

# BINDER CLUTCHES & BRAKES

SPRING-APPLIED SINGLE-DISC/MULTIPLE-DISC BRAKE

77 600..A00

77 600..A15

77 100..A00



POWER OF PARTNERSHIP AND MAGNETISM





#### **Kendrion Power Transmission**

#### BINDER CLUTCHES & BRAKES

Our company's strength is measured by the delivery of products, performances, as well as a high degree of esteem towards our customers.

KENDRION POWER TRANS-MISSION is striving to develop a long-term relationship with its

customers and to cultivate this relationship under the motto "Power of Partnership". Ambitious aims can only be realised through a close and productive co-operation with our customers.

The development of high-quality standard products as well as optimised tailor made solutions is the foundation of all our actions. Power of Partnership stands for a co-operation with the Kendrion employees without bureau-cracy, ensuring a long and successful partnership with our customers.

## Top Market Knowledge...

the realisation of market orientated products are the results of our competence in electromagnetism which has been achieved with decades of experience and knowledge. The development of most innovative concepts and the

use of the most modern technologies in our research department together with the use of the latest production and logistic processes are our strengths. Our customers profit from the individual solutions for high volume as well as the availability of individual products on the basis of a standard platform.

Our know-how is growing steadily hand in hand with the constant optimisation of every business process.

#### Optimal tailor made solutions...

are not empty promises. The profound understanding of the Power of Magnetism at KENDRION POWER TRANS-MISSION is the source of the research/development of market orientated products. Continuous expansion of the technological possibilities

enables us to be in the position to offer optimal solutions of brakes and clutches for numerous applications. We lay great emphasis on being able to offer solutions for different applications such as:

- ... SECURING
- ... STOPPING
- ... POSITIONING
- ... ACCELERATING.

#### Important synergies as a basis for success...

KENDRION POWER TRANS-MISSION is a European company with a local presence in all economic regions of the world. Integrated in and yielding performance to the Kendrion Holding N.V., which is noted on the Amsterdam stock exchange, as a successful company with an annual turnover of 1,8 billion EUR; and approx. 5500 employees all over the world.

This is an excellent basis to realise, secure and enable our long-term goals and company objectives. A network of connected companies within Kendrion is another valuable factor for the success of KENDRION POWER TRANS-MISSION. We live the "Power of Partnership" in a firm exchange

of expertise and business relationship within these companies.





Kendrion Power Transmission protects people and the environment



General technical inform	nation	
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	77 600A00	
	77 600A15	
	77 100A00	



# General technical information

# CLASSIC LINE

#### **Product line information**

## BINDER CLUTCHES & BRAKES



The CLASSIC LINE is comprised of DC operated spring-applied single-disc and multiple-disc brakes whose sturdy design and variable connection features make it ideally suited for the most demanding applications.

Electromagnetic springapplied brakes generate the braking torque when voltage is removed and the electromagnetic force is neutralised.

#### **Applications**

- DC motors
- Handling technology
- Lifting and materials handling technology
- Crane construction
- Paper-making and printing machines

• ...

#### **Versions**

77 600..A00 torque range 4 - 240 Nm

DC

adjustable torque

single-disc brake (service brake)

77 600..A15 torque range 7.5 - 360 Nm

DC

adjustable torque

single-disc brake (holding brake)

77 100..A00 torque range 17 - 800 Nm

DC

adjustable torque multiple-disc brake built-in bracing springs for

vertical operation

Upon request, the brake can be supplied with variable connection features (e.g. flying leads, connecting terminal or connection box with built-in rectifier).

#### Information on technical data included in the data sheets

The information provided in the operating instructions must be strictly adheared to when designing a machine (e.g. motor) and when using the brakes. The brakes are manufactured and tested in compliance with DIN VDE 0580 requirements. The insulation materials used conform with thermal class F norms. Operation of the brake as a pure holding brake without friction work is only permitted after prior consultation with the manufacturer. The specified times apply to the following conditions: seperate switching of the brake, operating temperature, rated voltage, and rated air gap. All values are mean values that are subject to variation. In case of AC brake

switching, the coupling time t<sub>1</sub> is substantially longer. W<sub>max</sub> (maximum switching energy) is the switching energy that must not be exceeded during braking operations at max. 1500 rpm. Braking operations at >1500 rpm lead to a substantial reduction in the maximum admissible switching energy per switching operation. Such operation is only permitted after prior consultation with the manufacturer. The maximum switching power P<sub>max</sub> is the switching energy W that can be converted by the brake per hour. In the case of applications where the number of switching operations per hour is greater than 1 (Z>1), the diagram (W<sub>max</sub> as a function of the number of switching operations

