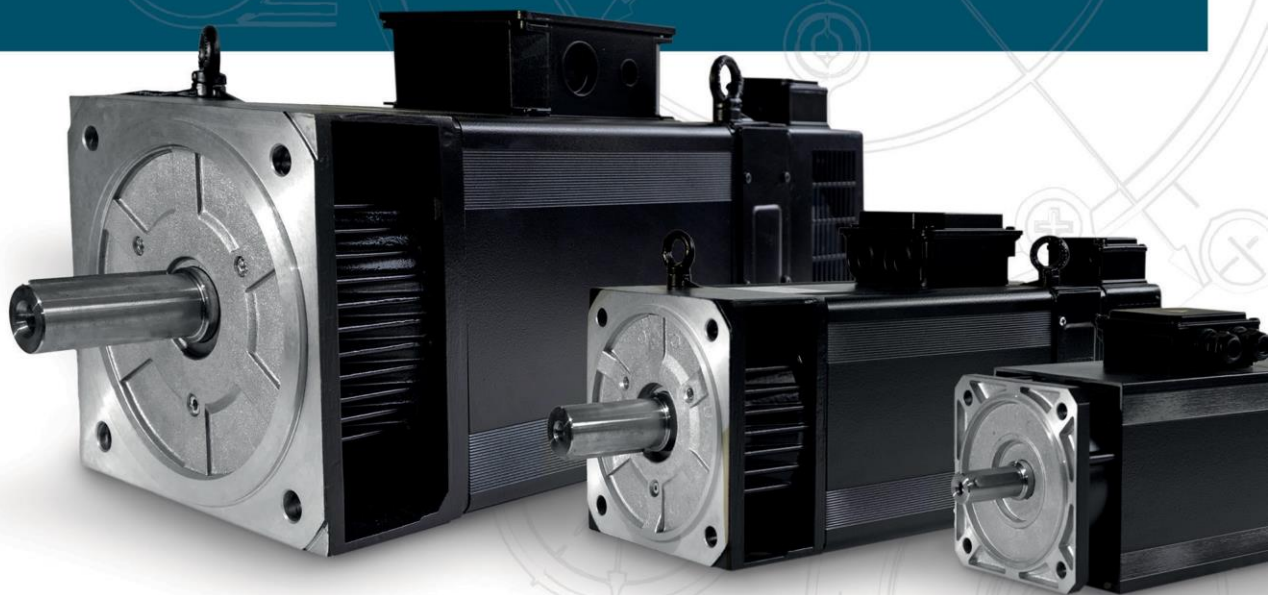


Asynchronous motors for inverter vector control **VT Series**

Italian technology since 1953



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2. General

2.1 Informations

Brusatori offers the VT series of asynchronous motors, with a square frame, developed to be connected to frequency converters. VT motors are 4-pole three-phase asynchronous motors with squirrel cage winding and are available with IP23 and IP54 protection degrees. 5 mechanical sizes are available (71 - 80 - 90 - 100 - 132) which can satisfy a range of powers from 0.37 kW to 55 kW.

The VT series motors are designed exclusively for connection to inverters.

ATTENTION!

All operations relating to transport, connection, commissioning and regular maintenance must be carried out by qualified responsible personnel, familiar with the appropriate safety regulations, and wearing the necessary protective equipment.

Read the entire manual carefully before carrying out any operation.



This manual is available to the user and is valid for all Brusatori electric motors belonging to the VT series.

Non-compliant behavior can cause serious damage to people or things.

In case of uncertainty, misunderstanding or doubts, stop operations immediately and contact our technical service.

Follow national, local, and plant-specific requirements and standards.

ATTENTION!

The special executions and constructive variants may deviate in some technical details from the motors described in the manual.

In case of difficulty, please contact the manufacturer indicating its code and serial number.



Brusatori Srl reserves the right to make changes to this document without notice.

The constructive variations agreed with the customer take precedence over the contents of the manual.

The manufacturer of the machine in which the motor will be incorporated must include the necessary safety guidelines in the instructions intended for the end user.

2.2 Symbols used



DANGER

ATTENTION

WARNING



ELECTRIC DANGER



DANGER SUSPENDED LOADS



DANGER HOT SURFACE

2.3 Intended use

The electric motors in this manual comply with the LOW VOLTAGE DIRECTIVE 2014/35/EU, and are intended for use in a standard industrial environments.

They also comply with Directive 2011/65/EU (RoHS Directive) and EMC Directive 2014/30/EU.

Each motor is built to be incorporated into a machine or to be assembled with other machinery to form a machine covered by the MACHINERY DIRECTIVE 2006/42/EC.

If used for other purposes, it is necessary to take the necessary precautions to make the motor safe in the environment in which they are intended.

ATTENTION!

The motor cannot be put into service before the machinery in which it is incorporated is declared compliant with the MACHINERY DIRECTIVE 2006/42/CE.

The manufacturer of the machinery must also verify that the machine complies with the EMC DIRECTIVE 2014/30/EU.



This document is intended for the machine manufacturer, not for the end user.

The manufacturer of the machine in which the motor will be incorporated is responsible for providing the installation, use and maintenance manual to the end user.

2.4 European directives

LOW VOLTAGE DIRECTIVE (LVD) 2014/35/EU	Compliant
HAZARDOUS SUBSTANCES DIRECTIVE 2011/65/EU (RoHS) and subsequent Delegated Directives	Compliant
MACHINERY DIRECTIVE 2006/42/CE	Responsibility of the machine manufacturer
EMC DIRECTIVE 2014/30/UE	Compliant (if electronic components are present) Responsibility of the machine manufacturer

2.5 Harmonized standards

CEI EN 60034-1: 2011	Rotating electrical machines Part 1: Nominal and operating characteristics
CEI EN 60034-5: 2021	Rotating electrical machines Part 5: Degrees of protection of rotating machinery enclosures (integral design) (IP Code) - Classification
CEI EN 60034-6: 1997	Rotating Electrical Machines Part 6: Cooling Methods (IC Code)
CEI EN 60034-7: 1997 / A1:2001	Rotating electrical machines Part 7: Classification of construction forms and types of installation as well as location of terminal boxes (IM code)
CEI EN 60034-8: 2008 / A1:2015	Rotating electrical machines Part 8: Marking of terminals and direction of rotation
CEI EN 60204-1: 2018	Machinery safety - Electrical equipment of machines Part 1: General rules

2.6 UL Certification

On request	OBJY2/8	Insulation system UL/CSA	File E316823
On request	NDMM*	Insulation system UL/CSA	File 247151

*Available for sizes 100 S/M/L/P and 132 S/M/L/P called VU

2.7 Available sizes

Mechanical size		Motor length				
VT	71	-	M	L	-	-
	80	S	-	L	-	-
	90	S	-	L	P	X
	100	A	S	M	L	P
	132	S	M	L	P	-

2.8 Identification plate

Each motor has its own unique identification plate.

The plate is affixed to the motor in the form of an adhesive label, and the ratings and operating conditions are indicated. Check before commissioning that the data correspond to those expected.

The plate must always be visible on the motor and its removal is NOT permitted.

	Brusatori Member of KEB Group		3 - PHASE AC MOTOR					
			VT series			Made in Italy		
Type VT 132 M	Cod. VT132M6Q00088			S/N 021522/01				
Pn 17 Kw	Hz	V	In A	Io A	Poles 4	IP 54		
nn 1581 rpm	54	380	 35,2	12,3	IMB35	IC 416		
Tn 103 Nm	54	220	 57,7	21,3	Cosφ 0,88	Eff. 87,8 %		
np 3900 rpm	Induct. (ph/ph) Y 4 mH			Duty S1				
nmax 6400 rpm	Resist. (ph/ph) Y 0,33 Ohm			Slip 32 rpm				
Fan RB2C250 1 ph	230 Vac	50/60 Hz	1.14 A	IP 44				
					Date 05/2025			
Ins. class F	Jm 0,073 Kgm^2			IEC 34-1		Weight 115 Kg		

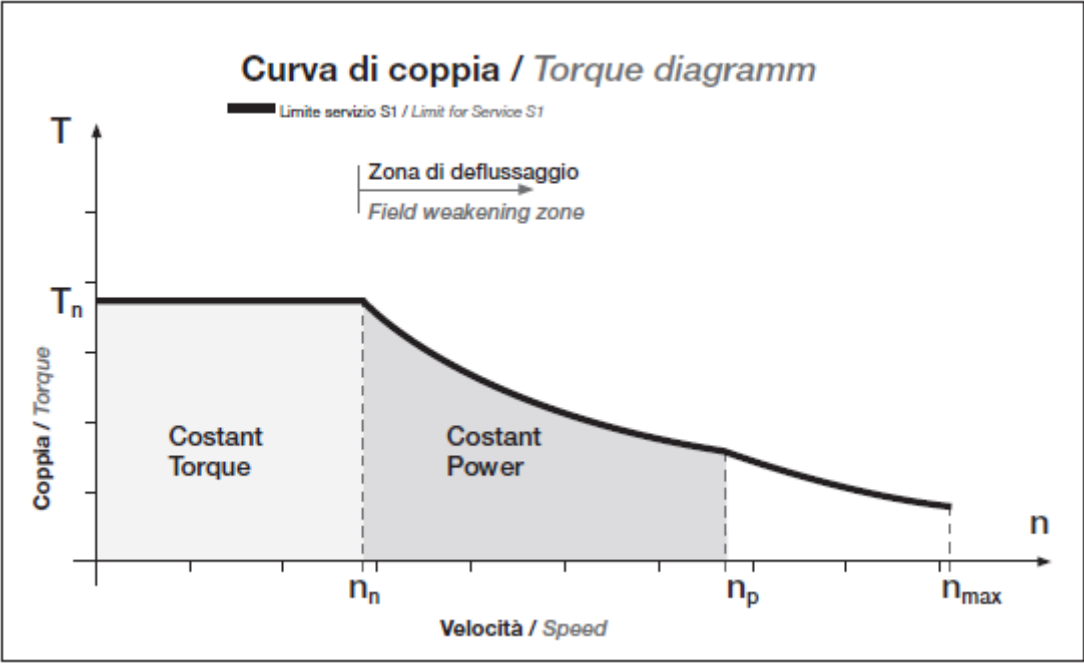
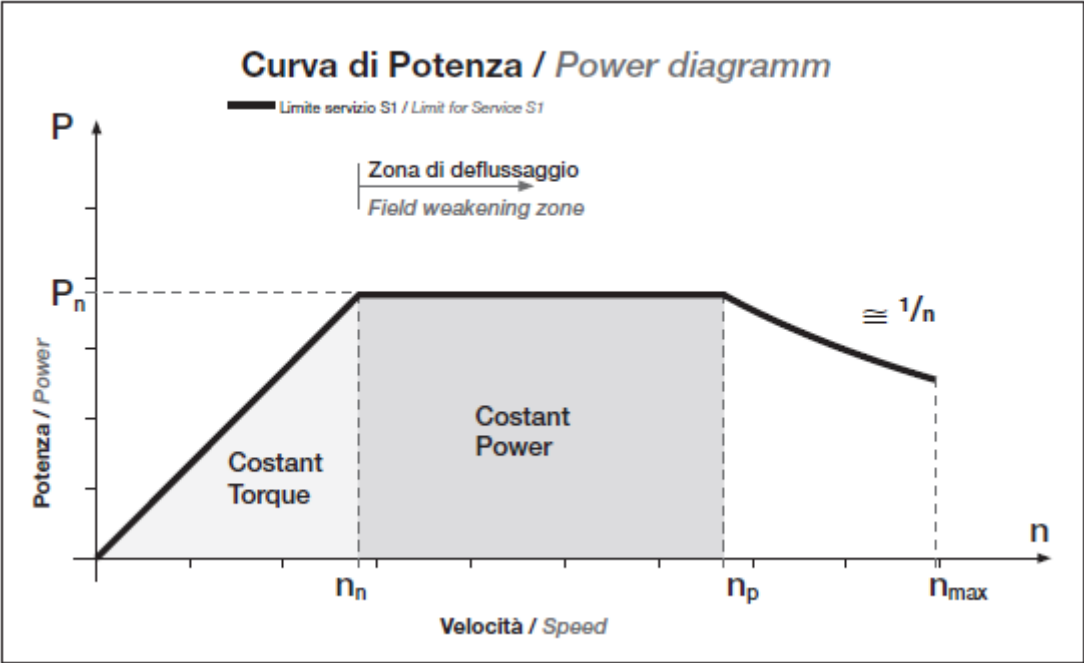
Note:

The appearance of the plates shown in this manual may differ from the real one.

