

Lenze spring applied brakes

Type BFK 458□□N

Spring applied, electromagnetic release

Factory preset torque
Simple, quick assembly
Adjustable for wear
Very robust
Torques 2 to 600 Nm
S1 continuous rated
Static and dynamic braking
No running-in

The BFK 458 replaces the previous 14.448 series. The new standard is with fixed torque setting (BFK 458N) although models with torque adjuster nut are available to order (BFK 458E). Applications include brake motors, cranes, material handling, wood and metal working machinery, or any drive where rotating equipment must be stopped quickly when the power supply is removed.

Electrical supply

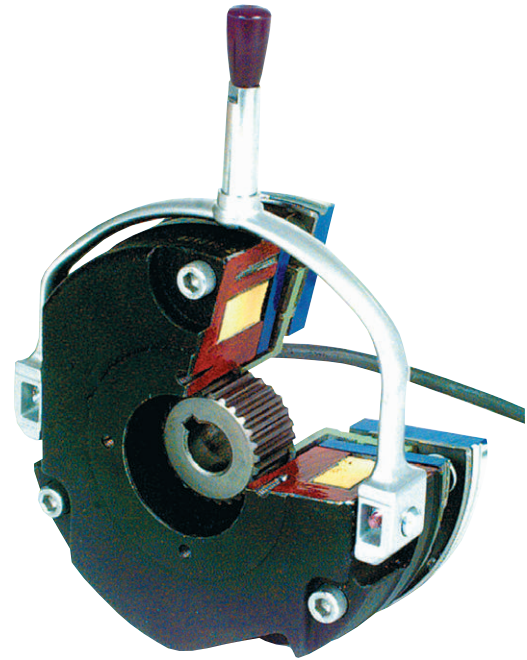
24V coils – suitable for battery supply or mains through a transformer rectifier such as the Simplavolt models on [page 438](#). Select the Simplavolt model according to supply voltage and brake coil power.

205V coils – suitable for 240V a.c. supply through a full wave rectifier or 415V a.c. supply through a half wave rectifier. See rectifier selections on [page 448](#).

Alternative coil voltages are available.

Coils are not polarity sensitive and do not have surge currents. The rated coil powers are:

Brake size	06	08	10	12	14	16	18	20	25
Coil power (W)	20	25	32	40	53	55	85	100	110



Mounting

Brakes are supplied in partially assembled kit form and can easily be fitted. Ensure that the shaft to which the brake is to be fitted is accurately toleranced to k6 or better, that the keyway is parallel to the shaft axis and the key not too high. The normal maximum speed is 3000 r/min. **View the Safety, Fitting and Operating Instruction Leaflet No. 426.** Full information is also given in Lenze catalogue 452059.

Maintenance

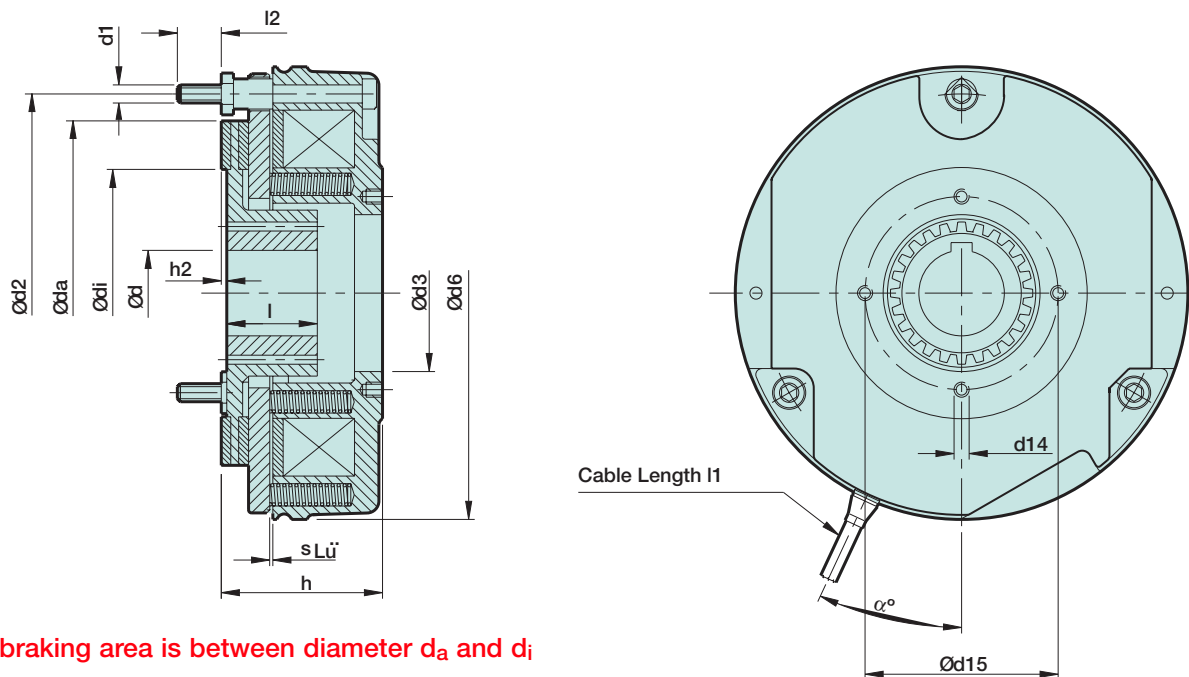
To maintain safety and efficient brake action, regular brake inspections are essential. The rate of brake wear depends on operating conditions. Check the air gap SLü, rotor thickness, that the brake is free of oil, grease and excess dust. Maintain the hand release clearance, s.

