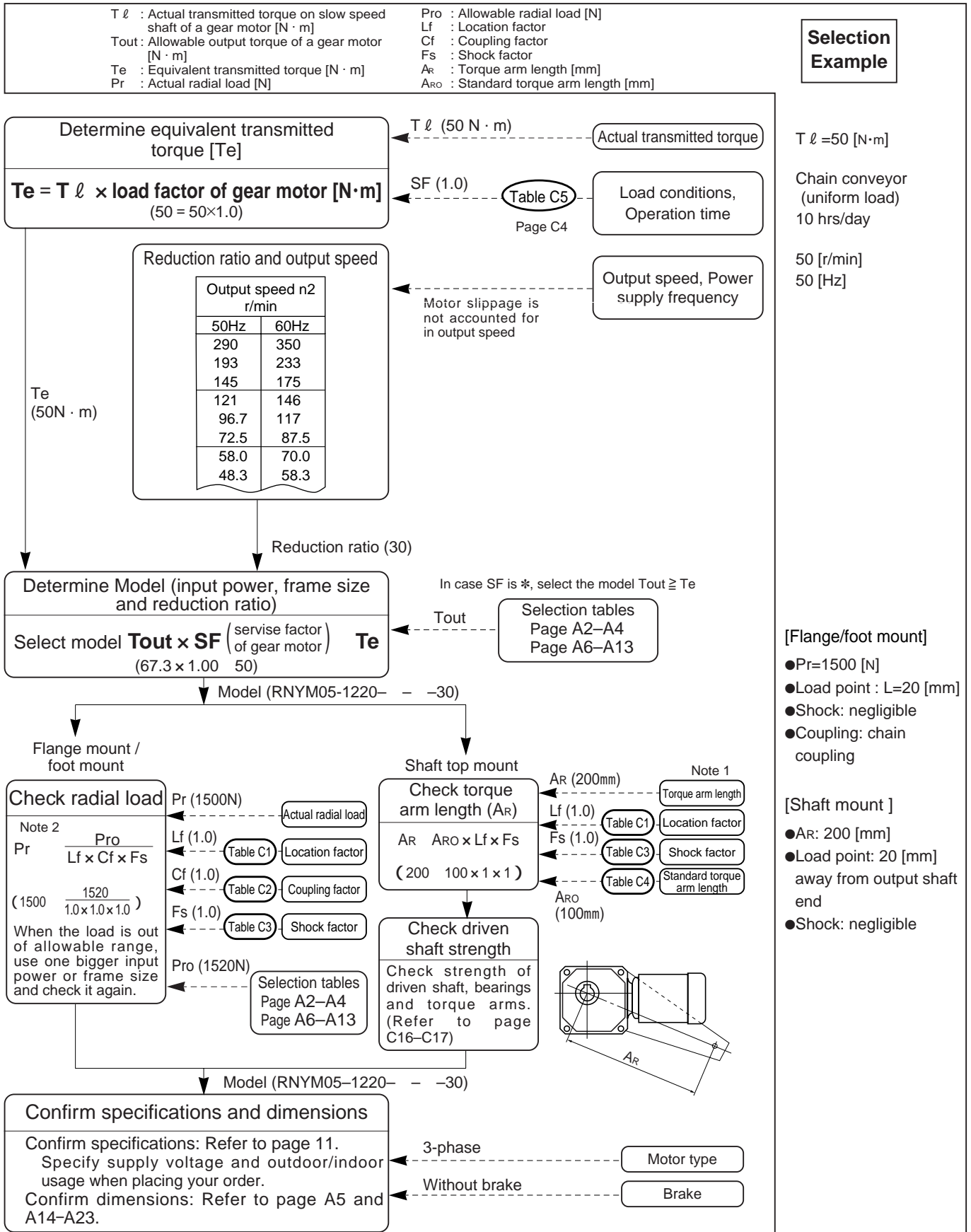


Technical Data

1. Hollow shaft type (RNYM series)



Model (RNYM05-1220-30)

Note 1: Torque arm length is a distance between the center of driven shaft and the torque arm whirl stop.

Note 2: Refer to page C11 for the formula in case of axial load

Table C1 Location factor [Lf]

Frame size	L (mm)								
	10	20	30	40	50	60	70	80	90
#03, #07	1.0	1.0	1.2	1.3	1.4	1.5	1.7	1.8	1.9
#17	1.0	1.0	1.2	1.3	1.4	1.5	1.6	1.7	1.8
#60, #63, #64	1.0	1.0	1.1	1.2	1.2	1.3	1.3	1.4	1.4
#1120	1.0	1.0	1.2	1.3	1.4	1.5	1.6	1.8	1.9
#1220	1.0	1.0	1.2	1.3	1.4	1.5	1.6	1.7	1.8
#1230	1.0	1.0	1.2	1.3	1.4	1.5	1.6	1.7	1.8
#1320	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7
#1330	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7
#1420	1.0	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.6
#1430	1.0	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.6
#1520	1.0	1.0	1.1	1.2	1.3	1.3	1.4	1.5	1.6
#1530, #1531, #56	1.0	1.0	1.1	1.2	1.3	1.3	1.4	1.5	1.5

Note : "L" indicates the distance from hollow shaft end to the point of radial load.

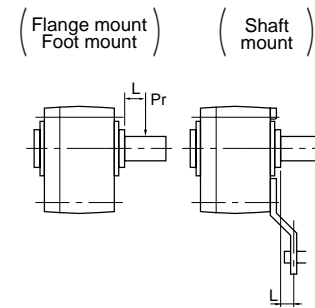


Table C2 Coupling factor [Cf]

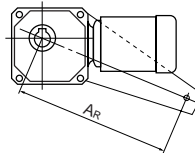
Coupling method	Cf
Chain	1
Gear	1.25
V-belt	1.5

Table C3 Shock factor [Fs]

Degree of shock	Fs
Negligible shock	1
Moderate shock	1-1.2
Heavy shock	1.4-1.6

Table C4 Standard torque arm length [AR0]

Frame size	AR0	Frame size	AR0	Frame size	AR0
03,07,17	50	1420	140	1430,461	160
1120	80	1520	150	1530,1531,56	200
1220	100	1230	100	60,63,64	280
1320	120	1330,361	130		



2. SELECTION OF LOAD FACTOR

The Load Factor is rated for the characteristics of the driven machine.

The tabulated ratings are based on a running time of 10 hours per day with uniform load.

For your reference, please see method ① and ② shown below.

① Recommended Load Factor by the Driven Application.

Table C5 Service Factor [S.F.]

