ENGELHARDT

Brushless Servomotors

Contents

Standards

The brushless servomotors Series T and S are in compliance with the following international regulation

IEC 60034

This is including the requirements of the Low Voltage Directive 73/23 EEC (1973), modified by the 93/68 EEC (1993) and Directive 89/336 EMC EEC.

The brushless servomotor range complies with the Machinery Directive 89/392 EEC, assuming that the motor component may not be put into service before the machine in which it will be assembled has achieved the Conformity to the Directive.

CE marking was applied for the first time in 1995.

When operating the motor, the observance of the regulation EN 60204-1 and safety instructions indicated in the operating instructions from the manufacturer must be complied with.

Regulations

Motors comply with the relevant standards and regulations as indicated in the table below:

Title	IEC	EU CENELEC	D DIN/VDE	I CEI/UNEL	GB BS	F NFC	E UNE
Electrical components							
General stipulations for electrical machines	60034-1	EN 60034-1	DIN EN 60034-1	CEI 2-3	4999-1 4999-69	51-200 51-111	UNE EN 60034-1
Terminal markings and and direction of rotation of rotating electrical machines	60034-8	HD 53 8 S4	DIN VDE 0530-8	CEI 2-8	4999-3	51-118	20113-8-96
Thermal evaluation and and classification of electrical insulation - Insulating materials	60085		DIN IEC 60085	CEI 15-26			
Mechanical components							
Dimensions and output series for rotating electrical machines IM B3 shape	60072-1	HD 231	DIN 42673-1	UNEL 13113	4999-10 51-110	51-105 51-104	20106-1/26 1980
Dimensions and output series for rotating electrical machines IM B5 shape	60072	HD 231	DIN 42677-1	UNEL 13117		20106-2-74	
Cylindrical shaft ends for electric motors	60072	HD 231	DIN 784-3	UNEL 13502	4999-10	51-111	
Classification of protection degree (IP code)	60034-5	EN 60034-5	DIN IEC60034-5	CEI 2-16	4999-20	EN60034-5	20111-5
Methods of cooling	60034-6	EN 60034-6	DIN EN 60034-6	CEI 2-7	4999-21		EN 60034-6
Mounting arrangements - IM code	60034-7	EN 60034-7	DIN EN 60034-7	CEI 2-14	4999-22	51-117	EN 60034-7
Mechanical vibration - measurements, evaluations and limits of vibrations	60034-14	EN60034-14	DIN EN 60034-14	CEI 2-23	4999-50	51-111	EN 60034-14
Tolerances			DIN 42948	UNEL 13501			
Tolerances of mounting and shaft extensions			DIN 42955	UNEL 13501/ 13502			
Classifications of environmental conditions	600721-2-1		DIN IEC 60721-2-1	CEI 75-1			
Mechanical vibration and shock (Balancing)	ISO 8821		DIN ISO 8821				

Mechanical Tolerances

Mechanical dimensions of electric motors are indicated in the regulation IEC 72-1 that also sets out admissible tolerances, see the table below:

Values for	By dimension:	Tolerance compared to rated values
Diameter of the shaft end	from 11 up to 28 mm from 38 up to 48 mm from 55 up to 100 mm	j6 k6 m6
Feather key width	/	h9
Flange pilot	/	j6

Note: The holes at the shaft ends conform to the regulation DIN 332-D.

Electrical Tolerances

Values for	Tolerance compared to rated values
Stall current (measurement in S1 duty cycle at rated speed with ϑ_{amb} = 40°C and altitude ≤1000 m above sea level).	Io +/- 5%
Rated current with rated torque and revolutions (measurement in S1 duty cycle at rated speed with ϑ_{amb} = 40°C and altitude ≤1000 m above sea level).	In +/- 5%
Back electromotive force: Bemf	Bemf +/- 5%

ϑ_{amb} = Ambient temperature

Degree of Protection

Degrees of protection for mechanical machines are designated in accordance with IEC 60034-5 by the letters **IP** and two characteristic numerals.

First numeral: Protection against contact and ingress of foreign bodies

IP	Description
0	No special protection
1	Protection against solid foreign bodies larger than 50 mm (Example: inadvertent contact with the hand)
2	Protection against solid foreign bodies larger than 12 mm (Example: inadvertent contact with the fingers)
3	Protection against solid foreign bodies larger than 2.5 mm (Example: Wires, tools)
4	Protection against solid foreign bodies larger than 1 mm (Example: Wires, bands)
5	Protection against dust (harmful deposits of dust)
6	Complete protection against dust. Is not described for electrical machines to IEC 34-5.

Second numeral: Protection against ingress of water

IP	Description
0	No special protection
1	Protection against vertically falling water drops (condensation)
2	Protection against dropping water when inclined by up to 15°
3	Protection against waterspray at up to 60° from vertical
4	Protection against water splashed from any direction
5	Protection against water projected by a nozzle from any direction
6	Protection against heavy seas or water projected in powerful jets
7	Protection when submerged between 0.15 and 1 m
8	Protection when continuously submerged in water at conditions agreed between the manufacturer and the user.

Series B28 and B29 are manufactured with degree of protection IP65 except for flange end, while series B38, B56, B63, B71, B100 are fully designed in accordance with degree of protection IP65. In addition, IP67 motors can be designed on request.

Brushless Servomotors

Technical Description

The permanent magnet synchronous servomotor along with the relative electronic drive, represents a servo system suitable for driving a shaft at high performance, particularly when dynamic control during transients or steady state stability is required. In general, they assure higher bandwidths than other motor types due to their compact design giving a high ratio of torque/inertia. They need no brushes, as their name suggests, unlike a DC motor. This gives high performance for limited dimensions, excellent reliability and reduced maintenance procedures.

Brushless servomotors are used in a wide range of operating fields, chosen for their ability to operate with an almost constant torque and withstanding overloads several times higher than rated current.

Servomotor performance is linked to the electronic drive that supplies them controlling stator phase switching thus substituting the commutator of the old DC machines. In the brushless servomotor currents are distributed to windings through power static switches (for example, IGBT, MOSFET) according to the position detected by means of an angular position transducer, such as resolver, encoder or Hall sensor. The power bridge along with the feedback element replaces the commutator of the old DC machines. The feature maintained in common with a DC motor is constant torque up to rated speed

Generally speaking, brushless servomotors are divided into two categories: sinusoidal and trapezoidal servomotors according to counter electromotive force behaviour.

Three-phase synchronous permanent magnet servomotors are made up of the following main components:

- Stator, with low-loss Fe-Si core lamination stack and three-phase star connection winding; insulation class F (for temperature rise of ΔT=100 K and ambient temperature of +40°C).
- Stator, with low-loss Fe-Si core lamination stack and three-phase star connection winding; insulation class F (for temperature rise of ΔT=100 K and ambient temperature of +40°C).
- Frame components, such as die-cast flange, endshield and cover, and extruded aluminium case.
- Rotor position detector, phased in particular with the stator phases and available in different types
    - Phase control and monitoring of motor revolution speed with a Resolver, (2-pole standard version), combinable with other feedback options.
    - Monitoring of angular position and motor rotation speed with an Encoder combinable with other feedback options.

      Note: it is also available with a sinusoidal encoder and a RS485 interface.

  - AC (standard) brushless tachometric generator for monitoring motor rotation speed, equipped with three-phase winding (table "Tachometric transducer") combinable with other feedback options.
  - Hall-effect detectors with high thermal stability and high magnetic sensitivity: They allow monitoring of the rotor position for the correct piloting of the power bridge combinable with other feedback options.
- Thermal detectors introduced into three phases in order to protect motor temperature. NTC detectors are also available.
- Interface with the drive for both power and signals with connectors in all series.
- Terminal board as an alternative option, instead of the power connector with brass-plated bolts. Easy access to connections and high operating safety (except for B28, B29, B36 and B38 available only with connectors).
- Failsafe holding brake (optional) to be fitted in the flanged endshield, equipped with permanent magnets and electromagnetic release.

Brief Description

The following features of our standard motors may vary depending on series and type:

- Admissible environmental temperature: from -15 °C up to +40 °C, with altitudes ≤1000 m above sea level.
- Mounting: IM B5 (V1 and V3 available)
- Flange concentricity degree " N" ; balancing: degree " N" ; dynamic balancing with half key
- Shaft designed according to the standard version with key (also available without key)
- Available stall toque: from 0.15 Nm up to 75 Nm.
- Available speed: 1200, 2000, 3000, 4000, 6000 rpm
- Drive operating voltage: 230 and 400 Vac
- Pole number according to the series: 4, 6, 8 poles
- Insulation class: " F" ; cooling through radiation and natural convection.
- IP65 degree of protection for the whole range (IP67 optional); B28 and B29 are designed with IP65 degree of protection as well except for the flange end.
- On-Off PTO switch for thermal protection tripping at 140 °C (NTC available)
- Optional feedback by choice: resolver, encoder, tacho and Hall sensors (several combinations may be added to this list)
- High acceleration and deceleration: up to 90.000 rad/sec^2
- Reduced dimensions
- Rare earth permanent magnets
- Excellent distribution of the rotor magnetic field, in order to eliminate torque fluctuations at low speed.

Applications

- Numerical control shaft drive
- Intermittent motion controls.
- Controls according to complex motion laws
- Machine tools for metals, wood and other material manufacturing (in general, chip forming machining)
- Textile machines.
- Graphic and serigraphic machines
- Machines for ceramics industry
- Machines for packing industry
- Plastic moulding machines
- Winding and unwinding machines
- Vehicles supplied by batteries for material transport and movement
- Press supply.
- Robotics and manipulation
- Transfer lines
- Paper factories

Definitions - Timing and Motor Identification

Definitions

- Stall torque (M_o): Torque available on the shaft continuously with speed close to zero (lower than 200 rpm) and with a winding current equivalent to the stall current (see Figure 1).
- Rated torque (M_n): Torque available on the shaft continuously with rated speed, and with a winding current equivalent to the rated current (see Figure 1).
- Peak torque (Mpk): Torque available on the shaft discontinuously, with a winding current equivalent to the peak current (see Figure 1).
- Stall current (Io): Current supplied to the motor continuously at a speed closed to zero, required to develop stall torque.
- Rated current (In): Current supplied to the motor continuously at a rated speed, required to develop rated torque.
- Peak current (Ipk): Current supplied to the motor discontinuously within a wide range of speed, required to develop peak torque.
- Voltage constant (Ke): Ratio between voltage induced by the rotor rotation (RMS value for sinusoidal motor, peak value for trapezoidal motor) at a certain number of revolutions and angular speed ($\omega=2 \times \pi \times n/60$ where n is the speed expressed in rpm) measured in rad/sec.
- Torque constant (Kt): Ratio between torque on the shaft and the current RMS value for sinusoidal motors, peak value for trapezoidal motors (equivalent to the voltage constant of a trapezoidal motor and to that of a sinusoidal motor multiplied by $\sqrt{3}$).
- Back electromotive force (B.E.M.F): Voltage induced by the rotor rotation (RMS value for sinusoidal motor, peak value for trapezoidal motor) at a certain number of revolutions.
- Phasing procedure: Synchronization procedure of those signals generated by the transducer with the back electromotive force induced by the rotating rotor and measured between two phase terminals of the motor winding.
- Saturation (saturation curve): It is made up of the peak torque curve combined with that representing the physical limit of the current, which may be expressed at some speed according to supply voltage (see Figure 1).
- Duty cycle: In case of an intermittent duty cycle it is possible to overload the motor in proportion to the ratio between operating time and total cycle time: the figure shows two overload curves at 20% and 50% (S3 duty).

Torque to speed performance curve: continuous and intermittent duties.

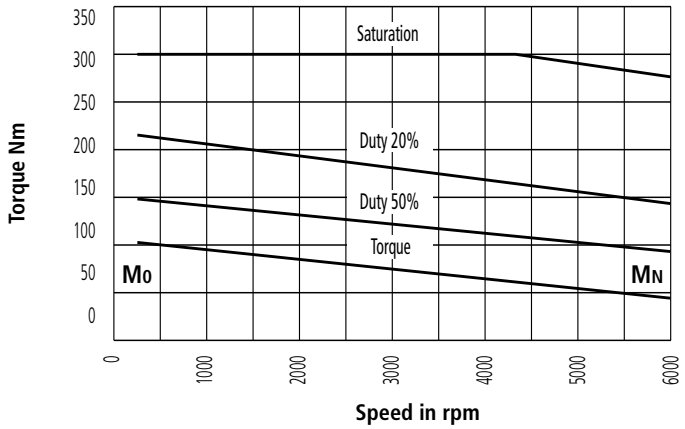


Fig. 1

- Continuous duty area: It includes all points of the torque/speed figure where the load torque value is lower than or equivalent to the torque curve that joints Mo and Mn: therefore, this is a continuous operation duty. The continuous duty area is defined as the area below the torque curve in the motor speed range available (see Figure 1).
- Intermittent duty area: It includes all points of the torque/speed figure where the load torque value is higher than the torque curve that joints Mo and Mn: therefore, this is non-continuous operation duty. The Intermittent duty area is defined as the area between the torque curve and the saturation curve (see Figure 1).

Phasing Procedure

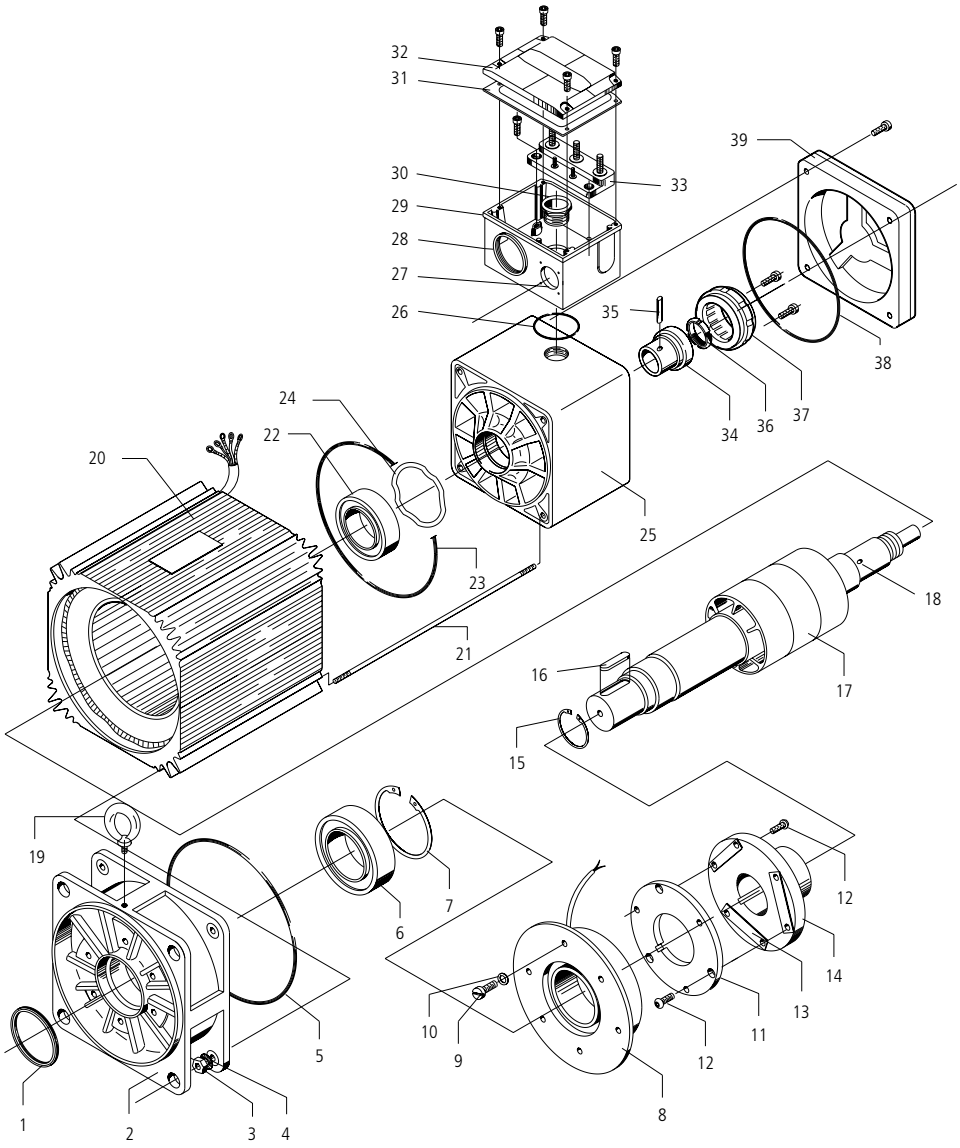
- Autophasing
  In the event that the motor is equipped with a new generation digital drive you only need to carry out phasing procedures explained in the reference handbook, thus matching data indicated in the motor nameplate with related parameters.

- Example of mechanical manual phasing procedure of a 2-pole resolver mounted on a 6-pole sinusoidal brushless servomotor..
  Disconnect terminals U, V, W from the DRIVE.
  Inject a direct current applying voltage with positive polarity in the phase V (blue) and negative polarity in the phase W (red): in this way the rotor of the motor results locked in a certain position. A current is required to hold the rotor in a fixed position, therefore without the presence of position clearance. The resolver must be excited with an operating generator at 7VRMS - 10KHz or through a drive, keeping, for instance, only electric supply R1, R3 connected to the drive and leaving the other wires (S1, S2, S3, S4) free. Display the signal S1 (red) and S2 (yellow) using a two-channel oscilloscope by connecting each probe screen to the equipotential connections Mo, including wires S3, S4 and R3 (see Resolver at page 18). Loosen the cramp screws of the NDE-shield and turn the stator of the resolver (always keeping the motor shaft still) until the signal S1-Mo is null (≤100mV) and the signal S2-Mo reaches the maximum value. Check that, slightly turning the motor shaft clockwise (looking at the flange end and disconnecting S2 probe in order to connect the power supply voltage signal R1), the signal S1-Mo results in phase with the signal R1-Mo. In the event that it is in phase opposition (180°), turn the resolver again and search for the following position that minimizes the signal S1-Mo, and then repeat the phase test. As soon as a reciprocal phase is obtained, let the shaft free to reach the angular position (V-W phases are still executed by the direct current). In this position fix the stator of the resolver with the screws that must be sealed using varnish.

Motor Selection

In order to properly select the motor the total motion mechanism of the drive must be assessed, thereby defining, rated and stall torque, accelerations required through a speed/torque graph, inertia of the machine (considering any gearbox to the motor) and the installation environment.

Refer to the chapter “ Data in the order” for selection criteria.



Dwg. 1

Part Description

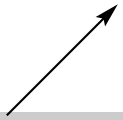
1 Oil seal
2 DE shield
3 Nut
4 O-ring
5 Shaft seal
6 DE bearing
7 Snap ring
8 Brake
9 Screw
10 Washer
11 Armature disk
12 Screw
13 Flat spring
14 Flange
15 Snap ring
16 Key
17 Complete rotor
18 Hole pin
19 Eyebolt
20 Complete stator housing
21 Stay-bolt
22 NDE bearing
23 O-ring
24 Pre load washer
25 NDE shield
26 Shaft seal
27 Signal connector hole
28 Power connector hole
29 Terminal box
30 Threaded ring
31 Gasket
32 Cover
33 Terminal board
34 Tachogenerator rotor
35 Pin
36 Threaded ring
37 Tachogenerator stator
38 O-ring
39 Back cover

Features of feedback detectors

As previously indicated, the motors may be equipped with various transducer types in order to meet the different requirements for precision, cost and other parameters. The standard motor includes the use of resolvers. Encoders, tachos and Hall sensors are also available.

Example for the definition of the option required:

B 71 12 I 3 H 1 A 01 0 000



Transducer

00= No transducer	01= Tacho*	02= Tacho* + encoder pred.
03= Encoder** +Tacho*	04= Tacho* + resolver perd.	05= Resolver (2 poles)
06= Encoder	07= Hall sensors	08= Resolver +Encoder**
09= Hall sensors + Encoder**	10= Resolver (2 poles) + encoder pred.	

Tab. 1

* Tacho consists of tacho plus Hall sensors

** As regards encoder types available, please refer to " Encoder + Hall sensors"

Resolver

Rated features	Assembled on the whole series	Units of measurement
Supply voltage	7 (±5%) 10 kHz	Vrms
Maximum speed	10000	rpm
Input current	50	mA
Pole number	2	/
Transformation ratio	0.5 ±5%	/
Electric error	±8'	°(Elect.)

Tab. 2

Encoder + Hall sensors

Rated features	Assembled on the whole series	Units of measurement
Supply voltage	5 (±5%)	Vcc
Pulses per revolution	1024 [1)]	ppr
Pole number	6 [2)]	/
Maximum frequency	100	KHz
Permitted maximum current	150	mA
Maximum speed	6000	rpm
Insulation class	H	/
Encoder electronics	Line driver [3)]	/
Hall electronics	NPN open collector [3)]	/

1) Available 250 (opt. A9), 256 (opt. B9), 500 (opt. C9), 512 (opt. D9), 1000 (opt. E9), 1024 (opt. 09), 2000 (opt. L9), 2048 (opt. F9), 4000 (opt. G9), 4096 (opt. H9) sinusoidal encoder with RS485 interface: single-turn (opt. RS), multi-turn (opt. RM)

2) 4 and 8 poles available

3) Further types of electronics available

Tab. 3

Tachometric transducer table

Rated features	Assembled on motor size 28-56	Assembled on motor sizes 63, 71, 100	Units of measurements
Loadless voltage at 1000 rpm (±5%)	3.33	13.0*	Vdc
Reference voltage precision	1.2	1.2	%
Admissible maximum current	0.1	0.1	A
Pole number	4	6	
Maximum speed	6000	3000	rpm
Insulation class	H	H	
Excitation	PERMANENT MAGNET		

* 6.5V for motors with maximum speed equal to 4000 and 6000 rpm.

Tab. 4

Hall detector table

Rated features	Value	Units of measurements
DC supply voltage range	4.5 ÷ 30	Vdc
Loadless output maximum voltage	30	Vdc
Output maximum current	25	mA

Tab. 5

Signals

The standard signal connections described below refer to the motors with resolver, encoder, tacho and Hall sensors. The options listed may coexist in the event that different configurations are used - such as resolver together with encoder - and may be customised according to the specific requirements of the customer.

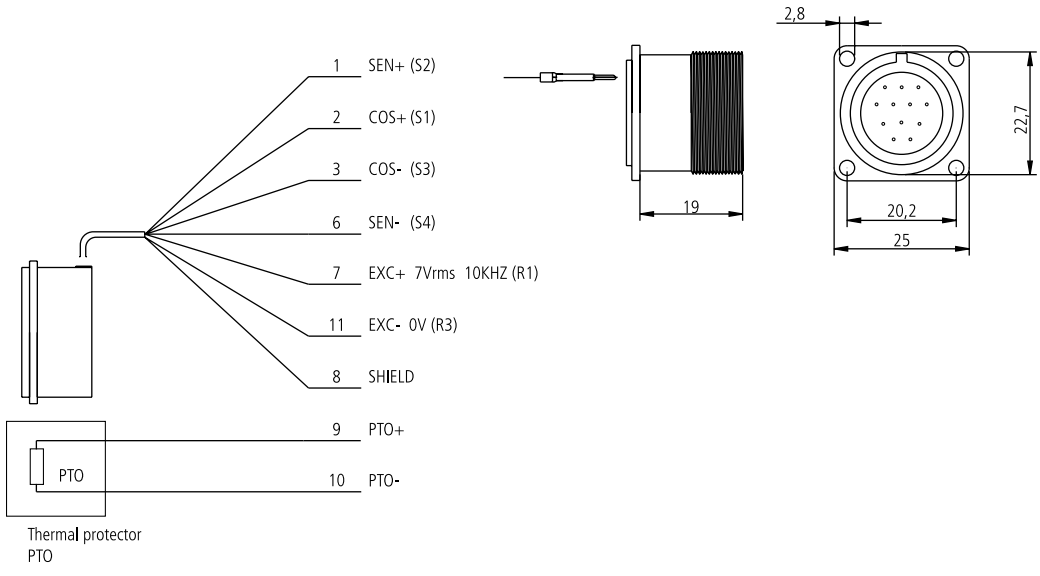
Connector	Pin Nr.	Male connector	Female connector
Resolver	12	XCNS0001C00B	XCNS0002C00B
Encoder	19	XCNS0001CM1B	XCNS0002CM2B
Tacho	12	XCNS0001C00B	XCNS0002C00B

NB: Other kinds of connectors are available on request, for example 90°-shifted.

Tab. 6

Resolver

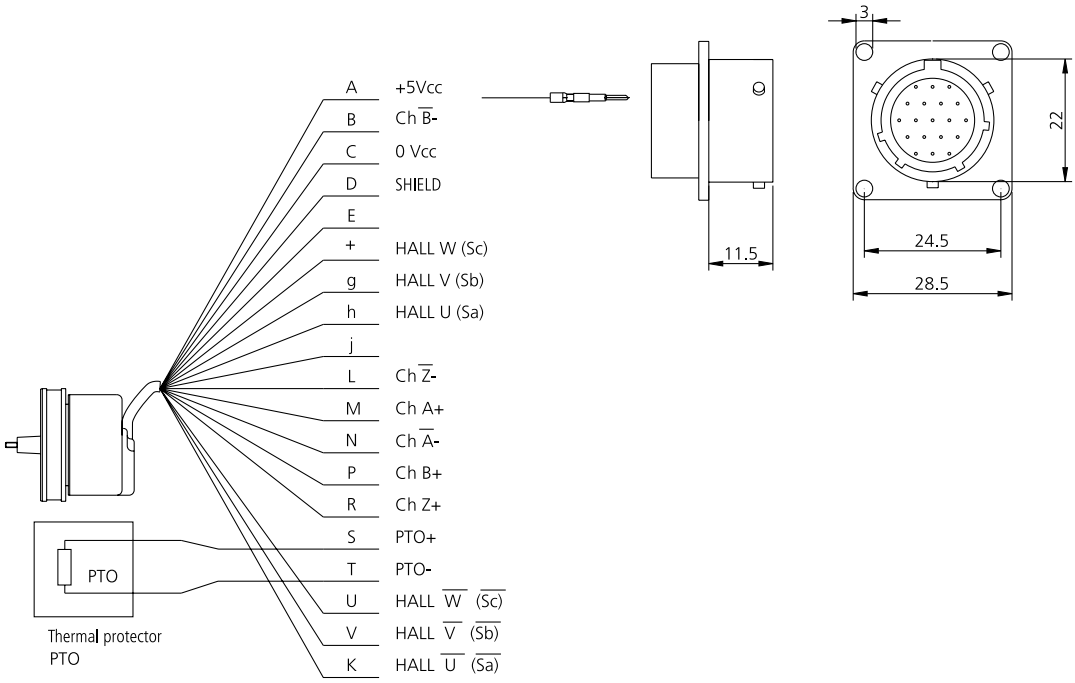
Signal connector. Code XCNS0001C00B



Dwg. 2

Encoder

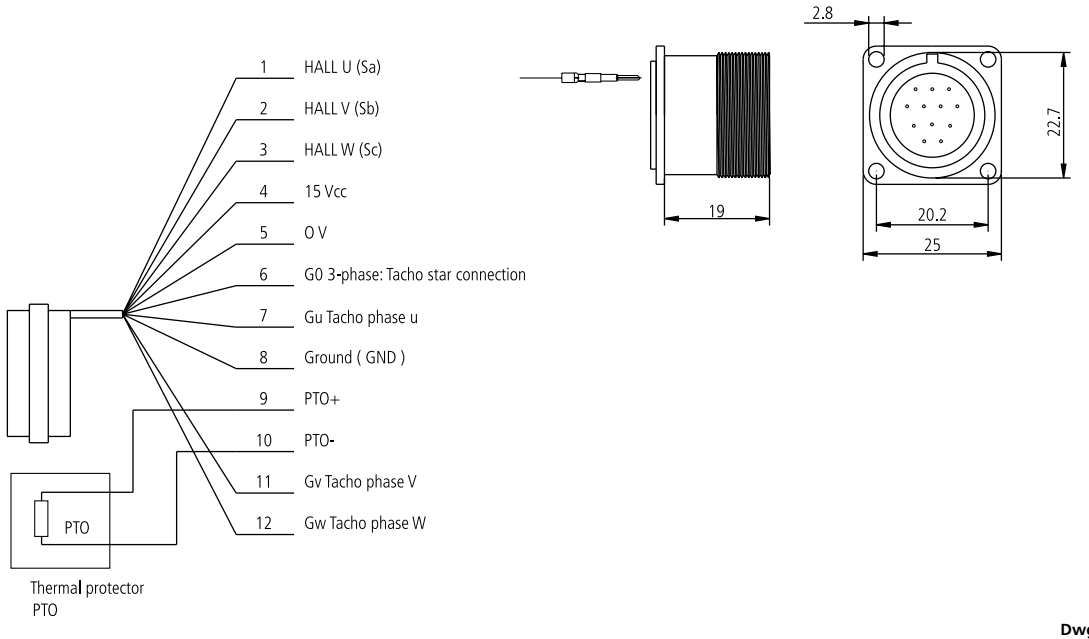
Signal connector. Code XCNS0001CM1B



Dwg. 3

Tacho + Hall

Signal connector. Code XCNS0001C00B



Dwg. 4

Power

The following power connectors are available for the standard motor version.