OPTIONS

Basic brake	– comprises stator assembly, rotor, hub and assembly screws. Requires a smooth, ferrous surface for mounting to.
Seal	– for additional protection against damp and dirt.
Hand release	– for manual release on loss of power.
Friction plate	– a stainless steel rubbing plate for damp conditions or non-ferrous mounting surfaces.
Mounting flange	– permits fixing over uneven mounting surfaces.
Tacho flange	– allows Type N stator to be centred with shaft for tacho generator assembly.
Double brake flange	– allows mounting of second brake to Type N stator. Details on application.

How to select and order:

1. Select basic brake according to torque.
2. For hoists, lifts or inclined conveyors or equipment where holding against gravity is required, specify “metal rotor” in accordance with hoist practice. On sizes 10 and above the metal rotor is standard.
3. Choose optional extras required.
4. Select power supply if required.
5. Select Stockline numbers (see ordering example).



The braking area is between diameter d_a and d_i


Size	Nominal torque Nm	Pilot bore	dH7 standard	Rotor													
				d1	d2	d3H7	d6j7	d14*	d15	d _i	d _a	h	h2	l	l1	S _{LÜ}	α
06	4	10	11/15	3xM4	72	25	87	-	-	40	60	36.3	1	18	400	0.2	25°
08	8	10	11/15/20	3xM5	90	32	105	-	-	56	77	42.8	1.5	20	400	0.2	25°
10	16	10	15/20	3xM6	112	42	130	-	-	66	95	48.4	2	20	400	0.2	25°
12	32	14	20/25	3xM6	132	50	150	-	-	70	115	54.9	2	25	400	0.3	25°
14	60	14	20/25/30	3xM8	145	60	165	4xM6	75	80	124	65.5	2	30	400	0.3	25°
16	80	15	25/30/35	3xM8	170	68	190	4xM6	85	104	149	72.5	2.25	30	600	0.3	25°
18	150	20	30/35/40/45	6xM8	196	75	217	4xM8	95	129	174	83.1	2.75	35	600	0.4	25°
20	260	25	35/40/45	6xM10	230	85	254	4xM10	110	148	206	97.6	3.5	40	600	0.4	25°
25	400	30	40/50/60	6xM10	278	115	302	4xM10	140	199	254	105.7	4.5	50	600	0.5	25°

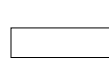
* Topped holes d14 for sizes 06-12 available on request.

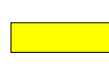
Brake torques

Depending on the individual application, it is possible to offer a range of torques as listed below. The adjustment must be carried out at our factory. In the table 'N' are the torques for the model N; 'E' for the model 'E' available on request.

When the brake is set above the nominal torque, the maximum airgap allowable for wear is reduced.

 Nominal torque setting which will be supplied unless other torques are specified.

 Operating brake for dynamic stopping ($S_{i\bar{u}max} = 2.5 \times S_{i\bar{u}}$)

 Holding brake with emergency stop operation ($S_{i\bar{u}max} = 1.5 \times S_{i\bar{u}}$)