per hour Z) shown in the operating instructions applies<sup>1)</sup>. The permitted number of switching operations Z (emergency stops) per hour and the max. permitted switching energy W<sub>max</sub> resulting therefrom are specified in the table included in the operating instructions<sup>2)</sup>. If the brake is used for other applications, e.g. as service brake, the diagram (W<sub>max</sub> as a function of the number of switching operations per hour Z) shown in the operating instructions applies<sup>2)</sup>. The P<sub>max</sub> and W<sub>max</sub> values are approximate values; they apply to applications where the brake is installed between the B-face end shield of the motor and the motor fan or fitted to the motor. The specified rated torques M<sub>2</sub>

and transmissible torques  $M_4$  characterise the torque level of the brakes. Depending on the application of the brake, the switching torque  $M_1$  and the effective transmissible torque  $M_4$  may differ from the specified  $M_2$  and  $M_4$  values. The switching torque  $M_1$  depends on the speed (rpm). If the friction surfaces are contaminated with oil or grease the transferable torque  $M_4$  and the switching torque  $M_1$  may drop.

All technical data is subject to the running-in process of the brake being completed. Vertical operation of the brake is only allowed after prior consultation with the manufacturer (except for 77 100..A00).

1) Versions 77 600/100..A00 2) Version 77 600..A15



# CLASSIC LINE

# SPRING-APPLIED SINGLE-DISC BRAKE

Version	77 600A00 - single-disc brake (service brake)
Standard rated voltages	24 V, 102 V, 178 V DC
Protection	IP 54 IP 55 (when installed under motor fan hood)
Thermal class	F
Rated torques	4 - 240 Nm
Accessories (options)	hand release feature, mounting screws

Specification subject to change without notice.
The "General technical information" and the "Operating instructions" 77 600..A00 must be strictly observed.



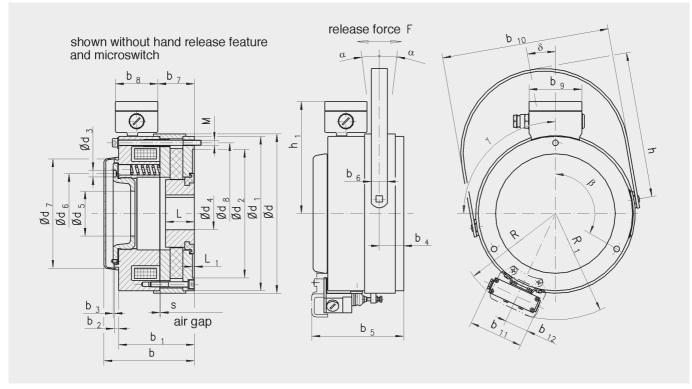
#### Technical data

Size	Rated tor- que range	Max. reachable rated torque	Max. speed	Max. sw		Max. swit-	Rated	Respons	se times	Moment of inertia	Weight
	(standard)	rated torque	зреси	attached	built in	ching energy (Z=1)	power	on	off	hub and friction disc	
	M <sub>2</sub>	M <sub>2 max</sub>	n <sub>max</sub>	P <sub>max</sub>	P <sub>max</sub>	W <sub>max</sub>	P <sub>N</sub>	t <sub>1</sub>	t <sub>2</sub>	J	m
	[Nm]	[Nm]	[rpm]	[kJ/h]	[kJ/h]	[kJ]	[W]	[ms]	[ms]	[kgcm <sup>2</sup> ]	[kg]
10	4 - 8	9	5400	250	350	30	23	15	75	1.22	1.8
11	7 - 14	15	5000	320	480	41	26	30	90	1.75	2.9
13	16 - 32	35	4000	460	720	50	38	40	130	5	4.3
16	30 - 60	65	3500	570	930	58	60	85	145	14	8.6
19	65 - 130	140	3000	640	1090	65	75	100	185	37.5	13.4
24	120 - 240	260	3000	700	1190	80	108	180	220	87	26.5

The service life values (W<sub>tot</sub>) specified in the table refer to the maximum rated torque (standard).

