

Type 73 43111H00
with Static Friction Plate,
Hub, Manual Release

Spring Set / Fail Safe
Single Disc Brake
AC 3-Phase Operated

This Single Disc Brake is a spring applied and electromagnetically released unit which provides fail safe operating characteristics, such that on interruption or failure of power supply the brake will engage and arrest the load. The brake is a multi coil unit wired for connection in parallel to 3-Phase AC Motor. Manual Release available as accessory.

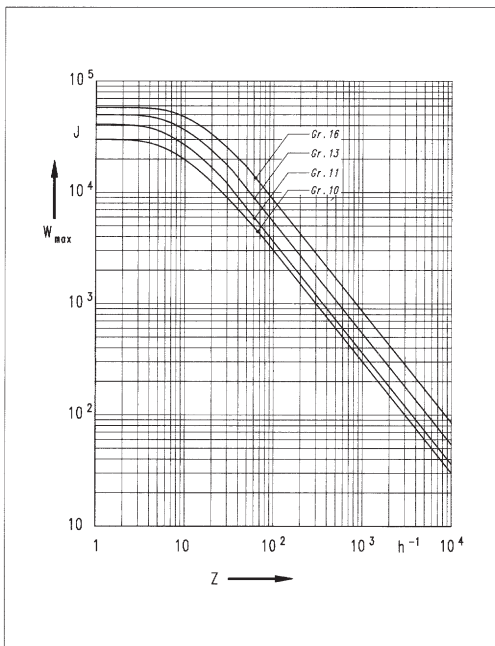
The brake is manufactured and tested to VDE 0580. For application information refer to Operating Instructions Type 73 431 . . H / Type 73 441 . . H.

Standard Voltage:
400 V 3 ~ 50 Hz. Other voltages available at extra cost.

Protection: IP44

Insulation Class: F

All data subject to change without notice.



Permissible Frictional Work per Engagement W_{max} related to Number of Operations per Hour Z .
With $n = 1500$ r. p. m.

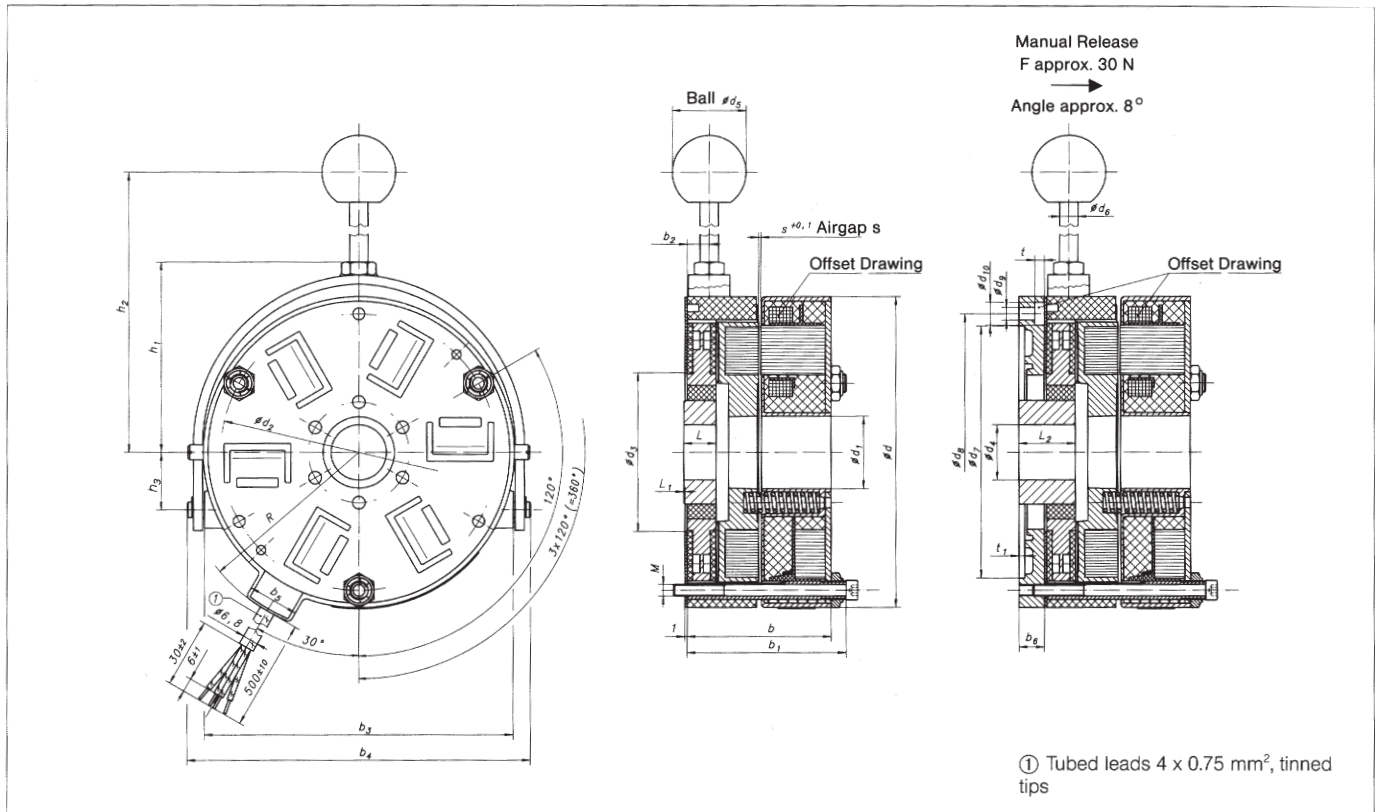
Technical Data

Size	Rated Torque	Max. Speed	Thermal Capacity	Rated Power	Time Connecting	Time Separation	Inertia Hub and Friction Disc J kgcm ²	Weight Type 73 431	Type 73 441
	M_2 ($n = 315$ r. p. m.) Nm	n_{max} r. p. m.	P_{max} kJ/h	P_n W	t_1 ms	t_2 ms		m	m
								kg	kg
10	7.5	5400	300	80	7	5	1.22	1.3	1.4
11	15	5400	360	100	8	5	1.75	1.9	2.2
13	35	4000	540	230	11	6	5	3	3.3
16	75	3500	850	480	12	7	14	5.6	6.2

The coupling times t_i refer to separately connected brakes at operating temperature, at rated voltage and with

nominal airgap. If the brake is connected in parallel to a 3-phase motor t_i will be 5 times the listed values.

73 431 . . H / 73 441 . . H Dimensions (mm)



Type 73 431 . . H00

Type 73 441 . . H00

① Tubed leads 4 x 0.75 mm², tinned tips

Brake Dimensions (mm)

Sz.	d	d ₁	d ₂	d ₃	d ₄ (H7)	d ₅	d ₆	d ₇ (H9)	d ₈	d ₉	d ₁₀	b	b ₁	b ₂	b ₃	b ₄	b ₅	b ₆	h ₁	h ₂	h ₃	t	t ₁	R	L	L ₁	L ₂	s	s _{max} ⁴⁾	M	F N
10	100	23	88	42	10 ¹⁾ /10 ²⁾ /22 ³⁾	32	8	75	88	5.5	10	49	56.5	8.5	99	105	22	8	63	115	25	4.2	2.5	62	13	0..1	20.5	0.25	0.6	3xM5	ca. 60
11	115	22.5	100	42	13 ¹⁾ /13 ²⁾ /22 ³⁾	32	8	90	100	5.5	10	54.5	62	9	112	118	22	9	70	122	25	4.2	2.5	68.5	13	0..1	22	0.25	0.6	3xM5	ca.100
13	135	31	120	67	18 ¹⁾ /22 ²⁾ /38 ³⁾	32	8	110	120	5.5	10	61.5	69	9.5	134	141.5	22	11	84	135	25	4.2	2.5	79.5	14	0..1	24.5	0.25	0.6	3xM5	ca.170
16	165	46	150	78	23 ¹⁾ /30 ²⁾ /44 ³⁾	32	8	140	150	6.5	11	74.5	83	11.5	163	170.5	22	10.5	99	150	25	4.5	2.5	94	17	0..1	26.7	0.3	0.6	3xM6	ca.220

¹⁾ Min. bore Type 73 441 . . H00.
Keyway to DIN 6885 Page 1 (ISO R 773), tolerance JS 9.

²⁾ Min. bore Type 73 431 . . H00.
Keyway to DIN 6885 Page 1 (ISO R 773), tolerance JS 9.

³⁾ Max. bore Keyway to DIN 6885
Page 1 (ISO R 773), tolerance JS 9.
Key carrying over total length. Shaft
ISO-fit k 6 at ¹⁾, ²⁾, ³⁾.

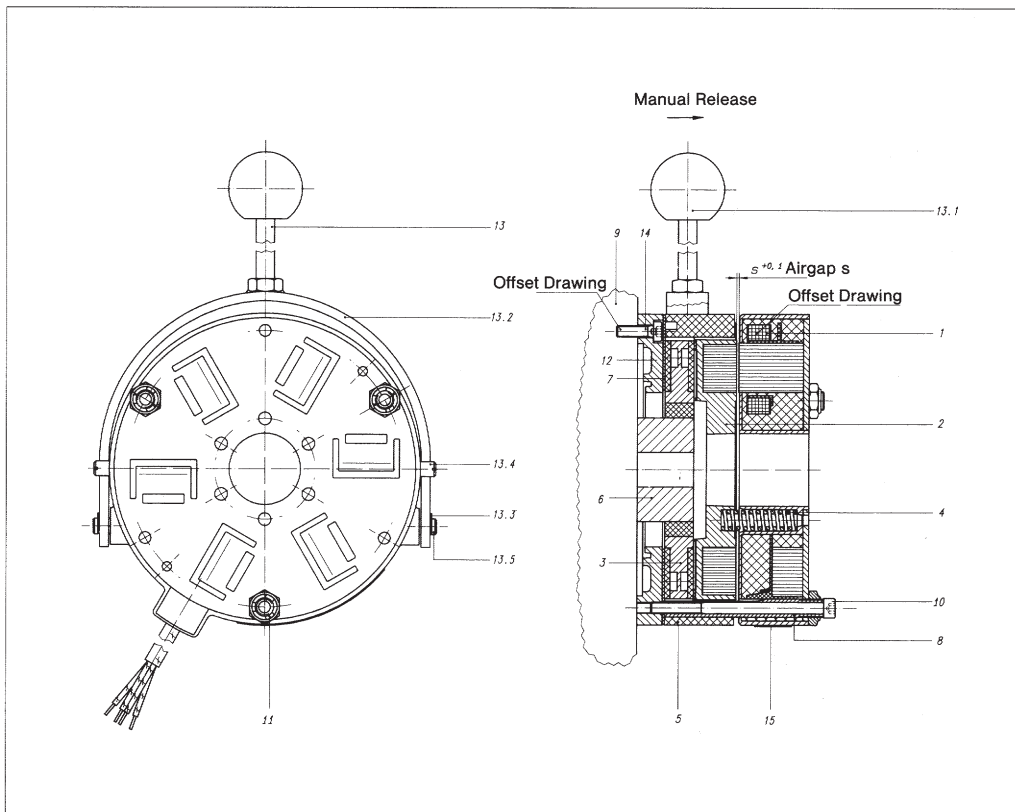
⁴⁾ Max. airgap until resetting or
replacement of friction disc.

Accessories

Size	Static Friction Plate Corrosion Protected		Manual Release	Mounting Screws Screw	Tightening Torque	Ordering No.	Pieces per brake
	Unprotected						
10	73 43110A01001	73 44110A00001	73 43110A00940	DIN 912 - M5 x 65 - 8.8	6 Nm	304 029	3
11	73 43111A01001	73 44111A00001	73 43111A00940	DIN 912 - M5 x 70 - 8.8	6 Nm	304 030	3
13	73 43113A01001	73 44113D00001	73 43113A00940	DIN 912 - M5 x 75 - 8.8 ⁵⁾	6 Nm	304 031	3
16	73 43116A01001	73 44116A00001	73 43116A00940	DIN 912 - M6 x 90 - 8.8	10 Nm	304 058	3

⁵⁾ DIN 912 - M5 x 80 - 8.8 required if
motor endshield made of Al.

**Spring Set / Fail Safe
 Single Disc Brake**



- 1 Magnet System
- 2 Armature
- 3 Friction Disc
- 4 Pressure Spring
- 5 Spacer Ring
- 6 Hub
- 7 Static Friction Plate (Accessory)
- 8 Sleeve
- 9 Motor Face
- 10 Mounting Screw (Accessory)
- 11 Hex. Nut
- 12 Flange (Type 73 441 . . H only)
- 13 Manual Release (Accessory)
- 13.1 Ball
- 13.2 Stirrup
- 13.3 Retainer Washer
- 13.4 Faucet Screw
- 13.5 Bolt
- 14 Cylinder-head Screw (Type 73 441 . . H only, not supplied)
- 15 Name Plate

Design and Function

The brake comprises of the Magnet System (1) which is guided by the Sleeves (8). The Armature (2) is held in the Spacer Ring (5). The gap between Spacer Ring (5) and Magnet System (1) is maintained by the Pressure Springs (4). Armature and Magnet System therefore represent a complete unit.

With Type 73 431 . . H the motor face can be utilized as friction surface provided that the material is Steel or Cast Iron. Otherwise the Static Friction Plate (7) must be used.

Braking is achieved by the Pressure Springs (4) moving the Armature (2) axially to grip the rotatable Friction Disc (3) which meshes with the Hub (6) between the Motor Face (9) if Type 73 341 . . H or the Flange (12) if Type 73 441 . . H, thus stopping the motor shaft via the brake hub. The brake is released by energisation of the Magnet System, which builds up a magnet field that retracts the armature against the force of the pressure springs

thus freeing the friction disc. In operation the brake does not produce any axial load onto the motor shaft.

Assembly

The brake comes pre-assembled. Hub (6), Static Friction Plate (7) if required and Mounting Screws (10) are separate items.

The mounting surface (either flange or motor face) must comply with the following specifications:

- axial run out with regard to the shaft < 0.1 mm (measuring radius = hole circle radius)
 - surface roughness max. R_z 16
 - surface hardness min. 100 HB
 - material steel or cast iron, otherwise Static Friction Disc (7) must be used
 - absolutely free of oil or grease
 - good thermal dissipation
- If brake is mounted without Static Friction Disc a recess to 1.5 mm with the diameter d₃ as indicated in Product Specification Type 73 341 . . H / 73 441 . . H is to be provided.

Before mounting Brake Type 73 441 . . H assemble Flange (12) to Motor Face (9) using Screws (14) and secure with Loctite 241. To centralize brake we recommend limit e9 for the spigot (limit on Flange (12) is H9). To assemble brake key Hub (6) to prepared motor shaft and locate axially by collar or circlip. When using brake Type 73 431 dimension L₁ for protrusion between Hub (6) and Friction Disc (3) is to be taken from Product Specification Type 73 431 . . H / 73 441 . . H. Place Static Friction Plate (7) (if required) and Friction Disc (3) in position over hub. Put Mounting Screws (10) through Sleeves (8) and fix the pre-assembled unit to the Flange (12) or the Motor Face (9). Take care not to exceed the tightening torque as indicated in Product Specification Type 73 341 . . H / 73 441 . . H. Connect brake taking care of correct voltage as indicated on Name Plate (15).

Setting the Rated Torque

Since brake comes pre-assembled there is no need to set the airgap. But the Rated Torque can be adjusted by removing 1 or more of the Pressure Springs (4), see table below. To do this the Hex. Nuts (11) are to be unscrewed and the whole unit to be dismantled.

Number of built springs	Rated Torque M ₂ %
6	100
5	83
4	67
3	50
2	33

73 431 . . H / 73 441 . . H

Manual Release

Before mounting Manual Release (11) make sure that fan cowl of motor or any other cover has an opening for Handle (11.1). Release Force F is shown in Product Specification Type 73 341 . . A.
Drive Bolts (13.5) into Spacer Ring (5). Screw Faucet Screws (13.4) into Armature (2) and secure with Loctite 648. Pull Stirrup (13.2) over Spacer Ring (5) and snap onto Bolts (13.5). Secure Stirrup (13.2) with Retainer Washers (13.3)

Important: With the Manual Release installed the Fail Safe Function of the brake may be eliminated, because pushing the lever of the Manual Release intentionally or unintentionally will offset the braking force.

Maintenance

Periodically check Airgap s with a feeler gauge. If equal to or more than s_{\max} (see Product Specification Type 73 431 . . H / 73 441 . . H) readjust airgap. To do this loosen Mounting Screws (10) and turn Hx. Nuts (11) clockwise (90° alters airgap by 0.25 mm) to set Airgap s to nominal value (see Product Specification Type 73 431 . . H / 73 441 . . H).
Recheck Airgap s with feeler gauge, then tighten Mounting Screws (10). Take care not exceed the tightening torque as indicated in Product Specification 73 431 . . H / 73 441 . . H.
For all brake sizes the maximum number of airgap adjustments is 5, the maximum wear of the Friction Disc (3) is 2 mm. After that the Friction Disc (3) is to be replaced. For doing this the Hex. Nuts (11) must be turned back to just before the end of the Sleeves (8). After the replacement the Airgap s must be readjusted.

Electrical Connection

The brake may be connected in different ways:

- independent from motor
- 3 phases in parallel to motor
- 2 phases in parallel to motor
- 1 phase and star-point in parallel to motor

If the brake is connected independently or if the load causes a quick stop of the motor short Connecting Times t_1 may be expected because of not occurring motor generator voltage. In this case the load adds to the braking torque. Under such working conditions it is required to sufficiently dimension all transmission parts (heavy duty material of hub, keys, shaft, etc.). For the same reason the Friction Disc (3) is armored with heavy duty light metal and around the inner square coated with a damping material. By this means peaks of torque will be suppressed or in the most critical case be limited to about twice the braking torque.

Kendrion Binder Magnete GmbH

Mönchweilerstraße 1
D-78048 Villingen-Schwenningen
P.O.Box 1220 (Postal code 78002)
Telephone +49 / 77 21 / 877-0
Telefax +49 / 77 21 / 877 359