LEROY SOMER®

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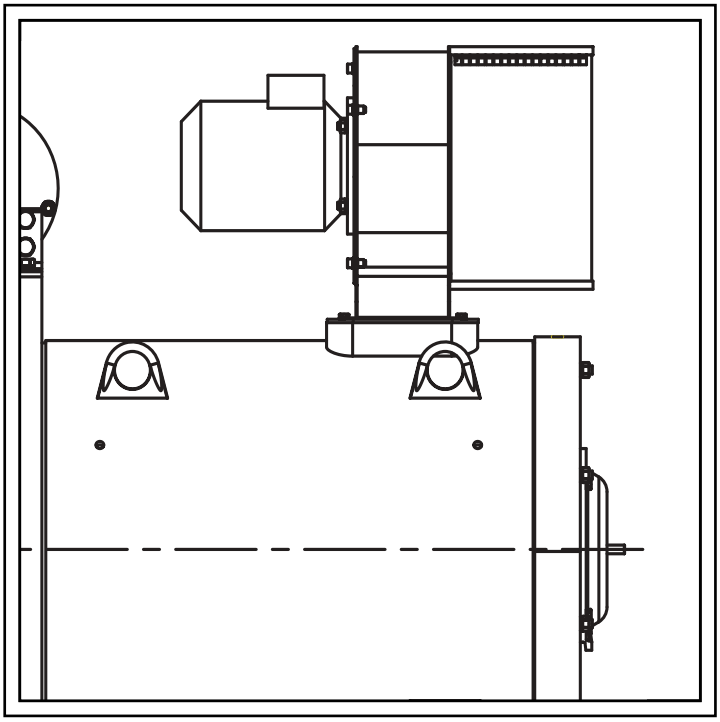
This manual is to be given to the end user



X8 X13A X14 - AC Gearless

Installation and maintenance

X8 X13A X14 - AC GEARLESS

THIS MANUAL MUST REMAINS WITH THE MACHINE.
THE TABLE (page 4) MUST BE SUPPLEMENTED TO ATTEST GOOD REALIZATION OF THE MAINTENANCE ACTIONS.

X8 X13A X14 - AC GEARLESS

SOMMAIRE

1 - MAINTENANCE

Monitoring table of the maintenance actions X8-X13A-X14

Serial number	
Motor type	
Date of starting machine	

OPERATION	see §	*Time after starting*																																											
		Date (years)	0,5	1	1,5	2	2,5	3	3,5	4	4,5	5	5,5	6	6,5	7	7,5	8	8,5	9	9,5	10	10,5	11	11,5	12	12,5	13	13,5	14	14,5	15	15,5	16	16,5	17	17,5	18	18,5	19	19,5	20
		Visa																																											
		Date																																										
Dimension x	6.6.3																																												
Check spring **41** length	6.6.2																																											
Checking of the stroke adjustment nut tightening **55**	6.6.3																																											
Linings state and absence of grease traces **61**	6.6.1																																											
Surface quality of the sheave brake drum **28a**	6.6.1																																											
Greasing **G1**																																												
Greasing **G2-4**																																												

Frequency of control and maintenance operations

X8 X13A X14 - AC GEARLESS

In order to obtain complete satisfaction from your new LEROY–SOMER gearless machine, it is important to comply with the following instructions.

IMPORTANT :
Contact with any live or rotating parts may cause injury. Never touch the motor during operation, as this is likely to become hot.
Installation, servicing and maintenance must only be carried out by a qualified member of staff.
LEROY-SOMER cannot be held responsible for any problems arising from failure to comply with the instructions in this manual.
The machine is under warranty as long as it is not partially or completely dismantled without LS assistance (or approval) during the warranty period.
CAUTION
Make sure the car is mechanically immobilized before performing any maintenance on the motor or on the brake.

2 - SERVICING

2.1 - First operation

Check that electrical machinery is properly grounded before carrying out the first operation to protect the staff from electric shock.

Run the machine and check the following points :
- abnormal noise,
- vibrations,
- action of switch contacts,
- all fixings and electrical connections are fully tightened,
- the state of the bearings,
- abnormal running,
- that the blower motor is rotating in the correct direction.
- Check also the currrent and the voltage on the machine when it is running with rated load.

Important : never run the machine without the blower switched on.

After some hours running, check any trace of grease on the brake drum.
- Secure the installation.
If some grease is detected on the braking surface, apply the following procedure :
- open the arms,
- clean the sheave (braking surface) and the brake lining with a clean and dry tissue until grease traces have disappeard,
- scratch the brake lining located under the sabot with very fine sam paper until grease traces have disappeared.

