LEROY SOMER

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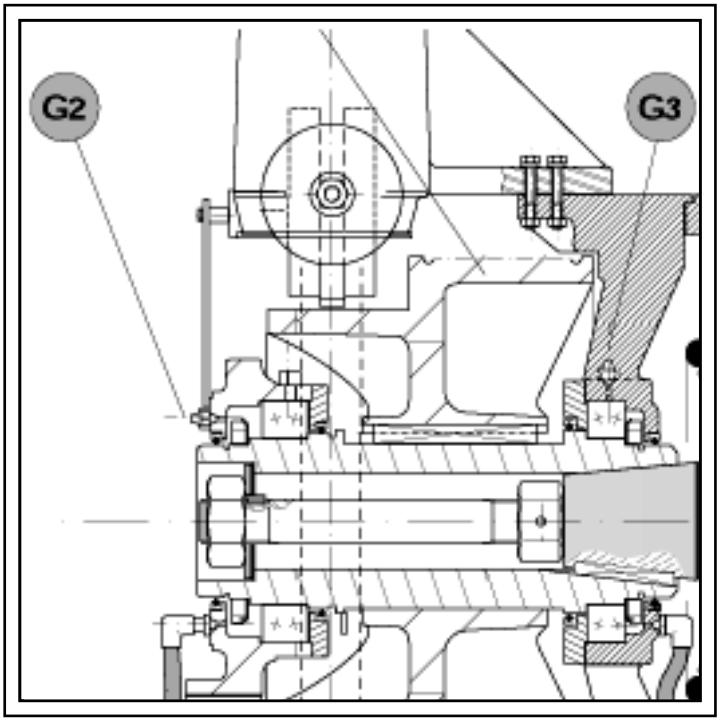
This manual is to be given to the end user



X20 – 30 – 36 AC GEARLESS

Installation and maintenance

X20 – 30 – 36 – 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 casing 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.

1 - RECEIPT

Initial checks :
- As soon as you receive the machine, inspect the state of the packing and of 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.

2 - STORAGE

2.1 - 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.

2.2 - Long-term storage (> 3 months)

- Place the motor in an horizontal position in a sealed watertight package (heat-sealed bag, for example) containing a dehydrating sachet and 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 release the brake by hand (with the brake release lever) or to release the brake springs and open the brake arms. Rotate the traction sheave twice a month minimum. Then put the brake back into its original position. Make sure the protective paper between the lining and the brake wheel is still in position.

3 - ENVIRONMENT

Rated characteristics for these motors are given for a normal environment (specified in IEC 34.1) :
- altitude 1000 m or less,
- maximum relative humidity: less than 95%,
- temperature between -16 and + 40 °C.
More stringent specifications can be accommodated by derating if the particular requirements are stated at the time of ordering.

4 - COMMISSIONING

4.1 - 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 >100MΩ, powered at 500 V.D.C. for 60 seconds) 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:

4.1.1 - By heating externally

- Place the motor in an oven at 70°C, ensuring all openings are free of obstruction, for 27 hours or more until the correct isolation is obtained.
- Take care to raise the temperature gradually to avoid condensation.
- While drying, make regular checks on the insulation values which will tend to fall initially and then rise.

4.1.2 - By heating internally

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

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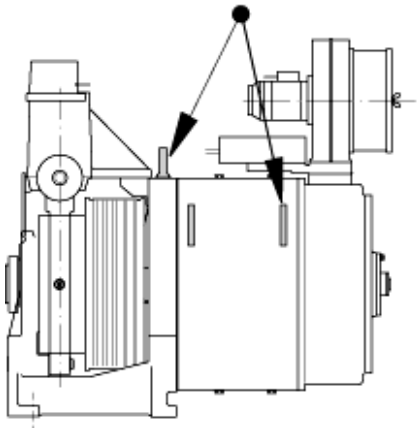
4.2 - Installation

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).

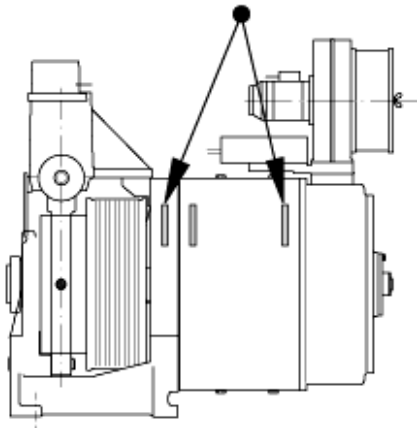
Motors should be installed in a location where cooling air (which must be low in humidity, free of dust, steam and corrosive gases) can enter and exit freely. Ensure that warm air emissions cannot be drawn back in (motor against a wall for example).