## Ordering data (to be fully specified)

#### SPRING-APPLIED SINGLE-DISC BRAKE **HUB** Please specify requested version Size (10, 11, 13, 16, 19, 24) Size (10, 11, 13, 16, 19, 24) Size: Size: Coil voltage (standard 24 V, 102 V, 178 V) Sealing 2 2 Voltage: \_ V DC $\square$ with sealing ring $\square$ without sealing ring Rated torque M<sub>2</sub> (standard) Bore diameter (standard), Size 10: 8 Nm Size 11: 14 Nm Size 13: 32 Nm Size 16: 60 Nm Size 19: 130 Nm groove JS9 as per DIN 6885, sheet 1 Size 10: Ø 15, Ø 18, Ø 20 mm **Size 11:** Ø 15, Ø 18, Ø 20, Ø 22 mm Size 13: Ø 20, Ø 25, Ø 30 mm Size 24: 240 Nm 3 Size 16: Ø 24, Ø 25, Ø 30, Ø 40 mm Rated torque M2: \_ Nm **Size 19:** Ø 30, Ø 40, Ø 45 mm Size 24: Ø 40, Ø 42, Ø 45, Ø 50 mm Microswitch ☐ with microswitch ☐ without microswitch Bore diameter: \_ (size 13 and over) ☐ with microswitch and protective cover (size 16 and over) or pilot bore



Size	d	d <sub>1</sub>	d <sub>2</sub> (H9)	d <sub>3</sub>	d <sub>4</sub> (H7)	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub> (j7)	d <sub>8</sub>	b ca.	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>	b <sub>6</sub>	b <sub>7</sub>	b <sub>8</sub>	b <sub>9</sub>
10	105	100	75	5.1	101/222	30	75	70	88	66	50	5	2-3.3	17.9	-	16	13	66	82
11	120	115	90	5.1	121/222	30	96	72	100	74.5	58.5	5	3.6-6.2	19.4	-	20	8.5	66	82
13	140	135	110	6.1	161/382)	54	104	93	120	88.5	72.5	5	3-4.7	22.2	-	20	22.5	66	82
16	175	165	140	7.1	201)/452)	67	124	125	150	106	87.8	5	4.7-8.6	23.7	113.5	20	38.5	66	82
19	200	190	160	7.1	251/552)	79	124	148	170	116	98.5	5	4.5-11	25.5	123.5	20	48.5	66	82
24	248	240	200	10.1	301/702)	90	150	170	220	140.5	117.5	7	2.7-5.6	34	142.5	25	57.5	66	82

Size	b <sub>10</sub>	b <sub>11</sub>	b <sub>12</sub>	h	h <sub>1</sub>	R	R <sub>1</sub>	L	L <sub>1</sub>	s	S <sub>max</sub> <sup>3)</sup>	М	F <sup>4)</sup> [N]	α	β	γ	δ
10	125.5	84	36.4	118	104	-	-	20.5	2.5	0.25 +0.2	0.65	3xM5	4	20°	3x120°	56°	180°
11	140.5	84	36.4	146	111,5	-	-	20.5	2.5	0.25 +0.2	0.65	3xM5	7	20°	3x120°	90°	0°
13	162.5	84	36.4	161	121,5	111	-	24	2.5	0.3 +0.2	0.75	6xM5	20	20°	6x60°	90°	10°
16	198	84	36.4	203	136,5	125	130	26.5	2.5	0.3 +0.2	0.85	6xM6	60	18°	6x60°	90°	10°
19	223	84	36.4	224	149	137	142	30	3	0.3 +0.2	0.85	6xM6	70	19°	6x60°	90°	10°
24	272.5	84	36.4	269	174	161	165	45	3	0.35 +0.25	0.95	6xM8	110	17°	6x60°	90°	15°

 $<sup>\</sup>ensuremath{^{\text{1}}}\xspace$  ) Min. bore with keyway JS9 as per DIN 6885, sheet 1.

## Accessories

Size	Hand release feature		Moi	unting screws	
		Screw size	Rated torque	Material number	Screws per brake
10	76 14110B00940	ISO 4762 - M5 x 60 - 8.8	5.5 Nm	304 028	3
11	76 14111B00940	ISO 4762 - M5 x 70 - 8.8	5.5 Nm	304 030	3
13	76 14113B00940	ISO 4762 - M5 x 85 - 8.8	5.5 Nm	304 035	6
16	76 14116B00940	ISO 4762 - M6 x 100 - 8.8	9.5 Nm	304 060	6
19	76 14119B00940	ISO 4762 - M6 x 110 - 8.8	9.5 Nm	304 061	6
24	76 14124B00940	ISO 4762 - M8 x 130 - 8.8	22 Nm	304 088	6

<sup>&</sup>lt;sup>2</sup>) Max. bore with keyway JS9 as per DIN 6885, sheet 1.