Plate legend

Type	Motor Type
Cod.	Brusatori motor code
S/N	Serial number
P_N Kw	Rated power in service
Hz	Rated frequency
V	Rated voltage
I_N A	Current at rated speed
I₀ A	Locked rotor current
Poles	Number of poles
IP	Protection degree
nn rpm	Rated speed
IM	Construction form
IC	Cooling index
T_N Nm	Torque at rated speed
Cosfi	Power factor
Eff. %	Efficiency
np rpm	Speed at constant power
Induct.	Phase-to-phase inductance
Duty	Type of service
nmax	Maximum mechanical speed
Resist	Phase-to-phase resistance
Slip	Scroll
Fan	Fan features
Feedback type	Transducer type + transducer data
Date	Month / Year of production
Ins. class	Tipo trasduttore + dati trasduttore
Jm	Rotor moment of inertia
IEC	Reference standard
Weight	Motor weight
Brake	Type of brake (only if present)

2.9 Torque / Power Curve



3. Technical data

3.1 Standard features

Winding	Reinforced three-phase for inverter application
Insulation	Class F according to CEI EN 60034-1
Overtemperature	Class F according to CEI EN 60034-1
Sizing	Class F according to CEI EN 60034-1
Type of service	S1 - Continuous
Protection degree (CEI EN 60034-5)	IP23 according to CEI EN 60034-5 IP54 according to CEI EN 60034-5
Room temperature	From -5 to +40 °C
Environmental conditions	Maximum altitude: 1000m above sea level Humidity: ≤90% (non-condensing) Transport / storage temperature: -20 to +70 °C
Color	Black RAL 9005
Cooling (CEI EN 60034-6)	IC 416 Single-phase fan for axial mounting for IP54 IC 06 Three-phase fan radial mounting for IP23
Ventilation	Direct starting of the fan when the power is switched on
Vibration degree (CEI EN 60034-14)	Grade A Half key balancing
Thermal protection	Thermal protector with normally closed contact 140°C (Max voltage 250 Vac, max current 6 Aac with cos =1)
Construction form (CEI EN 60034-7)	B5 IM 3001 VT 71 - VT 80 - VT 90 B35 IM 2001 VT 100 - VT 132
Bearings	Ball bearings lubricated for life
Position sensor	Encoder predisposition (Shaft D.14 mm)
Service position	Anyone
Power connection	Three-phase terminal block in terminal box
Signal connection	M23 Connector
Terminal box position	Up

* Operations at higher temperatures or altitudes are possible with derating (see paragraph 3.9).

ATTENTION!

The motor may only be used in the applications for which it was designed.
The rated values and operating conditions are indicated on the motor plate, check before putting into service that the data correspond to those foreseen.



Motor size		VT71	VT80	VT90	VT100	VT132
Stator	Material	Magnetic lamination				
	Stator winding	Copper winding with special insulation for use with inverters				
Case	Material	Aluminium				
Rear shield	Material	Aluminium			Aluminium+steel compass	
Ball bearings (standard)	D-End (spheres)	6004 ZZ	6205 ZZ	6206 ZZ	6209 ZZ C3	6310 ZZ C3
	ND-End (spheres)	6203 ZZ	6204 ZZ	6304 ZZ	6306 ZZ C3	6209 ZZ C3
	Lubrication	lubricated for life				
	Axial locking	-	-	-	D-End side	
Rollers bearings (optional)	D-End (rollers)	-	-	-	NU 209 ECP C3	NU 310 ET C3
	ND-End (rollers)	-	-	-	-	-
	Lubrication	Periodically lubricated by grease nipple				
	Axial locking	-	-	-	ND-End side	
Terminal box		Plastic			Aluminium	Aluminium
Flange		Aluminium			Aluminium + steel compass	Aluminium + steel compass
Ventilation carter		Galvanized steel				
Rotor		Magnetic lamination + Aluminium				

3.2 Standard transducer (encoder)

Sizes it is available on	71 - 80 - 90 - 100 - 132
Supply voltage	5 - 32 V
Output circuit	HTL / TTL
Resolution	65.536 pul./rot.
Maximum current with load	Max 30 mA
Maximum frequency of use	820 kHz
Maximum rotation speed	9000 rpm
Protection	IP65 acc. IEC 60529
Working temperature	-30 to +100 °C
Maximum relative humidity	90%
Connector	M23

3.3 Permissible radial loads

The tables give the allowable radial loads in Newtons, assuming zero axial force.

Radial force is applied to the center of the shaft for a bearing life of 20000 hours.

The motors are mounted in IM B3 construction in a horizontal position.

Warning: avoid axial shocks on the shaft during assembly.

Ball bearings:

Type	Distance from the shaft shoulder (mm)	Speed 500 rpm (N)	Speed 1000 rpm (N)	Speed 1500 rpm (N)	Speed 2000 rpm (N)	Speed 2500 rpm (N)	Speed 3000 rpm (N)	Speed 3500 rpm (N)	Speed 4000 rpm (N)
VT71	15	840	700	610	550	510	480	460	440
VT80	20	1290	1020	890	810	750	700	670	640
VT90	25	1750	1380	1200	1090	1010	950	900	860
VT100	40	2950	2300	2000	1800	1700	1600	1500	1400
VT132	55	5600	4400	3800	3450	3200	3000	2800	2700

Ball bearings:

Type	Distance from the shaft shoulder (mm)	Speed 500 rpm (N)	Speed 1000 rpm (N)	Speed 1500 rpm (N)	Speed 2000 rpm (N)	Speed 2500 rpm (N)	Speed 3000 rpm (N)	Speed 3500 rpm (N)	Speed 4000 rpm (N)
VT100	40	7888	6393	5653	5179	4839	4578	4368	4193
VT132	55	8010	8010	8010	8010	8010	7810	7448	7148

3.4 Optional Features

Size	71	80	90	100	132 IP54	132 IP23
Cooling mode						
Three-phase fan for IP54 motors	-	-	-	x	x	S
Variants and accessories						
Air filter (only for VT 132 IP23 size)	-	-	-	-	-	x
Other thermal sensors	R	R	R	R	R	R
Special shaft (diameter, without keyway)	x	x	x	x	x	x
Drive shaft side oil seal	x	x	x	x	x	x
Vibration class B	x	x	x	x	x	x
Drive shaft side roller bearing (for belt pull)	-	-	-	x	x	x
Insulated bearing opposite drive shaft side	-	-	-	-	x	x
Motor Brake	x	x	x	x	x	x
Special paint (RAL colours)	x	x	x	x	x	x
Reinforced insulation	S	S	S	S	S	S
Special anti-corrosion protection	R	R	R	R	R	R
Terminal box position on the right	x	x	x	x	x	x
Terminal box position on the left	x	x	x	x	x	x
Motors with UL insulation system (File 247151)	x	x	x	x	x	x
Special realizations on customer specifications	x	x	x	x	x	x
Encoder						
Sinusoidal encoder 1Vpp – 1024 pul./turn	x	x	x	x	x	x
Absolute single-turn encoder	x	x	x	x	x	x
Multiturn absolute encoder	x	x	x	x	x	x
Resolver 2 poles-7Vrms - rapp. Transformation 0.5	x*	x*	x*	x*	x*	x*

S: standard x: possible R: on request

* Not available for motors with brake

3.5 Construction forms

Motor size	71	80	90	100	132 IP54	132 IP23
Standard	IM B5	IM B5	IM B5	IM B35	IM B35	IM B35
Optional on request	IM B35	IM B35	IM B35	-	-	-
Optional on request	IM B14	IM B14	IM B14	-	-	-

3.6 Ventilation

The motors with IP54 protection are equipped with an axial electric fan mounted in the axis of the motor.

The motors with IP23 protection are equipped with a centrifugal electric fan mounted radially to the motor.

Standard fan data:

Motor size	VT71 VT80S	VT80L VT90S	VT90L /P/X	VT100	VT132	VT132	Unit
Certification	CE/UL/CSA	CE/UL/CSA	CE	CE/UL/CSA	CE/UL	CE	-
Motor protection	IP54	IP54	IP54	IP54	IP54	IP23	IP
Number of phase	1	1	1	1	1	3	N
Supply voltage	230 (Vac)	230 (Vac)	230 (Vac)	230 (Vac)	230 (Vac)	400Y/230Δ 480Y/277Δ	V
Frequency	50÷60	50÷60	50÷60	50÷60	50÷60	50÷60	Hz
Speed	2650÷3100	2750÷3100	2800÷3250	2350÷2500	2500÷2750	2800÷3360	min- 1
Power	19÷17	18÷17	45÷39	52÷65	245	370÷440	W
Current consumption	0,12÷0,1	0,11÷0,19	0,3÷0,25	0,23÷0,29	1,14	1.0Y/1.7Δ 1.0Y/1.7Δ	A
Minimum distance for air inlet/outlet	50	50	50	100	120	120	mm
Flow	152÷180	178÷200	340÷390	540÷590	1320÷1450	612	m³/h
Prevalence	70÷80	80÷65	150÷150	350÷460	530÷670	800	Pa
Thermal overload protection	Impedance	Impedance	Thermal	Thermal	Thermal	-	-
Degree of fan protection	IP20	IP20	IP54	IP44	IP44	IP55	IP
Capacitor	-	-	-	1,5 μF	8 μF	-	-

Optional fan data:

Motor size	VT71	VT80	VT100	VT132	Unit
Certification	CE/UL/CSA	CE/UL/CSA	CE/UL/CSA	CE/UL/CSA	-
Motor protection	IP54	IP54	IP54	IP54	IP
Number of phase	1	1	1	3	N
Supply voltage	24 (Vdc)	24 (Vdc)	400Y/460Y	400Y	V
Frequency	0	0	50÷60	50÷60	Hz
Speed	3000	5000	2550÷2900	2600÷2800	min-1
Power	3,2	18,5	50÷80	215÷310	W
Current consumption	0,132	0,77	0,09÷0,11	0,38÷0,48	A
Minimum distance for air inlet/outlet	50	50	100	120	mm
Flow	168	260	550÷640	1400÷1500	m³/h
Prevalence	75	265	375÷500	650÷850	Pa
Thermal overload protection	Restart	Impedance	Thermal	-	-
Degree of fan protection	IP20	IP20	IP44	IP44	IP
Capacitor	-	-	-	-	-

3.7 Motor holding brake

Upon request, it is possible to mount a holding brake on the rear shield of the motor.