2.2 - Maintenance

During service visits, for an optimized life expectancy of the machine, proceed with the following operations.
Verification of brake arm position (L at left and R at right).

2.2.1 - Every month

- Check for loose bolts, nuts or electrical connections.
- Check for abnormal noise, vibration or abnormal running.
- Remove grease traces (if any) on the sheave and brake drum **28a** (see § 2.1).

2.2.2 - After one month, then every six months

- Check the brake springs are properly adjusted. If they are not, the springs must be readjusted (see section 6.6.2).
- Check the plunger stroke is properly adjusted. If it is not, the plunger stroke must be readjusted (see section 6.6.3).

Parts	After 1 month
Inspection and adjustments	
Bolts and nuts tightening	●
Noise & vibration inspection	●
Dimension x (brake)	●
Check spring length (repere 41)	●
Checking of the stroke adjustment screw tightening (repere 55)	●
Linings state and absence of trace of grease (repere 61)	●

2.2.3 - Every year

- Motor bearing (NDE) maintenance
Grease with 96 g original grease (specified on motor name plate) or equivalent at point **G1** (grease nipple).

2.2.4 - Every five years

- Divertor sheave bearing maintenance (see page 11).
Unscrew the two plugs **G4**. Replace them by a grease nipple. Grease with 70 to 75 g of the original grease (specified on Name plate).
- Traction sheave bearing (DE) maintenance
X8-X14 : (see page 13) connect the grease nipple to **G2**. Grease with 70 to 75 g of original grease.
X13A : (see page 14) insert a splash tube of 150 mm, 8 mm outside diameter into one of the plug **G2**. The end of the splash tube is then in the bearing, as long as the 150 mm of the tube are fully entered (make sure a roller does not stop the tube: see detail on drawing page 14). Then grease it like X8.

3 - RECEIPT

Initial checks :
- As soon as you receive the machine, inspect the state of the packing and the machine. In the event of any damage having been caused by transportation, notify your haulage contractor.
- Next, ensure that the identification plate conforms with the contract specifications and certified data.

4 - STORAGE

4.1 - Storage area

The storage area must be dry, and sheltered from the elements. With a minimum temperature of -40°C, it should not be subject to frequent temperature variations (to avoid the risk of condensation), and should be free from vibration, dust and corrosive gases.

4.2 - Long-term storage (> 3 months)

- Place the motor in an horizontal position in a sealed watertight package (heat-sealed bag, for example) containing a deshydrating sachet and bag large enough to protect the machine, taking account of its size and the humidity in the storage area.
- The grooves of the traction sheave are protected by a special wax; don't remove this protective film, it protects the exposed surfaces.
- In case of vibrations in the warehouse, it is recommended to rotate the traction sheave twice a month minimum (this can be done by releasing brake with manual realesed system or by opening brake arms). After this operation put the brake back into its original position. Make sure the protective paper between the lining and the brake wheel is still in position.

5 - ENVIRONMENT

Rated characteristics for these motors are given for a normal environment (specified in 60034-1) :
- altitude 1000 m or less,
- maximum relative humidity: less than 95%,
- temperature between -10 and + 40 °C.

More stringent specifications can be accommodated by derating if the particular requirements are stated at the time of ordering.

6 - COMMISSIONING

6.1 - Insulation inspection (before installation)

If the motor has been stored for several months, it is essential to check that :
• the inside is clean and free of condensation;
• the motor is correctly insulated (minimum of >100 MΩ powered at 500 VDC.) after disconnection of all the electronic circuits.

WARNING : Do not apply the megohmmeter to the thermal detector terminals, as this may damage them.

If the correct insulation value is not reached, the motor should be dried out as follows :

6.1.1 - By heating externally

- Place the motor in an oven at 70°C, ensuring all openings are free of obstruction, for 24 hours or more until the correct insulation is obtained.
- Take care to rise the temperature gradually to avoid condensation.
- While drying, make regular checks on the insulation values which will tend to fall initially and then rise.

6.1.2 - By heating internally

Connect the three motor windings in serial. Supply them with a low DC voltage (to get 10% of rated current calculated with the winding resistances) increase voltage until the current get 50% of rated current. Supply during four hours temperature of motor housing must exceed 50°C (in the middle of the housing).

6.2 - Installation

⚠ Incorrect lifting methods may be dangerous for personnel and may cause serious damage to the machine.
Check that the machine weight is below the lifting capacity of any sling or hook. The only way to properly lift the complete machine is to attach it by points which are recommended (see figure 1 page 7).
Motors should be installed in a location where cooling air (which must be low in humidity, free of dust, steam and corrosive gases) can enter and exit freely. Ensure that warm air emissions cannot be drawn back in (motor against a wall for example).

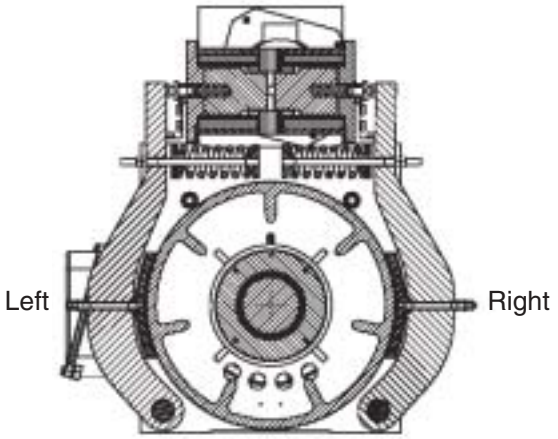
6.3 - Filter

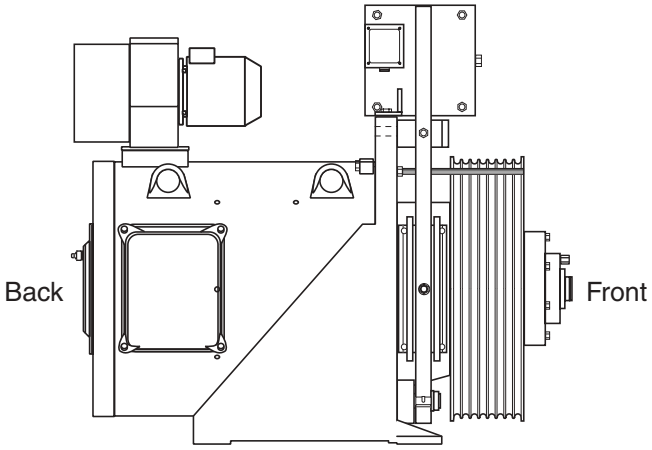
Motors are fitted with filter **F** to protect the gearless machine from dust. Remove the filter after cleaning the machine room and the hoist way when starting exploitation.

X8 X13A X14 - AC GEARLESS

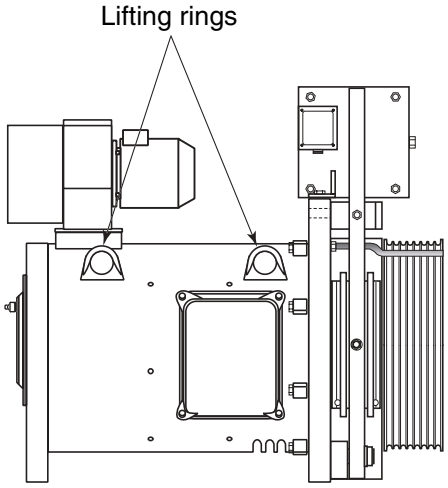
Vues of motor

See from pulley side

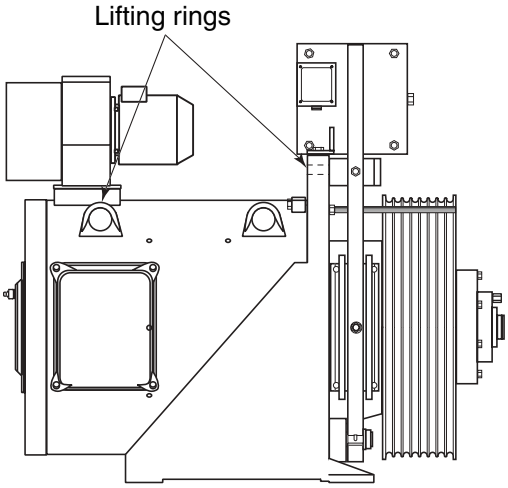




Lifting



X 8 - X14



X 13 A

If the motor is fitted on the chassis, do not lift with the lifting rings of the motor.

6.3.1 - Cleaning

- Release the brake by hand with the brake lever, or release the brake springs and open the brake arms, and remove the protection which is between the brake shoes and the brake wheel of the traction sheave.
- Remove any rust-protective wax from the sheave.

⚠ Do not use any abrasive material, but rather a cloth soaked in alcohol or solvent. Use a solvent wich does not contain oil to avoid oil contamination of the friction surfaces.
WARNING : only use the solvent in a ventilated area.

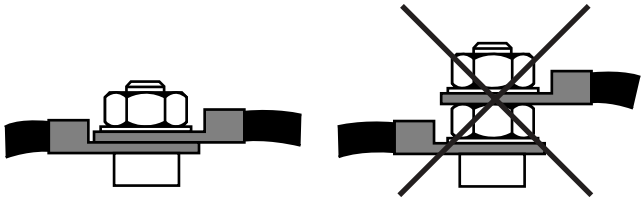
6.3.2 - Mechanical installation

- The gearless machine must be installed on a bed-plate not subject to vibrations, and must be secured by four M30 bolts,nuts, and washers. The bolts must be secured only when ropes, car, counter-weight, traction sheave and secondary sheave are perfectly aligned. When this operation is completed, weld the plates attached to the U bolts of the secondary sheave if it is supplied.
- Before installing the ropes, check that the traction sheave can rotate freely by releasing the brake and rotating the sheave by hand.
- When the ropes are installed, adjust the clearance* between the ropes and the rope guard and tighten the four bolts to secure the rope guard.

⚠ *** WARNING : according specifications and under the responsability of the installator.**

6.4 - Connection

- See connection diagrams in the terminal boxes (motor, brake and blower).
- Connect the motor using cables and connectors of an appropriate size.
- Check also that connectors are crimped onto the cables.
Be particularly careful when screwing on the terminal nuts (if done incorrectly, this could damage the connections by overheating : see figure 2).
- During installation, include safety devices to protect the motor against.
- Connect the supply cables to the terminals U1, V1, W1 as per IEC 60034-1 to have clock-wise rotation of the shaft (viewed from the pulley).
- If case, connect thermistors to the remote control.
- Connect the earth terminal.



Correct **Incorrect** fig. 2

6.5 - Bearing inspection

When the storage exceeds one year, it is advisable to regrease (see section 2.2).

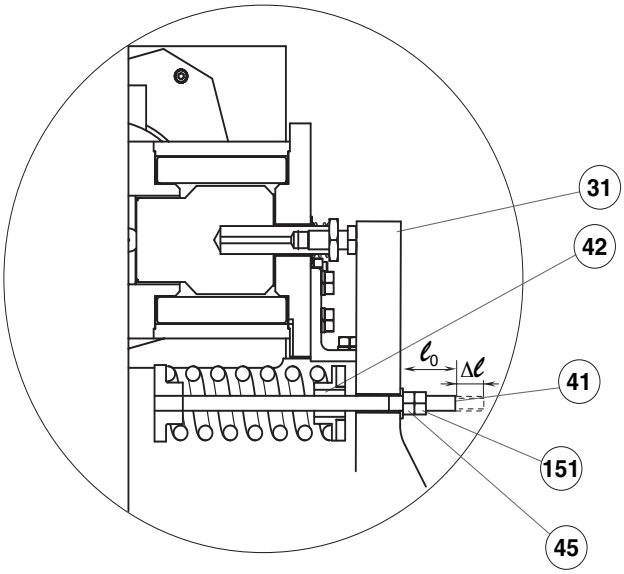
6.6 - Brake adjustment

6.6.1 - Definitions and limits

x : Plunger stroke travel.
ℓ_0 : Torque adjust screw lengh when brake lining are just on contact whith brake drum (no pressure).
$\Delta\ell$: Additive torque adjust screw length to induce a pressure on brake lining and get a brake torque.

6.6.2 - Torque adjustment

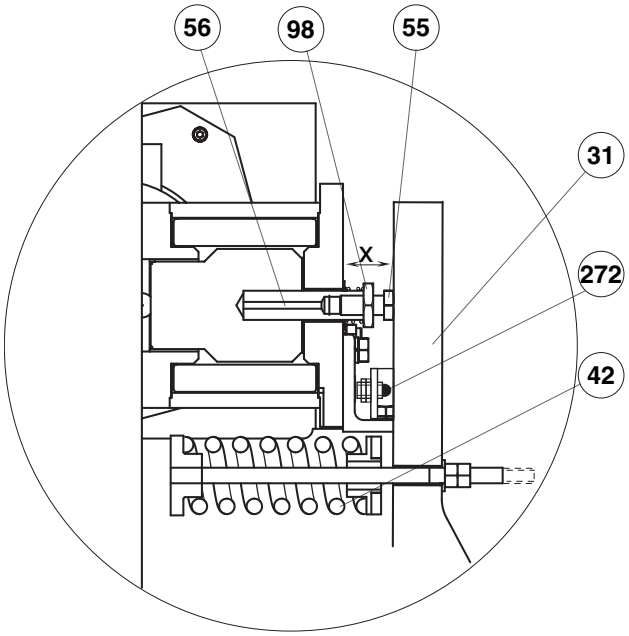
⚠ Before carrying out the adjustments, disconnect the brake supply. Ensure the car immobilization by appropriate mechanical system.
Set the brake with the spring **42**. Tighter the nuts **45** until the compression mentioned on the brake plate is reached.



- Unlock counter nut **151**.
- Adjust ℓ_0 by tightening the nut **45** at maximum with **nude hand**
- Adjust brake torque by adjusting the spring length with nut **45**.
- Lock counter nut **151**.

After the setting, carefully tighter the nut and the counternut **151** and **45**.
Brake torque is proportional to the length of the spring 42: $\Delta\ell$

6.6.3 - Plunger stroke adjustment

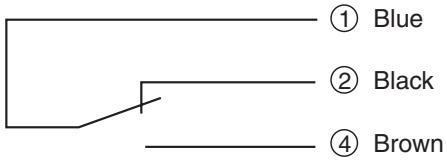


- Unlock counter nut **98**.
- Tighten brake stroke adjust screw **55** to its shortest position.
- Supply brake whith holding voltage to place the brake plunger in open position.
- Untighten screw **55** to place it in contact with brake arm **31** (maximum possible whith hand), brake arms must still remain closed. At the position $x = x_0$.
- Continue to untighten srew **55** with a spanner to get $x = x_0 + 2mm$
- Lock counter nut **98**.
- Once it has be done for the two side of the brake, traction sheave must be free.
- Switch off brake supply.

6.6.4 - Microswitch adjustment (setting in plant)

- Adjust the position of the two microswitches **272** once all operations here above are done.

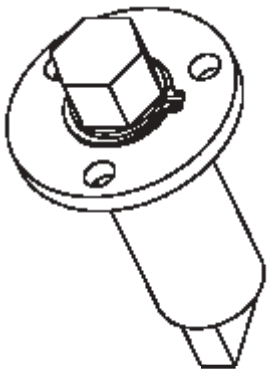
Micro-switchs diagram (brake closed)



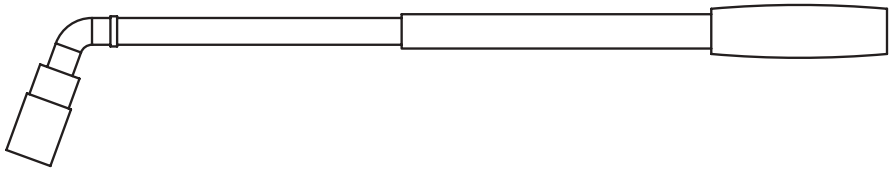
⚠ **WARNING : It's strictly forbidden to set the x dimension more than x0 + 2.5 mm.**
It's strictly forbbiden to set 42 more than $\Delta\ell$ = 24 mm for X8-X14 and $\Delta\ell$ = 30 mm for X13A

6.6.5 - Brake manual release

Remove the stopper of the brake manual release.
The brake manual release must be used only during the motor setting or servicing operations.
The brake manual release device must be removed during normal running of the elevator.
Give the stopper of the brake manual release after the servicing operations.



Brake manuel wrench



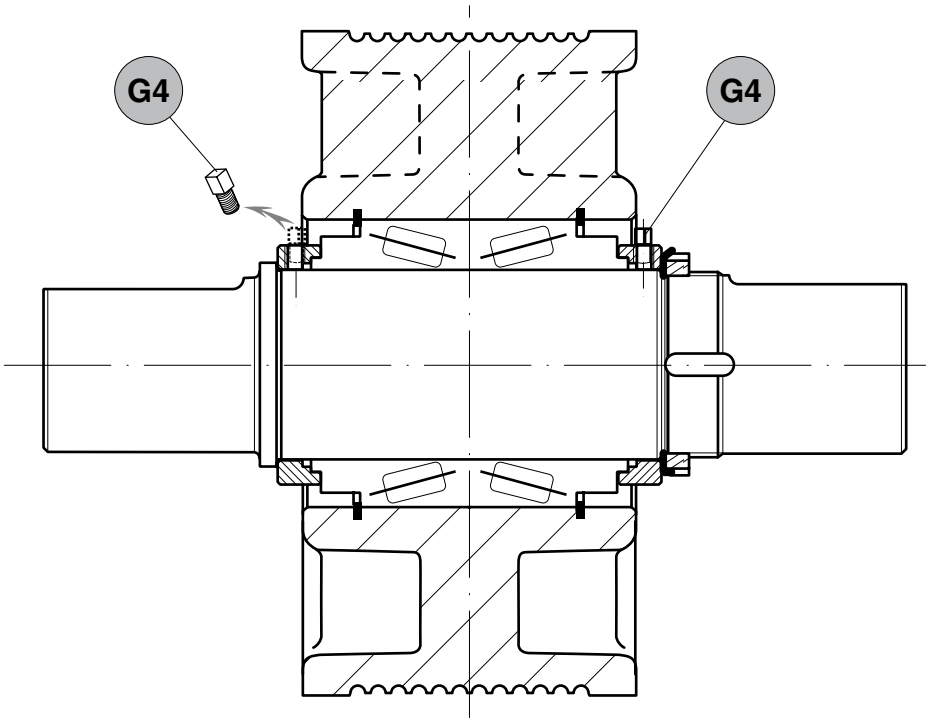
7 - ORDERING SPARE PARTS

To ensure efficient after-sales service, each order for spare parts should specify the following elements :
- motor type and serial n°

and for each part :
- part description and (or) identification n°,
- quantity ordered.

For instant identification, please give the reference of the document used for ordering (plan or manual n°). Details of the type and serial n° appear on the motor identification plate.

Divertor sheave greasing



Divertor sheave

Legend

Rep.	Qty	Designation
G4	2	Square head plug

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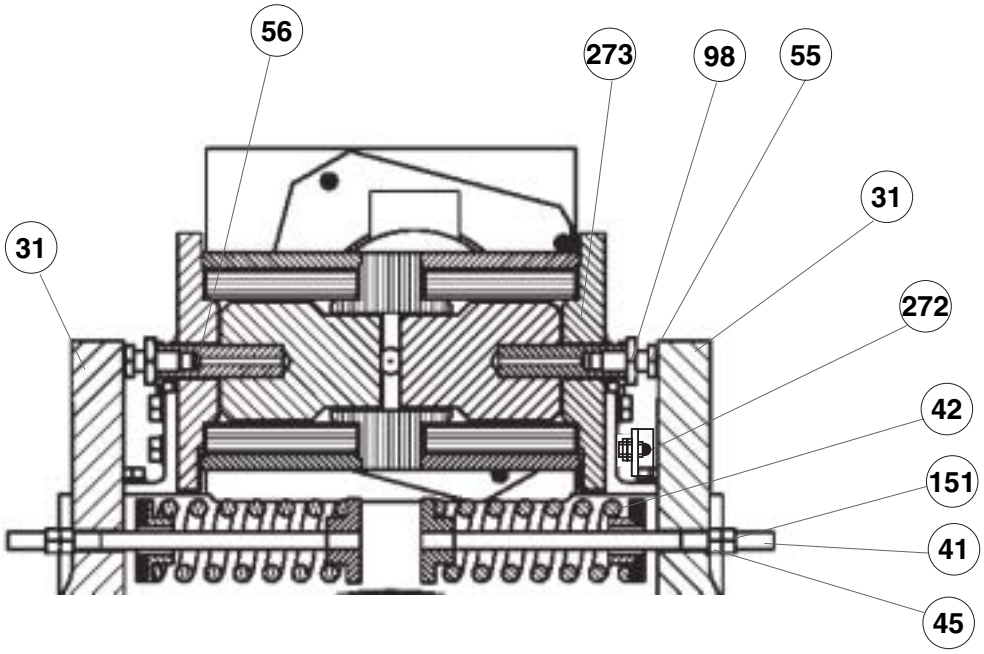
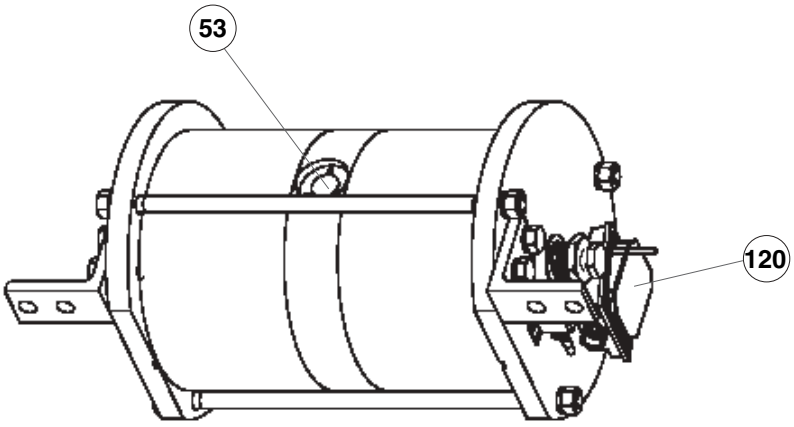
Brake system X8 - X13A - X14





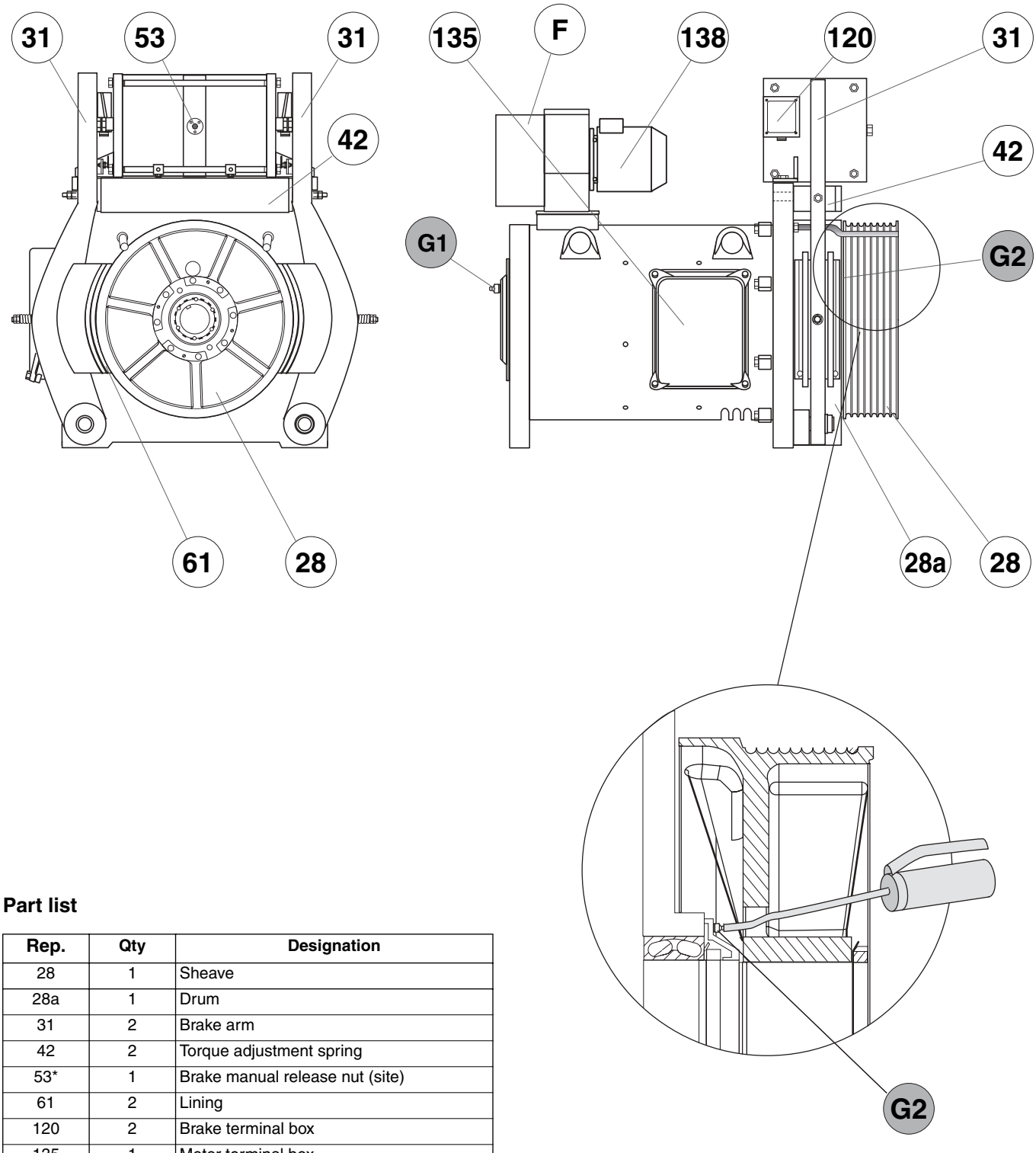
Part list

Rep.	Qty	Designation	Rep.	Qty	Designation
31	2	Brake arm	56	2	Plunger axle
41	2	Torque adjustment screw	98	2	Stroke adjustment counter nut
42	2	Torque adjustment spring	120	2	Brake terminal box
45	2	Torque adjustment nut	151	2	Torque adjustment counter nut
53*	1	Brake manual release nut (site)	272	2	Microswitch
55	2	Stroke adjustment screw	273	2	Shock absorber ring

*** Has to be dismonted during anormal operation for safety reasons.**

X8 X13A X14 - AC GEARLESS

X8 - X14 - AC Gearless (Greasing)



Part list

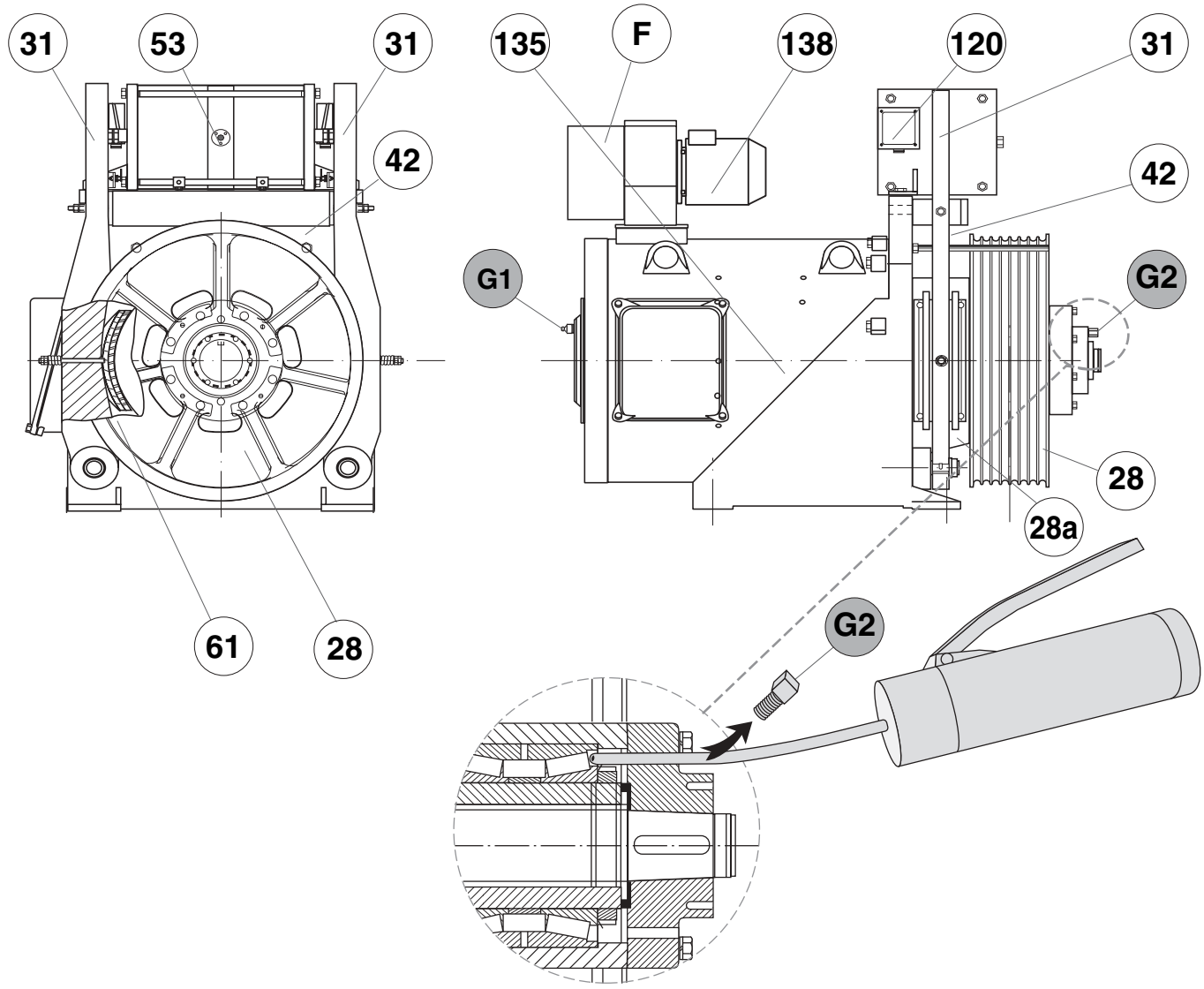
Rep.	Qty	Designation
28	1	Sheave
28a	1	Drum
31	2	Brake arm
42	2	Torque adjustment spring
53*	1	Brake manual release nut (site)
61	2	Lining
120	2	Brake terminal box
135	1	Motor terminal box
138	1	Motor fan
F	1	Filter
G	2	Greasing device

*** Has to be dismonted during anormal operation for safety reasons.**

Note : Grease quantities must not be exceeded (see on the name plate).

X8 X13A X14 - AC GEARLESS

X13A - AC Gearless (Greasing)



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LEROY-SOMER 16015 ANGOULÊME CEDEX - FRANCE

RCS ANGOULÊME N° B 671 820 223
S.A. au capital de 62 779 000 €

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