STEPPING MOTORS
catalogue

SANYO DENKI SANMOTION STEPPING SYSTEMS

RTA

Motion Control Systems

STEPPING MOTORS
catalogue

SANYO DENKI

SANMOTION
STEPPING SYSTEMS

Warning

- The sole purpose of this catalogue is as a general introduction to our products, in order to allow an orientation as well as a choice among them. Detailed information concerning limitations and installation/utilization procedures are described in the manuals and/or technical sheets relating to each product. It is therefore essential to strictly refer to these enclosed technical manuals for a correct use, in accordance with current standards.
- All those products for which a specific obligation is required, as per law regulation in force in the European Community countries, bear the EC marking stating they are in accordance with the related directives (depending on the products, EEC directive 73/23 and/or 89/336 and subsequent modifications and integration).
- All products are classed as “complex components”, exclusively designed and sold for installation in machines or equipments by a technically competent user, who will undertake the responsibility of safety and EMC requirements of the complete system. The necessary installation recommendations are included in the technical manuals.
- R.T.A. reserves the right to modify the products at any time and without prior notice (including, but not limited to, characteristics, availability and prices).

SANYO DENKI, established in 1927, began the development and production of stepping motors in 1959. The experience and skills accumulated in 50 years of activity has today made the company an international leader in this sector, both for design and development potential of new high-performance products and for mass-production capability of the introduced technological innovations.

Mass-production (several millions of units per year) is carried out making use of fully automated lines. In this way, an excellent price/performance ratio is insured, in connection with constant quality and a large repeatability of the characteristics of each item.

This range of motors proposed by R.T.A., selected from the more than 800 models in the SANYO DENKI's catalogue and supported by a very large stock of motors, always available at the warehouse, allows to face and solve in the best way a great variety of automation problems.

The wide range of drives produced by R.T.A. (more than 30 standard models, equipped with a wide series of accessories, interface cards and options) is the ideal complement to SANYO DENKI stepping motors, permitting the optimization of their potential, whilst the experience in the design of drives and the solution of practical problems, perfected in more than 30 years of activity, allows the offering of sound support for the optimal solution of the customer's requirements.

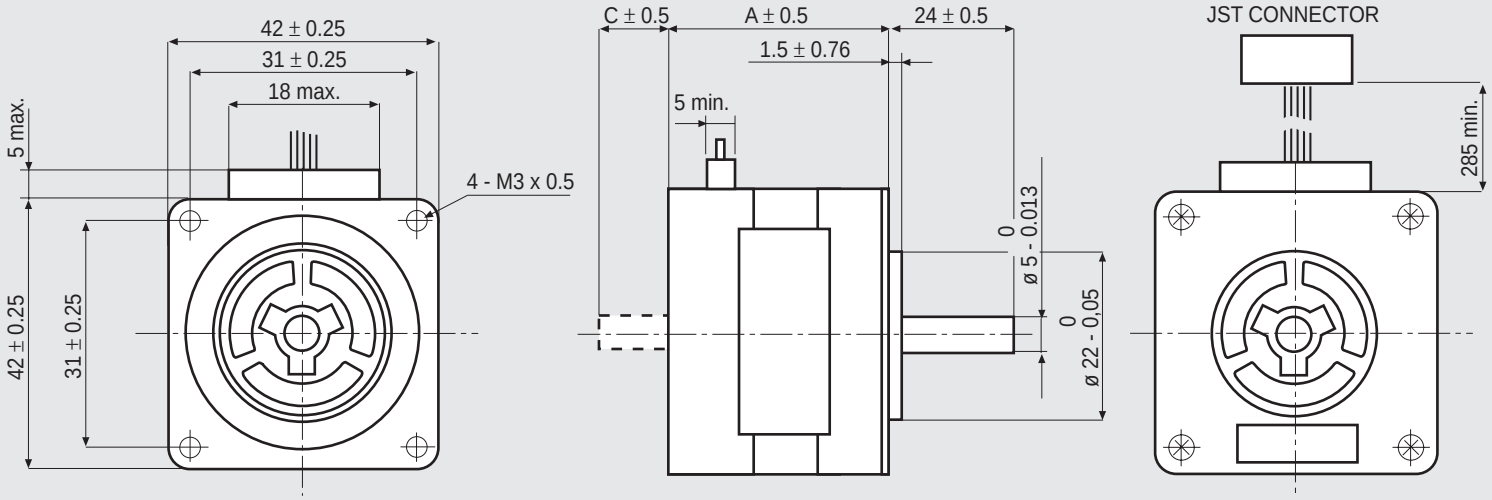
At present, both SANYO DENKI and R.T.A. have implemented Quality Assurance Systems certified according to ISO 9001 (JQA - 0622 and TÜV - 50 100 2153, respectively), following the strategic policy of improving the quality of the products and services offered to Customers.

INDEX

For connection with R.T.A. drives, see pages 40 e 41.

SANYO DENKI
SANMOTION

103 - 54 SERIES



MOTOR CONNECTOR IS JST mod. EHR-4 / EHR-6 A 4 / 6 POLES FEMALE.
FOR CONNECTION USE JST mod. B4B-EH-A / B6B-EH-A MALE CONNECTOR.

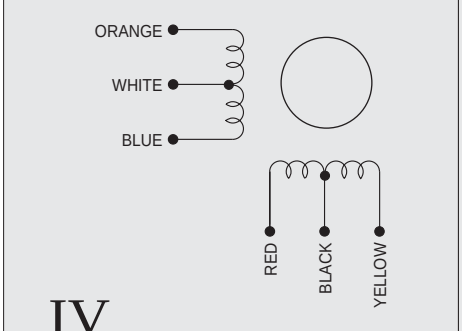
MODEL	A	C
103 - 546 - 55500	32.5	
103 - 546 - 5342	32.5	
103 - 547 - 52500	36.5	
103 - 547 - 52300	36.5	15

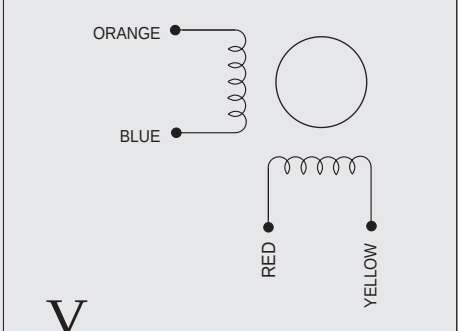
CHARACTERISTICS

MODEL		103 - 546 - 55500	103 - 546 - 5342	103 - 547 - 52500 (103 - 547 - 52300)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°	1,8° ± 0,09°
BIPOLAR PARALLEL CURRENT	(Amp)	0.2	0.42 (*)	0,7 (*)
UNIPOLAR CURRENT	(Amp)		0.6	1,0
RESISTANCE	(Ohm)	37.5	6.7	3,15
INDUCTANCE	(mH)	52	5.4	3
BIPOLAR HOLDING TORQUE	(Ncm)	12.5	19	25
UNIPOLAR HOLDING TORQUE	(Ncm)		14.5	19
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	20	30	43
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	63000	63000	59000
BACK E.M.F.	(V/Krpm)	47	18	14
MASS	(Kg)	0.2	0.2	0,24
LEADS CODE		V	IV	IV

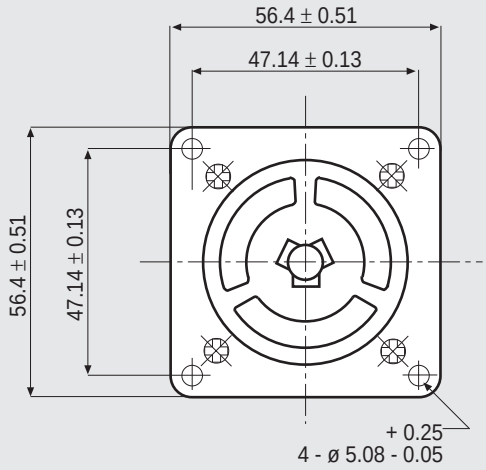
Codes between brackets refer to double shaft model.

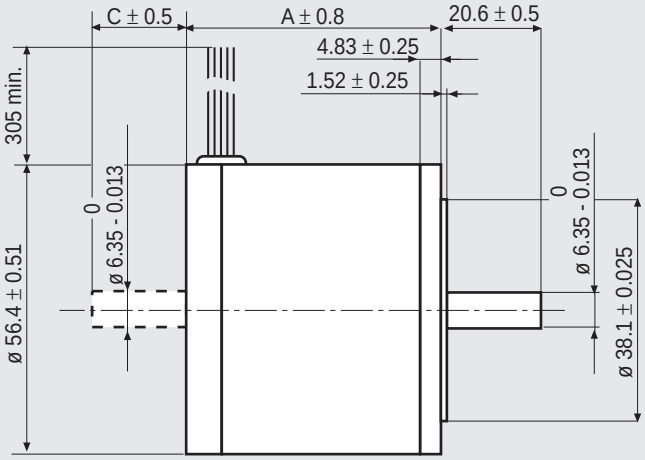
(*) Series connection





103 - 770 SERIES





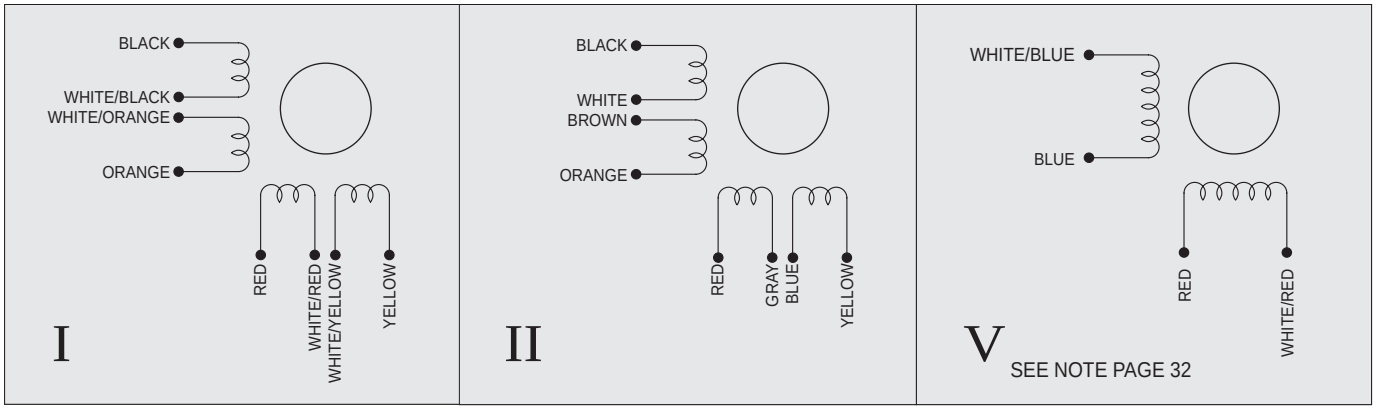
MODEL	A	C
103 - 770 - 6	50.8	
103 - 770 - 61	50.8	19.05
103 - G770 - 2241	50.8	
103 - G770 - 2221	50.8	19.05
103 - 770 - 1640	50.8	

CHARACTERISTICS

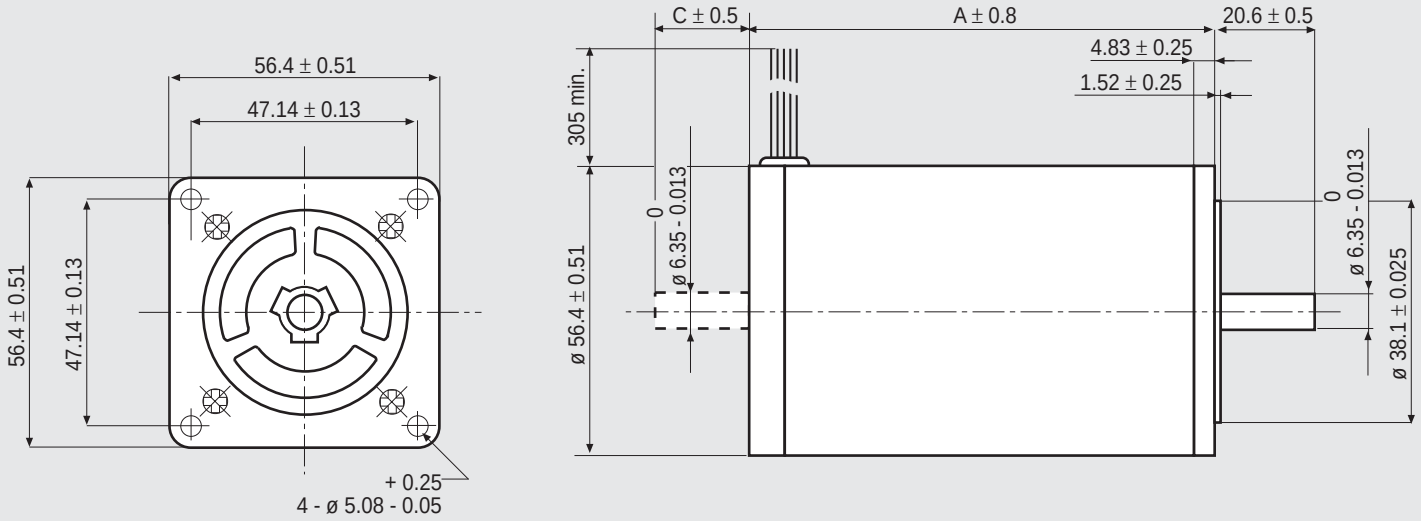
MODEL		103 - 770 - 6 (103 - 770 - 61)	103 - G770 - 2241 (103 - G770 - 2221)	103 - 770 - 1640
BASIC STEP ANGLE		1.8° ± 0,09°	1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	1.41 (*)	2.82 (*)	1.41
UNIPOLAR CURRENT	(Amp)	1.0	2.0	
RESISTANCE	(Ohm)	5.1	1.4	2.6
INDUCTANCE	(mH)	9.0	2.2	9.0
BIPOLAR HOLDING TORQUE	(Ncm)	62	60	62
UNIPOLAR HOLDING TORQUE	(Ncm)	49	47	
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	105	105	105
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	59000	52000	59000
BACK E.M.F.	(V/Krpm)	37	17	33
MASS	(Kg)	0.54	0.54	0.54
LEADS CODE		I	I (II)	V

Codes between brackets refer to double shaft model.

(*) Parallel connection.



103 - 714 SERIES

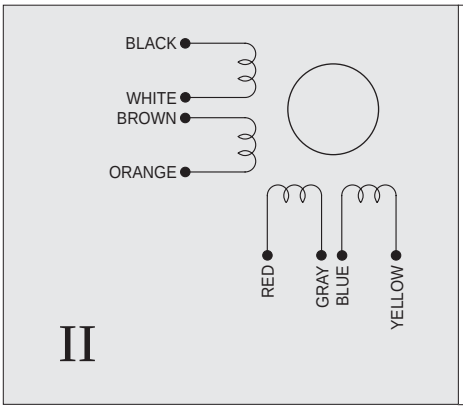


MODEL	A	C
103 - 714 - 0150	76.2	
103 - 714 - 0111	76.2	19.5

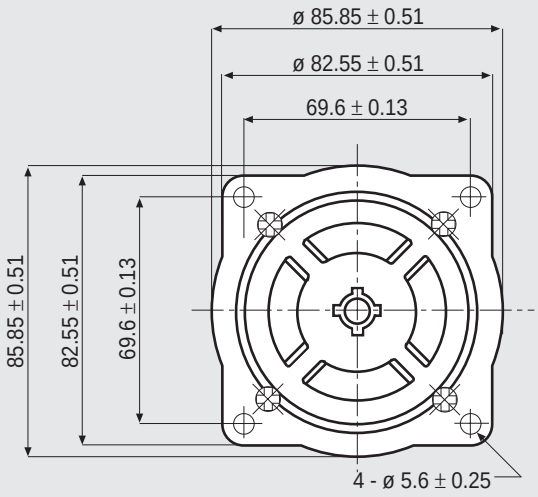
CHARACTERISTICS

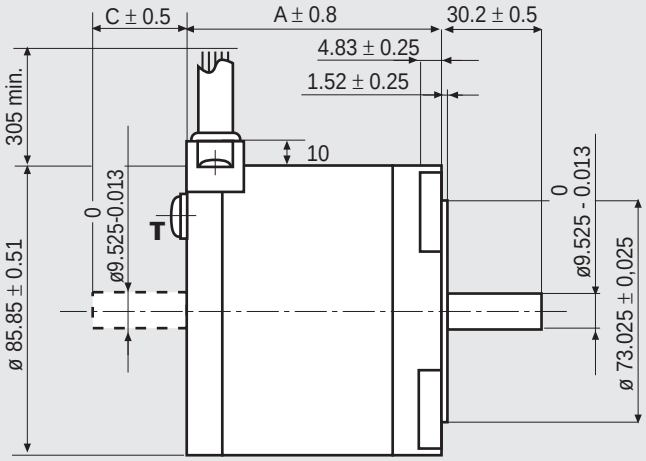
MODEL		103 - 714 - 0150 (103 - 714 - 0111)
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	2.55
UNIPOLAR CURRENT	(Amp)	1.8
RESISTANCE	(Ohm)	2,.6
INDUCTANCE	(mH)	4.9
BIPOLAR HOLDING TORQUE	(Ncm)	109
UNIPOLAR HOLDING TORQUE	(Ncm)	88
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	210
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	51000
BACK E.M.F.	(V/Krpm)	36
MASS	(Kg)	0.95
LEADS CODE		II

Codes between brackets refer to double shaft model.



103 - 807 SERIES





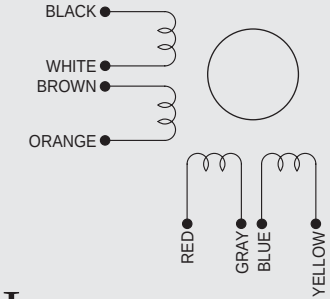
WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL

MODEL	A	C
103 - 807 - 6241	61	
103 - 807 - 6341	61	
103 - 807 - 6311	61	28.5

CHARACTERISTICS

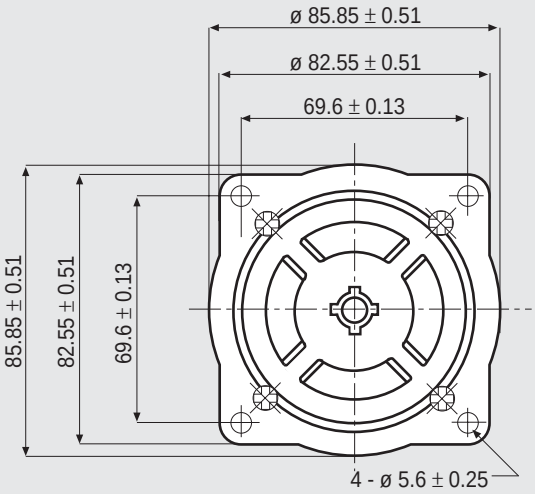
MODEL		103 - 807 - 6241	103 - 807 - 6341 (103 - 807 - 6311)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	2.7	4.3
UNIPOLAR CURRENT	(Amp)	1.9	3.05
RESISTANCE	(Ohm)	2.65	0.95
INDUCTANCE	(mH)	8.2	3.8
BIPOLAR HOLDING TORQUE	(Ncm)	170	170
UNIPOLAR HOLDING TORQUE	(Ncm)	135	135
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	560	560
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	30000	30000
BACK E.M.F.	(V/Krpm)	53	33
MASS	(Kg)	1.4	1.4
PROTECTION DEGREE		IP43	IP43
LEADS CODE		II	II

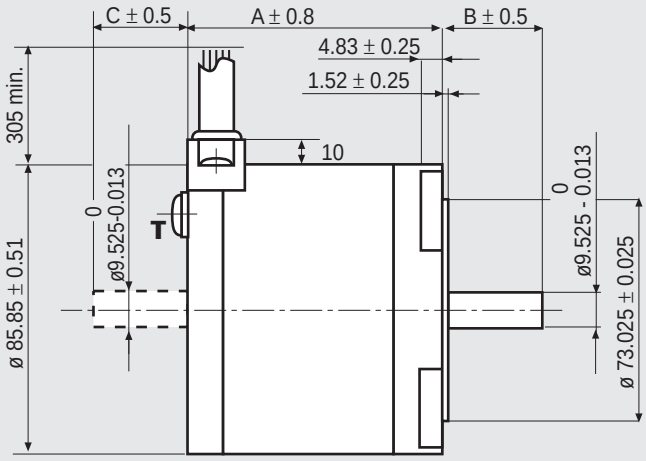
Codes between brackets refer to double shaft model.



II

SERIE 103 - 81





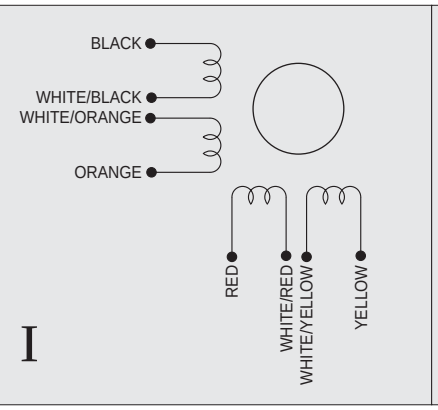
WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL

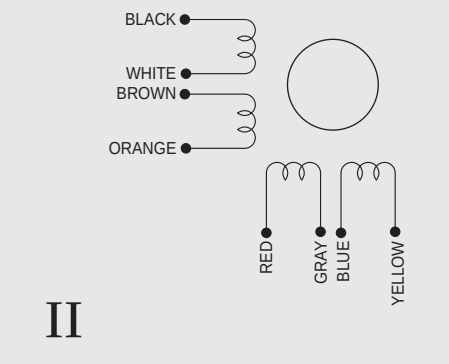
MODEL	A	B	C
103 - 810 - 6	93.5	31.8	
103 - 814 - 6541	91.0	30.2	
103 - 814 - 6511	91.0	30.2	30.2

CHARACTERISTICS

MODEL		103 - 810 - 6	103 - 814 - 6541 (103 - 814 - 6511)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	5.6	6.5
UNIPOLAR CURRENT	(Amp)	4.0	4.6
RESISTANCE	(Ohm)	0.75	0.55
INDUCTANCE	(mH)	4.5	2.7
BIPOLAR HOLDING TORQUE	(Ncm)	275	345
UNIPOLAR HOLDING TORQUE	(Ncm)	220	275
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	900	1120
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	30000	30500
BACK E.M.F.	(V/Krpm)	41	44
MASS	(Kg)	2.2	2.5
PROTECTION DEGREE			IP43
LEADS CODE		I	II

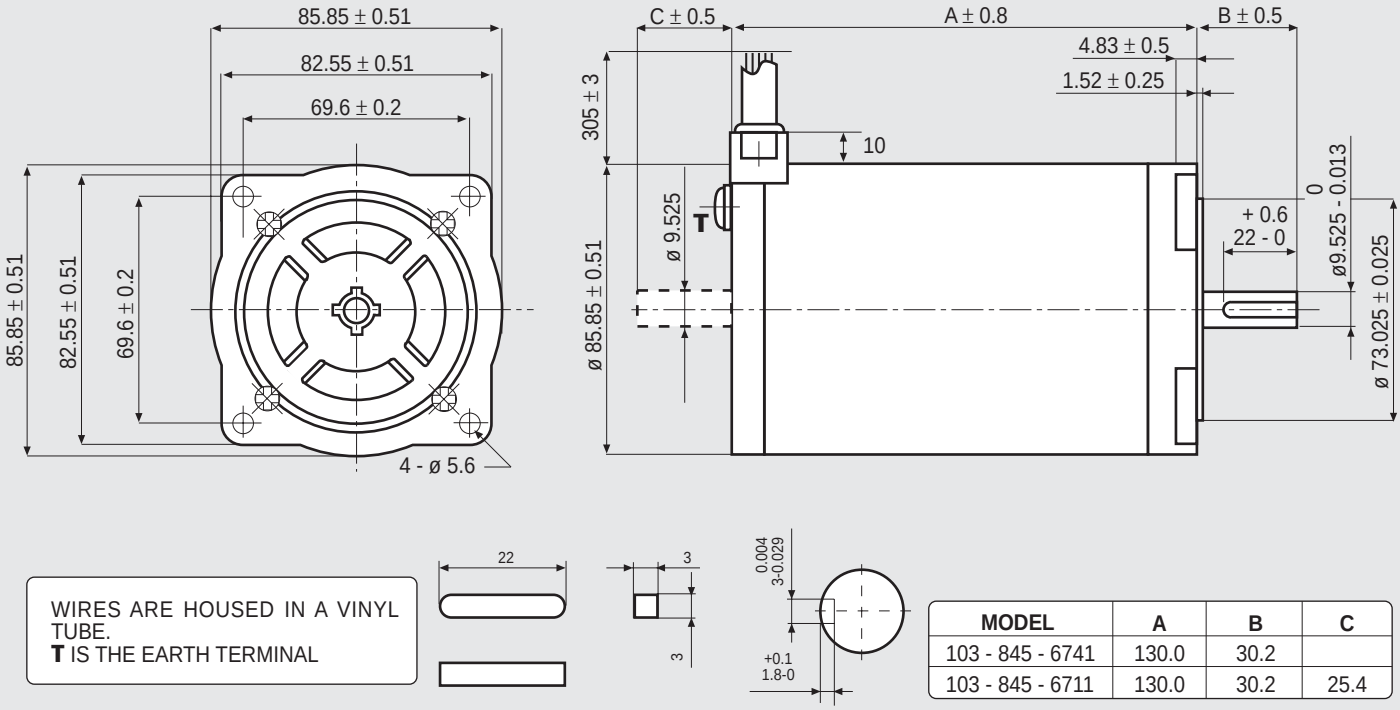
Codes between brackets refer to double shaft model.





