Gruppo Norton S.r.l.

*A*utomatismi per *A*perture

Msc

MADE IN ITALY



ENG

Manual for installation and maintenance of automatisms for sliding gates.

1000	FCM ☐	FCE ☐	Q ☐

2000	FCM ☐	FCE ☐	Q ☐

CE

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WARNINGS FOR THE INSTALLER

GENERAL SAFETY OBLIGATIONS

1) ATTENTION! To ensure the safety of people, it is important that you read all the following instructions. Incorrect installation or incorrect use of the product could cause serious harm to people.

2) Carefully read the instructions before beginning to install the product.

3) Do not leave packing materials (plastic, polystyrene, etc.) within reach of children as such materials are potential sources of danger.

4) Store these instructions for future reference.

5) This product was designed and built strictly for the use indicated in this documentation. Any other use, not expressly indicated here, could compromise the good condition/operation of the product and/or be a source of danger.

6) Gruppo Norton declines all liability caused by improper use or use other than that for which the automated system was intended.

7) Do not install the equipment in an explosive atmosphere: the presence of inflammable gas or fumes is a serious danger to safety.

8) The mechanical parts must conform to the provisions of Standards EN 12604 and EN 12605.
For non-EU countries, to obtain an adequate level of safety, the Standards mentioned above must be observed, in addition to national legal regulations.

9) Gruppo Norton is not responsible for failure to observe Good Technique in the construction of the closing elements to be motorised, or for any deformation that may occur during use.

10) The installation must conform to Standards EN 12453 and EN 12445. For non-EU countries, to obtain an adequate level of safety, the Standards mentioned above must be observed, in addition to national legal regulations.

11) Before attempting any job on the system, cut out electrical power.

12) The mains power supply of the automated system must be fitted with an all-pole switch with contact opening distance of 3mm or greater. Use of a 6A thermal breaker with all-pole circuit break is recommended.

13) Make sure that a differential switch with threshold of 0.03 A is fitted upstream of the system.

14) Make sure that the earthing system is perfectly constructed, and connect metal parts of the means of the closure to it.

15) The safety devices (EN 12978 standard) protect any danger areas against mechanical movement Risks, such as crushing, dragging, and shearing.

16) Use of at least one indicator-light is recommended for every system, as well as a warning sign adequately secured to the frame structure, in addition to the safety devices.

17) Gruppo Norton declines all liability as concerns safety and efficient operation of the automated system, if system components not produced by Gruppo Norton are used.

18) For maintenance, strictly use original parts by Gruppo Norton.

19) Do not in any way modify the components of the automated system.

20) The installer shall supply all information concerning manual operation of the system in case of an emergency, and shall hand over to the user the warnings handbook supplied with the product.

21) Do not allow children or adults to stay near the product while it is operating.

22) Keep radiocontrols or other pulse generators away from children, to prevent the automated system from being activated involuntarily.

23) The user must not attempt any kind of repair or direct action whatever and contact qualified personnel only.

24) Transit is permitted only when the automated system is idle.

25) Maintenance: check at least every 6 months the efficiency of the system, particularly the efficiency of the safety devices (including, where foreseen, the operator thrust force) and of the release devices.

26) Anything not expressly specified in these instructions is not permitted.

MOTOR MSC 1000 - MSC 2000

These instructions apply to the following models: MSC 1000 FCE, MSC 1000 FCM, MSC 2000 FCE e MSC 2000 FCM.
The automatisms MSC 1000 - MSC 2000 gearmotor is an electro-mechanical operator designed for moving sliding gates.
The non-reversing reduction system ensures the gate is mechanically locked when the gearmotor is not operating, therefore it is not necessary to install any electric lock
A convenient manual release with customised key makes it possible to move the gate in the event of a power failure or malfunction of the operator.
The MSC 1000 - MSC 2000 gearmotor was designed and built for controlling vehicle access.
AVOID ANY OTHER USE WHATEVER.

