

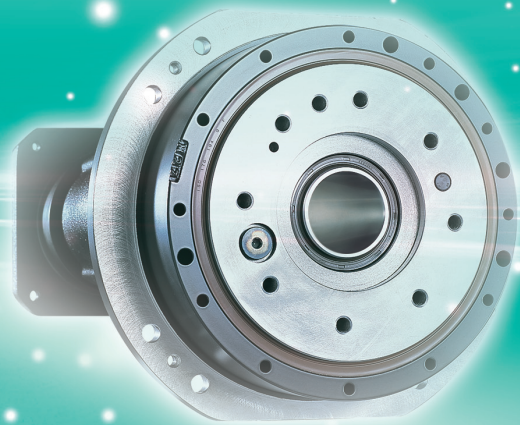


ISO 9001
JQA-1190

VIGO DRIVE™

High Precision Gearheads

RD SERIES



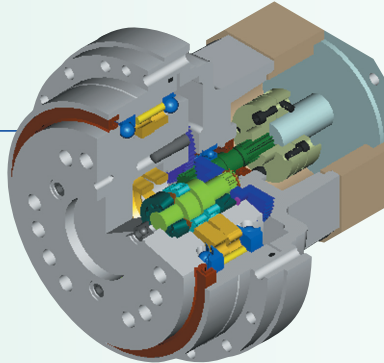
Nabtesco

RD SERIES Gearheads: High Performance In-Line and Hollow Shaft Gearheads

The RD SERIES Gearheads are based upon the highly successful, high-precision RV Series Reduction Gears. The high-performance RV has over 2 million units in service in various applications around the world today. The RD SERIES provides Near Zero Backlash, the ability to support heavy external loads and has significant advantages in terms of ease-of-use and cost for performance.

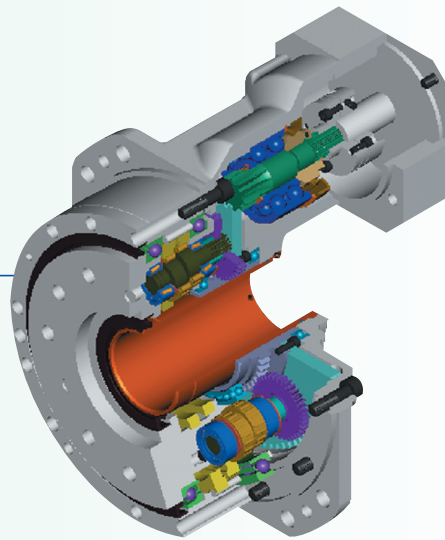
RD-E Series

**Standard
In-Line**



RD-C Series

Hollow Shaft



Features and Benefits

- 1.** High shock load capability
(Capable of 5 times the rated torque)
- 2.** Near Zero Backlash (less than 1 arc-min)
- 3.** High Ratio / High Rigidity
- 4.** Ready-to-connect motor mounting design
- 5.** Completely sealed unit (pre-greased)

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Features and Benefits **RD-E Series**

High shock load capability
High rigidity
High precision
High torque

The double-end support design and unique pin gear mechanism provide the following advantages

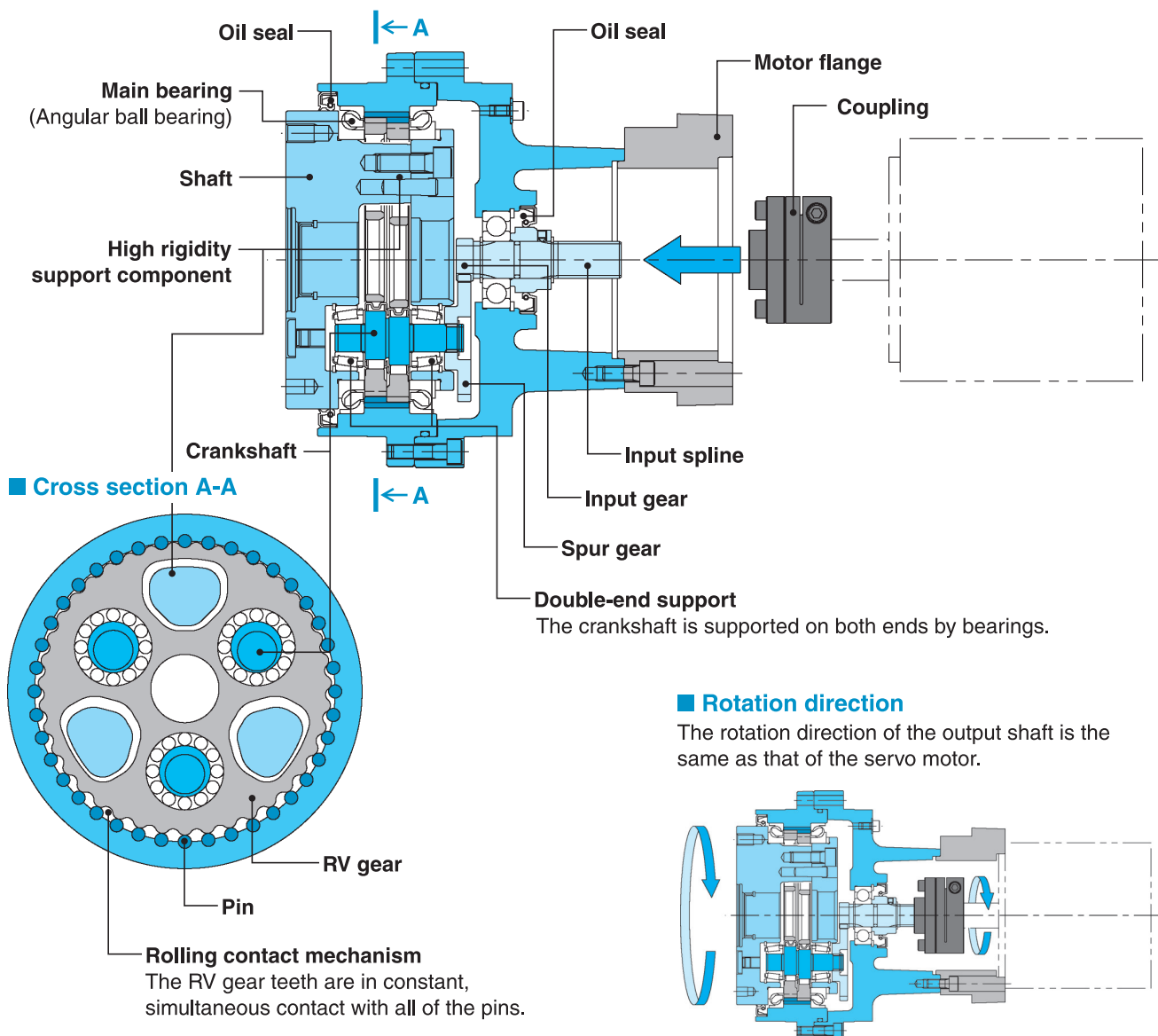
- (1) Capable of 5 times the rated torque
- (2) High torsional rigidity
- (3) Low backlash [1 arc.min]
- (4) High torque density (capable of high torque with downsized gear)

Heavy load support

A set of internal main bearings (large angular ball bearings) enables complete support of heavy external loads.

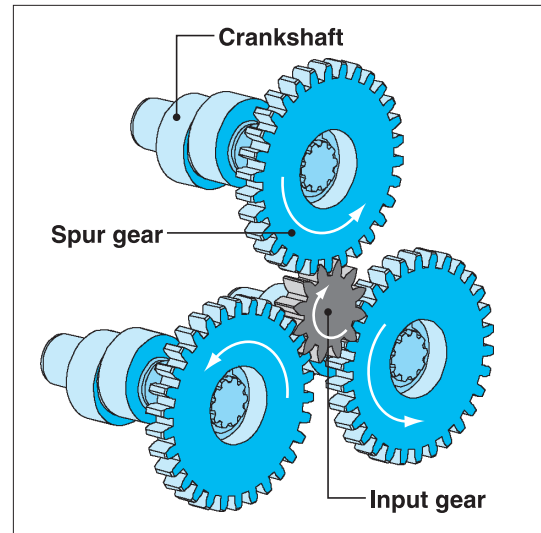
Maximum ease of use

- (1) Pre-greased
- (2) Coupling and motor flange provide easy motor mounting

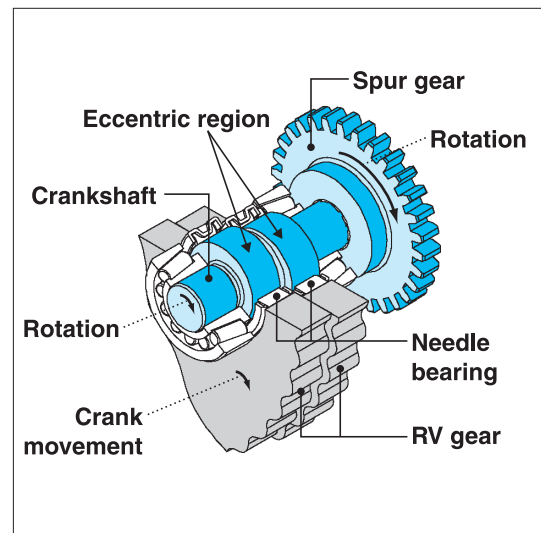


1. Rotation of the servo motor is transmitted through the input gear to the spur gears, and the speed is reduced accordingly with the gear ratio between the input gear and the spur gears <Fig. 1>.
2. Since they are directly connected, the crankshafts have the same rotational speed as the spur gears <Fig. 1>.
3. Two RV gears are mounted around the needle bearings on the eccentric region of the crankshaft. (In order to balance the equal amount of force, two RV gears are mounted) <Fig. 2>.
4. When the crankshafts rotate, the two RV gears mounted on the eccentric sections also revolve eccentrically around the input axis (crank movement) <Fig. 2>.
5. Pins are arrayed in a constant pitch in the grooves inside the case. The number of pins is just one larger than the number of RV teeth <Fig. 3>.
6. As the crankshafts revolve one complete rotation, the RV gears revolve eccentrically one pitch of a pin (crank movement), with all the RV teeth in contact with all of the pins <Fig. 3>.
7. The rotation is then output to the shaft (output shaft) via the crankshaft so that the crankshaft rotation speed can be reduced in proportion to the number of pins <Fig. 3>.
8. The total reduction ratio is the product of the first reduction ratio multiplied by the second reduction ratio.

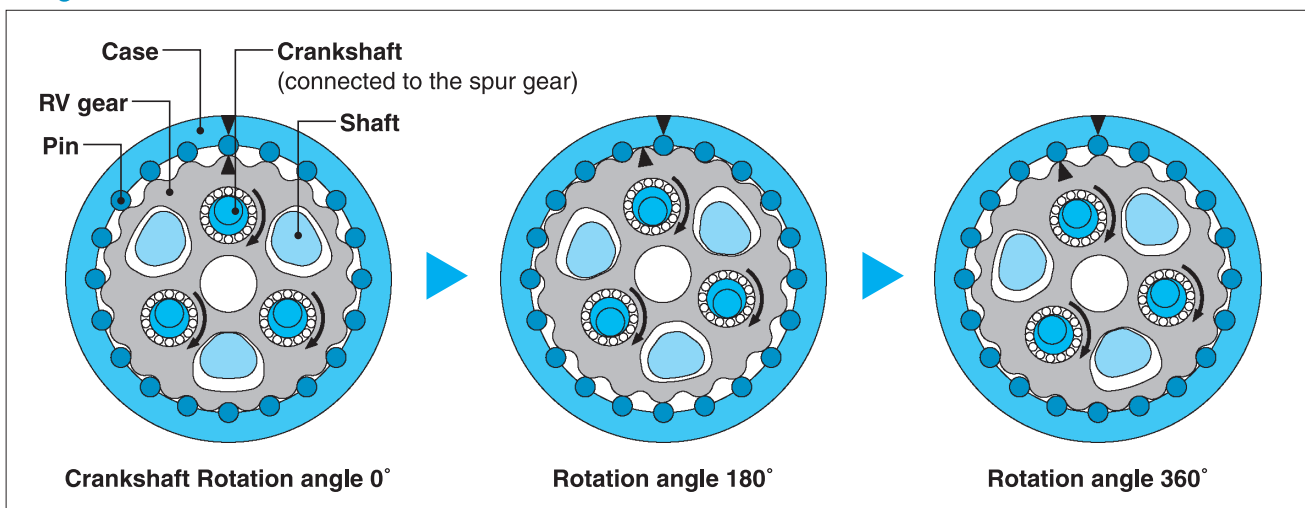
■ Fig. 1 First reduction section



■ Fig. 2 Crankshaft section



■ Fig. 3 Second reduction section



Features and Benefits **RD-C Series**

High shock load capability
High rigidity
High precision
High reduction ratio

The double-end support design and unique pin gear mechanism provide the following advantages

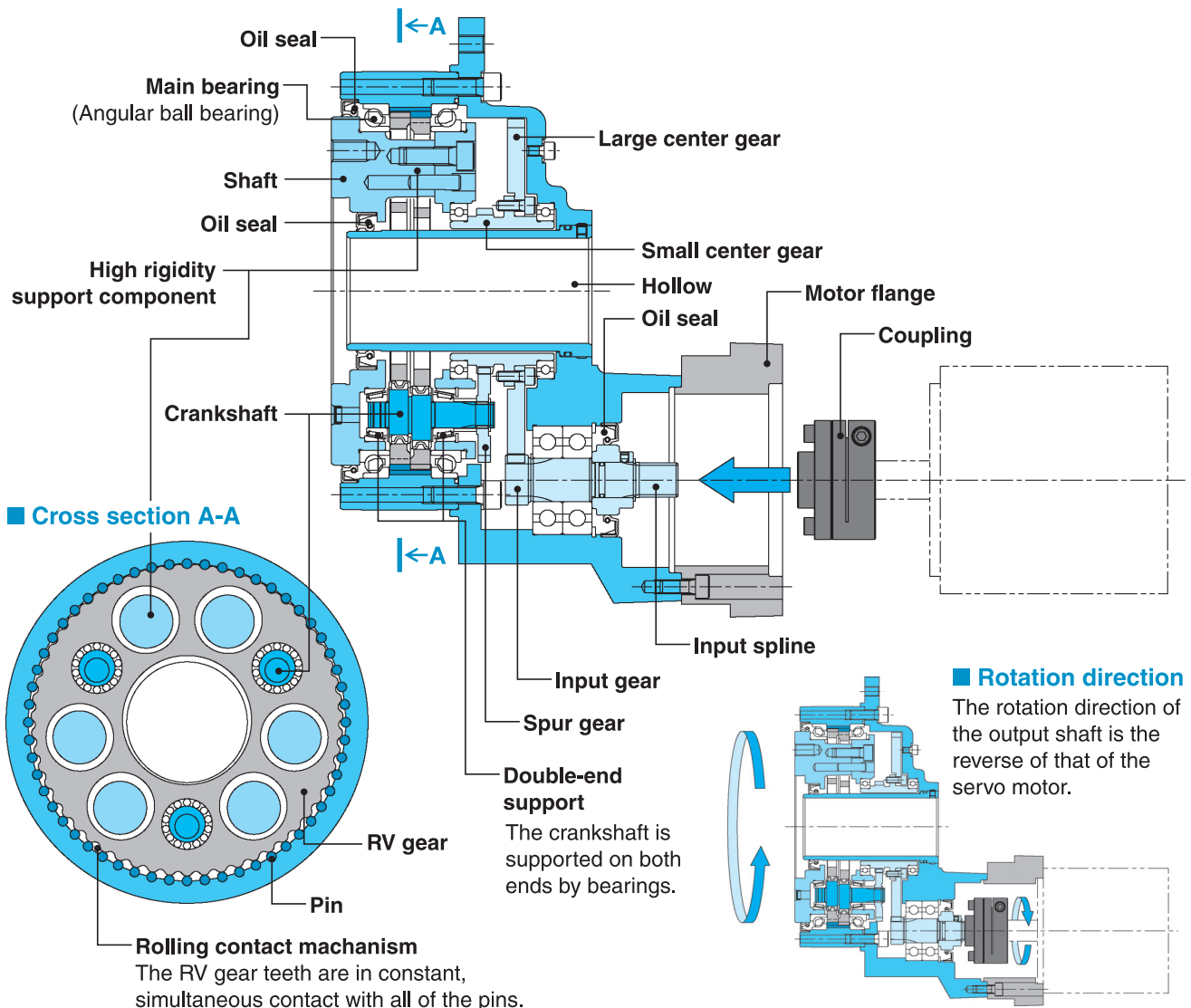
- (1) Capable of 5 times the rated torque
- (2) High torsional rigidity
- (3) Low backlash [1 arc.min]
- (4) High torque density (capable of high torque with downsized gear)
- (5) Capable of high reduction ratio (MAX I = 258:1)

Heavy load support

A set of internal main bearings (large angular ball bearings) enables complete support of heavy external loads.

