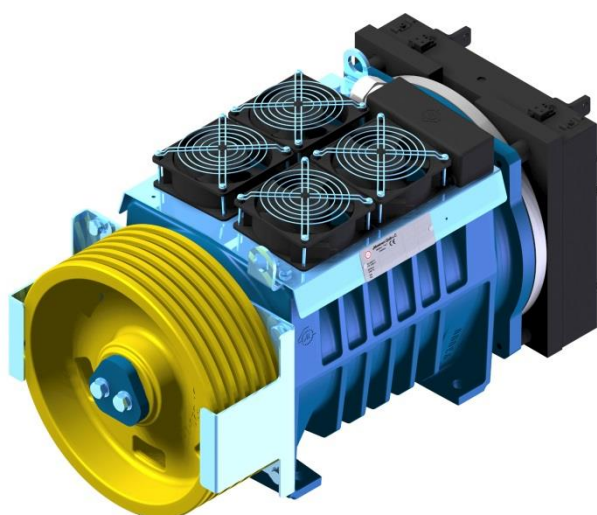




Montanari Giulio & C.

GEARLESS MGV25ML/L USER GUIDE



Installation operation and maintenance manual of the gearless MGV25ML/L

MONTANARI GIULIO & C. S.r.l.

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1. GENERAL INFORMATION

1.1. Copyright

This user guide and all its contents is the property of Montanari Giulio & C.. It's delivered on the condition that it shall be used only by the purchaser of Montanari or his authorized agent who shall follow all operating instructions and installation guidelines stated therein to ensure correct and accurate installation of the machine.

Montanari Giulio & C. reserves the right to make changes to the guide and at all contents without notice.

This booklet may not be copied, reproduced and delivered without written permission of Montanari Giulio & C.

1.2. General Notes

The operations described in this manual must be carried out by qualified personnel, equipped with the necessary workshop tools.

Before all interventions the entire system must be put out of commission to prevent it from being used.

For all requests for spare parts or for particular instructions it is always necessary to specify the serial number, which can be found stamped next to the electrical connection terminal board.

This user guide does not contemplate the instructions for the shutting down of the entire system, but only the instructions relating to the GEARLESS, therefore before starting the installation of the gearless you must follow the instructions in this operation and maintenance manual and take precautions in accordance with the current safety standards.

1.3. Montanari Gearless

The Gearless motors and all the components supplied by Montanari Giulio & C, have been tested in order to guarantee their correct operation.

The Gearless motor has been tested in both empty and loaded operating conditions, in accordance with the technical specifications for velocity, car capacity load, car weight, presence or not of compensation and the type of roping requested when the order was placed. This ensures the correct operation and a minimum number of setup operations.

All responsibility is declined for any malfunctions due to installation with different characteristics, except in the case of specific approval by Montanari G. & C.

1.4. Safety

For the correct installation, mounting and maintenance of the gearless machines, is needed qualified personnel.



- Check the proper functioning of the motor and the brake after installing the machine.
- Repairs may be carried out by the manufacturer or personnel authorized.
- The machines chassis and external parts may be very hot; therefore, don't put temperature-sensitive parts attached to them
- These machines must be not connected directly to the three phases system; it's necessary use inverter devices.
- When rotating these machines by other motor or manually, those machines will be working as generator and will produce high voltage.
- During the setup operations of the machine, there is high voltage at the terminal block.

1.5. References Standard

The following standards are to be considered as references and are not necessarily entirely applicable to this technical instruction. (Table N°1)

N	Reference	Type of standard	Description
1	UNI 10147	E	Maintenance : Terminology
2	UNI EN 81/1	E	Safety rules for the construction and installation of passenger and freight lifts

Table 1

1.6. Transport

The entire gearless are packed in cases or crates.

In some cases they are mounted upon wooden platforms, in order to be transported correctly on the lorry. The cases and crates are not load bearing and therefore cannot be stacked upon each other.

The unloading of the material, from the transport vehicle, must be done with equipment that is suitable for both the weight and the dimensions of the load. All the packing is designed for movement by fork lift and low lift platform trucks.

Upon the receipt of all material, check its condition. In the event of any damage do not proceed with the installation unless authorized otherwise by Montanari Giulio & C.

1.7. Warehouse Storage

Preserve the gearless, even if it is still packed, in a dry place where it is protected from bad weather. Once the packing has been removed take the necessary precautions to avoid the settling of any dust.



2. GEARLESS INFORMATIONS

2.1. Gearless Selection

The gearless selection must be done from Montanari Giulio & C. personnel. For any special requirements, contact the manufacturer. The gearless machine is not designed for any use other than those specified in this manual. The manufacturer will not be responsible for faults arising out of disregard to these instructions.

2.2. Gearless Overall Dimensions

Gearless Type	Traction Sheave [mm]		Dimensions [mm]			
	Ø D	F	A	B	C	E
MGV25ML MGV25L	210	106	689	315	363	64
	240	70				55
	240	106				64
	320	115		342		67

Table 2 – Overall Dimensions

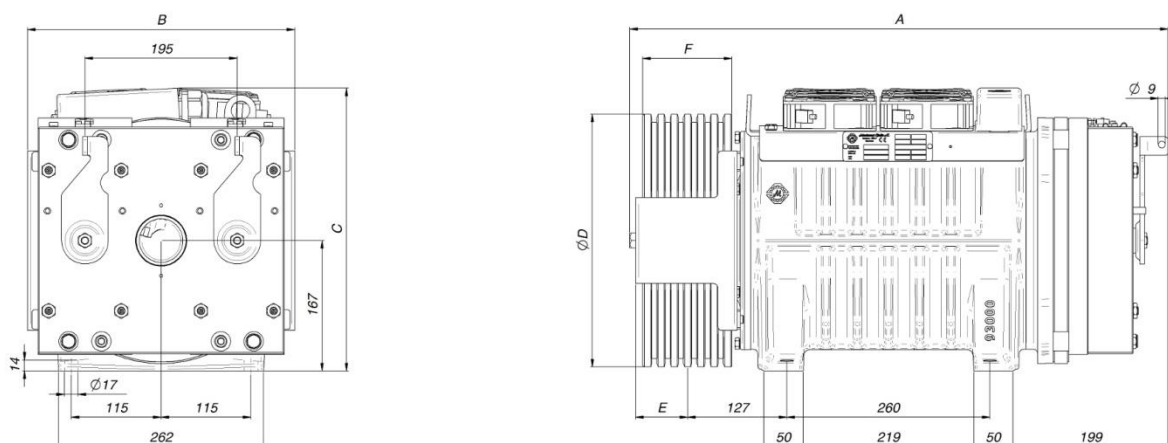


Figure 1 – Overall Dimensions

2.3. Gearless Parts

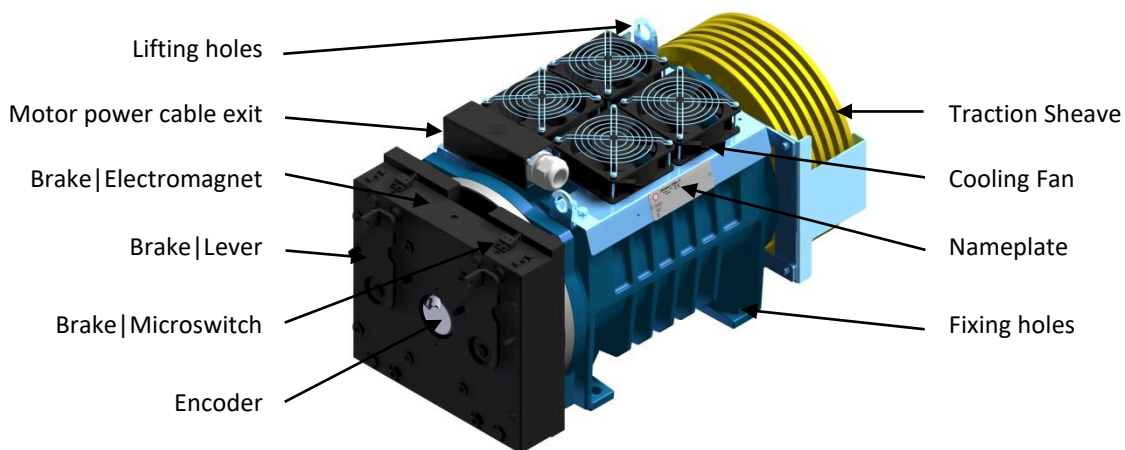


Figure 2 – MGV25ML and MGV25L Parts'

The cooling fan activates through a thermal switch when motor temperature reaches 70°C. In addition, a PTC thermistor inside the winding protects from overheating (temperature of winding reaches 130°C). Refer to Electrical Connection section for major details.

2.4. Lubrication

The gearless does not contain oil and is supplied with bearings that are lubricated for the life of the equipment; therefore no further lubrication is necessary.

2.5. Brake

The gearless is provided with braking device conform to the EN81-1 standard.

The braking system is pre-calibrated by the manufacturer and therefore don't require any further adjustment.

Attention must be paid and if necessary precautions taken to ensure that oil or grease do not come into contact with the brake disk. Grease or oil on the brake disc can jeopardize the braking system and put people in serious danger.

The braking system is Mayr and works as follow; in resting state (Electromagnet not supplied), the brake disks are locked from the surfaces movable (Green arrows in Figure N°3). In that condition the system is motionless. When motor received a moving command, the electromagnet of the brake is supplied releasing the brake disks (Green arrows in Figure N°4). Now the motor is free to moving.

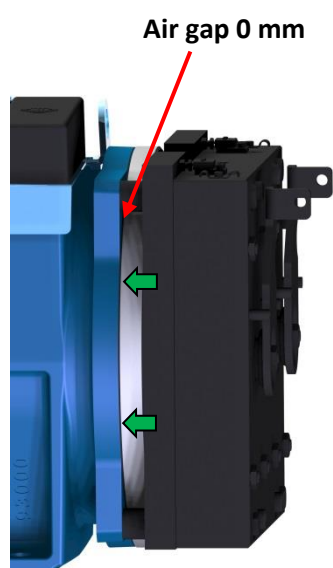


Figure 3 – Braking System not supplied

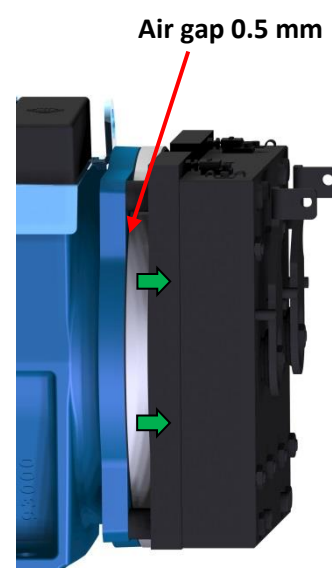


Figure 4 – Braking System supplied

2.6. Encoder Details

The manufacture supply the gearless with Encoder EnDat 2.2 or Sin-Cos protocol; the offset angle on the test report, is based on Fuji Frenic Lift inverter.

3. INSTALLATION

3.1. Operating Conditions

- The gearless machine must be installed in a building or closed hoist-way.
- Do not operate the gearless in an explosive atmosphere.
- The ambient temperature must be within 0°C and +40°C.

3.2. Handling

The gearless can be lifted using the holes already present on the base for the fitting of belts or chains.

(Figure N°5). Care must be taken to ensure that the gearless doesn't get knocked as the brake disc; the brake levers and the electrical connection terminal block is particularly delicate. Lifting example:



Figure 5

3.3. Assembling

The gearless are ideal for assembly either with or without a machine room. The roping and therefore the load must always be orientated versus the base of the machine as shown in the diagram. (Figure N°6)

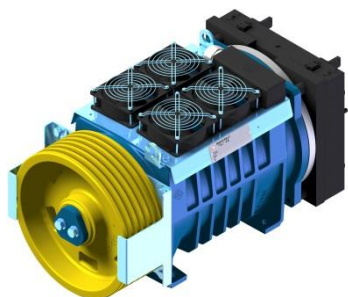


Figure 6



Figure 7

In the case of assembly with the machine down, and therefore with the roping and load upward, you must mount it rotated by 180 degrees. (Figure N°7)

3.4. Electric Installation

The Gearless is provided with the power cable:

Power Cables for U-V-W phases [1-2-3].
 Cables for PTC Thermistor [T5-T6].
 Power Cables for cooling fans supply [F7-F8] (230 Vac).
 Ground Cable (Yellow-Green Cable).
 Shield Cable (Grey Cable).



Figure 8 – Power Cable



- The power cable must be routed separately from all the cables.
- The motor power cable is shielded and the shielding cable must be connect at the earth.
- The encoder cable must be routed away from motor power cable for prevent electric disturb.

The braking device has one power cable with two wires inside, and one cable with three wires for microswitch's contacts (Figure N°9). In the nameplate of the braking device are written all electrical data. This type of configuration, the power cable and micro switch must be connected separately.

The microswitch is able to detect both the two mechanical parts. It has two contacts: one normally open and one normally closed (Figure N°9). These contacts tell us the actual state of the brake device (See Truth table N°3).

This braking device must be connected to the Booster device, an electronic device that provide an overvoltage of 207 Vdc for few seconds and an hold voltage of 104 Vdc. For major information see Booster Basic User Guide.



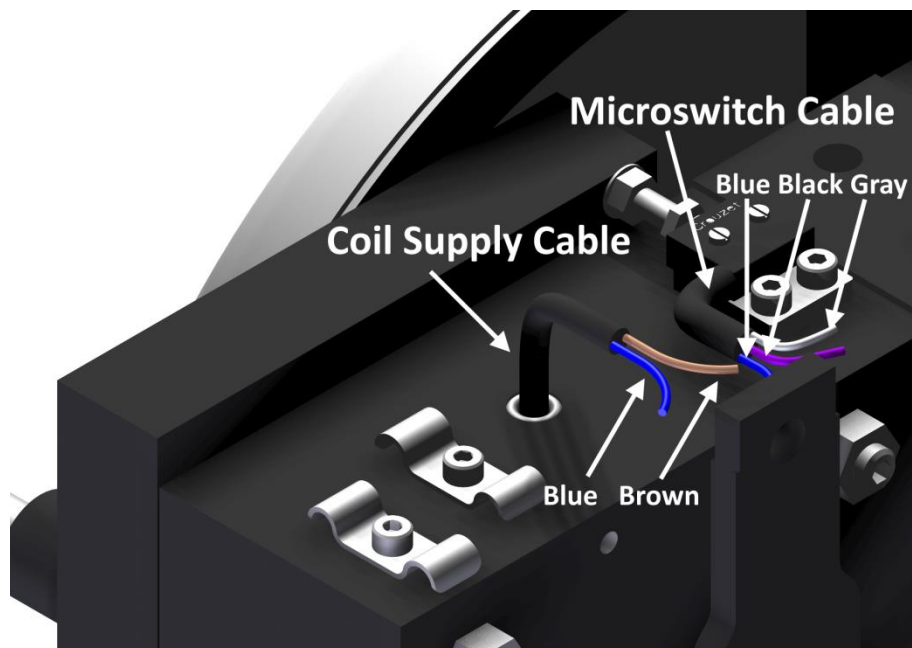


Figure 9 – Coil and Microswitch Cables





Brake Disk Locked			Brake Disk Free				
		Contact State			Contact State		
(Black) COM.		(Blue) N.O.	Disconnected	(Black) COM.		(Blue) N.O.	Connected
(Black) COM.		(Gray) N.C.	Connected	(Black) COM.		(Gray) N.C.	Disconnected

Table 3

As follow, an example how to drive the coil brake in parallel connection configuration.

- Normal Mode Condition:
It's possible driving only contactor n°1 (Figure N° 10) without contactor n°2.
This prevent the brake from dangerous over-voltages and noise in closing.
- Emergency Mode and Inspection Mode Condition:
It's recommended use both contactors. Use only contactor n°1 during the opening and/or closing, could cause not acceptable delay during the closing of the braking device.

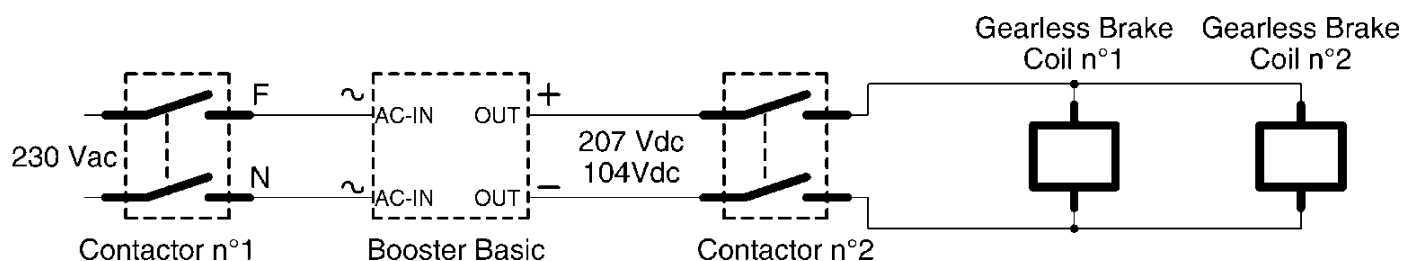


Figure 10 – Typical Application with brake coils in parallel configuration

4. TECHNICAL CHARACTERISTICS

GEARLESS MGV25ML CHARACTERISTICS

Motor Code	Motor Type	P _n	Speed	V _n	C _n	I _n	C _{max}	I _{max}	EMF	Poles	F	R _s	L _s	Static Load	I	Duty Cycle	Weight
		[kW]	[RPM]	[V]	[Nm]	[A]	[Nm]	[A]	[V·s/rad]	[N°]	[Hz]	[Ω]	[mH]	[Kg]	[kg·m ²]		[Kg]
MGV25200803BC00	MGV25ML	4,4	80	360	530	15	915	27	20	16	10,7	2,8	32	3400	0,28	180S/H 40%	220
MGV25201203BC00	MGV25ML	6,7	120	360	530	19	915	35	16	16	16	1,8	20	3400	0,28	180S/H 40%	220
MGV25201923BC00	MGV25ML	10,7	192	360	530	25	915	47	12	16	25,6	0,96	11	3400	0,28	180S/H 40%	220
MGV25202553BC00	MGV25ML	14,2	255	360	530	34	915	62	9	16	34	0,62	7	3400	0,28	180S/H 40%	220
MGV25203003BC00	MGV25ML	16,6	300	360	530	37	915	68	8	16	40	0,47	5	3400	0,28	180S/H 40%	220

Table 4 – Characteristics

GEARLESS MGV25L CHARACTERISTICS

Motor Code	Motor Type	P _n	Speed	V _n	C _n	I _n	C _{max}	I _{max}	EMF	Poles	F	R _s	L _s	Static Load	I	Duty Cycle	Weight
		[kW]	[RPM]	[V]	[Nm]	[A]	[Nm]	[A]	[V·s/rad]	[N°]	[Hz]	[Ω]	[mH]	[Kg]	[kg·m ²]		[Kg]
MGV25260603BC00	MGV25L	4	60	360	630	15	1100	27	24	16	8	3,2	37	3400	0,31	180S/H 40%	240
MGV25261203BC00	MGV25L	7,9	120	360	630	22	1100	40	18	16	16	1,5	18	3400	0,31	180S/H 40%	240
MGV25261603BC00	MGV25L	10,6	160	360	630	28	1100	49	14	16	21,3	0,95	11	3400	0,31	180S/H 40%	240
MGV25262103BC00	MGV25L	13,9	210	360	630	32	1100	59	11	16	28	0,65	8	3400	0,31	180S/H 40%	240
MGV25262553BC00	MGV25L	16,8	255	360	630	40	1100	71	10	16	34	0,47	5	3400	0,31	180S/H 40%	240
MGV25263603BC00	MGV25L	23,7	360	360	630	52	1100	91	7	16	48	0,28	3	3400	0,31	180S/H 40%	240

Table 5 – Characteristics

BRAKE RTW600 CHARACTERISTICS

Brake Type	Power (P _n)	Voltage (V _n)	Current (I _n)	Strength (C _n)	Certificate
	[W]	[V]	[A]	[Nm]	
RTW600	2X372W – 2X92W	207V _{DC-PEAK} - 104V _{DC-HOLD}	1.8A – 0.9A	2X600Nm	EU-BD 1014

Table 6 – Characteristics



5. USE

5.1. General Notes

The gearless are designed and constructed as lifting devices for lifts and hoists and respect the various sector standards; any other use is to be considered improper.

They cannot be used in systems with characteristics that are different to those agreed upon in the order (e.g. carrying capacity, velocity, etc.).

Qualified and competent personnel must carry out all tests, inspections or maneuvers that may be necessary in accordance with the current standards.

5.2. Emergency Maneuver

The emergency maneuver must be made by an independent electrical device, which is capable of opening the brake and moving the gearless at a reduced velocity.

It is possible to exploit the characteristics of the synchronous motor as it can slow down the car when the phases are put into short circuit.

This system has some load limits and it is therefore necessary to observe several precautions. Montanari Giulio & C. can provide the information necessary to apply the aforementioned solution upon request.

6. MAINTENANCE

6.1. General Notes

- Observe all the safety rules.
- The motor should not be dismantled at site.
- The bearing used are shielded and do not require any further lubrication under normal service conditions.
- Don't use high pressure cleaner on the motor.

6.2. Traction Sheave/Driving pulley

Periodically, at least once a year, check the amount of wear on the cable races on the traction pulley.

In the event of the cables slipping or of excessive wear contact Montanari Giulio & C. for the substitution instructions, always indicating the serial number.

6.3. Components Substitution

The instructions for any eventual component substitutions must be asked for each time from the Technical Department, specifying the serial number.

7. DECLARATION OF CONFORMITY

DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

(Directive 2006/42/CE, Annex II, par. B.)

Manufacturer:

Montanari Giulio & C. S.r.l.
Via Bulgaria n.39, 41122 Modena

Person authorized to compile the relevant technical documentation:

Bertoni Stefano (Dir. tecnico), by Montanari G. & C. S.r.l., Via Bulgaria n.39, 41122 Modena

Model of the partly completed machinery:

Gearless: MGX19 – MGX19 – MG200 – MG25S – MG25 – MG30 – MG34S – MG34 MCG150 – MDD035 – MDD070 – MGF40 – MGF51 – MGX75 – MGX80 – MGX53

The essential requirements of this Directive are applied a fulfilled and the relevant technical documentation is compiled in accordance with part B of Annex VII.

The partly completed machinery comply with the following directives:
2014/33/UE, 2014/30/UE, 2014/35/UE, 2004/108/CE.

The Montanari Giulio & C. S.r.l. undertakes to provide, in response to a reasoned request by national authorities, relevant information on the partly completed machinery.

The partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of this Directive: 2006/42/CE or 2014/33/UE.

Violation of the dispositions given in these technical instructions will immediately invalidate any form of guarantee.

Note:

With regard to fulfilment of point 9.7 of reference regulation EN81-1 1998 point 5.5.7 and reference regulation EN81-20, please remember that Montanari supplies protection devices only if specifically requested by the customer.

The responsible: Ponanti Graziano

Signature:



Modena 06/07/2016




8. BRAKE CERTIFICATE

The brake has been designed in conformance with the specific requests of the EN81-1:1998+A3:2009(D) standard.

This device is therefore usable as a brake to slow down the car in combination with a suitable speed governor in the case of excessive velocity in the rising direction. The examination certificate EU-BD 1014 and is sued by TÜV B.B.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ CERTIFICADO ◆ CERTIFICAT

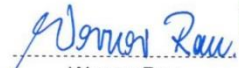


Industrie Service


EU TYPE-EXAMINATION CERTIFICATE


According to Annex IV, Part A of 2014/33/EU Directive

Certificate No.:	EU-BD 1014
Certification Body of the Notified Body:	TÜV SÜD Industrie Service GmbH Westendstr. 199 80686 Munich - Germany Identification No. 0036
Certificate Holder:	Chr. Mayr GmbH & Co. KG Eichenstr. 1 87665 Mauerstetten - Germany
Manufacturer of the Test Sample: <small>(Manufacturer of Serial Production – see Enclosure)</small>	Chr. Mayr GmbH & Co. KG Eichenstr. 1 87665 Mauerstetten - Germany
Product:	Braking device acting on the shaft of the traction sheave, as part of the protection device against overspeed for the car moving in upwards direction and braking element against unintended car movement
Type:	RTW Size 600, 800, 1000 Type 8012.____.____
Directive:	2014/33/EU
Reference Standards:	EN 81-20:2014 EN 81-50:2014 EN 81-1:1998+A3:2009
Test Report:	EU-BD 1014 of 2016-02-01
Outcome:	The safety component conforms to the essential health and safety requirements of the mentioned Directive as long as the requirements of the annex of this certificate are kept.
Date of Issue:	2016-02-01
Date of Validity:	from 2016-04-20



Werner Rau
Certification Body "lifts and cranes"





9. ERRORS AND FAULTS

<i>FAULT</i>	<i>CAUSE</i>	<i>SOLUTION</i>
The motor doesn't run	Motor phases incorrectly connected	Check the motor phases connections
	Inverter drive settings wrong	Check the inverter drive settings
	Inverter drive defective	Replace the drive
	Brake faulty	See below
	Motor mechanically blocked	Contact Montanari Giulio & C.
	Motor connections loose	Tighten the connections at the machine's controller
	Excessive temperature	See below
Braking system doesn't work	Brake supply is wrong	Check the correct voltage for supply the brake coil
	Braking system defective	Contact Montanari Giulio & C.
Excessive temperature	Cooling fan doesn't work	Replace the cooling fan
	Cooling fan not properly connected	Check the voltage of the cooling fan – (230Vac)
	PTC sensor defective	Contact Montanari Giulio & C.
	Inverter drive settings wrong	Check the inverter drive settings
Noise during the run	Motor alignment with the diverter pulley is faulty	Check and make the correct alignment
	Encoder defective	Replace the encoder
	Inverter drive settings wrong	Check the inverter drive settings
	Bearing defective	Contact Montanari Giulio & C.