Operation time Load conditions	10 hrs/ day max.	10-24 hrs/ day max.	Applications
Uniform	1	1.25	Conveyors (uniform load), Pumps (centrifugal), Food processing machine (rice polishers, canning machines), Elevators (uniform load), Plastic extruders, Agitators (pure liquid), Bar screens
Moderate shock	1.25	1.5	Conveyors (variable speed and heavy duty), Food processing machine (peat slicer, dough mixer, meat grinder), Elevators (heavy duty), Agitators (liquid and solid, variable-density liquid), Feeders (belts, aprons, screws), Thickeners, Flocculators, Machine tools
Heavy shock	1.75	2.0	Punching presses, Tapping machine, Crushers (crusher mills), Hoists (heavy duty), Drum barkers, Log hauls, Cutters, Platers

Note 1: The service factors and applications in the above table are only for your reference. Actual applications and their characteristics may be variable.

② Recommended Load Factor Modifications for Frequent Start-Stop Operation.

Please select a model using Table C6 and check the motor thermal rating (Table C7)

Table C6 Number of Starts-Stops and Load Factor.

Number of starts-stops (Times/hour)	~ 10 hours/day			24 hours/day		
	I	II	III	I	II	III
~ 10	1.00	1.15	1.50	1.20	1.30	1.65
~ 200	1.10	1.35	1.65	1.30	1.50	1.85
~ 500	1.15	1.50	1.80	1.40	1.65	2.00

The ratio of Moment of Inertia (The ratio of GD^2) =
$$\frac{\text{Total Moment of Inertia(} GD^2 \text{)as seen from the motor shaft}}{\text{Moment of Inertia(} GD^2 \text{)of motor}}$$

I : Allowable ratio of Moment of Inertia(GD^2) 0.3

II : Allowable ratio of Moment of Inertia (GD^2) 3

III : Allowable ratio of Moment of Inertia(GD^2) 10

Note : 1. The number of starts-stops includes brake or clutch operation times.

Note : 2. Consult us when starting under loaded conditions.

Table C7 Motor thermal rating (C×Z)

Note : Contact us regarding a motor for inverters and a single-phase motor.

Output Motor kW	Allowable C×Z (35%ED)	Allowable C×Z (35%ED-50ED%)	Allowable C×Z (50%ED-80ED%)	Allowable C×Z (80%ED-100ED%)	Motor moment of inertia kgf · m ²		Motor GD ² kgf · m ²	
					Standard	With brake	Standard	With brake
0.1	3200	3000	2000	1200	0.00033	0.00035	0.0013	0.0014
0.2	2200	2800	2800	2500	0.00050	0.00055	0.002	0.0022
0.25	2200	2800	2800	2500	0.00050	0.00055	0.002	0.0022
0.4	1800	2200	1500	1500	0.00065	0.00068	0.0026	0.0027
0.55	1800	2200	1500	1500	0.00101	0.00111	0.00405	0.00445
0.75	1400	1400	800	500	0.00120	0.00130	0.0048	0.0052
1.1	1400	1400	800	500	0.00185	0.00208	0.0074	0.0083
1.5	1200	1200	500	400	0.00213	0.00235	0.0085	0.0094
2.2	1000	900	400	200	0.00333	0.00373	0.0133	0.0149
3.0	1000	900	400	200	0.00700	0.00810	0.0281	0.0325
3.7	800	800	800	700	0.00848	0.00958	0.0339	0.0383
5.5	300	300	200	150	0.01143	0.01253	0.0457	0.0501

C × Z calculated below (1) to (3) should be less than allowable C × Z listed in Table C7.

(1) Obtain the C value.

$$C = \frac{GD_M^2 + GD_L^2}{GD_M^2}$$

GD_M² : Moment of inertia (kgf · m²) or GD² (kg · m²) of motor.

GD_L² : Total moment of inertia (kgf · m²) or GD² (kg · m²) of load as seen from the motor.

(2) Obtain the Z value, number of starts per hour.

(a) Assume that one operating period consists of “ on time ” t_a (sec), “ off time ” t_b (sec) and the motor is started n_r (times/cycle)

$$Z_r = \frac{3600n_r}{t_a + t_b} \text{ (times/hr)}$$

(b) When inching, n_i (times / cycle) is included in 1 cycle (t_a+t_b), the number of inching times per hour Z_i, and then included in the number of starts.

$$Z_i = \frac{3600n_i}{t_a + t_b} \text{ (times/hr)}$$

(c) Calculate Z (times/hr) by (a) and (b).

$$Z = Z_r + 1/2 \cdot Z_i = \frac{3600}{t_a + t_b} \cdot (n_r + \frac{1}{2} n_i) \text{ (times/hr)}$$

(3) Calculate C multiplied by Z.

Use the C obtained in step (1) and Z in step (2).

(4) Obtain the duty cycle %ED and check with table above.

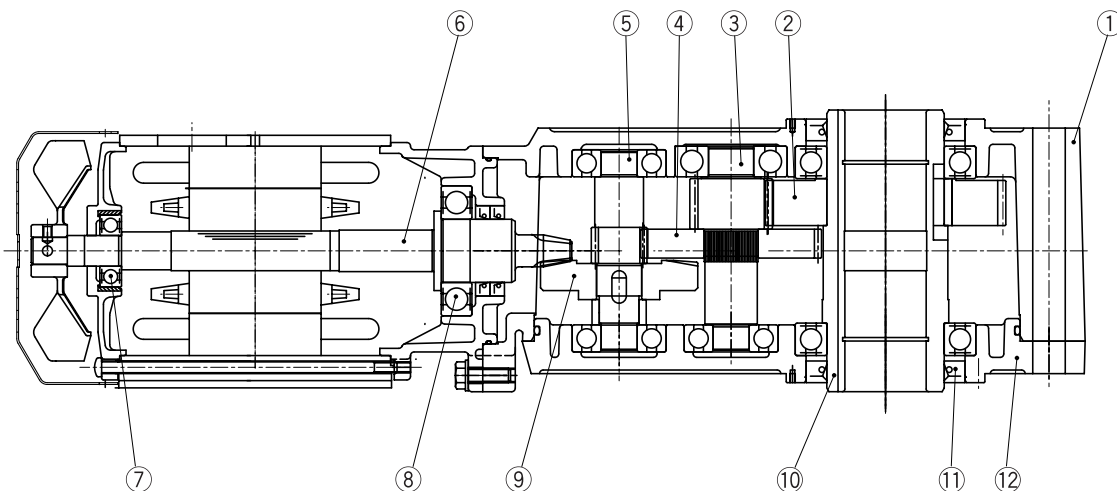
$$\%ED = \frac{t_a}{t_a + t_b} \times 100$$

Construction & Name plate



Construction

Hollow shaft type example (RNYM1-1530-120)



Part No.	Description	Part No.	Description	Part No.	Description	Part No.	Description
1	Casing (1)	4	Gear	7	Bearing	10	Output shaft
2	Gear	5	Pinion shaft	8	Bearing	11	Oil seal
3	Pinion shaft	6	Hypoid pinion shaft	9	Hypoid gear	12	Casing (2)

Name plate

① Model name of gear motor (refer to page 13)

② Reduction ratio

- Input power
- Input features

③ Manufacturing serial No.

HYPONIC DRIVE® INDUCTION GEAR MOTOR

MODEL ①

RATIO ②

kW P TYPE ④ / ⑤

VOLTS	FRAME
Hz	M/B INS. CLASS
M. AMP	TIME RATING
r/min	JISC4004 JP
B. AMP	B. TORQUE N·m

SERIAL NO. ③

◆ Sumitomo Heavy Industries, Ltd. JAPAN AM446516

④ Motor type

⑤ Brake type

- Brake features

(1) Moment of inertia of rotating motion

Rotating motion on the center of gravity		Rotating motion off the center of gravity	
	$J = \frac{1}{8} MD^2 \text{ [kg} \cdot \text{m}^2]$		$J = \frac{M}{4} \left(\frac{1}{2} D^2 + 4R^2 \right) \text{ [kg} \cdot \text{m}^2]$
	$J = \frac{1}{8} M (D^2 + d^2) \text{ [kg} \cdot \text{m}^2]$		$J = \frac{M}{4} \left(\frac{a^2 + b^2}{3} + 4R^2 \right) \text{ [kg} \cdot \text{m}^2]$
	$J = \frac{1}{12} M (a^2 + b^2) \text{ [kg} \cdot \text{m}^2]$		$J = \frac{1}{12} M (4L^2 + C^2) \text{ [kg} \cdot \text{m}^2]$

(2) Moment of inertia of rectilinear motion

General application		$J = \frac{M}{4} \left(\frac{V}{Ns} \right)^2 = \frac{M}{4} D^2 \text{ [kg} \cdot \text{m}^2]$
Horizontal motion by conveyor		$J = \frac{M}{4} \left(\frac{M_1 + M_2}{2} + M_3 + M_4 \right) \times D^2 \text{ [kg} \cdot \text{m}^2]$
Horizontal motion by lead screw		$J = \frac{M}{4} \left(\frac{V}{Ns} \right)^2 = \frac{M}{4} \left(\frac{P}{\pi} \right)^2 \text{ [kg} \cdot \text{m}^2]$
Vertical motion by hoist		$J = \frac{M_1 D^2}{4} + \frac{1}{8} M_2 D^2 \text{ [kg} \cdot \text{m}^2]$

(3) Calculation of moment of inertia at different rotating speeds

	$J_l = \left(\frac{Ns_2}{Ns_1} \right)^2 J$
--	--

(1) GD² of rotating motion

Rotating motion on the center of gravity		Rotating motion off the center of gravity	
	$GD^2 = \frac{1}{2} WD^2$ [kg · m ²]		$GD^2 = W \left(\frac{1}{2} D^2 + 4R^2 \right)$ [kg · m ²]
	$GD^2 = \frac{1}{2} W (D^2 + d^2)$ [kg · m ²]		$GD^2 = W \left(\frac{a^2 + b^2}{3} + 4R^2 \right)$ [kg · m ²]
	$GD^2 = \frac{1}{3} W (a^2 + b^2)$ [kg · m ²]		$GD^2 = \frac{1}{3} W (4L^2 + C^2)$ [kg · m ²]

(2) GD² of rectilinear motion

General application		$GD^2 = W \left(\frac{V}{N} \right)^2 = WD^2$ [kg · m ²]
Horizontal motion by conveyor		$GD^2 = \left(\frac{W_1 + W_2}{2} + W_3 + W_4 \right) \times D^2$ [kg · m ²]
Horizontal motion by lead screw		$GD^2 = W \left(\frac{V}{N} \right)^2 = W \left(\frac{P}{N} \right)^2$ [kg · m ²]
Vertical motion by hoist		$GD^2 = W_1 D^2 + \frac{1}{2} W_2 D^2$ [kg · m ²]

(3) Calculation of GD² at different rotation speeds

	$GD_l^2 = \left(\frac{N_2}{N_1} \right)^2 GD^2$
--	--

Moment of inertia and GD² of gearmotors



Table C8

Motor type			15W		25W		40W			
			Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²
			kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²
			01#,03#		01#,03#		05#,07#		17#	
In door	3-phase	Without brake	0.000050	0.00020	0.000058	0.00023	0.000070	0.00028	0.00011	0.00043
		With brake	0.000070	0.00028	0.000078	0.00031	0.000090	0.00036	0.00012	0.00047
	Single-phase Single-phase reversible	Without brake	0.000050	0.00020	0.000058	0.00023	0.000070	0.00028	0.00015	0.00058
		With brake	0.000070	0.00028	0.000078	0.00031	0.000090	0.00036	0.00015	0.00061
Water proof	3-phase	Without brake	0.000050	0.00020	0.000058	0.00023	0.000070	0.00028	–	–
		With brake	0.000070	0.00028	0.000078	0.00031	0.000090	0.00036	–	–
	Single-phase Single-phase reversible	Without brake	0.000050	0.00020	0.000058	0.00023	0.000070	0.00028	–	–
		With brake	0.000070	0.00028	0.000078	0.00031	0.000090	0.00036	–	–

Motor type			60W				90W	
			Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²
			kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²
			07#		17#		15#,17#	
In door	3-phase	Without brake	0.000070	0.00028	0.00012	0.00049	0.00015	0.00058
		With brake	0.000090	0.00036	0.00013	0.00052	0.00016	0.00062
	Single-phase Single-phase reversible	Without brake	0.000070	0.00028	0.00016	0.00065	0.00021	0.00083
		With brake	0.000090	0.00036	0.00017	0.00068	0.00022	0.00086
Water proof	3-phase	Without brake	0.000070	0.00028	–	–	–	–
		With brake	0.000090	0.00036	–	–	–	–
	Single-phase Single-phase reversible	Without brake	0.000070	0.00028	–	–	–	–
		With brake	0.000090	0.00036	–	–	–	–

Motor type			0.1kW		0.2kW		0.25kW		0.4kW		0.55kW	
			Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²
			kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²
			07#		17#		15#,17#		15#,17#		15#,17#	
In door	3-phase	Without brake	0.00033	0.0013	0.00050	0.0020	0.00065	0.0026	0.00065	0.0026	0.00101	0.00405
		With brake	0.00035	0.0014	0.00055	0.0022	0.00068	0.0027	0.00068	0.0027	0.00111	0.00445
	Single-phase	Without brake	0.00050	0.0020	0.00065	0.0026	–	–	0.00120	0.0048	–	–
		With brake	0.00055	0.0022	0.00068	0.0027	–	–	0.00130	0.0052	–	–
	For inverter	Without brake	0.00050	0.0020	0.00065	0.0026	–	–	0.00120	0.0048	–	–
		With brake	0.00055	0.0022	0.00068	0.0027	–	–	0.00130	0.0052	–	–
Out door Light dust proof	3-phase	Without brake	0.00033	0.0013	0.00050	0.0020	0.00065	0.0026	0.00065	0.0026	0.00101	0.00405
		With brake	0.00035	0.0014	0.00055	0.0022	0.00068	0.0027	0.00068	0.0027	0.00111	0.00445
	Single-phase	Without brake	0.00050	0.0020	0.00065	0.0026	–	–	0.00120	0.0048	–	–
		With brake	0.00055	0.0022	0.00068	0.0027	–	–	0.00130	0.0052	–	–
	For inverter	Without brake	0.00050	0.0020	0.00065	0.0026	–	–	0.00120	0.0048	–	–
		With brake	0.00055	0.0022	0.00068	0.0027	–	–	0.00130	0.0052	–	–
Protected explosion proof	3-phase	Without brake	0.00033	0.0013	0.00050	0.0020	0.00065	0.0026	0.00065	0.0026	0.00101	0.00405

Motor type			0.75kW		1.1kW		1.5kW		2.2kW		3.0kW	
			Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²	Moment of inertia	GD ²
			kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²	kg · m ²
			07#		17#		15#,17#		15#,17#		15#,17#	
In door	3-phase	Without brake	0.00120	0.0048	0.00185	0.0074	0.00213	0.0085	0.00333	0.0133	0.00703	0.0281
		With brake	0.00130	0.0052	0.00208	0.0083	0.00235	0.0094	0.00373	0.0149	0.00813	0.0325
	For inverter	Without brake	0.00213	0.0085	–	–	0.00333	0.0133	0.00848	0.0339	–	–
		With brake	0.00235	0.0094	–	–	0.00373	0.0149	0.00958	0.0383	–	–
Out door Light dust proof	3-phase	Without brake	0.00120	0.0048	0.00185	0.0074	0.00213	0.0085	0.00333	0.0133	0.00703	0.0281
		With brake	0.00130	0.0052	0.00208	0.0083	0.00235	0.0094	0.00373	0.0149	0.00813	0.0325
	For inverter	Without brake	0.00213	0.0085	–	–	0.00333	0.0133	0.00848	0.0339	–	–
		With brake	0.00235	0.0094	–	–	0.00373	0.0149	0.00958	0.0383	–	–
Protected explosion proof	3-phase	Without brake	0.00120	0.0048	0.00185	0.0074	0.00213	0.0085	0.00333	0.0133	0.00703	0.0281

Motor type			3.7kW		5.5kW	
			Moment of inertia	GD ²	Moment of inertia	GD ²
			kg · m ²	kg · m ²	kg · m ²	kg · m ²
			07#		17#	
In door	3-phase	Without brake	0.00848	0.0339	0.0114	0.0457
		With brake	0.00958	0.0383	0.0125	0.0501
	For inverter	Without brake	0.0114	0.0457	–	–
		With brake	0.0125	0.0501	–	–
Out door Light dust proof	3-phase	Without brake	0.00848	0.0339	0.0114	0.0457
		With brake	0.00958	0.0383	0.0125	0.0501
	For inverter	Without brake	0.0114	0.0457	–	–
		With brake	0.0125	0.0501	–	–
Protected explosion proof	3-phase	Without brake	0.00848	0.0339	0.0114	0.0457

Note 1. Moment of inertia/GD² on reducer and motor accounted for in the value stipulated in the tables.
 Note 2. The values in the tables are subject to change without notice.

Technical data

Rotating direction & Reduction ratio



Rotating direction

Table C9 Output shaft rotating direction

Frame size	Reduction ratio	Frame size	Reduction ratio
01, 03, 05, 07	5, 80, 100, 120, 160, 200, 240	01, 03, 05, 07	7.5, 10, 12, 15, 20, 25, 30, 40, 50, 60
15, 17	5, 7.5, 10, 12, 80, 100, 120, 150, 200, 240	15, 17	15, 20, 25, 30, 40, 50, 60
361	300, 360, 480, 560, 750, 900, 1200, 1440	361	–
461	300, 360, 480, 560, 750, 900, 1200, 1440	461	–
56	300, 360, 480, 560, 750, 900, 1200, 1440	56	–
60	–	60	80, 100, 120
63	10, 12, 15, 20, 25, 30	63	40, 50
64	10, 12, 15, 20, 25	64	30, 40
1120	5, 7, 10, 12, 15, 20, 25, 30, 40, 50, 60	1120	–
1220	5, 7, 10, 12, 15, 20, 25, 30, 40, 50, 60	1220	–
1230	–	1230	80, 100, 120, 150, 200, 240
1320	5, 7, 10, 12, 15, 20, 25, 30, 40, 50, 60	1320	–
1330	–	1330	80, 100, 120, 150, 200, 240
1420	5, 7, 10, 12, 15, 20, 25, 30, 40, 50, 60	1420	–
1430	–	1430	80, 100, 120, 150, 200, 240
1520	5, 7, 10, 12, 15, 20, 25, 30, 40, 50, 60	1520	–
1530	–	1530	80, 100, 120, 150, 200, 240
1531	–	1531	40, 50, 60, 80

Actual reduction ratio

Table C10 Actual reduction ratio

Frame size	Reduction ratio																		
	5	7	7.5	10	12	15	20	25	30	40	50	60	80	100	120	150	160	200	240
01, 03, 05, 07	5.01		7.50	10.00	12.27	15.00	20.00	24.55	30.00	40.00	50.00	60.91	80.00	100.00	121.82		160.00	200.00	243.64
15, 17	5.00		7.50	10.18	12.00	15.00	20.36	25.42	30.48	40.00	50.71	60.83	80.00	103.16	120.00	152.14		195.61	243.64
1120	5.00	7.03		9.81	11.74	15.26	20.67	24.62	30.00	41.33	49.23	60.00							
1220	5.00	7.03		9.81	11.74	15.26	20.67	24.62	30.00	41.33	49.23	60.00							
1320	5.00	7.03		9.81	11.74	15.26	20.67	24.62	30.00	41.33	49.23	60.00							
1420	5.00	6.97		10.00	11.96	14.75	19.69	25.00	30.45	39.38	50.00	60.91							
1520	5.00	7.03		9.81	11.74	15.26	20.67	24.62	30.00	41.33	49.23	60.00							
1230													81.45	101.01	120.15	151.51		200.39	231.27
1330													81.94	102.27	122.54	153.40		199.13	232.50
1430													80.37	102.35	122.64	153.52		199.29	240.00
1530													79.63	101.32	119.17	151.99		191.52	232.25
1531										39.20	49.88	57.60	77.42						
60													80.50	102.94	119.00				
63				10.31	12.47	14.48	20.39	24.15	29.24	41.16	49.00								
64				10.34	12.40	14.57	20.88	24.33	29.40	40.25									

Frame size	Reduction ratio							
	300	360	480	560	750	900	1200	1440
361	306.80	367.6	465.00	564.51	732.78	855.60	1239.00	1484.60
461	307.05	367.91	480.00	564.97	733.37	883.20	1240.00	1485.80
56	300.74	353.70	459.55	557.28	702.23	851.58	1149.11	1393.49

Note : The values in the tables are subject to change without notice.

Allowable axial load on output shaft (Pao) [N/kgf]

When radial and axial loads are posed simultaneously.

$$\left(\frac{Pr \cdot Lf}{Pro} + \frac{Pa}{Pao} \right) \cdot Cf \cdot Fs \leq 1$$

Check your selection to be within the formula.

- Pr : Actual radial load
- Pro : Allowable radial load (refer to selection tables)
- Pa : Actual axial load
- Pao : Allowable axial load
- Lf : Load location factor (refer to Table C1 of page C3)
- Cf : Coupling factor (refer to Table C2 of page C3)
- Fs : Sock factor (refer to Table C3 of page C3)

Table C11 Allowable axial load on output shaft (3/single-phase)

Frame size	N/kgf
01, 03, 05, 07	294N/30kgf
15, 17	294N/30kgf
–	–
1120, 190	294N/30kgf
1220, 1230, 20, 23, 25, 270	784N/80kgf
1320, 1330, 30, 33, 35, 36, 361, 370	980N/100kgf
1420, 1430, 40, 43, 45, 46, 461, 470	1470N/150kgf
1520, 1530, 1531, 50, 53, 54, 55, 56	2940N/300kgf
60, 63, 64	5390N/550kgf

Note. Radial load on output shaft not accounted for in the calculation above.

Lubrication

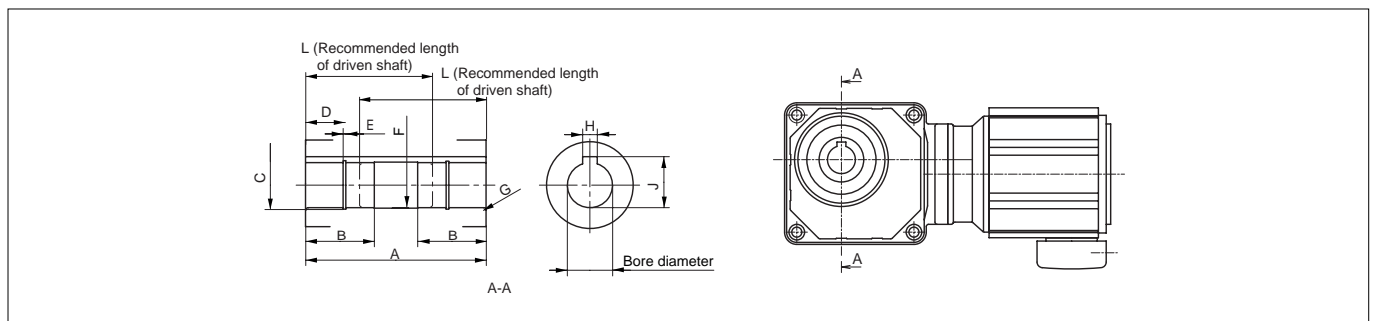
- As Hyponic Drives are sealed with long-life grease, replenishment is practically unnecessary, but overhaul in approximately 20,000 hours or 3-5 years of operation will provide longer service life.
- The durability of oil seals is subject to operating conditions. It may be required to change them in less than 20,000 hours or three years of operation under severe conditions.
- Overhaul of gear motors must be performed at our specified sites with professional knowledge and technique.

Hollow shaft type (RNYM series) output shaft bore size

Frame size	Bore (mm)									
	15	20	25	30	35	38	40	45	50	55
03 07 17										
1120										
1220 1230										
1320 1330 361										
1420										
1430 461										
1520 1530 1531 56										
60 63 64										

Standard
Semi-standard
(Contact us for price and delivery.)

Output shaft dimensions



(mm)

Frame size	Bore	A	B	C	D	E	F	G	H	J	L	Effective length of driven shaft
03 07	15	78	28				15.6	R1.0	5	17.3	55	20
17	15	94	28				15.6	R1.0	5	17.3	70	35
—												
1120	20	82	30	21	16	1.15	20.6	R1.0	6	22.8	60	20
1220	20	92	31	21	15	1.15	20.6	R1.5	6	22.8	65	55
	25	92	38	26.2	22	1.35	25.6	R1.5	8	28.3	60	40
1230	20	100	31	21	15	1.15	20.6	R1.5	6	22.8	75	55
	25	100	38	26.2	22	1.35	25.6	R1.5	8	28.3	65	40
1320 1330 361	20	110	31	21	15	1.15	20.6	R1.5	6	22.8	85	75
	25	110	38	26.2	22	1.35	25.6	R1.5	8	28.3	80	55
	30	110	46	31.4	22	1.35	30.6	R1.5	8	33.3	70	45
1420	25	138	38	26.2	22	1.35	25.6	R1.5	8	28.3	105	80
	30	138	46	31.4	22	1.35	30.6	R1.5	8	33.3	95	65
	35	138	52	37	26	1.75	35.6	R1.5	10	38.3	90	50
1430 461	25	138	38	26.2	22	1.35	25.6	R1.5	8	28.3	105	80
	30	138	46	31.4	22	1.35	30.6	R1.5	8	33.3	95	65
	35	138	52	37	26	1.75	35.6	R1.5	10	38.3	90	50
	38	138	58	40	26	1.75	38.6	R1.5	10	41.3	90	50
1520 1530 1531 56	30	156	46	31.4	22	1.35	30.6	R1.5	8	33.3	130	115
	35	156	52	37	26	1.75	35.6	R1.5	10	38.3	115	100
	38	156	58	40	26	1.75	38.6	R1.5	10	41.3	110	90
	40	156	60	42.5	30	1.95	40.6	R1.5	12	43.3	105	85
60 63 64	45	156	67	47.5	30	1.95	45.6	R1.5	14	48.8	100	70
	40	224	60	42.5	30	1.95	40.6	R1.5	12	43.3	180	155
	45	224	67	47.5	30	1.95	45.6	R1.5	14	48.8	175	120
	50	224	76	53	30	2.2	50.6	R1.5	14	53.8	165	110
	55	224	85	58	40	2.2	55.6	R2.5	16	59.3	155	90

Keyway dimensions in accordance with JIS B 1301-1996 parallel key (Normal Grade). Bore dimension tolerance in accordance with JIS B 0401-1976 "H8".

1. Mounting torque arm

(1) Mounting on driven shaft

- Apply molybdenum disulfide to the surface of the driven shaft and the inside of the hollow shaft, and insert Hyponic Drive onto the driven shaft.
- When engagement is too tight, lightly strike on the end of the hollow output shaft with a mallet. Never strike on the casing. It is recommended to make a jig shown on the right for smooth insertion.
- The hollow shaft dimension tolerance is in accordance with JIS "H8". The recommended tolerance for the driven shaft is :
 uniform load without impact.....JIS h6 or js6
 shock load or large radial load.....JIS js6 or k6
- Snap ring size is in accordance with JIS B2804C.

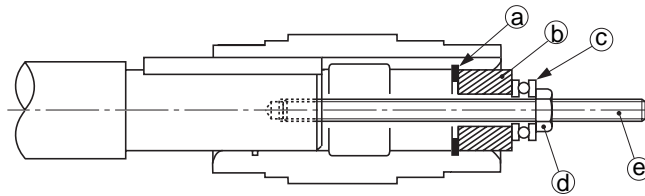


Fig. C1

a.....Retaining ring	d.....Nut
b.....Spacer	e.....Double-end threaded bolt
c.....Thrust bearing	

(2) Hyponic Drive must be secured to driven shaft.

a) How to secure Hyponic Drive not to move to the machine side (Ex.: Figs.C2-C4)

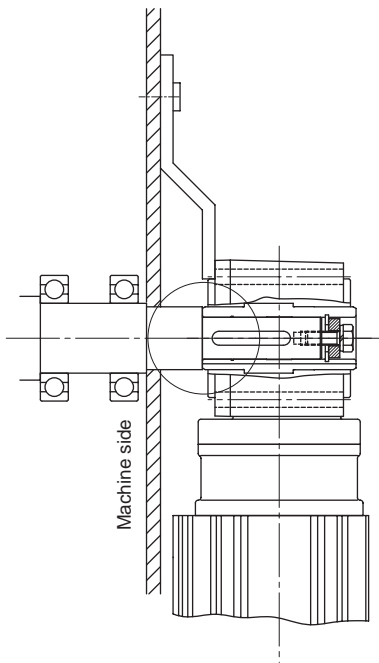


Fig. C2 secured by staged shaft

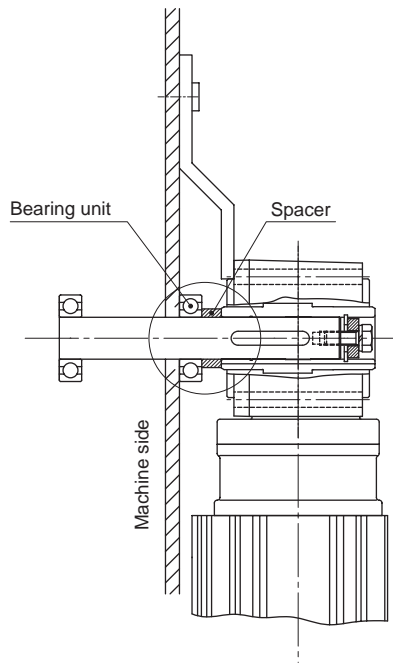


Fig.C3 secured by spacer
(stageless driven shaft)

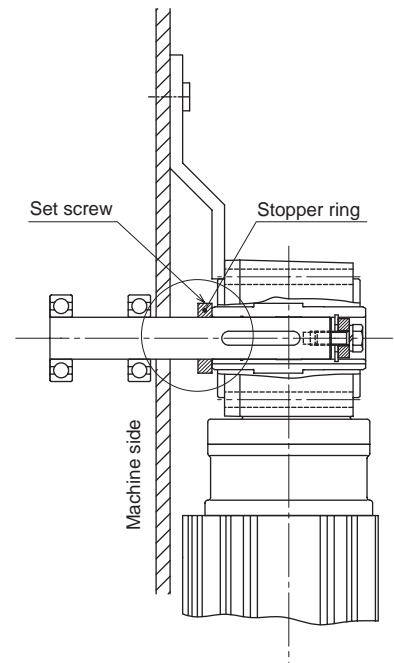


Fig. C4 secured by a set screw and a stopper (stageless driven shaft)

Hollow shaft type (RNYM series) handling precautions



b) How to secure Hyponic Drive not to move off from the machine side (Figs. C5-C7)

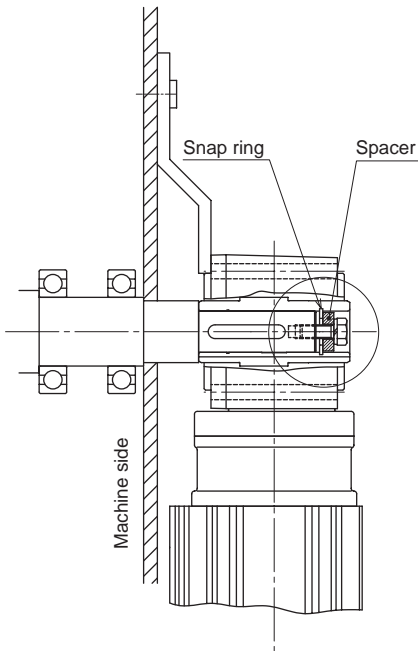


Fig. C5 secured by a spacer and a snap ring

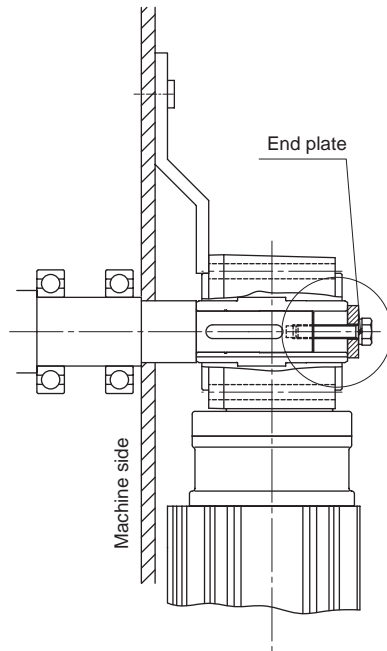


Fig. C6 secured by an end plate

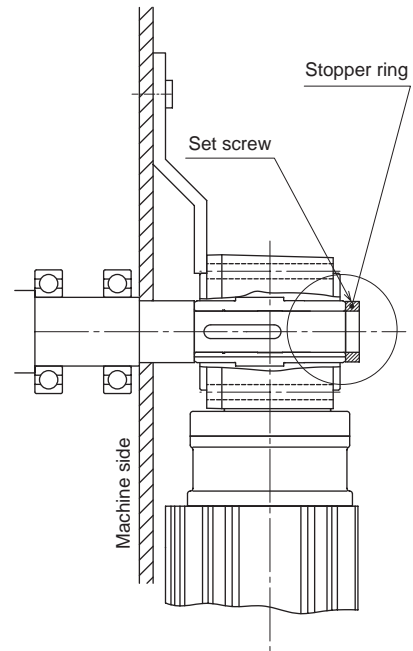


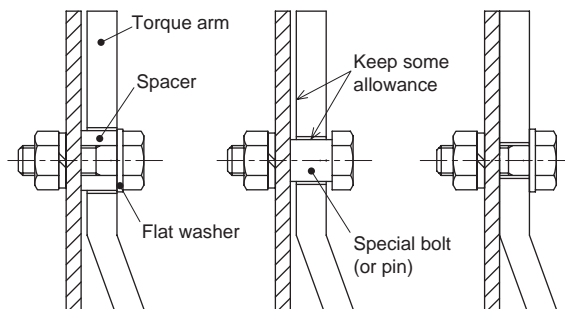
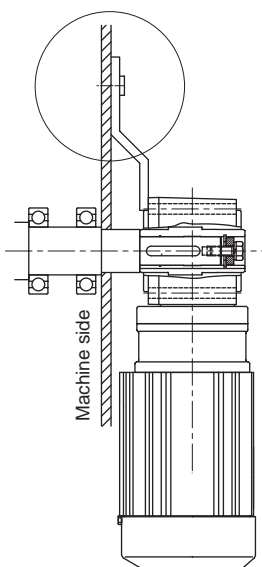
Fig. C7 secured by a set screw and a stopper ring

(3) Torque arm whirl stop

Attach the torque arm to Hyponic Drive casing on the machine side with hex socket head cap screws. (Refer to the table below for sizes of the bolts.)

Leave some allowance in the section of torque arm whirl stop so that excessive force will not be applied between Hyponic Drive and the driven shaft. Don't secure the torque arm with the whirl stop bolt. Or it may damage the whirl stop bolt, the torque arm, Hyponic Drive, or the machine.

In case of frequent start/stop operations, or repeated normal/reverse operations, use a rubber bush between the torque arm and mounting bolt (or spacer) to absorb the shock.



(Adjust the allowance according to the movement of the machine.)

Good

(Excessive force on the whirl stop bolt, machine, and Hyponic may cause damage.)

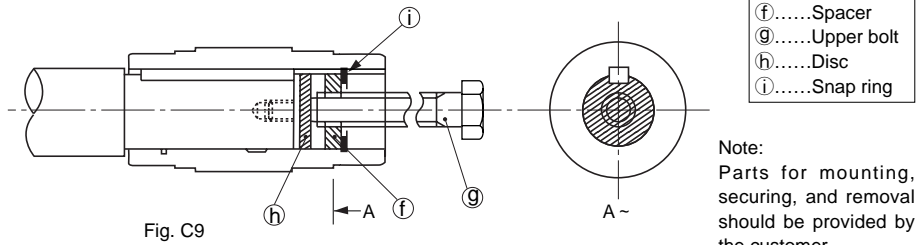
Bad

Fig. C8 Example of whirl stop mounting (Section A)

Frame size	Bolt
03	M5
07,17	M6
1120,1230	M8
1330,361	M10
1320,1430,461	M12
1420,1530,1531,56	M16
1520,60,63,64	M20

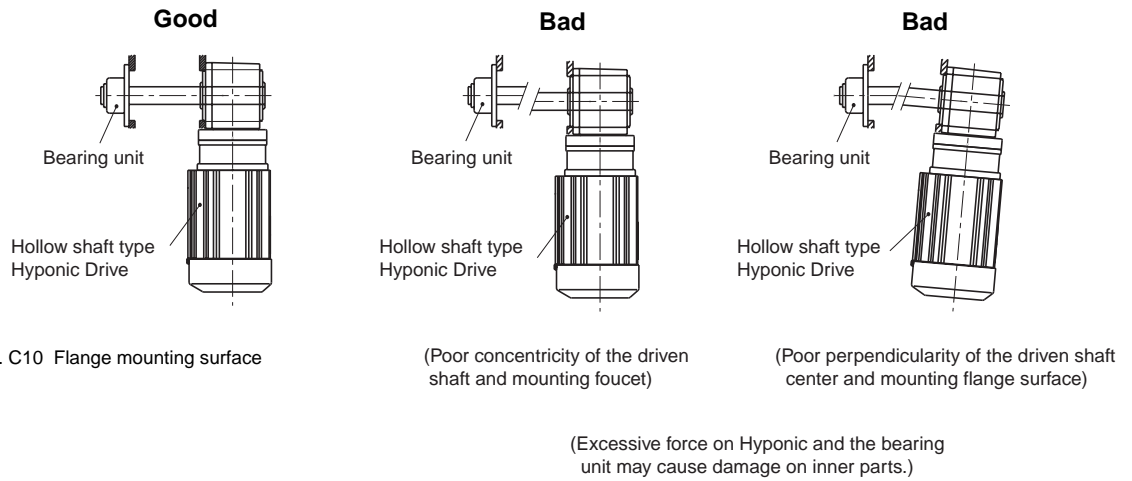
(4) Removal from a driven shaft

Handle with care so that excessive force will not be applied between the casing and the hollow shaft. It is recommended to make a jig as shown on the right for easy removal.



2. Flange mounting and casing bottom mounting (optional)

Handle with care in order not to apply excessive force to driven shaft or hollow shaft by twisting the Hyponic casing.

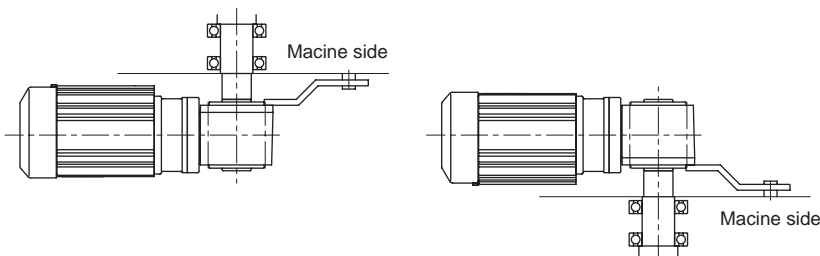


Torque arm designs



Fig. C11 Torque arm mountings and designs

	1	2	3	4
Mounting examples				
	Torque arm must not interfere with the motor.			
Drawing examples				
Drawing examples	1120 1220 1230 1320 1331, 361 1420 1430, 461 1520 1530, 1531, 56 60, 63, 64 			



Attach the torque arm to the casing on the machine side.

Table. C12 Recommended dimensions of torque arm design

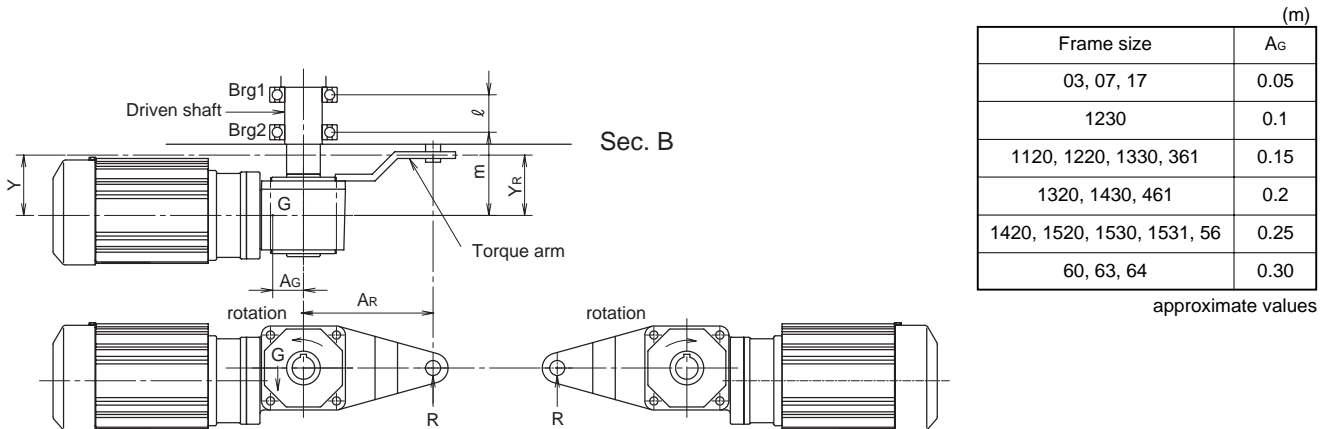
Frame size	Length	Bore	Whirl stop bore	Mounting pitches			Mounting bore	Thickness
	A_R	H	D	a	b	c	d	
03	80	37	6	33	18	48	6	3.2
07	90	37	7	37	19	55	7	3.2
17	90	37	7	37	19	55	7	4.5
1120	80	54	9	42	32		7	3.2
1220	100	80	11	57	40		9	4.5
1230	100	80	9	65	40		9	6
1320	120	87	14	62	46		11	4.5
1330, 361	130	87	11	79	47		11	9
1420	140	97	18	75	57		14	6
1430, 461	160	97	14	92	54		14	9
1520	150	112	22	80	70		14	9
1530, 1531, 56	200	112	18	109	64		18	9
60, 63, 64	280	152	22	145	85		22	12

(mm)

Torque arm designs & Safety cover



Check the strength of torque arm and driven shaft and the life time of the bearing.



Frame size	A_G (m)
03, 07, 17	0.05
1230	0.1
1120, 1220, 1330, 361	0.15
1320, 1430, 461	0.2
1420, 1520, 1530, 1531, 56	0.25
60, 63, 64	0.30

approximate values

- Torque arm load : $R = \frac{T + A_G \cdot G}{A_R}$
- Brg.1 load : $B1 = \frac{m(R-G) - Y_R \cdot R}{l}$
- Brg.2 load : $B2 = \frac{(R+m)(R-G) - Y_R \cdot R}{l}$
- Sec. B of driven shaft : $M = Y_R \cdot R - Y(R-G) \quad 0 < Y < m$

- T : Output torque [N · m]
- G : Hyponic Drive gravity [N]
- R : Torque arm load [N]
- A_G : Distance between the centers of the driven shaft and gravity [m]
- A_R : Distance from driven shaft center to torque arm whirl stop [m]
- Y_R : Distance from the center of Hyponic Drive to torque arm whirl stop [m]
- m : Distance from the center of Hyponic Drive to Brg.2 [m]
- R : Distance between Brg.1 and Brg.2 [m]
- Y : Distance between the center of Hyponic Drive and Sec. B [m]

Note: Output torque is (+) on the shown rotation, and (-) on the opposite rotation.

Detail dimensions of output shaft safety cover (separate shipment)

- It may be mounted on either the left or right side.
- Made of plastics

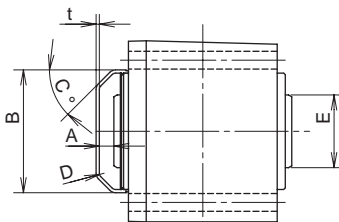


Fig. C12

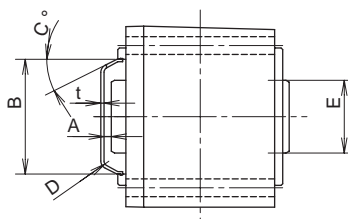


Fig. C13

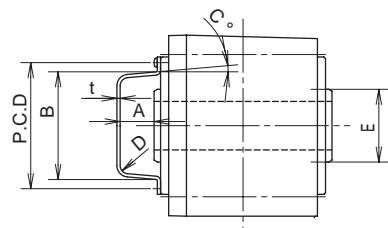


Fig. C14

Frame size	Dimensions		Safety cover						Output shaft end		Fig.
	A	B	C	D	t	P.C.D	N	M × P × L	E		
03, 07, 17	10	72	28°	R5	2				25	Fig. C12	
1120	10	56	45°	R3	2				30	Fig. C13	
1220, 1230	21	55	5°	R5	2	70	2	M3 × 0.5 × 6	40	Fig. C14	
1320, 1330, 361	21	63	5°	R5	2	78	2	M3 × 0.5 × 6	45		
1420, 1430, 461	30	73	5°	R5	2	88	2	M3 × 0.5 × 6	55		
1520, 1530, 1531	30	86	5°	R5	2	103	2	M3 × 0.5 × 6	65		
56	30	86	5°	R5	2	103	2	M3 × 0.5 × 6	75		
60, 63, 64	40	110	5°	R5	2	135	2	M3 × 0.5 × 6	95		

M : Screw size P : Thread pitch L : Thread length P.C.D : Mounting pitch N : Q'ty

Note 1: The values are subject to change without notice.

Note 2: No screw is required for safety cover for frame size #03, 07, and 17.

Note 3: Contact us when safety covers are required.

Technical data