

# FCPL40 Brake LS160 MP/LR/MR

## 1 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.

## 2 SUPPLY

FCPL 40 brake is fitted with D.C. coils; the separate supply to the brake is via rectifier SO7 mounted in the terminal box as standard.

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

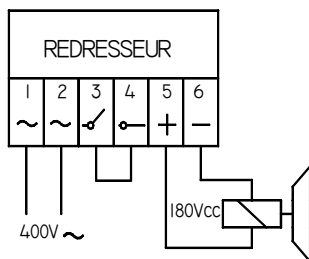
For brakes with different voltages, an independent D.C. supply must be provided (brake motor supplied without rectifier).

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 (in that case, the "coupure" must not be done above 3 meters from the coil).

**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 .

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.

20 V coil : power supply wires are green for S3 duty green and white for S1 duty.

**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.**

## 3 ACCESS TO THE BRAKE

3-1 Brake with auto ventilated motor (look at dwg. 1).

### 3-1-1 Dismounting

- Remove ( in case of encoder option) the cover rep **105** and release the encoder coupling ring rep **109**
- Unscrew the 3 columns in order to slide off the set encoder and its support.
- In case of brake release lever **53** unscrew it.
- Remove the rear cover **39**.
- Remove rubber belt **40** ( in case of IP 55 option)

### 3-1-2 Reassembling :

- Fit the seal **41** ( option IP55), reassemble the belt **40** ( option IP55) and the cover **39**.
- Screw the brake release lever **53** ( if brake release lever option), fit the encoder **109** and its cover **105** ( if encoder option)

3-2 Brake with forced ventilation (DWG 2)

### 3-2-1 Dismounting

- In case of brake release lever **53** unscrew it.
- Remove the rear cover **39**.
- Remove rubber belt **40** ( in case of IP 55 option)

### 3-2-2 Reassembling :

- Fit the seal **41** ( option IP55), reassemble the belt **40** ( option IP55) and the cover **39**.
- Screw the brake release lever **53** ( if brake release lever option).

## 4- 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 1.6 mm .

- release the three nuts **31** to move the armature **11** towards the yoke **9** while turning the nuts **24** .

-Adjustment is performed by inserting an 0.9 mm feeler gauge, 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 **31**. If the air gap is set correctly, the brake should be released sharply when powered up, and the disc should not rub.

Theoretically it's not necessary to adjust the brake release lever and the micro switch. But you must verify the right running before to finish the reassembling operations.

In case of bad running look at part 7 ( options ).

**Warning :**

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## 5- REPLACEMENT OF THE BRAKE DISC.

Suitable tools should be used for dismantling.

5-1 First operations :

5-1-1 brake with auto ventilated motor (look at DWG. 1).

- remove the plastic fan **21**.
- Remove the split pin **21a**.
- Remove the seal **41** (if IP 55 option).

5-1-2 BRAKE MOTOR WITH ENCODER ( look at dwg 2).

- release the encoder coupling ring rep **109**
- Unscrew the 3 columns in order to slide off the set encoder and its support.
- Fit the seal **41** in case of IP55 option

5-2 If you only want to change the disc.

- Insert two screws M6x70 through the yoke (**9**), screw them into the armature **11**. A complete brake block is thus assembled.( DWG 5)
- Remove the 3 fixing nuts **24**
- Gradually unscrew the nuts **31** and slide off the armature / yoke unit.
  - 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 being in contact with endshield **8**
  - Reassemble the armature / yoke unit on the column ( on about 10 mm) , tighten the nuts **31**, slide on the set upon the columns then fit the nuts **24**
  - Remove the screws M6x70
  - Fit the seal **41** ( if IP55)
  - Fit the fan and its split pin or the encoder
  - Then proceed to the adjustment of the air gap ( see part 4)

## 6 CHARACTERISTICS

standards braking torque:

Duty	Braking torque (N.m)
S1	65 - 80 - 95 - 105 - 125
S3	65 - 80 - 95 - 105 - 125 - 145 - 160

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 instruction from the plant

Electrical characteristics

Voltage (V)	Duty	R (Ω)	I (A)
20	S3	3.4	5.9
180	S1	350	0,6
180	S3	185	1,0

## 7- OPTIONS

7-1 brake release lever (look at DWG. 3).

The brake release lever is adjusted with a play (J) = 4 mm. This play must balance the wear of the brake lining and it must be equal to this value at least. This play increases with the brake lining wearing , but it find in a same position again after the adjustment of the air gap. For this reason it is not necessary to adjust the brake lever except in case of replacing yoke **9**.

The adjustment of the play must be realized with a minimum air gap = 0.9 mm

- release the nuts **27** of the brake lever.
- screw or release these one till to reach the play (J)
- tighten the nuts **27** of the brake lever.

7-2 Microswitch. (look at DWG. 4)

This micro switch can be set in different ways, depending what it is used for (brake lining wear, brake release indicator, air gap limits detector).

Theoretically, it is not necessary to adjust the settings, until the replacement of the yoke **9**

The setting(s) of the micro switch(s) must always be done with the air gap at the minimum value( 0.9 mm).

Adjust the value C between the micro switch **55** and the yoke **9** at about 5 mm and tighten it with the nut. Connect, between the black and the blue wires, an ohmmeter or, if you don't have one, an indicator light.

7-2-1 brake release device

Slightly relax the nut **61**.

With the nut **60** put on the screw **59** against the micro switch pushrod until the contact switch. The resistance becomes zero

Unscrew **59** from ¼ turn, the resistance becomes infinite, . Check that when the armature **11** is against with the yoke **9** (brake release), the resistance value is zero.

Lock the nut **61**.

7- 2-2 brake lining wear device

Slightly relax the nut **61**.

With the nut **60** put on the screw **59** against the micro switch pushrod until the contact switch. The resistance becomes zero.

Screw again **59** between ¾ and 1 turn, this value match to 09mm of brake lining wear. The resistance remain zero.

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## 8 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 disc wear 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>
Brake application time is too long.	The air-gap is too large.	<i>Readjust.</i>
	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>
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>

### Spare parts:

Rep	Description	Part n°
15	Disc	065AA0400003
21	plastic fan	056AA1600000
40	belt	070AA1600006
-	rectifier	069E807046

### Moteurs PATAY

89 rue Audibert Lavirotte BP 8317

69356 LYON Cedex 08 France

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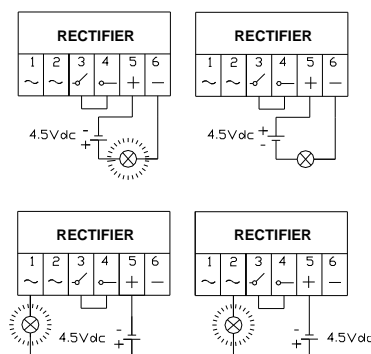
When ordering parts , please specify the information contained on the name plate , in particular the serial number of the motor.

### 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.



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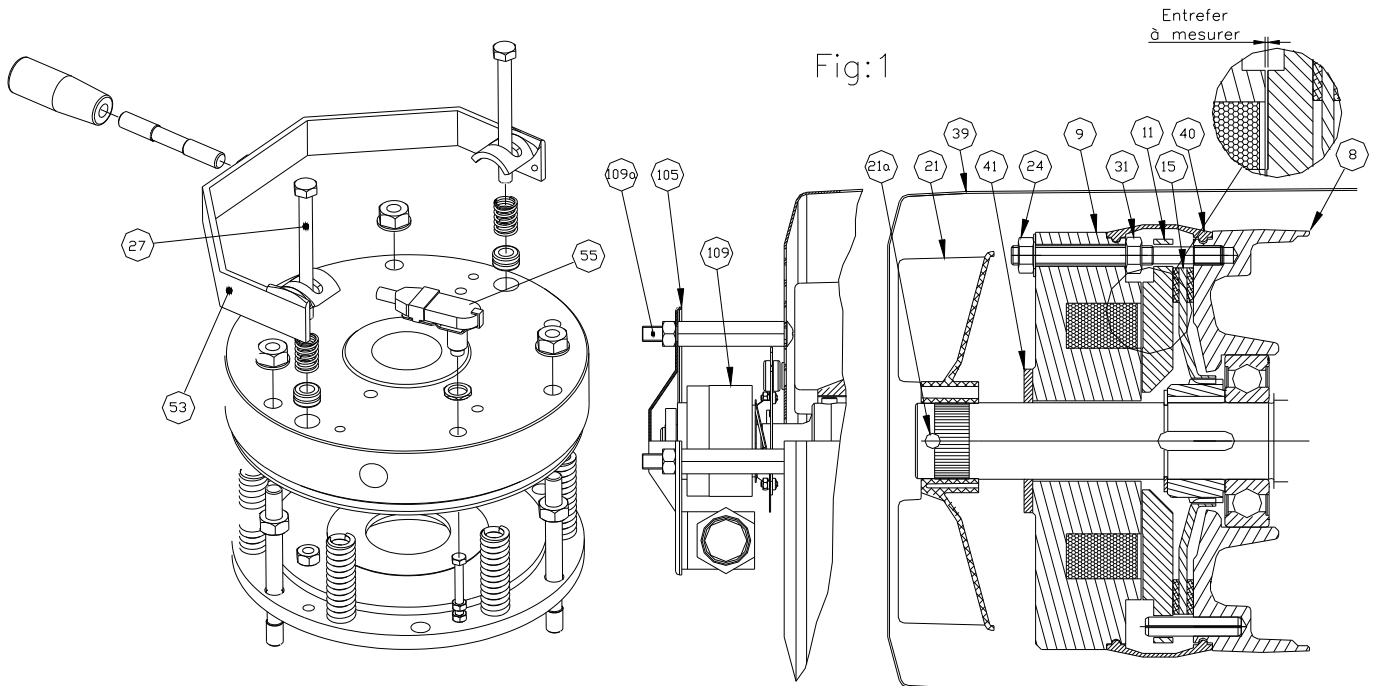


Fig:3

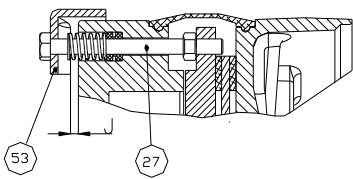


Fig:4

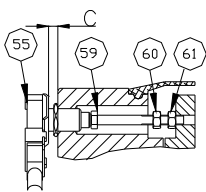


Fig:2

