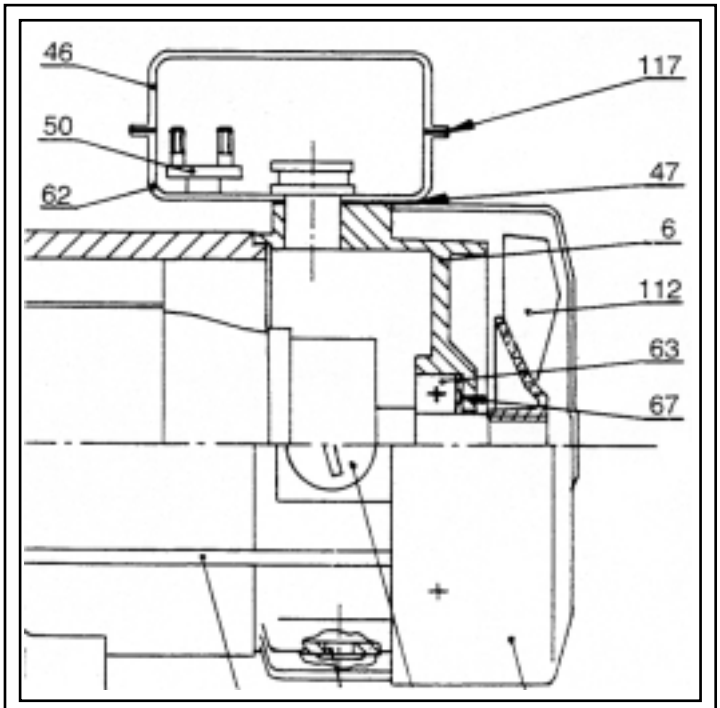
LEROY SOMER®

Réf. 809 - O33 / b - 9.94



MFA

IEC 56-63-71-80 - Nema Frame 56

D.C. motors

Installation and maintenance

GN 047501

COMMISSIONING

- Before starting, **check the motor power supply**.
- Ensure this supply is adjusted to provide a current which does not exceed a limiting starting current of 1.5 times the nominal current indicated on the plate.

NB : *This limit takes into account the most difficult operating conditions (single phase rectified supply via mixed bridge without inductance). In the most favourable conditions (additional inductance, transistorised supply, etc) higher values can be used in consultation with LEROY-SOMER.*

- Check that :
  - The characteristics specified on the identification plate correspond with those required.
  - The rotor turns freely by hand. It should not stick or catch at any point.
  - Pulleys or jointing sleeves should be balanced to correspond to the motor balancing. Check the letter on the shaft end if appropriate.
  - The motor shaft is aligned with the driven machine, depending on the degree of play allowed by the chosen connection.
  - The drive belt tension is correct, if appropriate (too high a tension can overload the bearings).

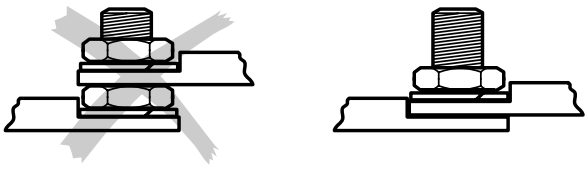
NB : *Where the environment contains no elements likely to adversely affect correct motor operation (penetrating water, airborne dust particles, etc), the user may leave open the hole under the brush holder end flange, so that dust from the brushes can drop out naturally (remove plug 122).*

WARNING

During continuous operation at full load, the motor housing can reach a high surface temperature :
AVOID ANY RISK OF CONTACT WITH PARTS OF THE BODY.

CONNECTION

Cables and connectors must be the correct size for the current.



Be particularly careful when screwing on the terminal nuts (if done incorrectly, this could cause overheating).

SERVICING

BRUSHES

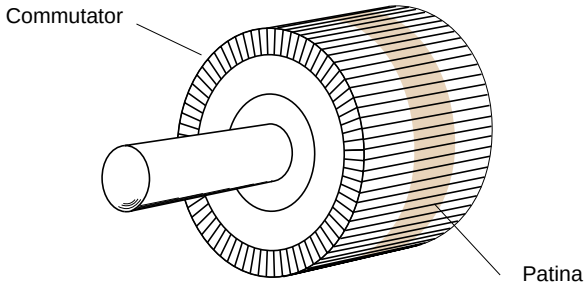
- Check the degree of wear at regular intervals.
  1st inspection : after 100 hours operation
  2nd inspection : after 300 hours operation
  3rd inspection : according to service interval table for the particular application.
- The length of each brush should never be less than :
  MFA 56 - MFA 63 - MFA 71 = 6 mm
  Nema Frame 56 = 6 mm
  MFA 80 = 13 mm

At each regular inspection, or at least every 500 hours, clean the whole motor (armature and commutator : interior and exterior, stator). First remove the plugs, then blow dry compressed air through the motor.

