General technical explanations

Electromagnetic clutches and brakes from SUCO are, among other things, notable for straightforward design and ease of installation.

When these clutches and brakes are correctly selected, they are trouble-free, require no maintenance, and are extremely reliable. SUCO clutches are dry running clutches.

In order for them to operate correctly, grease and oil must be kept away from their friction surfaces.

These electromagnetic clutches and brakes can be installed on flanges or shafts. Flange-mounted versions require a suitable flange surface.

The magnet component of the shaft-mounted models must be secured against rotation. The torque support must not be rigidly fixed.

Electromagnetic clutches and brakes require a DC power supply. They normally operate on a 24 VDC supply, but can also be supplied for other voltages (6, 12, 48 and 190 VDC). As standard, the power supply is via a 2-core cable 0.4 m long. Other cable lengths and connectors are available on request.

Due to their simple, modular design, electromagnetic clutches and brakes are easy to select.

The standard form of output is an axial drive with a bore and keyway, which passes through a flange. Variants are shown on subsequent pages. Customer-specific versions are available on request. Several examples of customer-specific versions are shown following the standard models.

Fields of application

Among many other applications, SUCO electromagnetic clutches and brakes are used in construction machines, agricultural machinery, machine tools, pumps and compressors, centrifuges, belt conveyors and cleaning machines.

Construction and mode of operation

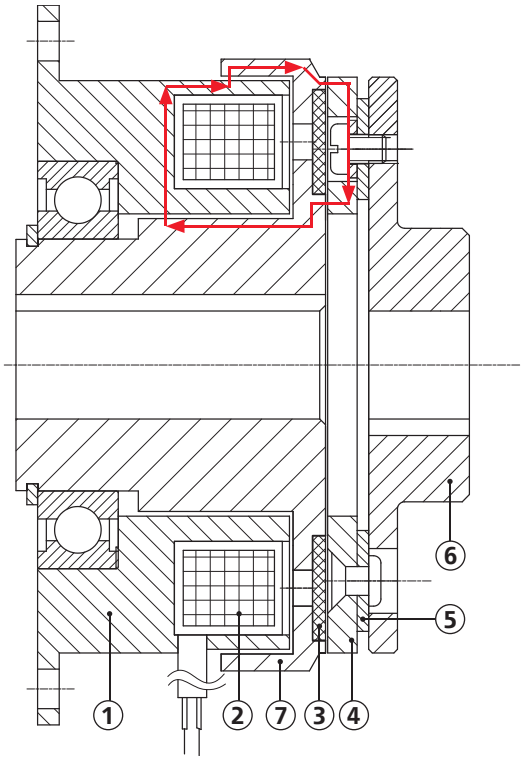
Electromagnetic clutches

The stator body ① contains the field coil ②, which is a copper coil cast in synthetic resin.

The clutch is activated by applying a direct current to the field coil.

This creates a magnetic field (red), which electromagnetically attracts the armature disc ④ towards the input drive hub ⑦ with its friction lining ③, and so allows torque to be transmitted from the input side to the output.

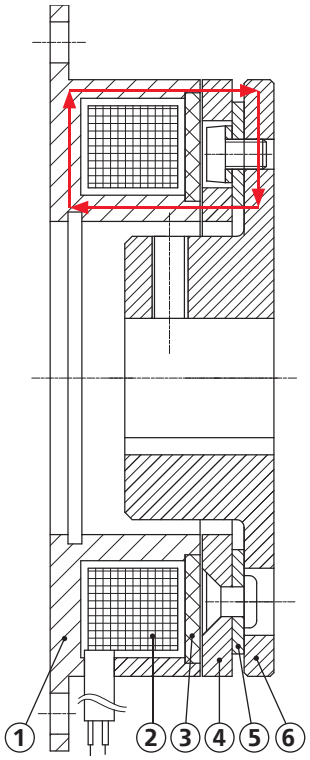
The axially-located output drive hub ⑥ separates from the input side when the current is cut off. A return spring ⑤ ensures that the armature disc separates from the input hub.



Electromagnetic brakes

Electromagnetic brakes work in a similar manner. The stator body ① contains the field coil ②, which is a copper coil cast in synthetic resin. When current is applied, a magnetic field (red) is created, which attracts the armature disc ④ towards the friction lining ③, and so transmits a braking torque to the output hub ⑥.

When the current is cut off, the return spring ⑤ pulls the armature disc back to its original position.



Depending on the size of the clutch or brake, the installation must provide for an air gap of between 0.2 and 0.5 mm between the drive hub and the armature disc. The purpose of this air gap is to ensure complete separation of the input and output drives when no current is applied.

Electromagnetic clutches and brakes

E-Type

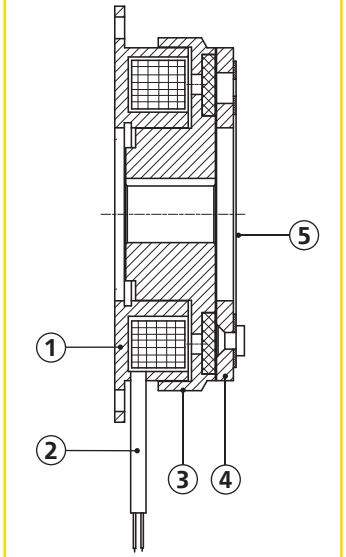
Electromagnetic clutch without bearings

The basic model of electromagnetic clutch without bearings consists of stator body ① with cast-in coil and connection cable ②, the input drive hub ③, and the armature disc ④ to which the return spring ⑤ is riveted.

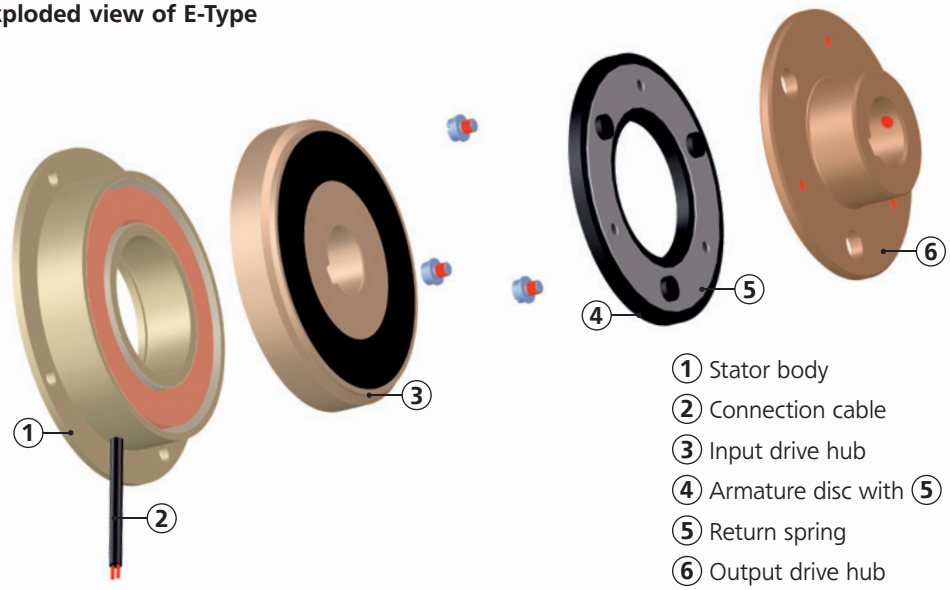
When assembling, the stator body must be accurately centred on the input drive hub, otherwise the hub may rub on the stator body and cause damage to the clutch.

Depending on the size of the clutch, the installation must provide for an air gap of between 0.2 and 0.5 mm between the drive hub and the armature disc.

If a SUCO output drive hub is not used, it is important to ensure that there are clearance holes to accommodate the rivet heads when installing the armature disc. The armature disc is centred by the screws which hold the return spring to the output component. When the armature disc is installed, it must remain free to move axially against the return spring.



Exploded view of E-Type



① Stator body
② Connection cable
③ Input drive hub
④ Armature disc with ⑤
⑤ Return spring
⑥ Output drive hub

Performance data and dimensions

Size	02	03	04	05	06	07	08	09
Torque [Nm] For reference purposes [1]	1.0	4.5	8.0	20.0	38.0	80.0	150.0	280.0
Speed of rotation max. [rpm]	10 000	8 000	6 000	5 000	4 000	3 000	3 000	2 000
Power [W] T = 20° C	9	12	20	23	32	40	55	72
d max. [mm] [2]	10	20	25	30	40	50	70	80
D [mm]	60	80	100	125	150	190	230	290
L1 [mm]	26.5	28.0	31.0	36.0	40.5	46.5	55.4	64.0
L2 [mm]	38.5	43.0	51.0	61.0	70.5	84.5	103.0	119.0

[1] Depending on design of installation, operating and ambient conditions

[2] Keyway to DIN 6885/1

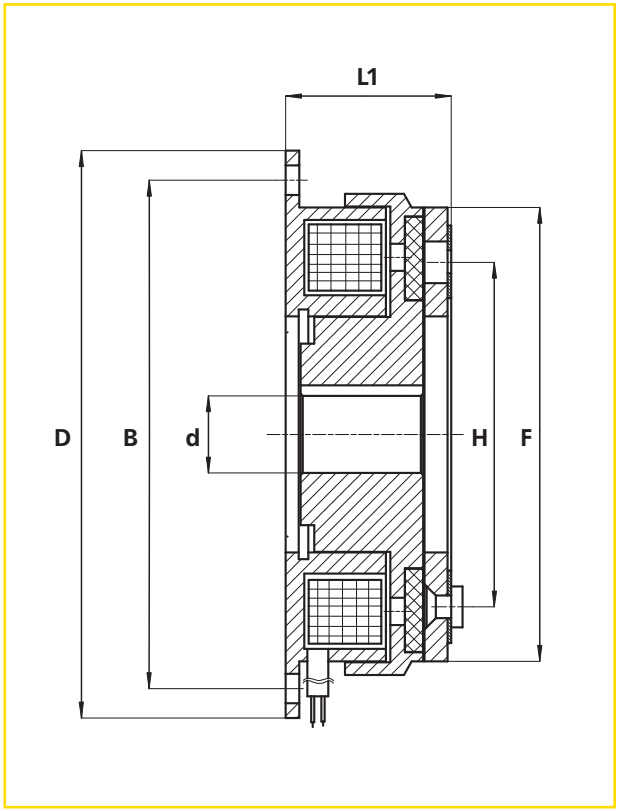
Models

Model A

Clutch with input drive hub

Basic version without output drive hub

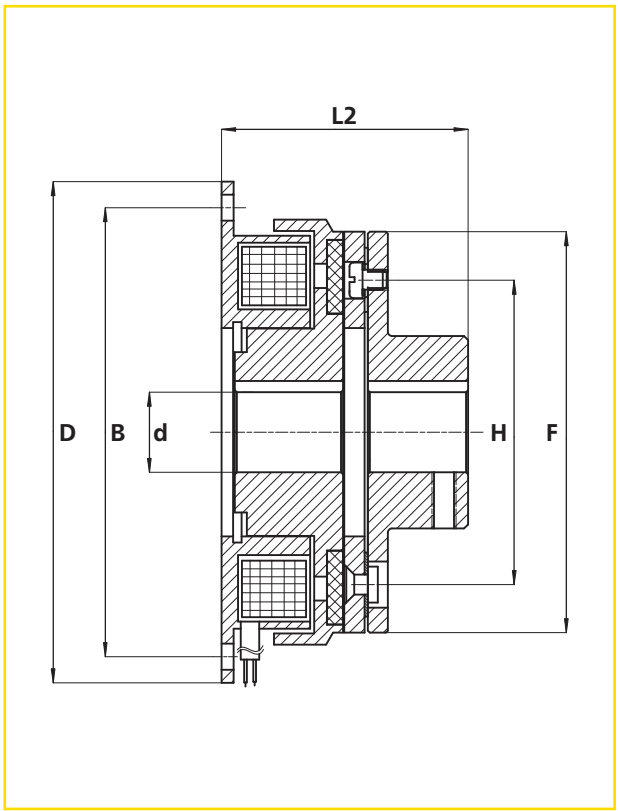
Connection to output side by screws



Model C

Clutch with input and output drive hub

Basic version with axial output drive (shaft - shaft)



Standard Dimensions [mm]

Size	Ø B	Ø F	Ø H
02	52	42	29
03	72	63	46
04	90	80	60
05	112	100	76
06	137	125	95
07	175	160	120
08	215	200	158
09	270	250	210

Electromagnetic clutches and brakes

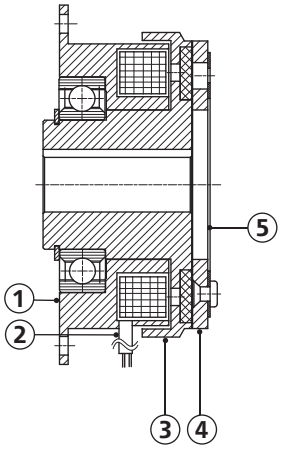
G-Type

Electromagnetic clutch with bearing

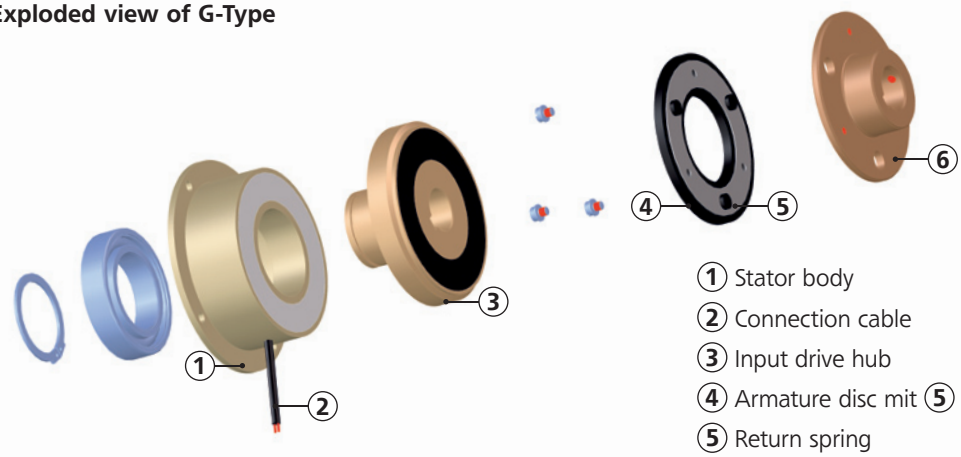
The basic model of electromagnetic clutch with bearing consists of stator body ① with cast-in coil and connection cable ②, the input drive hub ③ with support bearing, and the armature disc ④ to which the return spring ⑤ is riveted. Because it contains a bearing, it is not necessary to centre the stator body on the input drive hub when using this model.

Depending on the size of the clutch, the installation must provide for an air gap of between 0.2 and 0.5 mm between the drive hub and the armature disc.

If a SUCO output drive hub is not used, it is important to ensure that there are clearance holes to accommodate the rivet heads when installing the armature disc. The armature disc is centred by the screws which hold the spring disc to the output component. When the armature disc is installed, it must remain free to move axially against the return spring.



Exploded view of G-Type



① Stator body
② Connection cable
③ Input drive hub
④ Armature disc mit ⑤
⑤ Return spring
⑥ Output drive hub

Performance data and dimensions

Size	03	04	05	06	07	08	09
Torque [Nm] For reference purposes [1]	4.5	8.0	20.0	38.0	80.0	150.0	280.0
Speed of rotation max. [rpm]	8 000	6 000	5 000	4 000	3 000	3 000	2 000
Power [W] T = 20° C	12	20	23	32	40	55	72
d max. [mm] [2]	20	25	30	40	50	70	80
D [mm]	80	100	125	150	190	230	290
L1 [mm]	41.0	45.0	52.0	56.5	67.0	75.4	90.0
L2 [mm]	68.0	72.5	92.0	102.5	112.0	130.5	153.0
L3 [mm]	56.0	65.0	77.0	86.5	105.0	123.4	145.0

[1] Depending on design of installation, operating and ambient conditions

[2] Keyway to DIN 6885/1

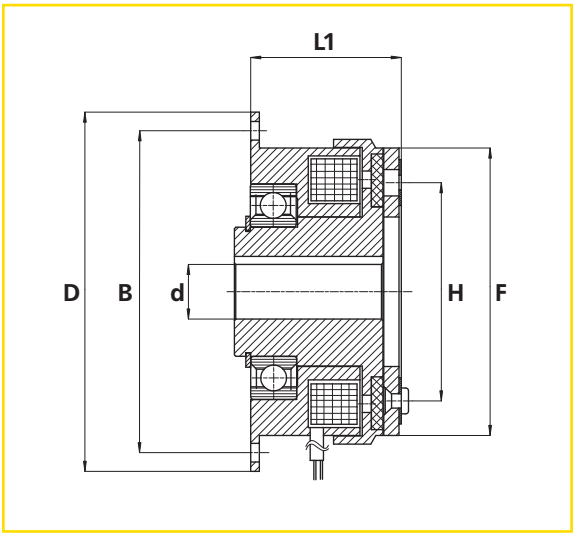
Models

Model A

Clutch with input drive hub

Basic version without output drive hub

Connection to output side by screws

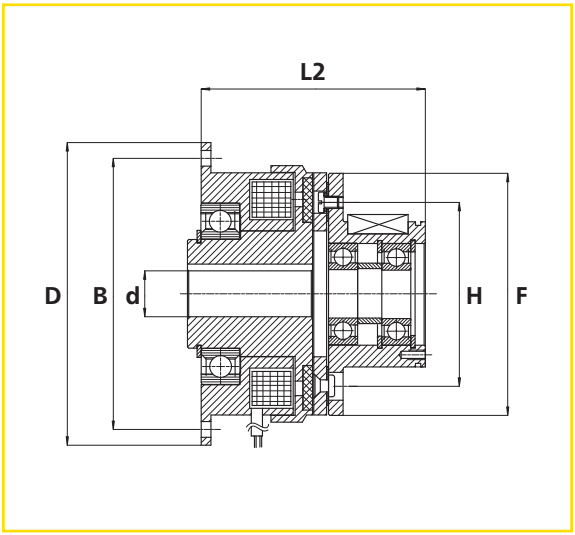


Model C

Clutch with input and output drive hubs

Basic version with axial output drive (mounted on one shaft)

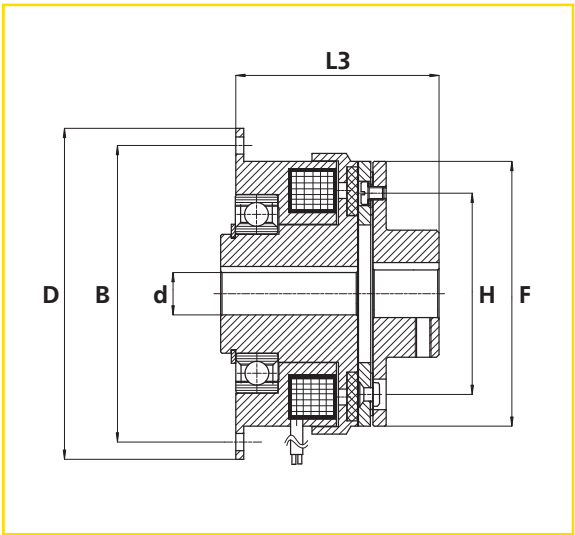
Output drive hub with bearings



Model D

Clutch with input and output drive hubs

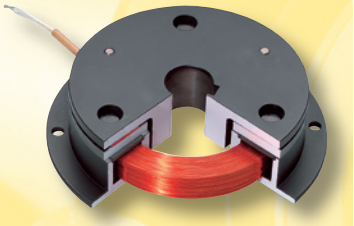
Basic version with axial output drive (shaft - shaft)



Standard Dimensions [mm]

Size	Ø B	Ø F	Ø H
02	52	42	29
03	72	63	46
04	90	80	60
05	112	100	76
06	137	125	95
07	175	160	120
08	215	200	158
09	270	250	210

B-Type Electromagnetic brakes

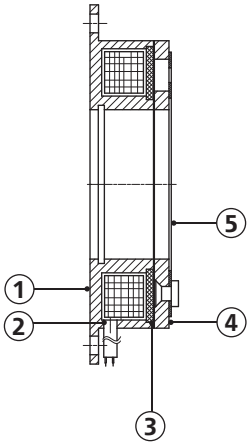


The basic model of electromagnetic brake consists of stator body ① with cast-in coil and connection cable ②, and the armature disc ④ to which the return spring ⑤ is riveted.

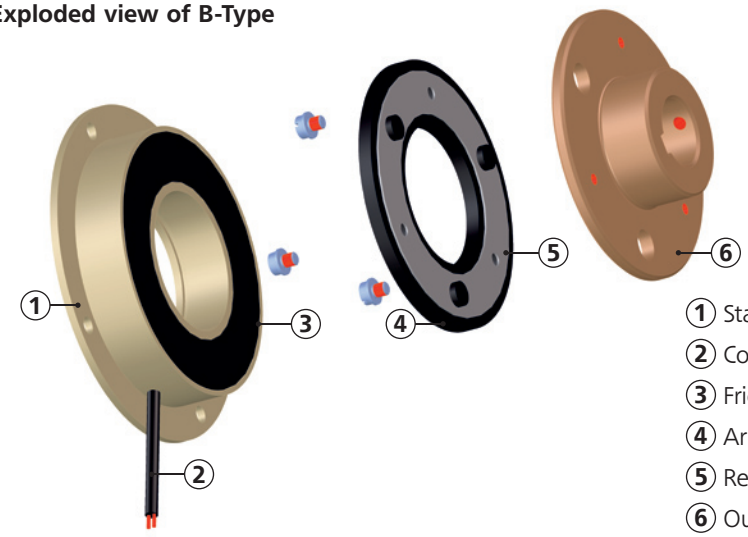
The friction lining ③ is bonded directly to the stator body. The stator body must be installed so that it is concentric with the output side.

Depending on the size of the brake, the installation must provide for an air gap of between 0.2 and 0.5 mm between the friction lining and the armature disc.

If a SUCO output drive hub is not used, it is important to ensure that there are clearance holes to accommodate the rivet heads, when installing the armature disc. The armature disc is centred by the screws which hold the spring disc to the output component. When the armature disc is installed, it must remain free to move axially against the return spring.



Exploded view of B-Type



① Stator body
② Connection cable
③ Friction lining
④ Armature disc with ⑤
⑤ Return spring
⑥ Output drive hub

Performance data and dimensions

Size	02	03	04	05	06	07	08	09
Torque [Nm] For reference purposes [1]	1.0	4.5	8.0	20.0	38.0	80.0	150.0	280.0
Speed of rotation max. [rpm]	10 000	8 000	6 000	5 000	4 000	3 000	3 000	2 000
Power [W] T = 20° C	9	12	20	23	32	40	55	72
d max. [mm] [2]	8	17	20	30	35	42	50	75
D [mm]	60	80	100	125	150	190	230	290
L1 [mm]	21.0	22.0	24.5	28.0	31.0	35.0	41.5	48.0
L2 [mm]	24.0	25.5	28.5	33.0	37.0	42.0	50.4	59.0
L3 [mm]	33.0	37.0	44.5	53.0	61.0	73.0	89.5	103.0

[1] Depending on design of installation, operating and ambient conditions

[2] Keyway to DIN 6885/1

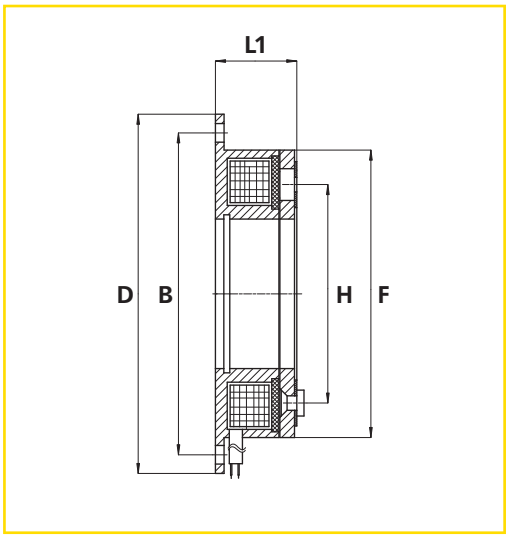
Models

Model A

Brake without hub

Basic version without drive hub

Connection to output side by screws

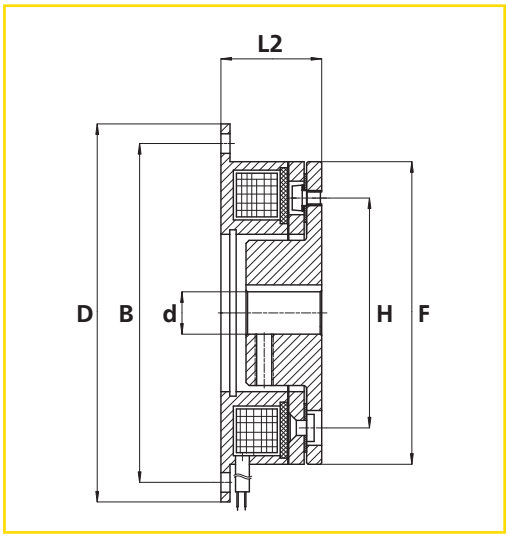


Model B

Brake with internal hub

Basic version with axial output drive

Internal hub

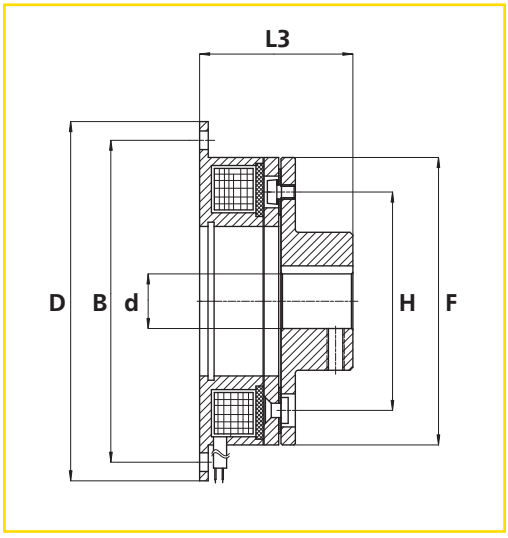


Model C

Brake with external hub

Basic version with axial output drive

External hub



Standard Dimensions [mm]

Size	Ø B	Ø F	Ø H
02	52	42	29
03	72	63	46
04	90	80	60
05	112	100	76
06	137	125	95
07	175	160	120
08	215	200	158
09	270	250	210

Different solutions, driven-side

Besides the standard bores, all versions can be supplied with special bore diameters or tapered bores.

Clutch-brake combination

This model can be manufactured on request in the standard sizes.

For performance data and dimensions, see E-Type (page 24) and B-Type (page 28).

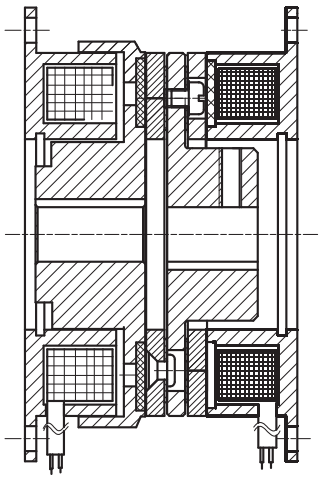


Fig. 1

With bearing-supported flange

A flange supported on a hollow shaft and bearings is used for the output side connection.

Holes in the flange can be used to attach pulleys, sprockets etc.

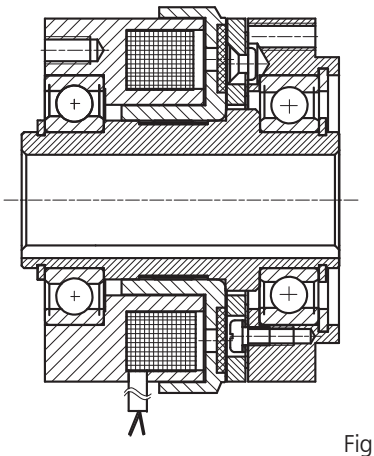


Fig. 2

With a flexible coupling

If an axial or angular misalignment is to be expected between two shafts, a flexible coupling can be attached.

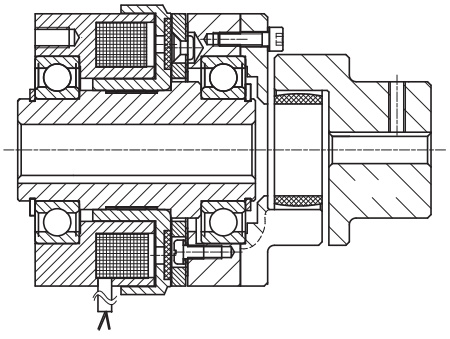


Fig. 3

With bearing-supported belt pulley

The output drive is a single-groove belt pulley (see Fig. 4) which is supported on a hollow shaft.

The pitch diameter can be supplied to the customer's requirements. Multiple-groove pulleys can also be supplied.

Common groove forms are:
SPA, SPB, SPZ, and Poly-V to DIN/EN.

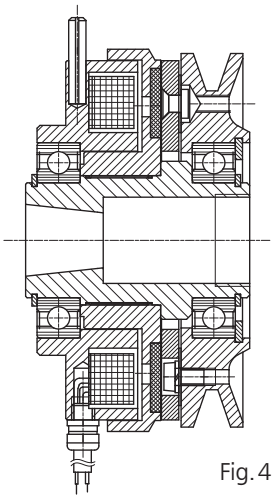


Fig. 4

With belt pulley supported on separate bearings

Here the output drive is a single or multiple-groove belt pulley which is separately supported, not on the hollow shaft of the electromagnetic clutch.

The pitch diameter of the pulley can be supplied to the customer's requirements.

Common groove forms are:
SPA, SPB, SPZ, and Poly-V to DIN/EN.

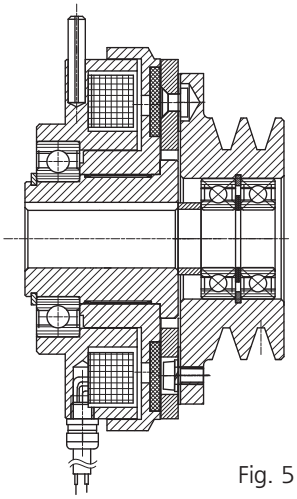


Fig. 5

With sprockets

A chain sprocket mounted on a bearing-supported flange transmits torque on the output side.

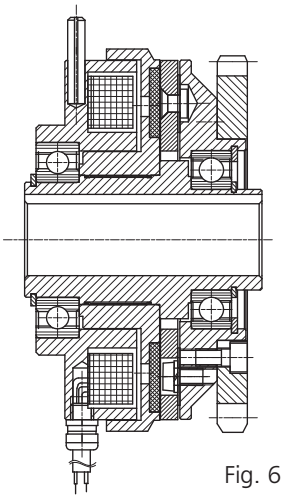
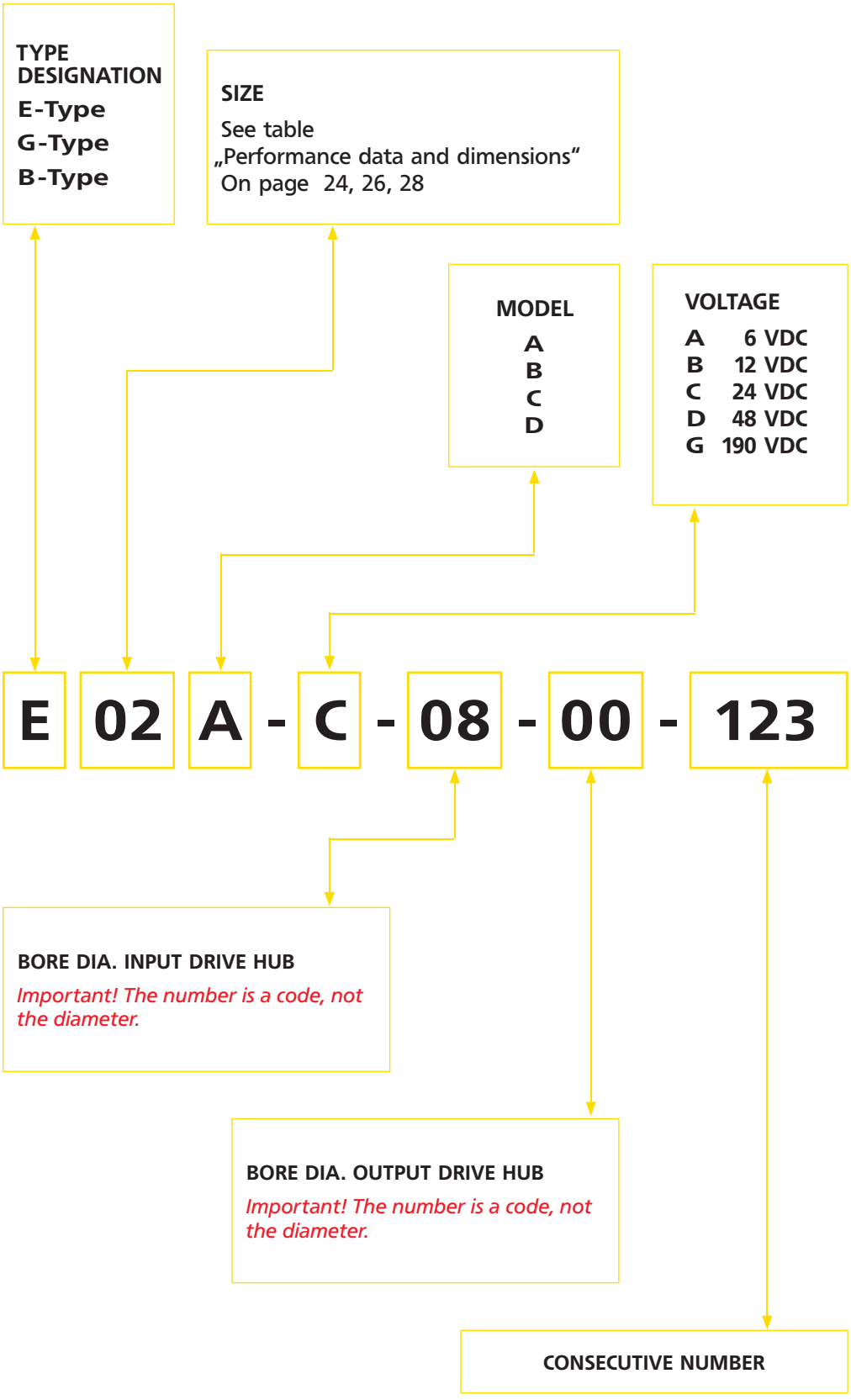


Fig. 6

Besides the standard bores, all versions can be supplied with special bore diameters or tapered bores.

Key to model codes



Questionnaire

For customer's requirements

www.suco.de

You will find the telephone and fax numbers of your contact on pages 38 to 40.

Company	
Contact	
Department	
Street	
Country, post code, town or city	
Telephone	
Fax	
E-mail	

	Clutch	Brake	
Type			
Power			kW
Operating speed			rpm
Drive/braking torque			Nm
Shaft diameter			mm
Braking time	– – – –		sec.

Input

Shaft diameter		– – – –	mm
Flexible coupling (Ø)		– – – –	mm
Belt-pulley diameter		– – – –	mm
Number of grooves		– – – –	

Output

Quantity/year:	
Times operated/h:	
Special operating conditions:	

Installation diagram: