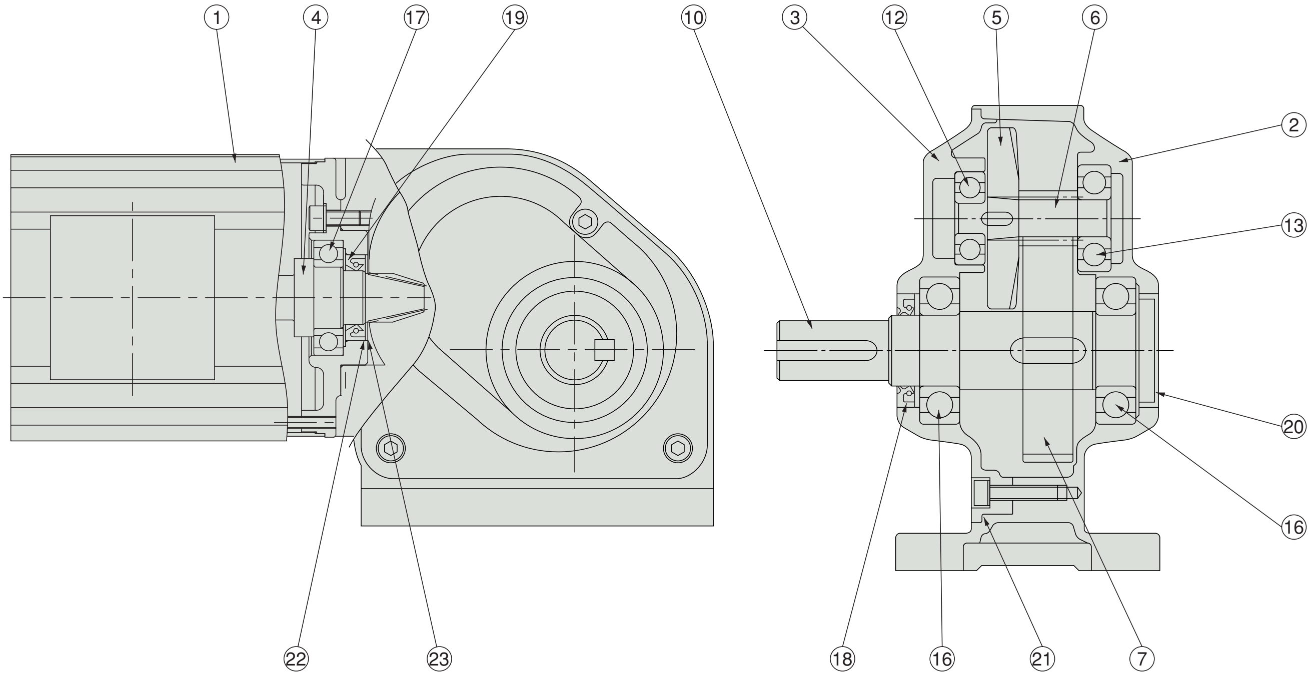
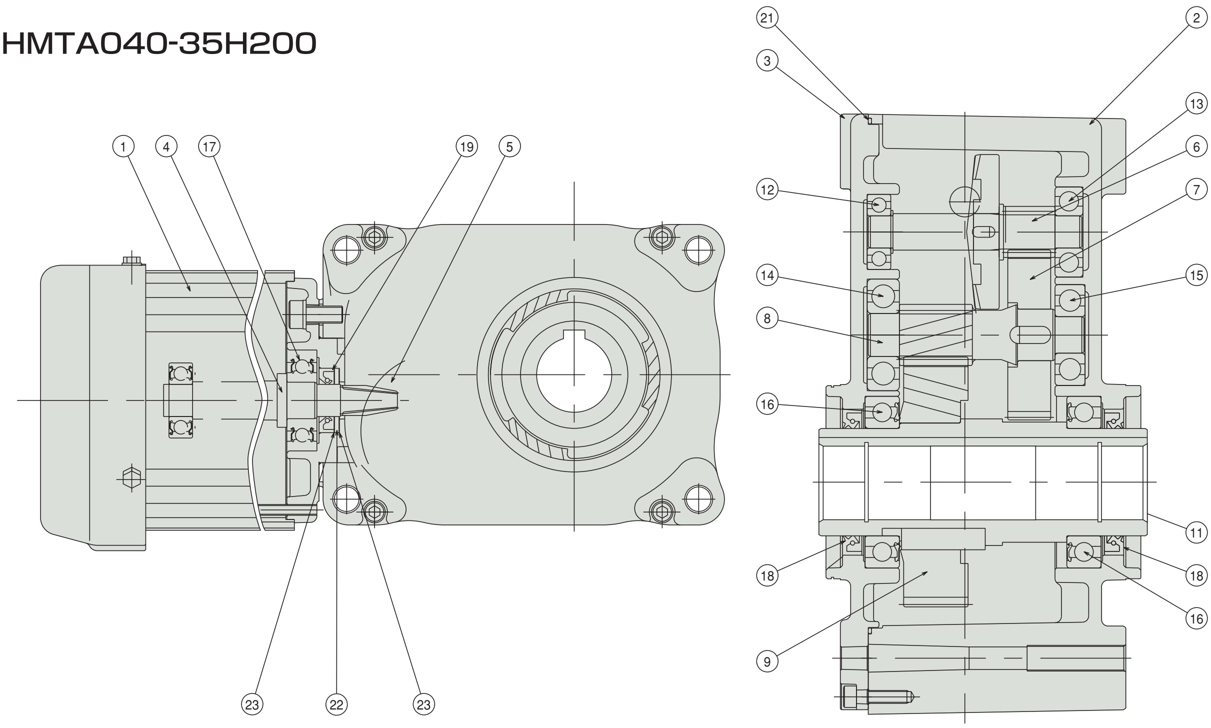
Hypoid Motor TA Series Structure

Structure of reducer

● HMTA040-24L50R



● HMTA040-35H200

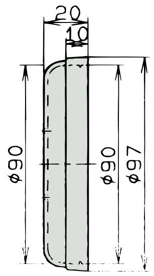


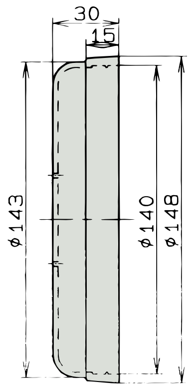
1. Motor
2. Case
3. Cover
4. Motor pinion (hypoid pinion)
5. 1st stage wheel (hypoid gear)
6. 2nd shaft with pinion
7. 2nd stage wheel
8. 3rd shaft with pinion
9. 3rd stage wheel
10. Output shaft
11. Hollow output shaft
12. Bearing (2nd shaft cover side)
13. Bearing (2nd shaft case side)
14. Bearing (3rd shaft cover side)
15. Bearing (3rd shaft case side)
16. Bearing (output shaft)
17. Bearing (motor shaft load side)
18. Oil seal (output shaft)
19. Oil seal (motor shaft)
20. Seal cap
21. O-ring
22. Filter
23. Shim

Hypoid Motor TA Series Options

Safety cap

● Model number HM90CAP ● Model number HM140CAP



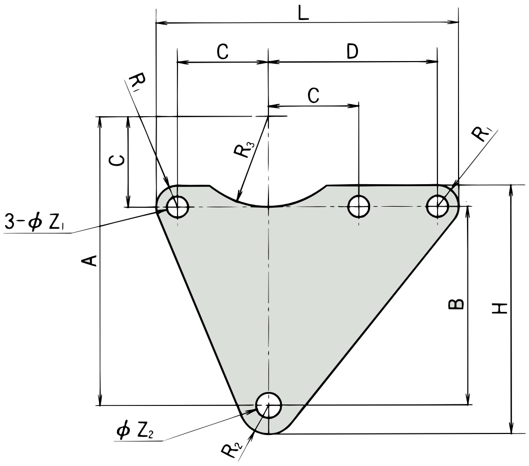


· For the hollow shaft type, the safety cap can be attached to the hollow shaft end opposite to the mounting side.
· Because the safety cap is made of PP resin (polypropylene), it will not rust and stays clean. The safety cap is colored green.

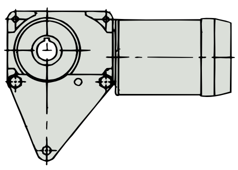
Also applies to adapter and inline reducer types.

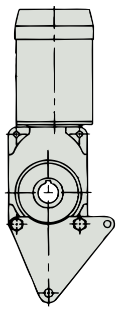
Model number	Recommended model	
HM90CAP	HMTA010-30H5～35H1200	HMTA150-45H5～80
	HMTA020-30H5～45H1200	HMTA220-45H5～60
	HMTA040-30H5～55H1200	HMTA100-30H5～35H1200
	HMTA075-35H5～45H200	HMTA200-30H5～45H1200
HM140CAP	HMTA040-55H600～1200	HMTA220-55H80～120
	HMTA075-55H300～480	HMTA370-55H5～60
	HMTA150-55H100～200	HMTA550-55H5～40

Torque arm



● The torque arm can be attached to either the short pitch or the long pitch side according to the mounting condition of the reducer.





Also applies to adapter and inline reducer types.

Model number	Recommended model	A	B	C	D	H	L	R1	R2	R3	φZ1	φZ2	Bolt	Plate thickness t
HM150TA	HMTA010-30H5～480 HMTA020-30H5～200 HMTA040-30H5～50 HMTA100-30H5～480 HMTA200-30H5～200	150	103	47	88	129	157	11	15	47	11	13	M12 recommended	6
HM200TA	HMTA010-35H600～1200 HMTA020-35H300～480 HMTA040-35H60～200 HMTA075-35H5～50 HMTA100-35H600～1200 HMTA200-35H300～480	200	142	58	106	171	188	12	17	47	13	17	M16 recommended	6
HM250TA	HMTA020-45H600～1200 HMTA040-45H300～480 HMTA075-45H60～200 HMTA150-45H5～80 HMTA220-45H5～60 HMTA200-45H600～1200	250	177	73	123	214	228	16	21	—	17	21	M20 recommended	9
HM350TA	HMTA040-55H600～1200 HMTA075-55H300～480 HMTA150-55H100～200 HMTA220-55H80～120 HMTA370-55H5～60 HMTA550-55H5～40	350	245	105	182	293	331	22	26	—	22	22	M20 recommended	9

Options

Hypoid Motor TA Series Installation

Lubrication

1. Grease lubrication

Grease is used for lubrication.

2. Grease injection

The product is delivered with the correct amount of unleaded grease already installed.

3. Grease change

In most cases, it is not necessary to change or replenish the grease, but if the grease is changed after 20,000 hours of operation, the life will be prolonged.

4. Grease specification

Use grease for high-grade gears with a viscosity No. 000 or equivalent.

5. Recommended grease

Nippon Grease Co., Ltd.: Nigtight LMS No. 000 (this is the unleaded grease installed before delivery)
Showa Shell Sekiyu K.K.: Alvania EP Grease R000
Nippon Oil Co., Ltd.: Pyronoc Universal 000

6. Grease quantity

●Foot mount type

Motor capacity	Reduction ratio	Grease quantity kg
100W 0.1 kW	1/5~1/50	0.17
	1/60	0.40
	1/80~1/200	0.33
	1/300~1/480	0.33+(0.15)
	1/600~1/1200	0.53+(0.15)
200W 0.2 kW	1/5~1/50	0.17
	1/60	0.40
	1/80~1/200	0.33
	1/300~1/480	0.53+(0.2)
	1/600~1/1200	1.15+(0.2)
0.4 kW	1/5~1/50	0.28
	1/60~1/200	0.53
	1/300~1/480	1.15+(0.4)
	1/600~1/1200	3.80+(0.4)
0.75 kW	1/5~1/50	0.47
	1/60~1/200	1.15
	1/300~1/480	3.70+(0.7)
1.5 kW	1/5~1/30	1.40
	1/40~1/80	1.15
	1/100~1/200	3.80
2.2 kW	1/5~1/20	1.40
	1/25~1/60	1.15
	1/80~1/120	3.80
3.7 kW	1/5~1/20	3.70
	1/25~1/60	3.40
5.5 kW	1/5~1/20	3.70
	1/25~1/40	3.40

Note) The values in parentheses are for the high-reduction speed 1st speed reduction stage.

●Face mount type・Hollow shaft type

Motor capacity	Reduction ratio	Grease quantity kg
100W 0.1 kW	1/5~1/60	0.33
	1/80~1/200	0.33
	1/300~1/480	0.33+(0.15)
	1/600~1/1200	0.53+(0.15)
200W 0.2 kW	1/5~1/60	0.33
	1/80~1/200	0.33
	1/300~1/480	0.53+(0.2)
	1/600~1/1200	1.15+(0.2)
0.4 kW	1/5~1/50	0.33
	1/60~1/200	0.53
	1/300~1/480	1.15+(0.4)
	1/600~1/1200	3.80+(0.4)
0.75 kW	1/5~1/30	0.67
	1/40~1/50	0.53
	1/60~1/200	1.15
	1/300~1/480	3.70+(0.7)
1.5 kW	1/5~1/30	1.40
	1/40~1/80	1.15
	1/100~1/200	3.80
2.2 kW	1/5~1/20	1.40
	1/25~1/60	1.15
	1/80~1/120	3.80
3.7 kW	1/5~1/20	3.70
	1/25~1/60	3.40
5.5 kW	1/5~1/20	3.70
	1/25~1/40	3.40

Note) The values in parentheses are for the high-reduction speed 1st speed reduction stage.

7. Oil seal

A contact-type oil seal is used to seal the shaft of the speed reducer housing. In most cases, it is not necessary to replace the oil seal. If the oil seal is replaced after 10,000 hours of operation, though, the life of the reducer will be prolonged. Because the life of the oil seal depends on the use conditions, there may be cases where the oil seal needs to be replaced before 10,000 hours of operation.
If the product is used in equipment for which oil leakage should be particularly avoided, such as food processing machines, install an oil pan or similar device in preparation for unexpected oil leakage due to failure, life expiration or other cause.

Hypoid Motor TA Series Installation

Installation

1. Mounting direction

Because all the models employ grease lubrication, they can be mounted in any direction: horizontal, vertical or inclined.

2. Ambient conditions

Installation place	Indoor not exposed to dust or water
Ambient temperature	−20℃ to 40℃
Ambient humidity	Less than 85% (non condensing)
Altitude	At elevations below 1000 m
Atmosphere	Free from corrosive gases, explosive gases and steam
Mounting direction	No limitations on mounting angles: horizontal, vertical or inclined

3. Bolt tightening

(1) Foot mount type

- Use a strong flat mounting surface that is not significantly affected by vibration during operation. After cleaning dirt and foreign matter from the mounting face, securely fasten the product with four bolts.
- When a none directly connected drive is employed or the product is started and stopped frequently, we recommend installing a stopper on the foot section.

(2) Face mount type and hollow shaft type

When installing a face mount type or hollow shaft type, please pay close attention to the following.

① Mounting

If the length of engagement of the mounting bolt and the female threads of the main body is short or the tightening torque is too high, the female threads of the main body may be damaged. If the tightening torque is too low, the bolts attaching the main body may loosen due to impacts caused when starting and stopping.

Use a conical spring washer or a spring washer and a flat washer when mounting the mounting bolt.

② Mounting bolt

a) Type

When the tapped (screw) hole is used for mounting
Hexagon head bolts (JIS B1051, Strength 4.6)
Hexagon socket bolt (JIS B1051, Strength 10.9)

When the through-hole is used for mounting
Hexagon head bolts (JIS B1051, Strength 8.8)
Hexagon socket bolt (JIS B1051, Strength 10.9)

B) Bolt length

When the tapped (screw) hole is used for mounting	
Threaded portion of case	Length of engagement of bolt
M10-34mm	31 mm or more
M12-46mm	43 mm or more
M16-44mm	40 mm or more
M20-55mm	50 mm or more

Determine the bolt length based on <Thickness of mounting flange + Length of engagement of bolt shown in the table above>.

When the through-hole is used for mounting	
Through-hole size	Bolt length
For M 8	120 mm or more
For M10	150 mm or more
For M12	170 mm or more
For M16	210 mm or more

Though some bolt lengths exceed the JIS standard range, they are commercially available from bolt makers.

③ Tightening torque

Tighten the bolt to the tightening torque shown in the table below.

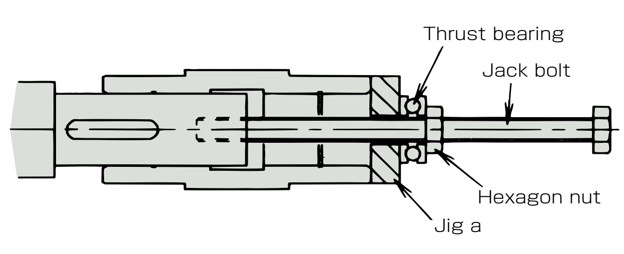
Screw size	Hexagon head bolt		Hexagon socket bolt	
	N·m	{kgf·cm}	N·m	{kgf·cm}
M 8	9.8～10.3	{100～105}	9.8～19.6	{100～200}
M10	19.6～20.6	{200～210}	19.6～39.2	{200～400}
M12	34.3～36.6	{350～370}	34.3～68.6	{350～700}
M16	84.3～88.2	{860～900}	84.3～168.6	{860～1720}
M20	84.3～88.2	{860～900}	84.3～168.6	{860～1720}

Hypoid Motor TA Series Installation

Attaching and removing the hollow shaft

(1) Attaching to the drive shaft

- The tolerance of the inside diameter of the hollow shaft is based on JIS H8. Under normal conditions, the finish of the drive shaft should be h7. When significant shocks or radial loads are caused, it should be js6 or K6 to tighten the fit slightly.
- When connecting the hollow shaft to the drive shaft, apply molybdenum disulfide grease to the surface of the drive shaft and the bore of the hollow output shaft.
- Making and using a jig as shown to the right will enable smooth insertion.



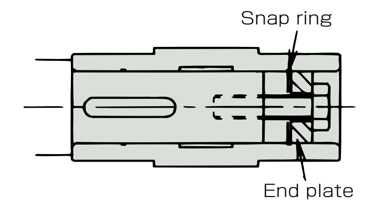
(2) Fastening to the drive shaft

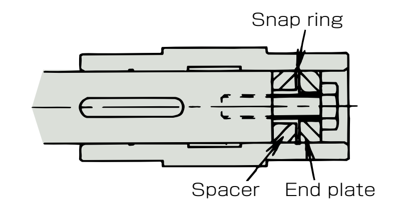
A. When the drive shaft has steps

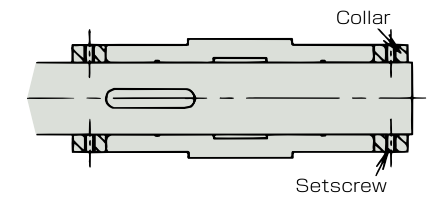
- As shown in the figure below, make an end plate and fasten the hollow output shaft to the drive shaft.

B. When the drive shaft has no steps

- The following two fastening methods are available.

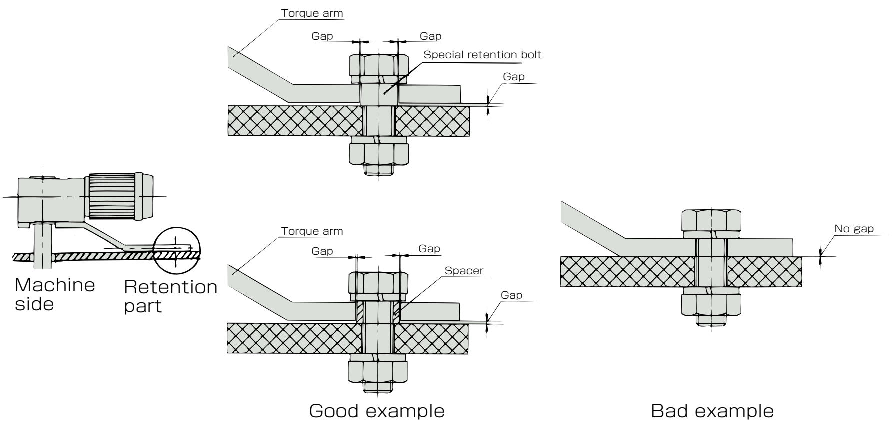






(3) Retention of torque arm

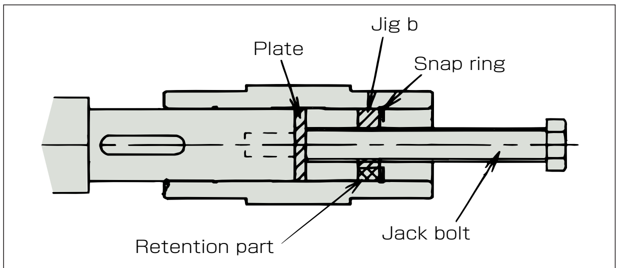
- Using hexagon socket bolts, attach the torque arm to the driven machine side of the hypoid motor.
  At the retention point of the torque arm, provide flexibility between the hypoid motor and the drive shaft and never clamp down the torque arm with the retention bolt. If no flexibility is provided, the bearing in the reducer will be damaged.
  If the starting frequency is high or the rotation is reversed repeatedly, use a rubber bush between the torque arm and the retention bolt (or spacer) to cushion the shock.



Retention part examples

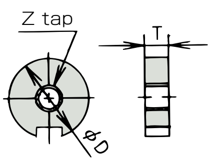
(4) Removing from drive shaft

- Pull out the drive shaft from the hollow output shaft, while taking care not to apply undue force between the casing and the hollow output shaft.
- Making and using a jig as shown to the right will enable smooth removal.



Reference dimensions of jig b and length of drive shaft

Recommended model	φD	T	Z
HMTA010-30H5~480	29.5	9	M10
HMTA020-30H5~200			
HMTA040-30H5~50			
HMTA100-30H5~480			
HMTA200-30H5~200			
HMTA010-35H600~1200	34.5	12	M12
HMTA020-35H300~480			
HMTA040-35H60~200			
HMTA075-35H5~50			
HMTA100-35H600~1200			
HMTA200-35H300~480			
HMTA020-45H600~1200	44.5	15	M16
HMTA040-45H300~480			
HMTA075-45H60~200			
HMTA150-45H5~80			
HMTA220-45H5~60			
HMTA200-45H600~1200			
HMTA040-55H600~1200	54.5	18	M18
HMTA075-55H300~480			
HMTA150-55H100~200			
HMTA220-55H80~120			
HMTA370-55H5~60			
HMTA550-55H5~40			

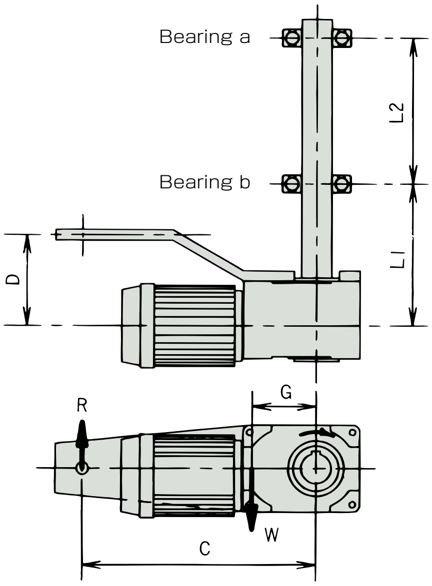


Also applies to the adapter and inline reducer types.

Hypoid Motor TA Series Installation

Design of torque arm

Whether a standard torque arm is used or you design and make the torque arm, check the strength of each element in the following manner.



1. Check the torque arm and fixing bolt

   Check according to the torque arm reaction force R.

$$R=\frac{T+W\times G}{C}$$

2. Selection of bearing

   Check according to the bearing reaction forces A and B.

$$A(\text{Bearing a})=\frac{L1\times(R-W)-D\times R}{L2}$$

$$B(\text{Bearing b})=\frac{(L1+L2)\times(R-W)-D\times R}{L2}$$

T : Output torque (N · m) {kgf·m}
W : Weight of reducer (kg) {kgf}
R : Torque arm reaction force (kg) {kgf}
G : Distance between center of drive shaft and center of gravity of reducer (m)
C : Distance between center of drive shaft and retention part (m)
D : Distance between center of reducer and retention part (m)
L 1 : Distance between center of reducer and bearing b (m)
L 2 : Distance between bearing a and bearing b (m)

For the direction of rotation shown in the figure to the left, the output torque is positive. When it is reversed, the output torque is negative.

Dimensions for optional torque arm (approximate value)

Also applies to adapter and inline reducer types.

Model number	HMTA010-30H5~35H1200 HMTA020-30H5~200 HMTA020-45H600~1200 HMTA040-55H600~1200 HMTA100-30H5~35H1200 HMTA200-30H5~200 HMTA200-45H600~1200	HMTA020-35H300~480 HMTA040-30H5~35H200 HMTA220-45H5~55H120 HMTA200-35H300~480	HMTA075-35H5~55H480 HMTA150-55H100~200	HMTA040-45H300~480 HMTA150-45H5~80 HMTA370-55H5~60	HMTA550-55H5~40
G	0.10m	0.12m	0.13m	0.15m	0.26m

Installation

Hypoid Motor TA Series Installation

Coupling (solid shaft)

1. For direct coupling

- When easy removal and safety are required, we recommend the compact and strong Tsubaki Roller Chain Coupling.
- When the product is used in places where lubrication is impossible, we recommend the Tsubaki Nylon Chain Coupling.
- When shaft misalignment or vibration is anticipated, we recommend the Tsubaki Jaw-flex Coupling.

2. For parallel coupling

- We recommend a strong and safe Tsubaki Roller Chain transmission.

3. Notes on coupling

(1) Accurately aligning the coupling and shaft center will prolong the operating life of the reducer and shaft coupling.

(2) For roller chain transmissions, make sure that the reducer's shaft and the mating shaft are parallel and adjust the tension of the chain to eliminate excessive slack.

4. Recommended coupling and roller chain

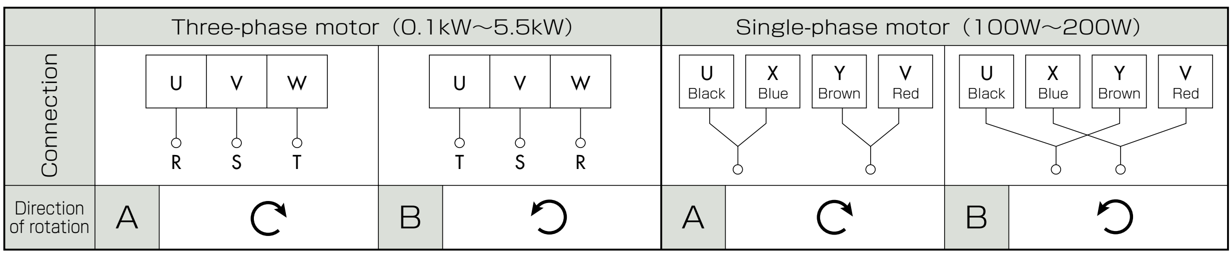
Motor output kW	Reduction ratio	Output shaft diameter mm	Recommended coupling: Roller chain coupling	Recommended coupling: Nylon chain coupling	Recommended coupling: Jaw-flex coupling
0.1	1/5～1/50	19	CR4012-J	CN411	L090-H
	1/60～1/200	24	CR4014-J	CN611	L100-H
	1/300～1/480	28	CR4014-J	CN617	L110-H
	1/600～1/1200	38	CR5016-J	—	L190-H
0.2	1/5～1/50	19	CR4012-J	CN415	L095-H
	1/60～1/200	28	CR4014-J	CN617	L110-H
	1/300～1/480	38	CR5016-J	—	L190-H
	1/600～1/1200	42	CR5018-J	—	—
0.4	1/5～1/50	24	CR4014-J	CN611	L100-H
	1/60～1/200	38	CR5016-J	—	L190-H
	1/300～1/480	42	CR5018-J	—	—
	1/600～1/1200	50	CR6018-J	—	—
0.75	1/5～1/50	30	CR4016-J	CN617	L110-H
	1/60～1/200	42	CR5018-J	—	—
	1/300～1/480	50	CR6018-J	—	—
1.5	1/5～1/80	42	CR5018-J	—	L190-H
	1/100～1/200	50	CR6018-J	—	—
2.2	1/5～1/60	42	CR5018-J	—	—
	1/80～1/120	50	CR6018-J	—	—
3.7	1/5～1/60	50	CR6018-J	—	—
5.5	1/5～1/40	50	CR6018-J	—	—

Motor output kW	Reduction ratio	Output shaft diameter mm	Recommended roller chain and number of sprocket teeth
0.1	1/5～1/50	19	RS40-13T
	1/60～1/200	24	RS50-15T
	1/300～1/480	28	RS60-17T
	1/600～1/1200	38	RS80-15T
0.2	1/5～1/50	19	RS50-13T
	1/60～1/200	28	RS60-13T
	1/300～1/480	38	RS80-15T
	1/600～1/1200	42	RS100-16T
0.4	1/5～1/50	24	RS60-13T
	1/60～1/200	38	RS80-15T
	1/300～1/480	42	RS100-16T
	1/600～1/1200	50	RS140-16T
0.75	1/5～1/50	30	RS80-13T
	1/60～1/200	42	RS120-13T
	1/300～1/480	50	RS140-16T
1.5	1/5～1/80	42	RS100-14T
	1/100～1/200	50	RS140-16T
2.2	1/5～1/60	42	RS100-16T
	1/80～1/120	50	RS140-16T
3.7	1/5～1/60	50	RS140-16T
5.5	1/5～1/40	50	RS140-16T

Note) The above should be used for reference purposes only. The O.H.L. value, etc., of the actual layout should be checked.

Wiring

1. Wiring of motor



- Shown above is the direction of rotation of the motor shaft as viewed from the motor fan cover side.

2. Direction of rotation of output shaft

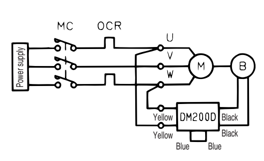
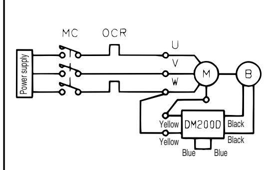
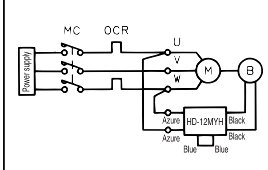
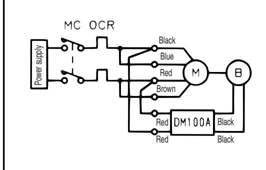
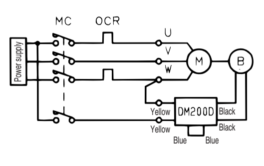
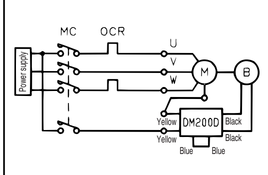
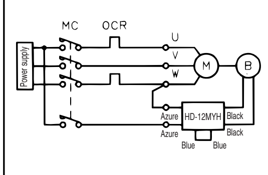
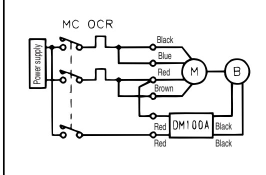
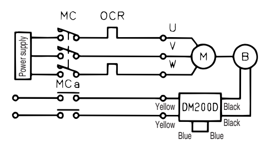
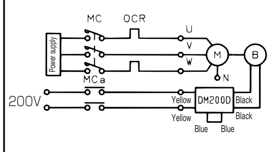
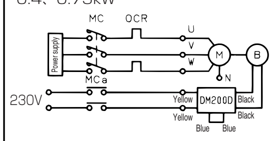
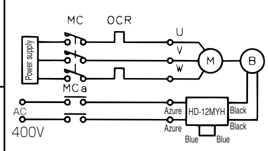
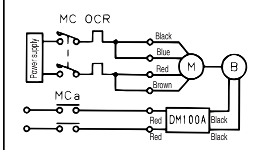
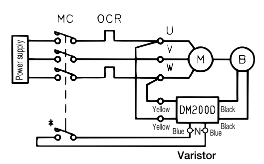
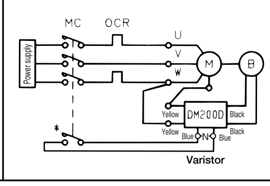
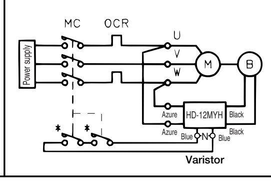
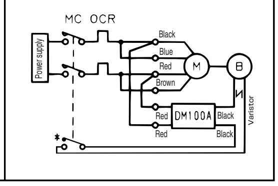
- The direction of rotation of the output shaft shown in the outline dimensional drawing is the one affected when the shaft arrangement is "R" and the direction of rotation of the motor is "A" above.
- The direction of rotation of the output shaft differs depending on the number of reduction steps. Since there may be 2-step reduction and 3-step reduction in the same outline dimensional drawing, both directions of rotation are shown in such cases.
- For the three-phase motor, interchange any two of U, V and W to reverse the rotation direction.

Hypoid Motor TA Series Installation

3. Wiring of brake-type gear motor

- There are various methods for wiring the brake. While referring to the diagram below, select a wiring method suitable to your application.
  For further details, refer to the instruction manual included with the product.

■Wiring diagram

	Application	Wiring method: Three-phase 200 V 0.1kW~5.5kW	Wiring method: Three-phase 400 V 0.1kW~0.75kW	Wiring method: Three-phase 400 V 1.5kW~3.7kW	Wiring method: Single-phase 100 V 100W~200W
AC internal wiring	•Normal use •Standard shipping specifications				
AC external wiring	•When you want to shorten the stop time •When attaching a phase advancing condenser				
AC external operation	•For use with an inverter (Set the inverter to the MC section) •When operating the brake separately		0.1、0.2kW  0.4、0.75kW 		
DC external wiring	•When stopping accuracy is required (For lift, etc.)				

Ⓜ : Motor, Ⓑ : Brake, MC: Electromagnetic contactor, MCa: Auxiliary relay, OCR: Overcurrent relay, ─┤⁄├─: Protective element (varistor)
DM200D, HD-12MYH, HD100A: DC module (The three-phase 200 V 3.7 kW device is PM90B; the 5.5 kW device is PM180B.)

Notes:

1. Use an auxiliary relay with rated load of 250 V AC, 7A or more.
2. The contact capacity of the contacts marked with an asterisk in the DC external wiring diagram should be 250 V AC, 10A or more.
3. When performing AC external operation on the 0.1 kW-0.75 kW three-phase 400 V level motors, disconnect the N section with a closed end connection binder. Then be sure to insulate the N section. In this case, the necessary input power to the DC module is 200 V for 0.1 kW and 0.2 kW and 230 V for 0.4 kW and 0.75 kW. If a 200 V or 230 V power supply is not available, reduce the voltage to 200 V or 230 V using a transformer. (For the inverter motor type, the input power to the DC module should be 200 V). Use a transformer with the following capacity: (0.1 kW-0.2 kW: 60 VA or more, 0.4 kW-0.75 kW: 150 VA or more).
4. The contact capacity of the contacts marked with an asterisk in the DC external wiring diagram for 1.5 kW to 3.7 kW and 400 V should be 400 to 440 V AC: two (or three) contacts with an inductive load of 1A or more should be connected serially.
5. The DC module (DM200D, HD-12MYH) includes a protective element for absorbing surges.
6. Add a protective element for protecting contacts as necessary.

■Precautions for connecting a varistor when using DC external wiring

When DC external wiring is employed, the power supply module for the brake may be damaged depending on the length of the wiring, the method of wiring, the type of relay, etc. Therefore, connect a varistor between the terminals for DC external wiring.
Connecting it near the power supply module for the brake (to the blue lead wire section for the three-phase motor) will be more effective. The model number of the varistor to be used is as shown below.
The varistor voltage should be 470 V for DM100A and DM200D and 910 V for HD-12MYH.

Name of product	Name of maker	Model number: For DM100A、DM200D	Model number: For HD-12MYH
Surge absorber	Matsushita Electric Industrial Co., Ltd.	ERZV14D471	ERZV14D911
Set-Lap	Fuji Electric Co., Ltd.	ENC471D-14A	ENC911D-14A
Ceramic varistor	Marcon Electronics Co., Ltd.	TNR15G471K	TNR15G102K

Hypoid Motor TA Series Selection (in common with Gear Motor TA Series Selection)

■Selection coefficient table (in common with Gear Motor TA Series)

Table 1. Service factors : (C_F)

Load condition \ Operating hours / Operation condition	Less than 10 hours / day	10 hours or more / day
	Intermittent · Continuous	Intermittent · Continuous
Uniform load without shocks	1	1
Load with light shocks	1	1.2

Note) For loads with medium or large shocks, please contact our company.

Table 2. Moment of inertia of motor shaft of hypoid motor and gear motor

(· SI units: Moment of inertia · Gravitational units:GD^2 The value is the same for both the hypoid motor and the gear motor.)

Motor output kW	Motor specifications	Three-phase motor · Non-brake type		Three-phase motor · Brake type		Single-phase motor · Non-brake type		Single-phase motor · Brake type	
		Moment of inertia	GD^2	Moment of inertia	GD^2	Moment of inertia	GD^2	Moment of inertia	GD^2
		$kg·m^2$	{$kgf·m^2$}	$kg·m^2$	{$kgf·m^2$}	$kg·m^2$	{$kgf·m^2$}	$kg·m^2$	{$kgf·m^2$}
0.1	Standard · Inverter motor	$0.64×10^{-3}$	{$2.54×10^{-3}$}	$0.66×10^{-3}$	{$2.64×10^{-3}$}	$0.60×10^{-3}$	{$2.40×10^{-3}$}	$0.85×10^{-3}$	{$3.40×10^{-3}$}
0.2	Standard · Inverter motor	$0.74×10^{-3}$	{$2.96×10^{-3}$}	$0.78×10^{-3}$	{$3.12×10^{-3}$}	$0.88×10^{-3}$	{$3.50×10^{-3}$}	$1.30×10^{-3}$	{$5.20×10^{-3}$}
0.4	Standard · Inverter motor	$0.90×10^{-3}$	{$3.59×10^{-3}$}	$0.94×10^{-3}$	{$3.74×10^{-3}$}				
0.75	Standard · Inverter motor	$1.37×10^{-3}$	{$5.48×10^{-3}$}	$1.47×10^{-3}$	{$5.89×10^{-3}$}				
1.5	Standard	$3.41×10^{-3}$	{$13.6×10^{-3}$}	$3.62×10^{-3}$	{$14.5×10^{-3}$}				
	Inverter motor	$3.91×10^{-3}$	{$15.6×10^{-3}$}	$4.12×10^{-3}$	{$16.5×10^{-3}$}				
2.2	Standard	$4.79×10^{-3}$	{$19.2×10^{-3}$}	$5.00×10^{-3}$	{$20.0×10^{-3}$}				
	Inverter motor	$5.23×10^{-3}$	{$20.9×10^{-3}$}	$5.44×10^{-3}$	{$21.7×10^{-3}$}				
3.7	Standard	$7.60×10^{-3}$	{$30.4×10^{-3}$}	$8.10×10^{-3}$	{$32.4×10^{-3}$}				
	Inverter motor	$8.24×10^{-3}$	{$32.9×10^{-3}$}	$8.75×10^{-3}$	{$35.0×10^{-3}$}				
5.5	Standard	$19.6×10^{-3}$	{$78.6×10^{-3}$}	$21.3×10^{-3}$	{$85.2×10^{-3}$}				
	Inverter motor	$21.4×10^{-3}$	{$85.2×10^{-3}$}	$23.0×10^{-3}$	{$92.0×10^{-3}$}				

(Note) No inverter- type single-phase motor is available.
The 5.5 kW brake type is a quasi-standard product.

Table 3. Inertia ratio and allowable starting frequency

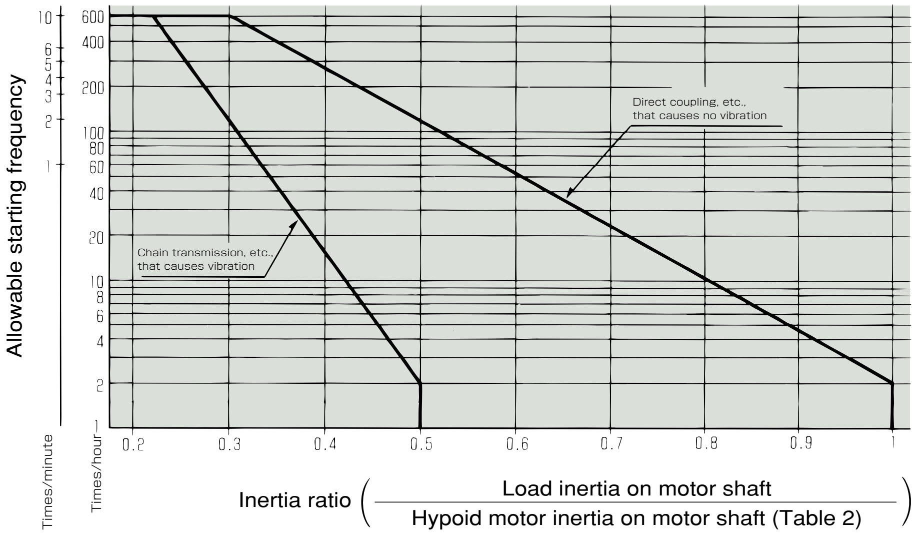


Table 4. Transmission factor coefficient : (f)

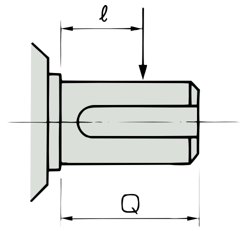
Chain	Gear · Toothed belt
1	1.25

Note) When using a high-strength toothed belt, do not use the transmission coefficient shown in Table 4, but take into account the mounting tension in calculating the O.H.L.

Table 5. Load acting position coefficient : (Lf)

ℓ/Q	0.25	0.38	0.50	0.75	1
Lf	0.8	0.9	1	1.5	2

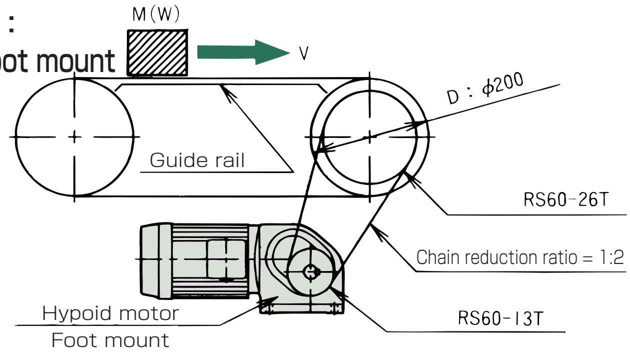
Load acting position



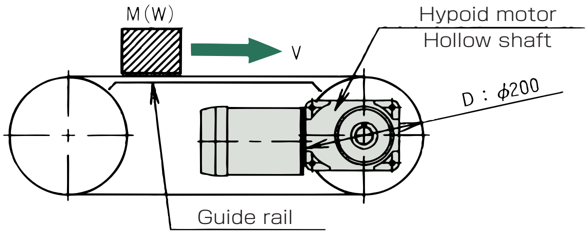
Hypoid Motor TA Series Selection

Example of selection (in common with Gear Motor TA Series Selection)

A : Foot mount



B : Hollow shaft mount



・Material total molarity (Material total weight)	: M=150kg (W=150kgf)
・Material velocity	: V=14m/min
・Friction coefficient of guide rail	: μ=0.15
・Efficiency of chain transmission	: η=0.95
・Operation hours	: 8 hours/day
・Starting frequency	: 10 times/hour
・Stopping	: Immediate stopping (brake)
・Power supply	: Three-phase 200 V, 60 Hz
・Shaft arrangement	: Right

"A" and "B" in the example of selection means the mounting types shown in the figure to the left.
A: Foot mount
B: Hollow shaft mount
For the gear motor, conform to "A" in the example.

Selection of model (SI units)

1. Determination of reduction ratio

- Determine the reduction ratio based on the necessary output shaft revolution speed.
- Refer to the reduction ratios shown in the specification chart.

A : (1) Calculate the conveyor shaft revolution speed (n_C).

$$n_C=\frac{V\times1000}{D\times\pi}=\frac{14\times1000}{200\times\pi}=22.3\text{r/min}$$

(2) Calculate the hypoid motor output shaft revolution speed (n_L).

$$n_L=n_C\times\frac{2}{1}=44.6\text{r/min}$$

(3) Determine the reduction ratio.
According to the specification chart on page 131, an output shaft revolution speed of 45 r/min is closest to "60 Hz, 44.6 r/min" and therefore the suitable reduction ratio is 1/40.

B : (1) Calculate the conveyor shaft revolution speed (n_C).

$$n_C=\frac{V\times1000}{D\times\pi}=\frac{14\times1000}{200\times\pi}=22.3\text{r/min}$$

(2) Calculate the hypoid motor output shaft revolution speed (n_L).

$$n_L=n_C=22.3\text{r/min}$$

(3) Determine the reduction ratio.
According to the specification chart on page 131, an output shaft revolution speed of 22.5 r/min is closest to "60 Hz, 22.3 r/min" and therefore the suitable reduction ratio is 1/80.

2. Calculation of output shaft torque

- Calculate the necessary output shaft torque based on the load torque.
- According to the operating conditions, use the appropriate service factor shown in Table 1 on page 191 to calculate the corrected output shaft torque.

A : (1) Calculate the necessary conveyor shaft torque (T_C).

$$T_C=9.8\mu M\frac{D}{2}\times\frac{1}{1000}\times\frac{1}{\eta}$$

$$=9.8\times0.15\times150\times\frac{200}{2000}\times\frac{1}{0.95}=23.2\text{N}\cdot\text{m}$$

Selection of model (gravitational units)

1. Determination of reduction ratio

- Determine the reduction ratio based on the necessary output shaft revolution speed.
- Refer to the reduction ratios shown in the specification chart.

A : (1) Calculate the conveyor shaft revolution speed (n_C).

$$n_C=\frac{V\times1000}{D\times\pi}=\frac{14\times1000}{200\times\pi}=22.3\text{r/min}$$

(2) Calculate the hypoid motor output shaft revolution speed (n_L).

$$n_L=n_C\times\frac{2}{1}=44.6\text{r/min}$$

(3) Determine the reduction ratio.
According to the specification chart on page 131, an output shaft revolution speed of 45 r/min is closest to "60 Hz, 44.6 r/min" and therefore the suitable reduction ratio is 1/40.

B : (1) Calculate the conveyor shaft revolution speed (n_C).

$$n_C=\frac{V\times1000}{D\times\pi}=\frac{14\times1000}{200\times\pi}=22.3\text{r/min}$$

(2) Calculate the hypoid motor output shaft revolution speed (n_L).

$$n_L=n_C=22.3\text{r/min}$$

(3) Determine the reduction ratio.
According to the specification chart on page 131, an output shaft revolution speed of 22.5 r/min is closest to "60 Hz, 22.3 r/min" and therefore the suitable reduction ratio is 1/80.

2. Calculation of output shaft torque

- Calculate the necessary output shaft torque based on the load torque.
- According to the operating conditions, use the appropriate service factor shown in Table 1 on page 191 to calculate the corrected output shaft torque.

A : (1) Calculate the necessary conveyor shaft torque (T_C).

$$T_C=\mu W\frac{D}{2}\times\frac{1}{1000}\times\frac{1}{\eta}$$

$$=0.15\times150\times\frac{200}{2000}\times\frac{1}{0.95}=2.37\text{kgf}\cdot\text{m}$$

Selection

SI units continued

(2) Calculate the hypoid motor output shaft torque (T_L) based on the conveyor shaft torque.

$$T_L = T_C \times \frac{1}{2} \times \frac{1}{\eta}$$

$$= 23.2 \times \frac{1}{2} \times \frac{1}{0.95} = 12.2\,\text{N·m}$$

(3) Calculate the corrected output shaft torque (T_F).
According to Table 1 on page 191,
Service factor $C_F = 1$

$$T_F = T_L \times 1 = 12.2\,\text{N·m}$$

(4) Determine the motor capacity.
According to the specification charts on pages 173 to 175, the motor capacity suitable for "Reduction ratio: 1/40, 60 Hz, Torque: 12.2 N · m" is 0.1 kW.

B : (1) Calculate the necessary conveyor shaft torque (T_C).

$$T_C = 9.8\,\mu M \frac{D}{2} \times \frac{1}{1000}$$

$$T_C = 9.8 \times 0.15 \times 150 \times \frac{200}{2000} = 22.1\,\text{N·m}$$

(2) Because the hypoid motor output shaft torque (T_L).is equal to the conveyor shaft torque,

$$T_L = T_C = 22.1\,\text{N·m}$$

(3) Calculate the corrected output shaft torque (T_F).
According to Table 1 on page 191,
Service factor $C_F = 1$

$$T_F = T_L \times 1 = 22.1\,\text{N·m}$$

(4) Determine the motor capacity.
According to the specification charts on pages 173 to 175, the motor capacity suitable for "Reduction ratio: 1/80, 60 Hz, Torque: 22.1 N · m" is 0.1 kW.

3. Tentative determination of model number

In consideration of the reduction ratio, torque and immediate stopping requirements,

A : Tentatively select Brake-type Hypoid Motor HMTA010-19L40RB and confirm the conditions.

B : Tentatively select Brake-type Hypoid Motor HMTA010-30H80B and confirm the conditions.

4. Confirmation of moment of inertia of load and starting frequency

- When the motor starts to drive a load that has a large moment of inertia (or when the brake-type motor stops such a load), a large torque will occur instantaneously and may cause an unexpected accident. To avoid this, check the load coupling method and the moment of inertia of the load.

A : (1) Calculate the moment of inertia of the load on the conveyor shaft (I_C).

$$I_C = MR^2 = 150 \times 0.1^2 = 1.5\,\text{kg·m}^2$$

(2) Calculate the moment of inertia on the motor shaft (I_ℓ).

$$I_\ell = I_C \times \frac{1}{i_C^2} \times \frac{1}{i_L^2}$$

$$= 1.5 \times \left(\frac{1}{2}\right)^2 \times \left(\frac{1}{40}\right)^2$$

$$= 0.23 \times 10^{-3}\,\text{kg·m}^2$$

(3) Calculate the inertia ratio (U) for the hypoid motor.

$$U = \frac{I_\ell}{I_M}$$

According to Table 2 on page 191, the moment of inertia on the motor shaft (I_M) is

$0.66 \times 10^{-3}\,\text{kg·m}^2$.

$$U = \frac{0.23 \times 10^{-3}}{0.66 \times 10^{-3}} \fallingdotseq 0.35$$

Gravitational units

(2) Calculate the hypoid motor output shaft torque (T_L) based on the conveyor shaft torque.

$$T_L = T_C \times \frac{1}{2} \times \frac{1}{\eta}$$

$$= 2.37 \times \frac{1}{2} \times \frac{1}{0.95} = 1.25\,\text{kgf·m}$$

(3) Calculate the corrected output shaft torque (T_F).
According to Table 1 on page 191,
Service factor $C_F = 1$

$$T_F = T_L \times 1 = 1.25\,\text{kgf·m}$$

(4) Determine the motor capacity.
According to the specification charts on pages 173 to 175, the motor capacity suitable for "Reduction ratio: 1/40, 60 Hz, Torque: 1.25 kgf · m" is 0.1 kW.

B : (1) Calculate the necessary conveyor shaft torque (T_C).

$$T_C = \mu M \frac{D}{2} \times \frac{1}{1000}$$

$$T_C = 0.15 \times 150 \times \frac{200}{2000} = 2.25\,\text{kgf·m}$$

(2) Because the hypoid motor output shaft torque (T_L).is equal to the conveyor shaft torque,

$$T_L = T_C = 2.25\,\text{kgf·m}$$

(3) Calculate the corrected output shaft torque (T_F).
According to Table 1 on page 191,
Service factor $C_F = 1$

$$T_F = T_L \times 1 = 2.25\,\text{kgf·m}$$

(4) Determine the motor capacity.
According to the specification charts on pages 173 to 175, the motor capacity suitable for "Reduction ratio: 1/80, 60 Hz, Torque: 2.25 kgf · m" is 0.1 kW.

3. Tentative determination of model number

In consideration of the reduction ratio, torque and immediate stopping specifications, tentatively select the following brake-type hypoid motors and check the conditions.

A : HMTA010-19L40RB、

B : HMTA010-30H80B and confirm the conditions.

4. Confirmation of the load inertia (GD^2) and starting frequency

- When a motor starts to drive a load that has a large inertia (GD^2) (or when a brake-type motor stops such a load), a large torque will occur instantaneously and this may cause an unexpected accident. To avoid this, check the load coupling method and the load inertia (GD^2).

A : (1) Calculate the load inertia (GD^2) on the conveyor shaft (GD_C^2).

$$GD_C^2 = WD^2 = 150 \times 0.2^2 = 6\,\text{kgf·m}^2$$

(2) Calculate the load inertia (GD^2) on the motor shaft (GD_ℓ^2).

$$GD_\ell^2 = GD_C^2 \times \frac{1}{i_C^2} \times \frac{1}{i_L^2}$$

$$= 6 \times \left(\frac{1}{2}\right)^2 \times \left(\frac{1}{40}\right)^2$$

$$= 0.94 \times 10^{-3}\,\text{kgf·m}^2$$

(3) Calculate the inertia ratio (U) for the hypoid motor.

$$U = \frac{GD_\ell^2}{GD_M^2}$$

According to Table 2 on page 191, GD_M^2 is

$2.64 \times 10^{-3}\,\text{kgf·m}^2$.

$$U = \frac{0.94 \times 10^{-3}}{2.64 \times 10^{-3}} \fallingdotseq 0.36$$

Hypoid Motor TA Series Selection

SI units continued

(4) Confirmation of the starting frequency
According to Table 3 on page 191, the allowable starting frequency is 30 times/min, which is satisfactory.

B : (1) Calculate the moment of inertia of the load on the conveyor shaft (I_C).

$I_C = MR^2 = 150 \times 0.1^2 = 1.5 kg \cdot m^2$

(2) Calculate the moment of inertia on the motor shaft (I_ℓ).

$$I_\ell = I_C \times \frac{1}{i^2 L}$$
$$= 1.5 \times \left(\frac{1}{80}\right)^2$$
$$= 0.23 \times 10^{-3} kg \cdot m^2$$

(3) Calculate the inertia ratio (U) for the hypoid motor.

$$U = \frac{I_\ell}{I_M}$$

According to Table 2 on page 191, the moment of inertia on the motor shaft (I_M) is $0.66 \times 10^{-3} kg \cdot m^2$.

$$U = \frac{0.23 \times 10^{-3}}{0.66 \times 10^{-3}} \fallingdotseq 0.35$$

(4) Confirmation of the starting frequency
According to Table 3 on page 191, the allowable starting frequency is 6 times/min, which is satisfactory.

※ If the allowable starting frequency is not satisfactory, the reducer may be damaged and its life expectancy shortened. In such cases, redo model selection and check the conditions again, or use the selected motor with the starting frequency lowered.

- If you cannot lower the starting frequency, the usage life will be reduced, so please contact our company.
- If the inertia ratio is large, we recommend that you perform soft starting, using an inverter, etc.

5. Confirmation of overhang load (O.H.L.)

- When attaching a sprocket, gear or belt to the output shaft or input shaft, check that the overhang load acting on the shaft is less than the allowable overhang load (shown in the specification chart) for the hypoid motor used. Calculate the O.H.L.

$$O.H.L = \frac{2000 T_F \times f \times Lf}{D_S}$$

A : Assuming that the load acts on the midpoint of the length of the shaft, the following is obtained from Table 4 and Table 5 on page 191.

f = 1 Lf = 1
P.C.D. of RS60-13^T = 79.6 mm

$$O.H.L = \frac{2000 \times 12.2 \times 1 \times 1}{79.6}$$
$$= 307N$$

Check that the calculated O.H.L. is less than the allowable O.H.L.
Since the allowable O.H.L. shown in the characteristics chart is 1617 N, the calculated O.H.L. is within the limit.

B : Assuming that the load acts on a position located away from the hollow output shaft end by ℓ as shown in the figure below, the following is obtained.

f = 1 Lf = 1

$$O.H.L = \frac{2000 \times 22.1 \times 1 \times 1}{200}$$
$$= 221N$$

Check that the calculated O.H.L. is less than the allowable O.H.L.
Because the allowable O.H.L. shown in the specification chart is 2254 N, the calculated O.H.L. is within the limit.

※ If the calculated O.H.L. exceeds the allowable O.H.L., shift the load acting position toward the base of the output shaft, use a sprocket with longer P.C.D., or select a larger hypoid motor.

Gravitational units

(4) Confirmation of the starting frequency
According to Table 3 on page 191, the allowable starting frequency is 30 times/min, which is satisfactory.

B : (1) Calculate the load inertia (GD^2) on the conveyor shaft (GD^2_C).

$GD^2_C = WD^2 = 150 \times 0.2^2 = 6 kgf \cdot m^2$

(2) Calculate the load inertia (GD^2) on the motor shaft (GD^2_ℓ).

$$GD^2_\ell = GD^2_C \times \frac{1}{i^2 L}$$
$$= 6 \times \left(\frac{1}{80}\right)^2$$
$$= 0.94 \times 10^{-3} kgf \cdot m^2$$

(3) Calculate the inertia ratio (U) for the hypoid motor.

$$U = \frac{GD^2_\ell}{GD^2_M}$$

According to Table 2 on page 191, GD^2_M is $2.64 \times 10^{-3} kgf \cdot m^2$.

$$U = \frac{0.94 \times 10^{-3}}{2.64 \times 10^{-3}} \fallingdotseq 0.36$$

(4) Confirmation of the starting frequency
According to Table 3 on page 191, the allowable starting frequency is 6 times/min, which is satisfactory.

※ If the allowable starting frequency is not satisfactory, the reducer may be damaged and its life expectancy shortened. In such cases, redo model selection and check the conditions again, or use the selected motor with the starting frequency lowered.

- If you cannot lower the starting frequency, the usage life will be reduced, so please contact our company.
- If the inertia ratio is large, we recommend that you perform soft starting, using an inverter, etc.

5. Confirmation of overhang load (O.H.L.)

- When attaching a sprocket, gear or belt to the output shaft or input shaft, check that the overhang load acting on the shaft is less than the allowable overhang load (shown in the specification chart) for the hypoid motor used. Calculate the O.H.L.

$$O.H.L = \frac{2000 T_F \times f \times Lf}{D_S}$$

A : Assuming that the load acts on the midpoint of the length of the shaft, the following is obtained from Table 4 and Table 5 on page 191.

f = 1 Lf = 1
P.C.D. of RS60-13^T = 79.6 mm

$$O.H.L = \frac{2000 \times 1.25 \times 1 \times 1}{79.6}$$
$$= 31.4kgf$$

Check that the calculated O.H.L. is less than the allowable O.H.L.
Since the allowable O.H.L. shown in the characteristics chart is 165kgf, the calculated O.H.L. is within the limit.

B : Assuming that the load acts on a position located away from the hollow output shaft end by ℓ as shown in the figure below, the following is obtained.

f = 1 Lf = 1

$$O.H.L = \frac{2000 \times 2.25 \times 1 \times 1}{200}$$
$$= 22.5kgf$$

Check that the calculated O.H.L. is less than the allowable O.H.L.
Because the allowable O.H.L. shown in the specification chart is 230kgf, the calculated O.H.L. is within the limit.

※ If the calculated O.H.L. exceeds the allowable O.H.L., shift the load acting position toward the base of the output shaft, use a sprocket with longer P.C.D., or select a larger hypoid motor.

Selection

SI units continued

6. Determination of model number

The models that satisfy the above-mentioned mounting method, power supply, immediate stopping requirements, torque, reduction ratio, starting frequency and O.H.L. are as follows:

Brake-type hypoid motors

A : HMTA010-19L40RB

B : HMTA010-30H80B

Gravitational units

6. Determination of model number

The models that satisfy the above-mentioned mounting method, power supply, immediate stopping requirements, torque, reduction ratio, starting frequency and O.H.L. are as follows:

Brake-type hypoid motors

A : HMTA010-19L40RB

B : HMTA010-30H80B

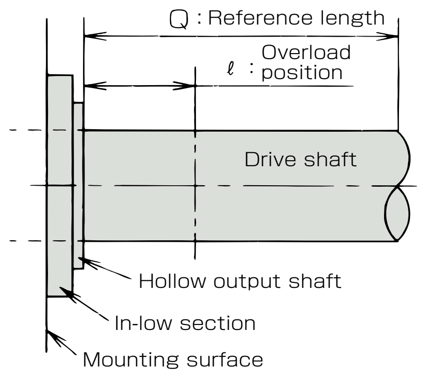
Cautions for selection of a hollow shaft type Overhang load (O.H.L.)

O.H.L. overload position

The allowable O.H.L. values for the following dimensions are shown in the specification charts (pages 131 to 133).

HMTA010-30H5～200 HMTA100-30H5～200	ℓ	9	13.7	18	27	36
	Q	36				
HMTA010-30H300～480 HMTA020-30H5～200 HMTA040-30H5～50 HMTA100-30H300～480 HMTA200-30H5～200	ℓ	10.5	16	21	31.5	42
	Q	42				
HMTA010-35H600～1200 HMTA020-35H300～480 HMTA040-35H60～200 HMTA075-35H5～50 HMTA100-35H600～1200 HMTA200-35H300～480	ℓ	14.5	22	29	43.5	58
	Q	58				
HMTA020-45H600～1200 HMTA040-45H300～480 HMTA075-45H60～200 HMTA150-45H5～80 HMTA220-45H5～60 HMTA200-45H600～1200	ℓ	16.5	25.1	33	49.5	66
	Q	66				
HMTA040-55H600～1200 HMTA075-55H300～480 HMTA150-55H100～200 HMTA220-55H80～120 HMTA370-55H5～60 HMTA550-55H5～40	ℓ	20.1	31.1	41	61.5	82
	Q	82				
ℓ/Q		0.25	0.38	0.5	0.75	1
Lf		0.8	0.9	1	1.5	2

Also applies to adapter and inline reducer types.



Hypoid Motor TA Series Others

■Special products

We manufacture special products in addition to our standard products. Please place orders for special products, using option and specification codes.

For instance, the following specifications are available. For an explanation of model numbers, refer to pages 127 and 128.

①Outdoor motor type ②Special voltage motor type ③Inverter motor type
④Ready for CE marking (0.1 kW to 0.75 kW) ⑤One-touch brake manual release type
⑥Specification of terminal box position ⑦Paint color
⑧Encoder type (described in the section for gear motors) ⑨POWER-LOCK type
⑩Shock Relay specification (hypoid motor, gear motor) ⑪Special hollow shaft hole diameter
⑪Manual shaft type (0.1 kW to 0.75 kW) (described in the section for gear motors)

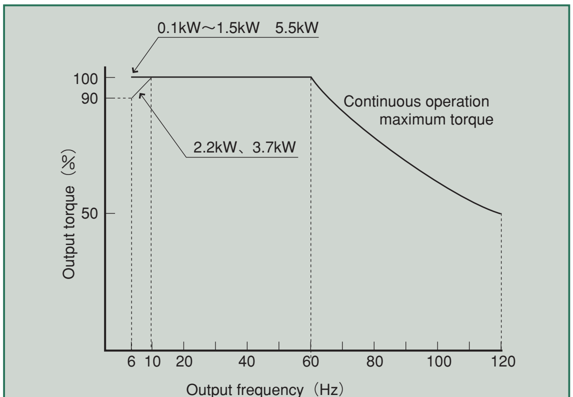
In addition, steel plate fan covers, steel plate terminal boxes, lead wire lagging, etc., are available for 0.1 kW to 0.75 kW models; special variable voltage, hot-zone-passing processing, class B insulation, class F insulation, cold-resistant types, heat-resistant types, etc., are available for 0.1 kW to 5.5 kW models.

Special product specifications

■Ready for CE marking (0.1 kW to 0.75 kW)

Manufacturers are obliged to attach the CE marking to products conforming to the Directive on Product Safety (EU directive) from the European Union (EU), a system that ensures the free distribution and safety of products in the EU. For the Hypoid Motor TA Series and Gear Motor TA Series, brakeless-type and brake-type 200 V level and 400 V level motors conforming to the Directive on Machinery and the Directive on Low Voltage can be incorporated in products to order with short lead times.

■Inverter motor type
(Optimum for inverter driving)



The rating of the motor at a frequency of 60 Hz is 100% output torque.
(Base frequency set to 60 Hz)

Quick-delivery
made-to-order product

★Exactly the same size as the standard product
★Quick delivery time of one week
★Low price

An inverter-ready motor optimum for inverter driving is coupled directly.

At frequencies of 6 to 60 Hz, constant-torque running can be performed with the torque at a frequency of 60 Hz being used as the continuous running torque.

For the 2.2 kW and 3.7 kW devices, reduction of torque is produced at frequencies of 10 Hz or less. (90% torque at a frequency of 6 Hz.)

- At frequencies of 60 to 120 Hz, as with the standard motor, there is a characteristic zone with constant horsepower and the output torque is limited. Care should therefore be taken with the load torque.
- Be sure to adjust the output voltage of the inverter so that the input voltage from the inverter to the motor conforms to the voltage and frequency indicated on the nameplate.
- If 100% torque is required at low frequencies, apply a torque boost with the inverter as necessary. Continuous operation for a long time with too much torque boost applied will cause overheating, which should be avoided.
- The motor may resonate depending on the revolution speed and frequency. When operating continuously, avoid the resonance frequency by, for example, changing the carrier frequency setting of the inverter.
- When the load is low, at the time of a trial run, for example, the current may become large at low frequencies. This is due to motor characteristics and does not indicate an abnormal condition.
  It is possible to decrease the current by changing the setting of the inverter (reducing the torque boost, reducing the V/F ratio and adjusting the torque vector).
- In order to prevent the motor from overheating, use an electronic thermal relay adjusted to the general motor characteristics or provide a thermal relay, etc., between the inverter and motor.
- For the brake-types, refer to the wiring diagram on page 190. If braking is performed at high frequencies above 60 Hz, mechanical damage or excessive wear on the lining of the brake will be caused. Therefore, be sure to perform braking at frequencies of 60 Hz or less.

Hypoid Motor TA Series Others

POWER-LOCK type (made-to-order products for other than the standard shaft hole diameter)

Attaching the POWER-LOCK of external tightening type to the hollow shaft will realize keyless coupling easily.

Features

(1) Keyway not necessary

A keyway in the drive shaft is not necessary.

(2) Easy coupling and decoupling

Since no key is used, installation and removal can be performed easily.

(3) Connection remains tight and secure

Strong frictional coupling makes it unnecessary to take troublesome measures against becoming detached or loose.

(4) No backlash and no fretting corrosion

Because of keyless coupling, the drive shaft and hollow shaft are free of backlash.

Recommended models

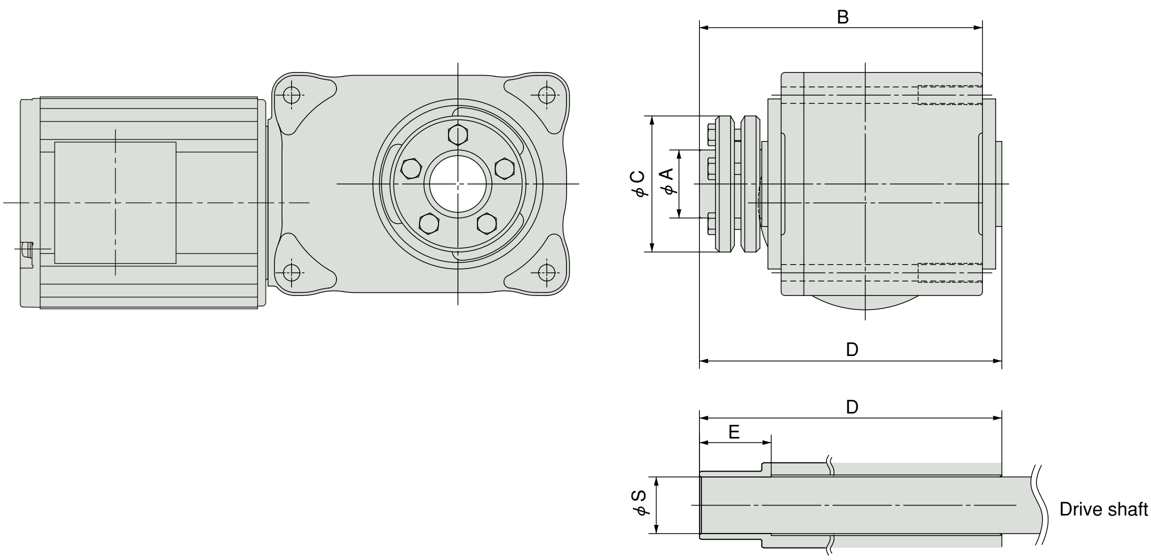
0.1kW～0.75kW 1/5～1/200

1.5kW 1/5～1/80

Specifications

1. Because the characteristics (allowable output shaft torque, allowable output shaft O.H.L., dimensions, etc.) of the hypoid motor are the same as those of the standard hollow-shaft-type hypoid motor, refer to the values shown on those pages.
2. For selection of a hypoid motor model and the notes on handing of the hypoid motor and POWER-LOCK, refer to the descriptions and the instruction manual for the standard product.

Mounting list



Unit:mm

Capacity kW	Reduction ratio	φS H7	φA	φC	E	D	B	Power lock model number	Bolt size	Tightening torque MA N·m {kgf·m}
0.1	1/5～1/200	30	36	72	38	160	150	PL036×072SL	M6×20	11.8 {1.2}
0.2	1/5～1/200									
0.4	1/5～1/50									
	1/60～1/200	35	44	80	40	188	178	PL044×080SL	M6×20	11.8 {1.2}
0.75	1/5～1/50									
	1/60～1/200	45	55	100	45	210	200	PL055×100SL	M6×25	11.8 {1.2}
1.5	1/5～1/80									

Note 1) The drive shaft to be coupled to the hypoid motor hollow shaft should have a dimensional tolerance of φS h6, a finish length of dimension E or longer and a surface roughness of 12 S or less. The finished surface of the drive shaft should be located within the range indicated by E.

Note 2) For 0.1 to 0.4 kW and 1/5 to 1/50 of 0.75 kW, a special safety cap is available.

Hypoid Motor TA Series Others

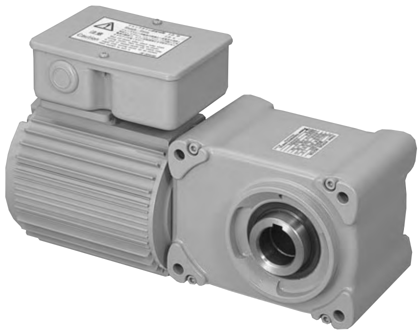
Shock Relay specification (hypoid motor, gear motor)

If the motor current exceeds the set value due to an overload, the shock relay functions after a given time to stop the motor directly, thus protecting the machinery.

Features

- The dedicated Shock Relay is included in the terminal box: only wiring of the motor power supply is required.
- The Shock Relay detects the motor current and functions instantaneously to protect the reducer and machinery.
- The load current and shock time can be set, enabling appropriate protection.

Note 1) Shock Relays ready for 400 V level and CE marking are not available.
Note 2) The shock relay cannot be used for inverter driving.



Ambient conditions

Ambient temperature	0～40℃
Ambient humidity	Less than 85% (non condensing)
Mounting direction	No limitations on mounting angles: horizontal, vertical or inclined
Vibration	4.9m/s² {0.5G} or less (20～50Hz)

Hypoid motor model list

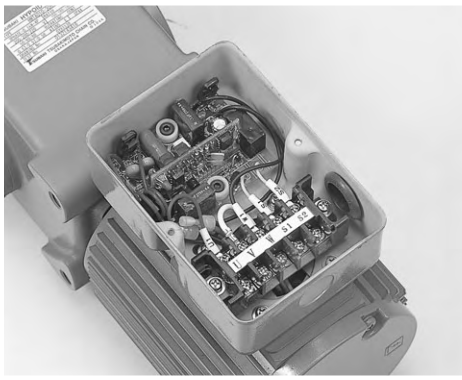
Reduction ratio / Capacity	0.1kW	0.2kW
1/5	●	●
1/10	●	●
1/15	●	●
1/20	●	●
1/25	●	●
1/30	●	●
1/40	●	●
1/50	●	●
1/60	●	●
1/80	●	●
1/100	●	●
1/120	●	●
1/160	●	●
1/200	●	●
1/300	●	●
1/360	●	●
1/480	●	●
1/600	●	●
1/720	●	●
1/960	●	●
1/1200	●	●

Example of model number : HMTA010-30H50SR
Indoor, non-brake, standard shaft arrangement and mounting type.

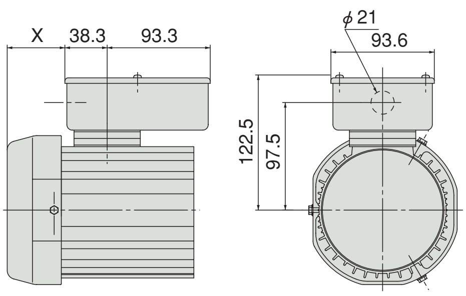
Gear motor model list

Reduction ratio / Capacity	0.1kW	0.2kW
1/5	●	●
1/10	●	●
1/15	●	●
1/20	●	●
1/25	●	●
1/30	●	●
1/40	●	●
1/50	●	●
1/60	●	●
1/75	●	●
1/100	●	●
1/120	●	●
1/165	●	●
1/200	●	●
1/300	●	●
1/360	●	●
1/450	●	●
1/600	●	●
1/720	●	●
1/1000	●	●
1/1200	●	●

Example of model number : GMTA010-18L50SR
Indoor, non-brake, standard shaft arrangement and mounting type.



Terminal box dimension list (All other dimensions are the standard except for the terminal box)



(mm)

Dimension X		
Motor capacity	0.1kW	0.2kW
X	14.2	52.2

※The 0.1 kW motor has no fan or fan cover.

Hypoid Motor TA Series Others

■Shaft diameter available for hollow shaft type

(The power lock type for other than the standard shaft hole diameter is a made-to-order product.)

Model number	Motor capacity	Reduction ratio	Shaft diameter (H8) tolerance							
			φ20	φ25	φ30	φ35	φ40	φ45	φ50	φ55
HMTA010-30H5 (B)～480 (B)	0.1 kW	1/5～1/480	○	○	●					
HMTA020-30H5 (B)～200 (B)	0.2 kW	1/5～1/200								
HMTA040-30H5 (B)～50 (B)	0.4 kW	1/5～1/50								
HMTA100-30H5 (B)～480 (B)	100W	1/5～1/480								
HMTA200-30H5 (B)～200 (B)	200W	1/5～1/200								
HMTA010-35H600 (B)～1200 (B)	0.1 kW	1/600～1/1200		○	○	●				
HMTA020-35H300 (B)～480 (B)	0.2 kW	1/300～1/480								
HMTA040-35H60 (B)～200 (B)	0.4 kW	1/60～1/200								
HMTA075-35H5 (B)～50 (B)	0.75kW	1/5～1/50								
HMTA100-35H600 (B)～1200 (B)	100W	1/60～1/1200								
HMTA200-35H300 (B)～480 (B)	200W	1/300～1/480								
HMTA020-45H600 (B)～1200 (B)	0.2 kW	1/600～1/1200			○	○	○	●		
HMTA040-45H300 (B)～480 (B)	0.4 kW	1/300～1/480								
HMTA075-45H60 (B)～200 (B)	0.75kW	1/60～1/200								
HMTA150-45H5 (B)～80 (B)	1.5 kW	1/5～1/80								
HMTA220-45H5 (B)～60 (B)	2.2 kW	1/5～1/60								
HMTA200-45H600 (B)～1200 (B)	200W	1/600～1/1200								
HMTA040-55H600 (B)～1200 (B)	0.4 kW	1/600～1/1200					△	△	△	●
HMTA075-55H300 (B)～480 (B)	0.75kW	1/300～1/480								
HMTA150-55H100 (B)～200 (B)	1.5 kW	1/100～1/200								
HMTA220-55H80 (B)～120 (B)	2.2 kW	1/80～1/120								
HMTA370-55H5 (B)～60 (B)	3.7 kW	1/5～1/60								
HMTA550-55H5 (B)～40 (B)	5.5 kW	1/5～1/40								

Also applies to the adapter and inline reducer types.

●Standard product ○Quick delivery product
△Made-to-order product

The key size corresponding to each hole diameter is as shown below.
{The key used is JIS B1301-1976 (New JIS key).}

Shaft diameter	Key
φ20	6×6
φ25	8×7
φ30	8×7
φ35	10×8
φ40	12×8
φ45	14×9
φ50	14×9
φ55	16×10

For hole diameters other than those shown here, please consult with us.