If the brushes need replacing, change the complete assembly. Only use brushes which are approved by LEROY-SOMER. After installation in their casing, new brushes should always be run in.

COMMUTATOR

When new, the surface is shiny, and copper-coloured. After a few hours of operation, a dark shiny tinge appears over the surface of the commutator, known as the patina. This micro-layer of copper oxide mixed with brush particles forms a



coating which protects the commutator. This is quite normal and a sign of correct operation.

- After replacing the brushes, you are advised to dismantle the motor completely in order to clean and inspect the state of the commutator.
- If the commutator is misshapen, scratched or badly worn, it should be removed for machining.
- Machining involves rotating the commutator and remilling the mica, and should only be carried out by a qualified mechanic.

MECHANICAL PARTS

- The ball bearings are permanently lubricated and do not require any maintenance.
- Any mechanical parts which may have been damaged should be replaced according to the parts list (see pages 4 to 7).
- **All orders for spare parts should specify the motor type and serial number (for the MFA 80, this is engraved on the frame near the identification plate).**

DISMANTLING

MFA motors can be dismantled without damaging the magnets.

- Switch off the motor and disconnect it from the machine.
- Mark the frame **(take care not to knock it** and break the magnets) with the angle of the brush holder endshield in relation to the housing. This position represents the brush adjustment deadline (to assist correct reassembly).
- Open the terminal box and mark the cables.
- Remove the motor cables.
- Remove brush retaining cap 394 and brushes 21 from their housing.
- Remove fan cover 72 (Nema frame 56, MFA 80).
- Remove fan 112 (Nema frame 56, MFA 80).
- Unscrew tie-rods 199 in order to separate drive endshield 7 and brush holder endshield 6 from the frame.
- Dislodge brush holder endshield 6 from its spigot.
- Remove drive endshield by pushing from the shaft end.
- Remove armature 1 from the shaft end, taking care to avoid damaging the magnets.
- Finally, remove any parts which need changing.

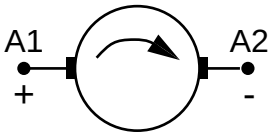
NB : *we recommend that the bearings are replaced whenever the motor is dismantled.*

REASSEMBLY

Clean all parts carefully, with dry compressed air (maximum 2 bars) for electrical parts; with white spirit or similar for mechanical parts.

- Perform the dismantling operations in reverse order.
- Once assembly is complete, ensure that the shaft rotates freely when turned by hand.
- If the angle of the non-drive endshield was not marked, take care to align the brushes correctly with respect to the housing.
- Switch on the motor and test operation.
- Reconnect the motor to the power terminals as marked before dismantling. Connect the motor to the machine according to the instructions in the commissioning section.

CONNECTION DIAGRAM



Direction of rotation
seen from shaft end

ELECTRICAL FAULTS

SYMPTOM	CAUSE	REMEDY
Rated speed lower or higher than usual tolerances (± 15% of rated speed)	Partial demagnetisation of magnets, usually after overcurrent	Replace the stator, which will have to be returned to the factory and remagnetised
Unusually high current at rated torque		
Commutator : traces of flashover, damage to metal, scratches, out-of-round	Power supply fault : • Not operated under correct conditions • Vibration	• Check power supply • Check type of use • Repair the commutator*
Different speed in one direction compared with the other	On reassembly incorrect indexing of housing in relation to brush holder endshield	Realign the motor

* Repair of the commutator should be undertaken by a qualified repairer, particularly the remilling of the mica.

MFA 56 RANGE

SPARE PARTS LIST

When ordering, please specify :
Type of motor
Serial number

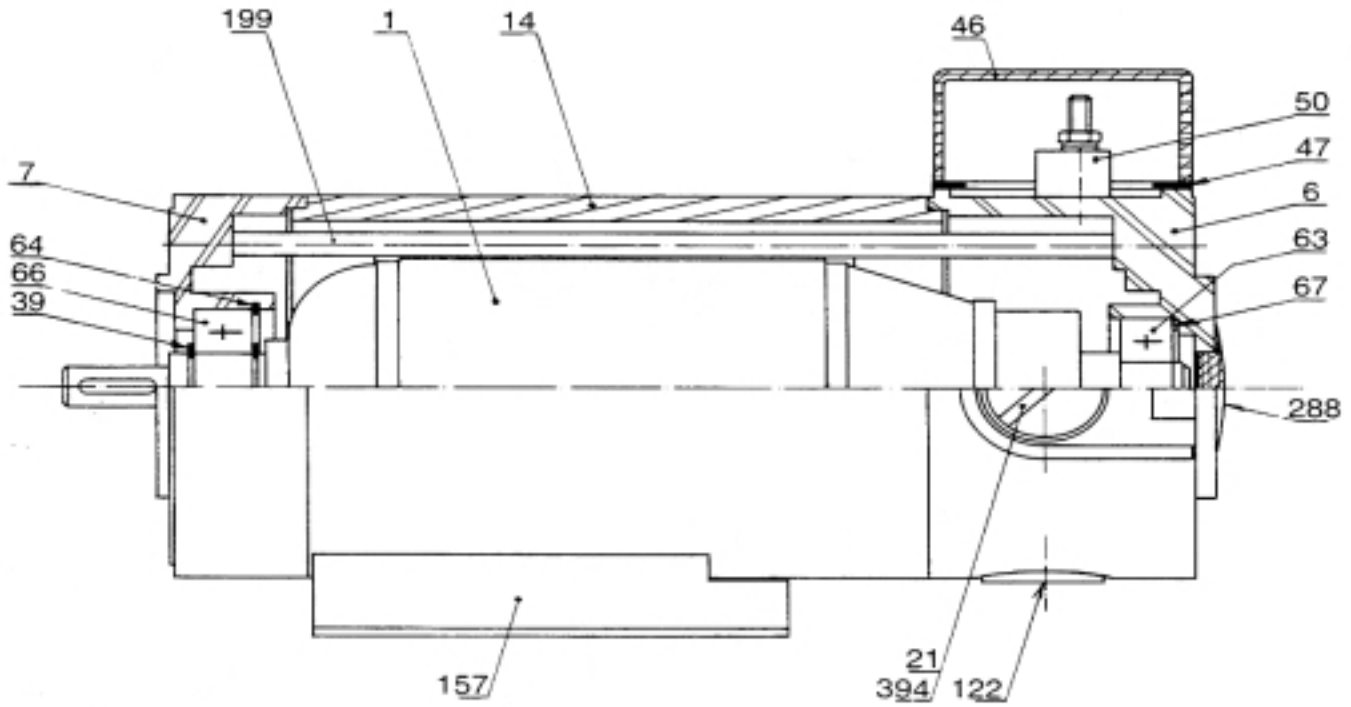
RECOMMENDED SPARE PARTS

- Set of brushes

IDENTIFICATION PLATE

LEROY SOMER® DC MOTOR
CAT NUMBER : _____
N° : _____ YEAR : _____
MODEL : _____
FIELD : _____
ARMATURE : _____ Volts _____ Amps
FORM FACTOR : _____
DUTY : _____
HP : _____ INSULATION : _____
RPM : _____
ENCLOSURE : _____ FRAME : _____
MFD by MOTEURS LEROY-SOMER
IEC 34-1 (1987) MADE IN FRANCE
GQ002701

PART LIST



No.	Qty	DESCRIPTION	No.	Qty	DESCRIPTION
1	1	Armature	157	1	Feet
6	1	Complete brush holder endshield	199	2	Tie-rods
7	1	Drive endshield	288	1	Endshield cover
14	1	Field magnet	394	2	Brush retaining cap
21	2	Brushes			
39	2	External retaining ring			
46	1	Terminal box cover			
47	1	Seal (between frame and terminal box)			
50	1	Terminal block			
63	1	Rear ball bearing			
64	1	Internal retaining ring			
66	1	Front ball bearing			
67	1	Spring washer			
122	1	Inspection plug			

MFA 63 - MFA 71 RANGE

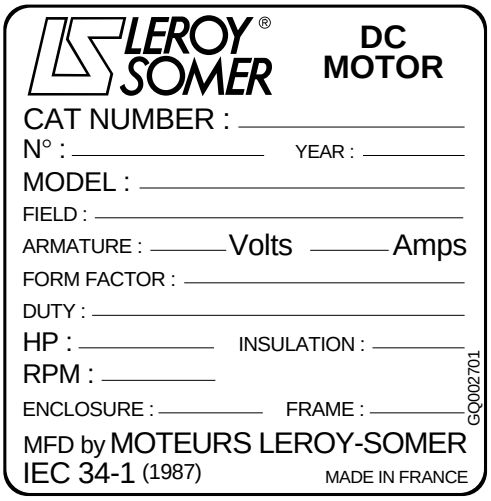
SPARE PARTS LIST

When ordering, please specify :
Type of motor
Serial number

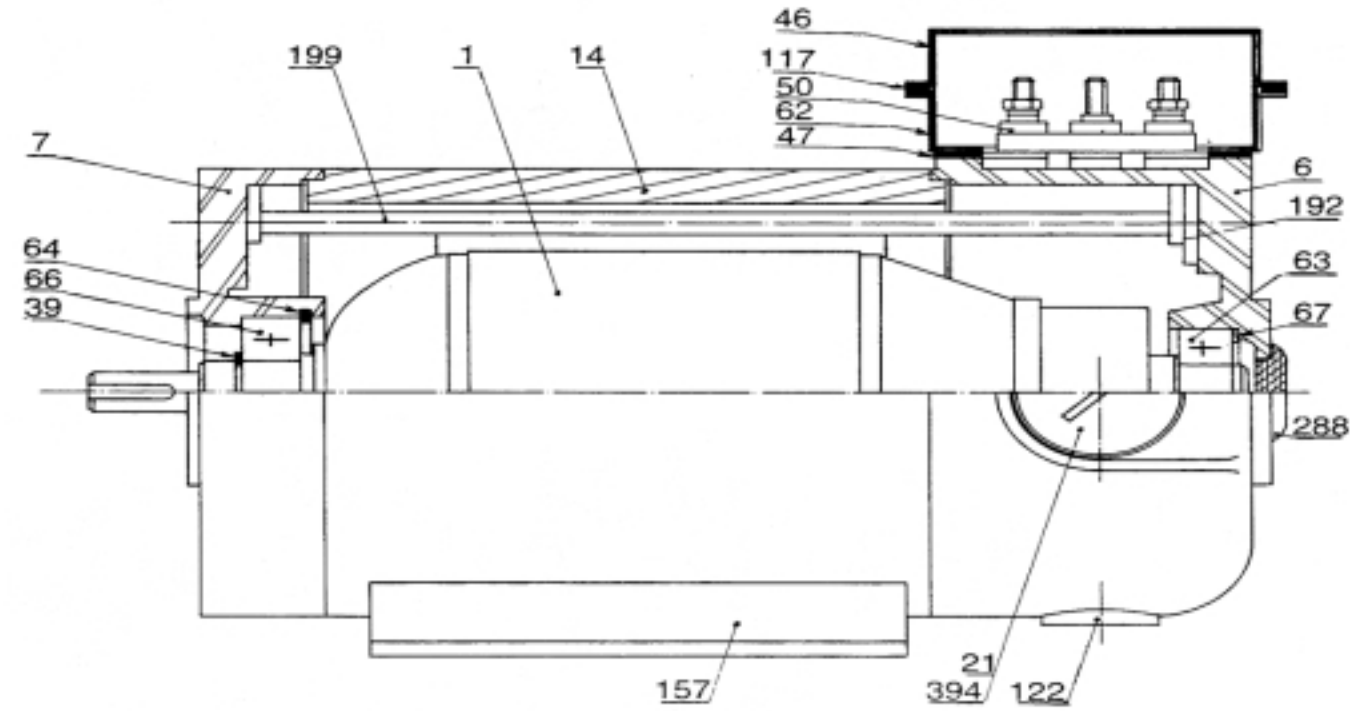
RECOMMENDED SPARE PARTS

- Set of brushes

IDENTIFICATION PLATE



PART LIST



No.	Qty	DESCRIPTION	No.	Qty	DESCRIPTION
1	1	Armature	117	1	Seal of terminal box cover
6	1	Complete brush holder endshield	122	1	Inspection plug
7	1	Drive endshield	157	1	Feet
14	1	Field magnet	192	2	Screws
21	2	Brushes	199	2	Tie-rods
39	✳	External retaining ring	288	1	Endshield cover
46	1	Terminal box cover	394	2	Brush retaining cap
47	1	Seal (between frame and terminal box)			
50	1	Terminal block			
62	1	Terminal box			
63	1	Rear ball bearing			
64	1	Internal retaining ring			
66	1	Front ball bearing			
67	1	Spring washer			