Power connectors:

Motor type	Pin No.	Male connector	Female connector	Max. continuous Ampere Irms Phase/Icc Brake
B28, B29, B36, B38	6	XCNP56A0000B	XCNP56B0000B	11/ 1.5
B56, B63	6	XCNP1300000B	XCNP13B0000B	13 / 1.5
B71	6	XCNP2300000B	XCNP23B0000B	23 / 1.5
B100	6	XCNP4600000B	XCNP46B0000B	46 / 1.5

Terminal board:

Motor type	Pin No.	Terminal board	Max. continuous Ampere Irms Phase/Icc Brake
B56, B63, B71, B100	5	XMR004010000	100 / 1.5

Tab. 7

Motor Series:
- B28 / B29
- B36 / B38 / B56*

-Pin 1= 0 Vdc Brake
-Pin 2= phase " U"
-Pin 3= phase " V"
-Pin P= PE
-Pin 4= phase " W"
-Pin 5= +24 Vdc Brake

* B56 connection 4 only

Motor Series:
- B56 / B63

-Pin A= phase " U"
-Pin B= phase " V"
-Pin C= phase " W"
-Pin D= PE
-Pin E= +24 Vdc Brake
-Pin F= 0 Vdc Brake

Motor Series:
- B71

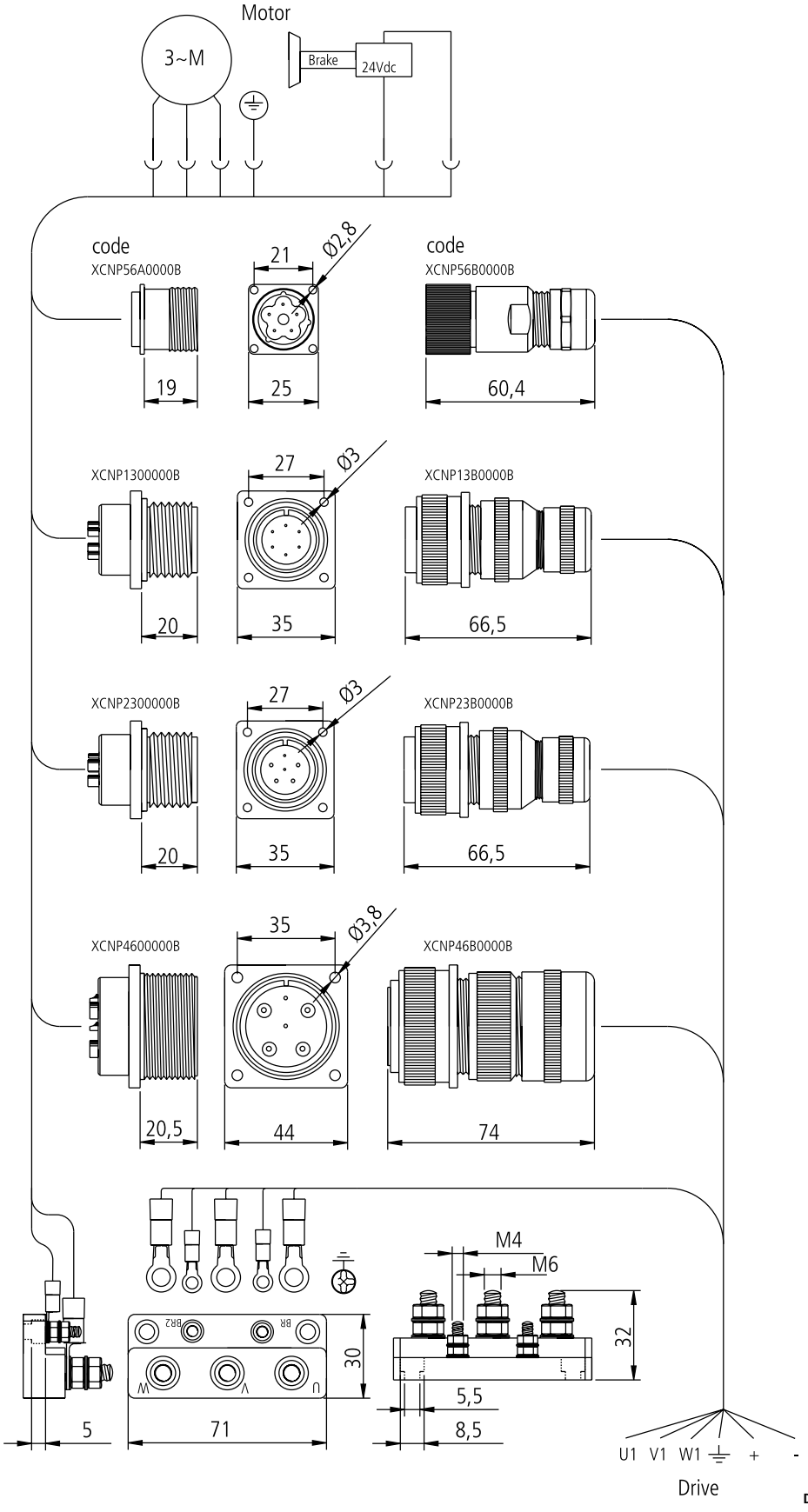
-Pin A= phase " U"
-Pin B= phase " V"
-Pin C= phase " W"
-Pin D= PE
-Pin E= +24 Vdc Brake
-Pin F= 0 Vdc Brake

Motor Series:
- B100

-Pin A= phase " U"
-Pin B= phase " V"
-Pin C= phase " W"
-Pin D= PE
-Pin E= +24 Vdc Brake
-Pin F= 0 Vdc Brake

Motor Series:
- B56/ B63
- B71/ B100

-U = phase " U"
-V = phase " V"
-W = phase " W"
- ⏚ = PE
-BR = +24 Vdc Brake
-BR2= 0 Vdc Brake



Dwg. 5

Table of termination conductors to the motor

For motors up to 44 Arms:

Connector: size	Motor type	Conductors section	
		Motor: mm²	Brake: mm²
1.0	B28, B29, B36 e B38	4 x 1.5	2 x 0.75
1.0	B56 e B63	4 x 1.5	2 x 0.75
1.25	B71	4 x 4	2 x 0.75
1.5	B100	4 x 10	2 x 0.75

Tab. 8

For motors equivalent to or higher than 44 Arms:

Terminal board	Motor type	Conductors section	
		Motor: mm²	Brake: mm²
/	B100	4 x 16	2 x 0.75

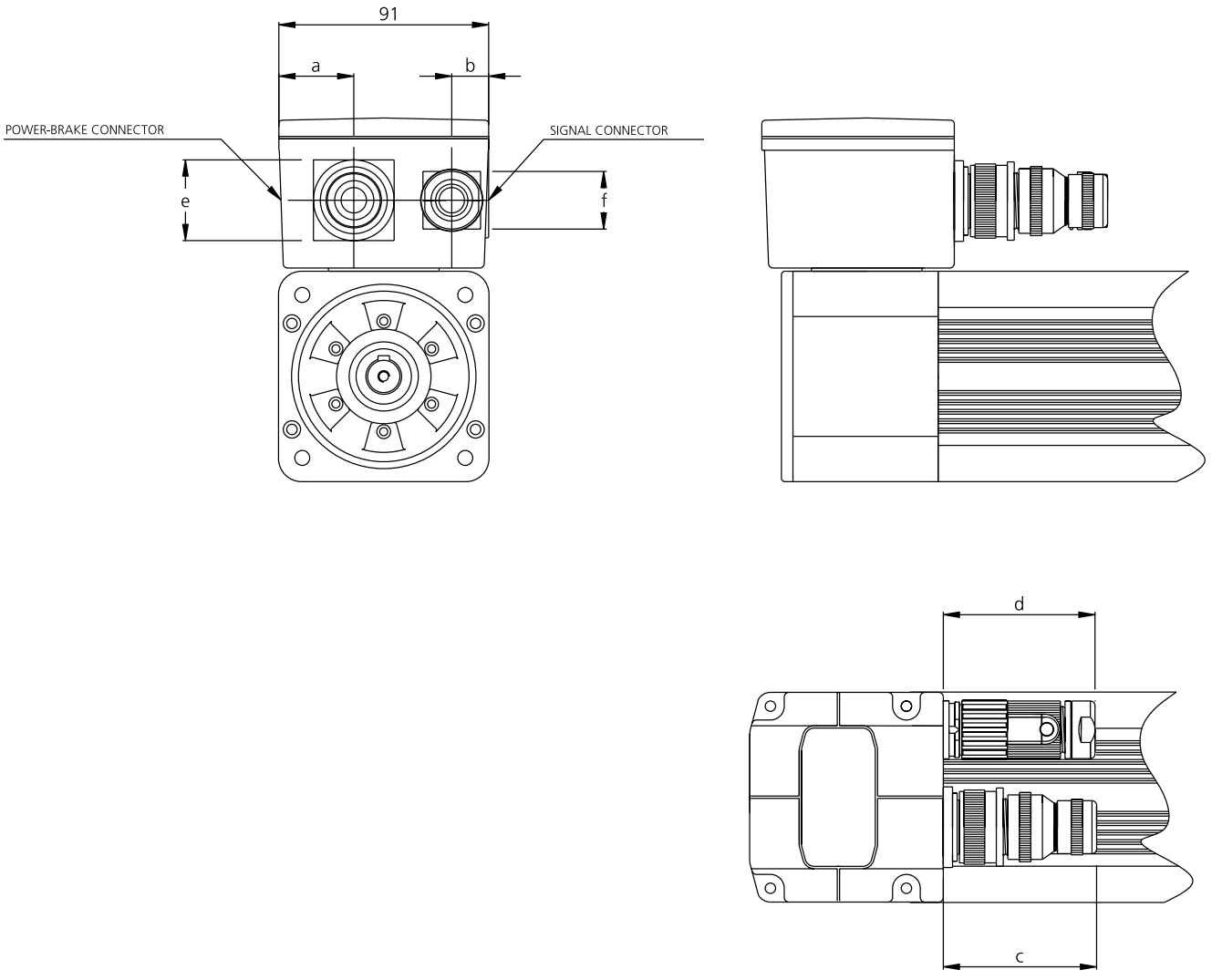
Tab. 9

Connection 1

Swivel box with power-brake and signal connectors. Connections available for: B56, B63, B71 and B100.

	Sizes	Connector code	Connectors sizes in mm					
			a	b	c	d	e	f
Signal connectors	All	XCNS-resolver	-	16	-	67	-	26
	All	XCNS-encoder	-	16	-	62	-	26
Power-brake connectors	B56, B63	XCNP-13	32.5	-	70	-	34	-
	B71	XCNP-23	32.5	-	70	-	34	-
	B100	XCNP-46	32.5	-	79	-	43	-

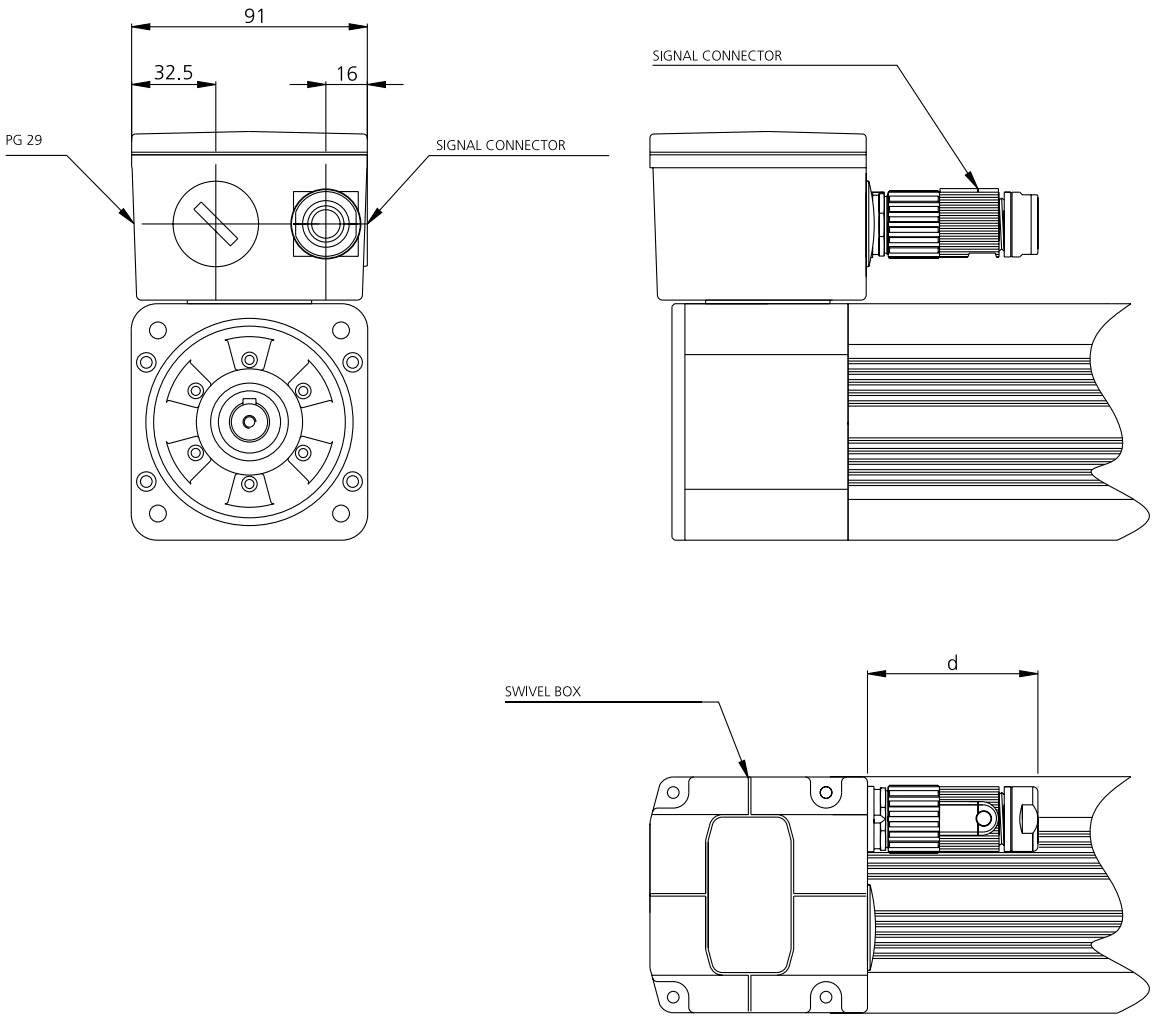
Tab. 10



Dwg.6

Connections 2 and 3

Swivel box with power-brake terminal board and signal connector: thermal detectors in the terminal board for the Connection 2, on the signal connector for the Connection 3. Suitable for series B56; B63; B71; B100.



Dwg. 7

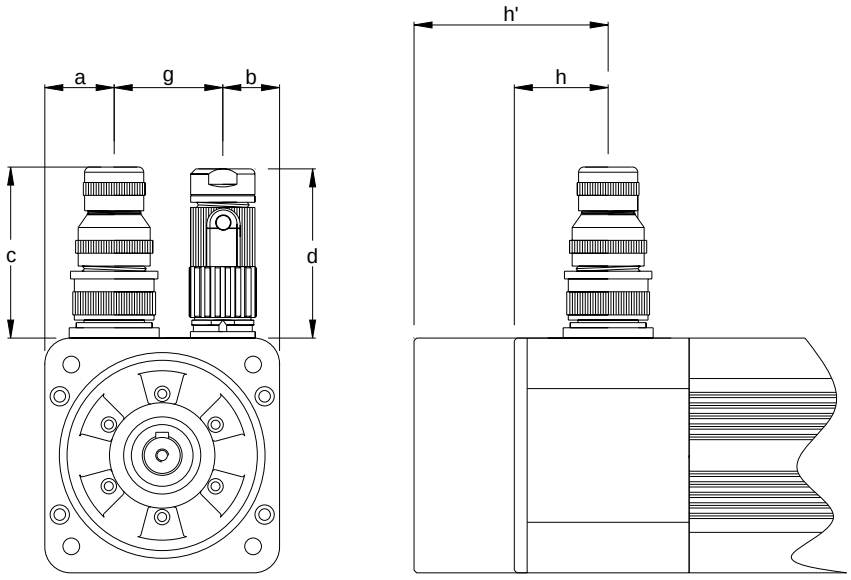
Connection 4

Fixed connectors for power-brake and signals. Suitable for all motor sizes.

	Sizes	Connector code	Connector overall dimensions in mm						
			A	B	c	d	g	h	h'
Signal connectors	All	XCNS-resolver	-	26.6	-	67	-	41	72.7
	All	XCNS-encoder	-	26.6	-	62	-	41	72.7
Power-brake connectors	B28, B29, B36, B38 e B56	XCNP-56	See page 26 and 27						
	B63	XCNP-13	26	-	70	-	39	41	72.7
	B71	XCNP-23	53.5	-	70	-	35	45	67.2
	B100	XCNP-46	36	-	79	-	52.5	57	84

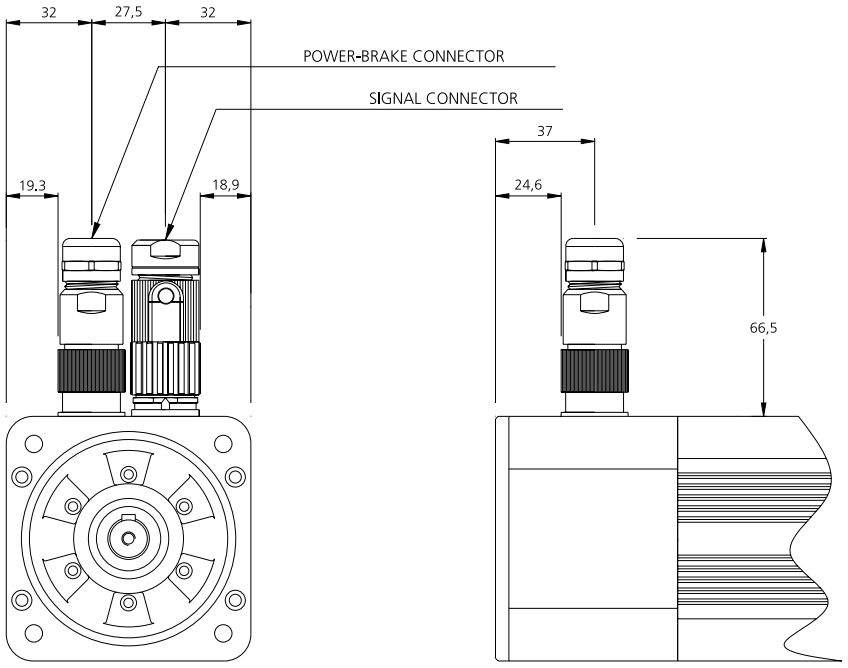
Tab. 11

Series B63, B71, B100



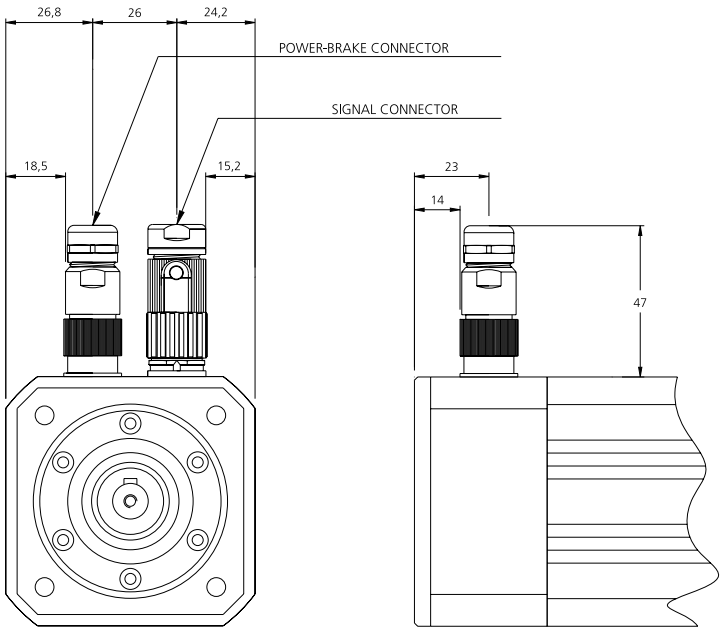
Dwg. 8

Series 56



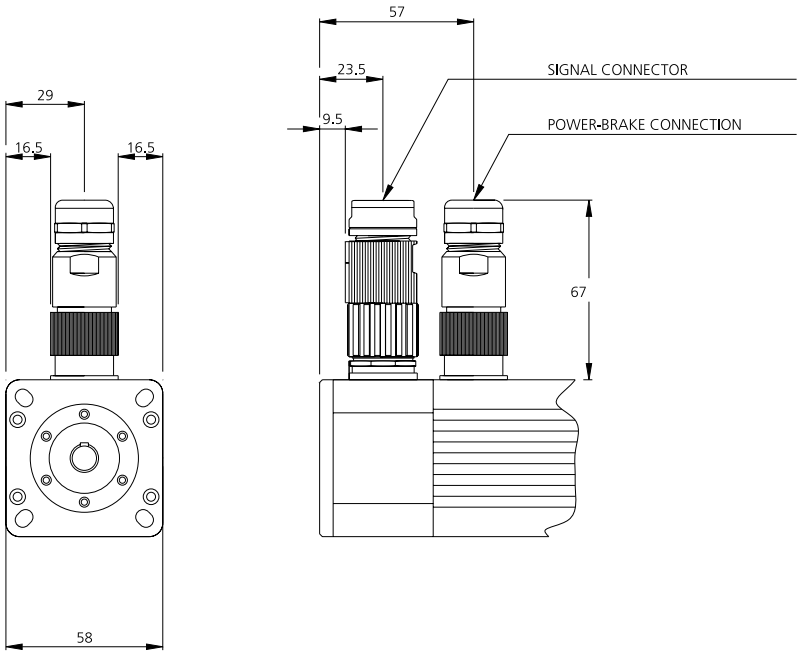
Dwg. 9

Series 36 and 38



Dwg. 10

Series 28 and 29

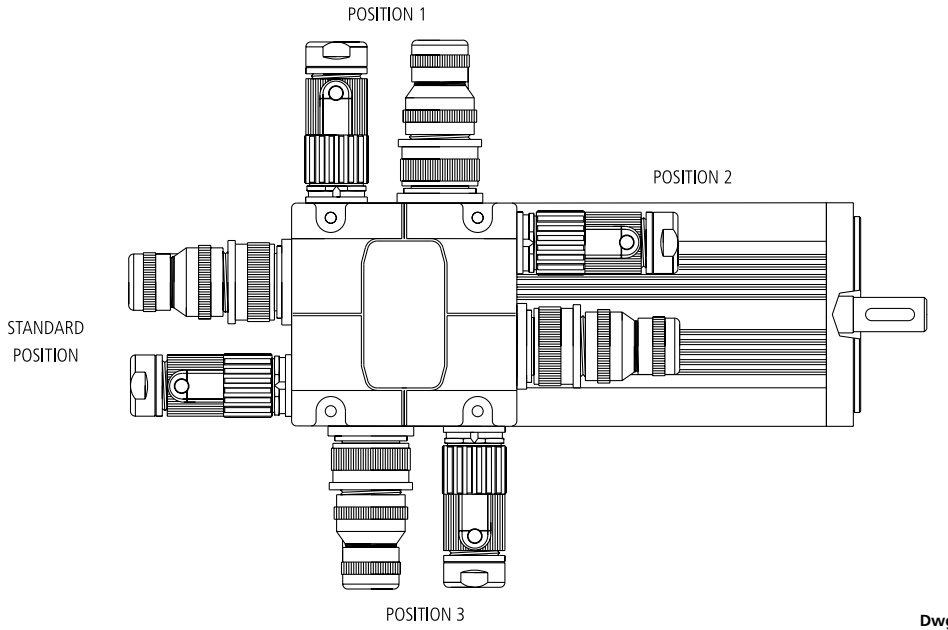


Dwg. 11

Note: there are also further connection types as indicated on page 34: "Coding"

Position of the terminal box

Four different mounting positions are available relating to the location of the terminal box and connectors when looking at drive end. " 0" is the standard position, " 1" , " 2" and " 3" according to the figure below (please also refer to motor coding).



Dwg. 12

Mechanical Components

Bearings

Specification of bearings (standard design)

Ball bearings in compliance with the regulation DIN 625

Motor size	Non-drive end	Drive end
B28 and B29	6000 2ZC3WT	6000 2ZC3WT
B36 and B38	6202 2ZC3WT	6002 2ZC3WT
B56	6202 2ZC3WT	6202 2ZC3WT
B63	6204 2ZC3WT	6203 2ZC3WT
B71	6205 2ZC3WT	6203 2ZC3WT
B100	6208 2ZC3WT	6206 2ZC3WT

Tab. 12

Bearing Mounting

Frame size	DE-shield bearings	NDE-shield bearings	Preloading bearing
All sizes	Locating bearings	Non-locating bearings	Non-drive end

Tab. 13

Bearing lubrication and maintenance

All motors have bearings type 2ZC3 with grease suitable for high temperature and permanent lubrication.

Paint Finish

The motors are marketed with two different paint finishes:

- *Normal finish:* Black finish with self-component water-soluble enamel, suitable for applications in environments not exposed to climatic agents.
- *Special finish:* Dull black finish with bi-component water-soluble polyurethane, suitable for environments partially exposed even to climatic agents.

Permissible radial forces

Motor size Speed: oad in:	1200 N	2000 N	3000 N	4000 N	6000 N	Drive end bearing
B28 D2		244	213	193	169	6000-2Z-C3
B28 D4		252	220	200	175	6000-2Z-C3
B28 D6		258	226	205	179	6000-2Z-C3
B28 D8		263	230	209	182	6000-2Z-C3
B28 01		267	233	212	185	6000-2Z-C3
B29 D1		247	215	196	171	6000-2Z-C3
B29 D3		256	224	203	178	6000-2Z-C3
B29 D4		263	230	209	182	6000-2Z-C3
B29 D5		268	234	213	186	6000-2Z-C3
B29 D7		272	238	216	189	6000-2Z-C3
B36 D6		376	329	299	261	6202-2Z-C3
B36 E2		403	352	320	279	6202-2Z-C3
B36 E8		420	367	334	291	6202-2Z-C3
B36 F5		433	378	343	300	6202-2Z-C3
B36 03		442	386	351	307	6202-2Z-C3
B38 D8		419	366	333	291	6202-2Z-C3
B38 01		435	380	345	302	6202-2Z-C3
B38 02		446	390	354	309	6202-2Z-C3
B56 D6		390	340	309	270	6202-2Z-C3
B56 01		410	358	325	284	6202-2Z-C3
B56 02		424	370	336	294	6202-2Z-C3
B56 03		434	379	345	301	6202-2Z-C3
B63 04		644	563	511	447	6204-2Z-C3
B63 06		668	584	530	463	6204-2Z-C3
B63 08		687	600	545	476	6204-2Z-C3
B63 10		701	613	557	486	6204-2Z-C3
B71 08		697	609	553	483	6205-2Z-C3
B71 12		724	632	574	502	6205-2Z-C3
B71 16		745	651	591	516	6205-2Z-C3
B71 20		761	665	604	528	6205-2Z-C3
B71 24		775	677	615	538	6205-2Z-C3
B71 28		787	687	624	545	6205-2Z-C3
B100 20Z	1807	1524	1332			6208-2Z-C3
B100 24I						
B100 27Z	1867	1575	1376			6208-2Z-C3
B100 30I						
B100 34Z	1915	1615	1411			6208-2Z-C3
B100 43I						
B100 48Z	1989	1677				6208-2Z-C3
B100 56I						
B100 61Z	2042	1722				6208-2Z-C3
B100 66Z						
B100 75Z	2082	1756				6208-2Z-C3

Loads applied at mid-shaft, referred to motors without parking brake and calculated for 30,000 operating hours. Axial loads have to be considered equal to 10% of the equivalent radial loads.

Tab. 14

Electrical Components

Thermal Protection

All our motors are equipped with a single PTO switch, a thermal on-off detector that activates itself at a temperature of 140 °C (standard tolerance 5 °C).

However a NTC may be used as an alternative.

Parking Brake

Motors with option " B" (in the alphanumeric code it is the 10th position as from the left: " A" no brake, " B" brake), are equipped with a parking brake with features depending on the series, indicted in the following table:

Motor size	Supply voltage	Input Volt	Resistance Amp	Max brake Ohm a 20°C	Rotor inertia pair Nm 10^{-4}Kgm^2	Weight kg
B28, B29	24 Vdc +/- 10%	0.35	67.5	1.2	0.07	0.12
B36, B38	"	0.51	44.2	3.5	0.38	0.3
B56	"	0.51	44.2	3.5	0.38	0.3
B63	"	0.71	29.5	9.5	3.60	1.1
B71	"	0.96	23.9	27.0	9.50	1.9
B100	"	0.9	24.4	48.0	31.80	3.7

Tab. 15

Forced Ventilation

All standard motors are non ventilated; they are therefore cooled by conduction and convection through the surface (system IC410 or IC416)

In the series from B63 through to B100, forced ventilation motors are also available. In this way it is possible to increase torque and current rated values by 25%. Length dimensions increase as well to accommodate the cooling fan. (reference data is indicted in the table below).

Size	Voltage Volt	Watt	Frequency Hz	Poles	Dimensions ⌀ xH*
B63	2~230	47	50/60	2	140x140x70
B71	2~230	47	50/60	2	165x165x91
B100	3~380	53	50/60	2	210x210x180

Tab. 16

NB: The series B63 and B71 may be equipped with 24 Volt DC servoventilation.

* H: quote to add to the length of the series motors

Derating Tables

The following derating tables with cumulative coefficients are provided for guidance. Ktot= Ktemp* Khigh* Kduty, according to different operating conditions, ambient temperature higher than 40 °C, altitude higher than 1000 m above sea level or duty cycles with overload.

Derating according to altitude

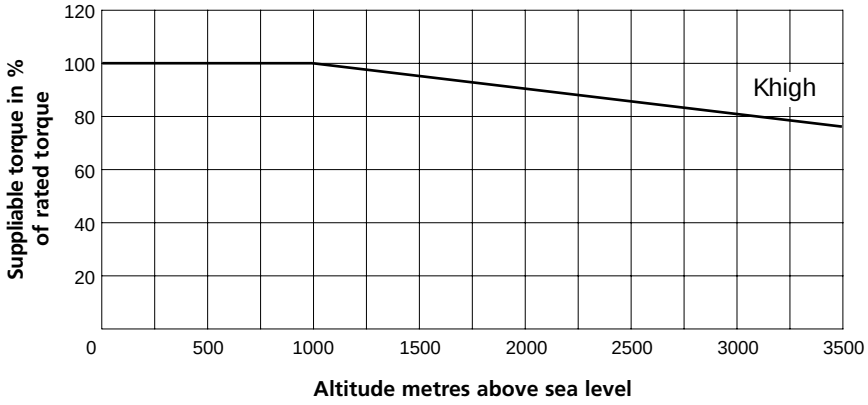


Fig. 2

Derating according to ambient temperature

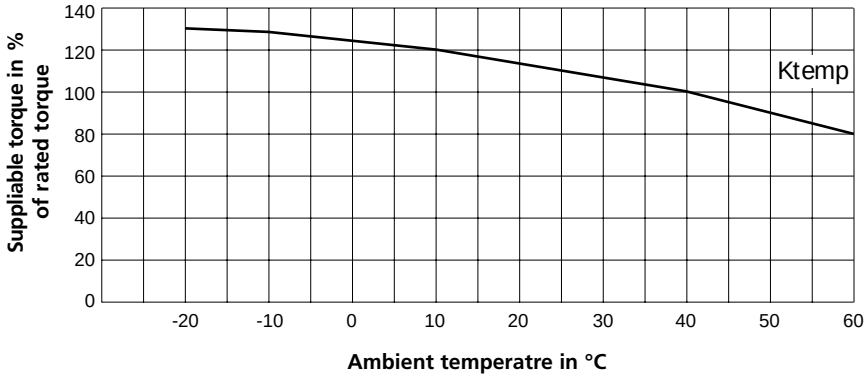


Fig. 3

Suppliable torque according to a duty cycle

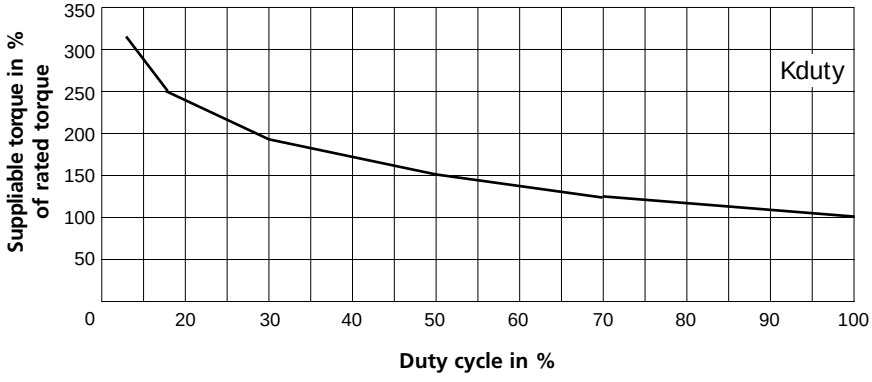


Fig. 4

Motors for continuous duty S1

Quotation	No. and date
Quantity	Unit
Name	Type
Type: sinusoidal or trapezoidal	" S" or " T"
Stall torque	Nm
Rated speed	min-1
Rated voltage	Volt
Mounting arrangement	Ex - 600034-7
Degree of protection	Ex - 600034-5
Feedback element	Resolver, Encoder, Tacho or Hall sensors
Thermal detectors	PTO or NTC
Parking brake	" Yes" or " No"
Connection	from 1 to 8
Possible terminal box	from 0 to 3

Additional information

Paint finish	Cold-water and two component paint
Vibration level	Indicate class: " N" , " R" or " S" ex - IEC60034-1-14
Noise level	
Special regulations	

Additional information for special duties

S 2: ... min (short-time duty)

S 3: ... % - ... min (intermittent duty)

S 4: ... % - J_M ... kgm² - J_{ext} ... kgm²
(intermittent duty with starting)

S 5: ... % - J_M ... kgm² - J_{ext} ... kgm²
(intermittent duty with electric braking)

S 6: ... % - min
(continuous-operation periodic duty with intermittent load)

S 7: J_M ... kgm² - J_{ext} ... kgm²
(continuous-operation periodic duty with electric braking)

S 8: J_M ... kgm² - J_{ext} ... kgm²
(continuous-operation periodic duty with speed changes)

S 9: ... kW equ (continuous duty with non-periodic load and speed variations). For this duty type suitable full load values should be taken as the overload concept.

S10: p/Δt .... r .... TL (Duty with discrete constant loads).
Starting conditions (no-load or loaded starting)

Load torque curve during the cycle (graph: min^{-1}/Nm compared to time)

Moment of inertia of the machine (kgm²)

Description of drive (Gearbox, belt, screw, wheel ratio I=…)

Radial force (N) and/or axial force (N) draw the shaft indicating both application and direction point of the force

Ambient conditions (humidity, temperature, altitude, dust accumulation, internal or external installation).

Motor coding (Type designation)

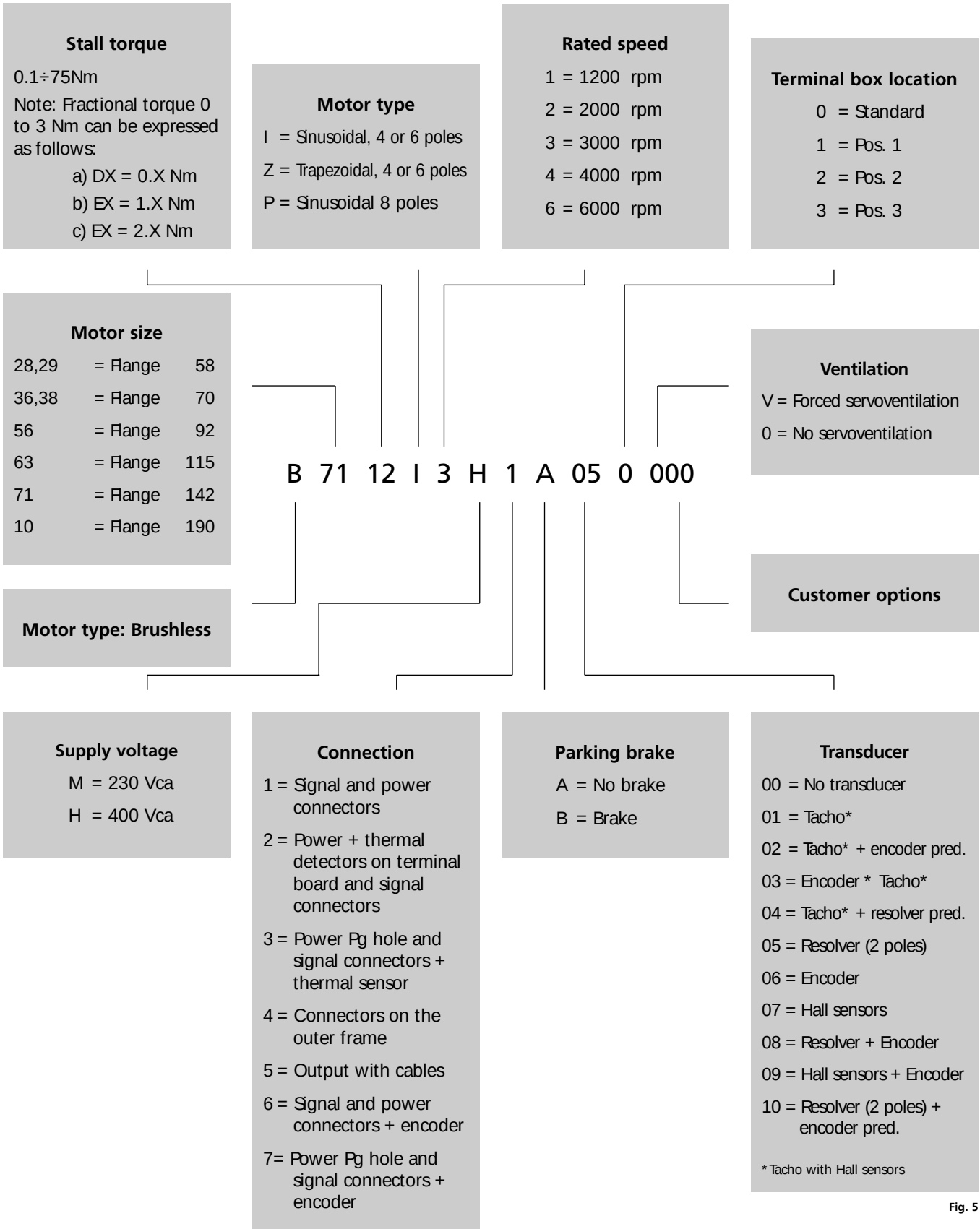


Fig. 5

Motor Nameplate

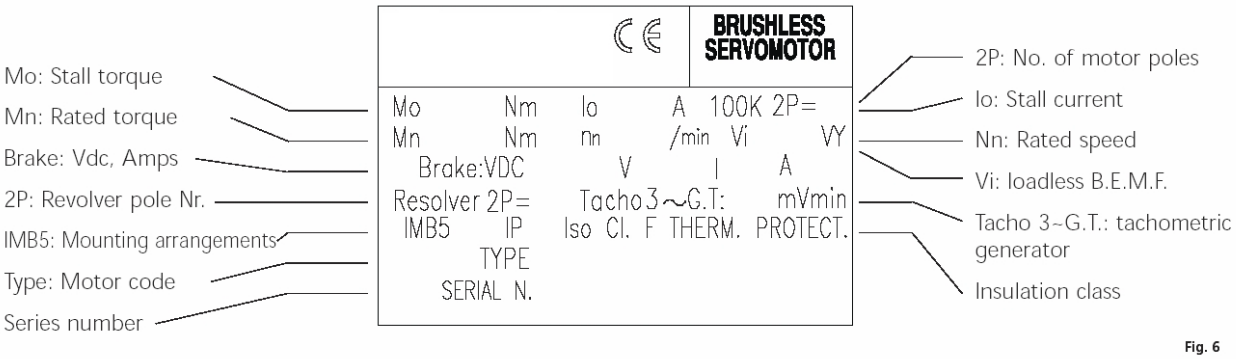
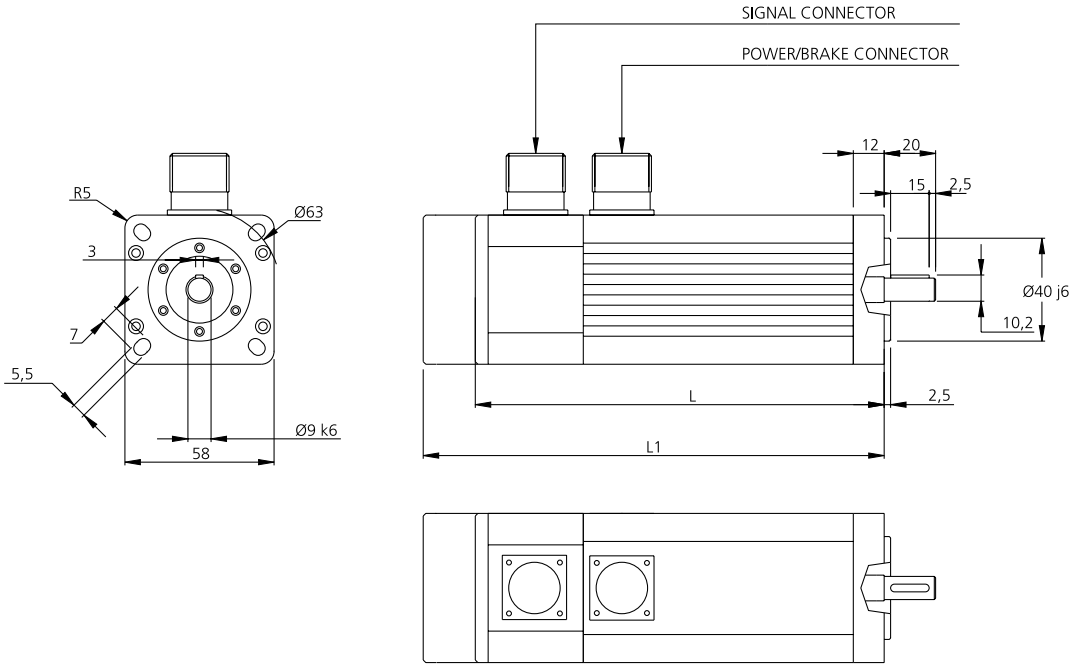


Fig. 6

Sinusoidal motors

SERIES 28

Sinusoidal: B28 voltage H(400 Volt) and M(230 Volt)



Dwg. 13

L = Motor length with resolver as transducer
L1= Motor length with encoder as transducer

Type	Nm	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
B28-D2	0.20	118	125	1.50	146	152	1.65
B28-D4	0.40	133	140	1.70	161	167	1.85
B28-D6	0.60	148	155	1.90	176	182	2.05
B28-D8	0.80	163	170	2.10	191	197	2.25
B28-01	1.00	178	185	2.30	206	212	2..45

Tab. 17

Sinusoidal: B28 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min-1 (4 poles) - Connection Y																		
S28 D2/2	0.20	2000	40	0.19	0.70	6000	0.07	94595	32	140	0.73	1.26	609	615	152	0.16	0.15	0.56
S28 D4/2	0.40	2000	80	0.38	1.40	6000	0.13	111111	35	140	0.73	1.26	204	282	152	0.32	0.30	1.11
S28 D6/2	0.60	2000	119	0.57	2.10	6000	0.18	118644	38	140	0.73	1.26	125	189	152	0.48	0.45	1.67
S28 D8/2	0.80	2000	159	0.76	2.80	6000	0.23	122271	40	140	0.73	1.26	78	126	152	0.64	0.61	2.23
S28 01/2	1.00	2000	199	0.95	3.50	6000	0.28	125000	43	140	0.73	1.26	50	83	152	0.80	0.76	2.79
3000 min-1 (4 poles) - Connection Y																		
S28 D2/3	0.20	3000	60	0.19	0.70	6000	0.07	94595	32	140	0.48	0.84	271	273	152	0.24	0.23	0.84
S28 D4/3	0.40	3000	119	0.38	1.40	6000	0.13	111111	35	140	0.48	0.84	91	125	152	0.48	0.45	1.67
S28 D6/3	0.60	3000	179	0.57	2.10	6000	0.18	118644	38	140	0.48	0.84	56	84	152	0.72	0.68	2.51
S28 D8/3	0.80	3000	239	0.76	2.80	6000	0.23	122271	40	140	0.48	0.84	35	56	152	0.96	0.91	3.34
S28 01/3	1.00	3000	298	0.95	3.50	6000	0.28	125000	43	140	0.48	0.84	22	37	152	1.19	1.13	4.18
4000 min-1 (4 poles) - Connection Y																		
S28 D2/4	0.20	4000	73	0.18	0.70	6000	0.07	94595	32	140	0.36	0.63	152	154	152	0.32	0.28	1.11
S28 D4/4	0.40	4000	147	0.35	1.40	6000	0.13	111111	35	140	0.36	0.63	51	71	152	0.64	0.56	2.23
S28 D6/4	0.60	4000	218	0.52	2.10	6000	0.18	118644	38	140	0.36	0.63	31	47	152	0.96	0.83	3.34
S28 D8/4	0.80	4000	293	0.70	2.80	6000	0.23	122271	40	140	0.36	0.63	20	32	152	1.27	1.11	4.46
S28 01/4	1.00	4000	364	0.87	3.50	6000	0.28	125000	43	140	0.36	0.63	12	21	152	1.59	1.39	5.57
6000 min-1 (4 poles) - Connection Y																		
S28 D2/6	0.20	6000	101	0.16	0.70	6000	0.07	94595	32	140	0.24	0.42	68	68	152	0.48	0.38	1.67
S28 D4/6	0.40	6000	201	0.32	1.40	6000	0.13	111111	35	140	0.24	0.42	23	31	152	0.96	0.76	3.34
S28 D6/6	0.60	6000	302	0.48	2.10	6000	0.18	118644	38	140	0.24	0.42	14	21	152	1.43	1.15	5.02
S28 D8/6	0.80	6000	402	0.64	2.80	6000	0.23	122271	40	140	0.24	0.42	9	14	152	1.91	1.53	6.69
S28 01/6	1.00	6000	503	0.80	3.50	6000	0.28	125000	43	140	0.24	0.42	6	9	152	2.39	1.91	8.36

Tab. 18

Sinusoidal: B28 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min-1 (4 poles) - Connection Y																		
S28 D2/2	0.20	2000	40	0.19	0.70	6000	0.07	94595	32	140	1.26	2.18	1827	1845	263	0.09	0.09	0.32
S28 D4/2	0.40	2000	80	0.38	1.40	6000	0.13	111111	35	140	1.26	2.18	612	846	263	0.18	0.17	0.64
S28 D6/2	0.60	2000	119	0.57	2.10	6000	0.18	118644	38	140	1.26	2.18	376	566	263	0.28	0.26	0.97
S28 D8/2	0.80	2000	159	0.76	2.80	6000	0.23	122271	40	140	1.26	2.18	234	378	263	0.37	0.35	1.29
S28 01/2	1.00	2000	199	0.95	3.50	6000	0.28	125000	43	140	1.26	2.18	149	248	263	0.46	0.44	1.61
3000 min-1 (4 poles) - Connection Y																		
S28 D2/3	0.20	3000	60	0.19	0.70	6000	0.07	94595	32	140	0.84	1.45	812	820	263	0.14	0.13	0.48
S28 D4/3	0.40	3000	119	0.38	1.40	6000	0.13	111111	35	140	0.84	1.45	272	376	263	0.28	0.26	0.97
S28 D6/3	0.60	3000	179	0.57	2.10	6000	0.18	118644	38	140	0.84	1.45	167	252	263	0.41	0.39	1.45
S28 D8/3	0.80	3000	239	0.76	2.80	6000	0.23	122271	40	140	0.84	1.45	104	168	263	0.55	0.52	1.93
S28 01/3	1.00	3000	298	0.95	3.50	6000	0.28	125000	43	140	0.84	1.45	66	110	263	0.69	0.66	2.41
4000 min-1 (4 poles) - Connection Y																		
S28 D2/4	0.20	4000	73	0.18	0.70	6000	0.07	94595	32	140	0.63	1.09	457	461	263	0.18	0.16	0.64
S28 D4/4	0.40	4000	147	0.35	1.40	6000	0.13	111111	35	140	0.63	1.09	153	212	263	0.37	0.32	1.29
S28 D6/4	0.60	4000	218	0.52	2.10	6000	0.18	118644	38	140	0.63	1.09	94	142	263	0.55	0.48	1.93
S28 D8/4	0.80	4000	293	0.70	2.80	6000	0.23	122271	40	140	0.63	1.09	59	95	263	0.74	0.64	2.57
S28 01/4	1.00	4000	364	0.87	3.50	6000	0.28	125000	43	140	0.63	1.09	37	62	263	0.92	0.80	3.22
6000 min-1 (4 poles) - Connection Y																		
S28 D2/6	0.20	6000	101	0.16	0.70	6000	0.07	94595	32	140	0.42	0.73	203	205	263	0.28	0.22	0.97
S28 D4/6	0.40	6000	201	0.32	1.40	6000	0.13	111111	35	140	0.42	0.73	68	94	263	0.55	0.44	1.93
S28 D6/6	0.60	6000	302	0.48	2.10	6000	0.18	118644	38	140	0.42	0.73	42	63	263	0.83	0.66	2.90
S28 D8/6	0.80	6000	402	0.64	2.80	6000	0.23	122271	40	140	0.42	0.73	26	42	263	1.10	0.88	3.86
S28 01/6	1.00	6000	503	0.80	3.50	6000	0.28	125000	43	140	0.42	0.73	17	28	263	1.38	1.10	4.83

Tab. 19

B28D2I_H&M

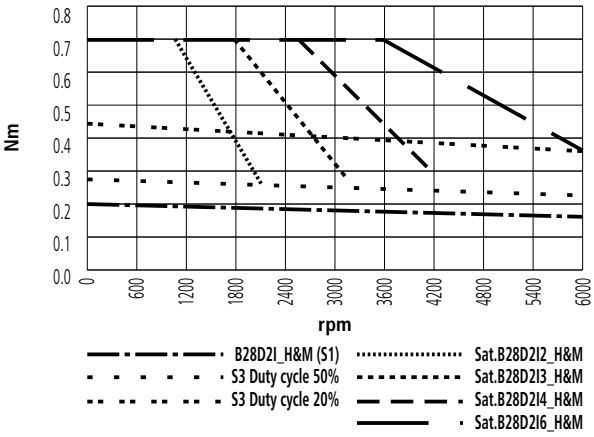


Fig. 7

B28D4I_H&M

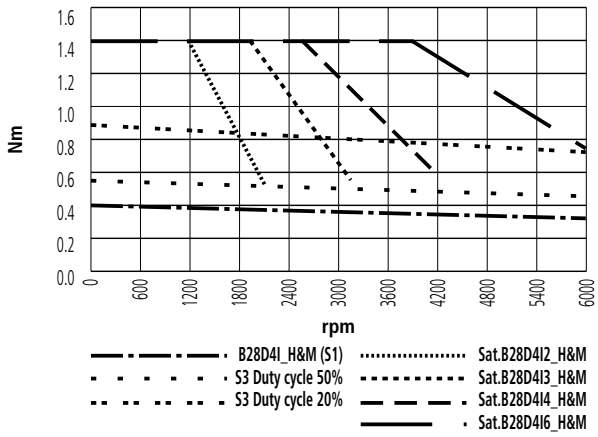


Fig. 8

B28D6I_H&M

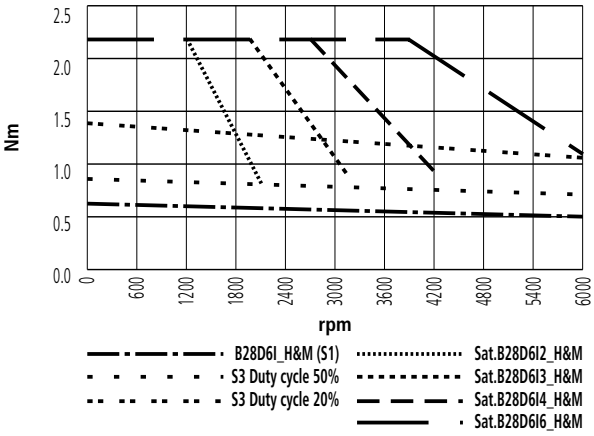


Fig. 9

B28D8I_H&M

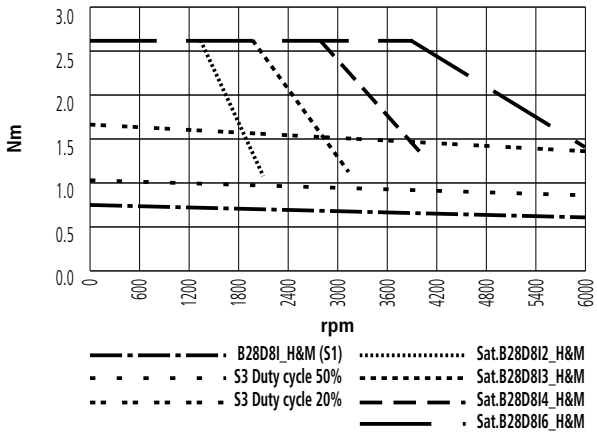


Fig. 10

B2801I_H&M

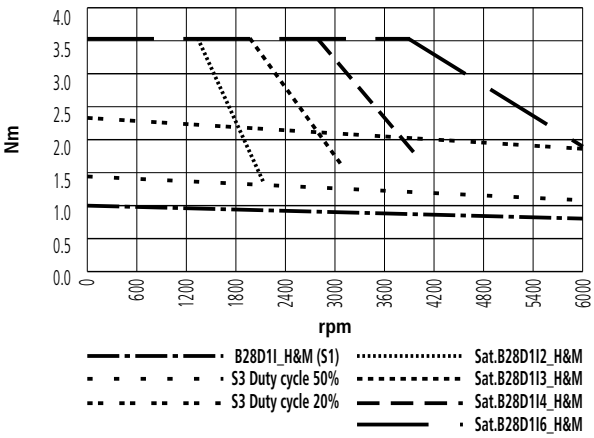
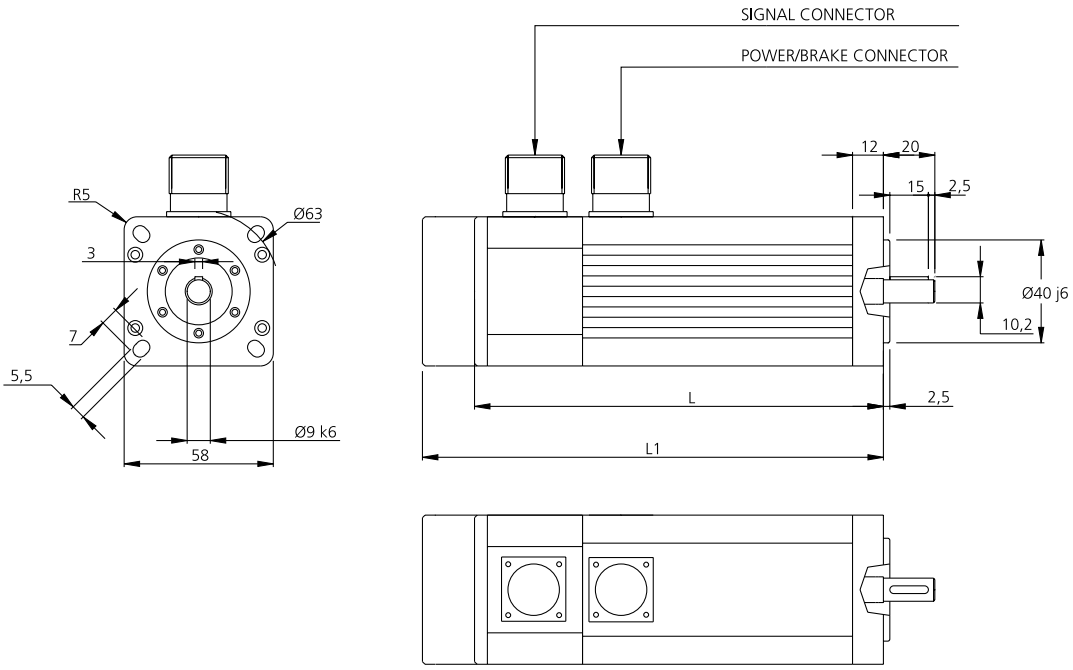


Fig. 11

Sinusoidal and trapezoidal motors

SERIES 29

Sinusoidal: B29 voltage H(400 Volt) and M(230 Volt)
Trapezoidal: B29 voltage H(400 Volt) and M(230 Volt)



Dwg. 14

L = Motor length with resolver as transducer
L1= Motor length with encoder as transducer

Type	Nm	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
B29-D1	0.13	129	158	1.35	157	186	1.60
B29-D3	0.25	149	178	1.65	177	206	1.90
B29-D4	0.37	169	198	1.95	197	226	2.20
B29-D5	0.50	189	218	2.25	217	246	2.50
B29-D7	0.70	209	238	2.55	237	266	2.80

Tab. 20

Sinusoidal: B29 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min-1 (4 poles) - Connection Y																		
S29 D1/2	0.13	2000	23	0.11	0.41	6000	0.16	25625	32	140	0.39	0.68	402	497	82	0.19	0.16	0.61
S29 D3/2	0.25	2000	46	0.22	0.81	6000	0.21	38571	35	140	0.39	0.68	122	212	82	0.37	0.33	1.20
S29 D4/2	0.37	2000	69	0.33	1.22	6000	0.26	46923	38	140	0.39	0.68	71	132	82	0.55	0.49	1.80
S29 D5/2	0.50	2000	96	0.46	1.63	6000	0.32	50938	40	140	0.39	0.68	46	97	82	0.74	0.68	2.41
S29 D7/2	0.70	2000	136	0.65	2.20	6000	0.38	57895	43	140	0.39	0.68	34	74	82	1.03	0.96	3.25
3000 min-1 (4 poles) - Connection Y																		
S29 D1/3	0.13	3000	35	0.11	0.41	6000	0.16	25625	32	140	0.26	0.45	191	221	82	0.29	0.24	0.91
S29 D3/3	0.25	3000	69	0.22	0.81	6000	0.21	38571	35	140	0.26	0.45	53	94	82	0.55	0.49	1.80
S29 D4/3	0.37	3000	101	0.32	1.22	6000	0.26	46923	38	140	0.26	0.45	34	59	82	0.82	0.71	2.71
S29 D5/3	0.50	3000	141	0.45	1.63	6000	0.32	50938	40	140	0.26	0.45	20	42	82	1.11	1.00	3.61
S29 D7/3	0.70	3000	204	0.65	2.20	6000	0.38	57895	43	140	0.26	0.45	15	33	82	1.55	1.44	4.88
4000 min-1 (4 poles) - Connection Y																		
S29 D1/4	0.13	4000	42	0.10	0.41	6000	0.16	25625	32	140	0.20	0.34	101	124	82	0.38	0.30	1.21
S29 D3/4	0.25	4000	88	0.21	0.81	6000	0.21	38571	35	140	0.20	0.34	31	53	82	0.74	0.62	2.39
S29 D4/4	0.37	4000	126	0.30	1.22	6000	0.26	46923	38	140	0.20	0.34	18	33	82	1.09	0.89	3.61
S29 D5/4	0.50	4000	176	0.42	1.63	6000	0.32	50938	40	140	0.20	0.34	12	24	82	1.48	1.24	4.82
S29 D7/4	0.70	4000	251	0.60	2.20	6000	0.38	57895	43	140	0.20	0.34	9	19	82	2.07	1.77	6.50
6000 min-1 (4 poles) - Connection Y																		
S29 D1/6	0.13	6000	57	0.09	0.41	6000	0.16	25625	32	140	0.13	0.23	44	55	82	0.58	0.40	1.82
S29 D3/6	0.25	6000	126	0.20	0.81	6000	0.21	38571	35	140	0.13	0.23	13	23	82	1.11	0.89	3.59
S29 D4/6	0.37	6000	176	0.28	1.22	6000	0.26	46923	38	140	0.13	0.23	8	15	82	1.64	1.24	5.41
S29 D5/6	0.50	6000	245	0.39	1.63	6000	0.32	50938	40	140	0.13	0.23	5	11	82	2.22	1.73	7.23
S29 D7/6	0.70	6000	352	0.56	2.20	6000	0.38	57895	43	140	0.13	0.23	4	8	82	3.10	2.48	9.76

Tab. 21

Sinusoidal: B29 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min-1 (4 poles) - Connection Y																		
S29 D1/2	0.13	2000	23	0.11	0.41	6000	0.16	25625	32	140	0.68	1.17	1253	1429	142	0.11	0.09	0.35
S29 D3/2	0.25	2000	46	0.22	0.81	6000	0.21	38571	35	140	0.68	1.17	421	639	142	0.21	0.19	0.69
S29 D4/2	0.37	2000	69	0.33	1.22	6000	0.26	46923	38	140	0.68	1.17	205	396	142	0.32	0.28	1.04
S29 D5/2	0.50	2000	96	0.46	1.63	6000	0.32	50938	40	140	0.68	1.17	145	294	142	0.43	0.39	1.39
S29 D7/2	0.70	2000	136	0.65	2.20	6000	0.38	57895	43	140	0.68	1.17	104	219	142	0.60	0.55	1.87
3000 min-1 (4 poles) - Connection Y																		
S29 D1/3	0.13	3000	35	0.11	0.41	6000	0.16	25625	32	140	0.45	0.78	536	635	142	0.17	0.14	0.52
S29 D3/3	0.25	3000	69	0.22	0.81	6000	0.21	38571	35	140	0.45	0.78	180	284	142	0.32	0.28	1.03
S29 D4/3	0.37	3000	101	0.32	1.22	6000	0.26	46923	38	140	0.45	0.78	95	176	142	0.47	0.41	1.56
S29 D5/3	0.50	3000	141	0.45	1.63	6000	0.32	50938	40	140	0.45	0.78	59	130	142	0.64	0.57	2.08
S29 D7/3	0.70	3000	204	0.65	2.20	6000	0.38	57895	43	140	0.45	0.78	45	97	142	0.89	0.83	2.81
4000 min-1 (4 poles) - Connection Y																		
S29 D1/4	0.13	4000	42	0.10	0.41	6000	0.16	25625	32	140	0.34	0.59	313	357	142	0.22	0.17	0.70
S29 D3/4	0.25	4000	88	0.21	0.81	6000	0.21	38571	35	140	0.34	0.59	111	160	142	0.43	0.36	1.38
S29 D4/4	0.37	4000	126	0.30	1.22	6000	0.26	46923	38	140	0.34	0.59	51	99	142	0.63	0.51	2.08
S29 D5/4	0.50	4000	176	0.42	1.63	6000	0.32	50938	40	140	0.34	0.59	34	74	142	0.85	0.72	2.78
S29 D7/4	0.70	4000	251	0.60	2.20	6000	0.38	57895	43	140	0.34	0.59	26	55	142	1.19	1.02	3.75
6000 min-1 (4 poles) - Connection Y																		
S29 D1/6	0.13	6000	57	0.09	0.41	6000	0.16	25625	32	140	0.23	0.39	134	159	142	0.33	0.23	1.05
S29 D3/6	0.25	6000	126	0.20	0.81	6000	0.21	38571	35	140	0.23	0.39	45	71	142	0.64	0.51	2.07
S29 D4/6	0.37	6000	176	0.28	1.22	6000	0.26	46923	38	140	0.23	0.39	24	44	142	0.95	0.72	3.12
S29 D5/6	0.50	6000	245	0.39	1.63	6000	0.32	50938	40	140	0.23	0.39	15	33	142	1.28	1.00	4.16
S29 D7/6	0.70	6000	352	0.56	2.20	6000	0.38	57895	43	140	0.23	0.39	12	24	142	1.79	1.43	5.62

Tab. 22

B29D1I_H&M

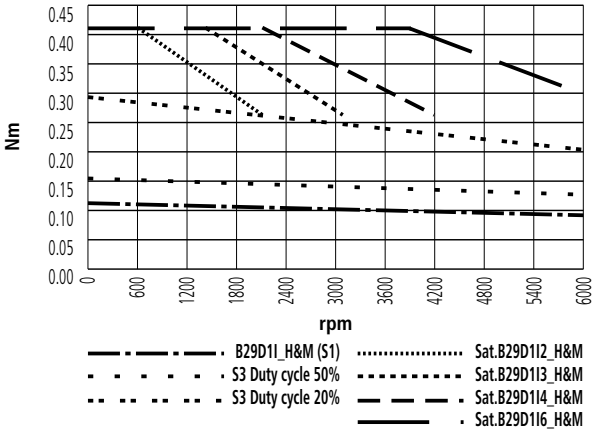


Fig. 12

B29D3I_H&M

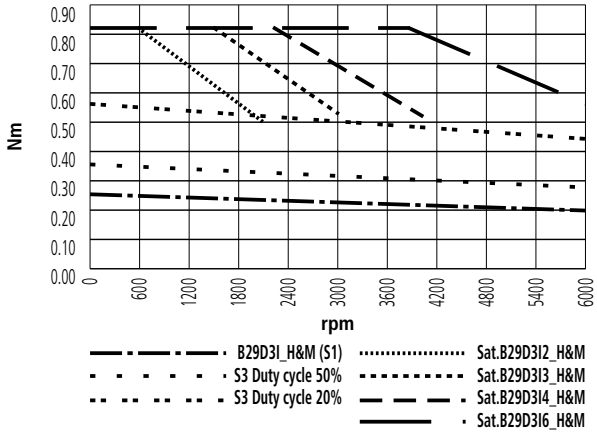


Fig. 13

B29D4I_H&M

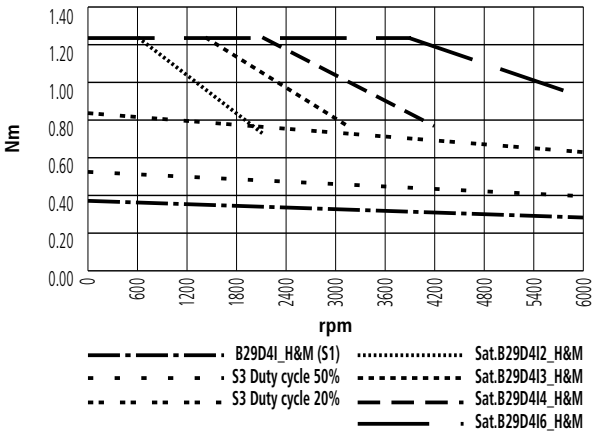


Fig. 14

B29D5I_H&M

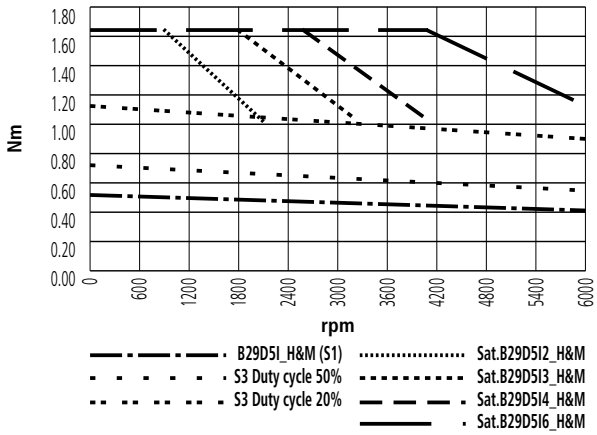


Fig. 15

B29D7I_H&M

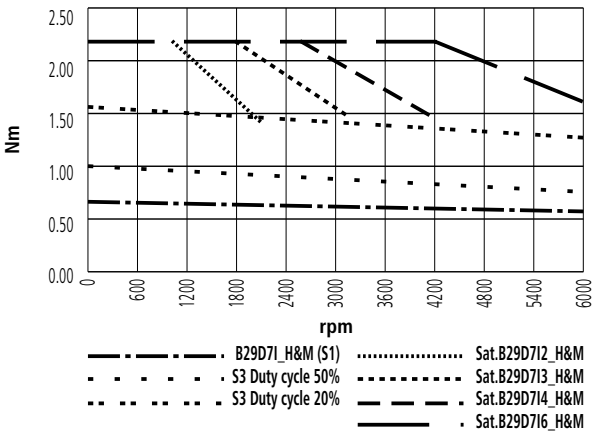


Fig. 16

Trapezoidal: B29 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	J_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min-1 (4 poles) - Connection Y																		
T29 D1/2	0.13	2000	23	0.11	0.41	6000	0.16	25625	32	140	0.55	0.55	402	497	115	0.24	0.20	0.75
T29 D3/2	0.25	2000	46	0.22	0.81	6000	0.21	38571	35	140	0.55	0.55	122	212	115	0.46	0.40	1.48
T29 D4/2	0.37	2000	69	0.33	1.22	6000	0.26	46923	38	140	0.55	0.55	71	132	115	0.67	0.60	2.22
T29 D5/2	0.50	2000	96	0.46	1.63	6000	0.32	50938	40	140	0.55	0.55	46	97	115	0.91	0.84	2.97
T29 D7/2	0.70	2000	136	0.65	2.20	6000	0.38	57895	43	140	0.55	0.55	34	74	115	1.28	1.18	4.01
3000 min-1 (4 poles) - Connection Y																		
T29 D1/3	0.13	3000	35	0.11	0.41	6000	0.16	25625	32	140	0.37	0.37	191	221	115	0.36	0.30	1.12
T29 D3/3	0.25	3000	69	0.22	0.81	6000	0.21	38571	35	140	0.37	0.37	53	94	115	0.68	0.60	2.21
T29 D4/3	0.37	3000	101	0.32	1.22	6000	0.26	46923	38	140	0.37	0.37	34	59	115	1.01	0.87	3.33
T29 D5/3	0.50	3000	141	0.45	1.63	6000	0.32	50938	40	140	0.37	0.37	20	42	115	1.37	1.23	4.45
T29 D7/3	0.70	3000	204	0.65	2.20	6000	0.38	57895	43	140	0.37	0.37	15	33	115	1.91	1.78	6.01
4000 min-1 (4 poles) - Connection Y																		
T29 D1/4	0.13	4000	42	0.10	0.41	6000	0.16	25625	32	140	0.27	0.27	100.6	124.3	115	0.47	0.36	1.49
T29 D3/4	0.25	4000	88	0.21	0.81	6000	0.21	38571	35	140	0.27	0.27	32.1	53.0	115	0.91	0.77	2.95
T29 D4/4	0.37	4000	126	0.30	1.22	6000	0.26	46923	38	140	0.27	0.27	17.6	32.7	115	1.35	1.09	4.44
T29 D5/4	0.50	4000	176	0.42	1.63	6000	0.32	50938	40	140	0.27	0.27	11.9	24.4	115	1.82	1.53	5.94
T29 D7/4	0.70	4000	251	0.60	2.20	6000	0.38	57895	43	140	0.27	0.27	8.6	18.6	115	2.55	2.19	8.01
6000 min-1 (4 poles) - Connection Y																		
T29 D1/6	0.13	6000	57	0.09	0.41	6000	0.16	25625	32	140	0.18	0.18	43.9	55.3	115	0.71	0.49	2.24
T29 D3/6	0.25	6000	126	0.20	0.81	6000	0.21	38571	35	140	0.18	0.18	13.2	23.2	115	1.37	1.09	4.43
T29 D4/6	0.37	6000	176	0.28	1.22	6000	0.26	46923	38	140	0.18	0.18	7.8	14.5	115	2.02	1.53	6.67
T29 D5/6	0.50	6000	245	0.39	1.63	6000	0.32	50938	40	140	0.18	0.18	5.2	10.7	115	2.73	2.13	8.91
T29 D7/6	0.70	6000	352	0.56	2.20	6000	0.38	57895	43	140	0.18	0.18	3.8	8.3	115	3.82	3.06	12.02

Tab. 23

Trapezoidal: B29 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	J_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min-1 (4 poles) - Connection Y																		
T29 D1/2	0.13	2000	23	0.11	0.41	6000	0.16	25625	32	140	0.95	0.95	1253	1429	199	0.14	0.12	0.43
T29 D3/2	0.25	2000	46	0.22	0.81	6000	0.21	38571	35	140	0.95	0.95	421	639	199	0.26	0.23	0.85
T29 D4/2	0.37	2000	69	0.33	1.22	6000	0.26	46923	38	140	0.95	0.95	205	396	199	0.39	0.35	1.28
T29 D5/2	0.50	2000	96	0.46	1.63	6000	0.32	50938	40	140	0.95	0.95	145	294	199	0.53	0.48	1.72
T29 D7/2	0.70	2000	136	0.65	2.20	6000	0.38	57895	43	140	0.95	0.95	104	219	199	0.74	0.68	2.32
3000 min-1 (4 poles) - Connection Y																		
T29 D1/3	0.13	3000	35	0.11	0.41	6000	0.16	25625	32	140	0.63	0.63	536	635	199	0.21	0.17	0.65
T29 D3/3	0.25	3000	69	0.22	0.81	6000	0.21	38571	35	140	0.63	0.63	180	284	199	0.39	0.35	1.28
T29 D4/3	0.37	3000	101	0.32	1.22	6000	0.26	46923	38	140	0.63	0.63	95	176	199	0.58	0.51	1.93
T29 D5/3	0.50	3000	141	0.45	1.63	6000	0.32	50938	40	140	0.63	0.63	59	130	199	0.79	0.71	2.57
T29 D7/3	0.70	3000	204	0.65	2.20	6000	0.38	57895	43	140	0.63	0.63	45	97	199	1.11	1.03	3.47
4000 min-1 (4 poles) - Connection Y																		
T29 D1/4	0.13	4000	42	0.10	0.41	6000	0.16	25625	32	140	0.48	0.48	313	357	199	0.27	0.21	0.86
T29 D3/4	0.25	4000	88	0.21	0.81	6000	0.21	38571	35	140	0.48	0.48	111	160	199	0.53	0.44	1.71
T29 D4/4	0.37	4000	126	0.30	1.22	6000	0.26	46923	38	140	0.48	0.48	51	99	199	0.78	0.63	2.57
T29 D5/4	0.50	4000	176	0.42	1.63	6000	0.32	50938	40	140	0.48	0.48	34	74	199	1.05	0.88	3.43
T29 D7/4	0.70	4000	251	0.60	2.20	6000	0.38	57895	43	140	0.48	0.48	26	55	199	1.47	1.26	4.63
6000 min-1 (4 poles) - Connection Y																		
T29 D1/6	0.13	6000	57	0.09	0.41	6000	0.16	25625	32	140	0.32	0.32	134	159	199	0.41	0.28	1.29
T29 D3/6	0.25	6000	126	0.20	0.81	6000	0.21	38571	35	140	0.32	0.32	45	71	199	0.79	0.63	2.56
T29 D4/6	0.37	6000	176	0.28	1.22	6000	0.26	46923	38	140	0.32	0.32	24	44	199	1.17	0.88	3.85
T29 D5/6	0.50	6000	245	0.39	1.63	6000	0.32	50938	40	140	0.32	0.32	15	33	199	1.58	1.23	5.15
T29 D7/6	0.70	6000	352	0.56	2.20	6000	0.38	57895	43	140	0.32	0.32	12	24	199	2.21	1.77	6.95

Tab. 24

B29D1Z_H&M

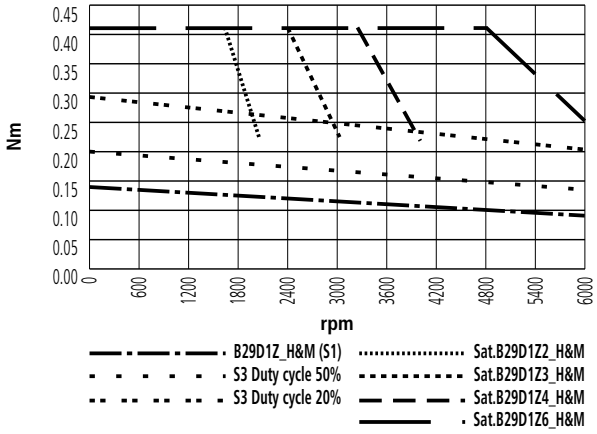


Fig. 17

B29D3Z_H&M

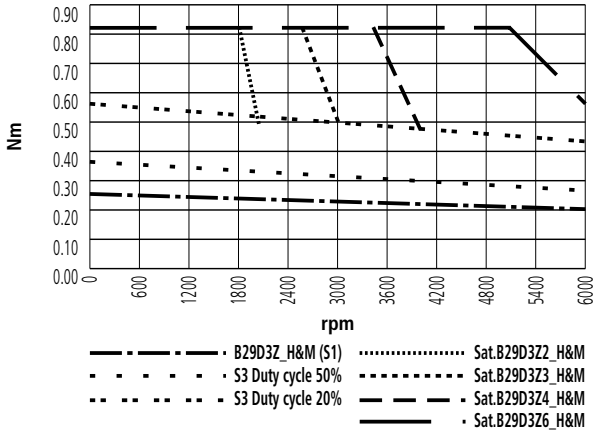


Fig. 18

B29D4Z_H&M

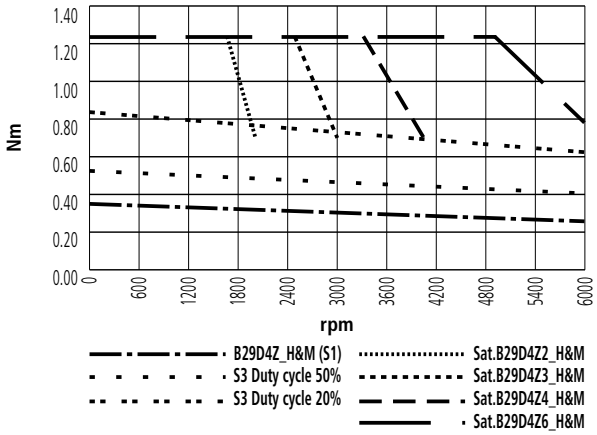


Fig. 19

B29D5Z_H&M

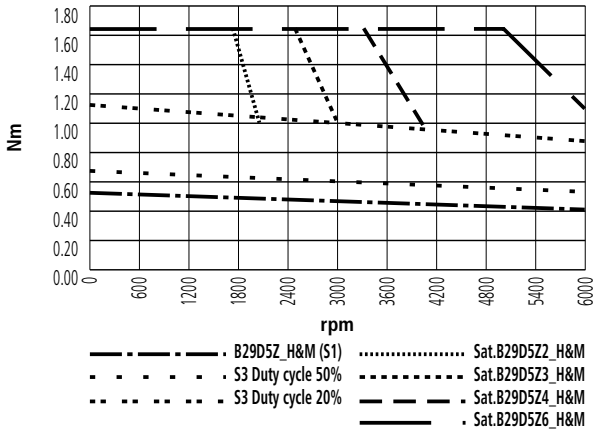


Fig. 20

B29D7Z_H&M

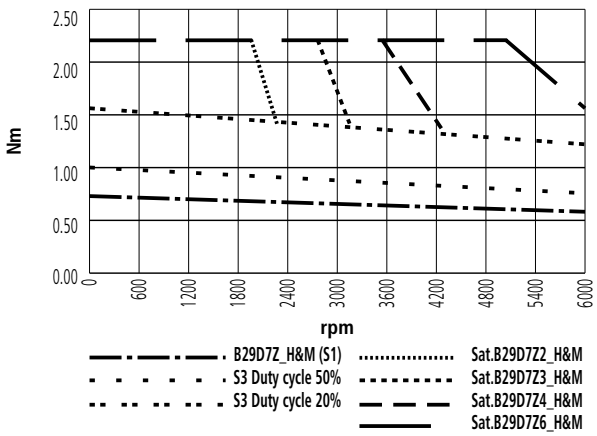
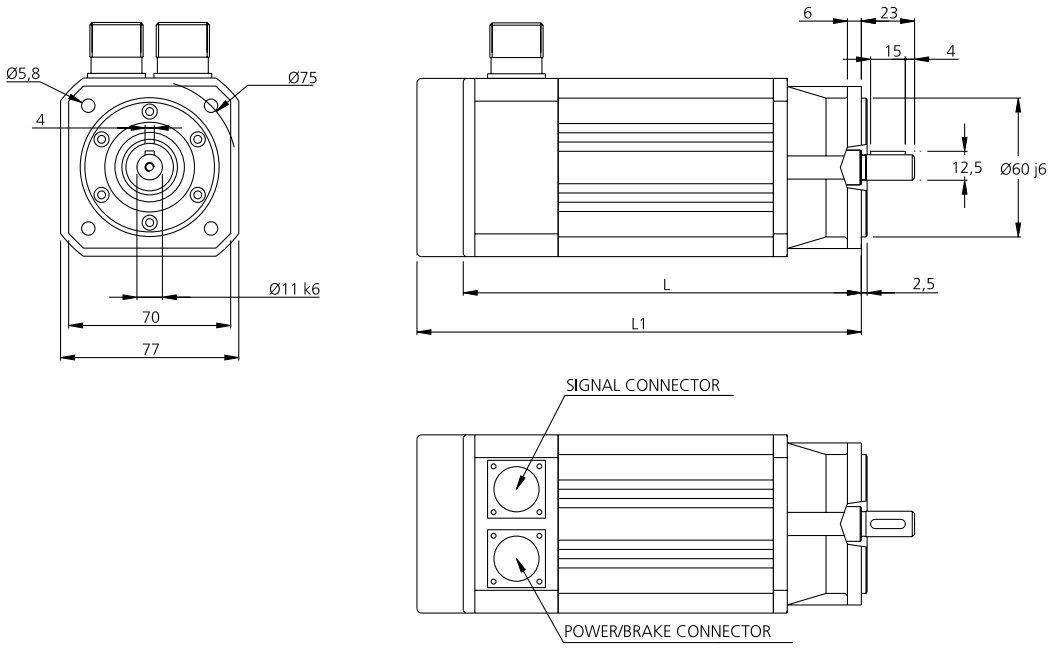


Fig. 21



Dwg. 15

L = Motor length with resolver as transducer
L1= Motor length with encoder as transducer

Type	Nm	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
B36-D6	0.60	126	152	1.4	173	199	2.0
B36-E2	1.20	151	177	2.2	198	224	2.8
B36-E8	1.80	176	202	3.1	223	249	3.7
B36-F5	2.50	201	227	4.0	248	274	4.6
B36-03	3.00	226	252	4.9	273	299	5.5

Tab. 25

Sinusoidal: B36 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min-1 (4 poles) - Connection Y																		
S36 D6/2	0.60	2000	115	0.55	2.10	6000	0.45	46667	32	140	0.73	1.26	80.5	159.3	152	0.48	0.44	1.67
S36 E2/2	1.20	2000	230	1.10	4.20	6000	0.60	70000	35	140	0.73	1.26	26.8	73.1	152	0.95	0.87	3.33
S36 E8/2	1.80	2000	346	1.65	6.30	6000	0.75	84000	38	140	0.73	1.26	16.5	48.7	152	1.43	1.31	5.00
S36 F5/2	2.50	2000	461	2.20	8.75	6000	0.90	97222	40	140	0.73	1.26	10.3	32.5	152	1.98	1.75	6.94
S36 03/2	3.00	2000	576	2.75	10.50	6000	1.10	95455	43	140	0.73	1.26	6.4	21.6	152	2.38	2.18	8.33
3000 min-1 (4 poles) - Connection Y																		
S36 D6/3	0.60	3000	173	0.55	2.10	6000	0.45	46667	32	140	0.48	0.84	35.8	70.8	152	0.71	0.65	2.50
S36 E2/3	1.20	3000	346	1.10	4.20	6000	0.60	70000	35	140	0.48	0.84	11.9	32.5	152	1.43	1.31	5.00
S36 E8/3	1.80	3000	518	1.65	6.30	6000	0.75	84000	38	140	0.48	0.84	7.3	21.6	152	2.14	1.96	7.50
S36 F5/3	2.50	3000	691	2.20	8.75	6000	0.90	97222	40	140	0.48	0.84	4.6	14.4	152	2.98	2.62	10.42
S36 03/3	3.00	3000	864	2.75	10.50	6000	1.10	95455	43	140	0.48	0.84	2.9	9.6	152	3.57	3.27	12.50
4000 min-1 (4 poles) - Connection Y																		
S36 D6/4	0.60	4000	218	0.52	2.10	6000	0.45	46667	32	140	0.36	0.63	20.1	39.8	152	0.95	0.83	3.33
S36 E2/4	1.20	4000	444	1.06	4.20	6000	0.60	70000	35	140	0.36	0.63	6.7	18.3	152	1.90	1.68	6.67
S36 E8/4	1.80	4000	670	1.60	6.30	6000	0.75	84000	38	140	0.36	0.63	4.1	12.2	152	2.86	2.54	10.00
S36 F5/4	2.50	4000	880	2.10	8.75	6000	0.90	97222	40	140	0.36	0.63	2.6	8.1	152	3.97	3.33	13.89
S36 03/4	3.00	4000	1089	2.60	10.50	6000	1.10	95455	43	140	0.36	0.63	1.6	5.4	152	4.76	4.13	16.67
6000 min-1 (4 poles) - Connection Y																		
S36 D6/6	0.60	6000	314	0.50	2.10	6000	0.45	46667	32	140	0.24	0.42	8.9	17.7	152	1.43	1.19	5.0
S36 E2/6	1.20	6000	628	1.00	4.20	6000	0.60	70000	35	140	0.24	0.42	3.0	8.1	152	2.86	2.38	10.0
S36 E8/6	1.80	6000	942	1.50	6.30	6000	0.75	84000	38	140	0.24	0.42	1.8	5.4	152	4.29	3.57	15.0
S36 F5/6	2.50	6000	1257	2.00	8.75	6000	0.90	97222	40	140	0.24	0.42	1.1	3.6	152	5.95	4.76	20.8
S36 03/6	3.00	6000	1571	2.50	10.50	6000	1.10	95455	43	140	0.24	0.42	0.7	2.4	152	7.14	5.95	25.0

Tab. 26

Sinusoidal: B36 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min-1 (4 poles) - Connection Y																		
S36 D6/2	0.60	2000	115	0.55	2.10	6000	0.45	46667	32	140	1.26	2.18	240.6	476.2	264	0.27	0.25	0.96
S36 E2/2	1.20	2000	230	1.10	4.20	6000	0.60	70000	35	140	1.26	2.18	80.2	218.4	264	0.55	0.50	1.92
S36 E8/2	1.80	2000	346	1.65	6.30	6000	0.75	84000	38	140	1.26	2.18	49.4	145.6	264	0.82	0.76	2.89
S36 F5/2	2.50	2000	461	2.20	8.75	6000	0.90	97222	40	140	1.26	2.18	30.8	97.1	264	1.15	1.01	4.01
S36 03/2	3.00	2000	576	2.75	10.50	6000	1.10	95455	43	140	1.26	2.18	19.3	64.7	264	1.37	1.26	4.81
3000 min-1 (4 poles) - Connection Y																		
S36 D6/3	0.60	3000	173	0.55	2.10	6000	0.45	46667	32	140	0.84	1.45	106.9	211.6	264	0.41	0.38	1.44
S36 E2/3	1.20	3000	346	1.10	4.20	6000	0.60	70000	35	140	0.84	1.45	35.6	97.1	264	0.82	0.76	2.89
S36 E8/3	1.80	3000	518	1.65	6.30	6000	0.75	84000	38	140	0.84	1.45	21.9	64.7	264	1.24	1.13	4.33
S36 F5/3	2.50	3000	691	2.20	8.75	6000	0.90	97222	40	140	0.84	1.45	13.7	43.1	264	1.72	1.51	6.01
S36 03/3	3.00	3000	864	2.75	10.50	6000	1.10	95455	43	140	0.84	1.45	8.6	28.8	264	2.06	1.89	7.22
4000 min-1 (4 poles) - Connection Y																		
S36 D6/4	0.60	4000	218	0.52	2.10	6000	0.45	46667	32	140	0.63	1.09	60.2	119.0	264	0.55	0.48	1.92
S36 E2/4	1.20	4000	444	1.06	4.20	6000	0.60	70000	35	140	0.63	1.09	20.1	54.6	264	1.10	0.97	3.85
S36 E8/4	1.80	4000	670	1.60	6.30	6000	0.75	84000	38	140	0.63	1.09	12.3	36.4	264	1.65	1.47	5.77
S36 F5/4	2.50	4000	880	2.10	8.75	6000	0.90	97222	40	140	0.63	1.09	7.7	24.3	264	2.29	1.92	8.02
S36 03/4	3.00	4000	1089	2.60	10.50	6000	1.10	95455	43	140	0.63	1.09	4.8	16.2	264	2.75	2.38	9.62
6000 min-1 (4 poles) - Connection Y																		
S36 D6/6	0.60	6000	314	0.50	2.10	6000	0.45	46667	32	140	0.42	0.73	26.7	52.9	264	0.82	0.69	2.89
S36 E2/6	1.20	6000	628	1.00	4.20	6000	0.75	70000	35	140	0.42	0.73	8.9	24.3	264	1.65	1.37	5.77
S36 E8/6	1.80	6000	942	1.50	6.30	6000	1.10	84000	38	140	0.42	0.73	5.5	16.2	264	2.47	2.06	8.66
S36 F5/6	2.50	6000	1257	2.00	8.75	6000	0.90	97222	40	140	0.42	0.73	3.4	10.8	264	3.44	2.75	12.03
S36 03/6	3.00	6000	1571	2.50	10.50	6000	1.10	95455	43	140	0.42	0.73	2.1	7.2	264	4.12	3.44	14.43

Tab. 27

B36D6I_H&M

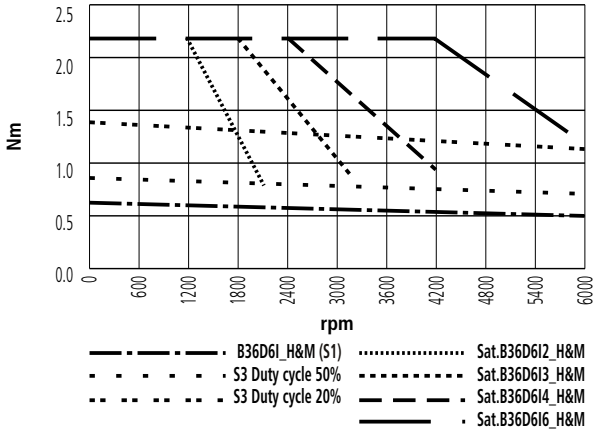


Fig. 22

B36E2I_H&M

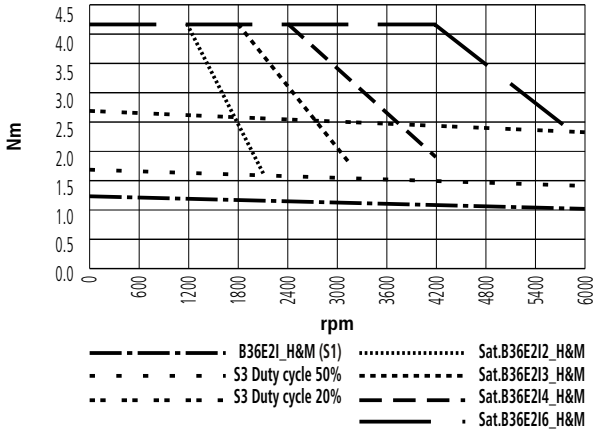


Fig. 23

B36E8I_H&M

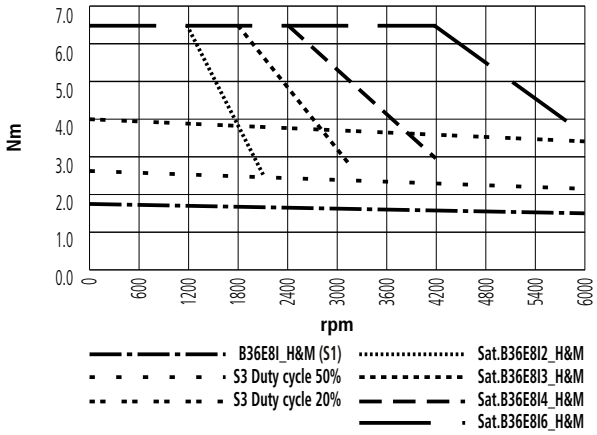


Fig. 24

B36F5I_H&M

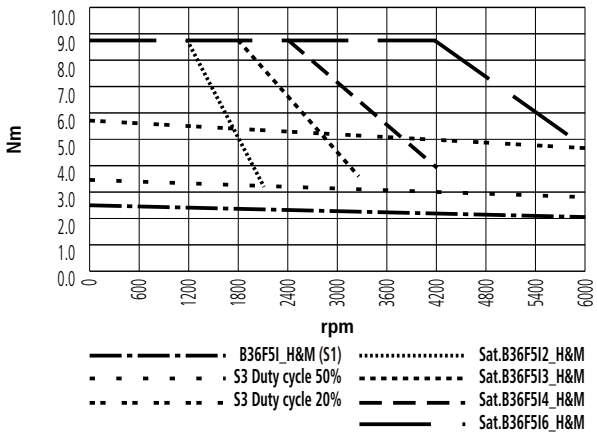


Fig. 25

B3603I_H&M

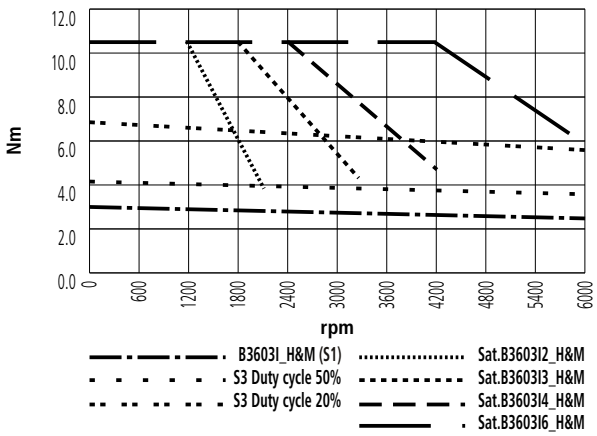
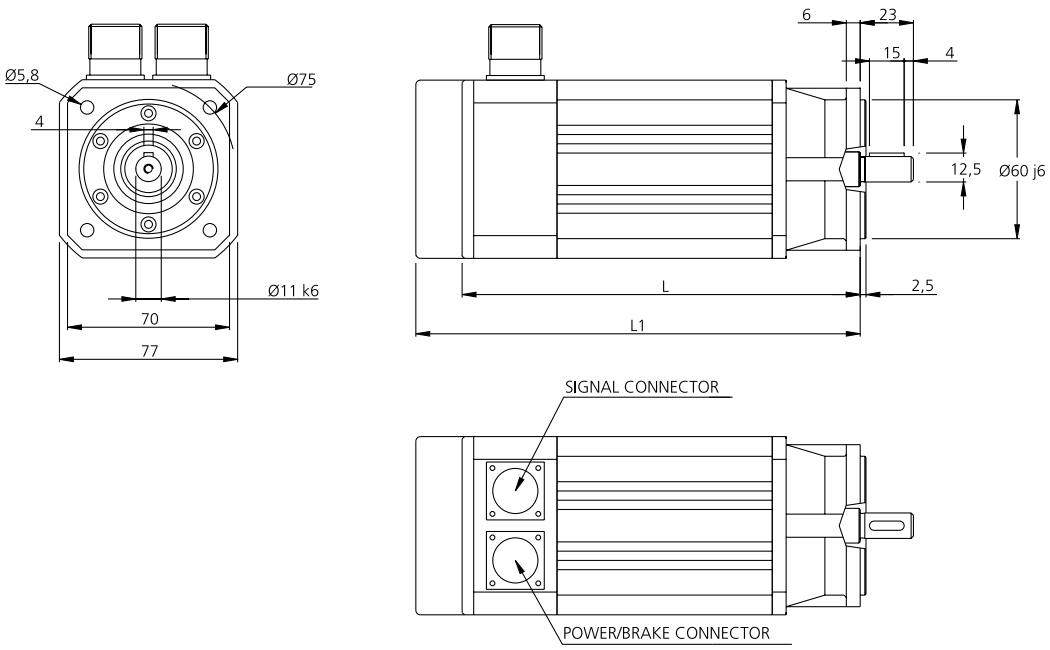


Fig. 26

Sinusoidal and trapezoidal motors

SERIES 38

Sinusoidal 4 poles: B38 voltage H(400 Volt) and M(230 Volt)
Trapezoidal 4 poles: B38 voltage H(400 Volt) and M(230 Volt)



Dwg. 16

L = Motor length with resolver as transducer
L1= Motor length with encoder as transducer

Type	Nm	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
B38-D8	0.82	172	207	2.5	199	234	3.1
B38-01	1.64	212	247	3.3	239	274	3.3
B38-02	2.35	242	287	4.8	279	314	3.5

Tab. 28

Sinusoidal: B38 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (4 poles) - Connection Y																		
S38 D8/2	0.82	2000	168	0.80	2.05	6000	0.62	33225	32	140	0.73	1.26	63.8	180.1	152	0.65	0.63	1.63
S38 01/2	1.64	2000	335	1.60	4.10	6000	1.14	35996	35	140	0.73	1.26	31.9	90.1	152	1.30	1.27	3.25
S38 02/2	2.35	2000	471	2.25	5.88	6000	1.66	35400	38	140	0.73	1.26	12.5	53.9	152	1.87	1.79	4.67
3000 min^{-1} (4 poles) - Connection Y																		
S38 D8/3	0.82	3000	251	0.80	2.05	6000	0.62	33225	32	140	0.48	0.84	27.2	80.5	152	0.98	0.95	2.44
S38 01/3	1.64	3000	503	1.60	4.10	6000	1.14	35996	35	140	0.48	0.84	14.3	40.3	152	1.95	1.90	4.88
S38 02/3	2.35	3000	707	2.25	5.88	6000	1.66	35400	38	140	0.48	0.84	5.6	23.9	152	2.80	2.68	7.00
4000 min^{-1} (4 poles) - Connection Y																		
S38 D8/4	0.82	4000	293	0.70	2.05	6000	0.62	33225	32	140	0.36	0.63	16.0	45.0	152	1.30	1.11	3.25
S38 01/4	1.64	4000	586	1.40	4.10	6000	1.14	35996	35	140	0.36	0.63	7.9	22.3	152	2.60	2.22	6.51
S38 02/4	2.35	4000	838	2.00	5.88	6000	1.66	35400	38	140	0.36	0.63	3.1	13.2	152	3.73	3.17	9.33
6000 min^{-1} (4 poles) - Connection Y																		
S38 D8/6	0.82	6000	440	0.70	2.05	6000	0.62	33225	32	140	0.24	0.42	7.1	20.1	152	1.95	1.67	4.88
S38 01/6	1.64	6000	880	1.40	4.10	6000	1.14	35996	35	140	0.24	0.42	3.5	9.9	152	3.90	3.33	9.76
S38 02/6	2.35	6000	1257	2.00	5.88	6000	1.66	35400	38	140	0.24	0.42	1.5	6.0	152	5.60	4.76	14.00

Tab. 29

Sinusoidal: B38 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min-1 (4 poles) - Connection Y																		
S38 D8/2	0.82	2000	168	0.80	2.05	6000	0.62	33225	32	140	1.26	2.18	192.0	541.8	263	0.38	0.37	0.94
S38 01/2	1.64	2000	335	1.60	4.10	6000	1.14	35996	35	140	1.26	2.18	95.7	270.0	263	0.75	0.74	1.89
S38 02/2	2.35	2000	471	2.25	5.88	6000	1.66	35400	38	140	1.26	2.18	41.1	160.6	263	1.08	1.03	2.70
3000 min-1 (4 poles) - Connection Y																		
S38 D8/3	0.82	3000	251	0.80	2.05	6000	0.62	33225	32	140	0.84	1.45	83.6	241.2	263	0.57	0.55	1.41
S38 01/3	1.64	3000	503	1.60	4.10	6000	1.14	35996	35	140	0.84	1.45	42.8	121.2	263	1.13	1.10	2.83
S38 02/3	2.35	3000	707	2.25	5.88	6000	1.66	35400	38	140	0.84	1.45	17.6	71.7	263	1.62	1.55	4.06
4000 min-1 (4 poles) - Connection Y																		
S38 D8/4	0.82	4000	293	0.70	2.05	6000	0.62	33225	32	140	0.63	1.09	47.5	134.1	263	0.75	0.64	1.89
S38 01/4	1.64	4000	586	1.40	4.10	6000	1.14	35996	35	140	0.63	1.09	23.8	67.1	263	1.51	1.29	3.77
S38 02/4	2.35	4000	838	2.00	5.88	6000	1.66	35400	38	140	0.63	1.09	9.8	40.2	263	2.16	1.84	5.41
6000 min-1 (4 poles) - Connection Y																		
S38 D8/6	0.82	6000	440	0.70	2.05	6000	0.62	33225	32	140	0.42	0.73	21.0	60.6	263	1.13	0.97	2.83
S38 01/6	1.64	6000	880	1.40	4.10	6000	1.14	35996	35	140	0.42	0.73	10.6	30.0	263	2.26	1.93	5.66
S38 02/6	2.35	6000	1257	2.00	5.88	6000	1.66	35400	38	140	0.42	0.73	4.3	17.7	263	3.24	2.76	8.11

Tab. 30

B38D8I_H&M

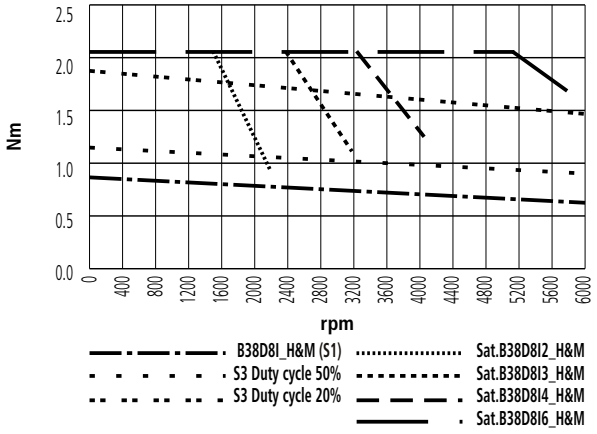


Fig. 27

B3801I_H&M

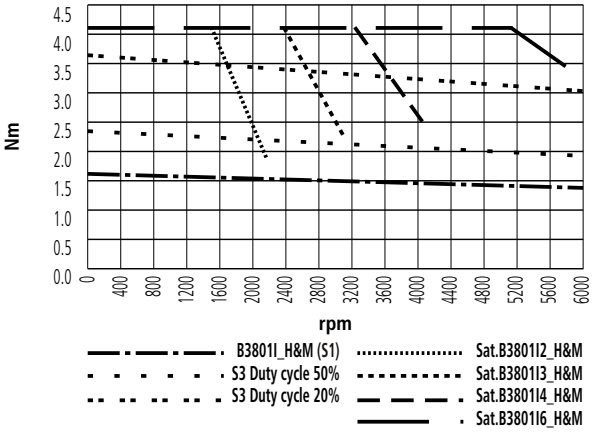


Fig. 28

B3802I_H&M

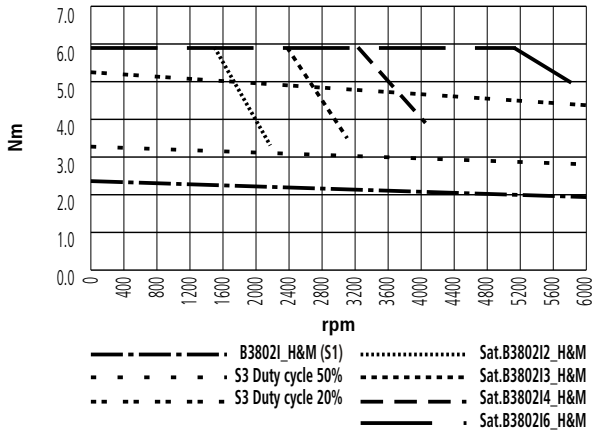


Fig. 29

Trapezoidal: B38 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	J_{max}	k_e	k_t	R_w	L_w	E_n	I_0	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min-1 (4 poles) - Connection Y																		
T38 D8/2	0.82	2000	168	0.80	2.05	6000	0.62	33225	32	140	0.94	0.94	63.8	180.1	196	0.87	0.85	2.19
T38 01/2	1.64	2000	335	1.60	4.10	6000	1.14	35996	35	140	0.94	0.94	31.9	90.1	196	1.75	1.71	4.37
T38 02/2	2.35	2000	471	2.25	5.88	6000	1.66	35400	38	140	0.94	0.94	12.5	53.9	196	2.51	2.40	6.27
3000 min-1 (4 poles) - Connection Y																		
T38 D8/3	0.82	3000	251	0.80	2.05	6000	0.62	33225	32	140	0.62	0.62	27.2	80.5	196	1.31	1.28	3.28
T38 01/3	1.64	3000	503	1.60	4.10	6000	1.14	35996	35	140	0.62	0.62	14.3	40.3	196	2.62	2.56	6.56
T38 02/3	2.35	3000	707	2.25	5.88	6000	1.66	35400	38	140	0.62	0.62	5.6	23.9	196	3.76	3.60	9.41
4000 min-1 (4 poles) - Connection Y																		
T38 D8/4	0.82	4000	293	0.70	2.05	6000	0.62	33225	32	140	0.47	0.47	16.0	45.0	196	1.75	1.49	4.37
T38 01/4	1.64	4000	586	1.40	4.10	6000	1.14	35996	35	140	0.47	0.47	7.9	22.3	196	3.50	2.99	8.75
T38 02/4	2.35	4000	838	2.00	5.88	6000	1.66	35400	38	140	0.47	0.47	3.1	13.2	196	5.01	4.27	12.55
6000 min-1 (4 poles) - Connection Y																		
T38 D8/6	0.82	6000	440	0.70	2.05	6000	0.62	33225	32	140	0.31	0.31	7.1	20.1	196	2.62	2.24	6.56
T38 01/6	1.64	6000	880	1.40	4.10	6000	1.14	35996	35	140	0.31	0.31	3.5	9.9	196	5.25	4.48	13.12
T38 02/6	2.35	6000	1257	2.00	5.88	6000	1.66	35400	38	140	0.31	0.31	1.5	6.0	196	7.52	6.40	18.82