Lifting rings



X20

Lifting rings



X30 - X36

4.2.1 - 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.

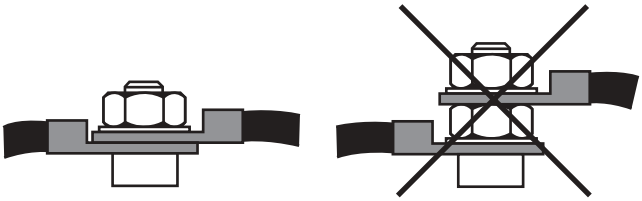
Do not use any abrasive material, but rather a cloth soaked in alcohol or solvent. Use a solvent wich does not contain oil to avoid oil contamination of the friction surfaces.
WARNING: only use the solvent in a ventilated area.
If the machines are delivered with a bed-plate and a secondary sheave, the secondary sheave has to be cleaned as well (see above).

4.2.2 - 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 two bolts to secure the rope guard.

4.3 - 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.
- Connect the supply cables to the terminals U1, V1, W1 as per IEC 34.1 to have clock-wise rotation of the shaft.
- If case, connect thermistors to the remote control.
- Connect the earth terminal.



Correct **Incorrect**

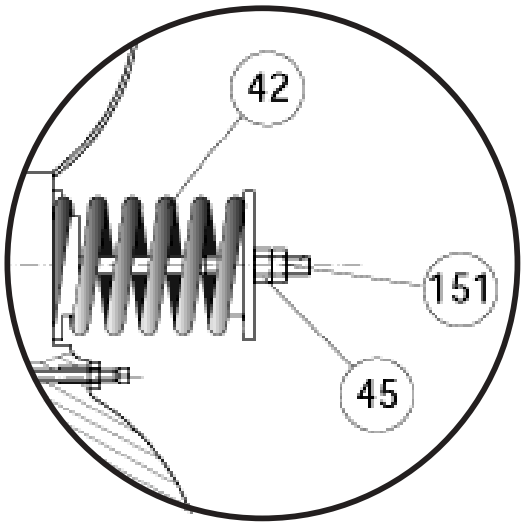
4.4 - Bearing inspection

When the storage exceeds one year, it is advisable to regrease (see section 5.2).

4.5 - Brake adjustment

Before carrying out the adjustments, disconnect the brake supply.

4.5.1 - Spring adjustment



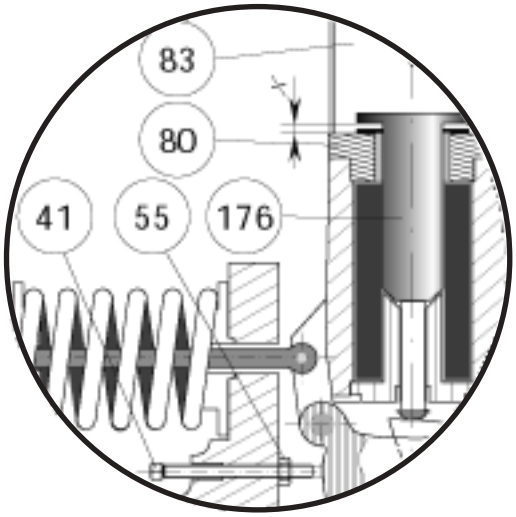
Adjust the $\Delta\ell$ dimension of the springs (see figure 3) to obtain the braking torque complying with the elevator code in use. Maximum values for $\Delta\ell$ are in technical catalogue.
- Unlock the counter nuts **45** and **151**.
- Adjust the spring length to $\Delta\ell$ with counter nuts **45**.
- Lock the counter nuts **45** and **151**.

4.5.2 - Plunger stroke adjustment

Dimension x must be adjusted around 11 mm to obtain 0.1mm minimum air gap between the brake shoe and drum (see figure 4 and drawing page 6 and 7):
- Dismantle the brake covers **83**.
- Unlock the counter nuts **55**.
- Use screws **41** to enable a wedge of x mm thickness to slide under the plunger head. Adjust both side of the brake at the same time.
- Lock the counter nuts **55**.
- Reassemble the brake covers.

Once the adjustment is done, connect the brake supply.

Release the mechanical system which immobilized the car before the adjustments.



4.6 - Filter

Motors are fitted with filter **F** to protect the gearless machine from dust. Remove the filter **F** after cleanning the machine room and the hoist way when the building is beginning to be inhabited.

5 - SERVICING

5.1 - 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.

5.2 - Maintenance

During service visits, for an optimized life expectancy of the machine, proceed with the following operations.

5.2.1 - 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 **28**.

5.2.2 - 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 4.5.1).
- Put two or three drops of oil (Rotogliss ISO 32 - HAFA) in the brake spring axis at location **O**.
- Check the plunger stroke is properly adjusted. If it is not, the plunger stroke must be readjusted (see section 4.5.2).

5.2.3 - Every year

- Motor bearing (NDE) maintenance : open drain plug (363). Grease with original grease at point **G1** (grease nipple). Screw drain plug (363) at the end of the operation.

5.2.4 - Every five years

- Divertor sheave bearing maintenance : Unscrew the two plugs **G4**. Replace one of them by a grease nipple. Grease with 70 to 75 g of the original grease. Put the two plugs **G4** back at the end of the operation.
- Traction sheave bearing (DE) maintenance : grease with original grease at point **G2** and **G3**. See table "Grease quantity per bearing".

PARTS	PERIODICITY			
	1 month	6 months	1 year	every 5 years
Inspection and adjustments				
Bolts and nuts tightening	●			
Noise & vibration inspection	●			
Brake springs adjustment		●		
Plunger stroke		●		
Greasing				
Points		**O**	**G1**	**G2-3-4**

6 - 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 number). Details of the type and serial number appear on the motor identification plate.

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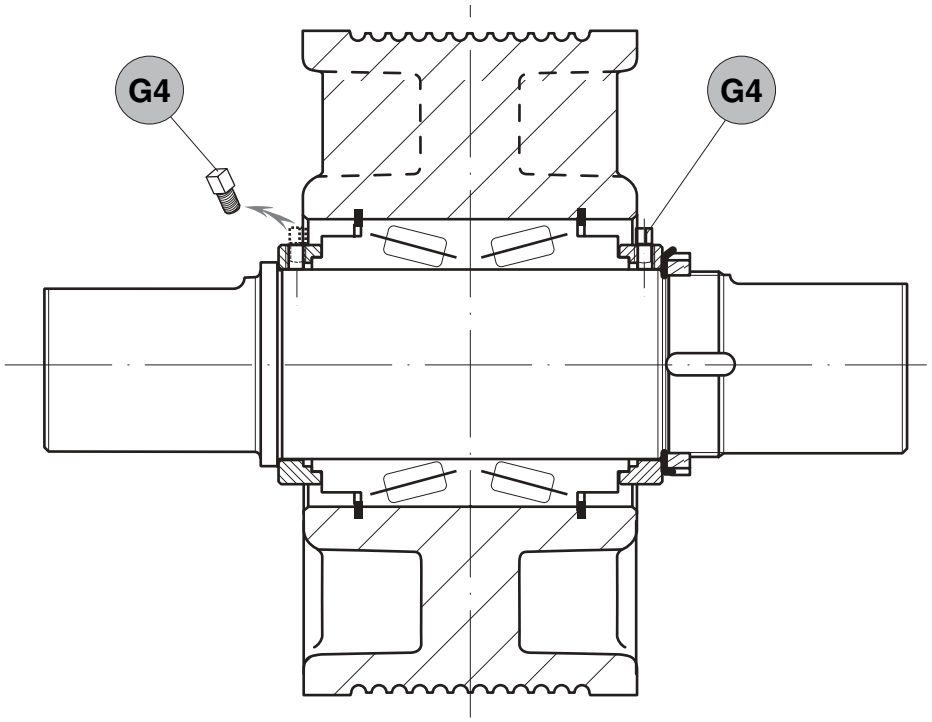
SHEAVE LUBRICATING-POINT



Secondary sheave

Rep.	Qty	Designation
G4	2	Square head plug

PART LIST

Rep.	Qty	Designation	Rep.	Qty	Designation
28	1	Sheave and drum	151	2	Torque adjustment counter nut
31	2	Brake arm	168	1	Blower motor
41	2	Airgap adjustment screw	176	2	Plunger
42	2	Torque adjustment spring	177	2	Rubber
45	2	Adjustment nut	272	2	Microswitch
52	2	Brake lever	301	1	Rotor
55	2	Airgap adjustment counter nut	363	1	Drain plug
63	2	Torque adjustment screw	G1	1	Greaser
80	2	Brake cover plate	G2	2	Square head plug
83	2	Brake cover	G3	1	Greaser
90	2	Plunger stop	O	4	Lubricating-point
92	2	Plunger axle	DE	1	Drive end bearing
96	2	Brake coil	NDE	1	Non drive end bearing
148	1	Stator	FF	1	Front frame bearing
			F	1	Filter

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DRAWINGS

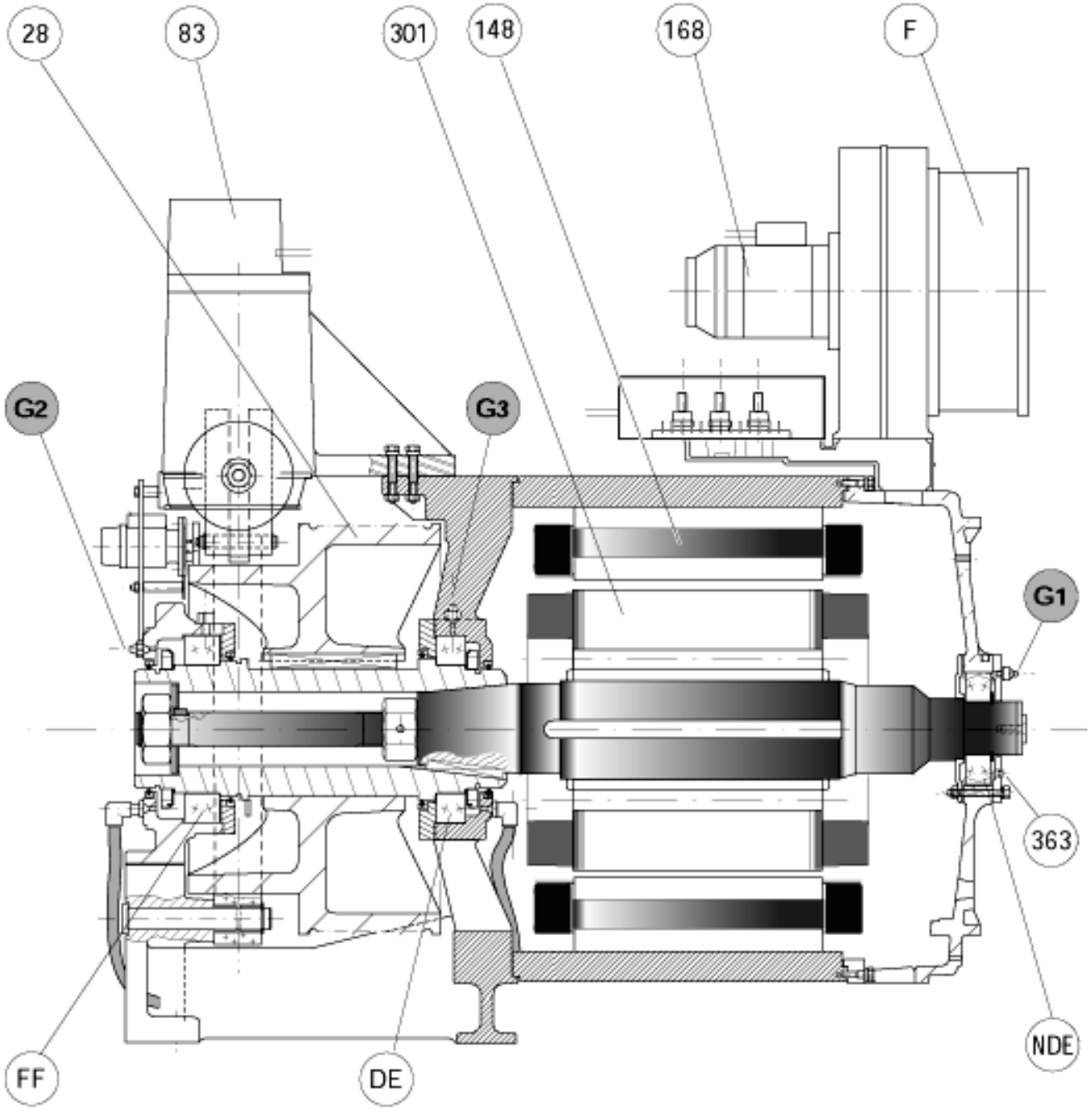

Fig. 5

X20 – 30 – 36 – AC GEARLESS

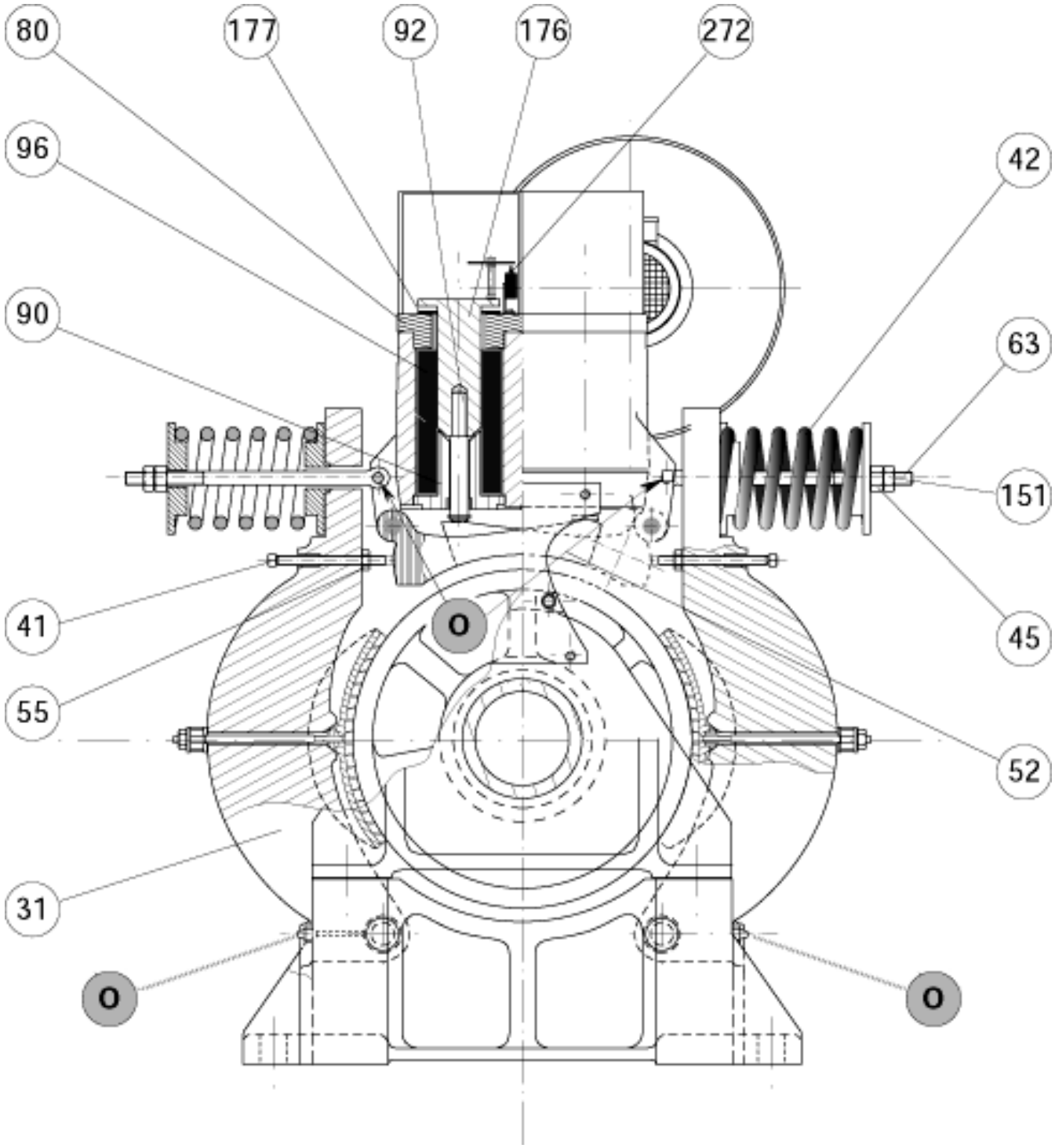

Fig. 6

X20 – 30 – 36 – AC GEARLESS

X20 – 30 – 36 – AC GEARLESS

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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