1. DESCRIPTION AND TECHNICAL SPECIFICATIONS

1.1. DIMENSIONS MSC 1000 - MSC 2000



1.2. MAXIMUM USE CURVE

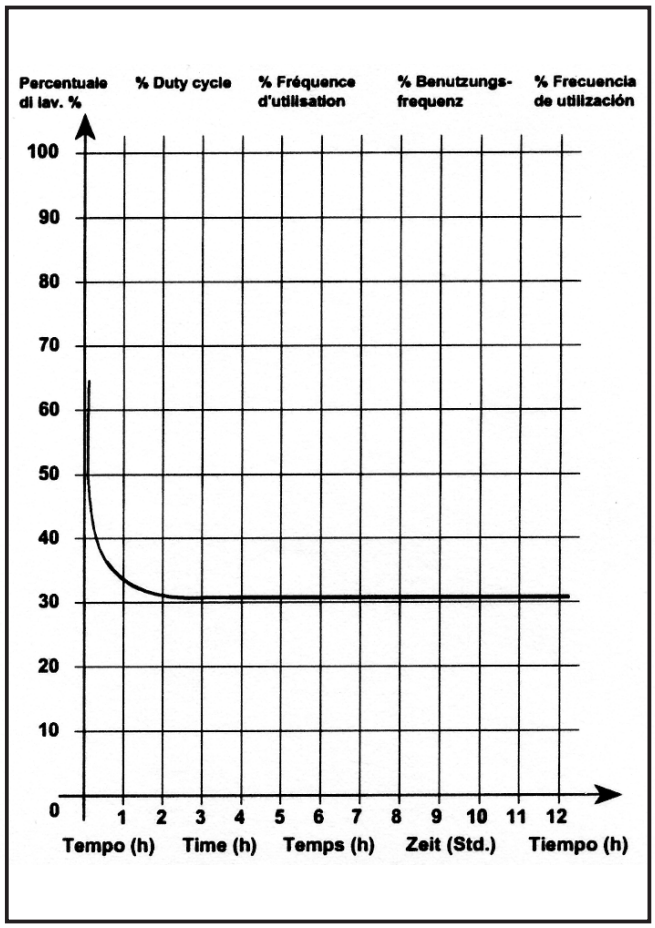
The curve makes it possible to establish maximum work time (T) according to use frequency (F). With reference to IEC 34-1 Standard, the MSC 1000 - MSC 2000 gearmotor can operate at a use frequency of 40%.
To ensure efficient operation, it is necessary to operate in the work range below the curve.
Important: The curve is obtained at a temperature of 20°C.
Exposure to the direct sun rays can reduce use frequency down to 20%.

Calculation of use frequency

Use frequency is the percentage of effective work time (opening + closing) compared to total time of cycle (opening + closing + pause times).
Calculation formula:

$$\%F = \frac{Ta + Tc}{Ta + Tc + Tp + Ti} \times 100$$

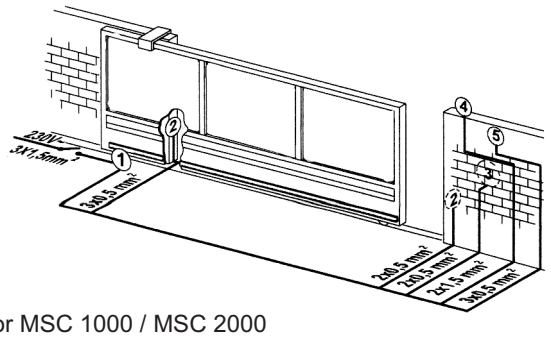
where:
Ta = opening time
Tc = closing time
Tp = pause time
Ti = time of interval between two complete cycles



