

POWER > SPEED > TORQUE

Spring-applied brake INTORQ BFK458

The versatile modular system 1.1 – 443 lb-ft





setting the standard

POWER > SPEED > TORQUE

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INTORQ BFK458 – The modular system

Our modular system forms the basis for a product range that offers versions tailored for almost any task. The BFK458 spring-applied brake, as a standard product, can be used anywhere, but its modular structure also meets the requirements of specific industries. Its strength lies in its versatility.

Electromagnetically released spring-applied brakes are used wherever masses in motion have to be decelerated as quickly as possible or where masses must be held in a defined position. The braking force is applied by compression springs. Thus the braking torque generated by friction locking remains available in the deenergized status – even in the event of mains failure.

The INTORQ BFK458 range replaces the 14.448/14.449 and 14.450 models of spring-applied brake. The main components of the modular system are the two basic modules E (adjustable braking torque) and N (braking torque not adjustable). The greatest degree of flexibility is achieved for a broad range of applications by the combination of the basic module with specific modules. This catalog is intended to help you to select and order the spring-applied brake you require quickly and easily.

The modular system for all applications

- Brake motors
- Wind power stations
- Crane construction
- Storage technology
- Industrial trucks
- Woodworking machines
- Electric trucks
- Gate drives
- Escalators
- Automation technology
- Variable speed drives

NEW: LongLife design INTORQ BFK458-L

In high-cycle applications, spring-applied brakes are subject to two kinds of stress. Due to the large number of load alternations, the service life of the brake is determined both by the mechanical components of the brake itself and the lifespan of the rotor, which is based on friction energy. In particular, the rotor/hub connection, the springs, and the sleeve bolts are subject to wear due to the number of load cycles. Based on the components mentioned, without additional measures the service life of spring-applied brakes is limited to 1×10^6 to 4×10^6 load cycles depending on the load. The new LongLife design guarantees a service life of the brake mechanism at least 10×10^6 switching cycles.

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List of abbreviations

Р	[hp]	Drive power	t3	[sec]	Slipping time
Mĸ	[lb-ft]	Rated torque of brake			(time during which a relative motion
ML	[lb-ft]	Load torque			occurs between the input and output,
M _{erf}	[lb-ft]	Required braking torque			with brake applied)
Ma	[lb-ft]	Deceleration torque	t ₁₁	[sec]	Delay time
Δn ₀	[rpm]	Initial relative speed of the brake			(time from disconnecting the voltage until
JL	[lb-ft ²]	Moment of inertia of all			the torque begins to rise)
		driven parts, referred to the shaft	t ₁₂	[sec]	Rise time of braking torque
		to be braked	QE	[Wsec]	Maximum permissible switching energy
t ₁	[sec]	Engagement time, $t_1 = t_{11} + t_{12}$			at single switching operation
t ₂	[sec]	Disengagement time (time from the	S _f	[h ⁻¹]	Transitional-switching frequency
		beginning of the torque drop until 0.1 M_K is reached)	S _{air gap}		Rated air gap

INTORQ BFK458-DDD product key



Sizes

06, 08, 10, 12, 14, 16, 18, 20, 25

Stator design

- E Adjustable (braking torque can be reduced using torque adjustment ring)
- N Non-adjustable
- L Non-adjustable, LongLife design

Not coded: Supply voltage, hub bore, Options



INTORQ 155-1

Product information



A powerful and complete range

- 9 sizes
- Standard voltages 24 V, 96 V, 103 V, 170 V, 180 V, 190 V, 205 V
- Graduated torque range from 1.1 443 lb-ft
- Customised logistics enabling short delivery times to be achieved despite wide product variety
- Degree of protection up to IP55 equivalent, dependent on the brake equipment and the installation conditions
- ATEX:

The product is suitable for use in potentially explosive atmospheres in zone II for stationary operation (holding or parking brake), explosion group II and temperature class T4.

Versatile

- Modular structure for virtually all applications
- Interchangeable with brake models 14.448 and 14.449

Torque transmission

- Designed for dry running
- Special machining of the friction surfaces ensures that the rated torques are achieved after just a small number of switching operations

Quick and easy installation

- Preset air gap
- No fixed bearing required on the brake

Durable

- The insulation system to temperature class F (311°F) ensures that the winding has a long service life
- These brakes are designed for 100% duty time (current applied to the brake)

Low maintenance

- Long rotor/hub connection with low rate of wear and a tried-and-tested involute gear
- Asbestos-free friction linings with low rate of wear
- Air gap must be checked dependent of the friction energy used

Reliable

- The quality assurance system is certified to ISO 9001 and ISO 14001 and provides the basis for consistently high-quality products
- Production and testing to VDE 0580

Options

- Manual release for all sizes, both directions can be used for release and mounting (one exception is the tacho brake)
- Noise-reduced design
- Various types of corrosion protection and enclosures
- Microswitches used to monitor air gap and wear (size 12 and above)
- Monitoring of manual release function (page 19)
- Non-standard voltages and bores on request

Temperature-resistant to -40°F

- Use of chrome-plated friction surfaces (armature plate and flange)
- Use of temperature-resistant fixing screws essential
- This design is compatible for use in conjunction with the noise-reduced rotor (rotor with plastic sleeve).



