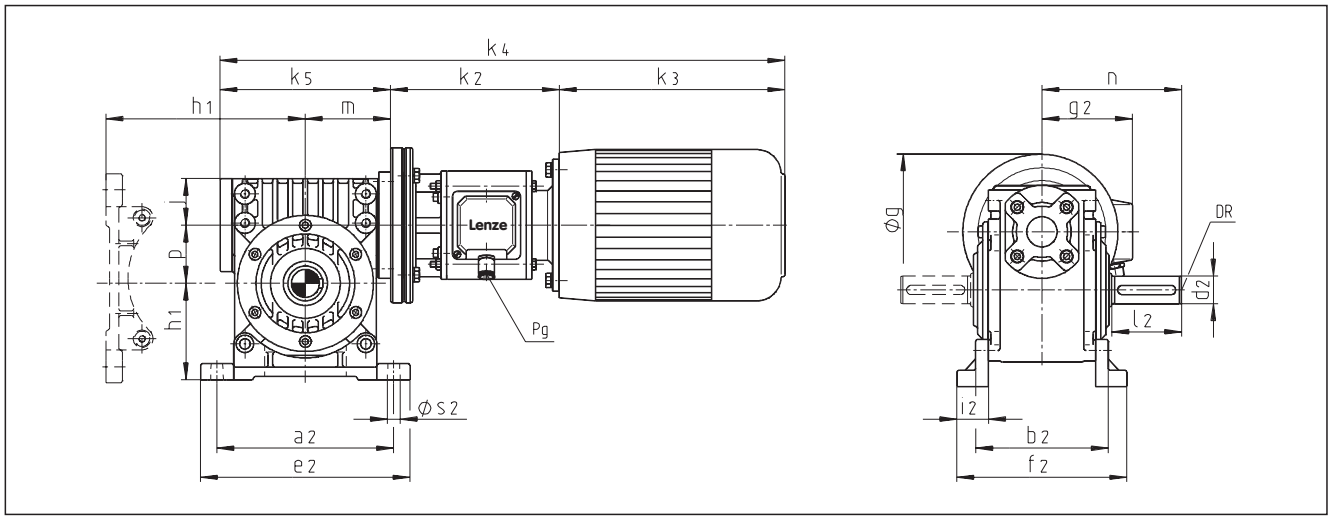
Ordering data:

Type description: Size, gearbox size, armature design (page 33)

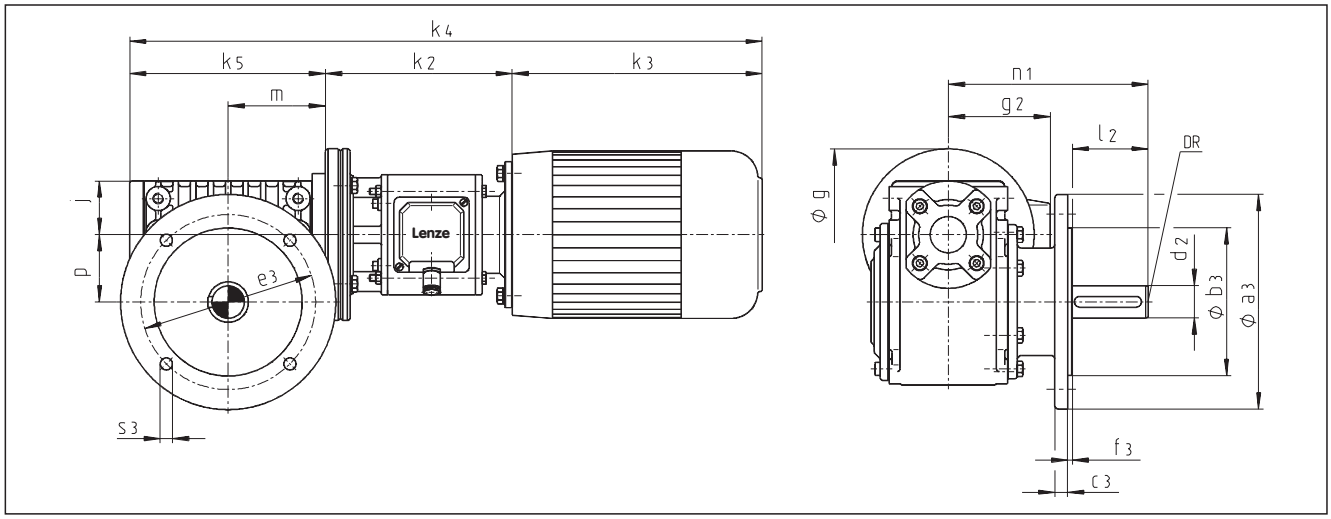
Variants: Overall mounting (page 46)
Voltage of clutch/brake, gearbox ratio (page 36)
Flange diameter for type 14.863

Motor: Power and voltage, speed and frequency, enclosure

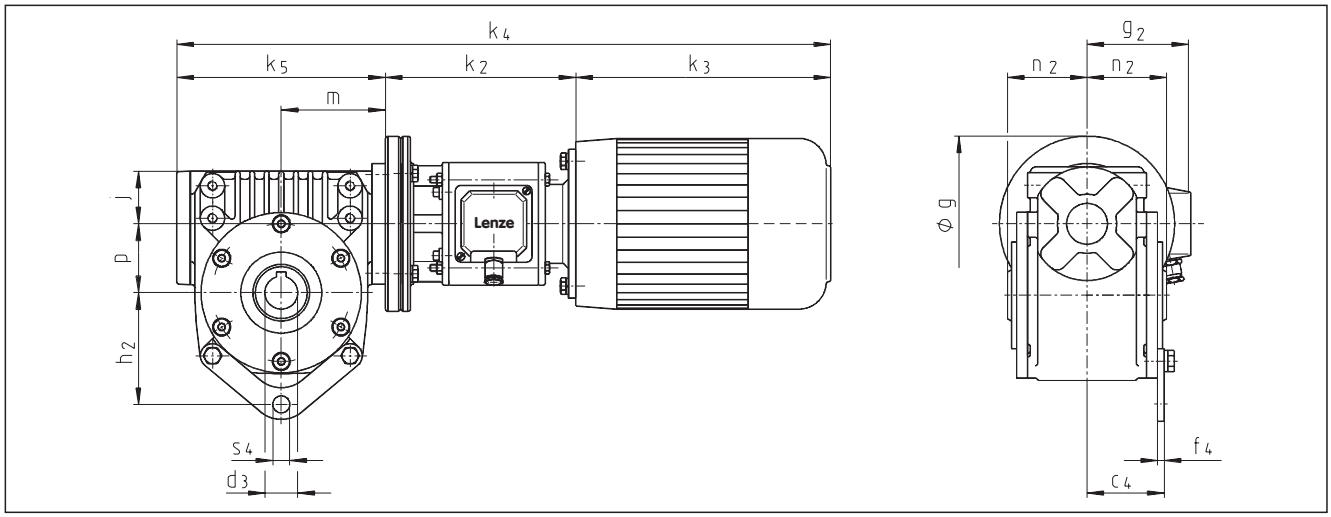
Type 14.865, foot mounted design



Type 14.866, flange mounted design



Type 14.867, hollow shaft mounted design



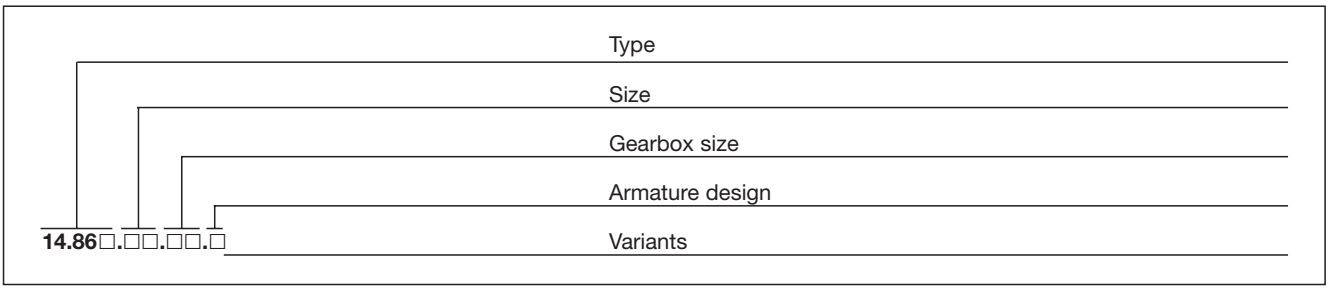
Keys according to DIN 6885/1
Centrings according to DR DIN 332