1.3. TECHNICAL SPECIFICATIONS

MODEL	MSC 1000	MSC 2000
Power supply	230V (+6% -10%) 50Hz	
Absorbed power (W)	550	650
RPM (X min.)	1400	
Absorbed current (A)	1,7	2,4
Capacitor	18 uf	25 uf
Reduction Ratio	1 : 30	
Pinion	Modulo 4 - Z16	
Thrust on pinion (daN)	80	150
Winding thermal protection	150°C	130°C
Use frequency	MSC 1000 - 30% MSC 1000 FULL OIL Intensive use according to table 1.2	Intensive use according to table 1.2
Oil quantity (Lt)	0,250	1,10
Oil type	Total Carter EP 68	
Operating temperature	-20°C +55°C	
Gearmotor weight (Kg)	16	17
Protection class	IP 44	
Gate max weight (Kg)	1000	2000
Gate speed	9,6 ml/min.	
Clutch	No (electonic clutch is reccomended)	Double disc in oil

2. ELECTRICAL SET-UP (standard system)



1) Motor MSC 1000 / MSC 2000
2) Photocells
3) Key selector
4) Flashing lamp
5) Radio receiver

Fig. 2

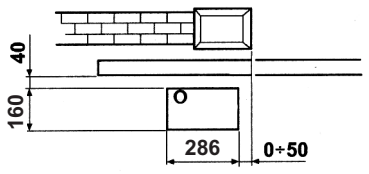


Fig. 3

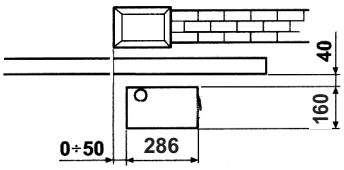


Fig. 4

3. INSTALLING THE AUTOMATISM

3.1. Preliminary checks

To ensure safety and efficiency of the automated system, make sure the following requirements are observed before installing the system:

• The gate structure must be suitable for automation. The following are necessary in particular: wheel diameter must be in proportion to the weight of the gate, an upper track must be provided, plus mechanical travel stops to prevent the gate derailing.
• The soil must guarantee a perfect stability of the foundation plinth.
• There must be no pipes or electric cables in the plinth excavation area.
• If the gearmotor is located in the vehicle transit or manoeuvre area, adequate means of protection should be provided against accidental impact.
• Check if an efficient earthing is available for connection to the gearmotor.

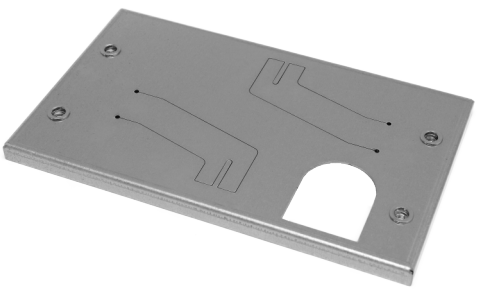


Fig. 5

3.2. MASONRY FOR FOUNDATION PLATE

1- Assemble the foundation plate as shown in figure 05.

2- In order to ensure that the pinion and rack engage correctly, the foundation plate must be positioned as shown in Fig. 03 (right closing) or Fig. 04 (left closing).
Warning: The hole for the cables on the foundation plate must always point to the gate, see Fig. 05.

3- After determining the position of the foundation plate, make a plinth as shown in Fig. 06 and wall the plate, providing several sheaths for routing the cables. Using a spirit level, check if the plate is perfectly level. Wait for the cement to set.

4- Lay the electric cables for connection to the accessories and power supply as shown in diagram of Fig. 02. To facilitate connections to the control unit, allow the cables to protrude by at least 45 cm from the hole on the foundation plate.

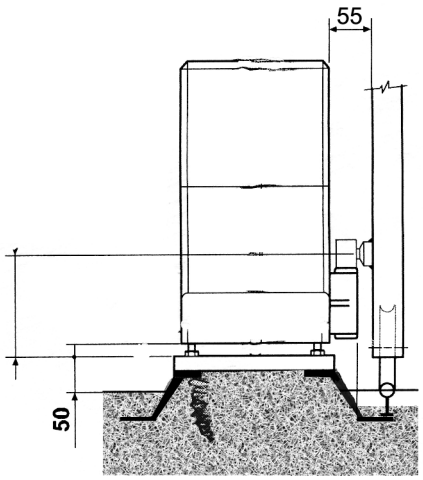


Fig. 6

3.3. MECHANICAL INSTALLATION

1- Remove the cover and position the operator on the foundation plate, using the supplied washers and nuts. During this operation, route the cables through the appropriate openings in the motor body.
2- Adjust the height of the gearmotor and the distance from the gate, referring to dimensions in Fig.6.
Attention: This operation is necessary to ensure the rack is correctly secured and to enable any new adjustments.
4- Secure the gearmotor to the plate, tightening the nuts.