Size	06	08	10	12	14	16	18	20	25
Rated torques [Nm], at 100 r/min	2 N/E	3.5 N/E	7 N	14 N/E	25 N/E	45 N	80 N	115 N/E	175 N/E
	2.5 N/E	4 E	9 N/E	18 N/E	35 N	55 N/E	100 N/E	145 N	220 N
	3 N/E	5 N	11 N/E	23 N/E	40 N/E	60 N/E	115 N/E	170 N/E	265 N/E
	3.5 N/E	6 N/E	14 N/E	27 N	45 N/E	70 N/E	130 N/E	200 N/E	300 N/E
		7 N/E			55 N/E			230 N/E	350 N/E
	4 N/E	8 N/E	16 N/E	32 N/E	60 N/E	80 N/E	150 N/E	260 N/E	400 N/E
	4.5 N/E	9 N/E	18 N/E	36 N/E	65 N/E	90 N/E	165 N/E	290 E	445 N/E
	5 N/E	10 E	20 E	40 E	75 N/E	100 N/E	185 N/E	315 N/E	490 N/E
	5.5 E	11 E	23 N/E	46 N/E	80 N/E	105 N/E	200 N/E	345 N/E	530 N/E
6 N/E	12 N/E			95 N/E	125 N/E	235 N/E	400 N/E	600 N/E	

Basic brake Stockline numbers

See next page for options



With standard (plastic base) rotors

Size	Torque Nm	Bore d	Coil voltage (d.c.)			
			24V	103V	180V	205V
06	4	10PB	A4-826 595	A4-826 702	A4-826 883	A4-826 997
		11	A4-826 607	A4-826 788	A4-826 891	A4-827 001
		15	A4-826 631	A4-826 816	A4-826 92X	A4-827 036
08	8	10PB	A4-826 64X	A4-826 824	A4-826 938	A4-827 044
		11	A4-826 658	A4-826 832	A4-826 946	A4-827 052
		15	A4-826 682	A4-826 867	A4-826 970	A4-827 087
		20	A4-826 690	A4-826 875	A4-826 989	A4-827 095

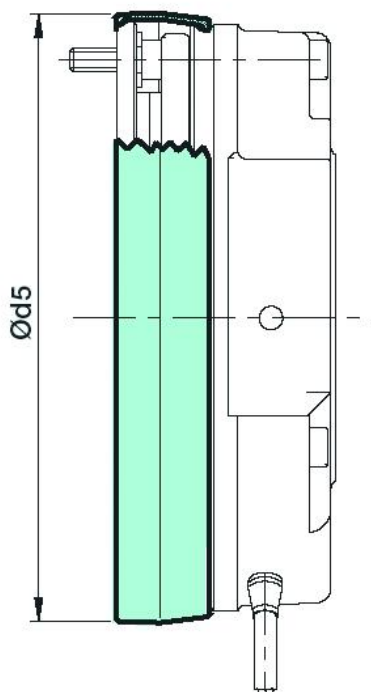
The basic brake consists of – stator assembly
 – rotor
 – hub
 – assembly screws



With metal base rotors

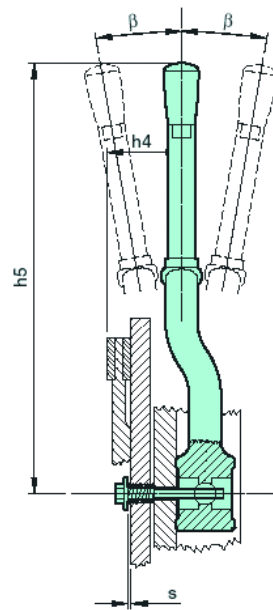
Size	Torque Nm	Bore d	Coil voltage (d.c.)			
			24V	103V	180V	205V
06	4	10PB	A4-806 85X	A4-825 441	A4-826 10X	A4-827 190
		11	A4-806 876	A4-825 45X	A4-826 118	A4-827 202
		14	A4-824 487	A4-825 476	A4-826 134	A4-827 229
		15	A4-824 495	A4-825 484	A4-826 142	A4-827 237
08	8	10PB	A4-824 507	A4-825 492	A4-826 150	A4-827 245
		11	A4-824 515	A4-825 504	A4-826 169	A4-827 253
		15	A4-824 558	A4-825 539	A4-826 205	A4-827 288
		20	A4-824 566	A4-825 555	A4-826 213	A4-827 296
10	16	10PB	A4-824 941	A4-825 571	A4-826 221	A4-827 308
		15	A4-824 968	A4-825 598	A4-826 248	A4-827 324
		20	A4-824 976	A4-825 60X	A4-826 256	A4-827 332
12	32	14PB	A4-824 984	A4-825 626	A4-826 264	A4-827 340
		20	A4-824 992	A4-825 634	A4-826 272	A4-827 359
		25	A4-825 007	A4-825 642	A4-826 280	A4-827 367
14	60	14PB	A4-825 015	A4-825 669	A4-826 299	A4-827 375
		20	A4-825 023	A4-825 650	A4-826 319	A4-827 383
		25	A4-825 031	A4-825 677	A4-826 327	A4-827 391
		30	A4-825 04X	A4-825 685	A4-826 335	A4-827 403
16	80	15PB	A4-825 161	A4-825 713	A4-826 343	A4-827 411
		25	A4-825 17X	A4-825 721	A4-826 351	A4-827 42X
		30	A4-825 188	A4-825 73X	A4-826 36X	A4-827 438
		35	A4-825 196	A4-825 748	A4-826 378	A4-827 446
18	150	20PB	A4-825 208	A4-825 756	A4-826 386	A4-827 454
		30	A4-825 216	A4-825 764	A4-826 394	A4-827 462
		35	A4-825 224	A4-825 780	A4-826 406	A4-827 470
		40	A4-825 232	A4-825 819	A4-826 414	A4-827 489
		45	A4-825 240	A4-825 827	A4-826 422	A4-827 497
20	260	25PB	A4-825 259	A4-825 835	A4-826 430	A4-827 509
		35	A4-825 267	A4-825 843	A4-826 449	A4-827 517
		40	A4-825 283	A4-825 851	A4-826 457	A4-827 525
		45	A4-825 291	A4-825 878	A4-826 465	A4-827 533
25	400	30PB	A4-825 338	A4-825 930	A4-826 481	A4-827 55X
		40	A4-825 346	A4-825 949	A4-826 49X	A4-827 568
		50	A4-825 362	A4-825 965	A4-826 51X	A4-827 584
		60	A4-825 389	A4-825 981	A4-826 536	A4-827 604