Type	B14 Motor		M_r Nm	Clutch	Brake	a_2	a_3	b_2	b_3 j6	c_2	c_3	c_4	d_2 k6	d_3 H7	e_2	e_3	f_2	f_3	f_4
	Size	Flange		P_{20} [W]															
14.86□.06.05.□	71	C 105	7.5	15	11.5	152	160	114	110	14	10	50	24	25	180	130	146	3.5	6
14.86□.06.06.□	71	C 105	7.5	15	11.5	174	200	136	130	17	12	58.5	28	30	205	165	175	3.5	6
14.86□.08.06.□	80	C 120	15	20	16	174	200	136	130	17	12	58.5	28	30	205	165	175	3.5	6
14.86□.08.08.□	80	C 120	15	20	16	212	250	166	180	19	14	71	38	40	245	215	200	4	6
14.86□.10.08.□	90	C 140	30	28	21	212	250	166	180	19	14	71	38	40	245	215	200	4	6
14.86□.10.10.□	90	C 140	30	28	21	240	300	194	230	22	16	75	48	50	280	265	234	4	7
14.86□.12.10.□	100	C160	60	35	28	240	300	194	230	22	16	75	48	50	280	265	234	4	7
14.86□.12.12.□	100	C160	60	35	28	300	350	235	250 h6	25	20	93	55 m6	70	350	300	286	5	7

1) according to motor brand

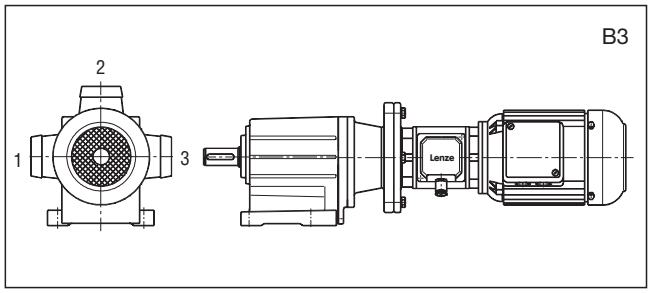
Type	g	g_2	h_1	h_2	i_1	j	k_2	k_3 1)	k_4 1)	k_5	l_2	m	n	n_1	n_2	p	s_2	s_3	s_4	DIN 332 DR	*m* [kg]		
																					14.865	14.866	14.867
14.86□.06.05.□	160	89	83	82	27	41	147	212	506	147	60	74	120	149	60	50	10	9	12.5	M8	21.5	22.5	19.5
14.86□.06.06.□	160	89	100	97	32	52	147	212	536	177	70	89	140	172	70	63	12	11	16.5	M10	28.5	30.5	26.5
14.86□.08.06.□	160	95	100	97	32	52	174	233	584	177	70	89	140	172	70	63	12	11	16.5	M10	32	34	30
14.86□.08.08.□	200	95	121	114	32	57	174	233	615	208	80	105	165	207	85	80	14	14	16.5	M12	45	48	41
14.86□.10.08.□	200	110	121	114	32	57	205	250	663	208	80	105	165	207	85	80	14	14	16.5	M12	53	56	49
14.86□.10.10.□	250	110	150	138	40	65	212	250	699	237	100	120	190	234	90	100	18	14	20.5	M16	65	70	64
14.86□.12.10.□	250	136	150	138	40	65	238	306	781	237	100	120	190	234	90	100	18	14	20.5	M16	78	83	77
14.86□.12.12.□	250	136	186	167	48	74	238	306	840	296	110	150	218	272	107.5	125	22	18	20.5	M20	115	117	115

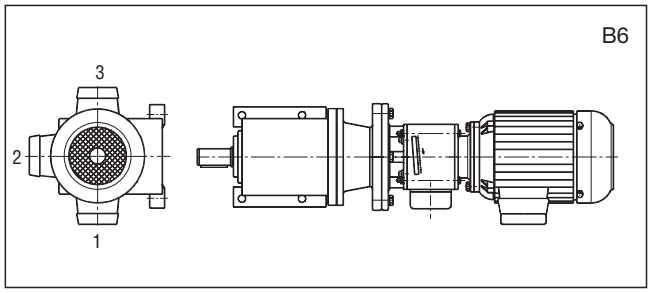
Ordering example
Type 14.865 with motor and worm gearbox, foot mounted design
Type 14.866 with motor and worm gearbox, flange mounted design
Type 14.867 with motor and worm gearbox, hollow shaft mounted design

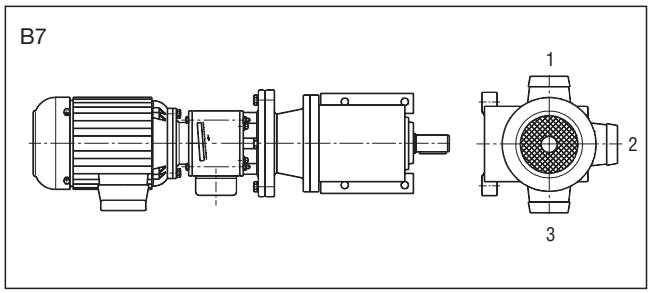


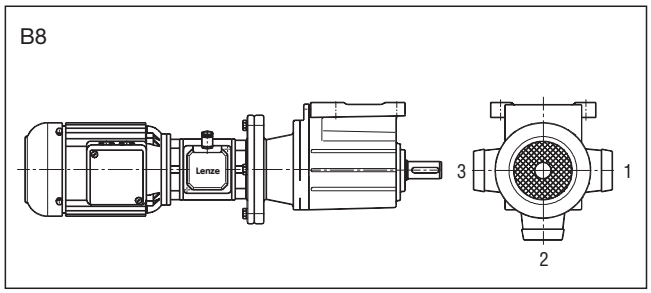
Ordering data:
Type description: Size, gearbox size, armature design (page 33)
Variants: Overall mounting (page 47)
Voltage of clutch / brake, gearbox ratio (page 37)
Motor: Power and voltage
Speed and frequency
Enclosure

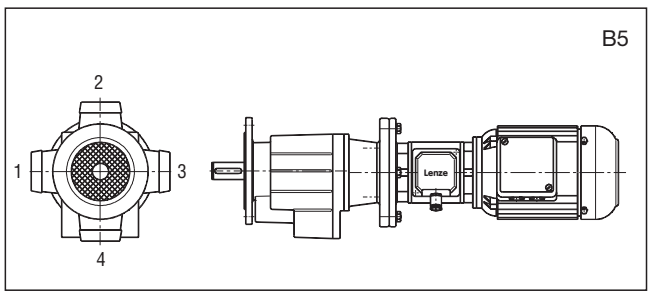
Clutch-brake unit with helical gearbox

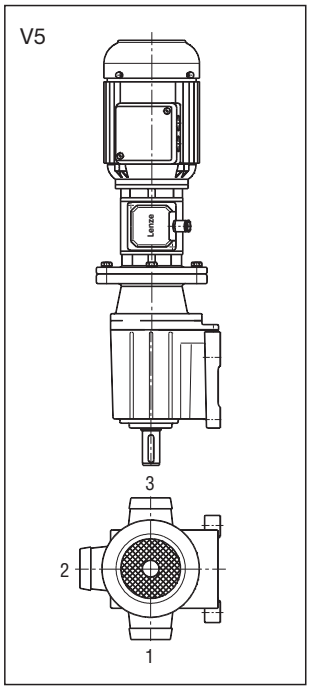


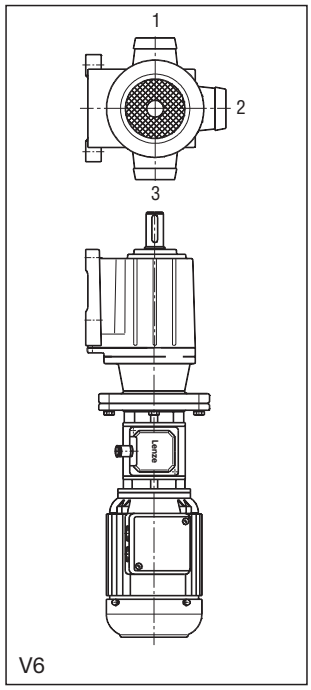


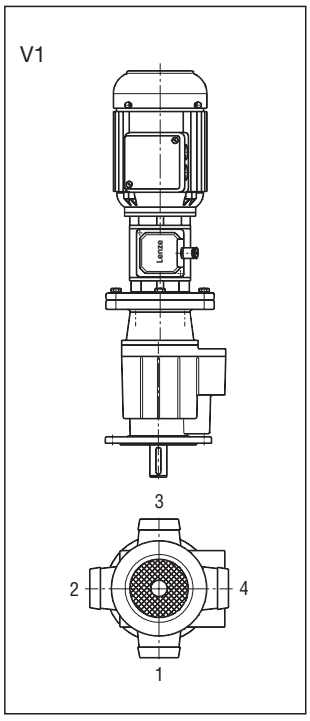


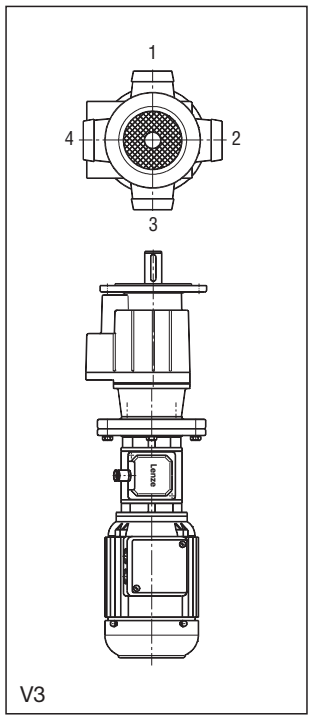












This page also applies to clutch-brake units 14.800/810 and 14.852/853.

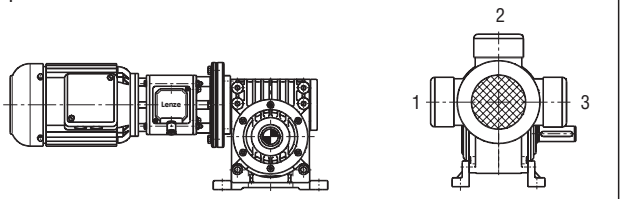
Design description

	Design
	Terminal box position
B3.1.	The position of the terminal box applies to motor and clutch-brake unit

Clutch-brake unit with worm gearbox

Foot mounted design

11



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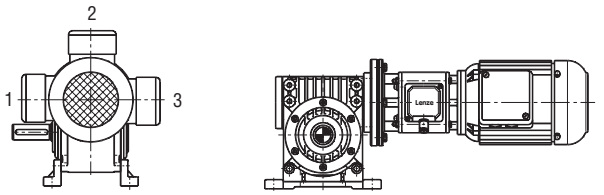

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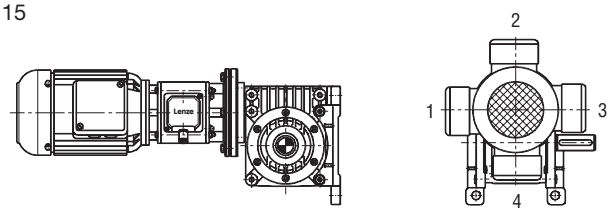

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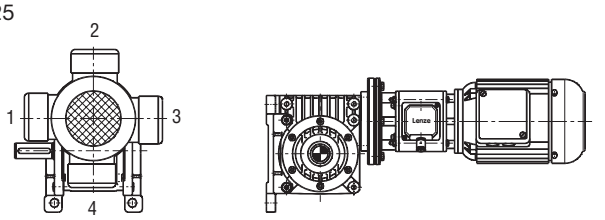
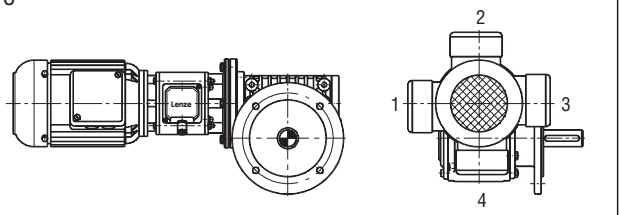


Flange mounted design

10



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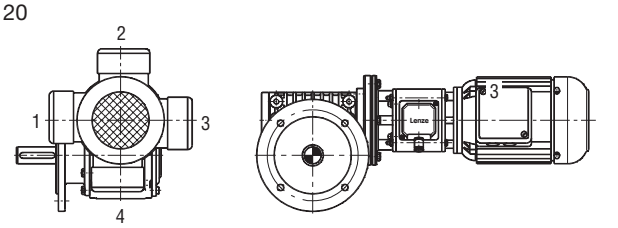
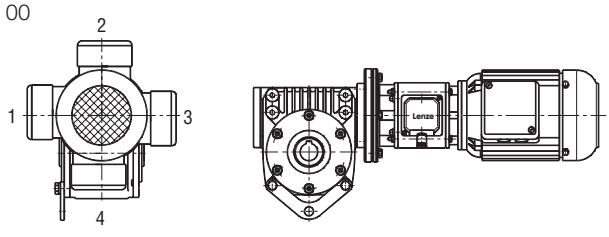


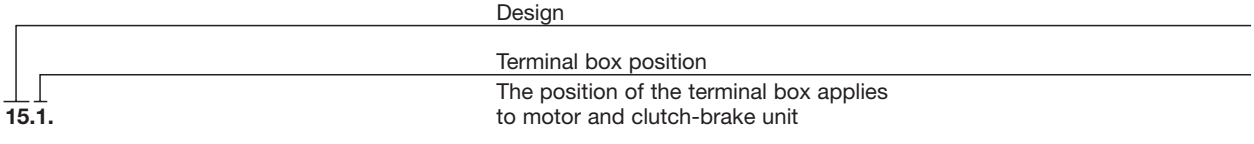
Hollow shaft mounted design

00



This page also applies to the types 14.855/856/857.

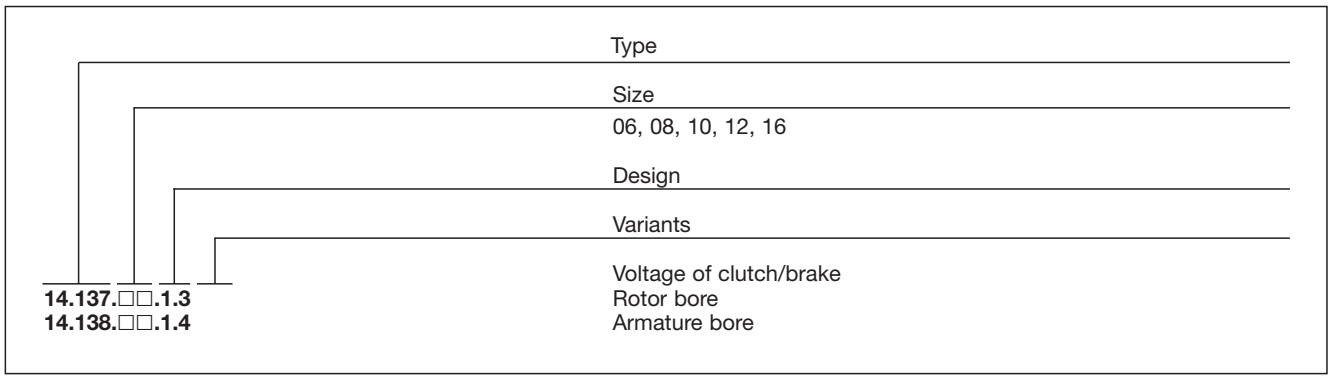
Design description



Clutch-brake unit
Type 14.137.□.1.3
Type 14.138.□.1.4

These types are the electromagnetic clutches and brakes with the different armature types which are used in the Simplabloc units.
The single elements are preferably used when they are to be directly integrated into the machine design and there is not enough space for a complete drive unit.
Type 14.137 is supplied with the backlash-free diaphragm-type armature, with connected armature plates.
Even when the power is switched off, this type has a low brake torque.
Type 14.138 uses the splined armature with very low inertia. These units are very easy to assemble. The airgap $s_{LÜ}$ is not influenced by a possible axial tolerance of the output shaft.

Type code



Technical data
Type 14.137/138

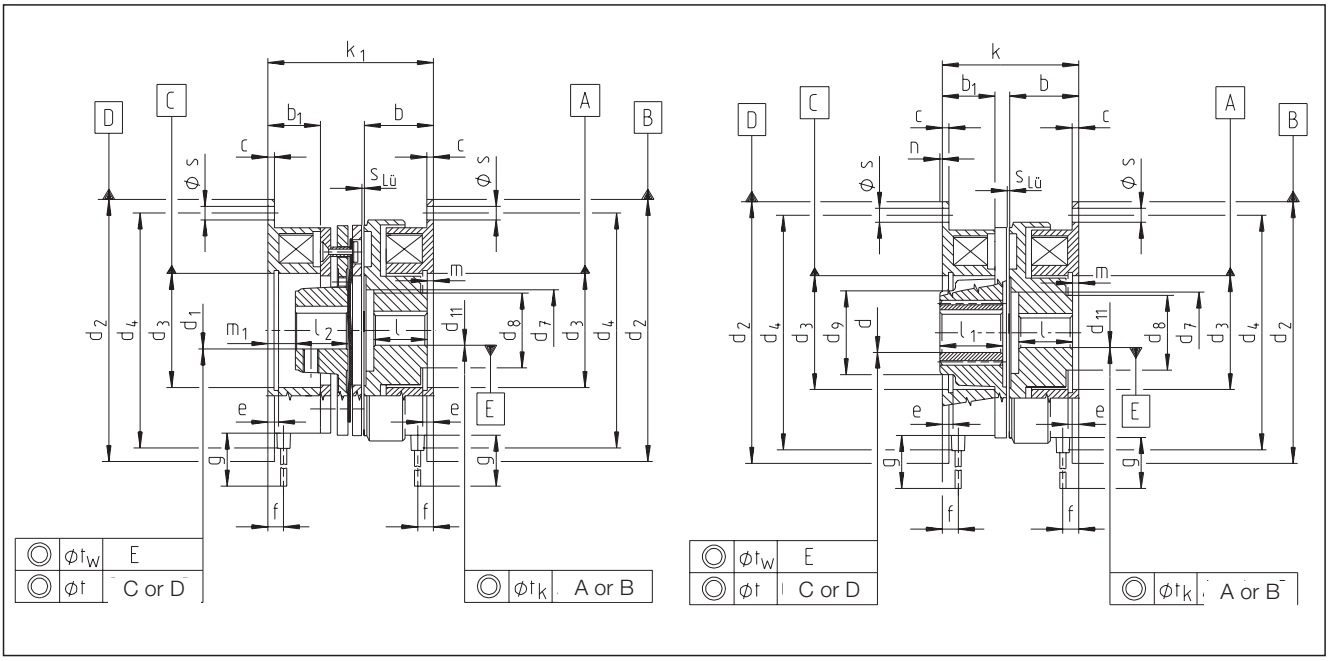
Type	M_r[1] (Nm)	P_{20}[2] (W)		$n_{max.}$ (min^{-1})	Q_E (J)	Q_{NA} (kWh)	Inertias J x 10^{-5} (kgm^2)		
		Clutch	Brake				Rotor	Armature	
								14.137	14.138
14.137/138.06	7.5	15	11.5	8000	3.6 x 10^3	6.5	11.9	10.2	4.2
14.137/138.08	15	20	16	6000	6 x 10^3	11	26.6	29	14
14.137/138.10	30	28	21	5000	10 x 10^3	17	78	113.6	41.4
14.137/138.12	60	35	28	4000	16 x 10^3	42	226	310	120
14.137/138.16	120	50	38	3000	20 x 10^3	68	630	1113	378

Standard voltage 24 V DC
[1] M_r referring to n = 100 min^{-1}
[2] for 20° C
For operating times see page 17.

Clutch-brake units

Type 14.137.06 [...16] 1.3

Type 14.138.06 [...16] 1.4



Type	M_r Nm	Clutch P W	Brake P W	b	b_1	c	d H7 min.	d H7 Standard			d H7 max.	d_1 H7 min.	d_1 H7 Standard		d_1 H7 max.	d_2 H9	d_3 H8	d_4	d_7	d_8	d_9
14.137.06.1.3 14.138.06.1.4	7.5	15	11.5	24	18	2	8	–	10	–	10	10	10	15	17	80	35	72	24.5	23	25
14.137.08.1.3 14.138.08.1.4	15	20	16	26.5	20	3	10	12	–	14	14	10	17	20	20	100	42	90	31	28.5	32
14.137.10.1.3 14.138.10.1.4	30	28	21	30	22	3	14	15	–	20	20	14	20	25	30	125	52	112	40	40	40
14.137.12.1.3 14.138.12.1.4	60	35	28	33.5	24	4	14	20	–	25	25	14	25	30	35	150	62	137	50	45	50
14.137.16.1.3 14.138.16.1.4	120	50	38	37.5	26	4	20	20	25	30	35	20	30	40	45	190	80	175	65	62	64

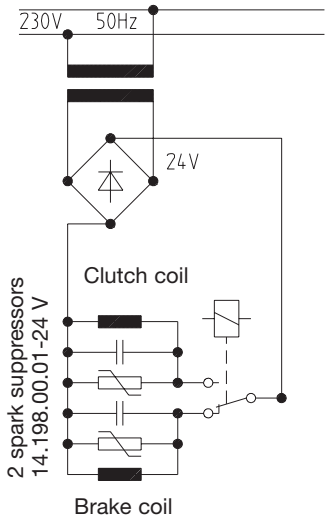
Type	d_{11} H7 min.	d_{11} H7 Standard			d_{11} H7 max.	e	f	g	k	k_1	l	l_1	l_2	m	m_1	n	s 4x	$s_{LÜ}$	z DIN 5480	t_k	t_w	t	*m* kg 14.137	*m* kg 14.138
14.137.06.1.3 14.138.06.1.4	10	10	–	15	17	3.5	6.3	400	45.5	55.1	18.5	20	15	2	11	0	4.5	0.2	20 x 1.25	0.2	0.1	0.16	0.8	0.7
14.137.08.1.3 14.138.08.1.4	12	17	–	20	22	4.3	7.8	400	51.2	61.3	20.5	24	20	2.5	9.4	1	5.5	0.2	25 x 1.25	0.3	0.1	0.16	1.5	1.3
14.137.10.1.3 14.138.10.1.4	15	20	25	30	30	5	8.8	400	57.7	70.8	22.5	26	25	3	8.9	1.5	6.6	0.2	32 x 1.25	0.3	0.1	0.16	2.8	2.5
14.137.12.1.3 14.138.12.1.4	20	20	25	30	40	5.5	9.3	400	64.3	79.6	25	29	30	3.5	8.1	1	6.6	0.3	40 x 1.25	0.3	0.1	0.2	5	4.6
14.137.16.1.3 14.138.16.1.4	25	25	30	40	50	6	10.7	400	71.5	89.8	28	33	38	3.5	4.3	1	9	0.3	55 x 2	0.4	0.2	0.2	9	8.5

Recommended ISO tolerances for shafts: k6

DC switching

The power consumption of clutch and brake coils must be considered when selecting the transformer rectifier unit. DC switching means short engagement and disengagement times, but requires a spark suppressor to be fitted to protect the contacts from high inductive voltages when switching off.

Design electromagnetic clutch - electromagnetic brake



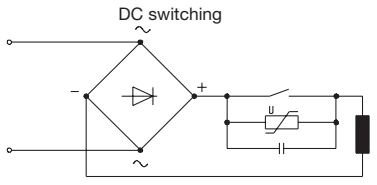
Energise to engage clutch
Energise to engage brake

Spark suppressor

The universal spark suppressor limits the inductive voltage which appears when switching off clutches or brakes on the dc side to manageable values. The inductive voltage can otherwise damage coils and switches.

The VDE rule 0580 therefore requires that the user has to provide for suitable protective measures to avoid excessive switch-off voltages and overvoltages. Three types of Simplabloc universal spark suppressors are available:

Type	Coil voltage	max. input voltage	max. coil power
14.198.00.01 – 24 V	6- 48 V	60 V	110 W
14.198.00.02 – 96 V	48-120 V	250 V	110 W
14.198.00.03 – 190 V	120-240 V	400 V	110 W

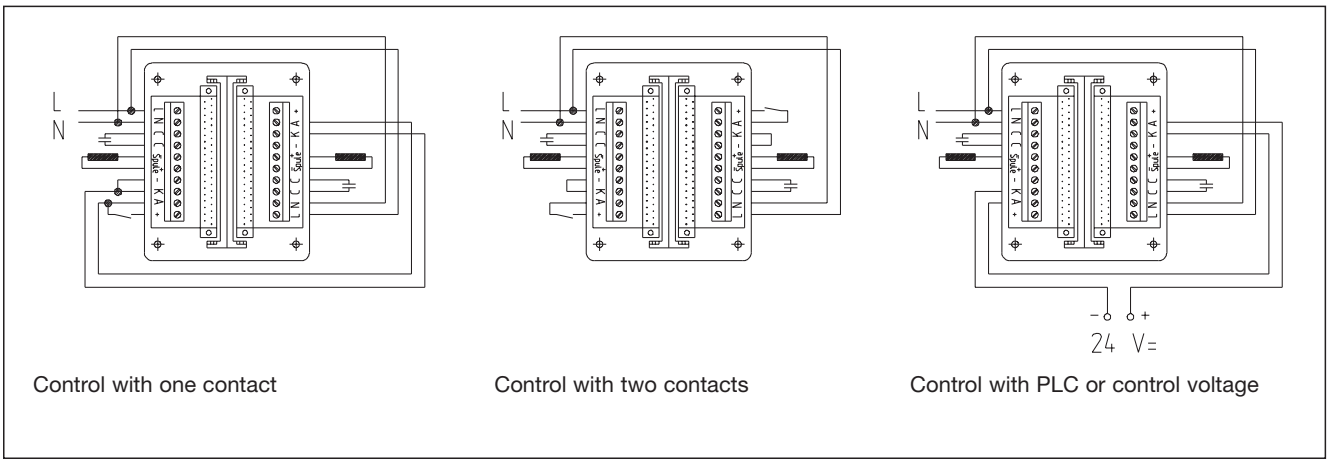


Fast excitation with DEG
Type 14.621.14.(16)xxx

The Simplabloc clutch-brake units achieve first-class positioning accuracy when used with the fast excitation units type DEG. With the DEG controller, the 24 V coils of the units can be connected without additional transformer to a 220 V / 240 V mains.
The switching of max. 2 coils up to max. 100 W is made free of wear through semi-conductors and the DEG units can be controlled by using auxiliary contacts, control voltages or sensors.

The DEG fast excitation units are designed as constant current sources. The nominal current flows in the magnetic coils independent of cold or warm coil. The torque variation between hot and cold coil is therefore completely eliminated.
The DEG fast excitation units are supplied as chassis type units to be fitted into switch cabinets.

Connection examples



Control with one contact

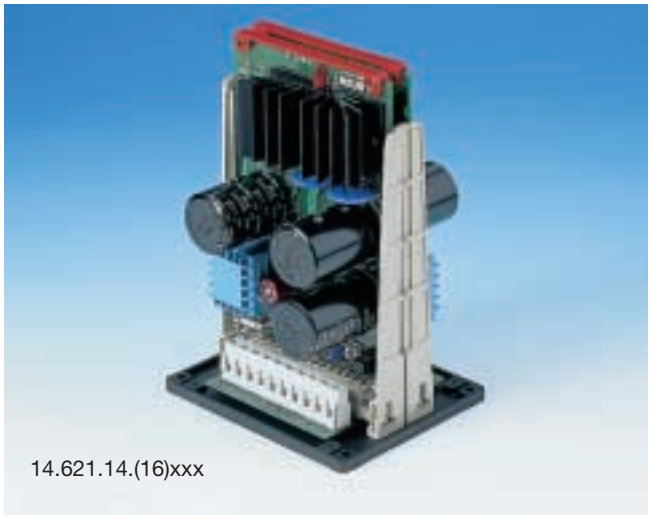
Control with two contacts

Control with PLC or control voltage

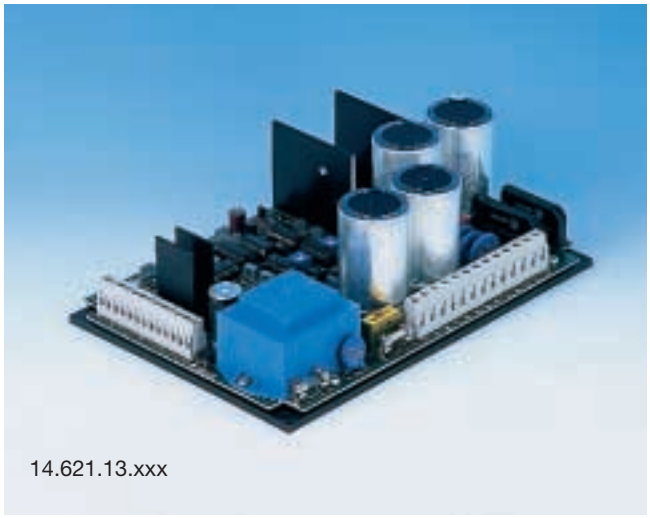
Double fast excitation devices DOSS
Type 14.621.13.xxx

For applications, where the control is made via start-stop pulses, we recommend the double fast excitation device DOSS.

We are pleased to send you our catalog “Electronic switching devices and accessories” for more detailed information about the above-mentioned switching devices.



14.621.14.(16)xxx



14.621.13.xxx

Lenze worldwide

Stammwerk
Head office

Lenze GmbH & Co KG
Postfach 10 13 52
D-31763 Hameln
Telefon ++49 (0)5154 / 82-0
Telefax ++49 (0)5154 / 82-28 00
E-Mail: Lenze@Lenze.de

Lenze GmbH & Co KG Anlagenbau
Buchenweg 1
D-31855 Aerzen
Telefon ++49 (0)5154 / 82-0
Telefax ++49 (0)5154 / 82-21 00

Lenze GmbH & Co KG Bremsen
Wülmser Weg 5
D-31855 Aerzen
Telefon ++49 (0)5154 / 82-14 53
Telefax ++49 (0)5154 / 82-11 04

Lenze GmbH & Co KG Kleinantriebe
Hans-Lenze-Straße 1
D-32699 Extertal
Telefon ++49 (0)5154 / 82-0
Telefax ++49 (0)5154 / 82-14 85

Lenze GmbH & Co KG Service
Breslauer Straße 3
D-32699 Extertal

Mechanical Drives
Telefon ++49 (0)5154 / 82-16 26
Telefax ++49 (0)5154 / 82-13 96

Electronic Drives
Telefon ++49 (0)5154 / 82-11 11
Telefax ++49 (0)5154 / 82-11 12

Service Helpline
++49 (0)180 5 20 24 26

Lenze Verbindungstechnik GmbH & Co KG
Ipf-Landesstraße 1
A-4481 ASTEN
Phone ++43 (0)7224 / 21 1-0
Telefax ++43 (0)7224 / 21 19 98

LS Automation GmbH & Co KG
Jakob-Stadler-Platz 11
D-78467 Konstanz
Telefon ++49 (0)7531 / 9 42 19-0
Telefax ++49 (0)7531 / 9 42 19 20

Deutschland
Germany

Werksniederlassung Nord
Lenze GmbH & Co KG Vertrieb
Dornenpark 1
31840 Hessisch Oldendorf
Telefon (0 51 52) 90 36-0
Telefax (0 51 52) 90 36-33/44/55

Vertriebsbüros:

Barsbüttel
Telefon (0 40) 67 56 11 00
Telefax (0 40) 67 56 11 01

Berlin
Telefon (0 33 04) 3 11 23
Telefax (0 33 04) 3 16 82

Bielefeld
Telefon (05 21) 8 75 23 94
Telefax (05 21) 8 75 27 20

Bielefeld
Telefon (05 21) 98 68 54
Telefax (05 21) 98 68 55

Bremen
Telefon (04 21) 42 12 21
Telefax (04 21) 42 12 51

Hameln
Telefon (0 51 54) 9 61 32
Telefax (0 51 54) 9 65 40

Hannover
Telefon (0 51 02) 91 45 54
Telefax (0 51 02) 91 45 55

Magdeburg
Telefon (03 91) 6 31 33 73
Telefax (03 91) 6 31 63 61

Norderstedt
Telefon (0 40) 52 68 21 23
Telefax (0 40) 52 68 21 25

Oelde
Telefon (0 25 29) 94 97 32
Telefax (0 25 29) 94 97 33

Osnabrück
Telefon (0 54 61) 9 11 00
Telefax (0 54 61) 9 11 01

Verbindungstechnik:
Telefon (0 57 05) 91 21 70
Telefax (0 57 05) 91 21 71

Telefon (0 41 61) 70 43 52
Telefax (0 41 61) 70 43 91

Werksniederlassung West
Lenze GmbH & Co KG Vertrieb
Postfach 10 12 20
47497 Neukirchen-Vluyn
Kelvinstraße 7
47506 Neukirchen-Vluyn
Telefon (0 28 45) 95 93-0
Telefax (0 28 45) 95 93 93

Vertriebsbüros:

Aachen/Düren
Telefon (0 24 07) 95 18 62
Telefax (0 24 07) 95 18 63

Dortmund / Bochum / Märk. Kreis
Telefon (0 23 89) 60 46
Telefax (0 23 89) 60 47

Düsseldorf / Krefeld / Heinsberg
Telefon (0 28 45) 95 93-19
Telefax (0 28 45) 95 93 93

Essen / Mettmann
Telefon (0 28 45) 95 93-14
Telefax (0 28 45) 95 93 93

Kleve / Wesel / Viersen
Telefon (0 28 73) 91 90 44
Telefax (0 28 73) 91 90 45

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Telefon (0 22 43) 91 25 36
Telefax (0 22 43) 91 25 37

Recklinghausen / Borken / Coesfeld
Telefon (0 23 62) 9 80 11
Telefax (0 23 62) 9 80 12

Wuppertal / Ennepe-Ruhr-Kreis / Oberberg.-Kreis
Telefon (0 23 39) 91 29 40
Telefax (0 23 39) 91 29 41

Werksniederlassung Mitte
Lenze GmbH & Co KG Vertrieb
Postfach 14 63
35724 Herborn
Westerwaldstraße 36
35745 Herborn
Telefon (0 27 72) 95 94-0
Telefax (0 27 72) 5 30 79

Vertriebsbüros:

Braunfels
Telefon (0 64 42) 96 21 30
Telefax (0 64 42) 96 21 31

Frankfurt
Telefon (0 27 79) 9 10 20
Telefax (0 27 79) 9 10 22

Karlsruhe
Telefon (0 72 46) 94 20 30
Telefax (0 72 46) 94 20 31

Kassel
Telefon (0 56 65) 92 10 14
Telefax (0 56 65) 92 10 15

Koblenz
Telefon (0 27 79) 9 10 61
Telefax (0 27 79) 9 10 63

Landau
Telefon (0 63 45) 91 90 30
Telefax (0 63 45) 91 90 31

Zweibrücken
Telefon (0 63 32) 46 07 81
Telefax (0 63 32) 46 07 82

Kupplungen-Bremsen-Kleinantriebe:
Telefon (0 27 72) 57 12 33
Telefax (0 27 72) 57 12 73

Verbindungstechnik:
Telefon (0 64 28) 44 13 73
Telefax (0 64 28) 44 13 74

Werksniederlassung Südwest
Lenze GmbH & Co KG Vertrieb
Postfach 14 33
71304 Waiblingen
Schänzle 8
71332 Waiblingen
Telefon (0 71 51) 9 59 81 - 0
Telefax (0 71 51) 9 59 81 50

Vertriebsbüros:

Esslingen
Telefon (0 71 51) 9 59 81-17
Telefax (0 71 51) 9 59 81 50

Freiburg
Telefon (0 76 65) 91 20 44
Telefax (0 76 65) 91 20 45

Heilbronn
Telefon (0 70 62) 93 62 84
Telefax (0 70 62) 93 62 85

Reutlingen
Telefon (07 41) 9 30 12
Telefax (07 41) 9 30 13

Rottweil
Telefon (0 74 28) 9 10 76
Telefax (0 74 28) 9 10 77

Singen
Telefon (0 77 31) 94 70 17
Telefax (0 77 31) 94 70 18

Südbaden
Telefon (07 41) 9 30 90
Telefax (07 41) 9 30 91

Werksniederlassung Süd
Lenze GmbH & Co KG Vertrieb
Fraunhoferstraße 16
82152 Martinsried
Postfach 11 26
82141 Planegg
Telefon (0 89) 89 56 14-0
Telefax (0 89) 89 56 14 14

