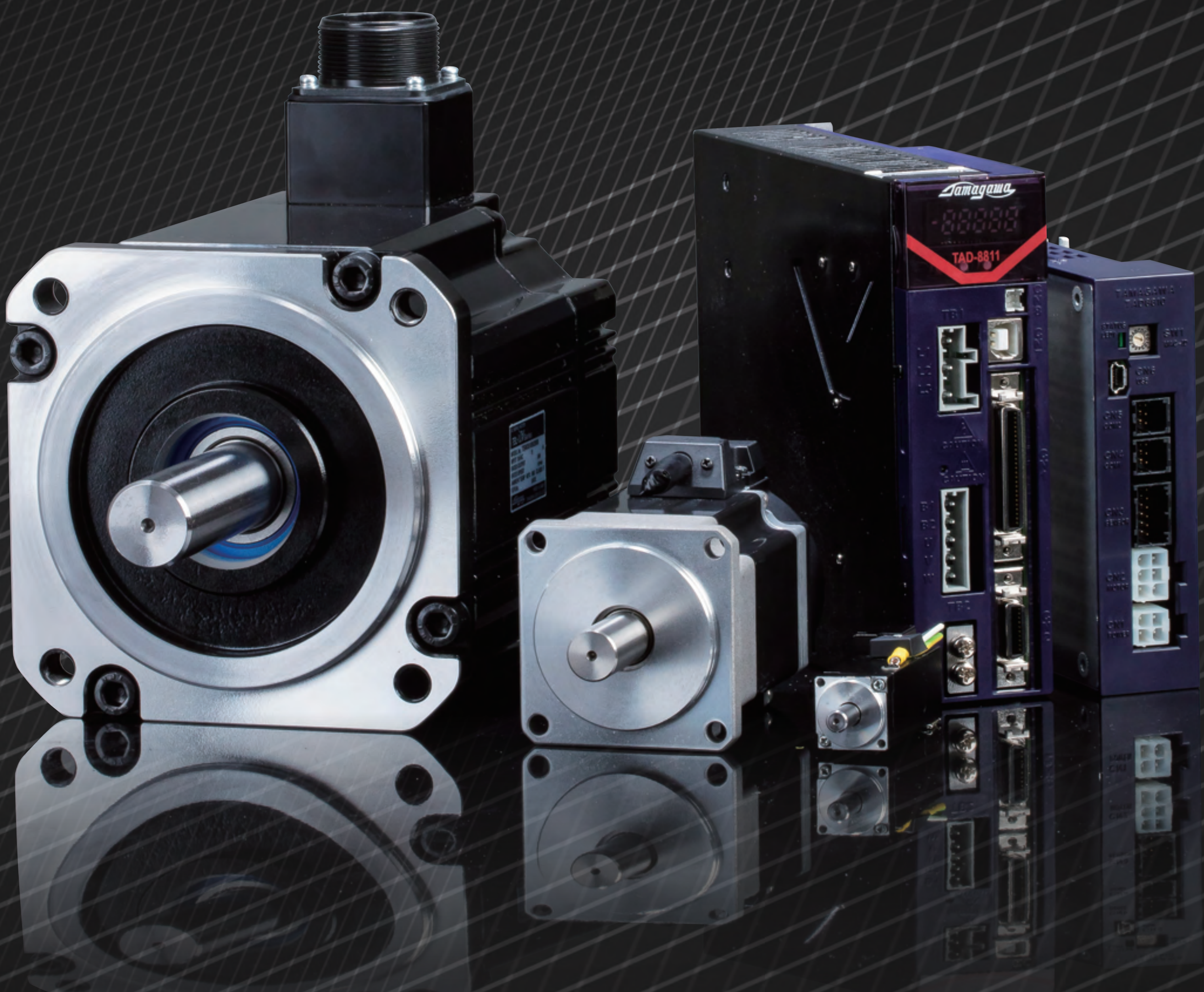
통합카탈로그 SV—NET 대응

AC서보모터

AC Servo motors



TAMAGAWA SEIKI CO., LTD.

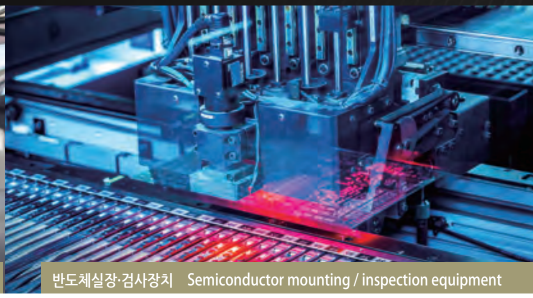
공장의 자동화나 소인화에 빠뜨릴 수 없는
산업용 로봇이나 그 주변장치, 조립장치 등의

다양한 모션 컨트롤을
다채로운 라인업과 뛰어난 기능으로 서포트

We support various motion controls such as industrial robots, peripheral devices, and assembly equipment, which are essential for factory automation and labor saving with a variety of run-ups and excellent functions.

Applications


자동차 제조 로봇 Automobile manufacturing robot


반도체실장·검사장치 Semiconductor mounting / inspection equipment

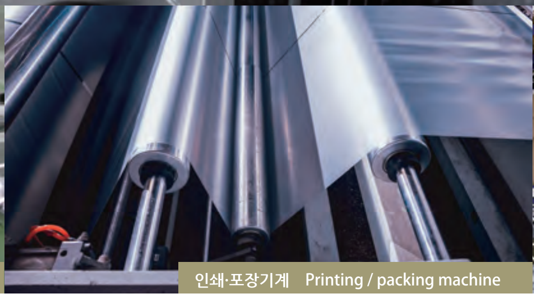

식품기계 Food machinery

AC Servo Motors

● 다채로운 라인업
● 센서는, 고객의 용도에 맞게
내환경형 레졸버와 고정밀 엔코더로 선정 가능
● Size：□14.5～180mm

● Various lineup
● Sensors can be selected from environmental-resistant resolvers and high-precision encoders according to the customer's application.
●Size:□14.5～180mm


직기 loom


인쇄·포장기계 Printing / packing machine


운송장치 Transport device

INDEX

서보모터
Servo Motors

AC Servo Motors / Line-up

Series	Voltage	Item	3w	5w	10w	13w	15w	16w	20w	26w	30w	40w	50w	92w	98w
TBL-i mini  P.8	DC24V		●	●	●	●	●	●	●	●	●	●			
		Size【mm】	□ 14.5	□ 14.5	□ 14.5 □ 19.5	□ 22	□ 14.5	□ 19.5	□ 19.5	□ 22	□ 19.5	□ 22			
		Rated speed (Max Speed)【min⁻¹】		3,000 (6,000) ※ 1		4,000 (5,000)		3,000 (6,000) ※ 1		4,000 (5,000)	3,000 (6,000)	4,000 (5,000)			
TBL-V  P.16	DC24V			●	●				●		●		●	●	●
		Size【mm】		□ 20	□ 20				□ 28		□ 28		□ 42	□ 56.4	□ 56.4
		Rated speed (Max Speed)【min⁻¹】							5,000 (8,000)					2,300 (2,900)	4,900 (6,200)
	DC48V			●	●				●		●		●		
		Size【mm】		□ 20	□ 20				□ 28		□ 28		□ 42		
		Rated speed (Max Speed)【min⁻¹】								5,000 (8,000)					
	AC100V			●	●				●		●		●		
		Size【mm】		□ 20	□ 20				□ 28		□ 28		□ 42		
		Rated speed (Max Speed)【min⁻¹】								5,000 (8,000)					
	AC200V			●	●				●		●		●		
		Size【mm】		□ 20	□ 20				□ 28		□ 28		□ 42		
		Rated speed (Max Speed)【min⁻¹】								5,000 (8,000)					
중관성 Medium inertia TBL -i  P.24	DC24V										●		●		
		Size【mm】									□ 40		□ 40		
		Rated speed (Max Speed)【min⁻¹】									3,000 (6,000)		3,000 (5,000)		
	DC48V										●		●		
		Size【mm】									□ 40		□ 40		
		Rated speed (Max Speed)【min⁻¹】											3,000 (6,000)		
	AC100V										●		●		
		Size【mm】									□ 40		□ 40		
		Rated speed (Max Speed)【min⁻¹】											3,000 (6,000)		
	AC200V										●		●		
		Size【mm】									□ 40		□ 40		
		Rated speed (Max Speed)【min⁻¹】											3,000 (6,000)		
저관성 Low inertia TBL-i IVs  P.38	AC200V												●		
		Size【mm】											□ 40		
		Rated speed (Max Speed)【min⁻¹】											3,000 (6,000)		

※ 1 인크리멘털 엔코더 4,096C/T 타입은, 센서 응답 주파수에 의해 3,000min-1 로 제한됩니다.
※ 2 당사 드라이버와의 조합에 따름
※ 3 적응 형식에 대해서는 별도 문의 부탁드립니다.
※ 4 모터와 조합한 경우, 최대 출력에 제한이 있습니다.

100w	200w	300w	320w	400w	600w	750w	1.0kw	1.5kw	2.0kw	3.0kw	4.0kw	5.0kw	5.5kw	7.5kw	Sensor	Drivers TAD8810 	Drivers TAD8811 
															Resolver INC	●	
															Resolver	●	
● □ 56.4	● □ 56.4														Resolver	●	
5,000 (8,000)	5,000 (5,900)																
● □ 56.4	● □ 56.4	● □ 56.4	● □ 86												Resolver		● ※ 3
	5,000 (8,000)		4,000 (4,400)														
● □ 56.4	● □ 56.4	● □ 56.4		● □ 86											Resolver		● ※ 3
		5,000 (8,000)															
● □ 40 □ 60															Resolver INC (～750w) ABS	● ※ 4	
3,000 (4,600)																	
● □ 40 □ 60	● □ 60 □ 80														Resolver INC (～750w) ABS	● ※ 4	
3,000 (6,000)		3,000 (3,800) ※□ 80mm:3,000(4,600)min^{-1}															
● □ 40 □ 60	● □ 60 □ 80			● □ 60 □ 80											Resolver INC (～750w) ABS		● ※ 4
		3,000 (6,000)															
● □ 40 □ 60	● □ 60 □ 80			● □ 60 □ 80	● □ 80	● □ 80	● □ 100	● □ 100	● □ 100	● □ 130	● □ 130	● □ 130	● □ 180	● □ 180	Resolver INC (～750w) ABS		● (～750w)
			3,000 (6,000)							3,000 (4,500)			2,000 (3,000)				
● □ 40	● □ 60			● □ 60	● □ 80	● □ 80									Resolver ABS		●
3,000 (6,000)				3,000 (6,000) ※ 2													

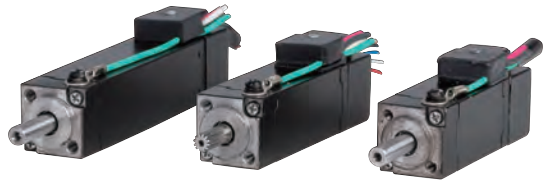
※ 1 Incremental Encoder 4,096C/T type is limited to 3,000min^{-1} in the limit of the response frequency of the sensor.
※ 2 Combination with our driver.
※ 3 Please contact us for the applying model.
※ 4 Maximum output is limited when the motor is combined with driver.

AC Servo Motors

TBL-i mini

취부 플랜지 사이즈 □14.5mm AC서보모터

Mounting flange size □14.5mm Servo Motors



특장점

- 초콤팩트 모터 사이즈
- 센서는, 레졸버 타입과 엔코더 타입으로 라인업
- 정격출력 3、5、10、15W
  정격회전수 3,000 min^{-1}／최고회전수6,000min^{-1}

Features

- Super small motor size.
- Servo Motor sensors line-up are resolver type and encoder type
- Rated output 3,5,10,15W
  Rated speed 3,000min^{-1}
  Maximum speed 6,000min^{-1}

형식 Model designation

TS486 □ N □□ 50 E □□□

① ② ③

③전원사양

기호	사양
500	DC24V

③ Power source Spec

No.	Spec
500	DC24V

※ DC48V 의 대응에 대해서는
당사 영업 창구로 문의해 주십시오

※ For information on how to use DC48V,
please contact our sales office.

①출력

기호	사양
1	3W
2	5W
4	10W
6	15W

②센서사양

기호	센서사양
40	레졸버 (Singlsyn)
22	2,048C/T (전선 절약) 인크리멘털 엔코더
28	4,096C/T (전선 절약) 인크리멘털 엔코더

① Output

No.	Spec.
1	3W
2	5W
4	10W
6	15W

② Sensor Spec.

No.	Sensor Spec.
40	Resolver（Singlsyn）
22	2,048C/T（wire-saving type） Incremental Encoder
28	4,096C/T（wire-saving type） Incremental Encoder

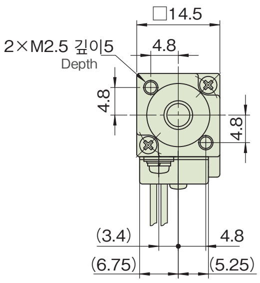
사양 일람 (센서 : 레졸버type) Specifications (Sensor：Resolver type)

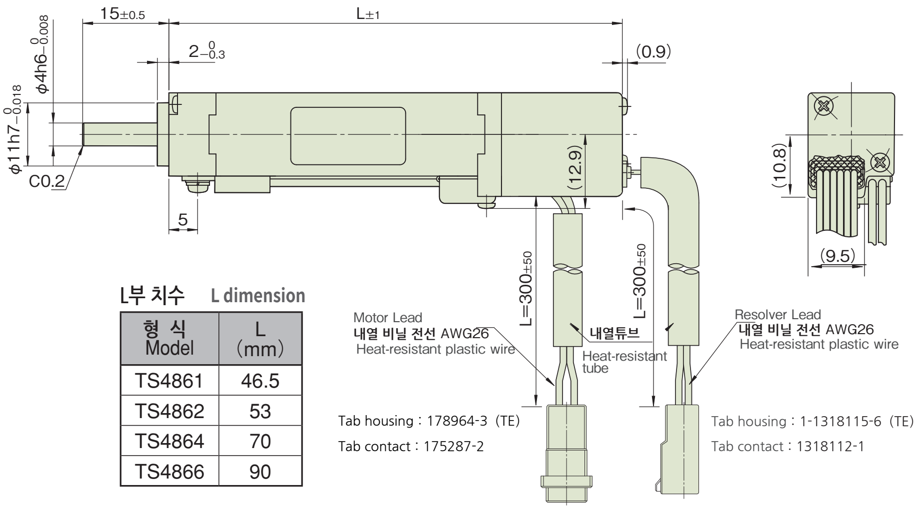
정격출력	Rated Output	（W）	3	5	10	15
형식	Model	—	TS4861N4050E500	TS4862N4050E500	TS4864N4050E500	TS4866N4050E500
입력전압	Input Voltage	（V）	DC24V			
정격토크	Rated torque	N・m（kgf・cm）	0.0095（0.097）	0.0159（0.162）	0.032（0.3265）	0.0477（0.4867）
스톨토크	Stoll torque	N・m（kgf・cm）	0.0095（0.097）	0.0159（0.162）	0.032（0.3265）	0.0477（0.4867）
순간최대토크	Peak torque	N・m（kgf・cm）	0.0285（0.29）	0.0477（0.486）	0.096（0.98）	0.1431（1.46）
정격회전속도	Rated speed	min^{-1}	3,000	3,000	3,000	3,000
최고회전속도	Maximum speed	min^{-1}	6,000	6,000	6,000	6,000
로터 관성 모멘트	Rotor moment of inertia	[GD^2/4] kg・m^2 (gf・cm・s^2)	0.00064×10^{-4} (0.00063)	0.00096×10^{-4} (0.00098)	0.0017×10^{-4} (0.00173)	0.0026×10^{-4} (0.002653)
정격 파워 레이트	Rated power rate	kW/s	1.46	2.6	6.1	8.75
기계적 시정수	Mechanical time constant	ms	2.63	1.83	1.29	1.17
축마찰 토크	Static friction torque	N・m（kgf・cm）	0.001（0.01）	0.001（0.01）	0.001（0.01）	0.0015（0.015）
절연종류	Insulation class	—	B 種	B 種	B 種	B 種
절연저항	Insulation resistance	MΩ Min	10	10	10	10
절연내압	Insulation strength	—	AC 600V 60s	AC 600V 60s	AC 600V 60s	AC 600V 60s
축방향 play	Shaft end play	mm Max	0.5	0.5	0.5	0.5
허용 레이디얼 하중	Maximum radial shaft load	N（kgf）	8（0.8）	8（0.8）	8（0.8）	8（0.8）
허용 스러스트 하중	Maximum thrust shaft load	N（kgf）	4（0.4）	4（0.4）	4（0.4）	4（0.4）
회전방향	Direction of rotation	—	U→V→W 통전 시 축단에서 볼 때 CCW	U→V→W 통전 시 축단에서 볼 때 CCW	U→V→W 통전 시 축단에서 볼 때 CCW	U→V→W 통전 시 축단에서 볼 때 CCW
센서취부오차	Sensor misalignment	° e Max	±8	±8	±8	±8
정격 등가 직류기 전기자 전류	Rated armature current of E.D.C.M.	A（rms）	0.68	1.0	1.573	2.14
스톨 등가 직류기 전기자 전류	Stoll armature current of E.D.C.M.	A（rms）	0.62	0.94	1.526	2.07
등가 직류기 무부하 전류	Noload armature current of E.D.C.M.	A（rms）	0.06	0.06	0.047	0.07
순간 최대 전기자 전류	Peak armature current of E.D.C.M.	A（rms）	1.92	2.875	4.62	6.28
등가 직류기 토크 상수	Torque constant of E.D.C.M.	N・m/A±10% (kgf・cm/A)	0.0154 (0.1566)	0.0169 (0.1728)	0.02097 (0.214)	0.023 (0.235)
등가 직류기 전압 상수	Voltage constant of E.D.C.M.	V/（r/min）±10%	1.609×10^{-3}	1.775×10^{-3}	2.198×10^{-3}	2.415×10^{-3}
등가직류기 저항	Armature resistance of E.D.C.M.	Ω±10%	10.04	6.058	3.51	2.622
등가 직류기 인덕턴스	Armature inductance of E.D.C.M.	mH±30%	0.815	0.555	0.33	0.326
전기적 시정수	Electrical time constant	ms	0.081	0.092	0.1	0.12
질량	Mass	kg	0.05	0.06	0.09	0.12

외형도 Outline

TS486□N4050 (레졸버 type)
(Resolver type)

(단위 : mm)
(Unit : mm)

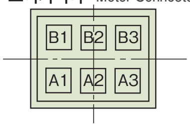




L부 치수 L dimension

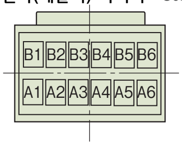
형 식 Model	L (mm)
TS4861	46.5
TS4862	53
TS4864	70
TS4866	90

모터커넥터 Motor Connector



Tab housing
: 178964-3 (TE)
Tab contact
: 175287-2

센서(레졸버) 커넥터 Sensor Connector (Resolver)



Tab housing (TE)
: 1-1318115-6
Tab contact (TE)
: 1318112-1

모터결선 Motor Connection

PIN No.	FUNCTION	COLOR
A1	U	RED
A2	V	WHT
A3	W	BLK
B1	FG	GRN
B2	—	—
B3	—	—

센서(레졸버) 결선 Resolver Connection

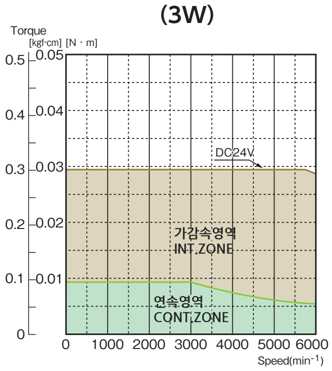
PIN No.	FUNCTION	COLOR	PIN No.	FUNCTION	COLOR
A1	S2	YEL	B1	S4	BLU
A2	S1	RED	B2	S3	BLK
A3	R1	WHT	B3	R2	ORG
A4	—	—	B4	—	—
A5	—	—	B5	—	—
A6	—	—	B6	—	—

N-T 특성 N-T characteristics

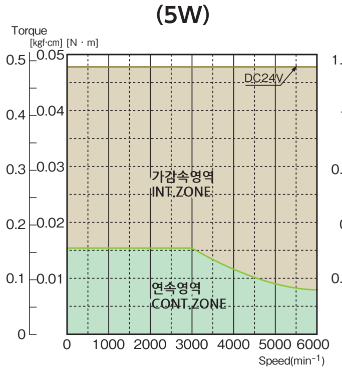
하기 특성은 선간 입력 전압(정류전압) DC24V에서의 특성값입니다.
(구동회로에 의해 제한되는 경우가 있습니다.)

DC bus voltage (line to line) DC24V. (Output torque may depends on driving circuit.)

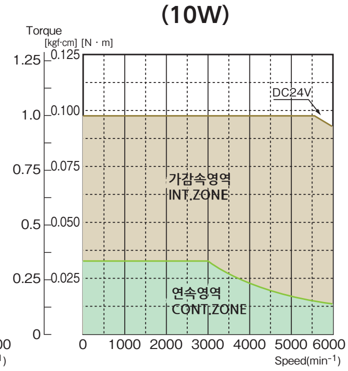
TS4861N4050E500 (3W)



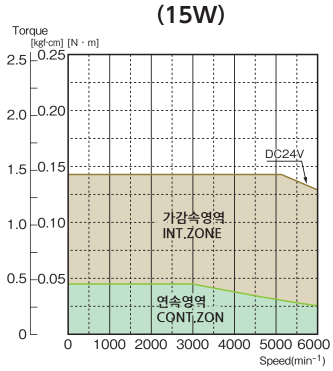
TS4862N4050E500 (5W)



TS4864N4050E500 (10W)



TS4866N4050E500 (15W)



사양 일람 (센서 : 인크리멘털 엔코더 type) Specifications (Sensor : Incremental Encoder type)

정격출력	Rated Output	(W)	3	5	10	15
형식	Model	2,048C/T type	TS4861N2250E500	TS4862N2250E500	TS4864N2250E500	TS4866N2250E500
		4,096C/T type	TS4861N2850E500	TS4862N2850E500	TS4864N2850E500	TS4866N2850E500
입력전압	Input Voltage	(V)	DC24V			
정격토크	Rated torque	N・m (kgf・cm)	0.0095 (0.097)	0.0159 (0.162)	0.032 (0.3265)	0.0477 (0.4867)
스톨토크	Stoll torque	N・m (kgf・cm)	0.0095 (0.097)	0.0159 (0.162)	0.032 (0.3265)	0.0477 (0.4867)
순간최대토크	Peak torque	N・m (kgf・cm)	0.0285 (0.29)	0.0477 (0.486)	0.096 (0.98)	0.1431 (1.46)
정격회전속도	Rated speed	min^{-1}	3,000	3,000	3,000	3,000
최고회전속도	Maximum speed	min^{-1}	6,000	6,000	6,000	6,000
			3,000 ※	3,000 ※	3,000 ※	3,000 ※
로터 관성 모멘트	Rotor moment of inertia	$[GD^2/4]$ kg・m^2 (gf・cm・s^2)	0.00064×10^{-4} (0.00063)	0.00096×10^{-4} (0.00098)	0.0017×10^{-4} (0.00173)	0.0026×10^{-4} (0.002653)
정격 파워 레이트	Rated power rate	kW/s	1.46	2.6	6.1	8.75
기계적 시정수	Mechanical time constant	ms	2.63	1.83	1.29	1.17
축마찰 토크	Static friction torque	N・m (kgf・cm)	0.001 (0.01)	0.001 (0.01)	0.001 (0.01)	0.0015 (0.015)
절연종류	Insulation class	—	B 種	B 種	B 種	B 種
절연저항	Insulation resistance	MΩ Min	10	10	10	10
절연내압	Insulation strength	—	AC 600V 60s	AC 600V 60s	AC 600V 60s	AC 600V 60s
축방향 play	Shaft end play	mm Max	0.5	0.5	0.5	0.5
허용 레이디얼 하중	Maximum radial shaft load	N (kgf)	8 (0.8)	8 (0.8)	8 (0.8)	8 (0.8)
허용 스러스트 하중	Maximum thrust shaft load	N (kgf)	4 (0.4)	4 (0.4)	4 (0.4)	4 (0.4)
회전방향	Direction of rotation	—	U → V → W 통전 시 축단에서 볼 때 CCW	U → V → W 통전 시 축단에서 볼 때 CCW	U → V → W 통전 시 축단에서 볼 때 CCW	U → V → W 통전 시 축단에서 볼 때 CCW
센서취부오차	Sensor misalignment	° e Max	±8	±8	±8	±8
정격 등가 직류기 전기자 전류	Rated armature current of E.D.C.M.	A (rms)	0.68	1.0	1.573	2.14
스톨 등가 직류기 전기자 전류	Stoll armature current of E.D.C.M.	A (rms)	0.62	0.94	1.526	2.07
등가 직류기 무부하 전류	Noload armature current of E.D.C.M.	A (rms)	0.06	0.06	0.047	0.07
순간 최대 전기자 전류	Peak armature current of E.D.C.M.	A (rms)	1.92	2.875	4.62	6.28
등가 직류기 토크 상수	Torque constant of E.D.C.M.	N・m/A±10% (kgf・cm/A)	0.0154 (0.1566)	0.0169 (0.1728)	0.02097 (0.214)	0.023 (0.235)
등가 직류기 전압 상수	Voltage constant of E.D.C.M.	V/ (r/min) ±10%	1.609×10^{-3}	1.775×10^{-3}	2.198×10^{-3}	2.4145×10^{-3}
등가직류기 저항	Armature resistance of E.D.C.M.	Ω±10%	10.04	6.058	3.51	2.622
등가 직류기 인덕턴스	Armature inductance of E.D.C.M.	mH±30%	0.815	0.555	0.33	0.326
전기적 시정수	Electrical time constant	ms	0.081	0.092	0.1	0.12
질량	Mass	kg	0.05	0.06	0.09	0.12

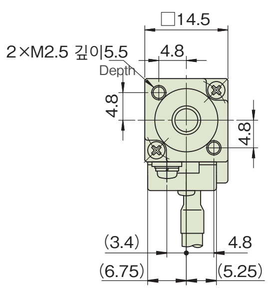
※인크리멘털 엔코더 4,096C/T type은, 센서 응답 주파수에 따라 3,000min^{-1} 로 제한됩니다.

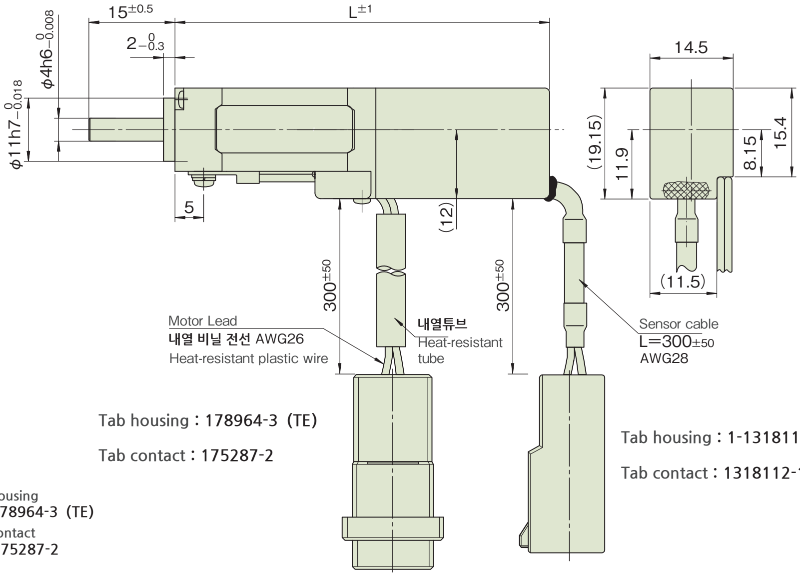
※ Incremental Encoder 4,096C/T type is limited to 3,000min^{-1} in the limit of the response frequency of the sensor.

외형도 Outline

(단위：mm)
(Unit：mm)

TS486□N2250 (2,048C/T type)、TS486□N2850 (4,096C/T type)

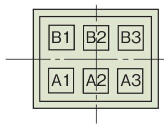




L부 치수 L dimension

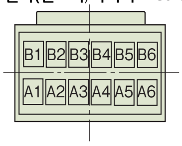
형 식 Model	L (mm)
TS4861	65.5
TS4862	72
TS4864	89
TS4866	109

모터커넥터 Motor Connector



Tab housing
：178964-3 (TE)
Tab contact
：175287-2

센서(엔코더)커넥터 Sensor Connector (Encoder)



Tab housing (TE)
：1-1318115-6
Tab contact (TE)
：1318112-1

모터결선 Motor Connection

PIN No.	FUNCTION	COLOR
A1	U	RED
A2	V	WHT
A3	W	BLK
B1	FG	GRN
B2	—	—
B3	—	—

센서(엔코더) 결선 Encoder Connection

PIN No.	FUNCTION	COLOR
A1	UE, A	BLU
A2	VE, B	GRN
A3	WE, Z	YEL
A4	—	—
A5	VCC	RED
A6	—	—

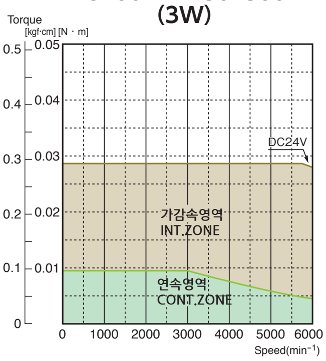
PIN No.	FUNCTION	COLOR
B1	$\overline{\text{UE, A}}$	BLU/BLK
B2	$\overline{\text{VE, B}}$	GRN/BLK
B3	$\overline{\text{WE, Z}}$	YEL/BLK
B4	—	—
B5	GND	BLK
B6	SHIELD	SHIELD

N-T 특성 N-T characteristics

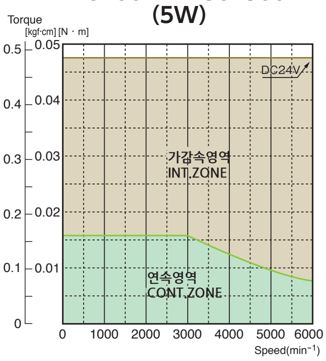
하기 특성은 선간 입력 전압(정류전압) DC24V에서의 특성값입니다.
(구동회로에 의해 제한되는 경우가 있습니다.)

DC bus voltage (line to line) DC24V. (Output torque may depends on driving circuit.)

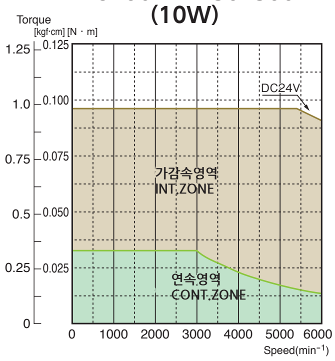
TS4861N2250E500 (3W)



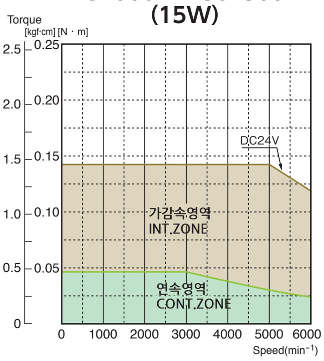
TS4862N2250E500 (5W)



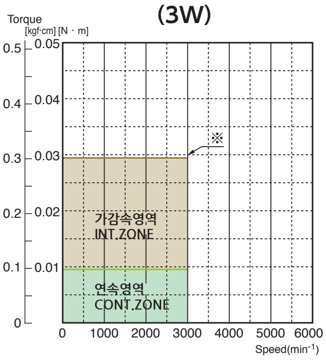
TS4864N2250E500 (10W)



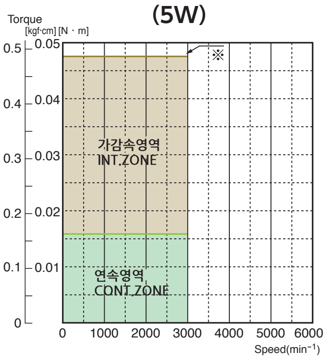
TS4866N2250E500 (15W)



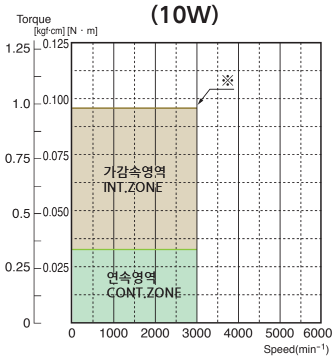
TS4861N2850E500 (3W)



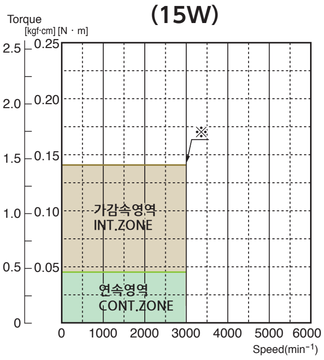
TS4862N2850E500 (5W)



TS4864N2850E500 (10W)



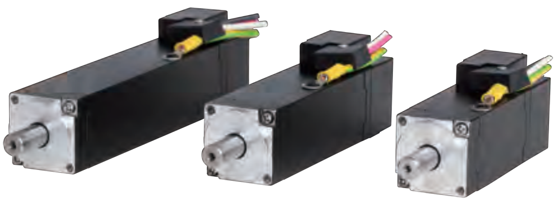
TS4866N2850E500 (15W)



※인크리멘털 엔코더 4,096C/T type은,센서 응답 주파수에 따라 3,000min-1 로 제한됩니다.
※ Incremental Encoder 4,096C/T type is limited to 3,000min-1 in the limit of the response frequency of the sensor.

TBL-*i* mini

취부 플랜지 사이즈 □19.5mm AC서보모터
Mounting flange size □19.5mm Servo Motors



특장점

- 콤팩트한 모터 사이즈
- 센서는 내환경 성능이 뛰어난 레졸버 타입
- 정격출력 10、16、20、30W
  정격회전수 3,000min^{-1} ／최고회전수 6,000min^{-1}

Features

- Small motor size.
- The sensor is an excellent resolver type in the environment-proof of the performance.
- Rated output 10,16,20,30W
  Rated speed 3,000min^{-1}
  Maximum speed 6,000min^{-1}

형식 Model designation

TS487 □① N 4050 E □□□②

①출력

기호	사양
1	10W
2	16W
3	20W
5	30W

① Output

No.	Spec.
1	10W
2	16W
3	20W
5	30W

②전원사양

기호	사양
500	DC24V

② Power source Spec

No.	Spec
500	DC24V

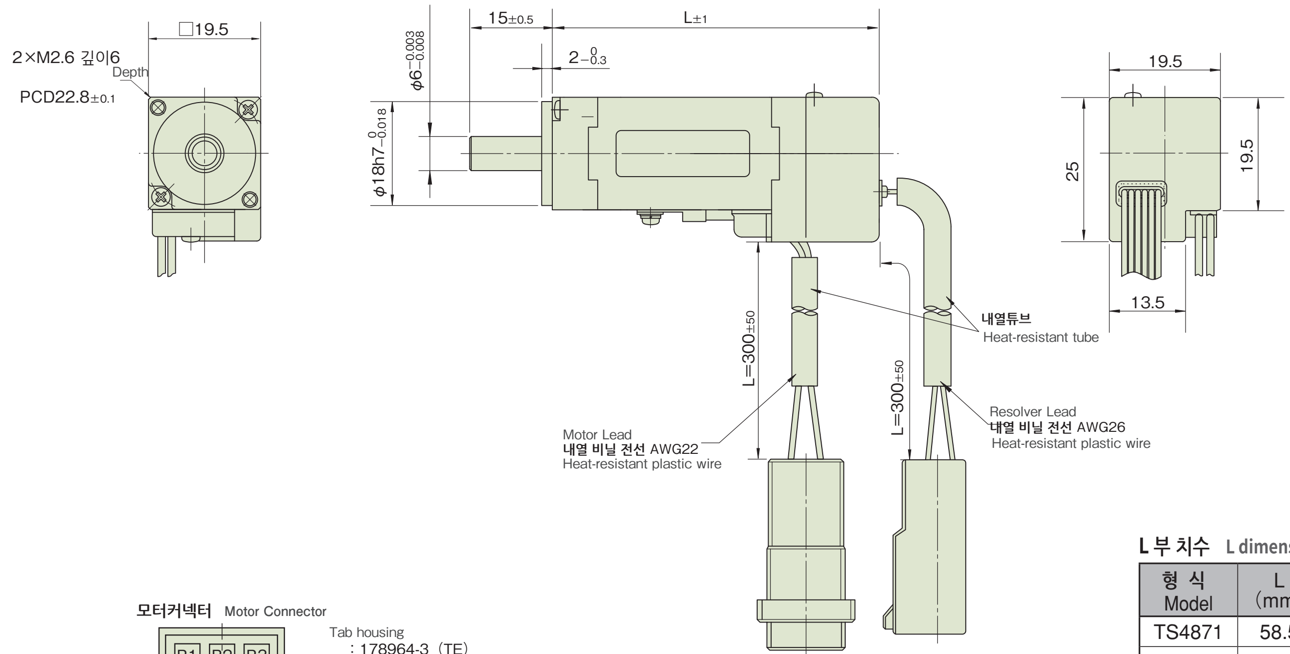
※ DC48V 의 대응에 대해서는
당사 영업 창구로 문의해 주십시오
※ For information on how to use DC48V,
please contact our sales office.

사양 일람 (센서 : 레졸버type) Specifications (Sensor : Resolver type)

정격출력	Rated Output	(W)	10	16	20	30
형식	Model	—	TS4871N4050E500	TS4872N4050E500	TS4873N4050E500	TS4875N4050E500
입력전압	Input Voltage	(V)	DC24V			
정격토크	Rated torque	N・m (kgf・cm)	0.032 (0.325)	0.051 (0.52)	0.064 (0.653)	0.096 (0.98)
스톨토크	Stoll torque	N・m (kgf・cm)	0.032 (0.325)	0.051 (0.52)	0.064 (0.653)	0.096 (0.98)
순간최대토크	Peak torque	N・m (kgf・cm)	0.096 (0.975)	0.153 (1.558)	0.192 (1.96)	0.288 (2.94)
정격회전속도	Rated speed	min^{-1}	3,000	3,000	3,000	3,000
최고회전속도	Maximum speed	min^{-1}	6,000	6,000	6,000	6,000
로터 관성 모멘트	Rotor moment of inertia	[GD^2/4] kg・m^2 (gf・cm・s^2)	0.0031 × 10^{-4} (0.003175)	0.00496 × 10^{-4} (0.00506)	0.00575 × 10^{-4} (0.00587)	0.00945 × 10^{-4} (0.00964)
정격 파워 레이트	Rated power rate	kW/s	3.26	5.24	7.1	9.76
기계적 시정수	Mechanical time constant	ms	2.86	2.1	2.0	1.99
축마찰 토크	Static friction torque	N・m (kgf・cm)	0.0015 (0.015)	0.002 (0.02)	0.002 (0.02)	0.002 (0.02)
절연종류	Insulation class	—	B 種	B 種	B 種	B 種
절연저항	Insulation resistance	MΩ Min	100	10	10	100
절연내압	Insulation strength	—	AC 600V 60s	AC 600V 60s	AC 600V 60s	AC 600V 60s
축방향 play	Shaft end play	mm Max	0.04	0.5	0.5	0.04
허용 레이디얼 하중	Maximum radial shaft load	N (kgf)	24 (2.45)	24 (2.45)	24 (2.45)	24 (2.45)
허용 스러스트 하중	Maximum thrust shaft load	N (kgf)	24 (2.45)	24 (2.45)	24 (2.45)	24 (2.45)
회전방향	Direction of rotation	—	U → V → W 통전 시 축단에서 볼 때 CCW	U → V → W 통전 시 축단에서 볼 때 CCW	U → V → W 통전 시 축단에서 볼 때CCW	U → V → W 통전 시 축단에서 볼 때 CCW
센서취부오차	Sensor misalignment	° e Max	±8	±8	±8	±8
정격 등가 직류기 전기자 전류	Rated armature current of E.D.C.M.	A (rms)	1.8	2.29	2.87	3.9
스톨 등가 직류기 전기자 전류	Stoll armature current of E.D.C.M.	A (rms)	1.72	2.2	2.78	3.82
등가 직류기 무부하 전류	Noload armature current of E.D.C.M.	A (rms)	0.08	0.09	0.09	0.08
순간 최대 전기자 전류	Peak armature current of E.D.C.M.	A (rms)	5.25	6.71	8.42	11.54
등가 직류기 토크 상수	Torque constant of E.D.C.M.	N・m/A±10% (kgf・cm/A)	0.01858 (0.1896)	0.0231 (0.2358)	0.023 (0.235)	0.02513 (0.256)
등가 직류기 전압 상수	Voltage constant of E.D.C.M.	V/ (r/min) ±10%	1.947 × 10^{-3}	2.422 × 10^{-3}	2.412 × 10^{-3}	2.634 × 10^{-3}
등가직류기 저항	Armature resistance of E.D.C.M.	Ω±10%	3.326	2.338	1.889	1.389
등가 직류기 인덕턴스	Armature inductance of E.D.C.M.	mH±30%	0.735	0.6	0.51	0.332
전기적 시정수	Electrical time constant	ms	0.22	0.26	0.27	0.24
질량	Mass	kg	0.111	0.15	0.17	0.25

외형도 Outline

(단위 : mm)
(Unit : mm)



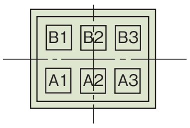
Tab housing : 178964-3
Tab contact : 175288-2

Tab housing : 1-1318115-6
Tab contact : 1318112-1

L 부 치수 L dimension

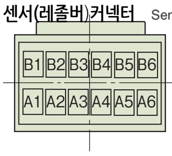
형 식 Model	L (mm)
TS4871	58.5
TS4872	70
TS4873	75
TS4875	101

모터커넥터 Motor Connector



Tab housing
: 178964-3 (TE)
Tab contact
: 175288-2

센서(레졸버)커넥터 Sensor Connector (Resolver)



Tab housing (TE)
: 1-1318115-6
Tab contact (TE)
: 1318112-1

모터결선 Motor Connection

PIN No.	FUNCTION	COLOR
A1	U	RED
A2	V	WHT
A3	W	BLK
B1	FG	GRN/YEL
B2	—	—
B3	—	—

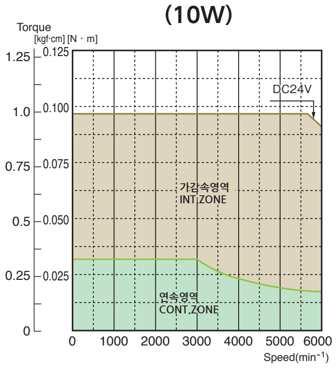
센서(레졸버) 결선 Resolver Connection

PIN No.	FUNCTION	COLOR	PIN No.	FUNCTION	COLOR
A1	S2	YEL	B1	S4	BLU
A2	S1	RED	B2	S3	BLK
A3	R1	WHT	B3	R2	ORG
A4	—	—	B4	—	—
A5	—	—	B5	—	—
A6	—	—	B6	—	—

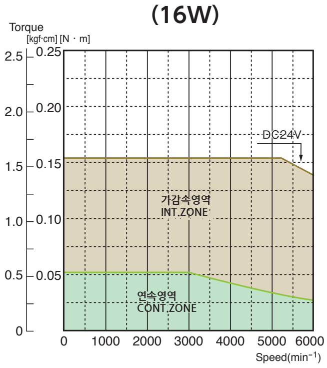
N-T 특성 N-T characteristics

하기 특성은 선간 입력 전압(정류전압) DC24V에서의 특성값입니다.
(구동회로에 의해 제한되는 경우가 있습니다.)
DC bus voltage (line to line) DC24V. (Output torque may depends on driving circuit.)

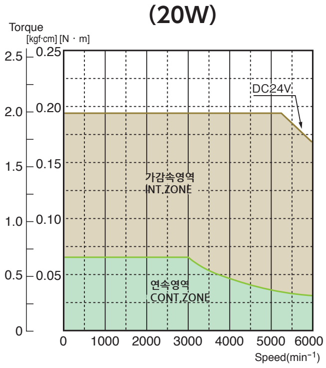
TS4871N4050E500 (10W)



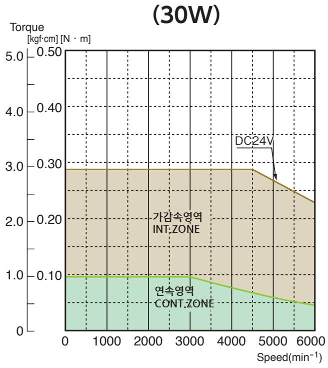
TS4872N4050E500 (16W)



TS4873N4050E500 (20W)



TS4875N4050E500 (30W)



TBL-*i* mini

취부 플랜지 사이즈 □22mm AC서보모터
Mounting flange size □22mm Servo Motors

특장점

- 콤팩트한 모터 사이즈
- 센서는, 2,000C/T 와 2,048C/T 두 종류의 인크리멘털 엔코더 타입
- 정격출력13、26、40W
  정격회전수 4,000 min^{-1} ／최고회전수 5,000min^{-1}

Features

- Small motor size.
- Servo Motor sensor line-up are 2,000C/T and 2,048C/T incremental encoder type.
- Rated output 13,26,40W
  Rated speed 4,000min^{-1}
  Maximum speed 5,000min^{-1}

형식 Model designation

TS463 □① N 2 □② 50 E □□□③

③전원사양	
기호	사양
510	DC24V

③ Power source Spec	
No.	Spec
510	DC24V

※ DC48V 의 대응에 대해서는 당사 영업 창구로 문의해 주십시오
※ For information on how to use DC48V, please contact our sales office.

①출력	
기호	사양
1	13W
2	26W
3	40W

②센서사양	
기호	센서사양
0	2,000C/T (전선 절약) 인크리멘털 엔코더
2	2,048C/T (전선 절약) 인크리멘털 엔코더

① Output	
No.	Spec.
1	13W
2	26W
3	40W

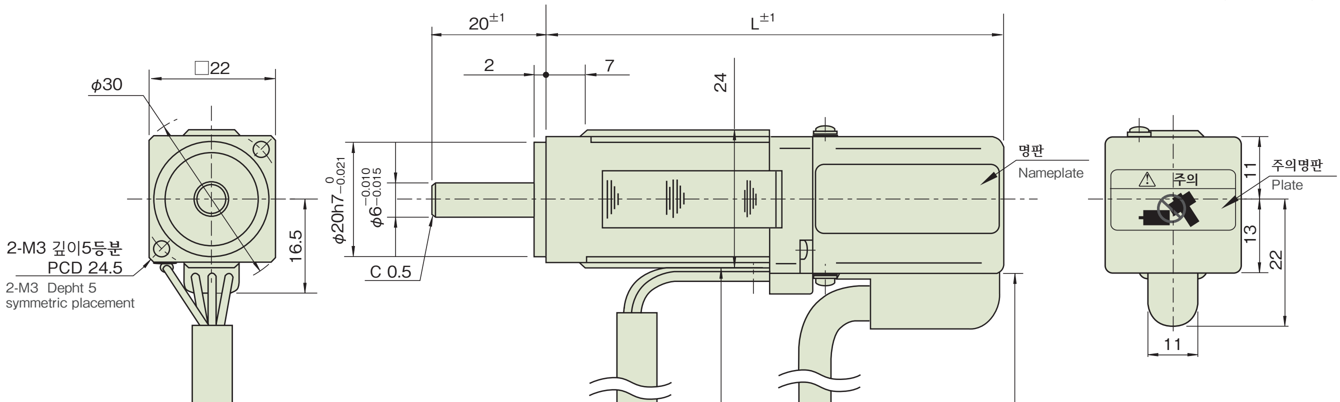
② Sensor Spec.	
No.	Sensor Spec.
0	2,000C/T（Wire-Saving type）Incremental Encoder
2	2,048C/T（Wire-Saving type）Incremental Encoder

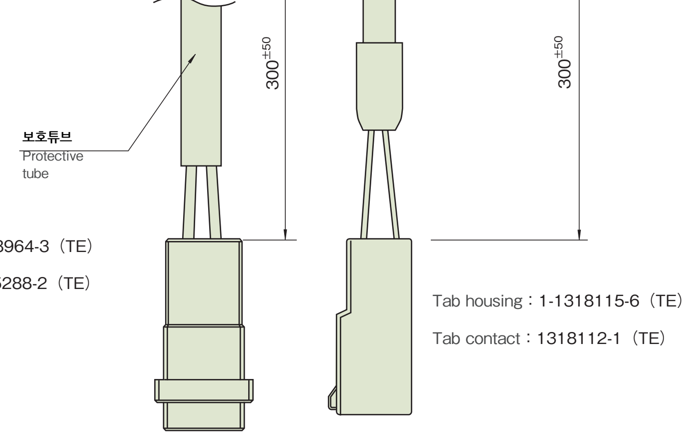
사양 일람 (센서 : 인크리멘털 엔코더type) Specifications (Sensor：Incremental Encoder type)

정격출력	Rated Output	（W）	13	26	40
형식	Model	2,000C/T type	TS4631N2050E510	TS4632N2050E510	TS4633N2050E510
		2,048C/T type	TS4631N2250E510	TS4632N2250E510	TS4633N2250E510
입력전압	Input Voltage	（V）	DC24V		
정격토크	Rated torque	N・m（kgf・cm）	0.031（0.32）	0.062（0.63）	0.095（0.97）
스톨토크	Stoll torque	N・m（kgf・cm）	0.031（0.32）	0.062（0.63）	0.095（0.97）
순간최대토크	Peak torque	N・m（kgf・cm）	0.094（0.96）	0.185（1.89）	0.285（2.91）
정격회전속도	Rated speed	min^{-1}	4,000	4,000	4,000
최고회전속도	Maximum speed	min^{-1}	5,000	5,000	5,000
로터 관성 모멘트	Rotor moment of inertia	[GD^2/4] kg・m^2 （gf・cm・s^2）	0.003 × 10^{-4} （0.003）	0.004 × 10^{-4} （0.004）	0.006 × 10^{-4} （0.006）
정격 파워 레이트	Rated power rate	kW/s	3.4	9.7	15.4
기계적 시정수	Mechanical time constant	ms	2.2	1.2	1.2
축마찰 토크	Static friction torque	N・m（kgf・cm）	0.01（0.1）	0.01（0.1）	0.01（0.1）
절연종류	Insulation class	—	B 種	B 種	B 種
절연저항	Insulation resistance	MΩ Min	100	100	100
절연내압	Insulation strength	—	AC 600V 60s	AC 600V 60s	AC 600V 60s
축방향 play	Shaft end play	mm Max	0.04	0.04	0.04
허용 레이디얼 하중	Maximum radial shaft load	N（kgf）	22.5（2.3）	22.5（2.3）	22.5（2.3）
허용 스러스트 하중	Maximum thrust shaft load	N（kgf）	14.7（1.5）	14.7（1.5）	14.7（1.5）
회전방향	Direction of rotation	—	U → V → W 통전 시 축단에서 볼 때 CCW	U → V → W 통전 시 축단에서 볼 때 CCW	U → V → W 통전 시 축단에서 볼 때 CCW
센서취부오차	Sensor misalignment	° e Max	±8	±8	±8
정격 등가 직류기 전기자 전류	Rated armature current of E.D.C.M.	A（rms）	1.44	2.92	4.0
스톨 등가 직류기 전기자 전류	Stoll armature current of E.D.C.M.	A（rms）	1.1	2.52	3.6
등가 직류기 무부하 전류	Noload armature current of E.D.C.M.	A（rms）	0.34	0.4	0.4
순간 최대 전기자 전류	Peak armature current of E.D.C.M.	A（rms）	3.66	8.0	11.2
등가 직류기 토크 상수	Torque constant of E.D.C.M.	N・m/A±10% （kgf・cm/A）	0.029 （0.29）	0.025 （0.25）	0.026 （0.27）
등가 직류기 전압 상수	Voltage constant of E.D.C.M.	V/（r/min）±10%	3.0 × 10^{-3}	2.6 × 10^{-3}	2.73 × 10^{-3}
등가직류기 저항	Armature resistance of E.D.C.M.	Ω±10%	6.2	2.0	1.36
등가 직류기 인덕턴스	Armature inductance of E.D.C.M.	mH±30%	1.4	0.51	0.30
전기적 시정수	Electrical time constant	ms	0.22	0.26	0.22
질량	Mass	kg	0.15	0.19	0.23

외형도 Outline

(단위 : mm)
(Unit : mm)

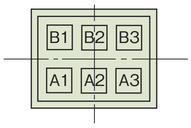




L 부 치수 L dimension

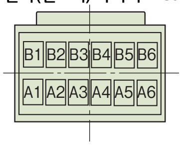
형 식 Model	L (mm)
TS4631	65
TS4632	80
TS4633	90

모터커넥터 Motor Connector



Tab housing
: 178964-3 (TE)
Tab contact
: 175288-2

센서(엔코더) 커넥터 Sensor Connector (Encoder)



Tab housing (TE)
: 1-1318115-6
Tab contact (TE)
: 1318112-1

모터결선 Motor Connection

PIN No.	FUNCTION	COLOR
A1	U	RED
A2	V	WHT
A3	W	BLK
B1	FG	GRN
B2	—	—
B3	—	—

센서(엔코더) 결선 Encoder Connection

PIN No.	FUNCTION	COLOR
A1	UE, A	BLU
A2	VE, B	GRN
A3	WE, Z	YEL
A4	—	—
A5	VCC	RED
A6	—	—

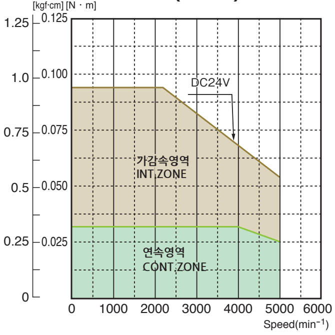
PIN No.	FUNCTION	COLOR
B1	$\overline{\mathrm{UE}}$, $\overline{\mathrm{A}}$	BLU/BLK
B2	$\overline{\mathrm{VE}}$, $\overline{\mathrm{B}}$	GRN/BLK
B3	$\overline{\mathrm{WE}}$, $\overline{\mathrm{Z}}$	YEL/BLK
B4	—	—
B5	GND	BLK
B6	SHIELD	SHIELD

N-T 특성 N-T characteristics

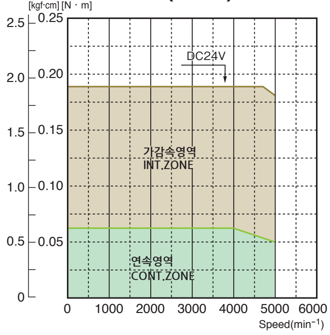
하기 특성은 선간 입력 전압(정류전압) DC24V에서의 특성값입니다.
(구동회로에 의해 제한되는 경우가 있습니다.)

DC bus voltage (line to line) DC24V. (Output torque may depends on driving circuit.)

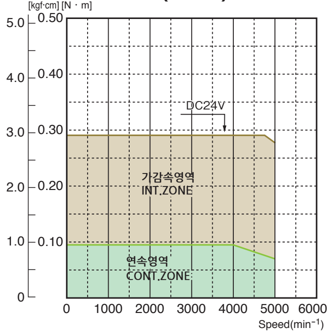
TS4631N2050E510
TS4631N2250E510
(13W)

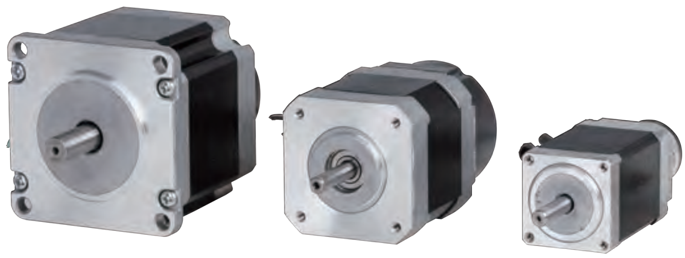


TS4632N2050E510
TS4632N2250E510
(26W)



TS4633N2050E510
TS4633N2250E510
(40W)





스텝 모터와 기계적으로 치환 가능한 서보 모터
Servo motors mechanically compatible with step motors

스텝모터와 같은 크기의 플랜지를 가진 TBL-V 시리즈는, 스텝모터와의 치환이 가능한 AC 서보 모터입니다.
(제조사에 따라 스텝모터의 설치 치수가 다릅니다. 세부 사항은 도면 등에서 확인해 주십시오.)

The TBL-V series AC servo motors have the same flange size as that of step motors. Hence, they can be installed in replacement of such step motors. (Note : The installation dimensions of step motors may vary by makers. Check the drawing for details.)

고신뢰성 레졸버
High-reliability resolvers

내환경성(온도, 진동, 충격)이 뛰어난 세계 최소의 레졸버(Smartsyn), VR레졸버(Singlsyn)를 탑재하고 있습니다.

The TBL-V series comes with our "Smartsyn" brushless resolver and "Singlsyn" VR (Variable Reluctance)-type resolver – both the world's smallest of their kinds with superior environment-resistant characteristics.

형식 Model designation

TS47 □□① N □□② □□③ E □□□④

①출력 / ① Output

기호 (No.)	사양 (Spec.)
34	5W
35	10W
37	20W
38	30W
42	50W

②센서사양 / ② Sensor Spec.

기호 (No.)	센서사양 (Sensor Spec.)
30	레졸버(Smartsyn) / Resolver(Smartsyn)

③축단사양 / ③ Shaft end Spec.

기호 (No.)	축단사양 (Shaft end Spec.)
00	원형축 (표준사양) / Round shaft (standard)
01	싱글 밀링 / Single milled shaft

④전원사양 / ④ Power source Spec.

기호 (No.)	사양 (Spec.)
100	AC100V
200	AC200V
500	DC24V
600	DC48V

TS47 □□① N □□② □□③ E □□□④

①출력 / ① Output

기호 (No.)	사양 (Spec.)
42	50W
46	100W（DC24V:98W）
47	200W（DC24V:92W）
48	300W
52	400W（AC100V:320W）

②센서사양 / ② Sensor Spec.

기호 (No.)	센서사양 (Sensor Spec.)
32	2X-VR 레졸버(Singlsyn) / 2X-VR Resolver (Singlsyn)
33	레졸버（Smartsyn /TS 4742제외） / Resolver(Smartsyn/Except TS4742)

③축단사양 / ③ Shaft end Spec.

기호 (No.)	축단사양 (Shaft end Spec.)
00	원형축 (표준사양) / Round shaft (standard)
01	싱글 밀링 / Single milled shaft
02	키 홈 (TS4742 제외) / Keyway (except TS4742)

④전원사양 / ④ Power source Spec.

기호 (No.)	사양 (Spec.)
100	AC100V
200	AC200V
500	DC24V
600	DC48V

기본사양 Basic Specifications

저전압 Low voltage

<table>
<tr><th rowspan="2">전 압
Voltage</th><th colspan="2" rowspan="2">플 랜 지
Mounting</th><th rowspan="3">기본형식
Model</th><th rowspan="2">정격출력
Output</th><th colspan="2">토 크
Torque</th><th colspan="2">전 류
Current</th><th colspan="2">회전수
Speed</th><th rowspan="2">로터 관성
Rotor inertia</th><th rowspan="2">질 량
Mass</th></tr>
<tr><th>정 격
Rated</th><th>순간최대
Max</th><th>정 격
Rated</th><th>순간최대
Max</th><th>정 격
Rated</th><th>순간최대
Max</th></tr>
<tr><th>[V]</th><th>[inch]</th><th>[mm]</th><th>[W]</th><th>[N・m]</th><th>[N・m]</th><th>[Arms]</th><th>[Arms]</th><th>[min^{-1}]</th><th>[min^{-1}]</th><th>[× 10^{-4}kg・m^2]</th><th>[kg]</th></tr>
<tr><td rowspan="7">DC24</td><td rowspan="2">#8</td><td rowspan="2">□ 20</td><td>TS4734</td><td>5</td><td>0.010</td><td>0.029</td><td>1.4</td><td>3.2</td><td rowspan="5">5,000</td><td rowspan="5">8,000</td><td>0.0009</td><td>0.09</td></tr>
<tr><td>TS4735</td><td>10</td><td>0.019</td><td>0.057</td><td>1.1</td><td>3.0</td><td>0.0014</td><td>0.1</td></tr>
<tr><td rowspan="2">#11</td><td rowspan="2">□ 28</td><td>TS4737</td><td>20</td><td>0.038</td><td>0.115</td><td>2.5</td><td>6.5</td><td>0.0064</td><td>0.18</td></tr>
<tr><td>TS4738</td><td>30</td><td>0.057</td><td>0.172</td><td>2.6</td><td>7.1</td><td>0.0083</td><td>0.2</td></tr>
<tr><td>#17</td><td>□ 42</td><td>TS4742</td><td>50</td><td>0.095</td><td>0.29</td><td>5.3</td><td>15.2</td><td>0.028</td><td>0.4</td></tr>
<tr><td rowspan="2">#23</td><td rowspan="2">□ 56.4</td><td>TS4746</td><td>98</td><td>0.19</td><td>0.57</td><td>6.3</td><td>17.7</td><td>4,900</td><td>6,200</td><td>0.093</td><td>0.6</td></tr>
<tr><td>TS4747</td><td>92</td><td>0.38</td><td>1.15</td><td>5.7</td><td>16.5</td><td>2,300</td><td>2,900</td><td>0.165</td><td>1.2</td></tr>
<tr><td rowspan="7">DC48</td><td rowspan="2">#8</td><td rowspan="2">□ 20</td><td>TS4734</td><td>5</td><td>0.010</td><td>0.029</td><td>1.4</td><td>3.2</td><td rowspan="7">5,000</td><td rowspan="6">8,000</td><td>0.0009</td><td>0.09</td></tr>
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<tr><td>#17</td><td>□ 42</td><td>TS4742</td><td>50</td><td>0.095</td><td>0.29</td><td>5.3</td><td>15.2</td><td>0.028</td><td>0.4</td></tr>
<tr><td rowspan="2">#23</td><td rowspan="2">□ 56.4</td><td>TS4746</td><td>100</td><td>0.19</td><td>0.57</td><td>6.3</td><td>17.7</td><td>0.093</td><td>0.6</td></tr>
<tr><td>TS4747</td><td>200</td><td>0.38</td><td>1.15</td><td>5.7</td><td>16.5</td><td>5,900</td><td>0.165</td><td>1.2</td></tr>
</table>

고전압 High voltage

<table>
<tr><th rowspan="2">전 압
Voltage</th><th colspan="2" rowspan="2">플 랜 지
Mounting</th><th rowspan="3">기본형식
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Current</th><th colspan="2">회전수
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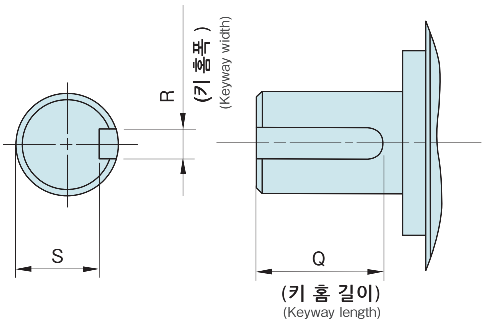
Max</th></tr>
<tr><th>[V]</th><th>[inch]</th><th>[mm]</th><th>[W]</th><th>[N・m]</th><th>[N・m]</th><th>[Arms]</th><th>[Arms]</th><th>[min^{-1}]</th><th>[min^{-1}]</th><th>[× 10^{-4}kg・m^2]</th><th>[kg]</th></tr>
<tr><td rowspan="9">AC100</td><td rowspan="2">#8</td><td rowspan="2">□ 20</td><td>TS4734</td><td>5</td><td>0.010</td><td>0.029</td><td>0.7</td><td>1.7</td><td rowspan="8">5,000</td><td rowspan="8">8,000</td><td>0.0009</td><td>0.09</td></tr>
<tr><td>TS4735</td><td>10</td><td>0.019</td><td>0.057</td><td>0.6</td><td>1.6</td><td>0.0014</td><td>0.1</td></tr>
<tr><td rowspan="2">#11</td><td rowspan="2">□ 28</td><td>TS4737</td><td>20</td><td>0.038</td><td>0.115</td><td>0.9</td><td>2.4</td><td>0.0064</td><td>0.18</td></tr>
<tr><td>TS4738</td><td>30</td><td>0.057</td><td>0.172</td><td>0.9</td><td>2.4</td><td>0.0083</td><td>0.2</td></tr>
<tr><td>#17</td><td>□ 42</td><td>TS4742</td><td>50</td><td>0.095</td><td>0.29</td><td>2.4</td><td>6.9</td><td>0.028</td><td>0.4</td></tr>
<tr><td rowspan="3">#23</td><td rowspan="3">□ 56.4</td><td>TS4746</td><td>100</td><td>0.19</td><td>0.57</td><td>3.0</td><td>8.4</td><td>0.093</td><td>0.6</td></tr>
<tr><td>TS4747</td><td>200</td><td>0.38</td><td>1.15</td><td>2.8</td><td>8.2</td><td>0.165</td><td>1.2</td></tr>
<tr><td>TS4748</td><td>300</td><td>0.57</td><td>1.72</td><td>2.8</td><td>8.2</td><td>0.27</td><td>1.9</td></tr>
<tr><td>#34</td><td>□ 86</td><td>TS4752</td><td>320</td><td>0.76</td><td>2.29</td><td>2.9</td><td>8.4</td><td>4,000</td><td>4,400</td><td>1.02</td><td>2.6</td></tr>
<tr><td rowspan="9">AC200</td><td rowspan="2">#8</td><td rowspan="2">□ 20</td><td>TS4734</td><td>5</td><td>0.010</td><td>0.029</td><td>0.7</td><td>1.7</td><td rowspan="9">5,000</td><td rowspan="9">8,000</td><td>0.0009</td><td>0.09</td></tr>
<tr><td>TS4735</td><td>10</td><td>0.019</td><td>0.057</td><td>0.6</td><td>1.6</td><td>0.0014</td><td>0.1</td></tr>
<tr><td rowspan="2">#11</td><td rowspan="2">□ 28</td><td>TS4737</td><td>20</td><td>0.038</td><td>0.115</td><td>0.9</td><td>2.4</td><td>0.0064</td><td>0.18</td></tr>
<tr><td>TS4738</td><td>30</td><td>0.057</td><td>0.172</td><td>0.9</td><td>2.4</td><td>0.0083</td><td>0.2</td></tr>
<tr><td>#17</td><td>□ 42</td><td>TS4742</td><td>50</td><td>0.095</td><td>0.29</td><td>2.4</td><td>6.9</td><td>0.028</td><td>0.4</td></tr>
<tr><td rowspan="3">#23</td><td rowspan="3">□ 56.4</td><td>TS4746</td><td>100</td><td>0.19</td><td>0.57</td><td>3.0</td><td>8.4</td><td>0.093</td><td>0.6</td></tr>
<tr><td>TS4747</td><td>200</td><td>0.38</td><td>1.15</td><td>2.8</td><td>8.2</td><td>0.165</td><td>1.2</td></tr>
<tr><td>TS4748</td><td>300</td><td>0.57</td><td>1.72</td><td>2.8</td><td>8.2</td><td>0.27</td><td>1.9</td></tr>
<tr><td>#34</td><td>□ 86</td><td>TS4752</td><td>400</td><td>0.76</td><td>2.29</td><td>2.9</td><td>8.4</td><td>1.02</td><td>2.6</td></tr>
</table>

축사양
Shaft Specifications

출력축 끝에 키홈이 있는 경우
For motors with shaft keyway

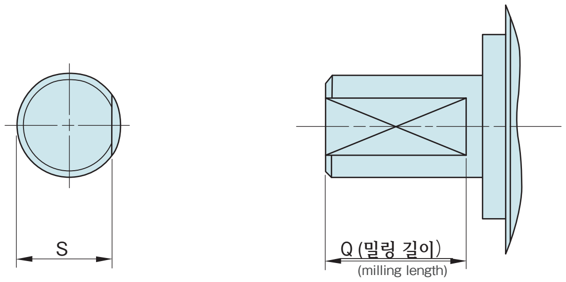


치수 mm Dimensions : mm

모 터 형 식 Motor model	Q(키 홈 길이) Q (milling length)	S	R(키 홈 폭) R (keyway width)	부속 키 사이즈 Supplied key size
TS4746	16	6.2(0,−0.2)	3P9 (−0.006,−0.031)	3X3X16(片丸) (JIS B 1301)
TS4747				
TS4748				
TS4752	20	11(0,−0.2)	5P9 (−0.012,−0.042)	5X5X20(片丸) (JIS B 1301)

※＃17（□42）사이즈 이하는 지원하지 않습니다.
Small size is not supported from ＃17（□42）

출력축 끝 한 면이 밀링인 경우
For motors with Single milled shaft

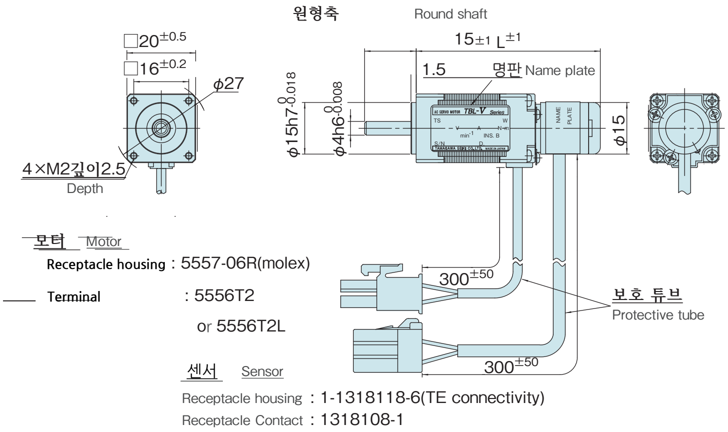


모 터 형 식 Motor model	Q(키 홈 길이) Q (milling length)	S
TS4734/TS4735	10	3.5(±0.2)
TS4737/TS4738	15	4.5(±0.2)
TS4742	15	4.5(±0.15)
TS4746/TS4747/TS4748	15	7.5(±0.2)
TS4752	25	13(±0.2)

외형도
Outline

(단위 : mm)
(Unit : mm)

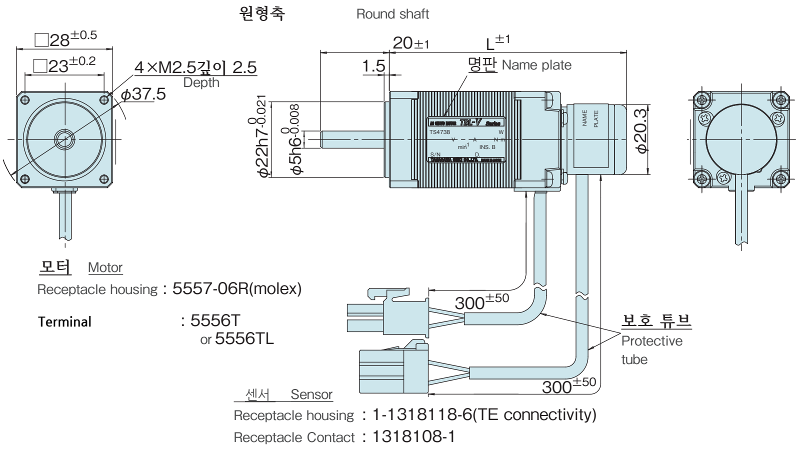
#8 □20mm(5W、10W)



L부 치수 L dimension

정격출력 Rated Output	5W	10W
형 식 Model	TS4734	TS4735
L(mm)	43.6	53.6

#11 □28mm(20W、30W)



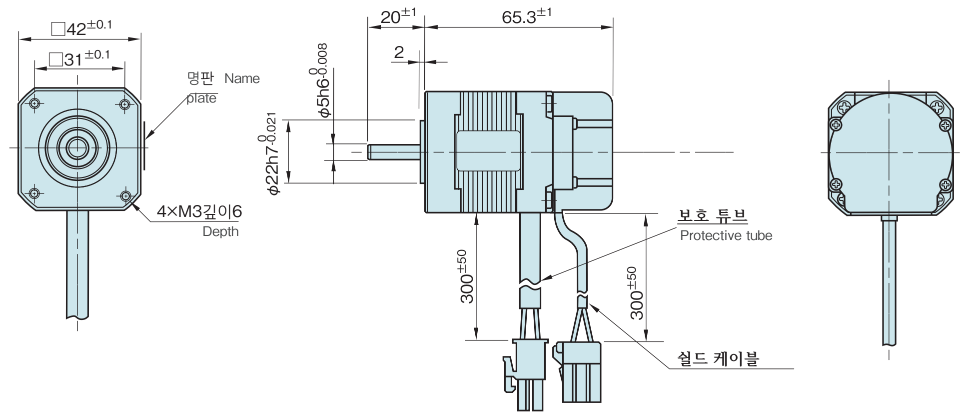
L부 치수 L dimension

정격출력 Rated Output	20W	30W
형 식 Model	TS4737	TS4738
L(mm)	59.0	69.0

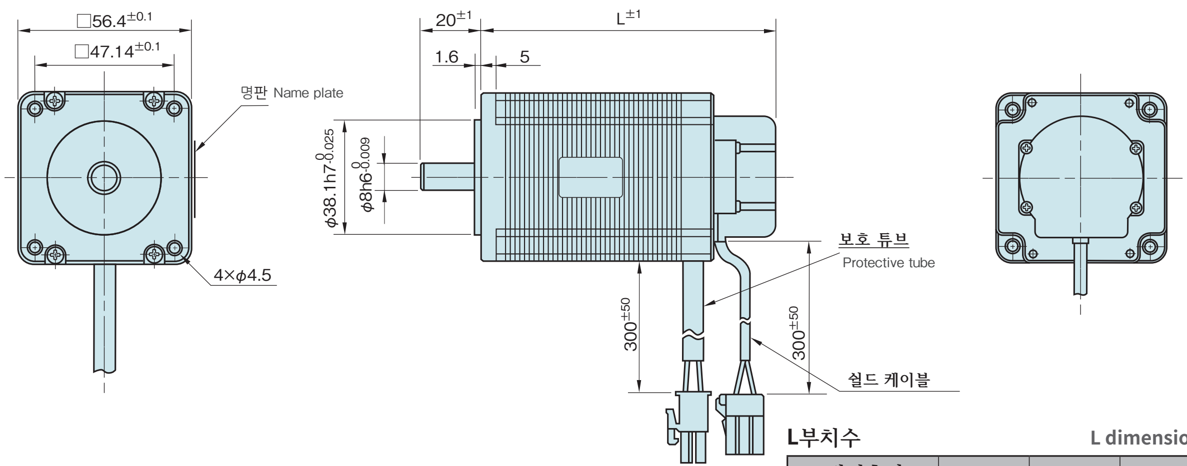
외형도 Outline

(단위 mm)
(Unit : mm)

#17 □42mm(50W)



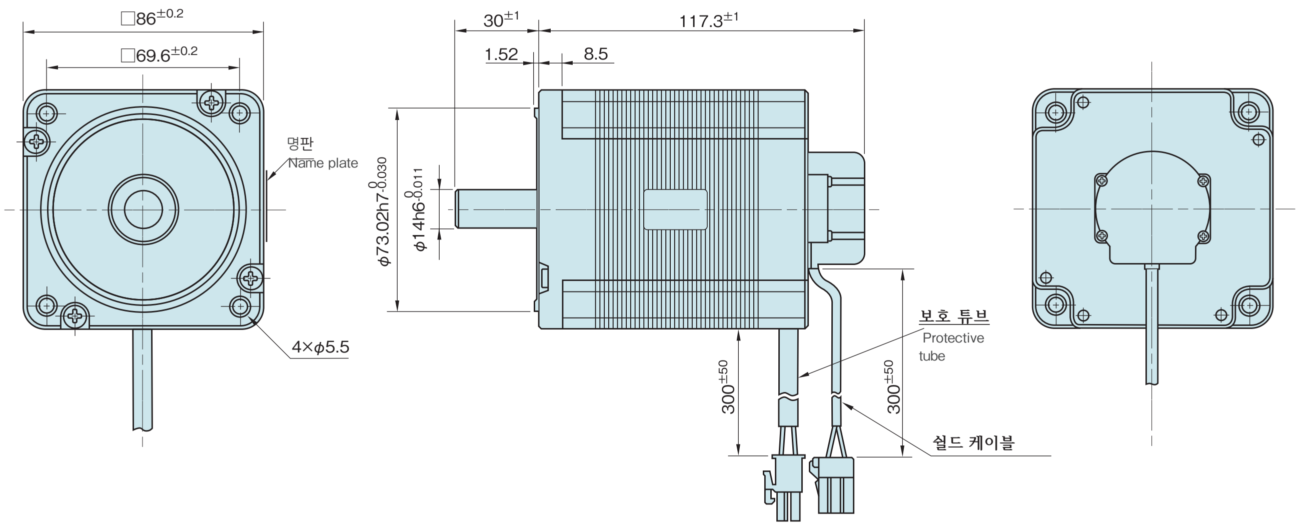
#23 □56.4mm(100W,200W,300W)



L부치수 **L dimension**

정격출력 Rated Output	100W	200W	300W	
형 식 Model	TS4746	TS4747	TS4748 N3200	TS4748 N3300
L(mm)	72.6	98.6	124.6	122.5

#34 □86mm(400W)



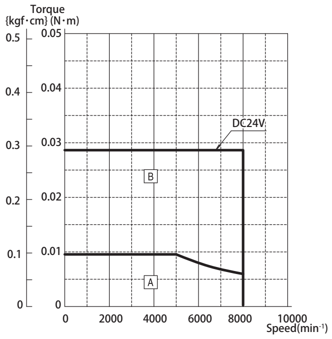
회전-토크특성(N-T특성)   Torque characteristic diagrams (N-T Characteristics)

DC24V用

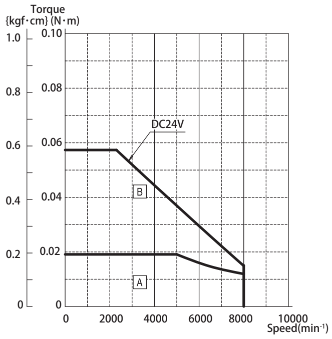
A: 연속영역
B: 가감속영역

A : Continuous operation area
B : Acceleration / deceleration area

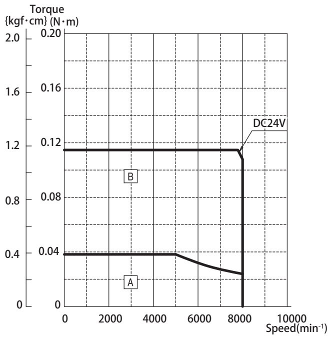
TS4734 N30□□ E500(5W)



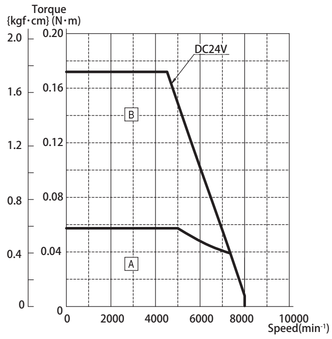
TS4735 N30□□ E500(10W)



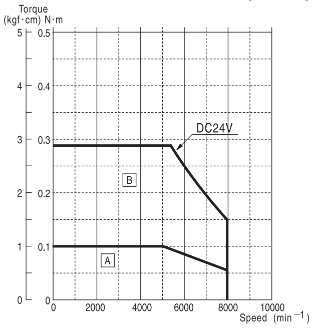
TS4737 N30□□ E500(20W)



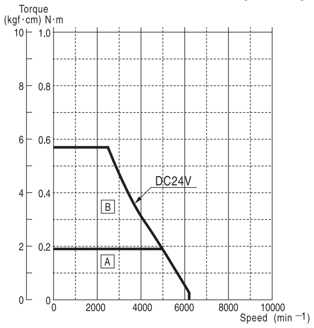
TS4738 N30□□ E500(30W)



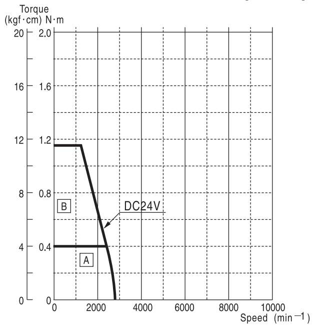
TS4742 N32□□ E500(50W)



TS4746 N32□□ E500(98W)



TS4747 N32□□ E500(92W)

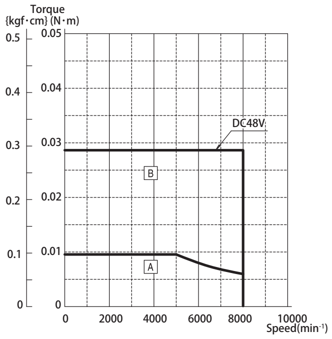


DC48V 用

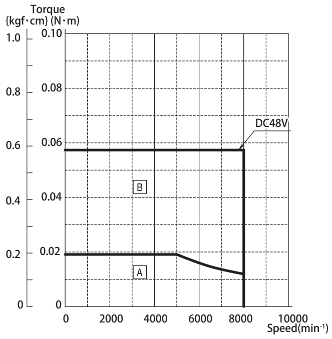
A: 연속영역
B: 가감속영역

A : Continuous operation area
B : Acceleration / deceleration area

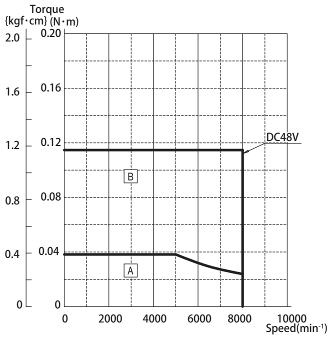
TS4734 N30□□ E600(5W)



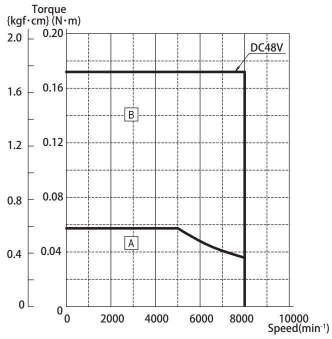
TS4735 N30□□ E600(10W)



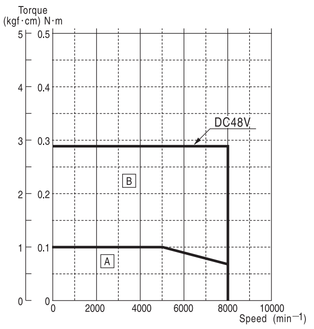
TS4737 N30□□ E600(20W)



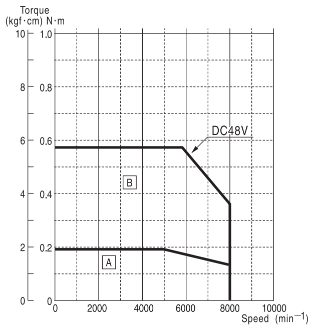
TS4738 N30□□ E600(30W)



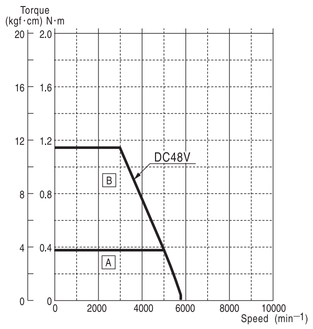
TS4742 N32□□ E600(50W)



TS4746 N32□□ E600(100W)



TS4747 N32□□ E600(200W)



회전-토크특성(N-T특성)

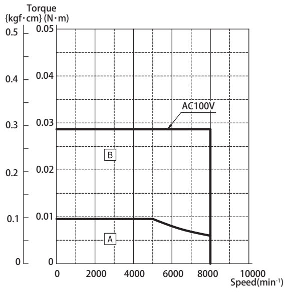
Torque characteristic diagrams (N-T Characteristics)

AC100V 用

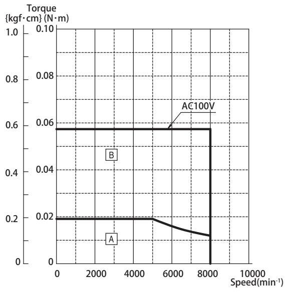
A: 연속영역
B: 가감속영역

A : Continuous operation area
B : Acceleration / deceleration area

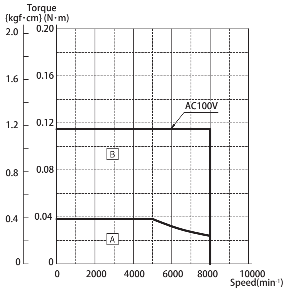
TS4734 N30□□ E100(5W)



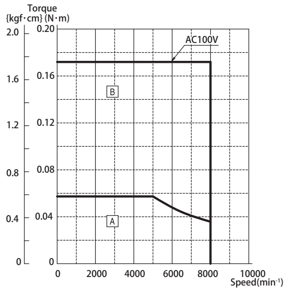
TS4735 N30□□ E100(10W)



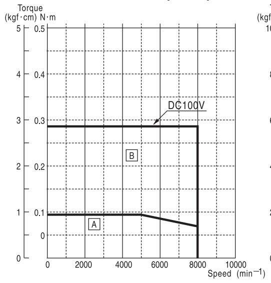
TS4737 N30□□ E100(20W)



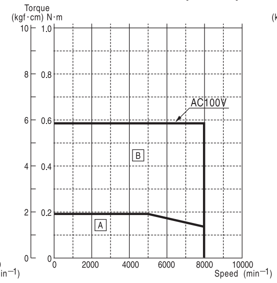
TS4738 N30□□ E100(30W)



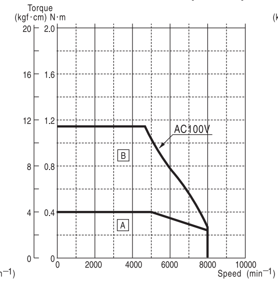
TS4742 N32□□ E100(50W)



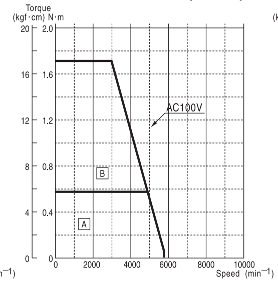
TS4746 N32□□ E100(100W)



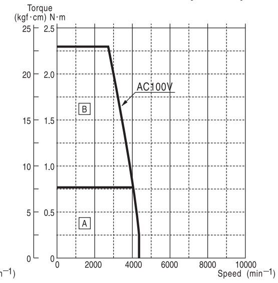
TS4747 N32□□ E100(200W)



TS4748 N32□□ E100(300W)



TS4752 N32□□ E100(320W)

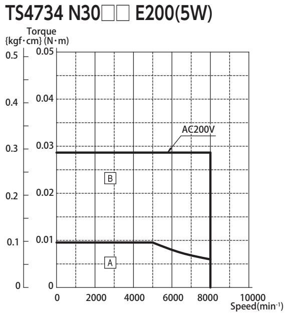


AC200V 用

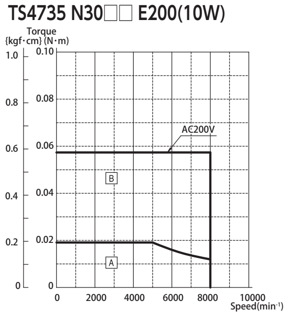
A: 연속영역
B: 가감속영역

A : Continuous operation area
B : Acceleration / deceleration area

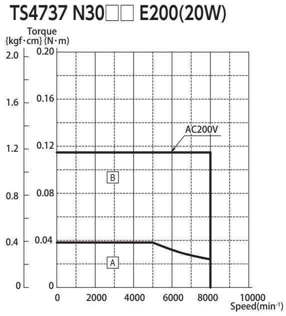
TS4734 N30□□ E200(5W)



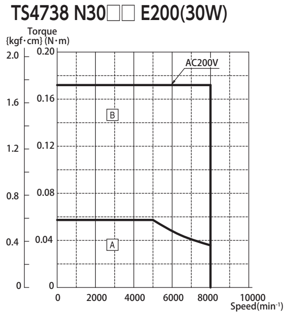
TS4735 N30□□ E200(10W)



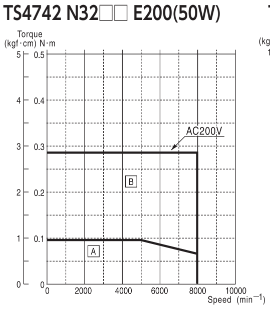
TS4737 N30□□ E200(20W)



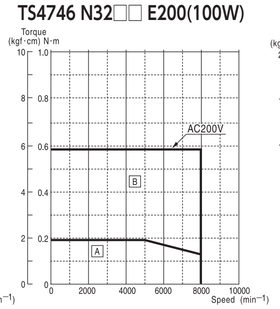
TS4738 N30□□ E200(30W)



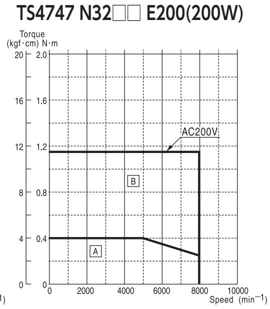
TS4742 N32□□ E200(50W)



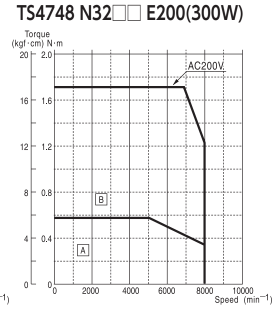
TS4746 N32□□ E200(100W)



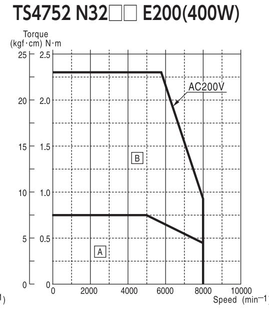
TS4747 N32□□ E200(200W)



TS4748 N32□□ E200(300W)

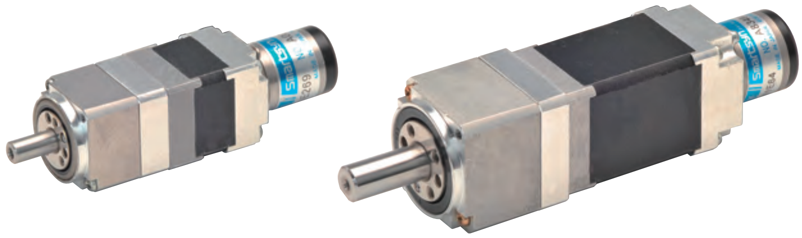


TS4752 N32□□ E200(400W)



TBL-V(브이) | # 감속기부착 AC서보모터

Reduction gear AC Servo Motors



하모닉 감속기 직결
Equipped with a Harmonic Drive® reducer

소형 논 백래시 하모닉 감속기를 직결한 콤팩트 고출력 서보 모터.

A compact and high-power servo motor combined with a small non-backlash Harmonic reducer.

고신뢰성 레졸버
High-reliability resolvers

내환경성(온도, 진동, 충격)이 뛰어난 세계 최소의 레졸버(Smartsyn) 탑재.

Equipped with the world's smallest resolver (Smartsyn) excellent in environment resistance (temperature, vibration, shock, etc.)

형식 Model designation

TS ①□□□□ N ②□□ ③□□ E ④□□□

①출력※

기호	사양
4734	5W
4735	10W
4737	20W
4738	30W

① Output ※

No.	Spec.
4734	5W
4735	10W
4737	20W
4738	30W

②센서사양

기호	센서사양
30	레졸버 (Smartsyn)

② Sensor Spec.

No.	Sensor Spec.
30	resolver (Smartsyn)

③감속비

기호	사양
11	1/30
12	1/50
13	1/100

③ Gear ratio

No.	Spec.
11	1/30
12	1/50
13	1/100

④전원사양

기호	사양
100	AC100V
200	AC200V
500	DC24V
600	DC48V

④ Power source Spec.

No.	Spec.
100	AC100V
200	AC200V
500	DC24V
600	DC48V

※감속기에 의해 제한됩니다. The output is limited with reduction gear.

기본사양 Basic Specifications

모터부 (감속기입력) Specifications of motors<Gear input>							감속기 Specifications of gear							
모터 플랜지 Motor mount flange		형 식 Model	출력※ Output	정 격 회전수 Rated speed	정격전류／최대전류 Rated current / Max current		취부플랜지 Mounting flange		감 속 비 Reduction ratio	정 격 회전수 Rated speed	최 대 회전수 Max speed	정격 토크 Rated torque	최대 토크 Peak torque	감속기 단일질량 Gear mass
					DC24,48V	AC100,200V								
[inch]	[mm]		[W]	[min⁻¹]	[Arms]	[Arms]	[inch]	[mm]		[min⁻¹]	[min⁻¹]	[N･m]	[N･m]	[kg]
#8	□20	TS4734	5	5,000	1.4/3.2	0.7/1.7	#8	□20.4	1/30	167	267	0.089	0.61	0.03
					1.4/3.2	0.7/1.7			1/50	100	160	0.21	1.1	0.03
					1.4/3.2	0.7/1.7			1/100	50	80	0.53	2.3	0.03
		TS4735	10	5,000	1.1/2.1	0.6/1.1			1/30	167	267	0.35	0.90	0.03
			9		1.0/2.3	0.5/1.2			1/50	100	160	0.53	1.8	0.03
			7		0.9/1.8	0.5/0.9			1/100	50	80	0.94	2.7	0.03
#11	□28	TS4737	20	5,000	2.7/6.9	0.9/2.4	#11	□30	1/30	167	267	0.63	2.7	0.12
					2.7/6.9	0.9/2.4			1/50	100	160	1.2	4.7	0.12
					2.7/6.5	0.9/2.3			1/100	50	80	2.6	9.0	0.12
		TS4738	30	5,000	2.6/5.7	0.9/2.0			1/30	167	267	1.2	3.3	0.12
			30		2.6/6.4	0.9/2.2			1/50	100	160	2.1	6.6	0.12
			24		2.2/4.5	0.7/1.6			1/100	50	80	3.3	9.0	0.12

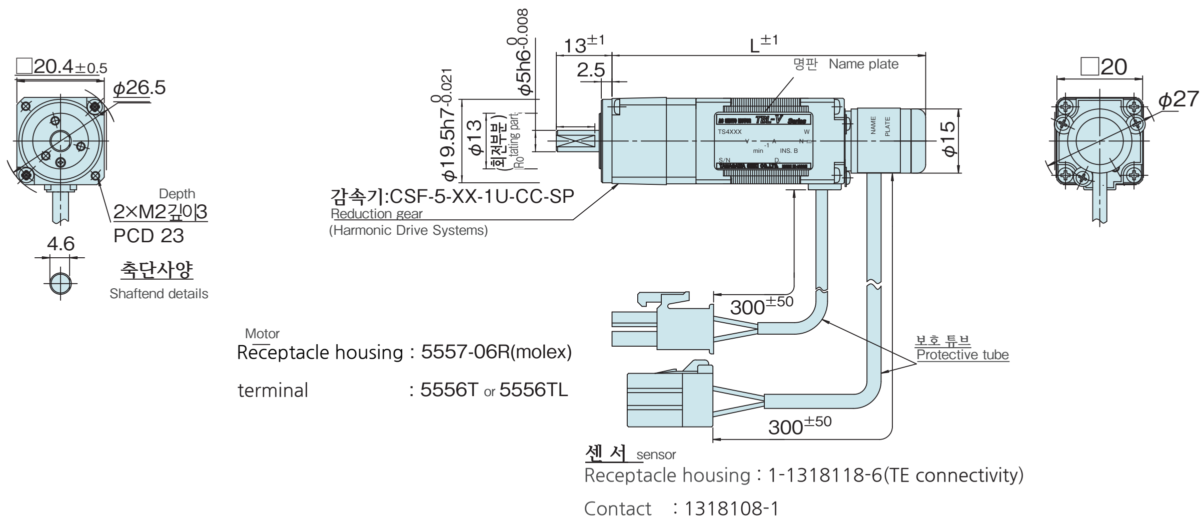
※감속기에 의해 제한됩니다. The output is limited with reduction gear.

외형도 Outline

(단위 : mm)
(Unit : mm)

#8 □20mm(5W,10W)

Single milled shaft

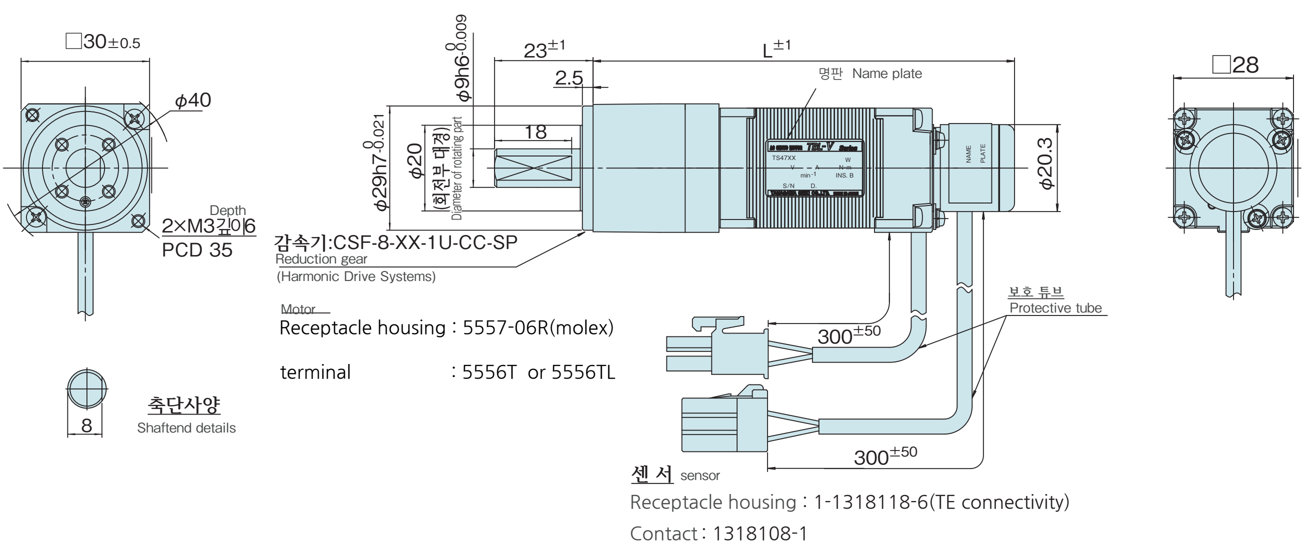


L부 치수 **L dimension**

정격출력 Rated Output	5W	10W
형 식 Model	TS4734	TS4735
L(mm)	63.2	73.2

#11 □28mm(20W,30W)

Single milled shaft

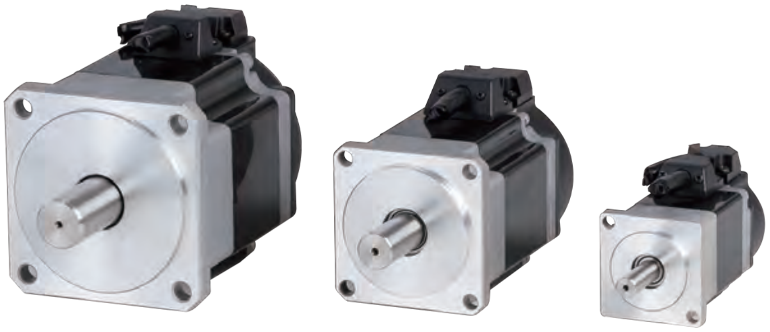


L부 치수 **L dimension**

정격출력 Rated Output	20W	30W
형 식 Model	TS4737	TS4738
L(mm)	88.4	98.4

TBL-iIV | 중관성type 소형 (□40~80mm)

Middle Inertia



특장점

- 초콤팩트 사이즈(업계 톱클래스)
- 고성능, 고신뢰성 센서 탑재
  고분해능 시리얼 엔코더 탑재 (17bit or 23bit)
  내환경성(온도, 진동, 충격)이 뛰어난 세계 최소 레졸버(Smartsyn) 탑재
- 저진동 · low cogging

Features

- Super compact size (Industry top class)
- Fitted with high performance, high reliability sensors
  - Fitted with a high resolution serial encoder (17 bit or 23 bit)
  - Fitted with world's smallest high environmental resistance (temperature, vibration, shock) resolver (Smartsyn)
- Low vibration, low cogging

형식 — Model designation

TSM □□□□ N □□ □□ E □□□

① ② ③ ④

①출력

기호	사양
3101	30W
3102	50W
3104	100W
3201	100W
3202	200W
3204	400W
3301	200W
3302	400W
3303	600W
3304	750W

②센서사양

기호	센서사양	브레이크 없음	브레이크 있음
10	17bit INC 엔코더	●	
13	23bit INC 엔코더	●	
20	17bit ABS 엔코더	●	
23	23bit ABS 엔코더	●	
30	1X 레졸버 (□ 40)	●	
33	1X 레졸버 (□ 60,80)	●	
60	17bit INC 엔코더		●
63	23bit INC 엔코더		●
70	17bit ABS 엔코더		●
73	23bit ABS 엔코더		●
80	1X 레졸버 (□ 40)		●
83	1X 레졸버 (□ 60,80)		●

③축단사양

기호	축단사양	오일씰 없음	오일씰 있음
00	원형축 (표준사양)	●	
01	더블 밀링	●	
02	키 홈	●	
05	원형축 (표준사양)		●
06	더블 밀링		●
07	키 홈		●

④전원사양

기호	사양
020	DC24V (※ 2)
040	DC48V (※ 2)
100	AC100V (※ 1)
200	AC200V

※ 1 TSM3303、3304 는 제외
※ 2 TSM3204、3302、3303、3304 는 제외
조합에 따라서는 대응할 수 없는 경우도 있습니다. 필요 시에는 문의 부탁 드립니다.

① Output

No.	Spec.
3101	30W
3102	50W
3104	100W
3201	100W
3202	200W
3204	400W
3301	200W
3302	400W
3303	600W
3304	750W

② Sensor Spec.

No.	Sensor Spec.	Brake Without	Brake With
10	17 bit INC Encoder	●	
13	23 bit INC Encoder	●	
20	17 bit ABS Encoder	●	
23	23 bit ABS Encoder	●	
30	1X Resolver (motor flange size □ 40)	●	
33	1X Resolver (motor flange size □ 60, □ 80)	●	
60	17 bit INC Encoder		●
63	23 bit INC Encoder		●
70	17 bit ABS Encoder		●
73	23 bit ABS Encoder		●
80	1X Resolver (motor flange size □ 40)		●
83	1X Resolver (motor flange size □ 60, □ 80)		●

③ Shaft end spec

No.	Shaft end spec	Oil seal Without	Oil seal With
00	Round shaft (Standard)	●	
01	Double-milled	●	
02	Keyway	●	
05	Oil seal Round shaft		●
06	Oil seal Double-milled		●
07	Oil seal Keyway		●

④ Power source spec

No.	Spec.
020	DC24V (※ 2)
040	DC48V (※ 2)
100	AC100V (※ 1)
200	AC200V

※ 1 TSM3303, 3304 are the exception.
※ 2 TSM3204, 3302, 3303, 3304, are the exception
Some combinations are non-compatible. Please inquire when ordering.

기본사양 Basic Specifications

저전압 Low voltage

전 압 Voltage	플랜지 Mounting flange	형 식 Model	출 력 Output	토 크 Torque 정 격 Rated	토 크 Torque 최대 Max	전 류 Current 정 격 Rated	전 류 Current 최대 Max	회전수 Speed 정 격 Rated	회전수 Speed 최대 Max	로터 관성 Rotor inertia 【×10⁻⁴kg·m²】 No brake	로터 관성 Rotor inertia With brake※	질 량 Mass 【kg】 No brake	질 량 Mass Withbrake
【V】	【mm】		【W】	【N·m】	【N·m】	【Arms】	【Arms】	【min⁻¹】	【min⁻¹】				
DC24	□40	TSM3101	30	0.095	0.33	3.5	10.6	3,000	6,000	0.023	0.028	0.3	0.5
		TSM3102	50	0.159	0.56	4.3	13.8		5,000	0.033	0.038	0.4	0.6
		TSM3104	100	0.318	1.11	7.1	23.8		4,600	0.062	0.067	0.5	0.7
	□60	TSM3201	100	0.318	1.11	8.0	25.7	3,000	4,600	0.12	0.17	0.6	0.9
DC48	□40	TSM3101	30	0.095	0.33	3.5	10.6	3,000	6,000	0.023	0.028	0.3	0.5
		TSM3102	50	0.159	0.56	3.2	10.3			0.033	0.038	0.4	0.6
		TSM3104	100	0.318	1.11	7.1	23.7			0.062	0.067	0.5	0.7
	□60	TSM3201	100	0.318	1.11	6.5	20.8	3,000	6,000	0.12	0.17	0.6	0.9
		TSM3202	200	0.64	2.24	6.2	20.7		3,800	0.24	0.28	0.8	1.3
	□80	TSM3301	200	0.64	2.24	8.0	25.7	3,000	4,600	0.45	0.60	1.1	1.7

※Including inertia of brake.

고전압 High voltage

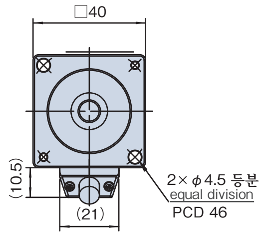
전 압 Voltage	플랜지 Mounting flange	형 식 Model	출 력 Output	토 크 Torque 정 격 Rated	토 크 Torque 최대 Max	전 류 Current 정 격 Rated	전 류 Current 최대 Max	회전수 Speed 정 격 Rated	회전수 Speed 최대 Max	로터 관성 Rotor inertia 【×10⁻⁴kg·m²】 No brake	로터 관성 Rotor inertia With brake※	질 량 Mass 【kg】 No brake	질 량 Mass Withbrake
【V】	【mm】		【W】	【N·m】	【N·m】	【Arms】	【Arms】	【min⁻¹】	【min⁻¹】				
AC100	□40	TSM3101	30	0.095	0.33	2.2	6.9	3,000	6,000	0.023	0.028	0.3	0.5
		TSM3102	50	0.159	0.56	2.1	6.8			0.033	0.039	0.4	0.6
		TSM3104	100	0.318	1.11	2.1	7.3			0.062	0.067	0.5	0.7
	□60	TSM3201	100	0.318	1.11	2.5	8.1	3,000	6,000	0.12	0.17	0.6	0.9
		TSM3202	200	0.64	2.24	4.4	14.6			0.24	0.28	0.8	1.3
		TSM3204	400	1.27	4.46	7.0	23.8			0.46	0.50	1.1	1.7
	□80	TSM3301	200	0.64	2.24	4.2	13.7	3,000	6,000	0.45	0.60	1.1	1.8
		TSM3302	400	1.27	4.46	7.0	23.4			0.83	1.00	1.6	2.3
AC200	□40	TSM3101	30	0.095	0.33	1.1	3.4	3,000	6,000	0.023	0.028	0.3	0.5
		TSM3102	50	0.159	0.56	1.1	3.4			0.033	0.038	0.4	0.6
		TSM3104	100	0.318	1.11	1.4	4.7			0.062	0.067	0.5	0.7
	□60	TSM3201	100	0.318	1.11	1.5	4.6	3,000	6,000	0.12	0.17	0.6	0.9
		TSM3202	200	0.64	2.24	2.2	7.3			0.24	0.28	0.8	1.3
		TSM3204	400	1.27	4.46	3.5	12.1			0.46	0.50	1.1	1.7
	□80	TSM3301	200	0.64	2.24	2.1	6.9	3,000	6,000	0.45	0.60	1.1	1.8
		TSM3302	400	1.27	4.46	3.6	12.6			0.83	1.00	1.6	2.3
		TSM3303	600	1.91	6.69	4.8	16.5			1.21	1.38	2.1	2.8
		TSM3304	750	2.39	8.36	6.5	22.1			1.50	1.66	2.4	3.2

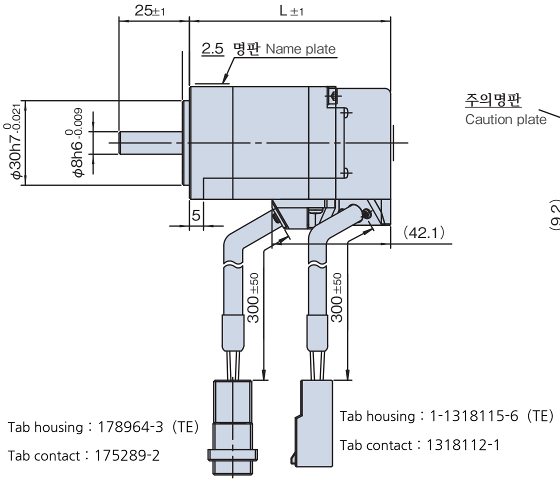
※Including inertia of brake.

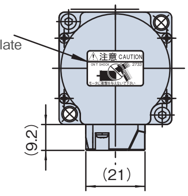
외형도 (브레이크 없음) Outline (No brake Type)

(단위 mm)
(Unit : mm)

□40mm (30W,50W,100W)



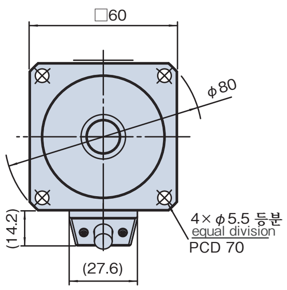


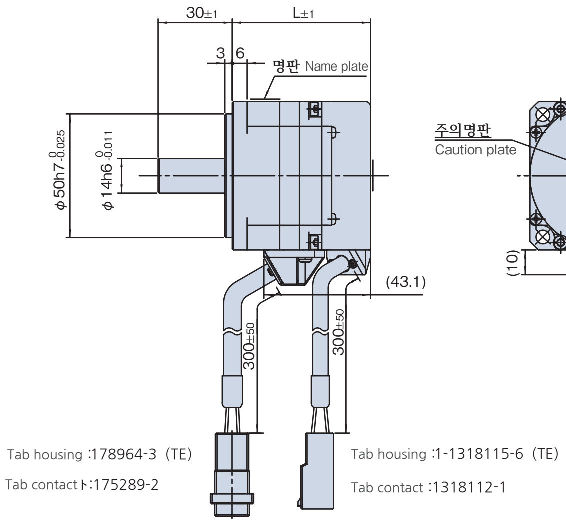


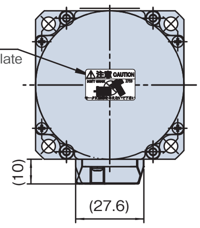
L부 치수 L dimension

정격출력 Rated output	30W	50W	100W
형 식 Model	TSM3101	TSM3102	TSM3104
L(mm)	51.4	56.4	71.4

□60mm (100W • 편평) Thin



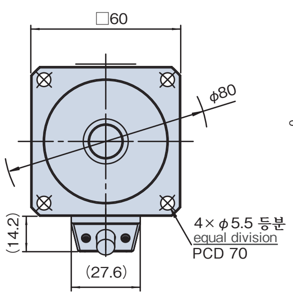


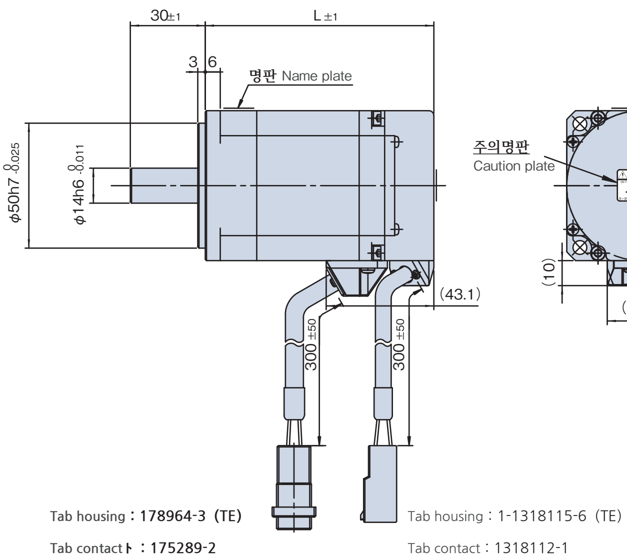


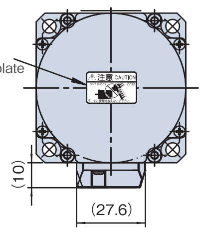
L부 치수 L dimension

정격출력 Rated output	100W 편평 Thin
형 식 Model	TSM3201
L(mm)	58.5

□60mm (200W,400W • 표준) Standard







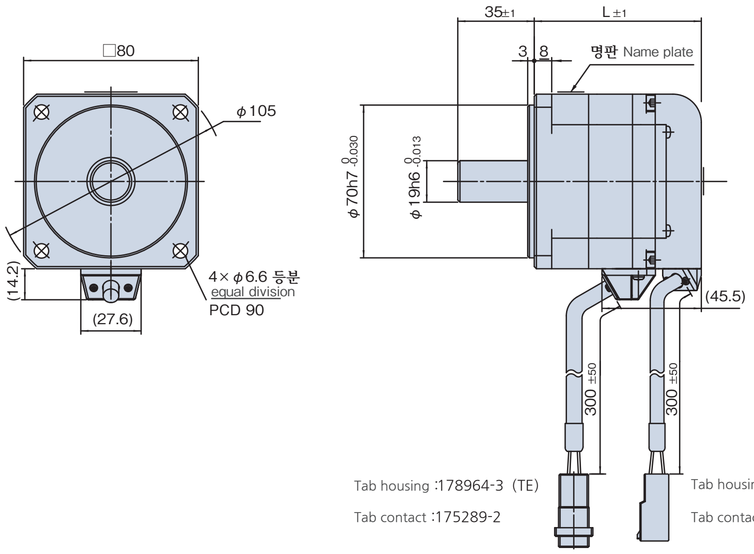
L부 치수 L dimension

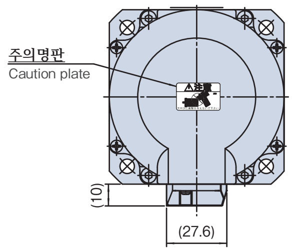
정격출력 Rated output	200W 표준 Standard	400W 표준 Standard
형 식 Model	TSM3202	TSM3204
L(mm)	69.5	91.5

외형도 (브레이크 없음) Outline (No brake Type)

(단위：mm)
(Unit：mm)

□80mm (200,400W・편평) Thin





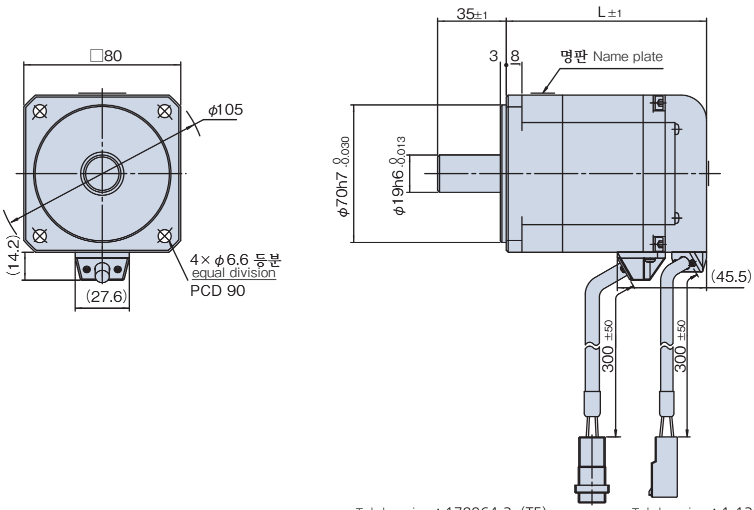
Tab housing :178964-3 (TE)
Tab contact :175289-2

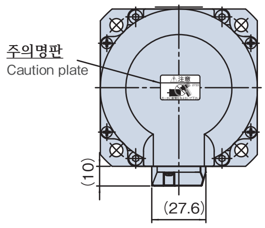
Tab housing :1-1318115-6 (TE)
Tab contact :1318112-1

L부 치수 L dimension

정격출력 Rated output	200W 편평 Thin	400W 편 평 Thin
형 식 Model	TSM3301	TSM3302
L(mm)	69.1	81.1

□80mm (600,750W・표준) Standard





Tab housing：178964-3 (TE)
Tab contact：175289-2

Tab housing：1-1318115-6 (TE)
Tab contact：1318112-1

L부 치수 L dimension

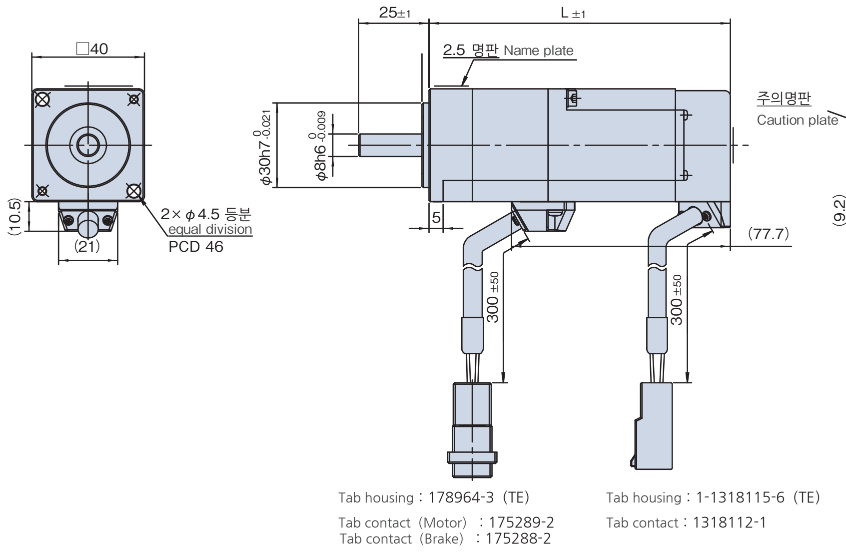
정격출력 Rated output	600 W 표준 Standard	750W 표준 Standard
형 식 Model	TSM3303	TSM3304
L(mm)	93.1	102.1

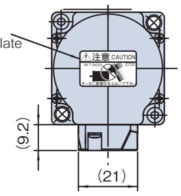
※센서 사양에 따라 주의 명판이 없는 경우가 있습니다.
※Depending on sensor specifications, there may be no caution plate.

외형도 (브레이크 있음) Outline (Brake Type)

(단위 : mm)
(Unit : mm)

□40mm (30W,50W,100W)

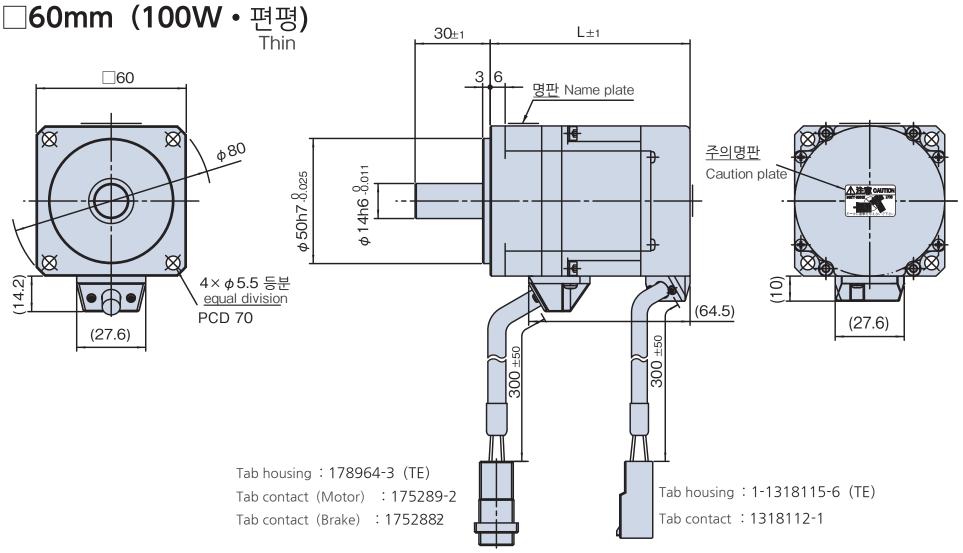




L부 치수 L dimension

정격출력 Rated output	30W	50W	100W
형 식 Model	TSM3101	TSM3102	TSM3104
L(mm)	87.0	92.0	107.0

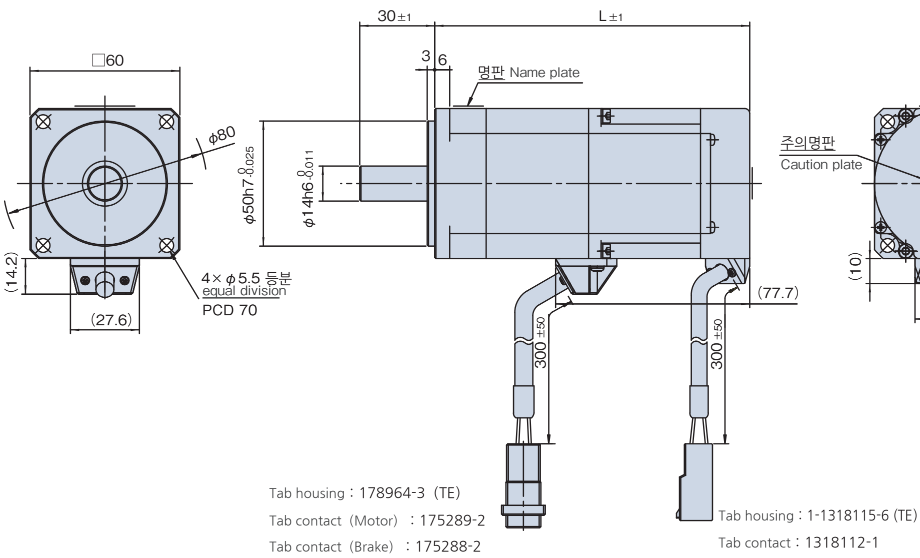
□60mm (100W • 편평 Thin)

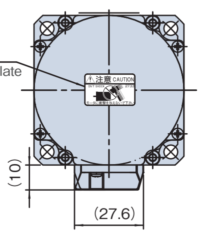


L부 치수 L dimension

정격출력 Rated output	100W 편 평 Thin
형 식 Model	TSM3201
L(mm)	79.9

□60mm (200,400W • 표준 Standard)





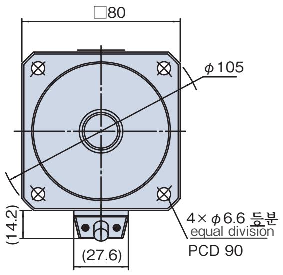
L부 치수 L dimension

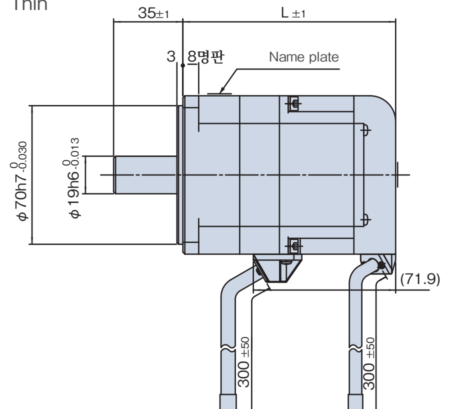
정격출력 Rated output	200W 표준 Standard	400W 표준 Standard
형 식 Model	TSM3202	TSM3204
L(mm)	104.1	126.1

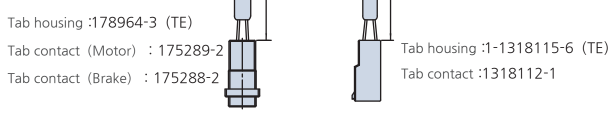
외형도 (브레이크 있음) Outline (Brake Type)

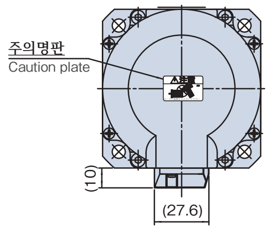
(단위：mm)
(Unit：mm)

□80mm（200,400W・편평）Thin





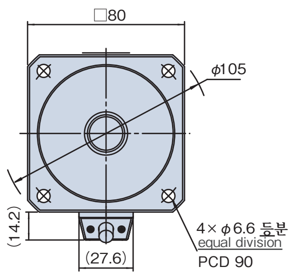


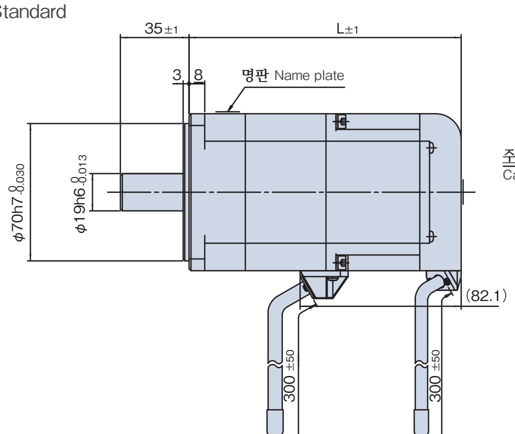


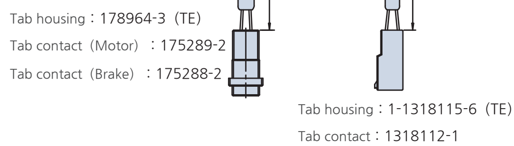
L부 치수 L dimension

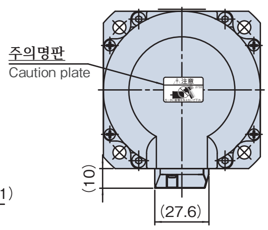
정격출력 Rated output	200W 편 평 Thin	400W 편 평 Thin
형 식 Model	TSM3301	TSM3302
L(mm)	95.5	107.5

□80mm（600,750W・표준）Standard









L부 치수 L dimension

정격출력 Rated output	600W 표준 Standard	750W 표준 Standard
형 식 Model	TSM3303	TSM3304
L(mm)	129.7	138.7

※센서 사양에 따라 주의 명판이 없는 경우가 있습니다.
※Depending on sensor specifications, there may be no caution plate.

회전-토크특성（N－T특성） DC24V　　Torque characteristic diagrams (N-T Characteristics) DC24V

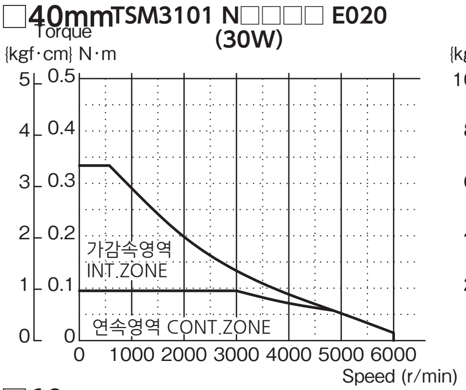
하기 특성은 선간 입력 전압(정류전압) DC24V에서의 특성값입니다.

(구동회로에 의해 제한되는 경우가 있습니다.)

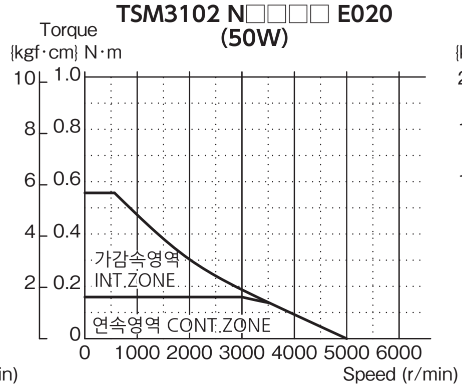
The characteristic graphs below give characteristic values for line-to-line input voltages (rectified voltage) at DC24 V .
(It may be limited by the drive circuit.)

□40mm

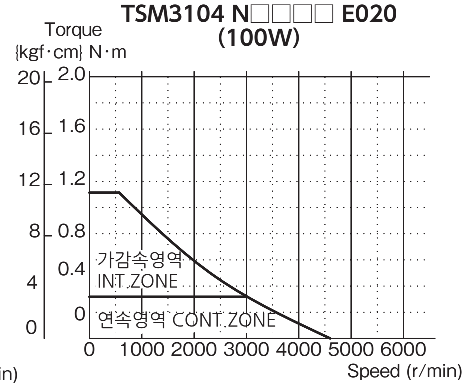
TSM3101 N□□□□ E020 (30W)



TSM3102 N□□□□ E020 (50W)

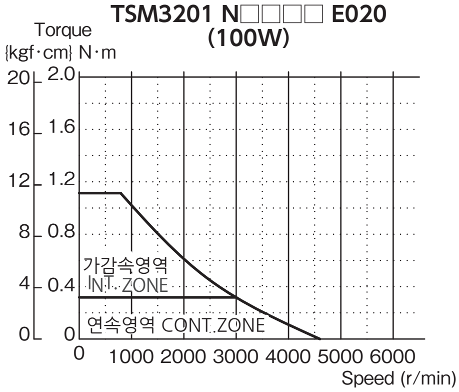


TSM3104 N□□□□ E020 (100W)



□60mm

TSM3201 N□□□□ E020 (100W)



회전-토크특성（N－T특성） DC48V　　Torque characteristic diagrams (N-T Characteristics) DC48V

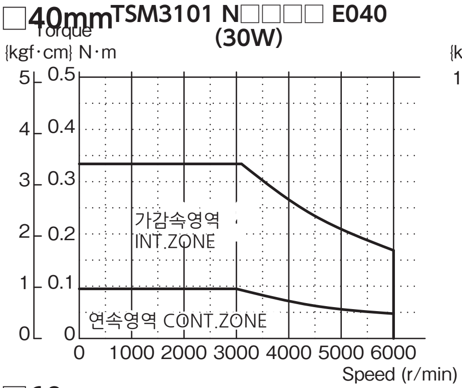
하기 특성은 선간 입력 전압(정류전압) DC48V에서의 특성값입니다.

(구동회로에 의해 제한되는 경우가 있습니다.)

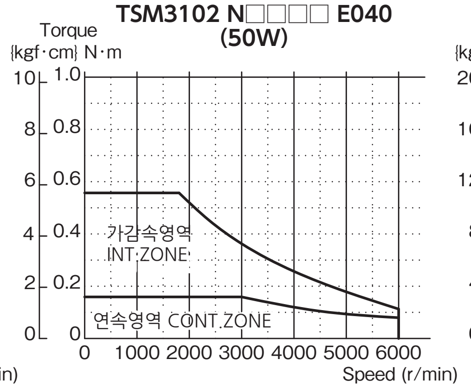
The characteristic graphs below give characteristic values for line-to-line input voltages (rectified voltage) at DC48 V .
(It may be limited by the drive circuit.)

□40mm

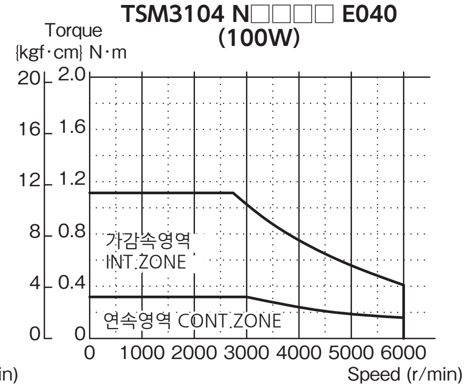
TSM3101 N□□□□ E040 (30W)



TSM3102 N□□□□ E040 (50W)

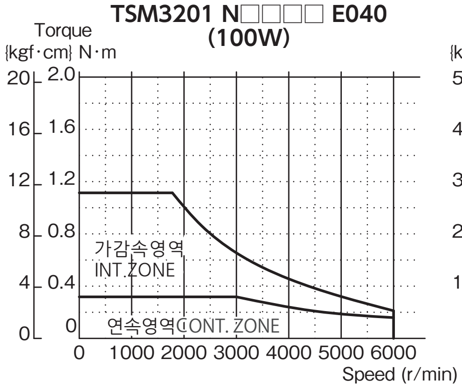


TSM3104 N□□□□ E040 (100W)

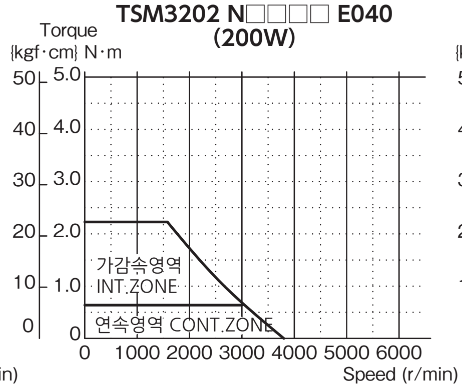


□60mm

TSM3201 N□□□□ E040 (100W)

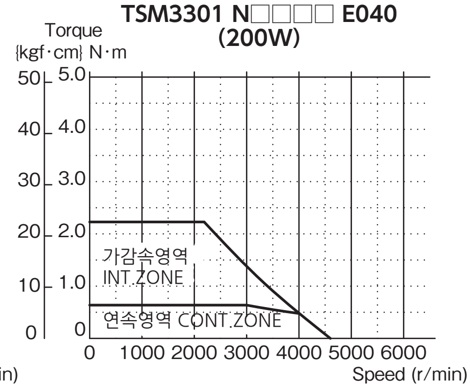


TSM3202 N□□□□ E040 (200W)



□80mm

TSM3301 N□□□□ E040 (200W)



회전-토크특성(N-T특성)　AC100V　Torque characteristic diagrams (N-T Characteristics)

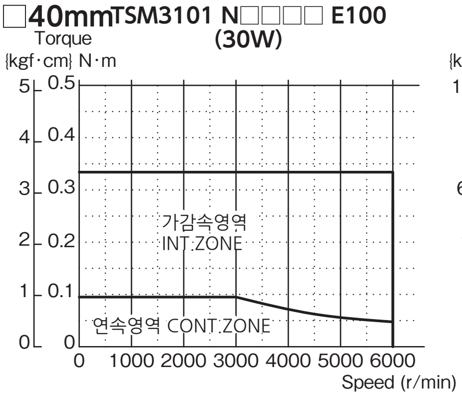
하기 특성은 선간 입력 전압(정류전압)DC105V（AC100V）에서의 특성값입니다.

(구동회로에 의해 제한되는 경우가 있습니다.)

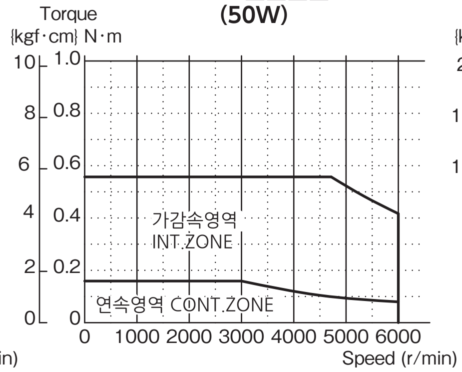
The characteristic graphs below give characteristic values for line-to-line input voltages (rectified voltage) at DC105 V (AC 100 V). (It may be limited by the drive circuit.)

□40mm

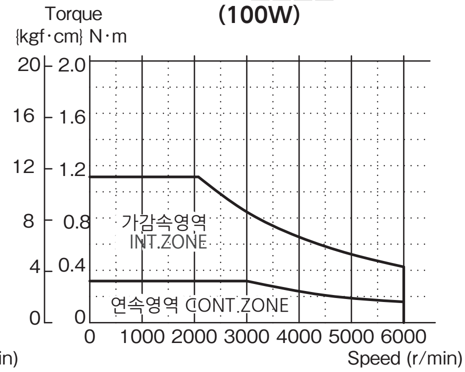
TSM3101 N□□□□ E100 (30W)



TSM3102 N□□□□ E100 (50W)

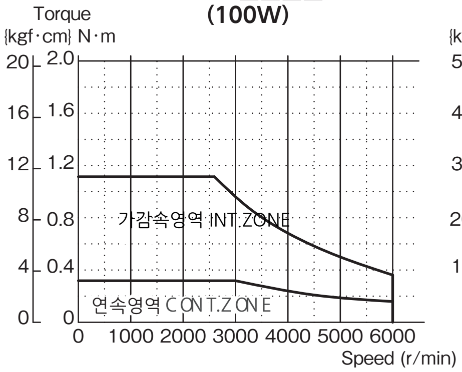


TSM3104 N□□□□ E100 (100W)

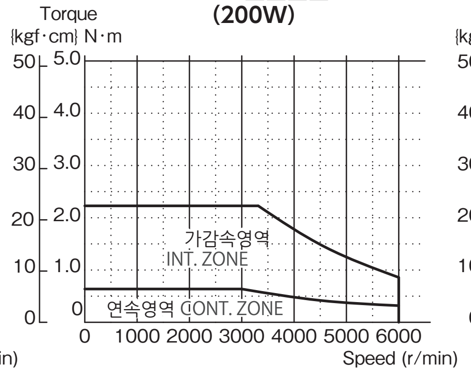


□60mm

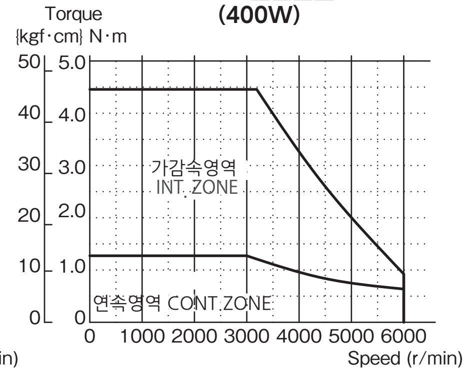
TSM3201 N□□□□ E100 (100W)



TSM3202 N□□□□ E100 (200W)

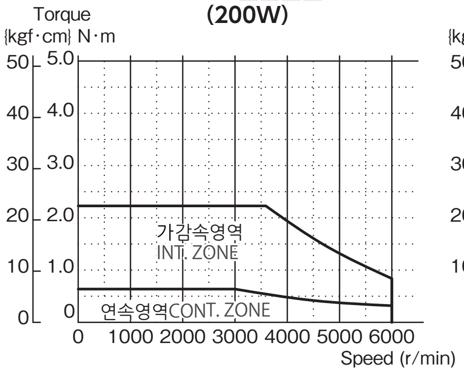


TSM3204 N□□□□ E100 (400W)

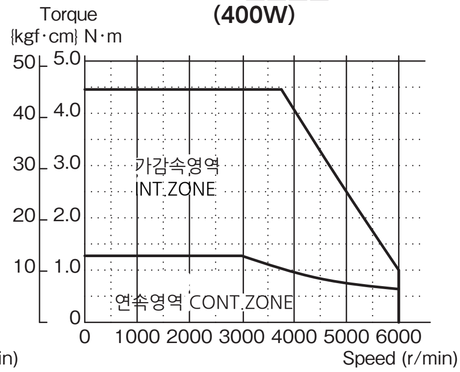


□80mm

TSM3301 N□□□□ E100 (200W)



TSM3302 N□□□□ E100 (400W)



회전-토크특성(N-T특성) AC200V Torque characteristic diagrams (N-T Characteristics)

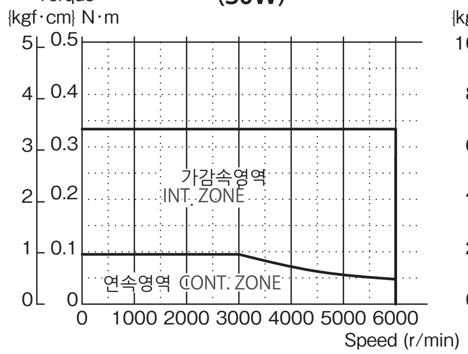
하기 특성은 선간 입력 전압(정류전압) DC210V (AC200V) 에서의 특성값입니다.

(구동회로에 의해 제한되는 경우가 있습니다.)

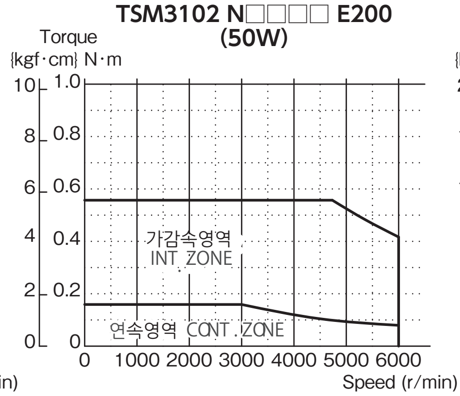
The characteristic graphs below give characteristic values for line-to-line input voltages (rectified voltage) at DC210 V (AC 200 V). (It may be limited by the drive circuit.)

□40mm

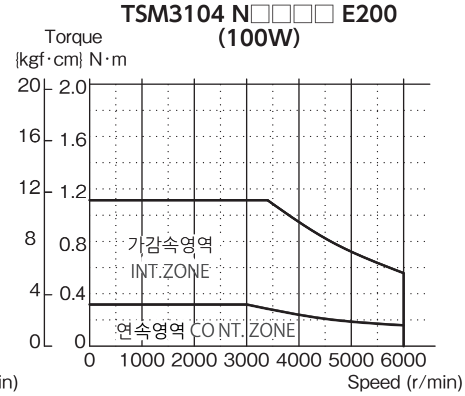
TSM3101 N□□□□ E200 (30W)



TSM3102 N□□□□ E200 (50W)

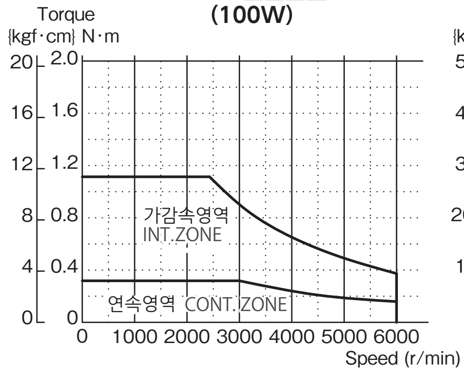


TSM3104 N□□□□ E200 (100W)

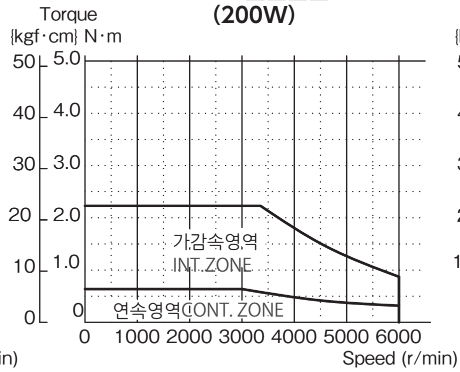


□60mm

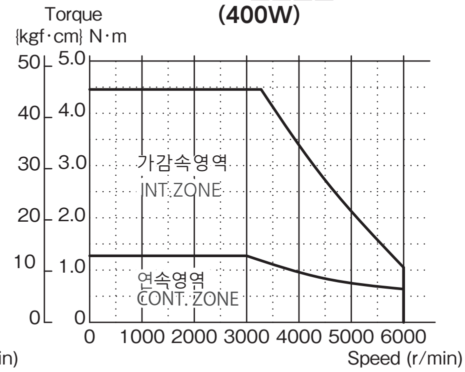
TSM3201 N□□□□ E200 (100W)



TSM3202 N□□□□ E200 (200W)

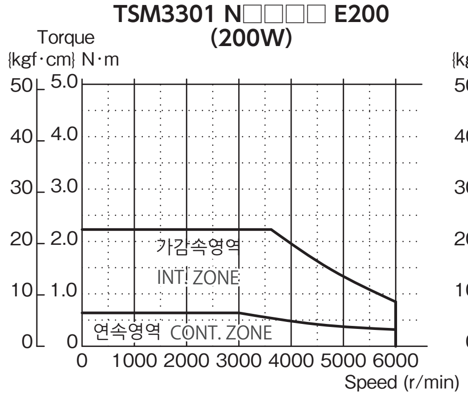


TSM3204 N□□□□ E200 (400W)

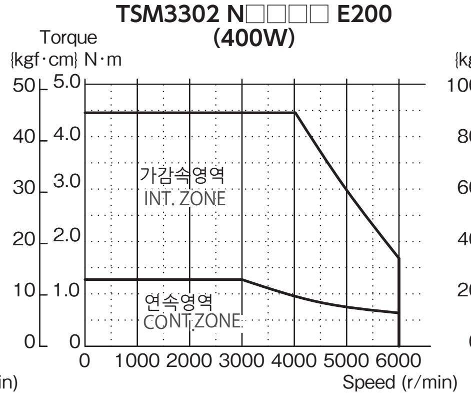


□80mm

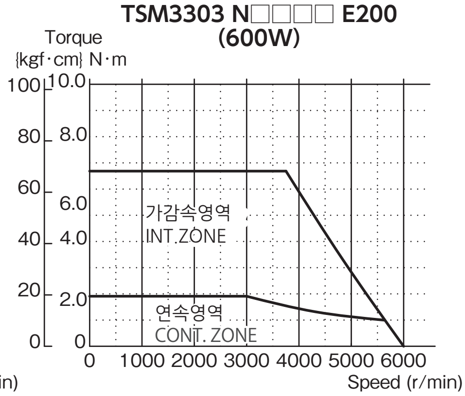
TSM3301 N□□□□ E200 (200W)



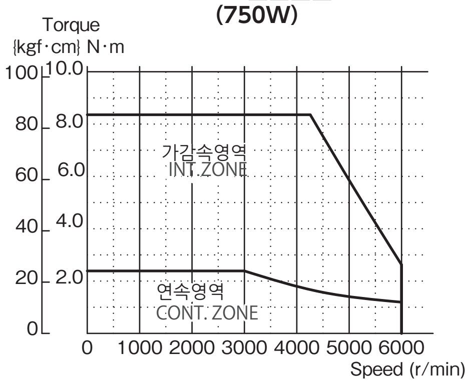
TSM3302 N□□□□ E200 (400W)



TSM3303 N□□□□ E200 (600W)

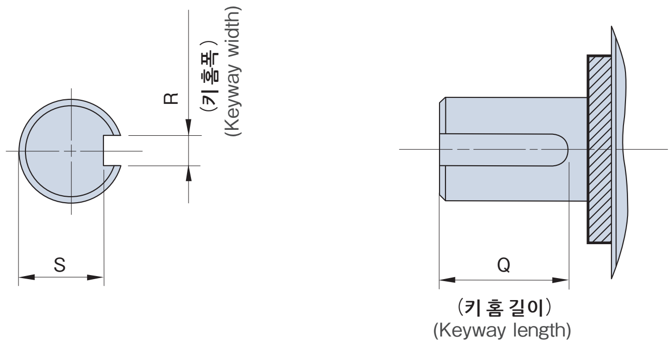


TSM3304 N□□□□ E200 (750W)



축사양 Shaft Specifications

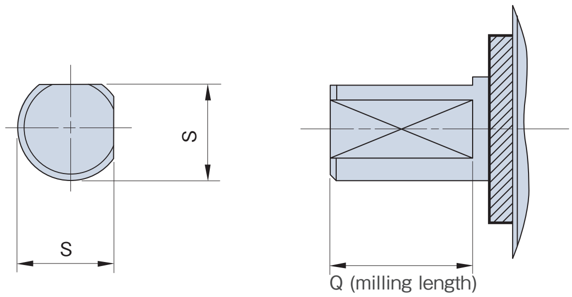
출력축 끝에 키홈이 있는 경우 For motors with shaft keyway



치수mm
Dimensions: mm

모터형식 Motor model	Q（키홈길이） Q(Keyway length)	S	R（키홈폭） R(Keyway width)	부속키 사이즈 Supplied key size
TSM3101	16	6.2（0,-0.2）	3P9（-0.006,-0.031）	3×3×16（片丸） (Round at one end) （JIS B 1301）
TSM3102				
TSM3104				
TSM3201	20	11（0,-0.2）	5P9（-0.012,-0.042）	5×5×20（片丸） (Round at one end) （JIS B 1301）
TSM3202				
TSM3204				
TSM3301	25	15.5（0,-0.2）	6P9（-0.012,-0.042）	6×6×25（片丸） (Round at one end) （JIS B 1301）
TSM3302				
TSM3303				
TSM3304				

출력축 끝 두 면이 밀링인 경우 For motors with double milled shaft



모터형식 Motor model	Q（키홈길이） Q(Keyway length)	S
TSM3101	16	7.5（±0.2）
TSM3102		
TSM3104		
TSM3201	20	13（±0.2）
TSM3202		
TSM3204		
TSM3301	25	17.5（±0.2）
TSM3302		
TSM3303		
TSM3304		

브레이크가 장착된 경우 When fitted with brake

브레이크가 장착된 경우, 모터축이 위 또는 아래로 사용될 때
동작 조건 등에 의해 모터 수명에 영향을 미칠 가능성이 있습니다.

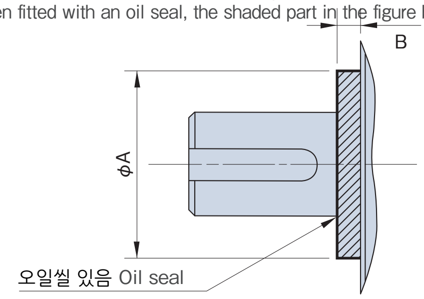
When fitted with a brake, motor life may be affected by operating conditions etc., if the motor shaft is used pointing up or down.

오일씰이 장착된 경우 For motors fitted with oil seal

오일씰을 부착한 경우, 아래 조건에서 사용해 주십시오.

·기름면은, 오일씰 립보다 밑돌게 사용해주십시오.
·오일씰에는 기름의 비말이 닿는 정도로만 사용해주십시오.
※오일씰을 부착할 경우, 아래 그림의 음영 부분이 추가됩니다.

When fitted with an oil seal, use the motor under the following conditions:
・Keep the oil level below the lip of the oil seal.
・Use the oil seal to the extent that oil splashes.
※When fitted with an oil seal, the shaded part in the figure below is added.



모터형식 Motor model	φA（mm）	B（mm）
TSM3101	20	7
TSM3102		
TSM3104		
TSM3201	27	7
TSM3202		
TSM3204		
TSM3301	34	7
TSM3302		
TSM3303		
TSM3304		

TBL-*i*IV 대형AC서보모터 (□100~180mm)

Large Size AC Servo motor

특장점

- 초콤팩트 사이즈(업계 톱클래스)
- 고성능, 고신뢰성 센서 탑재
  - 고분해능 시리얼 엔코더 탑재 (17bit or 23bit)
  - 내환경성(온도, 진동, 충격)이 뛰어난 세계 최소 레졸버(Smartsyn) 탑재
- 저진동·low cogging
- 전원 AC200V(표준) AC400V에도 대응 가능
- 센서 탈부착이 용이하여 메인터넌스성 향상

Features

- Super compact size (Industry top class)
- Fitted with high performance, high reliability sensors
  - · Fitted with a high resolution serial encoder (17 bit or 23 bit)
  - · Fitted with world's smallest high environmental resistance (temperature, vibration, shock) resolver (Smartsyn)
- Low vibration, low cogging
- AC 200 V power supply (standard), AC 400 V also available
- Easy sensor detachment and improved maintainability

형식 Model designation

TSM □□□□ N □□ □□ E □ □ □

① = □□□□, ② = first □□, ③ = second □□, ④ = □ after E, ⑤ = next □

①출력

기호	사양
3406	1.0kW
3409	1.5kW
3412	2.0kW
3506	3.0kW
3508	4.0kW
3510	5.0kW
3610	5.5kW
3614	7.5kW

②센서사양

기호	센서사양	브레이크 없음	브레이크 있음
20	17bit ABS 엔코더	●	
23	23bit ABS 엔코더	●	
30	레졸버	●	
70	17bit ABS 엔코더		●
73	23bit ABS 엔코더		●
80	레졸버		●

③축단사양

기호	축단사양	오일씰 없음	오일씰 있음
00	원형축	●	
02	키	●	
05	원형축		●
07	키		●

④전원사양

기호	사양
2	200V 用
4	400V 用

⑤정격회전수

기호	사양
2	2000min-1 (□ 180mm만 있음)
3	3000min-1 (□100、130mm만 있음)

기호	사양
0	표준사양
他	특수사양

No.	Spec.
0	Standard specs.
他	Other :special specs.

① Output

No.	Spec.
3406	1.0kW
3409	1.5kW
3412	2.0kW
3506	3.0kW
3508	4.0kW
3510	5.0kW
3610	5.5kW
3614	7.5kW

② Sensor Spec.

No.	Sensor Spec.	Brake Without	Brake With
20	17 bit ABS Encoder	●	
23	23 bit ABS Encoder	●	
30	1X Resolver	●	
70	17 bit ABS Encoder		●
73	23 bit ABS Encoder		●
80	1X Resolver		●

③ Shaft end Spec.

No.	Shaft end spec	Oil seal Without	Oil seal With
00	Round shaft (Standard)	●	
02	Key	●	
05	Round shaft		●
07	Key		●

④ Power source specifications

No.	Spec.
2	200V
4	400V

⑤ Rated speed

No.	Spec.
2	2000min^{-1} (motor flange size □180)
3	3000min^{-1} (motor flange size □100, □130)

※조합에 따라서는 대응할 수 없는 경우도 있습니다. 필요 시에는 문의 부탁 드립니다.
※ Some combinations are non-compatible. Please inquire when ordering.

기본사양 Basic Specifications

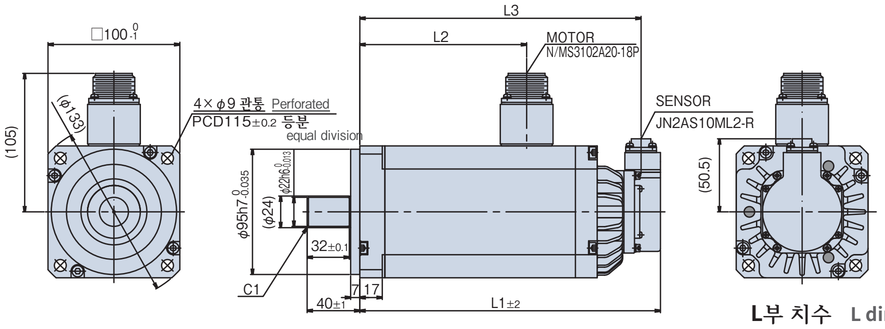
플랜지 Mounting flange 【mm】	형식 Model	출력 Output 【kW】	토크 Torque 정격 Rated 【N·m】	토크 Torque 최대 Max 【N·m】	전압 Voltage 【V】	전류 Current 정격 Rated 【Arms】	전류 Current 최대 Max 【Arms】	회전수 Speed 정격 Rated 【min^{-1}】	회전수 Speed 최대 Max 【min^{-1}】	로터관성 Rotor inertia 【×10^{-4}kg·m^2】 No Brake	로터관성 Rotor inertia 【×10^{-4}kg·m^2】 With brake ※	질량 Mass 【kg】 No brake	질량 Mass 【kg】 Withbrake
□100	TSM3406	1.0	3.2	9.6	200	7.4	21.3	3,000	4,500	2.05	2.82	3.0	4.8
					400	3.7	10.6						
	TSM3409	1.5	4.8	14.4	200	10.4	30.6			2.89	3.62	4.1	5.9
					400	5.2	15.5						
	TSM3412	2.0	6.4	19.2	200	13.5	40.5			3.72	4.46	5.5	7.3
					400	7.4	22.2						
□130	TSM3506	3.0	9.5	28.5	200	19.3	58.7	3,000	4,500	7.46	9.99	7.6	10.1
					400	9.9	31.6						
	TSM3508	4.0	12.7	38.1	200	25.0	76.8			9.82	12.34	8.5	11.0
					400	12.4	39.9						
	TSM3510	5.0	15.9	47.7	200	31.3	96.8			12.3	14.74	9.5	12.0
					400	16.7	54.1						
□180	TSM3610	5.5	26.2	65.5	200	34.3	88.0	2,000	3,000	40.3	47.9	16.8	22.8
					400	18.4	45.1						
	TSM3614	7.5	35.8	89.5	200	46.4	119.8			56.4	63.6	20.6	26.6
					400	23.2	57.0						

※ Including inertia of brake.

외형도 Outline

(단위 : mm)
(Unit : mm)

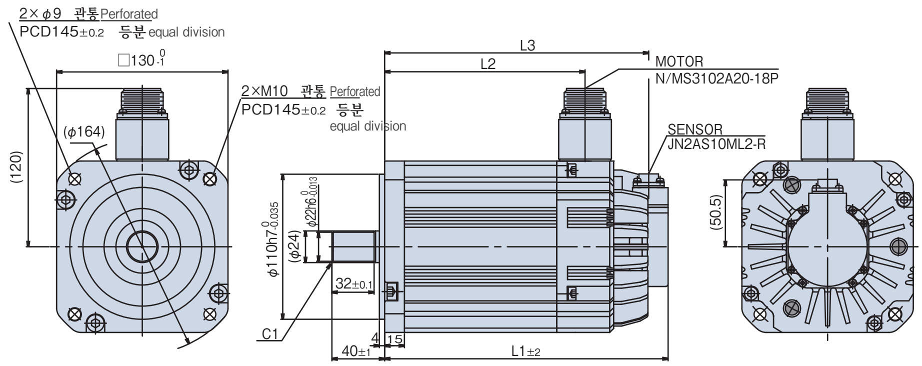
□100mm(1.0kW,1.5kW,2.0kW)



L부 치수 L dimension

정격출력 Rated output		1.0kW	1.5kW	2.0kW
형식 Model		TSM3406	TSM3409	TSM3412
Without brake	L1 (mm)	159	174	189
	L2 (mm)	66.5	81.5	96.5
	L3 (mm)	146.6	161.6	176.6
With brake	L1 (mm)	203	218	233
	L2 (mm)	66.5	81.5	96.5
	L3 (mm)	190.6	205.6	220.6

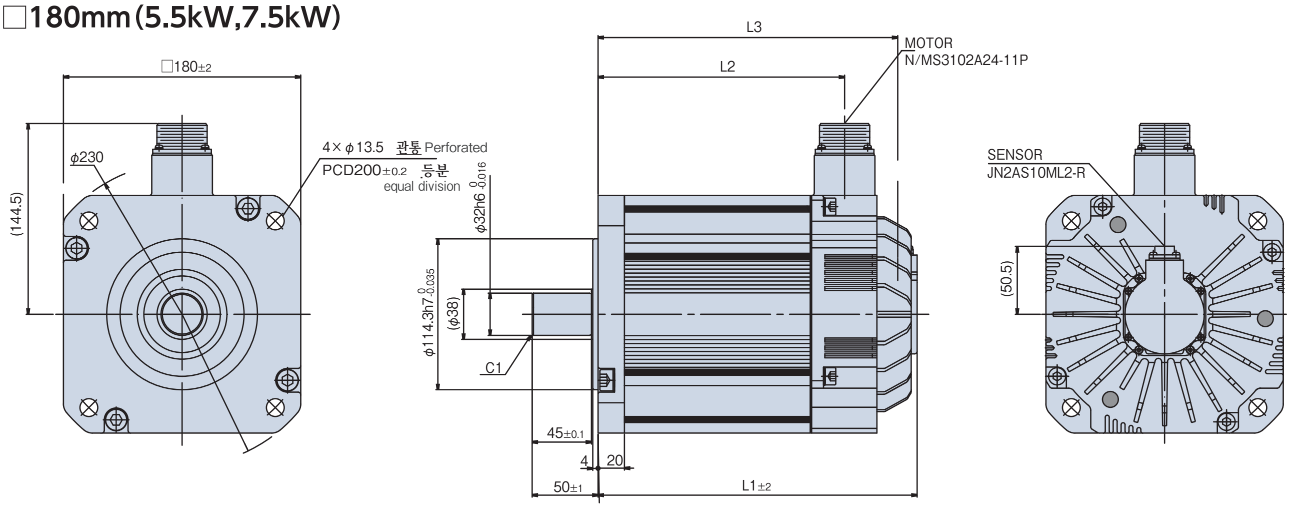
□130mm(3.0kW,4.0kW,5.0kW)



L부 치수 L dimension

정격출력 Rated output		3.0kW	4.0kW	5.0kW
형식 Model		TSM3506	TSM3508	TSM3510
Without brake	L1 (mm)	171	185	199
	L2 (mm)	102	116	130
	L3 (mm)	158.5	172.5	186.5
With brake	L1 (mm)	193.5	207.5	221.5
	L2 (mm)	124.5	138.5	152.5
	L3 (mm)	181	195	209

□180mm(5.5kW,7.5kW)



L부 치수 L dimension

정격출력 Rated output		5.5kW	7.5kW
형식 Model		TSM3610	TSM3614
Without brake	L1 (mm)	197	221
	L2 (mm)	137	161
	L3 (mm)	184.7	208.7
With brake	L1 (mm)	223.5	247.5
	L2 (mm)	163.5	187.5
	L3 (mm)	211.2	235.2

※레졸바 탑재의 경우 외형이 다를 수 있습니다.
※The outline of the resolver type may be different.

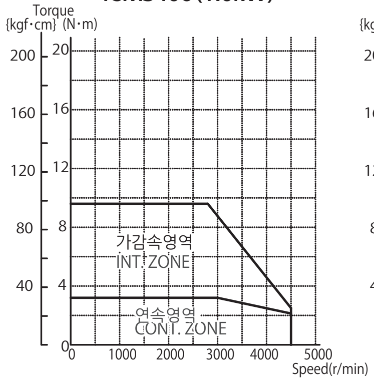
회전-토크특성(N-T특성)　AC200V 用　Torque characteristic diagrams (N-T Characteristics)

하기 특성은 선간 입력 전압(정류전압) DC210V（AC200V）에서의 특성값입니다.

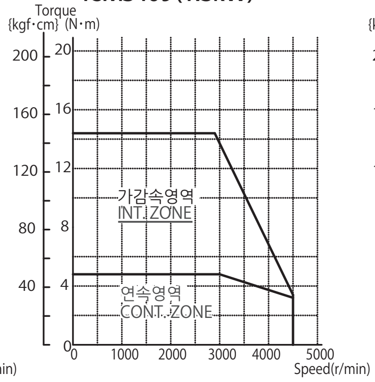
(구동회로에 의해 제한되는 경우가 있습니다.) The characteristic graphs below give characteristic values for line-to-line input voltages (rectified voltage) at DC210 V (AC 200 V). (It may be limited by the drive circuit.)

□100mm

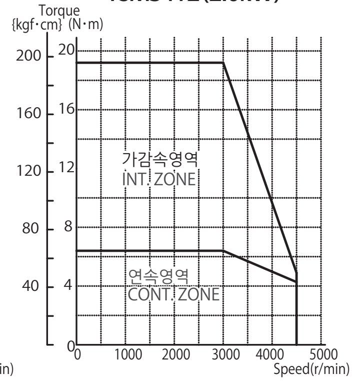
TSM3406 (1.0kW)



TSM3409 (1.5kW)

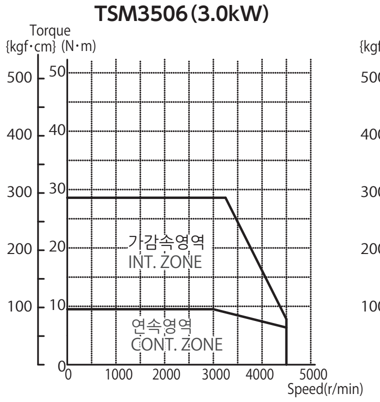


TSM3412 (2.0kW)

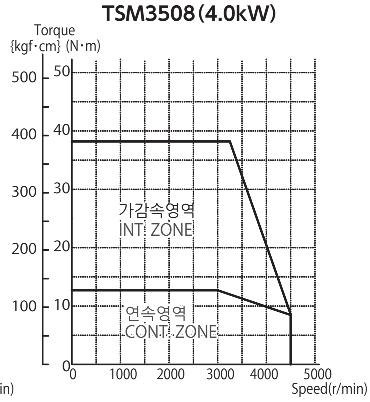


□130mm

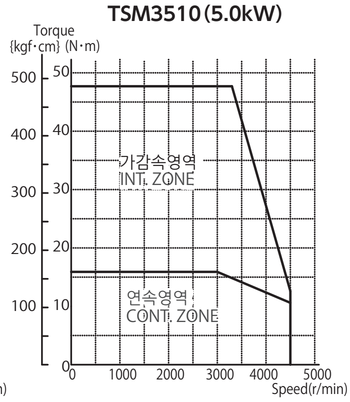
TSM3506 (3.0kW)



TSM3508 (4.0kW)

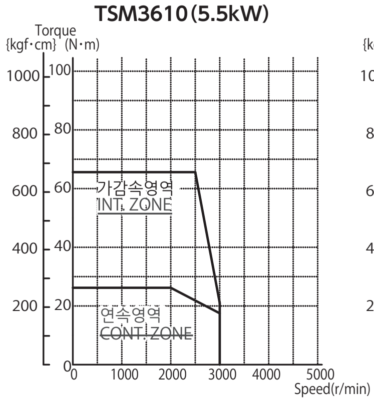


TSM3510 (5.0kW)

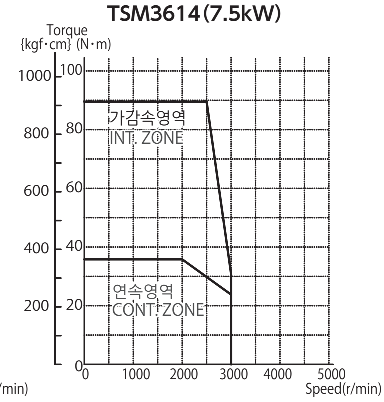


□180mm

TSM3610 (5.5kW)



TSM3614 (7.5kW)



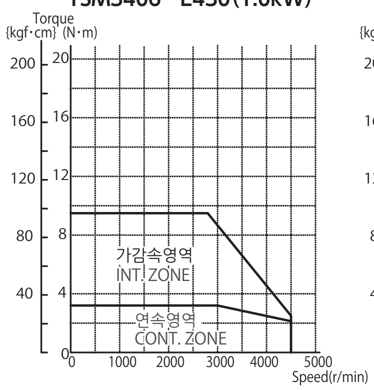
회전-토크특성(N-T특성)AC400V 用　Torque characteristic diagrams (N-T Characteristics)

하기 특성은 선간 입력 전압(정류전압) DC420V（AC400V）에서의 특성값입니다.

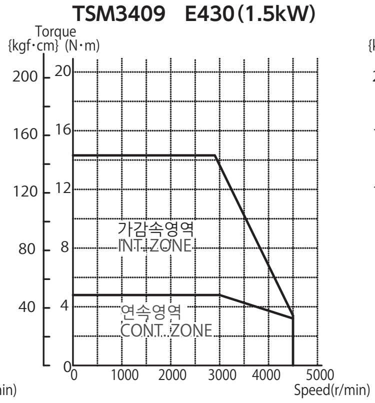
(구동회로에 의해 제한되는 경우가 있습니다.) The characteristic graphs below give characteristic values for line-to-line input voltages (rectified voltage) at DC420 V (AC 400 V). (It may be limited by the drive circuit.)

□100mm

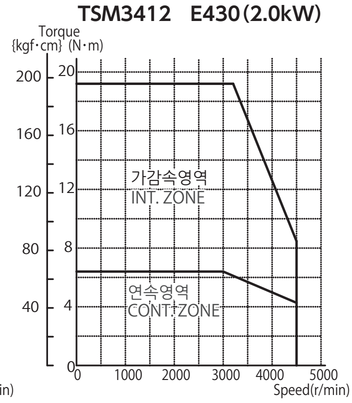
TSM3406　E430 (1.0kW)



TSM3409　E430 (1.5kW)



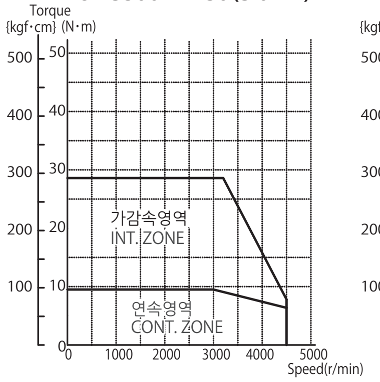
TSM3412　E430 (2.0kW)



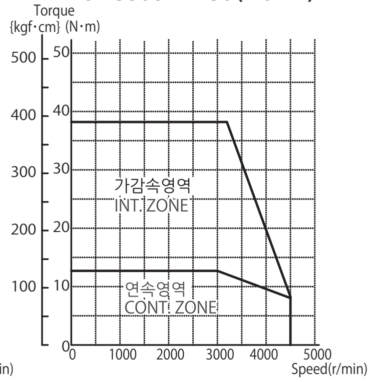
회전-토크특성(N-T특성)　AC400V 用　Torque characteristic diagrams (N-T Characteristics)

□130mm

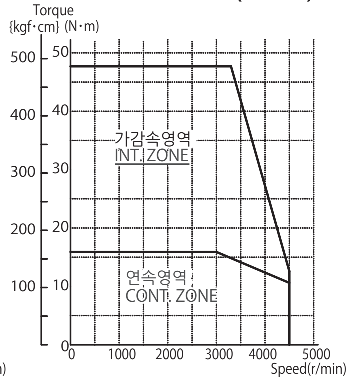
TSM3506　E430(3.0kW)



TSM3508　E430(4.0kW)

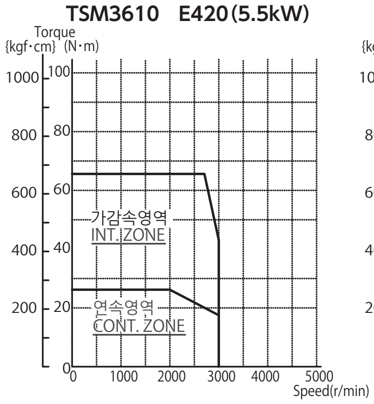


TSM3510　E430(5.0kW)

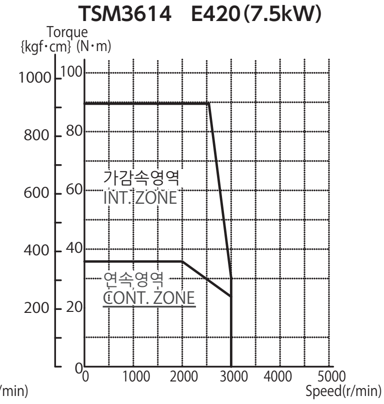


□180mm

TSM3610　E420(5.5kW)

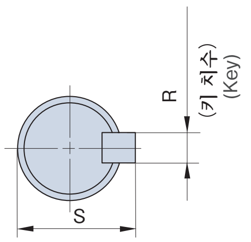


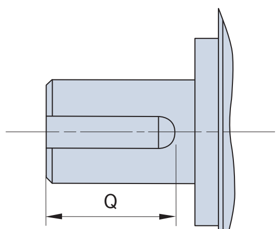
TSM3614　E420(7.5kW)



축사양　Shaft Specifications

출력축 끝에 키홈이 있는 경우　For motors with shaft keyway





(키 홈 길이)
(Keyway length)

치수mm
Dimensions: mm

모 터 형 식 Motor model	Q（키 홈 길이） Q(Keyway length)	S	R（키） R(Key)	부 속 키 사 이 즈 Supplied key size
TSM3406 TSM3409 TSM3412	29	25（0,-0.2）	8h9（-0.036）	8 × 7 × 25（양각）(Squart) （JIS B 1301）
TSM3506 TSM3508 TSM3510	29	25（0,-0.2）	8h9（-0.036）	8 × 7 × 25（양각）(Squart) （JIS B 1301）
TSM3610 TSM3614	40	35（0,-0.2）	10h9（-0.036）	10 × 8 × 35（양각）(Squart) （JIS B 1301）

오일씰이 장착된 경우　For motors fitted with oil seal

오일씰을 부착한 경우, 아래 조건에서 사용해 주십시오.
·기름면은, 오일씰 립보다 밑돌게 사용해주십시오.
· 오일씰에는 기름의 비말이 닿는 정도로만 사용해주십시오.

When fitted with an oil seal, use the motor under the following conditions:
・Keep the oil level below the lip of the oil seal.
・use the oil seal to the extent that oil splashes.

브레이크가 장착된 경우　When fitted with brake

브레이크가 장착된 경우, 모터축이 위 또는 아래로 사용될 때 동작 조건 등에 의해 모터 수명에 영향을 미칠 가능성이 있습니다.

When fitted with a brake, motor life may be affected by operating conditions etc., if the motor shaft is used pointing up or down.

TBL-iⅣs 저관성type
Low Inertia

특장점

- 가속도가 높고 민첩한 움직임
- 고토크
- 저소음·저진동

Features

- Alert movement with increased acceleration
- High torque
- Low noise and low vibration

형식 Model designation

TSM ①□□□□ N ②□□ ③□□ E ④□□□

①출력

기호	사양
4102	50W
4104	100W
4202	200W
4204	400W
4303	600W
4304	750W

②센서사양

기호	센서사양	브레이크 없음	브레이크 있음
23	23bit ABS 엔코더	●	
30	1X 레졸버 (모터 플랜지 사이즈□ 40)	●	
33	1X 레졸버 (모터 플랜지 사이즈□ 60、□ 80)	●	
73	23bit ABS 엔코더		●
80	1X 레졸버 (모터 플랜지 사이즈□ 40)		●
83	1X 레졸버 (모터 플랜지 사이즈□ 60、□ 80)		●

※옵션 : 17bit INC,17bit ABS, 23bit ABS,레졸버

③축단사양

기호	축단사양	오일씰 없음	오일씰 있음
00	원형 축단 탭(표준)	●	
02	키 홈 축단 탭(표준)	●	
05	원형 축단 탭		●
07	키 홈 축단 탭		●

④전원사양

기호	사양
205	AC200V

① Output

No.	Spec.
4102	50W
4104	100W
4202	200W
4204	400W
4303	600W
4304	750W

② Sensor Spec.

No.	Sensor Spec.	Brake Without	Brake With
20	23 bit ABS Encoder	●	
23	1X Resolver (motor flange size □ 40)	●	
30	1X Resolver (motor flange size □ 60, □ 80)	●	
70	23 bit ABS Encoder		●
73	1X Resolver (motor flange size □ 40)		●
80	1X Resolver (motor flange size □ 60, □ 80)		●

※Available as customize : 17bit INC,17bit ABS, 23bit ABS,Resolver

③ Shaft end spec

No.	Shaft end spec	Oil seal Without	Oil seal With
00	Round shaft Tapped shaft (Basic model)	●	
02	Keyway Tapped shaft (Basic model)	●	
05	Round shaft Tapped shaft		●
07	Keyway Tapped shaft		●

④ Power source specifications

No.	Spec.
205	AC200V

기본사양 Basic Specifications

플랜지 Mounting flange 【mm】	형식 Model	출력 Output 【kW】	토크 Torque 정격 Rated 【N·m】	토크 Torque 최대 Max 【N·m】	전압 Voltage 【V】	전류 Current 정격 Rated 【Arms】	전류 Current 최대 Max 【Arms】	회전수 Speed 정격 Rated 【min^{-1}】	회전수 Speed 최대 Max 【min^{-1}】	로터관성 Rotor inertia 【× 10^{-4}kg·m^2】 No Brake	로터관성 Rotor inertia 【× 10^{-4}kg·m^2】 With brake ※1	질량 Mass 【kg】 No Brake	질량 Mass 【kg】 Withbrake
□ 40	TSM4102	50	0.159	0.56	AC200	0.8	2.5	3,000	6,000	0.019	0.029	0.4	0.6
	TSM4104	100	0.318	1.11		0.9	2.9			0.035	0.044	0.5	0.7
□ 60	TSM4202	200	0.64	2.24		1.8	6.0		6,000 ※2	0.15	0.24	0.9	1.5
	TSM4204	400	1.27	4.46		2.8	9.3			0.27	0.39	1.3	1.9
□ 80	TSM4303	600	1.91	6.69		4.6	15.2		6,000 ※2	0.71	0.97	2.2	3.0
	TSM4304	750	2.39	8.36		5.1	17.1			0.86	1.13	2.5	3.3

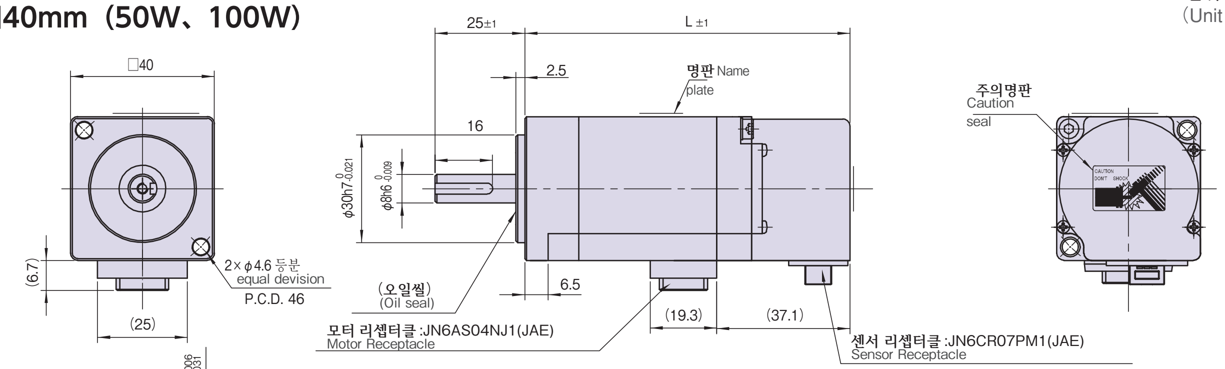
※1브레이크 이너셔 포함
※2당사 드라이버와의 조합에 따름
※3전류값은 오일씰이 없는 사양으로, 오일씰 포함에서는 오일씰이 없는 경우보다 전류값이 증가합니다.

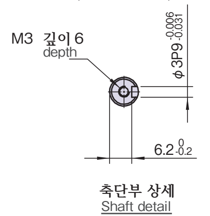
※1 Including inertia of brake.
※2 Combination with our driver.
※3 The current in the table is calculated value with basic model. It is increased in case of a motor with oil seal.

외형도 (브레이크 없음)　Outline (No brake Type)

(단위：mm)
(Unit：mm)

□40mm（50W、100W）



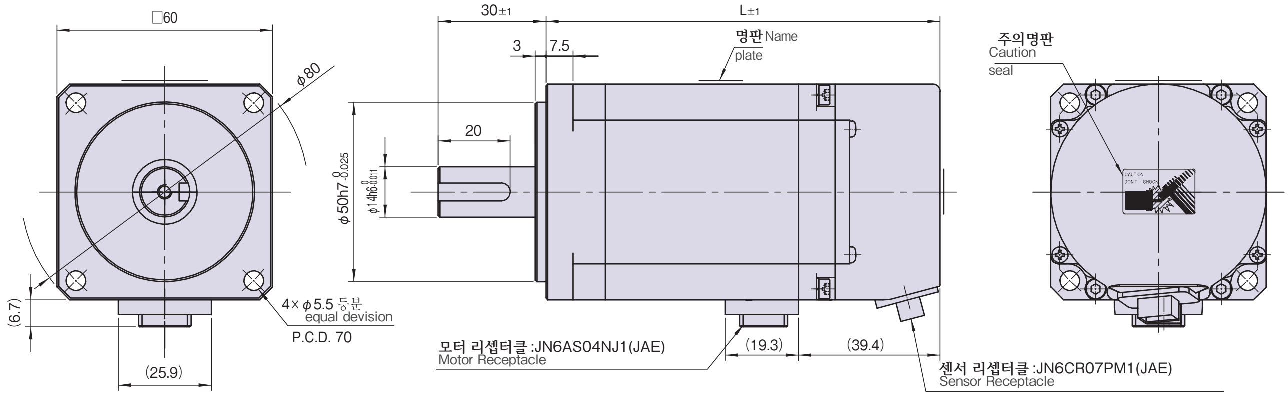


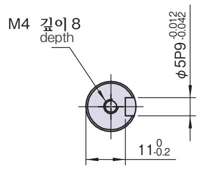
축단부 상세
Shaft detail

L부 치수　L dimension

정격출력 Rated output	50W	100W
형 식 Model	TSM4102	TSM4104
L(mm)	76.5	90.5

□60mm（200W、400W）



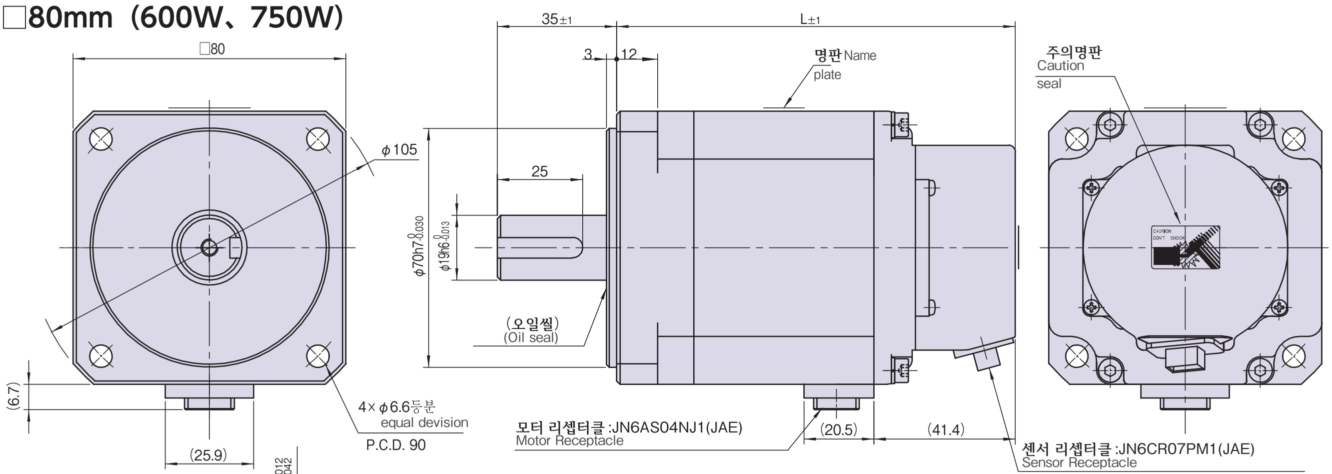


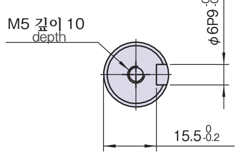
축단부 상세
Shaft detail

L부 치수　L dimension

정격출력 Rated output	200W	400W
형 식 Model	TSM4202	TSM4204
L(mm)	87.7	109.7

□80mm（600W、750W）





축단부 상세
Shaft detail

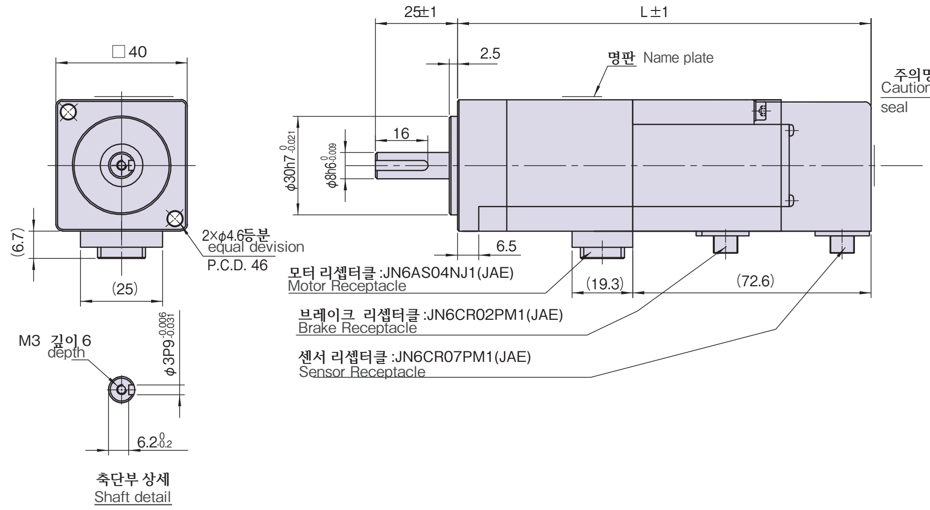
L부 치수　L dimension

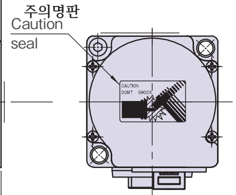
정격출력 Rated output	600W	750W
형 식 Model	TSM4303	TSM4304
L(mm)	109.8	116.8

외형도 (브레이크 있음) Outline (Brake Type)

(단위 : mm)
(Unit : mm)

□40mm (50W、100W)

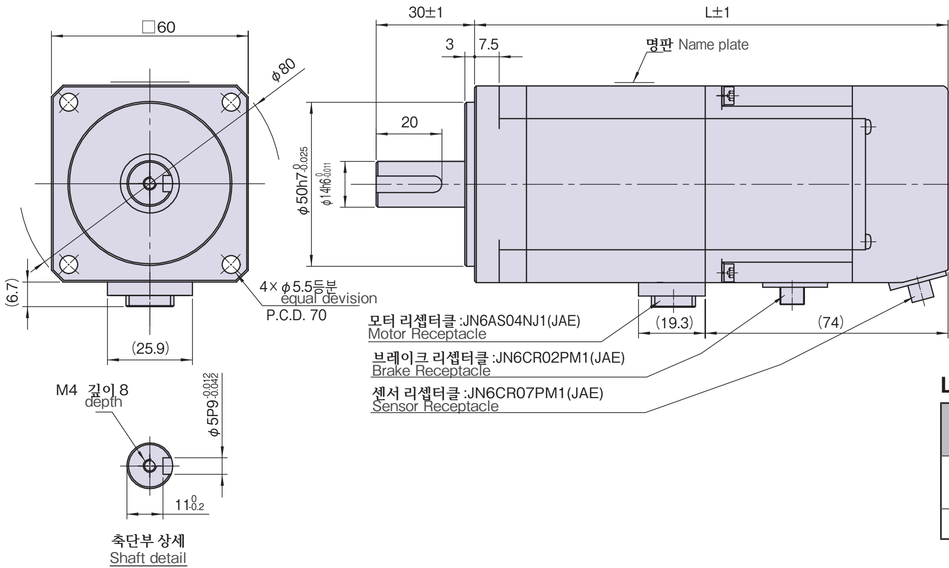


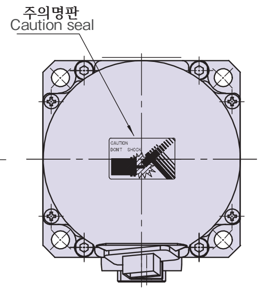


L부 치수 L dimension

정격출력 Rated output	50W	100W
형 식 Model	TSM4102	TSM4104
L(mm)	112.0	126.0

□60mm (200W、400W)

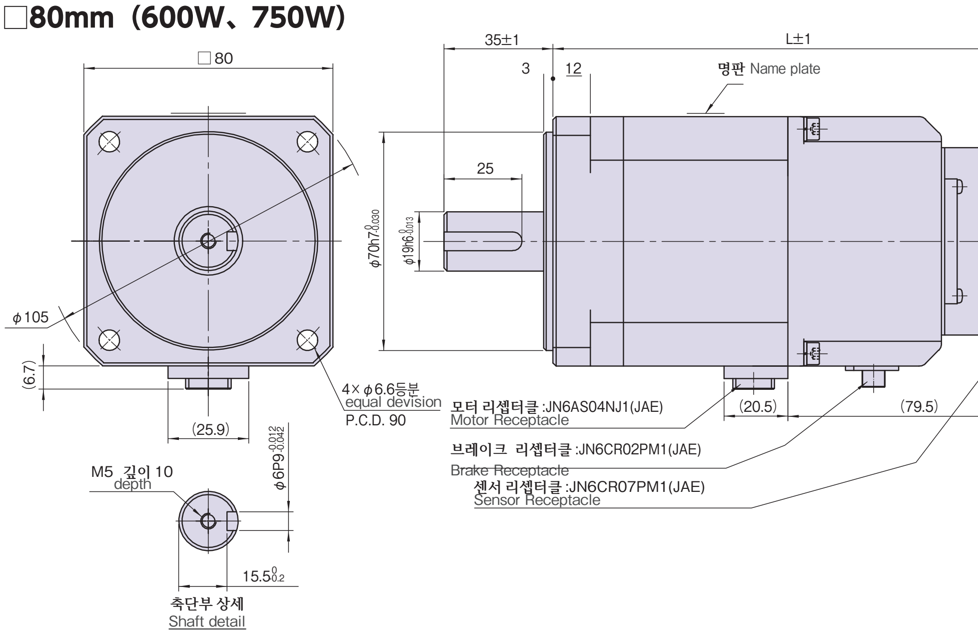


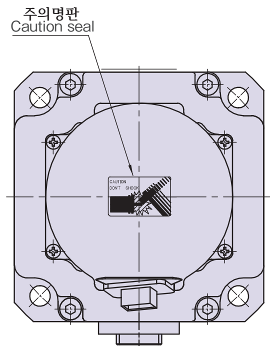


L부 치수 L dimension

정격출력 Rated output	200W	400W
형 식 Model	TSM4202	TSM4204
L(mm)	122.3	144.3

□80mm (600W、750W)





L부 치수 L dimension

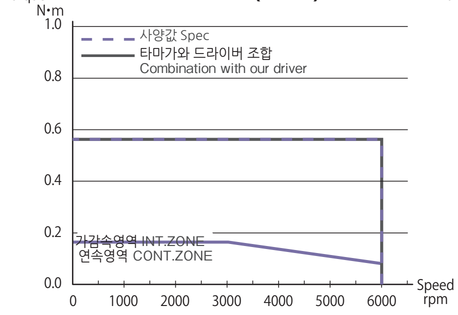
정격출력 Rated output	600W	750W
형 식 Model	TSM4303	TSM4304
L(mm)	147.9	154.9

회전-토크특성(N-T특성) Torque characteristic diagrams（N-T Characteristics）

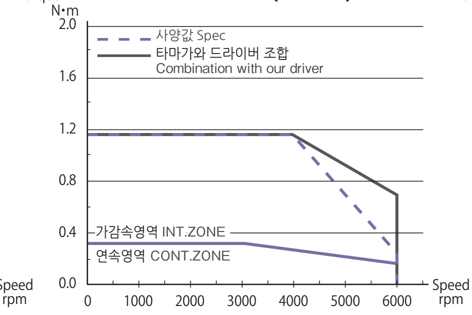
하기 특성은 선간 입력 전압(정류전압) DC210V(AC200V)에서의 특성값입니다. (구동회로에 의해 제한되는 경우가 있습니다.) **점선의 특성은 당사 드라이버 TAD8811 시리즈 조합에 의한 것입니다.**

DC bus voltage (line to line)DC210V(AC200V). (Output torque may depend on driving circuit.)
The characteristic of the dotted line is the case of TAD 8811 series combination for our Driver.

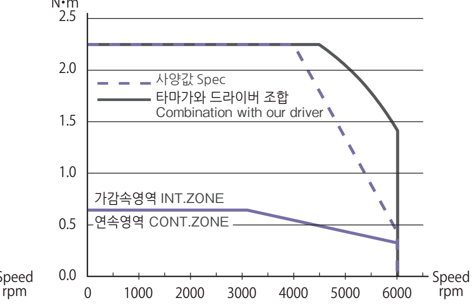
TSM4102(50W)



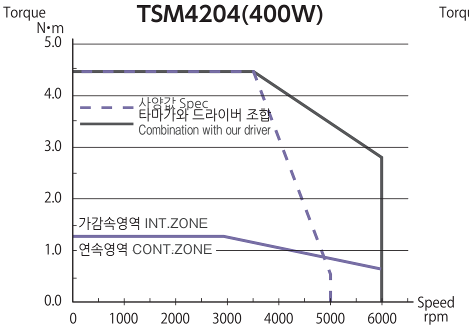
TSM4104(100W)



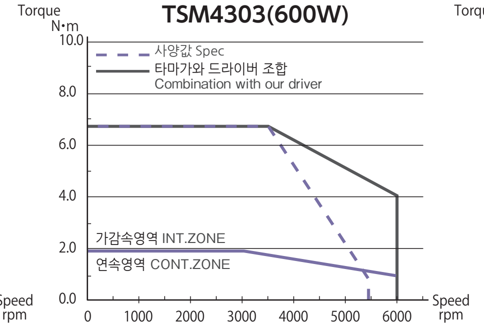
TSM4202(200W)



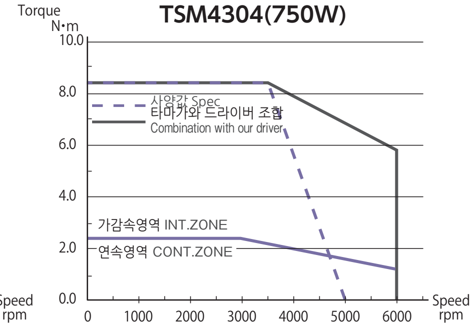
TSM4204(400W)



TSM4303(600W)

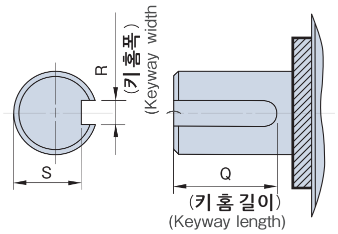


TSM4304(750W)



축사양 Shaft Specifications

출력축 끝에 키홈이 있는 경우 For motors with shaft keyway



치수 : mm
Dimensions: mm

모터형식 Motor model	Q（키홈길이） Q(Keyway length)	S	R（키홈폭） R(Keyway width)	부속키사이즈 Supplied key size
TSM4102 TSM4104	16	6.2（0,-0.2）	3P9（-0.006,-0.031）	3×3×16（片丸）(Round at one end) （JIS B 1301）
TSM4202 TSM4204	20	11（0,-0.2）	5P9（-0.012,-0.042）	5×5×20（片丸）(Round at one end) （JIS B 1301）
TSM4303 TSM4304	25	15.5（0,-0.2）	6P9（-0.012,-0.042）	6×6×25（片丸）(Round at one end) （JIS B 1301）

오일씰이 장착된 경우 For motors with Oil seal

오일씰을 부착한 경우, 아래 조건에서 사용해 주십시오.
·기름면은, 오일씰 립보다 밑돌게 사용해주십시오.
·오일씰에는 기름의 비말이 닿는 정도로만 사용해주십시오.

When oil seal is provided, be sure to use under the following conditions: ・Keep the level of oil below the lip of the oil seal.
・Use the oil seal in a way that it is exposed to the spray of oil.

브레이크가 장착된 경우 In case a brake is attached

브레이크가 장착된 경우, 모터축이 위 또는 아래로 사용될 때 동작 조건 등에 의해 모터 수명에 영향을 미칠 가능성이 있습니다.

In case a brake is attached, the motor life could be affected by operating conditions and others if the motor axis is used upward or downward.