Supporting keyway over entire length. Shaft ISO fitting k6. ( 1),2)

<sup>&</sup>lt;sup>3</sup>) Max. air gap referred to max. rated torque (standard).

<sup>4)</sup> Release force F (approx.) referred to max. rated torque (standard).



# CLASSIC LINE

# SPRING-APPLIED SINGLE-DISC BRAKE

Version	77 600A15 - single-disc brake (holding brake)
Standard rated voltages	24 V, 102 V, 178 V DC
Protection	IP 54 IP 55 (when installed under motor fan hood)
Thermal class	F
Rated torques	7.5 - 360 Nm
Accessories (options)	hand release feature, mounting screws

Specification subject to change without notice.
The "General technical information" and the "Operating instructions" 77 600..A15.



## Technical data

Size	Transmissible	Max. reachable transmissible torque	Max. speed	Max. switc	hing power	Max. swit-	Rated	Respons	se times	Moment of inertia	Weight
	torque range (standard)	transmissible torque	speeu	attached	built in	ching energy (Z=1)	power	on	off	hub and friction disc	
	M <sub>4</sub>	M <sub>4 max</sub>	n <sub>max</sub>	P <sub>max</sub>	P <sub>max</sub>	W <sub>max</sub>	P <sub>N</sub>	t <sub>1</sub>	t <sub>2</sub>	J	m
	[Nm]	[Nm]	[rpm]	[kJ/h]	[kJ/h]	[kJ]	[W]	[ms]	[ms]	[kgcm <sup>2</sup> ]	[kg]
10	7.5 - 15	15	5400	90	190	30	68	15	45	1.22	1.8
11	15 - 25	25	5000	125	285	41	79	20	60	1.75	2.9
13	35 - 50	55	4000	150	410	50	130	30	80	5	4.3
16	50 - 100	110	3500	175	535	58	155	50	120	14	8.6
19	120 - 200	200	3000	195	645	65	215	65	155	37.5	13.4
24	180 - 360	360	3000	240	730	80	167	110	205	87	26.5

The service life values ( $W_{tot}$ ) specified in the table refer to the maximum transmissible torque (standard).

#### Bestelldaten (Bitte bei jedem Punkt einen Eintrag)

# **ORDERING DATA** (to be fully specified) Size (10, 11, 13, 16, 19, 24) Size: Coil voltage (standard 24 V, 102 V, 178 V) 2 Voltage: \_ V DC Transmissible torque M<sub>4</sub> (standard) Size 10: 15 Nm Size 11: 25 Nm Size 13: 50 Nm Size 16: 100 Nm Size 19: 200 Nm Size 24: 360 Nm Transmissible torque M₄: \_\_ Microswitch ☐ with microswitch ☐ without microswitch (size 13 and over) ■ with microswitch and protective cover (size 16 and over)

## **HUB**

- Size (10, 11, 13, 16, 19, 24)
  - Size:
- 2 Sealing
  - ☐ with sealing ring ☐ without sealing ring

