

TX Operating instructions



High efficiency asynchronous three-phase motors



Index

1	General and safety informations	5
	1.1 Recycling	5
	1.2 Safety	5
2	Use conditions and limits	6
3	Supply status and product designation	6
	3.1 Receipt	6
	3.2 Name plate	6
	3.3 Painting	8
	3.4 Protections and packing	8
4	Storage	8
5	Installation	9
	5.1 Mechanical installation	9
	5.2 Electrical installation	11
6	Electric connections	13
	6.1 Motor connection	13
	6.2 Brake connection (rectifier HBZ, HEZ, HBV (HBVM))	13
	6.3 HBF brake connection	15
	6.4 Auxiliary equipment connections: independent cooling fan	16
	6.5 Auxiliary equipment connections: bi-metal type thermal probes, thermistor type thermal probes (PTC), anti-condensation heater	18
	6.6 Auxiliary equipment connections : encoder	18
7	Maintenance	19
	7.1 Motor periodical maintenance	19
	7.2 HBZ, HEZ brake periodical maintenance	20
	7.3 HBF brake periodical maintenance	21
	7.4 HBV (HBVM) brake periodical maintenance	22

8	Costructive scheme	23
8.1	HB 63 ... 160S motors	23
8.2	HB 63 ... 132 iFIT motors	23
8.3	HE 160 motors	24
8.4	HE 180 ... 315S motors	24
8.5	HBZ 63 ... 160S motors	25
8.6	HBZ 63 ... 132 iFIT motors	26
8.7	HEZ 160 motors	27
8.8	HEZ 180 ... 200 motors	28
8.9	HBF 63 ... 160S motors	29
8.10	HBV 63 ... 160S motors	30
9	Troubles: causes and countermeasures	31
9.1	Motor troubles	31
9.2	Brake troubles	32

This document is valid the following motor series:

HB (included HBM, HBZ, HB3, HB...), **HBZ** (included HB2Z, HB...Z), **HBF** (included HB2F, HB...F), **HBV** (HBVM, HB2V, HB...V), **HE** (included HE3, HE3Z, HE4, HE4Z).

1.1

Recycling



Disposal in accordance with regulation 2012/19/EU (WEEE):

This symbol means that the product contains materials that can be recovered or recycled and should not be disposed of with general waste. Disposal should be in accordance with EU directives where applicable. Outside the European Union, contact local authorities for information on applicable regulations.

1.2

Safety



The responsible for installation or maintenance **must read this handbook carefully before installing** the motor and should carefully follow all the instructions contained therein.



In particular, paragraphs marked with present symbols (danger and electrical hazards) contain dispositions to be strictly observed in order to assure **personal safety** and to avoid **any heavy damages** to the machine or to the system (e.g.: works on live parts, on lifting machines, etc.).

This document should always be **kept available** for reference **near the machine**.



Danger: electric rotating machines present dangerous parts: when operating they have live and rotating components and surfaces with temperatures higher than +50 °C.

The motor, together with the auxiliary equipment if any (e.g.: brake, encoder, etc.), is intended to be incorporated into an equipment or a complete system and should not to be put into service before the equipment or the finite system complies with:

- the "**Machinery Directive**" (Declaration of Incorporation - Directive 2006/42/EC Article 4.2 - II B) and subsequent updatings;
- the "**Electromagnetic Compatibility Directive (EMC)**" 2004/108/EC and subsequent updatings;
- the "**Low Voltage Directive**" 2006/95/EC and subsequent updatings: motors meet the requirements of this directive and are therefore CE marked on name plate.

An incorrect installation, an improper use, the removing or disconnection of protection devices, the lack of inspections and maintenance, improper connections may cause severe personal injury or property damage.

Therefore **the motor must be moved, installed, commissioned, handled, controlled, serviced and repaired exclusively by responsible qualified personnel (to IEC 364).**

It is recommended to pay attention to all instructions of present handbook, all instructions relevant to the system, all existing safety laws and standards concerning correct installation.



These instructions are relevant to motors suitable for installations in industrial areas; *additional protection* measures, if necessary for other applications, must be adopted and assured by the person responsible for the installation.



Attention!

Motors in non-standard design or with constructive variations may differ in the details from the ones described here following and may require additional information.



When working on electric machine, **machine must be stopped and disconnected from the power line** (including auxiliary equipments). If there are electric protections, avoid any possibility of unexpected restarting, paying attention to specific recommendations on equipment application.

In **single-phase motors**, running capacitor can remain temporarily charged keeping live relevant terminals even after motor stop.

In case of **brake motor** (HBZ, HBF, HBV, HBVM) the responsibility of the brake correct running is of the final assembler who, before putting into service, must:

- verify the correct running of brake and make sure that braking torque satisfies application needs, taking care to avoid dangers for persons or things;
- adjust braking torque (if required);
- respect connection instructions and any further recommendation contained in present instructions.

General and safety informations

1

Attention!

For any clarification and/or additional information consult Rossi S.p.A. and specify all name plate data.

-  If deviations from normal operation occur (temperature increase, unusual noise, etc.) immediately switch off the machine.
- The products relevant to this handbook correspond to the technical level reached at the moment the handbook is printed.
- Rossi S.p.A. reserves the right to introduce, without notice, the necessary changes for the increase of product performances.

Use conditions and limits

2

The motors are intended for use in industrial applications, in accordance with the nameplate data, with ambient temperature -15 to +40 °C (with peaks at -20 °C to +50 °C), maximum altitude 1000 m, according to CEI EN 60034-1.

For running at ambient temperature higher than +40 °C or lower than -15°C, consult us.

Motor running with independent cooling fan is allowed only when the fan is running.

Not allowed running conditions: application in aggressive environments having explosion danger, etc. The operating conditions must comply with the nameplate data.

Supply status and product designation

3

3.1

Receipt

On receipt verify that goods correspond to your order and it has not been damaged during the transport; in case of damages, contest them immediately to the courier.

Do not start up motors even only slightly damaged.

3.2

Name plate

Each motor is provided with an anodized aluminum nameplate containing technical information about its functional and construction features and defining, together with contractual agreements, its application limits; the nameplate must not be removed, and must be kept intact and legible.

All nameplate data must be specified on any orders for spare parts.

Unless otherwise agreed upon in the order, motors are painted with water-based two-component polyacrylic enamel, color blue RAL 5010 DIN1843, suitable to withstand weathering and aggressive agents (class C3 according to ISO 12944-2) and to allow further finishing with two-component synthetic paints.

Size. - 63 ... 160S

ROSSI		IEC 60034-1		IE3		CE	
MOT.(1)~(9)	(2) (3) (4) (5)	IP (6)	AMB. (7)	IC (8)			
(14)	(10)	kg (11)	I.C.L. (12)	S (13)			
(15)	Nm (30)	V~/Hz (32)	A (33)	V= (35)			
DE/NDE (16)	(17)	(18)					
(19) V (19)	% (21)	Hz (22)	% (23)	A (24)	kW (25)	min ⁻¹ (26)	cos φ (27)
(28)							
(29)							

NEMA YY230.Y460 V, 60 Hz

ROSSI		IEC 60034-1		IE3		CE	
MOT.(1)~N. (9)	(10)	IP (6)	AMB. (7)	IC (8)			
(2) (3) (4) (5)		kg (11)	I.C.L.(12)S (13)				
Nm (30)	V~/Hz (32)	A (33)	V= (35)				
(14)	(15)	(16)	(17)				
(19) V (19)	Hz (22)	A (24)	HP (25)	RPM (26)	PF (27)	NOM. EFF (28)	
(20)	(21)	(23)	(24)	(25)	(26)	(27)	(28)
(29)							

Size - 160M ... 280

ROSSI		IEC 60034-1		IE3		CE	
MOT.(1)~(9)	(2) (3) (4) (5)	IP (6)	AMB. (7)	IC (8)			
(14)	(10)	kg (11)	I.C.L. (12)	S (13)			
(15)	Nm (30)	V~/Hz (32)	A (33)	V= (35)			
DE/NDE (16)	(17)	(18)					
(19) V (19)	% (21)	Hz (22)	% (23)	A (24)	kW (25)	min ⁻¹ (26)	cos φ (27)
(20)	(21)	(22)	(23)	(24)	(25)	(26)	(27)
(28)							
(29)							

Rossi IEC 60034-1 IE3 Made in Italy

MOT. 3 ~ HB3 90L 4 B5 IP 55 AMB. 40°C IC 411
 2380729 02/21 7622429 kg 19 I.C.L. F S 1
 R000154943

DE/NDE h g

Δ V	Y	%	Hz	%	A	kW	min ⁻¹	cos φ
220/380			50		5.9/3.4	1.5	1415	0.81
230/400			50		5.7/3.3	1.5	1430	0.78
240/415			50		5.7/3.3	1.5	1430	0.76
265/460			60		5.0/2.9	1.5 SF1.15	1740	0.74
277/480			60		5.0/2.9	1.5 SF1.2	1745	0.72

50/60Hz: IE3 85.3/86.5(100%) 86.1/87.3(75%) 85/85.5(50%)
 60Hz NEMA NOM. EFF. 86.5% 2 hp DES.C CODE. L/L

UFC 2070

Rossi IEC 60034-1 IE3 Made in Italy

MOT.3 ~N.1801516 06/16 IP 55 AMB. 40°C IC411
 HB3 112M 4 B5 kg 33 I.C.L. F S 1
 R000145817

DE/NDE h g

R000145817 7723530

NEMA MG1-12 SF 1,15 CONT. DESIGN A CODE M

YY V Y	Hz	A	HP	RPM	PF	NOM.EFF
230/460	60	10,6/5,3	4	1750	79%	89,5%

ENERGY Verified for energy efficiency in accordance with US DOE 10CFR431, dated September 22, 2015
 Verified for energy efficiency in accordance with CSA C800-10, dated March 2010, reaffirmed 2015
 CC131B E304505

UFC 2163

Rossi IEC 60034-1 IE3 Made in Italy

MOT. 3 ~ HE3 160L 4 B5 IP 55 AMB. 40°C IC 411
 1642457 01/19 4598127 kg 125 I.C.L. F S 1
 R00011170

DE/NDE 6309-2Z-C3/6309-2Z-C3

Δ V	%	Hz	%	A	kW	min ⁻¹	cos φ
380		50		30.1	15	1460	0.82
400		50		29.5	15	1465	0.80
415		50		29	15	1470	0.78
460		60		25.5	15 SF1.15	1770	0.79
480		60		25.2	15 SF1.2	1775	0.77

50/60Hz: IE3 92.1/93.0(100%) 91.9/92.8(75%) 92.1/92.4(50%)
 60Hz NEMA NOM. EFF. 93% 20 hp DES.C CODE.A/A

UFC 228

Rossi IEC 60034-1 IE3 Made in Italy

MOT. 3 ~ HB3Z 90L 4 B5 IP 55 AMB. 40°C IC 411
 2383840 03/21 7631421 kg 25 I.C.L. F S 1
 R000246492

DE/NDE h g

Δ V	Y	%	Hz	%	A	kW	min ⁻¹	cos φ
220/380			50		5.9/3.4	1.5	1415	0.81
230/400			50		5.7/3.3	1.5	1430	0.78
240/415			50		5.7/3.3	1.5	1430	0.76
265/460			60		5.0/2.9	1.5 SF1.15	1740	0.74
277/480			60		5.0/2.9	1.5 SF1.2	1745	0.72