Seal

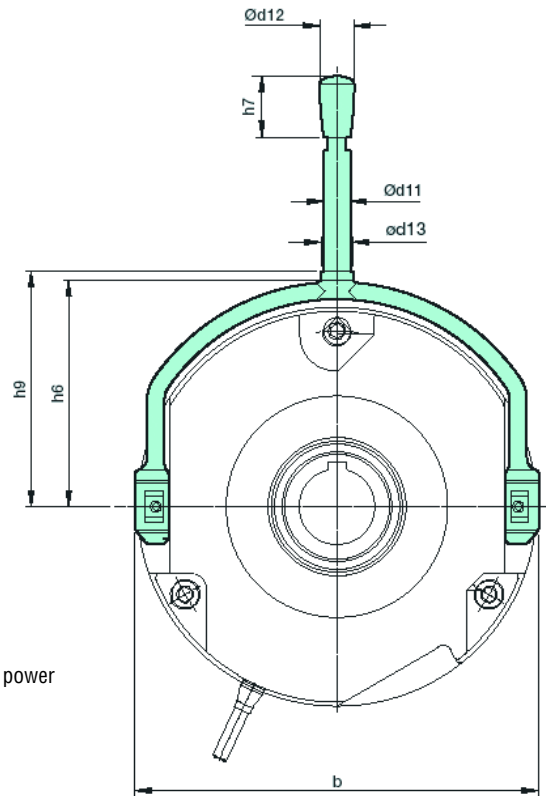


For protection against dirt and damp, the seal clips into grooves in the brake and the mounting surface