NEW: LongLife design INTORQ BFK458-L

Characteristics

- Armature plate with low backlash and reinforced torque support
- Compression springs with guide pins for protection against shearing forces
- Aluminum rotor with toothed intermediate ring: Both the friction lining and the tooth system have a low rate of wear

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Principle of operation



INTORQ BFK458 spring-applied brakes are single-disc brakes with two friction surfaces. With no voltage applied to the brake, several compression springs are used to generate the braking torque through friction locking. The brake is released electromagnetically. During braking, the compression springs use the armature plate to press the rotor (which can be shifted axially on the hub) against the counter friction face. When the brakes are applied, an air gap is present between the armature plate and the stator. The stator's coil is energised with DC voltage in order to release the brake. The resulting magnetic flux works against the spring pressure to draw the armature plate over the air gap to the stator. The spring pressure exerted on the rotor is thereby released and it can rotate freely.

The E design features a torque adjustment ring which customers can use to adjust the braking torque.



LongLife spring-applied brakes INTORQ BFK458- □ □ L in materials handling technology



INTOR

Braking torques

The basic modules E and N are available in the graduated torques listed below. At low torques the use of a brass shim inserted between the stator and armature plate is required in order to achieve short operating times. INTORQ brakes are designed to reach the specified rated torques by the end of a short run-in cycle in the majority of cases. However, the variable properties of the organic friction linings used, coupled with changing ambient conditions, mean that the specified braking torques may not always be achieved. Therefore, a certain amount of contingency (safety factor) should be included when dimensioning brakes. In particular, there may be an increase in breakaway torque following long idle times when conditions are humid and where there are fluctuations in temperature. The braking torque must be checked if the brake is being used on friction surfaces provided by the customer. If the brake is being used solely as a holding brake without any dynamic load, the friction lining must be reactivated regularly.

Size	06	08	10	12	14	16	18	20	25
								59 E	
	1.1 E	2.6 N/E			18 N/E	26 N/E	48 N/E	85 N/E	129 N/E
	1.5 N/E	2.9 E	5.2 N/E	10 N/E	26 N	33 N/E	59 N/E	107 N/E	162 N
	1.8 N/E	3.7 N/E	6.7 N/E	13 N/E	30 N/E	41 N/E	74 N/E	125 N/E	195 N/E
	2.3 N/E	4.4 N/E	8.1 N/E	17 N/E	33 N/E	44 N/E	85 N/E	148 N/E	221 N/E
Characteristic torques [lb-ft],	2.6 N/E	5.2 N/E	10 N/E	20 N/E	41 N/E	52 N/E	96 N/E	169 N/E	258 N/E
related to the relative speed $\Delta n = 100 \text{ rpm}$	2.9 N/E	5.9 N/E	12 N/E	24 N/E	44 N/E	59 N/E	111 N/E	192 N/E	295 N/E
	3.3 N/E	6.6 N/E	13 N/E	27 N/E	48 N/E	66 N/E	122 N/E	214 N/E	328 N/E
	3.7 E	7.4 E	15 E	30 E	55 N/E	74 N/E	136 N/E	232 N/E	361 N/E
	4.1 E	8.1 E	17 N/E	34 N/E	59 N/E	77 N/E	148 N/E	255 N/E	391 N/E
	4.4 N/E	8.8 N/E				92 N/E	173 N/E	295 N/E	443 N/E

N ... Braking torque for design N (without torque adjustment ring)

E ... Braking torque for design E (with torque adjustment ring)

_____ Service brake

(s_{air gap max} approximately 2.5 x s_{air gap})

Standard braking torque

Holding brake with emergency stop (s_{air gap max} approximately 1.5 x s_{air gap})

Brake module E, reduced braking torque

The braking torque on brake module E can be reduced using the torque adjustment ring located in the stator. The torque adjustment ring can be unscrewed to a maximum dimension of h_{1max} (see table on page 10).

NEW: LongLife BFK458-L

Designs

- Sizes 06, 08, 10, 12
- Stator in line with the "N design"
- Braking torques up to standard torque available according to the catalog
- Low braking torques also configurable without pole shim
- Microswitches not configurable
- Rear face bores and built-on rear face accessories not possible

It should be noted that the engagement and disengagement times change in accordance with the braking torque. Torque reduction is independent of the rated torque used.