The brake is of the electromechanical type with springs with braking action without voltage.

The brake must be switched on and switched off with the rotor stopped.

Brake data:

Motor size	VT71	VT80	VT90	VT100	VT132 IP54 VT132 S/M/L IP23	VT132P IP23	Unit
Static braking torque	6	6	23	60	200	400 ³⁾	Nm
Supply voltage +/- 5%	24	24	24	24	24	24	Vdc
Absorbed power	20	20	32	50	60	60	W
Maximum intervention speed	3000	3000	3000	3000	3000	3000	rpm
Max. work with 1 intervention/hour	3	3	10	35	50	90	kJ
Brake inertia	0,15	0,15	2	7	28	60	Kgcm ²
Additional mass	1,2	1,2	3,9	10	20	23	Kg

- 1) When the brake has not been run in, the value of the braking torque can deviate by +/- 20% from the nominal value
- 2) Required voltages are available upon request
- 3) For vertical mounting (V1 V3, etc.) consult our technical office

3.8 Vibration and balance class

VT motors are built to meet vibration class A and are half key balanced.

The vibration level according to class B is available on request.

The vibration level is expressed in displacement and speed, using the suspension method and with no load applied.

Vibration degree	Axis height (mm)	
	71 < H ≤ 132	
	Shift	Speed
	µm	mm/s
A	45	2,8
B	18	1,1

3.9 Motor derating in function of temperature / altitude

The motors are designed to operate at temperatures between -5°C and 40°C and at an altitude of 1000m above sea level.

If use takes place at altitudes or at higher temperatures, the motor must have a derating according to the indications given in the table below:

Altitude (m)	Temperature (°C)			
	30	40	50	60
1000	1	1	0,9	0,8
2000	1	0,93	0,85	0,75
3000	0,93	0,85	0,77	0,64
4000	0,85	0,73	0,65	0,5

3.10 Holes for cable entry in the terminal box

VT motors are supplied with the following holes on the terminal box: 2 for power and 1 for the auxiliaries (only for size 132).

The dimensions of the holes are according to the data shown in the table below:

Motor	Holes dimension
VT 71	2 x M20 x 1,5
VT 80	2 x M20 x 1,5
VT 90	2 x M20 x 1,5
VT 100	2 x M32 x 1,5
VT 132	2 x Ø40,5 + 2 x Ø20,5

4. Electrical data version IP54

4.1 Motor features VT 71 (M-L) IP54

Protection degree	IP 54		Ventilation	IC 06	
Rotor inertia J (kgm²)	M 0,00076 - L 0,00087				
Maximum mechanical speed nmax (rpm)	VT 71 M	7000	Motor weight (kg)	VT 71 M	8,5
	VT 71 L	7000		VT 71 L	10
D-End side bearing	6004 ZZ		ND-End side bearing	6203 DDU	
Vibration class	A		Construction form	IM 3001 (B5)	
Insulation class	H		Overtemperature Class	F	
Rated supply voltage (V)	400		Thermal protection	NC 140° C	

FAN FEATURES

Frequency (Hz)	50 / 60	Current (A)	0,12 / 0,10
Number of phases	1	Mounting	Axial
Voltage (V)	230	Type of ventilation	Forced air intake
Power (W)	19 / 17	Protection degree (IP)	IP20
Minimum distance for air inlet / outlet (mm)			50

VT 71 M

n _N Rated speed	1342	2508	2907	rpm
P _N Rated power	0,37	0,64	0,76	kW
V _N Nominal voltage	376	400*	400	V
I _N Current at rated power	1,16	1,86*	2,45	A
T _N Torque at rated speed	2,66	2,5	2,5	Nm
T _{max} Maximum torque	5	5	5	Nm
n _p Maximum speed at constant power	2800	5000	5500	rpm

VT 71 L

n _N Rated speed	1500	2670	3000	rpm
P _N Rated power	0,63	1,09	1,1	kW
V _N Nominal voltage	356	356*	380	V
I _N Current at rated power	2,16	3,75*	2,85	A
T _N Torque at rated speed	4	4	4	Nm
T _{max} Maximum torque	8	8	8	Nm
n _p Maximum speed at constant power	4500	7000	5500	rpm

* Delta motor connection (Δ)

4.2 Motor features VT 80 (S-L) IP54

Protection degree	IP 54		Ventilation	IC 06	
Rotor inertia J (kgm²)	S 0,0017 - L 0,0024				
Maximum mechanical speed nmax (rpm)	VT 80 S	7000	Motor weight (kg)	VT 80 S	11
	VT 80 L	7000		VT 80 L	13
D-End side bearing	6205 ZZ		ND-End side bearing	6204 ZZ	
Vibration class	A		Construction form	IM 3001 (B5)	
Insulation class	H		Overtemperature Class	F	
Rated supply voltage (V)	400		Thermal protection	NC 140° C	

FAN FEATURES

Frequency (Hz)	50 / 60		Current (A)	VT 80 S	0,12/0,10
				VT 80 L	0,11/0,19
Number of phases	1		Mounting	Axial	
Voltage (V)	230		Type of ventilation	Forced air intake	
Power (W)	VT 80 S	19 / 17	Protection degree (IP)	IP20	
	VT 80 L	18 / 17			
Minimum distance for air inlet / outlet (mm)				50	

VT 80 S

n _N Rated speed	1349	2515	2910	rpm
P _N Rated power	0,75	1,30	1,5	kW
V _N Nominal voltage	372	380*	380	V
I _N Current at rated power	2,13	3,37*	4,33	A
T _N Torque at rated speed	5,3	5	5	Nm
T _{max} Maximum torque	10	10	10	Nm
n _p Maximum speed at constant power	2500	4400	5000	rpm

VT 80 L

n _N Rated speed	1349	2520	2910	rpm
P _N Rated power	1,1	1,91	2,2	kW
V _N Nominal voltage	382	400*	400	V
I _N Current at rated power	2,79	5,22*	5,84	A
T _N Torque at rated speed	7,79	7,5	7,5	Nm
T _{max} Maximum torque	15	15	15	Nm
n _p Maximum speed at constant power	2600	4400	5000	rpm

* Delta motor connection (Δ)

4.3 Motor features VT 90 (S-L-P-X) IP54

Protection degree	IP 54		Ventilation	IC 416 (CEI EN 60034-6)	
Rotor inertia J (kgm²)	S 0,0024 - L 0,0033 - P 0,0043 - X 0,0057				
Maximum mechanical speed nmax (rpm)	VT 90 S	7000	Motor weight (kg)	VT 90 S	15,5
	VT 90 L	7000		VT 90 L	20
	VT 90 P	7000		VT 90 P	24
	VT 90 X	7000		VT 90 X	30
D-End side bearing	6206 ZZ		ND-End side bearing	6304 ZZ	
Vibration class	A		Construction form	IM 3001 (B5)	
Insulation class	H		Overtemperature Class	F	
Rated supply voltage (V)	400		Thermal protection	NC 140° C	

FAN FEATURES

Frequency (Hz)	50 / 60		Current (A)		VT 90 S	0,12/0,10
					VT90 L / P / X	0,11/0,19
Number of phases	1		Mounting		Axial	
Voltage (V)	230		Type of ventilation		Forced air intake	
Power (W)	VT 90 S	18 / 17	Protection degree (IP)	VT 90 S		IP20
	VT 90 L / P / X	45 / 39		VT 90 L / P / X		IP54
Minimum distance for air inlet / outlet (mm)					50	

VT 90 S

n _N Rated speed	1327	2530	3000	rpm
P _N Rated power	1,5	2,6	3,15	kW
V _N Nominal voltage	390	400*	400	V
I _N Current at rated power	3,8	5,9*	7,1	A
T _N Torque at rated speed	10,77	10	10	Nm
T _{max} Maximum torque	25	25	25	Nm
n _p Maximum speed at constant power	2500	4350	6000	rpm

VT 90 L

n _N Rated speed	1336	2487	3000	rpm
P _N Rated power	2,2	3,9	4,74	kW
V _N Nominal voltage	390	400*	400	V
I _N Current at rated power	5,15	8,8*	10,3	A
T _N Torque at rated speed	15,36	15	15	Nm
T _{max} Maximum torque	29	29	29	Nm
n _p Maximum speed at constant power	2500	4350	5500	rpm

* Delta motor connection (Δ)

VT 90 P

n_N Rated speed	1324	2505	2898	rpm
P_N Rated power	3	5,2	6	kW
V_N Nominal voltage	390	400*	400	V
I_N Current at rated power	6,77	11*	13,2	A
T_N Torque at rated speed	21,6	20	20	Nm
T_{max} Maximum torque	35	35	35	Nm
n_p Maximum speed at constant power	3500	4000	5000	rpm

VT 90 X

n_N Rated speed	1336	2535	2820	rpm
P_N Rated power	4	7	8	kW
V_N Nominal voltage	372	400*	400	V
I_N Current at rated power	9,3	15,7*	19	A
T_N Torque at rated speed	28,7	27	27	Nm
T_{max} Maximum torque	40	40	40	Nm
n_p Maximum speed at constant power	2700	4800	5400	rpm

* Delta motor connection (Δ)

4.4 Motor features VT 100 (A-S-M-L-P) IP54

Protection degree	IP 54		Ventilation	IC 416 (CEI EN 60034-6)	
Rotor inertia J (kgm²)	A 0,009 - S 0,013 - M 0,016 - L 0,020 - P 0,025				
Maximum mechanical speed nmax (rpm) *	VT 100 A	7000 (6700) **	Motor weight (kg)	VT 100 A	38
	VT 100 S	7000 (6700) **		VT 100 S	45
	VT 100 M	7000 (6700) **		VT 100 M	55
	VT 100 L	7000 (6700) **		VT 100 L	59
	VT 100 P	6700		VT 100 P	72
D-End side bearing **	6209 ZZ C3		ND-End side bearing	6306 ZZ C3	
Vibration class	A		Construction form	IM 2001 (B35)	
Insulation class	H		Overtemperature Class	F	
Rated supply voltage (V)	400		Thermal protection	NC 140° C	

*on request (high speed option to be evaluated with our technical office)

** roller bearings for belt pull applications available on request
(with roller bearings the maximum mechanical speed decreases)

FAN FEATURES

Frequency (Hz)	50 / 60	Current (A)	0,23 / 0,29
Number of phases	1	Mounting	Axial
Voltage (V)	230	Type of ventilation	Forced air intake
Power (W)	52 / 65	Protection degree (IP)	IP44
Minimum distance for air inlet / outlet (mm)			100

