

Generatori sincroni trifasi

Three-phase synchronous generators

Alternateurs synchrones triphases

Drehstrom syncrongeneratoren

Generadores sincronos trifases

M8B
160 - 200

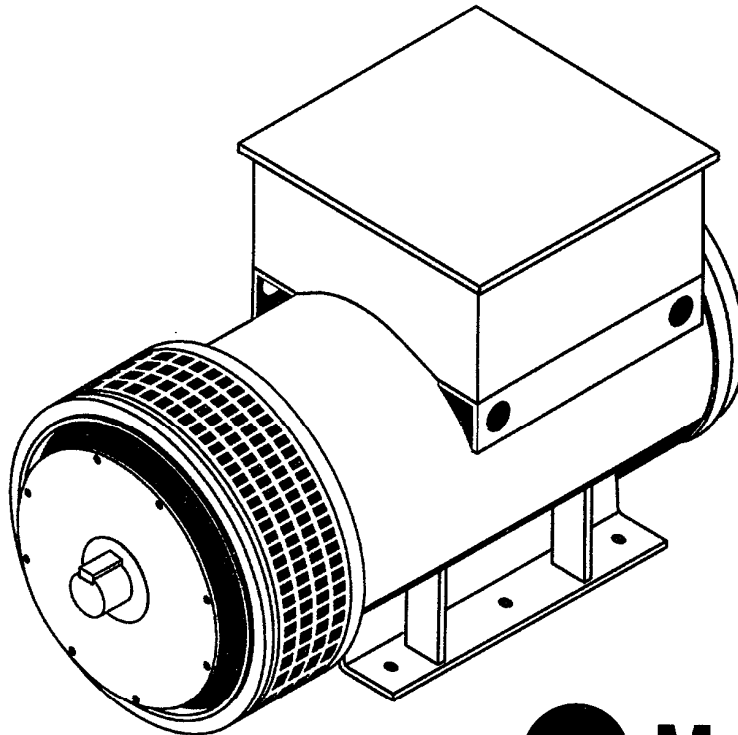
Istruzioni e avvertenze sulla sicurezza

Instructions and safety information

Instructions et avertissement pour la sécurité

Betriebsanleitung und allgemeine Sicherheitshinweise

Instrucciones y advertencias de seguridad



General safety warning

The generators which are the subject of these "instructions" are components designed for use in **industrial areas** (machines/plants) and therefore cannot be treated as retail goods.

This documentation consequently contains information that is only suitable for use by qualified personnel. It must be used in compliance with the regulations, laws and technical Standards in force and cannot under any circumstances take the place of plant standards or additional prescriptions, including any which are not legally enforceable, which have been issued for with the scope of ensuring safety.

Machines built to customer specifications or with constructional differences may differ in detail from the generators described herein. If you encounter any difficulties please do not hesitate to contact Marelli Motori, specifying:

- the type of machine
- the full code number of the generator
- the serial number



DANGER

Electric rotating machines have dangerous parts: when operating they have live and rotating components. Therefore:

- **improper use**
- **the removal of protective covers and the disconnection of protection devices**
- **inadequate inspection and maintenance**

can result in severe personal injury or property damage.

The person responsible for safety must therefore ensure that the machine is transported, installed, operated, maintained and repaired by qualified personnel only, that must have:

- specific training and experience,
- knowledge of applicable standards and laws,
- knowledge of the general safety regulations, national and local codes and plant requirements,
- the skill to recognise and avoid possible danger.

All maintenance and inspection operations must be carried out only with the authorization of the person responsible for safety, with the machine at a standstill, disconnected from the supply (including the auxiliary circuits such as the anti-condensation heaters).

As the electric machine is a product to be installed in industrial areas, **additional protective measures must be taken and assured by the person responsible for the installation, if stricter protection conditions are required.**

As the electric generator is a component to be coupled to another machine, it is the responsibility of the installing engineer to ensure, during operation, proper protection against the risk of contact with bare rotating parts and to prevent people or things from approaching the machine.

If the machine shows deviations from the normal performance (excessive or too low voltage, increase in temperature, noise and vibrations) promptly advise the personnel responsible for maintenance.

WARNING I Here enclosed with this "instructions manual" there are self adhesive leaflets which are reporting symbols for security: the self adhesive leaflet are to be applied to the generator surface, at the customer's charge, according the instructions presented on the sheet of the self - adhesive.

1. Description

The instructions here included are referred to three-phase synchronous generators series M8B. Technical data and constructive details are given in the catalogue.

In order to obtain the proper working of generators it is necessary to read carefully all included instructions.

The generators M8B are synchronous generators, brushless type, self excited and self regulated, manufactured according to the standards indicated on the name plate (IEC 34-1).

Degree of protection - characteristics

The protection degree of the generators and the rated data are shown on the name plate.

Frequency



The generators are proper for operation at 50 and 60 Hz, according to the data reported on the name-plate: for correct operation for 50 or for 60 Hz, it is necessary to verify that the settings of the voltage regulator are proper for the required operation and that the use of the generator is in accordance with the values on the name-plate.

Accessories

According to the customer's order the generators can be equipped with accessories, as anticondensation heaters, thermistors, etc.

2. Transport and storage

The generator is shipped ready for installation. It shall be carefully inspected at the arrival in order to verify if damages occurred during transport; if any, they should be referred directly to the haulier and to MARELLI MOTORI



For lifting and handling the purpose made eyebolts must be used.

The lifting eyes are designed to support only the weight of the generator and they are not to be used for lifting the complete gen-set that incorporates the generator. Check that the lifting means available are proper for the movement of all parts which have to be handled. Check also that all the working conditions are proper to operate without dangers for safety of personnel.

If the generator is not put into operation immediately, it should be stored in a covered area or in clean, dry and vibration-free place. If it is stored in a damp ambient, the windings should be dried before using it.

The rolling contact bearings do not require maintenance during storage; periodic rotation of the shaft will help to prevent contact corrosion and hardening of the grease.

3. Installation and commissioning

3.1 Check before installation



Before installing the generator, make sure that name plate data correspond to power supply and operating conditions and that the installation complies with the manufacturer's recommendations.

Before installing, clean from protecting varnish all connecting surfaces (as surface of couplings and flanges and shaft extension for two-bearings generators)



All generators are provided with ondulated spring (placed at the N.D.E. side) to preload the bearings.

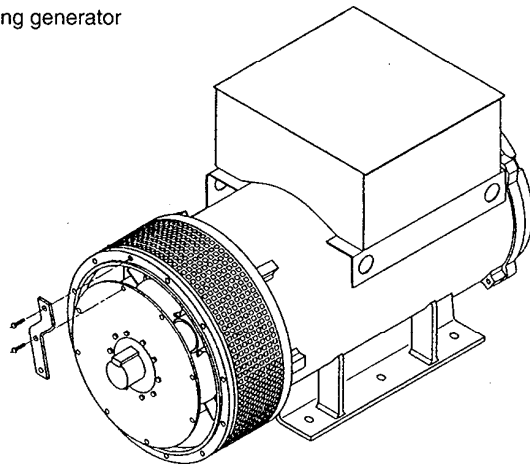
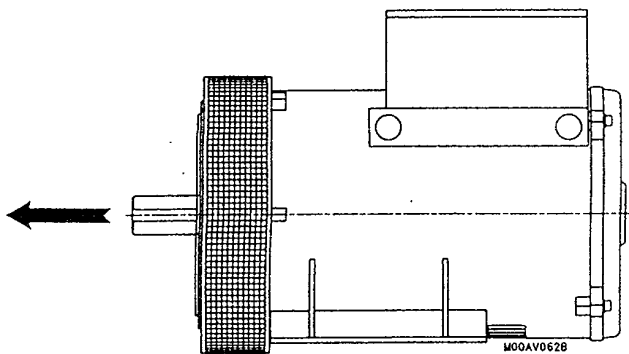
Double bearing generators are manufactured with end float of the rotor. At coupling, set the rotor in such a way to have clearance between N-end bearing and N-end endshield.



Single bearing generators are shipped with a rotor securing plate, fixing the coupling to the flange. Before installation, remove the plate. During assembly operations, make sure the preloading spring remains at its place.

Double bearing generator

Single bearing generator



3.2 Insulation test

If the alternator has been kept in storage for a long period of time, it is a good practice to test the stator windings for ground insulation before starting up.

Before doing this test, it is necessary to disconnect the voltage control system (AVR or similar devices).

If this test, performed using a ohmmeter or another similar instrument, shows that ground resistance is below 1 Mohm, it is necessary to dry the generator and then the test should be repeated.

3.3 Balancing

Unless otherwise indicated the rotor is balanced dynamically with a half-key fitted on the shaft extension, in compliance with IEC 34-14.

3.4 Installation conditions

Install the generator in a ventilated room. If installed in closed areas the alternators should have a possibility to exchange the cooling air directly with atmosphere. Air outlet and inlet openings should not be obstructed provisions should be taken to prevent obstacles from obstructing ventilation openings. The inlet of warm air should be avoided.

Provision should be taken to make inspection and maintenance easy when the generator is installed or during operation.

The generator should be supported by a baseplate or foundation suitable to avoid vibrations and sufficiently rigid to keep the alignment.

3.5 Alignment



Carefully align the generator and the driving machine.

Inaccurate alignment may lead to vibrations and damage of the bearings.

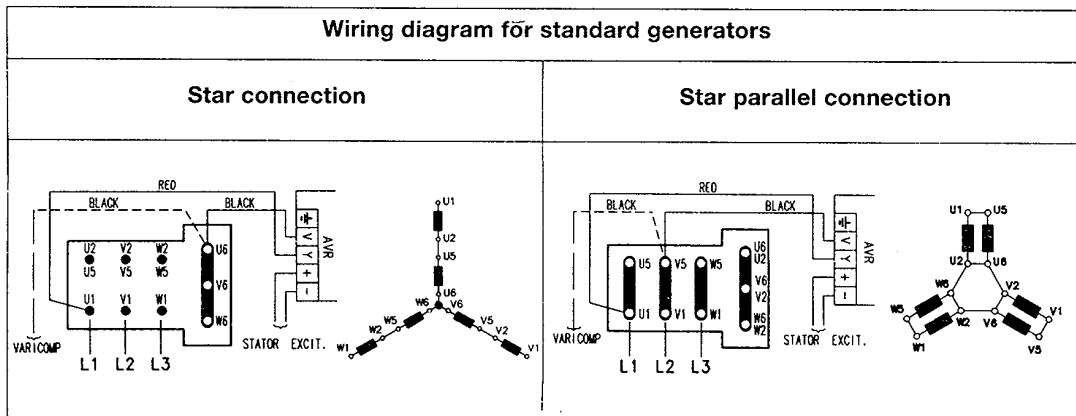
It is also necessary to verify that the torsional characteristics of generator and driving machine are compatible. In order to allow torsional analysis calculation (at customer's charge); MARELLI MOTORI can provide rotor drawings for torsional analysis purposes.

For single bearing generators it is further necessary to verify all dimensions of the flywheel and flywheel housing. Further it is necessary to check the dimensions of the coupling and of the flange on the generator.

3.6 Electrical connection

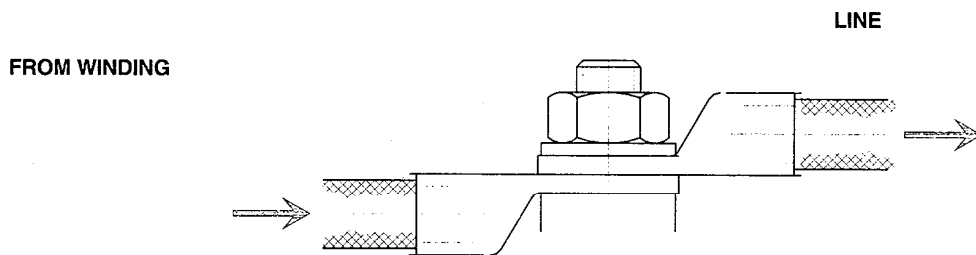
Standard generators are supplied with 12 leads (9 terminals). Terminals arrangement permits star and star parallel connection, according following diagrams.

Internal connection diagrams are shown on page 41 for standard generators (12 leads, with AVR only).



Diagrams for different winding types or with optional devices (Varicom) are shown on pages 42, 43 and 44.

The output cables have to be fixed to the terminal board as indicated in the following figure.



Direction of rotation

Generators are normally supplied to operate correctly when rotating clockwise (looking from shaft end side).



Grounding

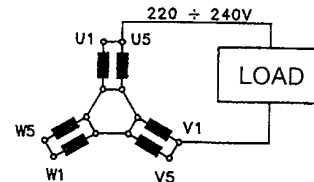
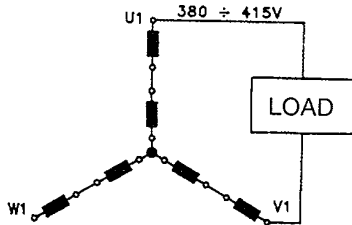
Inside the terminal box there is a terminal for grounding, and a second terminal is on a foot of the generator. Grounding has to be carried out using a copper wire of suitable size, in compliance with applicable standards.

Operation with single phase loads

The standard three phase generators of this series can be used as single phase if the following instructions are followed:

when a voltage of approximately 380-415 V (50 Hz) or 440-460 V (60 Hz) is required, series star connection has to be used and the load should be connected to terminals U1 and V1. The generator should be used for a maximum power equivalent to 0,6 times the power indicated on the nameplate for three phase load.

when a voltage of approximately 220 V (50 Hz) or 220-240 V (60 Hz) is required, the generator has to be reconnected to star parallel and single phase load should be connected to terminals U1 and V1. The generator should be used for a maximum power equivalent to 0,6 times the power indicated on the nameplate for three phase load.



Supply of leading loads only

It is possible to supply symmetrical leading three phase loads for a maximum power (in kVAR) equivalent to 0,25 times the power (in kVA) indicated on the nameplate.

3.7 Commissioning

Before starting up check insulation resistance:

THE GENERATOR HAS NOT TO BE OPERATED IF INSULATION RESISTANCE IS BELOW 1 MEGAOHM

Before first starting up, check:

- If fixing bolts are securely fixed
- that the alignment and coupling is correct
- that the ventilation air is sufficient
- that the protection grids are at their place
- for single bearing generators, that the bolts of disks are fixed with the proper torque.

ELECTRICAL CHECKS

Verify that the plant is provided with the correct electrical protection devices, according the applicable standards.

Verify that the connection to the terminal block is correctly performed (bolts of terminals properly tightened and output cables fixed as in the figure at page 12).

4. Maintenance



For safety purposes it is necessary that all operation for controlling or maintenance on electrical machine are performed by qualified and authorised personnel, and all operation must be performed when the machine is stopped, at ambient temperature, disconnected from any supply source (including the auxiliary circuits such as the anti-condensation heaters). Further all measures must be taken to avoid restarting of genset during maintenance.

4.1 Inspections and maintenance intervals

Inspection and maintenance should take into account the importance of the plant ambient conditions (dust etc.) operating conditions.

As a general rule, the machine should be subjected to a first inspection after approx. 500 operating hours (in any case not more than 1 year) and subsequent inspections when performing maintenance on prime mover.

When performing inspection check that:

- The generator operates smoothly, without noise or irregular vibrations due to bearing deterioration.
- The operating data comply with the rating ones.
- The air inlet openings are not obstructed.
- The supply cables show no signs of deterioration and connection are firmly tight.
- The electrical connections are in perfect condition (undamaged).
- Screws and nuts are firmly tightened.

4.2 Maintenance of bearings

The bearings (D.E. and N.D.E. side) are prelubricated sealed type (life lubrication), with sufficient grease quantity for a long operating time.

The life expected time is, in case of normal operating condition, of about 20000 hours for all bearings.

In case of complete overhaul of genset, the bearing of the generator should be changed.

4.3 Dismantling operations



Before dismantling the machine, examine the views in cross-section. Check that the lifting means available are proper for the movement of all parts which have to be handled. Check also that all the working conditions are proper to operate without dangers for safety of personnel.

Then uncouple the generator from the prime mover, removing the bolts securing the flange and feet; remove the bolts fixing the coupling and disconnect the terminals of the power leads on the terminal board.

Next, remove the generator from the prime mover.

Disconnect the leads connecting the exciter stator to the voltage regulator.

For two bearing generators

-Remove the half coupling from shaft extension and remove the key (223)

-Remove the guard protecting the generator (33).

-Remove the bolts fixing the shields (4-5) to the frame, then remove the shields

-Using proper lifting means, remove the rotor(3) from the main stator, through the D.E. end-side, taking all cares to avoid any damage to the windings.

For single bearing generators:

-Remove the bolts fixing the N.D.E. shield to the frame and dismantle the shield.

The rotor can be extracted from the stator, from D.E. side.

It should be remembered that the exciter stator is fixed to the N.D.E. endshield: then all the cares have to be taken to avoid any damage to its windings when removing the N.D.E. shield; further be sure the connections or the exciter stator are free to slide out from terminal box.

If a bearing should be replaced, remove it with a suitable puller.

4.4 Reassembly operations

Carry out the operations described above for dismantling in reverse order. If the end-shield have been removed, the fixing screws have to be fixed with LOCTITE (on the threaded surface). If a bearing was removed, always install a new one.

To make assembly easier, the bearings should be heated to about 70-80 c.

PLEASE NOTE: bearings should be assembled with the utmost care in order not to damage them.

5 Voltage regulator

The generators are provided with automatic voltage regulator (AVR).

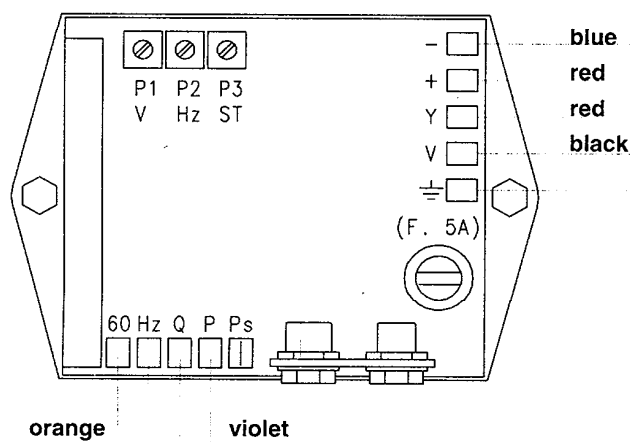
The AVR is provided with potenziometers to adapt the characteristics of the AVR to the different operating conditions.

The AVR is provided with adjustable stability circuitry to allow operations in a wide range of applications.

The AVR is equipped also with protecting circuit allowing the generator to operate underspeed if not loaded.



WARNING: it is not advisable to have the generator operating loaded when the frequency (speed) is below the rated value: this kind of operation is an overload for the whole excitation system of the generator.



CONNECTION OF AVR

The AVR is connected to the terminals of the generator and to exciter FAST-ON terminals.

USE OF POTENTIOMETERS

P1- potentiometer for adjusting the output voltage of the generator; it allows a wide range of voltage setting (i.e. between 350 and 470 V; or between 170 and 260 V depending from winding connections)). In case of resetting this potentiometer the voltage has to be set in the range +5%,-5% around the rated voltage of the machine. In order to obtain a finer regulation, or to adjust the voltage from control panel or to limit the voltage range, it is possible to insert an external potentiometer.

P2- potentiometer for changing the low speed protection. Usually it is set in order to reduce the excitation when the speed is 10 % below the rated value at 50 Hz. By removing the bridge which is normally shorting the auxiliary terminals 60-Hz of the regulator, the low speed protection acts properly for 60 Hz.

P3- potentiometer for stability adjust. By rotating it clockwise the stability of the regulator increases, but the response time becomes longer.

RADIO INTERFERENCE SUPPRESSOR

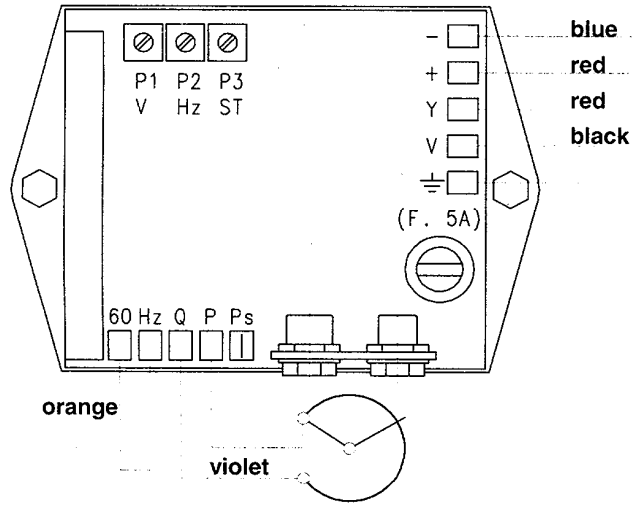
The voltage regulator is internally provided with radio interference suppressor, in order to limit the radio interference from the generators M8B among levels stated by C.E. standards for industrial areas.

⚠ FUSE

On the AVR there is a protecting fuse. In case should it be necessary to replace it, high speed fuses should be used; in additions they should have high breaking resistance with a rated voltage of 250 V, and rated current of 5A.

5.1 Rheostat for remote voltage setting

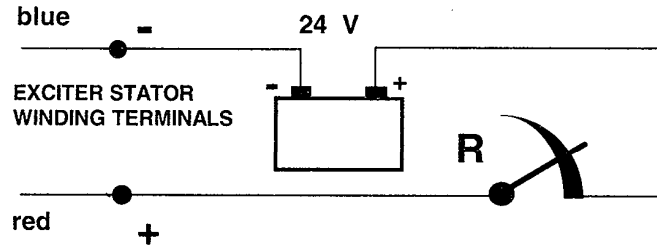
For all generators, that rheostat can be inserted between the auxiliary terminals P and Q (FAST-ON terminals) after having removed the short-circuiting bridge. The external rheostat has to be inserted with its wiper in intermediate position and then the internal potentiometer of AVR (P1) has to be reset to obtain the nominal voltage. The resistance of the external rheostat has to be about 1000 Ohm and minimum power 2 W.



5.2 Instructions for manual control of generators

If the voltage regulator (AVR) breaks down, a manual control system can be used, when a 24 V D.C. power supply is available.

This source could consist of a bank of batteries or a voltage transformer and a rectifier unit connected at the alternator's output. The rheostat should be designed for a maximum resistance of 60 Ohm and maximum current of 2,5 A. To proceed, the wiring diagram given in fig. has to be used, proceeding as follows:



- a) disconnect the two exciter's stator terminals (red wire +, blue wire -) from AVR.
- b) apply the D.C. power supply to these two wires
- c) set the rheostat R to adjust the alternator's output voltage.

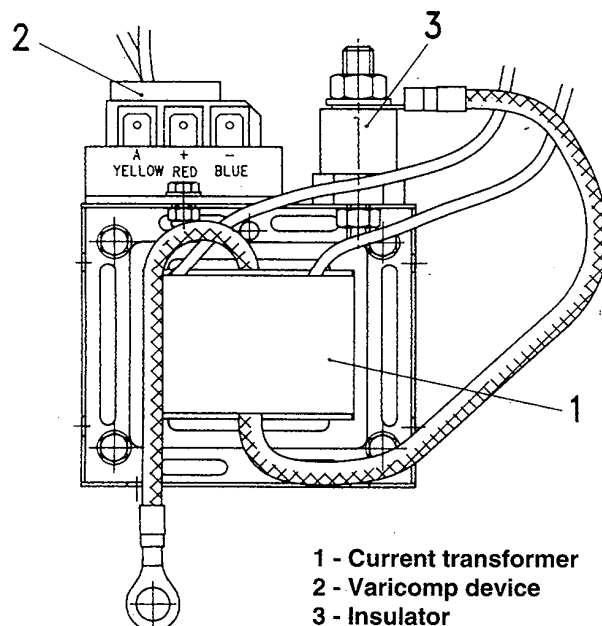
⚠ WARNING: compensate by manually increasing excitation as the load increases. Before removing the load, reduce the excitation current

5.3 Overboosting device Varicomp (optional)

The overexcitation device is composed by an electronic device and by a current transformer (T.A.), and acts in case of sudden overloads or in case of short circuit.

The current transformer supplies a current proportional to the load current; this current is rectified and then added to the current given by AVR. The current transformer is normally short circuited and it does not act on excitation in normal operation conditions. The current transformer is only inserted in case the output voltage drops below 70% of rated value.

Should a voltage increase be present as far as the load is increasing, then the intervention of the Varicomp device has to be modified by acting on the internal potentiometer of the electronic board, by rotating it anticlockwise.



1 - Current transformer
2 - Varicomp device
3 - Insulator

6. Trouble shooting and repairs

PROBLEMS, TROUBLE SHOOTING AND REPAIRS

TROUBLE	POSSIBLE CAUSE	REMEDY (always to be done with the machine switched off)
The alternator will not energise (no load voltage below 10% of rated voltage)	a. Loose connections b. Rotating diodes or surge suppressor broken c. Excitation circuit shorted or interrupted	a. Check and repair b. Check the diodes and change in case they are open or shortcircuited. c. Check the continuity and repair
The alternator will not energise (no load voltage 20-30% of rated voltage. Voltage insensitive to AVR potentiometer's rotation)	a. Fuse (on AVR's supply line) blown b. Connection's cut on the exciter stator c. Incorrect connections of exciter stator	a. Replace the fuse with the spare. If the fuse blows again check if the exciter stator is short circuited. If everything is correct, change the AVR b. Check the continuity and repair c. Reverse the two wires from the exciter stator
Voltage lower than rated (output voltage between 50 and 70%)	a. Speed less than rated b. Voltage potentiometer unset c. Fuse blown d. Faulty regulator	a. Check rpm (frequency) b. Rotate the potentiometer until the voltage reaches the rated value c. Replace the fuse with spare d. Disconnect AVR and replace it
Voltage too high	a. Potentiometer V unset b. Faulty regulator	a. Rotate the potentiometer until the voltage reaches the rated value b. Replace AVR
Unstable voltage	a. Diesel engine rpm variations b. Stability potentiometer unset b. Faulty regulator	a. Check rpm uniformity. Check the diesel engine governor b. Act on AVR's stability potentiometer. b. Replace AVR

7. Spare parts - Nomenclature

PART NAME	Type / code	
	M8B 160	M8B 200
201 D side (D:E) bearing	6310 2RS C3 cod 346245050	6313 2RS C3 cod 346245065
203 N side (N.D.E.) bearing	6309 2RS C3 cod 346245045	6309 2RS C3 cod 346245045
6 Voltage regulator	M16FA650A	M16FA650A
7 Fuse (5 A, 250 V)	963823050	
309 Rotating diode (direct)	41 HF 80 cod. 963821110	
310 Rotating diode (inverse)	41 HFR 80 cod. 963821111	
311 Surge suppressor	M16FA864A	
119 Complete rotating rectifier	M16FA509A	

SEZIONE
Raddrizzatore rotante

- 309 Diodo rotante diretto
- 310 Diodo rotante inverso
- 311 Scaricatore / filtro
- 119 Raddrizzatore rotante

SECTION
Rotating rectifier

- 309 Rotating diode (direct)
- 310 Rotating diode (inverse)
- 311 Surge suppressor
- 119 Complete rotating rectifier

VUES EN COUPE
Redresseur

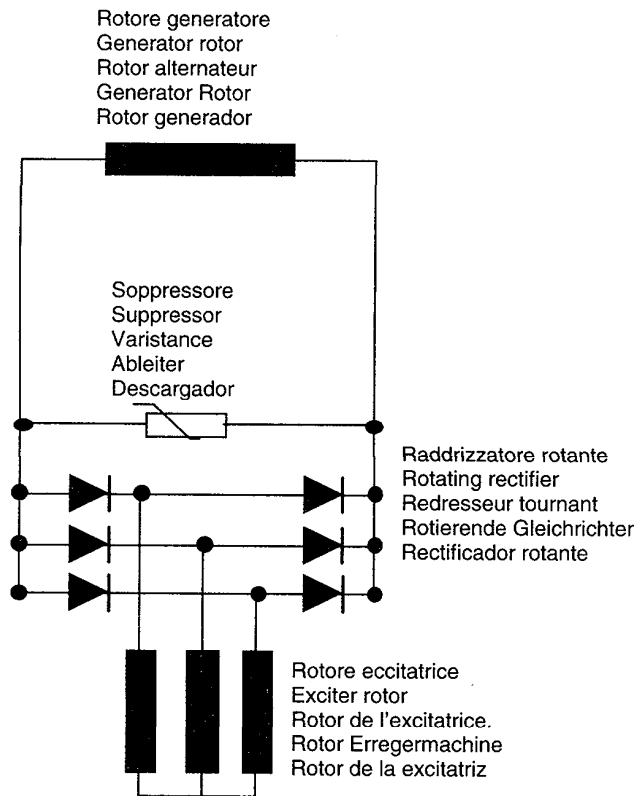
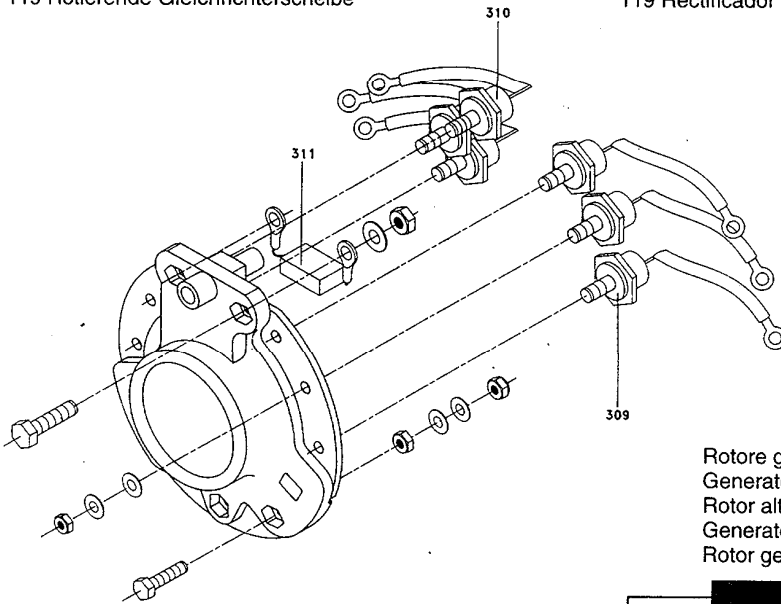
- 309 Diode directe
- 310 Diode inverse
- 311 Varistance
- 119 Redresseur

SCHNITTBILD
Rotierende Gleichrichterscheibe

- 309 Diode (positiv) direkt
- 310 Diode (negativ) invers
- 311 Überspannungsableiter / Filter
- 119 Rotierende Gleichrichterscheibe

SECCION
Disco rectificador

- 309 Diodo giratorio directo
- 310 Diodo giratorio inverso
- 311 Dispositivo de descarga
- 119 Rectificador giratorio completo



SEZIONE Nomenclatura delle parti

Costruzione bisupporto

2	Statore principale
3	Rotore principale
4	Scudo lato accoppiamento (lato D)
5	Scudo lato opposto (lato N)
6	Regolatore di tensione
41	Scatola morsetti (pannelli 55 56-57-58-59)
49	Protezione
52	Morsettiera
110	Statore eccitatrice
201	Cuscinetto lato accoppiamento (lato D)
202	Cuscinetto lato opposto (lato N)
205	Molla di precarico lato opposto (lato N)
223	Linguetta
119	Raddrizzatore

Costruzione monosupporto

4	Adattatore lato accoppiamento (lato D)
81	Giunto a lamelle

VUES EN COUPE Nomenclature

Alternateur bi-paliers

2	Stator
3	Rotor
4	Palier C.A.
5	Palier C.O.
6	Régulateur de tension
41	Boite à bornes
49	Grille de protection
52	Bornes
110	Stator excitateur
201	Roulement à billes C.A.
202	Roulement à billes C.O.
205	Anneau de préchargement côté opposé accouplement
223	Clavette
119	Redresseur

Alternateur mono-palier

4	Flasque côté accouplement
81	Joint (Disque)

SECTION Part name

Two bearing construction

2	Main stator
3	Main rotor
4	D-end endshield (D.E.)
5	N-end endshield (N.D.E.)
6	Voltage regulator
41	Terminal box
49	Protection
52	Terminal block
110	Exciter stator
201	D-end (D.E.) bearing
202	N-end (N.D.E.) bearing
205	Preloading spring
223	Key
119	Rotating rectifier

Single bearing construction

4	Adaptor
81	Flexplate coupling

SCHNITTBILD Bezeichnung der teile

Zweilager Ausführung

2	Stator des Generators
3	Rotor des Generators
4	Lagerschild Antriebsseite (Seite D)
5	Lagerschild gegenüber der Antriebsseite (Seite N)
6	Spannungsregler
41	Klemmenkasten (Teile 55-56-57-58-59)
49	Schutzgitter
52	Klemmenstein
110	Stator der Erregermaschine
201	Lager Antriebsseite (D-Seite)
202	Lager gegenüber der Antriebsseite (N-Seite)
205	Federring gegenüber der Antriebsseite Seite (N-Seite)
223	Paßfeder
119	Rotierende Gleichrichterscheibe

Einlager Ausführung

4	Flansch Antriebsseite (D-Seite)
81	Lamellenkupplungsscheibe

SECCION Denominación de los componentes

Construcciones con doble soporte

2	Estator
3	Rotor
4	Escudo del L.A. (Lado de acoplamiento)
5	Escudo del L.O. (Lado opuesto al de acoplamiento)
6	Regulador de tensión
41	Caja de bornes
49	Protección del L.A.
52	Bornes
110	Estator excitador
201	Cojinete del L.A.
202	Cojinete del L.O.
205	Muelle de precarga
223	Chaveta
119	Disco rectificador

Construcciones monosoporte

4	Empalme
81	Junta

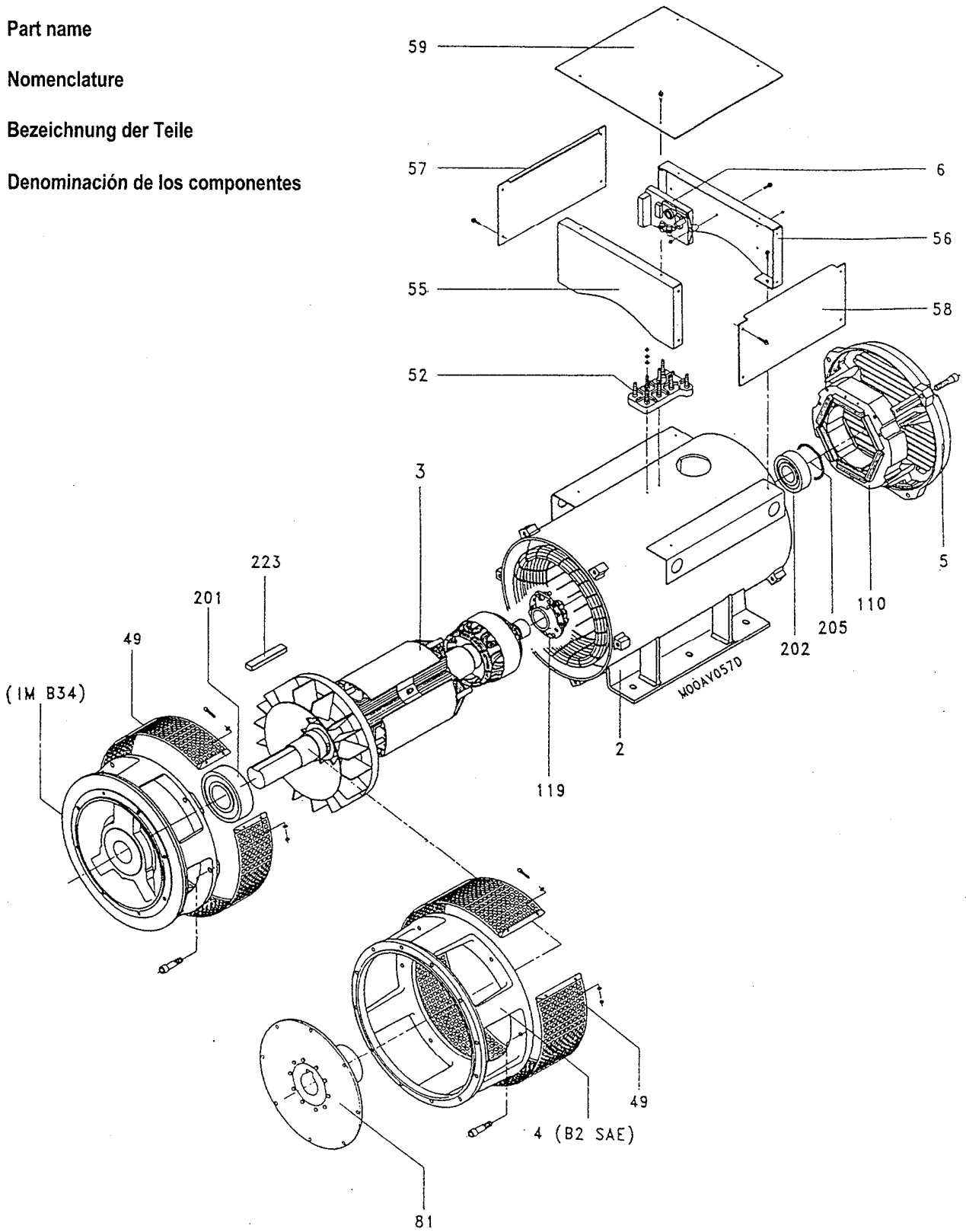
Nomenclatura delle parti

Part name

Nomenclature

Bezeichnung der Teile

Denominación de los componentes



Schema di collegamento interno per generatori normali di serie con 12 terminali

Collegamento stella serie

Wiring diagram for 12 terminals standard generators

Star connection

Schémas de connexions internes pour alternateurs standards à 12 cables

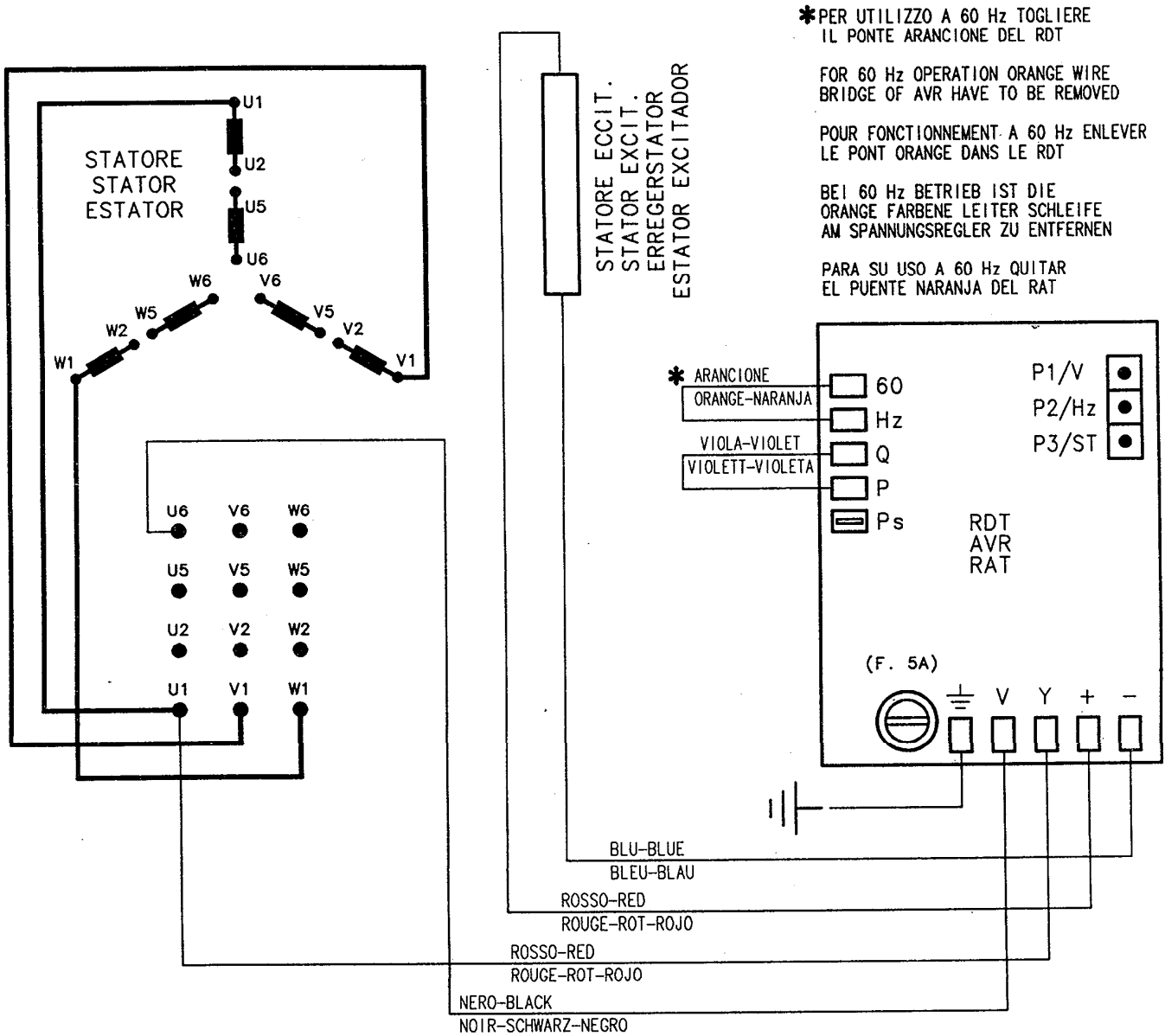
Connexion étoile - série

Stromlaufplan standardgeneratoren mit 12 Leitern

Stern - reihenschaltung

Esquemas de conexión de los generadores normales de series con 12 terminales

Conexión de estrella en serie



M00AV055B

Schema di collegamento interno per generatori con 12 terminali e Varicomp

Collegamento stella serie

Wiring diagram for 12 terminals generators with Varicomp

Star connection

Schémas de connexions internes pour alternateurs à 12 cables avec dispositif Varicomp

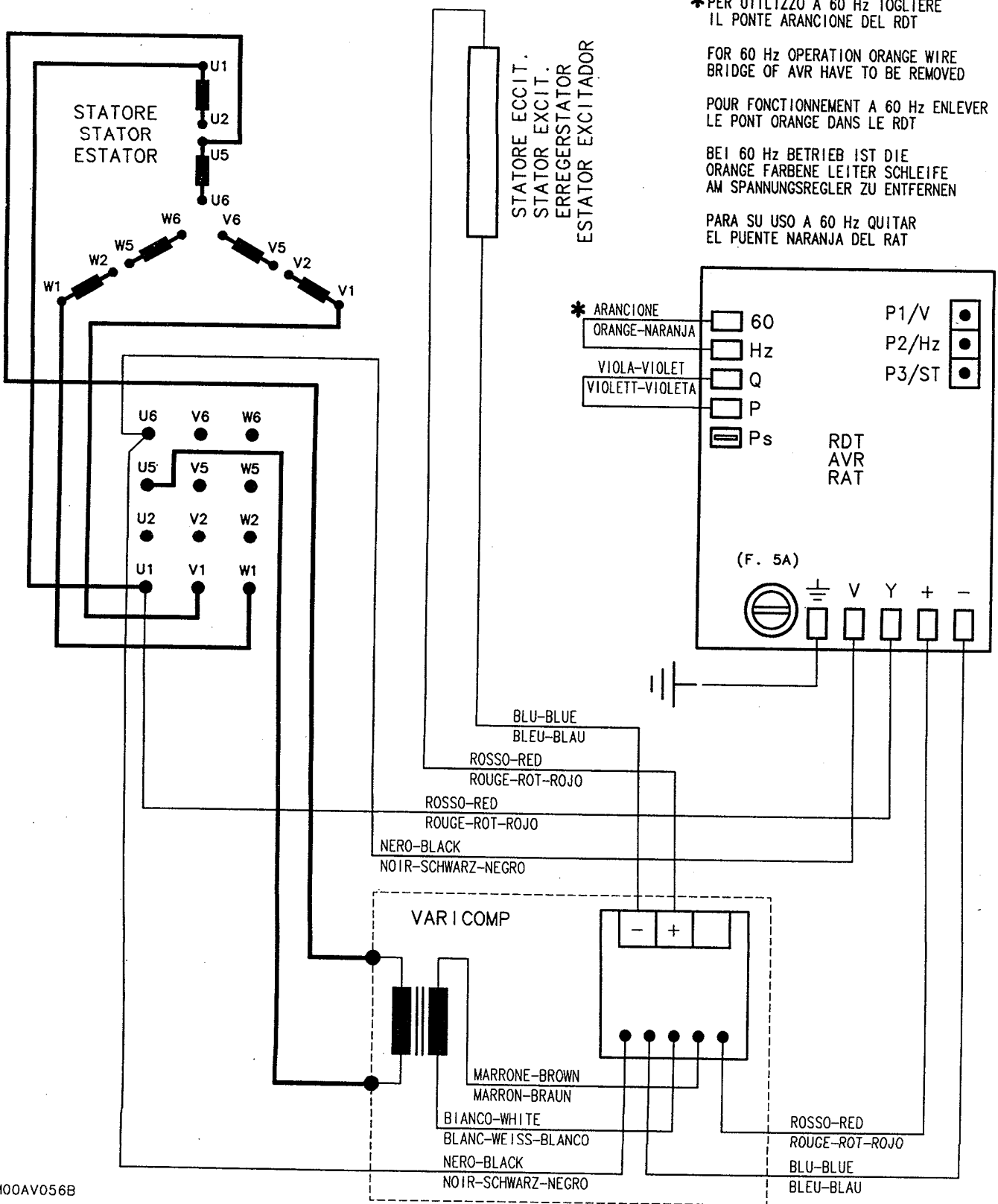
Connexion étoile - série

Stromlaufplan generatoren mit 12 Leitern und Varicomp

Stern - reihenschaltung

Esquemas de conexión de los generadores con 12 terminales y Varicomp

Conexión de estrella en serie

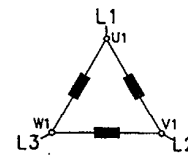
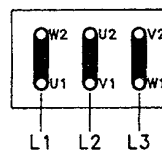
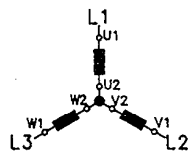
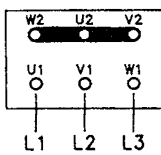


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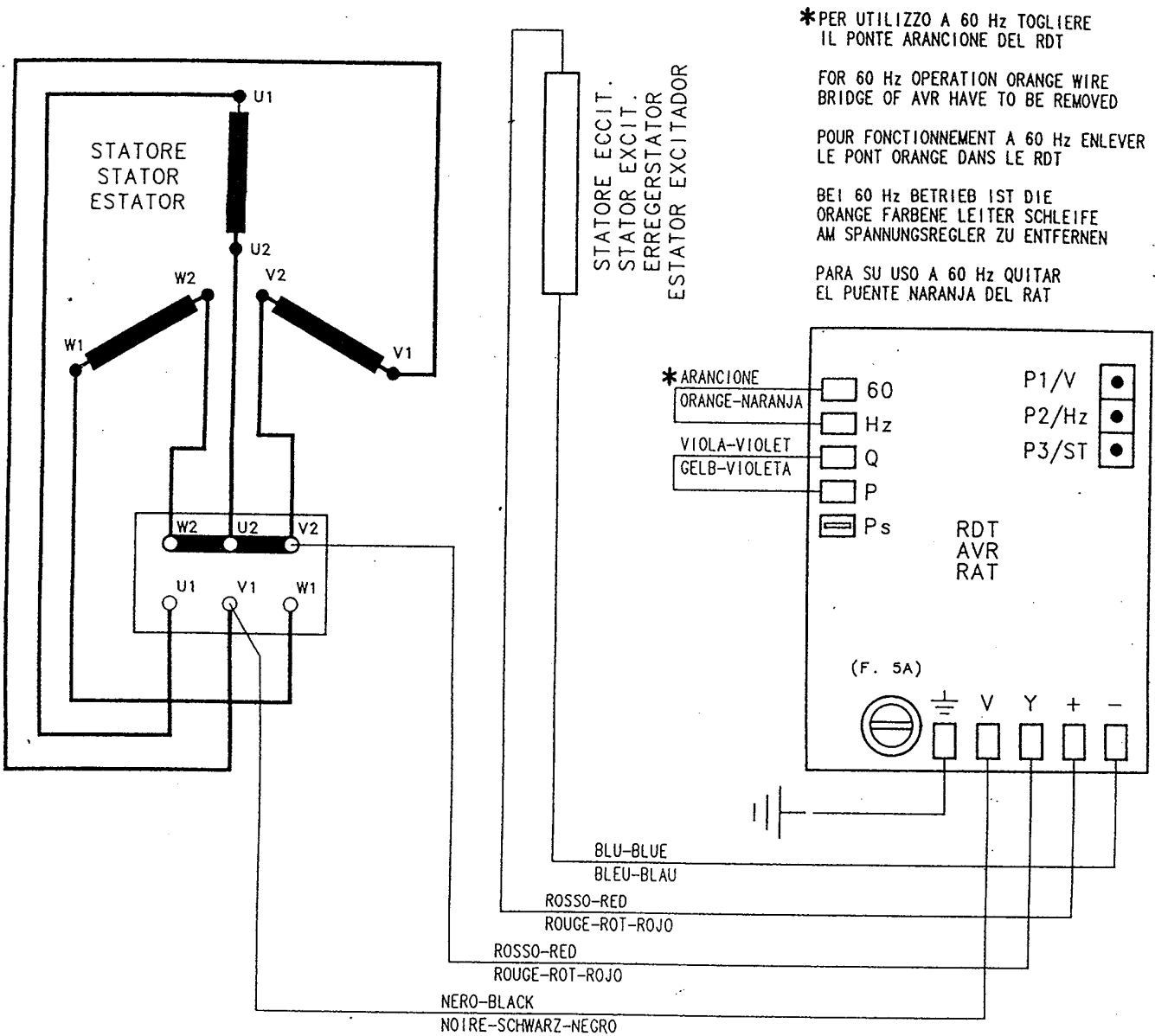
Schemi di collegamento per generatori con 6 terminali
Wiring diagrams for 6 terminal generators
Schémas de connexions pour alternateurs à 6 cables
Stromlaufplan für Generatoren mit 6 Leitern (optionale Variante)
Conexión eléctrica de generadores con 6 terminales (opcional)

Collegamento stella
Star connection
Connexion étoile
Stern- Schaltung
Conexión de estrella

Collegamento triangolo
Delta connection
Connexion triangle
Dreieck- Schaltung
Conexión de triángulo



Schema di collegamento interno per generatori con 6 terminali (variante a richiesta)
 Wiring diagram for 6 terminals generators (optional winding)
 Schémas de connexions internes pour alternateurs à 6 cables
 Stromlaufplan für Generatoren mit 6 Leitern (optionale Variante)
 Conexión eléctrica de generadores con 6 terminales (opcional)



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Schema di collegamento interno per generatori con 6 terminali e Varicomp
Wiring diagram for 6 terminal generators with Varicomp
Schémas de connexions internes pour alternateurs à 6 cables avec dispositif Varicomp
Stromlaufplan für Generatoren mit 6 Leitern und Varicomp (optionale Variante)
Esquemas de conexión interna de generadores con 6 terminales y Varicomp

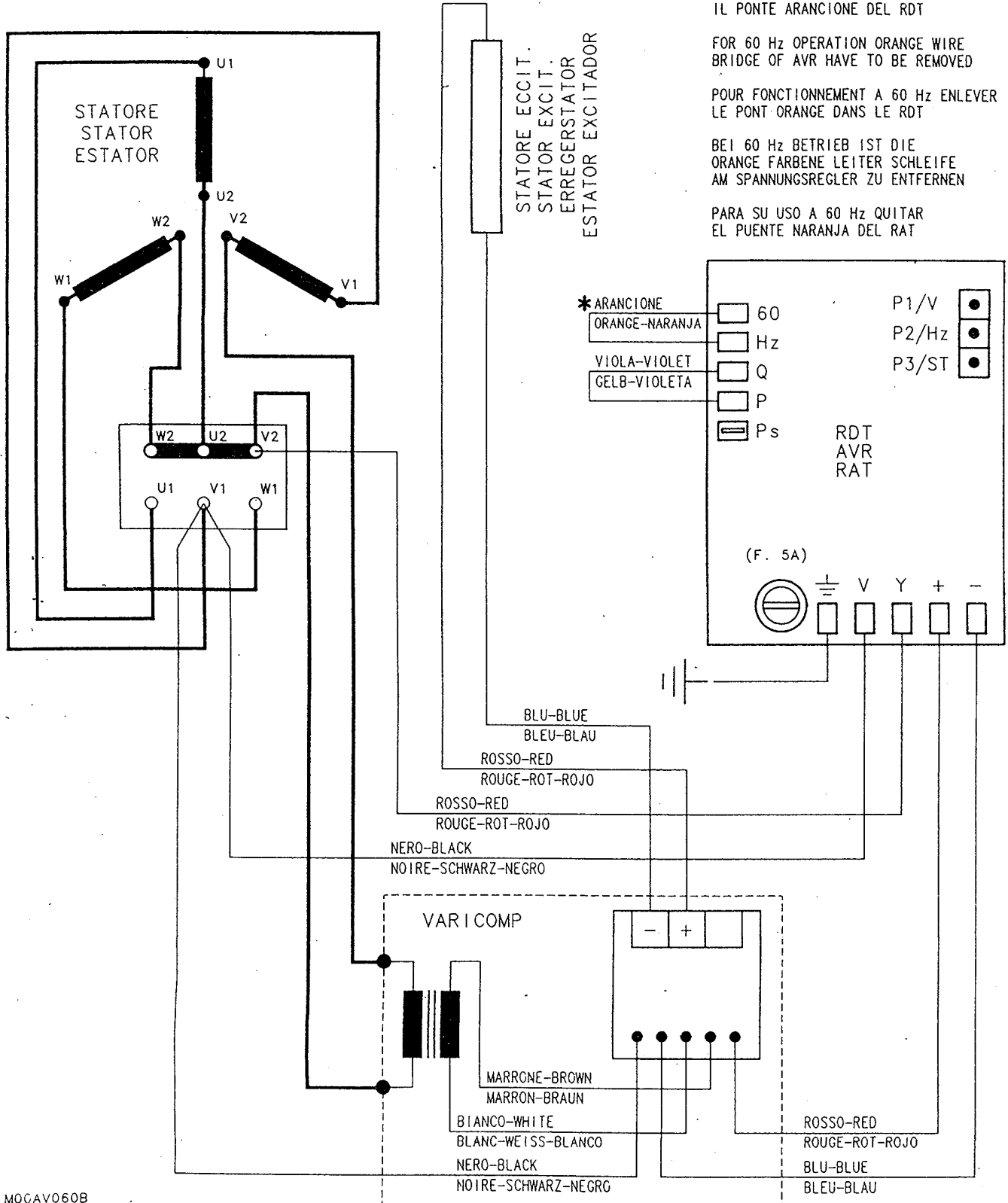
*PER UTILIZZO A 60 Hz TOGLIERE IL PONTE ARANCIONE DEL RDT

FOR 60 Hz OPERATION ORANGE WIRE BRIDGE OF AVR HAVE TO BE REMOVED

POUR FONCTIONNEMENT A 60 Hz ENLEVER LE PONT ORANGE DANS LE RDT

BEI 60 Hz BETRIEB IST DIE ORANGE FARBENE LEITER SCHLEIFE AM SPANNUNGSREGLER ZU ENTFERNEN

PARA SU USO A 60 Hz QUITAR EL PUENTE NARANJA DEL RAT



M0CAV060B



Marcatura "CE": conformità alla Direttiva Bassa Tensione (73/23/Cee, 93/68/Cee).
 "CE" marking: conformity to Low Voltage Directive (73/23/EEC, 93/68/EEC).
 Marquage "CE": conformité à Directive Basse Tension (73/23/CEE, 93/68/CEE).
 "CE" Kennzeichnung: nach der Niedrigen_Spannungsrichtlinie (73/23/EWG, 93/68/EWG).
 Marcado "CE": de acuerdo con la Directiva Baja Tensión (73/23/CEE, 93/68/CEE).

ISTRUZIONI PER L'APPLICAZIONE DELLA TARGA AUTOADESIVA

All'interno della scatola morsetti È presente una busta contenente la targa dati.

Questa targa deve essere applicata sull'alternatore come segue :

- 1) L'applicazione della targa autoadesiva deve essere eseguita ad una temperatura ambiente superiore a 15°C.
- 2) Pulire la parte interessata (vedi fig. 1) con alcool ed aspettare che sia perfettamente asciutta.
- 3) Togliere la parte adesiva dal supporto e applicarla come indicato nella fig. 1 facendo pressione con un rullo di gomma per una migliore aderenza.

INSTRUCTIONS FOR THE APPLICATION OF THE PRESSURE-SENSITIVE NAME PLATE ON THE ALTERNATOR

Inside the terminal box there is an envelope containing the name plate.

This name plate has to be put on the alternator as follows :

- 1) The application of the pressure-sensitive name-plate has to be carried out at ambient temperature higher than 15°C.
- 2) To clean the involved surface (see picture 1) by using alcohol and await until it is completely dried.
- 3) To take away the adhesive part from the attached one and apply it , as shown by picture 1 , pressing it by mean of a rubber roller , to get a better bond.

INSTRUCTIONS POUR LA POSE DE LA PLAQUE SIGNALÉTIQUE AUTO-ADHÉSIVE SUR L'ALTERNATEUR

A l'intérieur de la boîte à bornes, il est prévu une enveloppe contenant la plaque signalétique.

Celle-ci doit être posée sur l'alternateur de la façon suivante :

- 1) La pose de la plaque auto-adhésive doit s'effectuer à une température ambiante supérieure à 15°C
- 2) Nettoyer la surface (voir fig.1) avec de l'alcool, attendre qu'elle soit parfaitement sèche.
- 3) Oter la partie adhésive de son support et la coller comme indiqué fig.1 en faisant pression avec un rouleau de caoutchouc pour une meilleure adhérence.

ANLEITUNG FÜR DIE ANBRINGUNG DES TYPENSCHILD-AUFKLEBERS AM GENERATOR

Im Inneren des Klemmenkastens des Generator ist die Tüte mit dem Typenschild befestigt.

Dieses Typenschild muss auf dem Generator , wie folgt angebracht werden :

- 1) Die Anbringung des Typenschild-Aufklebers muss bei einer Umgebungstemperatur von 15°C erfolgen.
- 2) Säubern der Aufklebestelle mit Alkohol und warten, bis diese vollkommen getrocknet ist.
- 3) Abziehen der Schutzfolie auf der Rückseite des Aufklebers und Anbringung entsprechend der Zeichnung 1 unter Zuhilfenahme einer Gummiwalze zur besseren Haftung.

INSTRUCCIONES PARA LA COLOCACION DE LA PLACA ADHESIVA

En el interior de la caja de bornes del Alternador se encuentra el sobre que contiene la placa de características.

Dicha placa tiene que ser aplicada en el Alternador tal como se indica en la fig.1 siguiendo las siguientes instrucciones :

- 1) La aplicación debe hacerse a una temperatura ambiente superior a los 15°C.
- 2) Limpiar con alcohol la superficie donde debe ir adherida (Fig. 1) y esperar a que se seque bien.
- 3) Separar la parte adhesiva y aplicarla tal cual se indica en la Fig. 1 , haciendo presión con un rodillo de goma para garantizar una mejor adherencia.

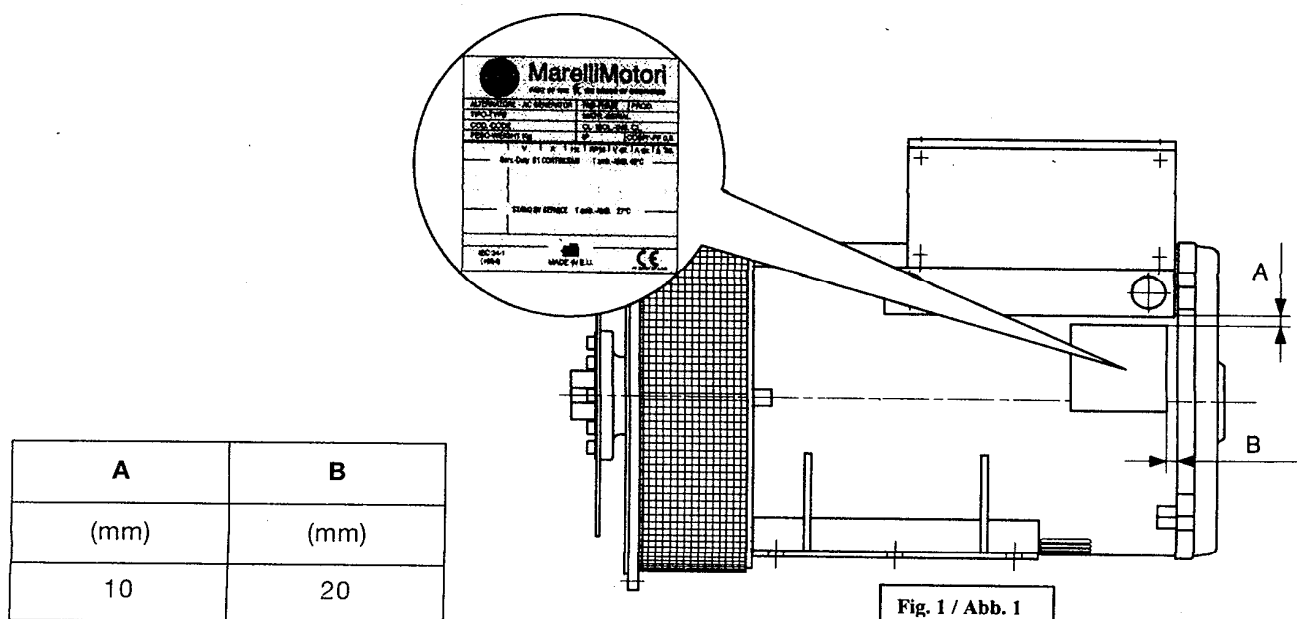
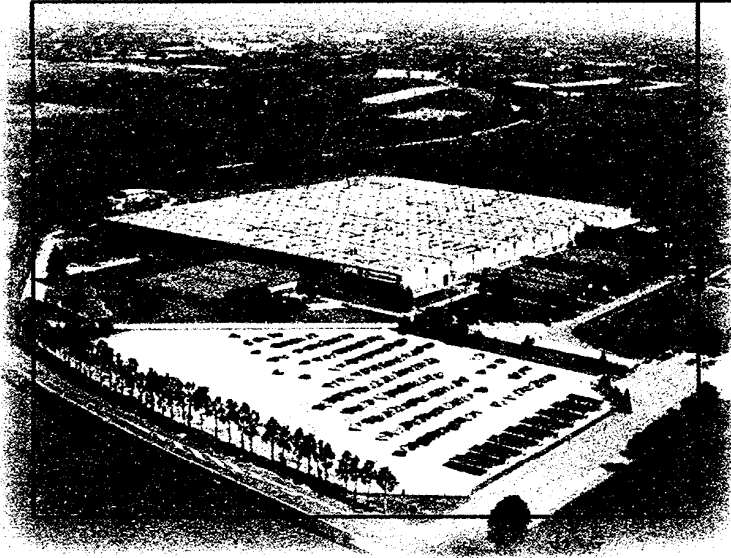


Fig. 1 / Abb. 1



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Via Sabbionara, 1

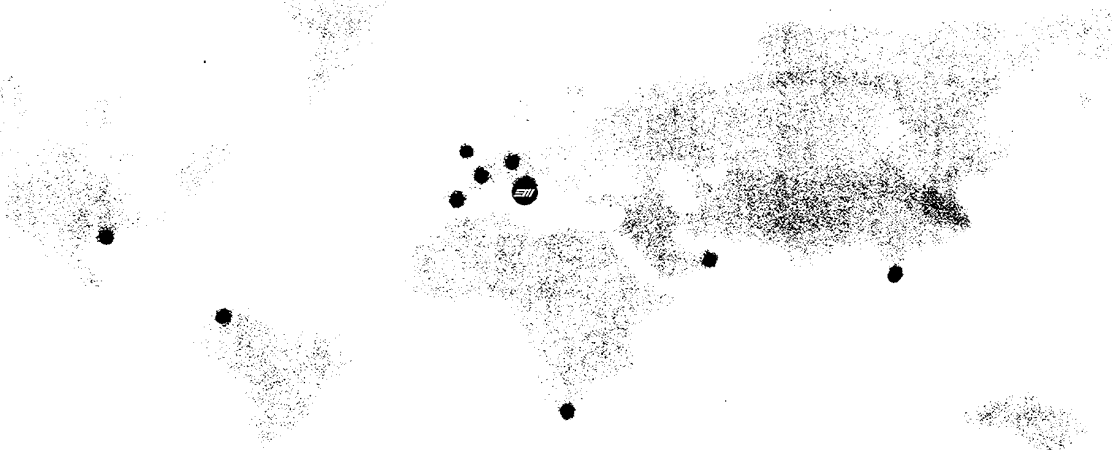
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