Size	06	08	10	12	14	16	18	20	25
Torque reduction per detent position [lb-ft]	0.15	0.26	0.59	0.96	1.3	1.2	2.7	4.1	4.6

Brake module E/N + flange + manual release





Thickness of friction plate: 0.06 in (sizes 06-16)

Size	b	d ^{J7 1)} spec.	d ^{H7 2)} max	d ₁	d ₂	d ₃ H7	d5	d _{6j7}	d7	d ₈	d9 ^{H8}	d ₁₀	d ₁₁	d ₁₂	d ₁₃	d ₁₄ 3)	d ₁₅ 3)	d ₁₆	di	da
06	3.46	3/8	5/8	3xM4	2.83	0.98	3.58	3.43	3.43	2.05	0.94	1.22	0.315	0.511	0.378	4xM4	1.48	3x0.177	1.57	2.36
08	4.19	3/8	3/4	3xM5	3.54	1.26	4.29	4.13	4.13	2.36	1.02	1.61	0.315	0.511	0.378	4xM5	1.93	3x0.217	1.85	3.03
10	5.20	3/8	3/4	3xM6	4.41	1.65	5.28	5.12	5.12	2.68	1.38	1.77	0.394	0.512	0.472	4xM5	2.13	3x0.260	2.60	3.74
12	5.98	9/16	1	3xM6	5.20	1.97	6.10	5.91	5.91	3.23	1.57	2.05	0.394	0.512	0.472	4xM5	2.52	3x0.260	2.76	4.53
14	6.65	9/16	1 1/8	3xM8	5.71	2.36	6.65	6.50	6.50	3.62	2.05	2.17	0.472	0.945	0.551	4xM6	2.95	3x0.354	3.15	4.88
16	7.66	5/8	1 3/8	3xM8	6.69	2.68	7.68	7.48	7.48	402	2.05	2.76	0.472	0.945	0.551	4xM6	3.35	3x0.354	4.09	5.87
18	8.74	3/4	1 3/4	6xM8	7.72	2.95	8.74	8.54	8.54	4.57	2.44	3.03	0.551	0.945	0.610	4xM8	3.74	4x0.354 ⁴⁾	5.08	6.85
20	10.2	1	2	6xM10	9.06	3.35	10.2	10	10	5.31	2.83	3.54	0.551	0.945	0.650	4xM10	4.33	4x0.433 ⁴⁾	5.83	8.11
25	11.9	1 1/8	2 1/2	6xM10	10.9	4.53	12.1	11.9	11.9	6.50	3.35	4.72	0.630	0.945	0.724	4xM10	5.51	6x0.433	7.83	10

1) pre-drilled without keyway
 2) Standard keyway in accordance with DIN 6885/1 P9, selection of the shaft diameter depending on the type of loading (see Operating Instructions)

³⁾ Bores are made on customer request for sizes 06-12

⁴⁾ The thread in the mounting surface is offset by 30° in relation to the center axle of the manual release lever

Dimensions in inches

Size	h	h ₁ min.	h ₁ max.	h2	h3	h4	h₅ standard	h ₅₋ 7) max.	h _ó	h7	h ₈	h9	I	I1 ⁵⁾	Slü	α	β ⁶⁾
06	1.43	1.55	1.70	0.039	0.236	0.622	4.21	-	2.15	0.906	1.29	2.22	0.709	16	0.0079	25°	12°
08	1.69	1.84	2.00	0.059	0.276	0.642	4.57	-	2.48	0.906	1.63	2.56	0.787	16	0.0079	25°	10°
10	1.91	2.06	2.20	0.079	0.354	1.08	5.20	-	2.91	0.906	1.67	3.06	0.787	16	0.0079	25°	9°
12	2.16	2.32	2.66	0.079	0.354	1.16	6.34	-	3.35	0.906	1.87	3.48	0.984	16	0.0118	25°	10°
14	2.61	2.81	3.04	0.079	0.433	1.30	7.68	-	3.86	1.26	1.97	4.00	1.18	16	0.0118	25°	9°
16	2.85	3.05	3.37	0.089	0.433	1.48	9.45	-	4.49	1.26	2.11	4.57	1.18	24	0.0118	25°	10°
18	3.27	3.51	3.82	0.108	0.433	1.62	11.0	15.5	4.88	1.26	2.33	5.06	1.38	24	0.0157	25°	9°
20	3.84	4.12	4.51	0.138	0.433	1.87	12.6	16.4	5.75	1.26	2.70	5.89	1.57	24	0.0157	25°	10°
25	4.20	4.56	5.03	0.177	0.492	2.27	17.5	19.7	6.69	1.26	3.49	6.91	1.97	24	0.0197	25°	10°