Bore diameter (standard), groove JS9 as per DIN 6885, sheet 1

**Size 10:** Ø 15, Ø 18, Ø 20 mm

Size 11: Ø 15, Ø 18, Ø 20, Ø 22 mm

Size 13: Ø 20, Ø 25, Ø 30 mm

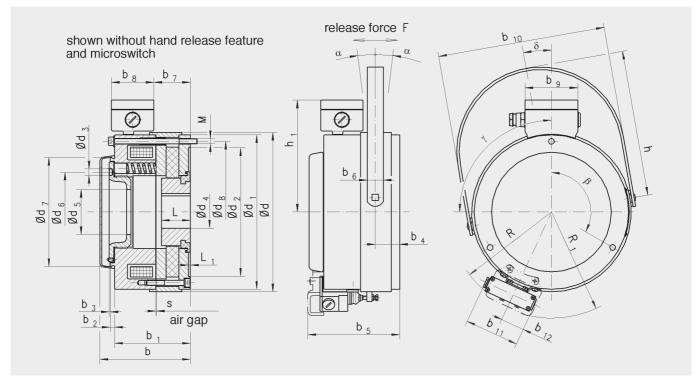
3 Size 16: Ø 24, Ø 25, Ø 30, Ø 40 mm

Size 19: Ø 30, Ø 40, Ø 45 mm

Size 24: Ø 40, Ø 42, Ø 45, Ø 50 mm

Bore diameter: \_

or pilot bore



Size	d	d <sub>1</sub>	d <sub>2</sub> (H9)	d <sub>3</sub>	d <sub>4</sub> (H7)	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub> (j7)	d <sub>8</sub>	b	b, ca.	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>	b <sub>6</sub>	b <sub>7</sub>	b <sub>8</sub>	b <sub>9</sub>
10	105	100	75	5.1	101/222	30	75	70	88	66	50	5	1.9-3.9	17.9	-	16	13	66	82
11	120	115	90	5.1	121/222	30	96	72	100	74.5	58.5	5	4.9-7	19.4	-	20	8.5	66	82
13	140	135	110	6.1	161/382)	54	104	93	120	88.5	72.5	5	4-5.5	22.2	-	20	22.5	66	82
16	175	165	140	7.1	201/452)	67	124	125	150	106	87.8	5	4.6-7.9	23.7	113.5	20	38.5	66	82
19	200	190	160	7.1	251/552)	79	124	148	170	116	98.5	5	3.7-9.6	25.5	123.5	20	48.5	66	82
24	248	240	200	10.1	301)/702)	90	150	170	220	140.5	117.5	7	3.1-5.2	34	142.5	25	57.5	66	82

Size	b <sub>10</sub>	b <sub>11</sub>	b <sub>12</sub>	h	h <sub>1</sub>	R	R <sub>1</sub>	L	L <sub>1</sub>	S	S <sub>max</sub> <sup>3)</sup>	М	F <sup>4)</sup> [N]	α	β	γ	δ
10	125.5	84	36.4	118	104	-	-	20.5	2.5	0.28 +0.2	0.65	3xM5	8	20°	3x120°	56°	180°
11	140.5	84	36.4	146	111,5	-	-	20.5	2.5	0.28 +0.2	0.75	3xM5	13	20°	3x120°	90°	0°
13	162.5	84	36.4	161	121,5	111	-	24	2.5	0.33 +0.2	0.85	6xM5	32	20°	6x60°	90°	10°
16	198	84	36.4	203	136,5	125	130	26.5	2.5	0.35 +0.2	0.95	6xM6	100	18°	6x60°	90°	10°
19	223	84	36.4	224	149	137	142	30	3	0.4 +0.2	1.05	6xM6	110	19°	6x60°	90°	10°
24	272.5	84	36.4	269	174	161	165	45	3	0.4 +0.25	1.1	6xM8	165	17°	6x60°	90°	15°

 $<sup>\</sup>ensuremath{^{\text{1}}}\xspace$  ) Min. bore with keyway JS9 as per DIN 6885, sheet 1.

## Accessories

Size	Hand release feature		Moi	unting screws	
		Screw size	Rated torque	Material number	Screws per brake
10	76 14110B00940	ISO 4762 - M5 x 60 - 8.8	5.5 Nm	304 028	3
11	76 14111B00940	ISO 4762 - M5 x 70 - 8.8	5.5 Nm	304 030	3
13	76 14113B00940	ISO 4762 - M5 x 85 - 8.8	5.5 Nm	304 035	6
16	76 14116B00940	ISO 4762 - M6 x 100 - 8.8	9.5 Nm	304 060	6
19	76 14119B00940	ISO 4762 - M6 x 110 - 8.8	9.5 Nm	304 061	6
24	76 14124B00940	ISO 4762 - M8 x 130 - 8.8	22 Nm	304 088	6

<sup>2)</sup> Max. bore with keyway JS9 as per DIN 6885, sheet 1.

Supporting keyway over entire length. Shaft ISO fitting k6. ( 1),2)

 $<sup>\</sup>ensuremath{^{\text{3}}}\xspace$  ) Max. air gap referred to max. transmissible torque (standard).

<sup>4)</sup> Release force F (approx.) referred to max. transmissible torque (standard).