3.4. ASSEMBLING THE RACK

3.4.1. STEEL RACK TO WELD (fig.7)

1) Fit the three threaded pawls on the rack element, positioning them at the bottom of the slot. In this way, the slot play will enable any future adjustments to be made.
2) Manually take the leaf into its closing position.
3) Lay the first section of rack level on the pinion and weld the threaded pawl on the gate.
4) Move the gate manually, checking if the rack is resting on the pinion, and weld the second and third pawl.
5) Position another rack element end to end with the previous one, using a section of rack to synchronise the teeth of the two elements.
6) Move the gate manually and weld the three threaded pawls, thus proceeding until the gate is fully covered.

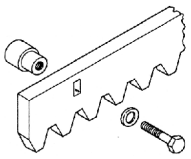


Fig. 7

3.4.2. STEEL RACK TO SCREW (fig. 8)

1) Manually take the leaf into its closing position.
2) Lay the first section of rack level on the pinion and place the spacer between the rack and the gate, positioning it at the bottom of the slot.
3) Mark the drilling point on the gate. Drill a Ø 6,5 mm hole and thread with an M8 male tap. Screw the bolt.
4) Move the gate manually, checking if the rack is resting on the pinion, and repeat the operations at point 3.
5) Position another rack element end to end with the previous one, using a section of rack to synchronise the teeth of the two elements.
6) Move the gate manually and carry out the securing operations as for the first element, thus proceeding until the gate is fully covered.

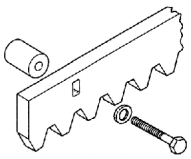


Fig. 8

3.4.3. NYLON RACK TO SCREW (fig. 9)

1) Manually take the leaf into its closing position.
2) Lay the first section of rack level on the pinion.
3) Mark the drilling point on the gate. Drill a Ø 4 mm hole and thread with screw 6x20 mm with relative plate reinforcement.
4) Move the gate manually, checking if the rack is resting on the pinion, and repeat the operations at point 2.
5) Position another rack element end to end with the previous one, using a section of rack to synchronise the teeth of the two elements.
6) Move the gate manually and carry out the securing operations as for the first element, thus proceeding until the gate is fully covered.

NOTES ON RACK INSTALLATION

• Make sure that, during the gate travel, all the rack elements do not exit the pinion.
• Do not, on any account, weld the rack elements either to the spacers or to each other.(only for steel rack).
• When the rack has been installed, to ensure it meshes correctly with the pinion, it is advisable to lower the gearmotor position by about 1.5 mm.
• Manually check if the gate correctly reaches the mechanical limit stops maintaining the pinion and rack coupled and make sure there is no friction during gate travel.
• Do not use grease or other lubricants between rack and pinion.

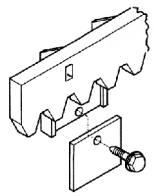


Fig. 9

4. START UP

ATTENTION: BEFORE TO PUT IN SERVICE THE MOTOR MUST REMOVE ABSOLUTELY THE BLACK STOPPER PLACED ON THE CONDUIT OF OIL CHARGE AND INSERT THE VALVE OF VENT FOR OIL GAS (FIG. 9.1).