✳ Different quantities depending on the type of motor

Nema FRAME 56 RANGE

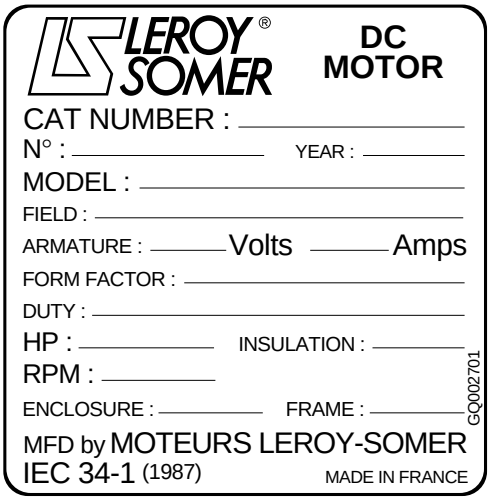
SPARE PARTS LIST

When ordering, please specify :
Type of motor
Serial number

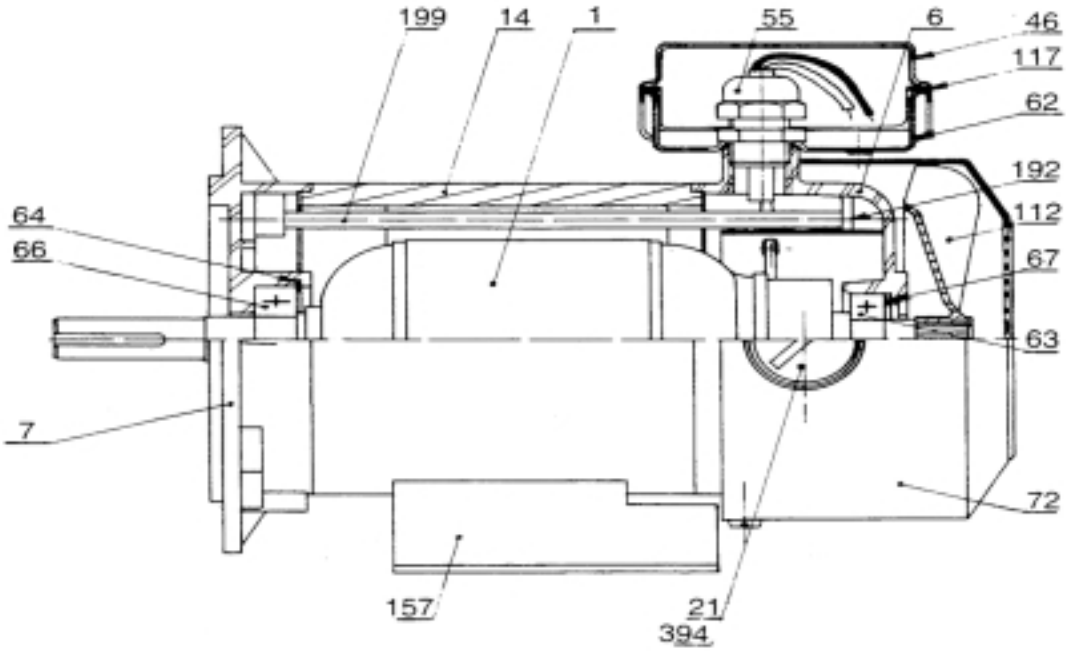
RECOMMENDED SPARE PARTS

- Set of brushes

IDENTIFICATION PLATE



PART LIST



No.	Qty	DESCRIPTION	No.	Qty	DESCRIPTION
1	1	Armature	157	1	Feet
6	1	Complete brush holder endshield	192	2	Screws
7	1	Drive endshield	199	2	Tie-rods
14	1	Field magnet	200	4	Fixing screws
21	2	Brushes	394	2	Brush retaining cap
46	1	Terminal box cover			
55	1	Cable gland			
62	1	Terminal box			
63	1	Rear ball bearing			
66	1	Front ball bearing			
67	1	Spring washer			
72	1	Fan cover			
112	1	Fan			
117	1	Seal (terminal box cover)			

MFA 80 RANGE

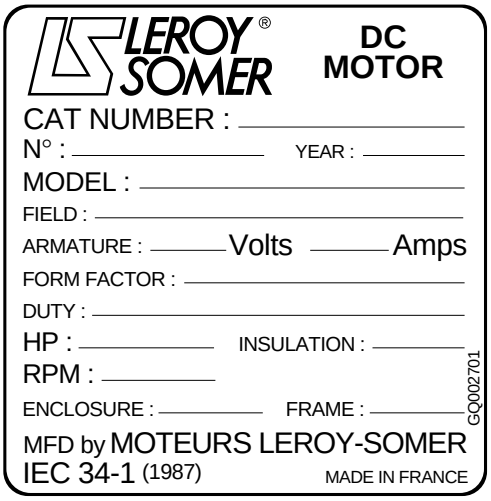
SPARE PARTS LIST

When ordering, please specify :
Type of motor
Serial number engraved on the housing near the idenfification plate

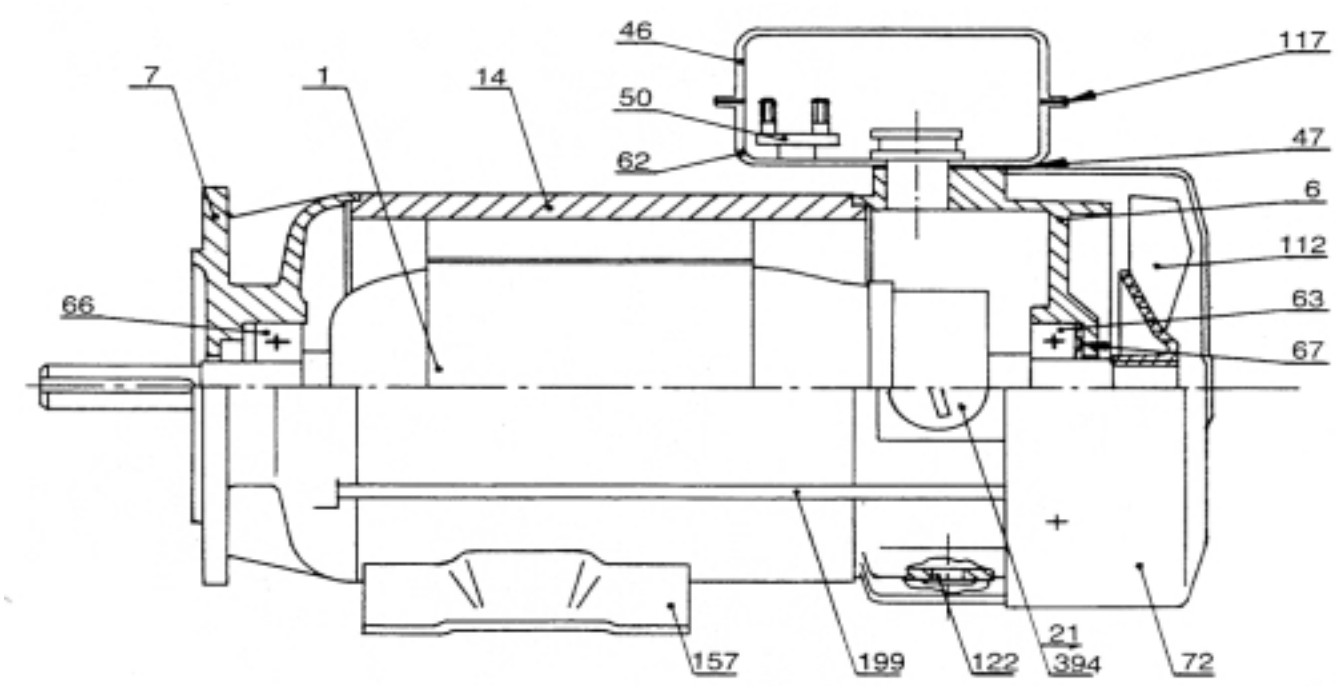
RECOMMENDED SPARE PARTS

- Set of brushes
- Set of ball bearings

IDENTIFICATION PLATE



PART LIST



No.	Qty	DESCRIPTION	No.	Qty	DESCRIPTION
1	1	Armature	117	1	Seal (terminal box cover)
6	1	Complete brush holder endshield	122	1	Checking plug
7	1	Drive endshield	157	1	Feet
14	1	Field magnet	199	2	Tie-rods
21	2	Brushes	394	2	Brush retaining cap
46	1	Terminal box cover			
47	1	Seal between frame and terminal box			
50	1	Terminal block			
62	1	Terminal box			
63	1	Rear ball bearing			
66	1	Front ball bearing			
67	1	Spring washer			
72	1	Fan cover			
112	1	Fan			