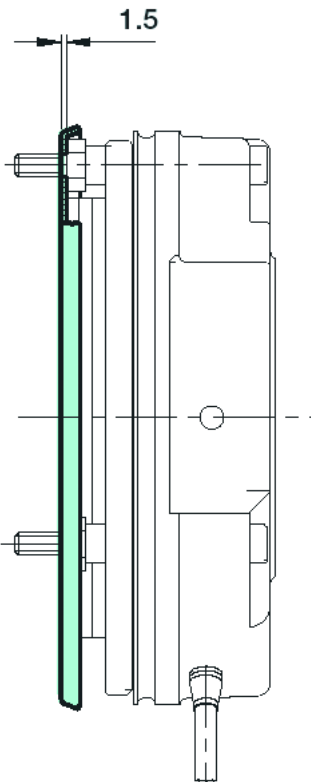
Hand release



For manual release on loss of power

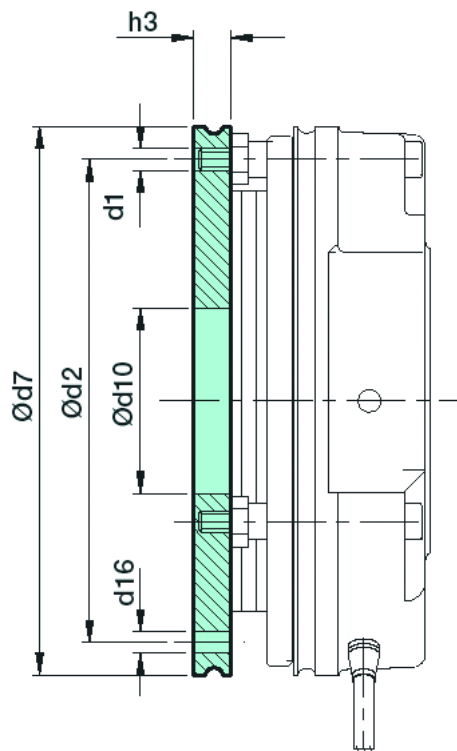


Friction plate



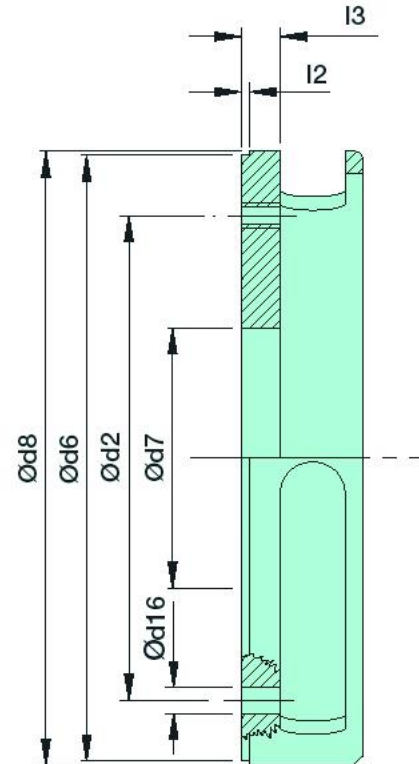
A stainless steel rubbing plate for non-ferrous mounting surfaces or where moisture is present. Can be used in conjunction with the mounting flange.

Mounting flange



A steel adaptor flange that permits fixing where the mounting surface is uneven.

Tacho flange



This flange requires a concentric register to be provided on the mounting surface which then allows assembly of a tachogenerator to the rear of the brake.

Size	Seal ød5	b	d11	d12	d13	Hand release		h6	h7	h9	β	s
						h4	h5					
06	91	88	8	13	9.6	15.8	109.2	54.5	23	56.3	12°	1
08	109	106.5	8	13	9.6	16.3	118	63	23	65	10°	1
10	134	132	10	13	12	27.4	134	73.8	23	77.8	9°	1
12	155	152	10	13	12	29.4	163.5	85	23	88.5	10°	1.5
14	169	169	12	24	14	33	195.5	98	32	101.5	9°	1.5
16	195	194.5	12	24	14	37.5	240	113	32	116	10°	1.5
18	222	222	14	24	15.5	41.1	347	124	32	128.5	9°	2
20	259	258	14	24	16.5	47.6	418	146	32	149.5	10°	2
25	307	302	16	24	18.4	57.7	504	170	32	175.5	10°	2.5

Size	h3	Mounting flange						Tacho flange				
		d1	d2	ød7	ød10	ød16	d2	d6h7	d7H7	d8	l2	l3
06	6	3xM4	72	87	31	3x4.5	92	95	40	98	2	6
08	7	3xM5	90	105	41	3x5.5	90	115	50	116	2	7
10	9	3xM6	112	130	45	3x6.6	112	140	60	141	2	9
12	9	3xM6	132	150	52	3x6.6	132	162	60	165	2	9
14	11	3xM8	145	165	55	3x9	145	177	80	181	2	11
16	11	3xM8	170	190	70	3x9	170	204	85	206	2	11
18	11	6xM8	196	217	77	4x9	196	233	90	237	2	11
20	11	6xM10	230	254	90	6x11	230	271	90	274	2	11
25	12.5	6xM10	278	302	120	6x11	278	322	120	324	2	13

Brake size	Seal	Hand release	Friction plate	Mounting flange	Tacho flange
06	A4-806 537	A4-806 415	A4-806 407	A4-806 230	A4-806 395
08	A4-806 545	A4-809 188	A4-809 267	A4-806 194	A4-810 144
10	A4-806 553	A4-809 196	A4-809 291	A4-809 074	A4-810 160
12	A4-806 561	A4-809 208	A4-809 303	A4-806 214	A4-810 179
14	A4-809 137	A4-809 216	A4-809 311	A4-806 222	A4-810 195
16	A4-809 145	A4-809 224	A4-809 32X	A4-806 249	A4-810 207
18	A4-809 153	A4-809 232	-	A4-806 257	A4-810 223
20	A4-809 161	A4-809 240	-	A4-806 265	A4-810 231
25	A4-809 17X	A4-809 259	-	A4-806 273	A4-810 24X

Stockline numbers in black – delivery time on request.

Electrical circuits

Brakes can be controlled by a switch in the a.c. supply before the rectifier. This method is often used with brake motors, where the brake is switched with the motor contacts. Due to the inductance of the brake coils, engagement times can be 3-6 times longer than with d.c. switching, therefore this arrangement is NOT suitable for hoist applications. For falling loads, such as: hoists, lifts and cranes, also for

high inertia loads, a brake motor will, to some extent, regenerate the supply and hold off the brake. Here it is ESSENTIAL to switch on the d.c. side of the rectifier. A.C. rectifiers can be protected against d.c. switching by adding a suppressor across the switch contact. Rectifiers designed for d.c. switching contain varistors to protect the diodes inside them. However, these may require external suppressors across the switch contact to reduce arcing.

Simplavolt units for 24V coils

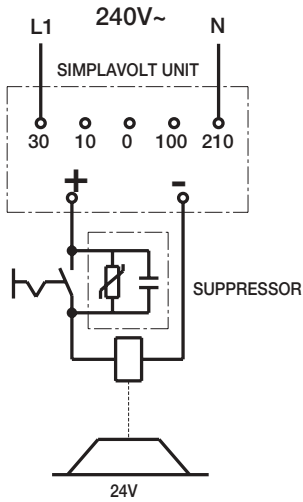
Stockline No.	Used for
B3-68 93X	110-240V a.c. supply, 30W max
B3-68 956	110-240V a.c. supply, 60W max
B3-68 964	380-415V a.c. supply, 60W max
B3-63 219	110-240V a.c. supply, 120W max
B3-66 332	380-415V a.c. supply, 120W max

Rectifier and coil selection for mains supply

Supply volts (a.c.)	Rectifier type	Coil voltage d.c.
110	Bridge	103
220	Bridge	180
230/240	Bridge	205
220	Half wave	103
230/240	Half wave	103
380	Half wave	180
400/415	Half wave	180
460	Half wave	205

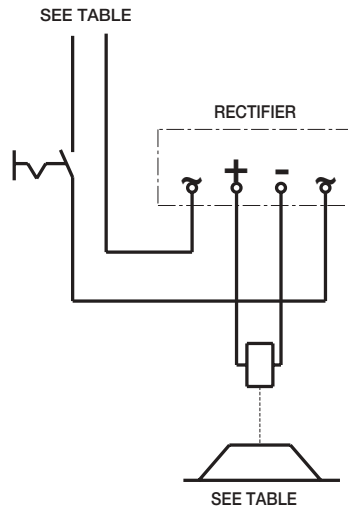
BRAKES ONLY

VIA SIMPLAVOLT UNIT



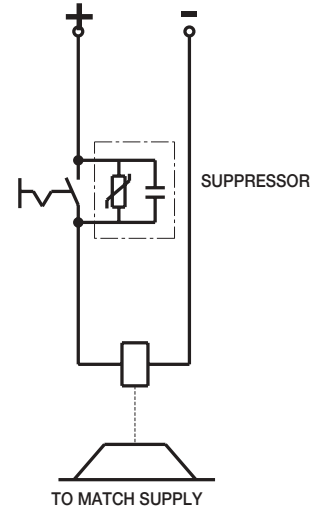
Brake switched on d.c. supply supply - fast engagement

MAINS CONNECTION
A.C. SWITCHING



Rectifier switched on a.c. supply slow brake engagement

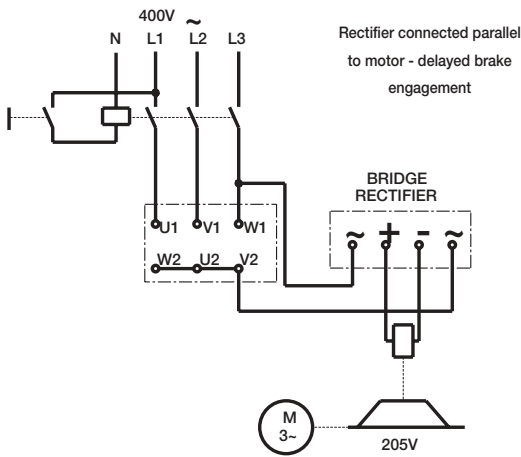
INDEPENDENT
D.C. SUPPLY



Fast brake engagement

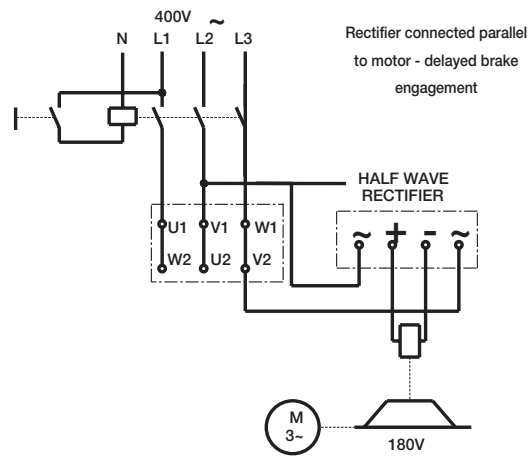
BRAKE MOTORS

MOTOR CONNECTED STAR



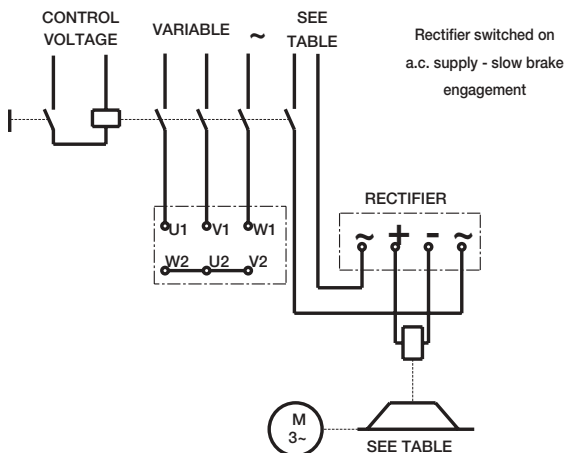
Rectifier connected parallel to motor - delayed brake engagement

MOTOR CONNECTED DELTA



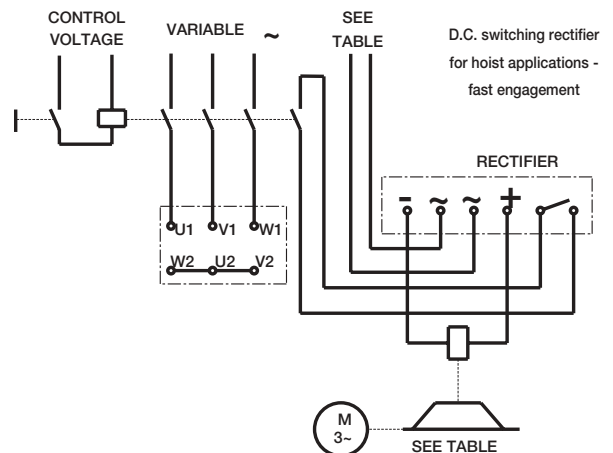
Rectifier connected parallel to motor - delayed brake engagement

INVERTER CONTROL - SEPARATE BRAKE SUPPLY

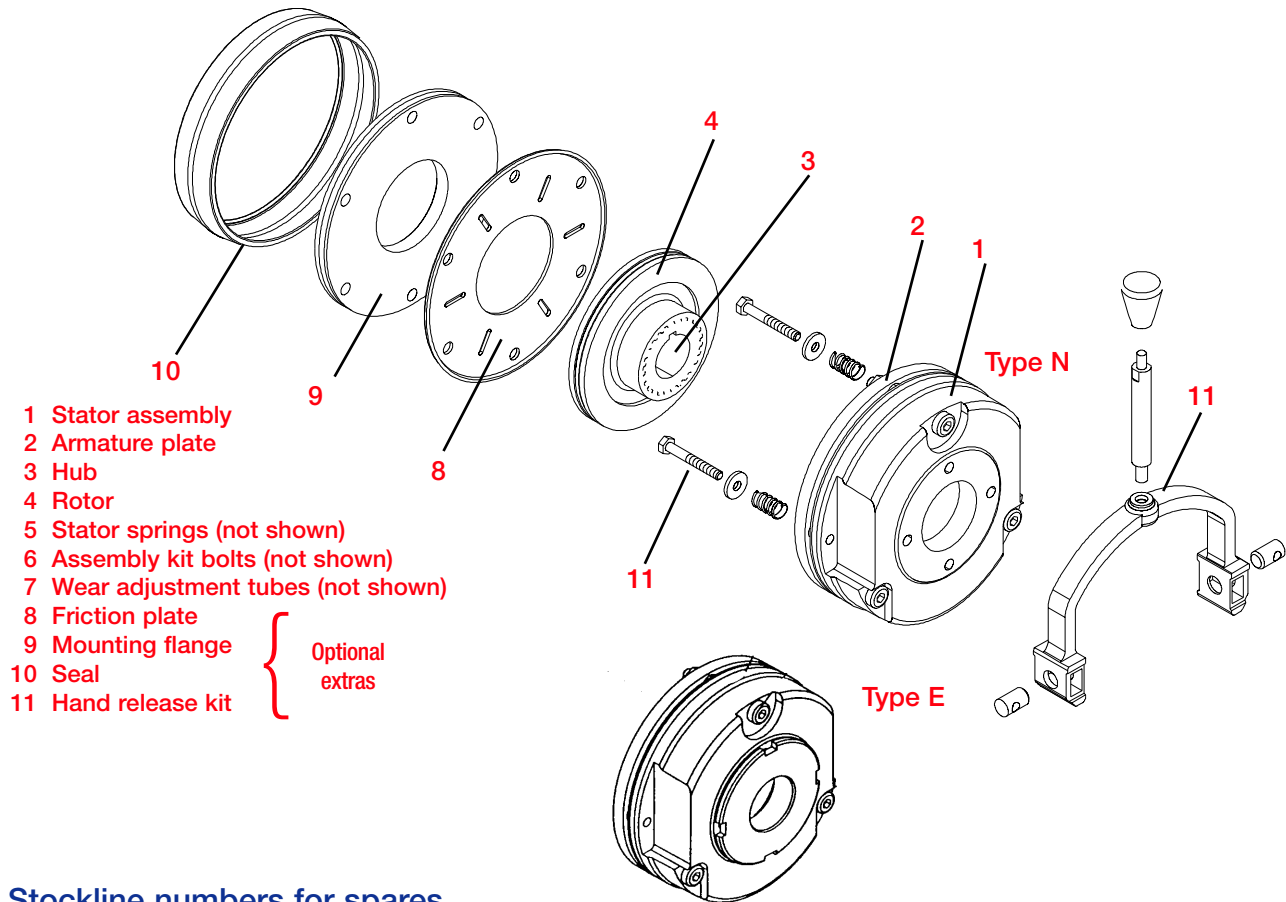


Rectifier switched on a.c. supply - slow brake engagement

INVERTER CONTROL - SEPARATE BRAKE SUPPLY



D.C. switching rectifier for hoist applications - fast engagement



Stockline numbers for spares

Item	Brake size	06	08	10	12	14	16	18	20	25	
1	Stator and armature assembly } Type N	24V	807 124	807 183	807 262	807 309	807 830	807 928	808 034	808 113	808 219
		103V	807 175	807 191	807 270	807 317	807 849	807 91X	808 042	808 121	808 227
		180V	807 132	807 203	807 289	807 376	807 857	807 936	808 069	808 13X	808 235
		205V	807 140	807 211	807 297	807 384	807 865	807 944	808 050	808 148	808 243
2	Stator and armature assembly } Type E	24V	807 108	807 22X	807 333	807 392	807 873	807 952	808 077	808 251	808 294
		103V	876 685	807 238	876 693	807 404	807 881	807 960	808 085	808 26X	808 582
		180V	807 159	807 246	807 35X	807 002	807 89X	807 979	808 093	808 278	808 590
		205V	807 167	807 254	807 368	807 822	807 901	807 987	808 105	808 286	808 602
2	Armature plate	849 230	849 249	849 257	849 265	849 273	849 281	849 29X	849 301	849 31X	
3	Hub (bores available) (Bore/Stock number) Keyways to BS4235	PB/806 529	PB/808 811	PB/808 811	PB/809 492	PB/809 520	PB/809 563	PB/809 618	PB/809 677	PB/809 73X	
		ø10/806 474	ø11/808 767	ø12/808 783	ø20/809 504	ø20/809 539	ø25/809 571	ø35/809 634	ø35/809 693	ø40/809 748	
		ø11/806 482	ø14/808 791	ø15/808 775	ø25/809 512	ø25/809 547	ø30/809 58X	ø40/809 650	ø40/809 705	ø50/809 764	
		ø15/806 510	ø20/808 803	ø20/808 803	-	ø30/809 555	ø35/809 598	ø45/809 669	ø45/809 713	ø60/809 780	
4	Rotor, standard	807 806	806 588	-	-	-	-	-	-	-	
	Rotor, metal-based	806 206	806 608	807 010	806 912	808 314	806 616	808 018	808 200	806 825	
5	Spring (single)	849 328	849 352	849 360	849 379	849 387	849 415	849 395	849 407	849 423	
6	Assembly kit (short)	810 258	810 37X	810 388	810 290	810 408	810 310	810 416	810 432	810 345	
	Assembly kit (long)	810 274	810 282	810 290	810 302	810 310	810 329	810 337	810 345	810 361	
7	Adjustment tubes (single)	849 431	849 466	849 474	849 474	849 490	849 502	849 510	849 529	849 537	

ALL STOCKLINE NUMBERS PREFIXED BY A4.

Stockline numbers in black – delivery time on request.

Interchangeability with previous series 14.448

Most parts from the BFK458 are interchangeable with these exceptions:

- size 08 motors and hubs due to a design change. The complete brake is interchangeable
- springs are of a different design and therefore not interchangeable
- mounting flanges are only provided with an outer set of fixing holes