

# FCPL brake

## Adjustment and maintenance

### I - INSTALLATION

To install the brake motors, follow the recommendations in the A.C. motor installation and maintenance manual. Ensure that the brake is applied when stopped.

### II - SUPPLY

FCPL brakes are fitted with D.C. coils; the separate supply to the brake is via rectifier SO7 mounted in the terminal box as standard.

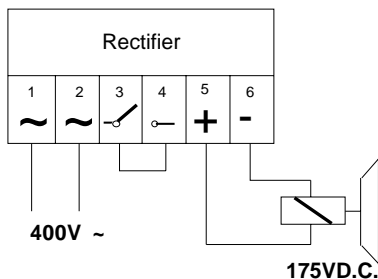
Voltage		Nominal D.C. brake voltage (V) $\pm 10\%$
Mains ~ (V)	Rectifier	
220 V	SO7	100
230 V	SO7	100
400 V	SO7	180
460 V	SO7	200

For brakes with different voltages, an independent D.C. supply must be provided (brake motor supplied without rectifier).

For motors starting with reduced voltage or operating at a variable voltage or frequency, it is necessary to provide a separate power supply for the brake.

To reduce brake application response time, the D.C. supply between the rectifier and the brake must be cut off.

**This is essential for hoisting applications.** Remove the strap from terminals 3 and 4 on the rectifiers and connect the brake contactor to these terminals.



**Duty:** Leroy Somer brake coils are defined for a 60% operating factor with duty cycle (S3) or for continuous duty (S1). They can be distinguished by the colour of the power supply wires when the cover (39) of the brake is removed.

180 V coil : power supply wires are blue for S3 duty, white and blue for S1 duty.

100 V coil : power supply wires are yellow for S3 duty, yellow and white for S1 duty.

#### Important :

**Before any intervention on the brake, the brake motor must be disconnected.**

**Check that the brake motor is not maintaining a load before performing any work on the brake.**

### III- SETTING THE AIR GAP

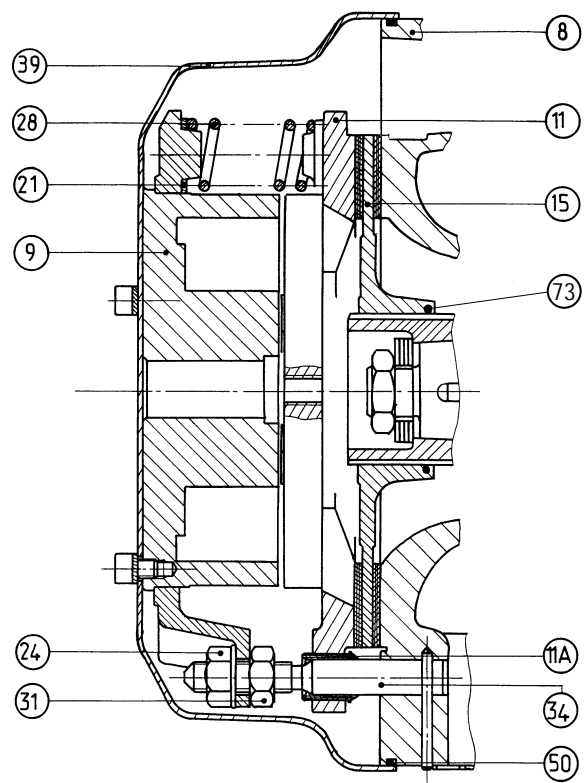
The air-gap is the distance between the armature 11 and the yoke 9 when the coil is not supplied. The air-gap must be re-adjusted when it reaches 1.5 mm or when the brake can no longer be released normally.

To adjust the air-gap, switch off the coil and remove the cover 39. Then release the three nuts 31 (19 mm spanner) to move the armature 11 towards the yoke 9 while turning the nuts 24 (18 mm spanner).

Adjustment is performed by inserting an 0.8 mm feeler gauge for brakes with 1 disc, and a 1 mm gauge for brakes with 2 discs, between the yoke 9 and the armature 11. It must be possible to slide the gauge into the air-gap without effort and with no play at three points distributed equally around the **edge** of the yoke.

After checking, tighten the three nuts 24 (18 mm spanner). If the air gap is set correctly, the brake should be released sharply when powered up, and the disc should not rub.

Re-assemble cover 39.



For a two brake disc FCPL, the disc the nearest to the armature 11 must be mounted without O-Ring seal 73.

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### IV - DISMANTLING

**Suitable tools should be used for dismantling.**

Remove the rear cover 39, then disconnect the brake power supply wires.

Insert a threaded rod (M12 for FCPL54; M16 for FCPL60), fitted with a washer and locking nut into the yoke (bore 9), screw it into the armature 11. Tighten the locking nut to eliminate the air gap. A complete brake block is thus assembled.

Undo the 3 fixing nuts 24 (18 mm spanner).

Gradually unscrew the nuts 31 with a 19 spanner and slide off the armature/yoke unit.

**If you only want to change the disc.** Pull out the worn disc 15 by sliding it along its spline.

Ensure that the friction surfaces of endshield 8 and armature 11 are clean and dry.

Insert the new disc, with the hub side towards the endshield, and with the friction surface of the disc in contact with endshield 8 (then see \*).

**If you want to alter the braking torque.**

It is rarely necessary to alter the braking torque, since it has been defined for the particular application at the time of ordering. Modifying this involves changing certain parameters such as the brake response time.

Request assembly instructions from the plant.

Unscrew the lock nut of the threaded rod which will gradually slacken the springs 28 then unscrew the threaded rod.

Select the number of springs and spacers needed for the required braking torque (see paragraph V).

**These must be PATAY parts.**

Ensure the springs are equi-distant between the yoke and the armature. Screw the threaded rod to the armature to join the yoke and the armature and tighten the nut to compress the springs.

\*Reassemble the armature/yoke unit by firstly engaging the armature 11 on the (brake) columns, then fit nuts 31 before fitting the yoke lugs.

Bring the friction surface of the armature 11 against the disc by gradually screwing the nuts 31. Adjust the nuts 24 to bring them into contact with the yoke lugs 9.

Remove the locking nut and remove the threaded rod.

Adjust the air gap.

Change gasket 50.

Reconnect the brake power supply wires before replacing the cover.

### V- MAINTENANCE

#### FCPL 54 brake

##### Electrical characteristics :

Voltage (V)	Duty	R ( $\Omega$ )	I (A)
20	S3	2,25	8,9
100	S3	61	1,6
180	S3	195	0,9
180	S1	355	0,5

##### Spare parts :

No	Description	Part n°
15	Disc	065F 156 054
21	Spacer	070E 202 054
28	Spring	058E 122 054
11A	Rings	041F 010 054
50	Cover gasket	965E 000 004

When ordering the brake yoke, specify the brake type and voltage.

##### Braking torques :

Quantity		Braking torque (Nm)	Setting sheet ref:
No 28	No 21		
2	0	75	314 453
2	2	90	314 575
3	0	110	314 489
3	3	130	314 551
4	0	150	314 412
4	4	180	314 576
6	0	220	314 414

# FCPL brake

## Adjustment and maintenance

### FCPL 60 brake

#### Electrical characteristics :

Voltage (V)	Duty	R ( $\Omega$ )	I (A)
20	S3	1,9	10,5
100	S3	55	1,8
180	S3	170	1,1
180	S1	300	0,6

#### Spare parts :

No	Description	Part n°
15	Disc	065F 172 058
21	Spacer	070E 202 054
28	Spring	058E 122 054
11A	Rings	041F 100 060
50	Cover gasket	965E 000 006

When ordering the brake yoke, specify the brake type and voltage.

#### Braking torques :

Quantity		Braking torque (Nm)	Setting sheet ref:
No 28	No 21		
3	3	150	314 688
4	0	175	315 192
4	4	200	314 689
6	0	260	314 690
6	6	300	314 691

#### NOTE : FCPL 60 /2 discs

The braking torque of a brake with 2 discs will be twice the braking torque of a 1 disc brake using the same number of springs and spacers.

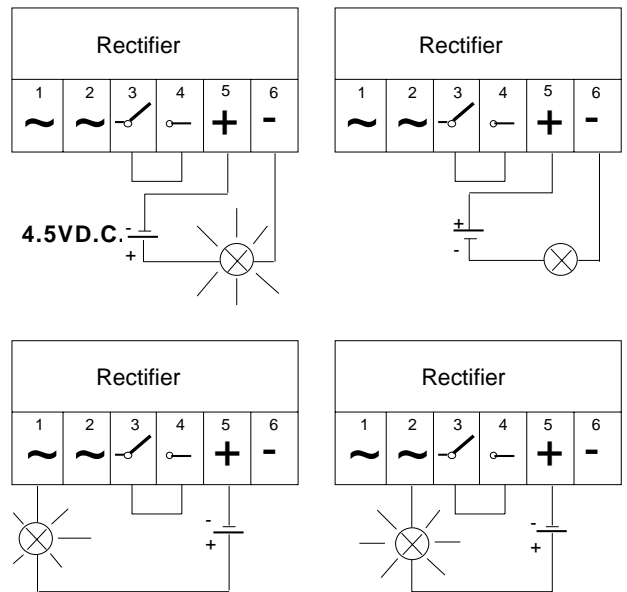
With this version an intermediate plate should be inserted between the two discs (Ref 062E 325 58).

### SO7 rectifiers :

To check that the rectifier is working correctly, use a multimeter in the "diode test" position.

It is also possible to connect a 4.5 V battery and lamp to test the rectifier. Disconnect all wires from the rectifier except the strap between 3 and 4 as shown in the 4 circuit diagrams.

If the lamp does not light as indicated, it should be replaced.



#### Other references:

Description	Part n°
SO7 rectifier	069E 807 046
Wear detector*	069E 805 046

\* optional

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### VI - TROUBLESHOOTING GUIDE

Fault	Possible cause	Solution
Brake cannot be released.	Voltage is present at the coil terminals.	The air gap is too large for the yoke to attract the armature. <i>Readjust the air-gap. Check wear of disc and change if necessary.</i>
		The voltage is too low (less than 80% of nominal voltage). <i>Increase the voltage to the nominal value.</i> The coil is broken, it has infinite resistance. <i>Change the yoke.</i>
Brake release time is too long.	There is no voltage at the coil terminals.	The rectifier is no longer working. <i>Test the rectifier.</i>
	Check the voltage at the coil terminals.	<i>It must not be less than 90% of nominal voltage.</i>
	The air gap is too large.	<i>Readjust.</i>
Brake application time is too long.	The braking torque has been set too high.	<i>Return to original setting or refer to the factory.</i>
	Check that the switching is on the D.C. supply between the rectifier and brake (see paragraph II).	<i>Use terminals 3 and 4 of SO7 rectifier for brake switching.</i>
The braking torque is insufficient.	Friction surfaces are not clean and dry.	<i>Ensure friction surfaces are clean and dry.</i> <i>Readjust torque setting if necessary.</i>
	The disc is worn.	<i>Change the disc.</i>
Continuous rubbing on the brake lining.	The air gap is too narrow.	<i>Readjust the air gap.</i>

**When ordering parts, please specify the information contained on the nameplate, in particular the motor serial number.**

**Moteurs PATAY**  
**99 rue Audibert et Lavirotte**  
**69 356 LYON CEDEX 08 - FRANCE**  
**Tel : (33) 04 78 58 35 94**  
**Fax : (33) 04 72 73 47 66**