MOTOR 103 - 810 - 6 IS NOT AVAILABLE WITH VINYL TUBE WIRES PROTECTION AND **T** EARTH TERMINAL.

103 - 845 SERIES



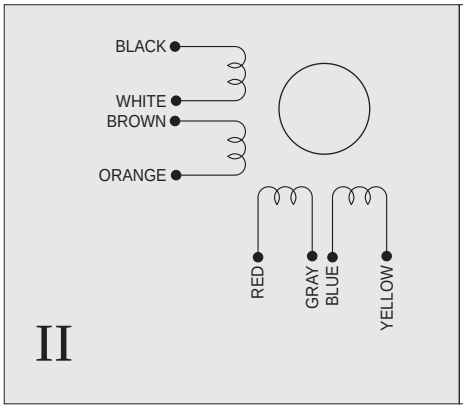
WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL

MODEL	A	B	C
103 - 845 - 6741	130.0	30.2	
103 - 845 - 6711	130.0	30.2	25.4

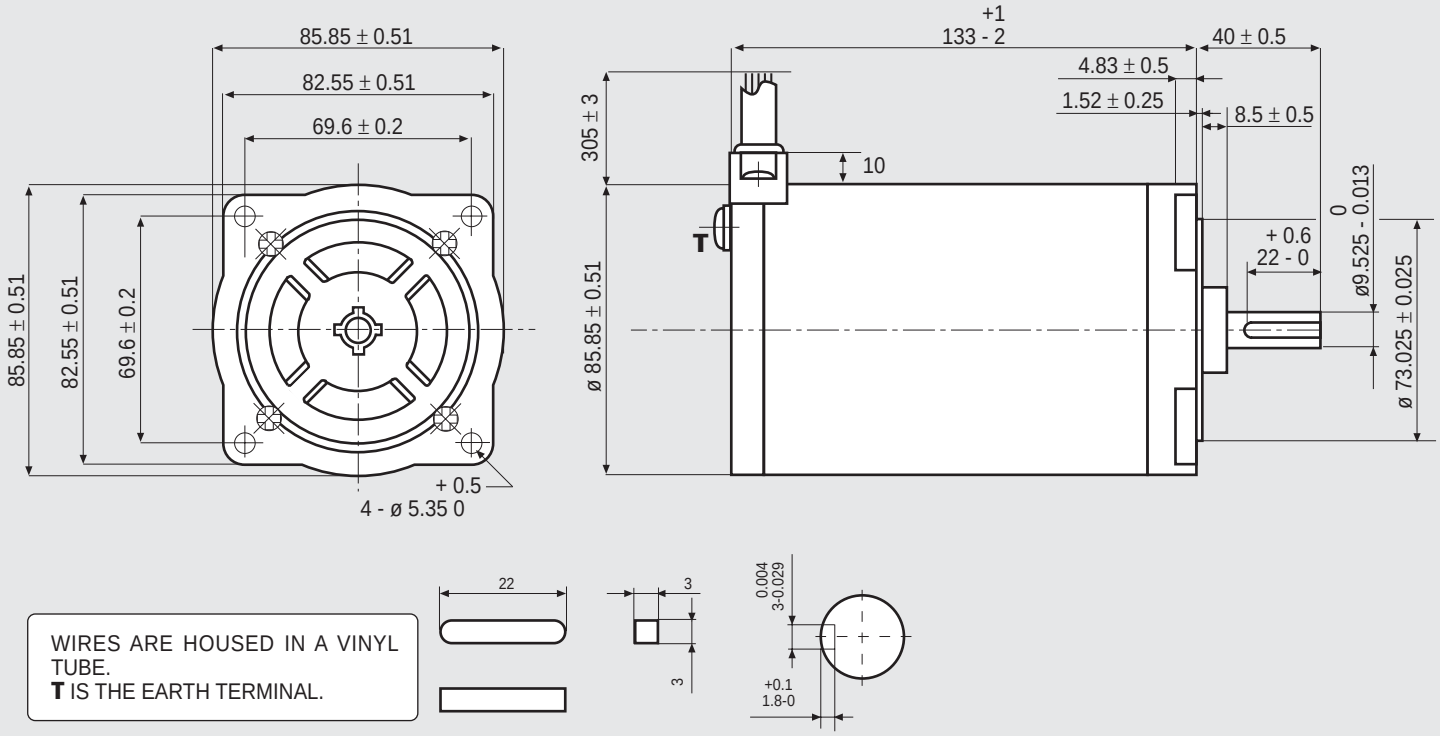
CHARACTERISTICS

MODEL		103 - 845 - 6741 (103 - 845 - 6711)
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	9.5
UNIPOLAR CURRENT	(Amp)	6.7
RESISTANCE	(Ohm)	0.45
INDUCTANCE	(mH)	2.0
BIPOLAR HOLDING TORQUE	(Ncm)	510
UNIPOLAR HOLDING TORQUE	(Ncm)	410
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	1550
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	32900
BACK E.M.F.	(V/Krpm)	46
MASS	(Kg)	3.6
PROTECTION DEGREE		IP43
LEADS CODE		II

Codes between brackets refer to double shaft model.



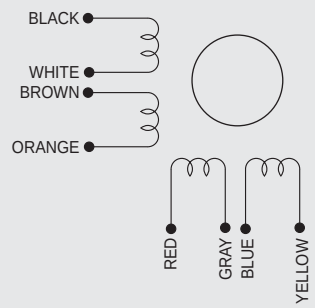
103 - 845 - 67S1 SERIES



WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL.

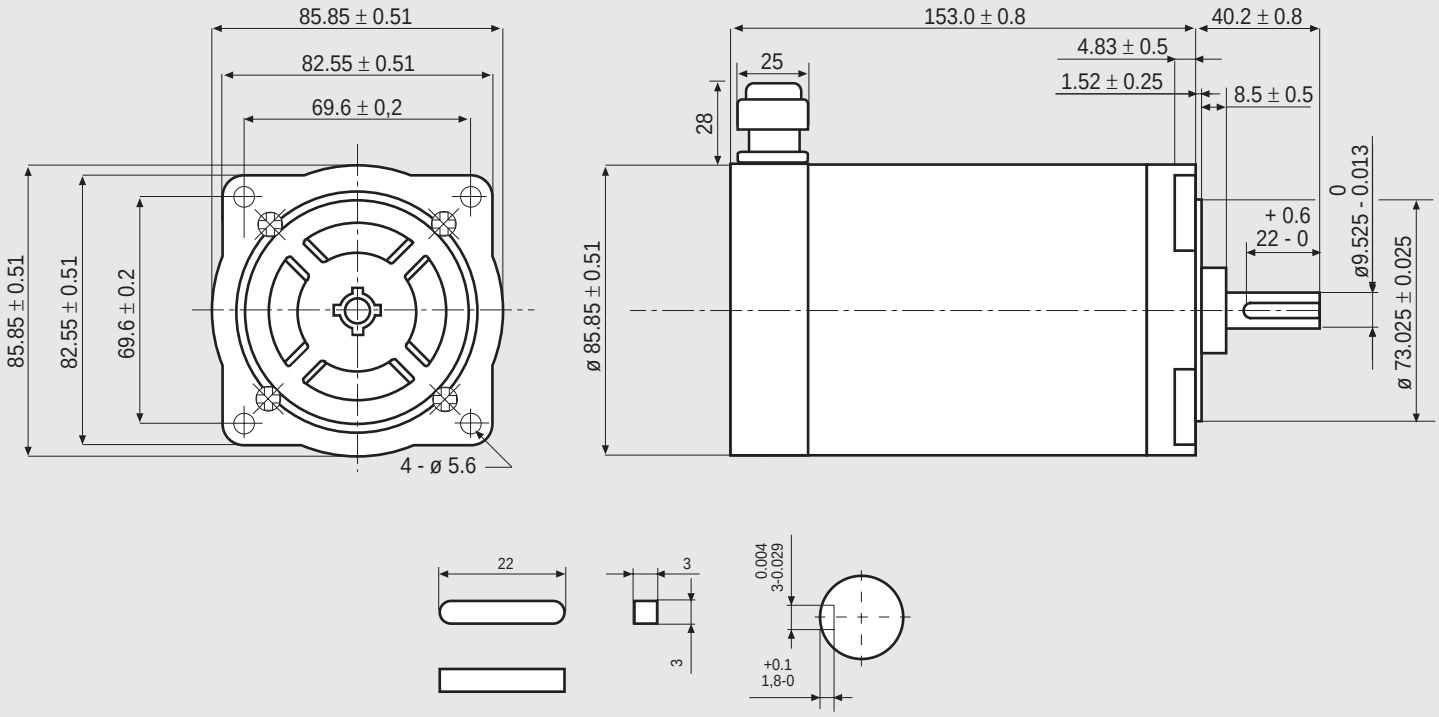
CHARACTERISTICS

MODEL		103 - 845 - 67S1
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	9.5
UNIPOLAR CURRENT	(Amp)	6.7
RESISTANCE	(Ohm)	0.45
INDUCTANCE	(mH)	2.0
BIPOLAR HOLDING TORQUE	(Ncm)	510
UNIPOLAR HOLDING TORQUE	(Ncm)	410
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	1550
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	32900
BACK E.M.F.	(V/Krpm)	46
MASS	(Kg)	3.6
PROTECTION DEGREE		IP55
LEADS CODE		II



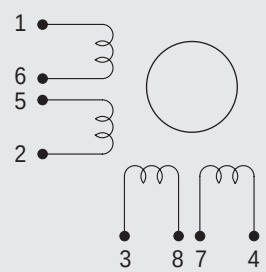
II

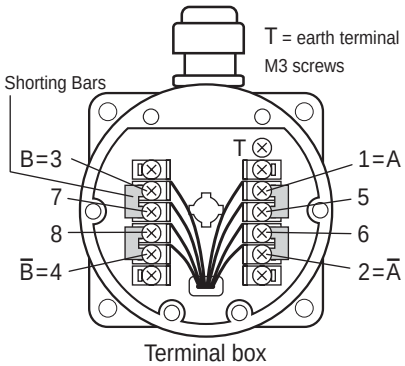
103 - 845 - 67S41 SERIES



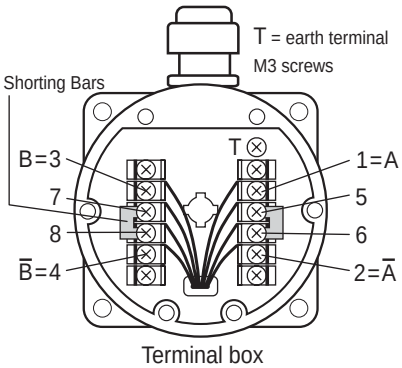
CHARACTERISTICS

MODEL		103 - 845 - 67S41
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	9.5
UNIPOLAR CURRENT	(Amp)	6.7
RESISTANCE	(Ohm)	0.45
INDUCTANCE	(mH)	2.0
BIPOLAR HOLDING TORQUE	(Ncm)	510
UNIPOLAR HOLDING TORQUE	(Ncm)	410
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	1550
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	32900
BACK E.M.F.	(V/Krpm)	46
MASS	(Kg)	3,9
PROTECTION DEGREE		IP55
LEADS CODE		VI



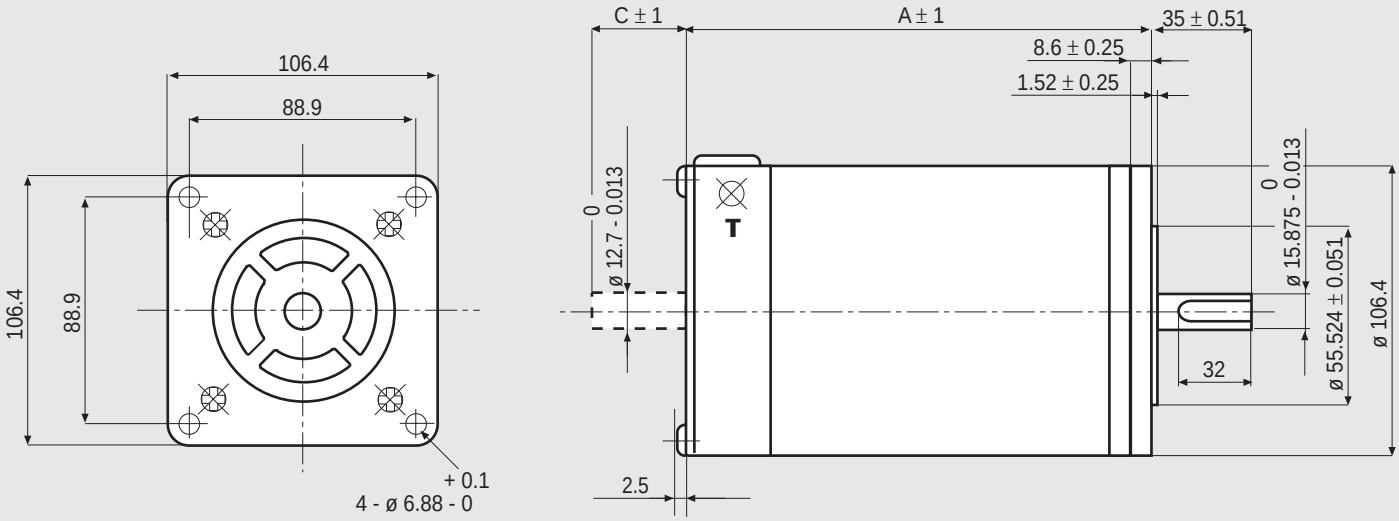


Terminal box
Parallel connection

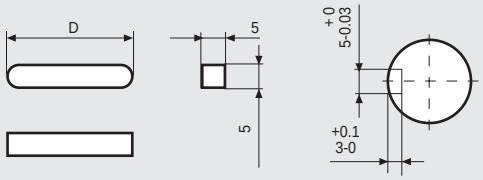


Terminal box
Series connection

103 - 89 SERIES



T IS THE EARTH TERMINAL .

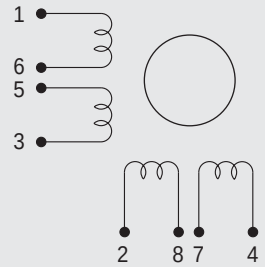


MODEL	A	C	D
103 - 8932 - 6451	186.9		32
103 - 8932 - 6421	186.9	30.8	32
103 - 8960 - 6551	245		28

CHARACTERISTICS

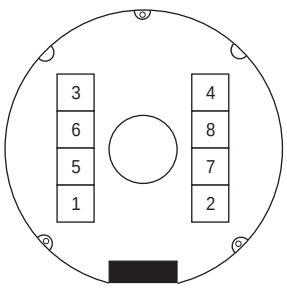
MODEL		103 - 8932 - 6451 (103 - 8932 - 6421)	103 - 8960 - 6551
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	12.7	14.1
UNIPOLAR CURRENT	(Amp)	9.0	10.0
RESISTANCE	(Ohm)	0.28	0.28
INDUCTANCE	(mH)	2.4	3.0
BIPOLAR HOLDING TORQUE	(Ncm)	1330	2060
UNIPOLAR HOLDING TORQUE	(Ncm)	1020	1580
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	8000	11500
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	16500	17900
BACK E.M.F.	(V/Krpm)	85	120
MASS	(Kg)	7	10.5
PROTECTION DEGREE		IP43	IP43
LEADS CODE		III	III

Codes between brackets refer to double shaft model.



III

Terminal box - internal view



The correct dimensioning of a stepping motor system requires a deep knowledge of the two following essential parameters:

- Mechanical features of the application, as for example inertia of masses in motion, transmission kinematics, speed, acceleration, time required to perform the motion, duty cycle etc.
- Performances of the motor-drive unit, mainly in terms of torque-speed curves.

The torque is not only a feature of the sole motor, but is strongly affected by the drive used with it. The same motor can be used with various drive types in order to obtain different performances in different applications.
Herafter are reported a selection table and some typical Torque-Speed diagrams obtained with different couplings between RTA drives and SANYO motors. For a correct interpretation of these information, the following considerations apply:

- All reported curves are “pull-out curves”
- Couplings indicated in the selection table take into account only the compatibility between the motor and the power output characteristics of the drive. The effective choice must be made only knowing all requirements of the application like resolution, type of supply, mechanical format etc. (for more information about drive characteristics see also Drive manual)
- At very low speed (<30 RPM) resonance and vibration, strongly dependent by load, could appear with “non ministep-drives” (GMD, GAC). This phenomenon is much less critical with “ministep drives” (NDC, SAC, GMH, MIND)
- As the majority of the stepping motor systems, most of the indicated couplings exhibit duty cycle limitations in order to avoid motor overheating. Accessories like motor heatsinks and/or fans are available in case of need
- In the selection table, “**YT**” means that, for this coupling the specific torque-speed diagram is present; “**Y**” means that the coupling is rated but the specific torque-speed diagram is not present. For a specific motor, the use of the same background colour in different couplings with different drives means that all those couplings exhibit similar torque-speed characteristics. This means that, when you have a motor with one coupling marked “**YT**” and three couplings marked “**Y**” with the same background colour, you can use the torque-speed diagram shown for “**YT**” also for the other three.

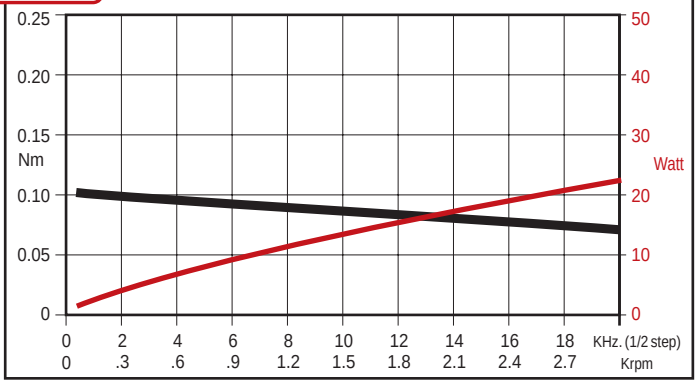
SELECTION TABLE FOR COUPLING BETWEEN STANDARD MOTORS AND DRIVES

MOTOR MODELS AND CONNECTIONS	DRIVE MODELS	NDC		SAC		GMH				GMD				GAC		MIND			BCW
		04	06	25	26	05	06	07	09	02	03	04	06	03	04	...3	...4	...5	02
546-5342	Parallel*	YT																	
547-52500	Parallel*	YT																	
547-52500	Series	YT																	
770-1640	—	Y		Y		Y				YT									
G770-2241	Parallel		Y	Y		Y				YT									
G770-2241	Series	Y								YT									
714-0150	Parallel		Y	Y		Y				YT									
807-6241	Parallel		Y	Y		Y				YT									
807-6341	Parallel		Y		Y		Y			YT									
807-6341	Series		Y	Y		Y				YT									
810-6	Parallel		Y		Y		Y			YT						Y			
814-6541	Series		Y		Y		Y			YT									
814-6541	Parallel		Y		Y		Y			YT	Y	YT		Y	Y	Y	Y		
845-6741	Series		Y		Y		Y			YT	Y			Y					
845-6741	Parallel							Y	YT		YT	YT	YT	Y	Y	Y	Y	Y	
8932-6451	Series											YT		Y					
8932-6451	Parallel								YT			YT	YT		Y		Y	Y	YT
8960-6551	Series											YT			Y				
8960-6551	Parallel								YT			YT	YT		Y		Y	Y	YT

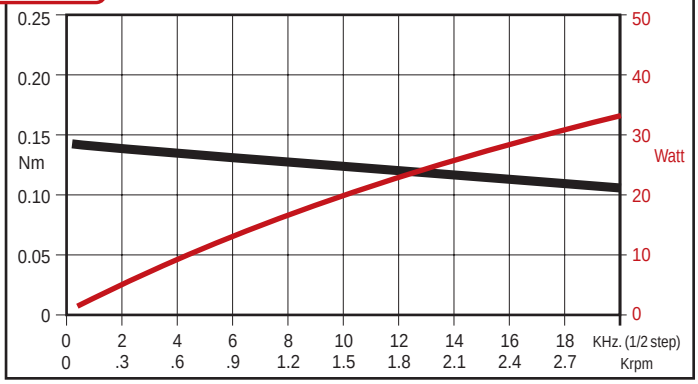
* 6-wires motor. For Parallel connection see page 40.