VT 100 A

n _N Rated speed	1000	1362	2020	2540	2938	rpm
P _N Rated power	2,6	4	5,3	6,5	7,5	kW
V _N Nominal voltage	380	392	380	380*	380	V
I _N Current at rated power	5,81	9,09	10,6	14,5*	15,9	A
T _N Torque at rated speed	24,8	27,4	25	24,6	24,5	Nm
T _{max} Maximum torque	50	53	50	49	49	Nm
n _p Maximum speed at constant power	2000	2800	4200	5000	5500	rpm

VT 100 S

n _N Rated speed	607	1015	1498	2013	2520	3000	rpm
P _N Rated power	2,6	4,3	6	7,8	9	10,2	kW
V _N Nominal voltage	380	380	380	380	380	380	V
I _N Current at rated power	7,0	9,7	13,0	16,4	18,5	20,7	A
T _N Torque at rated speed	40,9	40,5	38,2	37	34,1	32,5	Nm
T _{max} Maximum torque	80	90	95	100	90	85	Nm
n _p Maximum speed at constant power	1200	2250	3750	5400	6500	7000	rpm

* Delta motor connection (Δ)

VT 100 M

n_N Rated speed	604	1022	1508	2018	2524	3003	rpm
P_N Rated power	3,1	5,2	7,2	9,1	10,5	11,8	kW
V_N Nominal voltage	380	380	380	380	380	380	V
I_N Current at rated power	7,9	12,1	16,4	20,0	21,6	24,0	A
T_N Torque at rated speed	49	48,6	45,6	43,1	39,7	37,5	Nm
T_{max} Maximum torque	105	115	120	120	105	100	Nm
n_p Maximum speed at constant power	1300	2500	4150	5750	6750	7000	rpm

VT 100 L

n_N Rated speed	603	1014	1513	2026	2504	3010	rpm
P_N Rated power	3,8	6,2	8,5	10,8	12,2	13,3	kW
V_N Nominal voltage	380	380	380	380	380	380	V
I_N Current at rated power	10,3	14,9	19,1	23,3	25,2	27,1	A
T_N Torque at rated speed	60,2	58,4	53,6	50,9	46,5	42,2	Nm
T_{max} Maximum torque	135	130	160	160	140	120	Nm
n_p Maximum speed at constant power	1350	2250	4500	6450	7000	7000	rpm

VT 100 P

n_N Rated speed	609	1020	1519	2000	2502	3010	rpm
P_N Rated power	4,6	7,3	10	12,5	14	15,5	kW
V_N Nominal voltage	380	380	380	380	380	380	V
I_N Current at rated power	11,8	17,0	22,0	28,5	29,1	32,3	A
T_N Torque at rated speed	72,1	68,3	62,9	59,7	53,4	49,2	Nm
T_{max} Maximum torque	175	195	200	200	160	140	Nm
n_p Maximum speed at constant power	1450	2900	4850	6650	6700	6700	rpm

4.5 Motor features VT 132 (S-M-L-P) IP54

Protection degree	IP 54		Ventilation	IC 416 (CEI EN 60034-6)	
Rotor inertia J (kgm²)	S 0,052 - M 0,073 - L 0,099 - P 0,122				
Maximum mechanical speed nmax (rpm) *	VT 132 S	6400 (5000) **	Motor weight (kg)	VT 132 S	91
	VT 132 M	6400 (5000) **		VT 132 M	115
	VT 132 L	6400 (5000) **		VT 132 L	146
	VT 132 P	5000 (5000) **		VT 132 P	174
D-End side bearing **	6310 ZZ C3		ND-End side bearing	6209 ZZ C3	
Classe di vibrazione	A		Construction form	IM 2001 (B35)	
Insulation class	H		Overtemperature Class	F	
Rated supply voltage (V)	400		Thermal protection	NC 140°C	

*on request (high speed option to be evaluated with our technical office)

** roller bearings for belt pull applications available on request
(with roller bearings the maximum mechanical speed decreases)

FAN FEATURES

Frequency (Hz)	50 / 60	Current (A)	1,14
Number of phases	1	Mounting	Axial
Voltage (V)	230	Type of ventilation	Forced air intake
Power (W)	245	Protection degree (IP)	IP44
Minimum distance for air inlet / outlet (mm)			120

VT 132 S

n _N Rated speed	1066	1581	2104	2654	3167	rpm
P _N Rated power	8	12	17	20	24	kW
V _N Nominal voltage	380	380	380	380	380	V
I _N Current at rated power	18,1	25,7	36,4	42,2	50,7	A
T _N Torque at rated speed	71,7	72,5	77,2	72	72,4	Nm
T _{max} Maximum torque	190	195	220	210	220	Nm
n _p Maximum speed at constant power	2800	4200	6000	6400	6400	rpm

VT 132 M

n _N Rated speed	1059	1581	2101	2652	3150	rpm
P _N Rated power	12	17	22	28	33	kW
V _N Nominal voltage	380	380	380	380	380	V
I _N Current at rated power	26,3	35,2	46,2	57,8	67,9	A
T _N Torque at rated speed	108	103	100	101	100	Nm
T _{max} Maximum torque	290	250	300	300	300	Nm
n _p Maximum speed at constant power	2800	3900	6400	6400	6400	rpm

VT 132 L

n_N Rated speed	1062	1581	2101	2651	3152	rpm
P_N Rated power	17	24	32	38	44	kW
V_N Nominal voltage	380	380	380	380	380	V
I_N Current at rated power	36,4	49,2	65,2	80,4	90,2	A
T_N Torque at rated speed	153	145	145	137	133	Nm
T_{max} Maximum torque	410	370	390	480	420	Nm
n_p Maximum speed at constant power	2800	4100	5600	6400	6400	rpm

VT 132 P

n_N Rated speed	1060	1584	2102	2653	3153	rpm
P_N Rated power	20	28	37	44	50	kW
V_N Nominal voltage	380	380	380	380	380	V
I_N Current at rated power	42,5	57,3	74,6	88,7	99,7	A
T_N Torque at rated speed	180	169	168	158	151	Nm
T_{max} Maximum torque	500	450	450	460	430	Nm
n_p Maximum speed at constant power	2800	4200	5400	5400	5400	rpm

5. Electrical data version IP23 S

5.1 Motor features VT 132 (S-M-L-P) IP23 S

Protection degree	IP 23 S		Ventilation	IC 06 (CEI EN 60034-6)	
Rotor inertia J (kgm²)	S 0,052 - M 0,073 - L 0,099 - P 0,122				
Maximum mechanical speed nmax (rpm) *	VT 132 S	6400 (5000) **	Motor weight (kg)	VT 132 S	96
	VT 132 M	6400 (5000) **		VT 132 M	120
	VT 132 L	6400 (5000) **		VT 132 L	151
	VT 132 P	5000 (5000) **		VT 132 P	179
D-End side bearing **	6310 ZZ C3		ND-End side bearing	6209 ZZ C3	
Classe di vibrazione	A		Construction form	IM 2001 (B35)	
Insulation class	H		Overtemperature Class	F	
Rated supply voltage (V)	400		Thermal protection	NC 140°C	

*on request (high speed option to be evaluated with our technical office)

** roller bearings for belt pull applications available on request
(with roller bearings the maximum mechanical speed decreases)

FAN FEATURES

Frequency (Hz)	50 / 60	Current (A)	1,14
Number of phases	3	Mounting	Radial
Voltage (V)	400Y / 230Δ - 480Y / 277Δ	Type of ventilation	Forced air intake
Power (W)	370 / 440	Protection degree (IP)	IP44
Minimum distance for air inlet / outlet (mm)			120

VT 132 S

n _N Rated speed	1055	1575	2100	2651	3162	rpm
P _N Rated power	11	15,5	22	27	31	kW
V _N Nominal voltage	380	380	380	380	380	V
I _N Current at rated power	24,9	33,6	49,5	60,3	66,3	A
T _N Torque at rated speed	100	94	100	97	94	Nm
T _{max} Maximum torque	220	220	270	280	260	Nm
n _p Maximum speed at constant power	2300	3800	5800	6400	6400	rpm

VT 132 M

n _N Rated speed	1048	1578	2094	2647	3146	rpm
P _N Rated power	17	24	30	37	44	kW
V _N Nominal voltage	380	380	380	380	380	V
I _N Current at rated power	37,7	52,1	62,9	77,0	92,1	A
T _N Torque at rated speed	155	145	137	133	134	Nm
T _{max} Maximum torque	340	370	350	350	380	Nm
n _p Maximum speed at constant power	2300	4100	5400	6400	6400	rpm

VT 132 L

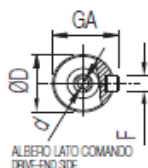
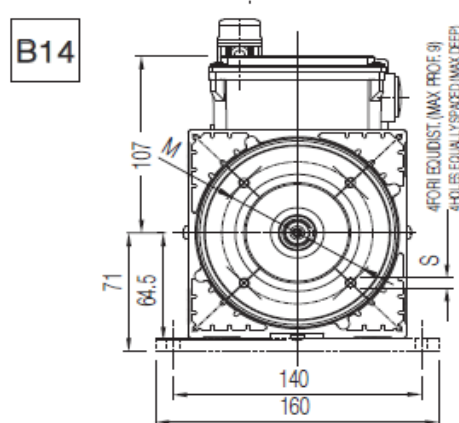
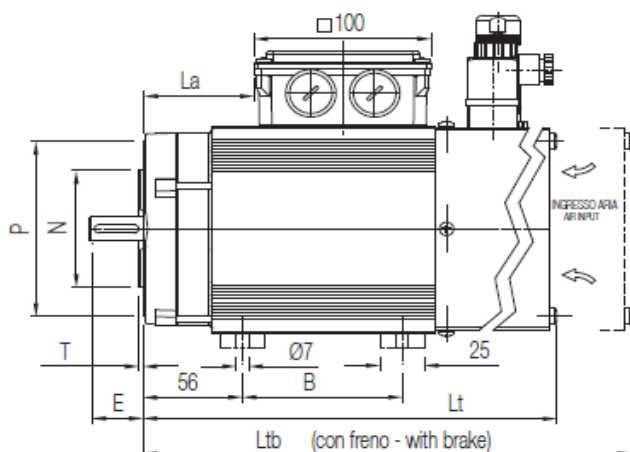
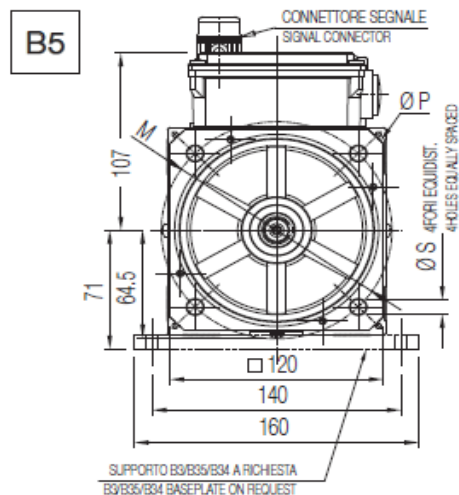
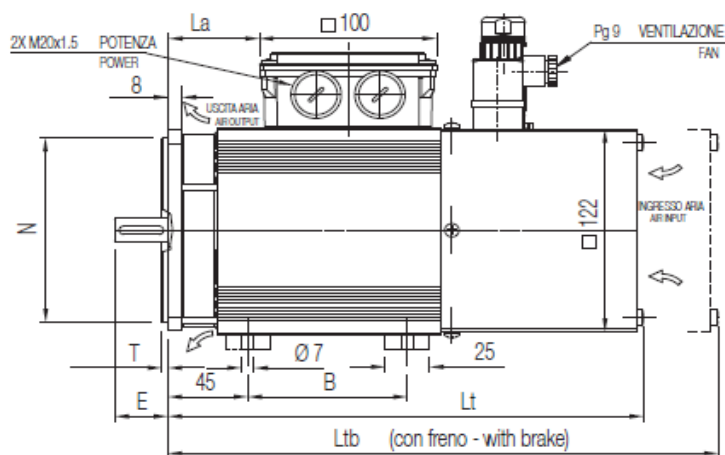
n_N Rated speed	1058	1581	2101	2646	3147	rpm
P_N Rated power	22	31	38	44	50	kW
V_N Nominal voltage	380	380	380	380	380	V
I_N Current at rated power	49,0	66,2	79,2	90,9	101	A
T_N Torque at rated speed	199	187	173	159	152	Nm
T_{max} Maximum torque	510	520	500	470	420	Nm
n_p Maximum speed at constant power	2700	4400	6000	6400	6400	rpm

VT 132 P

n_N Rated speed	1057	1585	2103	2658	3160	rpm
P_N Rated power	27	42	44	50	55	kW
V_N Nominal voltage	380	380	380	380	380	V
I_N Current at rated power	60,2	83,8	91,2	107	118	A
T_N Torque at rated speed	244	254	200	180	166	Nm
T_{max} Maximum torque	680	700	590	640	620	Nm
n_p Maximum speed at constant power	2900	4800	5400	5400	5400	rpm

6. Overall dimensions

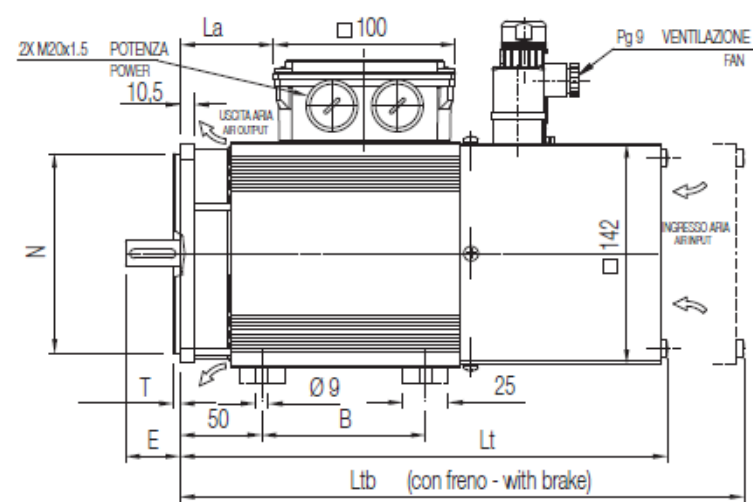
6.1 Overall dimensions – VT071



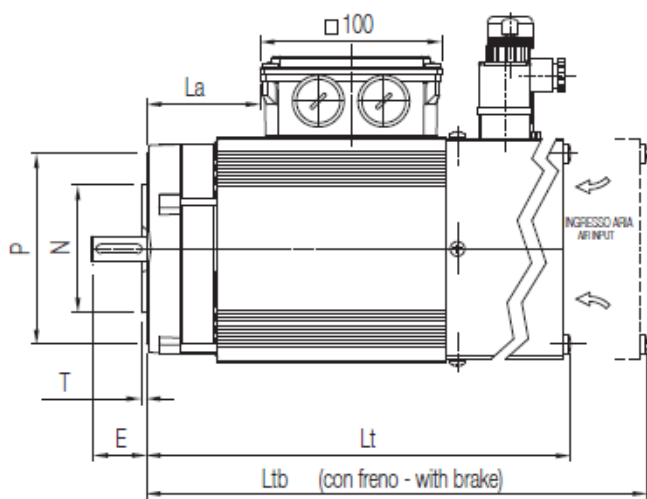
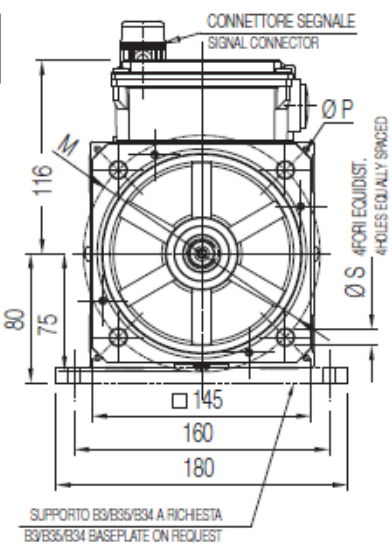
Type			Length				Shaft								Flange						
			B	La	Lt	Ltb	D (1)	D (2)	E (1)	E (2)	GA (1)	GA (2)	F (1)	F (2)	d (1)	d (2)	P	N	T	M	S
VT 71	M	B5	90	51,5	270	312	14j6	19j6	30	40	16	21,5	5	6	M5	M6	160	110j6	3,5	130	9
	L																				
	M	B14	90	62,5	281	323	14j6	19j6	30	40	16	21,5	5	6	M5	M6	105	70j6	2,5	85	M6
	L																				

(1) Advised (2) On request

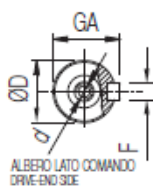
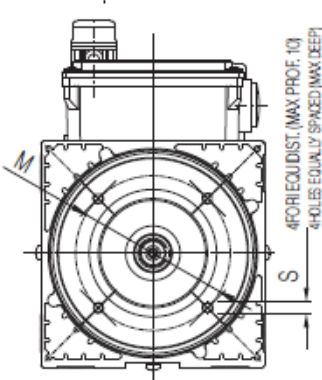
6.2 Overall dimensions – VT080



B5



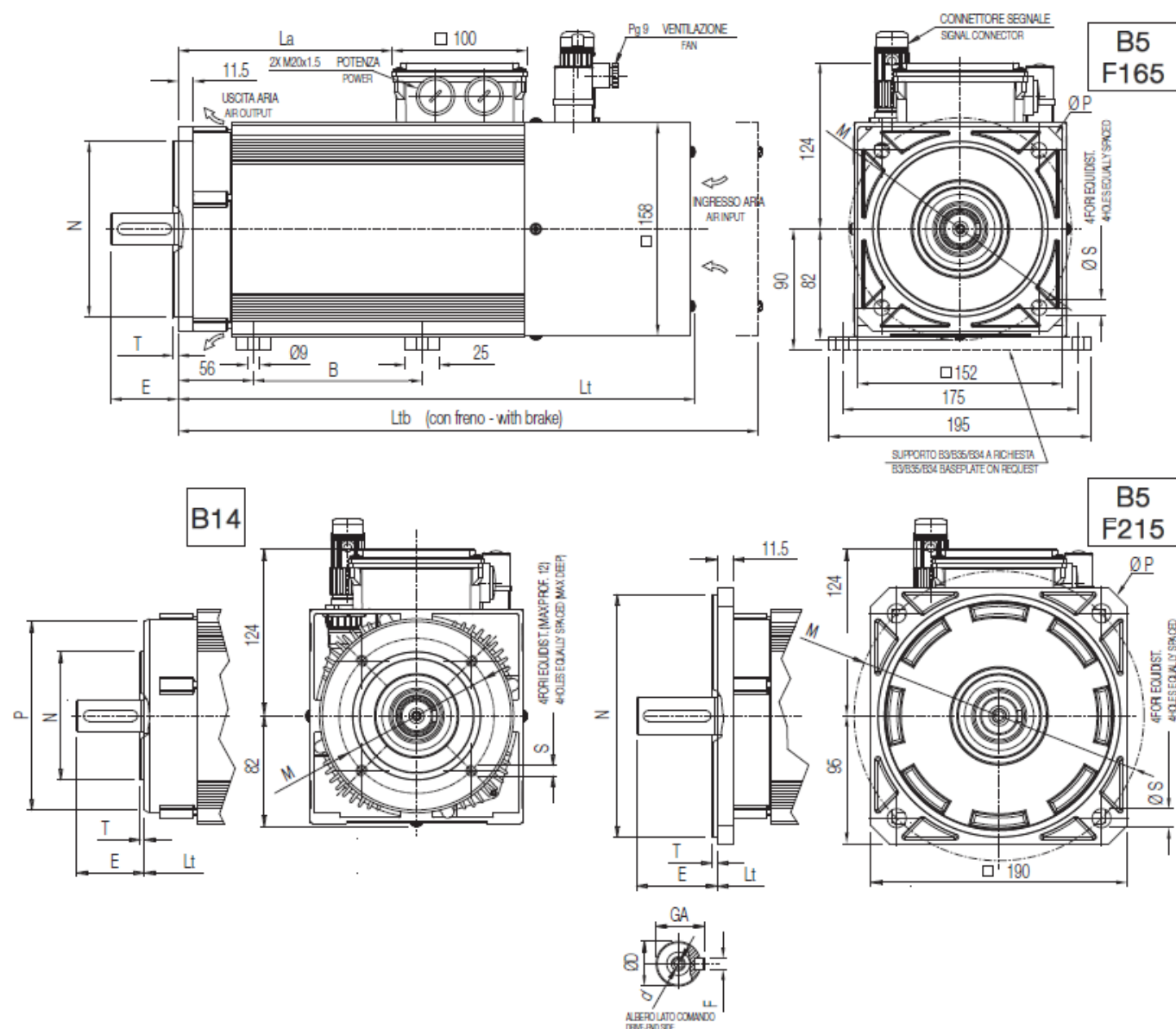
B14



Type			Length				Shaft								Flange						
			B	La	Lt	Ltb	D (1)	D (2)	E (1)	E (2)	GA (1)	GA (2)	F (1)	F (2)	d (1)	d (2)	P	N	T	M	S
VT 80	S	B5	100	78	285	325	19j6	24j6	40	50	21,5	27	6	8	M6	M8	200	130j6	3,5	165	11
	L																				
	S	B14	-	78	285	325	19j6	24j6	40	50	21,5	27	6	8	M6	M8	120	80j6	2,5	100	M6
	L																				

(1) Advised (2) On request

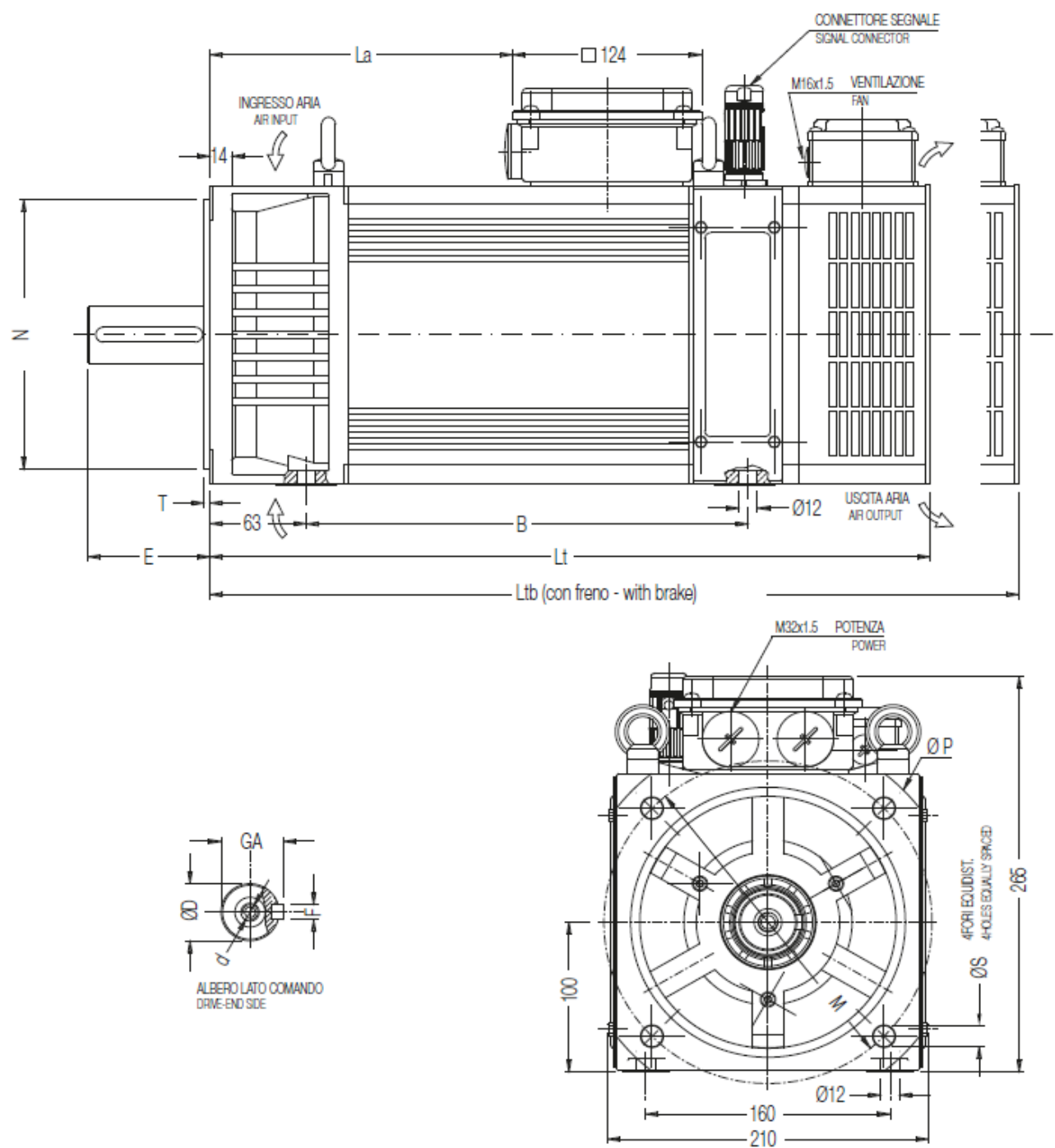
6.3 Overall dimensions – VT090



Type			Length				Shaft					Flange				
			B	La	Lt	Ltb	D (1)	E (1)	GA (1)	F (1)	d (1)	P	N	T	M	S
VT 90	S	B5/F165 (Standard)	100	84	294	344	24	50	27	8	M8	200	130j6	3,5	165	11,5
	L		125	119	345	395										
	P		125	159	385	435										
	X		185	229	455	505										
VT 90	S	B5/F215 (Su richiesta)	100	84	294	344	28	60	31	8	M10	250	180j6	4	215	13,5
	L		125	119	345	395										
	P		125	159	385	435										
	X		185	229	455	505										
VT 90	S	B14	-	84	294	344	24	50	27	8	M8	140	95j6	3	115	M8
	L		-	119	345	395										
	P		-	159	385	435										
	X		-	229	455	505										

(1) Advised (2) On request

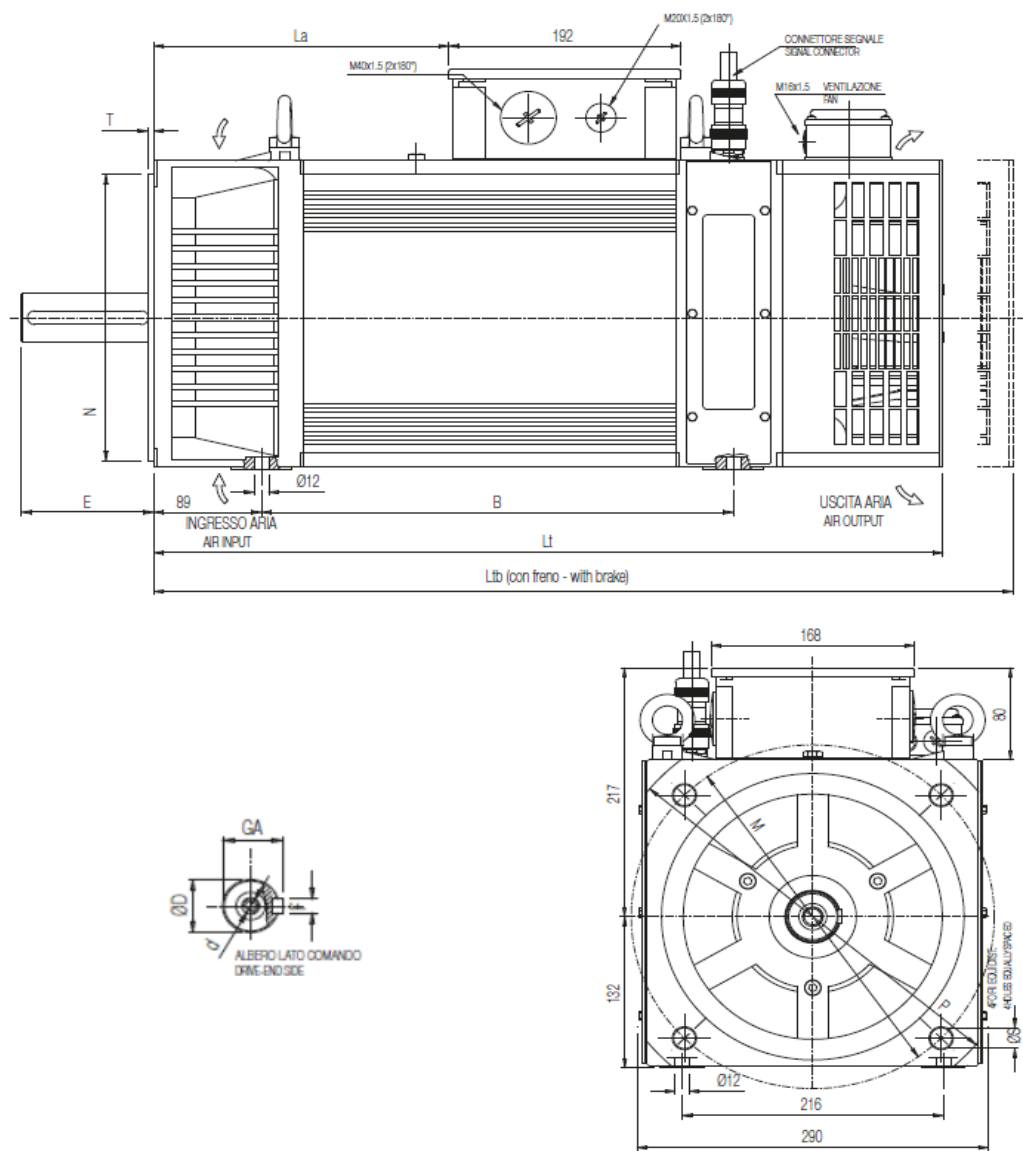
6.4 Overall dimensions – VT100



Type		Length				Shaft										Flange				
		B	La	Lt	Ltb	D (1)	D (2)	E (1)	E (2)	GA (1)	GA (2)	F (1)	F (2)	d (1)	d (2)	P	N	T	M	S
VT 100	A	240	148	422	506	38 k6	28 j6	80	60	41	31	10	8	M12	M10	250	180j6	4	215	14
	S	290	198	472	556															
	M	320	228	502	586															
	L	365	273	547	631															
	P	420	328	602	685															

(1) Advised (2) On request

6.5 Overall dimensions – VT132 IP54

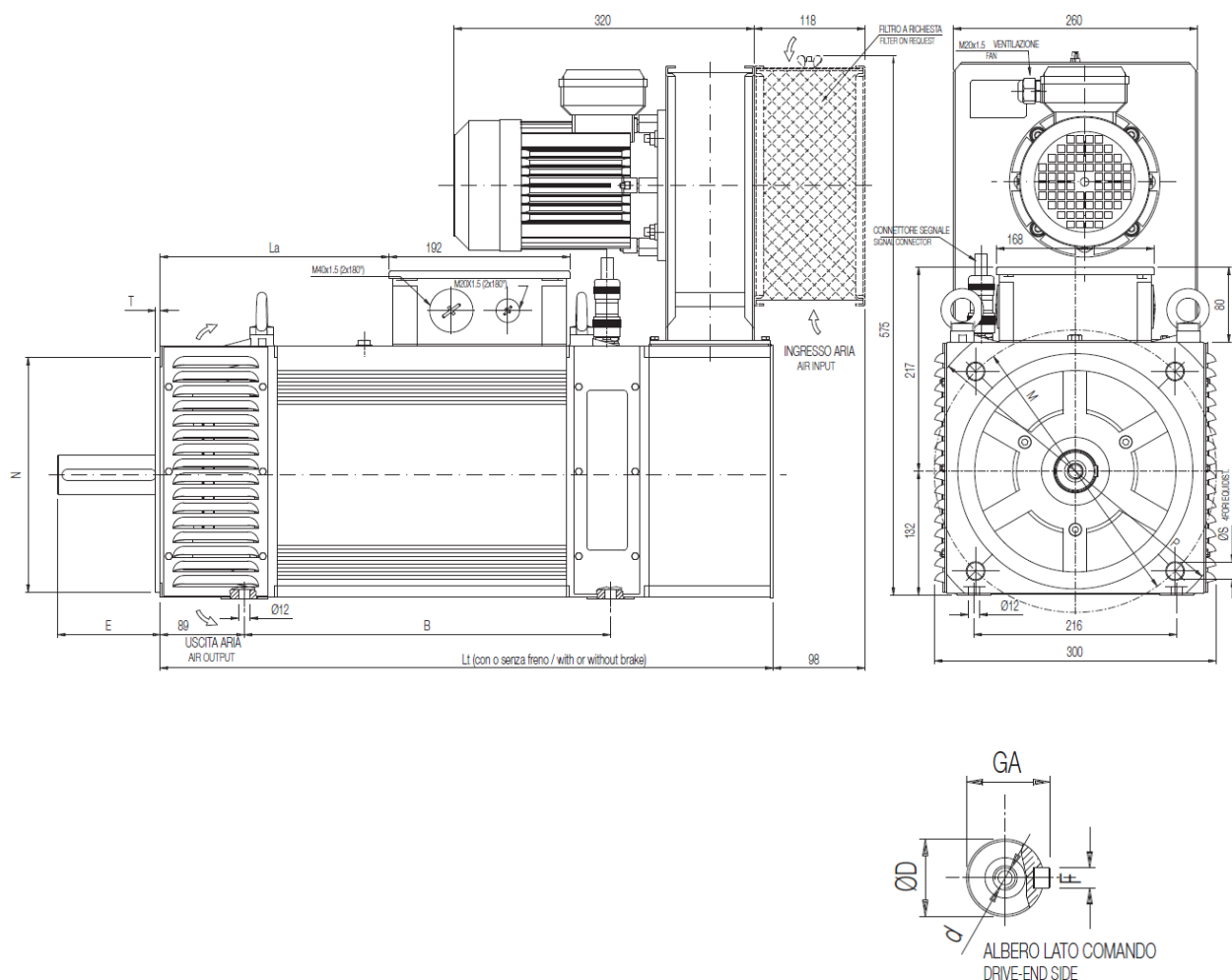


Type		Length			
		B	La	Lt	Ltb
VT 132	S	320	173	585	705
	M	390	243	655	775
	L	480	333	745	865
	P	560	413	825	945

Type		Shaft					Flange				
		D	E	GA	F	d	P	N	T	M	S
VT 132	(1)	42 k6	110	45	12	M16	350	250 j6	5	300	18
	(2)	48 k6	110	51,5	14	M16	350	250 j6	5	300	18
	(2)	38 k6	80	41	10	M12	300	230 j6	4	265	14

(1) Advised (2) On request

6.6 Overall dimensions – VT132 IP23



Type		Length		
		B	La	Lt
VT 132	S	320	173	585
	M	390	243	655
	L	480	333	745
	P	560	413	825

Type		Shaft					Flange				
		D	E	GA	F	d	P	N	T	M	S
VT 132	(1)	42 k6	110	45	12	M16	350	250 j6	5	300	18
	(2)	48 k6	110	51,5	14	M16	350	250 j6	5	300	18
	(2)	38 k6	80	41	10	M12	300	230 j6	4	265	14

(1) Advised (2) On request

7. Electrical connections

7.1 Safety Instructions

WARNING!

Do not perform work on the motor, connecting cables, frequency converters or accessories such as brakes, fans or thermal protection cables when voltage is present.

**WARNING!**

For cable entries, use cable glands and seals that conform to the type of protection and cable diameter.

**WARNING!**

The system manufacturer is responsible for proper installation.
Signal and power connectors must be shielded.



The motor must be connected as shown in the diagrams provided.
Observe the EMC instructions and the converter manufacturer's instructions.

When making the connection make sure that:

- The connecting conductors are suitable for the intended use, voltages and currents present.
- Properly sized connecting conductors, anti-twist, anti-kink and anti-thrust terminals as well as anti-kink protectors for the conductors themselves are provided.
- The protective conductor is grounded.
- Grounding is carried out in accordance with local regulations before connecting the motor to the power supply.

With connection by connectors make sure that:

- The signal and power connector ferrules are tightened securely in order to ensure good contact and tightness, and clicks the connector locking protection if provided.

With connection by terminal board make sure that:

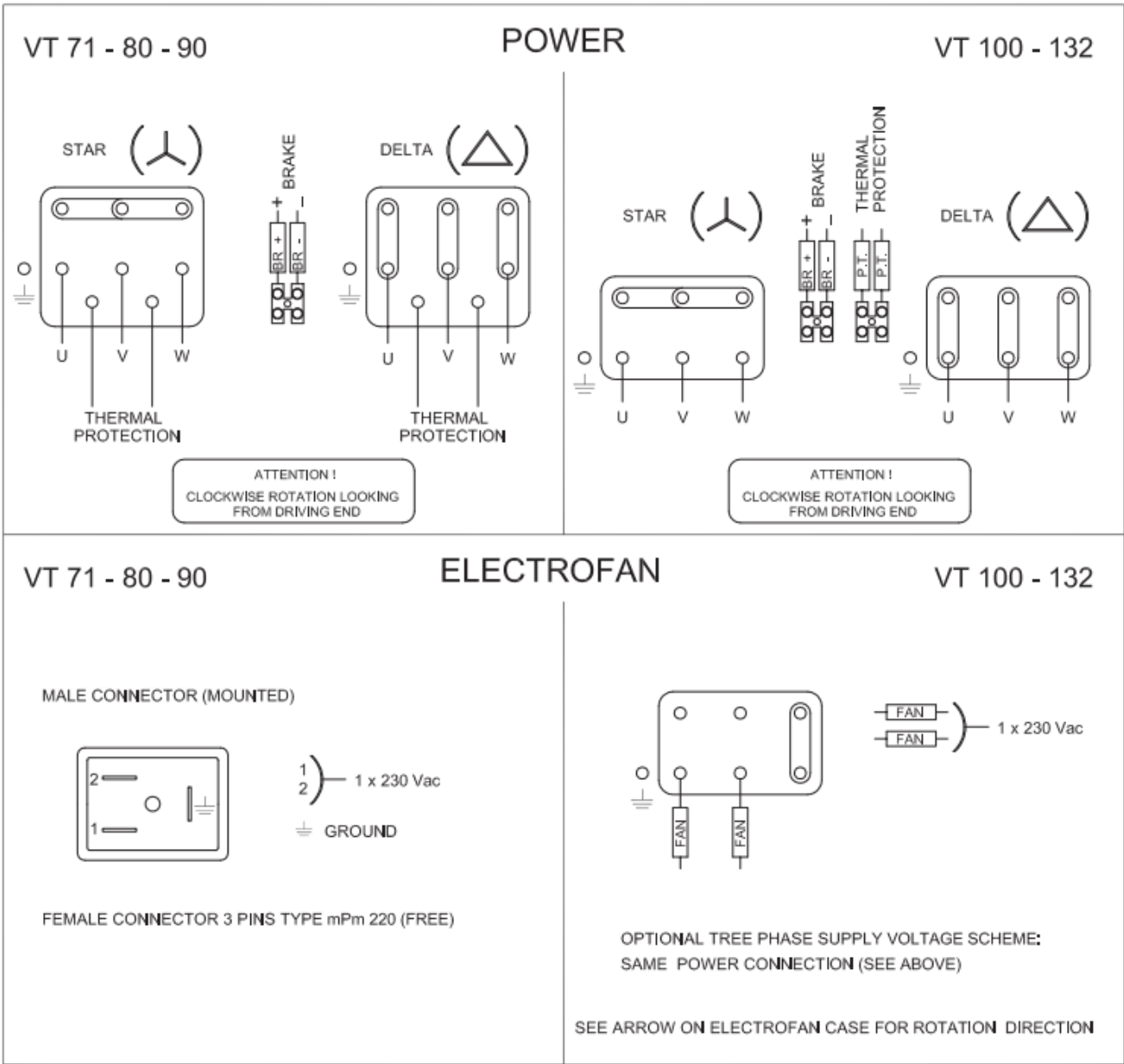
- Conductor ends should be stripped only to the lug or terminal block.
- The size of the lugs must be suitable for the terminals used on the terminal block.
- Comply with terminal tightening torque values.
- The protective conductor or grounding conductor must be connected.
- For large cross sections, the grounding conductor can be divided into three protective conductors, placed symmetrically around the power conductors.
- The inside of the terminal block should be clean and free of residual conductors.
- Avoid accidental dropping of nuts, washers, conductor residues inside the motor through the cable passage hole.
- Pay attention to wires protruding from conductors and observe minimum air gaps between live parts.
- Unused inlets must be closed and sealing elements must be screwed tight to ensure a dust- and water-tight seal.
- Terminal box seals must be properly inserted into their respective housings in order to ensure the correct IP class.

The required tightening torque according to the pin type is given below:

Pin size	Tightening torque [Nm]
M4	1.6
M5	2.5
M6	4
M8	8
M10	13
M12	20
M14	30
M16	40

WARNING!

Tighten the cables on the headstocks observing the tightening torques corresponding to the pin type. Tolerance +0% / -10%



7.2 Transducer (Encoder)

Normally, a hollow-shaft transducer is used on VT series motors.

The transducer body is attached to the rear cover of the motor and is made free to oscillate by means of a torque arm, which is responsible for absorbing any axial/radial misalignment. A 12-pin M23 male (panel or bulkhead feed-through) connector is used for the electrical connection. The female (flying) part with solder contacts is supplied with the transducer as standard.

Always ensure that the electrical data of the transducer is compatible with that of the inverter powering the motor, that the supply voltage is correct, and that the connections are respected.

WARNING!
Do not supply power to the transducer output channels and never run the motor if the transducer has output cables shorted to each other or to ground.



WARNING!
Do not perform the high voltage test on the transducer terminals.



Wiring instructions for the signal flying connector are shown on a sheet located inside the motor terminal box.
Always use a shielded cable for connection to the inverter.
When soldering the flying connector, do not overheat the contacts. Avoid short circuits between the connector contacts.

WARNING!
Failure to comply with any of the above warnings may result in immediate failure of the encoder.



The encoder connection diagram is either attached to the flying connector or placed inside the motor terminal box.
Normally the maximum mechanical rotation speed of the encoder is 9000rpm. Do not exceed this limit to avoid damage to the transducer.

Encoder SICK VFS60 connection:



MALE CONNECTOR:
INTERCONTEC
AKUA020MS06620203.000
(MOUNTED)



PLUG-IN FACE VIEW

FEMALE CONNECTOR:
SIZE M23 12 PINS (FREE)
INTERCONTEC
A ST A 013 FS 13 10 0035 000

PIN	SIGNAL TTL/HTL	EXPLANATION
1	B ₋	Signal line
2	N.C.	Not connected
3	Z	Signal line
4	Z ₋	Signal line
5	A	Signal line
6	A ₋	Signal line
7	N.C.	Not connected
8	B	Signal line
9	N.C.	Not connected
10	GND	Encoder ground connection
11	N.C.	Not connected
12	U _s	Supply voltage (volt-free to housing)
Screen	Screen	Connected to housing on encoder side Connected to ground on control side

7.3 Thermal protector

Thermal motor protection by means of a 140°C bimetallic thermal protector (maximum voltage 250Vac, maximum current 5Aac) built into the windings is provided as standard. The normally closed contact opens when the thermal protector reaches the trip temperature. The connection terminal is normally located inside the terminal box.

Do not perform the high voltage test on the terminals of the thermal protectors.

WARNING!

Failure to connect the thermal probes will immediately void the product warranty.



8. Transportation and storage

8.1 Transport conditions

If present, use only the specially provided lifting hooks for transport.

WARNING!

Check before lifting that the hooks are tightly screwed in and the load is balanced.
The hooks are sized for the weight of the motor; do not add other weights.
Do not use the hooks if the temperature is below -20°C.



WARNING!

Do not lift the motor by grasping the shaft-the plastic shaft cover could slip off, causing the motor to fall, resulting in injury or damage.



All the motors manufactured by Brusatori leave the factory in optimal conditions after being inspected and tested.

Upon arrival, check the motor carefully to ensure that it has not been damaged during transport.

If you notice any abnormalities or damage, contact the manufacturer as soon as possible, and do not put the motor into service.

8.2 Storage conditions

For proper storage, the ambient temperature must be between -20°C and +70°C.

If the machines are stored, place them horizontally and pay attention that the environment is dry, dust-free and vibration-free.

Manually rotate the motor shaft every 2-3 months.

Measure the insulation resistance before starting the motor for the first time, make sure it is at least 2 MΩ, if not, dry the winding.

For drying the winding, the oven temperature should be 90°C for 12-16 hours, and then 105°C for 6-8 hours.

9. Installation

9.1 Mounting

WARNING!

The motors are designed exclusively for installation in industrial environments. Different installations are permitted only if all necessary precautions are taken by the machine/plant manufacturer to ensure safe operation.

Read the entire manual carefully before performing any operation.

Any installation operation must be carried out by qualified personnel, with tools appropriate to the type of operation.



Provide good fastening of feet and flanges.

For mounting IM B5 (IM 3001) flange motors, the motor support frame must be sized to prevent the transfer of vibration to the motor and the occurrence of vibration due to resonance.

For mounting IM B3 (IM 1001) and IM B35 (IM 2001) motors, the motor support frame must be sized to prevent the transfer of vibration to the motor and the occurrence of vibration due to resonance.

WARNING!

The motor should be mounted in such a way as to ensure adequate heat dissipation without impeding ventilation.

The opposite side of the flange should NOT be thermally insulated, as it is necessary for heat dissipation.



For long and large motors (VT size 100L, 100P, 132L, 132P), an IM B35 (IM 2001) mounting is recommended to avoid bending and/or deformation of the flange/motor shaft. For mounting motors with IM B3 and IMB35 feet, the crankcase must be flat, rigid, and solid. When mounting some motors, it is necessary to remove the protective doors, which must then be positioned as originally. During the mounting stages be careful not to damage the windings. If IM B35 mounting for long motors is not possible, it would be strongly recommended to use a support placed at the back shield, which should not be rigid but provided with cup springs or compressible rubber supports. The thrust to be exerted by the support can be quantified at 50 percent of the total weight of the motor.

WARNING!

In the case of upright installations with the shaft facing upward make sure that no liquid of any kind can seep into the upper bearing.

In the case of direct coupling in oil bath make sure that the oil seal complete with spring is fitted.



WARNING!

In the case of direct coupling (shaft engaged), with gears and with a gearbox, it is absolutely essential to carry out exact alignment between the motor shaft and driven shaft and between the coupling flanges. Otherwise, severe vibrations, irregularities in motion, unwanted axial thrusts and breakage of the drive shaft may occur.



When coupling with belts, install the motor with the shaft perfectly parallel and aligned with that of the pulley to avoid axial thrusts on the supports. The belt pull must not exceed the maximum applicable load under any circumstances. The axial load must not exceed 20 percent of the maximum radial load indicated at the rated speed of the motor.

WARNING!

Excessive belt tension can cause rapid bearing wear and shaft failure.



Attach or remove drive elements (pulley, coupling, gear wheel, etc.) only with appropriate devices (for example, heating the drive element or using the threaded hole on the shaft end).

WARNING!

Never fit half couplings or pulleys using a hammer, or remove them using a lever infulcated against the motor body.

Before keying the transmission part, remove the anti-rust paint from the drive shaft and keyway using alcohol or appropriate solvents.

It is important that the solvent does not get inside the bearings.



Grease the shaft end and keyway before keying the transmission organ.

Observe the general safety measures for protecting the transmission organ against contact.

WARNING!

Absolutely avoid striking or exerting pressure on the shaft end.

**WARNING!**

The use of damaged or unsuitable components may result in personal injury or property damage.



The motor flange should be fastened directly to the machine using appropriate screws.

Observe the correct tightening torques, using the correct equipment.

9.2 Ventilation

The motors are equipped with single-phase electric fan powered at 230Vac 50/60Hz.

Air flow can be supply or suction depending on the type of motor and fan chosen. The minimum distance between the machine structure and the motor hot air outlet should be at least 100mm.

For installations in harsh environmental conditions due to the presence of a lot of dust, water, high humidity, mist, water-oil vapors, etc., it is necessary to use motors with IP54 protection rating. Under these operating conditions, periodic maintenance of the fan and motor is required to remove dirt deposits from the impeller/fan blades and fan channels.

For motors with IP23 protection, it is essential to ascertain the quality of the cooling air. Make sure that the air drawn in by the fan is always cool, clean and dry. An air filter is available for this type of motor and can be installed on the fan.

Shut-off doors should always be installed before starting the motor. Air sucked in/blown out by the fan should always pass completely through the stator in the longitudinal direction and out the other side.

9.3 Commissioning

The following points should be checked before commissioning:

- The rotor must be able to rotate freely (supply the brake if necessary).
- The correct installation of the drive elements must be checked.
- All electrical connections and connecting elements must be carefully made and tightened.
- The protective and grounding conductor must be properly connected.
- Any auxiliary devices must be working (brake, fan, etc.).
- It is opportune to take appropriate safety measures against contact with moving and live parts.

WARNING!

Make sure the brake (if provided) is working properly.
The brake is only suitable for a limited number of emergency braking.
Use as a working brake is not permitted.



WARNING!

Always use safety devices, even during testing operations.



WARNING!

Drives can cause high voltage stresses on the motor winding, so it is necessary to check with appropriate oscilloscope and trained personnel that the voltage values at the terminal box terminals are not too high due to long wiring and/or from the voltage and frequency of the inverter supply.



It should be noted that the cause of this phenomenon is external to the motor.

In such cases, it is recommended that suitable filters be inserted between the inverter and motor to reduce $\frac{dV}{dt}$ surges, and the use of symmetrical shielded cables.

WARNING!

This list of verifications may be incomplete, so additional verifications may be necessary.



10. Maintenance

10.1 Instructions on maintenance

WARNING!

Before starting any work on the motors and before opening any cover of active parts, be sure to:

- Cut the power to the motor.
- Blocking re-insertion.
- Verify that there is no voltage.
- Check for proper grounding.
- Cover or separate adjacent live parts.

In addition to the main circuits, any auxiliary or supplementary circuits must also be disconnected.

These safety measures can be abandoned only after maintenance work is completed and the motor has been completely reassembled.

All work should be carried out with the motor disconnected.



All standard motors mount pre-lubricated ball bearings for life, which require no maintenance.

Every 2000 hours of operation, it is good to check their temperature and vibration. However, it is recommended to replace the bearings after about 20000 operating hours, at the latest after three years.

The bearings and their greases should be suitable for a temperature range of -30° to +140°C.

Per i motori provvisti di ingrassatore, è necessario rispettare gli intervalli di ri-lubrificazione suggeriti dal costruttore:

VT100 ROLLER BEARING LUBRICATION INTERVAL

Bearing Type	RPM	Operation time (h)	Grease quantity (g)
NU 209 ECP	1000	13800	8
	2000	7900	
	3000	4500	

VT132 ROLLER BEARING LUBRICATION INTERVAL

Bearing Type	RPM	Operation time (h)	Grease quantity (g)
NU 310 ECP	1000	10000	15
	2000	6100	
	3000	3000	

La temperatura ambiente, la velocità di funzionamento ed il tipo di lubrificante utilizzato possono influenzare notevolmente la frequenza di intervento. Per maggiori informazioni consultare il nostro ufficio tecnico.

For spare parts, specify in detail all nameplate data of the motor or accessory to which they relate, with any options requested in the order.

WARNING!

This manual, along with any additional safety information, must be kept!

Unless expressly authorized by the manufacturer, any repairs performed by the end user will void the manufacturer's responsibility for the conformity of the motor supplied.

We recommend that maintenance work be performed in our service center.



Unprotected machined surfaces (flanges and shaft ends) should be treated with anticorrosive products.
 Cleaning the motor can damage it if done incorrectly.
 Use only appropriate products.
 Avoid contact of products with oil seals and gaskets to prevent damage.

10.1 Troubleshooting



Note:

This list cannot be considered complete. If you have any doubts consult our technical office.

PROBLEM	PROBABLE CAUSE	POSSIBLE SOLUTION
Motor does not start	No power supply	Check power supply, Check drive connections
	No brake release	Check brake connection or if there are any faults
	Encoder/resolver malfunction	Check wirings and connections, look for any encoder/resolver faults
Motor runs slowly or not as intended	Inverter malfunctioning, wrong connection or wiring	Confront that displayed and nominal values corresponds, check the inverter settings and connection
	Encoder/resolver malfunction	Check wirings and connections, look for any encoder/resolver faults
Motor overheats	Abnormal operating values, cooling problems	Verify that the fan works correctly
	Thermal protection malfunctioning	Check that thermal protection works correctly
	Overload, abnormal power supplied, inverter fault	Confront nominal values and values displayed
	No brake release	Check that the brake works correctly
Brake does not work	Brake fault, wrong brake connection/wiring	Check connections, check if the brake is damaged
Vibrations	Abnormal balance, worn out bearings, fixing screws loose	Balance the motor correctly, tighten loosen screws, replace worn out bearings
High noise level	Foreign bodies inside the motor, wrong inverter settings	Verify the presence of any foreign bodies inside the motor, check inverter settings
Other problems not listed here	Instructions not followed or accidental fault	Immediately contact our technical office

11. Disposal

Refer to the nature of the material and current regulations regarding the dismantling and disposal of electrical equipment, so as to limit the impact on the environment and avoid ecological damage.

12. Certifications

12.1 RoHS directive

All motors in the present manual comply with Directive 2011/65/EU (RoHS Directive) and following Delegated Directives, on limitation of hazardous substances.

12.2 EMC directive

Electrical motors are not covered by Directive 2014/30/EU (EMC Directive) on Electromagnetic Compatibility. All motors in the present manual comply with EMC Directive if said motors are equipped with electronic components, because the installed devices have been verified compliant to said Directive.

12.3 EU Declaration of Conformity

Most recent version of the Declaration of Conformity can be found on Brusatori website.

12.4 Quality management system ISO 9001: 2015

Most recent version of the document can be found on Brusatori website.

12.5 UL/CSA Certificate of compliance (optional)

Most recent version of UL and CSA certificates of compliance can be found on Brusatori website.

13. Contact

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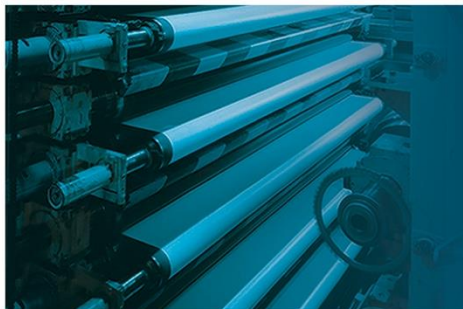
Notes

Applications



TEXTIL

Ironers, dryers, vaporizers, calenders



PRINTING

Rotogravure printing machines, flexographic printing machines, converting lines, laminators, coating lines



PLASTICS

Extrusion lines, pipe machines, profile machines, stretch lines, tape lines, recycling



MACHINE TOOLS

Grinders, milling machines, machining centers, sawing machines



METALS

Winders-unwinders, loaders and stackers, tube lines, drawing lines, cable production lines, longitudinal and transverse cutting lines



PAPER

Winders-unwinders, cutters, rewinders, wrappers



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