50/60Hz: IE3 85.3/86.5(100%) 86.1/87.3(75%) 85/85.5(50%)
 60Hz NEMA NOM. EFF. 86.5% 2 hp DES.C CODE. L/L

UFC 2071

Rossi IEC 60034-1 IE3 Made in Italy

MOT.3 ~N.1801516 06/16 IP 55 AMB. 40°C IC411
 HB3Z 112M 4 B5 kg 33 I.C.L. F S 1
 R000135969

DE/NDE h g

R000135969 6473681

NEMA MG1-12 SF 1,15 CONT. DESIGN A CODE M

YY V Y	Hz	A	HP	RPM	PF	NOM.EFF
230/460	60	10,6/5,3	4	1750	79%	89,5%

ENERGY Verified for energy efficiency in accordance with US DOE 10CFR431, dated September 22, 2015
 Verified for energy efficiency in accordance with CSA C800-10, dated March 2010, reaffirmed 2015
 CC131B E304505

UFC 2170

Rossi IEC 60034-1 IE3 Made in Italy

MOT. 3 ~ HE3Z 160L 4 B5 IP 55 AMB. 40°C IC 411
 1642457 01/19 4598127 kg 125 I.C.L. F S 1
 R00011171

DE/NDE 6309-2Z-C3/6309-2Z-C3

Δ V	%	Hz	%	A	kW	min ⁻¹	cos φ
380		50		30.1	15	1460	0.82
400		50		29.5	15	1465	0.80
415		50		29	15	1470	0.78

50Hz: IE3 92.1(100%) 91.9(75%) 92.1(50%)

UFC 228

(1) Number of phases	(11) Motor mass	(21) Voltage tolerance	(31) Braking torque
(2) Motor type	(12) Insulation class I.CL....	(22) Nominal frequency	(32) Rectifier supply
(3) Size	(13) Duty cycle S...	(23) Frequency tolerance	(33) Current absorbed by brake
(4) Number of poles	(14) Motor code	(24) Nominal current	(34) Rectifier designation
(5) Designation of mounting position	(15) Customer code (On request)	(25) Nominal power	(35) D.c. nominal voltage of brake supply
(6) Protection IP ...	(16) Bearings	(26) Nominal speed	(36) Service factor
(7) Maximum ambient temperature	(17) Note 1	(27) Nominal power factor	
(8) Code IC	(18) Note 2	(28) Nominal efficiency IEC 60034-2-1	
(9) Production number	(19) Connection of the phases	(29) Design - code	
(10) Two months and year of manufacturing end serial number	(20) Nominal voltage	(30) Brake size	

3.3

Painting

Unless otherwise agreed in the order the motors are painted with water-soluble polyacrylic dual-compound enamel, color blue RAL 5010 DIN 1843 resistant to atmospheric and aggressive agents (category C3 according to ISO 12944-2) and suitable for further coat with synthetic dual-compound paints.

3.4

Protections and packing

Free shaft ends are treated with long-life protective anti-rust long life oil.

Unless otherwise agreed in the order, motors are adequately packed: on pallet, protected with a polyethylene film, wound with adhesive tape and strap (bigger sizes); in carton pallet, wound with adhesive tape and strap (smaller sizes); in carton boxes wound with tape (for small dimensions and quantities).

If necessary, motors are conveniently separated by means of anti-shock foam cells or of filling cardboard.

Do not stock packed products on top of each other.

Storage

4

Surroundings should be sufficiently clean, dry and free from corrosive media and excessive vibrations ($v_{eff} \leq 0,2$ mm/s) to avoid damage to bearings (excessive vibration should also be guarded during transit, even if within wider range) and ambient storage temperature should be $0 \div +40$ °C with peaks of -20 °C and $+50$ °C. Always protect the motor from humidity.

Every six months rotate the shafts (some revolutions are sufficient; release the brake in case of brake motor) to prevent damage to bearings and seal rings.

Assuming normal surroundings and the provision of adequate protection during transit, the unit is protected for storage up to 1 year.

For a 2 year storing period in normal surroundings it is necessary to generously grease the sealings, the shafts and the unpainted machined surfaces, if any.

For storages longer than 2 years or in aggressive surroundings or outdoors, consult Rossi S.p.A..

Before the installation, verify that:

- no damages occurred during the storing or the transport;
- design is suitable for the environment (temperature, atmosphere, etc.);
- electrical connection (power supply, etc.) matches with motor name plate data;
- used mounting position matches with the one stated on name plate;
- no humidity affected the motor (check insulation resistance on page 11);
- always check as described when the storage times suggested above are exceeded;
- drive is not blocked.



Attention!

For lifting and transporting the motor use the motor eyebolts (when provided) keeping in mind that these are suitable only for lifting the motor and not other machines fitted to it; be sure that load is properly balanced and provide lifting systems, and cables of adequate section. If necessary, motor masses are stated in Rossi technical catalogs.

5.1

Mechanical installation

Be sure that the structure on which motor is fitted is plane, levelled and sufficiently dimensioned in order to assure fitting stability and absence of vibration induced on the motor itself (vibration speed $v_{eff} \leq 3,5$ mm/s for $P_N \leq 15$ kW and $v_{eff} \leq 4,5$ mm/s for $P_N > 15$ kW are acceptable), keeping in mind all transmitted forces due to the masses, to the torque, to the radial and axial loads.

In the case of using for fastening, the holes of the B14 flange, the threaded part of the screw must ensure a sufficiently extended gripping thread section and proper tightening of the motor to the machine but must not exceed the following lengths:

size 63, 71 and 80: 10 mm; size 90: 12 mm; size 100 and 112: 13 mm; size 132: 18 mm



Attention!

Bearing life and good shaft and coupling running depend on alignment precision between the shafts. Therefore carefully align the motor and the driven machine (with the aid of shims if need be), interposing flexible couplings whenever possible.



Attention!

Incorrect alignment may cause breakdown of shafts (which may represent **heavy danger for people**) and/or bearings (which may cause overheatings).

Mating surfaces (flange or feet) must be clean and sufficiently rough (approximately $R_a \geq 6,3$ μm) to provide a good friction coefficient: remove by a scraper or solvent the possible paint of coupling surfaces.

When external loads are present use pins or locking blocks, if necessary.

When mounting the motor on the machine, it is recommended to use locking adhesives on the fastening screws and on mating surfaces.



Position the motor so as to allow a free passage of air (on fan side) for cooling.

Therefore it is necessary to avoid:

- any obstruction to the air flow;
- heat sources near the motor that might affect the temperature of cooling air and of the motor (for radiation);
- in general, insufficient air recycle and applications hindering the steady dissipation of heat.

For **outdoor installation**, in presence of **damp** or corrosive environments the IP55 protection degree is not enough to guarantee a proper application. In this case, be sure that:

- the motor is equipped with the condensate drain holes, in the right position (downwards) and always open (except during washes);
- the brake is with "Design for damp and corrosive environment" ("UC" code stated on name plate, HBZ and HBF motors) and with "Stainless steel bolts and screws of brake" ("DB" code stated on name plate, HBZ motor);
- the anti-condensation heater, if present, is properly connected for at least 2 hours before the motor starts running (never supply the heater during motor operations); as an alternative, a single-phase voltage equal to approx. 10% of the nominal connection voltage applied to U1 and V1 terminals can replace the heater;
- the motor is protected by whatever appropriate means, from solar radiation and from weather direct exposure, especially when it is installed with vertical shaft upwards and when no drip-proof cover is present.

Before commissioning verify the correct tightening of electrical connections, fastening and fitting systems (see Tab. 1 and Tab. 2).

Tab. 1 Tightening torques M_s for terminal block connections

	M_s [N m]				
	M4	M5	M6	M8	M12
min	0,8	1,8	2,7	5,5	15
max	1,2	2,5	4	8	20

Tab. 2 Tightening torques M_s for screw and fixing bolts

Screw ⁽¹⁾	M_s [N m]										
	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M24
Class - 8.8	3	6	11	25	50	85	135	205	280	400	710
Class - 10.9	4	8	15	35	71	120	190	290	390	560	1 000
Taptite	3	6	10	26	-	-	-	-	-	-	-

¹⁾ Class 8.8 is usually sufficient. Before tightening the bolt be sure that the eventual centerings of flanges are inserted properly. The bolts are to be diagonally tightened with the maximum tightening torque.

Fitting of components to shaft ends

It is recommended to machine the hole of parts keyed onto shaft ends to H7 tolerance. Before mounting, clean mating surface thoroughly and lubricate against seizure.

Assemble and disassemble with the aid of **jacking screws** and **pullers** taking care to avoid impacts and shocks which may irredeemably damage the bearings (see figure below).

D ∅	d	
9	M3	
11	M4	
14	M5	
19	M6	
24	M8	
28	M10	
38	M12	
42	M16	
48	M16	
55	M20	
60	M20	
65	M20	
75	M20	

In case of **direct fitting** or coupling be sure that the motor has been carefully aligned with the driven machine.

If necessary, interpose a flexible or elastic coupling.

In case of **V-belt drives** make sure that overhang is minimum and that driven shaft is always parallel to machine shaft.

V-belts should not be excessively tensioned in order to avoid excessive loads on bearings and motor shaft (for maximum loads on shaft end and relevant bearing life see Rossi catalogs).

Motor is dynamically balanced; in case of standardized shaft end the balancing is obtained with half key inserted into the shaft end and exclusively for the nominal rotation speed (in order to avoid vibrations and unbalances it is necessary that also power transmissions are balanced with half key).

Before executing a possible trial run without output elements, secure the key.

Before putting into service and after long stillstanding or storing periods it is necessary to measure insulation resistance between the windings and to earth by adequate d.c. instrument (500 V).

Insulation resistance control



Attention!

Do not touch the terminals during and just after the measurement because of live terminals.

Insulation resistance, measured at +25°C winding temperature, **must not be lower than 10 MΩ** (EN 60204) for new winding, than **1 MΩ** for winding run for a long time.

Lower values usually denote the presence of humidity in the windings; in this case let them dry (with warm air flow or by applying to the windings connected in series an AC voltage not exceeding the 10% of the nominal voltage).

For use under long overloads or jamming conditions, cut-outs, motor-protections, electronic torque limiters or other similar devices should be fitted.

Where duty cycles involve a high number of on-load, it is advisable to utilize thermal probes for motor protection (fitted on the wiring); magnetothermic breaker is unsuitable since its threshold must be set higher than the motor nominal current of rating.

For no-loads starts (or with very reduced load) and whenever it is necessary to have smooth starts, low starting currents and reduced stresses, adopt reduced voltage starting (e.g.: star-delta starting, starting autotransformer, with inverter, etc.).

After making sure that the voltage corresponds to name plate data, wire up to the electrical power supply of motor, of possible brake and auxiliary equipments, referring to Tab. 3a/3b and Tab. 4 and other additional indications attached to present instructions.



Select cables of suitable section in order to avoid overheating and/or excessive voltage drops at motor terminals.

Metallic parts of motors which normally are not under voltage, must be firmly connected to earth through a cable of adequate section and by using the proper terminal inside the terminal box marked for the purpose.

In order not to alter protection class, close the terminal box by positioning correctly the gasket and by tightening all fastening screws. For installations in environments with frequent water sprays, it is advisable to seal the terminal box and the cable gland with adhesive for seals.

For three-phase motors the direction of rotation is clockwise (drive-end view) if connections are according to Fig. 1.

If direction of rotation is not as desired, invert two phases at the terminals; for single-phase motors follow the instructions on Fig. 2.

In case of connection or disconnection of high polarity (≥ 6 poles) motor windings, there can be dangerous voltage peaks.

Pre-arrange the proper protection (e.g. varistors or filters) on the supply line.

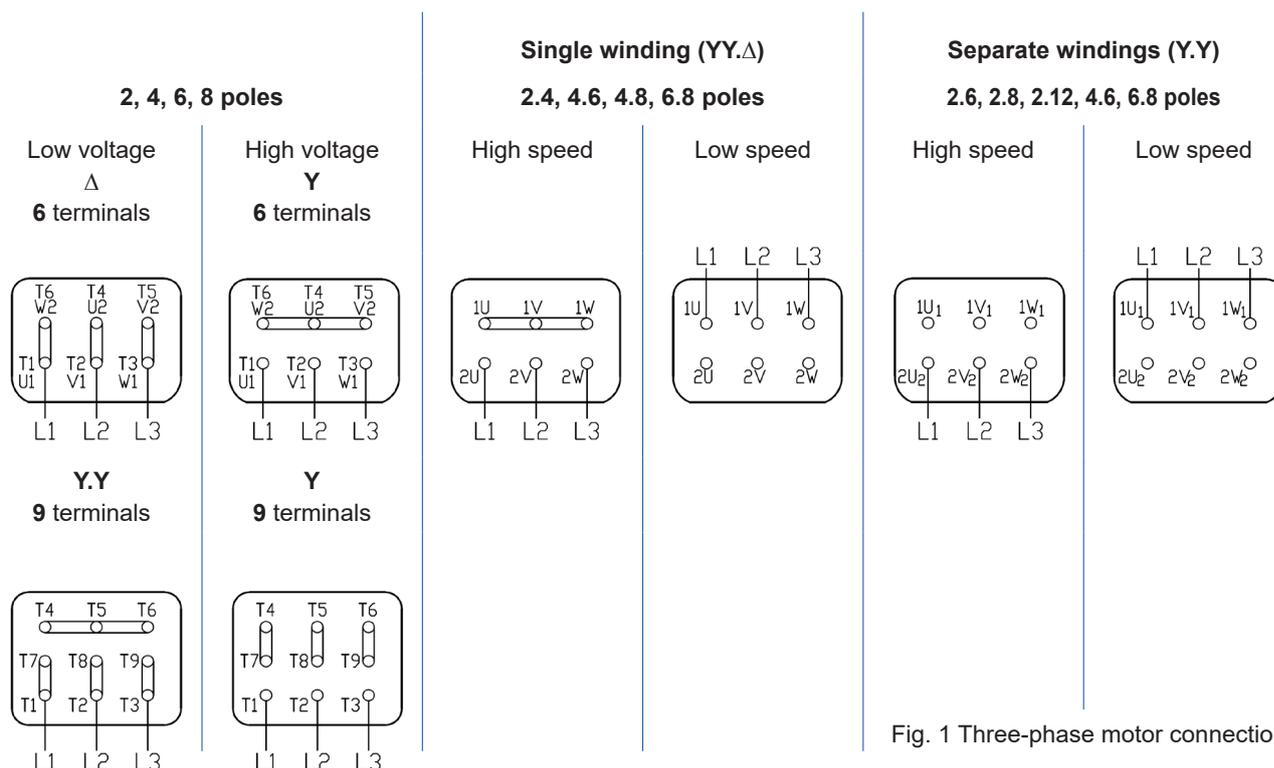


Fig. 1 Three-phase motor connection

For single-phase motors follow the instructions on Fig. 2.

2, 4, 6 pole motor
Terminal block: 6 terminals
Permanently connected terminals
Direct starting

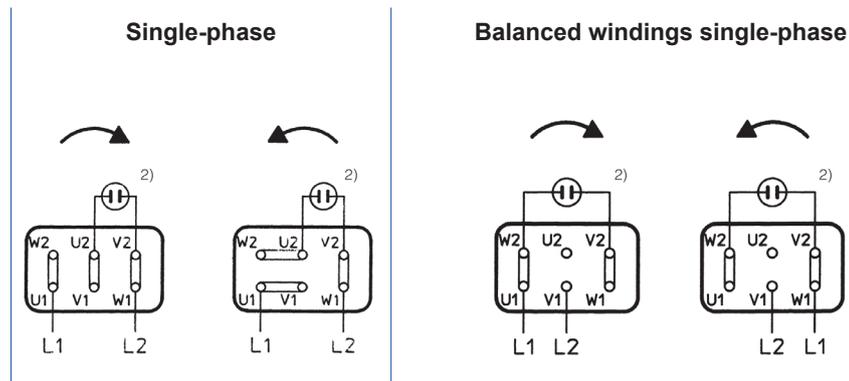


Fig. 2 Single-phase motor connection and balanced windings single-phase motor connection

²⁾ Auxiliary capacitor, if any, is to be connected in parallel to the running one

Also the use of inverters requires some precautions relevant to voltage peaks (U_{max}) and voltage gradients (dU/dt) generated by this power supply type; the values become higher by increasing the mains voltage U_N the motor size, the power supply cable length between inverter and motor and by worsening the inverter quality.

For mains voltages $U_N > 400$ V, voltage peaks $U_{MAX} > 1000$ V, voltage gradients $dU/dt > 1$ kV μ s, supply cables between inverter and motor > 30 m, it is recommended, especially in absence of proper non-standard designs on motor (see manufacturer's catalog), to insert suitable filters between inverter and motor.

Indications for the installation according to "Electromagnetic Compatibility (EMC)" 2004/108/EC Directive.

Asynchronous three-phase motors supplied from the line and running in continuous duty comply with **EN 50081** and **EN 50082** standards.

No particular shieldings are necessary. This is also valid for the motor of independent cooling fan, if any.

In case of jogging operation, any disturbance generated by insertion devices must be limited through adequate wirings (as indicated by device manufacturer).

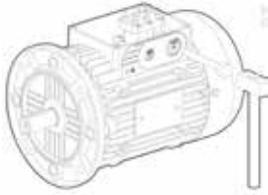
In case of brake motor with d.c. brake (HBZ, HBV, HBVM) and rectifiers RN1, RR1 ... RR8, rectifier-brake coil group can comply with standards **EN 50081-1** (emission levels for civil environments) and **EN 50082- 2** (immunity for industrial environments) by connecting in parallel to the rectifier a noise-reducing capacitor or filter (specifications on request; consult us).

When brake is supplied separately, brake cables must be kept separate from power cables. It is possible to keep together brake cables with other cables only if they are shielded.

Where motors are supplied by inverters it is necessary to follow the wiring instructions of the manufacturer of inverter.

In case of design with encoder: install the electronic control board as near as possible the encoder (and as far as possible from inverter, if any; if not possible, carefully shield the inverter); always use twisted pairs shielded leads connected to earth on both ends; signal cables of encoder must be separate from the power cables (see specific instructions attached to the motor).

Follow schemes on Fig. 1 (Pag. 11) e Fig. 2 (Pag. 12).



Motor **sizes ≤ 160S**: before connecting the motor for the first time, proceed to knockout the openings on the terminal box to allow the cable entry; (see fig. on the left); after that, accurately remove any fragment still remaining inside the terminal box; restore the motor protection degree fixing the cable glands (not provided) with lock nut and employing the gaskets supplied inside the terminal box.

Motor **sizes ≥ 160M**: use the cable glands supplied.

HBZ, HEZ, HBV (HBVM) brake (rectifier) connection

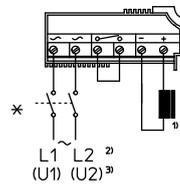
Single-speed motors **size ≤ 160S** are supplied with rectifier already connected to motor terminal block. Therefore, for standard duties, motor is ready to be used without any further connections for brake supply.

For two-speed motors, for those driven by inverter and for lifting with on-load descent braking it is necessary to supply the rectifier separately with proper cables pre-arranged (for lifting it is necessary to open the rectifier supply also on d.c. side as shown in the schemes).

Follow the instructions of Fig. 3a and Fig. 3b

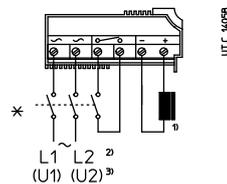
Rectifier RM1, RM2, RR8

t_2 (standard braking)



HBZ-HB2Z-HB3Z (RM1, RM2)	(T1) (T2) ³⁾ 230/60 Y.Y
230/460/60 Y.Y/Y	(T1) (T5) ³⁾ 460/60 Y
HBV-HB2V-HB3V	(-) (-) 230/60 Y.Y ⁴⁾
	(T1) (T2) ³⁾ 460/60 Y

t_2 c.c. (fast braking)



HBZ-HB2Z-HB3Z (RM1, RM2)	(T1) (T2) ³⁾ 230/60 Y.Y
230/460/60 Y.Y/Y	(T1) (T5) ³⁾ 460/60 Y
HBV-HB2V-HB3V	(-) (-) 230/60 Y.Y ⁴⁾
	(T1) (T2) ³⁾ 460/60 Y

Rectifier RR1, RR5

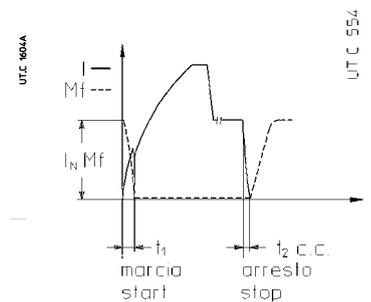
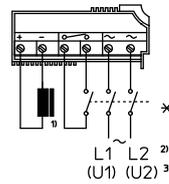
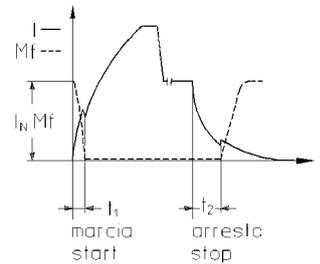
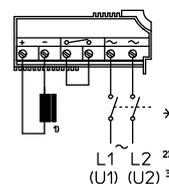


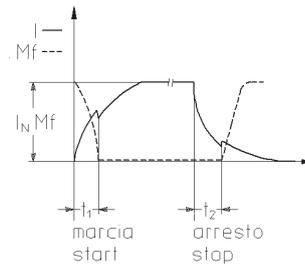
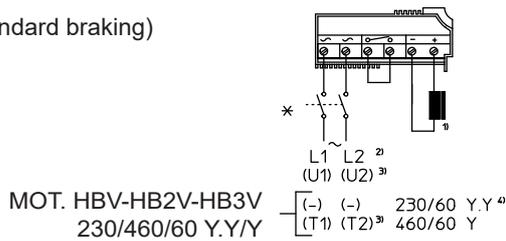
Fig. 3a Rectifier connection (brake)

* Brake supply contactor should work in parallel with motor supply contactor; the contacts should be suitable to open very inductive loads.

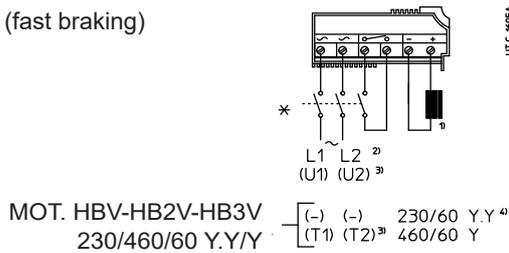
- 1) Brake coil supplied already connected to rectifier.
- 2) Separate supply.
- 3) Motor terminal block.
- 4) Not applicable, consult us.

Rectifier RN1, RD1

t_2 (standard braking)



t_2 c.c. (fast braking)



UTC 9005A

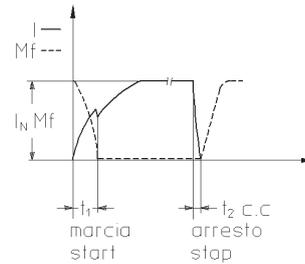


Fig. 3b Rectifier connection for standard release

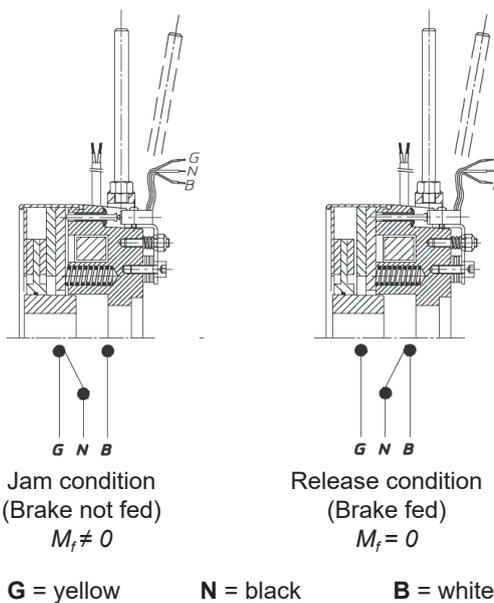
* Brake supply contactor should work in parallel with motor supply contactor; the contacts should be suitable to open very inductive loads.

- 1) Brake coil supplied already connected to rectifier.
- 2) Separate supply.
- 3) Motor terminal block.
- 4) Not applicable, consult us.

Verify that rectifier supply voltage is the one stated on motor name plate.

In case of brake equipped with microswitch (HBZ, HEZ motor, "SB", or "SU" code on name plate) refer to the connection diagram of Fig. 4. Respect the power supply indications catalog Rossi S.p.A.

Brake jam/release signal



Brake wear signal

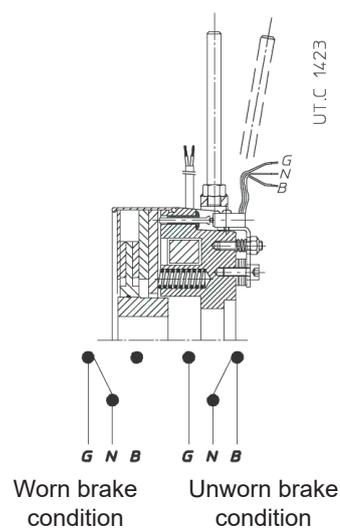


Fig. 4. Brake with microswitch

HBF brake connection

Brake coil pre-arranged as standard for separate brake supply.

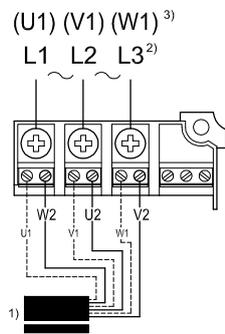
(Brake coil already Y-connected to the auxiliary terminal block: re-arrange the brake coil connection in case of motor Δ -connected or in case of separate supply with Δ voltage).

For both cases, before commissioning, connect the auxiliary terminal block to the motor terminal block or to an external line.

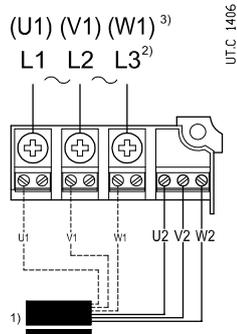
For **two-speed** motors and for those driven by inverter it is necessary to supply the brake separately with proper pre-arranged cables.

Follow the instructions below:

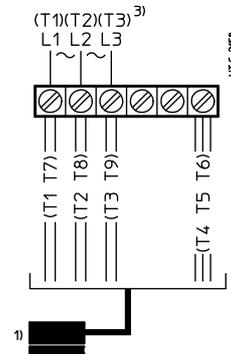
Δ brake connection



Y brake connection



Y.Y brake connection



Y brake connection

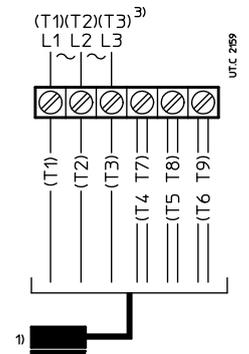


Fig.5. Brake terminal block

1) Brake coil is supplied already connected to the auxiliary terminal block.

2) Separate supply.

3) Motor terminal block.

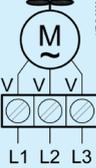
6.4

Auxiliary equipment connections: independent cooling fan

For HB motors sizes ≤ 160S supply wires of independent cooling fan are marked by the letter «V» on cable terminals and are connected to auxiliary rectifier terminals inside the main compartment.

For HE motors sizes ≥ 160M the servo fan power supply with auxiliary terminal block is located in a second box on the fan cover.

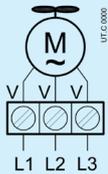
For HB versions, the connection diagrams are shown below in Tab. 3a. For HE versions see Tab. 3b. on Page 17.

	Motor size wound and stated for			independent cooling fan HB independent cooling fan name plate					
	Motor size	V	Hz	V	Hz	W	A	Code	Type
	63 ... 80	Δ220 Y380	50	230	50/60	19/18	0,12/0,11	,VA	Single phase
		Δ230 Y400	50						
		Δ265 Y460	60						
		Δ277 Y480	60						
		Δ240 Y415	50						
		YY230 Y460	60						
		Δ400	50						
		Δ480	60						
		Δ255 Y440	60						
		Δ415	50						
		Δ440	60						
		Δ460	60						
	90	Δ220 Y380	50	230	50/60	45/39	0,31/0,25	,VA	Single phase
		Δ230 Y400	50						
		Δ265 Y460	60						
		Δ277 Y480	60						
		Δ240 Y415	50						
		YY230 Y460	60						
		Δ400	50						
		Δ480	60						
	100,112	Δ220 Y380	50	Y380	50	40	0,12	,VD	Three phase
		Δ230 Y400	50	Y400	50	45	0,13		
		Δ265 Y460	60	Y460	60	45	0,13		
		Δ277 Y480	60	Y480	60	50	0,15		
		Δ240 Y415	50	Y415	50	45	0,13		
		YY230 Y460	60	Y460	60	45	0,13		
		Δ400	50	Y400	50	45	0,13		
		Δ480	60	Y480	60	50	0,15		
		Δ255 Y440	60	Y440	60	43	0,12		
		Δ415	50	Y415	50	45	0,13		
	132,160S	Δ440	60	Y440	60	43	0,12	,VD	Three phase
		Δ460	60	Y460	60	45	0,13		
		Δ220 Y380	60	Y380	60	38	0,11		
		Δ380	60	Y380	60	38	0,11		
		Δ290 Y500	50	Y500	50	45	0,1		
		Δ220 Y380	50	Y380	50	50	0,13		
		Δ230 Y400	50	Y400	50	53	0,15		
		Δ265 Y460	60	Y460	60	65	0,14		
		Δ277 Y480	60	Y480	60	70	0,15		
		Δ240 Y415	50	Y415	50	51	0,16		
132,160S	YY230 Y460	60	Y460	60	65	0,14	,VD	Three phase	
	Δ400	50	Y400	50	53	0,15			
	Δ480	60	Y480	60	70	0,15			
	Δ255 Y440	60	Y440	60	60	0,14			
	Δ415	50	Y415	50	51	0,16			
	Δ440	60	Y440	60	60	0,14			
	Δ460	60	Y460	60	65	0,14			
	Δ220 Y380	60	Y380	60	56	0,12			
	Δ380	60	Y380	60	56	0,12			
	Δ290 Y500	50	Y500	50	53	0,12			
							,VF		

Non-standard design code for the designation: ,VA ,VD ,VF.
IC 416 is stated on name plate

Tab. 3a independent cooling fan connection HB

Motor size wound and stated for			independent cooling fan HE						
Motor size	V	Hz	independent cooling fan name plate					Code	Type
			V	Hz	W	A			
160	Y380	50	Y380	50	50	0,13	,VD	Three phase	
	Y400		55		0,14				
	Y415		55		0,15				
	Y440	60	Y440	60	75	0,15			
	Y460		75		0,15				
Y480	80	0,16							
180	Y380	50	Y380	50	65	0,15			
	Y400		70		0,16				
	Y415		75		0,16				
	Y440	60	Y440	60	95	0,16			
	Y460		100		0,17				
Y480	105	0,17							
200	Y380	50	Y380	50	80	0,15			
	Y400		80		0,16				
	Y415		85		0,16				
	Y440	60	Y440	60	115	0,18			
	Y460		120		0,18				
Y480	125	0,19							
225	Y380	50	Y380	50	160	0,38			
	Y400		165		0,39				
	Y415		170		0,4				
	Y440	60	Y440	60	240	0,43			
	Y460		245		0,44				
Y480	255	0,45							
250	Y380	50	Y380	50	200	0,6			
	Y400		205		0,63				
	Y415		210		0,67				
	Y440	60	Y440	60	285	0,63			
	Y460		290		0,67				
Y480	300	0,69							
280	Y380	50	Y380	50	165	0,56			
	Y400		175		0,59				
	Y415		180		0,6				
	Y440	60	Y440	60	250	0,58			
	Y460		255		0,6				
Y480	260	0,62							
315	Y380	50	Y380	50	375	0,8			
	Y400		375		0,8				
	Y415		375		0,8				
	Y440	60	Y440	60	600	1,09			
	Y460		600		1,09				
Y480	600	1,09							



Non-standard design code for the designation: ,VD ,VM.

Tab. 3b independent cooling fan connection HE

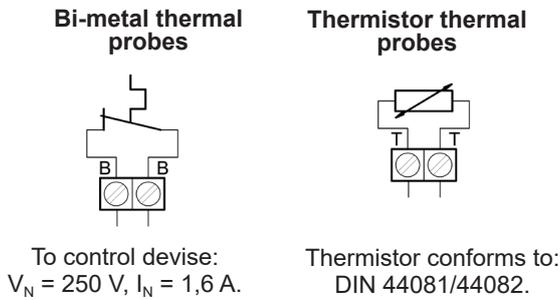
Verify that the direction of rotation of three-phase independent cooling fan is correct (air flow must be towards drive-end; see arrow on fan cover); on the contrary invert two phases at the terminals.

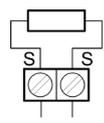
During the installation, verify that the supply data correspond to those of the independent cooling fan; refer to code of independent cooling fan as per motor name plate; running of motors with independent cooling fan is allowed only when external fan is running; in case of running with frequent starts and stops, it is necessary to supply the independent cooling fan continuously.

6.5

Auxiliary equipment connections: bi-metal type thermal probes, thermistor type thermal probe (PTC), anti-condensation heater

The connection wires are inside the terminal box and are marked by the letter "B" (bi-metal type thermal probes), "T" (thermistor type thermal probes PTC) or "S" (anti-condensation heater) on cable terminals; they are connected to an auxiliary terminal block according to schemes of Tab. 4.



Anti-condensation heater		Supply voltage: 1 ph ~ 50/60 Hz.
Motor size	Heater [W]	
63, 71	15	
80 ... 100	25	
112 ... 160S	50	
160	50	
180 ... 225	80	
250, 280	100	
315	130	

Tab. 4 Connection of bi-metal type thermal probes, thermistor type thermal probes (PTC), anti-condensation heater



Bi-metal or thermistor type thermal probes need an adequate relay or a release device.



Anti-condensation heaters must be supplied separately from motor and never during the operation.

The anti-condensation heater must be supplied for at least two hours before motor commissioning, in order to achieve a full thermal steady condition.

For the design type identification refer to the mark on cable connected to auxiliary terminal block and to the relevant identification code stated on nameplate.

6.6

Auxiliary equipment connections: encoder

See specific instructions inside terminal box.

Motor periodical maintenance

Before carrying out maintenance, make sure that you have disconnected the power supply to the motor and other accessories (if any) and secured the motor against accidental insertion.



Releasing the brake runs the risk of inhaling brake dust; wear a protective mask.



Motor surfaces can reach high temperatures.

Allow the engine to cool down and perform maintenance at room temperature.

Periodically verify (according to environment and duty) and reset, if necessary:

- motor cleaning (absence of oil, dirt and machining residuals) and free passage of cooling air;
- correct tightening of electrical connections (Tab. 1) of fastening screws and motor mechanical pairing (Tab. 2);

Tab. 1 Tightening torques M_s for terminal block connections

	M_s [N m]				
	M4	M5	M6	M8	M12
min	0,8	1,8	2,7	5,5	15
max	1,2	2,5	4	8	20

Tab. 2 Tightening torques M_s for screw and fixing bolts

Screw ⁽¹⁾	M_s [N m]										
	M4	M5	M6	M8	M10	M12	M14	M16	M18	M20	M24
Class - 8.8	3	6	11	25	50	85	135	205	280	400	710
Class - 10.9	4	8	15	35	71	120	190	290	390	560	1 000
Taptite	3	6	10	26	-	-	-	-	-	-	-

- static and live tightening conditions;
- that motor run is free from vibrations ($v_{eff} \leq 3.5$ mm/s for $P_N \leq 15$ kW; $v_{eff} \leq 4.5$ mm/s for $P_N > 15$ kW), and anomalous noises; in this case, verify motor fastening, paired machine balancing or need for bearings replacement.

For motors with protection degree higher than IP55, machined mating surfaces on housing, endshields, covers, etc., before mounting, must be covered with a proper not hardening adhesive or with grease in order to assure motor tightening.

In case of brake motor also see points below 7.2, 7.3, 7.4.

By executing controls of electric absorption, keep in mind that measured values are comprehensive of brake absorption (with brake supply directly from terminal block).

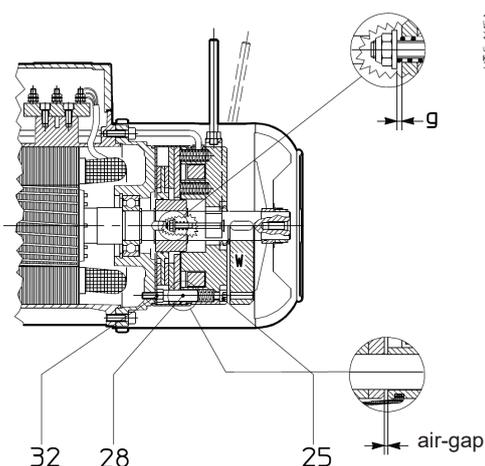
7.2

HBZ, HEZ brake periodical maintenance

Verify, at regular intervals, that **air-gap** and **backlash "g"** (see Fig. 6) of release lever pullers, if any, are included within values stated in Tab. 5 (remove the wear dust of friction surface, if any).

Excessive air-gap value deriving from friction surface wear makes brake noise level rise and could prevent its electric release.

Fig. 6 Air-gap HBZ, HEZ brake



Tab. 5 Air-gap HBZ, HEZ brake

Brake size	Motor size	g ⁽¹⁾ [mm]	Air-gap [mm]		s _{min} ⁽²⁾ [mm]
			nom.	max.	
BZ 12	63, 71	0.5	0.25	0.40	6
BZ 53, 13	71, 80	0.5	0.25	0.40	6
BZ 04, 14	80, 90	0.6	0.30	0.45	6
BZ 05, 15	90, 100, 112	0.6	0.30	0.45	7
BZ 06S	112	0.7	0.35	0.55	7
BZ 06, 56	132S,...160S	0.7	0.35	0.55	7
BZ 07	132M, 160S	0.7	0.40	0.60	7.5
BC 08	160, 180M	0.8	0.40	0.60	11
BC 09	180L, 200	0.8	0.50	0.70	13

¹⁾ Backlash of release lever pullers (if any) (approximate values: after an air-gap adjustment always check the brake functionality and the proper brake release).

²⁾ Minimum thickness of brake disk.

Important:  an air-gap greater than max value can produce a decrease down to 0 of the braking torque due to the **clearance taking up of the release lever pullers**; "g" dimension in Fig.6 must match with the values stated in Tab. 5; a too high g value makes it difficult or inefficient the use of the release hand lever.

Adjust the air-gap (see Fig. 6) by releasing the nuts **32** and by screwing the fastening screws **25** (it is necessary to act through a hole of the flywheel, if present) in order to reach minimum air-gap (see Tab. 5) measuring by a thickness gauge in 3 positions at 120° near the guiding bushes **28**. Tighten nuts **32** keeping in position fastening screws **25**. Verify the obtained air-gap value.

If the brake is in a **non-standard design** with "**ready air-gap reset**" design (code "**,RF**" on name plate) it is provided with removable thin spacers placed under the brake fastening studs (see. Fig. 7).

In this case, adjust air-gap simply removing one series of thin spacers after having partially loosen (without disassembling) the brake fixing bolts **25** and without adjusting by thickness gauge. The brake is supplied with two series of thin spacers of different color (yellow and red) to allow two adjustment operations.

After several adjustments of air-gap, verify that brake disk thickness is not lower than the minimum value stated in Tab. 5.; if necessary, replace the brake disk (refer to Fig. 6 and Fig. 7).

Release lever rod is not to be left permanently installed (to avoid dangerous or inappropriate use).

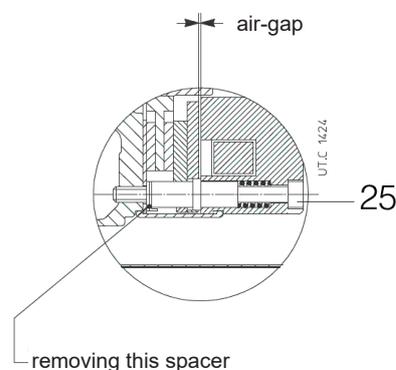
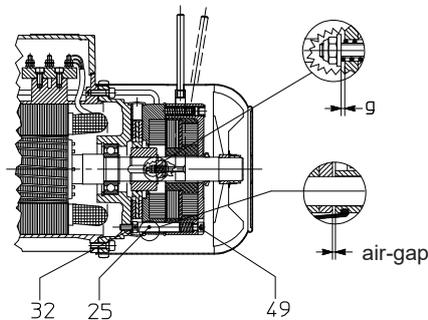


Fig. 7 ",RF" brake

HBF brake periodical maintenance

Verify, at regular intervals, that air-gap and backlash "g" (see Fig. 8) of release lever pullers, if any, are included within values stated in Tab. 6 (remove the wear dust of friction surface, if any).

Fig. 8 Air-gap HBF brake



Tab. 6 Air-gap HBF brake

Brake size	Motor size	g ⁽¹⁾ [mm]	Air-gap [mm]		s _{min} ⁽²⁾ [mm]
			nom.	max.	
BF 12	63, 71	0.5	0.25	0.40	6
BF 53, 13	71, 80	0.5	0.25	0.40	6
BF 04, 14	80, 90	0.6	0.30	0.45	6
BF 05, 15	90, 100, 112	0.6	0.30	0.45	8
BF 06S	112	0.7	0.35	0.55	7
BF 06	132	0.7	0.35	0.55	7
BF 07	132, 160S	0.7	0.40	0.60	7.5

¹⁾ Backlash of release lever pullers (if any) (approximate values: after an air-gap adjustment always check the brake functionality and the proper brake release).

²⁾ Minimum thickness of friction surface.

Excessive air-gap value makes brake noise level rise and could prevent its electric release.



Important:

an air-gap greater than max value can produce a decrease down to 0 of the braking torque due to the **clearance taking up of the release lever pullers**. "g" dimension in Fig. 8 must match with values stated in Tab. 6; a too high value of "g" makes it difficult or inefficient the use of the release hand lever.

Adjust the air-gap (see Fig. 6) by releasing the nuts **32** and by screwing the fastening screws **49** in order to reach minimum air-gap (see Tab. 6) measuring by a thickness gauge in 3 positions at 120° near the guiding bushes **25**. Tighten nuts **32** keeping in position fastening screws **49**. Verify the obtained air-gap value.

After several air-gap adjustments, re-adjust braking torque and verify that brake disk thickness is not lower than minimum value stated in Tab. 6; if necessary, replace the brake disk.

When the hand lever for manual release does not run, after repeated operations, re-adjust the backlash "g" according to the table values. Release lever and screw 15 must not be left permanently installed (to avoid dangerous or inappropriate use).

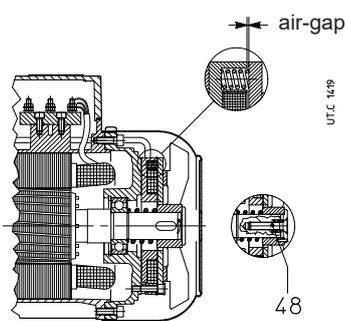
7.4

HBV (HBVM) brake periodical maintenance

Verify, at regular intervals, that air-gap is included between values stated in Tab.7.

Excessive air-gap value could produce: decrease of braking torque up to zero, rise of brake noise level, and even miss of electric release.

Fig.9. Air-gap HBV brake



Tab.7. Air-gap HBV (HBVM) brake

Brake size	Motor size	Air-gap [mm]		$A_{min}^{(4)}$ [mm]
		nom. ⁽³⁾	max.	
V 02	63	0.25	0.50	1
V 03	71	0.25	0.60	1
V 04	80	0.25	0.60	1
V 05, G5	90	0.25	0.60	1
V 06, G6	100, 112	0.30	0.65	1, 4.5 ⁽⁵⁾
V 07, G7	132, 160S	0.35	0.70	4.5

³⁾ Nominal value means approximate average value.

⁴⁾ Minimum thickness of friction surface.

⁵⁾ Value for VG9

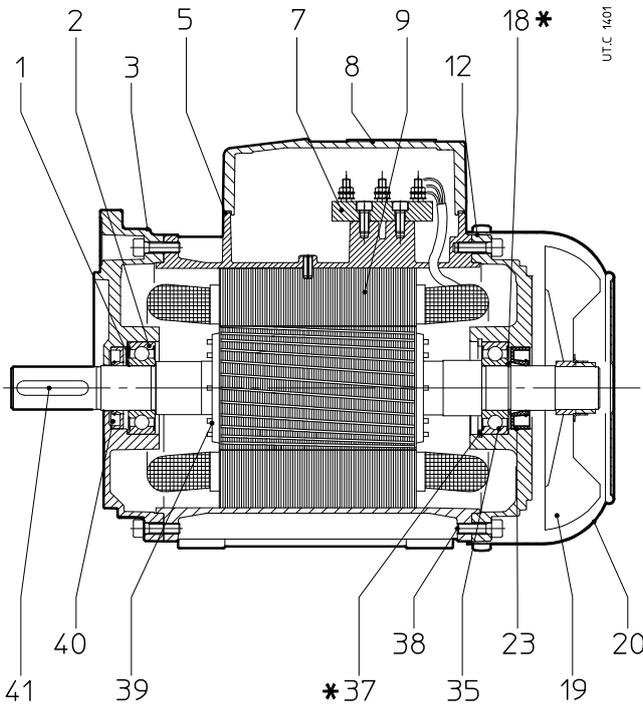
Adjust the **air-gap** (see Fig. 9), **even with the fan cover mounted**, acting on self-locking nut **48** considering that the pitch is: 1 mm for size 63, 1.25 mm for sizes 71 and 80, 1.5 mm for sizes 90 ... 112, 1.75 mm for sizes 132 and 160S.

Important:

in case of single-phase motor (HBVM), loosen the tightening dowel of fan before adjusting.

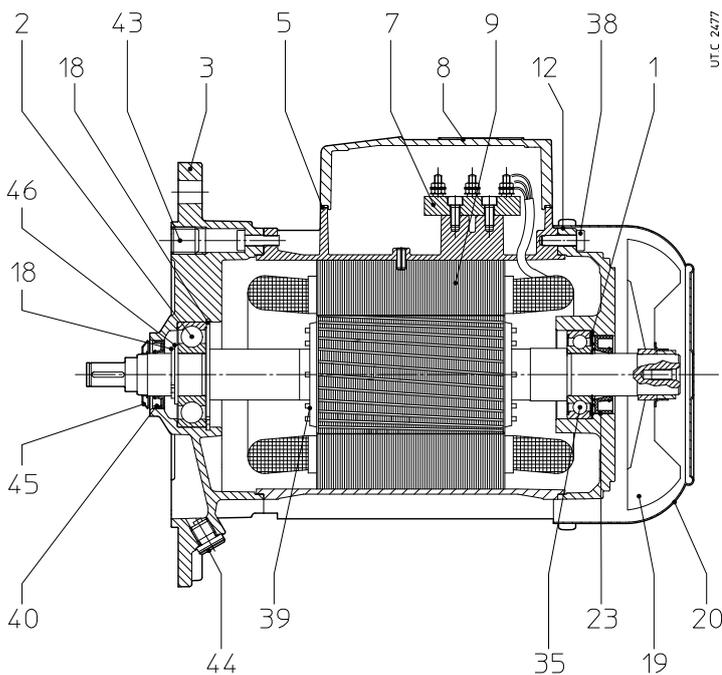
After several adjustments of air-gap, verify that the thickness of friction surface is not lower than the minimum value stated in Tab. 7; if necessary, replace the brake anchor (see Fig. 9).

HB 63 ...160S motors



- 1 Preload spring
 - 2 Drive-end bearing
 - 3 Drive-end endshield (flange)
 - 5 Terminal box cover gasket
 - 7 Terminal block
 - 8 Terminal box cover
 - 9 Housing with stator windings
 - 12 Non-drive end endshield
 - 18 Safety circlip
 - 19 Fan
 - 20 Fan cover
 - 23 Seal ring
 - 35 Non-drive end bearing
 - 37 Circlip for driving shaft axial fastening
 - 38 Screw
 - 39 Rotor with shaft
 - 40 Seal ring
 - 41 Key
- * On request

HB 63 ...132 iFIT motors

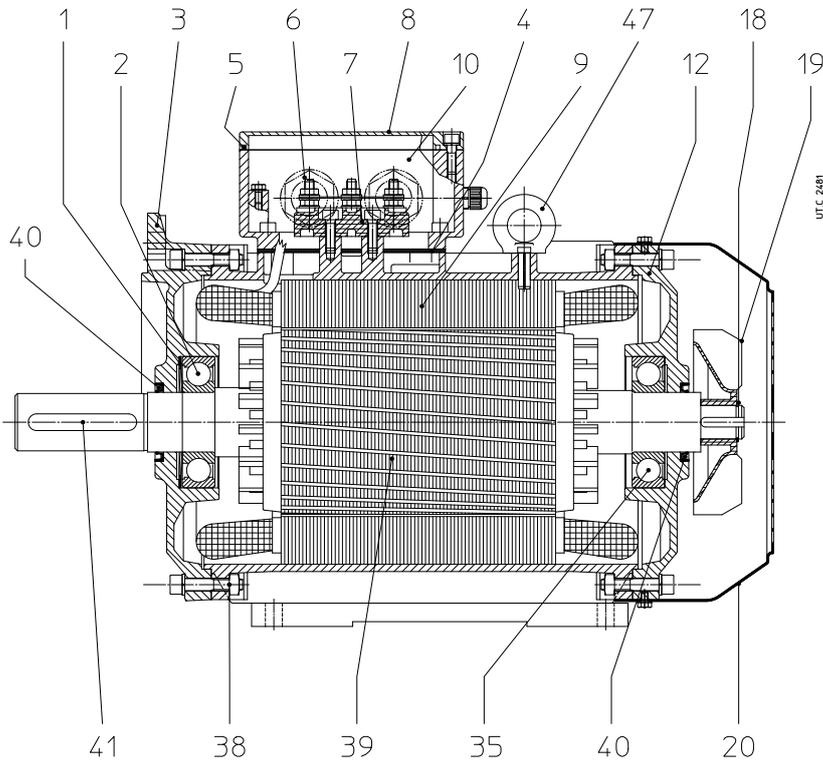


- 1 Preload spring
- 2 Drive-end bearing
- 3 Flange
- 5 Terminal box cover gasket
- 7 Terminal block
- 8 Terminal box cover
- 9 Housing with stator windings
- 12 Non-drive end endshield
- 18 Safety circlip
- 19 Fan
- 20 Fan cover
- 23 V-ring
- 35 Non-drive end bearing
- 38 Screw
- 39 Rotor with shaft
- 40 Seal ring
- 43 Hexagon socket headless screw
(Present according to the mounting position)
- 44 Plug
- 45 Rotating protective ring
- 46 Thickness washer (only for size 132)

This is not a valid reference for spare parts ordering; in this case it is necessary to consult the "Spare part tables". Consult Rossi S.p.A.

8.3

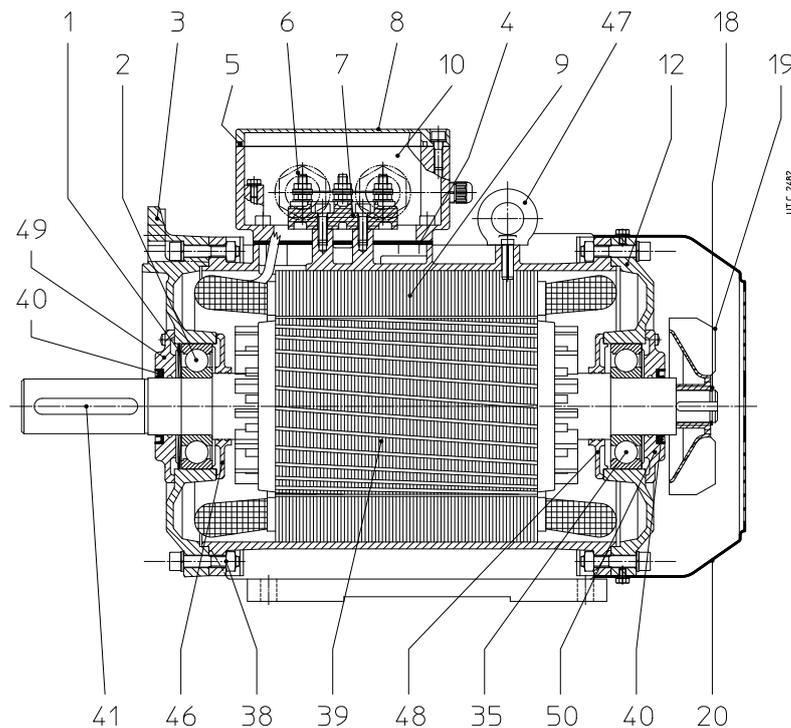
HE 160 motor



- 1 Preload spring
- 2 Drive-end bearing
- 3 Drive-end endshield (flange)
- 4 Terminal box gasket
- 5 Terminal box cover gasket
- 6 Cable gland 7 Terminal block
- 8 Terminal box cover
- 9 Housing with stator windings
- 10 Terminal box
- 12 Non-drive end endshield
- 18 Safety circlip
- 19 Fan
- 20 Fan cover
- 23 Seal ring
- 35 Non-drive end bearing
- 38 Bolt
- 39 Rotor with shaft
- 40 Seal ring
- 41 Key
- 47 Lifting eyebolt

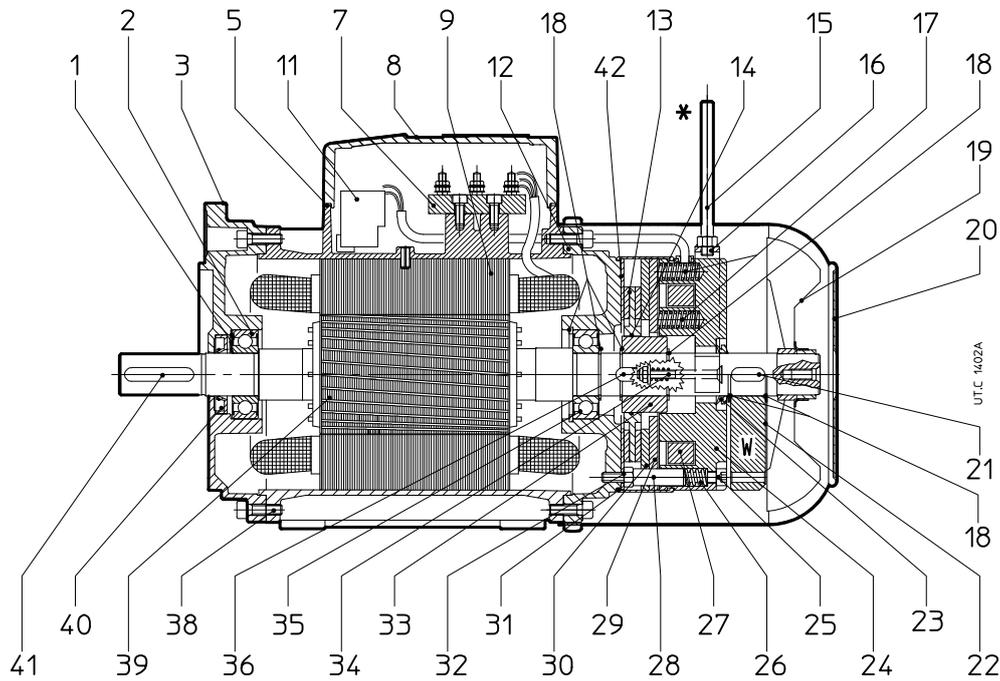
8.4

HE 180 ... 315S motors



- 1 Preload spring
- 2 Drive-end bearing
- 3 Drive-end endshield (flange)
- 4 Terminal box gasket
- 5 Terminal box cover gasket
- 6 Cable gland
- 7 Terminal block
- 8 Terminal box cover
- 9 Housing with stator windings
- 10 Terminal box
- 12 Non-drive end endshield
- 18 Safety circlip
- 19 Fan
- 20 Fan cover
- 35 Non-drive end bearing
- 38 Bullone
- 39 Rotor with shaft
- 40 Seal ring
- 41 Key
- 46 Internal cover DE side
- 47 Lifting eyebolt
- 48 Internal bearing cover NDE side NDE
- 49 External bearing cover DE side
- 50 External bearing cover NDE side

This is not a valid reference for spare parts ordering; in this case it is necessary to consult the "Spare part tables". Consult RossiS.p.A.



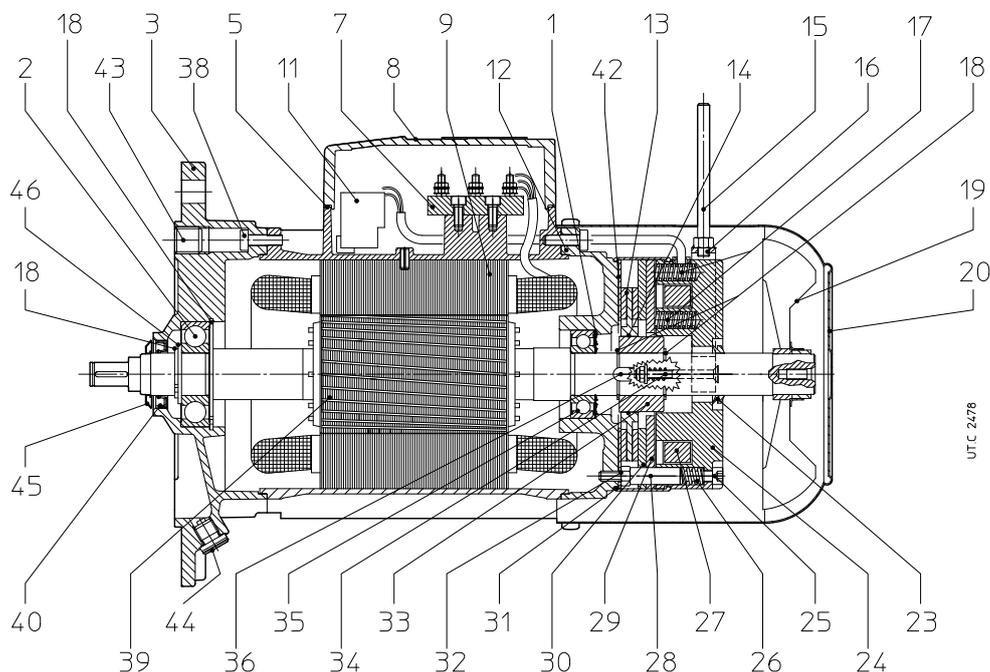
- | | |
|--------------------------------|--|
| 1 Preload spring | 25 Fastening screw |
| 2 Drive-end bearing | 26 Contrast spring |
| 3 Drive-end endshield (flange) | 27 Toroid coil |
| 5 Terminal box cover gasket | 28 Guiding bush |
| 7 Terminal block | 29 Intermediate anchor |
| 8 Terminal box cover | 30 Brake anchor |
| 9 Housing with stator windings | 31 Protection gaiter |
| 11 Rectifier | 32 Fastening nut |
| 12 Non-drive end endshield | 33 Dragging hub |
| 13 Brake disk | 34 Release hand lever puller with contrast spring and self-locking nut |
| 14 O-ring anti-vibration | 35 Non-drive end bearing |
| 15 Release hand lever rod | 36 Key |
| 16 Release hand lever | 37 Circlip for driving shaft axial fastening |
| 17 Braking spring | 38 Screw |
| 18 Safety circlip | 39 Rotor with shaft |
| 19 Fan | 40 Seal ring |
| 20 Fan cover | 41 Key |
| 21 Key | 42 Brake plate |
| 22 Flywheel | |
| 23 V-ring | |
| 24 Electromagnet | |

* On request

This is not a valid reference for spare parts ordering; in this case it is necessary to consult the "Spare part tables". Consult Rossi S.p.A.

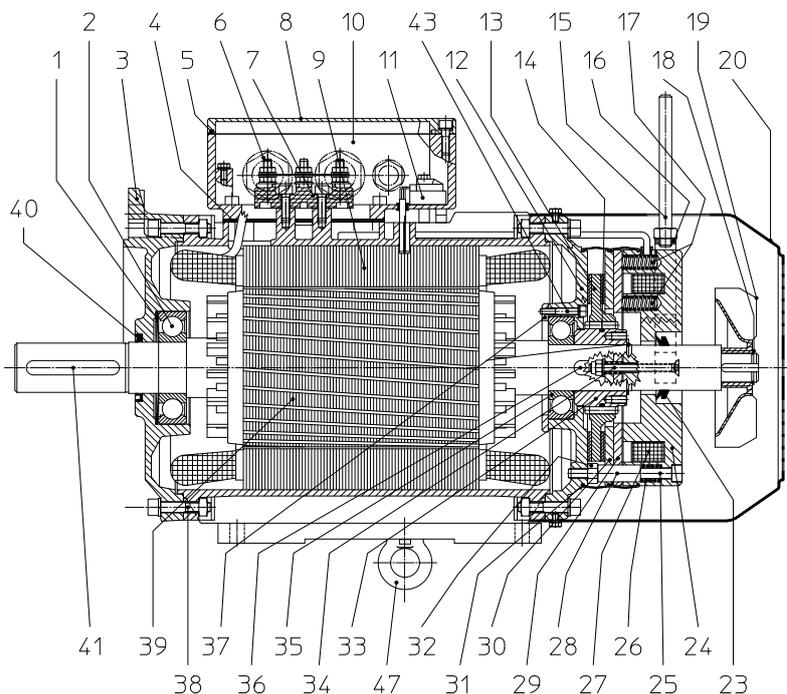
8.6

HBZ 63 ... 132 iFIT motors



- | | |
|--------------------------------|--|
| 1 Preload spring | 30 Brake anchor |
| 2 Drive-end bearing | 31 Protection gaiter |
| 3 Flange | 32 Fastening nut |
| 5 Terminal box cover gasket | 33 Dragging hub |
| 7 Terminal block | 34 Release hand lever puller with contrast spring and self-locking nut |
| 8 Terminal box cover | 35 Non-drive end bearing |
| 9 Housing with stator windings | 36 Key |
| 11 Rectifier | 38 Screw |
| 12 Non-drive end endshield | 39 Rotor with shaft |
| 13 Brake disk | 40 Seal ring |
| 14 Anti-vibration O-ring | 41 Key |
| 15 Release hand lever rod | 42 Brake plate |
| 16 Release hand lever | 43 Hexagon socket headless screw
(present in function of the construction form) |
| 17 Braking spring | 44 Plug |
| 18 Safety circlip | 45 Rotating protective ring |
| 19 Fan | 46 Thickness washer (only for size 132) |
| 20 Fan cover | |
| 23 V-ring | |
| 24 Electromagnet | |
| 25 Fastening screw | |
| 26 Contrast spring | |
| 27 Toroid coil | |
| 28 Guiding bush | |
| 29 Intermediate anchor | |

This is not a valid reference for spare parts ordering; in this case it is necessary to consult the "Spare part tables".
Consult Rossi S.p.A.

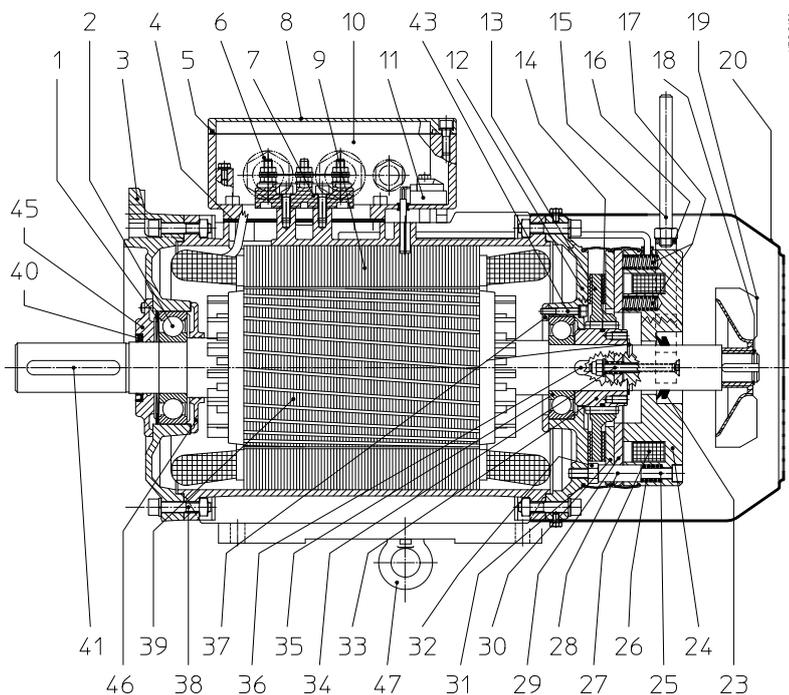


- | | |
|--------------------------------|--|
| 1 Preload spring | 25 Fastening screw |
| 2 Drive-end bearing | 26 Contrast spring |
| 3 Drive-end endshield (flange) | 27 Toroid coil |
| 4 Terminal box gaske | 28 Guiding bush |
| 5 Terminal box cover gasket | 29 Intermediate anchor |
| 6 Cable gland | 30 Brake anchor |
| 7 Terminal block | 31 Protection gaiter |
| 8 Terminal box cover | 32 Fastening nut |
| 9 Housing with stator windings | 33 Dragging hub |
| 10 Terminal box | 34 Release hand lever puller with contrast spring and self-locking nut |
| 11 Rectifier | 35 Non-drive end bearing |
| 12 Non-drive end endshield | 36 Key |
| 13 Brake disk | 37 Motor shaft axial locking flange |
| 14 Anti-vibration O-ring | 38 Bolt |
| 15 Release hand lever rod | 39 Rotor with shaft |
| 16 Release hand lever | 40 Seal ring |
| 17 Braking spring | 41 Key |
| 18 Safety circlip | 43 Motor shaft axial locking ring screw |
| 19 Fan | 47 Lifting eyebolt |
| 20 Fan cover | |
| 23 V-ring | |
| 24 Electromagnet | |

This is not a valid reference for spare parts ordering; in this case it is necessary to consult the "Spare part tables".
Consult Rossi S.p.A.

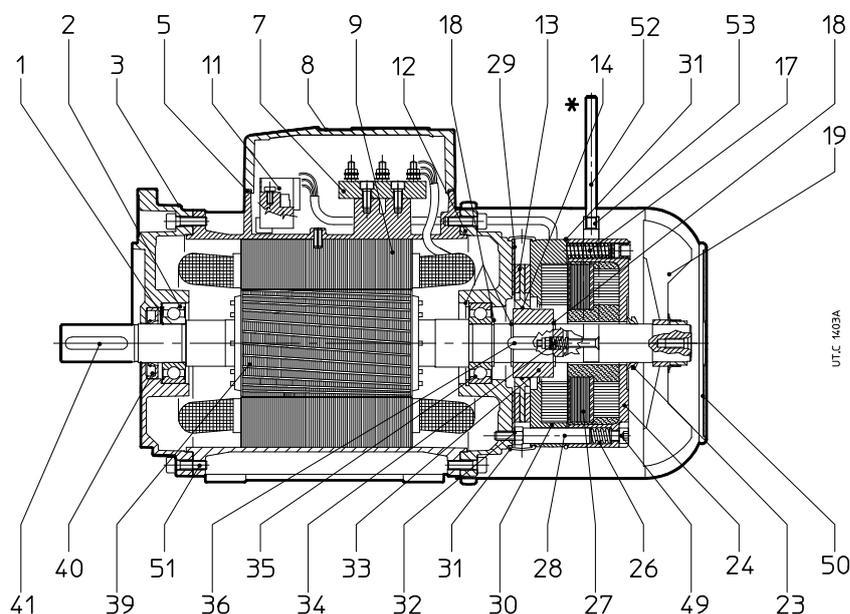
8.8

HEZ 180 ... 200 motors



- | | |
|--------------------------------|--|
| 1 Preload spring | 27 Toroid coil |
| 2 Drive-end bearing | 28 Guiding bush |
| 3 Drive-end endshield (flange) | 29 Intermediate anchor |
| 4 Terminal box gaske | 30 Brake anchor |
| 5 Terminal box cover gasket | 31 Protection gaiter |
| 6 Cable gland | 32 Fastening nut |
| 7 Terminal block | 33 Dragging hub |
| 8 Terminal box cover | 34 Release hand lever puller with contrast spring and self-locking nut |
| 9 Housing with stator windings | 35 Non-drive end bearing |
| 10 Terminal box | 36 Key |
| 11 Rectifier | 37 Anello bloccaggio assiale albero motore |
| 12 Non-drive end endshield | 38 Bullone |
| 13 Brake disk | 39 Rotor with shaft |
| 14 Anti-vibration O-ring | 40 Seal ring |
| 15 Release hand lever rod | 41 Key |
| 16 Release hand lever | 43 Motor shaft axial locking ring screw |
| 17 Braking spring | 45 External bearing cover DE |
| 18 Safety circlip | 46 Internal bearing cover DE |
| 19 Fan | 47 Lifting eyebolt |
| 20 Fan cover | |
| 23 V-ring | |
| 24 Electromagnet | |
| 25 Fastening screw | |
| 26 Contrast spring | |

This is not a valid reference for spare parts ordering; in this case it is necessary to consult the "Spare part tables".
Consult Rossi S.p.A.



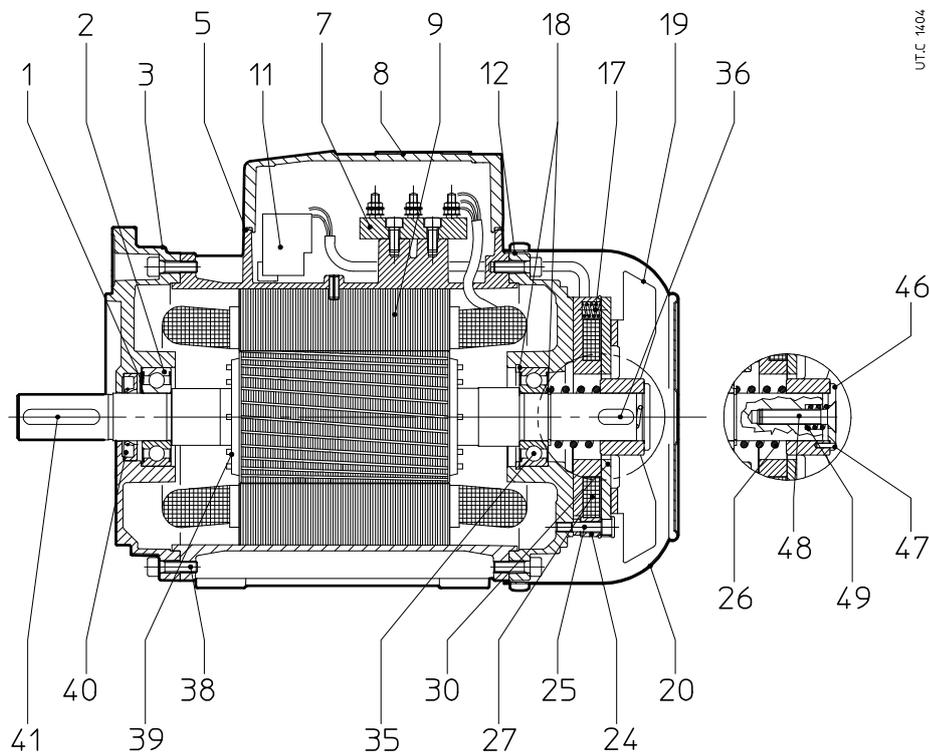
- | | |
|--------------------------------|--|
| 1 Preload spring | 29 Brake plate |
| 2 Drive-end bearing | 30 Brake anchor |
| 3 Drive-end endshield (flange) | 31 Protection gaiter and O-ring |
| 5 Terminal box cover gasket | 32 Fastening nut |
| 7 Terminal block | 33 Dragging hub |
| 8 Terminal box cover | 34 Release hand lever puller with contrast spring and self-locking nut |
| 9 Housing with stator windings | 35 Non-drive end bearing |
| 11 Brake terminal block | 36 Key |
| 12 Non-drive end endshield | 37 Circlip for driving shaft axial fastening |
| 13 Brake disk | 39 Rotor with shaft |
| 14 Anti-vibration O-ring | 40 Seal ring |
| 17 Braking spring | 41 Key |
| 18 Safety circlip | 49 Fastening screw |
| 19 Fan | 50 Fan cover |
| 23 V-ring | 51 Screw |
| 24 Electromagnet | 52 Release hand lever rod |
| 26 Contrast spring | 53 Release hand lever |
| 27 Toroid coil | |
| 28 Guiding bush | |

* On request

This is not a valid reference for spare parts ordering; in this case it is necessary to consult the "Spare part tables". Consult Rossi S.p.A.

8.10

HBV 63 ... 160S motors



- | | |
|--------------------------------|--|
| 1 Preload spring | 26 Contrast springs |
| 2 Drive end bearing | 27 Toroid coil |
| 3 Drive end endshield (flange) | 30 Brake anchor with friction surface |
| 4 Terminal box gasket | 35 Non-drive end bearing |
| 5 Terminal box cover gasket | 36 Key |
| 7 Terminal block | 37 Circlip for driving shaft axial fastening |
| 8 Terminal box cover | 38 Screw |
| 9 Housing with stator windings | 39 Rotor with shaft |
| 10 Terminal box | 40 Seal ring |
| 11 Rectifier | 41 Key |
| 12 Non-drive end endshield | 45 Self-locking nut |
| 17 Braking spring | 46 Washer |
| 18 Safety circlip | 47 Pin |
| 19 Fan-brake disk | 48 Grub screw |
| 20 Fan cover | 49 Contrast spring |
| 24 Electromagnet | |
| 25 Fastening screw | |

This is not a valid reference for spare parts ordering; in this case it is necessary to consult the "Spare part tables". Consult Rossi S.p.A.

Ref.	Motor troubles	Possible causes	Corrective actions
1	Motor does not work	Failure on supply mains	Check voltage presence on the three phases of supply mains
		False connection in the terminal box	Check that motor connection corresponds to the schemes foreseen
		Brake jam status	See «Brake troubles», point 1
		Operation of motor thermal probes	Wait for winding cooling; if problems remains, see point 4.
		Operation of magneto-thermic protection on power line	Check that the required load is not too high or that magneto-thermic protection is underdimensioned.
		Trouble on motor winding	Consult Rossi (Motor Division)
2	The direction of rotation is false	False connection in terminal box	Check that motor connection corresponds to the schemes foreseen (for three-phase motors, change 2 phases)
3	The starting torque is insufficient	Y-connection of motor instead of Δ	Check that motor connection corresponds to the schemes foreseen
		Voltage or supply frequency outside motor nameplate data	Check the electrical parameters of supply mains
		Excessive voltage fall upline of the motor	Check and if necessary increase the cable section
4	Motor overheating ($t_{\text{housing}} - t_{\text{amb}} > 70^{\circ}\text{C}$)	Brake jam status	See «Brake troubles», point 1
		Nameplate data do not match with the power line	Consult Rossi (Motor Division)
		Y-connection of motor instead of Δ	Check that motor connection corresponds to the schemes foreseen
		A supply phase is missing	Check the mains and the contacts inside the motor terminal block
		Too high or too long lasting overload	Reduce the power requirement, install a higher power motor or pre-arrange an additional cooling device (independent cooling fan)
		Excessive starting frequency	Reduce the starting frequency or the inertia downline of the motor
		Trouble of Electrical disjunctors (single-phase motors)	Consult Rossi (Motor Division)
		Independent cooling fan (if present) is not working	Check that the independent cooling fan is working, is correctly working, connected and that the direction of rotation is the one foreseen (see arrow on fan cover)
		Obstructed fan cover	Free the cooling air passages
		Insufficient space around the motor	Widen the cooling air passages
5	The current absorption is outside the nameplate value	Insufficient air circulation	Increase the cooling air recycle
		Brake jam status	See «Brake troubles», point 1
6	Anomalous noise	Winding failure	Consult Rossi (Motor Division)
		Damaged bearings	Replace the bearings
		False alignment between motor shaft-driven machine	Correct the alignment
		Eccentric or not balanced rotating elements	Balance the rotating elements and eliminate the eccentricity
		With supply from inverter: low quality wave, excessive cable length, inadequate protection	Pre-arrange adequate filters and protections. Reduce the distance between motor and inverter (see specific manufacturer's documentation)

Notes:

When consulting Rossi S.p.A., state:

- all data on gear reducer or gearmotor name plate;
- failure nature and duration;
- when and under what conditions the failure happened;
- during the warranty period, in order not to lose validity, do not disassemble nor tamper the gear reducer or gearmotor without approval by Rossi S.p.A.

9.2

Brake troubles

Ref.	Brake troubles	Possible causes	Corrective actions
1	Brake does not release	Direct supply from motor terminal block: false or missing motor connection to the line (e.g.: Δ connection instead of Y)	Check that motor connection corresponds to the schemes foreseen
		Direct supply from motor terminal block: false or missing brake connection (rectifier) to the motor terminal block	Check that brake connection corresponds to schemes foreseen
		Direct supply from motor terminal block: mains voltage does not correspond to motor name plate data	Consult Rossi (Motor Division)
		Direct supply from motor terminal block: motor supply from inverter	Brake supply from separate line
		Supply from separate line: false or missing brake connection (rectifier) to the separate line	Check that brake connection corresponds to schemes foreseen
		Supply from separate line: supply voltage does not correspond to the brake name plate data	Pre-arrange a separate line with adequate voltage
		False brake or rectifier connection	Check that brake connection corresponds to schemes foreseen
		Too high air-gap	Re-adjust the correct value
		Brake coil failure	Consult Rossi (Motor Division)
	Possible ice formation in the air gap	Remove ice and prevent its formation	
2	Brake does not work	Too high air-gap	Re-adjust the correct value
		Worn friction surface	Replace the brake disc
3	The braking delay is too high	Rectifier contact openings only from a.c. side	Open rectifier contacts also on d.c. side
4	Braking torque is not suitable	Too high air-gap	Re-adjust the correct value
		False brake adjustment (motor HBF ≥ 160M)	Adjust the brake correctly
		Insufficient spring number	Consult Rossi (Motor Division)
5	Anomalous noise	Too high air-gap	Re-adjust the correct value

Notes:

When consulting Rossi S.p.A., state:

- all data on gear reducer or gearmotor name plate;
- failure nature and duration;
- when and under what conditions the failure happened;
- during the warranty period, in order not to lose validity, do not disassemble nor tamper the gear reducer or gearmotor without approval by Rossi S.p.A.



Rossi

Solutions for
an evolving
industry

Rossi S.p.A.

Via Emilia Ovest 915/A
41123 Modena - Italy

Phone +39 059 33 02 88

info@rossi.com
www.rossi.com

© Rossi S.p.A. Rossi reserves the right to make any modification whenever to this publication contents. The information given in this document only contains general descriptions and/or performance features which may not always specifically reflect those described.

The Customer is responsible for the correct selection and application of product in view of its industrial and/or commercial needs, unless the use has been recommended by technical qualified personnel of Rossi, who were duly informed about Customer's application purposes. In this case all the necessary data required for the selection shall be communicated exactly and in writing by the Customer, stated in the order and confirmed by Rossi. The Customer is always responsible for the safety of product applications. Every care has been taken in the drawing up of the catalog to ensure the accuracy of the information contained in this publication, however Rossi can accept no responsibility for any errors, omissions or outdated data. Due to the constant evolution of the state of the art, Rossi reserves the right to make any modification whenever to this publication contents. The responsibility for the product selection is of the Customer, excluding different agreements duly legalized in writing and undersigned by the Parties.