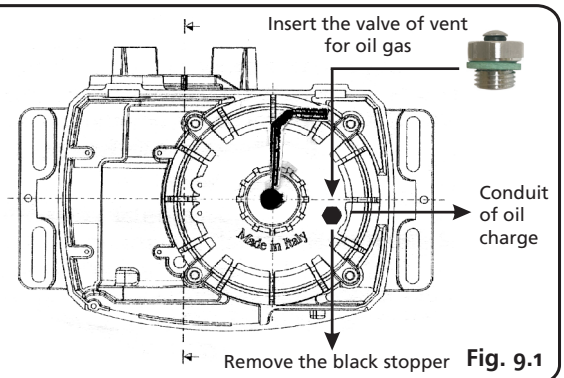


Fig. 9.1

4.1. CONTROL BOARD CONNECTION

ATTENTION:
Before attempting any work on the board (connections, programming, maintenance), always turn off power.

4.2. ADJUSTING THE TORQUE TRANSMISSION only for MSC 2000)

To adjust the torque transmission, act on the screw placed on the engine (Fig. 10):
- Rotate the screw clockwise to encrease the torque transmission.
- Rotate the screw anticlockwise to decrease the torque transmission.

CAUTION: THE MOTOR IS EQUIPPED WITH DOUBLE CLUTCH THEREFORE MUST REGULATE THE MOTOR FORCE IN RELATION TO THE TRACTION FORCE OF THE DOOR.

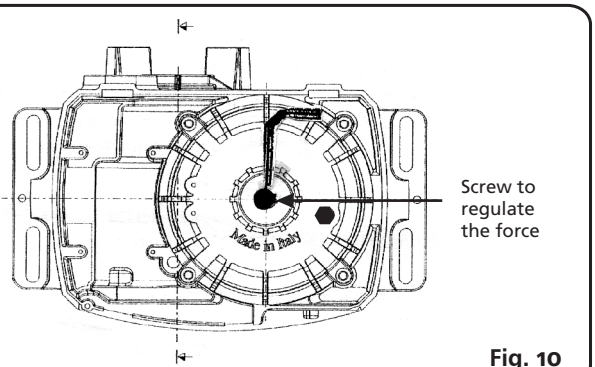
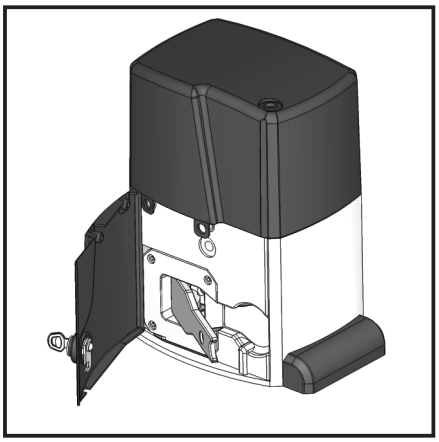


Fig. 10

4.3. AUTOMATISM SYSTEM TEST

Once installation of the operator has been completed, make a careful functional check of all accessories and safety devices connected.
Give the Client the “User Guide” and demonstrate the correct operation and use of the gearmotor, highlighting the potentially dangerous zones of the automated system.

5. MANUAL OPERATION



If it is necessary to manually actuate the gate due to lack of power or disruption of automation, you must act on the release as follows.
LEVER UNLOCK
1) Insert the key supplied in the plastic fold and open it.
2)Pull the lever unlock.
3)Open or close the gate manually.

6. RESTORING NORMAL OPERATION

To prevent an inadvertent boost could move the gate during the maneuver, turn off the power supply , before locking again the motor.
LEVER UNLOCK
1) Close the unlock lever.
2) Move the gate until the release system meshes.
3) Close the plastic fold and restore the power supply to the system

7. MAINTENANCE

Check the functional operation of the system at least every six months, especially the efficiency of the safety devices (including the operator thrust force) and the release devices.

7.1. OIL FILLING

Periodically check the amount of oil within the operator.
For medium-low frequency of use, an annual check is enough, for more intensive use it is recommended every 6 months.
To make filling, unscrew the cap and load until the level.

8. REPAIRS

For any repairs, contact Norton’s authorised Repair Centres.

USER'S GUIDE

MOTOR FOR SLIDING GATE MOD. MSC 1000 - MSC 2000

Read the instructions carefully before using the product and keep them for future consultation.

GENERAL SAFETY RULES

If installed and used correctly, the MSC 1000 - MSC 2000 automated system will ensure a high degree of safety.
Some simple rules regarding behaviour will avoid any accidental trouble:
• Do not stand near the automated system and do not allow children and other people or things to stand there, especially while it is operating.
• Keep radiocontrols or any other pulse generator well away from children to prevent the automated system from being activated involuntarily.
• Do not allow children to play with the automated system.
• Do not willingly obstruct gate movement.
• Prevent any branches or shrubs from interfering with gate movement.
• Keep light signalling systems efficient and clearly visible.
• Do not attempt to activate the gate by hand unless you have released it.
• In the event of malfunctions, release the gate to allow access and wait for qualified technical personnel to do the necessary work.
• After enabling manual operation, switch off the power supply to the system before restoring normal operation.
• Do not make any alterations to the components of the automated system.
• Do not attempt any kind of repair of direct action whatsoever and contact qualified personnel only.
• Call in qualified personnel at least every 6 months to check the efficiency of the automated system, safety devices and earth connection.

MANUAL OPERATION

If it is necessary to manually actuate the gate due to lack of power or disruption of automation, you must act on the release as follows.

LEVER UNLOCK

1) Insert the key supplied in the plastic fold and open it.

2)Pull the lever unlock.

3)Open or close the gate manually.

DESCRIPTION

The MSC 1000 - MSC 2000 automated system is ideal for controlling vehicle access areas of medium transit frequency.
The MSC 1000 - MSC 2000 automated system for sliding gates is an electro-mechanical operator transmitting motion to the sliding gate with a rack pinion appropriately coupled to the gate.

Operation of the sliding gate is controlled by an electronic control unit housed inside the operator or in a hermetically sealed outdoor enclosure.
When, with the gate closed, the unit receives an opening command by radiocontrol or from another suitable device, it activates the motor until the opening position is reached.
If automatic operation was set, the gate re-closes automatically after the selected pause time has elapsed.
If the semi-automatic operation was set, a second pulse must be sent to close the gate again.
An opening pulse during re-closing, always causes movement to be reversed.
A stop pulse (if provided) always stops movement.
The light signalling indicates that the gate is currently moving.
For details on sliding gate behaviour in different function logics, consult the installation technician.
The automated systems include obstacle-detection and/or safety devices (photocells, edges) that prevent the gate from closing when there is an obstacle in the area they protect.
The system ensures mechanical locking when the motor is not operating and, therefore, it is not necessary to install any lock.
Manual opening is, therefore, only possible by using the release system.
The gearmotor MSC 1000 does not have a mechanical clutch and, therefore, it is coupled to a unit with an electronic clutch offering the necessary anti-crushing safety if the system is completed with the necessary safety devices.
The gearmotor MSC 2000 have a mechanical clutch, so it doesn't need any electronic clutch.
A convenient manual release with customised key makes it possible to move the gate in the event of a power failure or malfunction.

RESTORING NORMAL OPERATION

To prevent an inadvertent boost could move the gate during the maneuver, turn off the power supply , before locking again the motor.

LEVER UNLOCK

1) Close the unlock lever.

2) Move the gate until the release system meshes.

3) Close the plastic fold and restore the power supply to the system

EC DECLARATION OF CONFORMITY FOR MACHINES

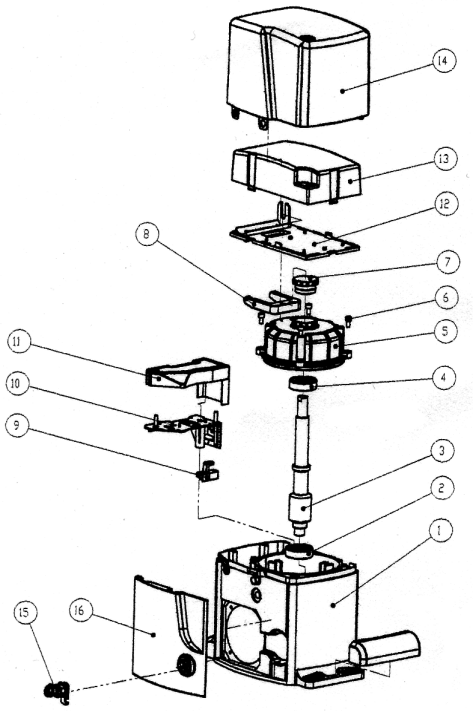
(DIRECTIVE 89/392 CEE, ANNEX II, PART B)

Manifacturer: **Gruppo Norton S.r.l.** - Contrada Salvina snc - Area P.I.P. - 90030 Altofonte (PA) - Italy
Declares that: The motor for sliding gate mod. MSC 1000, mod. MSC 2000
• is made to be integrated into a machine or to be assembled with other machinery to create a machine under the provisions of Directive 89/ 392 CEE, and integrated 91/368/CEE, 93/44/CEE, 93/68/CEE;
• is conform to the essential safety requirements of the following directives CEE:
73/23 CEE and integrated 93/68/CEE.
89/336 CEE and integrated 92/31 CEE e 93/68/CEE
and also declares that it is prohibited to put into service the machinery until the machine in which it will be integrated or of which it will become a component has been identified and declared as conforming to the conditions of Directivea 89/392/CEE and integrated, DPR n° 459 , dated 24 july 1996

Altofonte, 15 January 2016

The Legal Representative
S. Calamonaci

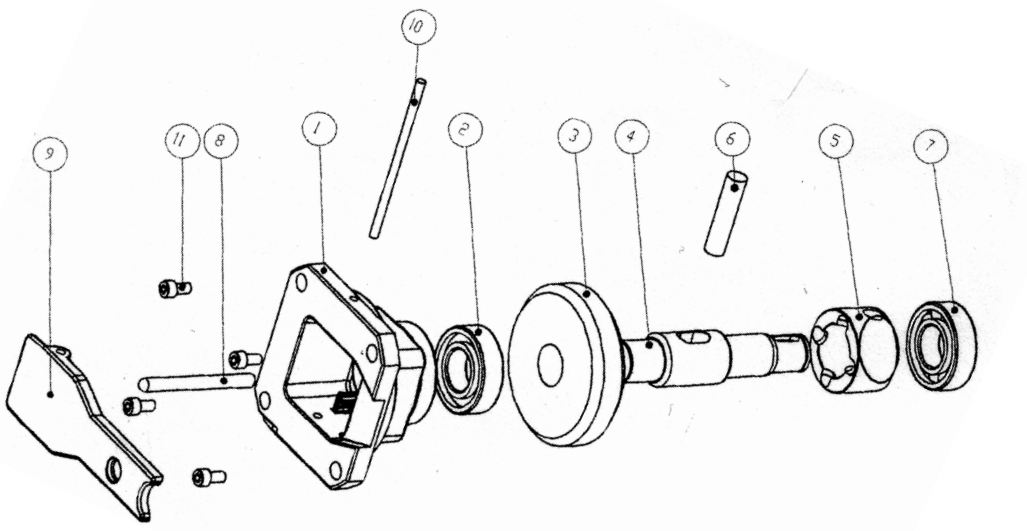
MOTOR MSC 1000 - MSC 2000



SPARE PARTS

1	Body reducer
2	Bearing 6303
3	Crankshaft
4	Bearing 6303
5	Motor cover
6	Screw TCEI 6 x 12
7	Register clutch cap
8	Electronic box hinge
9	Support spring limit switch
10	Limit switch box base
11	Limit switch cover
12	Electric box base
13	Electric box cover
14	External cover
15	MSC lock
16	Fold

TRANSMISSION AND UNLOCK GROUP



1	Square cap
2	Bearing 6205
3	Helical wheel
4	Led tree
5	Unlock Coupling
6	Plug 12 X 47
7	Bearing 6205
8	Unlock pin 8 x 80,5
9	Unlock lever
10	Unlock lever plug 5 X 106
11	Screw TCEI 6 X 12

Distributor's Stamp: