

Electromagnetic clutch-brake combinations
INTORQ 14.800 – 14.867

7.5 – 120 Nm



INTORQ

setting the standard

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Clutch-brake combinations

Product information

Electromagnetic clutch-brake combinations have been enjoying market success for a number of years. They are used in all areas of mechanical engineering when a production sequence has to be synchronised. As the drive runs continuously with the clutch rotor, the energy from the upstream drive can be used to accelerate the output. INTORQ 14.105/115 series electromagnetic clutches and brakes are used in these clutch-brake combinations. They are switched alternately in order to accelerate or decelerate the output shaft. Torque transmission is achieved using friction.

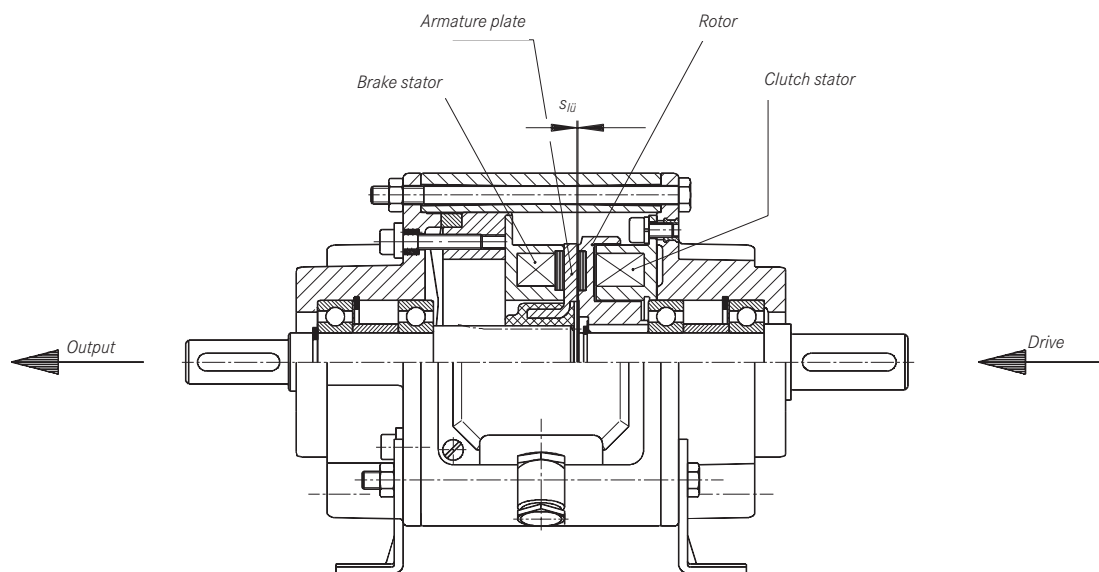
As well as the basic versions with free drive and output shafts and hollow shafts, clutch-brake combinations are also available with built-on three-phase AC motors and with helical or worm gearboxes mounted at the output end. The drives can be used in either a horizontal or vertical mounting position. Using preassembled units significantly reduces design costs for new developments and the time spent on mounting.

Friction clutches and brakes are subject to a certain amount of wear which is dependent on the switching energy used. Automatic adjusting devices (which are susceptible to faults) are no longer required, thanks to the wear resistant, asbestos-free friction linings used.

Air gap compensation can be carried out quickly and without disassembling the clutch-brake combination thanks to patented wear adjustment. The low moments of inertia of the wear-resistant armature plates permit high switching frequencies and good positioning accuracy which can be increased still further if required, using the high-speed switchgear that is available.

Features

- Five frame sizes from 7.5 – 120 Nm
- Asbestos-free friction lining
- Patented air gap adjustment can be performed externally without disassembling the combination.
- Operating times of the clutch and brake do not overlap.
- A backlash-free version can be supplied on request.
- Two shaft and two hollow shaft diameters as well as two flange diameters in IEC dimensions are available for each size.
- Two axis heights are available for each size.
- Insulation material class B
- Dimensioned for 100% duty
- IP44 degree of protection, higher degrees on request
- Rated voltage 24 V DC, other voltages on request
- Variable terminal box position; standard position is on left when looking at the drive end.
- VDE 0580



Clutch-brake combinations

INTORQ

Product information

Patented adjusting device
INTORQ 14.800 - 867

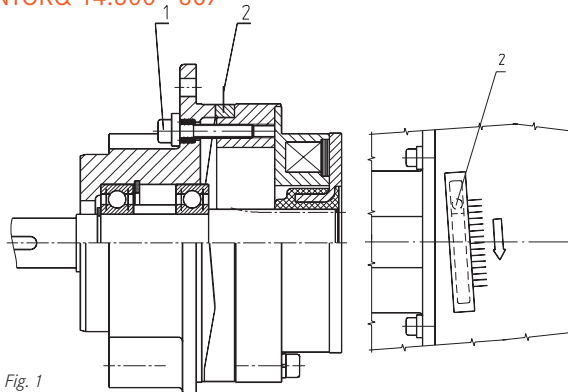


Fig. 1

Output cover with adjusting device and splined armature plate (Fig. 1)

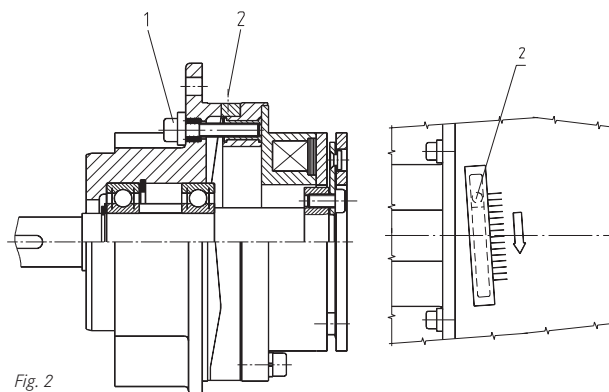


Fig. 2

Output cover with adjusting device and backlash-free diaphragm armature plate (Fig. 2)

The same air gap adjusting device is provided for each output cover. The sequence of functions is described below. The description of the patented adjusting device applies to both versions. If required, the air gap can be compensated as follows:

- Loosen the four screws (1) in the housing cover at the output end until the pressure on the compression springs beneath it is relieved but do not remove them completely.
- Remove the cover from the slot in the housing. Insert a cylindrical pin into the bore which then becomes visible. This pin must be capable of radially twisting the ring (2).

- Turn the ring in the direction of the arrow. When you feel resistance, turn it back by one scale marking (equal to the rated air gap).

After adjusting the air gap, retighten the screws (1) and insert the cover into the housing.

This simple way of adjusting an air gap can be also be performed easily on built-in combinations.



INTORQ

Clutch-brake combinations

Type code

INTORQ 14.800 – 14.810

	INTORQ 14.800.	06.	10.	1	
Type _____					
Size _____					
Output-end version _____					
Drive-end version _____					
Variants _____					

Clutch-brake combinations

Type code

INTORQ 14.800 – 14.810

Type

INTORQ 14.800 – clutch-brake combinations
without motor

INTORQ 14.810 –clutch-brake combinations
with motor

Output-end version

- 10 – free output shaft, without foot, without flange
- 11 – free output shaft, with foot, without flange
- 12 – free output shaft, without foot, with flange
- 13 – free output shaft, with foot, with flange
- 20 – with hollow shaft, without foot, without flange
- 21 – with hollow shaft, without foot, with flange
- 22 – with hollow shaft, with foot, without flange
- 23 – with hollow shaft, with foot, with flange

Drive-end version

- 1 – splined armature plate, free drive shaft
- 2 – splined armature plate, free drive shaft and flange
- 3 – splined armature plate, hollow shaft, B5 flange
- 4 – splined armature plate, hollow shaft, B14 flange
- 6 –backlash-free diaphragm armature plate,
free drive shaft
- 7 –backlash-free diaphragm armature plate,
free drive shaft and flange
- 8 –backlash-free diaphragm armature plate, hollow shaft,
B5 flange
- 9 –backlash-free diaphragm armature plate, hollow shaft,
B14 flange

Variants

Clutch/brake voltage

Shaft diameter/bore diameter/flange diameter/foot
height/terminal box position

Motor:

Power – voltage

Speed – frequency

Degree of protection

For available motor frame sizes, see page 11.

Clutch-brake combinations

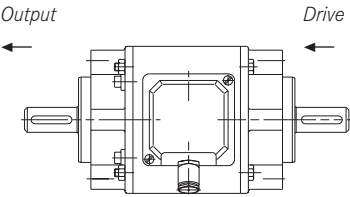
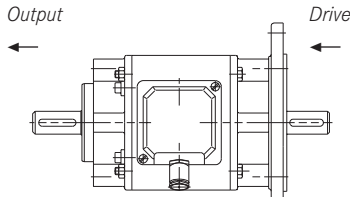
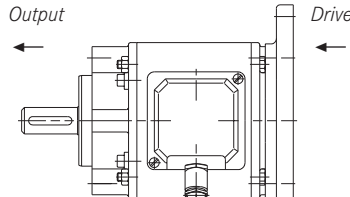
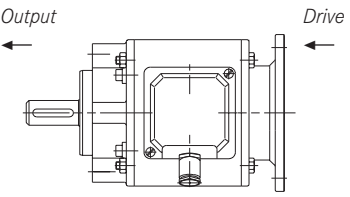
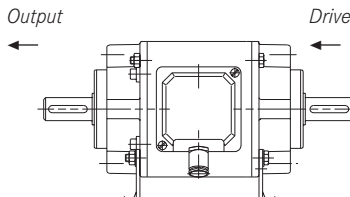
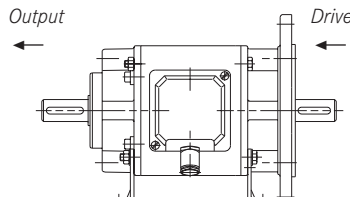
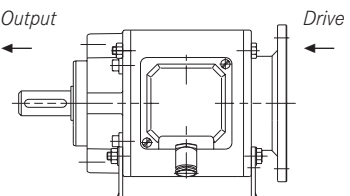
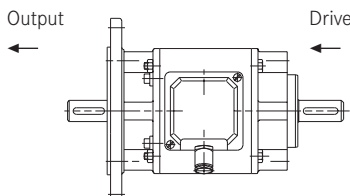
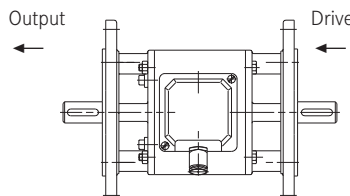
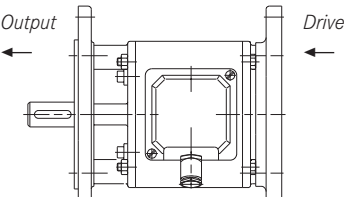
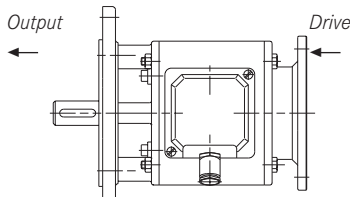
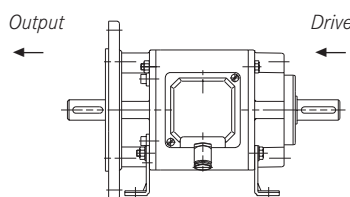
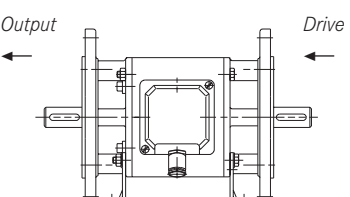
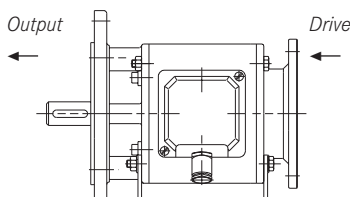
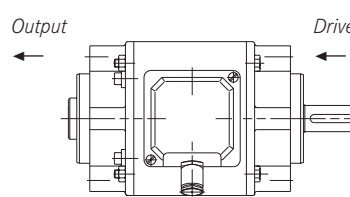
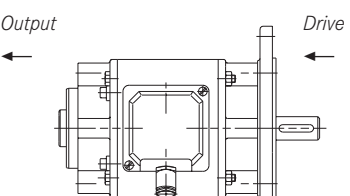
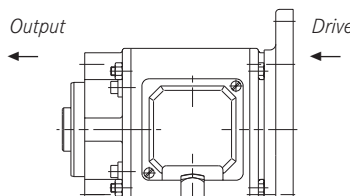
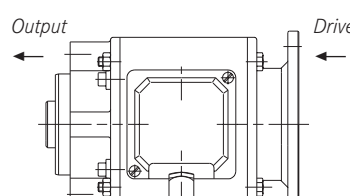
Design selection

INTORQ 14.800

Version	Versions with splined armature plate				Versions with backlash-free diaphragm armature plate			
	10.1	10.2	10.3	10.4	10.6	10.7	10.8	10.9
Drive	Free shaft	Free shaft and B5 flange	Hollow shaft and B5 flange	Hollow shaft and B14 flange	As	As	As	As
Output	Free shaft	Free shaft	Free shaft	Free shaft	10.1	10.2	10.3	10.4
Foot mounting	–	–	–	–				
Version	11.1	11.2	–	11.4	11.6	11.7	–	11.9
Drive	Free shaft	Free shaft and B5 flange	–	Hollow shaft and B14 flange	As	As	–	As
Output	Free shaft	Free shaft	–	Free shaft	11.1	11.2	–	11.4
Foot mounting	With feet	With feet	–	With feet				
Version	12.1	12.2	12.3	12.4	12.6	12.7	12.8	12.9
Drive	Free shaft	Free shaft and B5 flange	Hollow shaft and B5 flange	Hollow shaft and B14 flange	As	As	As	As
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
Foot mounting	–	–	–	–				
Version	13.1	13.2	–	13.4	13.6	13.7	–	13.9
Drive	Free shaft	Free shaft and B5 flange	–	Hollow shaft and B14 flange	As	As	–	As
Output	Free shaft and B5 flange	Free shaft and B5 flange	–	Free shaft and B5 flange	13.1	13.2	–	13.4
Foot mounting	With feet	With feet	–	With feet				
Version	20.1	20.2	20.3	20.4	20.6	20.7	20.8	20.9
Drive	Free shaft	Free shaft and B5 flange	Hollow shaft and B5 flange	Hollow shaft and B14 flange	As	As	As	As
Output	Hollow shaft	Hollow shaft	Hollow shaft	Hollow shaft	20.1	20.2	20.3	20.4
Foot mounting	–	–	–	–				
Version	21.1	21.2	21.3	21.4	21.6	21.7	21.8	21.9
Drive	Free shaft	Free shaft and B5 flange	Hollow shaft and B5 flange	Hollow shaft and B14 flange	As	As	As	As
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
Foot mounting	–	–	–	–				
Version	22.1	22.2	–	22.4	22.6	22.7	–	22.9
Drive	Free shaft	Free shaft and B5 flange	–	Hollow shaft and B14 flange	As	As	–	As
Output	Hollow shaft	Hollow shaft	–	Hollow shaft	22.1	22.2	–	22.4
Foot mounting	With feet	With feet	–	With feet				
Version	23.1	23.2	–	23.4	23.6	23.7	–	23.9
Drive	Free shaft	Free shaft and B5 flange	–	Hollow shaft and B14 flange	As	As	–	As
Output	Hollow shaft and B5 flange	Hollow shaft and B5 flange	–	Hollow shaft and B5 flange	23.1	23.2	–	23.4
Foot mounting	With feet	With feet	–	With feet				

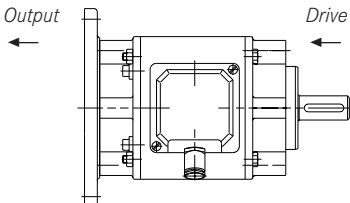
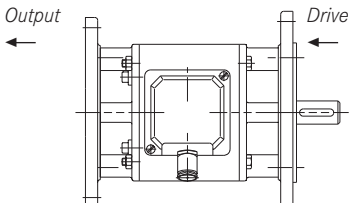
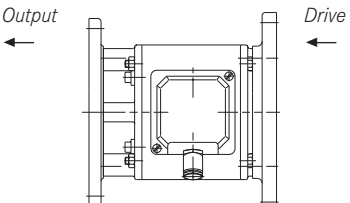
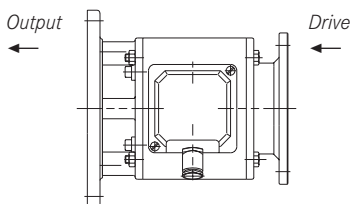
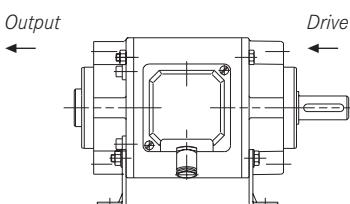
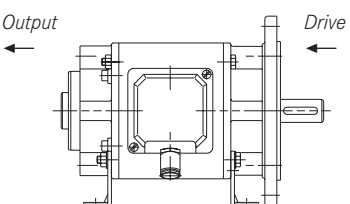
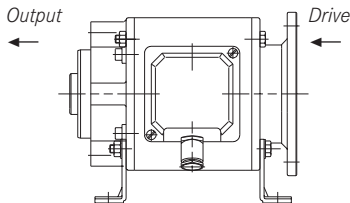
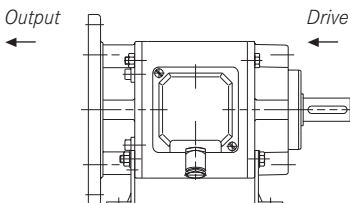
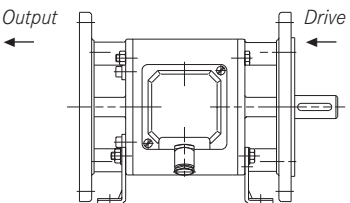
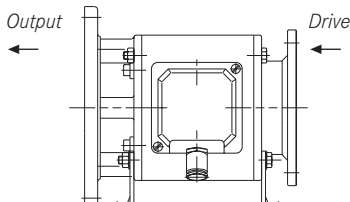
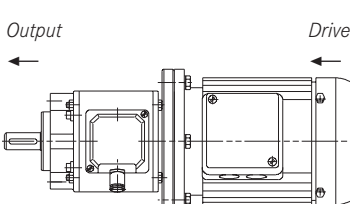
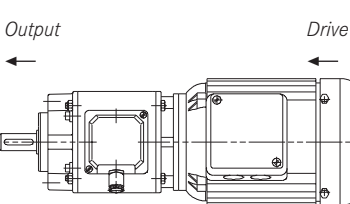
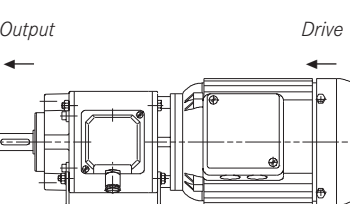
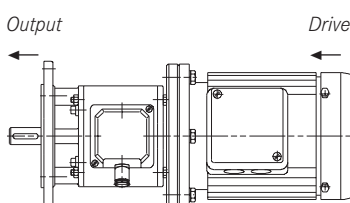
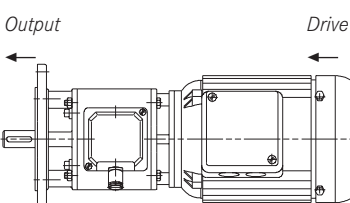
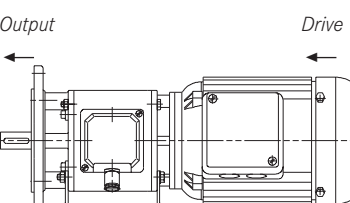
Clutch-brake combinations

Overview of types

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 INTORQ 14.800.□□.20.2(7) Page 24	 INTORQ 14.800.□□.20.3(8) Page 26	 INTORQ 14.800.□□.20.4(9) Page 28

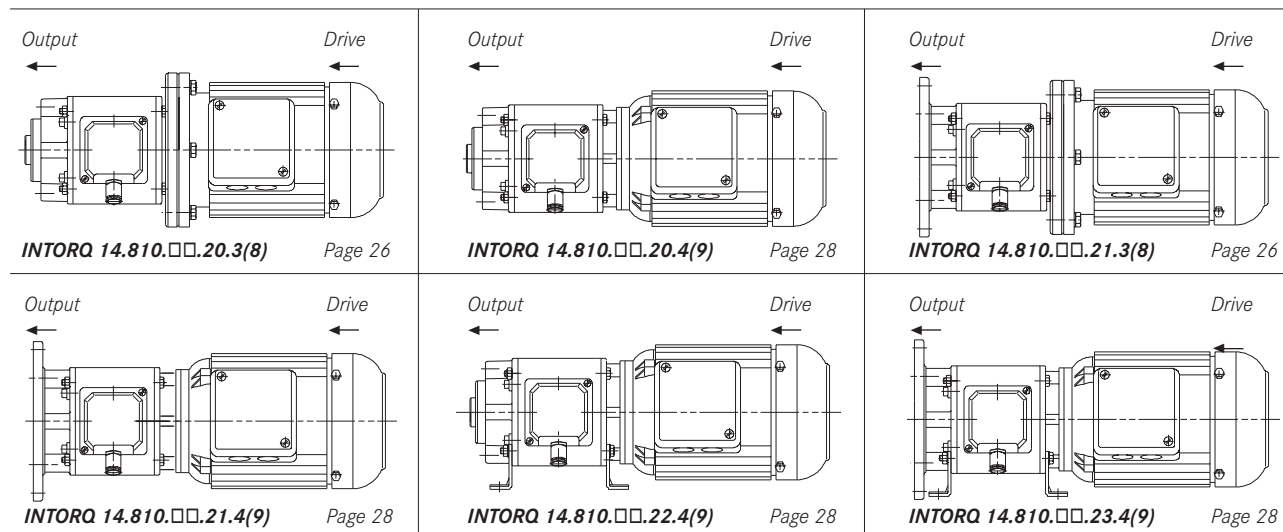
Clutch-brake combinations

Overview of types

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Clutch-brake combinations

Overview of types



The INTORQ 14.810 is supplied complete with a built-on three-phase AC motor but it is not shown in separate dimension drawings. The dimensions of this clutch-brake combination can be found in the 14.800 dimension tables. For example, the dimensions for the 14.810.06.12.4 version should be taken from the 14.800.06.12.4 dimension table on pages 22/23.

The assignment of the available motor frame sizes and designs can be seen in the table below.

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

Clutch-brake combinations

Dimensioning

Selecting the size

Dimensioning is carried out in accordance with VDI Guideline 2241.

Symbols used in calculations:

M_K	Rated torque of the clutch or brake in Nm
M_{load}	Load torque in Nm
M_a	Acceleration or deceleration torque in Nm
M_{req}	Required torque in Nm
P	Drive power in kW
Δ_{no}	Initial relative speed of the clutch or brake in rpm
J_{load}	Moment of inertia of all output components referred to the clutch shaft in kgm ²
t₃	Slipping time in seconds during which there is a relative movement between the drive and output if the clutch or brake is closed
t₁₁	Engagement delay time in seconds, i.e. the time from switching the voltage on to experiencing an increase in torque
t₁₂	Torque rise time in seconds, i.e. the time from the start of the torque increase until rated torque M _K is reached
t₁	Engagement time in seconds, i.e. the sum of t ₁₁ + t ₁₂
t₂	Disengagement time in seconds, i.e. the time from switch-off until 10% of rated torque M _K is reached
K	Safety factor ≥ 2
Q	Calculated switching energy per switching cycle in J
Q_E	Max. permissible switching energy for one switching operation in J, in accordance with the table on page 18
Q_{perm}	Max. permissible switching energy in J
S_h	Operating frequency per hour, i.e. the number of working cycles distributed evenly over the time period
Z_{NA}	Number of switching operations until readjustment

The required size is dimensioned essentially in accordance with the required torques or braking torques. The inertias to be accelerated or braked (moments of inertia), the relative speeds, the acceleration or deceleration times, the required operating frequencies and the desired service life should all be included in the calculation. The ambient conditions for the site of use of housed clutches should be known. Such conditions could include, for example, extraordinary ambient temperatures, extremely high air humidity and dust accumulation.

Friction surfaces must always be kept free of oil and grease.

Clutch-brake combinations

Dimensioning

Safety factor

In order to achieve the required transmission security even in extreme operating conditions, the calculated torque is multiplied by safety factor K. The value of K is determined by the operating conditions.

$$K \geq 2$$

Load types

In practice, the following load types mainly occur:

■ Purely dynamic load

A purely dynamic load is present when flywheels, rolls or similar are to be accelerated or decelerated and

the static load torque is negligible.

$$M_{\text{req}} = M_a \cdot K \leq M_K$$

$$M_a = \frac{J_{\text{load}} \cdot \Delta n_0}{9.55 \cdot \left(t_3 - \frac{t_{12}}{2}\right)} \quad M_{\text{req}} = \frac{J_{\text{load}} \cdot \Delta n_0}{9.55 \cdot \left(t_3 - \frac{t_{12}}{2}\right)} \cdot K$$

■ Dynamic and static load

The majority of applications belong to this mixed category, as a dynamic load is present in addition to a static load torque in most cases.

The required size is usually calculated using the clutch or acceleration process.

$$M_{\text{req}} = (M_a \pm M_{\text{load}}) \cdot K \leq M_K$$

$$M_{\text{req}} = \left[\frac{J_{\text{load}} \cdot \Delta n_0}{9.55 \cdot \left(t_3 - \frac{t_{12}}{2}\right)} \pm M_{\text{load}} \right] \cdot K$$

+M_{load} = to engage clutch and accelerate load

-M_{load} = to engage brake and decelerate load

Estimated required torque or size

If only the drive power to be transmitted is known, the required torque or braking torque can be determined as follows:

$$M_{\text{req}} = 9550 \frac{P}{n} \cdot K \leq M_K$$

Acceleration and delay time

If the rated torque is specified and the moment of inertia and load torque are both known, the acceleration or delay time can be determined as follows:

$$t_3 = \frac{J_{\text{load}} \cdot \Delta n_0}{9.55 \cdot (M_K \pm M_{\text{load}})} + \frac{t_{12}}{2}$$

-M_{load} = to engage clutch and accelerate load

+M_{load} = to engage brake and decelerate load

Clutch-brake combinations

Dimensioning

Thermal load

When dimensioning clutches and brakes, other important factors to be taken into account are the switching energy per switching cycle and the operating frequency. The available switching energy per switching cycle (engaging the clutch and braking) is calculated using the formula below:

The permissible friction energy per switching cycle at a given operating frequency can be taken from the diagram on page 16. If the friction energy per switching cycle is known, the permissible operating frequency can also be taken from the diagram.

$$Q = \frac{J_{load} \cdot \Delta n_0^2}{182.5} \cdot \left(\frac{M_K}{M_K - M_{load}} + \frac{M_K}{M_K + M_{load}} \right)$$

Example

The following technical data is known for a packaging machine's positioning mode:

$J_{load} = 0.01 \text{ kgm}^2$ total
 $M_{load} = 6 \text{ Nm}$
 $\Delta n_0 = 700 \text{ rpm}$
 $t_3 = 0.15 \text{ s}$
 $S_h = 4000$ switching operations per hour

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

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

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

Selected clutch-brake combination:

INTORQ 14.800.10.11.1

With $M_K = 30 \text{ Nm}$

Calculation of the available switching energy per switching cycle:

$$Q = \frac{J_{load} \cdot \Delta n_0^2}{182.5} \cdot \left(\frac{M_K}{M_K - M_{load}} + \frac{M_K}{M_K + M_{load}} \right) \quad Q = \frac{0.01 \cdot 700^2}{182.5} \cdot \left(\frac{30}{30 - 6} + \frac{30}{30 + 6} \right) \quad Q = 55.9 \text{ J}$$

See the diagram (page 16) for S_{perm} depending on the calculated switching energy.

The required operating frequency is permissible at the calculated switching energy for the selected size (10).

Ordering example

INTORQ 14.800.10.11.1

24 V DC, shaft Ø 19 mm/19 mm

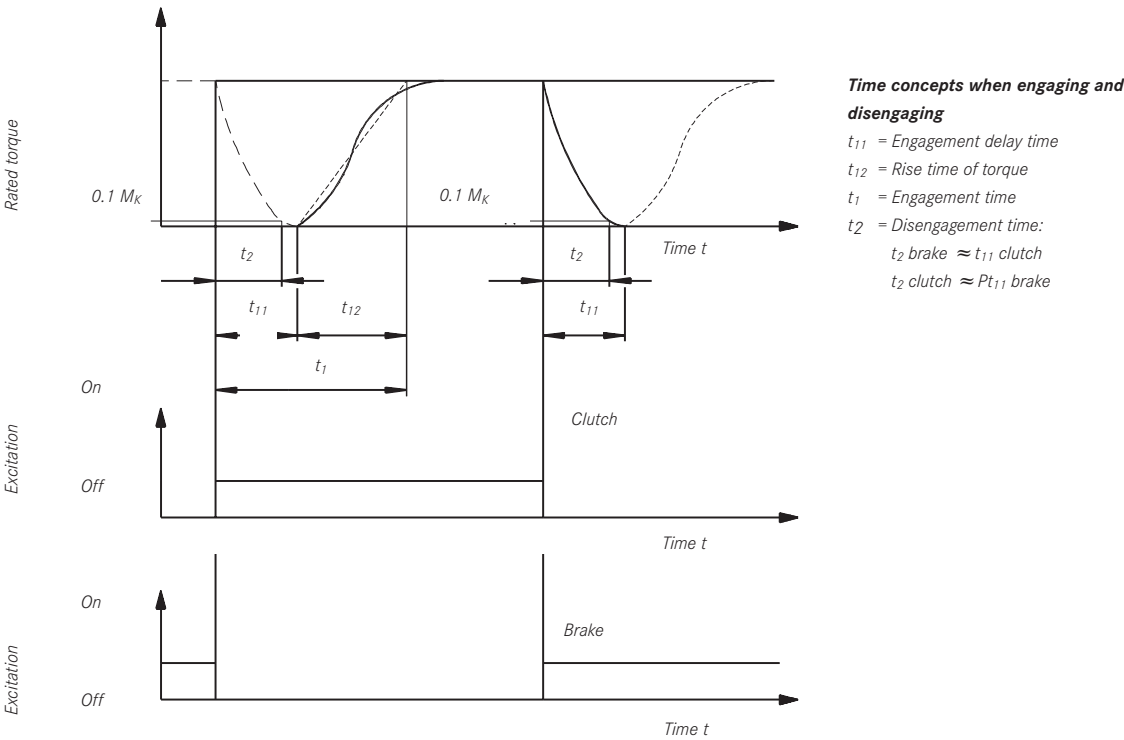
Clutch-brake combinations



Dimensioning

Operating times

The operating times listed in the tables apply to switching on the DC side with a rated air gap and warm coil. These are mean values whose variation depends on, amongst other things, the rectification type and the air gap S_{ij} .



Operating times in milliseconds

Size	INTORQ 14.800/810/852 to 867 and 14.137/138				
	E clutch			E 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

Clutch-brake combinations

Selection table

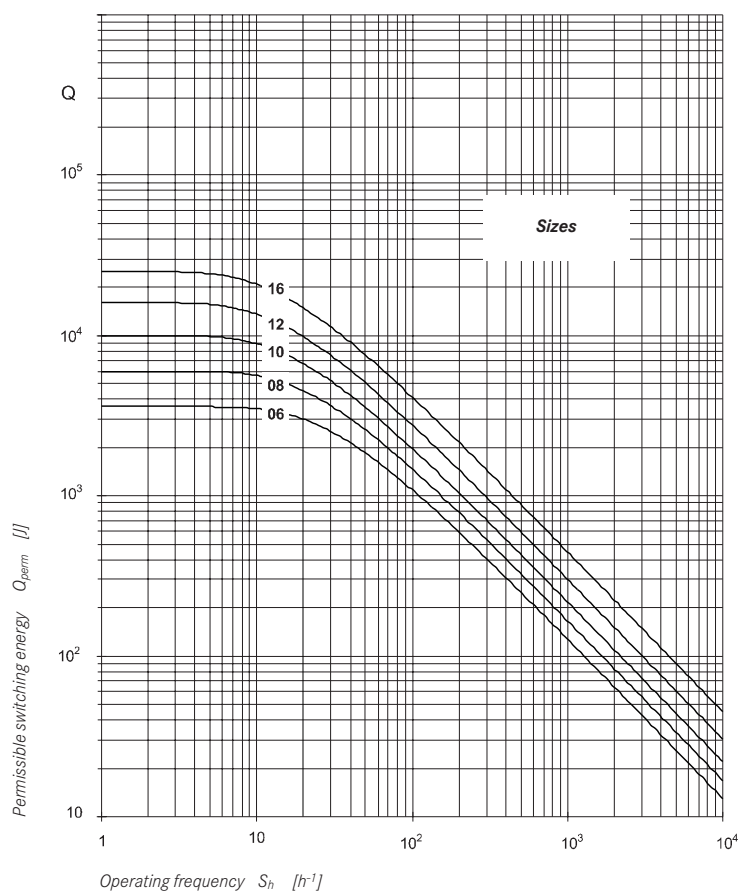
INTORQ 14.800 – 867	Size	$M_K^{1)}$ Nm	$P_{20}^{2)}$ W		n_{max} rpm	Q_E J	Moments of inertia $J \times 10^{-5}, \text{kgm}^2$		
		14.105 14.115	Clutch	Brake			Rotor	Armature plate	Output shaft
With splined armature plate	06	7.5	15	11.5	3000	3.6×10^3	11.9	4.2	0.7
	08	15	20	16	3000	6×10^3	26.6	13.9	2.4
	10	30	28	21	3000	10×10^3	78	41.4	6.5
	12	60	35	28	3000	16×10^3	226	120	15.8
	16	120	50	38	3000	25×10^3	630	378	64
With backlash-free diaphragm armature plate	06	7.5	15	11.5	3000	3.6×10^3	11.9	6.5	1.2
	08	15	20	16	3000	6×10^3	26.6	25.3	3.7
	10	30	28	21	3000	10×10^3	78	82.1	10.2
	12	60	35	28	3000	16×10^3	226	241	23.3
	16	120	50	38	3000	25×10^3	630	800	85

■ Standard voltage 24 V DC

■ ¹⁾ M_K in relation to $n = 100 \text{ rpm}$

■ ²⁾ At 20°C

INTORQ 14.800/810/852 ÷ 867 and 14.137/138



Clutch-brake combinations

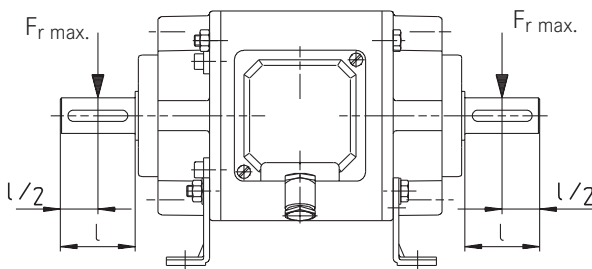
Shaft loads

The radial forces specified in the table relate to the centre of the shaft ends. F_{rmax} is the maximum permissible radial force in relation to the shaft strength.

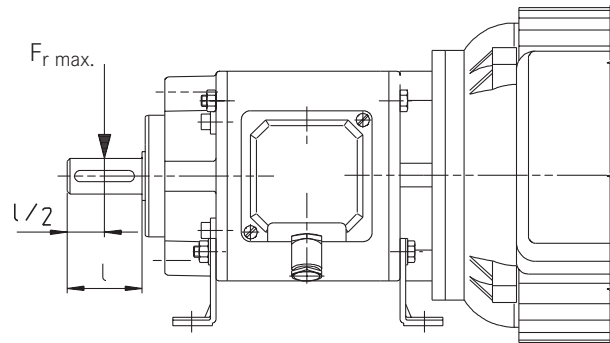
Force F_{rated} underlies a bearing service life of $L_h = 10,000$ hours at $n = 1500$ rpm.

These values can be converted to other service lives and speeds with the aid of the diagram. However, you should ensure that force F_{rmax} is not exceeded. If additional axial forces are present, please inform us of them so that we can perform a recalculation.

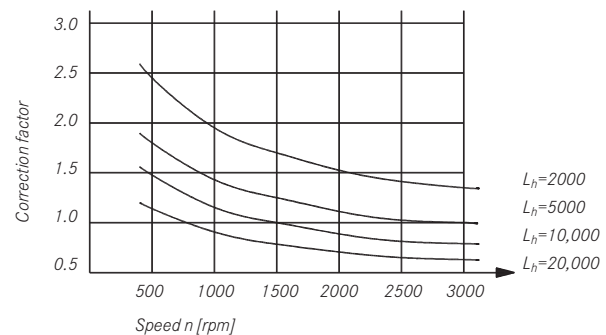
INTORQ 14.800



INTORQ 14.810



Size	Force F_{rmax} [N]	Force F_{rated} [N]
06	600	325
08	900	425
10	1300	590
12	1900	870
16	2300	1350



$$F = F_{rated} \cdot k \leq F_{rmax}$$

- F** Permissible radial force in N
- F_{rmax}** Max. permissible radial force in N, in relation to shaft strength
- F_{rated}** Permissible radial force in N for $L_h = 10,000$ h and $n = 1500$ rpm
- k** Correction factor from diagram

Example:

Size 08

Speed $n = 500$ rpm

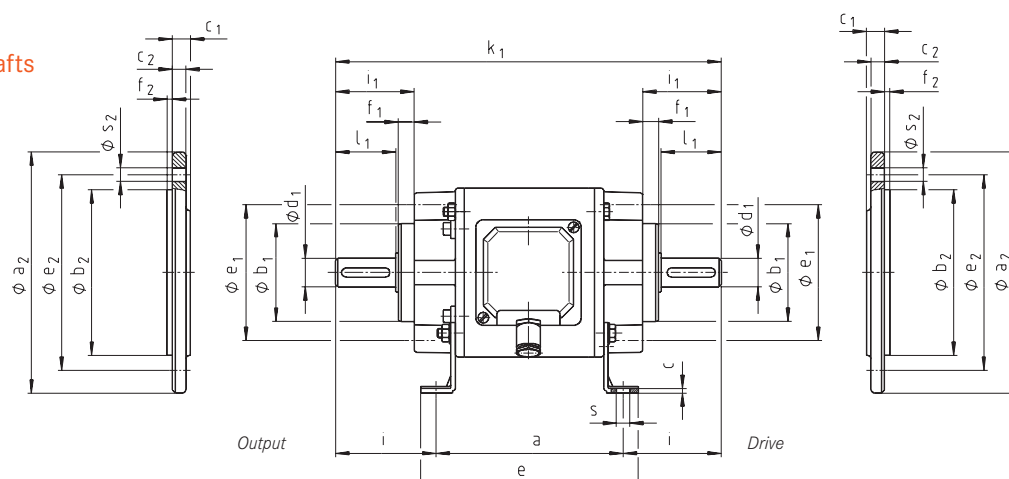
Service life $L_h = 5000$ hours

$F = 425 \cdot 1.8 = 765 \text{ N} < F_{rmax} = 900 \text{ N}$

Clutch-brake combinations

Dimensions

Free drive and output shafts



Keys to DIN 6885/1
Centring to DR DIN 332

INTORQ 14.800.□□.11.1(6) basic version

Size	M _K Nm	Clutch P ₂₀ W	Brake P ₂₀ W	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
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

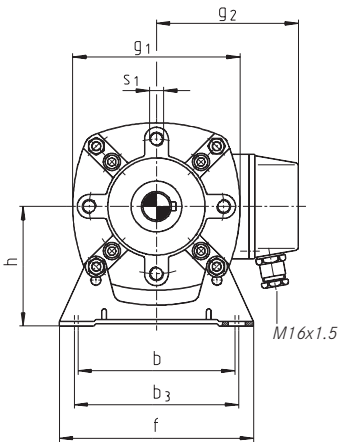
Size	a ₂	b ₂ j7	c ₁	c ₂	e ₂	f ₂	s ₂	m kg
06	140	95	12	10	115	3	9	0.4
	160	110			130	3.5		0.5
08	160	110	12	9	130	3.5	9	0.5
	200	130			165	4		0.7
10	200	130	22	15	165	3.5	11	0.8
	250	180			215	4		1.1
12	200	130	22	15	165	3.5	11	0.8
	250	180			215	4		1.1
16	250	180	22	15	215	4	13.5	1.3
	300	230			265	4		2.0

Clutch-brake combinations



Dimensions

Free drive and output shafts



INTORQ	Feet	Drive 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]	●	●	●

Order data

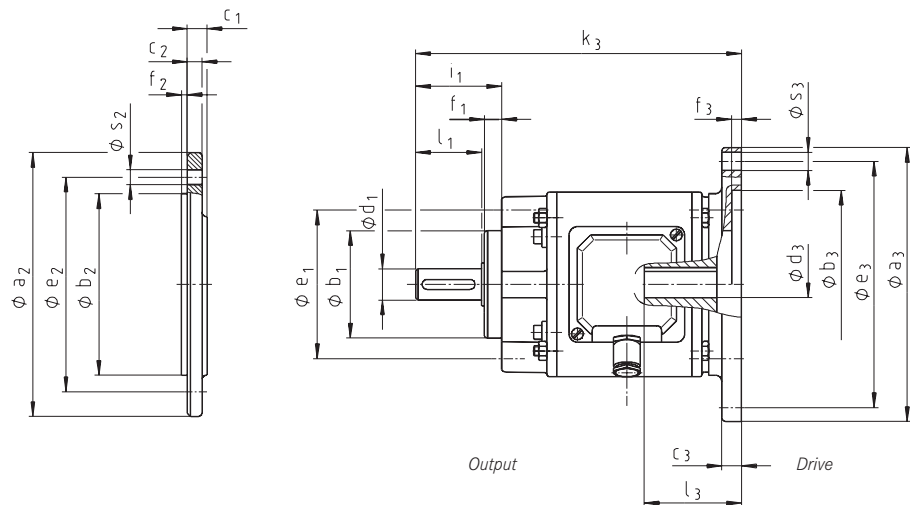
- General – Type designation with specification of size and rated voltage
- Diameters of drive and output shafts
- If required – Diameters of drive and output flanges
- Foot height
- Backlash-free diaphragm armature plate
- [value in brackets in the type designation]

Clutch-brake combinations

Dimensions

Drive, hollow shaft, B5 flange –
output, free shaft

Keys to DIN 6885/1
Keyways to DIN 6885/1JS9
Centring to DR DIN 332



INTORQ 14.800.□□.10.3[8] basic version

Size	M _K Nm	Clutch P ₂₀ W	Brake P ₂₀ W	a ₃	b ₁ h ₈	b ₃ H ₉	c ₃	d ₁ k ₆	d ₃ G ₇	e ₁	e ₃	f ₁	f ₃	g ₁	g ₂	i ₁	k ₃	l ₁	l ₃	s ₁	s ₃	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	M8	2.5
				160		110.2		14	14		130						42	153	30		9	
08	15	20	16	160	65	110.2	14	14	14	90	130	10	4	112	95		42	184	30	50	M8	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	5	140	110		62	217	40	60	M10	7.5
				250		180.2		24	24		215						72	227	50		13.5	
12	60	35	28	200	78	130.2	16	24	24	115	165	20	5	167	136		72	251	50	70	M10	12
				250		180.2		28	28		215						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	22
				300		230.2		38	38		265						102	314	80			

Output flange

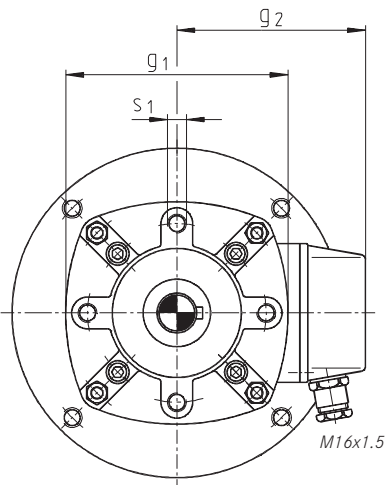
Size	a ₂	b ₂ j7	c ₁	c ₂	e ₂	f ₂	s ₂	m kg
06	140	95	12	10	115	3	9	0.4
	160	110			130	3.5		0.5
08	160	110	12	9	130	3.5	9	0.5
	200	130			165	3.5	11.5	0.7
10	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
12	200	130	22	15	165	3.5	11	0.8
	250	180			215	4	13.5	1.1
16	250	180	22	15	215	4	13.5	1.3
	300	230			265			2.0

Clutch-brake combinations



Dimensions

Drive, hollow shaft, B5 flange –
output, free shaft



INTORQ	Drive B5 flange	Output B5 flange
14.800.□□.10.3[8]	●	–
14.800.□□.12.3[8]	●	●

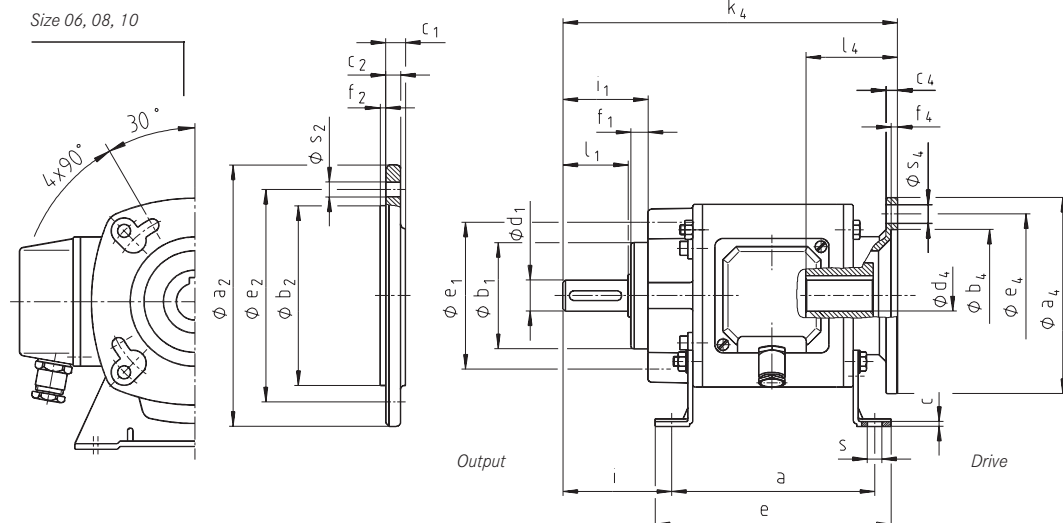
Order data

- General – Type designation with specification of size and rated voltage
Diameter of drive hollow shaft
Diameter of drive flange
Diameter of output shaft
- If required – Diameter of output flange
Backlash-free diaphragm armature plate
[value in brackets in the type designation]

Clutch-brake combinations

Dimensions

Drive, hollow shaft,
B14 flange –
output, free shaft



Keys to DIN 6885/1
Keyways to DIN 6885/1JS9
Centring to DR DIN 332

INTORQ 14.800.□□.11.4[9] basic version

Size	M _K 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	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	3
								14	14														
08	15	20	16	120	65	80.2	7	14	14	90	100	10	4	112	95	71	42	186	30	58	M8	7	4.5
								19	19														
10	30	28	21	140	78	95.2	8	19	19	115	115	19	4	140	110	80	62	225	40	70	M10	9	8
								24	24														
12	60	35	28	160	78	110.2	8	24	24	115	130	20	4	167	136	100	72	261	50	80	M10	9	13
								28	28														
16	120	50	38	200	98	130.2	10	28	28	145	165	20	5	210	158	112	82	309	60	97	M12	12	24
								38	38														

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

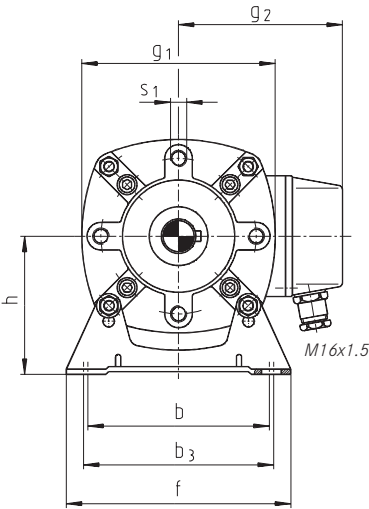
Size	a ₂	b ₂ j7	c ₁	c ₂	e ₂	f ₂	s ₂	m kg
06	140	95	12	10	115	3	9	0.4
	160	110			130	3.5		0.5
08	160	110	12	9	130	3.5	9	0.5
	200	130			165	3.5		0.7
10	200	130	22	15	165	3.5	11	0.8
	250	180			215	4		1.1
12	200	130	22	15	165	3.5	11	0.8
	250	180			215	4		1.1
16	250	180	22	15	215	4	13.5	1.3
	300	230			265	4		2.0

Clutch-brake combinations



Dimensions

Drive, hollow shaft, B14 flange –
output, free shaft



INTORQ	Feet	Output B5 flange
14.800.□□.10.4[9]	-	-
14.800.□□.11.4[9]	●	-
14.800.□□.12.4[9]	-	●
14.800.□□.13.4[9]	●	●

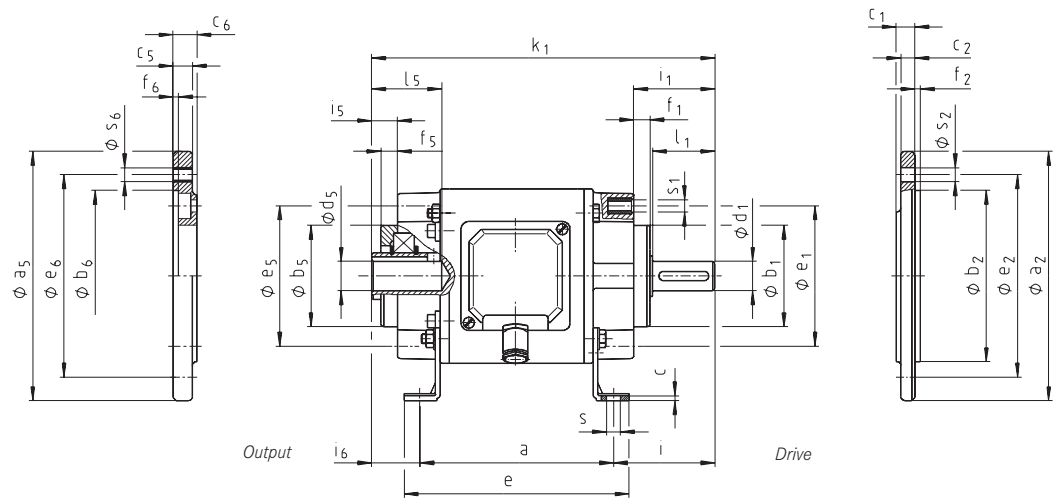
Order data

- General –
- Type designation with specification of size
and rated voltage
Diameter of drive hollow shaft
Diameter of output shaft
- If required –
- Diameter of output flange
Foot height
Backlash-free diaphragm armature plate
[value in brackets in the type designation]

Clutch-brake combinations

Dimensions

Drive, free shaft – output, hollow shaft



Keys to DIN 6885/1

Keyways to DIN 6885/1JS9

Centring to DR DIN 332

INTORQ 14.800.□□.22.1[6] basic version

Size	M _K 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 48.5	20.5	7	0.2
08	120	105	110	3	140	130	55 65	30	9	0.3
10	140	130	140	4	165	160	70 80	27	9	0.4
12	160	150	160	5	184	180	82 92	31	11	0.7
16	185	185	195	6	215	223	97.5 117.5	41.5	13	1.2

Drive flange

Size	a ₂	b ₂ j7	c ₁	c ₂	e ₂	f ₂	s ₂	m kg
06	140 160	95 110	12	10	115 130	3 3.5	9	0.4 0.5
08	160 200	110 130	12	9	130 165	3.5	9 11.5	0.5 0.7
10	200 250	130 180	22	15	165 215	3.5 4	11 13.5	0.8 1.1
12	200 250	130 180	22	15	165 215	3.5 4	11 13.5	0.8 1.1
16	250 300	180 230	22	15	215 265	4	13.5	1.3 2.0

Output flange

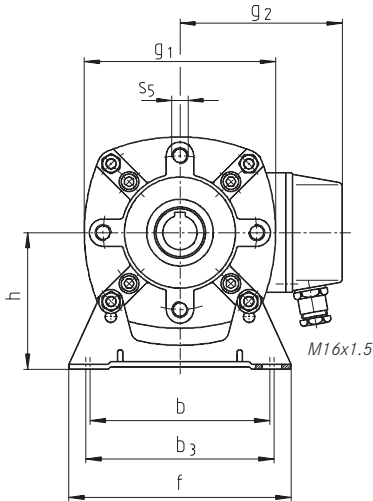
Size	a ₅	b ₆ H9	c ₅	c ₆	e ₆	f ₆	s ₆	m kg
06	140 160	95.2 110.2	13	15	115 130	4	9	0.4 0.5
08	160 200	110.2 130.2	14	18	130 165	4	M8 11.5	0.5 0.7
10	200 250	130.2 180.2	13	18	165 215	4 5	M10 13.5	0.8 1.1
12	200 250	130.2 180.2	16	21	165 215	4 5	M10 M12	0.8 1.1
16	250 300	180.2 230.2	20	27	215 265	5	M12	1.3 2.0

Clutch-brake combinations



Dimensions

Drive, free shaft – output, hollow shaft



INTORQ	Feet	Drive 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]	●	●	●

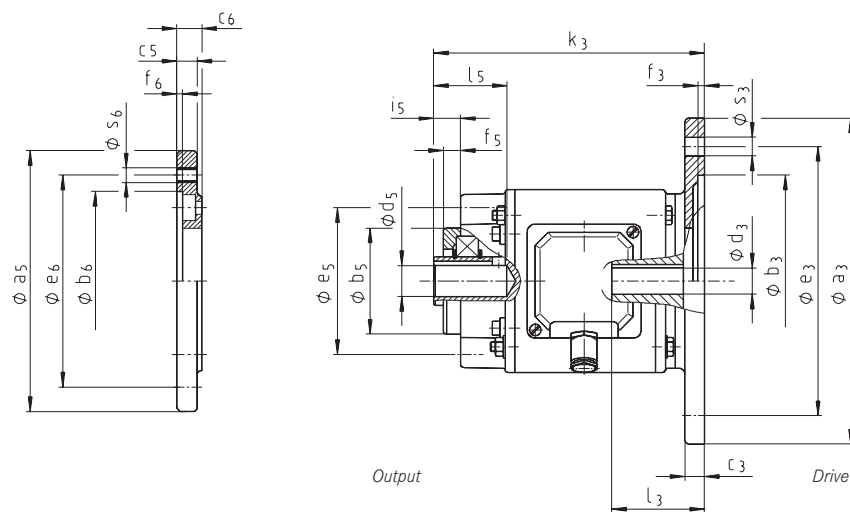
Order data

- General – Type designation with specification of size and rated voltage
Diameters of drive shaft and output hollow shaft
- If required – Diameters of drive and output flanges
Foot height
Backlash-free diaphragm armature plate
[value in brackets in the type designation]

Clutch-brake combinations

Dimensions

Drive, hollow shaft, B5 flange – output, hollow shaft



Keyways to DIN 6885/1JS9

INTORQ 14.800.□□.20.3[8] basic version

Size	M _K 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
	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
06	15	20	16	160	110.2			14	14	130									30	10		
				160	110.2	14	14	130	30	11.5	M8	4.5										
08	15	20	16	160	110.2	65	14	14	14	130			90	4	10	112	95	17	159	50	30	M8
				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

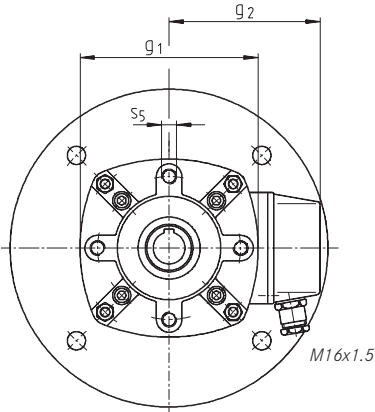
Size	a ₅	b ₆ H9	c ₅	c ₆	e ₆	f ₆	s ₆	m kg
06	140	95.2	13	15	115	4	9	0.4
	160	110.2			130			0.5
08	160	110.2	14	18	130	4	M8	0.5
	200	130.2			165			0.7
10	200	130.2	13	18	165	4	M10	0.8
	250	180.2			215			1.1
12	200	130.2	16	21	165	4	M10	0.8
	250	180.2			215			1.1
16	250	180.2	20	27	215	5	M12	1.3
	300	230.2			265			2.0

Clutch-brake combinations



Dimensions

Drive, hollow shaft, B5 flange – output, hollow shaft



INTORQ	Drive B5 flange	Output B5 flange
14.800.□□.20.3[8]	●	-
14.800.□□.21.3[8]	●	●

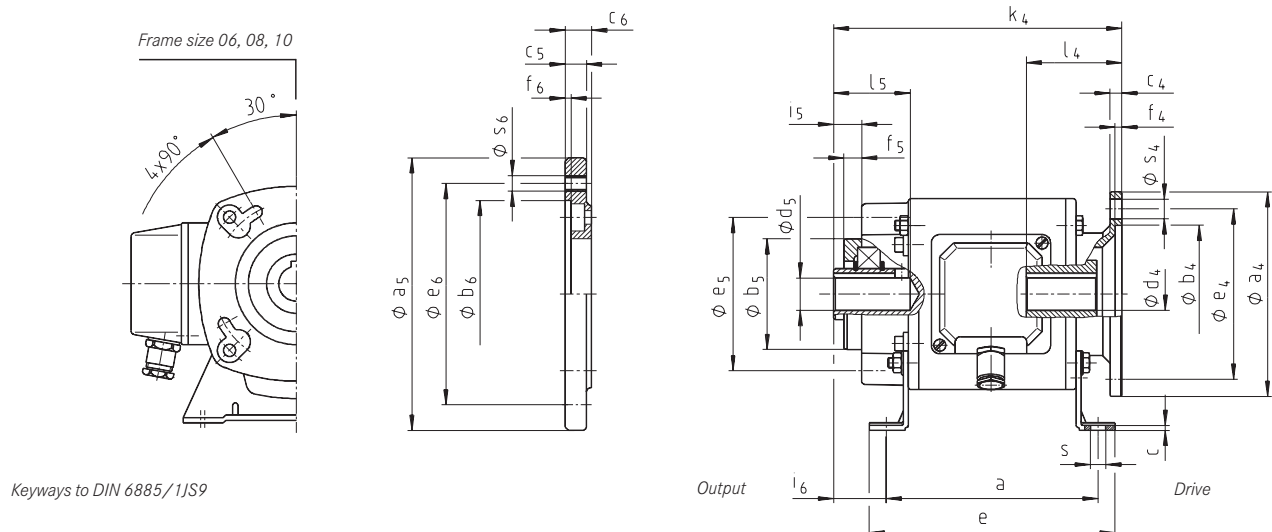
Order data

- General –
- Type designation with specification of size and rated voltage
- Diameter of drive hollow shaft
- Diameter of drive flange
- Diameter of output hollow shaft
- If required –
- Diameter of output flange
- Backlash-free diaphragm armature plate
- [value in brackets in the type designation]

Clutch-brake combinations

Dimensions

Drive, hollow shaft, B14 flange – output, hollow shaft



INTORQ 14.800.□□.22.4[9] basic version

Size	M _K Nm	Clutch P ₂₀ W	Brake P ₂₀ W	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
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	13
								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	24
								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

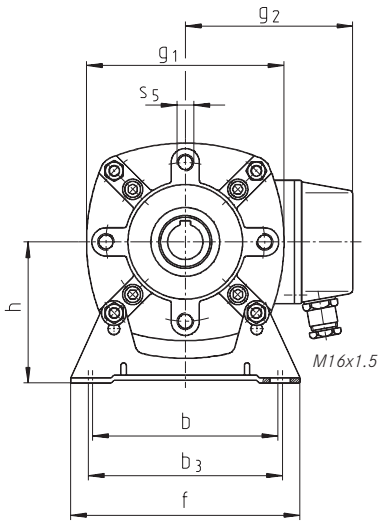
Size	a ₅	b ₆ H9	c ₅	c ₆	e ₆	f ₆	s ₆	m kg
06	140	95.2	13	15	115	4	9	0.4
	160	110.2			130			0.5
08	160	110.2	14	18	130	4	M8	0.5
	200	130.2			165			0.7
10	200	130.2	13	18	165	4	M10	0.8
	250	180.2			215			1.1
12	200	130.2	16	21	165	4	M10	0.8
	250	180.2			215			1.1
16	250	180.2	20	27	215	5	M12	1.3
	300	230.2			265			2.0

Clutch-brake combinations



Dimensions

Drive, hollow shaft, B14 flange – output, hollow shaft



INTORQ	Feet	Output B5 flange
14.800.□□.20.4[9]	-	-
14.800.□□.21.4[9]	-	●
14.800.□□.22.4[9]	●	-
14.800.□□.23.4[9]	●	●

Order data

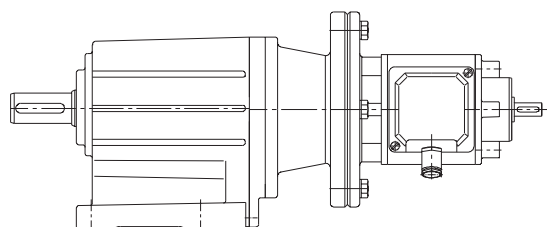
- General –
- Type designation with specification of size and rated voltage
- Diameter of drive hollow shaft
- Diameter of output hollow shaft
- If required –
- Diameter of output flange
- Foot height
- Backlash-free diaphragm armature plate
- [value in brackets in the type designation]

Clutch-brake combinations with helical and helical-worm gearboxes

Product information

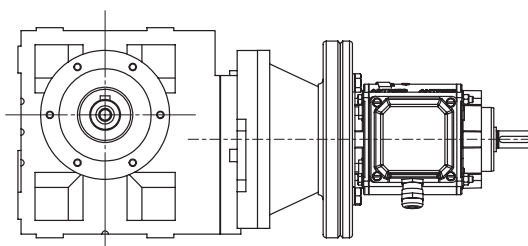
INTORQ 14.852/853/855/856/857

INTORQ 14.852



With this type series, a helical or worm gearbox is already downstream of the clutch-brake combination with free drive shaft. In view of the frequent high switching frequencies, the connection between the clutch-brake combination and the gearbox is backlash-free.

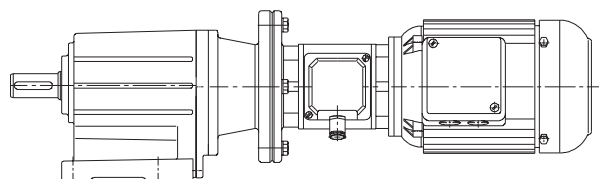
INTORQ 14.855



Please refer to the selection tables below for possible output speeds and ratios. The drive can be connected to these units via flexible couplings and belt pulleys or sprockets.

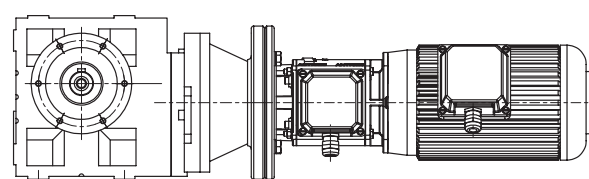
INTORQ 14.862/863/865/866/867

INTORQ 14.862



This type series is largely identical to the one described above. But these combinations are supplied with B14 mounted three-phase AC motors instead of free drive shafts.

INTORQ 14.865



The type of wear adjustment and the technical data are identical to those for type series 14.800 and 810.

Clutch-brake combinations with helical and helical-worm gearboxes

Type code

INTORQ 14.852 – 14.867 with Lenze helical gearboxes

	INTORQ 14.852.	06.	GST/GSS	05.	1	
Type						
Size						
Helical gearbox/ Helical-worm gearboxes						
Gearbox size						
Armature plate version						
Variants						

Type

INTORQ 14.852 – free drive shaft and helical gearbox,
B3 mounting

INTORQ 14.853 – free drive shaft and helical gearbox,
B5 mounting

INTORQ 14.855 – free drive shaft and worm gearbox,
B3 mounting

INTORQ 14.856 – free drive shaft and worm gearbox,
B5 mounting

INTORQ 14.857 – free drive shaft and worm gearbox with
hollow shaft

INTORQ 14.862 – B14 motor and helical gearbox,
B3 mounting

INTORQ 14.863 – B14 motor and helical gearbox,
B5 mounting

INTORQ 14.865 – B14 motor and worm gearbox,
B3 mounting

INTORQ 14.866 – B14 motor and worm gearbox,
B5 mounting

INTORQ 14.867 – B14 motor and worm gearbox with hollow
shaft

Armature plate version

1 = splined armature plate

Variants

Overall design

Clutch/brake voltage

Diameter of drive shaft

Motor:

Power – voltage

Speed – frequency

Degree of protection

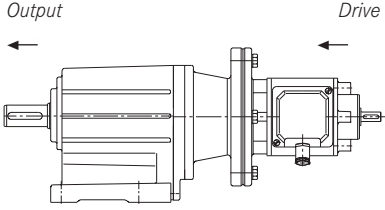
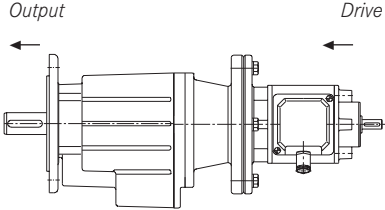
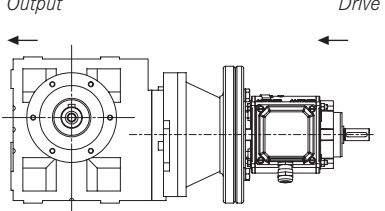
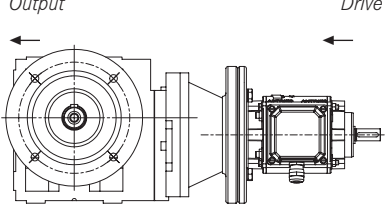
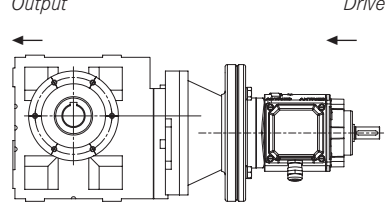
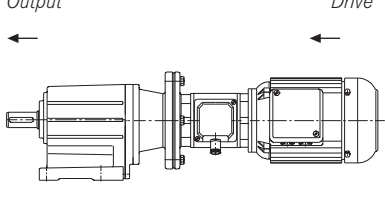
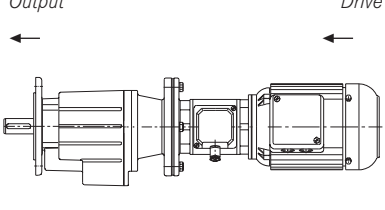
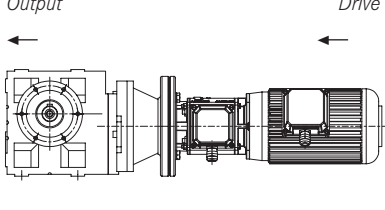
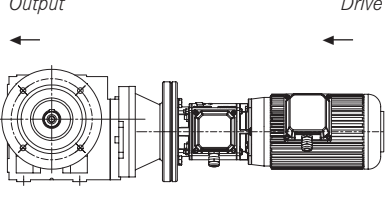
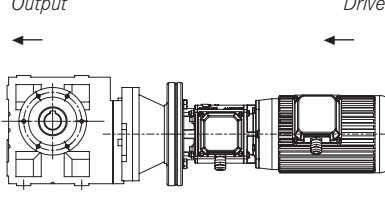
Gearbox:

Ratio

Flange diameter (only with flange-mounted helical
gearboxes)

Clutch-brake combinations with helical and helical-worm gearboxes

Overview of types

 Output → Drive → Foot mounting INTORQ 14.852.□□. Page 38	 Output → Drive → Flange mounting INTORQ 14.853.□□. Page 38	
 Output → Drive → Foot mounting INTORQ 14.855.□□. Page 40	 Output → Drive → Flange mounting INTORQ 14.856.□□. Page 40	 Output → Drive → Hollow shaft mounting INTORQ 14.857.□□. Page 40
 Output → Drive → Foot mounting INTORQ 14.862.□□. Page 42	 Output → Drive → Flange mounting INTORQ 14.863.□□. Page 42	
 Output → Drive → Foot mounting INTORQ 14.865.□□. Page 44	 Output → Drive → Flange mounting INTORQ 14.866.□□. Page 44	 Output → Drive → Hollow shaft mounting INTORQ 14.867.□□. Page 44

Clutch-brake combinations with helical and helical-worm gearboxes

Permissible radial and axial forces - output

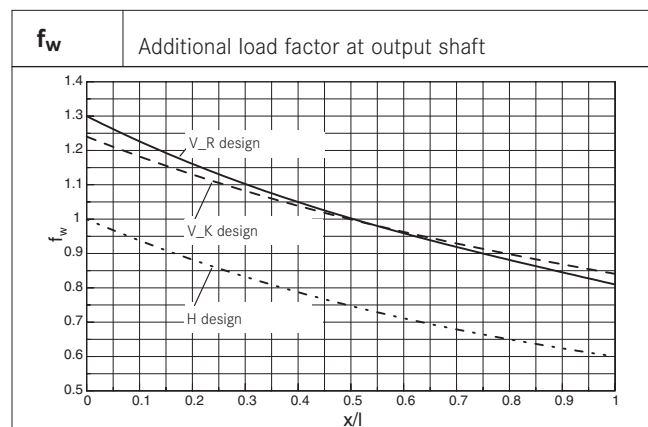
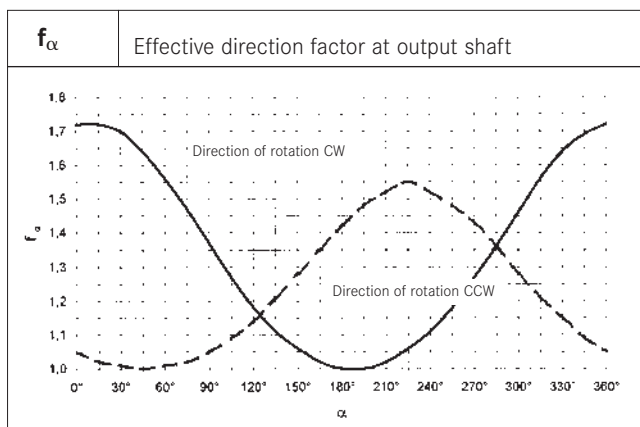
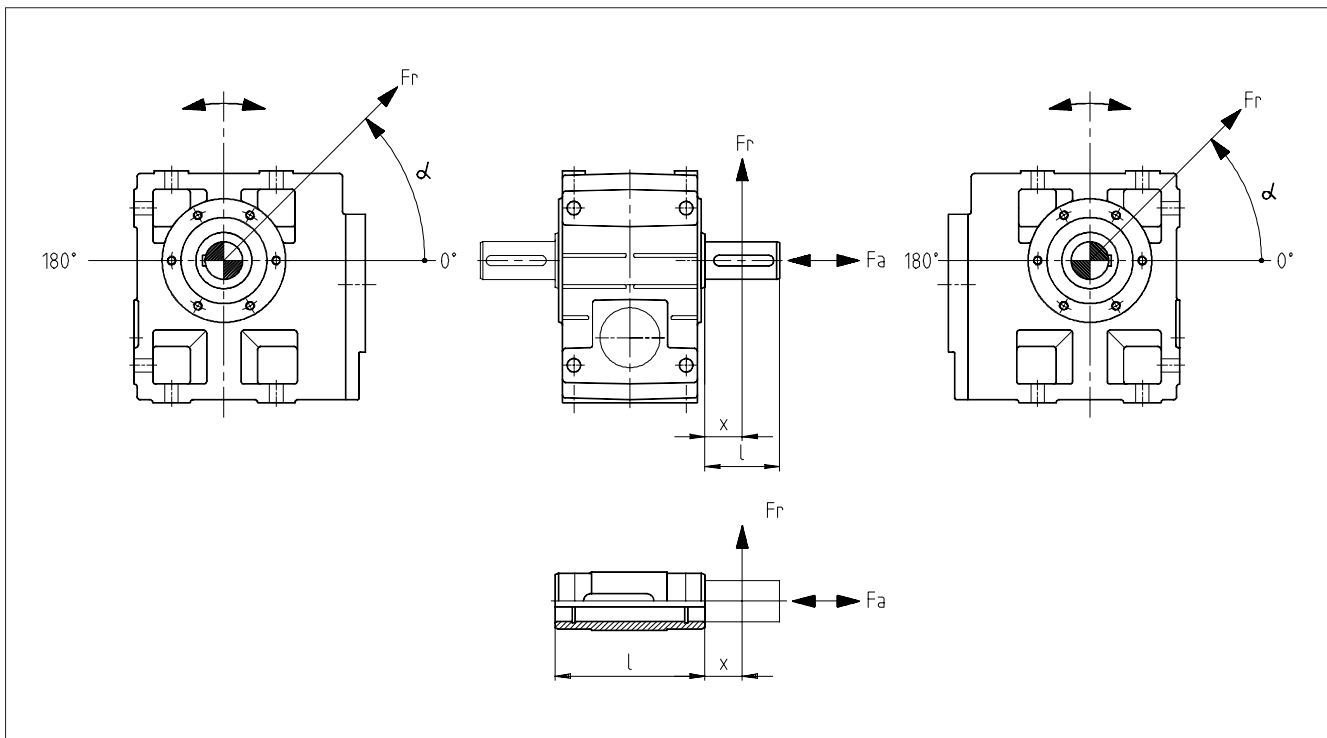
– Permissible radial force

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

– Permissible axial force

$$F_{a\text{perm}} = F_{a\text{Tab}} \quad \text{where } F_r = 0$$

Contact Lenze if F_r and $F_a \neq 0$



Clutch-brake combinations with helical and helical-worm gearboxes

Permissible radial and axial forces - output

VAK	Solid shaft with flange Application of force F_r : centre of shaft journal ($x = l/2$) F_{aTab} only valid when $F_r = 0$							
n_2 [rpm]	GSS 04		GSS 05		GSS 06		GSS 07	
	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]
250	4100	3500	4900	2500	7000	2800	7900	2400
160	4400	4000	4900	3100	8100	3500	9100	3200
100	4700	4200	4900	4000	9400	4500	10,600	4300
63	4700	4200	4900	4900	9400	5700	12,400	5900
40	4700	4200	4900	5500	9400	7300	14,000	8000
25	4700	4200	4900	5500	9400	8800	14,000	10,000
≤ 16	4700	4200	4900	5500	9400	8800	14,000	10,000
F_{rmax}	4700	–	4900	–	9400	–	14,000	–

V□R	Solid shaft without flange Application of force F_r : centre of shaft journal ($x = l/2$) F_{aTab} only valid when $F_r = 0$							
n_2 [rpm]	GSS 04		GSS 05		GSS 06		GSS 07	
	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]
250	3000	3700	2900	2800	3600	3200	4200	3100
160	3500	4200	3400	3500	4200	4100	5100	4100
100	4100	4900	4000	4400	5000	5200	6300	5500
63	4200	5500	4300	5500	5900	6500	7700	7200
40	4200	5500	4300	6000	6900	8200	9300	9500
25	4200	5500	4300	6000	8200	9000	11,300	12,500
≤ 16	4200	5500	4300	6000	8500	9000	12,000	12,500
F_{rmax}	4200	–	4300	–	8500	–	12,000	–

H□□	Hollow shaft Application of force F_r : at hollow shaft end face ($x = 0$) F_{aTab} only valid when $F_r = 0$							
n_2 [rpm]	GSS 04		GSS 05		GSS 06		GSS 07	
	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]	F_{rTab} [N]	F_{aTab} [N]
250	3800	3700	3600	2800	4800	3200	5600	3100
160	4500	4200	4300	3500	5600	4100	6700	4100
100	5300	4900	5100	4400	6600	5200	8200	5500
63	6000	5500	6000	5500	7700	6500	10,000	7200
40	6000	5500	7000	6000	9100	8200	12,100	9500
25	6000	5500	7500	6000	10,700	9000	14,800	12,500
≤ 16	6000	5500	7500	6000	11,500	9000	16,000	12,500
F_{rmax}	6000	–	7500	–	11,500	–	16,000	–

Neither radial nor axial forces are permissible for the hollow shaft with shrink disc (S□□).

Clutch-brake combinations with helical and helical-worm gearboxes

INTORQ

Shaft loads

Helical gearbox

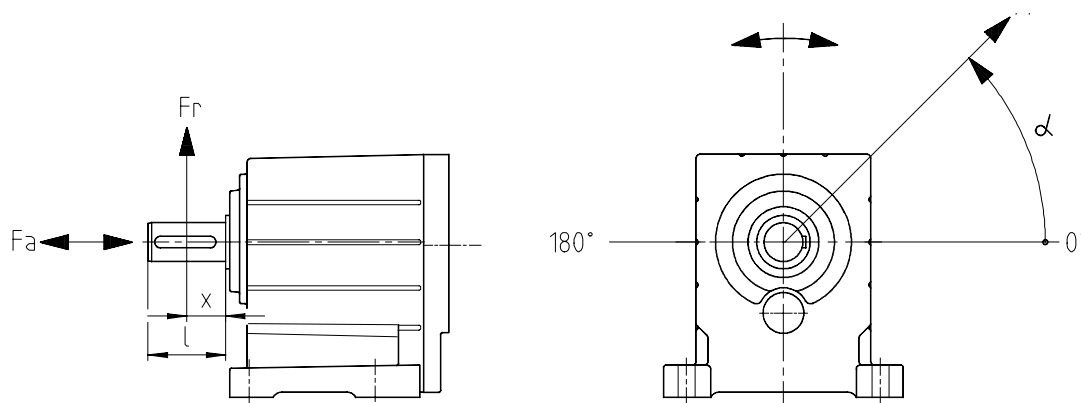
Permissible radial force

$$F_{rperm} = f_w \cdot f_a \cdot F_{rTab} \leq f_w \cdot F_{rmax}$$

Permissible axial force

$$F_{aperm} = F_{aTab} \quad \text{if } F_r = 0$$

Contact Lenze if F_r and $F_a \neq 0$



Direction of rotation	α	0°	45°	90°	135°	180°	225°	270°	315°
	f_α								
		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□□	Application of force F_{rTab} : centre of shaft journal ($x = l/2$), F_{aTab} only valid when $F_r = 0$									
	GST 05		GST 06		GST 07		GST 09		GST 11	
	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	17,000	9500
250	2200	2300	2600	900	3800	2200	7600	2800	19,000	10,000
160	2600	2650	3100	1250	4500	2900	9400	4000	21,000	11,000
100	3000	3100	3600	1800	5400	3900	11,500	5600	21,000	14,000
63	3500	3600	4300	2600	6400	5300	11,500	8900	21,000	16,000
40	3800	3600	4350	3600	7600	7000	11,500	11,000	21,000	16,000
25	3900	3600	4350	4800	9100	7000	11,500	12,000	21,000	16,000
< 16	3900	3600	4350	4800	9500	7000	11,500	12,000	21,000	16,000
F_{rmax}	3900	–	4350	–	9500	–	11,500	–	21,000	–

Clutch-brake combinations with helical and helical-worm gearboxes

Selection tables

INTORQ 14.852/853/862/863 with Lenze helical gearboxes

P Drive power

n₂ Output speed

n₁ Drive speed

M₂ Output torque

i Rated ratio of the helical gearbox

n ₂	M ₂	Free drive shaft		Directly connected motor		Motor frame size	n ₁	i
rpm	Nm	INTORQ	For dimensions, see page	INTORQ	For dimensions, see page		rpm	
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							24.933 32.267 39.160
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							24.567 32.267 39.160
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 12.571 15.4 20.044
55 43 35	188 243 295							24.933 32.267 39.160
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							28.333 32.267 39.160

Other drive powers and speeds are available on request.

Clutch-brake combinations with helical and helical-worm gearboxes

Selection tables

INTORQ 14.855/856/857 and INTORQ 14.865/866/867
with Lenze worm gearboxes

- P** Drive power
n₁ Drive speed
i Rated ratio of the worm gearbox
n₂ Output speed
M₂ Output torque

n ₂	M ₂	Free drive shaft		Directly connected motor		Motor frame size	n ₁	i
rpm	Nm	INTORQ	For dimensions, see page	INTORQ	For dimensions, see page		rpm	
P = 0.37 kW								
178 140 87 68 43 35 25 23	18 22 63 42 65 78 110 119	14.855/856/857.06.04.□	40/41	14.865/866/867.06.04.□	44/45	71	1380	7.733 9.827 15.869 20.147 31.738 39.200 54.250 61.250
P = 0.55 kW								
178 139 87 68 43 35 25	18 23 36 42 67 81 114	14.855/856/857.08.05.□	40/41	14.865/866/867.08.05.□	44/45	80	1380	7.733 9.897 15.869 20.147 31.788 39.200 54.250
P = 1.1 kW								
174 136 88 68 44	56 70 106 127 194	14.855/856/857.10.06.□	40/41	14.865/866/867.10.06.□	44/45	90	1390	8.000 10.238 15.869 20.147 31.738
P = 2.2 kW								
174 141 91 69 45	113 136 206 257 388	14.855/856/857.12.07.□	40/41	14.865/866/867.12.07.□	44/45	100	1410	8.125 10.00 15.500 20.157 31.000

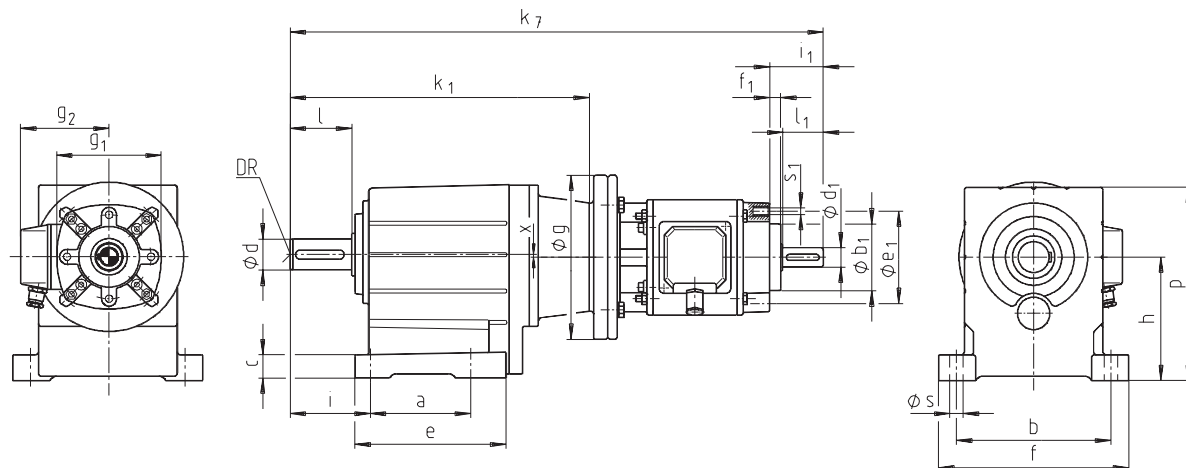
Other drive powers and speeds are available on request.

Clutch-brake combinations with helical and helical-worm gearboxes

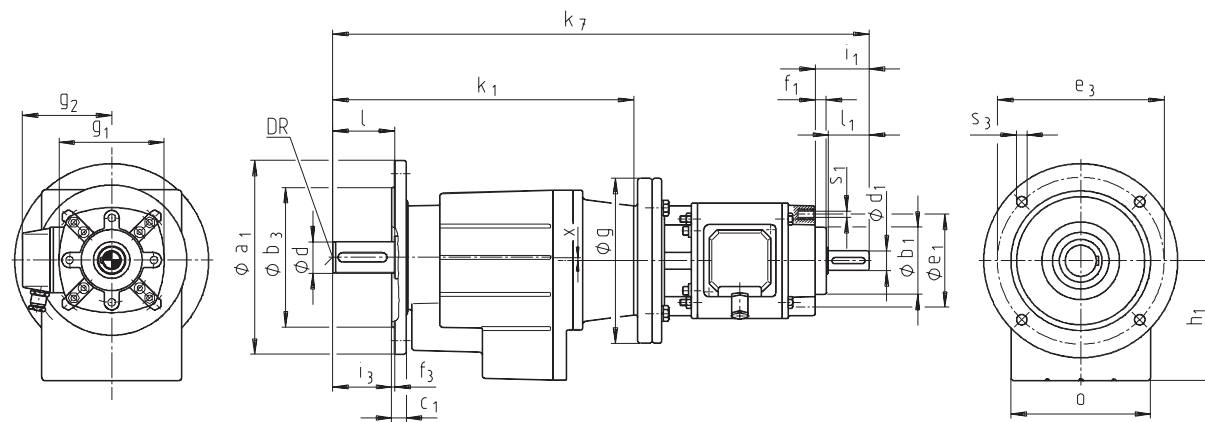
Dimensions

Clutch-brake combination with Lenze helical gearbox

INTORQ 14.852, foot mounting



INTORQ 14.853, flange mounting



Keys to DIN 6885/1

Centring to DR DIN 332

INTORQ	M _K Nm	Clutch P ₂₀ [W]	Brake P ₂₀ [W]	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
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

INTORQ	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	x	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	1	1	M10	18	11 11.5 12
14.85□.06.GST06.1	90	89	125	121	79	35 42	60	295	482 489	60	23 30	145	198	13.5	M6 9 11	2	2	M10	25	19 20
14.85□.08.GST06.1	112	95	125	121	79	42 52	60	313	531 541	60	30 40	145	198	13.5	M8 9 11	2	2	M10	30	21 22
14.85□.08.GST07.1	112	95	160	155	104	42 52	80	369	605 615	80	30 40	180	251	17.5	M8 11 14	3	3	M16	45	37 39
14.85□.10.GST07.1	140	110	160	155	104	62 72	80	389	649 659	80	40 50	180	251	17.5	M10 11 14	3	3	M16	52	42 44
14.85□.10.GST09.1	140	110	200	194	127.5	62 72	100	452	732 742	100	40 50	222	311	17.5	M10 14 14	4	4	M16	79	70 72
14.85□.12.GST09.1	167	136	200	194	127.5	72 82	100	452	753 763	100	50 60	222	311	22	M10 14 14	4	4	M16	92	75 77
14.85□.12.GST11.1	167	136	250	243	155	72 82	120	509	840 850	120	50 60	270	385	22	M10 14 18	4	4	M20	138	111 115

Ordering example

- INTORQ 14.852 with helical gearbox, foot mounting
- INTORQ 14.853 with helical gearbox, flange mounting

INTORQ 14.85□. □□. GST □□. □
 Type _____
 Size _____
 Helical gearbox _____
 Gearbox size _____
 Armature plate version _____
 Variants _____

Order data

Type designation:
 Specification of size, gearbox size, armature plate version
 (page 31)

Variants

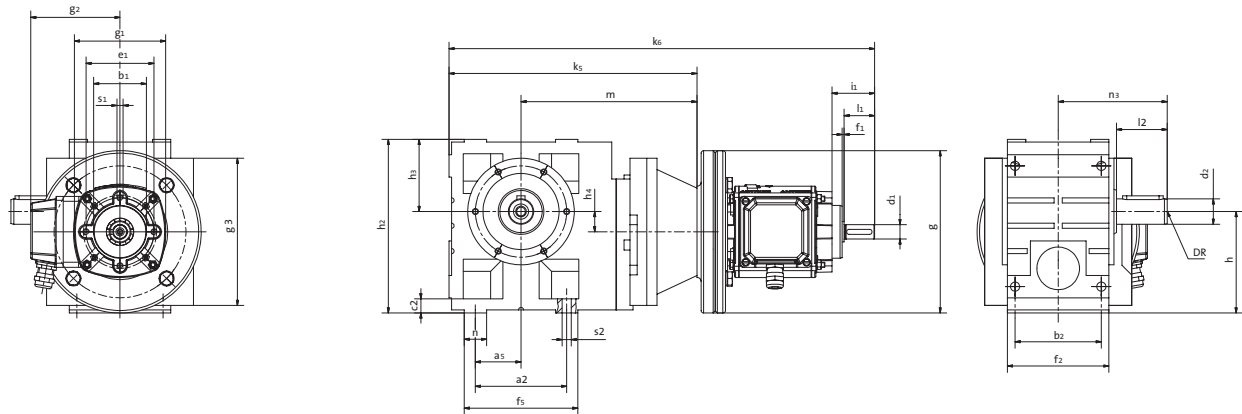
Overall design (page 46)
 Clutch/brake voltage
 Diameter of drive shaft
 Gearbox ratio (page 35)
 Flange diameter with INTORQ 14.853

Clutch-brake combinations with helical and helical-worm gearboxes

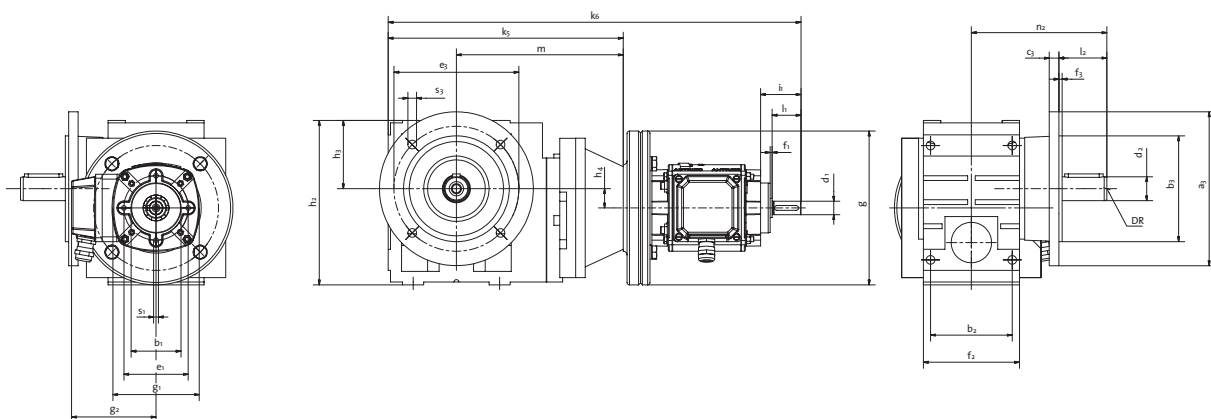
Dimensions

Clutch-brake combination with Lenze worm gearbox

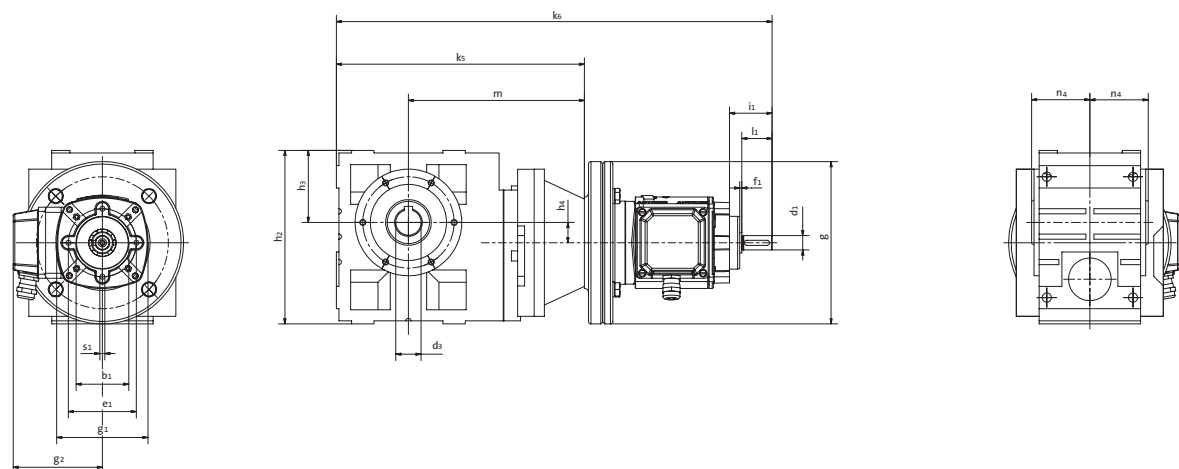
INTORQ 14.855, foot mounting



INTORQ 14.856, flange mounting



INTORQ 14.857, hollow shaft mounting



Keys to DIN 6885/1
Centring to DR DIN 332

INTORQ	M _K Nm	Clutch P ₂₀ [W]	Brake P ₂₀ [W]	a ₂	a ₃	a ₅	b ₁ h ₈	b ₂	b ₃ j ₇	c ₂	c ₃	d ₁ k ₆	d ₂ k ₆	d ₃ H ₇	e ₁	e ₃	f ₁	f ₂	f ₃	f ₅	g
14.85□.06.04.□	7.5	15	11.5	90	160	45	52	85	110	14	10	11 14	25	25 30	67	130	10	100	3.5	112	160
14.85□.08.05.□	15	20	16	95	200	47.5	65	105	130	17	12	14 19	30	30 35	90	165	10	127	3.5	124	160
14.85□.10.06.□	30	28	21	120	200 250	60	78	120	180	20	14.5	19 24	40	40 45	115	215	19	145	4	156	200
14.85□.12.07.□	60	35	28	140	250 300	70	78	150	180 230	25	14.5 16.5	24 28	50	50 55	115	215 265	20	180	4	185	250

INTORQ	g ₁	g ₂	g ₃	h	h ₂	h ₃	h ₄	i ₁	k ₂	k ₅	k ₆	l ₁	l ₂	m	n	n ₂	n ₃	n ₄	s ₁	s ₂	s ₃	DIN 332 DR	m [kg] 14.855	14.856	14.857
14.85□.06.04.□	90	89	145	100	171	71	20	35 42	145	245	423 430	23 30	50	174	22	130.5	107.5	57.5	M6	9	9	M10	20	23	20
14.85□.08.05.□	12	95	180	125	205	80	23	42 52	145	284	502 512	30 40	60	204	29	148	130	70	M8	11	11	M10	34	38	33
14.85□.10.06.□	140	110	180	150	250	100	26	62 72	180	344	604 614	40 50	80	244	36	184	160	80	M10	14	14	M16	55	62	54
14.85□.12.07.□	167	136	180	190	310	120	33	72 82	222	387	688 698	50 60	100	267	45	235	200	100	M10	18	14	M16	93	107	92

Ordering example

■ INTORQ 14.855 with worm gearbox, foot mounting

■ INTORQ 14.857 with worm gearbox, hollow shaft mounting

■ INTORQ 14.856 with worm gearbox, flange mounting

Type _____
 Size _____
 Gearbox size _____
 Armature plate version _____
 Variants _____

INTORQ 14.85□. □□. □□. □

Order data

Type designation:
 Specification of size, gearbox size, armature plate version
 (page 31)

Variants

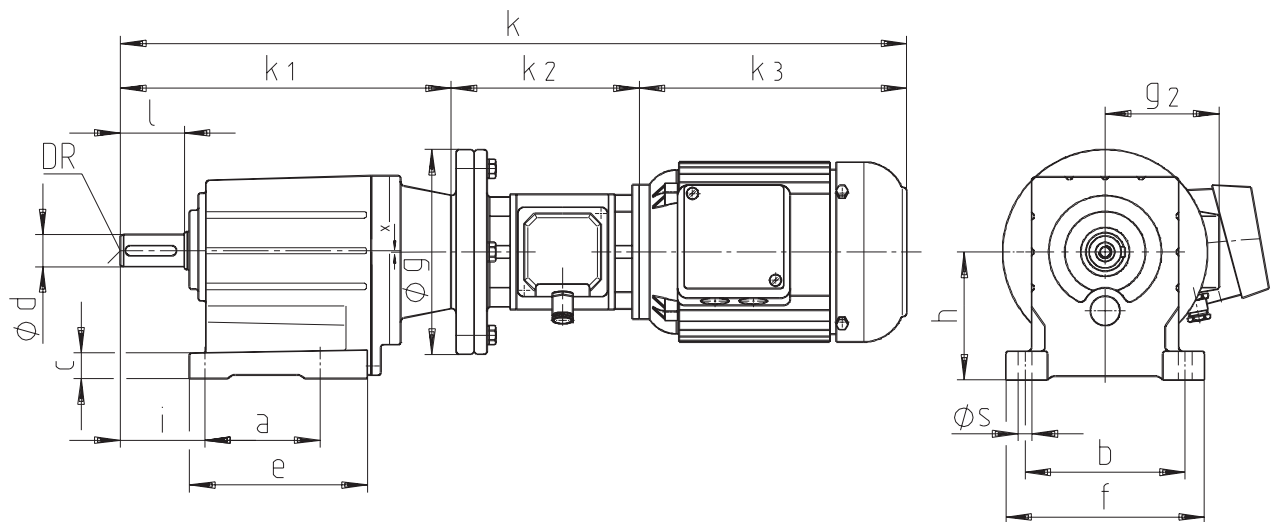
Overall design (page 47)
 Clutch/brake voltage
 Diameter of the drive shaft
 Gearbox ratio (page 36)

Clutch-brake combinations with helical and helical-worm gearboxes

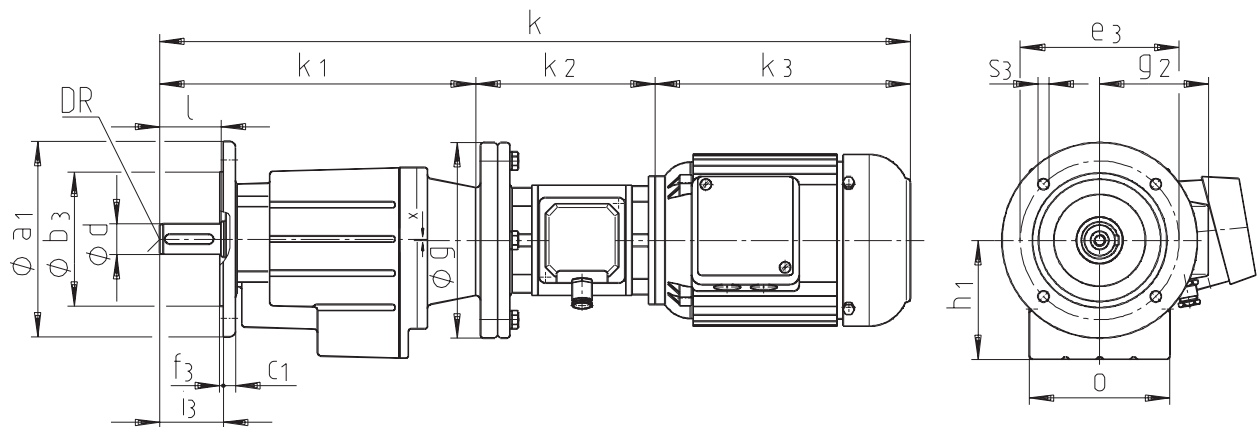
Dimensions

Clutch-brake combination with Lenze helical gearbox and motor

INTORQ 14.862, foot mounting



INTORQ 14.863, flange mounting



Keys to DIN 6885/1
Centring to DR DIN 332

INTORQ	B14 motor		M _k Nm	Clutch P ₂₀ [W]	Brake P ₂₀ [W]	a	a ₁	b	b ₃ j7	c	c ₁	d k6	e	e ₃	f	f ₃
	Frame size	Flange														
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

INTORQ	g	g ₂	h	h ₁	i	i ₃ 1)	k	k ₁	k ₂	k ₃ 1)	l	o	s	s ₃	x	DIN 332 DR	m [kg] 14.862	14.863
14.86□.06.GST05.1	160	89	100	98	66	50	628	269	147	147	50	115	11	7 9 9	1	M10	25	25
14.86□.06.GST06.1	160	89	125	121	79	60	654	295	147	156	60	145	13.5	9 11	2	M10	37	37
14.86□.08.GST06.1	160	95	125	121	79	60	720	313	174	174	60	145	13.5	9 11	2	M10	42	43
14.86□.06.GST07.1	160	95	160	155	104	80	776	369	174	192	80	180	17.5	11 14	3	M16	53	53
14.86□.10.GST07.1	200	110	160	155	104	80	844	389	205	205	80	180	17.5	11 14	3	M16	65	65
14.86□.10.GST09.1	200	110	200	194	127.5	100	907	452	205	225	100	222	17.5	14 14	4	M16	91	89
14.86□.12.GST09.1	250	136	200	194	127.5	100	996	452	238	238	100	222	17.5	14 14	4	M16	112	111
14.86□.12.GST11.1	250	136	250	243	155	120	1053	509	238	268	120	270	17.5	14 18	4	M20	160	156

1) Dependent on motor supplier

Ordering example

■ INTORQ 14.862 with motor and helical gearbox, foot mounting

■ INTORQ 14.863 with motor and helical gearbox, flange mounting

Type INTORQ 14.86□. □□. GST □□. □
 Size _____
 Helical gearbox _____
 Gearbox size _____
 Armature plate version _____
 Variants _____

Order data

Type designation:
Specification of size, gearbox size, armature plate version (page 31)

Variants

Overall design (page 46), clutch/brake voltage, gearbox ratio (page 35), flange diameter with INTORQ 14.863

Motor

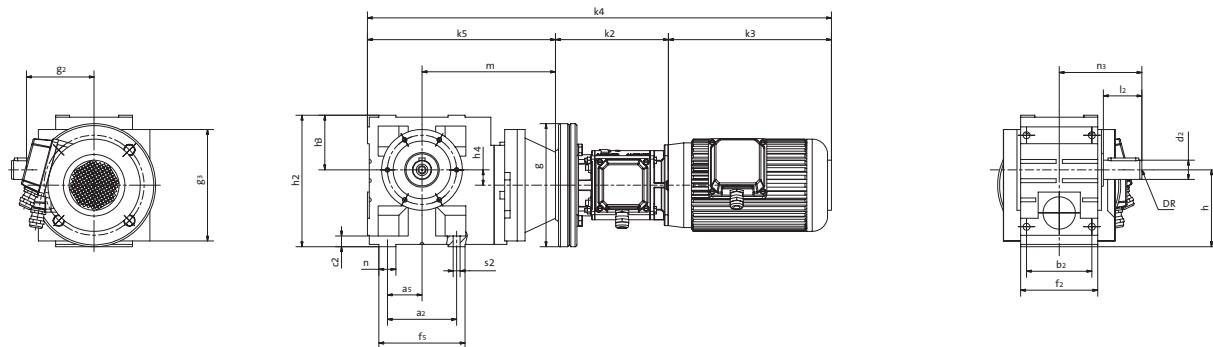
Power and voltage, speed and frequency, degree of protection

Clutch-brake combinations with helical and helical-worm gearboxes

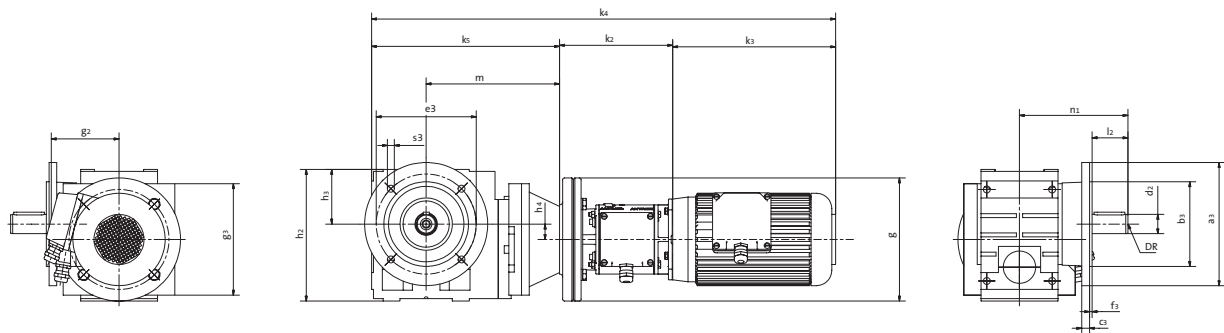
Dimensions

Clutch-brake combination with Lenze worm gearbox and motor

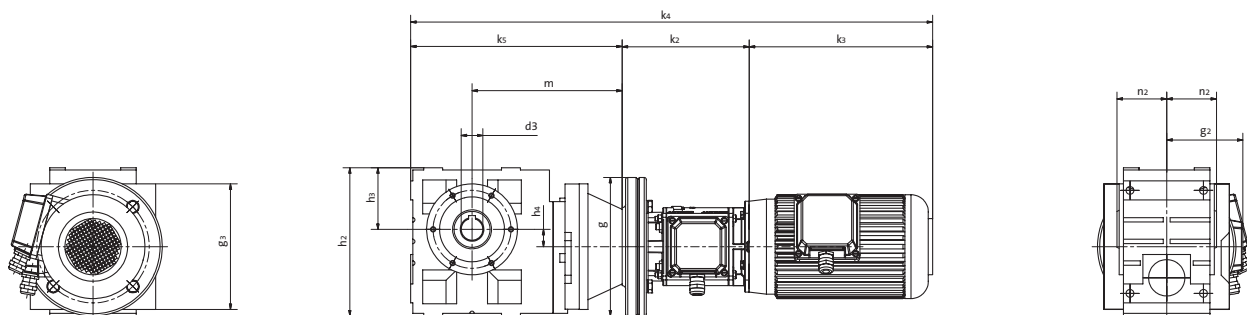
INTORQ 14.865, foot mounting



INTORQ 14.866, flange mounting



INTORQ 14.867, hollow shaft mounting



Keys to DIN 6885/1
Centring to DR DIN 332

INTORQ	M _K Nm	Clutch P ₂₀ [W]	Brake P ₂₀ [W]	a ₂	a ₃	a ₅	b ₂	b ₃ j7	c ₂	c ₃	d ₂ k6	d ₃ H7	e ₃	f ₁	f ₂	f ₃	f ₅	g	g ₂	g ₃	h
14.86□.06.04.□	7.5	15	11.5	90	160	45	85	110	14	10	25	25 30	130	10	100	3.5	112	160	89	145	100
14.86□.08.05.□	15	20	16	95	200	47.5	105	130	17	12	30	30 35	165	10	127	3.5	124	160	95	180	125
14.86□.10.06.□	30	28	21	120	200 250	60	120	180	20	14.5	40	40 45	215	19	145	4	156	200	110	180	150
14.86□.12.07.□	60	35	28	140	250 300	70	150	180 230	25	14.5 16.5	50	50 55	215 265	20	180	4	185	250	136	180	190

INTORQ	h ₂	h ₃	h ₄	k ₂	k ₃ 1)	k ₄ 1)	k ₅	l ₂	m	n	n ₁	n ₂	n ₃	s ₂	s ₃	DIN 332 DR	m [kg] 1) 14.865	14.866	14.867
14.86□.06.04.□	171	71	20	147	212	604	245	50	174	22	130.5	57.5	108	9	9	M10	28	31	28
14.86□.08.05.□	205	80	23	174	233	691	284	60	204	29	148	70	130	11	11	M10	46	50	45
14.86□.10.06.□	250	100	26	205	250	799	344	80	244	36	184	80	160	14	14	M16	73	80	72
14.86□.12.07.□	310	120	33	238	306	931	387	100	267	45	235	100	200	18	14	M16	133	144	129

1) Dependent on motor supplier

Ordering example

- INTORQ 14.865 with motor and worm gearbox,
foot mounting
- INTORQ 14.866 with motor and worm gearbox,
flange mounting
- INTORQ 14.867 with motor and worm gearbox,
hollow shaft mounting

INTORQ 14.86□. □□. □□. □

Type _____

Size _____

Gearbox size _____

Armature plate version _____

Variants _____

Order data

Type designation:
Specification of size, gearbox size, armature plate version
(page 31)

Variants

Overall design (page 46)
Clutch/brake voltage
Gearbox ratio (page 36)

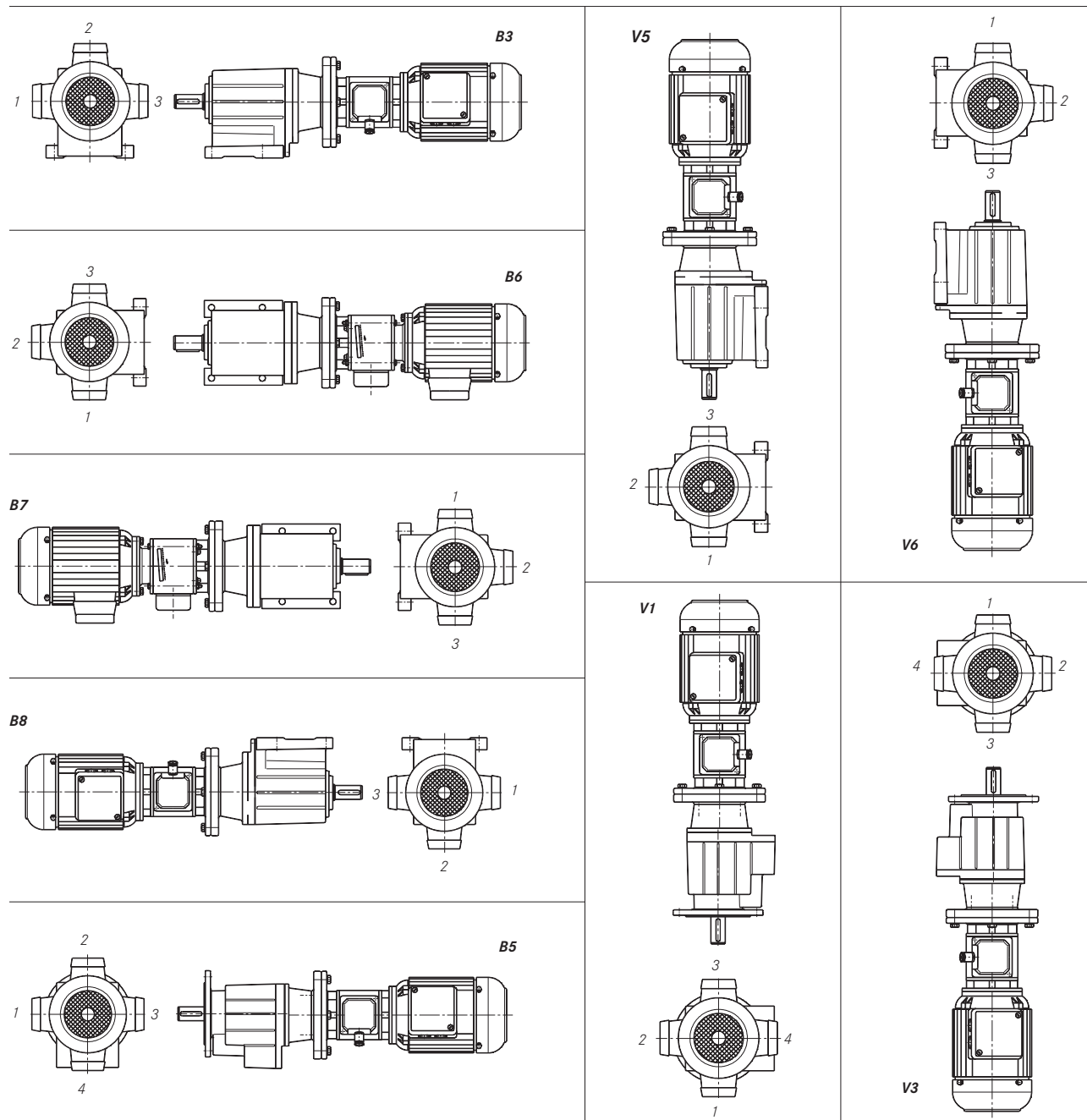
Motor

Power and voltage
Speed and frequency
Degree of protection

Clutch-brake combinations with helical and helical-worm gearboxes

Mountings and terminal box positions

Clutch-brake combination with Lenze helical gearbox



Mounting designation



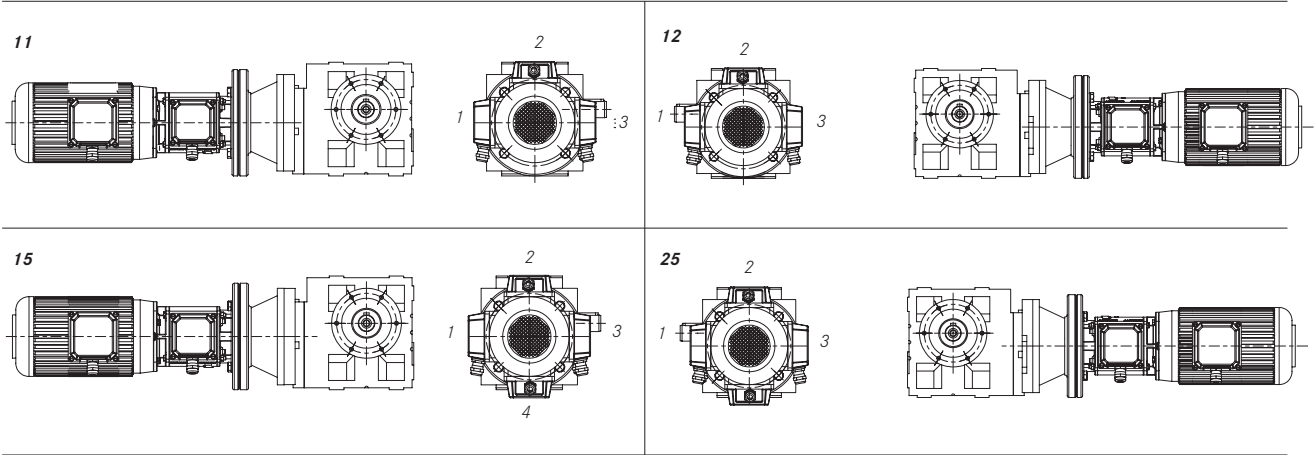
The terminal box position applies to the motor and clutch-brake combination.

This page is also valid for clutch-brake combinations 14.800/810 and 14.852/853.

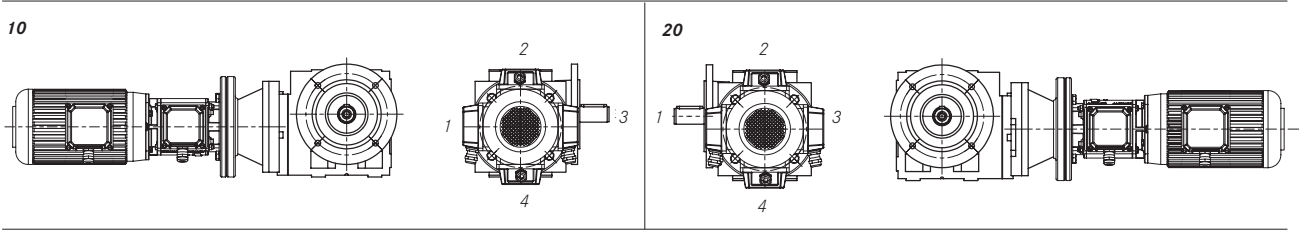
Clutch-brake combinations with helical and worm gearboxes

Mountings and terminal box positions
Clutch-brake combination with worm gearbox

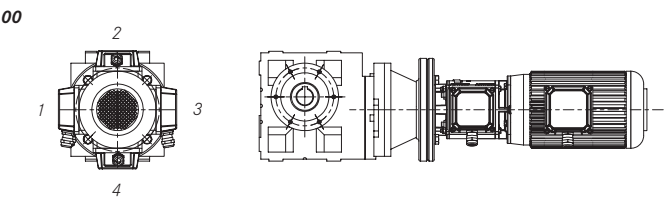
Foot mounting



Flange mounting



Hollow shaft mounting



Mounting designation

Mounting _____ 15. _____ 1.

Terminal box position _____

The terminal box position applies to the motor and clutch-brake combination.

This page is also valid for types 14.855/856/857.

Clutch-brake combinations

Single elements without housing

Product information

INTORQ 14.137.□.1.3

This type is a clutch-brake combination without a housing.

The use of these single elements is preferred if they are to be integrated directly in a machine structure and there is not enough space available to use complete drive units.

The INTORQ 14.137 is supplied with a backlash-free diaphragm armature plate assembly. A low braking torque remains present even if the voltage is disconnected.

Type code

INTORQ 14.137.

□□.

1.3.

Type

Size 06, 08, 10, 12, 16

Mounting

Variants

Clutch/brake voltage

Rotor bore

Armature plate bore

Technical data

INTORQ	M _k ¹⁾ (Nm)	P ₂₀ ²⁾ (W)		n _{max.} (rpm)	Q _E (J)	Moments of inertia J x 10 ⁻⁵ (kgm ²)	
		Clutch	Brake			Rotor	Armature plate
14.137.06	7.5	15	11.5	8000	3.6 x 10 ³	11.9	10.2
14.137.08	15	20	16	6000	6.6 x 10 ³	26.6	29
14.137.10	30	28	21	5000	10.5 x 10 ³	78	113.6
14.137.12	60	35	28	4000	16.5 x 10 ³	226	310
14.137.16	120	50	38	3000	20.6 x 10 ³	630	1113

■ Standard voltage 24 V DC

■ ¹⁾ M_k, in relation to = 100 rpm

■ ²⁾ At 20°C

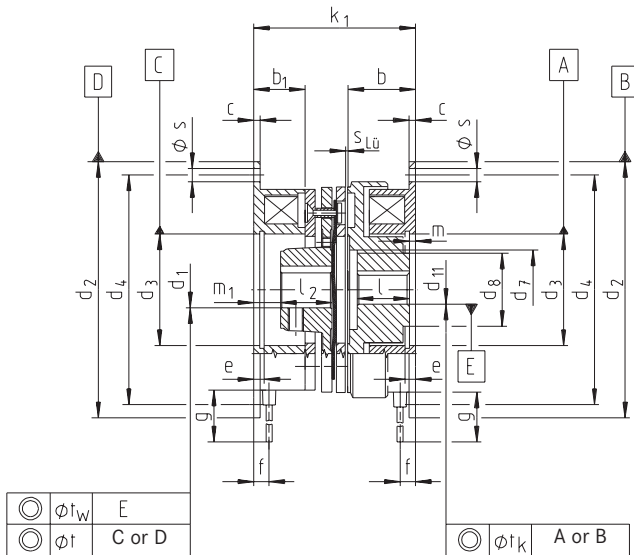
■ The operating times should be taken from the table on page 15.

Clutch-brake combinations

Single elements without housing

Dimensions

Type 14.137.06 [...16] 1.3



Type	M _k	Clutch	Brake	b	b ₁	c	d ₁				d ₂	d ₃	d ₄	d ₇	d ₈
		P	P				H7								
		Nm	W				W	min.	standard	max.					
14.137.06.1.3	7.5	15	11.5	24	18	2	10	10	15	17	80	35	72	24.5	23
14.137.08.1.3	15	20	16	26.5	20	3	10	17	20	20	100	42	90	31	28.5
14.137.10.1.3	30	28	21	30	22	3	14	20	25	30	125	52	112	40	40
14.137.12.1.3	60	35	28	33.5	24	4	14	25	30	35	150	62	137	50	45
14.137.16.1.3	120	50	38	37.5	26	4	20	30	40	45	190	80	175	65	62

Type	d ₁₁					e	f	g	k ₁	l	l ₂	m	m ₁	s	s _{lū}	t _k	t _w	t	m
	H7																		
	min.	standard			max.														
14.137.06.1.3	10	10	–	15	17	3.5	6.3	400	55.1	18.5	15	2	11	4.5	0.2	0.2	0.1	0.16	0.8
14.137.08.1.3	12	17	–	20	22	4.3	7.8	400	61.3	20.5	20	2.5	9.4	5.5	0.2	0.3	0.1	0.16	1.5
14.137.10.1.3	15	20	25	30	30	5	8.8	400	70.8	22.5	25	3	8.9	6.6	0.2	0.3	0.1	0.16	2.8
14.137.12.1.3	20	20	25	30	40	5.5	9.3	400	79.6	25	30	3.5	8.1	6.6	0.3	0.3	0.1	0.2	5
14.137.16.1.3	25	25	30	40	50	6	10.7	400	89.8	28	38	3.5	4.3	9	0.3	0.4	0.2	0.2	9

Recommended ISO fits for shafts: k6

Accessories

INTORQ 14.640.10.048 EDS 48 electronic dual switch

Application area

Using 24 V standard excitation to switch:

- Clutch-brake combinations
- Other coils which are to be switched on the DC side in alternating or parallel operation

The EDS 48 electronic dual switch is ideal for controlling two coils.

Features

The EDS 48 electronic dual switch contains the complete power supply for a 24 V DC voltage coil and can be operated using control voltages (e. g. from a PLC) or pulses. A pulse at the START input switches the clutch on until a pulse at the STOP input switches the clutch off and the brake on. A program switch can be used to preselect the type of brake to be controlled (electromagnetic or spring-applied brake).

Note:

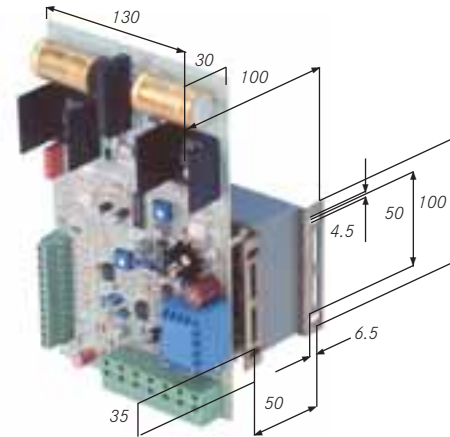
When using spring-applied brakes, the transformer power must be dimensioned for the sum of the clutch and braking powers.

Delay times can be set on two potentiometers to prevent clutches and brakes that do not have a common armature plate working in opposition. The input electronics are potential-free and isolated from the power section by an optocoupler.

For safety reasons, the clutch is always set to "off" and the brake to "on" following mains connection or the closing of switch a1. The device is able to execute the first start command (clutch ON) approximately one second later. If a start command is already present at the input before the mains connection is made, the brake remains switched on until a new start command is sent.

If required, switch a1 can serve as an "emergency-off" switch.

EDS 48 dimensions



Technical data

Standard excitation	24 V
Input voltage	230 V, 50/60 Hz
Coil voltage	24 V
Max. coil power: With EDS 48 type 14.640.10.048	50 W
Max. operating frequency: Up to 35 W	Five switching operations/s
Up to 50 W	Two switching operations/s
Connectable coils	Two units
Max. control current at 24 V	10 mA approx.
Auxiliary supply at terminals 30 and 31	15 V
Max. current of the auxiliary supply	30 mA
Max. delay time	250 ms
Control pulses	≥ 3 ms
EDS 48 weight	1.8 kg

Control options

- PLC (programmable logic controller)
- Contacts
- NPN (PNP) proximity switches
- NPN (PNP) photoelectric barriers

Accessories

INTORQ 14.640.10.048 EDS 48 electronic dual switch

Connection examples

Control via continuous signals

Switching via contact

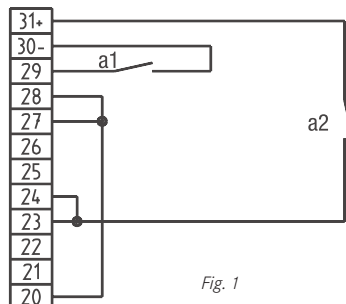


Fig. 1

Pressing the a2 switch turns the brake "off" and the clutch "on" (start), if a1 is not closed. If a2 is opened, the clutch switches "off" and the brake "on" (stop). The first start command is executed no earlier than approximately 1 second after the mains voltage is switched on or after a1 is opened.

Switching via optocoupler

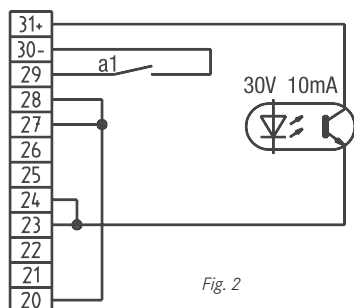


Fig. 2

This example is as Fig. 1, but an optocoupler or a transistor is used instead of a contact.

Switching via proximity switch

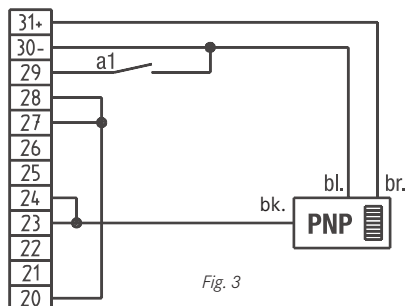


Fig. 3

This example is as Fig. 1, but a PNP proximity switch is used instead of a contact.

Colours: bk. = black/bl. = blue/br. = brown

Proximity switch damped = clutch "on"/brake "off"

Proximity switch free = brake "on"/clutch "off"

Switching via PLC

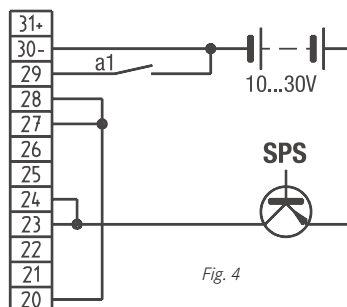


Fig. 4

In this example, a PLC with a control voltage of 10 to 30 V is used for control.

Control voltage "on" = clutch "on"/brake "off"

Control voltage "off" = brake "on"/clutch "off"

Caution

The cables to the coil must not short-circuit or have a conductive connection to earth (electrical bonding), the PEN conductor or other coils.

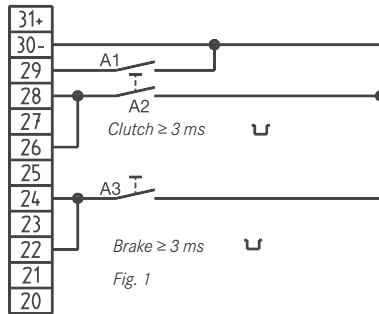
Accessories

INTORQ 14.640.10.048 EDS 48 electronic dual switch

Connection examples

Control via pulses

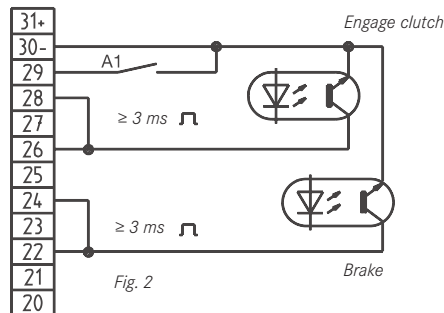
Switching via contacts



Pressing switch a2 switches the clutch "on" (start), if a1 is not closed. The pulse must be ≥ 3 ms and is saved until switch a3 is closed for at least 3 ms (stop). If a3 remains closed and switch a2 gives the start command, the brake switches "off" and the clutch "on".

This example is as Fig. 1, but an optocoupler or transistors are used instead of contacts.

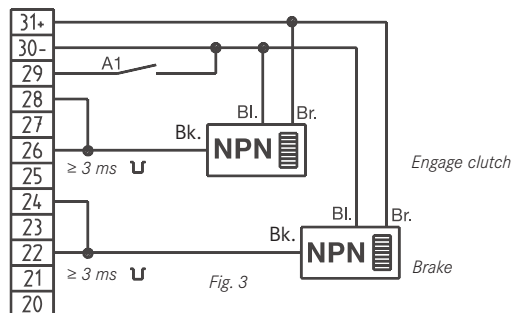
Switching via optocoupler



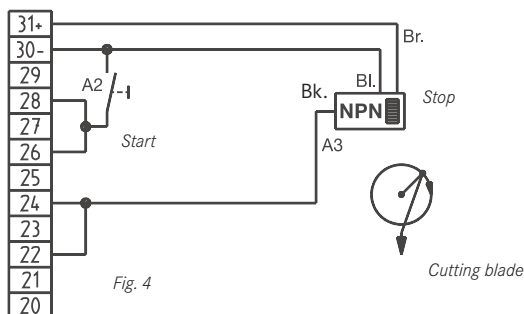
This example is as Fig. 1, but NPN proximity switches (e.g. type 14.666.03.001, three-wire version) are used instead of contacts.

Colours: bk. = black/bl. = blue/br. = brown

Switching via proximity switch



Example of pulse control



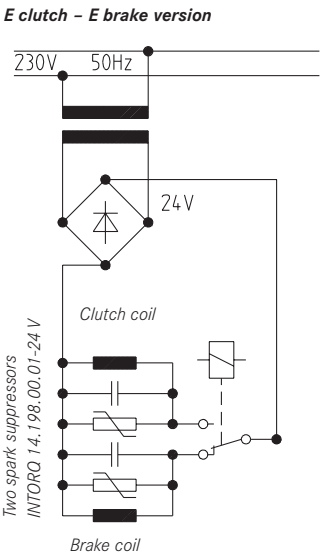
A cutting blade is driven by a cam. Proximity switch a3 (type 14.666.03.001) should cause it to stop automatically after one revolution following the start pulse. The start command is issued via switch a2.

Accessories

DC switching

The performance of both the clutch and brake coils must be taken into account when dimensioning a transformer rectifier.

DC switching means short switch-on and switch-off times, but requires a spark suppressor to protect the contacts against high induced voltages during switch-off.



Clutch is energised to engage
Brake is energised to engage

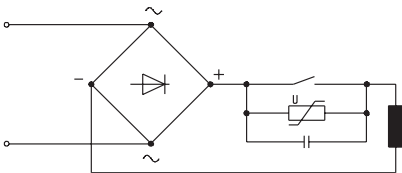
INTORQ 14.198.00.0□ universal spark suppressor

The universal spark suppressor limits the induced voltages which occur when switching off all clutches and brakes on the DC side to safe values. Otherwise, these induced voltages might damage coils and switches. Therefore, VDE 0580 requires appropriate protective measures to avoid excessive switch-off surges and overvoltages. Four versions of the universal spark suppressor are available for the following voltage ranges:

Type	Coil voltage U	Coil power P _{max}
INTORQ 14.198.00.01	24 V - 50 V	110 W
INTORQ 14.198.00.02	50 V - 120 V	110 W
INTORQ 14.198.00.03	120 V - 200 V	110 W
INTORQ 14.198.00.04	200 V - 250 V	110 W

DC switching

Connection example



Accessories

DEG and DOSS high-speed switchgear

High-speed operation with INTORQ 14.621.14.(16)□□□

DEG double European device

Working in conjunction with DEG high-speed switchgear, the clutch-brake combinations achieve excellent positioning accuracy.

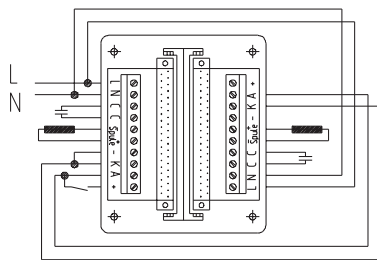
The 24 V coils on the housing clutches can be connected to the DEG device on a 220 V/240 V mains.

The coil current (two coils up to a maximum of 100 W) is switched by semiconductors and is free of wear; DEG devices are controlled via auxiliary contacts, control voltages or proximity sensors.

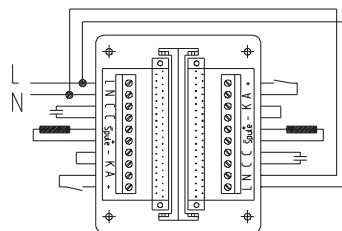
DEG high-speed switchgear is dimensioned as a constant current source. The rated current flows in the solenoids regardless of whether the coil is cold or warm. The torque remains the same whether the operating status is cold or warm.

We supply DEG high-speed switchgear as built-in units.

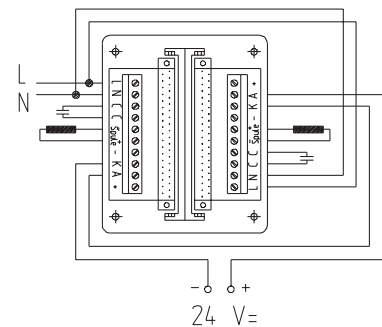
Connection examples



Control with one contact



Control with two contacts



Control with PLC or control voltage

DOSS double high-speed switchgear

INTORQ 14.621.13.□□□

We recommend the DOSS double high-speed switchgear for applications in which start/stop pulses are used for control.

The switchgear mentioned above can be found in our "Electronic Switchgear and Accessories" catalogue which is available on request.



INTORQ 14.621.14.(16)□□□



INTORQ 14.621.13.□□□





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In addition, we co-operate with Lenze's global sales organisation. You can contact us via Lenze Service by calling the 24-hour helpline (008000 24 461 77).

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