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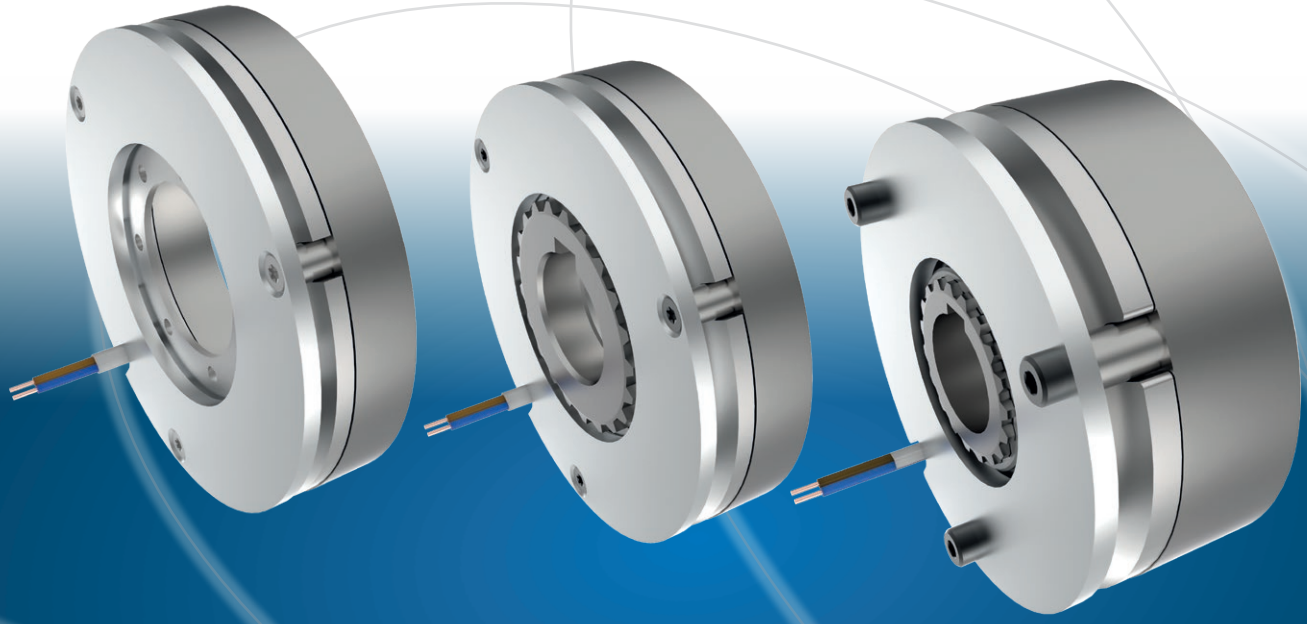

ROBA®-servostop®

P.898000.V03.EN

www.mayr®.com

ROBA®-servostop®
The perfect safety brakes for servomotors and lightweight robots

Reliable function due to fail-safe principle

The spring applied ROBA®-servostop® is closed in de-energised condition. It provides the required braking torque even in the event of an emergency stop, a power failure or when the power supply is interrupted. To ensure that the ROBA®-servostop® brakes also provide sufficient friction work in emergency stop situations and brake movements with a defined braking torque, a friction lining developed for this purpose with a corresponding steel counter friction surface is required. While this is common with safety brakes, permanent magnet brakes with their steel-on-steel friction combinations reach their tribological limits here.

Reliable even at high temperatures

The braking torque is generated through special organic friction linings. These temperature-resistant linings impress with their high, even friction coefficients, and can also be used at high ambient temperatures of up to 120 °C.

Lightweight solution for robotics

In the mayr® modular system, users can choose between classic servo brakes in the motor, with hub and toothed rotor, in classic or slim constructional design. In addition, there is another slim and lightweight design variant, the ROBA®-servostop® Cobot, a pad solution with a large inner diameter. The latter is specially designed for integration into the robot joint. These solutions are particularly compact and convince with their low weight and ideal dynamic properties. But also the classic brakes with hub and toothed rotor can be customized and integrated directly into a joint.

High performance density and energy efficiency

The ROBA®-servostop® brakes are not only very lightweight, but also extremely fast when it comes to magnetic actuation. At the same time they display high performance density and wear resistance. Furthermore, the brakes impress users with their high permitted friction work during dynamic braking actions. In addition, the ROBA®-servostop® brakes are designed in such a way that the installation space is optimally used and as much energy as possible is saved.

Easy installation

The simple and ready-to-install design makes installation substantially easier. The operating air gap does not have to be adjusted. Exact axial positioning on the motor shaft is not required. The brake always operates accurately and reliably with a steady air gap and tolerates minor bearing backlash and temperature expansion. Installation errors are almost completely excluded.

Any installation position in servomotors

For servomotors, the brakes are preferably installed in the A-bearing shield, because the fixed bearing is located here and temperature expansions cannot influence the brake severely. The ROBA®-servostop® can also be integrated without restrictions into the B-bearing side of the motor, as temperature expansions and bearing backlash do not have a negative influence on the function and the reliability of the brake.

ROBA®-servostop® – Overview of the series

ROBA®-servostop® Cobot

Proven series for lightweight robots

Type 8981.29000

- Can be integrated into even the smallest installation spaces
- Ideal for hollow shafts
- High performance density at low energy consumption

Performance data

Nominal braking torque:	0.5 up to 8.5 Nm
Max. speed:	5,000 up to 8,000 rpm

Page 4

ROBA®-servostop® Classic

Classic series for installation into
A- or B-bearing shield of servomotors

Type 8980.00000

- High braking torque
- Wear-resistant - large number of emergency stops (dynamic brakings) are allowed
- Easy installation

Performance data

Nominal braking torque:	1.5 up to 100 Nm
Max. speed:	3000 up to 9000 rpm

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ROBA®-servostop® Lean

Slim series for installation into
A- or B-bearing shield of servomotors

Type 8982.00000

- Slim design
- Easy installation
- High performance density at low energy consumption

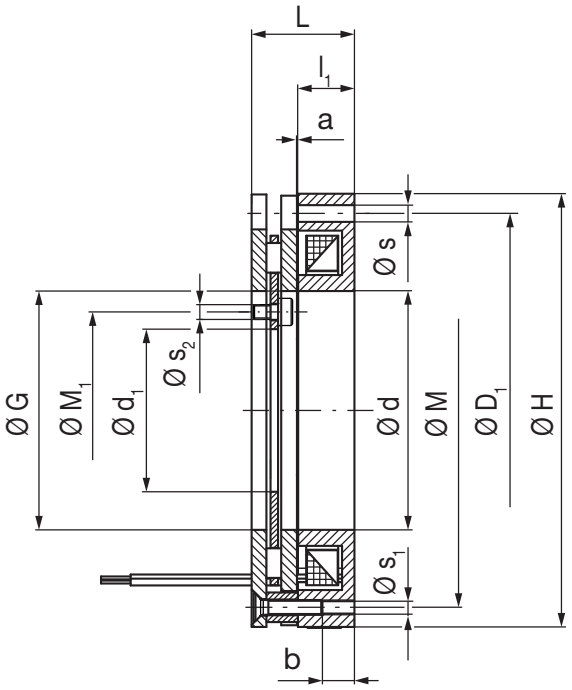
Performance data

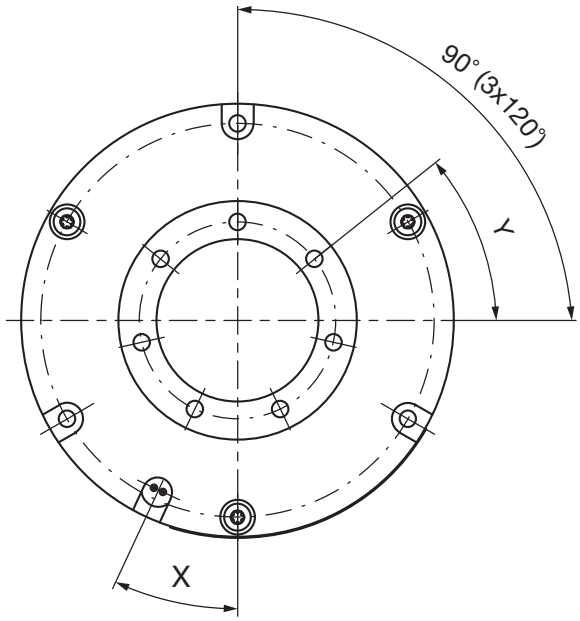
Nominal braking torque:	0.65 up to 11.5 Nm
Max. speed:	5000 up to 8000 rpm

Page 7

ROBA®-servostop® Cobot

Type 8981.29000





Technical Data			Size			
			50	60	80	100
Nominal braking torque 1) 2) 3)	M_N	[Nm]	0.5	1.25	4	8.5
Overexcitation voltage	U_O	[VDC]	24	24	24	24
Holding voltage	U_H	[VDC]	8	8	8	8
Pull-in voltage at 20 °C	U	[VDC]	11.9	12.8	12.5	11.7
Pull-in voltage at 120 °C	U	[VDC]	16.5	17.8	17.4	16.3
Coil power at overexcitation voltage	P_O	[W]	29	43	61	83
Coil power at holding voltage	P_H	[W]	3.2	4.8	6.7	9.3
Maximum speed	n_{max}	[rpm]	8000	6000	6000	5000

Dimensions	Size			
	50	60	80	100
a	0.15	0.15	0.2	0.2
b	5.5	5.5	5.5	5
d	33.5	40.5	48.5	63
d_1	22	29	33	47
D_1	53	62	80	98
G	33.5	40.5	48.5	63
H	58	68	88	108
L	16.5	18.4	20.9	22.4
l_1	10	11	11.5	12
M	53	62	80	98
M_1	27	34	40	54
s	2.4	2.9	3.4	3.4
s_1	M2	M2.5	M3	M4
s_2	2.3	2.3	3.4	3.4
X	35°	35°	25°	35°
Y	90° (4x)	30° (4x60°)	38.6° (7x51.4°)	18° (10x36°)

We reserve the right to make dimensional and constructional alterations.

1) Braking torque tolerance: + 75 %

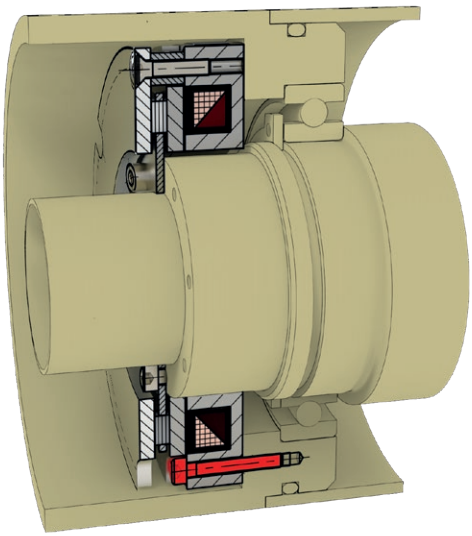
2) Suitable for temperatures of between 0 and 60 °C: For higher temperatures, please consider the following braking torque reductions:
>60 °C to 80 °C: 10 % reduction
>80 °C to 100 °C: 20 % reduction
>100 °C to 120 °C: 30 % reduction

3) The braking torque values are valid for the run-in condition and are based on friction values determined in tests at Mayr. As a friction system is influenced by many parameters, such as installation situation, temperature, ambient conditions, run-in condition, wear, switching work, sliding speed, aging, contamination, etc., deviating braking torques are possible. The specified nominal braking torque is a lower limit which is very likely to be reached, but cannot be guaranteed due to the many possible influences. The fluctuations in braking torques must be taken into account during dimensioning by providing appropriate safety measures. Especially for critical applications, it is important to consult Mayr and carry out an appropriate application check.

ROBA®-servostop® Cobot – Installation Examples

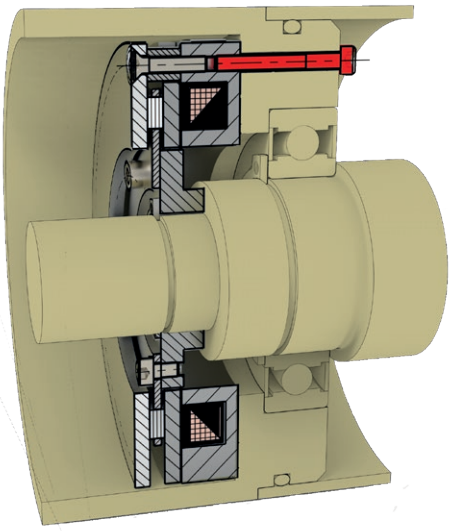
Screw connection on the coil carrier front

Proven installation variant for hollow shaft drives. Here, the brake is connected to the motor unit via recesses in the flange plate and through holes in the coil carrier. The rotor disk with the friction lining pads is screwed to the collar of the stepped hollow shaft.



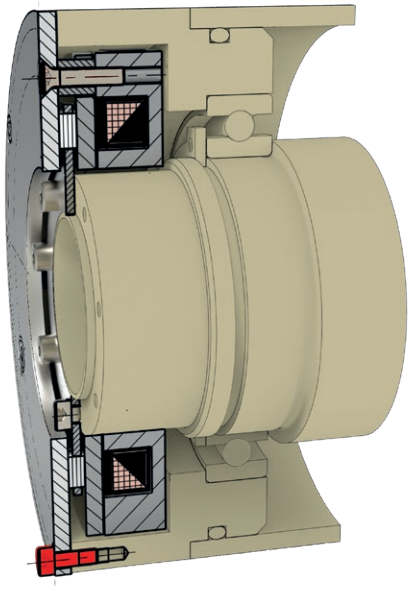
Screw connection on the coil carrier back

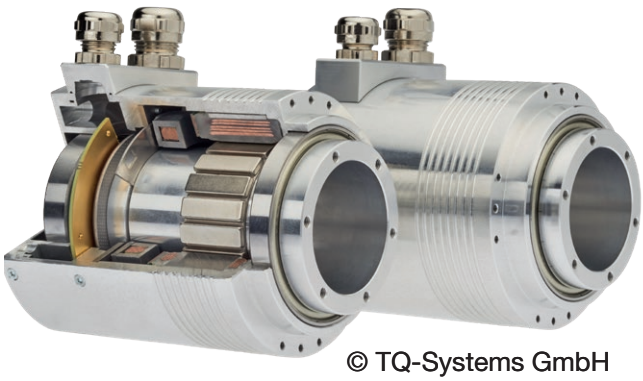
Possible installation variant for drives with full shaft. The brake is mounted via through holes in the bearing shield and threaded holes in the brake back. The rotor disk with the friction lining pads is screwed to an adaptor, which is connected to the shaft via positive locking or frictional locking.



Screw connection via the flange plate (special design)

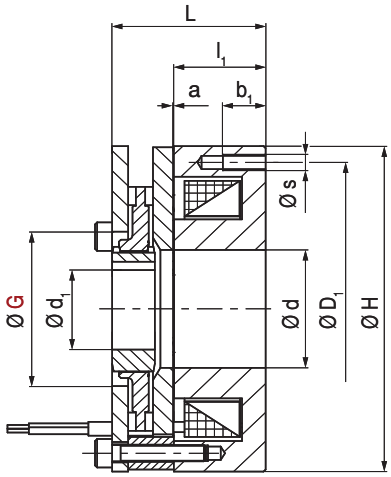
Customer-specific installation situation in connection with hollow shafts. The brake is mounted on the motor unit via the flange plate, and the rotor disk with the friction lining pads is screwed to the hollow shaft front side.

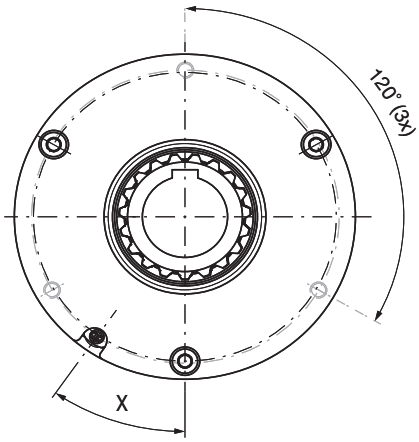




ROBA®-servostop® classic

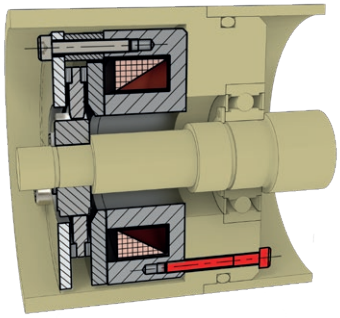
Type 8980.00000





Installation example: Screw connection on the coil carrier back

Proven installation variant for ROBA®-servostop Classic and ROBA®servostop Lean. The brake is connected to the motor unit via threaded holes in the coil carrier back. The braking torque is transmitted onto the shaft via the toothing between the friction lining rotor and the toothed hub.



Technical Data			Size						
			50	60	80	100	120	140	160
Nominal braking torque [1) 2) 3)]	M_N	[Nm]	1.5	3.25	7	16	32	60	100
Coil voltage	U	[VDC]	24	24	24	24	24	24	24
Pull-in voltage at 20 °C	U	[VDC]	16	16	16	16	16	16	16
Pull-in voltage at 120 °C	U	[VDC]	21	21	21	21.5	21.5	21.5	21
Electrical power	P_{20}	[W]	8.7	10.3	15.4	20.7	25.8	35.8	47.2
Maximum speed	n_{max}	[rpm]	9000	8000	6500	5000	4000	3500	3000

Dimensions	Size						
	50	60	80	100	120	140	160
a	$0.15^{+0.06/-0.03}$	$0.15^{+0.06/-0.03}$	$0.15^{+0.07/-0.02}$	$0.2^{+0.06/-0.03}$	$0.2^{+0.06/-0.03}$	$0.2^{+0.07/-0.02}$	$0.25^{+0.07/-0.02}$
b_1	7	7	10	12	12	14	14
d	16	23	29	42	47	65	70
$d_{1\,min}$	8	9	11	15	18	32	30
$d_{1\,max}$	12	15	20	30	34	44	45
D_1	45	56	72	90	112	132	145
G	25	28	38	55	62	85	90
H	52	62	80	102	124	147	166
L	31.65	31.15	35.95	45	45.6	54.6	60.65
l_1	20.5	19.5	21.5	25.5	24	28	31
s	M3	M3	M4	M5	M6	M8	M8
X	35°	35°	35°	35°	35°	35°	35°

1) Braking torque tolerance: + 75 %

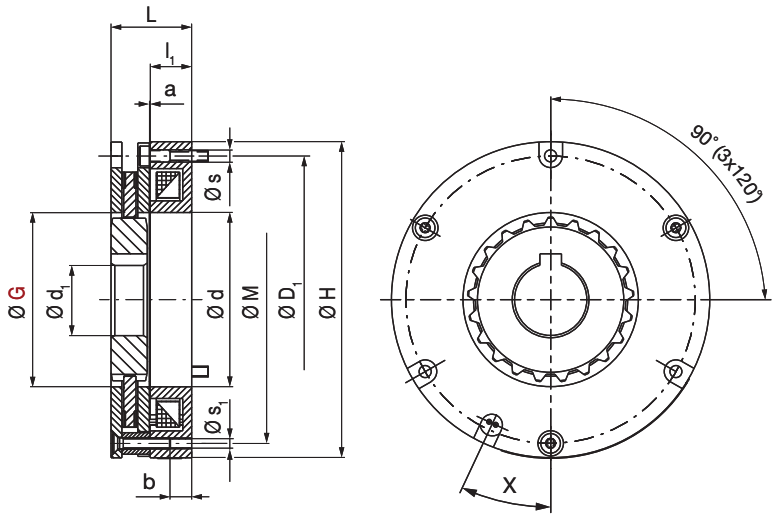
2) Suitable for temperatures of between 0 and 60 °C: For higher temperatures, please consider the following braking torque reductions:
>60 °C to 80 °C: 10 % reduction
>80 °C to 100 °C: 20 % reduction
>100 °C to 120 °C: 30 % reduction

3) The braking torque values are valid for the run-in condition and are based on friction values determined in tests at Mayr. As a friction system is influenced by many parameters, such as installation situation, temperature, ambient conditions, run-in condition, wear, switching work, sliding speed, aging, contamination, etc., deviating braking torques are possible. The specified nominal braking torque is a lower limit which is very likely to be reached, but cannot be guaranteed due to the many possible influences. The fluctuations in braking torques must be taken into account during dimensioning by providing appropriate safety measures. Especially for critical applications, it is important to consult Mayr and carry out an appropriate application check.

We reserve the right to make dimensional and constructional alterations.

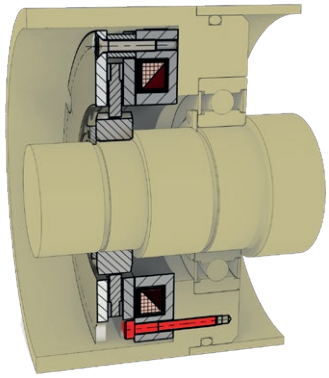
ROBA®-servostop® Lean

Type 8982.00000



Installation example: Screw connection on the coil carrier front

Proven installation variant for ROBA®-servostop Classic and ROBA®-servostop Lean. The brake is connected to the motor unit via through holes in the coil carrier. The braking torque is transmitted onto the shaft via the toothing between the friction lining rotor and the toothed hub.



Technical Data			Size			
			50	60	80	100
Nominal braking torque 1) 2) 3)	M_N	[Nm]	0.65	2.00	5.25	11.5
Overexcitation voltage	U_O	[VDC]	24	24	24	24
Holding voltage	U_H	[VDC]	8	8	8	8
Pull-in voltage at 20 °C	U	[VDC]	11.9	12.8	12.5	11.7
Pull-in voltage at 120 °C	U	[VDC]	16.5	17.8	17.4	16.3
Coil power at overexcitation voltage	P_O	[W]	29	43	61	83
Coil power at holding voltage	P_H	[W]	3.2	4.8	6.7	9.3
Maximum speed	n_{max}	[rpm]	8000	8000	6000	5000

Dimensions	Size			
	50	60	80	100
a	0.15	0.15	0.2	0.2
b	5.5	5.5	5.5	5
d	33.5	40.5	48.5	63
$d_{1\ H7}$	16	22	20	35
D_1	53	62	80	98
G	33.5	40.5	48.5	63
H	58	68	88	108
L	18.8	20.8	22.3	23.8
l_1	10	11	11.5	12
M	53	62	80	98
s	2.4	2.9	3.4	4.5
s_1	M2	M2.5	M3	M4
X	35°	35°	25°	35°

1) Braking torque tolerance: + 75 %

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You can find the complete contact details for the representative responsible for your area in the Contact section at www.mayr.com

12/03/2021 BE