Tab. 31

Trapezoidal: B38 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	J_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	W	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min^{-1} (4 poles) - Connection Y																		
T38 D8/2	0.82	2000	168	0.80	2.05	6000	0.62	33225	32	40	1.62	1.62	192.0	541.8	340	0.51	0.49	1.26
T38 01/2	1.64	2000	335	1.60	4.10	6000	1.14	35996	35	140	1.62	1.62	95.7	270.0	340	1.01	0.99	2.53
T38 02/2	2.35	2000	471	2.25	5.88	6000	1.66	35400	38	140	1.62	1.62	41.1	160.6	340	1.45	1.39	3.62
3000 min^{-1} (4 poles) - Connection Y																		
T38 D8/3	0.82	3000	251	0.80	2.05	6000	0.62	33225	32	140	1.08	1.08	83.6	241.2	340	0.76	0.74	1.89
T38 01/3	1.64	3000	503	1.60	4.10	6000	1.14	35996	35	140	1.08	1.08	42.8	121.2	340	1.52	1.48	3.79
T38 02/3	2.35	3000	707	2.25	5.88	6000	1.66	35400	38	140	1.08	1.08	17.6	71.7	340	2.17	2.08	5.43
4000 min^{-1} (4 poles) - Connection Y																		
T38 D8/4	0.82	4000	293	0.70	2.05	6000	0.62	33225	32	140	0.81	0.81	47.5	134.1	340	1.01	0.86	2.53
T38 01/4	1.64	4000	586	1.40	4.10	6000	1.14	35996	35	140	0.81	0.81	23.8	67.1	340	2.02	1.72	5.05
T38 02/4	2.35	4000	838	2.00	5.88	6000	1.66	35400	38	140	0.81	0.81	9.8	40.2	340	2.90	2.46	7.24
6000 min^{-1} (4 poles) - Connection Y																		
T38 D8/6	0.82	6000	440	0.70	2.05	6000	0.62	33225	32	140	0.54	0.54	21.0	60.6	340	1.52	1.29	3.79
T38 01/6	1.64	6000	880	1.40	4.10	6000	1.14	35996	35	140	0.54	0.54	10.6	30.0	340	3.03	2.59	7.58
T38 02/6	2.35	6000	1257	2.00	5.88	6000	1.66	35400	38	140	0.54	0.54	4.3	17.7	340	4.34	3.70	10.87

Tab. 32

B38D8Z_H&M

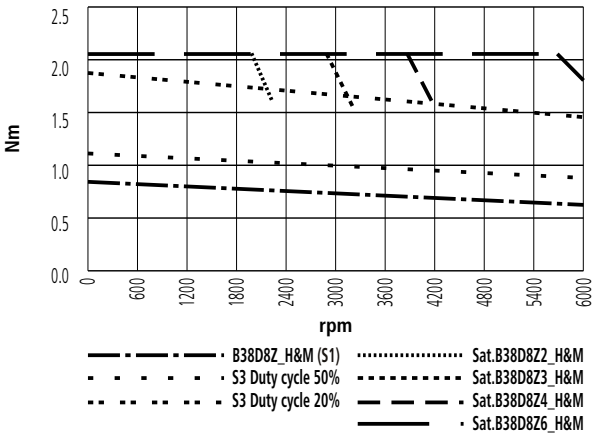


Fig. 30

B3801Z_H&M

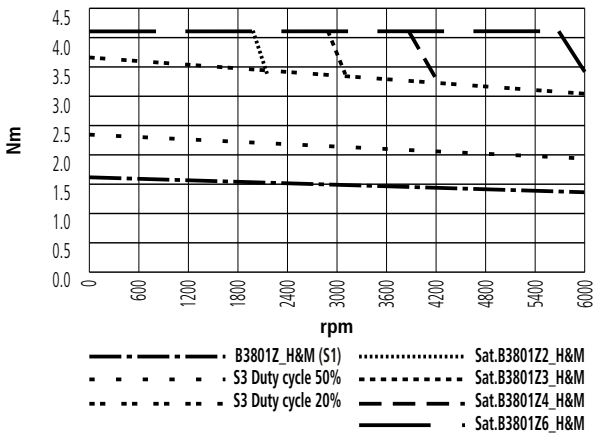


Fig. 31

B3802Z_H&M

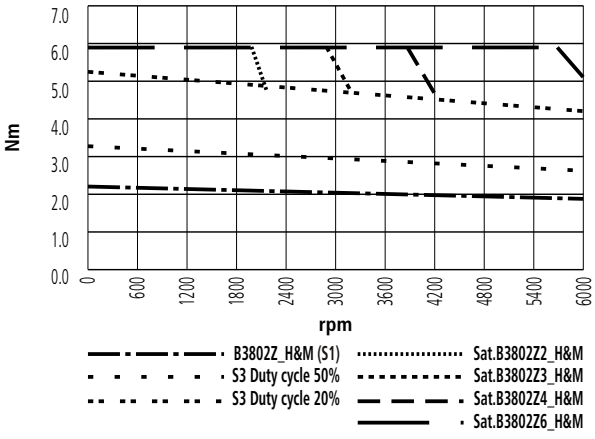
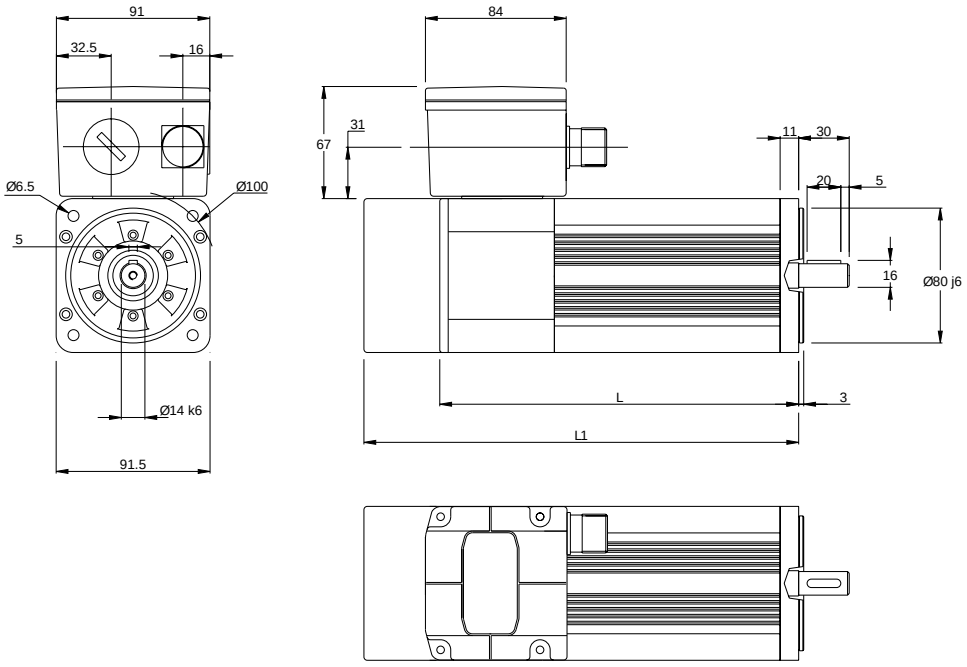


Fig. 32

Sinusoidal and trapezoidal motors

SERIES 56

Sinusoidal 4 poles: B56 voltage H(400 Volt) and M(230 Volt)
Trapezoidal 4 poles: B56 voltage H(400 Volt) and M(230 Volt)



Dwg. 17

L = Motor length with resolver as transducer
L1= Motor length with encoder as transducer

Type	Nm	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
B56-D6	0.60	185	224	3.7	212.5	251	4.3
B56-01	1.30	210	249	4.6	237.5	276	5.2
B56-02	1.90	235	274	5.6	262.5	301	6.2
B56-03	2.80	265	299	6.5	287.5	326	7.1

Tab. 33

Sinusoidal: B56 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min-1 (4 poles) - Connection Y																		
S56 D6/2	0.6	2000	0.13	0.6	1.7	6000	0.73	23288	50	140	0.73	1.26	104	290	152	0.5	0.5	1.3
S56 01/2	1.3	2000	0.23	1.1	3.3	6000	1.40	23571	45	140	0.73	1.26	40	143	152	1.0	0.9	2.6
S56 02/2	1.9	2000	0.36	1.7	4.8	6000	1.84	26087	76	140	0.73	1.26	21	91	152	1.5	1.3	3.8
S56 03/2	2.8	2000	0.50	2.4	6.6	6000	2.28	28947	95	140	0.73	1.26	14	66	152	2.2	1.9	5.2
3000 min-1 (4 poles) - Connection Y																		
S56 D6/3	0.6	3000	0.16	0.5	1.7	6000	0.73	23288	50	140	0.48	0.84	52	142	152	0.7	0.6	2.0
S56 01/3	1.3	3000	0.31	1.0	3.3	6000	1.40	23571	45	140	0.48	0.84	18	64	152	1.5	1.2	3.9
S56 02/3	1.9	3000	0.50	1.6	4.8	6000	1.84	26087	76	140	0.48	0.84	9	41	152	2.3	1.9	5.7
S56 03/3	2.8	3000	0.69	2.2	6.6	6000	2.28	28947	95	140	0.48	0.84	6	30	152	3.3	2.6	7.9
4000 min-1 (4 poles) - Connection Y																		
S56 D6/4	0.60	4000	0.21	0.50	1.7	6000	0.73	23288	50	140	0.36	0.63	29.7	79.3	152	1.0	0.8	2.7
S56 01/4	1.30	4000	0.42	1.00	3.3	6000	1.40	23571	45	140	0.36	0.63	10.1	35.8	152	2.1	1.6	5.2
S56 02/4	1.90	4000	0.63	1.50	4.8	6000	1.84	26087	76	140	0.36	0.63	5.4	23.3	152	3.0	2.4	7.6
S56 03/4	2.80	4000	0.88	2.10	6.6	6000	2.28	28947	95	140	0.36	0.63	3.5	16.5	152	4.4	3.3	10.5
6000 min-1 (4 poles) - Connection Y																		
S56 D6/6	0.60	6000	0.25	0.40	1.7	6000	0.73	23288	50	140	0.24	0.42	13.1	35.5	152	1.4	1.0	4.0
S56 01/6	1.30	6000	0.57	0.90	3.3	6000	1.40	23571	45	140	0.24	0.42	4.6	16.4	152	3.1	2.1	7.9
S56 02/6	1.90	6000	0.82	1.30	4.8	6000	1.84	26087	76	140	0.24	0.42	2.4	10.6	152	4.5	3.1	11.4
S56 03/6	2.80	6000	1.19	1.90	6.6	6000	2.28	28947	95	140	0.24	0.42	1.6	7.6	152	6.7	4.5	15.7

Tab. 34

Sinusoidal: B56 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_W	L_W	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (4 poles) - Connection Y																		
S56 D6/2	0.6	2000	0.13	0.6	1.7	6000	0.73	23288	50	140	1.26	2.18	374.4	994.2	263	0.3	0.3	0.8
S56 01/2	1.3	2000	0.23	1.1	3.3	6000	1.40	23571	45	140	1.26	2.18	120.7	423.0	263	0.6	0.5	1.5
S56 02/2	1.9	2000	0.36	1.7	4.8	6000	1.84	26087	76	140	1.26	2.18	62.6	272.0	263	0.9	0.8	2.2
S56 03/2	2.8	2000	0.50	2.4	6.6	6000	2.28	28947	95	140	1.26	2.18	37.8	168.4	263	1.3	1.1	3.0
3000 min^{-1} (4 poles) - Connection Y																		
S56 D6/3	0.6	3000	0.16	0.5	1.7	6000	0.73	23288	50	140	0.84	1.45	160.2	445.6	263	0.4	0.3	1.2
S56 01/3	1.3	3000	0.31	1.0	3.3	6000	1.40	23571	45	140	0.84	1.45	52.7	187.2	263	0.9	0.7	2.3
S56 02/3	1.9	3000	0.50	1.6	4.8	6000	1.84	26087	76	140	0.84	1.45	27.8	121.7	263	1.3	1.1	3.3
S56 03/3	2.8	3000	0.69	2.2	6.6	6000	2.28	28947	95	140	0.84	1.45	17.9	75.5	263	1.9	1.5	4.6
4000 min^{-1} (4 poles) - Connection Y																		
S56 D6/4	0.6	4000	0.21	0.5	1.7	6000	0.73	23288	50	140	0.63	1.09	90.5	248.6	263	0.6	0.5	1.6
S56 01/4	1.3	4000	0.42	1.0	3.3	6000	1.40	23571	45	140	0.63	1.09	29.8	105.8	263	1.2	0.9	3.0
S56 02/4	1.9	4000	0.63	1.5	4.8	6000	1.84	26087	76	140	0.63	1.09	15.9	68.9	263	1.7	1.4	4.4
S56 03/4	2.8	4000	0.88	2.1	6.6	6000	2.28	28947	95	140	0.63	1.09	10.0	42.1	263	2.6	1.9	6.1
6000 min^{-1} (4 poles) - Connection Y																		
S56 D6/6	0.6	6000	0.25	0.4	1.7	6000	0.73	23288	50	140	0.42	0.73	39.6	110.0	263	0.8	0.6	2.3
S56 01/6	1.3	6000	0.57	0.9	3.3	6000	1.40	23571	45	140	0.42	0.73	13.3	47.4	263	1.8	1.2	4.6
S56 02/6	1.9	6000	0.82	1.3	4.8	6000	1.84	26087	76	140	0.42	0.73	7.4	31.0	263	2.6	1.8	6.6
S56 03/6	2.8	6000	1.19	1.9	6.6	6000	2.28	28947	95	140	0.42	0.73	4.4	18.4	263	3.9	2.6	9.1

Tab. 35

B56D6I_H&M

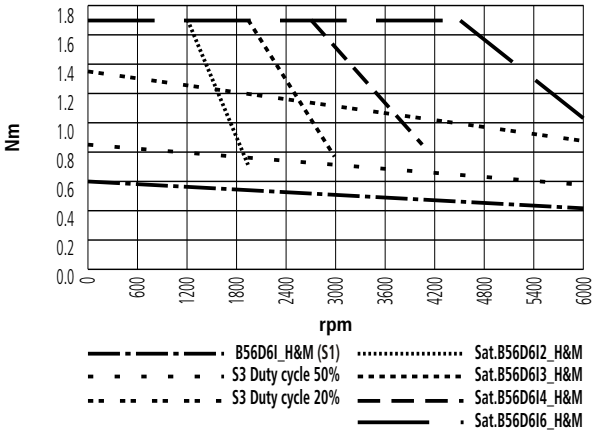


Fig. 33

B5601I_H&M

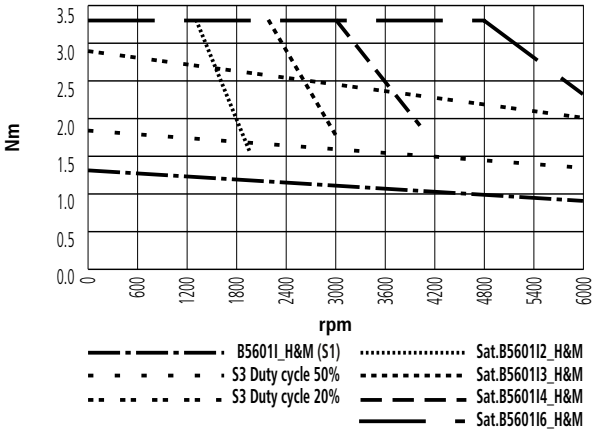


Fig. 34

B5602I_H&M

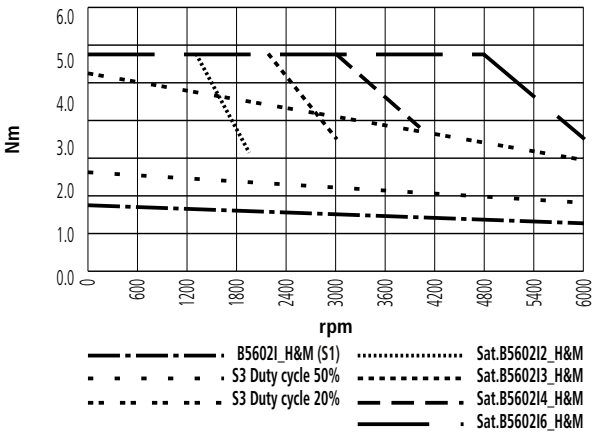


Fig. 35

B5603I_H&M

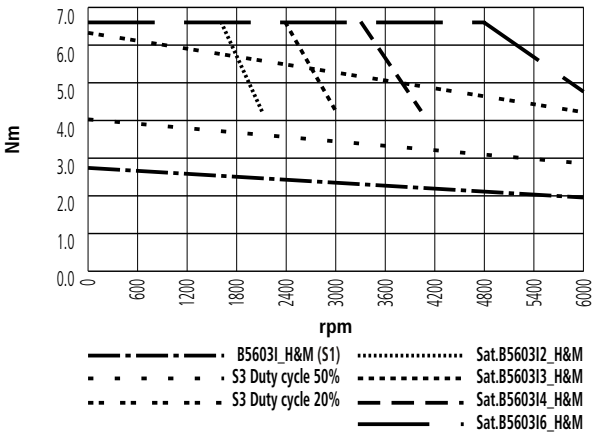


Fig. 36

Trapezoidal: B56 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	J_{max}	k_e	k_t	R_W	L_W	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min^{-1} (4 poles) - Connection Y																		
T56 D6/2	0.6	2000	0.13	0.6	1.7	6000	0.73	23288	50	140	0.94	0.94	104.3	289.8	196	0.6	0.6	1.8
T56 01/2	1.3	2000	0.23	1.1	3.3	6000	1.40	23571	45	140	0.94	0.94	40.3	143.0	196	1.4	1.2	3.5
T56 02/2	1.9	2000	0.36	1.7	4.8	6000	1.84	26087	76	140	0.94	0.94	20.7	91.0	196	2.0	1.8	5.1
T56 03/2	2.8	2000	0.50	2.4	6.6	6000	2.28	28947	95	140	0.94	0.94	13.9	66.0	196	3.0	2.6	7.0
3000 min^{-1} (4 poles) - Connection Y																		
T56 D6/3	0.6	3000	0.16	0.5	1.7	6000	0.73	23288	50	140	0.62	0.62	52.4	142.0	196	1.0	0.8	2.7
T56 01/3	1.3	3000	0.31	1.0	3.3	6000	1.40	23571	45	140	0.62	0.62	17.9	64.0	196	2.1	1.6	5.3
T56 02/3	1.9	3000	0.50	1.6	4.8	6000	1.84	26087	76	140	0.62	0.62	9.4	40.9	196	3.0	2.6	7.7
T56 03/3	2.8	3000	0.69	2.2	6.6	6000	2.28	28947	95	140	0.62	0.62	6.4	30.2	196	4.5	3.5	10.6
4000 min^{-1} (4 poles) - Connection Y																		
T56 D6/4	0.60	4000	0.21	0.50	1.7	6000	0.73	23288	50	140	0.47	0.47	29.7	79	196	1.3	1.1	3.6
T56 01/4	1.30	4000	0.42	1.00	3.3	6000	1.40	23571	45	140	0.47	0.47	10.0	35.7	196	2.8	2.1	7.0
T56 02/4	1.90	4000	0.63	1.50	4.8	6000	1.84	26087	76	140	0.47	0.47	5.4	23.2	196	4.1	3.2	10.2
T56 03/4	2.80	4000	0.88	2.10	6.6	6000	2.28	28947	95	140	0.47	0.47	3.5	16.5	196	6.0	4.5	14.1
6000 min^{-1} (4 poles) - Connection Y																		
T56 D6/6	0.60	6000	0.25	0.40	1.7	6000	0.73	23288	50	140	0.31	0.31	13.0	36.0	196	1.9	1.3	5.4
T56 01/6	1.30	6000	0.57	0.90	3.3	6000	1.40	23571	45	140	0.31	0.31	4.5	16.4	196	4.2	2.9	10.6
T56 02/6	1.90	6000	0.82	1.30	4.8	6000	1.84	26087	76	140	0.31	0.31	2.4	10.6	196	6.1	4.2	15.4
T56 03/6	2.80	6000	1.19	1.90	6.6	6000	2.28	28947	95	140	0.31	0.31	1.6	7.5	196	9.0	6.1	21.1

Tab. 36

Trapezoidal: B56 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	J_{max}	k_e	k_t	R_w	L_w	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min^{-1} (4 poles) - Connection Y																		
T56 D6/2	0.6	2000	0.10	0.5	1.7	6000	0.73	23288	50	140	1.62	1.62	374.4	994.2	340	0.4	0.3	1.0
T56 01/2	1.3	2000	0.23	1.1	3.3	6000	1.40	23571	45	140	1.62	1.62	120.7	423.0	340	0.8	0.7	2.0
T56 02/2	1.9	2000	0.36	1.7	4.8	6000	1.84	26087	76	140	1.62	1.62	62.6	272.0	340	1.2	1.0	3.0
T56 03/2	2.8	2000	0.50	2.4	6.6	6000	2.28	28947	95	140	1.62	1.62	37.8	168.4	340	1.7	1.5	4.1
3000 min^{-1} (4 poles) - Connection Y																		
T56 D6/3	0.6	3000	0.16	0.5	1.7	6000	0.73	23288	50	140	1.08	1.08	160.2	445.6	340	0.6	0.5	1.6
T56 01/3	1.3	3000	0.31	1.0	3.3	6000	1.40	23571	45	140	1.08	1.08	52.7	187.2	340	1.2	0.9	3.0
T56 02/3	1.9	3000	0.50	1.6	4.8	6000	1.84	26087	76	140	1.08	1.08	27.8	121.7	340	1.8	1.5	4.4
T56 03/3	2.8	3000	0.69	2.2	6.6	6000	2.28	28947	95	140	1.08	1.08	17.9	75.5	340	2.6	2.0	6.1
4000 min^{-1} (4 poles) - Connection Y																		
T56 D6/4	0.6	4000	0.21	0.5	1.7	6000	0.73	23288	50	140	0.81	0.81	90.5	248.6	340	0.7	0.6	2.1
T56 01/4	1.3	4000	0.42	1.0	3.3	6000	1.40	23571	45	140	0.81	0.81	29.8	105.8	340	1.6	1.2	4.1
T56 02/4	1.9	4000	0.63	1.5	4.8	6000	1.84	26087	76	140	0.81	0.81	15.9	68.9	340	2.3	1.8	5.9
T56 03/4	2.8	4000	0.88	2.1	6.6	6000	2.28	28947	95	140	0.81	0.81	9.3	40.7	340	3.4	2.6	8.1
6000 min^{-1} (4 poles) - Connection Y																		
T56 D6/6	0.6	6000	0.25	0.4	1.7	6000	0.73	23288	50	140	0.54	0.54	39.6	110.0	340	1.1	0.7	3.1
T56 01/6	1.3	6000	0.57	0.9	3.3	6000	1.40	23571	45	140	0.54	0.54	13.3	47.4	340	2.4	1.7	6.1
T56 02/6	1.9	6000	0.82	1.3	4.8	6000	1.84	26087	76	140	0.54	0.54	7.4	31.0	340	3.5	2.4	8.9
T56 03/6	2.8	6000	1.19	1.9	6.6	6000	2.28	28947	95	140	0.54	0.54	4.4	18.4	340	5.2	3.5	12.2

Tab. 37

B56D6Z_H&M

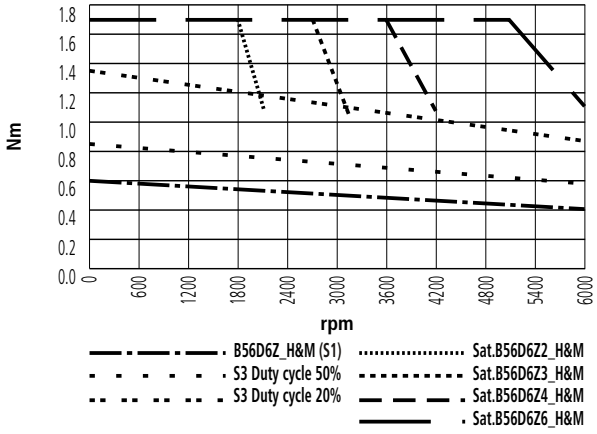


Fig. 37

B5601Z_H&M

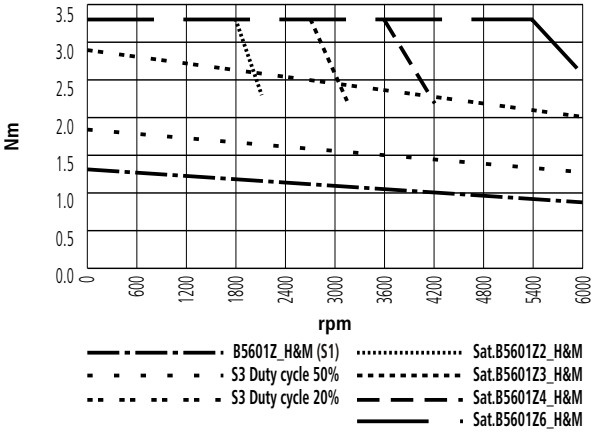


Fig. 38

B5602Z_H&M

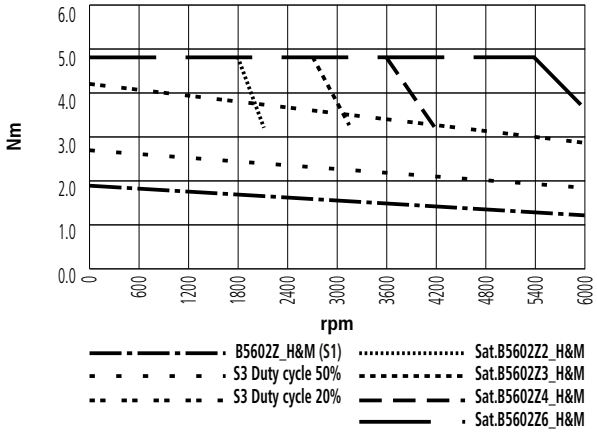


Fig. 39

B5603Z_H&M

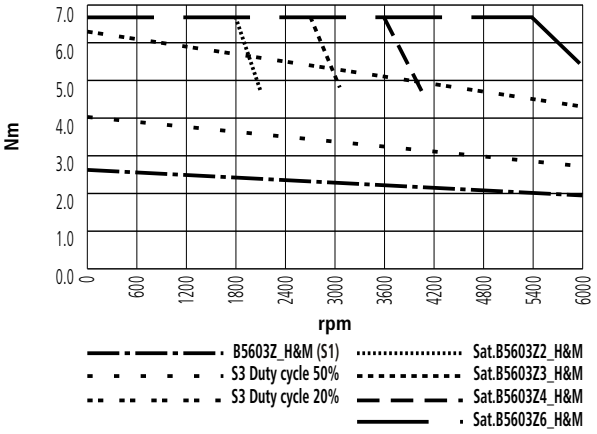
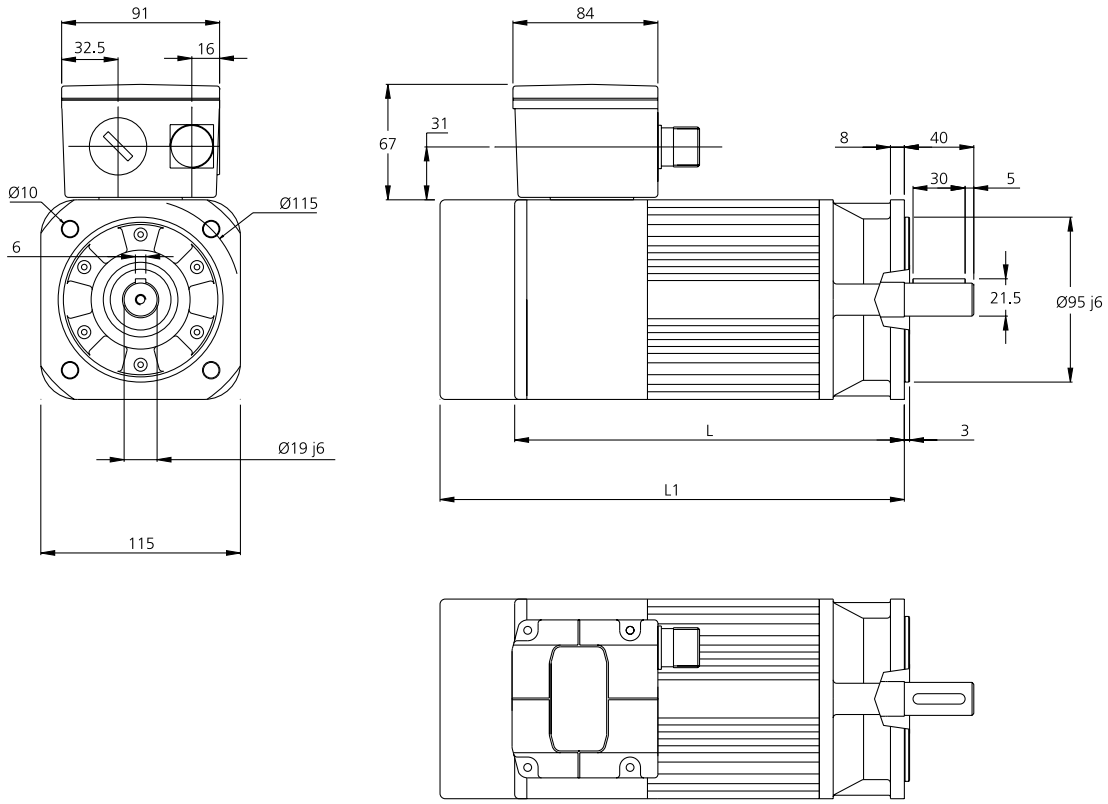


Fig. 40

Sinusoidal and trapezoidal motors

SERIES 63

Sinusoidal 6 poles: B63 voltage H(400 Volt) and M(230 Volt)
Trapezoidal 6 poles: B63 voltage H(400 Volt) and M(230 Volt)
Sinusoidal 8 poles: B63 voltage H(400 Volt) and M(230 Volt)



Dwg. 18

L = Motor length with resolver as transducer
L1= Motor length with encoder as transducer

Type	Nm	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
B63-04	4.0	224	256	7.1	254.5	286.5	8.0
B63-06	6.0	249	281	9.0	279.5	311.5	10.1
B63-08	8.0	274	306	10.1	304.5	336.5	12.0
B63-10	10.0	299	331	12.0	329.5	361.5	13.9

Tab. 38

Sinusoidal: B63 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J - *J	a_{pk} - $*a_{pk}$	T_{th}	ϑ_{max}	k_e	k_t	R_W	L_W	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (6 poles) - Connection Y																		
S63 04/2	4.0	2000	0.75	3.6	17.1	4000	5.81 - 8.64	29432 - 19792	25	140	0.82	1.41	7.85	37.78	171	2.8	2.5	12.1
S63 06/2	6.0	2000	1.13	5.4	24.4	4000	8.55 - 13.32	28538 - 18318	30	140	0.82	1.41	4.87	25.67	171	4.2	3.8	17.3
S63 08/2	8.0	2000	1.53	7.3	33.1	4000	11.20 - 17.99	29554 - 18399	30	140	0.82	1.41	2.86	16.66	171	5.7	5.2	23.4
S63 10/2	10.0	2000	1.91	9.1	40.5	4000	13.65 - 22.67	29670 - 17865	35	140	0.82	1.41	2.18	12.86	171	7.1	6.4	28.6
3000 min^{-1} (6 poles) - Connection Y																		
S63 04/3	4.0	3000	1.10	3.5	17.1	4000	5.81 - 8.64	29432 - 19792	25	140	0.54	0.94	3.60	17.08	171	4.2	3.7	18.1
S63 06/3	6.0	3000	1.67	5.3	24.4	4000	8.55 - 13.32	28538 - 18318	30	140	0.54	0.94	2.20	11.41	171	6.4	5.6	25.9
S63 08/3	8.0	3000	2.23	7.1	33.1	4000	11.20 - 17.99	29554 - 18399	30	140	0.54	0.94	1.30	7.67	171	8.5	7.5	35.1
S63 10/3	10.0	3000	2.76	8.8	40.5	4000	13.65 - 22.67	29670 - 17865	35	140	0.54	0.94	0.93	5.47	171	10.6	9.3	43.0
4000 min^{-1} (6 poles) - Connection Y																		
S63 04/4	4.0	4000	1.38	3.3	17.1	6000	5.81 - 8.64	29432 - 19792	25	140	0.41	0.71	2.00	9.45	171	5.7	4.7	24.2
S63 06/4	6.0	4000	2.09	5.0	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.41	0.71	1.14	6.09	171	8.5	7.1	34.5
S63 08/4	8.0	4000	2.76	6.6	33.1	6000	11.20 - 17.99	29554 - 18399	30	140	0.41	0.71	0.71	4.16	171	11.3	9.3	46.8
S63 10/4	10.0	4000	3.43	8.2	40.5	6000	13.65 - 22.67	29670 - 17865	35	140	0.41	0.71	0.55	3.31	171	14.1	11.6	57.3
6000 min^{-1} (6 poles) - Connection Y																		
S63 04/6	4.0	6000	1.88	3.0	17.1	6000	5.81 - 8.64	29432 - 19792	25	140	0.27	0.47	0.85	4.05	171	8.5	6.4	36.3
S63 06/6	6.0	6000	2.89	4.6	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.27	0.47	0.54	2.85	171	12.7	9.8	51.8
S63 08/6	8.0	6000	3.90	6.2	33.1	6000	11.20 - 17.99	29554 - 18399	30	140	0.27	0.47	0.35	1.99	171	17.0	13.2	70.2
S63 10/6	10.0	6000	4.84	7.7	40.5	6000	13.65 - 22.67	29670 - 17865	35	140	0.27	0.47	0.24	1.43	171	21.2	16.3	85.9

Note: J standard inertia, * J higher inertia

Tab. 39

Sinusoidal: B63 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J - *J	a_{pk} - $*a_{pk}$	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (6 poles) - Connection Y																		
S63 04/2	4.0	2000	0.75	3.6	17.1	4000	5.81 - 8.64	29432 - 19792	25	140	1.41	2.45	26.05	110.59	296	1.6	1.5	7.0
S63 06/2	6.0	2000	1.13	5.4	24.4	4000	8.55 - 13.32	28538 - 18318	30	140	1.41	2.45	13.59	69.23	296	2.5	2.2	10.0
S63 08/2	8.0	2000	1.53	7.3	33.1	4000	11.20 - 17.99	29554 - 18399	30	140	1.41	2.45	9.06	51.75	296	3.3	3.0	13.5
S63 10/2	10.0	2000	1.91	9.1	40.5	4000	13.65 - 22.67	29670 - 17865	35	140	1.41	2.45	6.44	40.08	296	4.1	3.7	16.6
3000 min^{-1} (6 poles) - Connection Y																		
S63 04/3	4.0	3000	1.10	3.5	17.1	4000	5.81 - 8.64	29432 - 19792	25	140	0.94	1.63	11.52	48.67	296	2.5	2.1	10.5
S63 06/3	6.0	3000	1.67	5.3	24.4	4000	8.55 - 13.32	28538 - 18318	30	140	0.94	1.63	6.19	31.23	296	3.7	3.3	15.0
S63 08/3	8.0	3000	2.23	7.1	33.1	4000	11.20 - 17.99	29554 - 18399	30	140	0.94	1.63	4.15	23.93	296	4.9	4.4	20.3
S63 10/3	10.0	3000	2.76	8.8	40.5	4000	13.65 - 22.67	29670 - 17865	35	140	0.94	1.63	2.93	18.26	296	6.1	5.4	24.8
4000 min^{-1} (6 poles) - Connection Y																		
S63 04/4	4.0	4000	1.38	3.3	17.1	6000	5.81 - 8.64	29432 - 19792	25	140	0.71	1.22	6.45	27.10	296	3.3	2.7	14.0
S63 06/4	6.0	4000	2.09	5.0	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.71	1.22	3.53	17.83	296	4.9	4.1	20.0
S63 08/4	8.0	4000	2.76	6.6	33.1	6000	11.20 - 17.99	29554 - 18399	30	140	0.71	1.22	2.22	12.94	296	6.5	5.4	27.1
S63 10/4	10.0	4000	3.43	8.2	40.5	6000	13.65 - 22.67	29670 - 17865	35	140	0.71	1.22	1.61	10.02	296	8.2	6.7	33.1
6000 min^{-1} (6 poles) - Connection Y																		
S63 04/6	4.0	6000	1.88	3.0	17.1	6000	5.81 - 8.64	29432 - 19792	25	140	0.47	0.82	2.95	12.53	296	4.9	3.7	21.0
S63 06/6	6.0	6000	2.89	4.6	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.47	0.82	1.59	8.16	296	7.4	5.6	29.9
S63 08/6	8.0	6000	3.90	6.2	33.1	6000	11.20 - 17.99	29554 - 18399	30	140	0.47	0.82	1.02	5.98	296	9.8	7.6	40.6
S63 10/6	10.0	6000	4.84	7.7	40.5	6000	13.65 - 22.67	29670 - 17865	35	140	0.47	0.82	0.80	4.91	296	12.3	9.4	49.7

Note: J standard inertia, *J higher inertia

Tab. 40

B6304I_H&M

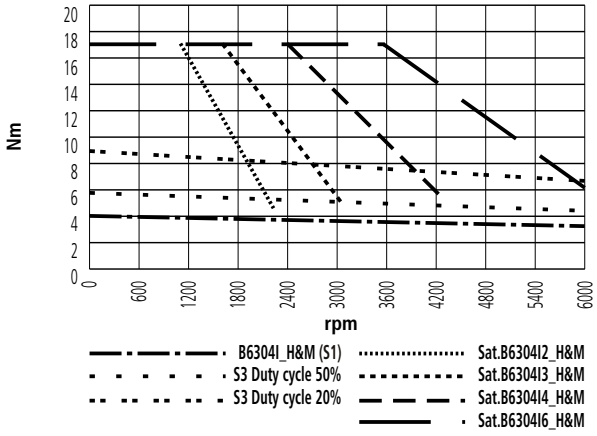


Fig. 41

B6306I_H&M

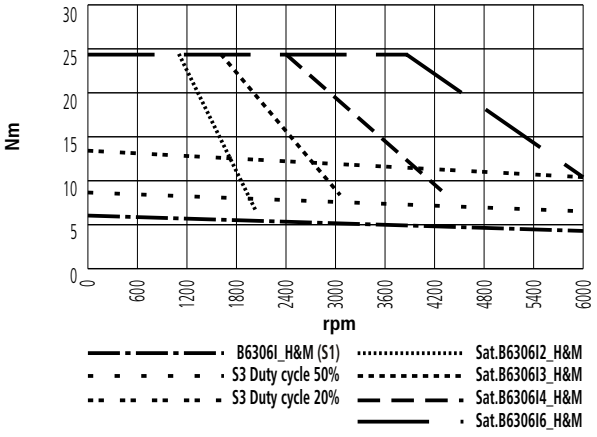


Fig. 42

B6308I_H&M

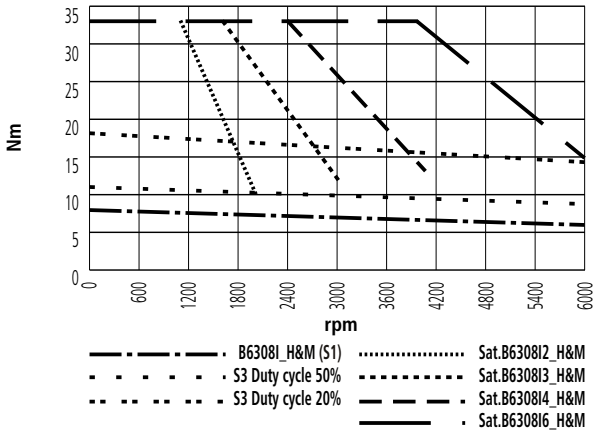


Fig. 43

B6310I_H&M

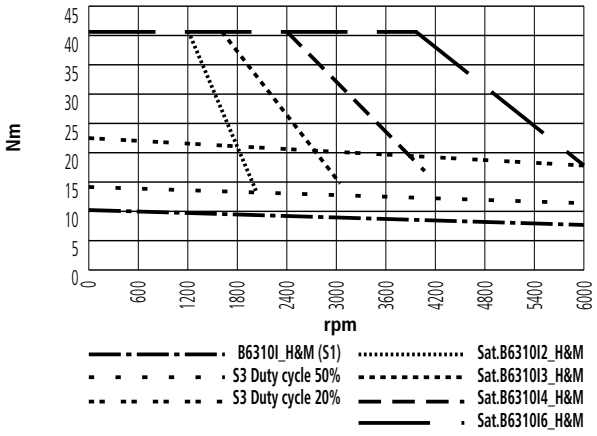


Fig. 44

Trapezoidal: B63 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J - *J	a_{pk} - $*a_{pk}$	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min^{-1} (6 poles) - Connection Y																		
T63 04/2	4.0	2000	0.75	3.6	17.1	4000	5.81 - 8.64	29432 - 19792	25	140	0.94	0.94	5.39	25.88	196	4.3	3.8	18.3
T63 06/2	6.0	2000	1.13	5.4	24.4	4000	8.55 - 13.32	28538 - 18318	30	140	0.94	0.94	3.32	17.28	196	6.4	5.8	26.1
T63 08/2	8.0	2000	1.53	7.3	33.1	4000	11.20 - 17.99	29554 - 18399	30	140	0.94	0.94	2.06	12.24	196	8.5	7.8	35.4
T63 10/2	10.0	2000	1.91	9.1	40.5	4000	13.65 - 22.67	29670 - 17865	35	140	0.94	0.94	1.45	8.78	196	10.7	9.7	43.3
3000 min^{-1} (6 poles) - Connection Y																		
T63 04/3	4.0	3000	1.10	3.5	17.1	4000	5.81 - 8.64	29432 - 19792	25	140	0.62	0.62	2.38	11.50	196	6.4	5.6	27.4
T63 06/3	6.0	3000	1.67	5.3	24.4	4000	8.55 - 13.32	28538 - 18318	30	140	0.62	0.62	1.42	7.44	196	9.6	8.5	39.1
T63 08/3	8.0	3000	2.23	7.1	33.1	4000	11.20 - 17.99	29554 - 18399	30	140	0.62	0.62	0.93	5.44	196	12.8	11.4	53.1
T63 10/3	10.0	3000	2.76	8.8	40.5	4000	13.65 - 22.67	29670 - 17865	35	140	0.62	0.62	0.68	4.11	196	16.0	14.1	64.9
4000 min^{-1} (6 poles) - Connection Y																		
T63 04/4	4.0	4000	1.38	3.3	17.1	6000	5.81 - 8.64	29432 - 19792	25	140	0.47	0.47	1.29	6.47	196	8.5	7.1	36.5
T63 06/4	6.0	4000	2.09	5.0	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.47	0.47	0.81	4.32	196	12.8	10.7	52.1
T63 08/4	8.0	4000	2.76	6.6	33.1	6000	11.20 - 17.99	29554 - 18399	30	140	0.47	0.47	0.53	3.06	196	17.1	14.1	70.7
T63 10/4	10.0	4000	3.43	8.2	40.5	6000	13.65 - 22.67	29670 - 17865	35	140	0.47	0.47	0.40	2.43	196	21.4	17.5	86.6
6000 min^{-1} (6 poles) - Connection Y																		
T63 04/6	4.0	6000	1.88	3.0	17.1	6000	5.81 - 8.64	29432 - 19792	25	140	0.31	0.31	0.60	2.88	196	12.8	9.6	54.8
T63 06/6	6.0	6000	2.89	4.6	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.31	0.31	0.32	1.69	196	19.2	14.7	78.2
T63 08/6	8.0	6000	3.90	6.2	33.1	6000	11.20 - 17.99	29554 - 18399	30	140	0.31	0.31	0.22	1.36	196	25.6	19.9	106.1
T63 10/6	10.0	6000	4.84	7.7	40.5	6000	13.65 - 22.67	29670 - 17865	35	140	0.31	0.31	0.20	1.19	196	32.1	24.7	129.8

Note: J standard inertia, * J higher inertia

Tab. 41

Trapezoidal: B63 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J - *J	a_{pk} - *a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_W	L_W	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min^{-1} (6 poles) - Connection Y																		
T63 04/2	4.0	2000	0.75	3.6	17.1	4000	5.81 - 8.64	29432 - 19792	25	140	1.62	1.62	16.72	72.90	340	2.5	2.2	10.5
T63 06/2	6.0	2000	1.13	5.4	24.4	4000	8.55 - 13.32	28538 - 18318	30	140	1.62	1.62	9.05	46.65	340	3.7	3.3	15.0
T63 08/2	8.0	2000	1.53	7.3	33.1	4000	11.20 - 17.99	29554 - 18399	30	140	1.62	1.62	5.88	34.80	340	4.9	4.5	20.4
T63 10/2	10.0	2000	1.91	9.1	40.5	4000	13.65 - 22.67	29670 - 17865	35	140	1.62	1.62	4.34	27.28	340	6.2	5.6	24.9
3000 min^{-1} (6 poles) - Connection Y																		
T63 04/3	4.0	3000	1.10	3.5	17.1	4000	5.81 - 8.64	29432 - 19792	25	140	1.08	1.08	7.56	32.80	340	3.7	3.2	15.8
T63 06/3	6.0	3000	1.67	5.3	24.4	4000	8.55 - 13.32	28538 - 18318	30	140	1.08	1.08	3.91	21.11	340	5.5	4.9	22.5
T63 08/3	8.0	3000	2.23	7.1	33.1	4000	11.20 - 17.99	29554 - 18399	30	140	1.08	1.08	2.81	16.23	340	7.4	6.6	30.6
T63 10/3	10.0	3000	2.76	8.8	40.5	4000	13.65 - 22.67	29670 - 17865	35	140	1.08	1.08	1.93	12.12	340	9.2	8.1	37.4
4000 min^{-1} (6 poles) - Connection Y																		
T63 04/4	4.0	4000	1.38	3.3	17.1	6000	5.81 - 8.64	29432 - 19792	25	140	0.81	0.81	4.14	18.22	340	4.9	4.1	21.1
T63 06/4	6.0	4000	2.09	5.0	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.81	0.81	2.20	11.24	340	7.4	6.2	30.1
T63 08/4	8.0	4000	2.76	6.6	33.1	6000	11.20 - 17.99	29554 - 18399	30	140	0.81	0.81	1.43	8.28	340	9.9	8.1	40.8
T63 10/4	10.0	4000	3.43	8.2	40.5	6000	13.65 - 22.67	29670 - 17865	35	140	0.81	0.81	1.15	7.24	340	12.3	10.1	49.9
6000 min^{-1} (6 poles) - Connection Y																		
T63 04/6	4.0	6000	1.88	3.0	17.1	6000	5.81 - 8.64	29432 - 19792	25	140	0.54	0.54	1.83	7.90	340	7.4	5.5	31.6
T63 06/6	6.0	6000	2.89	4.6	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.54	0.54	1.00	5.00	340	11.1	8.5	45.1
T63 06/6	6.0	6000	2.89	4.6	24.4	6000	8.55 - 13.32	28538 - 18318	30	140	0.54	0.54	1.00	5.00	340	11.1	8.5	45.1
T63 10/6	10.0	6000	4.84	7.7	40.5	6000	13.65 - 22.67	29670 - 17865	35	140	0.54	0.54	0.48	3.03	340	18.5	14.2	74.8

Note: Jstandard inertia, *Jhigher inertia

Tab. 42

B6304Z_H&M

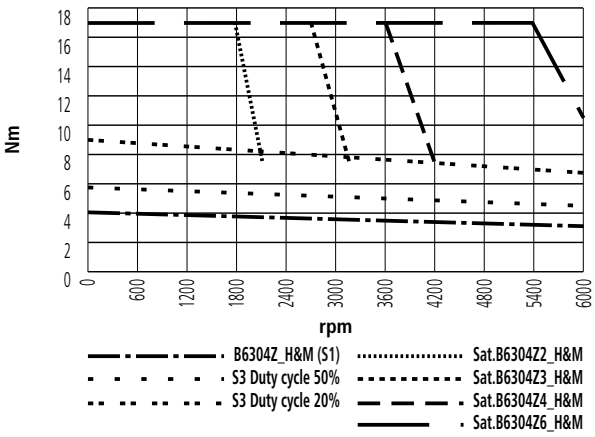


Fig. 45

B6306Z_H&M

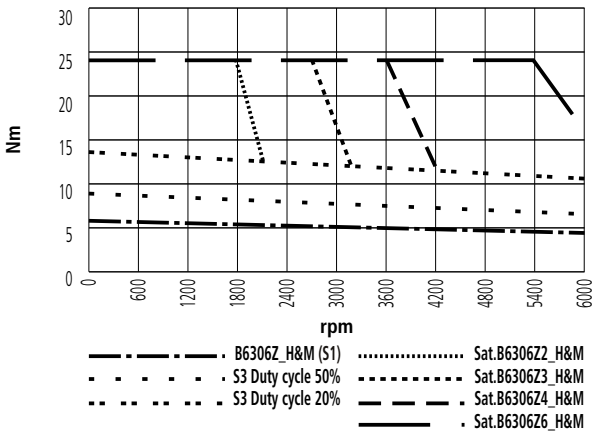


Fig. 46

B6308Z_H&M

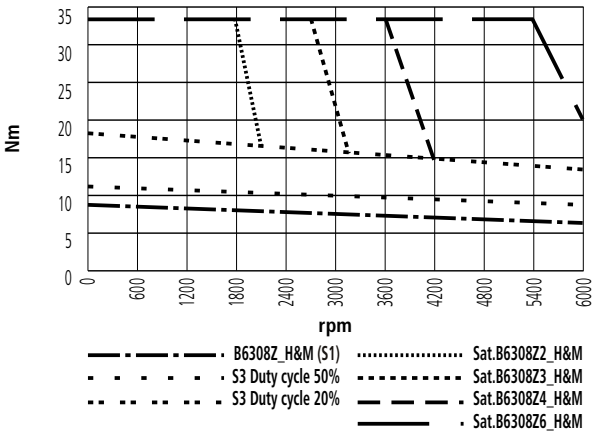


Fig. 47

B6310Z_H&M

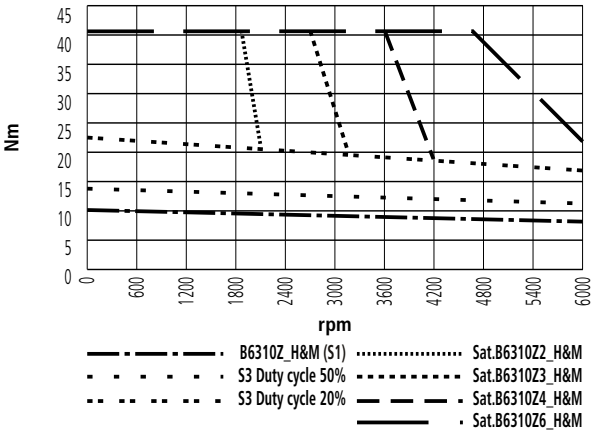


Fig. 48

Sinusoidal 8 poles: B63 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_W	L_W	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (8 poles) - Connection Y																		
S63 04/2	4.0	2000	0.8	3.6	20	4000	6.20	32258	25	140	0.81	1.41	5.25	16.50	170	2.8	2.6	14.2
S63 06/2	6.0	2000	1.1	5.4	30	4000	8.01	37453	30	140	0.81	1.41	2.93	11.25	170	4.3	3.8	21.3
S63 08/2	8.0	2000	1.5	7.2	40	4000	10.00	40000	30	140	0.81	1.41	1.88	7.50	170	5.7	5.1	28.4
S63 10/2	10.0	2000	1.9	9.0	50	4000	11.90	42017	30	140	0.81	1.41	1.38	6.49	170	7.1	6.4	35.5
3000 min^{-1} (8 poles) - Connection Y																		
S63 04/3	4.0	3000	1.1	3.6	20	4000	6.20	32258	25	140	0.54	0.94	2.33	7.33	170	4.3	3.8	21.3
S63 06/3	6.0	3000	1.7	5.4	30	4000	8.01	37453	30	140	0.54	0.94	1.30	5.00	170	6.4	5.7	31.9
S63 08/3	8.0	3000	2.3	7.2	40	4000	10.00	40000	30	140	0.54	0.94	0.84	3.33	170	8.5	7.7	42.6
S63 10/3	10.0	3000	2.8	9.0	50	4000	11.90	42017	30	140	0.54	0.94	0.61	2.88	170	10.6	9.6	53.2
4000 min^{-1} (8 poles) - Connection Y																		
S63 04/4	4.0	4000	1.3	3.2	20	6000	6.20	32258	25	140	0.41	0.71	1.31	4.13	170	5.7	4.5	28.4
S63 06/4	6.0	4000	2.0	4.8	30	6000	8.01	37453	30	140	0.41	0.71	0.73	2.81	170	8.5	6.8	42.6
S63 08/4	8.0	4000	2.7	6.4	40	6000	10.00	40000	30	140	0.41	0.71	0.47	1.88	170	11.3	9.1	56.7
S63 10/4	10.0	4000	3.4	8.0	50	6000	11.90	42017	30	140	0.41	0.71	0.35	1.62	170	14.2	11.3	70.9

Tab. 43

Sinusoidal 8 poles: B63 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (8 poles) - Connection Y																		
S63 04/2	4.0	2000	0.75	3.6	20	4000	6.20	32258	25	140	1.41	2.45	15.75	49.50	296	1.6	1.5	8.2
S63 06/2	6.0	2000	1.13	5.4	30	4000	8.01	37453	30	140	1.41	2.45	8.78	33.75	296	2.5	2.2	12.3
S63 08/2	8.0	2000	1.51	7.2	40	4000	10.00	40000	30	140	1.41	2.45	5.65	22.50	296	3.3	2.9	16.4
S63 10/2	10.0	2000	1.88	9.0	50	4000	11.90	42017	30	140	1.41	2.45	4.14	19.46	296	4.1	3.7	20.4
3000 min^{-1} (8 poles) - Connection Y																		
S63 04/3	4.0	3000	1.13	3.6	20	4000	6.20	32258	25	140	0.94	1.63	7.00	22.00	296	2.5	2.2	12.3
S63 06/3	6.0	3000	1.70	5.4	30	4000	8.01	37453	30	140	0.94	1.63	3.90	15.00	296	3.7	3.3	18.4
S63 08/3	8.0	3000	2.26	7.2	40	4000	10.00	40000	30	140	0.94	1.63	2.51	10.00	296	4.9	4.4	24.5
S63 10/3	10.0	3000	2.83	9.0	50	4000	11.90	42017	30	140	0.94	1.63	1.84	8.65	296	6.1	5.5	30.7
4000 min^{-1} (8 poles) - Connection Y																		
S63 04/4	4.0	4000	1.34	3.2	20	6000	6.20	32258	25	140	0.71	1.22	3.94	12.38	296	3.3	2.6	16.4
S63 06/4	6.0	4000	2.01	4.8	30	6000	8.01	37453	30	140	0.71	1.22	2.19	8.40	296	4.9	3.9	24.5
S63 08/4	8.0	4000	2.68	6.4	40	6000	10.00	40000	30	140	0.71	1.22	1.41	5.63	296	6.5	5.2	32.7
S63 10/4	10.0	4000	3.35	8.0	50	6000	11.90	42017	30	140	0.71	1.22	1.04	4.87	296	8.2	6.5	40.9

Tab. 44

B6304P_H&M

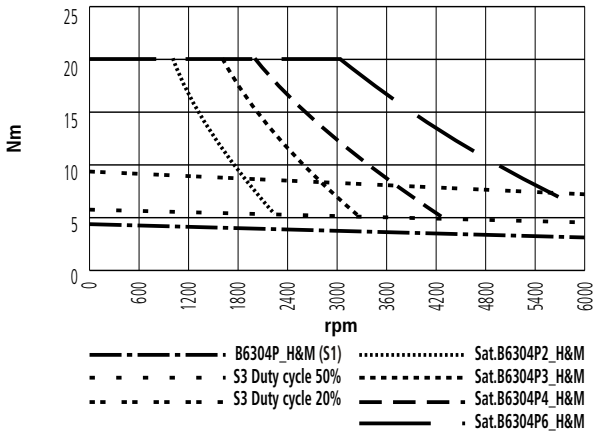


Fig. 49

B6306P_H&M

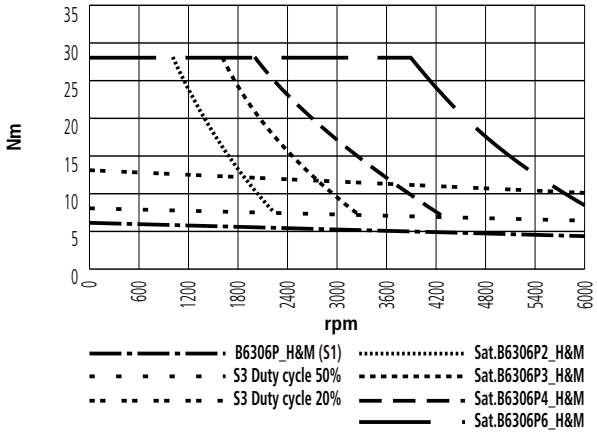


Fig. 50

B6308P_H&M

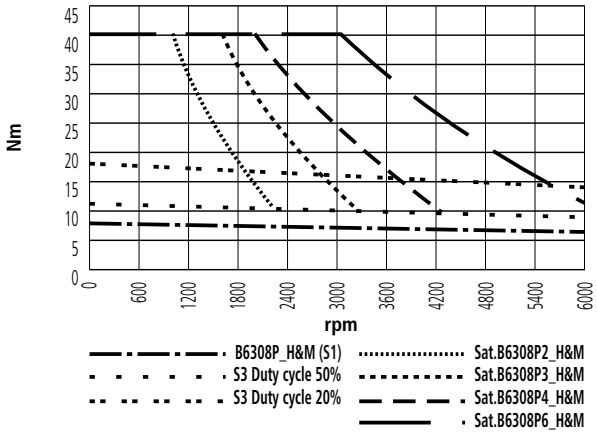


Fig. 51

B6310P_H&M

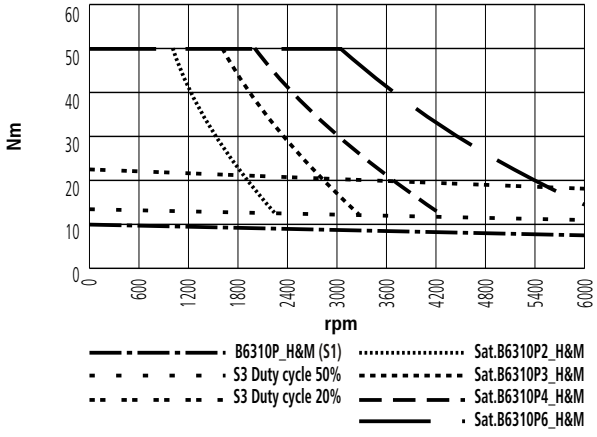
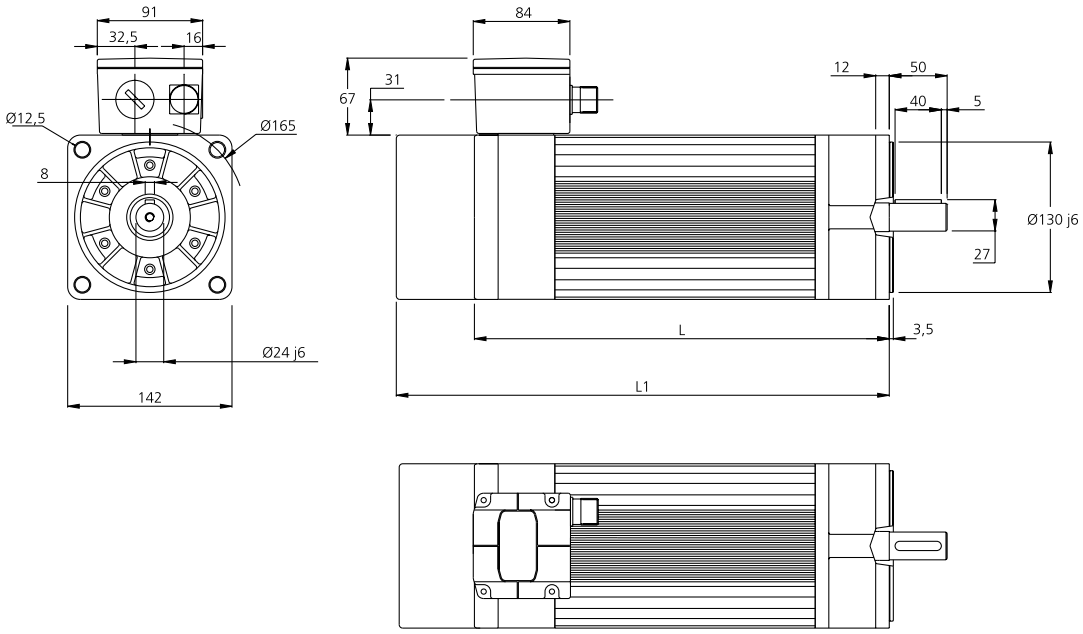


Fig. 52

Sinusoidal and trapezoidal motors

SERIES 71

Sinusoidal 6 poles: B71 voltage H(400 Volt) and M(230 Volt)
Trapezoidal 6 poles: B71 voltage H(400 Volt) and M(230 Volt)
Sinusoidal 8 poles: B71 voltage H(400 Volt) and M(230 Volt)



Dwg. 19

L = Motor length with resolver as transducer
L1= Motor length with encoder as transducer

Type	Nm	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
B71-08	7.8 / 8*	234	256	12.0	264	286	13.9
B71-12	11.7 / 12*	259	281	14.1	288	311	16.0
B71-16	15.6 / 16*	284	306	16.4	314	336	18.3
B71-20	19.5 / 20*	309	331	18.6	339	361	20.5
B71-24	23.4 / 26*	334	356	20.8	364	386	22.7
B71-28	27.3 / 28*	369	380	23.0	389	411	24.9

* Torque regarding trapezoidal and sinusoidal motors 8 poles

Tab. 45

Sinusoidal: B71 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J - *J	a_{pk} - *a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_W	L_W	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (6 poles) - Connection Y																		
S71 08/2	7.8	2000	1.5	7.4	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.82	1.41	3.45	19.77	171	5.5	5.2	21.2
S71 12/2	11.7	2000	2.3	11.0	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.82	1.41	1.91	13.21	171	8.3	7.8	34.0
S71 16/2	15.6	2000	3.1	14.7	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.82	1.41	0.96	8.08	171	11.0	10.4	42.5
S71 20/2	19.5	2000	3.9	18.4	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.82	1.41	0.79	6.84	171	13.8	13.0	56.6
S71 24/2	23.4	2000	4.6	22.0	92	4000	45.35 - 62.84	20287 - 14640	55	140	0.82	1.41	0.61	5.25	171	16.6	15.6	65.1
S71 28/2	27.3	2000	5.3	25.5	108	4000	52.26 - 70.48	20666 - 15323	60	140	0.82	1.41	0.41	3.55	171	19.3	18.0	76.4
3000 min^{-1} (6 poles) - Connection Y																		
S71 08/3	7.8	3000	2.2	7.0	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.54	0.94	1.55	8.56	171	8.3	7.4	31.8
S71 12/3	11.7	3000	3.3	10.5	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.54	0.94	0.87	6.11	171	12.4	11.1	50.9
S71 16/3	15.6	3000	4.4	14.1	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.54	0.94	0.43	3.59	171	16.6	15.0	63.7
S71 20/3	19.5	3000	5.5	17.6	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.54	0.94	0.35	3.04	171	20.7	18.7	84.9
S71 24/3	23.4	3000	6.6	21.1	92	4000	45.35 - 62.84	20287 - 14640	55	140	0.54	0.94	0.27	2.33	171	24.8	22.4	97.6
S71 28/3	27.3	3000	7728.3	24.6	108	4000	52.26 - 70.48	20666 - 15323	60	140	0.54	0.94	0.20	1.74	171	29.0	26.1	114.6
4000 min^{-1} (6 poles) - Connection Y																		
S71 08/4	7.8	4000	2.8	6.8	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.41	0.71	0.92	4.94	171	11.0	9.6	42.5
S71 12/4	11.7	4000	4.2	10.1	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.41	0.71	0.53	3.57	171	16.6	14.3	67.9
S71 16/4	15.6	4000	5.7	13.5	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.41	0.71	0.30	2.49	171	22.1	19.1	84.9
S71 20/4	19.5	4000	7.0	16.8	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.41	0.71	0.19	1.63	171	27.6	23.8	113.2
S71 24/4	23.4	4000	8.4	20.1	92	4000	45.35 - 62.84	20287 - 14640	55	140	0.41	0.71	0.17	1.46	171	33.1	28.4	130.2
S71 28/4	27.3	4000	9.8	23.5	108	4000	52.26 - 70.48	20666 - 15323	60	140	0.41	0.71	0.12	1.01	171	38.6	33.3	152.8

Note: J standard inertia, * J higher inertia

Tab. 46

Sinusoidal: B71 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J - *J	a_{pk} - $*a_{pk}$	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (6 poles) - Connection Y																		
S71 08/2	7.8	2000	1.5	7.4	30	4000	15.75 - 32.26	19048 - 9299	40	140	1.41	2.45	9.18	53.96	296	3.2	3.0	12.3
S71 12/2	11.7	2000	2.3	11.0	48	4000	23.60 - 39.91	20339 - 12027	45	140	1.41	2.45	5.16	34.02	296	4.8	4.5	19.6
S71 16/2	15.6	2000	3.1	14.7	60	4000	31.53 - 47.55	19029 - 12618	45	140	1.41	2.45	3.35	25.23	296	6.4	6.0	24.5
S71 20/2	19.5	2000	3.9	18.4	80	4000	38.44 - 55.20	20812 - 14493	50	140	1.41	2.45	2.45	20.67	296	8.0	7.5	32.7
S71 24/2	23.4	2000	4.6	22.0	92	4000	45.35 - 62.84	20287 - 14640	55	140	1.41	2.45	1.43	12.16	296	9.6	9.0	37.6
S71 28/2	27.3	2000	5.3	25.5	108	4000	52.26 - 70.48	20666 - 15323	60	140	1.41	2.45	1.12	9.19	296	11.2	10.4	44.1
3000 min^{-1} (6 poles) - Connection Y																		
S71 08/3	7.8	3000	2.2	7.0	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.94	1.63	4.13	23.98	296	4.8	4.29	18.38
S71 12/3	11.7	3000	3.3	10.5	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.94	1.63	2.29	15.12	296	7.2	6.4	29.4
S71 16/3	15.6	3000	4.4	14.1	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.94	1.63	1.49	11.58	296	9.6	8.6	36.8
S71 20/3	19.5	3000	5.5	17.6	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.94	1.63	1.13	9.56	296	11.9	10.8	49.0
S71 24/3	23.4	3000	6.6	21.1	92	4000	45.35 - 62.84	20287 - 14640	55	140	0.94	1.63	0.65	5.40	296	14.3	12.9	56.4
S71 28/3	27.3	3000	7.7	24.6	108	4000	52.26 - 70.48	20666 - 15323	60	140	0.94	1.63	0.50	4.08	296	16.7	15.1	66.2
4000 min^{-1} (6 poles) - Connection Y																		
S71 08/4	7.8	4000	2.8	6.8	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.71	1.22	2.27	13.06	296	6.4	5.6	24.5
S71 12/4	11.7	4000	4.2	10.1	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.71	1.22	1.30	8.51	296	9.6	8.3	39.2
S71 16/4	15.6	4000	5.7	13.5	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.71	1.22	0.88	6.72	296	12.7	11.0	49.0
S71 20/4	19.5	4000	7.0	16.8	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.71	1.22	0.58	4.76	296	15.9	13.7	65.4
S71 24/4	23.4	4000	8.4	20.1	92	4000	45.35 - 62.84	20287 - 14640	55	140	0.71	1.22	0.36	2.94	296	19.1	16.4	75.2
S71 28/4	27.3	4000	9.8	23.5	108	4000	52.26 - 70.48	20666 - 15323	60	140	0.71	1.22	0.29	2.30	296	22.3	19.2	88.2

Note: J standard inertia, *J higher inertia

Tab. 47

B7108I_H&M

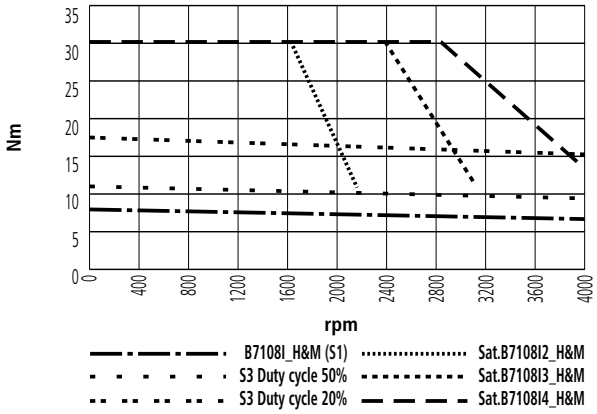


Fig. 53

B7112I_H&M

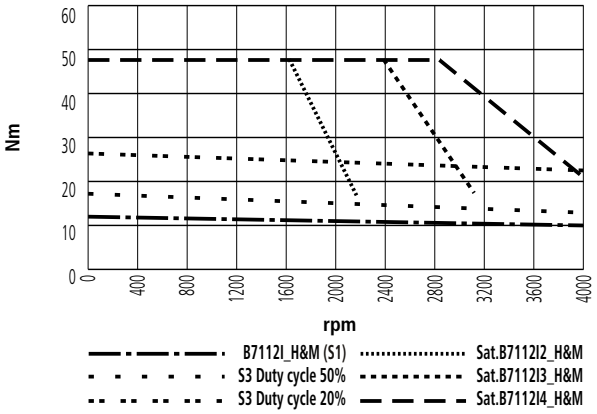


Fig. 54

B7116I_H&M

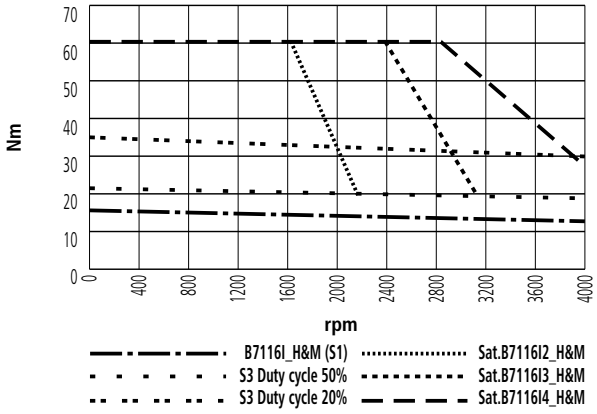


Fig. 55

B7120I_H&M

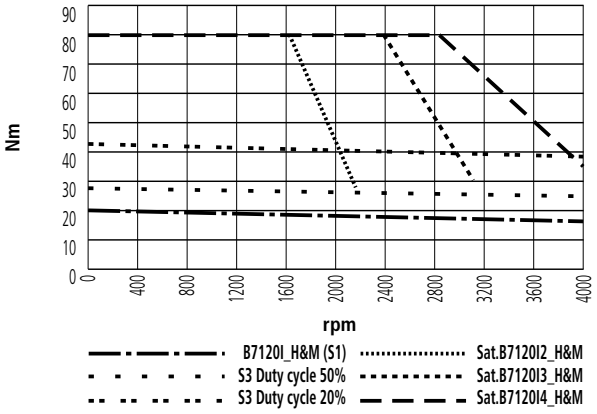


Fig. 56

B7124I_H&M

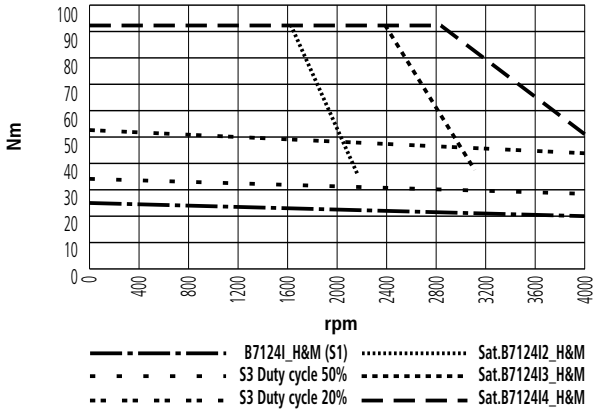


Fig. 57

B7128I_H&M

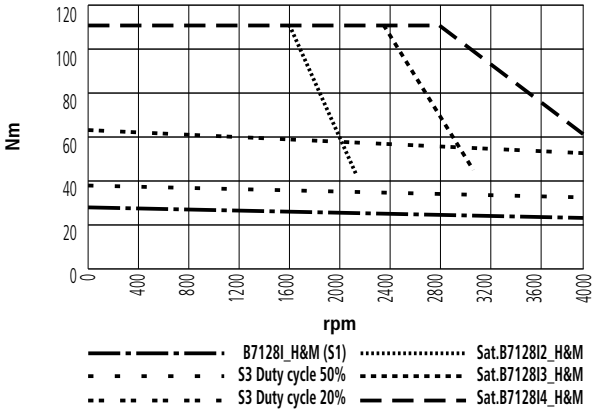


Fig. 58

Trapezoidal: B71 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J - *J	a_{pk} - $*a_{pk}$	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
2000 min^{-1} (6 poles) - Connection Y																		
T71 08/2	8.0	2000	1.5	7.4	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.94	0.94	3.18	16.77	196	8.5	7.9	32.0
T71 12/2	12.0	2000	2.3	11.0	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.94	0.94	1.65	11.18	196	12.8	11.7	51.2
T71 16/2	16.0	2000	3.1	14.7	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.94	0.94	0.87	7.21	196	17.1	15.7	64.0
T71 20/2	20.0	2000	3.9	18.4	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.94	0.94	0.70	5.96	196	21.3	19.6	85.4
T71 24/2	24.0	2000	4.6	22.0	90	4000	45.35 - 62.84	19846 - 14322	55	140	0.94	0.94	0.51	4.41	196	25.6	23.5	96.0
T71 28/2	28.0	2000	5.3	25.5	104	4000	52.26 - 70.48	19900 - 14756	60	140	0.94	0.94	0.39	3.31	196	29.9	27.2	111.0
3000 min^{-1} (6 poles) - Connection Y																		
T71 08/3	8.0	3000	2.2	7.0	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.62	0.62	1.36	7.24	196	12.8	11.2	48.0
T71 12/3	12.0	3000	3.3	10.5	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.62	0.62	0.70	4.76	196	19.2	16.8	76.8
T71 16/3	16.0	3000	4.4	14.1	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.62	0.62	0.39	3.20	196	25.6	22.6	96.0
T71 20/3	20.0	3000	5.5	17.6	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.62	0.62	0.31	2.65	196	32.0	28.2	128.1
T71 24/3	24.0	3000	6.6	21.1	90	4000	45.35 - 62.84	19846 - 14322	55	140	0.62	0.62	0.23	1.96	196	38.4	33.8	144.1
T71 28/3	28.0	3000	7.7	24.6	104	4000	52.26 - 70.48	19900 - 14756	60	140	0.62	0.62	0.16	1.42	196	44.8	39.4	166.5
4000 min^{-1} (6 poles) - Connection Y																		
T71 08/4	8.0	4000	2.8	6.8	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.47	0.47	0.75	4.11	196	17.1	14.5	64.0
T71 12/4	12.0	4000	4.2	10.1	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.47	0.47	0.39	2.71	196	25.6	21.6	102.4
T71 16/4	16.0	4000	5.7	13.5	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.47	0.47	0.21	1.73	196	34.1	28.8	128.1
T71 20/4	20.0	4000	7.0	16.8	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.47	0.47	0.18	1.49	196	42.7	35.9	170.7
T71 24/4	24.0	4000	8.4	20.1	90	4000	45.35 - 62.84	19846 - 14322	55	140	0.47	0.47	0.14	1.17	196	51.2	42.9	192.1
T71 28/4	28.0	4000	9.8	23.5	104	4000	52.26 - 70.48	19900 - 14756	60	140	0.47	0.47	0.09	0.77	196	59.8	50.2	222.0

Note: J standard inertia, *J higher inertia

Tab. 48

Trapezoidal: B71 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o Nm	n rpm	P_n kW	M_n Nm	M_{pk} Nm	n_{max} rpm	J - *J 10^{-4} Kgm²	a_{pk} - *a_{pk} rad/sec²	T_{th} min	ϑ_{max} °C	k_e Vs	k_t Nm/A	R_W Ω	L_W mH	E_n V	I_o A	I_n A	I_{pk} A
2000 min-1 (6 poles) - Connection Y																		
T71 08/2	8.0	2000	1.5	7.4	30	4000	15.75 - 32.26	19048 - 9299	40	140	1.62	1.62	8.29	47.32	340	4.9	4.6	18.5
T71 12/2	12.0	2000	2.3	11.0	48	4000	23.60 - 39.91	20339 - 12027	45	140	1.62	1.62	4.64	29.33	340	7.4	6.8	29.6
T71 16/2	16.0	2000	3.1	14.7	60	4000	31.53 - 47.55	19029 - 12618	45	140	1.62	1.62	3.16	23.63	340	9.9	9.1	37.0
T71 20/2	20.0	2000	3.9	18.4	80	4000	38.44 - 55.20	20812 - 14493	50	140	1.62	1.62	2.36	19.05	340	12.3	11.3	49.3
T71 24/2	24.0	2000	4.6	22.0	90	4000	45.35 - 62.84	19846 - 14322	55	140	1.62	1.62	1.33	11.03	340	14.8	13.6	55.5
T71 28/2	28.0	2000	5.4	25.8	104	4000	52.26 - 70.48	19900 - 14756	60	140	1.62	1.62	0.99	8.19	340	17.3	15.9	64.1
3000 min-1 (6 poles) - Connection Y																		
T71 08/3	8.0	3000	2.2	7.0	30	4000	15.75 - 32.26	19048 - 9299	40	140	1.08	1.08	3.65	20.68	340	7.4	6.5	27.7
T71 12/3	12.0	3000	3.3	10.5	48	4000	23.60 - 39.91	20339 - 12027	45	140	1.08	1.08	2.07	13.04	340	11.1	9.7	44.4
T71 16/3	16.0	3000	4.4	14.1	60	4000	31.53 - 47.55	19029 - 12618	45	140	1.08	1.08	1.39	10.50	340	14.8	13.0	55.5
T71 20/3	20.0	3000	5.5	17.6	80	4000	38.44 - 55.20	20812 - 14493	50	140	1.08	1.08	1.06	8.47	340	18.5	16.3	73.9
T71 24/3	24.0	3000	6.6	21.1	90	4000	45.35 - 62.84	19846 - 14322	55	140	1.08	1.08	0.57	4.66	340	22.2	19.5	83.2
T71 28/3	28.0	3000	7.7	24.6	104	4000	52.26 - 70.48	19900 - 14756	60	140	1.08	1.08	0.41	3.43	340	25.9	22.7	96.1
4000 min-1 (6 poles) - Connection Y																		
T71 08/4	8.0	4000	2.8	6.8	30	4000	15.75 - 32.26	19048 - 9299	40	140	0.81	0.81	2.03	11.43	340	9.9	8.4	37.0
T71 12/4	12.0	4000	4.2	10.1	48	4000	23.60 - 39.91	20339 - 12027	45	140	0.81	0.81	1.05	6.96	340	14.8	12.4	59.1
T71 16/4	16.0	4000	5.7	13.5	60	4000	31.53 - 47.55	19029 - 12618	45	140	0.81	0.81	0.79	5.91	340	19.7	16.6	73.9
T71 20/4	20.0	4000	7.0	16.8	80	4000	38.44 - 55.20	20812 - 14493	50	140	0.81	0.81	0.59	4.76	340	24.6	20.7	98.6
T71 24/4	24.0	4000	8.4	20.1	90	4000	45.35 - 62.84	19846 - 14322	55	140	0.81	0.81	0.32	2.57	340	29.6	24.8	110.9
T71 28/4	28.0	4000	9.8	23.5	104	4000	52.26 - 70.48	19900 - 14756	60	140	0.81	0.81	0.24	1.97	340	34.5	29.0	128.2

Note: J standard inertia, *J higher inertia

Tab. 49

B7108Z_H&M

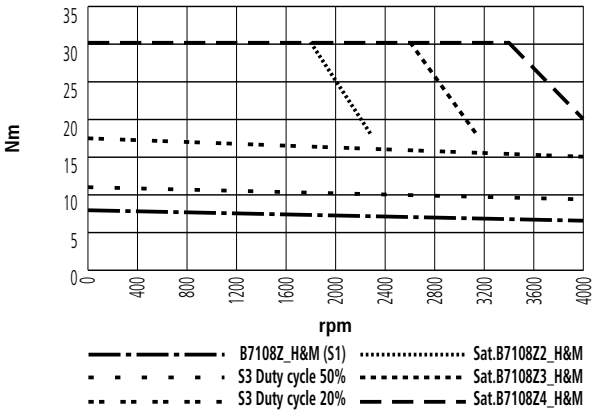


Fig. 59

B7112Z_H&M

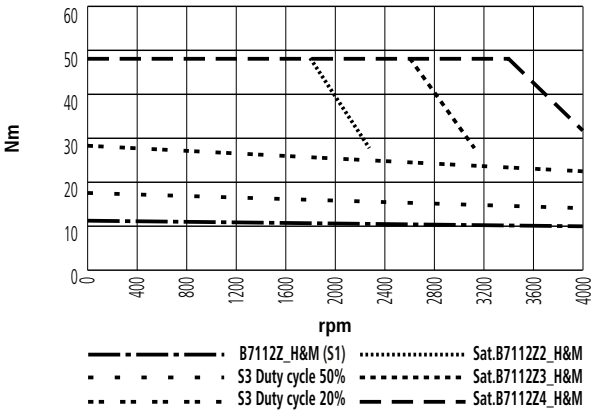


Fig. 60

B7116Z_H&M

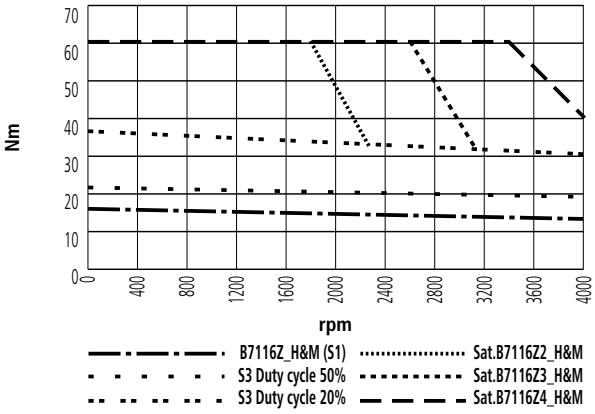


Fig. 61

B7120Z_H&M

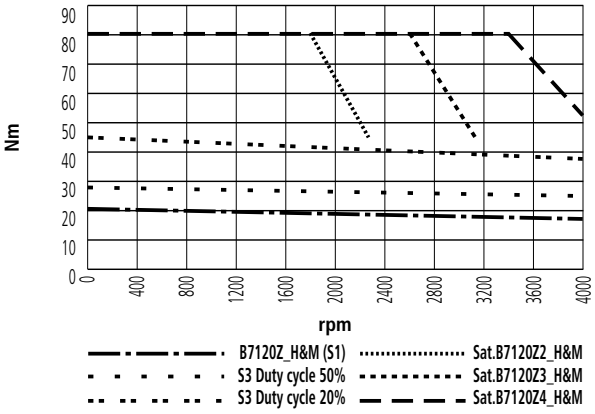


Fig. 62

B7124Z_H&M

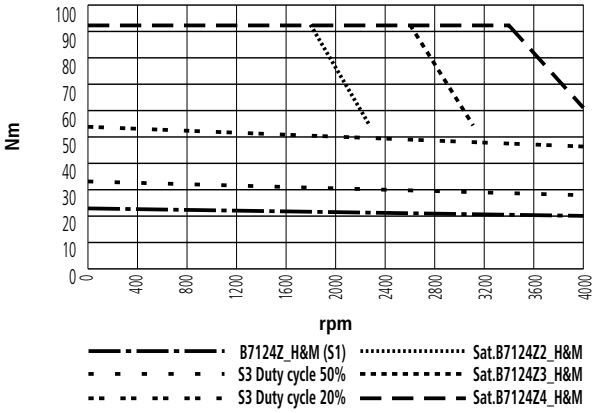


Fig. 63

B7128Z_H&M

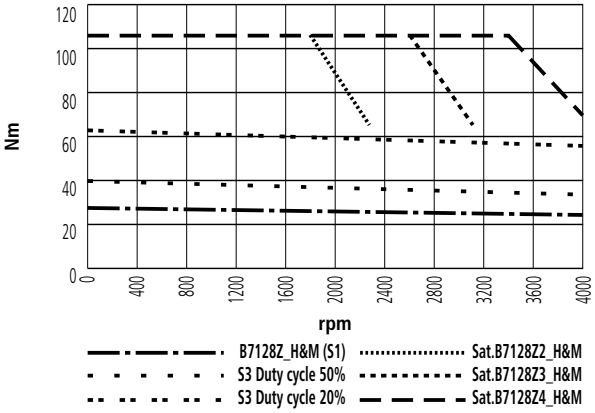


Fig. 64

Sinusoidal 8 poles: B71 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_W	L_W	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (8 poles) - Connection Y																		
S71 08/2	8.0	2000	1.5	7.0	40.0	4000	12.70	31496	40	140	0.81	1.41	2.70	15.53	170	5.7	5.0	28.4
S71 12/2	12.0	2000	2.2	10.5	60.0	4000	17.40	34483	45	140	0.81	1.41	1.44	10.37	170	8.5	7.4	42.6
S71 16/2	16.0	2000	2.9	14.0	80.0	4000	22.10	36199	45	140	0.81	1.41	0.92	7.61	170	11.3	9.9	56.7
S71 20/2	20.0	2000	3.7	17.5	100.0	4000	26.80	37313	50	140	0.81	1.41	0.70	6.28	170	14.2	12.4	70.9
S71 24/2	24.0	2000	4.4	21.0	120.0	4000	31.50	38095	50	140	0.81	1.41	0.59	5.23	170	17.0	14.9	85.1
S71 28/2	28.0	2000	5.1	24.5	140.0	4000	36.20	38674	55	140	0.81	1.41	0.50	4.48	170	19.9	17.4	99.3
3000 min^{-1} (8 poles) - Connection Y																		
S71 08/3	8.0	3000	2.2	7.0	40.0	4000	12.70	31496	40	140	0.54	0.94	1.20	6.90	170	8.5	7.4	42.6
S71 12/3	12.0	3000	3.3	10.5	60.0	4000	17.40	34483	45	140	0.54	0.94	0.64	4.61	170	12.8	11.2	63.8
S71 16/3	16.0	3000	4.4	14.0	80.0	4000	22.10	36199	45	140	0.54	0.94	0.41	3.38	170	17.0	14.9	85.1
S71 20/3	20.0	3000	5.5	17.5	100.0	4000	26.80	37313	50	140	0.54	0.94	0.31	2.79	170	21.3	18.6	106.4
S71 24/3	24.0	3000	6.6	21.0	120.0	4000	31.50	38095	50	140	0.54	0.94	0.26	2.32	170	25.5	22.3	127.7
S71 28/3	28.0	3000	7.7	24.5	140.0	4000	36.20	38674	55	140	0.54	0.94	0.22	1.99	170	29.8	26.1	148.9
4000 min^{-1} (8 poles) - Connection Y																		
S71 08/4	8.0	4000	2.5	6.0	40.0	4000	12.70	31496	40	140	0.41	0.71	0.68	3.88	170	11.3	8.5	56.7
S71 12/4	12.0	4000	3.8	9.0	60.0	4000	17.40	34483	45	140	0.41	0.71	0.36	2.59	170	17.0	12.8	85.1
S71 16/4	16.0	4000	5.0	12.0	80.0	4000	22.10	36199	45	140	0.41	0.71	0.23	1.90	170	22.7	17.0	113.5
S71 20/4	20.0	4000	6.3	15.0	100.0	4000	26.80	37313	50	140	0.41	0.71	0.18	1.57	170	28.4	21.3	141.8
S71 24/4	24.0	4000	7.5	18.0	120.0	4000	31.50	38095	50	140	0.41	0.71	0.15	1.31	170	34.0	25.5	170.2
S71 28/4	28.0	4000	8.8	21.0	140.0	4000	36.20	38674	55	140	0.41	0.71	0.13	1.12	170	39.7	29.8	198.6

Tab. 50

Sinusoidal 8 poles: B71 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
2000 min^{-1} (8 poles) - Connection Y																		
S71 08/2	8.0	2000	1.5	7.0	40	4000	12.70	31496	40	140	1.41	2.45	8.10	46.58	296	3.3	2.9	16.4
S71 12/2	12.0	2000	2.2	10.5	60	4000	17.40	34483	45	140	1.41	2.45	4.34	31.14	296	4.9	4.3	24.5
S71 16/2	16.0	2000	2.9	14.0	80	4000	22.10	36199	45	140	1.41	2.45	2.79	22.86	296	6.5	5.7	32.7
S71 20/2	20.0	2000	3.7	17.5	100	4000	26.80	37313	50	140	1.41	2.45	2.12	18.81	296	8.2	7.2	40.9
S71 24/2	24.0	2000	4.4	21.0	120	4000	31.50	38095	50	140	1.41	2.45	1.76	15.68	296	9.8	8.6	49.1
S71 28/2	28.0	2000	5.1	24.5	140	4000	36.20	38674	55	140	1.41	2.45	1.51	13.43	296	11.5	10.0	57.3
3000 min^{-1} (8 poles) - Connection Y																		
S71 08/3	8.0	3000	2.2	7.0	40	4000	12.70	31496	40	140	0.94	1.63	3.60	20.70	296	4.9	4.3	24.5
S71 12/3	12.0	3000	3.3	10.5	60	4000	17.40	34483	45	140	0.94	1.63	1.94	13.84	296	7.4	6.4	36.8
S71 16/3	16.0	3000	4.4	14.0	80	4000	22.10	36199	45	140	0.94	1.63	1.24	10.16	296	9.8	8.6	49.1
S71 20/3	20.0	3000	5.5	17.5	100	4000	26.80	37313	50	140	0.94	1.63	0.94	8.36	296	12.3	10.7	61.3
S71 24/3	24.0	3000	6.6	21.0	120	4000	31.50	38095	50	140	0.94	1.63	0.78	6.97	296	14.7	12.9	73.6
S71 28/3	28.0	3000	7.7	24.5	140	4000	36.20	38674	55	140	0.9	1.63	0.67	5.97	296	17.2	15.0	85.9
4000 min^{-1} (8 poles) - Connection Y																		
S71 08/4	8.0	4000	2.5	6.0	40	4000	12.70	31496	40	140	0.71	1.22	2.03	11.64	296	6.5	4.9	32.7
S71 12/4	12.0	4000	3.8	9.0	60	4000	17.40	34483	45	140	0.71	1.22	1.09	7.79	296	9.8	7.4	49.1
S71 16/4	16.0	4000	5.0	12.0	80	4000	22.10	36199	45	140	0.71	1.22	0.70	5.72	296	13.1	9.8	65.4
S71 20/4	20.0	4000	6.3	15.0	100	4000	26.80	37313	50	140	0.71	1.22	0.53	4.70	296	16.4	12.3	81.8
S71 24/4	24.0	4000	7.5	18.0	120	4000	31.50	38095	50	140	0.71	1.22	0.44	3.92	296	19.6	14.7	98.2
S71 28/4	28.0	4000	8.8	21.0	140	4000	36.20	38674	55	140	0.71	1.22	0.38	3.36	296	22.9	17.2	114.5

Tab. 51

B7108P_H&M

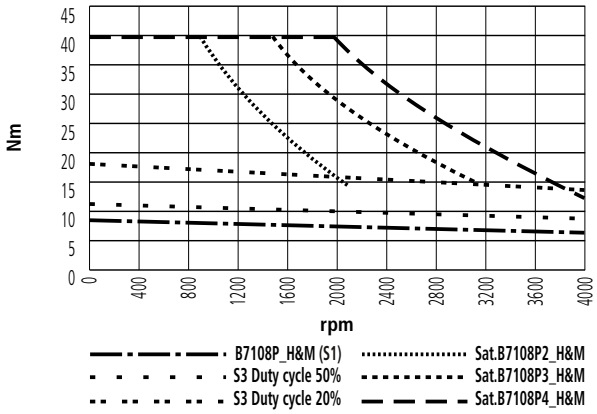


Fig. 65

B7112P_H&M

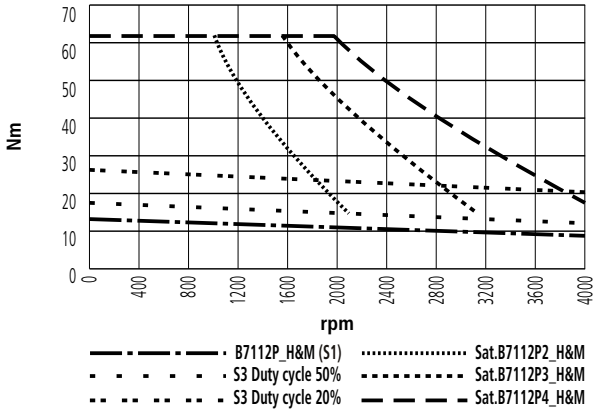


Fig. 66

B7116P_H&M

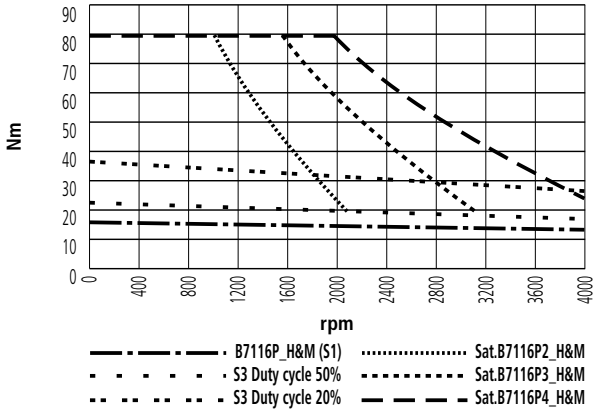


Fig. 67

B7120P_H&M

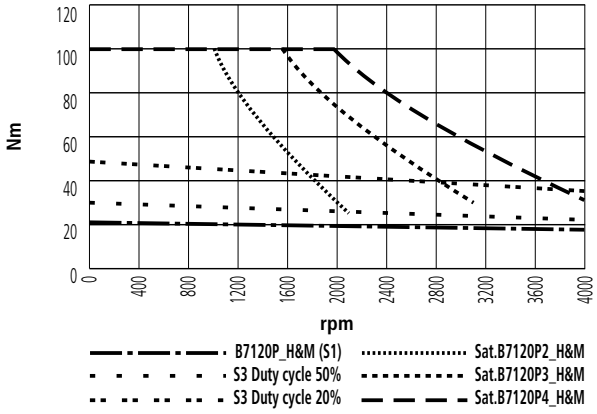


Fig. 68

B7124P_H&M

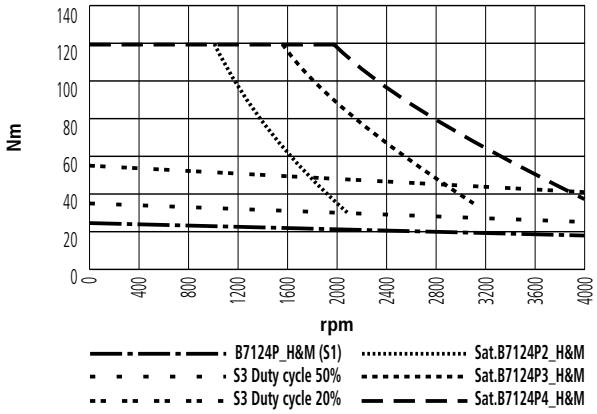


Fig. 69

B7128P_H&M

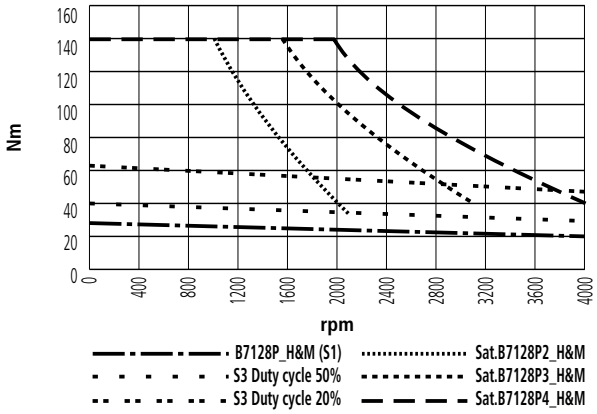
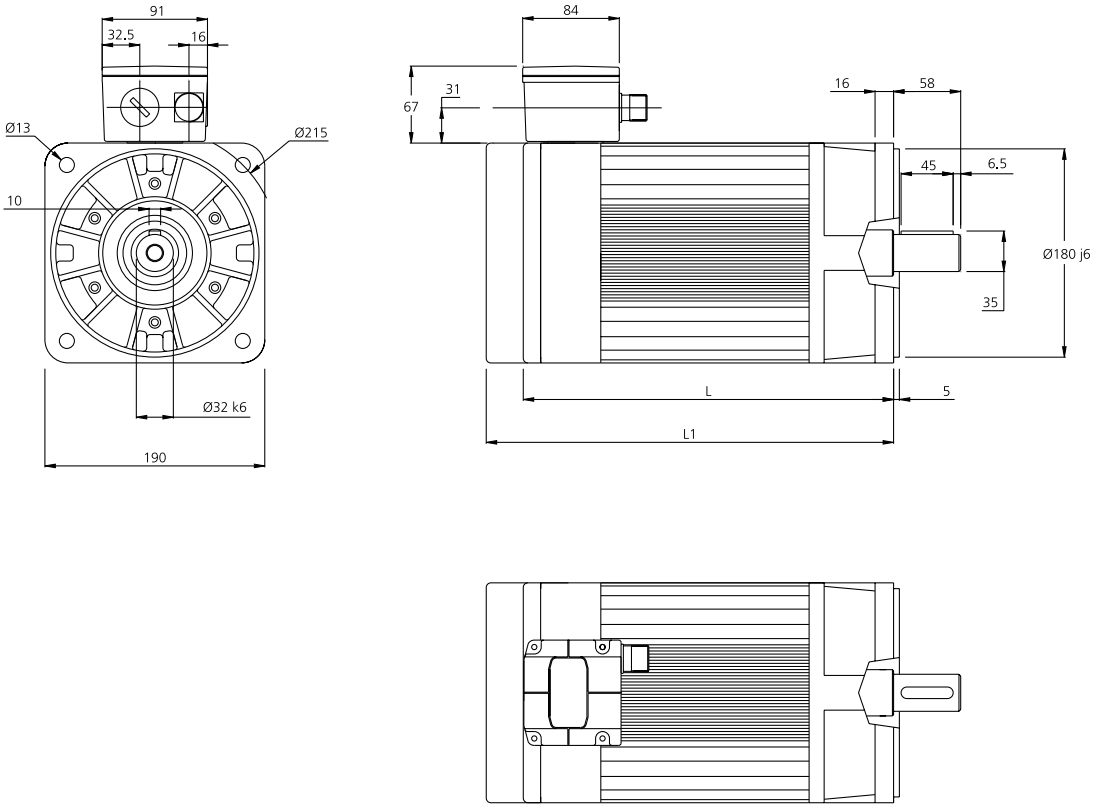


Fig. 70

Sinusoidal and trapezoidal motors

SERIES 100

Sinusoidal 6 poles: B100 voltage H(400 Volt) and M(230 Volt)
Trapezoidal 6 poles: B100 voltage H(400 Volt) and M(230 Volt)



Dwg. 20

L = Motor length with resolver as transducer
L1= Motor length with encoder as transducer

Type (S/T)	Nm	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
B100--- / 20	--- / 20*	278	303	22.0	340	387	28.6
B100-24 / 27	24.0 / 27*	301	328	26.0	365	392	32.6
B100-30 / 34	30.0 / 34*	326	353	30.0	390	417	36.4
B100-43 / 48	43.0 / 48*	376	403	38.0	440	467	44.6
B100-54 / 61	54.0 / 61*	426	453	46.0	490	517	54.6
B100-66 / 75	66.0 / 75*	476	503	54.0	540	567	62.6

* Torque regarding trapezoidal motors

Tab. 52

Sinusoidal: B100 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J/*J	$a_{pk}/*a_{pk}$	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
1200 min^{-1} (6 poles) - Connection Y																		
S100 24/1	24.0	1200	2.8	22.4	89.0	3000	136.0	6544	55	140	1.36	2.35	1.02	12.51	170	10.2	9.5	37.9
S100 30/1	30.0	1200	3.5	28.0	99.0	3000	170.0	5824	60	140	1.36	2.35	0.79	10.09	170	12.8	11.9	42.1
S100 43/1	43.0	1200	5.2	41.2	139.0	3000	238.0	5840	65	140	1.36	2.35	0.48	6.56	170	18.3	17.5	59.1
S100 54/1	54.0	1200	6.3	50.4	163.0	3000	300.0	5433	70	140	1.36	2.35	0.33	4.85	170	23.0	21.4	69.4
S100 66/1	66.0	1200	7.7	61.6	199.0	3000	370.0	5378	70	140	1.36	2.35	0.26	4.06	170	28.1	26.2	84.7
2000 min^{-1} (6 poles) - Connection Y																		
S100 24/2	24.0	2000	4.6	21.8	89.0	3000	136.0	6544	55	140	0.81	1.41	0.38	4.63	170	17.0	15.5	63.1
S100 30/2	30.0	2000	5.7	27.3	99.0	3000	170.0	5824	60	140	0.81	1.41	0.27	3.38	170	21.3	19.4	70.2
S100 43/2	43.0	2000	8.2	39.1	139.0	3000	238.0	5840	65	140	0.81	1.41	0.18	2.48	170	30.5	27.7	98.6
S100 54/2	54.0	2000	10.3	49.1	163.0	3000	300.0	5433	70	140	0.81	1.41	0.13	1.95	170	38.3	34.8	115.6
S100 66/2	66.0	2000	12.6	60.1	199.0	3000	370.0	5378	70	140	0.81	1.41	0.10	1.46	170	46.8	42.6	141.1
3000 min^{-1} (6 poles) - Connection Y																		
S100 24/3	24.0	3000	6.6	20.9	89.0	4000	136.0	6544	55	140	0.54	0.94	0.19	2.36	170	25.5	22.2	94.7
S100 30/3	30.0	3000	8.2	26.2	99.0	4000	170.0	5824	60	140	0.54	0.94	0.14	1.79	170	31.9	27.9	105.3

Tab. 53

Sinusoidal: B100 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	ϑ_{max}	k_e	k_t	R_w	L_w	E_n	I_0	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	Vrms	Arms	Arms	Arms
1200 min^{-1} (6 poles) - Connection Y																		
S100 24/1	24.0	1200	2.8	22.4	89.0	3000	136.00	6544	55	140	2.36	4.08	3.03	37.83	296	5.9	5.5	21.8
S100 30/1	30.0	1200	3.5	28.0	99.0	3000	170.00	5824	60	140	2.36	4.08	2.26	28.62	296	7.3	6.9	24.2
S100 43/1	43.0	1200	5.2	41.2	139.0	3000	238.00	5840	65	140	2.36	4.08	1.44	20.53	296	10.5	10.1	34.0
S100 54/1	54.0	1200	6.3	50.4	163.0	3000	300.00	5433	70	140	2.36	4.08	1.06	15.72	296	13.2	12.3	39.9
S100 66/1	66.0	1200	7.7	61.6	199.0	3000	370.00	5378	70	140	2.36	4.08	0.85	13.15	296	16.2	15.1	48.7
2000 min^{-1} (6 poles) - Connection Y																		
S100 24/2	24.0	2000	4.6	21.8	89.0	3000	136.0	6544	55	140	1.41	2.45	1.10	13.62	296	9.8	8.9	36.3
S100 30/2	30.0	2000	5.7	27.3	99.0	3000	170.0	5824	60	140	1.41	2.45	0.89	11.18	296	12.2	11.1	40.4
S100 43/2	43.0	2000	8.2	39.1	139.0	3000	238.0	5840	65	140	1.41	2.45	0.55	7.60	296	17.6	16.0	56.7
S100 54/2	54.0	2000	10.3	49.1	163.0	3000	300.0	5433	70	140	1.41	2.45	0.39	5.87	296	22.0	20.0	66.5
S100 66/2	66.0	2000	12.6	60.1	199.0	3000	370.0	5378	70	140	1.41	2.45	0.31	4.73	296	26.9	24.5	81.2
3000 min^{-1} (6 poles) - Connection Y																		
S100 24/3	24	3000	6.6	20.9	89	4000	136.0	6544	55	140	0.94	1.63	0.55	6.83	296	14.7	12.8	54.5
S100 30/3	30.0	3000	8.2	26.2	99	4000	170.0	5824	60	140	0.94	1.63	0.37	5.32	296	18.4	16.0	60.6

Tab. 54

B1024I_H&M

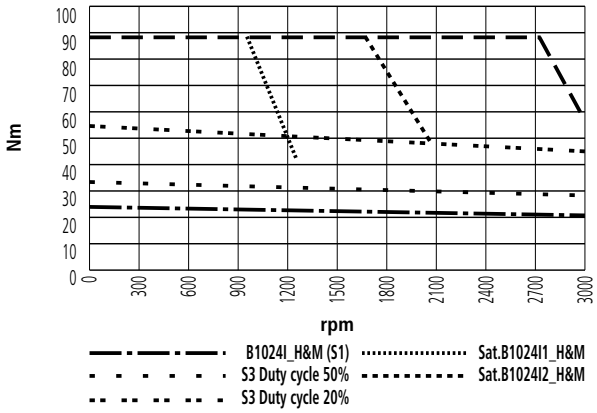


Fig. 71

B1030I_H&M

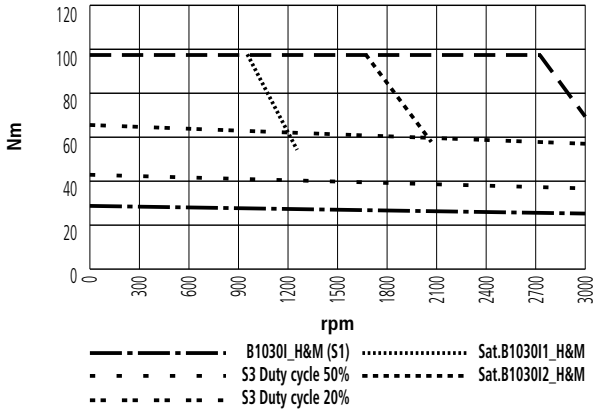


Fig. 72

B1043I_H&M

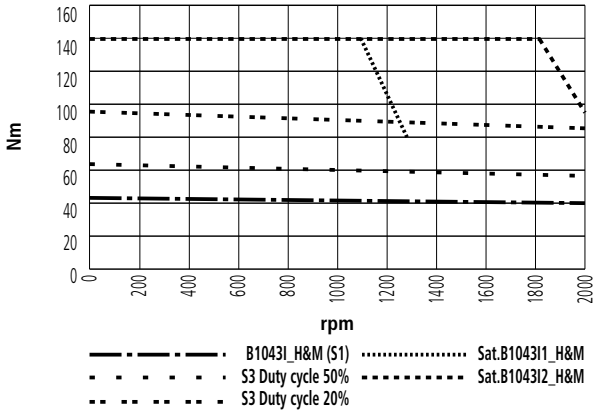


Fig. 73

B1054I_H&M

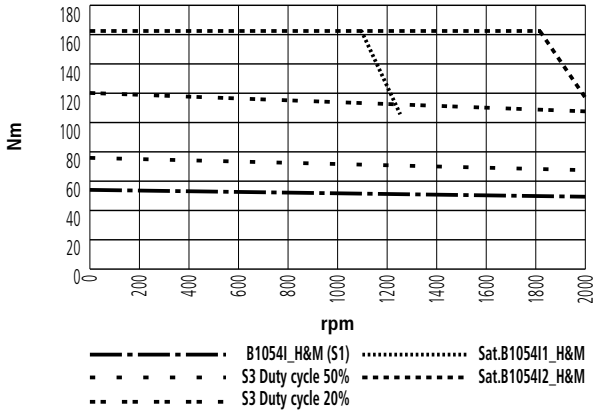


Fig. 74

B1066I_H&M

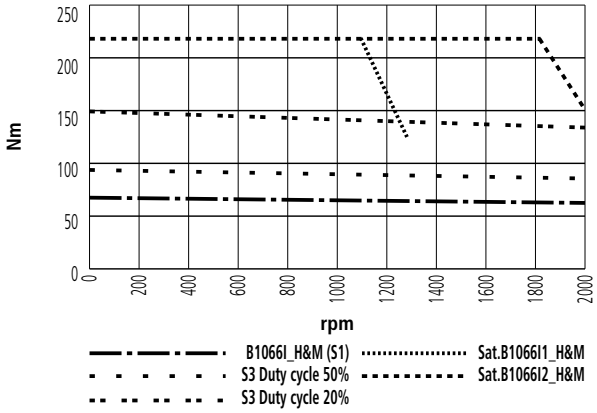


Fig. 75

Trapezoidal: B100 voltage M(230 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_0	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	J_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm²	rad/sec²	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
1200 min-1 (6 poles) - Connection Y																		
T10020/1	20.0	1200	2.4	19.3	72	3000	102	7059	50	140	1.56	1.56	1.301	13.21	196	12.8	12.4	46.2
T10027/1	27.0	1200	3.2	25.8	100	3000	136	7353	55	140	1.56	1.56	1.04	12.51	196	17.3	16.5	64.1
T10034/1	34.0	1200	4.0	32.2	112	3000	170	6588	60	140	1.56	1.56	0.58	7.15	196	21.8	20.6	71.8
T10048/1	48.0	1200	5.7	45.1	155	3000	238	6513	65	140	1.56	1.56	0.38	5.28	196	30.8	28.9	99.4
T10061/1	61.0	1200	7.3	57.9	185	3000	300	6167	70	140	1.56	1.56	0.28	3.93	196	39.1	37.1	118.6
T10075/1	75.0	1200	8.9	70.8	226	3000	370	6108	70	140	1.56	1.56	0.20	3.14	196	48.1	45.4	144.9
2000 min-1 (6 poles) - Connection Y																		
T10020/2	20.0	2000	3.9	18.6	72	3000	102	7059	50	140	0.94	0.94	0.44	4.64	196	21.4	19.9	76.9
T10027/2	27.0	2000	5.2	24.8	100	3000	136	7353	55	140	0.94	0.94	0.29	3.40	196	28.9	26.5	106.9
T10034/2	34.0	2000	6.5	31.0	112	3000	170	6588	60	140	0.94	0.94	0.22	2.79	196	36.3	33.1	119.7
T10048/2	48.0	2000	9.1	43.5	155	3000	238	6513	65	140	0.94	0.94	0.14	1.90	196	51.3	46.5	165.6
T10061/2	61.0	2000	11.7	55.8	185	3000	300	6167	70	140	0.94	0.94	0.09	1.38	196	65.2	59.6	197.7
T10075/2	75.0	2000	14.3	68.3	226	3000	370	6108	70	140	0.94	0.94	0.07	1.10	196	80.1	73.0	241.5
3000 min-1 (6 poles) - Connection Y																		
T10020/3	20.0	3000	5.6	17.8	72	4000	102	7059	50	140	0.62	0.62	0.20	2.06	196	32.1	28.5	115.4
T10027/3	27.0	3000	7.4	23.7	100	4000	136	7353	55	140	0.62	0.62	0.12	1.51	196	43.3	38.0	160.3
T10034/3	34.0	3000	9.3	29.7	112	4000	170	6588	60	140	0.62	0.62	0.10	1.24	196	54.5	47.6	179.5

Tab. 55

Trapezoidal: B100 voltage H(400 Volt)

Motor type	Stall torque	Rated speed	Output at nominal speed	Rated torque	Peak torque	PHYSICAL DATA Maximum speed	Moment of inertia	Peak torque acceleration	THERMAL DATA Thermal time constant	Thermal protection threshold	ELECTRICAL DATA Voltage constant	Torque constant	Winding line to line resistance	Winding line to line inductance	B.E.M.F. at rated speed	Stall current	Rated current	Peak current
	M_o	n	P_n	M_n	M_{pk}	n_{max}	J	a_{pk}	T_{th}	J_{max}	k_e	k_t	R_w	L_w	E_n	I_o	I_n	I_{pk}
	Nm	rpm	kW	Nm	Nm	rpm	10^{-4} Kgm^2	rad/sec^2	min	°C	Vs	Nm/A	Ω	mH	V	A	A	A
1200 min^{-1} (6 poles) - Connection Y																		
T10020/1	20.0	1200	2.4	19.3	72	3000	102	7059	50	140	2.71	2.71	3.83	40.04	340	7.4	7.1	26.6
T10027/1	27.0	1200	3.2	25.8	100	3000	136	7353	55	140	2.71	2.71	2.41	28.96	340	10.0	9.5	37.0
T10034/1	34.0	1200	4.0	32.2	112	3000	170	6588	60	140	2.71	2.71	1.73	21.91	340	12.6	11.9	41.4
T10048/1	48.0	1200	5.7	45.1	155	3000	238	6513	65	140	2.71	2.71	1.13	15.52	340	17.7	16.7	57.3
T10061/1	61.0	1200	7.3	57.9	185	3000	300	6167	70	140	2.71	2.71	0.75	10.92	340	22.5	21.4	68.4
T10075/1	75.0	1200	8.9	70.8	226	3000	370	6108	70	140	2.71	2.71	0.54	8.42	340	27.7	26.2	83.5
2000 min^{-1} (6 poles) - Connection Y																		
T10020/2	20.0	2000	3.9	18.6	72	3000	102	7059	50	140	1.62	1.62	1.35	14.21	340	12.3	11.5	44.4
T10027/2	27.0	2000	5.2	24.8	100	3000	136	7353	55	140	1.62	1.62	0.86	10.43	340	16.6	15.3	61.6
T10034/2	34.0	2000	6.5	31.0	112	3000	170	6588	60	140	1.62	1.62	0.66	8.08	340	20.9	19.1	69.0
T10048/2	48.0	2000	9.1	43.5	155	3000	238	6513	65	140	1.62	1.62	0.41	5.59	340	29.6	26.8	95.5
T10061/2	61.0	2000	11.7	55.8	185	3000	300	6167	70	140	1.62	1.62	0.33	4.85	340	37.6	34.4	114.0
T10075/2	75.0	2000	14.3	68.3	226	3000	370	6108	70	140	1.62	1.62	0.24	3.74	340	46.2	42.1	139.2
3000 min^{-1} (6 poles) - Connection Y																		
T10020/3	20.0	3000	5.6	17.8	72	4000	102	7059	50	140	1.08	1.08	0.56	5.87	340	18.5	16.4	66.5
T10027/3	27.0	3000	7.4	23.7	100	4000	136	7353	55	140	1.08	1.08	0.38	4.63	340	24.9	21.9	92.4
T10034/3	34.0	3000	9.3	29.7	112	4000	170	6588	60	140	1.08	1.08	0.32	4.02	340	31.4	27.4	103.5

Tab. 56

B1020Z_H&M

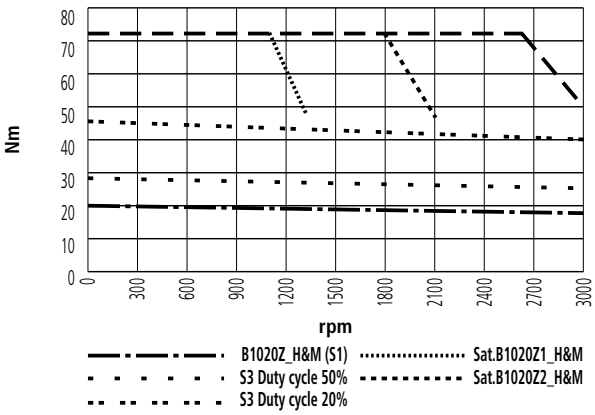


Fig. 76

B1027Z_H&M

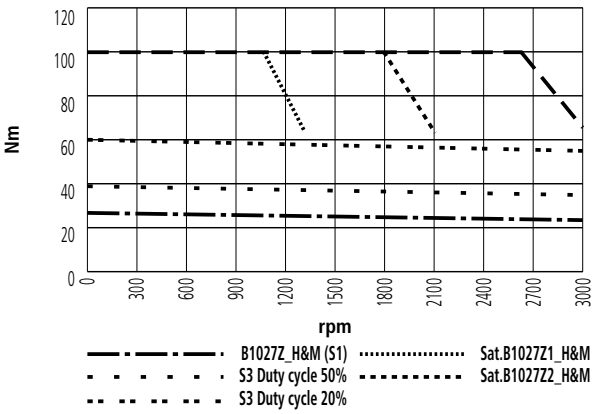


Fig. 77

B1034Z_H&M

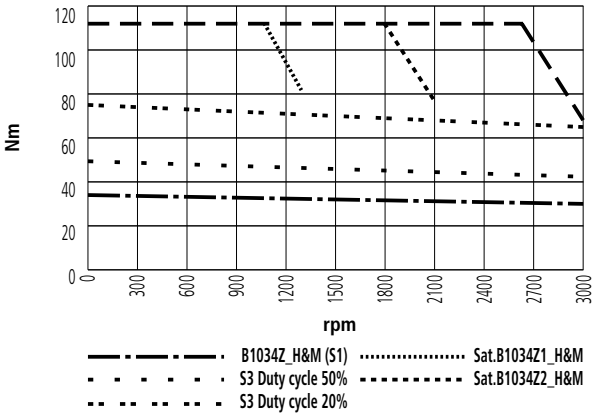


Fig. 78

B1048Z_H&M

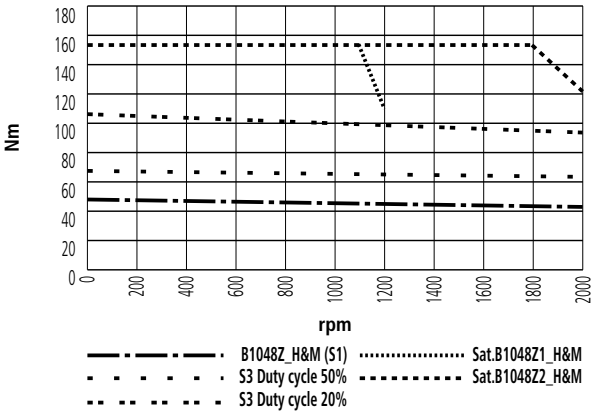


Fig. 79

B1061Z_H&M

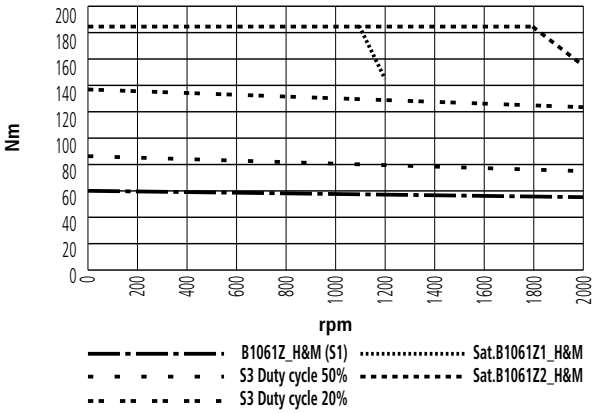


Fig. 80

B1075Z_H&M

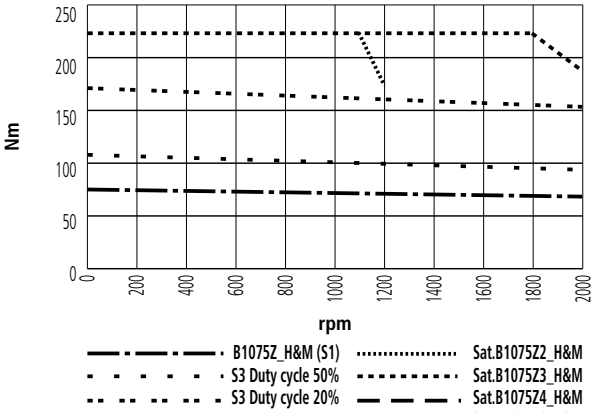


Fig. 81

Series V High Frequency Spindle Motors: Design & performance

Series V squirrel cage four-pole spindle motors are in general, designed in particular for high-speed applications in the field of machine tools and automation, they are electrically supplied with three-phase current and air-cooled.

With a tough and compact construction and a high degree of protection, series V spindle motors combine these construction features with an axial fan inside the motor frame coupled to the N-end in order to always assure forced ventilation. They are also equipped with probes inside the stator winding for the motor thermal protection.

Construction features	Standard construction
Mounting arrangements	IM B35 (foot- and flange-mounted motor)
Degree of protection	IP 54
Insulation class	F (winding temperature rise 105 K at ambient temperature +40°C)
Thermal protection	Thermal detectors inside the stator winding
Balancing	Class R (reduced)
Concentricity	N tolerance (normal)
Shaft D-end	Cylindrical, normal, plain (no key), tolerance k5
Terminal box position	Top
Connections	
Motor	Terminals in the terminal box
Fan	Terminals in the terminal box
Integrated transducer	12-pole round connector
Thermal probes	Terminals in the terminal box
Ventilation	**Built-in axial fan coupled to the N-end**
Fan electrical supply	3x380 Vac 50/60 Hz
Installation altitude	≤ 1000 m above sea leve

Tab. 57

Within a range of rated output between 4 kW and 10 kW with rated speed of rotation of 1500 1/min, spindle motors can develop very high maximum speed of rotation (up to 9000 1/min in standard construction).

With a wide constant output operating field, specific high output and high overload capacity the Series V Motors give excellent uniformity of rotation and reduced time of acceleration / deceleration over the operation cycle.

Standard performance	
Speed field at constant output	Between 1:3 and 1:6
Rated speed	1500 1/min
Maximum speed	up to 9000 1/m

Tab. 58

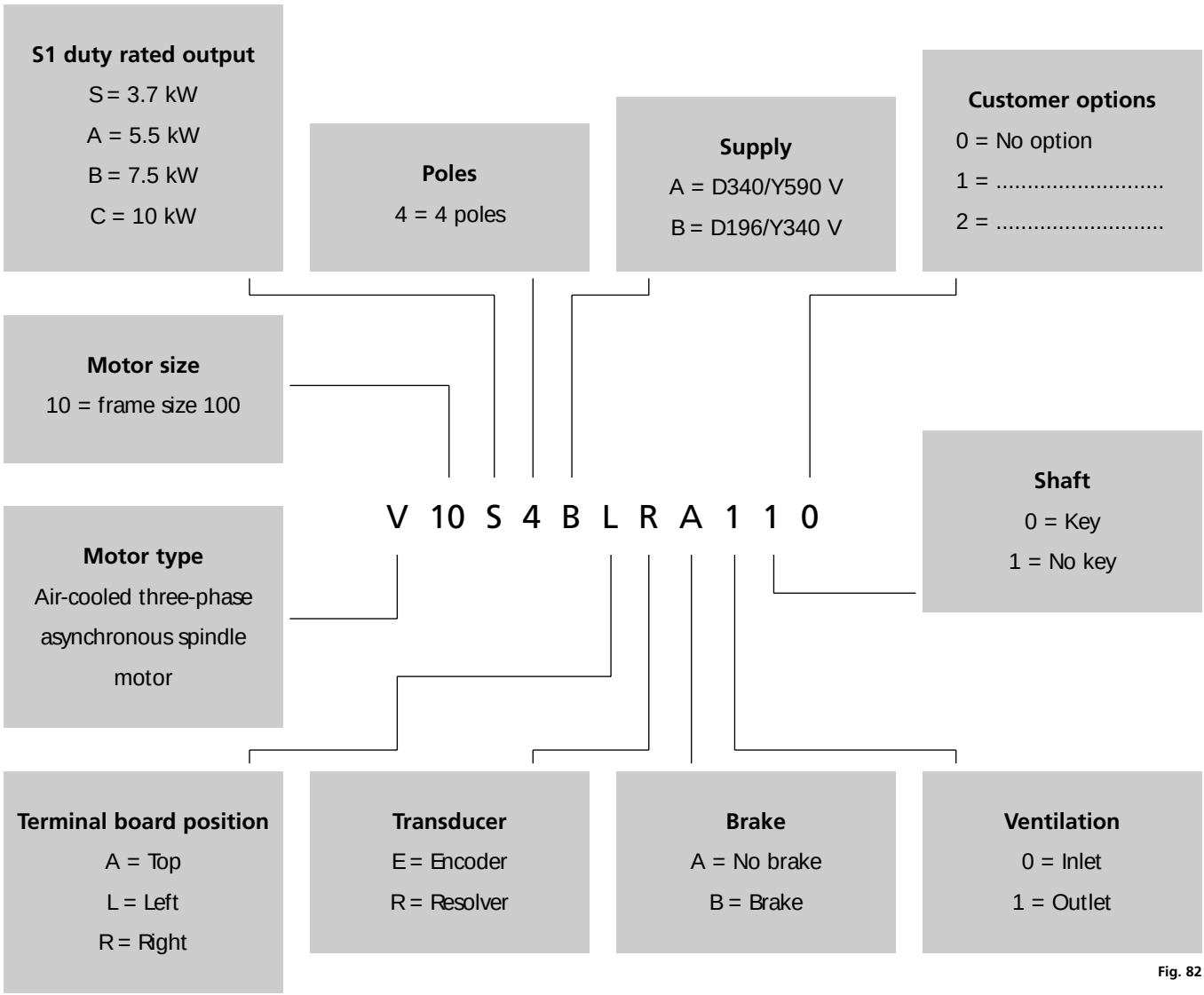


Fig. 82

Construction	Standard	Special	Option
Vibration class	R	" S"	V01
Concentricity	N	" R"	P01
Shaft end	Plain	Keyway and key	A01
Ventilation direction [1]	Outlet	Inlet	F01
Terminal box position [2]	Top	left	M01
		right	M02
Brake [3]	No brake	Brake	B01

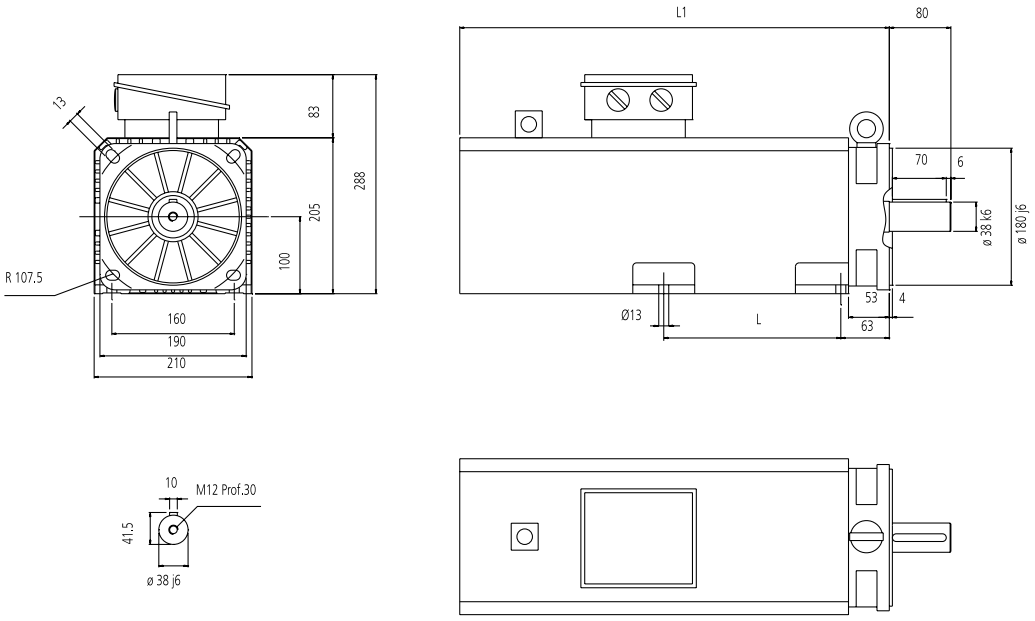
Tab. 59

[1] Outlet = from non-drive end to shaft end; Inlet = from shaft end to non-drive end
[2] Position looking at the motor shaft-end
[3] Parking brake on the drive-end

Spindle motors

Series V

Supply 3x400 V AC



Dwg. 21

L = Distance between fixing holes
L1= Motor length with encoder as transducer

Type	kW	L mm without brake	L1 mm without brake	Weight (kg) without brake	L mm with brake	L1 mm with brake	Weight (kg) with brake
V10S	4.0	175	453	45	225	503	47
V10A	5.5	220	498	53	270	548	57
V10B	7.5	280	558	64	330	608	66
V10C	10.0	350	628	73	400	678	82

Tab. 60

Ventilator data	
Supply voltage and frequency	3x400 (380) V c.a. 50/60 Hz
Speed	2800-3150 1/min
Absorbed output	53-70 W
Absorbed current	0,15-0,14 A
Direction of air flow	From front to rear (optionally inverted direction)

Tab. 61

Spindle motors Series V

Tipo	PRESTAZIONI									PHYSICAL DATA					THERMAL DATA		ELECTRICAL DATA				
	Output at nominal speed S1	Output at nominal speed S6-60%	Output at nominal speed S6-40%	Rated torque S1	Rated torque S6-60%	Rated torque S6-40%	Rated speed	Speed range at constant output	Output at maximum speed	Maximum speed	Moment of inertia	Degree of protection	Vibration class	Concentricity (standard)	Thermal class	Thermal protection threshald ($\Delta\vartheta$=100 K)	Poles number	Winding connection	Rated voltage V_n V	Rated current I_n Arms	Power factor cosφ
	P_n kW	P_n kW	P_n kW	M_n Nm	M_n Nm	M_n Nm	n_n 1/min		P_{max} kW	n_{max} 1/min	J 10^{-4} kgm^2					ϑ_{max} °C	2p				
V10S	4.0	5.0	6.4	26.0	32.5	41.6	1500	1:5	3.2	9000	140	IP 54	R	N	F	140	4	Y	340	9.8	0,8
V10A	5.5	7.0	8.5	35.0	44.5	54.0	1500	1:5	4.4	9000	190	IP 54	R	N	F	140	4	Y	340	13.6	0,8
V10B	7.5	9.5	12.0	48.0	60.0	77.0	1500	1:5	6.0	9000	258	IP 54	R	N	F	140	4	Y	340	18.5	0,8
V10C	10.0	13.0	16.0	64.0	83.0	102.5	1500	1:5	8.0	9000	330	IP 54	R	N	F	140	4	Y	340	25.0	0,8

Tab. 62

V10S

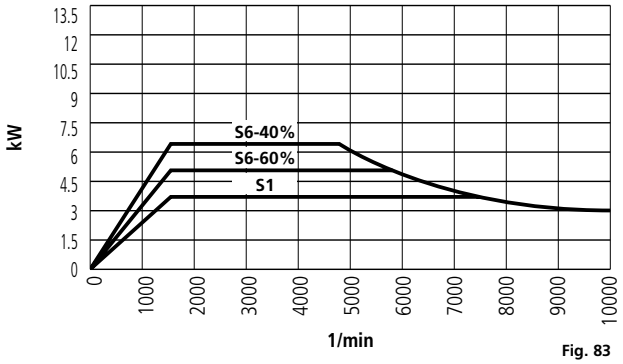


Fig. 83

Service	S1	S6-60%	S6-40%
kW	4	5	6.4
Nm	26	32.5	41.6

Tab. 63

V10A

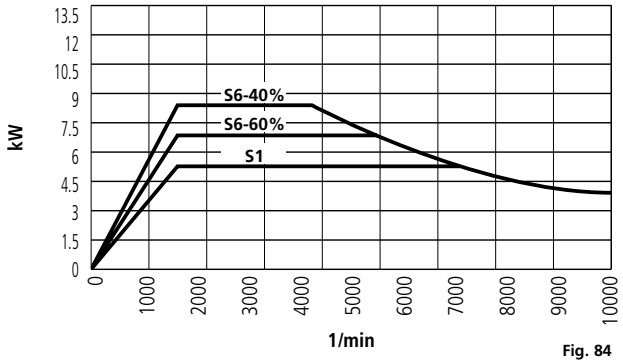


Fig. 84

Service	S1	S6-60%	S6-40%
kW	5.5	7	8.5
Nm	35	44.5	54

Tab. 64

V10B

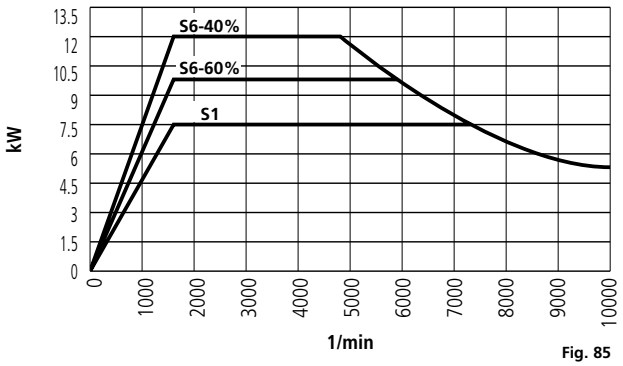


Fig. 85

Service	S1	S6-60%	S6-40%
kW	7.5	9.5	12
Nm	48	60	77

Tab. 65

V10C

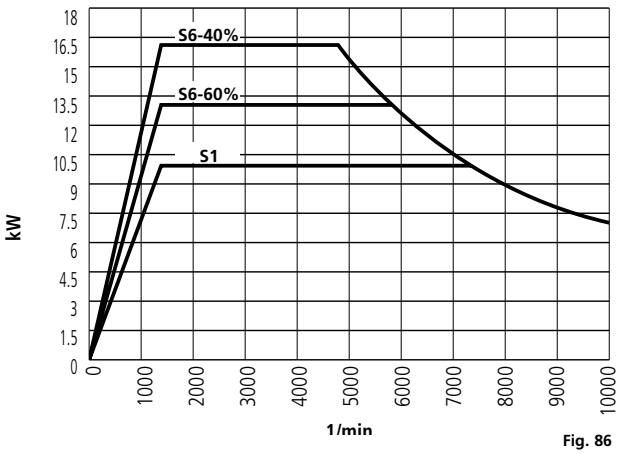


Fig. 86

Service	S1	S6-60%	S6-40%
kW	10	13	16
Nm	64	83	102.5

Tab. 66