# CLASSIC LINE

# SPRING-APPLIED SINGLE-DISC BRAKE

Version	77 100A00
Standard rated voltages	24 V, 102 V, 178 V DC
Protection	IP 54 IP 55 (when installed under motor fan hood)
Thermal class	F
Rated torques	17 - 800 Nm
Accessories (options)	hand release feature, mounting screws

Specification subject to change without notice. The "General technical information" and the "Operating instructions" 77 100..A00.



#### Technical data

Size	Rated	Max. reachable	Residual	Max.		witching	Max.	Rated	Respons	se times	Moment of	Weight	
	torque range (stan- dard)	rated torque	torque	speed	atta- built in ched		swit- ching energy (Z=1)	power	on	off	inertia hub and internal discs		
	M <sub>2</sub>	M <sub>2 max</sub>	M <sub>5</sub>	n <sub>max</sub>	P <sub>max</sub>	P <sub>max</sub>	W <sub>max</sub>	$P_N$	t <sub>1</sub>	t <sub>2</sub>	J	m	
	[Nm]	[Nm]	[Nm]	[rpm]	[kJ/h]	[kJ/h]	[kJ]	[W]	[ms]	[ms]	[kgcm <sup>2</sup> ]	[kg]	
13	17 - 25	27	0.05	4500	460	720	25	38	50	160	6.25	5.4	
16	25 - 50	55	0.1	3800	570	930	42	60	80	200	20	10.2	
19	50 - 100	110	0.2	3200	640	1090	67	75	100	270	40	14.8	
24	100 - 200	220	0.5	3000	700	1190	113	109	200	330	95	31.1	
25	150 - 300	330	0.7	3000	740	1210	125	109	250	350	135	32.6	
29	200 - 400	440	1	3000	1000	1700	180	185	300	480	250	58.3	
33	400 - 800	880	2	2500	1300	1980	235	230	450	600	650	93.4	

The service life values (W<sub>tot</sub>) specified in the table refer to the maximum rated torque (standard).

#### Ordering data (to be fully specified)

## SPRING-APPLIED SINGLE-DISC BRAKE Please specify requested version Size (13, 16, 19, 24, 25, 29, 33) Size: Coil voltege (standard 24 V, 102 V, 178 V) 2 V DC Voltage: \_ Rated torque M<sub>2</sub> (standard) **Size 13:** 25 Nm **Size 16:** 50 Nm Size 19: 100 Nm Size 24: 200 Nm Size 25: 300 Nm Size 29: 400 Nm Size 33: 800 Nm Rated torque M2: \_ Nm Microswitch $\ \square$ with microswitch $\ \square$ without microswitch with microswitch and protective cover (sizes 16 - 25)

# **HUB**

Size (13, 16, 19, 24, 25, 29, 33)

Size:

Sealing 2

 $\square$  with sealing ring  $\square$  without sealing ring

Bore diameter (standard), groove JS9 as per DIN 6885, sheet 1

Size 13: Ø 20, Ø 24, Ø 25, Ø 28, Ø 30 mm **Size 16:** Ø 24, Ø 25, Ø 28, Ø 30,Ø 40 mm

Size 19: Ø 30, Ø 38, Ø 40, Ø 42, Ø 45 mm

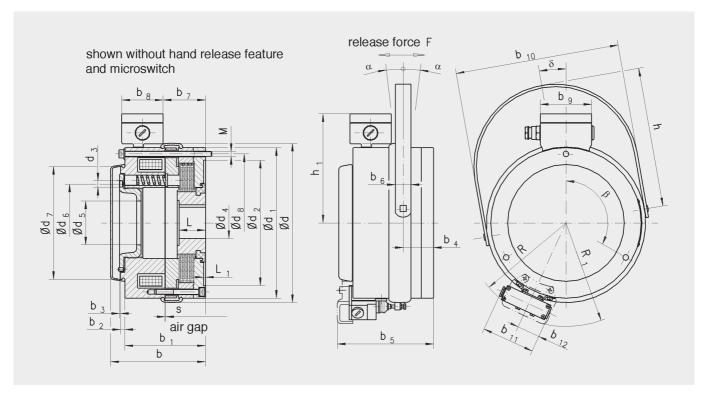
3 Size 24: Ø 40, Ø 42, Ø 45, Ø 48, Ø 50 mm

Size 25: Ø 40, Ø 42, Ø 45, Ø 48, Ø 50 mm Size 29: Ø 45, Ø 50, Ø 55, Ø 60 mm

**Size 33:** Ø 45, Ø 50, Ø 55, Ø 60 mm

Bore diameter: \_\_

or pilot bore



Size	d	d <sub>1</sub>	d <sub>2</sub> (H9)	d <sub>3</sub>	d <sub>4</sub> (H7)	d <sub>5</sub>	d <sub>6</sub>	d <sub>7</sub> (j7)	d <sub>8</sub>	b ca.	b <sub>1</sub>	b <sub>2</sub>	b <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>	b <sub>6</sub>	b <sub>7</sub>	b <sub>8</sub>	b <sub>9</sub>
13	146	135	110	6.1	12 <sup>1)</sup> /35 <sup>2)</sup>	54	75	93	120	90	73.5	5	3.0-4.6	27.5	1	20	23.5	66	82
16	178	165	140	7.1	201/452	67	96	125	150	108	90	5	2.4-4.6	32	115	20	40	66	82
19	204	190	160	7.1	251/552)	79	104	148	170	120	102	5	3.8-5.6	35.5	127	20	52	66	82
24	258	240	200	10.1	301)/752)	90	124	170	220	143	120	7	2.8-5.2	39.5	145	25	59	66	82
25	258	240	200	10.1	301)/752)	90	124	170	220	151	128	7	3.1-5.0	48	153	25	67	66	82
29	315	290	240	10.1	351/852	100	150	210¹)	267	177	155	8	1.4-3.4	53	-	30	89	66	82
33	356	330	275	10.1	401/952	115	165	2251)	300	202	179	8	1.9-4.1	60.5	-	30	112	66	82

Size	b <sub>10</sub>	b <sub>11</sub>	b <sub>12</sub>	h	h <sub>1</sub>	R	R <sub>1</sub>	L	L <sub>1</sub>	s	S <sub>max</sub> <sup>3)</sup>	М	F 4) [N]	α	β	δ
13	155	84	36.5	161	121,5	111	-	25	2.5	0.5 +0.2	1	6xM5	15	16°	6x60°	10°
16	187	84	36.5	203	136,5	125	130	28	2.5	0.6 +0.2	1.7	6xM6	40	15°	6x60°	10°
19	216	84	36.5	224	149	137	142	31	3	0.6 +0.3	1.7	6xM6	50	16°	6x60°	10°
24	166	84	36.5	269	174	161	165	45	3	0.7 +0.3	1.8	6xM8	55	20°	6x60°	10°
25	166	84	36.5	269	174	161	165	45	3	0.9 +0.3	1.8	6xM8	55	20°	6x60°	10°
29	316	84	36.5	328	199	186	-	52	5	1.1 +0.3	2.3	6xM10	90	21°	6x60°	10°
33	358	84	36.5	377	219	205	-	58	5	1.1 +0.3	2.5	6xM12	180	22°	6x60°	10°

 $<sup>^{\</sup>mbox{\tiny 1}}\mbox{)}$  Min. bore with keyway JS9 as per DIN 6885, sheet 1.

## Accessories

Size	Hand release feature	Mounting screws										
		Screw size	Rated torque	Material number	Screws per brake							
13	71 10113E00940	ISO 4762 - M5 x 85 - 8.8	4 Nm	304 035	6							
16	71 10116E00940	ISO 4762 - M6 x 100 - 8.8	8 Nm	304 060	6							
19	71 10119E00940	ISO 4762 - M6 x 120 - 8.8	8 Nm	304 062	6							
24	71 10124E00940	ISO 4762 - M8 x 130 - 8.8	12 Nm	304 088	6							
25	71 10124E00940	ISO 4762 - M8 x 140 - 8.8	12 Nm	304 090	6							
29	71 10129E00940	ISO 4762 - M10 x 170 - 8.8	18 Nm	304 123	6							
33	71 10133E00940	ISO 4762 - M12 x 200 - 8.8	28 Nm	304 150	6							

<sup>&</sup>lt;sup>2</sup>) Max. bore with keyway JS9 as per DIN 6885, sheet 1.

Supporting keyway over entire length. Shaft ISO fitting k6. (1),2)

 $<sup>\</sup>ensuremath{^{\text{3}}}\xspace$  ) Max. air gap referred to max. transmissible torque (standard).

<sup>4)</sup> Release force F (approx.) referred to max. transmissible torque (standard).