SPEED/TORQUE CURVES

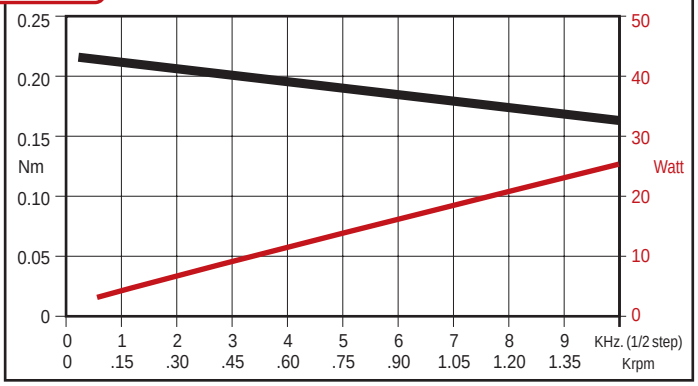
SANYO 103 546 5342 - parallel bipolar connection
RTA NDC04 drive



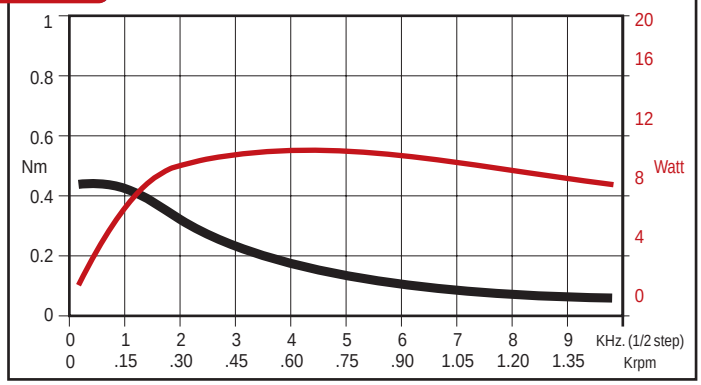
SANYO 103 547 52500 - parallel bipolar connection
RTA NDC04 drive



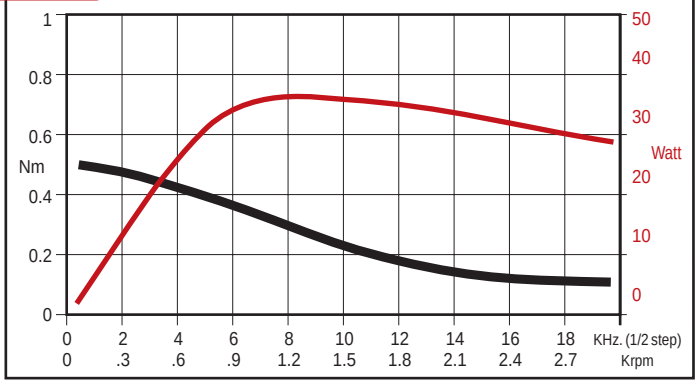
SANYO 103 547 52500 - series bipolar connection
RTA NDC04 drive



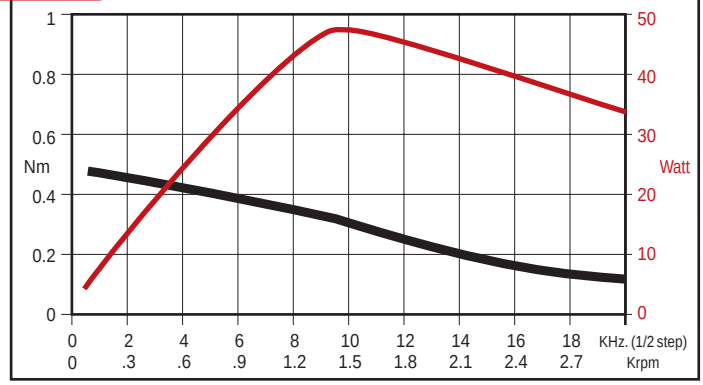
SANYO 103 770 6
24 Volt, 1 Amp. unipolar conection



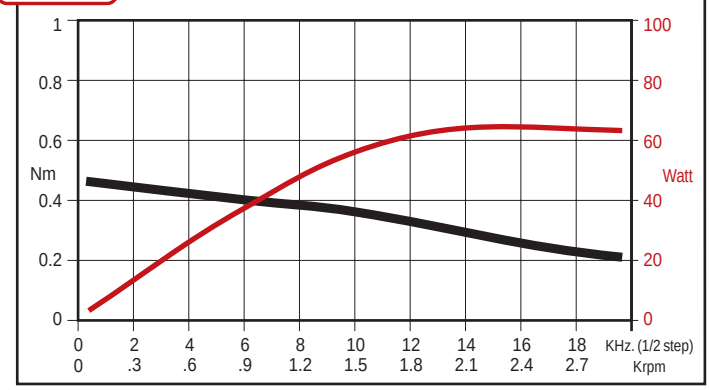
SANYO 103 770 1640 - parallel bipolar connection
RTA GMD02 drive



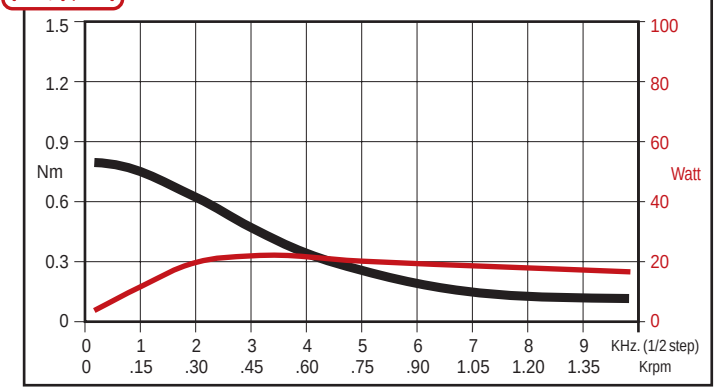
SANYO 103 G770 2241 - series bipolar connection
RTA GMD02 drive



SANYO 103 G770 2241 - parallel bipolar connection
RTA GMD02 drive

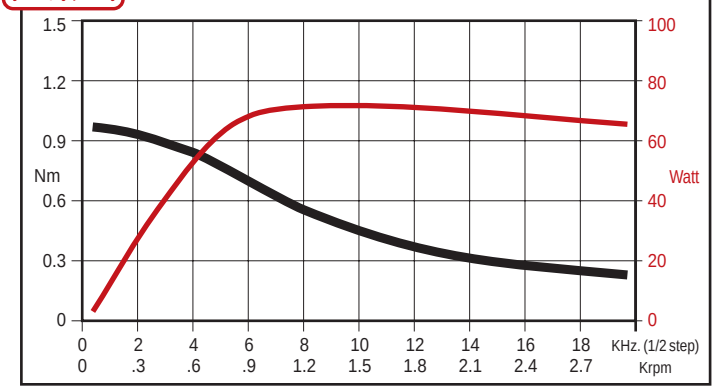


SANYO 103 714 0150
24 Volt, 1,8 Amp. unipolar connection

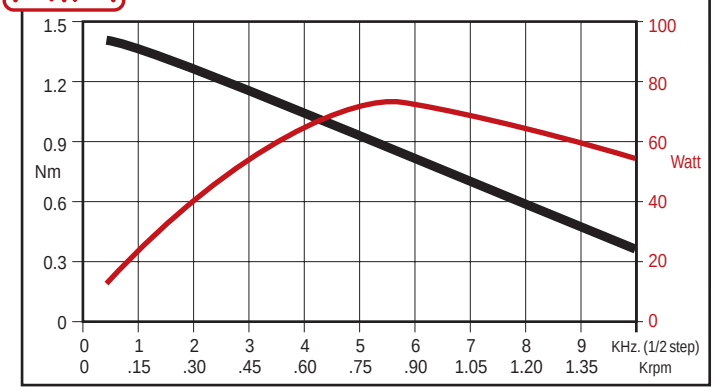


SPEED / TORQUE CURVES

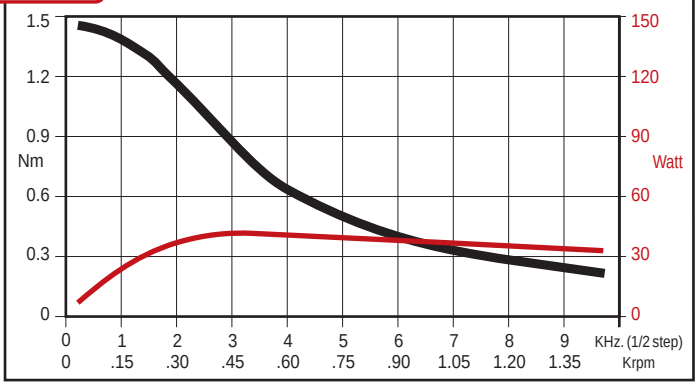
SANYO 103 714 0150 - parallel bipolar connection
RTA GMD02 drive



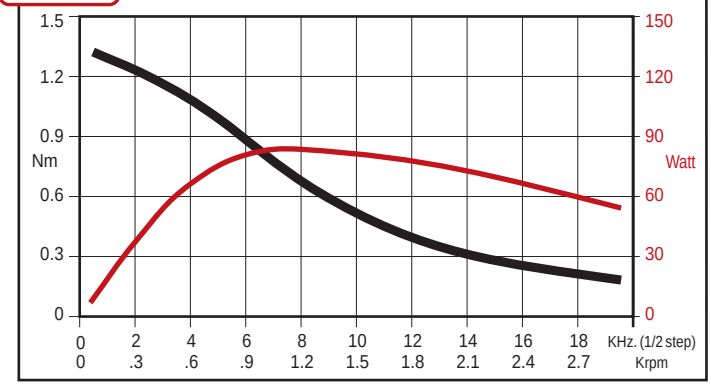
SANYO 103 807 6241 - parallel bipolar connection
RTA GMD02 drive



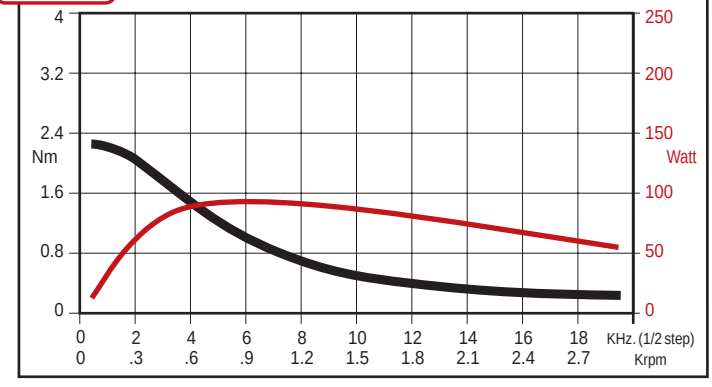
SANYO 103 807 6341 - series bipolar connection
RTA GMD02 drive



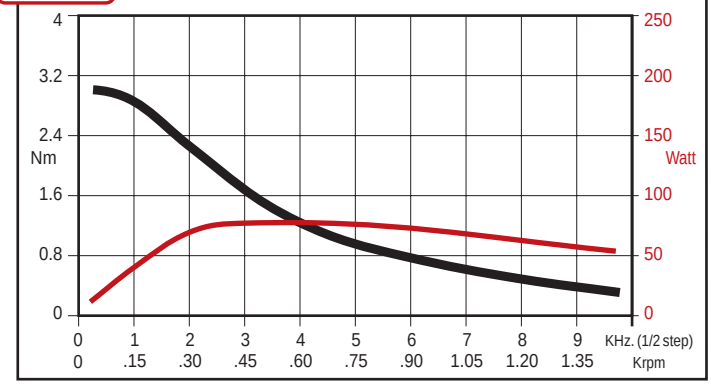
SANYO 103 807 6341 - parallel bipolar connection
RTA GMD02 drive



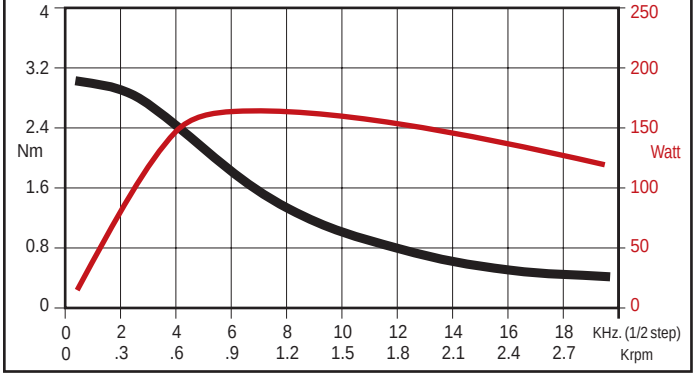
SANYO 103 810 6 - parallel bipolar connection
RTA GMD02 drive



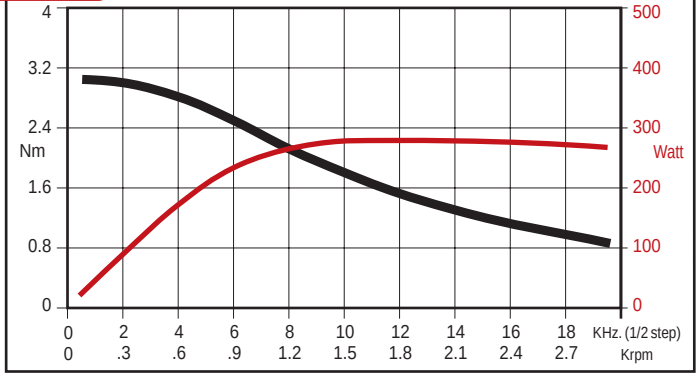
SANYO 103 814 6541 - series bipolar connection
RTA GMD02 drive



SANYO 103 814 6541 - parallel bipolar connection
RTA GMD03 drive

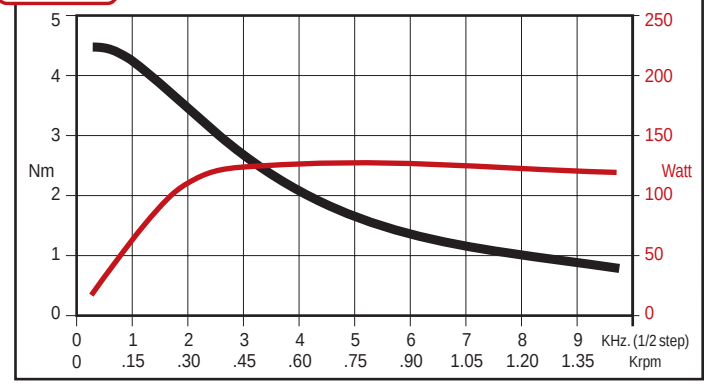


SANYO 103 814 6541 - parallel bipolar connection
RTA GMD04 drive

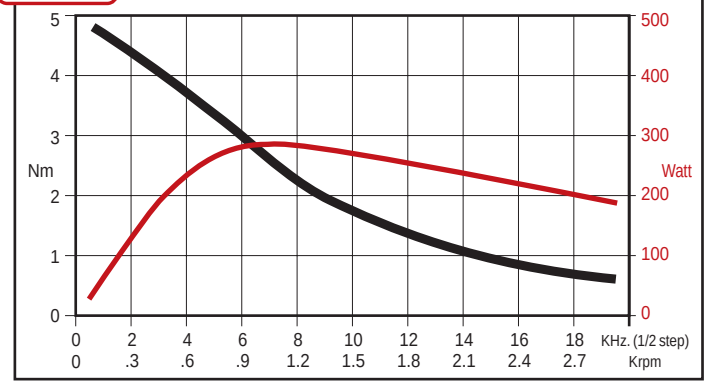


SPEED/TORQUE CURVES

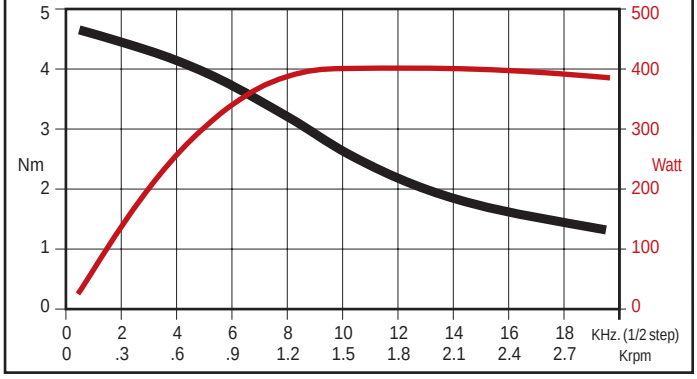
SANYO 103 845 6741 - series bipolar connection
RTA GMD02 drive



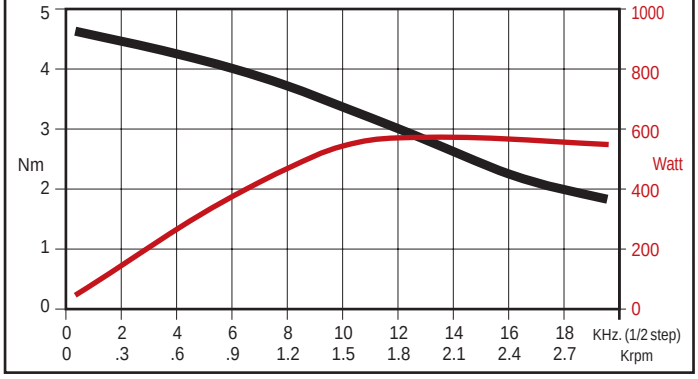
SANYO 103 845 6741 - parallel bipolar connection
RTA GMD03 drive



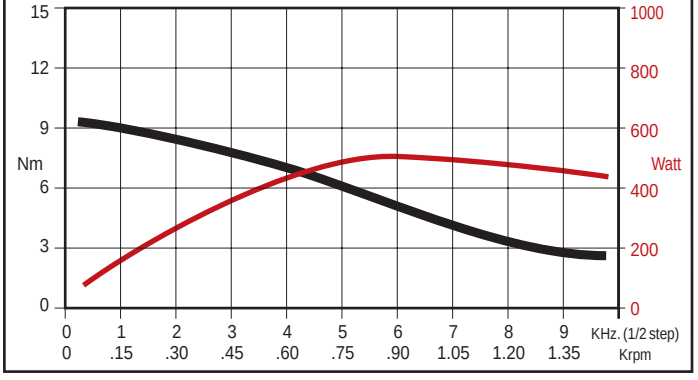
SANYO 103 845 6741 - parallel bipolar connection
RTA GMD04 drive



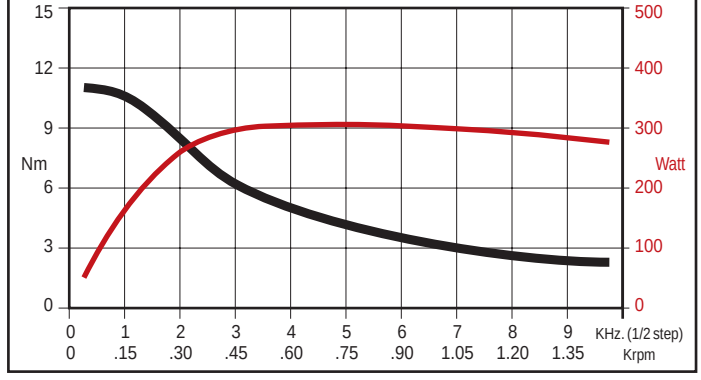
SANYO 103 845 6741 - parallel bipolar connection
RTA GMD06 drive



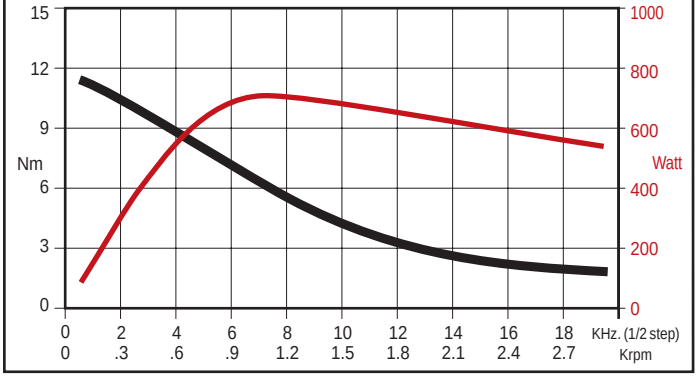
SANYO 103 8932 6451 - parallel bipolar connection
RTA GMD03 drive



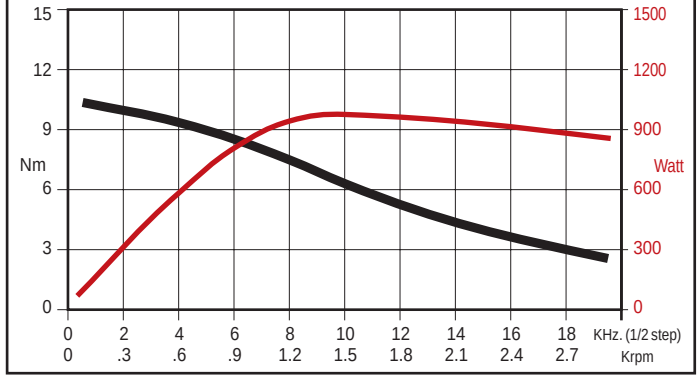
SANYO 103 8932 6451- series bipolar connection
RTA GMD04 drive



SANYO 103 8932 6451 - parallel bipolar connection
RTA GMD04 drive

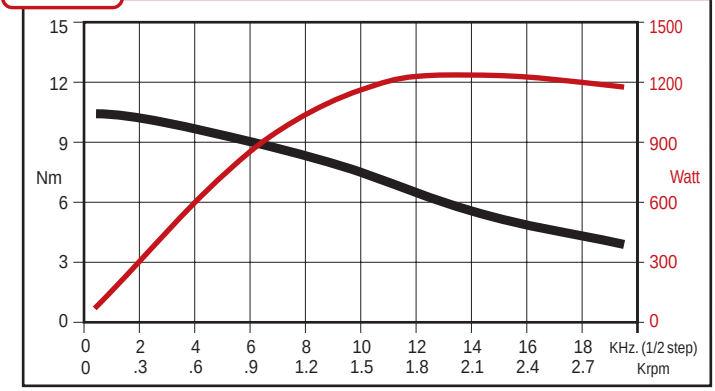


SANYO 103 8932 6451 - parallel bipolar connection
RTA GMD06 drive

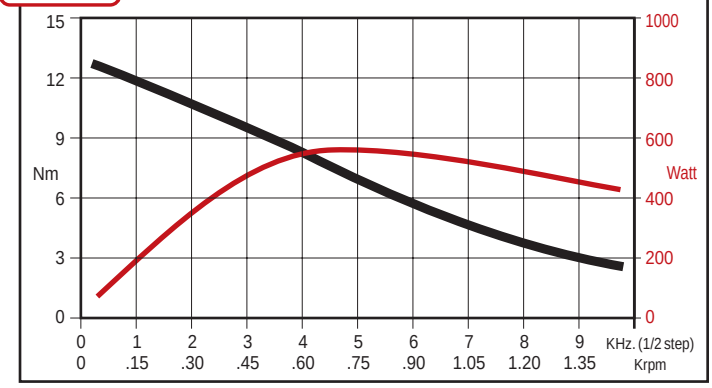


SPEED/TORQUE CURVES

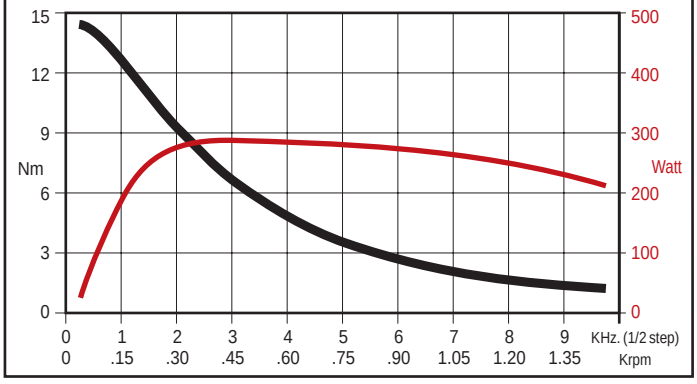
SANYO 103 8932 6451 - parallel bipolar connection
RTA BCW02 drive



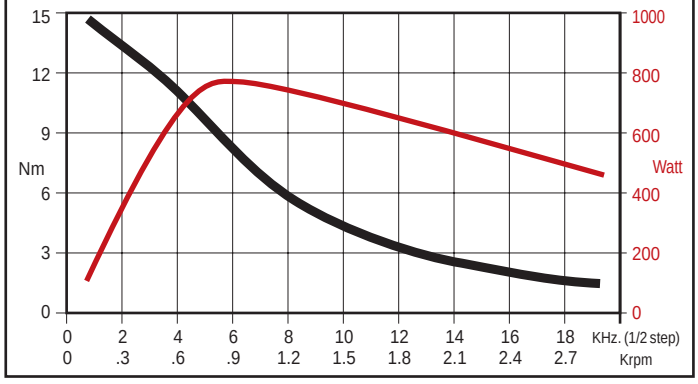
SANYO 103 8960 6551 - parallel bipolar connection
RTA GMD03 drive



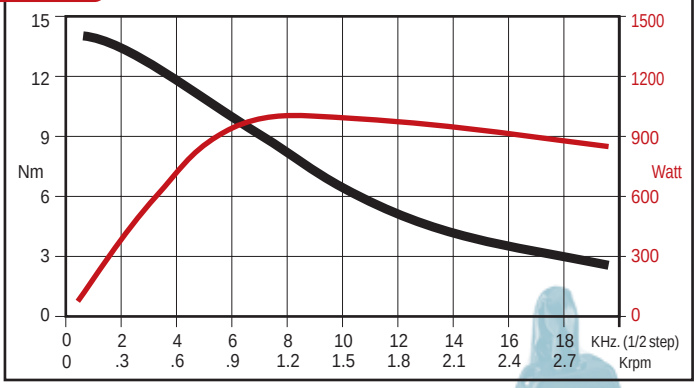
SANYO 103 8960 6551 - series bipolar connection
RTA GMD04 drive



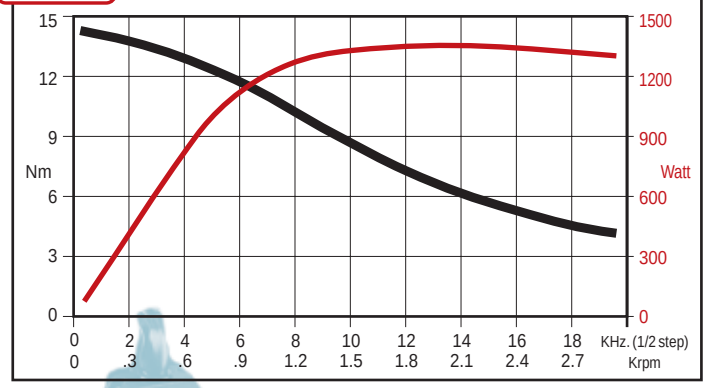
SANYO 103 8960 6551 - parallel bipolar connection
RTA GMD04 drive

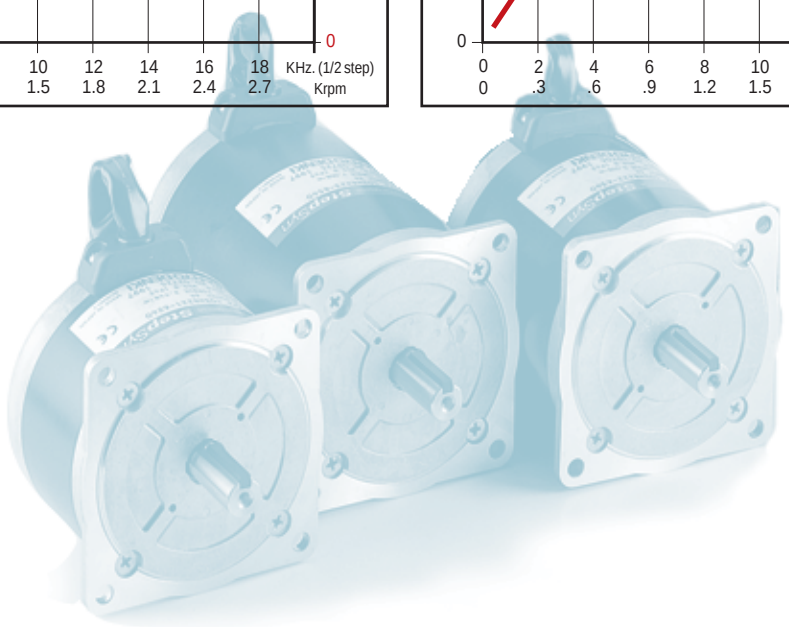


SANYO 103 8960 6551 - parallel bipolar connection
RTA GMD06 drive



SANYO 103 8960 6551 - parallel bipolar connection
RTA BCW02 drive





stepping motors, H Series

Better torque, small size, high efficiency!

