

-For fast response speed, high operation frequency demand

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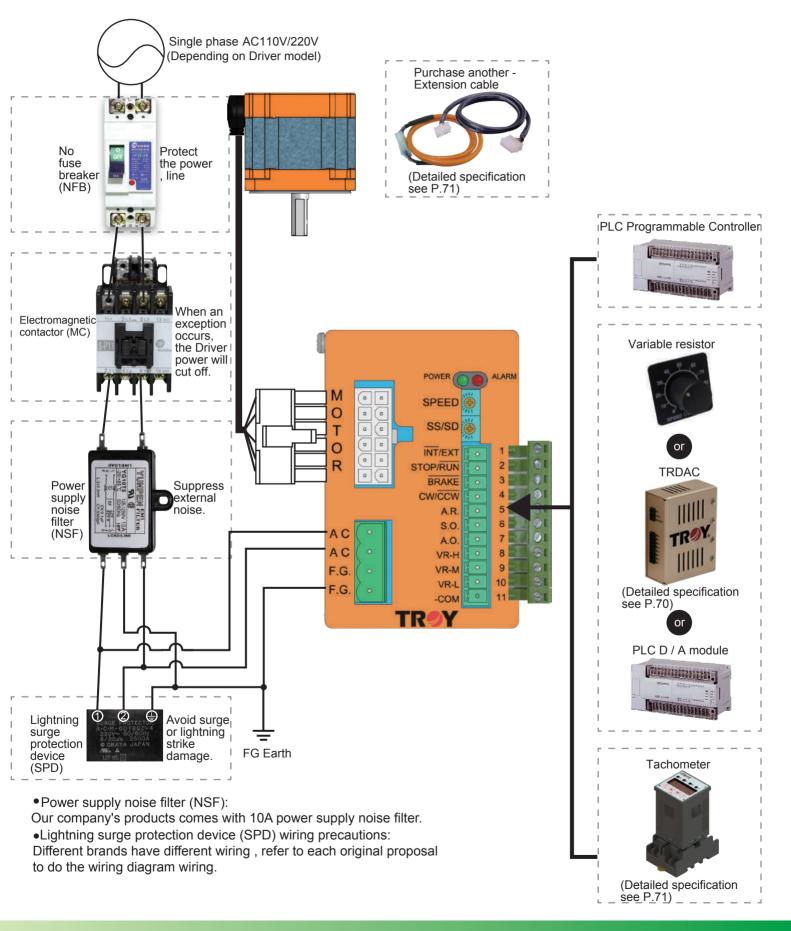
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DC brushless Motor- SBS series

■ System wiring diagrams



6B040P-2N

■ Specifications and characteristics of Motor/Driver

				and the same of th			7		
Motor	output pov	wer	20W	40W	60W	90W			
Round shaft Motor (M: E/M brake type) Pinion shaft Motor (M: E/M brake type)		6B020S-□N(M) (Note 1) 6B020P-□N(M)	6B040S-□N(M) 6B040P-□N(M)	9B060S-□N(M) 9B060PD-□N(M)	9B090S-□N(M) 9B090PD-□N(M)	Characteristics Product index Product names of Motor			
Motor specification -1 Type		Ç US RoHS	⊕ IP54	RoHS @					
certifica		-2 Type	(€ ((®) [R	RoHS (Note 2)	oduct				
Driver			SBD020-□N	SBD040-□N	SBD060-□N	SBD090-□N	index		
Driver s	pecification	certificates		C€ Ro	oHS (e)		Produc		
<u></u> -1 Ty∣	pe Single Phase	Max. Current (A)	2.4	2.4	2.5	2.9	ct nar		
AC11 50/60 -2 Typ AC22 50/60	10~115V) HZ	Rated Current (A)	0.59	0.99	1.48	1.93	nes F		
er -2 Typ	pe Single Phase	Max. Current (A)	1.7	1.7	1.7	1.7	roduc		
의 AC22 50/60	20~230V HZ	Rated Current (A)	0.33	0.56	0.82	1.05	Product weight		
Starting	Torque (Nm)		0.15	0.25	0.45	0.65	ght		
Rated To	orque (Nm)		0.10	0.20	0.30	0.50	G		
Allowabl	e load inertia	GD ² (Kgcm ²)	14.01	23.23	39.42	54.23	Gearhead		
se S	Input line v	O ()	DC	24	DC24				
Series h	Consumpti	ion power(W)	6.		7.5				
ies have E E/M Brake	Maintenan Attraction t		0.		0.5				
e E/M	Release tir	` '	3		_	<u></u> 5	Installation		
	ontrol range(r/	, ,	0	250~		<u> </u>			
ореса се		To load	-1%Max.	at 2000r/min, no load~rat			Certificates		
Speed va	ariation rate	To voltage		Voltage variation ±15%, a			ates		
opood is		To Temperature		0-+40°C at 2000r/min, no	•		Mod		
Slow star	rt/Slow down	time set up	*	tor from 0~2000r/min whe			Model naming		
Speed co	ontrol method		 Control from external variable resistor (resistance 20ΚΩ) Control from internal variable resistor (also work with external variable resistor for 2 sections speed switch control) Control from external DC voltage (DC0~5V/1 mA above) Work with D/A speed setter TRDAC (Option) 						
Signal in	put/output me	thode	●Photo coupler input into	erface	(Ораоп)		S		
Olgital III	patroatput me	uious	Transistor Open Collect	<u> </u>			B S		
			Within speed control ra	inge, Motor sets Flat Torq	stor, Relay type I/O modu ue output	le	S B S		
Function			 Instant brake stop, Sloven brake stop, all el 	w up/Slow down lectric types of holding rol	۵				
			Can parallel operation	counc types of floraling for			U B S		
D			When protection functions activate, Motors stop automatically, Driver alarm signals output Overload protection: starts when Motor activate torque for more than 7 sec Over heat protection: starts when Driver internal heat sink over 80°C Over voltage protection: (1) starts when up down, coiling or over inertial load						
Protectio	n function		Low voltage protection	(2) When Driver voltagoperation	ge of the AC power input of roltage is lower than about	over about 35%, starts	Accessories		
Insulation	n impedance		Applies DC500V high resi	istance meter test, power, F	F.G grounding, I/O terminal i	resistance value is over 100MΩ			
Insulation	n high voltage		Power and F.G connect connectors pass with 3kg	to ground, terminals pass	s with 1.8KV/60Hz high vo 1 minute, no abnormal cor	Itage, power and I/O	Motor selection		
Ambient t	temperature/l	Humidity range	0~+40°C, under 85% re	lative humidity (avoid dus	t and erosion, combustion	gas)	on —		

Note1 : -□, Please fill power voltage in □. □indicates single phaseAC110~115V , ②: indicates single phase AC220~230V * 1 Nm=10.19716 Kgcm Note2: 9B060PD-2N \ 9B090PD-2N have passed IP54 certificate.

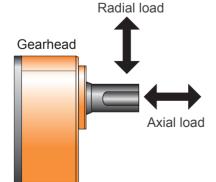


■ Gearhead specifications & allowable speed range/allowable torque/allowable inertia load (GD²)

Gear	ratio	3	3.6	5	6	7.5	9	10	12.5	15	18	20	25	30
Speed range	High speed	666	555	400	333	266	222	200	160	133	111	100	80	66
(r/min)	Low speed	83.4	69.5	50	41.7	33.4	27.8	25	20	16.7	13.9	12.5	10	8.4
Allowable torque (Nm)	6B020P-□N(M) + 6D□	0.27	0.32	0.45	0.54	0.68	0.81	0.9	1.1	1.4	1.6	1.8	2.2	2.6
Allowable iner	tia load GD² (kgcm²)	6.30	9.08	17.5	25.2	39.4	56.7	70.1	109	158	227	280	438	625
Allowable torque (Nm)	6B040P-□N(M) + 6D□	0.54	0.65	0.9	1.1	1.4	1.6	1.8	2.3	2.7	3.2	3.6	4.3	5.2
Allowable inert	tia load GD ² (kgcm ²)	10.5	15.1	29.0	41.8	65.3	94.1	116	181	261	376	465	62	25
Allowable torque (Nm)	9B060PD-□N(M) + 9D□	0.81	0.97	1.4	1.6	2	2.4	2.7	3.4	4.1	4.9	5.4	6.5	7.7
Allowable inert	tia load GD² (kgcm²)	63.1	90.8	175	252	394	568	701	1095	1577	2271	2803	4380	6307
Allowable torque (Nm)	9B090PD-□N(M) + 9D□	1.4	1.6	2.3	2.7	3.4	4.1	4.5	5.6	6.8	8.1	9	10.8	12.9
Allowable inert	tia load GD ² (kgcm ²)	86.8	125	241	347	542	781	964	1506	2169	3124	3856	6026	8677
Gear	r ratio	36	50	60	75	90	100	120	150	180	200	250	300	360
Speed range	High speed	55	40	33	26	22	20	16	13	11	10	8	6	5
(r/min)	Low speed	7	5	4.2	3.4	2.8	2.5	2.1	1.7	1.4	1.3	1	0.9	0.7
Allowable torque (Nm)	6B020P-□N(M) + 6D□	3.1	4.3	5.2		6.5					6.5			
Allowable inert	ia load GD ² (kgcm ²)			62	25						625			
Allowable torque (Nm)	6B040P-□N(M) + 6D□	6.2			6.5						6.5			
Allowable inert	tia load GD ² (kgcm ²)			62	25						625			
Allowable torque (Nm)	9B060PD-□N(M) + 9D□	9.3	12.9	15.5	19.4	23.2	25.8	29.2	36.5			40		
Allowable inert	tia load GD² (kgcm²)	9082			110	00					11000			
Allowable torque (Nm)	9B090PD-□N(M) + 9D□	15.5	21.5	25.8	32.3	38.7	40				40			
	tia load GD² (kgcm²)			11/	000						11000			

- * Motor 6B020P- \square (M)...etc, please fill in \square with line power voltage. $\boxed{1}$: stand for single phase AC110~115V, $\boxed{2}$: stand for single phase AC220~230V.
- * Gearhead 6D □ /9D □ /9D □ H, please fill gear ratio in □.
- * In above table stands for after installation of Gearhead, the axis rotation direction is reversed with Motor axis direction; without marking stands for the same direction as Motor axis rotation.
- *1Nm = 10.197Kgcm.
- *The Gearheads of all series have RoHS @ certificate.
- *Also available orthogonal Gearhead: hollow shaft type $9VD\square(H)$, the solid single shaft type $9VD\square A(H)$, the solid biaxial shaft type $9VD\square B(H)$, and size please refer to P.10.

■ Motor allowable radial load/axial load



- 1 Radial load (hanging load): loading is vertical to Gearhead axis power output
- ② Axial load (thrust load): loading is in the direction of Gearhead axis power output

◆ Round shaft type

Model	Permissible overhun	Permissible thrust load		
Model	10mm from output shaft front 20mm from output shaft front		(Unit: Kg f)	
6B020S-□N(M)	8	9	Permissible axial loading, not more than 1/2 of motor weight. But please try to avoid applying	
6B040S-□N(M)	8	9	force in the horizontal direction (axial) of motor shaft, when	
9B060S-□N(M)	13	15	exceeds that will reduce motor service life. If axial loading is needed, we	
9B090S-□N(M)	16	17	recommend applying indirect transmission, such as: couplings, belts, chains, etc	

◆ Pinion shaft type (Gearhead attached)

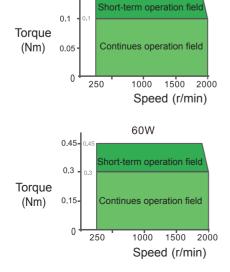
		Permissible overhur	Permissible thrust load	
Model	Gear ratio	10mm from output shaft front	20mm from output shaft front	(Unit: Kg f)
6B020P-□N(M)	3, 3.6, 5	10	15	
+ 6D□ 6B040P-□N(M)	6, 7.5, 9, 10, 12.5, 15,18, 20	15	20	4
+ 6D□	25, 30, 36, 50, 60, 75,90,100,120, 150, 180,200, 250, 300, 360	20	30	
9B060PD-□N(M)	3, 3.6, 5	30	40	
+ 9D□ 9B090PD-□N(M)	6, 7.5, 9, 10, 12.5, 15,18, 20	40	50	15
+ 9D□	25, 30, 36, 50, 60, 75,90,100,120, 150, 180,200, 250, 300, 360	50	65	

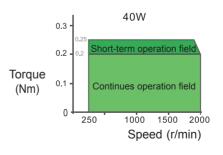
* Motor 6B020S-□N(M)... etc, please fill power voltage in □. □ : indicate single phase AC110V~115V, □ : indicate single phaseAC220~230V

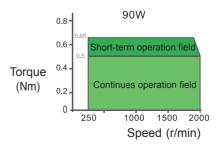
0.15

■ Speed - Torque characteristic diagrams

20W





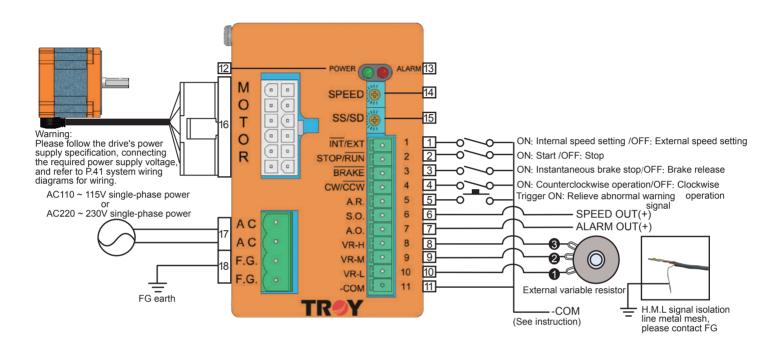


^{*} Gearhead 6D□/9D□, please fill Gearhead in □.



■ Driver panel functions and wiring instructions



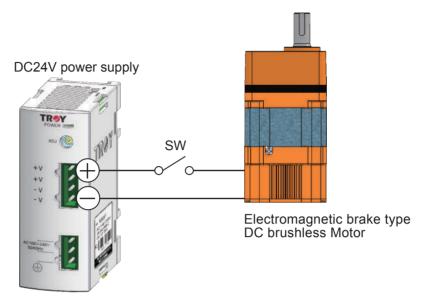


Number	Panel marked	Function	Explanation
1	INT/EXT	Speed setting mode switch to select the input	Internal / external speed setting mode switching selection
2	$STOP/\overline{RUN}$	Stop/Start signal input	Stop / start signal switching input
3	BRAKE	Instantaneous brake stop signal input	Executive instantaneous brake stop / brake release signal switch input
4	CW/CCW	The direction of rotation switch to select the input	Clockwise/counterclockwise operation switch selection
5	A.R.	Warning signs release abnormal input	AR trigger input contacts (continuous "L" state 10ms) to release the error warning signal
6	S.O.	Speed signal output	When Motor speed is detected using, digital signal output 12 Pulse / rev
7	A.O.	Abnormal warning signal output	Overload, overheating, over voltage, low voltage, disconnection of any of a protective function is activated, Motor stops naturally, and outputs an abnormality warning signal
8	VR-H		
9	VR-M	External speed setting input	An external connection terminal variable resistor or external DC voltage (0 ~ 5V) Speed control range: 250 ~ 2000r / min
10	VR-L		
11	-COM	Control signal grounding	GND contact input and output a control signal common ground wire, and the external DC power
12	POWER	Power Indicator	Input power LED (green) lights
13	ALARM	Abnormal indicator	Overload, overheating, over voltage, low voltage, disconnection of any of a protective function is activated LED (red) lights
14	SPEED	Internal speed setting key	20 ~ 90W speed control range: 250 ~ 2000r / min
15	SS/SD	Slow start, stop time setting key	Slow start 0.5 ~ 8 sec; slow stop 0.5 ~ 7sec
16	MOTOR	Motor wiring connector	Motor and Driver connection
17	AC	Power, voltage input terminal	AC power voltage input connection
18	FG	Power ground terminal	Power ground connection

U

В S

■ Motor electromagnetic brake wiring instructions



◆Operation instruction

Motor start/Motor stop with external electromagnetic brake operating procedures: Motor start: Must energize external electromagnetic brake before the Motor starts

Step: External electromagnetic brake power ON Attracting waiting time (This is the time of the external electromagnetic brake actuation, the purpose: to keep the force is released) Motor Driver starting signal ON Motor starts running The Motor is stopped before the operation do not yet fully external electromagnetic brake power. Motor Stop: Step: Motor Driver stop signal ON Wait 0.2sec (reference value, this is the operation of the Motor to a complete stop time) External electromagnetic brake power is turned OFF Waiting for the release time (This is the external electromagnetic brake actuation time, purpose: To generate holding force)

Motor stopped (a holding force)

Precautions

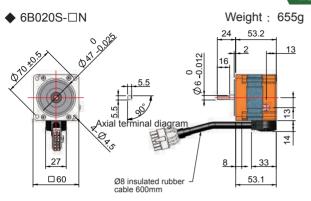
- 1. This series of external electromagnetic brake using the brake power is part of the hold-type.
- 2.External electromagnetic brake is designed to allow the Motor stops when the holding force has to be used as a safety brake, electromagnetic brake, do not use this as a Motor positioning or emergency brake applications.
- 3.Always to pull the Motor before starting the external electromagnetic brake energized (means no brakes); Motor stopped before the operation do not yet fully external electromagnetic brake power (expressed brakes).
- 4.External electromagnetic brake suction time and release time value refer to the product specification. 5. Motor brakes to stop for about 0.2sec (test conditions in the Motor no-load speed 3000r / min, the electromagnetic brake is energized, the brake actuator signal ON time of the Driver, this time as a reference base, but the actual length of time will stop according to the inertia load or frictional load ... different load patterns and has fluctuated.
- 6.We recommend to do the actual measuring device operating time at the time of commissioning.

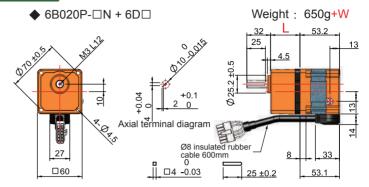


■ Dimensions - Motor/Gearhead

Round shaft type Gear shaft type

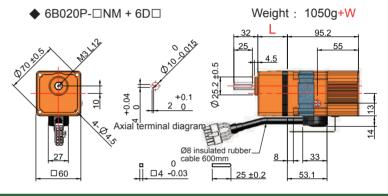
20W/□60mm



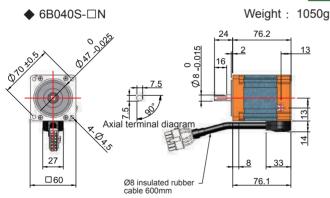


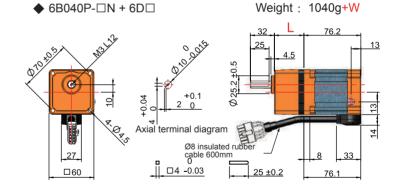
Unit: mm

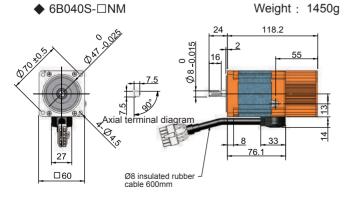
6B020S-□NM Weight: 1055g 970405 0 -0.012 □60 Ø8 insulated rubber cable 600mm 53.1



40W/□60mm

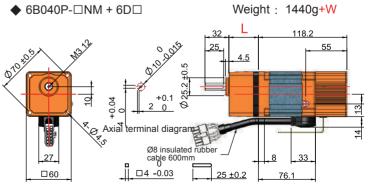






* Figure above dimensions tolerance values are not labeled a general machining tolerances, the control mode, refer to P.12, others have marked tolerance values according to the drawing labeled based.

6B040P-□NM + 6D□



* 6B pinion shaft type 6D3-6D360, Gearhead length L and weight W specification as following:

	Model	6D3~6D20	6D25~6D100	6D120~6D360
Gearhead	Length L (mm)	39.5	39.5	43.5
	Weight W (g)	300	325	365

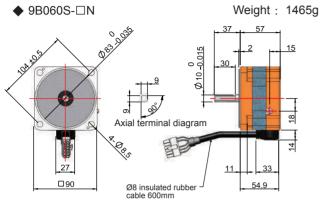
Round shaft type

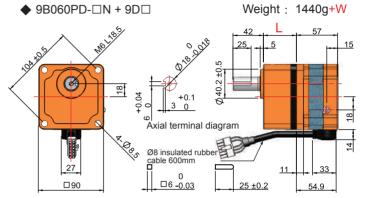
Dimensions - Motor/Gearhead

Gear shaft type

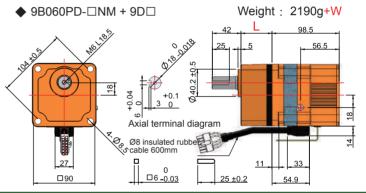
Unit: mm

60W/□90mm

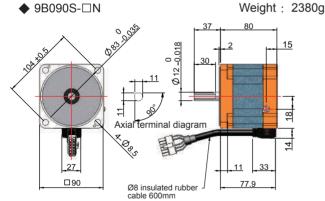


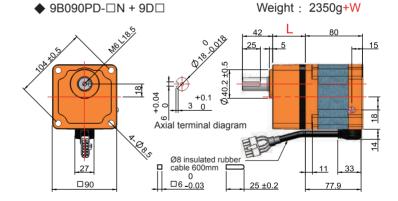


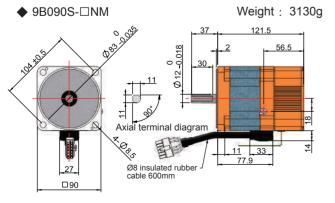
◆ 9B060S-□NM Weight: 2215g 704.20.52 terminal diagran Ø8 insulated rubber cable 600mm

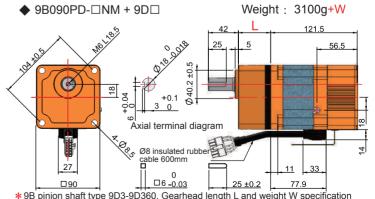


90W/□90mm









* Figure above dimensions tolerance values are not labeled a general machining tolerances, the control mode, refer to P.12, others have marked tolerance values according to the drawing labeled based.

* 9B pinion shaft type 9D3-9D360, Gearhead length L and weight W specification as following:

| Model | 9D3~9D20 | 9D25~9D100 | 9D120~9D360 | nead Length L (mm 45.5 58.5 64.5 Weight W (g) 860 1125 1265



■ Dimensions - Driver

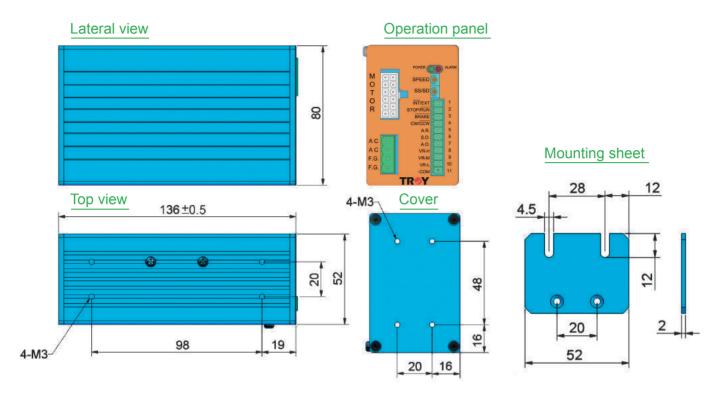
Unit: mm

Model : SBD020- \square N/SBD040- \square N

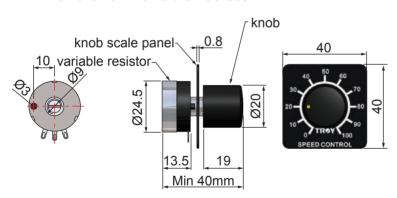
SBD060-□N/SBD090-□N

Dimensions are common

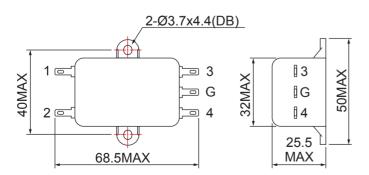
Weight: 530g



Dimensions - Variable resistor



■ Dimensions - Power supply noise filter



* Figure above dimensions tolerance values are not labeled a general machining tolerances, the control mode, refer to P.12, others have marked tolerance values according to the drawing labeled based.

Weight: 30g

Weight: 50g

■ Machanism: 【Opera	iting of larg	e index tab	le 】				Date dd/mn	n I yy
Company name:	Co	ntact persor	:		Departr	ment/Ti	tle:	
TEL:	FAX:		Application	:		Use a	rea:	
Power input: □Single -ph	nase AC:	V □Three	-phase AC:	V	□DC:	V	Frequency:	Hz
□Single stop t □Clock Stop:	llated speed e direction retime: Sec wise/counte	(Range: un \ stop \ ru cond/Sequen er clockwise Sequence \	rpm ~ rpr	n) Activation total (CW:	ated tim Sequ Seco	e: S uence / ond/Sec		ence,
□DBS \$	e shless motor Series	∵ □BMS Ser		ries [lMagnetic bra ⊐UBS Series	
[Mechanism reference]			se sketch you of mechanisr		ual trans	smissic	on	
Object W	LT							
Drive mechanism and	operating da	ıta]						
Object r	nass		W	=	kg			
Index ta	ble diamete	r	Dт	=	cm			
Width			Lт	=	cm			
Materia			ρ	=				
Position	ing angle	*(note)	θ	=	deg			
Position	ning time	*(note)	То	=	sec			
Stoppin	g accuracy			±	mm			
*(note)F	lease enter	the max spe	ed					
Recommendation produc	ts (Selecte	d specs) :						

After complete above information, please fax it to nearby regional business office, we will select

applicable product for you as soon as possible

■ Machanism: 【Le	ad screw]				ate dd/mm	7 уу
Company name:		Contact person:	D	epartment/Tit	ile:	
TEL:	FAX:		Application:	Use ar	ea:	
Power input: □Single	-phase AC:	V □Three	-phase AC:V	□DC: <u>V</u>	Frequency:	Hz
□9 s □0 9	Regulated sp lingle direction top time: Blockwise/co litop: Seco	eed (Range: on run \ stop \ ru Second/Sequen unter clockwise	•	ated time: \$SequenceSecond/Se	/Minutes)	ence,
DC □D	orque brushless m BS Series	otor: □BMS Ser	□Reversible □Sp ies □BS Series □ ohase □5 phase		•	
Mechanism referer FA W DB PB	Object Level	W a	【Please sketch y part of mechani		nsmission	
Work+Table mass Screw angle Screw shaft diame Screw Length Screw pitch Material Screw efficiency Internal frictional of	eter	$W = _{_{_{_{_{_{_{_{_{_{_{_{_{_{_{_{_{_{_$	Positioning dista Positioning time Push / Pull force Stopping accura	nce *(note) *(note) cy	FA =k ±n	sec (g
pilot pressure nut			*(note)Please er	nter the max s	peed	

 $\label{lem:commendation} \textbf{Recommendation products} \ (\, \textbf{Selected specs} \,) \ :$

^{*} After complete above information, please fax it to nearby regional business office, we will select applicable product for you as soon as possible

■ Machanism:	[Belt a	nd pulle	y						Date dd/n	nm <i>i</i>	<i>I</i> уу
Company name:			Contact _l	person	•		Departn	nent/Ti	tle:		
TEL:		FAX:			Application:			Use a	rea:		
Power input: □S	ingle -ph	nase AC:	V 🗆	Three	-phase AC:	V	□DC:	_ <u>V</u>	Frequenc	y:	Hz
Activated mode:	□Regui □Singli stop	llated spe e directio time: \$ kwise/cou : Seco	eed (Ran n run · s Second/S inter cloc	ge: top \ ru Sequen kwise ence \	ntinuously → rpm ~rpr un · stop → (ce; Run, stop repeated → (CCW:Se	m) (Activation total (CW:	ated tin Seq Sec	ne: uence ond/Se	/Minutes)	equ€	ence
	□Torque DC brus □DBS \$	e shless mo Series	otor: □Bľ	MS Ser	□Reversible ries □BS Se phase □5 ph	ries [
(Mechanism ref	Object W OP1	Belt Wevel	Motor	_	ase sketch y		ctual tra	ansmis	sion		
[Drive mechanis	sm and	operating	data]	•							
Work + Table + Screw angle Pulley diamete Width Material Pulley diamete	er	$\alpha = $	deg cm cm	friction Position Position Push	pulley efficiental coefficient oning distance oning time *(r / Pull force ing accuracy	t of sl ee *(no	•	ırfaces	η = μ = L = Το= FA=	 cn se kg	ec J
	er		cm								

$\label{lem:Recommendation products} \mbox{ (Selected specs) } \mbox{ : }$

Material

*(note)Please enter the max speed

^{**} After complete above information, please fax it to nearby regional business office, we will select applicable product for you as soon as possible

Company name: FAX:	peed time: Second/Sequence Sequence /Minutes) Second/Sequence \ uence \
Power input: □Single -phase AC:V □Three -phase AC:V □D Activated mode: □Single direction operating continuously → □Rated s □Regulated speed (Range: rpm ~ rpm) □Single direction run · stop · run · stop → (Activated stop time: Second/Sequence; Run, stop total S □Clockwise/counter clockwise repeated → (CW: S Stop: Second/Sequence · CCW: Second/Sequence · Stop: Sequence/Minute) Required motor: AC induction motor: □Induction □Reversible □Speed □Torque □C brushless motor: □BMS Series □BS Series □SB □DBS Series Stepping motor: □2 phase □3 phase □5 phase 【Drive mechanism and operating data】: Use the space below to draw	peed time: Second/Sequence Sequence /Minutes) Second/Sequence \ uence \
Activated mode: □Single direction operating continuously → □Rated s □Regulated speed (Range: rpm ~ rpm) □Single direction run · stop · run · stop → (Activated stop time: Second/Sequence; Run, stop total S □Clockwise/counter clockwise repeated → (CW: S Stop: Second/Sequence · CCW: Second/Sequence · Sequence/Minute) Required motor: AC induction motor: □Induction □Reversible □Speed □Torque □C brushless motor: □BMS Series □BS Series □SB □DBS Series Stepping motor: □2 phase □3 phase □5 phase 【Drive mechanism and operating data】: Use the space below to draw	peed time: Second/Sequence Sequence /Minutes) Second/Sequence \ uence \
□Regulated speed (Range: rpm ~ rpm) □Single direction run · stop · run · stop → (Activated stop time: Second/Sequence; Run, stop total S □Clockwise/counter clockwise repeated → (CW: S stop: Second/Sequence · CCW: Second/Sequence · Stop: Sequence/Minute) Required motor: AC induction motor: □Induction □Reversible □Speed □Torque □C brushless motor: □BMS Series □BS Series □SB □DBS Series Stepping motor: □2 phase □3 phase □5 phase 【Drive mechanism and operating data】: Use the space below to draw	time: Second/Sequence Sequence /Minutes) Second/Sequence \u00f3 uence \u00e7
□Torque □C brushless motor: □BMS Series □BS Series □SB □DBS Series Stepping motor: □2 phase □3 phase □5 phase □Drive mechanism and operating data]: Use the space below to draw	control □Magnetic brake
· · · · · · · · · · · · · · · · · · ·	S Series □UBS Series

Recommendation products (Selected specs):

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