Vertriebsbüros:

Allgäu
Telefon (0 83 64) 98 65 33
Telefax (0 83 64) 98 65 35

Ansbach
Telefon (0 98 03) 9 40 11
Telefax (0 98 03) 9 40 12

Augsburg
Telefon (0 90 73) 80 03 17
Telefax (0 90 73) 80 03 18

München
Telefon (0 89) 32 14 98 40
Telefax (0 89) 32 14 98 41

München
Telefon (0 81 36) 89 36 73
Telefax (0 81 36) 89 36 75

Oberfranken
Telefon (0 91 26) 28 66 33
Telefax (0 91 26) 28 66 34

Regensburg
Telefon (0 85 52) 92 11 02
Telefax (0 85 52) 92 11 06

Rosenheim
Telefon (0 80 51) 30 94 80
Telefax (0 80 51) 30 94 81

Unterfranken
Telefon (0 93 67) 9 91 11
Telefax (0 93 67) 9 91 12

Verbindungstechnik:
Telefon (0 89) 98 10 53 18
Telefax (0 89) 98 10 53 20

Verbindungstechnik und Bremsen:
Telefon (0 91 76) 99 86 81
Telefax (0 91 76) 99 86 82

Werksniederlassung Ost
Lenze GmbH & Co KG Vertrieb
Grimmaische Straße 78
04720 Döbeln
Telefon (0 34 31) 66 06-0
Telefax (0 34 31) 66 06 66

Vertriebsbüros:

Döbeln
Telefon (0 34 31) 66 06 13
Telefax (0 34 31) 66 06 66

Sömmerda
Telefon (0 36 34) 60 18 09
Telefax (0 36 34) 60 18 60

Lenze

weltweit
worldwide

ARGENTINA
E.R.H.S.A.
Girardot 1368
1427 BUENOS AIRES
Phone ++54 (0)11 / 45 54 32 32
Telefax ++54 (0)11 / 45 52 36 11

AUSTRALIA
FCR Motion Technology Pty. Ltd.
Automation Place
23 McArthur's Road
P.O. Box 359
Altona North
3025 MELBOURNE
Phone ++61 (0)3 / 93 99 15 11
Telefax ++61 (0)3 / 93 99 14 31

AUSTRIA
Lenze Antriebstechnik GmbH
Ipf-Landesstraße 1
4481 ASTEN
Phone ++43 (0)7224 / 21 0-0
Telefax ++43 (0)7224 / 21 09 99

Büro Vorarlberg:
Wiesenweg 1
6960 WOLFURT
Phone ++43 (0)5574 / 67 89-0
Telefax ++43 (0)5574 / 67 89 66

Büro Wien:
Triester Straße 14/109
2351 WR. NEUDORF
Phone ++43 (0)2236 / 2 53 33-0
Telefax ++43 (0)2236 / 2 53 33-66

Lenze Verbindungstechnik
GmbH & Co KG
Ipf-Landesstraße 1
4481 ASTEN
Phone ++43 (0)7224 / 21 1-0
Telefax ++43 (0)7224 / 21 19 98

BELGIUM
Lenze b.v.b.a
Noorderlaan 133
bus 15
2030 ANTWERPEN
Phone ++32 (0)3 / 54 26 20 0
Telefax ++32 (0)3 / 54 13 75 4

BOSNIA-HERZOGOVINA
see AUSTRIA

BRAZIL
C.D.P. Comp. Imp. Ltda.
Al. Tibirica, 1130 – Vila Ipanema
MAIRIPORA – SP – 07600-000
Phone ++55 (0)11 / 4 30-31 94
Telefax ++55 (0)11 / 4 30-26 07

BULGARIA
see MACEDONIA

CANADA
see USA

CHILE
Sargent S.A.
Tecnica Thomas C. Sargent
S.A.C.é.I.,
Casilla 166-D
SANTIAGO DE CHILE
Phone ++56 (0)2 / 69 91 52 5
Telefax ++56 (0)2 / 69 83 98 9

Aupi Ltda.
Automation y Proceso Industrial
Camino a Melipilla No. 262, Casilla 80
SANTIAGO DE CHILE
Phone ++56 (0)2 / 81 11 80 4
Telefax ++56 (0)2 / 81 11 10 2

CHINA
Lenze GmbH & Co KG
Beijing Representative Office
Rm. 401, Huaxin Mansion
No. 33, An Ding Road
Chaoyang District
BEIJING 100029
Phone ++86-10-6441 1470
Telefax ++86-10-6441 1467

CROATIA
see AUSTRIA

CZECH REPUBLIC
Lenze Antriebstechnik GmbH
informační a poradenské středisko
17. listopadu 510
549 41 ČERVENÝ KOSTELEC
Phone ++420 (0)441 / 467-111
Telefax ++420 (0)441 / 467-166

DENMARK
Lenze A/S
Vallensbækvej 18A
2605 BRØNDBY
Phone ++45 / 46 96 66 66
Telefax ++45 / 46 96 66 60

Büro Jylland:
Leomotor A/S
Enebærvej 11
8653 THEM
Phone ++45 / 46 96 66 66
Telefax ++45 / 46 96 66 80

EGYPT
AL-FARID
Mohamed Farid Hassanen & Co
1349 Kornish El Nile
CAIRO - EL SAHEL
Phone ++20 (0)2 / 20 56 26-7/8/9/0
Telefax ++20 (0)2 / 20 56 27 1

ESTLAND
see FINLAND

FINLAND
Refimex Oy
PL 130, Olarinluoma 12
02201 ESPOO
Phone ++358 (0)9 / 88 66 47 00
Telefax ++358 (0)9 / 88 66 47 99

FRANCE
Lenze S.A.
Z.A. de Chanteloup
Rue Albert Einstein
93603 AULNAY S/S BOIS CEDEX
Phone ++33 (0)1 / 48 79 62 00
Telefax ++33 (0)1 / 48 69 40 99

Succ. Rhône-Alpes:
42, Chemin des Pivolles
69150 DÉCINES-CHARPIEU
Phone ++33 (0)4 / 72 15 40 20
Telefax ++33 (0)4 / 78 26 88 36

Agence Sud-Ouest:
14, rue Capus
31400 TOULOUSE
Phone ++33 (0)5 / 61 14 85 37
Telefax ++33 (0)5 / 61 14 85 38

Agence Est:
24, rue des Roses
67870 GRIESHEIM-PRÈS-MOLSHEIM
Phone ++33 (0)3 / 88 38 09 20
Telefax ++33 (0)3 / 88 38 17 24

GREECE
George P. Alexandris S.A.
12K. Mavromichali Str.
185 45 PIRAEUS
Phone ++30 (0)1 / 41 11 84 15
Telefax ++30 (0)1 / 4 11 81 71
4 12 70 58

183 Monastiriou Str.
546 27 THESSALONIKI
Phone ++30 (0)31 / 5 56 65 04
Telefax ++30 (0)31 / 51 18 15

HUNGARY
Lenze Antriebstechnik
Handelsgesellschaft mbH
2040 BUDAÖRS
Gyár utca 2.
Postfach 322.
Phone ++36 (0)23 / 501-320
Telefax ++36 (0)23 / 501-339

ICELAND
see DENMARK

INDIA
Emco Lenze Pvt. Ltd.
106 Sion Koliwada Road, Sion (East)
MUMBAI 400 022
Phone ++91 (0)22 / 40 71 81 6
40 76 37 1
40 76 43 2
40 77 45 3
Telefax ++91 (0)22 / 40 90 42 3

INDONESIA
P.T. Futurindo Globalsatya
Jl.: Prof. Dr. Latumenten No. 18
Kompleks Perkantoran
Kota Grogol Permai Blok A 35
JAKARTA 11460
Buero 1:
Phone ++62 (0)21 / 766 42 34
765 86 23
Telefax ++62 (0)21 / 766 44 20
Buero 2:
Phone ++62 (0)21 / 567 96 31
567 96 32
Telefax ++62 (0)21 / 566 87 50

IRAN
Tavan Ressan Co.,
P.O. Box 19395-5177
Ayatollah-Sadr Exp.Way,
South Dastour Ave., Habibi Str. No. 44
TEHRAN 19396
Phone ++98 (0)21 / 26 67 66
26 26 55
26 92 99
Telefax ++98 (0)21 / 20 02 88 3

ISRAEL
Greensphon Engineering Works LTD
P.O.Box 10 108 Haifa-Bay 26110.
Phone ++972 (0)4 / 87 21 18 7
Telefax ++972 (0)4 / 87 26 23 1

ITALY
Gerit Trasmissioni S.p.A.
Viale Monza 338
20128 MILANO
Phone ++39 (0)02 / 27 09 81
Telefax ++39 (0)02 / 27 09 82 92

JAPAN
Miki Pulley Co., Ltd.
1-39-7 Komatsubara, Zama-city
KANAGAWA 228-8577
Phone ++81 (0)462 / 58 16 61
Telefax ++81 (0)462 / 58 17 04

LUXEMBOURG
see BELGIUM

MACEDONIA
Lenze Antriebstechnik GmbH
Pretstavnistvo Skopje
Nikola Rusinski str. III/A/2
91000 SKOPJE
Phone ++389 (0)91 / 39 00 90
Telefax ++389 (0)91 / 39 00 91

MALAYSIA
D.S.C. ENGINEERING SDN BHD
40M, Jalan SS21/58
Damansara Utama
47400 Petaling Jaya
SELANGOR D.E.
Phone ++60 (0)3 / 77 25 62 43
77 25 62 46
Telefax ++60 (0)3 / 77 29 50 31

MEXICO
see USA

NETHERLANDS
Lenze B.V., Postbus 31 01
5203 DC``S-HERTOGENBOSCH
Ploegweg 15
5232 BR`S-HERTOGENBOSCH
Phone ++31 (0)73 / 64 56 50 0
Telefax ++31 (0)73 / 64 56 51 0

NEW ZEALAND
Tranz Corporation
112 Mays Road, Onehunga
P.O. Box 12-320, Penrose
AUCKLAND
Phone ++64 (0)9 / 63 45 51 1
Telefax ++64 (0)9 / 63 45 51 8

NORWAY
Dtc- Lenze as
Stallbakken 5
2005 RAELINGEN
Phone ++47 / 64 80 25 10
Telefax ++47 / 64 80 25 11

PHILIPPINES
Jupp & Company Inc.
Unit 2111, Cityland 10, Tower II
6817 Ayala Ave. Cor. H. V.
De La Costa St.
MAKATI, METRO MANILA
Phone ++63 (0)2 / 89 43 89 8
89 21 50 6
Telefax ++63 (0)2 / 89 32 07 4

POLAND
Lenze-Rotiw Sp. z o.o.
ul. Roździeńskiego 188b
40-203 KATOWICE
Phone ++48 (0)32 / 2 03 97 73
Telefax ++48 (0)32 / 7 81 01 80

Lenze Systemy Automatyki Sp. z o.o.
Ul. Kociewska 30 A
87-100 TORUŃ
Phone ++48 (0)56 / 6 55 94 93
6 55 94 94
6 55 94 95
6 58 40 00
6 58 40 10
Telefax ++48 (0)56 / 6 55 94 96

PORTUGAL
Costa Leal el Victor
Electronica-Pneumatica, Lda.
Rua Prof. Augusto Lessa, 269,
Apart. 52053
4202-801 PORTO
Phone ++351-22 / 5 50 85 20
Telefax ++351-22 / 5 02 40 05

ROMANIA
see AUSTRIA

RUSSIA
Inteldrive
1 Buhvostova Street 12/11
Korpus 18 Office 322
MOSCOW 107258
Phone ++7 (0)095 / 963 96 86
Telefax ++7 (0)095 / 962 67 94

SINGAPORE
see MALAYSIA

SLOVAC REPUBLIC
ECS Sluzby spol. s.r.o.
Staromlynska 29
82106 BRATISLAVA
Phone ++421 (0)7 / 45 25 96 06
Telefax ++421 (0)7 / 45 25 96 06

SLOVENIA
Lenze pogonska tehnika GmbH
Podruznica Ljubljana
C.A. Bitenca 68
1000 LJUBLJANA
Phone ++386 61 / 15 026 15
Telefax ++386 61 / 15 026 10

SOUTH AFRICA
S.A. Power Services (Pty.) Ltd.
P.O. Box 11 37
RANDBURG 2125
Phone ++27 (0)11 / 78 71 80 1
Telefax ++27 (0)11 / 78 75 04 0

SOUTH KOREA
see CHINA

SPAIN
Lenze Transmisiones, S.A.
Mila i Fontanals, 135-139
08205 SABADELL (Barcelona)
Phone ++34 93 / 72 07 68 0
Telefax ++34 93 / 71 22 54 1

SWEDEN
Lenze Transmissioner AB
Box 10 74, 58110 LINKÖPING
Phone ++46 (0)13 / 35 58 00
Telefax ++46 (0)13 / 10 36 23

SWITZERLAND
Lenze Bachofen AG
Ackerstraße 42, Postfach
8610 USTER-ZÜRICH
Phone ++41 (0)1 / 94 41 21 2
Telefax ++41 (0)1 / 94 41 23 3

Vente Suisse Romande:
Route de Prilly 25
1023 CRISSIER
Phone ++41 (0)21 / 63 72 19 0
Telefax ++41 (0)21 / 63 72 19 9

TAIWAN
ACE Pillar Trading Co. Ltd.
No.12, Lane 61, Sec. 1,
Kuanfu Road, San-Chung City
TAIPEI HSIEN
Phone ++886 (0)2 / 299 58 40 0
Telefax ++886 (0)2 / 299 53 46 6

THAILAND
Weinmann & Schneider Co., Ltd.
429 Moo 7
Theparak Road
Tambol Theparak
Amphur Muang
SAMUTPRAKARN 10270
Phone ++66 (0)2 / 38 35 13 4
38 35 63 36
38 36 60 68
38 36 57 6
Telefax ++66 (0)2 / 38 35 63 7

TURKEY
LSE Elektrik Elektronik Makine
Otomasyon Mühendislik
San. ve Tic. Ltd. Sti.
Gülsuyu mah. Zuhal Cad.
Fil Yokusu No:8
81530 MALTEPE/ISTANBUL
Phone ++90 (0)216 / 441 00 43
441 61 04
459 67 26
459 66 18
Telefax ++90 (0)216 / 399 41 26

UNITED KINGDOM/EIRE
Lenze Ltd.
Caxton Road
BEDFORD MK 41 OHT
Phone ++44 (0)1234 / 32 12 00
Telefax ++44 (0)1234 / 26 18 15

USA
Lenze Corp.
175 Route 46 West
FAIRFIELD NJ 07004
Phone ++1 973 / 227-5311
Telefax ++1 973 / 227-7423

Lenze Corp.
1730 East Logan Avenue
EMPORIA KS 66 801
Phone ++1 316 / 34 38 40 1
Telefax ++1 316 / 34 22 59 5

Lenze Corp.
300 Petty Road
Suite E
LAWRENCEVILLE, GA 30043
Phone ++1 770 / 962-3696
Telefax ++1 770 / 962-2983

YUGOSLAVIA
see MACEDONIA