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ELETTROMANDRINI AD ALTA FREQUENZA

HIGH FREQUENCY ELECTRIC SPINDLES

**MANUALE D'USO
E MANUTENZIONE**

***USE AND MAINTENANCE
MANUAL***

ELTE S.R.L.

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WARNING

Only qualified personnel can perform the connection and installation of this motor as an observance of the current safety rules in force. Furthermore, due to the fact that this motor is destined to be incorporated into another machine, according to the provisions of art. 4, par. 2 of the Machines Directive 89/392/EEC dated 14/06/1989, it is strictly forbidden to start-up the machine into which it has to be incorporated, before the former has been declared conform to the provisions of the Directive.

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PRODUCT CHARACTERISTICS

The following materials are used to manufacture our motors:

- high resistance light aluminium alloy for the frame;
- steel 38 NCD4 (or C50) for the shaft;
- stator and rotor core laminations are low losses when feeding frequency is higher than 100 Hz: this reduces increasing temperature typically produced by high frequency;
- all rotating parts are checked and balanced both under the construction phase and final test;
- specific bearings are used for different applications and different working speeds: such as when the motor works over 6000 rpm, we use high speed bearings and, when high precision is requested, angular contact bearings (TM series) are used.

All these details permit to achieve the best performances in wood and/or light metal workings.

START-UP CONDITIONS

Before connecting the motor to the power supply, check the following:

- Verify that the voltage and the frequency of the feeding system corresponds to those indicated on the motor nameplate. For electric connections please refer to the diagrams shown in Fig. 1.
- Verify that the feeding cables are properly fixed to the terminal board or to the connector. After this operation, close the terminal box and check electric insulation from phase to earth and earth effectiveness.

Excluding the start-up, the motor must never exceed the rated current

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on the nameplate. In case of incorrect rotational direction, disconnect the motor from power supply and then reverse two power supply terminals. Always before applying load, run the spindle at about 6.000 Rpm approx for up to 10 minutes till reach 35°C. Applying load to a cold spindle will cause premature failure.

Motor ventilation inlet must never be obstructed by objects or surfaces: this may produce the increasing of motor temperature.

The characteristics indicated for our motors are given for room temperatures not greater than 40 degrees Celsius and for altitudes under 1000 m from sea level.

BALANCING

For a correct use it is necessary that the motor at its' nominal speed, and with the tool mounted, produces vibrations less than 2.5 mm/sec to avoid premature bearings failure. Therefore, we recommend that special attention be given when choosing and maintaining tools (referring to the chosen balancing).

In case of one slot tool, ELTE considers half key balancing as standard. In case of two slots tool, the shaft is balanced with entire key.

WARRANTY

All ELTE SRL motors are warranted against defects in ELTE SRL workmanship and materials provided that they have been used in a suitable way for the purpose and technical characteristics for which they were destined. ELTE SRL sole obligation under this warranty is limited to repairing the product or, as its exclusive option, replacing the product, without additional charge, provided the item is properly returned to ELTE SRL for repair as discussed below; the warranty is not extended to the parts exposed to a normal wear and tear.

Under no circumstances, including, but not limited to negligence, ELTE SRL shall have any liability for any incidental, special or consequential damages that may result from the use of, or inability to use, the ELTE SRL motors and shall not be liable for consequential or indirect loss or damage including, but not limited to, loss of profits, loss of production, plant downtime, or liabilities to customers or other third parties.

This warranty does not cover:



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- Any damage occurring during shipment and transport of the goods (for which claims shall be presented to the carrier).
- Damage caused by abuse and improper use of the product, inexperience, tampering with, misuse, unauthorized user adjustments, out of balance tooling, improper or lack of maintenance, lack of running-in, lack of respect of the bearings warm up period.



Warranty period: ELTE SRL high-frequency motors are warranted for 12 months from the date of shipment to ELTE SRL customers. All warranty claims must be submitted to ELTE SRL prior to the expiration of the warranty period. Failure to fulfil prompt payment conditions results on the immediate termination of warranty provisions. The purchaser must check that the product received is equal, as for it's quality and size, to his request before using it. Any complaint must be transmitted by writing within 8 (eight) days from material receipt.

Procedure to receive Warranty Service: before returning any products in warranty, the customer must first receive a return authorization from ELTE SRL. No claim will be allowed nor credit given for products returned without such authorization. Proper packaging and insurance for transportation is solely the customer's responsibility and charge. Customers should ship prepaid the ELTE SRL product requiring warranty service to ELTE SRL. Please include an explanation of the defect or problem, a description of the way in which the ELTE SRL product is used, and your name, address and telephone number.

Repairs or Replacement within the scope of the Warranty: if an ELTE SRL motor is defective due to ELTE SRL workmanship or materials and the defect occurs during the warranty period, then ELTE SRL will repair it and send it shipment to customer freight to collect. ELTE SRL is not responsible for removal and shipping to ELTE SRL, the reinstallation of the ELTE SRL product upon its return to customer and for any incidental or consequential damages resulting from defect, removal, reinstallation, shipping or otherwise.

Repairs outside the scope of the Warranty: problems with ELTE SRL products can be due to improper maintenance, faulty installation, non-ELTE additions or modifications, other problems not due to defects in ELTE SRL workmanship or materials, then the customer will be responsible for the cost of any necessary repairs.

Service location: repairs are done only at ELTE SRL location where all necessary instrumentation is available.

Product specifications: all product specifications, applications and



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other information provided in ELTE SRL catalogue and publications are subject to correction and change without notice.

This limited warranty represents ELTE SRL sole and exclusive warranty obligation with respect to ELTE SRL products. ELTE SRL liability to a customer or any other person shall not exceed the ELTE SRL sales price.

EXCEPT FOR THE WARRANTIES SET FORTH HEREIN, ELTE SRL DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

MAINTENANCE

Before any control and/or maintenance operations, it's recommended to disconnect the motor from power supply in order to prevent accidental starting and to prevent touching live parts that may cause severe and even mortal accidents.

It's a good rule to clean the electric spindle and check that the ventilation inlet is free from dust. Best performance and bearings' life are strictly linked to the tools wear state and their balancement degree. Thus, it's very important to periodically check their conditions. If not differently specified, bearings used by Elte are life-lubricated and protected against the dust. If bearings seem to be noisy or show any imperfection, they must be replaced with ones with the same number and having the same technical features.

Only skilled technicians may carry out all above-mentioned operations.

ASSISTANCE

Once the terms of guarantee are expired, ELTE is available for motor repairing; however, in case the Customer wishes to repair the motor (provided he/she is a skilled technician), ELTE may supply the original spare parts. To order spare parts please refer to the numbers of the exploded view drg 2/3.

ELTE is free from any responsibility for repairing or maintenance operations not performed by its own skilled personnel.



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INVERTER

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For those supplying the motors through Inverter we recommend to use output inductances in order to maintain output voltage peaks lower than 350 V/_sec. It is recommended not to use frequencies and voltages different from those printed on the label. In general it is possible to vary (within certain limits) the shaft speed by using a potentiometer suitably connected to the Inverter itself in order to linearly adjust the characteristic Voltage - Frequency. However we recommend not using the motors with speeds greater than those indicated on the label because mechanical parts in use may not be suitable for such purpose. Furthermore, we recommend paying special attention to the type of Inverter in use because it may often cause overheating being dangerous for windings and bearings life. In any case the rated current of the motor must never be exceeded. For any possible information, please consult our Technical Department.

PROBLEMS SOLUTIONS

Motor doesn't run at his nominal speed (printed on the nameplate)

PROBABLE CAUSE

- Verify that feeding frequency is correct.

Motor current too high even at no load.

PROBABLE CAUSE

- Feeding Voltage is higher than nominal at the nominal frequency: in case of six terminals motor verify if your are not feeding with star voltage on the motor in delta connection.
- Feeding Frequency is lower than nominal at the nominal voltage.

Motor reaches too high temperatures (higher than 70 degrees Celsius)

PROBABLE CAUSE



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- Ventilation duct is obstructed and does not permit a good cooling.
- Motor is working with room temperature higher than 40 degrees Celsius.
- Motor takes too high currents even without any applied load. (See previous note).



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In case of technical problems please fill up this form and send it as an enclosure with the motor:



REPAIRING FORM

Customer:.....

Motor Type:.....

Serial Number:.....

Hour of processing:.....

Processed material:.....

Type of processing:.....

Motor Service:

- Continuous
- Intermittent:
Empty.....% Charged.....%
- Other

Type of tool balance:.....

Description of the problems:.....

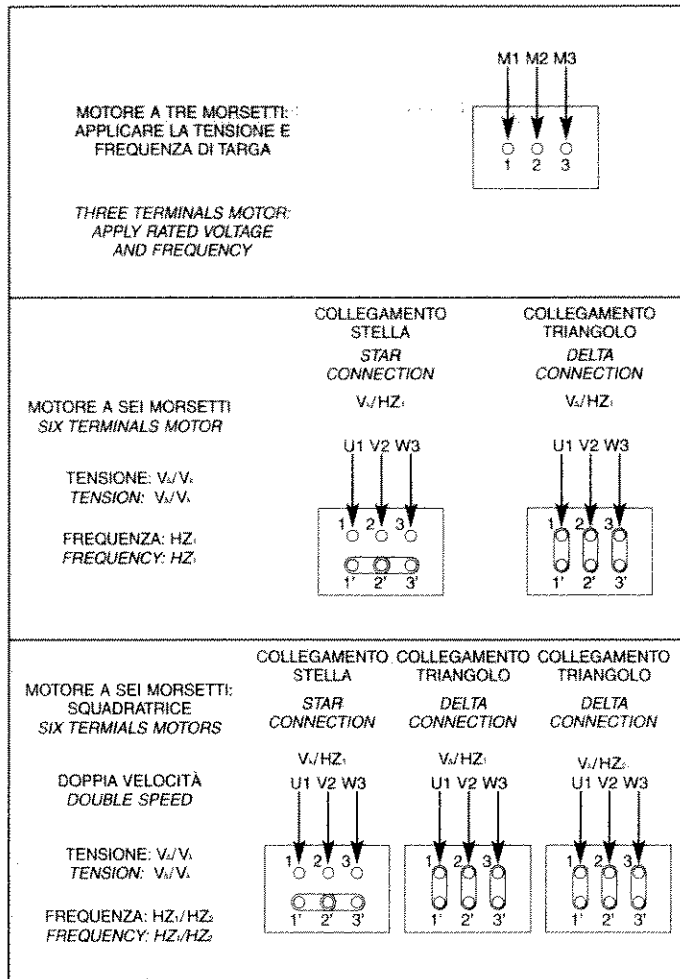
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Signature:.....



COLLEGAMENTO ELETTRICO ELECTRIC CONNECTION

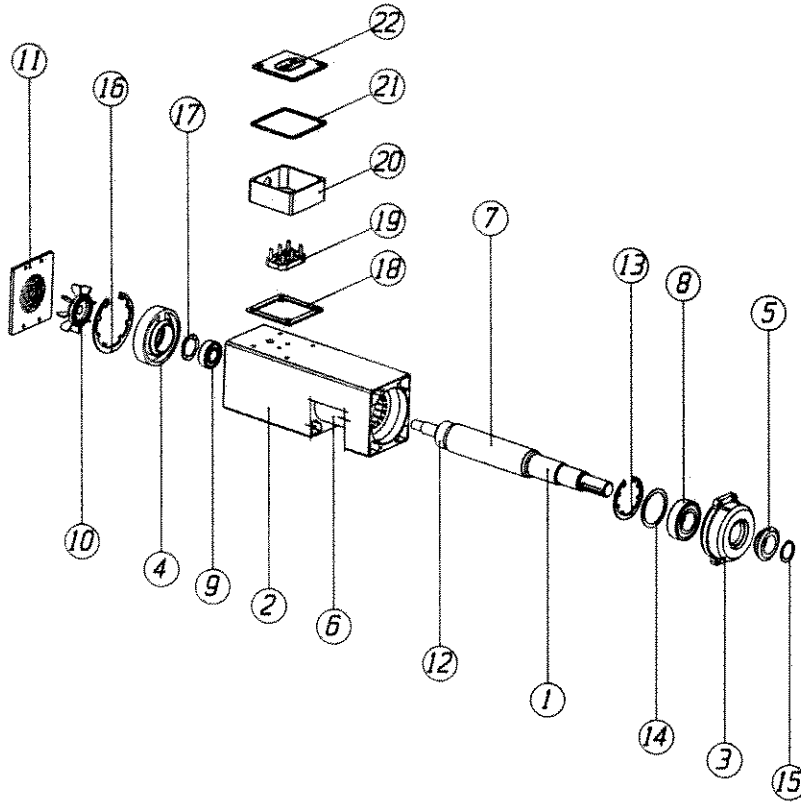
Fig. 1



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Fig. 2

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POS.	DESCRIZIONE
1	ALBERO
2	CARCASSA
3	COPERCHIO ANTERIORE
4	COPERCHIO POSTERIORE
5	LABIRINTO
6	STATORE AVVOLTO
7	ROTORE
8	CUSCINETTO ANTERIORE
9	CUSCINETTO POSTERIORE
10	VENTOLA
11	PIASTRINA COPRIVENTOLA
12	BUSSOLA DI BILANCIATURA
13	SEGER PER INTERNI
14	DISTANZIALE
15	SEGER
16	SEGER PER INTERNI
17	MOLLA DI COMPENSAZIONE
18	GUARNIZIONE BASE
19	MORSETTIERA
20	COPRIMORSETTIERA
21	GUARNIZIONE COPERCHIO
22	GUARNIZIONE COPRIMORSETTIERA

POS.	DESCRIPTION
1	SHAFT
2	FRAME
3	FRONT COVER
4	REAR COVER
5	LABIRYNTH SEAL
6	WINDED STATOR
7	ROTOR
8	FRONT BEARING
9	REAR BEARING
10	FAN
11	FAN COVER PLATE
12	BALANCING BUSH
13	"O" RING
14	DISTANCE RING
15	"O" RING
16	"O" RING
17	COMPENSATION SPRING
18	GASKET
19	TERMINAL BOARD
20	TERMINAL COVER
21	COVER GASKET
22	TERMINAL BOARD GASKET

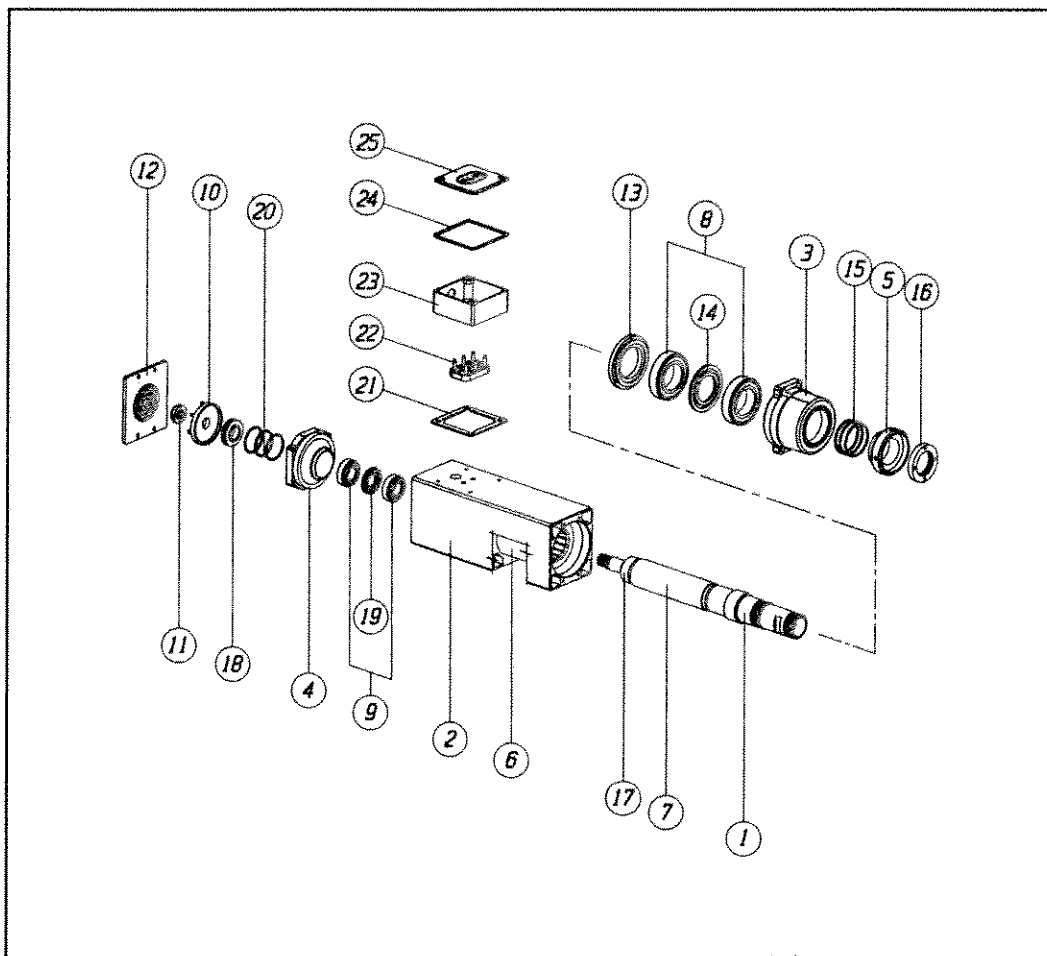
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Fig. 3

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POS.	DESCRIZIONE
1	ALBERO
2	CARCASSA
3	COPERCIO ANTERIORE
4	COPERCIO POSTERIORE
5	LABIRINTO
6	STATORE AVVOLTO
7	ROTORE
8	COPPIA CUSCINETTO ANTERIORE
9	COPPIA CUSCINETTO POSTERIORE
10	VENTOLA
11	GHIERA AUTOBLOCCANTE
12	PIASTRINA COPRIVENTOLA
13	GHIERA BLOCCA COPPIA
14	DISTANZIALE
15	SEGMENTI LAMELLARI
16	CONTROGHIERA ANTERIORE
17	BUSSOLA DI BILANCIATURA
18	GHIERA BLOCCA COPPIA
19	DISTANZIALE
20	SEGMENTI LAMELLARI
21	GUARNIZIONE BASE
22	MORSETTIERA
23	COPRIMORSETTIERA
24	GUARNIZIONE COPERCIO
25	GUARNIZIONE COPRIMORSETTIERA

POS.	DESCRIPTION
1	SHAFT
2	FRAME
3	FRONT COVER
4	REAR COVER
5	LABYRINTH SEAL
6	WINDED STATOR
7	ROTOR
8	FRONT PAIR OF BEARINGS
9	REAR PAIR OF BEARINGS
10	FAN
11	SELFLOCKING NUT
12	FANCOVER PLATE
13	BEARINGS - LOCKING NUT
14	DISTANCE RING
15	LAMELLAR SEGMENTS
16	FRONT NUT
17	BALANCING BUSH
18	BEARINGS - LOCKING NUT
19	DISTANCE RING
20	LAMELLAR SEGMENTS
21	GASKET
22	TERMINAL BOARD
23	TERMINAL COVER
24	COVER GASKET
25	TERMINAL BOARD COVER