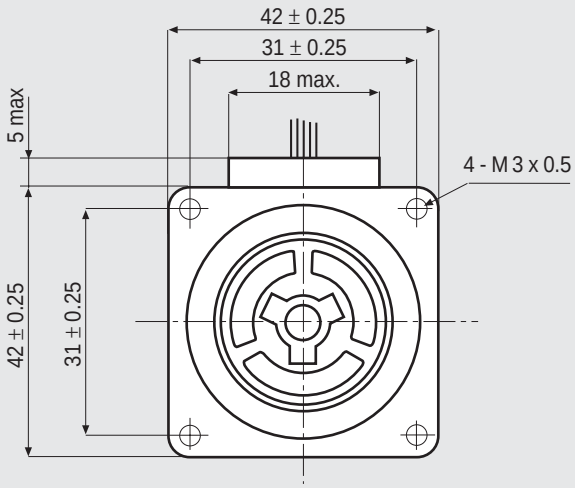
The remarkable commitment of resources invested by SANYO DENKI in the research and development of new technologies and products has allowed it to propose this new range of stepping motors, which go alongside the widest range of standard models.

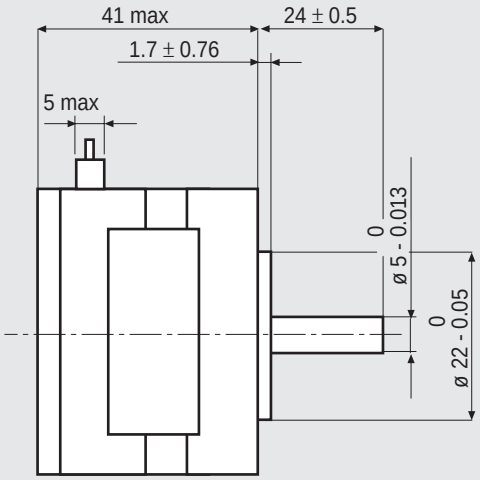
The innovative design of SANYO DENKI H series stepping motors presents the following advantages, compared with conventional stepping motors:

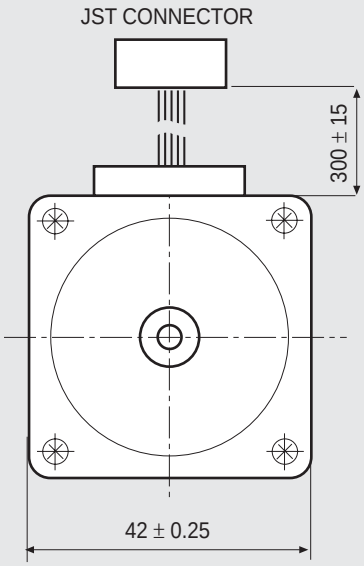
- Better performance in terms of torque and power, though maintaining conventional standard dimensions (NEMA).
- Lower noise at the same power.
- Less vibrations generated by the motor body.
- Optimized construction for a better exploitation of any advantages in terms of precision and noiselessness offered by high step-fractioning drives.
- Higher efficiency with consequential reduction of losses at the same supplied mechanical power.

The better performance and lower noise make SANYO DENKI H series stepping motors the optimum choice for powerful, precise and reliable positioning systems allowing their use in new fields and applications.

103 - H548 - 04500 SERIES





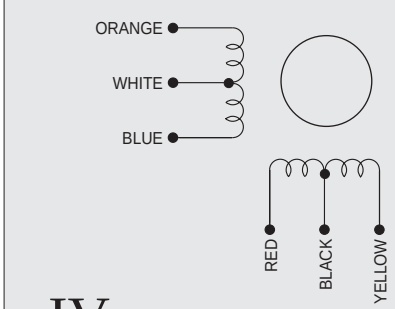


MOTOR CONNECTOR IS JST mod.EHR-6 A 6 POLES FEMALE.
FOR CONNECTION USE JST mod. B6B-EH-A MALE CONNECTOR.

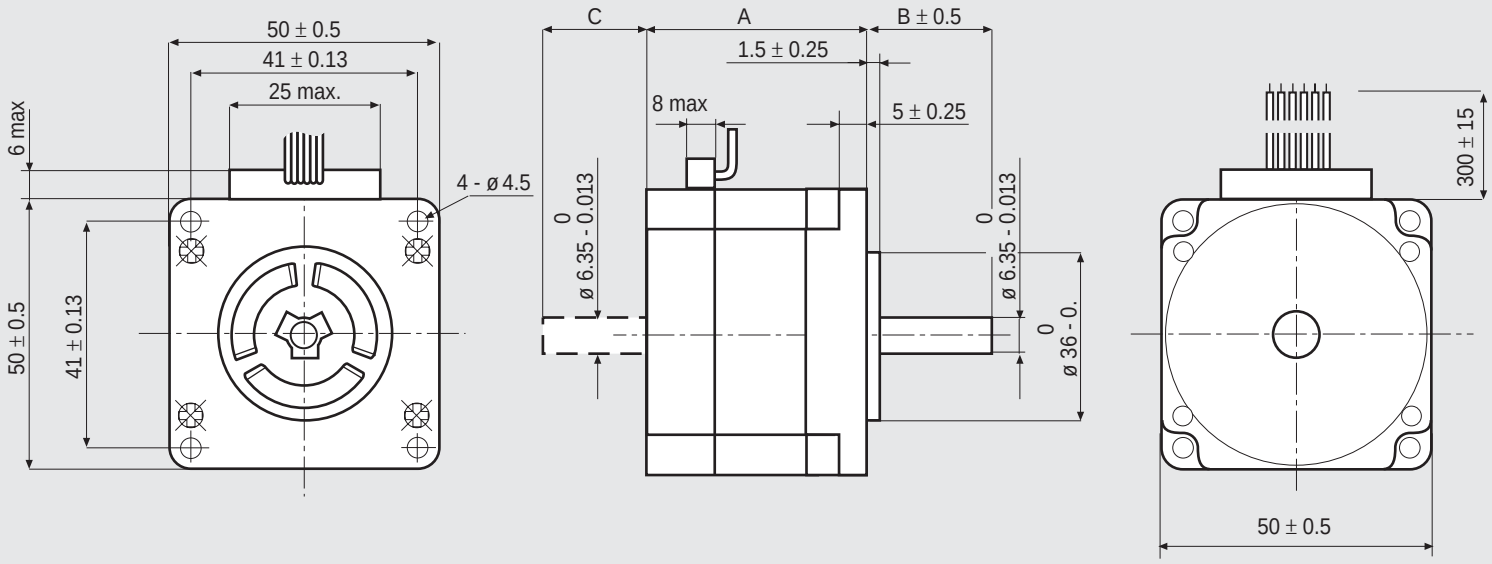
CHARACTERISTICS

MODEL		103 - H548 - 04500
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	0.9 (*)
UNIPOLAR CURRENT	(Amp)	1.2
RESISTANCE	(Ohm)	3
INDUCTANCE	(mH)	4.3
BIPOLAR HOLDING TORQUE	(Ncm)	37
UNIPOLAR HOLDING TORQUE	(Ncm)	27
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	53
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	66000
BACK E.M.F.	(V/Krpm)	17
MASS	(Kg)	0.28
LEADS CODE		IV

(*) Series bipolar connection.



103 - H67 SERIES



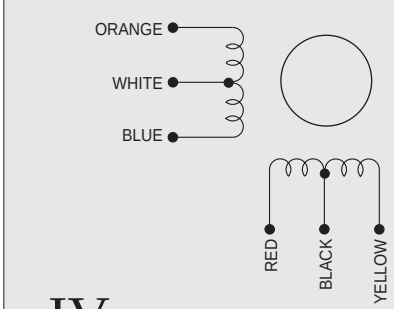
MODEL	A	B	C
103 - H6701 - 0140	39.8	20.6	
103 - H6701 - 0113	39.8	28	15.5
103 - H6703 - 0440	51.3	20.6	

CHARACTERISTICS

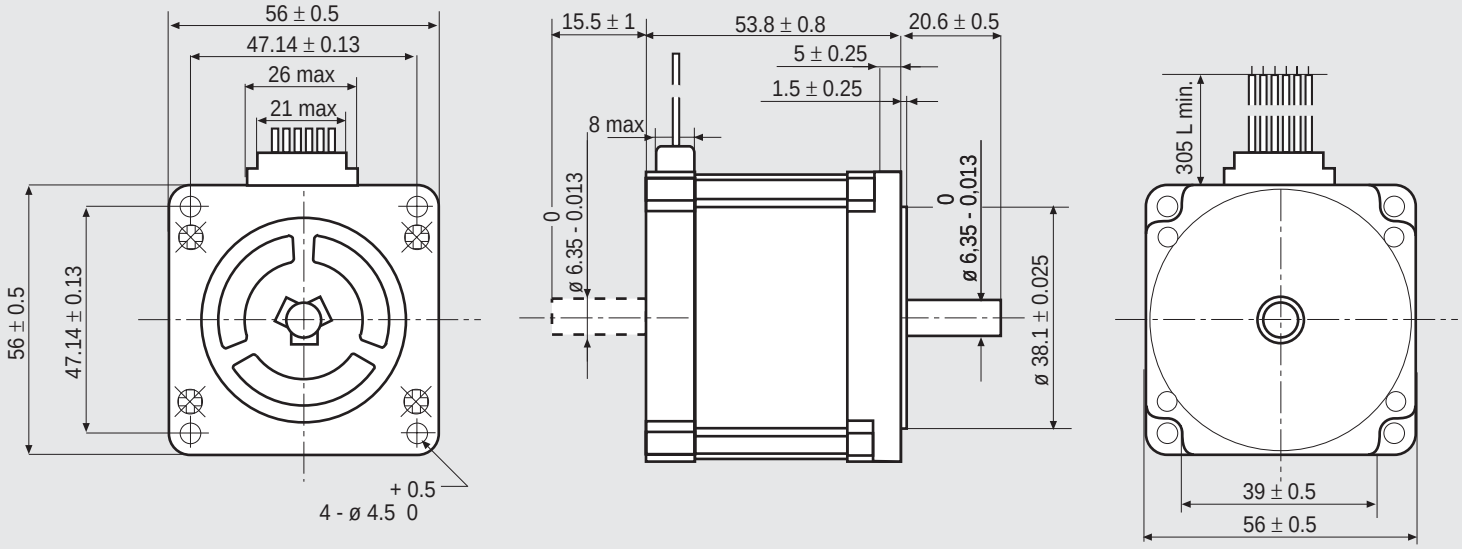
MODEL		103 - H6701 - 0140 (103 - H6701 - 0113)	103 - H6703 - 0440
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	0.7(*)	1.4 (*)
UNIPOLAR CURRENT	(Amp)	1.0	2.0
RESISTANCE	(Ohm)	4.3	1.6
INDUCTANCE	(mH)	6.8	3.2
BIPOLAR HOLDING TORQUE	(Ncm)	38	68
UNIPOLAR HOLDING TORQUE	(Ncm)	28	49
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	57	118
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	66000	58000
BACK E.M.F.	(V/Krpm)	20	17.5
MASS	(Kg)	0.35	0.5
LEADS CODE		IV	IV

Codes between brackets refer to double shaft model.

(*) Series bipolar connection.



103 - H7123 SERIES

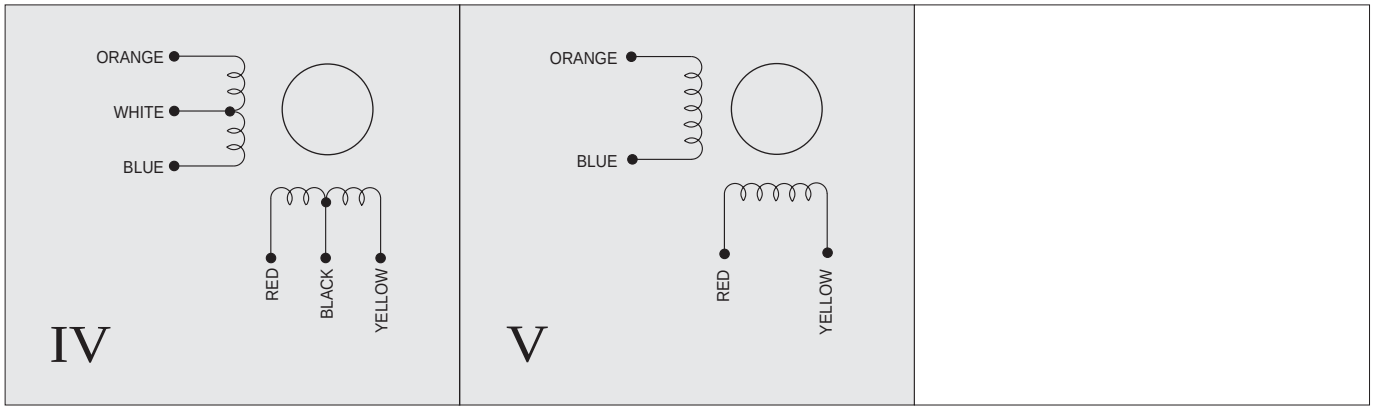


CHARACTERISTICS

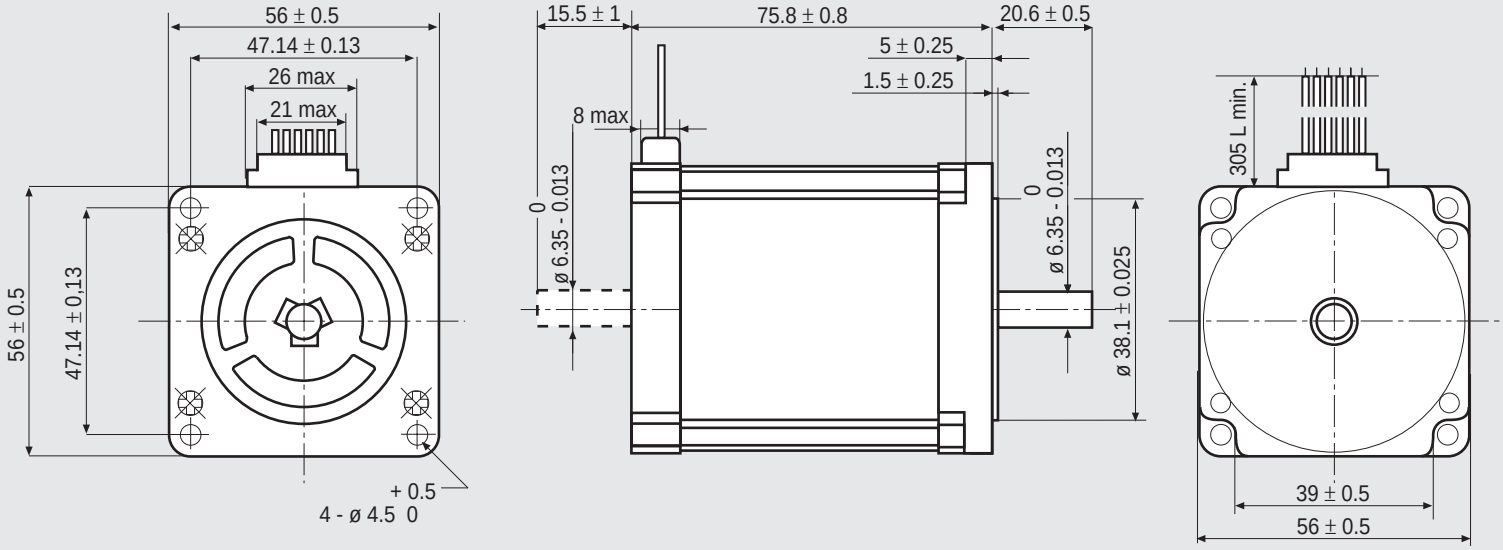
MODEL		103-H7123-0140	103-H7123-0440	103-H7123-0740 (103-H7123-0710)	103-H7123-1740 (103-H7123-1710)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°	1.8° ± 0.09°	1,8° ± 0,09°
BIPOLAR CURRENT	(Amp)	0.7 (*)	1.5 (*)	2.2 (*)	4
UNIPOLAR CURRENT	(Amp)	1	2	3	
RESISTANCE	(Ohm)	6.7	1.6	0.77	0,41
INDUCTANCE	(mH)	15	3.8	1.6	1,6
BIPOLAR HOLDING TORQUE	(Ncm)	110	110	110	110
UNIPOLAR HOLDING TORQUE	(Ncm)	85	85	85	
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	210	210	210	210
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	50000	50000	50000	50000
BACK E.M.F.	(V/Krpm)	60	31	20	20
MASS	(Kg)	0.65	0.65	0.65	0,65
LEADS CODE		IV	IV	IV	V

Codes between brackets refer to double shaft model.

(*) Series bipolar connection.



103 - H7126 SERIES

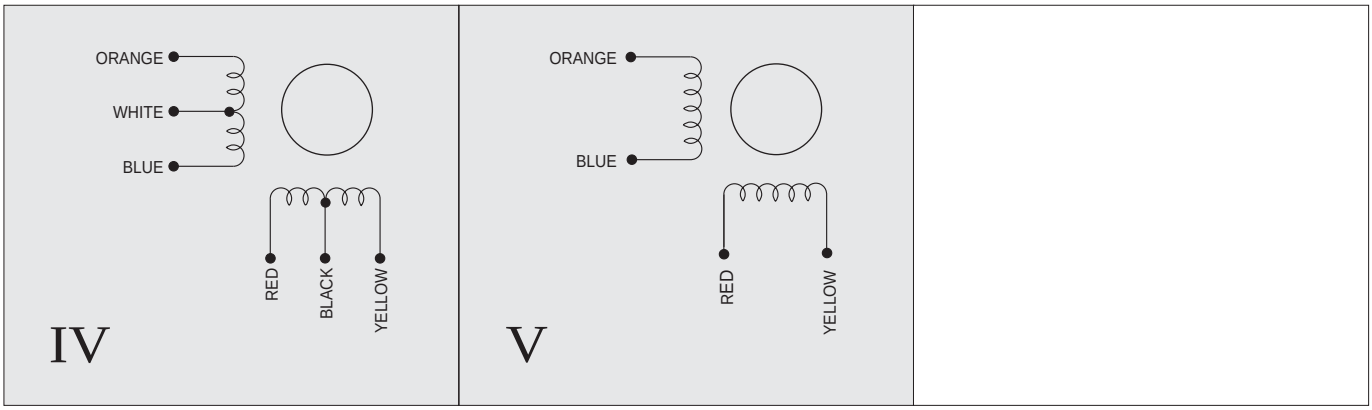


CHARACTERISTICS

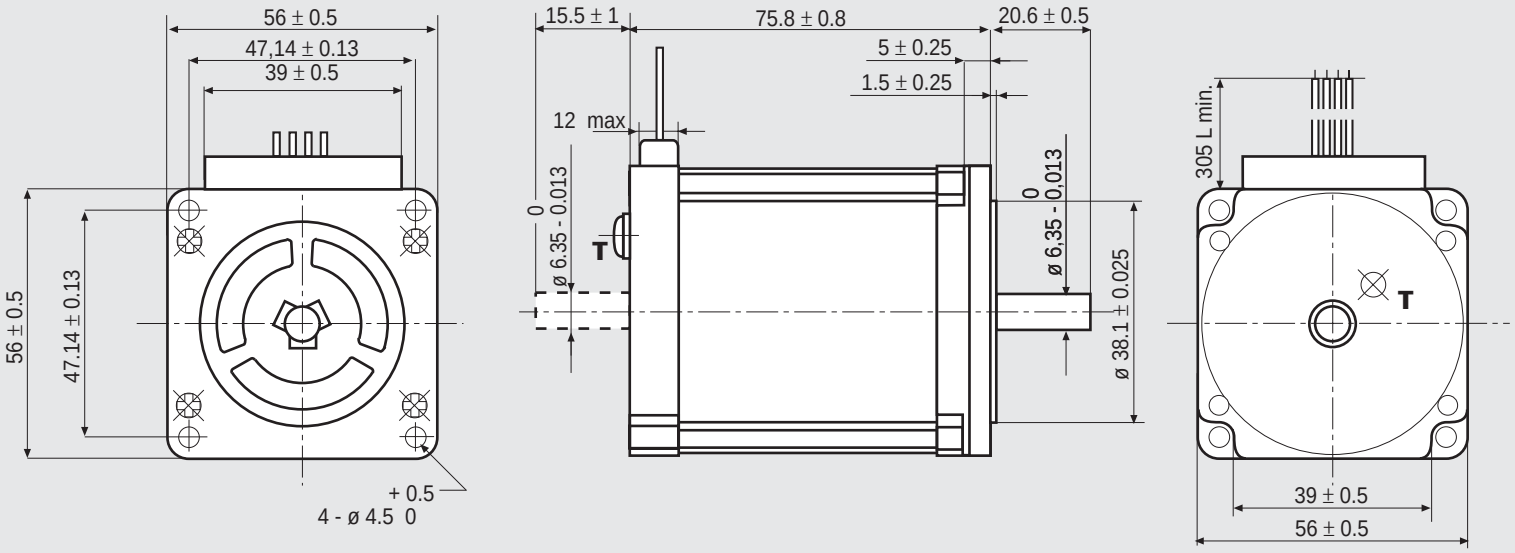
MODEL		103 - H7126 - 0140	103 - H7126 - 0740 (103 - H7126 - 0710)	103 - H7126 - 1740 (103 - H7126 - 1712)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	0.75 (*)	2.2 (*)	4
UNIPOLAR CURRENT	(Amp)	1	3	
RESISTANCE	(Ohm)	8.6	0.9	0.48
INDUCTANCE	(mH)	19	2.2	2.2
BIPOLAR HOLDING TORQUE	(Ncm)	165	165	165
UNIPOLAR HOLDING TORQUE	(Ncm)	130	130	
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	360	360	360
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	45800	45800	45800
BACK E.M.F.	(V/Krpm)	92	31	31
MASS	(Kg)	1	1	1
LEADS CODE		IV	IV	V

Codes between brackets refer to double shaft model.

(*) Series bipolar connection.



103 - H7126 - 66 SERIES

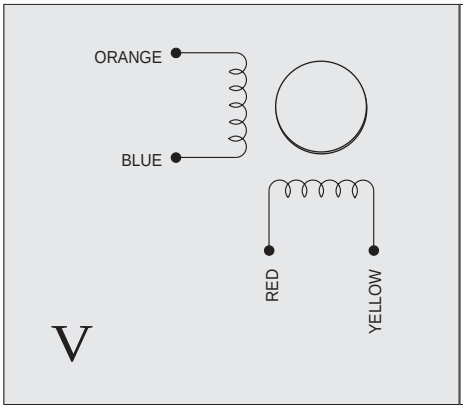


T IS THE EARTH TERMINAL.

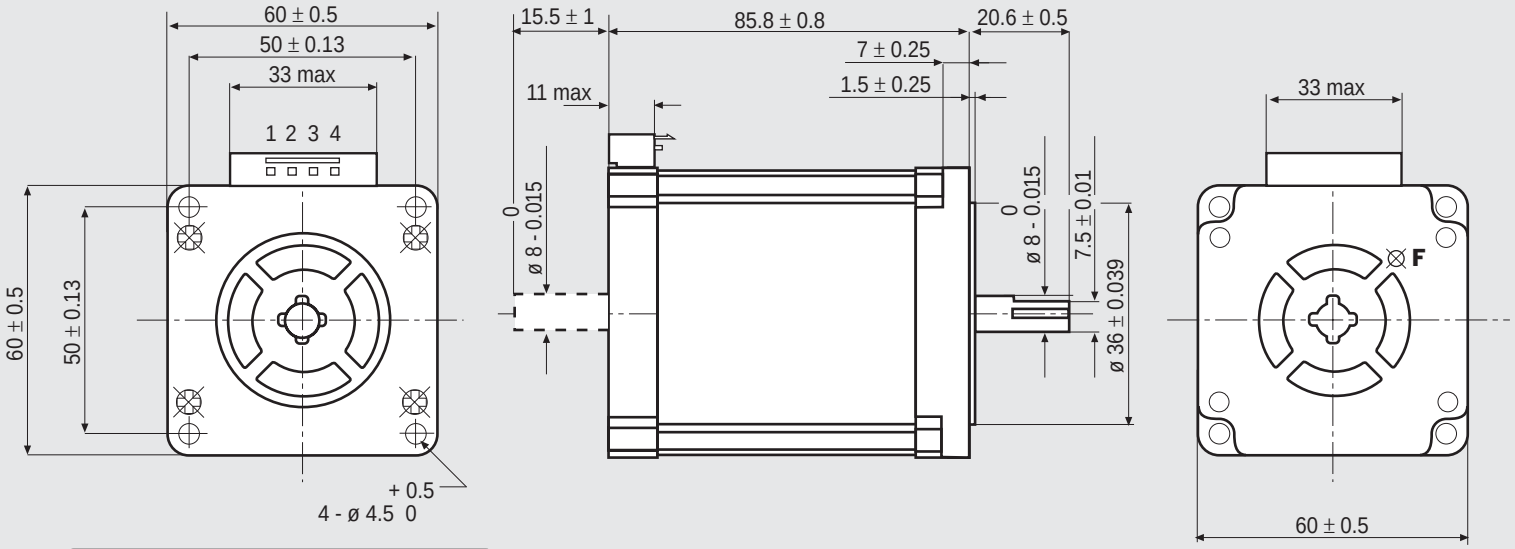
CHARACTERISTICS

MODEL		103 - H7126 - 6640 (103 - H7126 - 6610)
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	5.6
RESISTANCE	(Ohm)	0.3
INDUCTANCE	(mH)	0.85
BIPOLAR HOLDING TORQUE	(Ncm)	165
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	360
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	45800
BACK E.M.F.	(V/Krpm)	23
MASS	(Kg)	1
PROTECTION DEGREE		IP43
LEADS CODE		V

Codes between brackets refer to double shaft model.



103 - H7823 SERIES



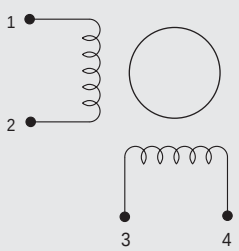
MOTOR CONNECTOR IS JST mod. B4P-VH 4 POLES MALE.
FOR CONNECTION USE JST mod. VHR-4N FEMALE CONNECTOR AND mod. SVH-21T-P1.1 CONTACTS.

FOR **F** THREADED HOLE USE 3 x 6 mm SCREWS.

CHARACTERISTICS

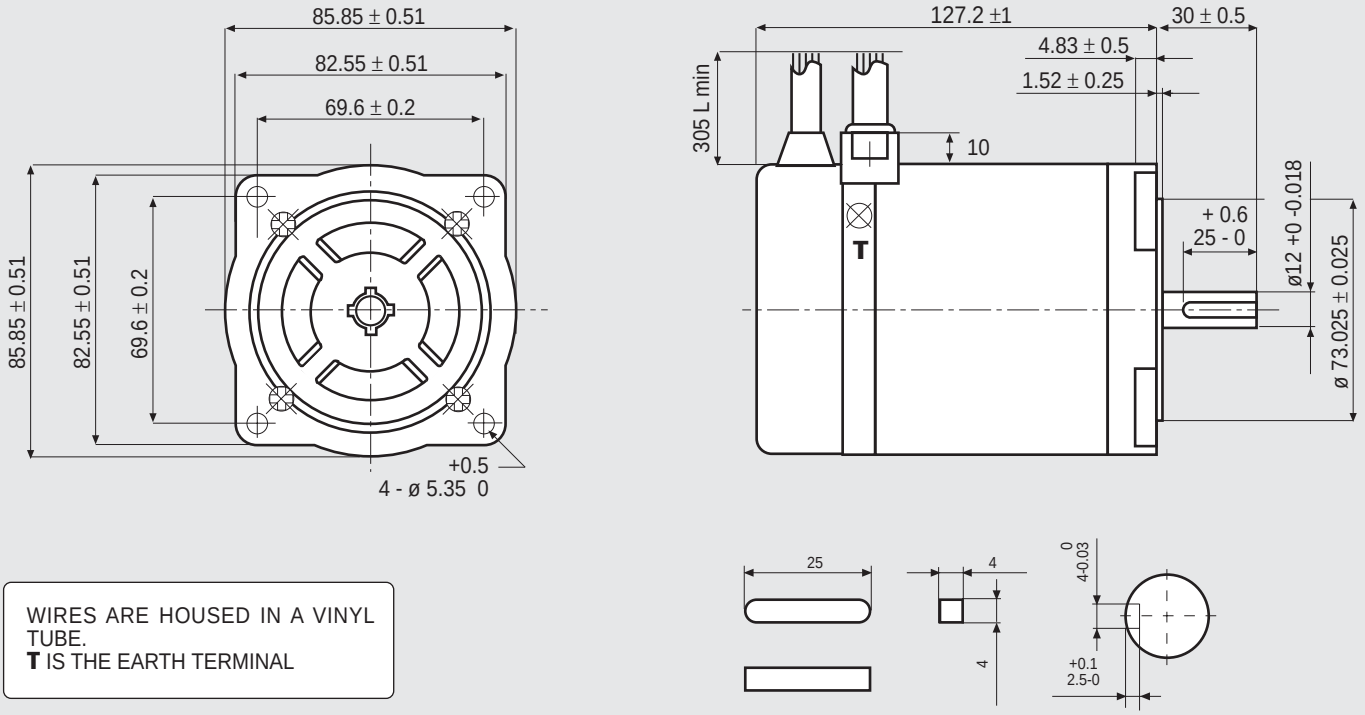
MODEL		103 - H7823 - 1741 (103 - H7823 - 1711)
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	4.0
RESISTANCE	(Ohm)	0.65
INDUCTANCE	(mH)	2.4
BIPOLAR HOLDING TORQUE	(Ncm)	300
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	840
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	35700
BACK E.M.F.	(V/Krpm)	75
MASS	(Kg)	1.4
LEADS CODE		V

Codes between brackets refer to double shaft model.



V

SANYO DENKI SANMOTION 103 - H8222 - 63XE42 SERIES

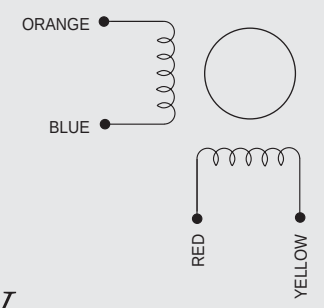


WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL

CHARACTERISTICS

MODEL		103 - H8222 - 63XE42
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	6
RESISTANCE	(Ohm)	0.35
INDUCTANCE	(mH)	2.7
BIPOLAR HOLDING TORQUE	(Ncm)	560
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	2900
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	19300
BACK E.M.F.	(V/Krpm)	93
MASS	(Kg)	2.8
PROTECTION DEGREE		IP40
ENCODER CHARACTERISTICS		Line Driver 5 Vdc 200 step/rev.
LEADS CODE		V

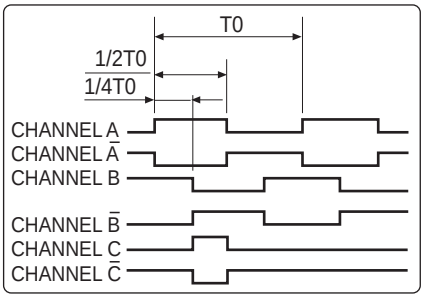
Codes between brackets refer to double shaft model.



V

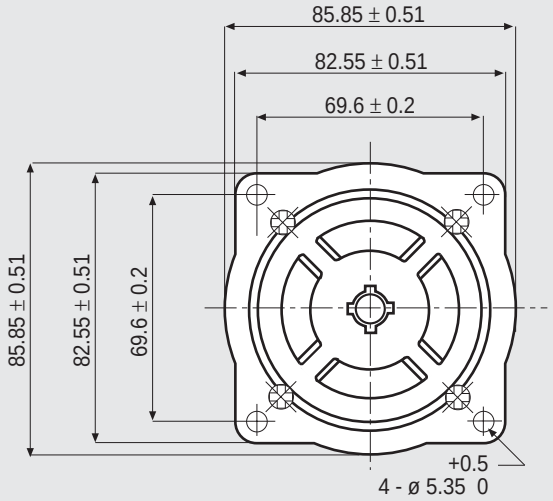
LEADS COLOR	ENCODER
BLUE	CHANNEL A
BROWN	CHANNEL $\bar{A}$
GREEN	CHANNEL B
PURPLE	CHANNEL $\bar{B}$
WHITE	CHANNEL C
YELLOW	CHANNEL $\bar{C}$
RED	±5Volt
BLACK	OVolt
BLACK	FG (SHIELD)

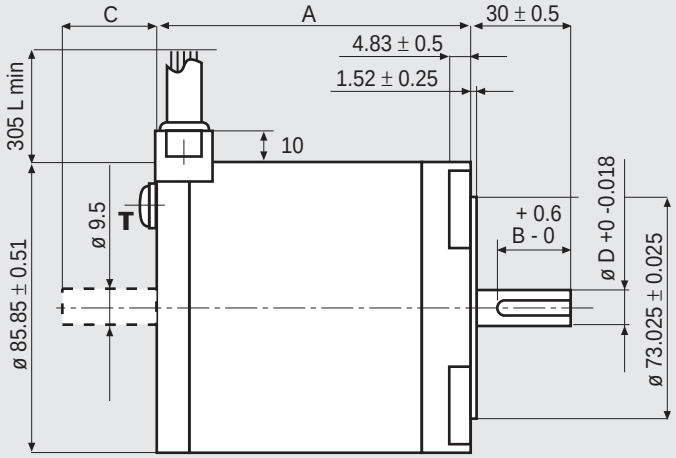
ENCODER OUTPUT WAVEFORM



With this waveform the shaft rotation is counterclockwise when view from mounting surface side. F max 100 KHz.

103 - H82 SERIES





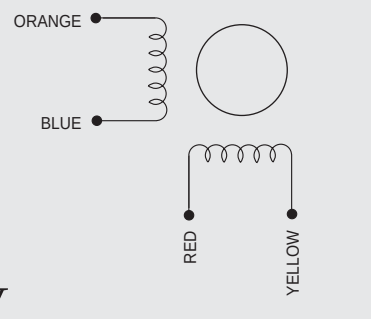
WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL

MODEL	A	B	C	D
103 - H8221 - 6241	62	22		9.525
103 - H8221 - 6211	62	22	25.4±0,5	9.525
103 - H8222 - 6340	92.2	25		12
103 - H8222 - 6310	92.2	25	28±1	12
103 - H8223 - 6540	125.9	25		12
103 - H8223 - 6510	125.9	25	28±1	12

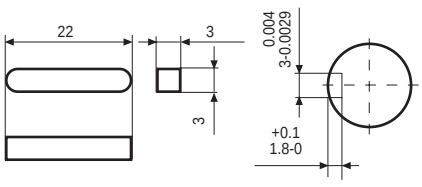
CHARACTERISTICS

MODEL		103 - H8221 - 6241 (103 - H8221 - 6211)	103 - H8222 - 6340 (103 - H8222 - 6310)	103 - H8223 - 6540 (103 - H8223 - 6510)
BASIC STEP ANGLE		1,8° ± 0,09°	1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	6	6	9
RESISTANCE	(Ohm)	0.3	0.35	0.2
INDUCTANCE	(mH)	1.65	2.7	1.4
BIPOLAR HOLDING TORQUE	(Ncm)	300	560	790
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	1450	2900	4350
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	20600	19300	18200
BACK E.M.F.	(V/Krpm)	50	93	88
MASS	(Kg)	1.5	2.5	3.5
PROTECTION DEGREE		IP43	IP43	IP43
LEADS CODE		V	V	V

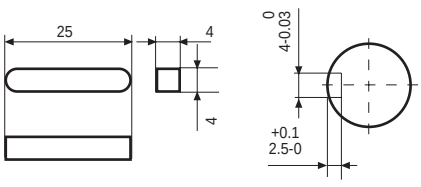
Codes between brackets refer to double shaft model.



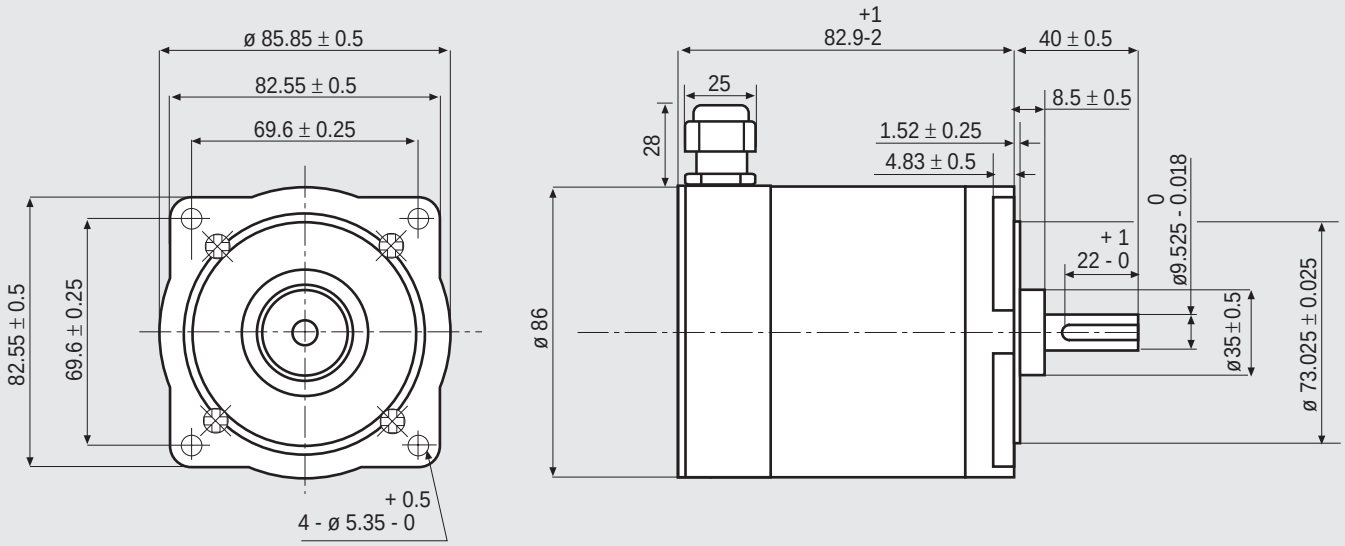
SHAFT 103 - H8221



SHAFT 103 - H8222
103 - H8223

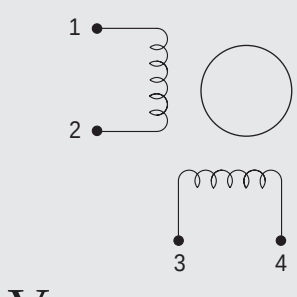


103 - H8221 - 62S41 SERIES

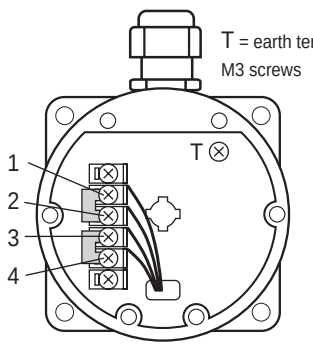


CHARACTERISTICS

MODEL		103 - H8221 - 62S41
BASIC STEP ANGLE		1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	6
RESISTANCE	(Ohm)	0.3
INDUCTANCE	(mH)	1.65
BIPOLAR HOLDING TORQUE	(Ncm)	300
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	1450
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	20600
BACK E.M.F.	(V/Krpm)	50
MASS	(Kg)	1.75
PROTECTION DEGREE		IP55
LEADS CODE		V

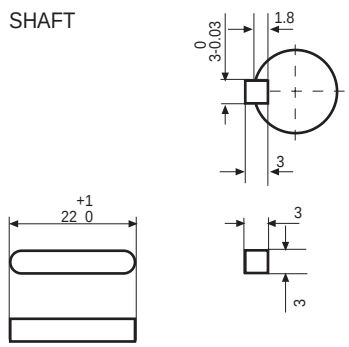


V

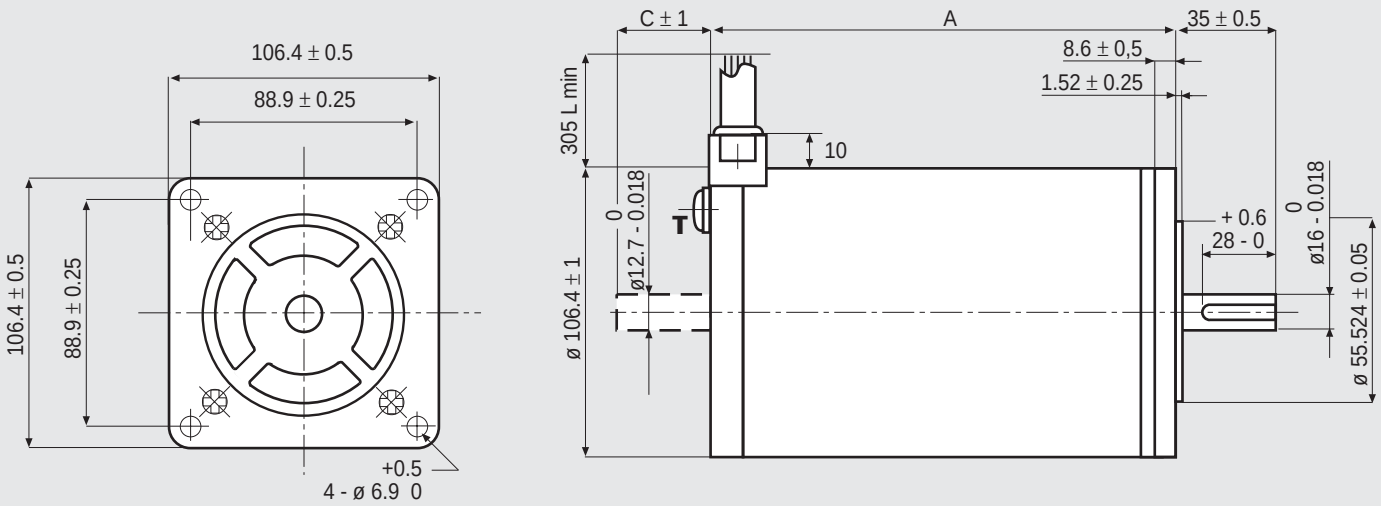


Terminal box

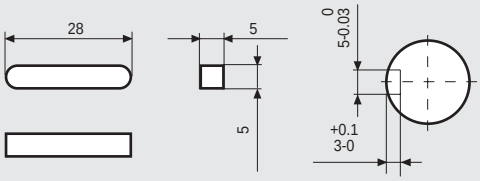
SHAFT



103 - H89 SERIES



WIRES ARE HOUSED IN A VINYL TUBE.
T IS THE EARTH TERMINAL

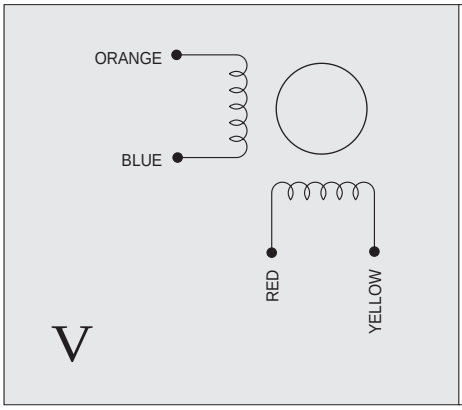


MODEL	A	C
103 - H89222 - 6341	163	
103 - H89222 - 6541	163	
103 - H89223 - 6341	221	
103 - H89223 - 6641	221	
103 - H89223 - 6611	221	28

CHARACTERISTICS

MODEL		103-H89222-6341	103-H89222-6541	103-H89223-6341	103-H89223-6641 (103-H89223-6611)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°	1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR CURRENT	(Amp)	6	10	6	12
RESISTANCE	(Ohm)	0,45	0,16	0,63	0,16
INDUCTANCE	(mH)	5,4	1,9	8	2
BIPOLAR HOLDING TORQUE	(Ncm)	1620	1620	2460	2460
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	14650	14650	22000	22000
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	11100	11100	11100	11100
BACK E.M.F.	(V/Krpm)	270	162	410	205
MASS	(Kg)	7	7	10	10
PROTECTION DEGREE		IP43	IP43	IP43	IP43
LEADS CODE		V	V	V	V

Codes between brackets refer to double shaft model.



The correct dimensioning of a stepping motor system requires a deep knowledge of the two following essential parameters:

- Mechanical features of the application, as for example inertia of masses in motion, transmission kinematics, speed, acceleration, time required to perform the motion, duty cycle etc.
- Performances of the motor-drive unit, mainly in terms of torque-speed curves.

The torque is not only a feature of the sole motor, but is strongly affected by the drive used with it. The same motor can be used with various drive types in order to obtain different performances in different applications.
Herafter are reported a selection table and some typical Torque-Speed diagrams obtained with different couplings between RTA drives and SANYO motors. For a correct interpretation of these information, the following considerations apply:

- All reported curves are “pull-out curves”
- Couplings indicated in the selection table take into account only the compatibility between the motor and the power output characteristics of the drive. The effective choice must be made only knowing all requirements of the application like resolution, type of supply, mechanical format etc. (for more information about drive characteristics see also Drive manual)
- At very low speed (<30 RPM) resonance and vibration, strongly dependent by load, could appear with “non ministep-drives” (GMD, GAC). This phenomenon is much less critical with “ministep drives” (NDC, SAC, GMH, MIND)
- As the majority of the stepping motor systems, most of the indicated couplings exhibit duty cycle limitations in order to avoid motor overheating. Accessories like motor heatsinks and/or fans are available in case of need
- In the selection table, “**YT**” means that, for this coupling the specific torque-speed diagram is present; “**Y**” means that the coupling is rated but the specific torque-speed diagram is not present. For a specific motor, the use of the same background colour in different couplings with different drives means that all those couplings exhibit similar torque-speed characteristics. This means that, when you have a motor with one coupling marked “**YT**” and three couplings marked “**Y**” with the same background colour, you can use the torque-speed diagram shown for “**YT**” also for the other three.

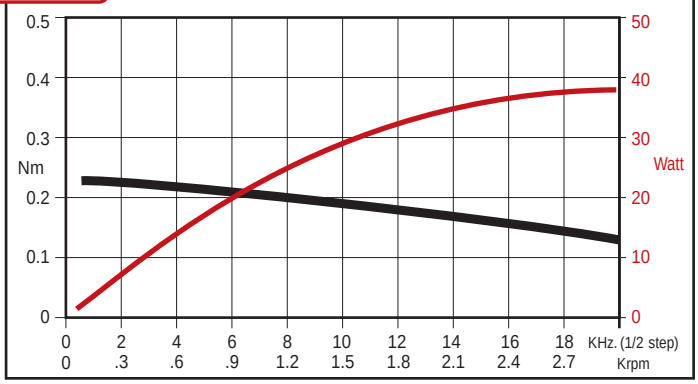
SELECTION TABLE FOR COUPLING BETWEEN STANDARD MOTORS AND DRIVES

MOTOR MODELS AND CONNECTIONS	DRIVE MODELS	NDC		SAC		GMH				GMD				GAC		MIND			BCW
		04	06	25	26	05	06	07	09	02	03	04	06	03	04	...3	...4	...5	02
H548-04500	Parallel*	YT																	
H548-04500	Series	YT																	
H6701-0140	Parallel*	YT																	
H6701-0140	Series	YT																	
H6703-0440	Parallel*	YT																	
H6703-0440	Series	YT																	
H7123-0740	Series		Y	Y		Y				YT									
H7123-1740	–		Y		Y		Y			YT									
H7126-0740	Series		Y	Y		Y				YT									
H7126-1740	–		Y		Y		Y			YT				Y					
H7126-6640	–		Y		Y		Y			YT				Y					
H7823-1741	–		Y		Y		Y			YT				Y					
H8221-6241	–		Y		Y		Y			YT		YT		Y	Y	Y	Y		
H8222-6340	–						Y			YT		YT		Y	Y	Y	Y		
H8223-6540	–							Y	YT		YT	YT	YT	Y	Y	Y	Y	Y	
H89222-6541	–							Y	YT		YT	YT	YT	Y	Y	Y	Y	Y	YT
H89223-6641	–							Y	YT		YT	YT	YT	Y	Y	Y	Y	Y	YT

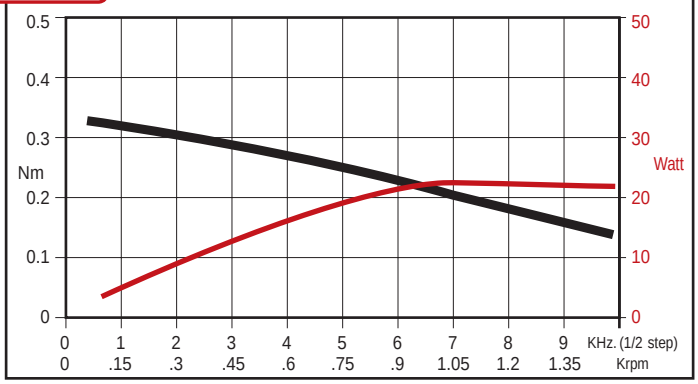
* 6-wires motor. For Parallel connection see page 40.

SPEED/TORQUE CURVES

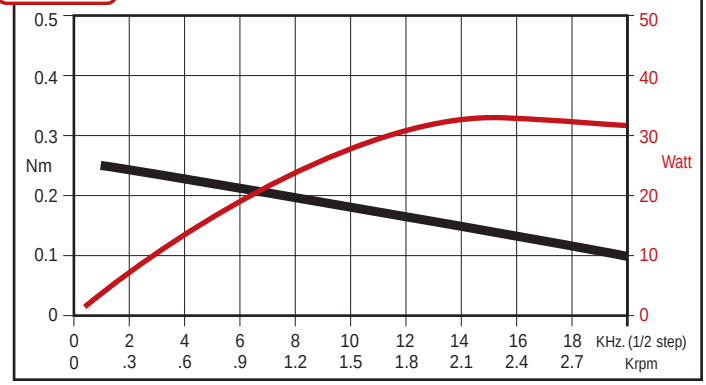
SANYO 103 H548 04500 - parallel bipolar connection
RTA NDC04 drive



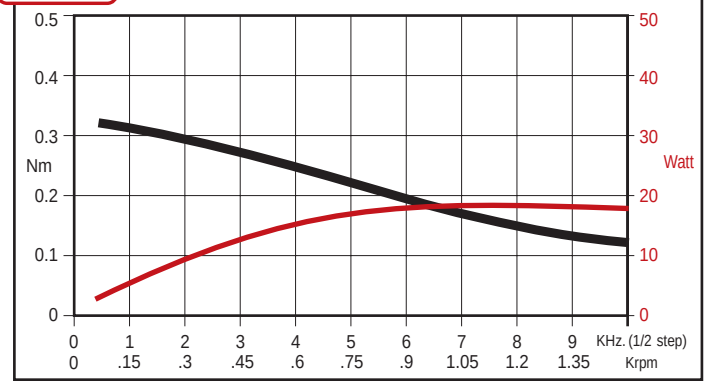
SANYO 103 H548 04500 - series bipolar connection
RTA NDC04 drive



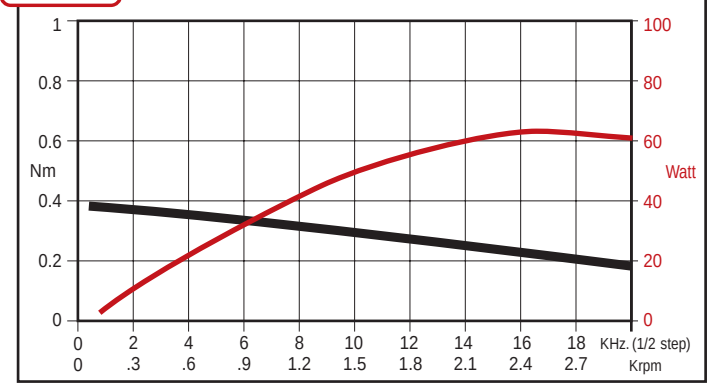
SANYO 103 H6701 0140 - parallel bipolar connection
Azionamento RTA NDC04



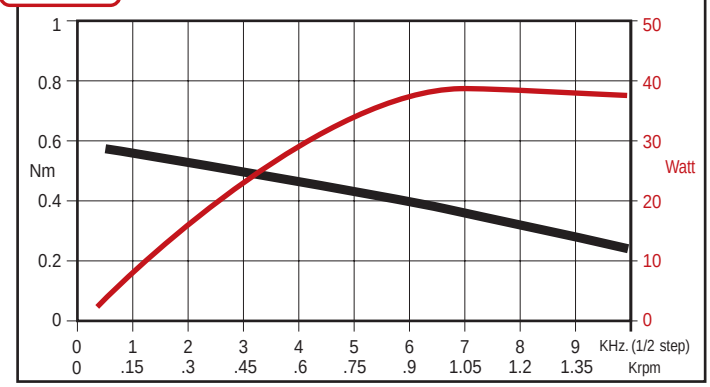
SANYO 103 H6701 0140 - series bipolar connection
RTA NDC04 drive



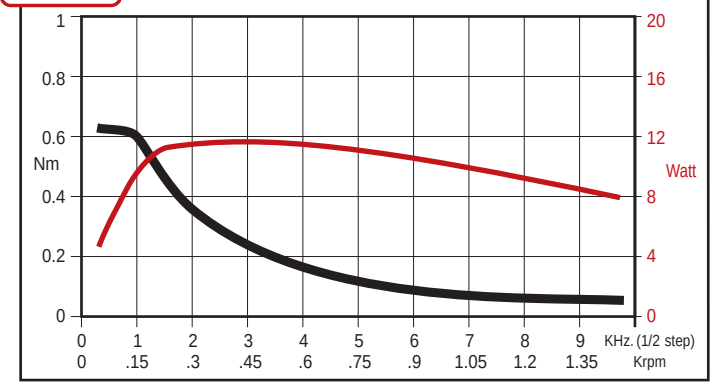
SANYO 103 H6703 0440 - parallel bipolar connection
RTA NDC04 drive



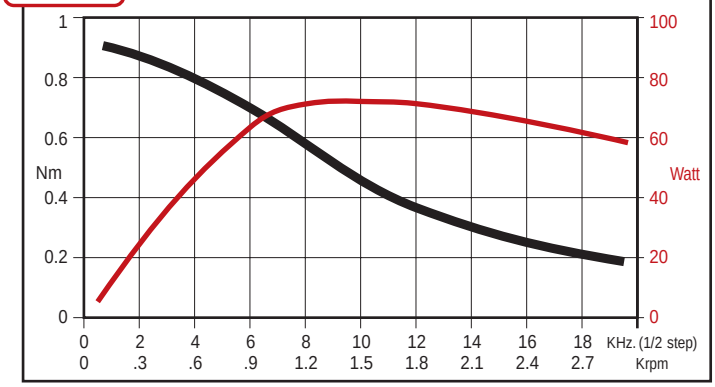
SANYO 103 H6703 0440 - series bipolar connection
RTA NDC04 drive



SANYO 103 H7123 0140
24 Volt, 1 Amp. unipolar connection

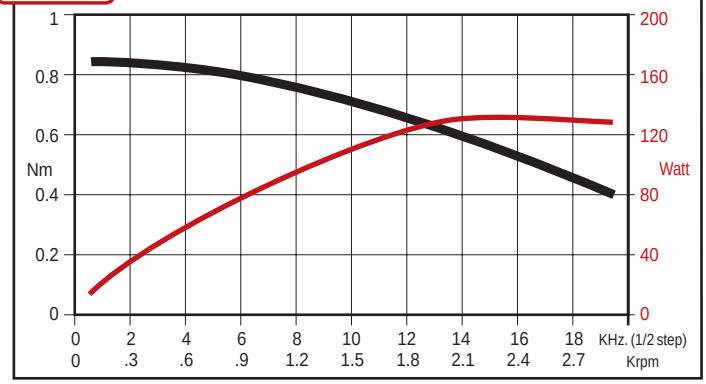


SANYO 103 H7123 0740 - series bipolar connection
RTA GMD02 drive

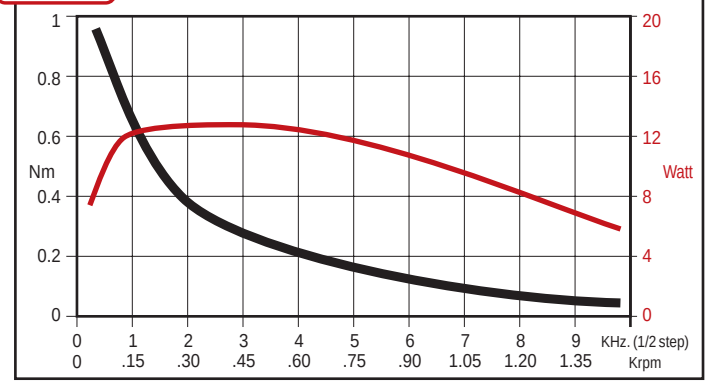


SPEED/TORQUE CURVES

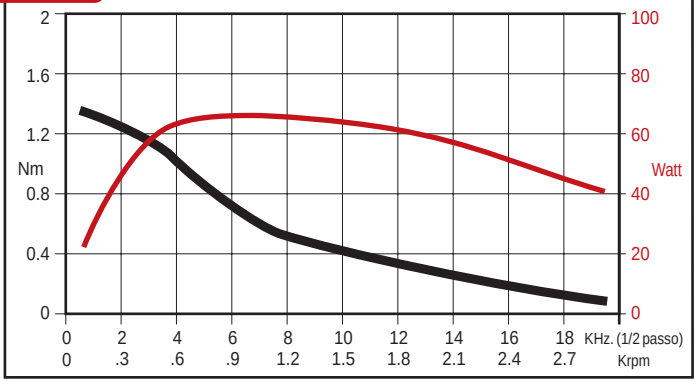
SANYO 103 H7123 1740 - bipolar connection
RTA GMD02 drive



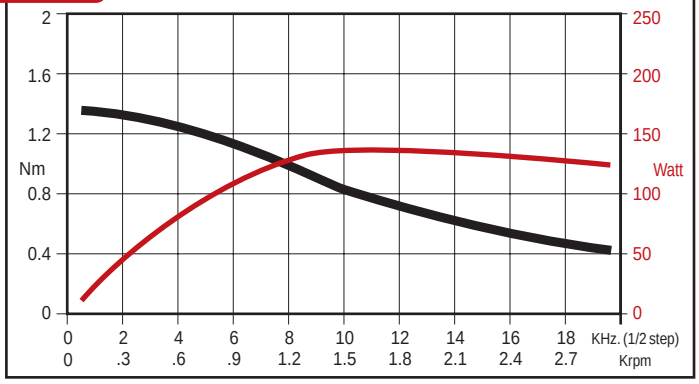
SANYO 103 H7126 0140
24 Volt, 1 Amp. unipolar connection



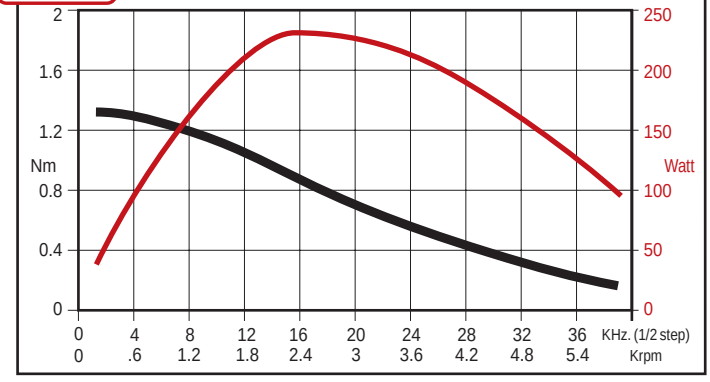
SANYO 103 H7126 0740 - series bipolar connection
RTA GMD02 drive



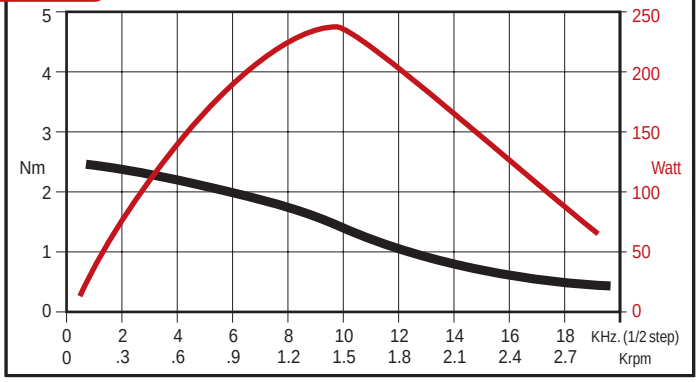
SANYO 103 H7126 1740 - bipolar connection
RTA GMD02 drive



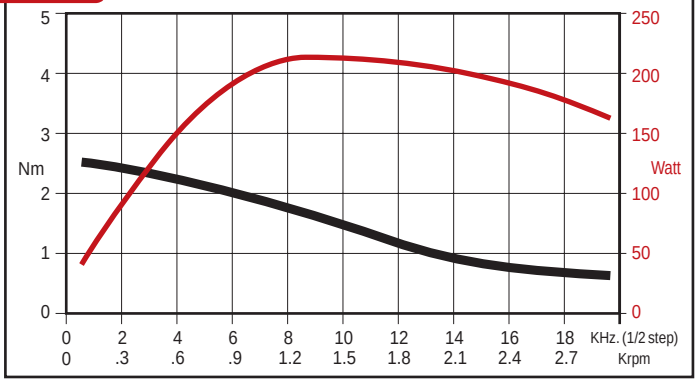
SANYO 103 H7126 6640 - bipolar connection
RTA GMD02 drive



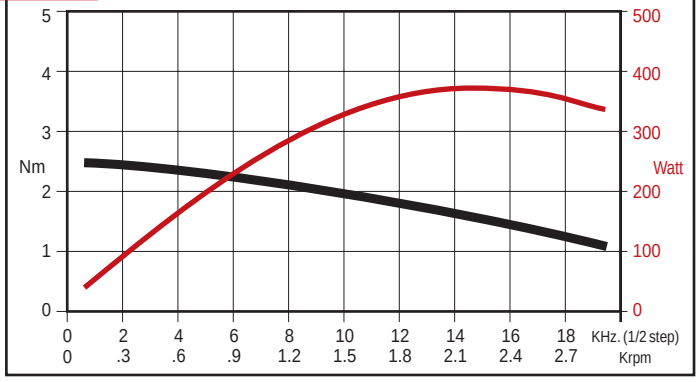
SANYO 103 H7823 1741 - bipolar connection
RTA GMD02 drive



SANYO 103 H8221 6241 - bipolar connectin
RTA GMD02 drive

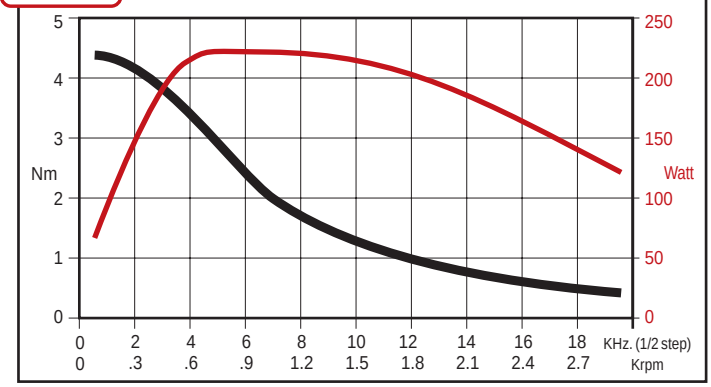


SANYO 103 H8221 6241- bipolar connection
RTA GMD04 drive

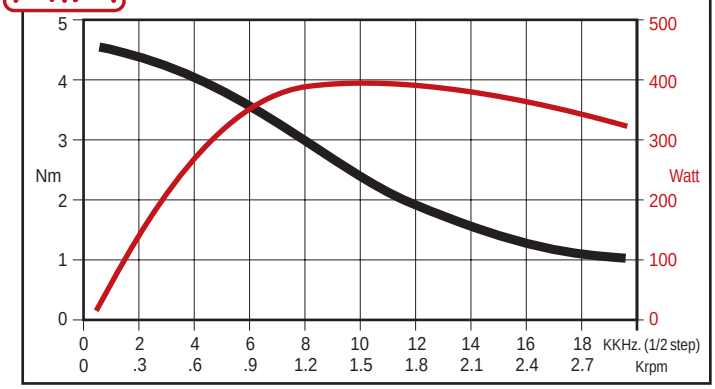


SPEED/TORQUE CURVES

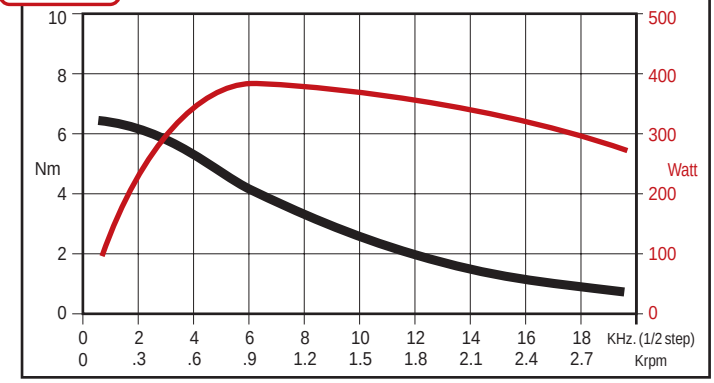
SANYO 103 H8222 6340 - bipolar connection
RTA GMD02 drive



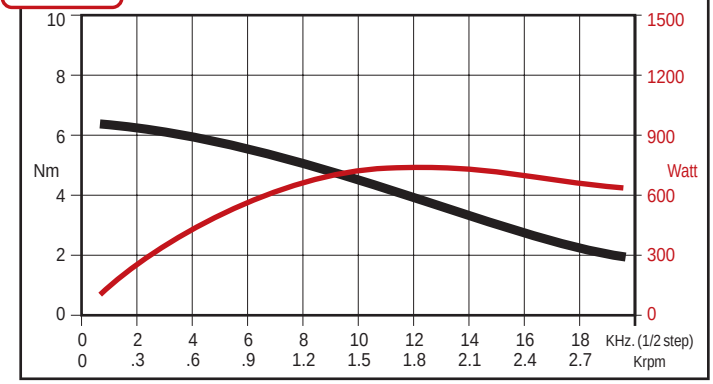
SANYO 103 H8222 6340 - bipolar connection
RTA GMD04 drive



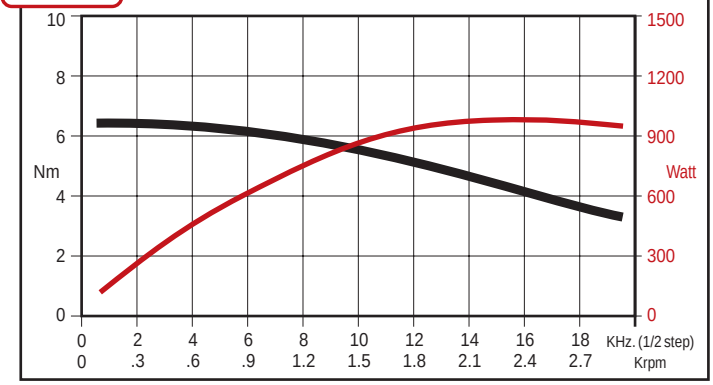
SANYO 103 H8223 6540 - bipolar connection
RTA GMD03 drive



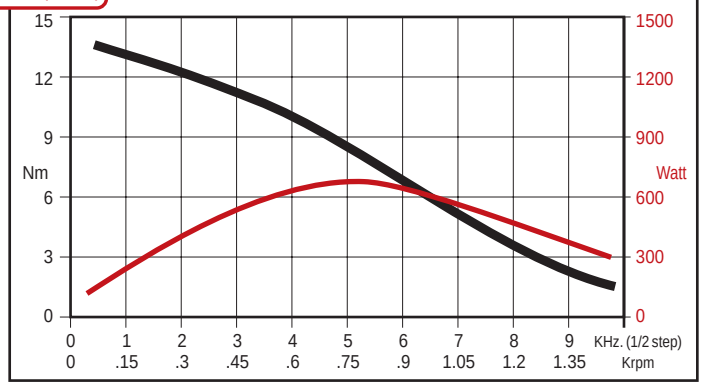
SANYO 103 H8223 6540 - bipolar connection
RTA GMD04 drive



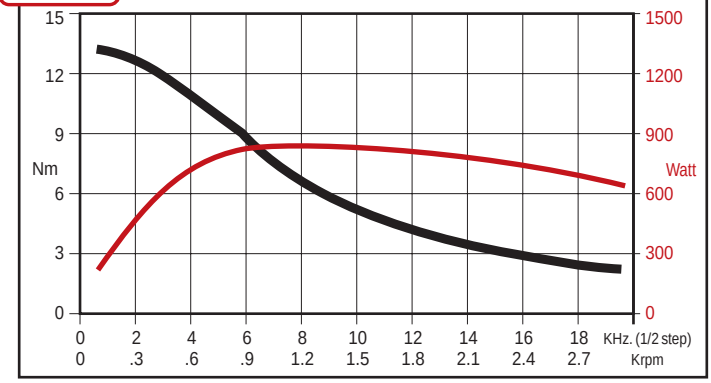
SANYO 103 H8223 6540 - bipolar connection
RTA GMD06 drive



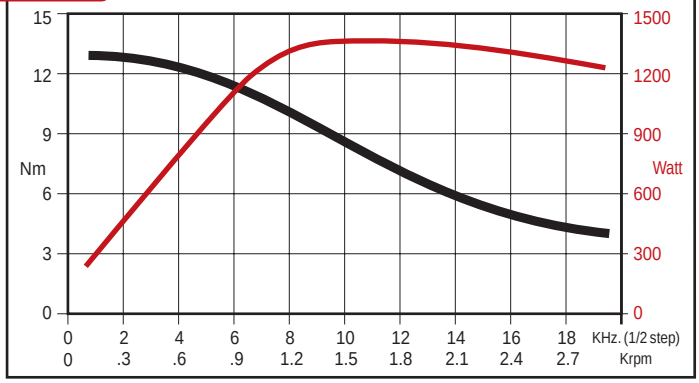
SANYO 103 H89222 6541 - bipolar connection
RTA GMD03 drive



SANYO 103 H89222 6541 - bipolar connection
RTA GMD04 drive

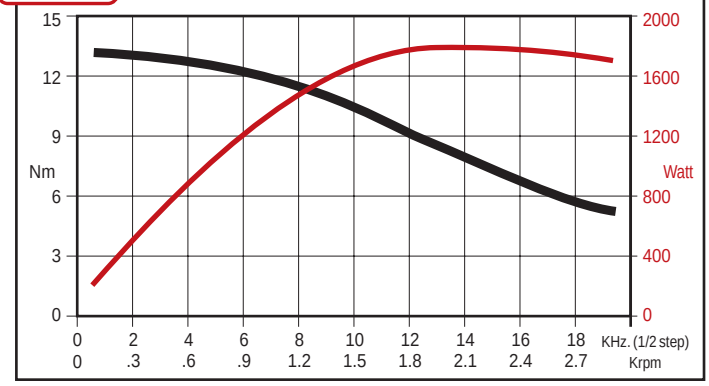


SANYO 103 H89222 6541 - bipolar connection
RTA GMD06 drive

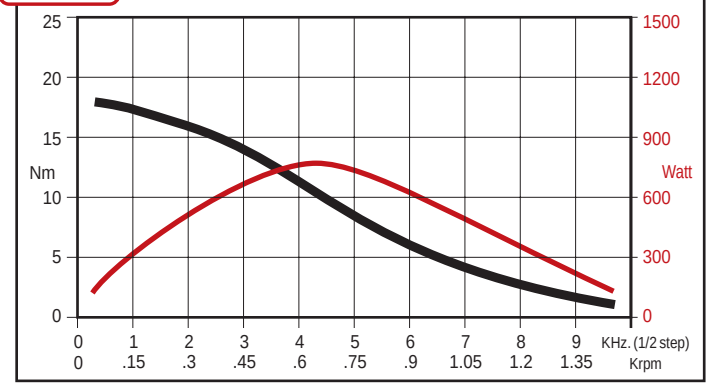


SPEED/TORQUE CURVES

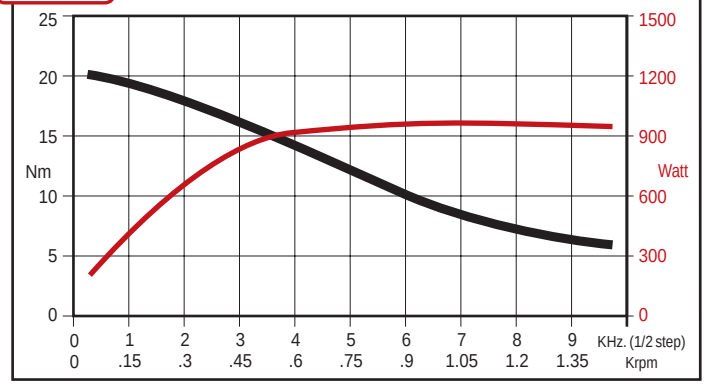
SANYO 103 H89222 6541 - bipolar connection
RTA BCW02 drive



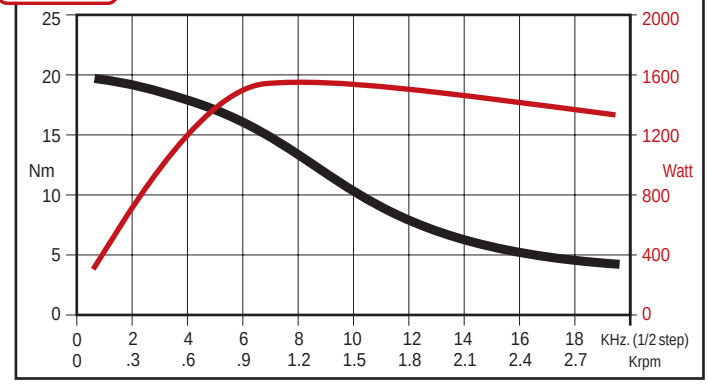
SANYO 103 H89223 6641 - bipolar connection
RTA GMD03 drive



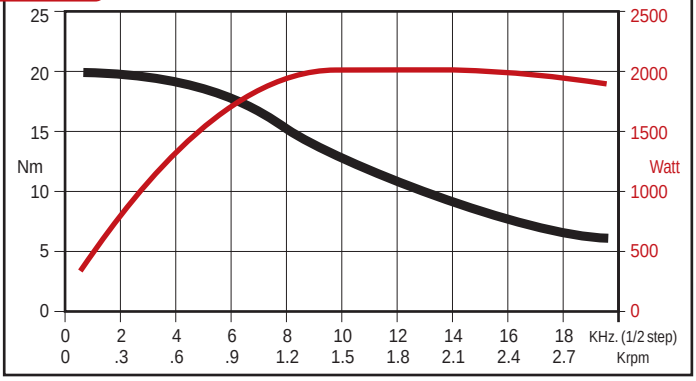
SANYO 103 H89223 6641 - bipolar connection
RTA GMD04 drive

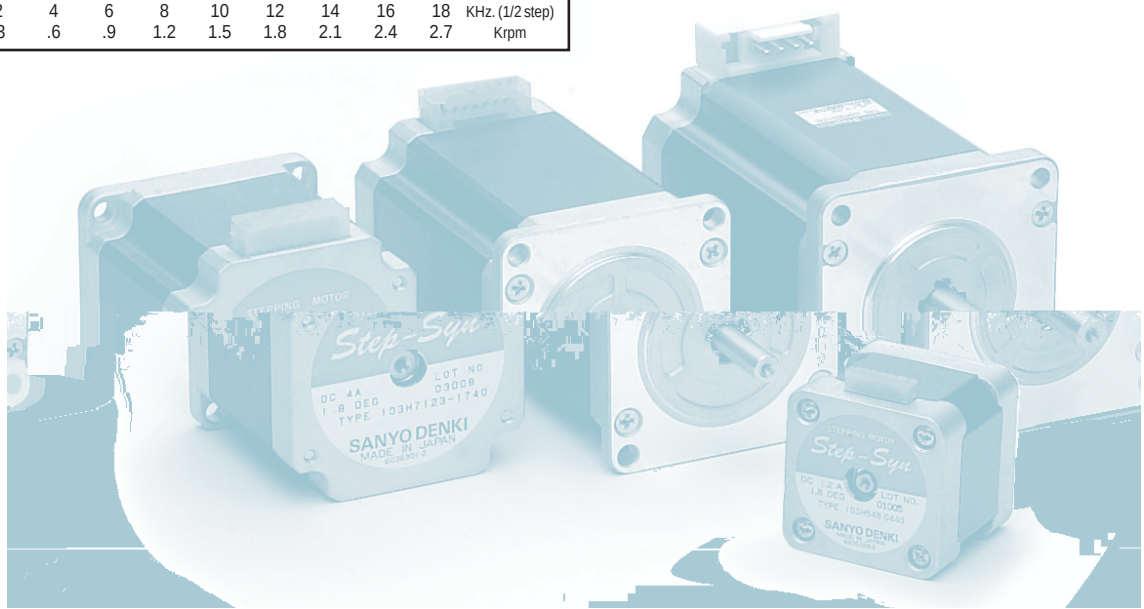


SANYO 103 H89223 6641 - bipolar connection
RTA GMD06 drive



SANYO 103 H89223 6641 - bipolar connection
RTA BCW02 drive





SM Series *stepping motors*

The highest torque in 3,4" size!

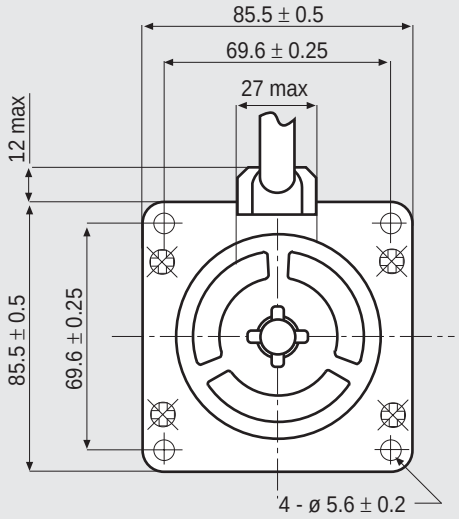
The remarkable commitment by SANYO DENKI in the development of new production technologies has allowed to propose this new range of stepping motors, which goes alongside the wide choice of models of the "Standard" and "H" series.

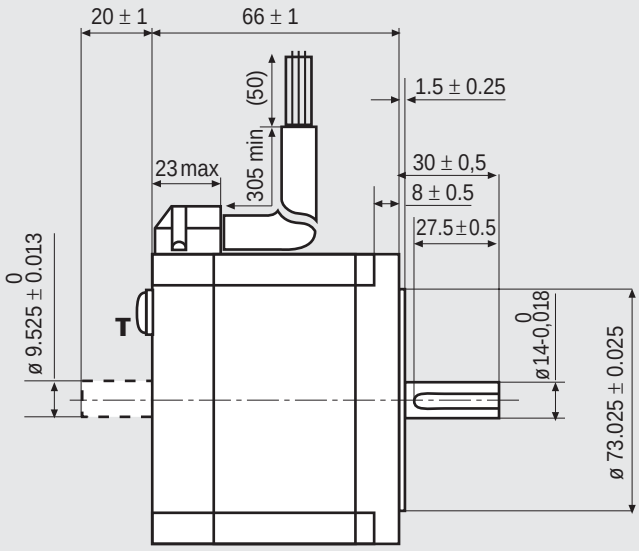
The improved design of SANYO DENKI SM series stepping motors presents the following advantages, compared with conventional models:

- The best performance in terms of torque and power, though maintaining conventional standard dimensions (NEMA).
- Shaft with diameter 14mm. for an improved stiffness and strength and easy use with mechanical components following UNI standard.
- Minimum noise at the same power.
- Optimized for use with drives with any type of power supply. Perfect coupling with the X-MIND series of RTA drives with supply directly from main.
- Class F insulation and further improved efficiency allow the use of SM motors in high power and high environment temperature applications.
- CE, UL and CSA marking allowing the use in applications and machinery for use in Italy and worldwide.

All these features make SANYO DENKI SM series stepping motors the best choice for high power and high precision positioning systems to be used in high performance machines worldwide.

SERIE SM 2861



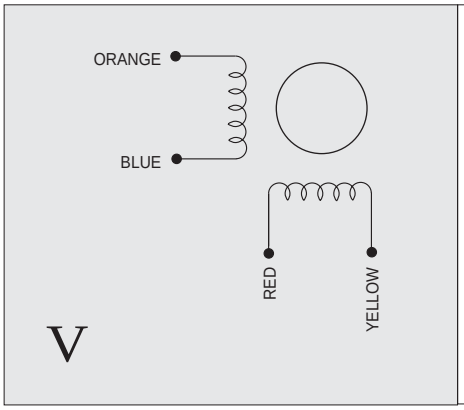


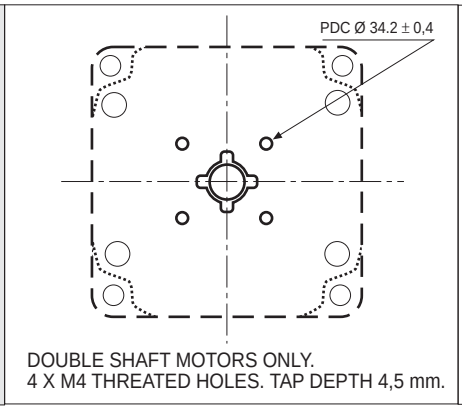
T IS THE EARTH TERMINAL .

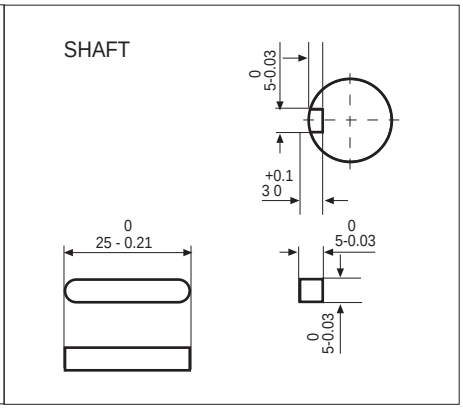
CHARACTERISTICS

MODEL		SM2861-5055	SM2861-5255 (SM2861-5225)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	2	6
RESISTANCE	(Ohm)	2.2	0.29
INDUCTANCE	(mH)	15	1.7
BIPOLAR HOLDING TORQUE	(Ncm)	360	360
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	1480	1480
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	24300	24300
BACK E.M.F.	(V/Krpm)	180	60
MASS	(Kg)	1.7	1.7
INTERNATIONAL STANDARDS		UL, CSA, CE, RoHS	UL, CSA, CE, RoHS
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS		IP43 - F	IP43 - F
LEADS CODE		V	V

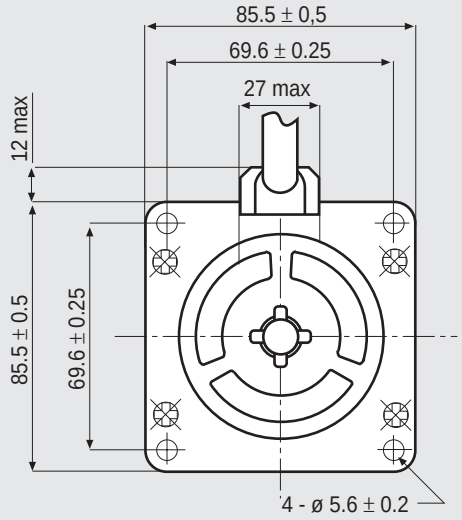
Codes between brackets refer to double shaft model.

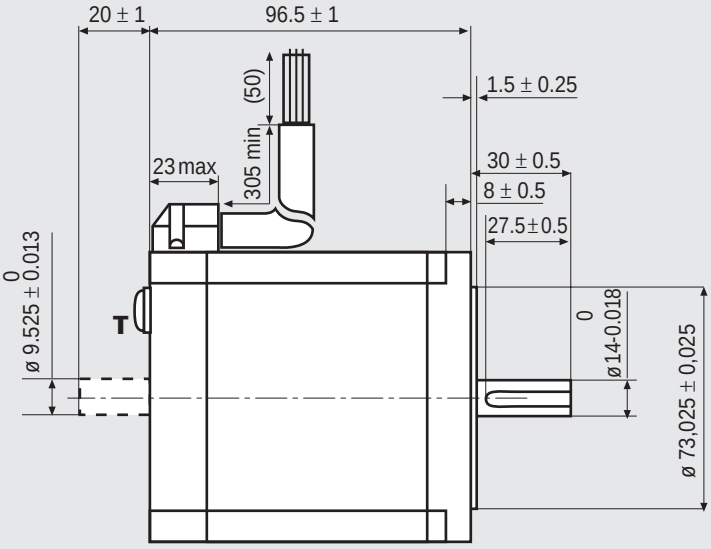






SM 2862 SERIES



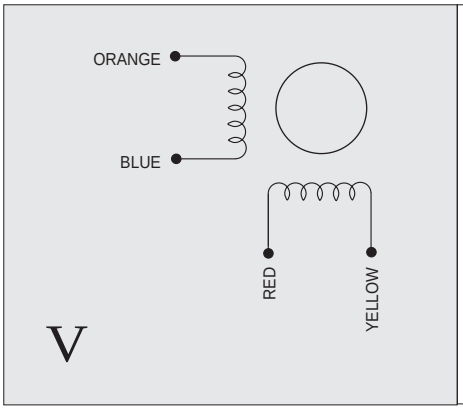


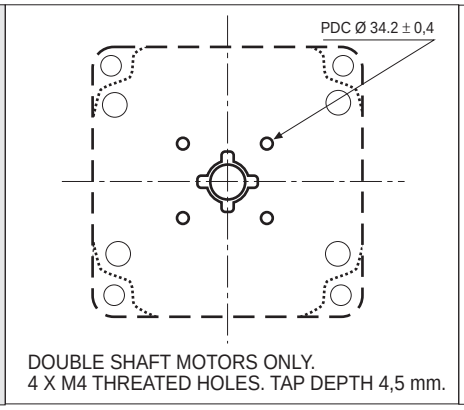
T IS THE EARTH TERMINAL .

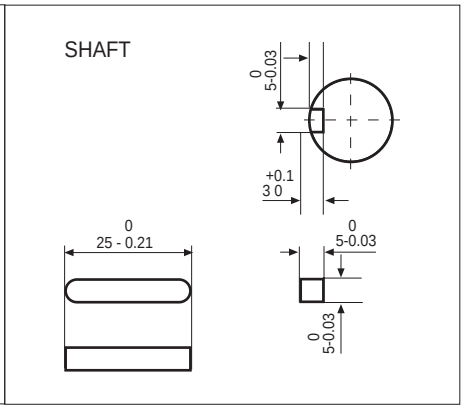
CHARACTERISTICS

MODEL		SM2862-5055	SM2862-5155 (SM2862-5125)	SM2862-5255 (SM2862-5225)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0,09°	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	2	4	6
RESISTANCE	(Ohm)	3.2	0.83	0.36
INDUCTANCE	(mH)	25	6.4	2.8
BIPOLAR HOLDING TORQUE	(Ncm)	700	700	700
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	3000	3000	3000
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	23300	23300	23300
BACK E.M.F.	(V/Krpm)	350	175	120
MASS	(Kg)	2.9	2.9	2.9
INTERNATIONAL STANDARDS		UL, CSA, CE, RoHS	UL, CSA, CE, RoHS	UL, CSA, CE, RoHS
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)	250 VAC (350 VDC)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS		IP43 - F	IP43 - F	IP43 - F
LEADS CODE		V	V	V

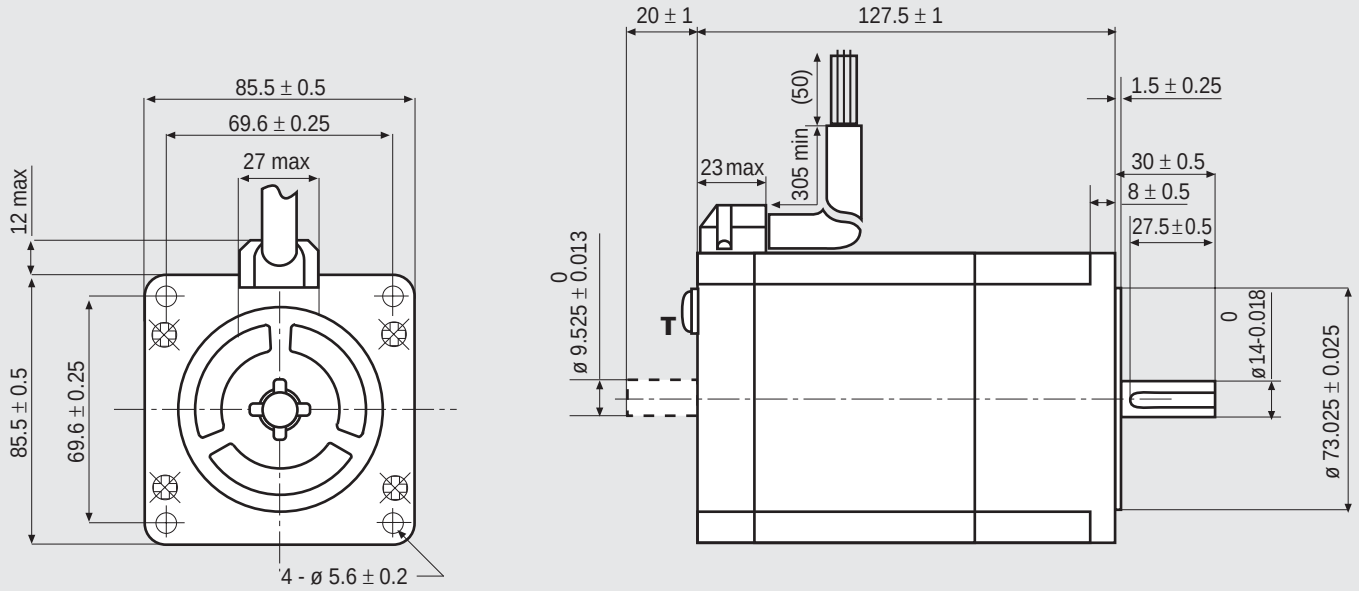
Codes between brackets refer to double shaft model.







SM 2863 SERIES

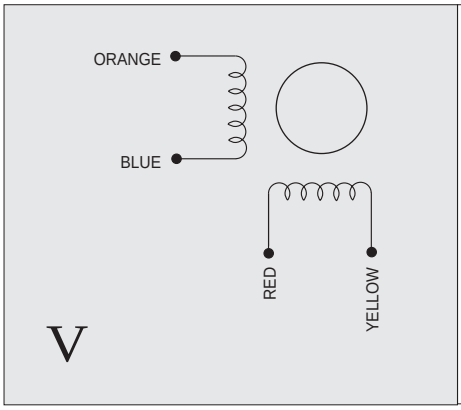


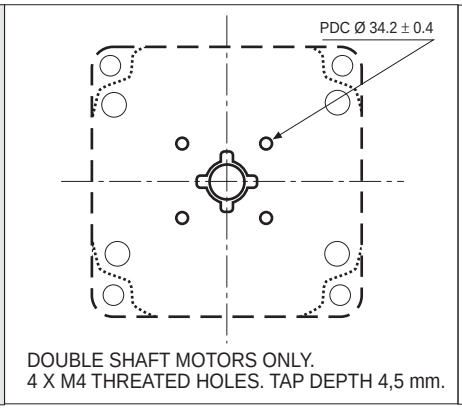
T IS THE EARTH TERMINAL .

CHARACTERISTICS

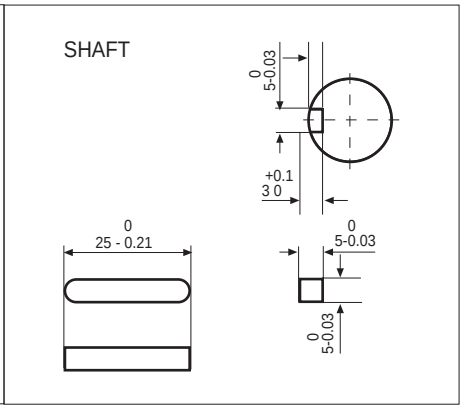
MODEL		SM2863-5155 (SM2863-5125)	SM2863-5255 (SM2863-5225)
BASIC STEP ANGLE		1.8° ± 0.09°	1.8° ± 0.09°
BIPOLAR PARALLEL CURRENT	(Amp)	4	6
RESISTANCE	(Ohm)	1	0.46
INDUCTANCE	(mH)	7.9	3.8
BIPOLAR HOLDING TORQUE	(Ncm)	920	920
ROTOR INERTIA	(Kgm ^{2} x 10 $^{-7}$)	4500	4500
THEORETICAL ACCELERATION	(rad x sec.$^{-2}$)	20500	20500
BACK E.M.F.	(V/Krpm)	241	161
MASS	(Kg)	4	4
INTERNATIONAL STANDARDS		UL, CSA, CE, RoHS	UL, CSA, CE, RoHS
INSULATION VOLTAGE	(V)	250 VAC (350 VDC)	250 VAC (350 VDC)
PROTECTION DEGREE - INSULATION CLASS		IP43 - F	IP43 - F
LEADS CODE		V	V

Codes between brackets refer to double shaft model.





DOUBLE SHAFT MOTORS ONLY.
4 X M4 THREATED HOLES. TAP DEPTH 4,5 mm.



The correct dimensioning of a stepping motor system requires a deep knowledge of the two following essential parameters:

- Mechanical features of the application, as for example inertia of masses in motion, transmission kinematics, speed, acceleration, time required to perform the motion, duty cycle etc.
- Performances of the motor-drive unit, mainly in terms of torque-speed curves.

The torque is not only a feature of the sole motor, but is strongly affected by the drive used with it. The same motor can be used with various drive types in order to obtain different performances in different applications.
Hereafter are reported a selection table and some typical Torque-Speed diagrams obtained with different couplings between RTA drives and SANYO motors. For a correct interpretation of these information, the following considerations apply:

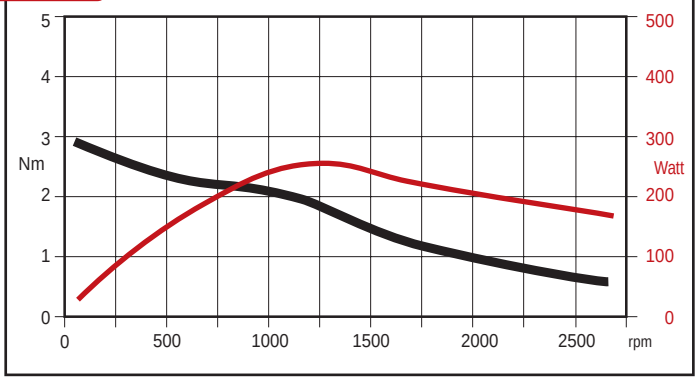
- All reported curves are “pull-out curves”
- Couplings indicated in the selection table take into account only the compatibility between the motor and the power output characteristics of the drive. The effective choice must be made only knowing all requirements of the application like resolution, type of supply, mechanical format etc. (for more information about drive characteristics see also Drive manual)
- At very low speed (<30 RPM) resonance and vibration, strongly dependent by load, could appear with “non ministep-drives” (GMD and GAC). This phenomenon is much less critical with “ministep drives” (NDC, SAC, GMH, MIND.
- As the majority of the stepping motor systems, most of the indicated couplings exhibit duty cycle limitations in order to avoid motor overheating. Accessories like motor fans are available in case of need
- In the selection table, “**YT**” means that, for this coupling the specific torque-speed diagram is present; “**Y**” means that the coupling is rated but the specific torque-speed diagram is not present. For a specific motor, the use of the same background color in different couplings with different drives means that all those couplings exhibit similar torque-speed characteristics. This means that, when you have a motor with one coupling marked “**YT**” and three couplings marked “**Y**” with the same background color, you can use the torque-speed diagram shown for “**YT**” also for the other three.

SELECTION TABLE FOR COUPLING BETWEEN STANDARD MOTORS AND DRIVES

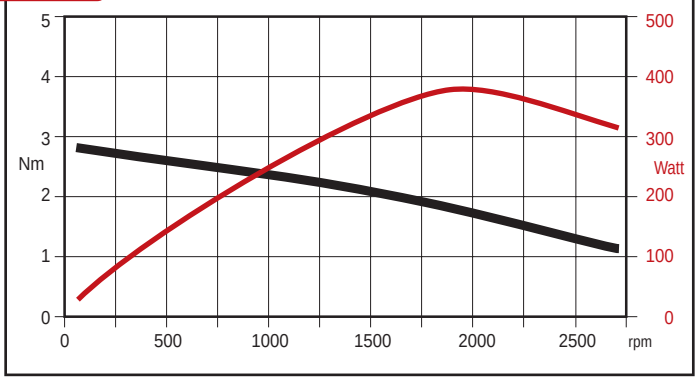
MOTOR MODELS AND CONNECTIONS / DRIVE MODELS	MIND B3	NDC	PLUS B3	MIND B4	PLUS B4	MIND B5	X MIND B4
SM2861 5055							YT
SM2861 5255	YT	Y	Y	YT	Y	YT	
SM2862 5055							YT
SM2862 5155							YT
SM2862 5225	YT	Y	Y	YT	Y	YT	
SM2863 5155							YT
SM2863 5255	YT	Y	Y	YT	Y	YT	

SPEED/TORQUE CURVES

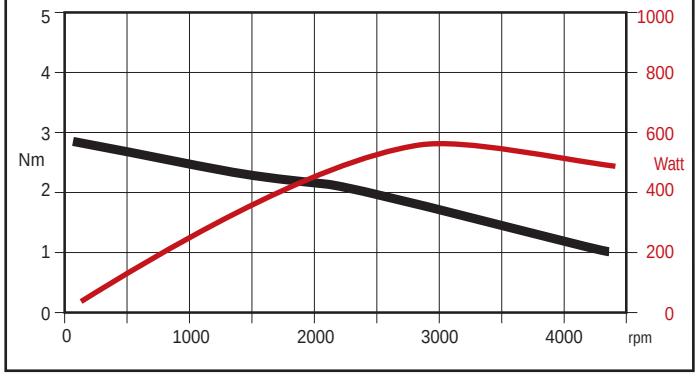
SANYO SM2861 5255
RTA MIND B3 drive



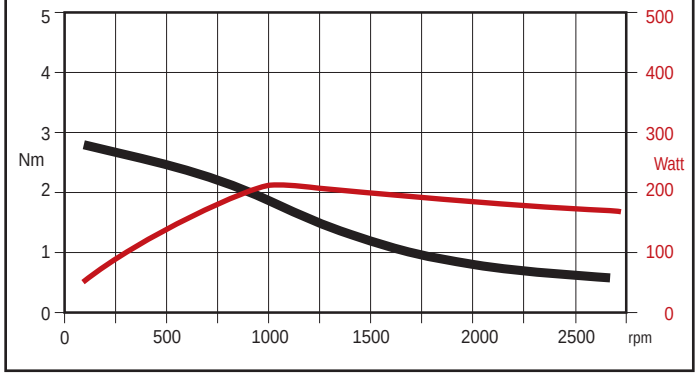
SANYO SM2861 5255
RTA MIND B4 drive



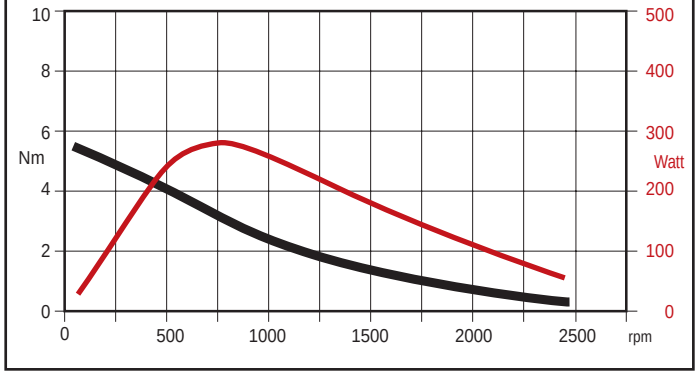
SANYO SM2861 5255
RTA MIND B5 drive



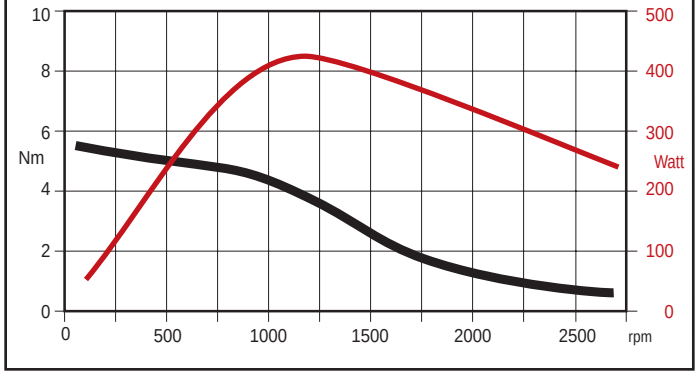
SANYO SM2861 5055
RTA X-MIND B4 230 VAC drive



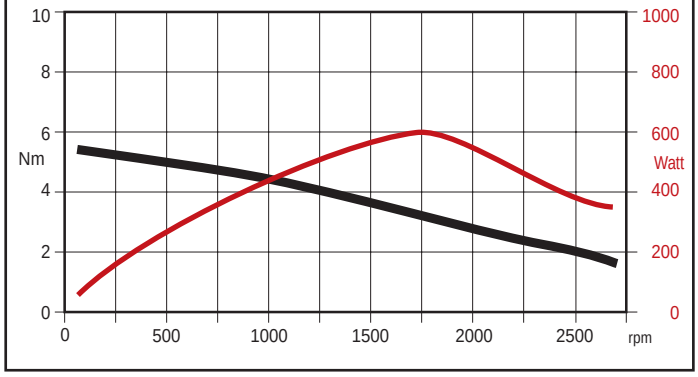
SANYO SM2862 5255
RTA MIND B3 drive



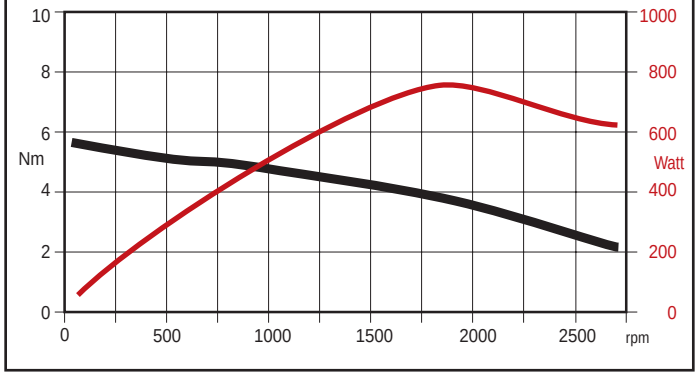
SANYO SM2862 5255
RTA MIND B4 drive



SANYO SM2862 5255
RTA MIND B5 drive

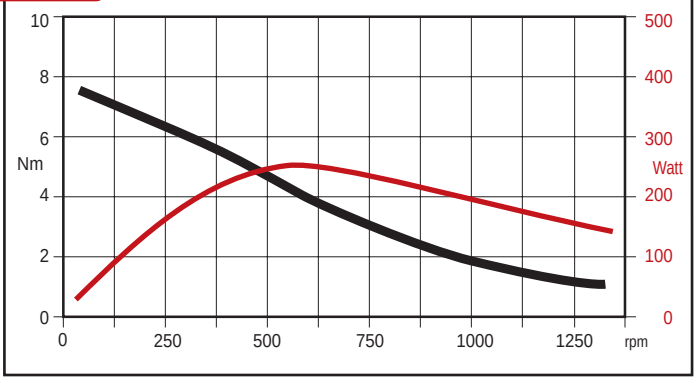


SANYO SM2862 5155
RTA X-MIND B6 230 VAC drive

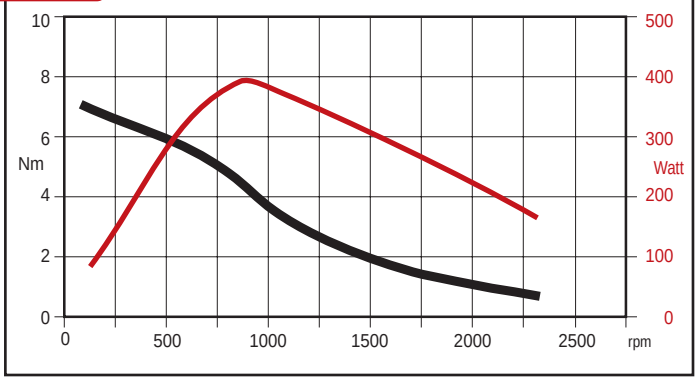


SPEED/TORQUE CURVES

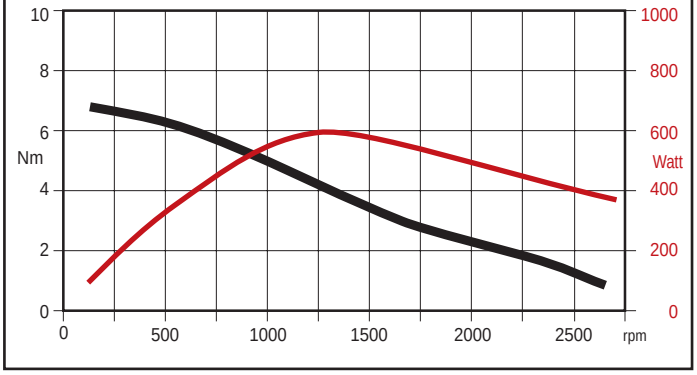
SANYO SM2863 5255
RTA MIND B3 drive



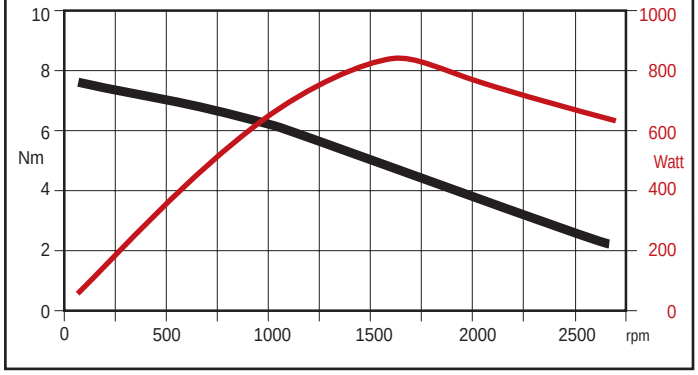
SANYO SM2863 5255
RTA MIND B4 drive



SANYO SM2863 5255
RTA MIND B5 drive

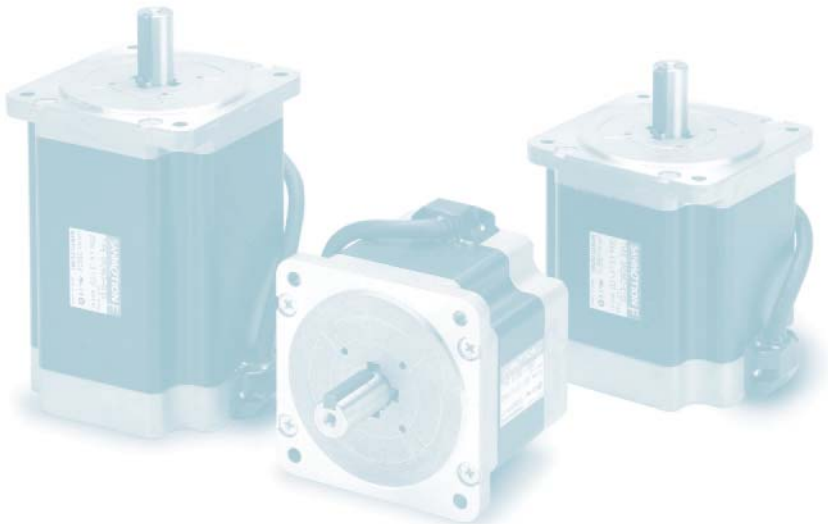


SANYO SM2863 5155
RTA X-MIND B6 230 VAC drive

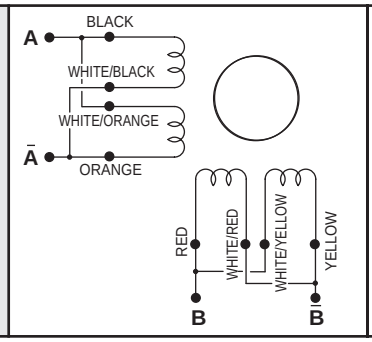
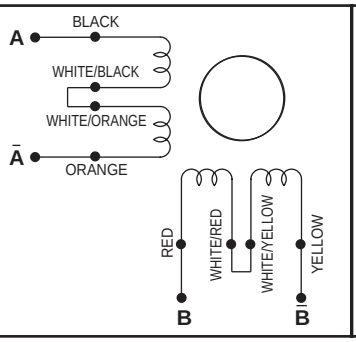
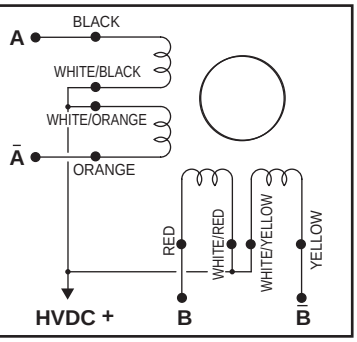
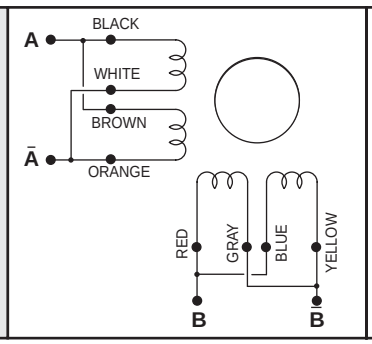
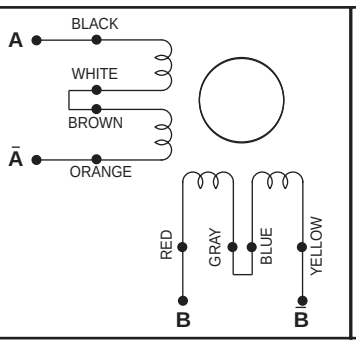
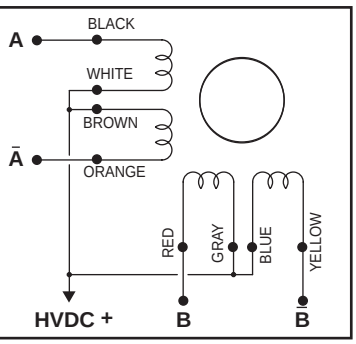
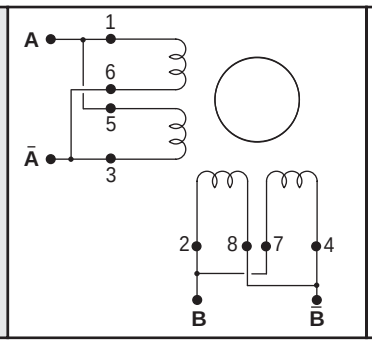
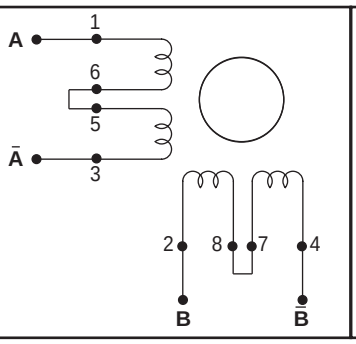
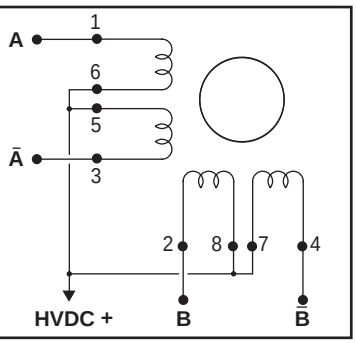
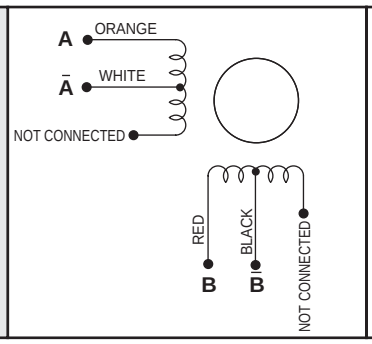
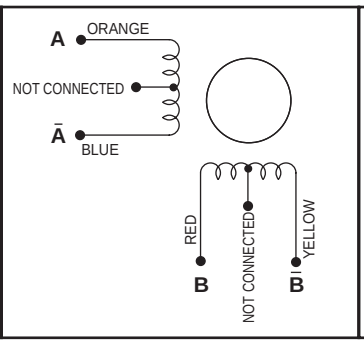
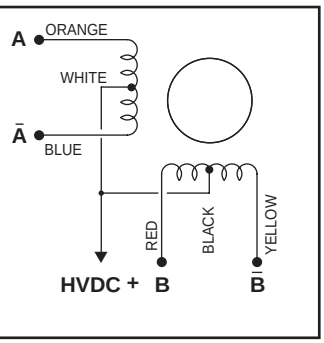


CONVERSION FACTORS

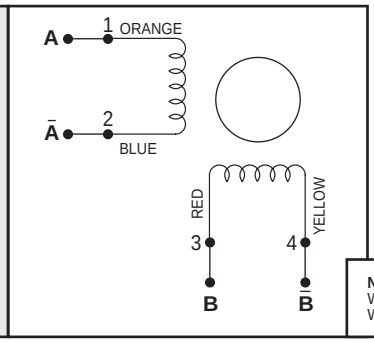
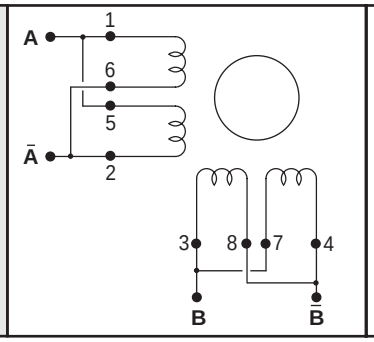
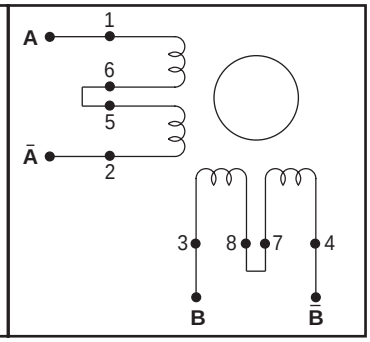
LENGTH	1 mm = 3.937 x 10^{-2} inch
MASS	1 Kg = 2.205 x lb force
INERTIA	10^7 g cm^2 = 1 Kg m^2 = 5.467 x 10^4 oz in^2 = 3.417 x 10^3 lb in^2
TORQUE	1 Nm = 1.416 x 10^2 oz in = 0.738 ft lb = 8.85 in lb 1 Ncm = 1.416 oz in = 7.38 x 10^{-3} ft lb = 8.85 x 10^{-2} in lb
POWER	1 KW = 1.34 hp 1 W = 1.34 x 10^{-3} hp



CONNECTION SCHEMATICS OF RTA DRIVES WITH SANYO MOTORS

LEADS CODE	PARALLEL BIPOLAR CONNECTION	SERIES BIPOLAR CONNECTION	UNIPOLAR CONNECTION
I			
II			
III			
IV			

CONNECTION SCHEMATICS OF RTA DRIVES WITH SANYO MOTORS

LEADS CODE	PARALLEL BIPOLAR CONNECTION	SERIES BIPOLAR CONNECTION	UNIPOLAR CONNECTION
V			
VI			

NOTE: FOR 103-770-1640 MOTOR
WHITE/BLUE = ORANGE
WHITE/RED = YELLOW

MC - 02 - 08

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Motion Control Systems