■ ⁵⁾ Length of the connecting cable

6) Manual release angle tolerance +3°

⁷⁾ Recommended lever length for 1.5 M_K Recommended ISO shaft tolerances: up to Ø 2 inches = k6

over Ø 2 inches = m6

INTORQ

Brake module N + centering flange

Brake suitable for mounting a speed or microswitch



Size	h	h ₁	h ₂	d ^{H7} max.	d ₁ 1)	d ₂	d ₃	d ₄ 4)	d ₅ H7	d ₆ H7	d7 ^{H7}	d ₈	di	da	I	1 ₁ 2)	I ₂	S _{air gap}
06	1.67	1.43	0.276	5/8	3xM4	2.83	1.48	4xM4	0.984	3.74	1.57	3.86	1.57	2.36	0.709	15.7	0.079	0.0079
08	1.96	1.69	0.335	3/4	3xM5	3.54	1.93	4xM5	1.26	4.53	1.97	4.57	1.85	3.03	0.787	15.7	0.079	0.0079
10	2.26	1.91	0.433	3/4	3xM6	4.41	2.13	4xM5	1.65	5.51	2.36	5.55	2.60	3.74	0.787	15.7	0.079	0.0079
12	2.52	2.16	0.433	1	3xM6	5.20	2.52	4xM5	1.97	6.38	2.36	6.50	2.76	4.53	0.984	15.7	0.079	0.0118
14	3.01	2.61	0.511	1 1/8	3xM8	5.71	2.95	4xM6	2.36	6.97	3.15	7.13	3.15	4.88	1.18	15.7	0.079	0.0118
16	3.29	2.85	0.522	1 1/2	3xM8	6.69	3.35	4xM6	2.68	8.03	3.35	8.11	4.09	5.87	1.18	23.6	0.079	0.0118
18	3.70	3.27	0.541	1 3/4	6×M8	7.72	3.74	4xM8	2.95	9.17	3.54	933	5.08	6.85	1.38	23.6	0.079	0.0154
20	4.28	3.84	0.571	2	6xM10	9.06	4.33	4xM10	3.35	10.7	3.54	10.8	5.83	8.11	1.57	23.6	0.079	0.0154
25	4.65	4.20	0.669	2 3/4	6xM10	10.9	5.51	4xM10	4.53	12.7	4.72	12.8	7.83	10	1.97	23.6	0.079	0.0197

¹⁾ Use DIN 6912 fixing screws

²⁾ Cable length

³⁾ Manual release can be mounted as an option, as shown on right of page 10

⁴⁾ Bores are made on customer request for sizes 06–12

Dimensions in inches





Brake module N + connection flange + brake module N

Double brake (double braking torque) suitable for use in applications where redundant braking systems are required.



Size	d ^{H7} max.	d ₁	d ₂	d₅ ^{H7}	d _{6j7}	di	da	н	h	h ₁	h ₂	h ₃	I	I ₁ 1)	I ₂	S _{air gap}
06	5/8	3xM4	2.83	0.984	3.43	1.57	2.36	3.33	1.43	0.472	0.039	1.9	0.709	15.7	0.343	0.0079
08	3/4	3xM5	3.54	1.26	4.13	1.85	3.03	3.84	1.69	0.472	0.059	2.16	0.787	15.7	0.386	0.0079
10	3/4	3xM6	4.41	1.65	5.12	2.60	3.74	4.32	1.91	0.511	0.079	2.42	0.787	15.7	0.500	0.0079
12	1	3xM6	5.20	1.97	5.91	2.76	4.53	4.95	2.16	0.630	0.079	2.79	0.984	15.7	0.516	0.0118
14	1 1/8	3xM8	5.71	2.36	6.50	3.15	4.88	5.83	2.58	0.669	0.079	3.25	1.18	15.7	0.516	0.0118
16	1 1/2	3xM8	6.69	2.68	7.48	4.09	5.87	6.50	2.85	0.787	0.089	3.64	1.18	23.6	0.646	0.0118
18	1 3/4	6xM8	7.72	2.95	8.54	5.08	6.85	7.33	3.27	0.787	0.108	4.06	1.38	23.6	0.689	0.0154
20	2	6xM10	9.06	3.35	10.0	5.83	8.11	8.47	3.84	0.787	0.138	4.63	1.57	23.6	0.701	0.0154
25	2 3/4	6xM10	10.9	4.53	11.9	7.83	10.0	9.39	4.20	0.984	0.177	5.15	1.97	23.6	0.846	0.0197

¹⁾ Cable length

Manual release as an option

Rotor with plastic sleeve

The rotor with plastic sleeve offers numerous advantages and reduces rattling noise in the rotor/hub connection. The tried-and-tested involute gear, which has been proving its worth for many years, safeguards the stability of the rotor/hub connection. The plastic sleeve reduces backlash, thereby increasing the service life of the brake.

Dimensions in inches

Features and advantages

- Low-backlash power transmission between shaft and rotor
- Long service life thanks to involute gear and long rotor neck
- Low wear between rotor and hub thanks to low backlash
- Recommended for frequency inverter operation
- Noise-reduced design



Rated data

Size	P ¹⁾ [68 °F]	s _{air gap max} service brake	s _{air gap max} holding brake	max. adjustment	min. ²⁾ rotor thickness	Jplastic rotor	J _{aluminum} rotor	Mass of stator
	[W]	[in]	[in]	[in]	[in]	[lb-in ²]	[lb-in ²]	assy [lb]
06	20	0.0197	0.0118	0.0591	0.1772	0.0376	0.0513	1.65
08	25	0.0197	0.0118	0.0591	0.2165	0.1162	0.2084	2.65
10	30	0.0197	0.0118	0.0591	0.2953	-	0.6834	4.63
12	40	0.0295	0.0177	0.0787	0.3150	-	1.5377	7.72
14	50	0.0295	0.0177	0.0984	0.2953	-	2.1527	11.5
16	55	0.0295	0.0177	0.1378	0.3150	-	5.1255	17.4
18	85	0.0394	0.0236	0.1181	0.3937	-	9.9093	26.5
20	100	0.0394	0.0236	0.1575	0.4724	-	24.944	42.5
25	110	0.0492	0.0295	0.1772	0.6102	-	68.340	64.2

 $^{\rm I}$) Coil power at 68 °F in W, possible deviation up to +1 0%, depending on supply voltage selected

²⁾ The friction lining is dimensioned so that the brake can be readjusted at least five times.

Braking torques, depending on speed and permissible

limit speeds

Size	Average braking torque on braking off Δn_0 to a standstill	braking torque at [%]	Δ _{n0} [rpm]		max. speed Δn _{0max}
	[%]	1500	3000	max.	[rpm]
06	100	87	80	74	6000
08	100	85	78	73	5000
10	100	83	76	73	4000
12	100	81	74	73	3600
14	100	80	73	72	3600
16	100	79	72	70	3600
18	100	77	70	68	3600
20	100	75	68	66	3600
25	100	73	66	66	3000

As speed increases, so does wear.



Operating times

The listed operating times apply to DC switching with rated air gap $s_{l\ddot{u}}$ and a warm coil. The times are mean values which may vary depending on the method of rectification

and the air gap $s_{l\ddot{u}}.$ The engagement time t_1 is approximately 10 times higher for AC switching than for DC switching.



Size	Braking torque rating at	Maximum permissible switching energy at	Transitional- switching	Switching times [msec] ²⁾ at rated air gap					
	Δn = 100 rpm M _K - ¹⁾	Q _E	S _f	Engagement (DC	switching)		Disengagement		
	[lb-ft]	[Wsec]	[h ⁻¹]	t ₁₁	t ₁₂	t ₁	t ₂		
06	2.95	3000	79	15	13	28	45		
08	5.90	7500	50	15	16	31	57		
10	11.8	12000	40	28	19	47	76		
12	23.6	24000	30	28	25	53	115		
14	44.3	30000	28	17	25	42	210		
16	59.0	36000	27	27	30	57	220		
18	111	60000	20	33	45	78	270		
20	192	80000	19	65	100	165	340		
25	295	120000	15	110	120	230	390		

1) Minimum braking torque for run-in friction pairs

²⁾ Operating times valid for 205 V DC coils

INTORO

Service life and wear

The amount of friction energy to be withstood until the maximum permissible working air gap is reached and the brake is adjusted depends on various factors. These include in particular the mass to be decelerated, the differential speed, the operating frequency and the resulting temperature at the friction surfaces. Therefore, it is not possible to specify a friction energy value until readjustment that is universally valid for all operating conditions.

In addition, increased wear should be expected with vertical mounting.

The BFK458 can be adjusted when $s_{air gap max}$ is reached. The way in which the friction lining is dimensioned allows the brake to be adjusted at least 5 times.

Permissible friction energy $\ensuremath{\mathsf{Q}}_{zul}$ depending on operating frequency f



Operating cycles per hour

Where the amount of friction energy per switching operation is low, the brake's mechanical components can impose limitations in terms of service life. The rotor/hub connection, springs, armature plate and sleeves are particularly vulnerable to operational wear. The expected service life of the standard design is around 1 million load alternations. Solutions that are optimized in terms of service life are available in cases where a longer service life is required (consult INTORQ).

Maintenance

Brakes are components that are subject to wear. When installing a brake, easy access for inspection and maintenance work must be ensured. Intervals between inspections should be set in accordance with the expected service life and load. For more information, please see the operating instructions.

LongLife Spring-applied brake INTORQ BFK458-L

Guaranteed performance data

- Guaranteed service life of brake mechanism: 10x10⁶ repetitive cycles of operation 15x10⁶ repetitive cycles of operation
- The brake warranty covers either two years or the guaranteed number of cycles – whichever is reached first.
- The scope of the warranty in the event of premature failure covers replacement of the brake, including a flat-rate replacement fee (consult INTORQ).



Manual release



Friction plate (sizes 06 – 16)

Manual release

The manual release is used to release the brake by hand and can be retrofitted. The manual release springs back to its base position (0 setting) automatically after operation. The release screws are carried in ball joints and are only tensioned. The space "s" is the distance between the armature plate (1) and the washer (15). The dimension "s" must be maintained when installing the manual release.

Size	S _{air gap} + 0.0039 - 0.0019	s ^{+0.0039}
	[in]	[in]
06 08 10	0.0079	0.0394
12 14 16	0.0118	0.0591
18 20	0.0154	0.0787
25	0.0197	0.0984

Flange

A flange can be used if no suitable counter friction face is available. The flange can also be fitted with the seal.

Friction plate

A friction plate may be supplied for sizes 06 up to and including 16. This should be used if the counter face is smooth and machined, but is not suitable as a friction surface. Combination with a cover ring is provided.

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Accessories





Centering flange

Connection flange

Seal

Centering flange (tacho brake)

Brake module N combined with a centering flange is suitable for mounting a tachogenerator.

Flange (double brake)

The connection flange can be used to adapt a second brake module to brake module N; the resulting double brake is suitable for use in stage machinery or other applications with increased safety requirements.

Seal

To a large extent, the seal prevents the exit or ingress of dust, humidity, dirt, etc., out of or into the braking area. The seal is inserted into the groove on the stator. If no suitable groove is available on the counter friction face, we recommend the use of a flange.



Brake cover

Brake module E, N + cover = encapsulated design

A cover can be mounted onto brake module E and brake module N as an option, to protect the brake from water and dust (enclosure to IP65). This design is not available in conjunction with manual release.





Size	d ₁	d ₂	d ₃ ^{H8}	d ₄	d ₅ [mm]	h	h ₁	h ₂	h ₃ 1)
06	5.31	4.72	3.86	4x0.217	M16x1.5	2.17	1.10	0.650	0.118
08	6.10	5.59	4.65	4x0.217	M20x1.5	2.40	1.34	0.787	0.118
10	7.28	6.54	5.63	4x0.217	M20x1.5	2.83	1.54	0.823	0.118
12	8.07	7.56	6.42	4x0.260	M20x1.5	3.23	1.65	0.906	0.118
14	8.86	8.35	7.20	4x0.260	M20x1.5	3.62	2.01	0.945	0.118
16	9.84	9.29	8.19	4x0.260	M20x1.5	3.86	2.05	0.984	0.118
18	11.2	10.6	9.37	4x0.260	M20x1.5	4.53	2.36	1.14	0.118
20	13.0	12.4	11.1	4x0.354	M20x1.5	5.16	2.72	1.38	0.118
25	15.4	14.5	12.9	4x0.354	M20x1.5	5.59	3.07	1.57	0.118

1) Recommended recess length on motor endshield

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Microswitch

The brake can be fitted with a microswitch for the purpose of monitoring the release or wear. The microswitch can be built into the circuit as a NC contact or a NO contact.

Dimensions

Size	12	14	16	18	20	25
Dimension x	0.512	0.453	0.433	0.276	*	*
Overall radius r	3.17	3.48	3.90	4.43	*	6.10

* no projection

Dimensions in inches

Mounting the microswitch onto brake module E



Microswitch for manual release monitoring

Gate drives, for instance, are provided with brakes with manual release, and a microswitch for monitoring the manual release. In this case, the manual release must make it possible to move the gate to the desired position in manual operation, e.g. using a crank. This manual operation has to be detected via a microswitch, whose switching signal must be combined with the motor control, so that the motor can be prevented from starting (thus also preventing any possible injury to the operator). The microswitch for manual release monitoring is a built-on option.

The fixing bracket is screwed onto the magnet housing or stator via the bores on the rear face. The fixing bracket enables a microswitch to be fastened to it. The two directions of release, towards and away from the motor, can be implemented by using different fixing brackets and microswitch settings.



Terminal box

The connecting cables can easily be integrated into higherlevel controls via the terminal box (brake sizes 12-25) in order to support different wiring options (three inputs/ outputs). 2/4-pole terminal strips, half-wave and bridge rectifiers and a microswitch connection can be integrated into the terminal box. The terminal box is mounted onto the spring-applied brake using a fixing bracket and screws, as shown in the illustration. You can select the mounting angle according to your requirements by using the assembly kit.



Size	12	14	16	18	20	25
b	-0.197	0.217	0.492	0.906	1.48	1.79
h	4.80	5.12	5.59	6.10	6.85	7.80
r	4.96	5.28	5.75	6.24	6.97	7.91

Dimensions in inches

Bridge rectifiers and half-wave rectifiers

Type code	В	Е	G	-	5	6	1	-	440
								_	
Brake	—				_			-	
Electronic									
Rectifier									
1 Bridge rectifier					-				
2 Half-wave rectifier					_				
5 Bridge rectifier/half-wave rectifier									
4 -pole									
6-pole									
1-Mounting position horizontal									
2-Mounting position vertical									
3-Mounting position horizontal with snap-in stud									
440 V voltage									

INTORQ-14.198.00.0 universal spark suppressor

The universal spark suppressor limits the induced voltage arising when inductive direct current circuits are switched off on the DC side. These induced voltages can damage coils and switches. VDE 0580 therefore requires that, in order to avoid impermissible high switch off voltages and overvoltages, suitable protective measures must be provided by the user. The universal spark suppressor is available in 4 versions for the following voltage ranges:

INTORQ	Coil voltage	Max. mains voltage	Max. coil power	Capacitor voltage	b ₁	b ₂ approx.	d	e approx.	h	I ₁	l ₂ approx.	mass [lb]
14.198.00.01	24 V - 50 V	60 V~	110 W	250 V-	0.335	0.492	0.027	0.886	0.728	1.04	0.984	0.015
14.198.00.02	50 V - 120 V	250 V~	110 W	630 V-	0.591	0.827	0.027	1.48	1.02	1.63	0.787	0.049
14.198.00.03	120 V - 200 V	400 V~	110 W	1000 V-	0.511	0.787	0.027	1.48	0.945	1.63	0.591	0.037
14.198.00.04	200 V - 250 V	555 V~	110 W	1000 V-	0.511	0.787	0.027	1.48	0.945	1.63	0.591	0.022

Dimensions





Wiring example



Parallel to coil



4-pole bridge rectifier and 4-pole half-wave rectifier

Dimensions

BEG-142/143-270 BEG-242/243-555



4-pole bridge rectifier BEG-142-270 BEG-143-270

Application area

Current supply for spring-applied brakes from AC mains (normal excitation). Example: 103 V coil on 110 V mains

Technical data

Max. mains voltage	270 V~
Max. DC current at 140°F	1.0 A
Max. ambient temperature	176°F

The rectifiers are protected against overvoltage by input and output varistors.

4-pole half-wave rectifier BEG-242-555 BEG-243-555

Application area

Current supply for spring-applied brakes from AC mains (normal excitation). Example: 205 V coil on 460 V mains

Technical data

Max. mains voltage	555 V~
Max. DC current at 140°F	1.0 A
Max. ambient temperature	176°F

The rectifiers are protected against overvoltage by input and output varistors.





Chosen coil voltage: 103 V





6-pole bridge rectifier

Dimensions

BEG-162-270





BEG-161-270





6-pole bridge rectifier

BEG-162-270 BEG-161-270

Application area

Current supply for spring-applied brakes from AC mains (normal excitation). Example: 103 V coil on 110 V mains

Technical data

Max. mains voltage	270 V~
Max. DC current at 140°F	0.75 A
Max. ambient temperature	176°F
The rectifiers are protected against of	overvoltage by input and
output varistors.	

BEG-162-270/161-270/262-460/261-460 rectifiers also contain the spark suppressors required by VDE 0580-Section-26.





 $V = \frac{V \sim}{1.11} = \frac{110 V \sim}{1.11} = 99 V$ Chosen coil voltage: 103 V

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6-pole half-wave rectifier

Dimensions

BEG-262-460 BEG-262-555









6-pole half-wave rectifier

BEG-262-460 BEG-261-460 BEG-262-555 BEG-261-555

Application area

Current supply for spring-applied brakes from AC mains (normal excitation). Example: 205 V coil on 460 V mains





Technical data

BEG-261-460

Max. mains voltage	555 V~_/_460 V~
Max. DC current at 140°F	0.75 A
Max. ambient temperature	176°F

The rectifiers are protected against overvoltage by input and output varistors. BEG-162-270/161-270/262-460/ 261-460 rectifiers also contain the spark suppressor required by VDE 0580-Section-26.

Fixing options 4-pole rectifier



0.039 to 0.118 inches thick

Fixing options 6-pole rectifier







Connection diagrams

DC switching





AC switching



AC switching parallel to the motor







Mains voltage selection table

Rectifier type and rated coil voltage for

mains voltage

AC voltage	Rectifier	Rectifier type 4-pole	Spark suppressor	Rectifier type 6-pole	Coil rated voltage
[V]		1 A at 140°F	INTORQ	0.75 A at 140°F	[V]
42 V	Half-wave	BEG-243/242-555	14.198.00.01	BEG-262/261-460	20 V
48 V	Bridge Half-wave	BEG-142/143-270 BEG-243/242-555	14.198.00.01 14.198.00.01	BEG-162/161-270 BEG-262/261-460	42 V 20 V
110 V	Bridge	BEG-142/143-270	14.198.00.02	BEG-162/161-270	103 V
220 V	Bridge Half-wave	BEG-142/143-270 BEG-243/242-555	14.198.00.04 14.198.00.02	BEG-162/161-270 BEG-262/261-460	205 V 103 V
230 V	Bridge Half-wave	BEG-142/143-270 BEG-243/242-555	14.198.00.04 14.198.00.02	BEG-162/161-270 BEG-262/261-460	205 V 103 V
240 V	Bridge Half-wave	BEG-142/143-270 BEG-243/242-555	14.198.00.04 14.198.00.02	BEG-162/161-270 BEG-262/261-460	215 V 103 V
255 V	Bridge	BEG-142/143-270	14.198.00.04	BEG-162/161-270	225 V
277 V	Half-wave	BEG-243/242-555	14.198.00.03	BEG-262/261-460	127 V
290 V	Half-wave	BEG-243/242-555	14.198.00.03	BEG-262/261-460	127 V
380 V	Half-wave	BEG-243/242-555	14.198.00.03	BEG-262/261-460	180 V
400 V	Half-wave	BEG-243/242-555	14.198.00.03	BEG-262/261-460	180 V
415 V	Half-wave	BEG-243/242-555	14.198.00.03	BEG-262/261-460	180 V
420 V	Half-wave	BEG-243/242-555	14.198.00.03	BEG-262/261-460	180 V
440 V	Half-wave	BEG-243/242-555	14.198.00.04	BEG-262/261-460	205 V
460 V	Half-wave	BEG-243/242-555	14.198.00.04	BEG-262/261-460	205 V
480 V	Half-wave	BEG-243/242-555	14.198.00.04	BEG-262/261-555*	215 V
500 V	Half-wave	BEG-243/242-555	14.198.00.04	BEG-262/261-555*	225 V
555 V	Half-wave	BEG-243/242-555	14.198.00.04	BEG-262/261-555*	250 V

* Spark suppressor without capacitor. For optimum interference suppression, we recommend the use of spark suppressor 14.198.00.04.

Max. rated coil voltage: 250 V Standard coil rated voltages: 24, 96, 103, 170, 180, 190, 205 V

Model overview

BFK458 spring-applied brake with accessories

Size	■ 06	08	∎ 10	12	1 4	∎ 16	1 8	20	25
Туре	E (with N (with L (Lor	n torque ad hout torque ngLife desig	ljustment ri e adjustmer gn)	ng) nt ring)					
Voltage	∎ 24 V	∎ 96 V	∎ 103 V	∎ 170 V	∎ 180 V	∎ 190 V	205 \	/	
Braking torque	1.1 - 4	43 lb-ft							
Cable length	Stance (from 4) from 40	lard inches - 4) inches - 1	0 inches in 100 inches	4 inches s in 10 inche	teps, es steps)				
Manual release	Assen	nbled							
Armature plate	■ Stand ■ Noise ■ With p	ard -reduced ((pole shim/	Hard-d D-ring desig brass film	chromium p m), not avai	lated (fron lable for L	n size 06) ongLife des	sign		
Microswitch	■ Opera ■ Wear ■ Manu ■ Manu	ation monite monitoring al release r al release r	oring (size (size 12 ar nonitoring, nonitoring,	l 2 and above) ad above) direction of direction of	ve) f release a f release to	way from n owards mot	notor (sizes tor (sizes C	s 06-25) 06-10)	
Temperature- resistant -40°F	■ With d ■ With t ■ Rotor	chromium-r cemperature with plastic	blated frictio e-resistant c sleeve as	on surfaces fixing screw option app	(armature vs roved	plate and	flange abs	olutely esse	ential)
Terminal box	Moun	ted (from s	ize 12)						

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Rotor	Plastic (only for size 06/08)	Aluminum	Silenced (rotor with sleeve)						
Low wear rotor	Aluminum	Silenced (rotor w LongLife design	vith sleeve) obligatory						
Fixing screw set	 For mounting onto the f For mounting onto the f For flange with through For connection flange/ 	flange motor/friction plate hole (up to and includ double brake	ling size 16)						
Manual release	as mounting kit	as mounting kit							
Terminal box	as mounting kit, not available for LongLife design								
Flange	 Friction plate (up to and including size 16) Flange Tachometer flange Connection flange double brake 								
Sealing	 Seal Shaft sealing ring (shaft Plug Brake cover 	t diameter on request)							
Electrical accessories									
Bridge rectifier	 4-pole without snap-in s 4-pole with snap-in stude 6-pole vertical with inte 6-pole horizontal with inte 	stud d grated spark suppress ntegrated spark suppre	sor essor						
Half-wave rectifier	 4-pole without snap-in students 4-pole with snap-in students 6-pole vertical with inte 6-pole horizontal with inte 	stud d grated spark suppress ntegrated spark suppre	sor essor						
Spark suppressor	Available in 4 sizes								





INTORQ – Sales and Service

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