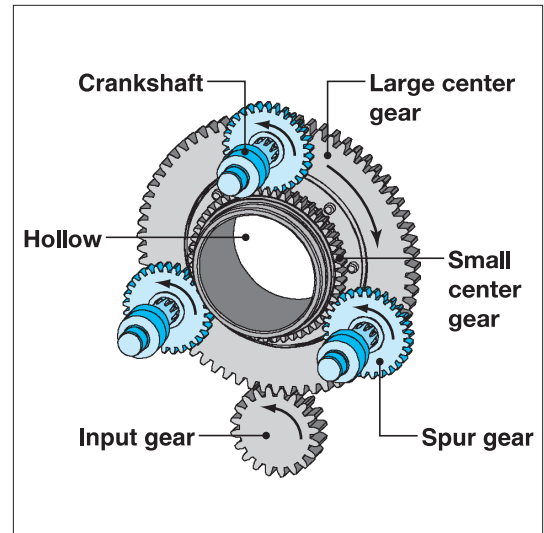
Maximum ease of use

- (1) The hollow shaft structure that allows routing of cables through the reduction gear
- (2) Pre-greased
- (3) Coupling and motor flange provide easy motor mounting

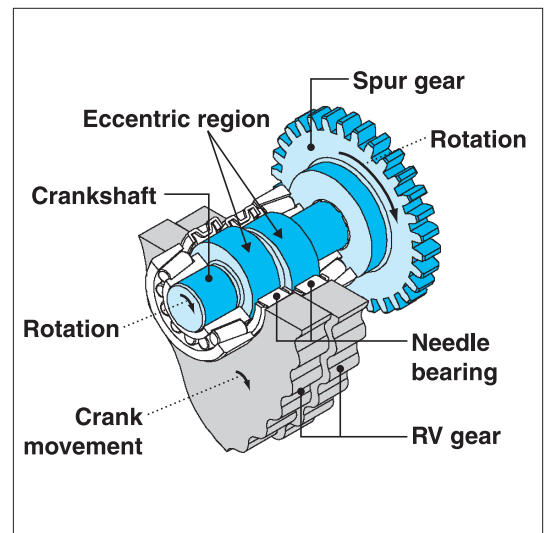


1. Rotation of the servo motor is transmitted through the input gear to the large center gear, and is then transmitted through the small center gear to the spur gear. At this point, the speed is reduced accordingly to the gear ratio between the small center gear and the spur gear. This operation is carried out in the First reduction section <Fig. 1>.
2. Since they are directly connected, the crankshafts have the same rotational speed as the spur gears <Fig. 1>.
3. Two RV gears are mounted around the needle bearings on the eccentric region of the crankshaft. (In order to balance the equal amount of force, two RV gears are mounted) <Fig. 2>.
4. When the crankshafts rotate, the two RV gears mounted on the eccentric sections also revolve eccentrically around the input axis (crank movement) <Fig. 2>.
5. Pins are arrayed in a constant pitch in the grooves inside the case. The number of pins is just one larger than the number of RV teeth <Fig. 3>.
6. As the crankshafts revolve one complete rotation, the RV gears revolve eccentrically one pitch of a pin (crank movement), with all the RV teeth in contact with all of the pins <Fig. 3>.
7. The rotation is then output to the shaft (output shaft) via the crankshaft so that the crankshaft rotation speed can be reduced in proportion to the number of pins <Fig. 3>.
8. The total reduction ratio is the product of the first reduction ratio multiplied by the second reduction ratio.

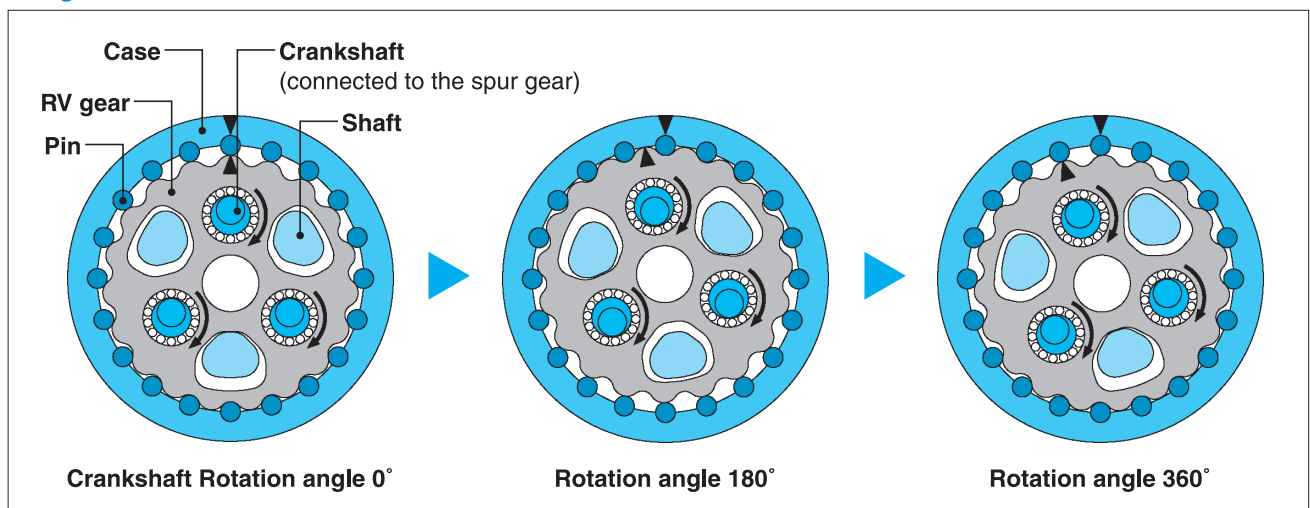
■ Fig. 1 First reduction section



■ Fig. 2 Crankshaft section



■ Fig. 3 Second reduction section



Rating Table

Model Code	Ratio Code (Speed Ratio)					T ₀	N ₀	K	T _{s1}
						Rated Torque	Rated Output Speed	Rated Life [Continuous]	Allowable Acceleration/Deceleration Torque
						N-m (lb-in)	rpm	Hr	N-m (lb-in)
RD-E Series									
RD-006E	031 (31)	043 (43)	054 (53,5)	079 (79)	103 (103)	58 (521)	30	6000	117 (1042)
RD-020E	041 (41)	057 (57)	081 (81)	105 (105)	161 (161)	167 (1476)	15	6000	412 (3645)
RD-040E	041 (41)	057 (57)	081 (81)	105 (105)	153 (153)	412 (3645)	15	6000	1029 (9114)
RD-080E	041 (41)	057 (57)	081 (81)	101 (101)	153 (153)	784 (6944)	15	6000	1960 (17359)
RD-160E	066 (66)	081 (81)	101 (101)	145 (145)	171 (171)	1568 (13887)	15	6000	3920 (34719)
RD-320E	066 (66)	081 (81)	101 (101)	141 (141)	185 (185)	3136 (27775)	15	6000	7840 (69437)
RD-C Series									
RD-010C	081 (81)	108 (108)	153 (153)	189 (189)	243 (243)	98 (868)	15	6000	245 (2170)
RD-027C	100 (99,82)	142 (141,68)	184 (184)	233 (233,45)		265 (2344)	15	6000	662 (5859)
RD-050C	109 (109)	153 (152,6)	196 (196,2)	240 (239,8)		490 (4340)	15	6000	1225 (10850)
RD-100C	101 (100,5)	150 (150)	210 (210)	258 (258)		980 (8680)	15	6000	2450 (21699)
RD-200C	106 (105,83)	156 (155,96)	206 (206,09)	245 (245,08)		1960 (17359)	15	6000	4900 (43398)
RD-320C	115 (115)	157 (157)	207 (207)	253 (253)		3136 (27775)	15	6000	7840 (69437)

- Note:**
1. The rating table shows the specification values of each reduction gear.
 2. The allowable output speed may be limited by heat depending on the operation rate.
 3. For the moment of inertia of the reduction gear, refer to the external dimension drawings of the reduction gear and the coupling.
 4. For dimension α , refer to "Allowable Moment And Maximum Axial Load" in the Glossary on page 8.

Ts2	Ns1	Ns2	Backlash	Lost Motion	Torsional R:G:dity Spring Constant N-m/ arc.min (lb-in/arc.min)	Capacity of Main Bearing			
						M0	Ms1	F0	α
Momentary Maximum Allowable Torque N-m (lb-in)	Allowable Output Speed [Continuous] (Note 2) rpm	Allowable Output Speed [Intermittent] (Note 2) rpm	arc.min	arc.min		Allowable Moment N-m (lb-in)	Momentary Maximum Allowable Moment N-m (lb-in)	Maximum Thrust Load N (lb)	Dimension α (Note 4) mm
294 (2604)	60	100	1.5	1.5	20 (177)	196 (1736)	392 (3472)	1470 (331)	77.8
833 (7378)	45	75	1.0	1.0	49 (434)	882 (7812)	1764 (15623)	3920 (882)	93.2
2058 (18227)	42	70	1.0	1.0	108 (955)	1666 (14755)	3332 (29511)	5194 (1168)	114.6
3920 (34719)	42	70	1.0	1.0	196 (1736)	2156 (19095)	4312 (38190)	7840 (1764)	136.1
7840 (69437)	27	45	1.0	1.0	392 (3472)	3920 (34719)	7840 (69437)	14700 (3307)	167.3
15680 (138874)	21	35	1.0	1.0	980 (8680)	7056 (62493)	14112 (124987)	19600 (4409)	203
490 (4340)	48	80	1.0	1.0	47 (417)	686 (6076)	1372 (12152)	5880 (1323)	91.2
1323 (11718)	36	60	1.0	1.0	147 (1302)	980 (8680)	1960 (17359)	8820 (1984)	112
2450 (21699)	30	50	1.0	1.0	255 (2257)	1764 (15623)	3528 (31247)	11760 (2646)	136.8
4900 (43398)	24	40	1.0	1.0	510 (4513)	2450 (21699)	4900 (43398)	13720 (3087)	148.9
9800 (86796)	18	30	1.0	1.0	980 (8680)	8820 (78117)	17640 (156233)	19600 (4409)	204.4
15680 (138874)	15	25	1.0	1.0	1960 (17359)	20580 (182272)	39200 (347185)	29400 (6614)	245.9

Glossary

Life Rating

The lifetime resulting from the operation with the rated torque and the rated output speed is referred to as the "life rating".

Allowable Acceleration/Deceleration Torque

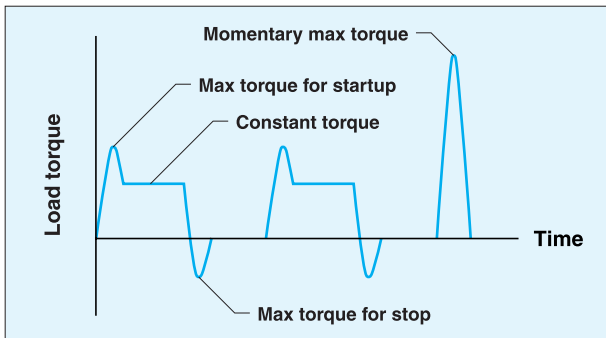
When the machine starts or stops, the load torque to be applied to the reduction gear is larger than the constant-speed load torque due to the effect of the inertia torque of the rotating part. In such a situation, the allowable torque during acceleration/deceleration is referred to as "allowable acceleration/deceleration torque".

Note: Be careful that the load torque, which is applied during normal operation, does not exceed the allowable acceleration/deceleration torque.

Momentary Maximum Allowable Torque

A large torque may be applied to the reduction gear due to execution of emergency stop or by an external shock. In such a situation, the allowable value of the momentary applied torque is referred to as "momentary maximum allowable torque".

Note: Be careful that the momentary excessive torque does not exceed the momentary maximum allowable torque.



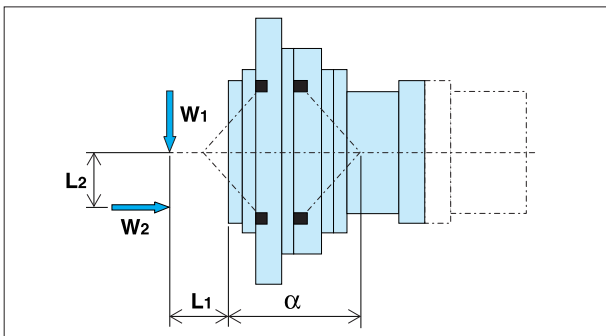
Allowable Moment and Maximum Thrust Load

The external load moment may be applied to the reduction gear during normal operation. In such a situation, the allowable values of the external moment and the external axial load are respectively referred to as "allowable moment" and "maximum axial load".

- M_c : Load moment (N-m)
- W_1, W_2 : Load (N)
- L_1, L_2 : Distance to the point of load application (mm)
- α : Designated dimension (mm) (Refer to the Rating Table.)

$$M_c = \frac{W_1 \times (L_1 + \alpha) + W_2 \times L_2}{1000}$$

Note: When the load moment and the axial load are applied concurrently, ensure that the reduction gear is used within the corresponding allowable moment range, which is indicated in the diagram on the next page.



Momentary Maximum Allowable Moment

A large moment may be applied to the reduction gear due to execution of emergency stop or by an external shock. In such a situation, the allowable value of the momentary applied moment is referred to as "momentary maximum allowable moment".

Note: Be careful that the momentary excessive moment does not exceed the momentary maximum allowable moment.

Allowable Output Speed [Continuous]

The allowable output speed when the machine starts and stops repeatedly is referred to as "allowable output speed [Continuous]".

Note: Maintain the environment and operation conditions so that the temperature of the reduction gear case is 60°C or lower.

Allowable Output Speed [Intermittent]

The allowable output speed during the operation in which the reduction gear is not activated frequently is referred to as "allowable output speed [Intermittent]".

Note: Maintain the environment and operation conditions so that the temperature of the reduction gear case is 60°C or lower.

Torsional Rigidity, Lost Motion, Backlash

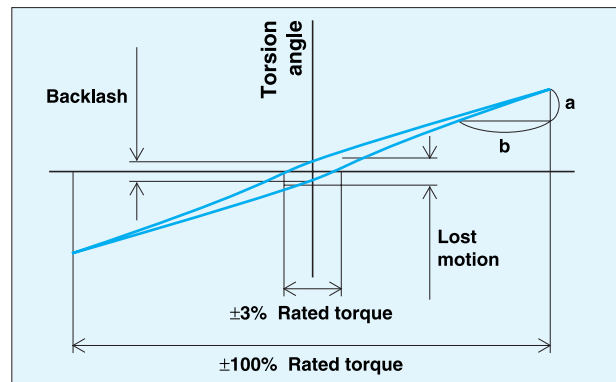
When a torque is applied to the output shaft while the input shaft is fixed, torsion is generated according to the torque value and a hysteresis curve results.

The value of b/a is referred to as "torsional rigidity".

The torsion angle at the mid point of the hysteresis curve width at $\pm 3\%$ of rated torque is referred to as "lost motion".

The torsion angles when the torque indicated by the hysteresis curve is zero are referred to as "backlash".

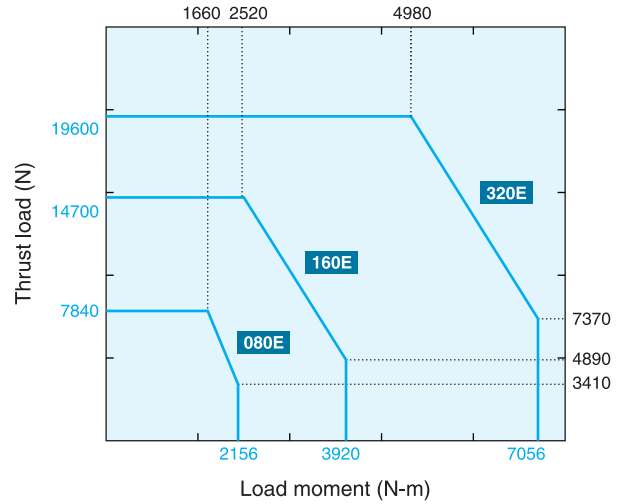
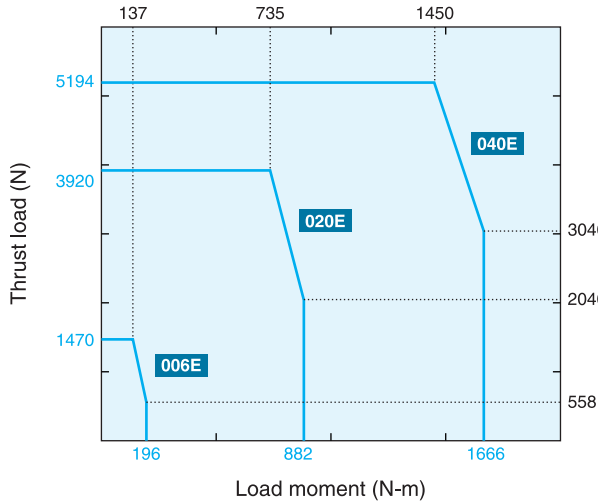
Hysteresis Curve



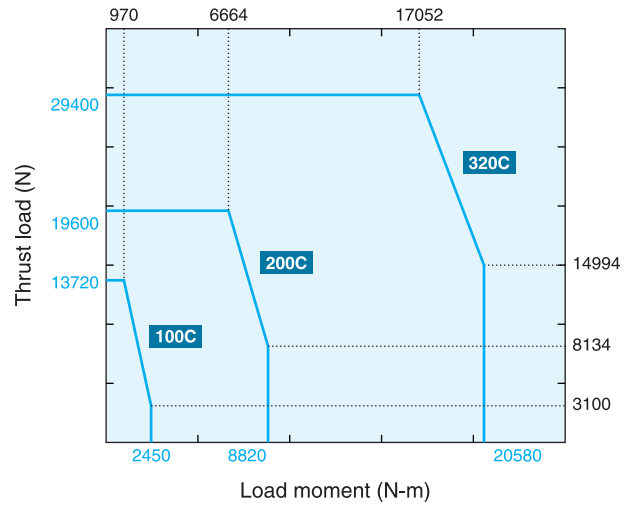
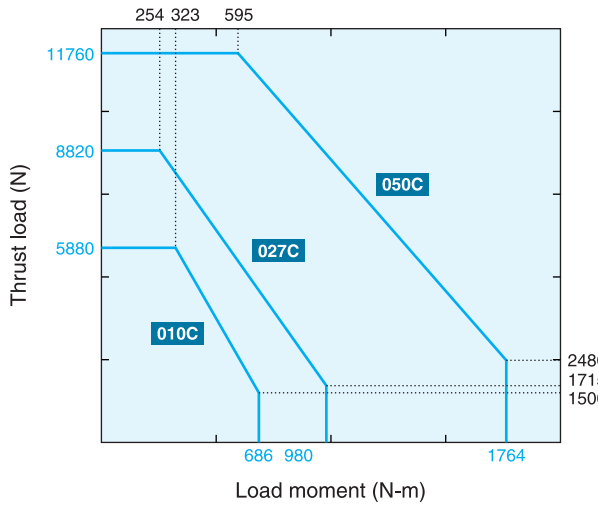
Performance

Allowable Moment Diagram

RD-E Series



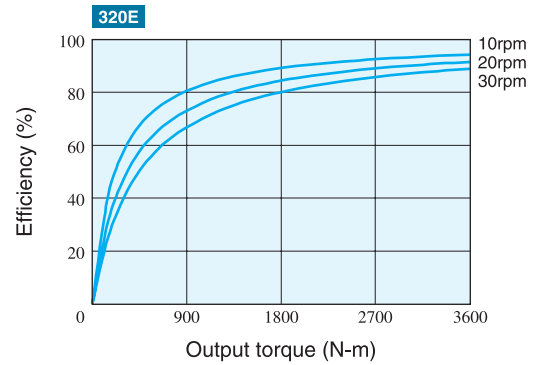
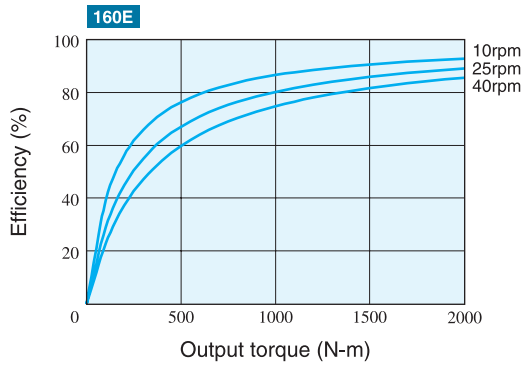
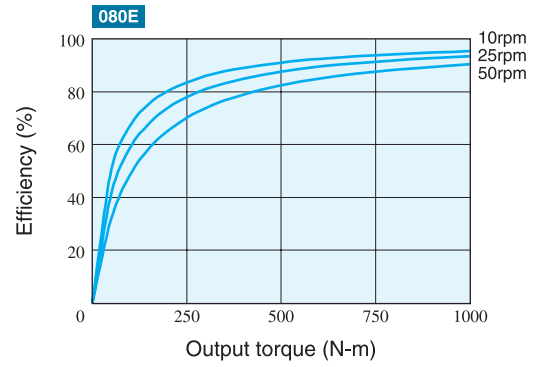
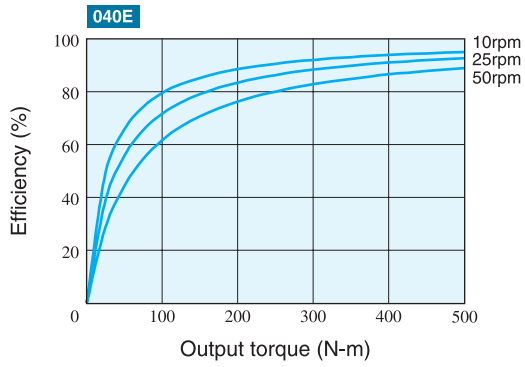
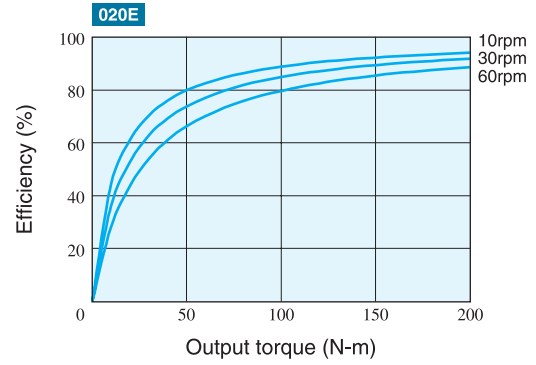
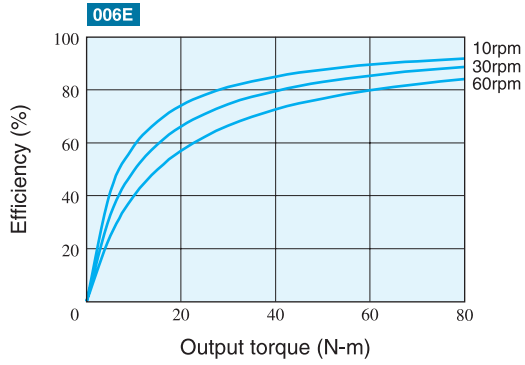
RD-C Series



Efficiency Charts

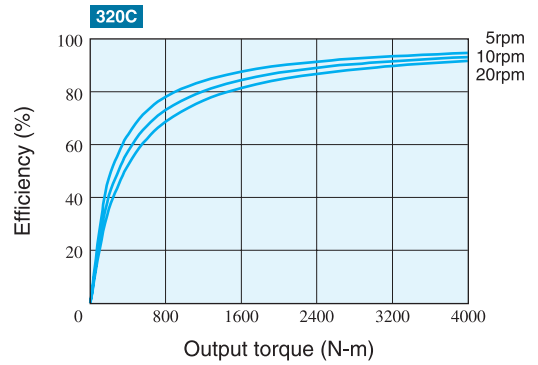
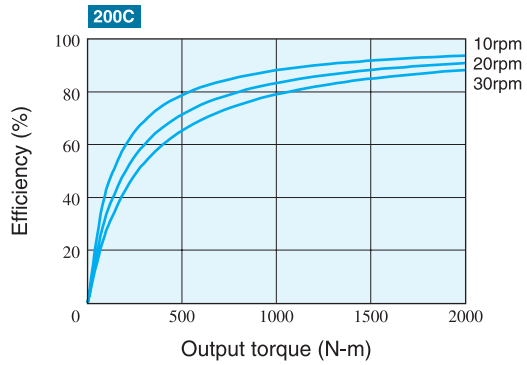
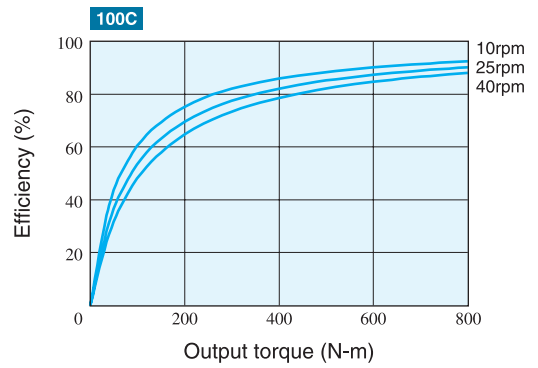
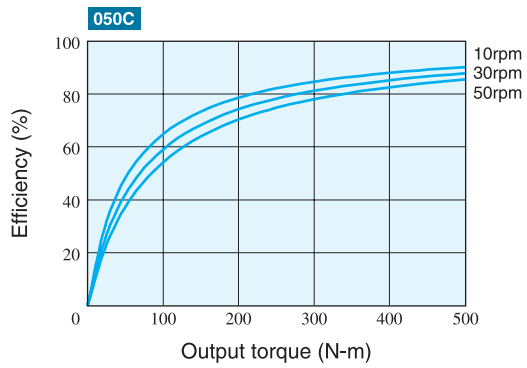
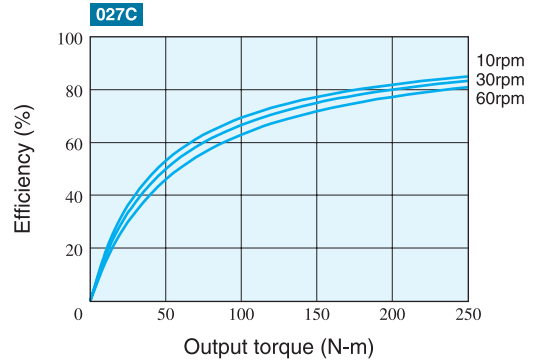
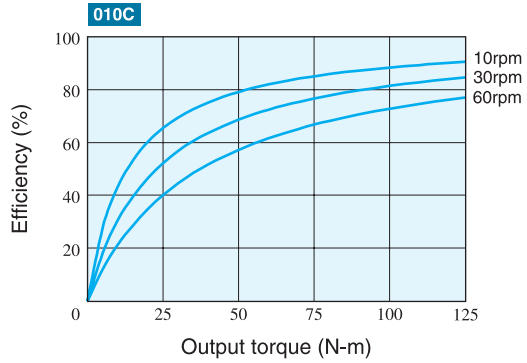
RD-E Series

Case temperature: 30°C
Lubricant: Grease (Molywhite RE00)



RD-C Series

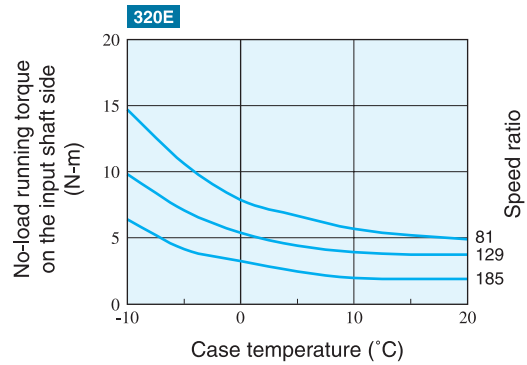
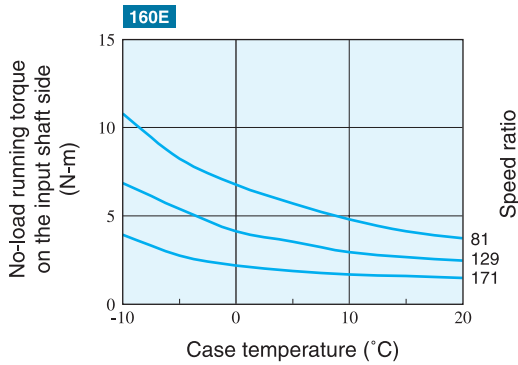
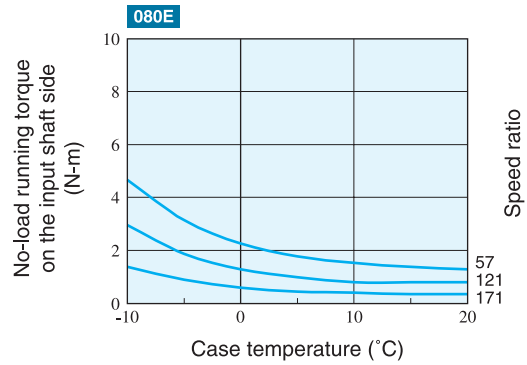
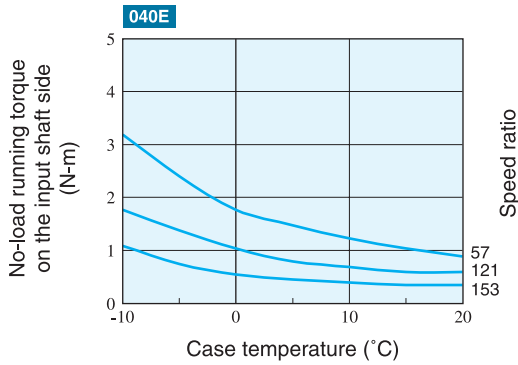
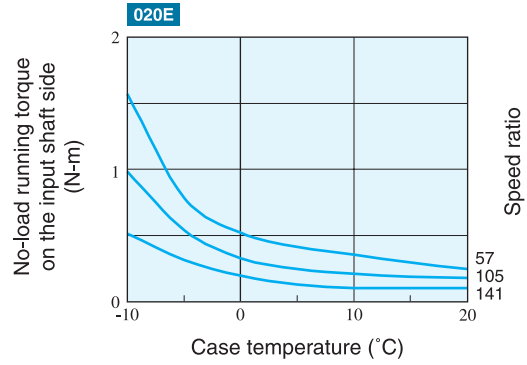
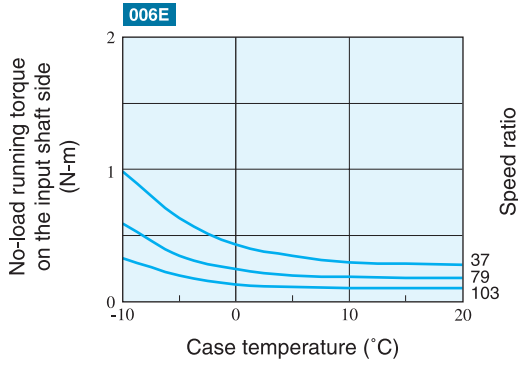
Case temperature: 30°C
Lubricant: Grease (Molywhite RE00)



Low-temperature Characteristics (No-load running torque under low temperature)

RD-E Series

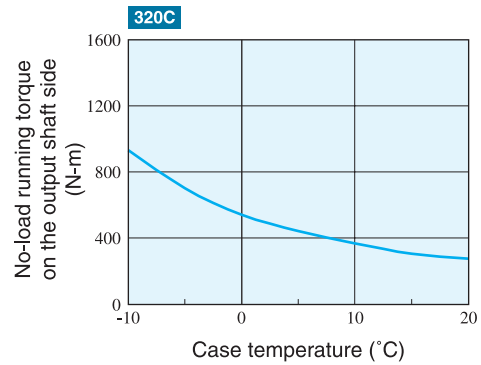
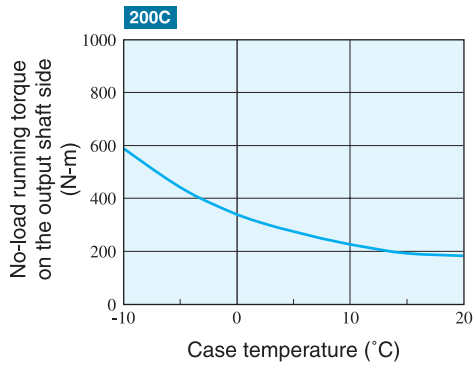
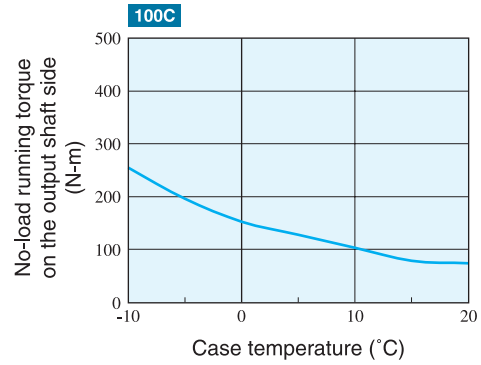
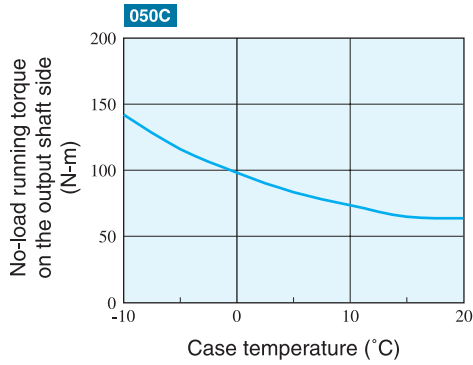
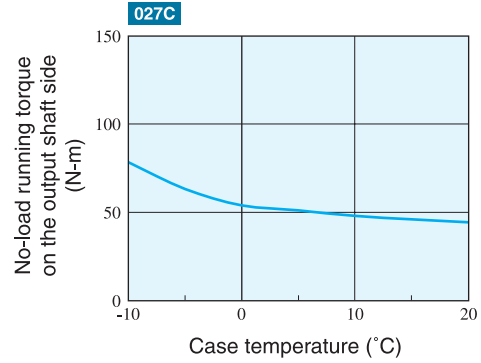
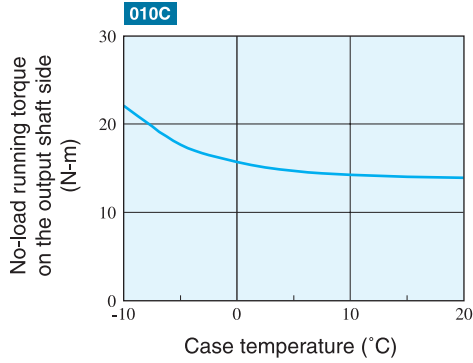
Input speed: 2000 rpm
Lubricant: Grease (Molywhite RE00)



RD-C Series

Output speed: 15 rpm
Lubricant: Grease (Molywhite RE00)
Loss at center gear is not included.

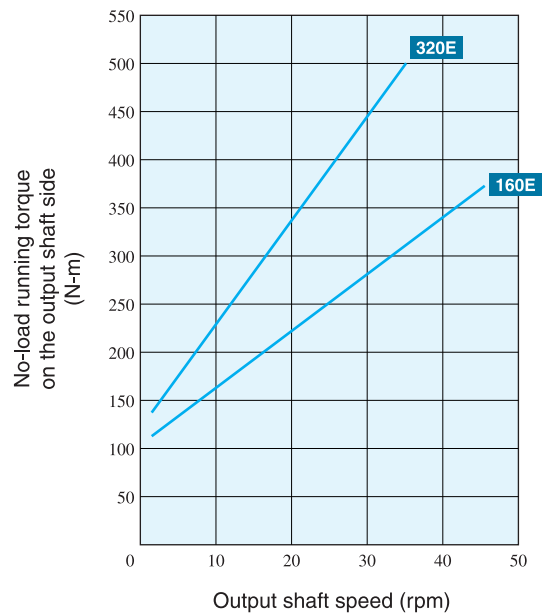
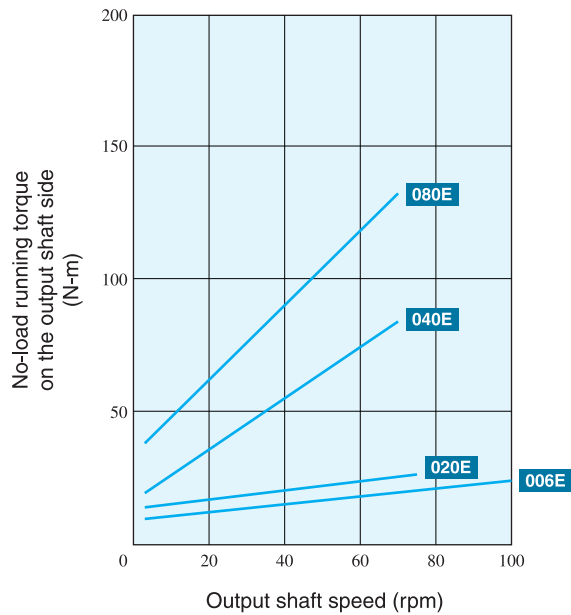
Note: Unlike the RD-E series and the RD-C series uses no-load running torque on the output shaft side.



No-load Running Torque

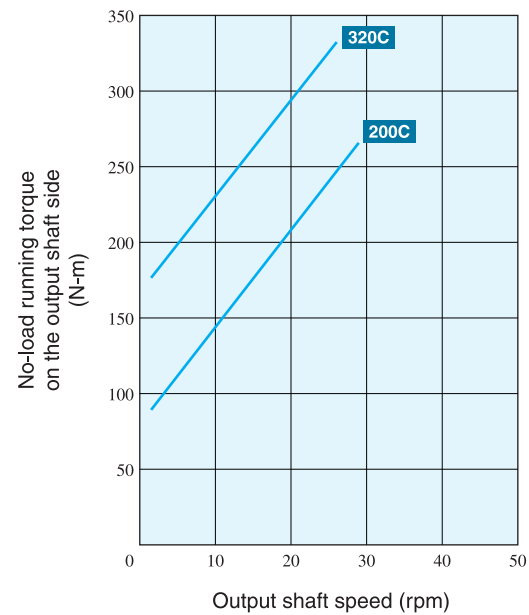
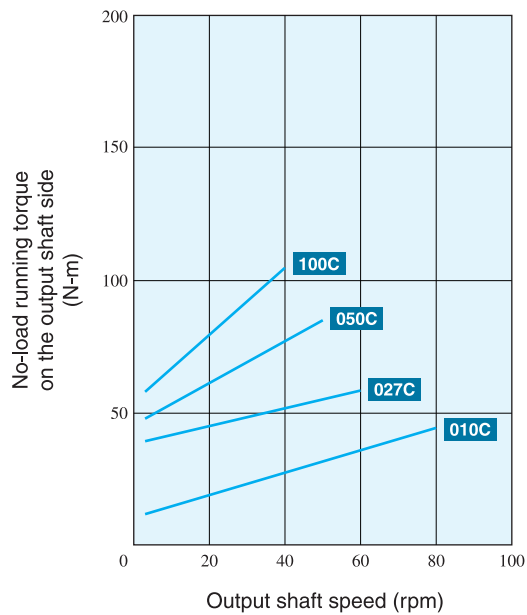
RD-E Series

Case temperature: 30°C
Lubricant: Grease (Molywhite RE00)



RD-C Series

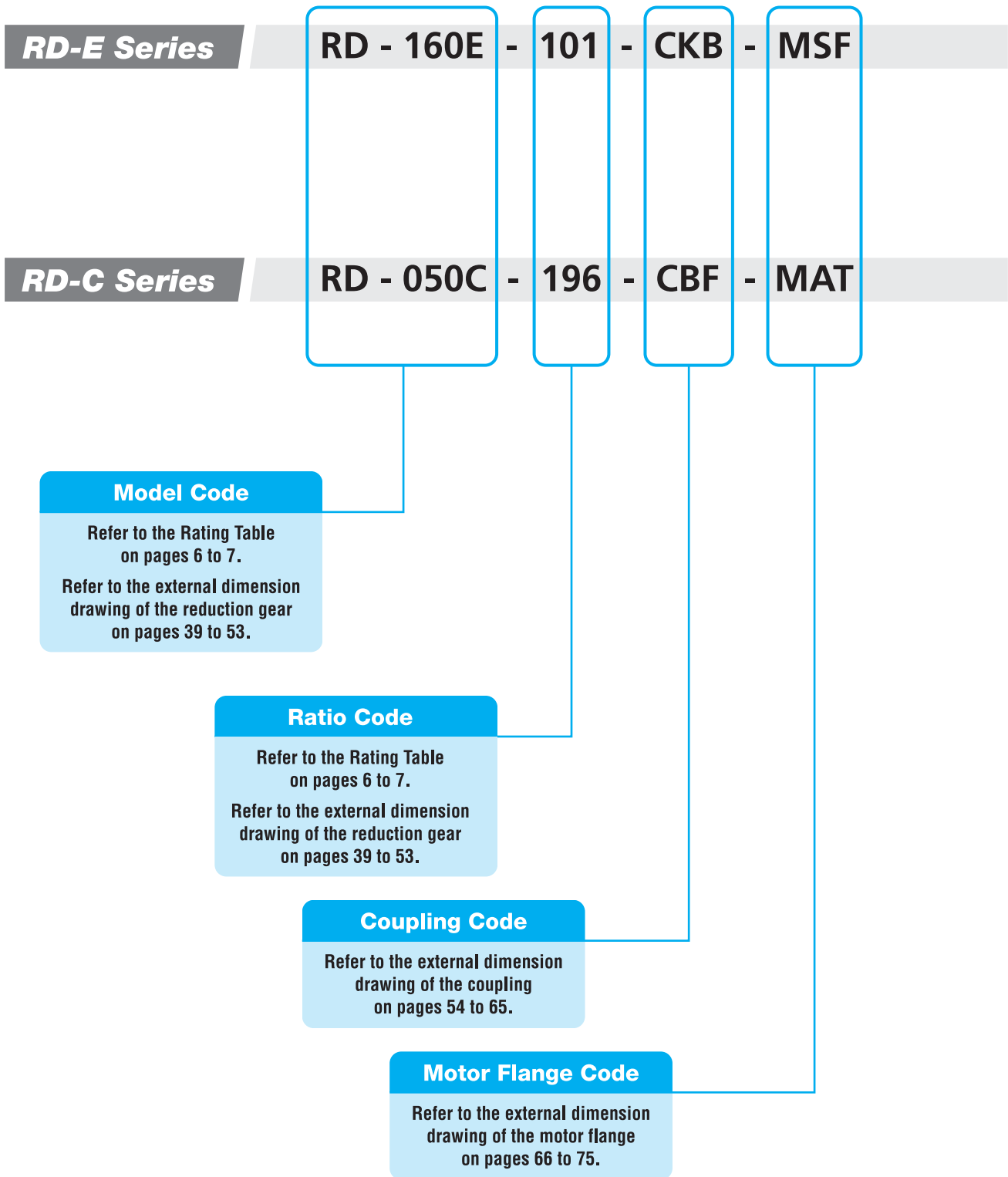
Case temperature: 30°C
Lubricant: Grease (Molywhite RE00)
Loss at center gear is not included.



The no-load running torque that is converted to the input shaft side value should be figured out according to the following equation.

$$\text{No-load running torque on the input shaft side (N-m)} = \frac{\text{No-load running torque on the output shaft side (N-m)}}{\text{Speed ratio}}$$

Product Codes



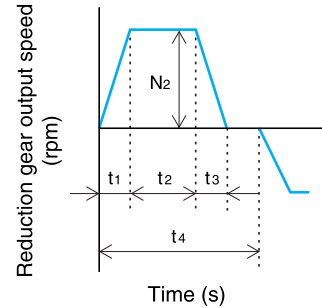
Selection of Product Code

Input and calculation of the load conditions

Input of the operation pattern

Input the operation pattern.

t₁	Acceleration time (s)	0.1
t₂	Constant-speed operation time (s)	0.8
t₃	Deceleration time (s)	0.1
t₄	One operation cycle time (s)	10



Input of the speed (output shaft for the reduction gear)

Input the speed of the output shaft for the reduction gear during normal operation.

N₂	Constant speed (rpm)	20
N₁	Average speed for startup (rpm)	10
N₃	Average speed for stop (rpm)	10

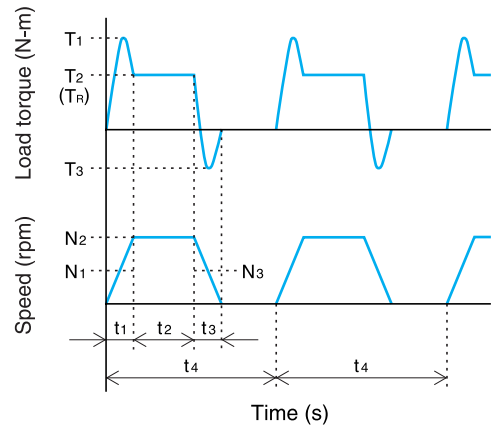
$$\dots\dots N_1 = \frac{N_2}{2}$$

$$\dots\dots N_3 = \frac{N_2}{2}$$

Input of the constant speed torque (output shaft for the reduction gear)

Input the torque of the output shaft for the reduction gear during normal operation.

T_R	Constant speed torque (N-m)	1996
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Input of the moment of inertia (output shaft for the reduction gear)

Input the load moment of inertia at the output shaft for the reduction gear.

I_R	Load moment of inertia (kg-m ²)	85
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Calculation of the load torque (output shaft for the reduction gear)

Calculate the inertia torque during acceleration/deceleration of the output shaft for the reduction gear.

T_A	Inertia torque during acceleration (N-m)	1780	$\dots\dots T_A = \left\{ \frac{I_R \times (N_2 - 0)}{t_1} \right\} \times \frac{2\pi}{60}$
T_D	Inertia torque during deceleration (N-m)	-1780	$\dots\dots T_D = \left\{ \frac{I_R \times (0 - N_2)}{t_3} \right\} \times \frac{2\pi}{60}$

Calculate the load torque of the output shaft for the reduction gear.

T₁	Maximum torque for startup (N-m)	3776	$\dots\dots T_1 = T_A + T_R $
T₂	Constant speed torque (N-m)	1996	$\dots\dots T_2 = T_R $
T₃	Maximum torque for stop (N-m)	216	$\dots\dots T_3 = T_D + T_R $

Calculation of the average speed (output shaft for the reduction gear)

Calculate the average speed of the output shaft for the reduction gear. (Downtime is not included.)

N_m	Average output speed (rpm)	18
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$$\dots\dots N_m = \frac{t_1 \cdot N_1 + t_2 \cdot N_2 + t_3 \cdot N_3}{t_1 + t_2 + t_3}$$

Calculation of the average load torque (output shaft for the reduction gear)

Calculate the average load torque of the output shaft for the reduction gear. (Downtime is not included.)

T_m	Average load torque (N-m)	2186
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$$\dots\dots T_m = \sqrt{\frac{\frac{10}{3} \left(t_1 \cdot N_1 \cdot T_1^{\frac{10}{3}} + t_2 \cdot N_2 \cdot T_2^{\frac{10}{3}} + t_3 \cdot N_3 \cdot T_3^{\frac{10}{3}} \right)}{t_1 \cdot N_1 + t_2 \cdot N_2 + t_3 \cdot N_3}}$$

Selection of the reduction gear

Input of the specification values

Select a tentative model from the rating table.

Model	T ₀	N ₀	K	T _{S1}	T _{S2}	N _{S1}	N _{S2}	M ₀	M _{S1}	F ₀	α
	Rated Torque (N-m)	Rated Output Speed (rpm)	Rated Life [Continuous] (Hr)	Allowable Acceleration/ Deceleration Torque (N-m)	Momentary Maximum Allowable Torque (N-m)	Allowable Output Speed [Continuous] (rpm)	Allowable Output Speed [Intermittent] (rpm)	Allowable Moment (N-m)	Momentary Maximum Allowable Moment (N-m)	Maximum Axial Load (N)	Dimension α (mm)
006E	58	30	6000	117	294	60	100	196	392	1470	77.8
020E	167	15	6000	412	833	45	75	882	1764	3920	93.2
040E	412	15	6000	1029	2058	42	70	1666	3332	5194	114.6
080E	784	15	6000	1960	3920	42	70	2156	4312	7840	136.1
160E	1568	15	6000	3920	7840	27	45	3920	7840	14700	167.3
320E	3136	15	6000	7840	15680	21	35	7056	14112	19600	203

Comparison between the allowable output speed and the maximum actual output speed

Check the allowable output speed of the tentatively selected model.

N_{S1}	Allowable output speed [Continuous] (rpm)	21
N_{S2}	Allowable output speed [Intermittent] (rpm)	35

..... For the N_{S1} and N_{S2} values, refer to the rating table (page 7).

Check the maximum actual output speed of the tentatively selected model.

N_{max}	Maximum output speed (rpm)	20
------------------------	----------------------------	----

..... N_{max} = N₂

◆ **Confirmation!** “Is the maximum output speed the same as or lower than the allowable output speed?” → **OK**

Calculate the operation rate (operation time of the reduction gear/one operation cycle time).

O_p	Operation rate (%)	10
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$$\dots\dots O_p = \frac{t_1 + t_2 + t_3}{t_4} \times 100$$

◆ **Confirmation!** “Is the operation rate 50% or lower?” → **OK**

Note: If the operation rate is high, forced cooling may be required as a countermeasure against heating.

Comparison between the service life and the required life

Calculate the life of the tentatively selected model.

L_h	Life (Hr)	16647
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$$L_h = K \times \frac{N_0}{N_m} \times \left(\frac{T_0}{T_m} \right)^{\frac{10}{3}}$$

For the K, N₀, T₀ values, refer to the rating table (page 6).

Q₁	Number of operation cycles per day (times)	8640
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Q₂	Number of operating days per year (days)	365
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Q₃	Number of operating hours per day (Hr)	2.4
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$$Q_3 = \frac{Q_1 \times (t_1 + t_2 + t_3)}{60 \times 60}$$

Q₄	Number of operating hours per year (Hr)	876
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$$Q_4 = Q_3 \times Q_2$$

Calculate the useful year of the tentatively selected model based on the operating hours.

L	Service life (year)	19.0
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$$L = \frac{L_h}{Q_4}$$

L_{ex}	Required life (year)	10
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◆Confirmation! "Is the service life the same as or higher than the required life?" → OK

Comparison between the allowable acceleration/deceleration torque and the maximum load torque

Check the allowable acceleration/deceleration torque of the tentatively selected model.

T_{S1}	Allowable acceleration/deceleration torque (N-m)	7840
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..... For the T_{S1} value, refer to the rating table (page 6).

Check the maximum load torque that is applied to the reduction gear during operation.

T_{max}	Maximum load torque (N-m)	3776
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$$T_{max} = T_1$$

◆Confirmation! "Is the maximum load torque the same as or lower than the allowable acceleration/deceleration torque?" → OK

Input of the external load (output shaft for the reduction gear)

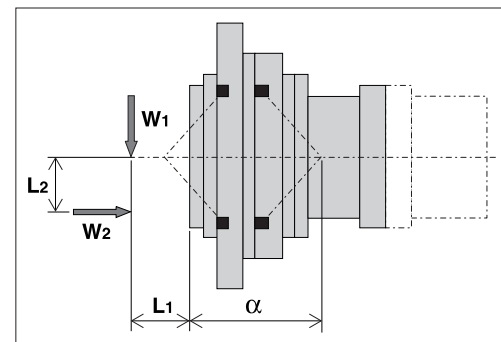
Input the external load that is applied to the output shaft for the reduction gear.

W₁	Radial load (N)	4900
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L₁	Distance to the point of radial load application (mm)	100
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W₂	Thrust load (N)	0
----------------------	-----------------	---

L₂	Distance to the point of axial load application (mm)	0
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Comparison between the allowable axial load and the axial load

Check the allowable axial load of the tentatively selected model.

F₀	Allowable axial load (N)	19600
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..... For the F₀ value, refer to the rating table (page 7).

Check the axial load that is applied to the output shaft for the reduction gear during operation.

W₂	Axial load (N)	0
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◆Confirmation! "Is the axial load the same as or lower than the allowable axial load?" → OK

Comparison between the allowable moment and the load moment

Check the allowable moment of the tentatively selected model.

M₀	Allowable moment (N-m)	7056
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..... For the M₀ and α values, refer to the rating table (page 7).

Calculate the load moment that is applied to the output shaft for the reduction gear during operation.

M_C	Load moment (N-m)	1485
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$$M_C = \frac{W_1 \times (L_1 + \alpha) + W_2 \times L_2}{1000}$$

◆ **Confirmation!** “Is the load moment the same as or lower than the allowable moment?” → OK

Note: In the actual operation, it is necessary to check that the allowable moment range, which is indicated in the diagram on page 9, has not been exceeded.

Input of the selected motor characteristics

Input the motor specifications (i.e., torque, speed)

	Motor model	□□□□□□
P	Motor rated output (KW)	4.8
T_{M0}	Motor rated torque (N-m)	30
T_{M1}	Motor momentary maximum torque (N-m)	75
N_{M0}	Motor rated speed (rpm)	3000

Input of the speed ratio of the reduction gear

Calculate the maximum speed ratio based on the maximum speed of the output shaft for the reduction gear and the rated speed of the motor.

R_{max}	Maximum speed ratio of the reduction gear	150
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$$R_{max} = \frac{N_{M0}}{N_{max}}$$

Select an optimal speed ratio from the rating table.

Model	Ratio code (R Speed ratio)				
	066 (66)	081 (81)	101 (101)	141 (141)	185 (185)
320E					

..... For the R values, refer to the rating table (page 6).

Matching verification between the reduction gear and the motor

Check the maximum speed during operation.

N_{max}	Maximum speed (rpm)	20
------------------------	---------------------	----

$$N_{max} = N_2$$

Input the no-load running torque of the reduction gear in accordance with the no-load running torque chart.

T_{mf1}	No-load running torque of the reduction gear (N-m)	330
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..... For the T_{mf1} values, refer to the charts for the no-load running torque (page 14).

With consideration given to the variations in each machine, multiply the no-load running torque by 1.3.

T_{mf2}	No-load running torque of the reduction gear (N-m)	429
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$$T_{mf2} = T_{mf1} \times 1.3$$

Note: When the reduction gear is used in a low temperature environment, refer to the charts for the low-temperature characteristics (no-load running torque under low temperature) shown on pages 12 and 13.

Check the maximum load torque of the reduction gear.

T_{max}	Maximum load torque (N-m)	3776 $T_{max} = T_1$
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Calculate the “load torque to be applied to the output shaft for the reduction gear plus the no-load torque”.

T_{out}	Load to be applied to the output shaft for the reduction gear + no-load torque (N-m)	4205 $T_{out} = T_{max} + T_{mf2}$
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Input the ratio of the reduction gear.

R	Ratio of the reduction gear	141
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Calculate the “load torque to be applied to the input shaft for the reduction gear plus the no-load torque”.

T_{in}	Average load torque of the input shaft for the reduction gear (N-m)	29.8 $T_{in} = \frac{T_{xmf}}{R}$
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Check the motor rated torque.

T_{MO}	Motor rated torque (N-m)	30
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◆ **Confirmation!** “Is the load torque plus the no-load torque the same or lower than the motor rated torque?” → OK

Note: If high detent torque is applied to the motor shaft when the reduction gear is halted, be sure to include this additional value.

Check the momentary maximum torque of the motor.

T_{M1}	Motor momentary maximum torque (N-m)	75
----------	--------------------------------------	----

Calculate the maximum torque to be generated by the output shaft for the reduction gear at the point of motor momentary maximum torque.

T_{M1out}	Maximum torque generated at the output shaft for the reduction gear (N-m)	8460 $T_{M1out} = T_{M1} \cdot R \cdot \eta_R$
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Check the momentary maximum allowable torque of the reduction gear.

T_{S2}	Momentary maximum allowable torque (N-m)	15680 For the T_{S2} value, refer to the rating table (page 7).
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◆ **Confirmation!** “Is the maximum torque generated at the output shaft for the reduction gear the same as or lower than the momentary maximum allowable torque?” → OK

Note: If the maximum torque generated at the output shaft for the reduction gear exceeds the momentary maximum allowable torque, impose a limitation on the motor torque value.

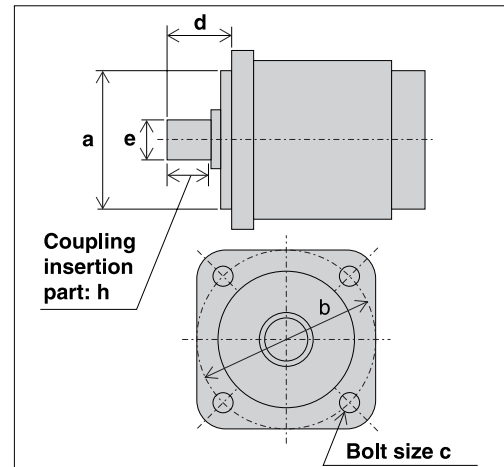
Also, ensure that the shock torque, due to an emergency stop, is the same as or lower than the momentary maximum allowable torque.

Selection of the coupling and motor flange

Input of the selected motor shape

Input the motor specification (shape).

a	Motor mounting pilot diameter (mm)	Ø114.3
		0 -0.025
b	Motor mounting bolt P.C.D (mm)	200
c	Motor mounting bolt size	M12
d	Motor shaft length (mm)	79
e	Motor shaft diameter (mm)	Ø35
		+0.010
		0
h	Motor shaft coupling insertion part length (mm)	75.8



Selection of the coupling

Convert the momentary maximum allowable torque of the reduction gear to the torque on the input shaft side.

T_{S4}	Momentary maximum allowable torque on the input shaft side (N-m)	139 $T_{S4} = \frac{T_{S2}}{R} \times \frac{1}{\eta_R}$
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The selected RD-320E-141 model is shown in External Dimension Drawing (2) of the reduction gear on page 47. According to this drawing, the dimensions of the spline shaft are 25 x 18 x 1.25. The motor shaft diameter of Ø35 (0 to Ø+0.010), is considered to be equivalent to the applicable shaft diameter of Ø35k6 (Ø+0.002 to Ø+0.018). Select the coupling code, which corresponds to the above spline and the applicable shaft, from the external dimension drawing of the coupling on page 59.

	Coupling code	CKB
D_{CP}	Coupling outside diameter (mm)	Ø82
S_{CP}	Coupling insertion length (mm)	33.5
T_{ai}	Coupling allowable transmission torque (N-m)	208.6

◆Confirmation!

“Is the coupling insertion length shorter than the coupling insertion length of the motor shaft?” → OK

Note: The motor shaft must be inserted to the coupling until its tip comes into contact with the partition plate of the coupling.

◆Confirmation! “Is the coupling allowable transmission torque the same as or more than the momentary maximum allowable torque on the input shaft side?” → OK

Note: The shock torque, due to an emergency stop, must not exceed the momentary maximum allowable torque.

Selection of the motor flange

The applicable reduction gear is noted on the upper right area in the external dimension drawing of the motor flange. The external dimension drawing of the applicable reduction gear (RD-320E) is shown on pages 72 to 75. Check each value according to the procedure below and then select the motor flange code from the external dimension drawing of the motor flange on page 73.

Motor mounting pilot diameter: Ø114.3 (Ø-0.025 to 0). Check it against value D.

Motor mounting bolt P.C.D: 200. Check it against value E.

Motor mounting bolt size: M12. Check it against value F.

Motor shaft length: 79. Check it against value “d” of the applicable motor shaft length.

Select the motor flange that meets the above conditions from the external dimension drawing of the motor flange.

	Motor flange code	MSF
H	Motor flange inside diameter (mm)	Ø137

◆Confirmation! “Is the motor flange inside diameter larger than the coupling outside diameter?” → OK

Note: If the coupling outside diameter is larger than the motor mounting pilot diameter, first connect the motor and the flange and then connect them to the coupling.

End of selections

Selected RD : **RD** - **320E** - **141** - **CKB** - **MSF**
Model code
Ratio code
Coupling code
Motor flange code

Selected motor : -

Note: Matching verification between the reduction gear and the motor in the above selection steps, should be used as a reference, since they have been matched based only on the torque comparisons during operation of the reduction gear. For more precise motor selection, the effective torque, load inertia moment, brake torque, regenerative ability, and so forth, must also be considered.

Calculation of moment rigidity and torsion angle

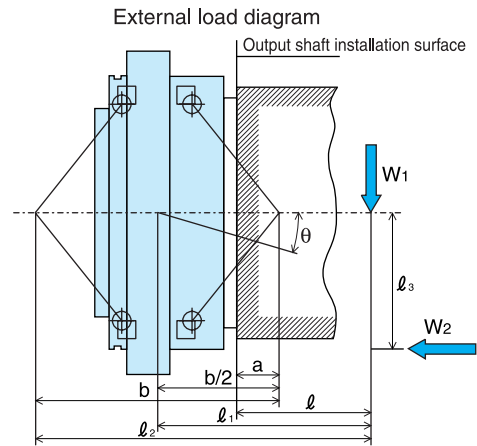
Calculation of moment rigidity

When a load moment occurs with an external load applied, the output shaft will tilt in proportion to the load moment (if l_2 is larger than b).

The moment rigidity indicates the rigidity of the main bearing, and it is represented by the load moment value required for tilting the main bearing by 1 arc.min.

$$\theta = \frac{W_1 l_1 + W_2 l_3}{M_1 \times 10^3}$$

θ : Tilt angle of the output shaft (arc.min)
 M_1 : Moment rigidity (N-m/arc.min.)
 W_1, W_2 : Load (N)
 l_1, l_3 : Distance to the point of load application (mm)
 l_1 : $l + \frac{b}{2} - a$
 l : Distance from the output shaft installation surface to the point of load application (mm)



Model code	Moment rigidity N-m/arc.min.	Dimensions (mm)	
		a	b
RD-006E	117	12.5	90.3
RD-020E	372	20.1	113.3
RD-040E	931	29.9	144.5
RD-080E	1176	27.9	164.0
RD-160E	2940	42.7	210.0
RD-320E	4900	48.4	251.4

Model code	Moment rigidity N-m/arc.min.	Dimensions (mm)	
		a	b
RD-010C	421	28.0	119.2
RD-027C	1068	38.0	150.0
RD-050C	1960	50.5	187.3
RD-100C	2813	58.7	207.6
RD-200C	9800	76.0	280.4
RD-320C	12740	114.5	360.4

Calculation of torsion angle

Calculate the torsion angle when the torque is applied in a single direction, using an example of RD-160E.

1) When the load torque is 30 N-m ······ Torsion angle (ST₁)

● When the load torque is within the lost motion range:

$$ST_1 = \frac{30}{47} \times \frac{1 \text{ (arc.min.)}}{2} = 0.32 \text{ arc.min. or less}$$

2) When the load torque is 1300 N-m ······ Torsion angle (ST₂)

● When the load torque is within the rated range:

$$ST_2 = \frac{1}{2} + \frac{1300 - 47.0}{392} = 3.70 \text{ arc.min.}$$

Note: 1. The torsion angles that are calculated above are for a single reduction gear.

2. For the customized specifications for the lost motion, contact us.

Model code	Torsion rigidity N-m/arc.min.	Lost motion		Backlash arc.min.
		Lost motion arc.min.	Measured torque N-m	
RD-006E	20	1.5	± 1.76	1.0
RD-020E	49	1.0	± 5.00	
RD-040E	108		± 12.3	
RD-080E	196		± 23.5	
RD-160E	392		± 47.0	
RD-320E	980		± 94.0	

Model code	Torsion rigidity N-m/arc.min.	Lost motion		Backlash arc.min.
		Lost motion arc.min.	Measured torque N-m	
RD-010C	47	1.0	± 2.94	1.0
RD-027C	147		± 7.94	
RD-050C	255		± 14.7	
RD-100C	510		± 29.4	
RD-200C	980		± 58.8	
RD-320C	1960		± 94.1	

Selection method for the coupling and motor flange

1. Verify the matching specification of the reduction gear and the motor, and then select the model to be used.
2. Once the model is selected, specify the coupling and the motor flange to be used, according to the "Selection table for the coupling and motor flange" that indicates the motor code and ratio code individually. The following describes an example of the selection procedure.

3. Example of selection

- (1) Specifications for the selected reduction gear and motor

Reduction gear: RD-320E-141 Motor: See below

- (2) Check the coupling and motor flange for the selected reduction gear, in accordance with the "Selection table for the RD-320E (2) Coupling and motor flange" on the following page.

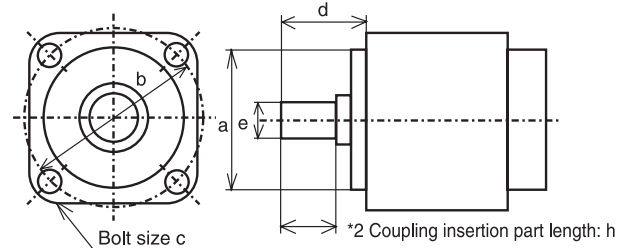
(Reduction gear specifications)

Reduction gear (Refer to the external dimension drawings on the following pages)		
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N-m) *1
RD-320E-101	101	194.1
RD-320E-141	141	139.0
RD-320E-185	185	105.9

(Motor dimensions)

a	Motor pilot diameter (mm)	Ø114.3 ⁰ _{-0.025}
b	Motor mounting bolt P.C.D (mm)	200
c	Motor mounting bolt size (mm)	M12
d	Motor shaft length (mm)	79
e	Motor shaft diameter (mm)	Ø35k6 ^{+0.018} _{+0.002}
h	Motor shaft coupling insertion part length (mm)	75.8

- (3) Check the dimension of a, b, c, d, e, and h in the motor dimension drawings, and then list them (see the list on the right).



(4) Selection of the coupling and motor flange

- 1) Select the tentative coupling code "CKB" for the motor shaft diameter (e) Ø35k6 in the motor table.

Coupling (Refer to external dimension drawings on the following pages)				
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N-m) *1	Coupling insertion length (mm) *2	Coupling outside diameter (mm) *3	Coupling code
19 h6 (0/-0.013)	73.0	27.5	68	CVS
22 h6 (0/-0.013)	84.5	27.5	68	CVA
35 h6 (0/-0.016)	208.6	33.5	82	CKA
35 k6 (+0.018/+0.002)	208.6	33.5	82	CKB
35 h6 (0/-0.016)	212.8	38.5	94	CMC

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d		Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code
over	or less	*3			*3	
40	45	95	110	M8	110	MSZ
40	45	95	115	M8	110	MTC
55	60	114.3	200	M12	137	MTF
65	70	114.3	200	M12	137	MSL
75	80	114.3	200	M12	137	MSF
95	100	114.3	200	M12	137	MST

- 2) After selecting the tentative code, confirm that each of the conditions described in "precaution for coupling selection" is met.

*1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.

Coupling allowable transmission torque 208.6 (N-m) > reduction gear input shaft allowable torque 139.0 (N-m) → Condition is met

*2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).

Coupling insertion length 33.5 (mm) < Motor shaft coupling insertion part length (h) 75.8 (mm) → Condition is met

- 3) Select a motor flange that is compatible with the motor (refer to the motor dimension drawing) from the motor flange table.
Result: The motor flange code "MSF" is selected.

- 4) After selecting the motor flange, check the following conditions.

*3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter.

Coupling outside diameter 82 (mm) < Motor pilot diameter 114.3 (mm) < Motor flange inside diameter 137 (mm) → Condition is met

Check result: The coupling code "CKB" is selected.

(Selection is complete)

RD-6E Quick Selection Table of the Coupling and Motor Flange

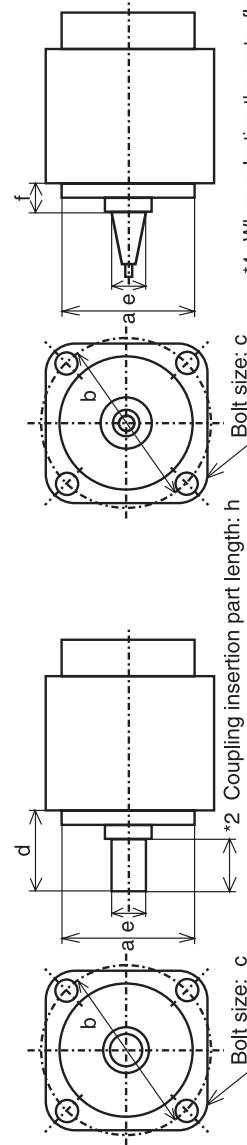
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) ^{*1}
RD-006E-031	31	11.9
RD-006E-043	43	8.5
RD-006E-054	53.5	6.9
RD-006E-079	79	4.7
RD-006E-103	103	3.6

Coupling (Refer to external dimension drawings on the following pages)				
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) ^{*1}	Coupling insertion length (mm) ^{*2}	Coupling outside diameter (mm) ^{*3}	Coupling code
8 h6 (0/-0.009)	10.3	18.5	44	CAS
9 h6 (0/-0.009)	11.6	18.5	44	CAH
10 h6 (0/-0.011)	12.9	18.5	44	CAK
11 h6 (0/-0.011)	14.1	18.5	44	CAA
14 h6 (0/-0.011)	18.0	18.5	44	CAB
14 k6 (+0.012/+0.001)	18.0	18.5	44	CAC
16 h6 (0/-0.011)	20.6	18.5	44	CAD
16 k6 (+0.012/+0.001)	20.6	18.5	44	CAE
17 h6 (0/-0.011)	21.9	18.5	44	CAL
19 h6 (0/-0.013)	24.4	18.5	44	CAF
19 k6 (+0.015/+0.002)	24.4	18.5	44	CAJ
10 h6 (0/-0.009)	22.7	23.5	56	CCF
14 h6 (0/-0.011)	31.7	23.5	56	CCS
14 k6 (+0.012/+0.001)	31.7	23.5	56	CCJ
16 h6 (0/-0.011)	36.3	23.5	56	CCA
17 h6 (0/-0.011)	38.5	23.5	56	CCK
19 h6 (0/-0.013)	43.1	23.5	56	CCB
19 k6 (+0.015/+0.002)	43.1	23.5	56	CCC
22 h6 (0/-0.013)	49.9	23.5	56	CCL
24 h6 (0/-0.013)	54.4	23.5	56	CCE
24 k6 (+0.015/+0.002)	54.4	23.5	56	CCD
25 h6 (0/-0.013)	56.7	23.5	56	CCM
11 (+0.1/0) taper 1/10	-	-	56	*4 CCH

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code	Motor flange diameter (mm)
25	30	45	M3	50	*3 MAB	
25	30	46	M4	50	*3 MAA	
25	30	60	M4	60	MAH	
25	30	70	M4	60	MAJ	
25	30	70	M5	60	MAF	
20	25	75	M5	60	MAE	
25	30	75	M5	60	MAD	
25	30	75	M6	60	MAC	
25	30	90	M5	66	MAN	
30	35	90	M5	66	MAR	
35	40	90	M5	66	MBH	
25	30	90	M6	66	MAZ	
35	40	90	M6	66	MAM	
25	30	80	M6	66	MAL	
30	35	80	M6	66	MAQ	
35	40	80	M6	66	MAK	
50	55	80	M6	66	MAS	
40	45	95	M8	66	MBF	
40	45	95	M6	66	MBA	
35	40	95	M8	66	MAY	
40	45	95	M8	66	MBB	
50	55	95	M8	66	MBC	
45	50	110	M8	66	MAW	
40	45	110	M8	66	MBJ	
35	40	110	M8	66	MBD	
45	50	110	M8	66	MAV	
50	55	110	M8	66	MAX	
65	70	110	M8	66	MBE	
55	60	110	M8	70	MAT	

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. The MAB and MAA are the exception to this case. These types of coupling should be attached only after attaching the motor to the motor flange. Motor flanges are designed to allow the tightening of the coupling clamp bolts from their side openings.



*4 When selecting the motor flange for the CCH, assume that "d=f+26".

RD-20E Quick Selection Table of the Coupling and Motor Flange

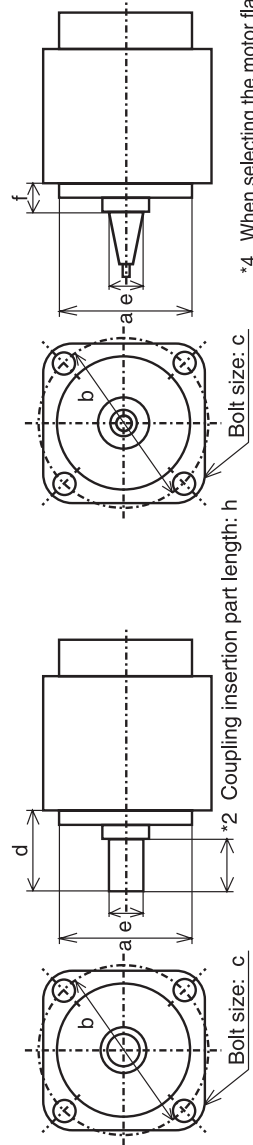
Reduction gear (Refer to the external dimension drawings on the following pages)		
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) *1
RD-020E-041	41	25.4
RD-020E-057	57	18.3
RD-020E-081	81	12.9
RD-020E-105	105	9.9
RD-020E-161	161	6.5

Coupling (Refer to external dimension drawings on the following pages)					
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) *1	Coupling insertion length (mm) *2	Coupling outside diameter (mm) *3	Coupling code	
8 h6 (0/-0.009)	10.3	18.5	44	CAS	
9 h6 (0/-0.009)	11.6	18.5	44	CAH	
10 h6 (0/-0.011)	12.9	18.5	44	CAK	
11 h6 (0/-0.011)	14.1	18.5	44	CAA	
14 h6 (0/-0.011)	18.0	18.5	44	CAB	
14 h6 (+0.012/+0.001)	18.0	18.5	44	CAC	
16 h6 (0/-0.011)	20.6	18.5	44	CAD	
16 h6 (+0.012/+0.001)	20.6	18.5	44	CAE	
17 h6 (0/-0.011)	21.9	18.5	44	CAL	
19 h6 (0/-0.013)	24.4	18.5	44	CAF	
19 h6 (+0.015/+0.002)	24.4	18.5	44	CAJ	
10 h6 (0/-0.009)	22.7	23.5	56	CCF	
14 h6 (0/-0.011)	31.7	23.5	56	CCS	
14 h6 (+0.012/+0.001)	31.7	23.5	56	CCJ	
16 h6 (0/-0.011)	36.3	23.5	56	CCA	
17 h6 (0/-0.011)	38.5	23.5	56	CCK	
19 h6 (0/-0.013)	43.1	23.5	56	CCB	
19 h6 (+0.015/+0.002)	43.1	23.5	56	CCC	
22 h6 (0/-0.013)	49.9	23.5	56	CCL	
24 h6 (0/-0.013)	54.4	23.5	56	CCE	
24 h6 (+0.015/+0.002)	54.4	23.5	56	CCD	
25 h6 (0/-0.013)	56.7	23.5	56	CCM	
11 (+0.1/0) taper: 1/10	-	-	56	*4 CCH	
16 (+0.1/0) taper: 1/10	-	-	68	*5 CRS	

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code	Motor flange code
25	30	45	M3	50	*3 MAB	
25	30	46	M4	50	*3 MAA	
25	30	60	M4	60	MAH	
25	30	70	M4	60	MAJ	
25	30	70	M5	60	MAF	
20	25	75	M5	60	MAE	
25	30	75	M6	60	MAC	
25	30	90	M5	66	MAN	
30	35	90	M5	66	MAR	
35	40	90	M5	66	MBH	
25	30	90	M6	66	MAZ	
35	40	90	M6	66	MAM	
25	30	100	M6	66	MAL	
30	35	100	M6	66	MAQ	
35	40	100	M6	66	MAK	
50	55	100	M6	66	MAS	
40	45	110	M8	66	MBF	
40	45	115	M6	66	MBA	
35	40	95	M8	66	MAY	
40	45	115	M8	66	MBB	
50	55	115	M8	66	MBC	
45	50	130	M8	66	MAW	
40	45	135	M8	66	MBJ	
35	40	145	M8	66	MBD	
45	50	145	M8	66	MAV	
50	55	145	M8	66	MAX	
65	70	145	M8	66	MBE	
55	60	145	M8	70	MAT	

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. The MAB and MAA are the exception to this case. These types of coupling should be attached only after attaching the motor to the motor flange. Motor flanges are designed to allow the tightening of the coupling clamp bolts from their side openings.



*4 When selecting the motor flange for the CCH, assume that "d=f+26".

*5 When selecting the motor flange for the CRS, assume that "d=f+42".

RD-40E Quick Selection Table of the Coupling and Motor Flange

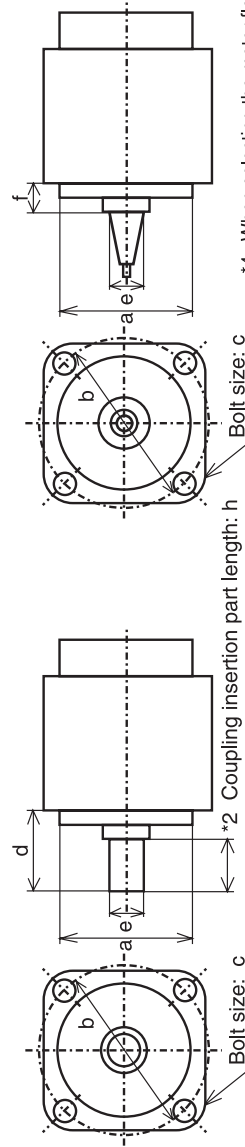
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) ^{*1}
RD-040E-041	41	62.7
RD-040E-057	57	45.1
RD-040E-081	81	31.8
RD-040E-105	105	24.5
RD-040E-153	153	16.8

Coupling (Refer to external dimension drawings on the following pages)				
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) ^{*1}	Coupling insertion length (mm) ^{*2}	Coupling outside diameter (mm) ^{*3}	Coupling code
10 h6 (0/-0.009)	22.7	23.5	56	CEF
14 h6 (0/-0.011)	31.7	23.5	56	CES
14 k6 (+0.012/+0.001)	31.7	23.5	56	CEH
16 h6 (0/-0.011)	36.3	23.5	56	CEA
17 h6 (0/-0.011)	38.5	23.5	56	CEJ
19 h6 (0/-0.013)	43.1	23.5	56	CEB
19 k6 (+0.015/+0.002)	43.1	23.5	56	CEC
24 h6 (0/-0.013)	54.4	23.5	56	CEE
24 k6 (+0.015/+0.002)	54.4	23.5	56	CED
25 h6 (0/-0.013)	56.7	23.5	56	CEK
19 h6 (0/-0.013)	73.0	27.5	68	CFS
22 h6 (0/-0.013)	84.5	27.5	68	CFA
24 h6 (0/-0.013)	92.2	27.5	68	CFD
24 k6 (+0.015/+0.002)	92.2	27.5	68	CFB
25 h6 (0/-0.013)	96.1	27.5	68	CFJ
28 h6 (0/-0.013)	107.6	27.5	68	CFE
32 h6 (0/-0.016)	123.0	27.5	68	CFH
32 k6 (+0.018/+0.002)	123.0	27.5	68	CFC
24 h6 (0/-0.013)	143.0	33.5	82	CJD
28 h6 (0/-0.013)	166.9	33.5	82	CJC
32 h6 (0/-0.016)	190.7	33.5	82	CJE
32 k6 (+0.018/+0.002)	190.7	33.5	82	CJS
35 h6 (0/-0.016)	208.6	33.5	82	CJA
35 k6 (+0.018/+0.002)	208.6	33.5	82	CJB
16 (+0.1/0) taper 1/10	-	-	68	*4 CFF
32 (+0.1/0) taper 1/10	-	-	94	*5 CTS

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)					
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code
30	35	90	M5	80	MKE
35	40	90	M5	80	MLK
35	40	90	M6	80	MKC
25	30	100	M6	80	MKB
35	40	100	M6	80	MKA
50	55	100	M6	80	MKF
40	45	110	M8	80	MLL
40	45	115	M6	80	MKY
40	45	115	M8	80	MKX
50	55	115	M8	80	MKH
35	40	115	M8	98	MKN
45	50	130	M8	98	MKM
40	45	135	M8	98	MLM
50	55	135	M8	98	MLN
35	40	145	M8	98	MKZ
45	50	145	M8	98	MKL
50	55	145	M8	98	MKQ
55	60	145	M8	98	MKK
60	65	145	M8	98	MKS
65	70	145	M8	98	MLA
65	70	145	M12	98	MLB
50	55	145	M12	98	MLC
40	45	165	M8	98	MLD
45	50	165	M8	98	MLQ
45	50	165	M10	98	MLE
55	60	165	M10	98	MKJ
60	65	165	M10	98	MKR
50	55	200	M12	98	MLF
60	65	200	M12	98	MLH
65	70	200	M12	98	MLJ
75	80	200	M12	98	MKT
100	105	200	M12	98	MKW
75	80	215	M12	98	MKV
80	85	215	M12	98	MLR

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter.



- *4 When selecting the motor flange for the CFF, assume that "d=f+42".
- *5 When selecting the motor flange for the CTS, assume that "d=f+83".

RD-80E (1) Quick Selection Table of the Coupling and Motor Flange

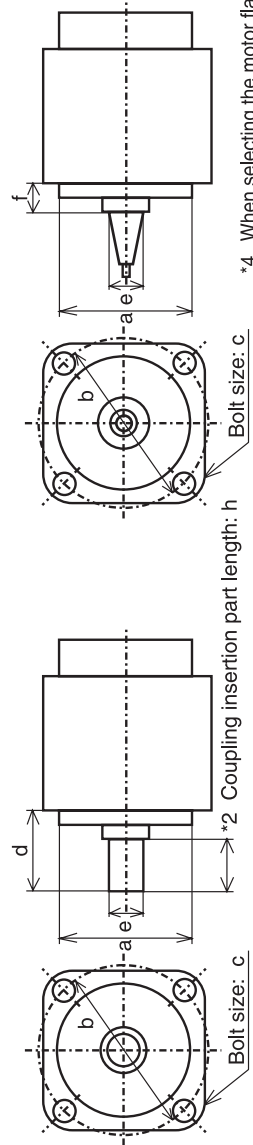
Reduction gear (Refer to the external dimension drawings on the following pages)		
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) *1
RD-080E-041	41	119.5
RD-080E-057	57	86.0

Coupling (Refer to external dimension drawings on the following pages)					
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) *1	Coupling insertion length (mm) *2	Coupling outside diameter (mm) *3	Coupling code	
19 h6 (0/-0.013)	73.0	27.5	68	CVS	
22 h6 (0/-0.013)	84.5	27.5	68	CVA	
24 h6 (0/-0.013)	92.2	27.5	68	CVD	
24 k6 (+0.015/+0.002)	92.2	27.5	68	CVB	
28 h6 (0/-0.013)	107.6	27.5	68	CVE	
32 h6 (0/-0.016)	123.0	27.5	68	CVH	
32 k6 (+0.018/+0.002)	123.0	27.5	68	CVH	
24 h6 (0/-0.013)	143.0	33.5	82	CKD	
28 h6 (0/-0.013)	166.9	33.5	82	CKC	
32 h6 (0/-0.016)	190.7	33.5	82	CKE	
32 k6 (+0.018/+0.002)	190.7	33.5	82	CKS	
35 h6 (0/-0.016)	208.6	33.5	82	CKA	
35 k6 (+0.018/+0.002)	208.6	33.5	82	CKB	
35 h6 (0/-0.016)	212.8	38.5	94	CMC	
35 k6 (+0.018/+0.002)	212.8	38.5	94	CMS	
38 k6 (+0.018/+0.002)	231.0	38.5	94	CMA	
42 h6 (0/-0.016)	255.4	38.5	94	CMB	
16 (+0.1/0) taper 1/10	-	-	68	*4 CVF	
32 (+0.1/0) taper 1/10	-	-	94	*5 CMD	

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code	
						over
30	35	70	M5	80	MKE	
35	40	70	M5	80	MLK	
35	40	90	M6	80	MKC	
25	30	80	M6	80	MKB	
35	40	80	M6	80	MKA	
50	55	80	M6	80	MKF	
40	45	95	M8	80	MLL	
40	45	95	M6	80	MKY	
40	45	95	M8	80	MKX	
50	55	95	M8	80	MKH	
35	40	95	M8	98	MKN	
45	50	110	M8	98	MKM	
40	45	110	M8	98	MLM	
50	55	110	M8	98	MLN	
35	40	110	M8	98	MKZ	
45	50	110	M8	98	MKL	
50	55	110	M8	98	MKQ	
55	60	110	M8	98	MKK	
60	65	110	M8	98	MKS	
65	70	110	M8	98	MLA	
65	70	110	M12	98	MLB	
50	55	114.3	M12	98	MLC	
40	45	115	M8	98	MLD	
45	50	115	M8	98	MLQ	
45	50	130	M10	98	MLE	
55	60	130	M10	98	MKJ	
60	65	130	M10	98	MKR	
50	55	114.3	M12	98	MLF	
60	65	114.3	M12	98	MLH	
65	70	114.3	M12	98	MLJ	
75	80	114.3	M12	98	MKT	
100	105	114.3	M12	98	MKW	
75	80	180	M12	98	MKV	
80	85	180	M12	98	MLR	

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter.



*4 When selecting the motor flange for the CVF, assume that "d=f+42".

*5 When selecting the motor flange for the CMD, assume that "d=f+83".

RD-80E (2) Quick Selection Table of the Coupling and Motor Flange

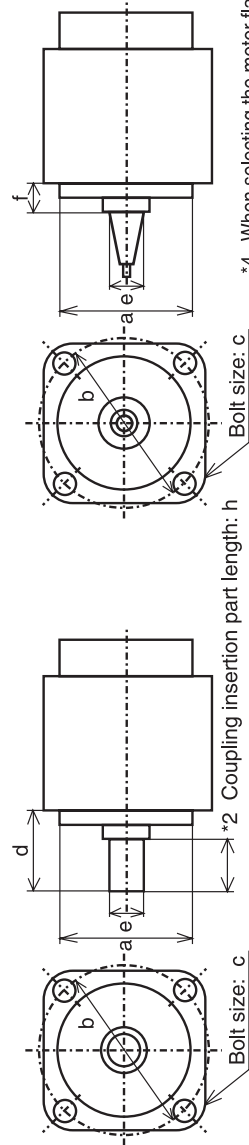
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) ^{*1}
RD-080E-081	81	60.5
RD-080E-101	101	48.5
RD-080E-153	153	32.0

Coupling (Refer to external dimension drawings on the following pages)				
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) ^{*1}	Coupling insertion length (mm) ^{*2}	Coupling outside diameter (mm) ^{*3}	Coupling code
10 h6 (0/-0.009)	22.7	23.5	56	CEF
14 h6 (0/-0.011)	31.7	23.5	56	CES
14 k6 (+0.012/+0.001)	31.7	23.5	56	CEH
16 h6 (0/-0.011)	36.3	23.5	56	CEA
17 h6 (0/-0.011)	38.5	23.5	56	CEJ
19 h6 (0/-0.013)	43.1	23.5	56	CEB
19 k6 (+0.015/+0.002)	43.1	23.5	56	CEC
24 h6 (0/-0.013)	54.4	23.5	56	CEE
24 k6 (+0.015/+0.002)	54.4	23.5	56	CED
25 h6 (0/-0.013)	56.7	23.5	56	CEK
19 h6 (0/-0.013)	73.0	27.5	68	CFS
22 h6 (0/-0.013)	84.5	27.5	68	CFA
24 h6 (0/-0.013)	92.2	27.5	68	CFD
24 k6 (+0.015/+0.002)	92.2	27.5	68	CFB
25 h6 (0/-0.013)	96.1	27.5	68	CFJ
28 h6 (0/-0.013)	107.6	27.5	68	CFE
32 h6 (0/-0.016)	123.0	27.5	68	CFH
32 k6 (+0.018/+0.002)	123.0	27.5	68	CFC
24 h6 (0/-0.013)	143.0	33.5	82	CJD
28 h6 (0/-0.013)	166.9	33.5	82	CJC
32 h6 (0/-0.016)	190.7	33.5	82	CJE
32 k6 (+0.018/+0.002)	190.7	33.5	82	CJS
35 h6 (0/-0.016)	208.6	33.5	82	CJA
35 k6 (+0.018/+0.002)	208.6	33.5	82	CJB
16 (+0.1/0) taper 1/10	-	-	68	*4 CFF
32 (+0.1/0) taper 1/10	-	-	94	*5 CTS

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)					
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code
30	35	90	M5	80	MKE
35	40	90	M5	80	MLK
35	40	90	M6	80	MKC
5	30	100	M6	80	MKB
35	40	100	M6	80	MKA
50	55	100	M6	80	MKF
40	45	110	M8	80	MLL
40	45	115	M6	80	MKY
40	45	115	M8	80	MKX
50	55	115	M8	80	MKH
35	40	115	M8	98	MKN
45	50	130	M8	98	MKM
40	45	135	M8	98	MLM
50	55	135	M8	98	MLN
35	40	145	M8	98	MKZ
45	50	145	M8	98	MKL
50	55	145	M8	98	MKQ
55	60	145	M8	98	MKK
60	65	145	M8	98	MKS
65	70	145	M8	98	MLA
65	70	145	M12	98	MLB
50	55	145	M12	98	MLC
40	45	165	M8	98	MLD
45	50	165	M8	98	MLQ
45	50	165	M10	98	MLE
55	60	165	M10	98	MKJ
60	65	165	M10	98	MKR
50	55	200	M12	98	MLF
60	65	200	M12	98	MLH
65	70	200	M12	98	MLJ
75	80	200	M12	98	MKT
100	105	200	M12	98	MKW
75	80	215	M12	98	MKV
80	85	215	M12	98	MLR

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter.



*4 When selecting the motor flange for the CFF, assume that "d=f+42".
 *5 When selecting the motor flange for the CTS, assume that "d=f+83".

RD-160E Quick Selection Table of the Coupling and Motor Flange

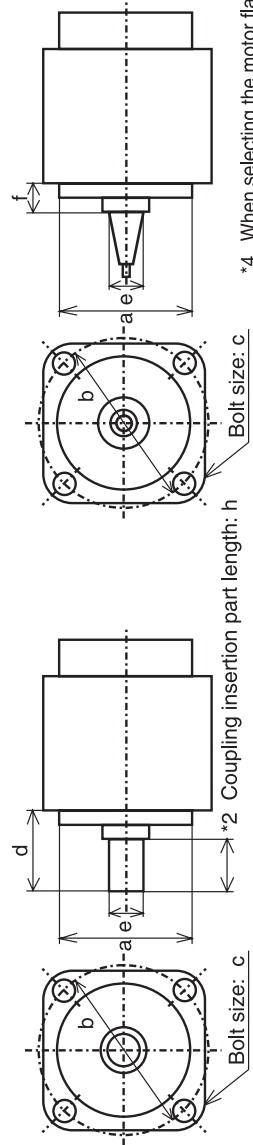
Reduction gear (Refer to the external dimension drawings on the following pages)		
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) *1
RD-160E-066	66	148.5
RD-160E-081	81	121.0
RD-160E-101	101	97.0
RD-160E-145	145	67.6
RD-160E-171	171	57.3

Coupling (Refer to external dimension drawings on the following pages)					
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) *1	Coupling insertion length (mm) *2	Coupling outside diameter (mm) *3	Coupling code	
19 h6 (0/-0.013)	73.0	27.5	68	CVS	
22 h6 (0/-0.013)	84.5	27.5	68	CVA	
24 h6 (0/-0.013)	92.2	27.5	68	CVD	
24 k6 (+0.015/+0.002)	92.2	27.5	68	CVB	
28 h6 (0/-0.013)	107.6	27.5	68	CVE	
32 h6 (0/-0.016)	123.0	27.5	68	CVH	
32 k6 (+0.018/+0.002)	123.0	27.5	68	CVC	
24 h6 (0/-0.013)	143.0	33.5	82	CKD	
28 h6 (0/-0.013)	166.9	33.5	82	CKC	
32 h6 (0/-0.016)	190.7	33.5	82	CKE	
32 k6 (+0.018/+0.002)	190.7	33.5	82	CKS	
35 h6 (0/-0.016)	208.6	33.5	82	CKA	
35 k6 (+0.018/+0.002)	208.6	33.5	82	CKB	
35 h6 (0/-0.016)	212.8	38.5	94	CMC	
35 k6 (+0.018/+0.002)	212.8	38.5	94	CMS	
38 k6 (+0.018/+0.002)	231.0	38.5	94	CMA	
42 h6 (0/-0.016)	255.4	38.5	94	CMB	
16 (+0.1/0) taper 1/10	-	-	68	*4 CVF	
32 (+0.1/0) taper 1/10	-	-	94	*5 CMD	
38 (+0.1/0) taper 1/10	-	-	126	*6 CPS	

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code	Motor flange code
40	45	95	M8	110	MSZ	MSZ
40	45	95	M8	110	MSC	MSC
50	55	95	M8	110	MSD	MSD
40	45	110	M8	110	MTA	MTA
50	55	110	M8	110	MTB	MTB
35	40	110	M8	110	MTD	MTD
45	50	110	M8	110	MSB	MSB
50	55	110	M8	110	MSC	MSC
55	60	110	M8	110	MSA	MSA
60	65	110	M8	110	MSE	MSE
65	70	110	M8	110	MSS	MSS
55	60	114.3	M12	137	MTF	MTF
60	65	114.3	M12	137	MTJ	MTJ
65	70	114.3	M12	137	MSL	MSL
75	80	114.3	M12	137	MSF	MSF
95	100	114.3	M12	137	MST	MST
100	105	114.3	M12	137	MSM	MSM
35	40	130	M10	137	MTE	MTE
45	50	130	M10	137	MTK	MTK
55	60	130	M10	137	MSH	MSH
60	65	130	M10	137	MSK	MSK
75	80	180	M12	137	MSR	MSR
85	90	180	M12	137	MTH	MTH
45	50	200	M12	137	MSV	MSV
50	55	200	M12	137	MSW	MSW
60	65	200	M12	137	MSX	MSX
65	70	200	M12	137	MSY	MSY
80	85	230	M14	137	MSQ	MSQ
65	70	114.3	M12	137	*3 RSL	*3 RSL
75	80	114.3	M12	137	*3 RSF	*3 RSF
100	105	114.3	M12	137	*3 RSM	*3 RSM
110	115	114.3	M12	137	*3 RST	*3 RST

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. Since the RSL, RSF, RSM and RST are the ring type, ensure that motor flange inside dimension is larger than the coupling outside dimension.



- *4 When selecting the motor flange for the CVF, assume that "d=f+42".
- *5 When selecting the motor flange for the CMD, assume that "d=f+83".
- *6 When selecting the motor flange for the CPS, assume that "d=f+83".

RD-320E (1) Quick Selection Table of the Coupling and Motor Flange

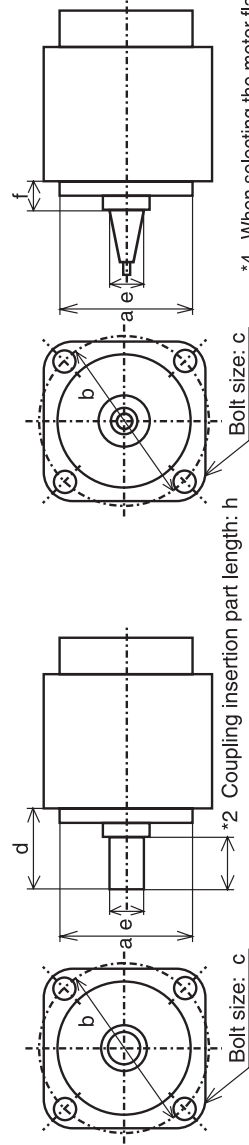
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) ^{*1}
RD-320E-066	66	297.0
RD-320E-081	81	242.0

Coupling (Refer to external dimension drawings on the following pages)				
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) ^{*1}	Coupling insertion length (mm) ^{*2}	Coupling outside diameter (mm) ^{*3}	Coupling code
19 h6 (0/-0.013)	73.0	27.5	68	CHS
22 h6 (0/-0.013)	84.5	27.5	68	CHA
24 h6 (0/-0.013)	92.2	27.5	68	CHD
24 k6 (+0.015/+0.002)	92.2	27.5	68	CHB
28 h6 (0/-0.013)	107.6	27.5	68	CHE
32 h6 (0/-0.016)	123.0	27.5	68	CHF
32 k6 (+0.018/+0.002)	123.0	27.5	68	CHC
24 h6 (0/-0.013)	143.0	33.5	82	CLD
28 h6 (0/-0.013)	166.9	33.5	82	CLC
32 h6 (0/-0.016)	190.7	33.5	82	CLE
32 k6 (+0.018/+0.002)	190.7	33.5	82	CLS
35 h6 (0/-0.016)	208.6	33.5	82	CLA
35 k6 (+0.018/+0.002)	208.6	33.5	82	CLB
35 h6 (0/-0.016)	212.8	38.5	94	CNC
35 k6 (+0.018/+0.002)	212.8	38.5	94	CNS
38 k6 (+0.018/+0.002)	231.0	38.5	94	CNA
42 h6 (0/-0.016)	255.4	38.5	94	CNB
35 h6 (0/-0.016)	442.0	43.5	126	CWC
35 k6 (+0.018/+0.002)	442.0	43.5	126	CWS
38 k6 (+0.018/+0.002)	479.9	43.5	126	CWA
42 h6 (0/-0.016)	530.4	43.5	126	CWB
32 (+0.1/0) taper 1/10	-	-	94	*4 CND
38 (+0.1/0) taper 1/10	-	-	126	*5 CWD
16 (+0.1/0) taper 1/10	-	-	68	*6 CHG

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d	Motor pilot diameter (mm) a ^{*3}	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H ^{*3}	Motor flange code	
40	45	110	M8	110	MSZ	
40	45	115	M8	110	MTC	
50	55	115	M8	110	MSD	
40	45	135	M8	110	MTA	
50	55	135	M8	110	MTB	
35	40	145	M8	110	MTD	
45	50	145	M8	110	MSB	
50	55	145	M8	110	MSC	
55	60	145	M8	110	MSA	
60	65	145	M8	110	MSE	
65	70	145	M8	110	MSS	
55	60	200	M12	137	MTF	
60	65	200	M12	137	MTJ	
65	70	200	M12	137	MSL	
75	80	200	M12	137	MSF	
95	100	200	M12	137	MST	
100	105	200	M12	137	MSM	
35	40	165	M10	137	MTE	
45	50	165	M10	137	MTK	
55	60	165	M10	137	MSH	
60	65	165	M10	137	MSK	
75	80	215	M12	137	MSR	
85	90	215	M12	137	MTH	
85	50	235	M12	137	MSV	
50	55	235	M12	137	MSW	
60	65	235	M12	137	MSX	
65	70	235	M12	137	MSY	
60	85	265	M14	137	MSQ	
65	70	200	M12	137	*3 RSL	
75	80	200	M12	137	*3 RSF	
100	105	200	M12	137	*3 RSM	
110	115	200	M12	137	*3 RST	

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. Since the RSL, RSF, RSM and RST are the ring type, ensure that motor flange inside dimension is larger than the coupling outside dimension.



- *4 When selecting the motor flange for the CND, assume that "d=f+83".
- *5 When selecting the motor flange for the CWD, assume that "d=f+83".
- *6 When selecting the motor flange for the CHG, assume that "d=f+83".

RD-320E (2) Quick Selection Table of the Coupling and Motor Flange

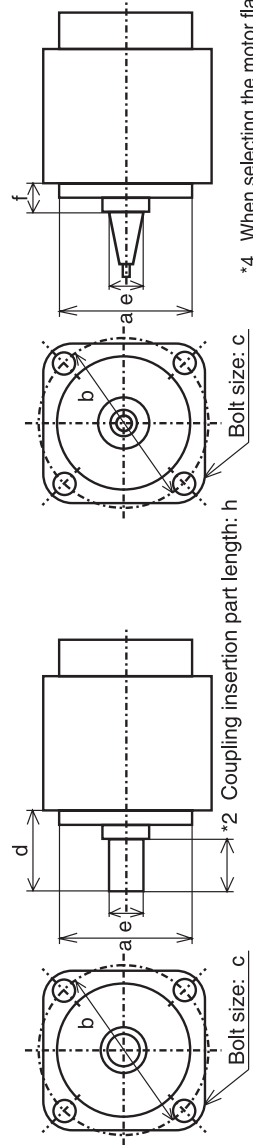
Reduction gear (Refer to the external dimension drawings on the following pages)		
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) *1
RD-320E-101	101	194.1
RD-320E-141	141	139.0
RD-320E-185	185	105.9

Coupling (Refer to external dimension drawings on the following pages)					
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) *1	Coupling insertion length (mm) *2	Coupling outside diameter (mm) *3	Coupling code	
19 h6 (0/-0.013)	73.0	27.5	68	CVS	
22 h6 (0/-0.013)	84.5	27.5	68	CVA	
24 h6 (0/-0.013)	92.2	27.5	68	CVD	
24 k6 (+0.015/+0.002)	92.2	27.5	68	CVB	
28 h6 (0/-0.013)	107.6	27.5	68	CVE	
32 h6 (0/-0.016)	123.0	27.5	68	CVH	
32 k6 (+0.018/+0.002)	123.0	27.5	68	CVC	
24 h6 (0/-0.013)	143.0	33.5	82	CKD	
28 h6 (0/-0.013)	166.9	33.5	82	CKC	
32 h6 (0/-0.016)	190.7	33.5	82	CKE	
32 k6 (+0.018/+0.002)	190.7	33.5	82	CKS	
35 h6 (0/-0.016)	208.6	33.5	82	CKA	
35 k6 (+0.018/+0.002)	208.6	33.5	82	CKB	
35 h6 (0/-0.016)	212.8	38.5	94	CMC	
35 k6 (+0.018/+0.002)	212.8	38.5	94	CMS	
38 k6 (+0.018/+0.002)	231.0	38.5	94	CMA	
42 h6 (0/-0.016)	255.4	38.5	94	CMB	
16 (+0.1/0) taper 1/10	-	-	68	*4 CVF	
32 (+0.1/0) taper 1/10	-	-	94	*5 CMD	
38 (+0.1/0) taper 1/10	-	-	126	*6 CPS	

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code	Motor flange code
40	45	95	M8	110	MSZ	MSZ
40	45	95	M8	110	MTC	MTC
50	55	95	M8	115	MSD	MSD
40	45	110	M8	135	MTA	MTA
50	55	110	M8	135	MTB	MTB
35	40	110	M8	145	MTD	MTD
45	50	110	M8	145	MSB	MSB
50	55	110	M8	145	MSC	MSC
55	60	110	M8	145	MSA	MSA
60	65	110	M8	145	MSE	MSE
65	70	110	M8	145	MSS	MSS
55	60	114.3	M12	200	MTF	MTF
60	65	114.3	M12	200	MTJ	MTJ
65	70	114.3	M12	200	MSL	MSL
75	80	114.3	M12	200	MSF	MSF
95	100	114.3	M12	200	MST	MST
100	105	114.3	M12	200	MSM	MSM
35	40	130	M10	165	MTE	MTE
45	50	130	M10	165	MTK	MTK
55	60	130	M10	165	MSH	MSH
60	65	130	M10	165	MSK	MSK
75	80	180	M12	215	MSR	MSR
85	90	180	M12	215	MTH	MTH
45	50	200	M12	235	MSV	MSV
50	55	200	M12	235	MSW	MSW
60	65	200	M12	235	MSX	MSX
65	70	200	M12	235	MSY	MSY
80	85	230	M14	265	MSQ	MSQ
65	70	114.3	M12	200	*3 RSL	*3 RSL
75	80	114.3	M12	200	*3 RSF	*3 RSF
100	105	114.3	M12	200	*3 RSM	*3 RSM
110	115	114.3	M12	200	*3 RST	*3 RST

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. Since the RSL, RSF, RSM and RST are the ring type, ensure that motor flange inside dimension is larger than the coupling outside dimension.



- *4 When selecting the motor flange for the CVF, assume that "d=f+42".
- *5 When selecting the motor flange for the CMD, assume that "d=f+83".
- *6 When selecting the motor flange for the CPS, assume that "d=f+83".

RD-10C Quick Selection Table of the Coupling and Motor Flange

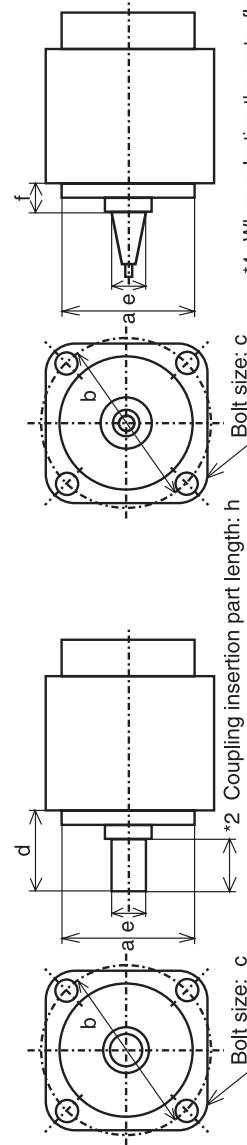
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) ^{*1}
RD-010C-081	81	7.6
RD-010C-108	108	5.7
RD-010C-153	153	4.0
RD-010C-189	189	3.2
RD-010C-243	243	2.5

Coupling (Refer to external dimension drawings on the following pages)				
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) ^{*1}	Coupling insertion length (mm) ^{*2}	Coupling outside diameter (mm) ^{*3}	Coupling code
8 h6 (0/-0.009)	10.3	18.5	44	CBS
9 h6 (0/-0.009)	11.6	18.5	44	CBH
10 h6 (0/-0.009)	12.9	18.5	44	CBK
11 h6 (0/-0.011)	14.1	18.5	44	CBA
14 h6 (0/-0.011)	18.0	18.5	44	CBB
14 k6 (+0.012/+0.001)	18.0	18.5	44	CBC
16 h6 (0/-0.011)	20.6	18.5	44	CBD
16 k6 (+0.012/+0.001)	20.6	18.5	44	CBE
17 h6 (0/-0.011)	21.9	18.5	44	CBL
19 h6 (0/-0.013)	24.4	18.5	44	CBF
19 k6 (+0.015/+0.002)	24.4	18.5	44	CBJ
10 h6 (0/-0.009)	22.7	23.5	56	CDF
14 h6 (0/-0.011)	31.7	23.5	56	CDS
16 h6 (0/-0.011)	36.3	23.5	56	CDA
19 h6 (0/-0.013)	43.1	23.5	56	CDB
19 k6 (+0.015/+0.002)	43.1	23.5	56	CDC
22 h6 (0/-0.013)	44.9	23.5	56	CDH
24 h6 (0/-0.013)	54.4	23.5	56	CDE
24 k6 (+0.015/+0.002)	54.4	23.5	56	CDD
25 h6 (0/-0.013)	56.7	23.5	56	CDJ
11 (+0.1/0) taper 1/10	-	-	56	*4 CDG

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)					
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code
25	30	45	M3	50	*3 MAB
25	30	46	M4	50	*3 MAA
25	30	60	M4	60	MAH
25	30	70	M4	60	MAJ
25	30	70	M5	60	MAF
20	25	75	M5	60	MAE
25	30	75	M5	60	MAD
25	30	75	M6	60	MAC
25	30	90	M5	66	MAN
30	35	90	M5	66	MAR
35	40	90	M5	66	MBH
25	30	90	M6	66	MAZ
35	40	90	M6	66	MAM
25	30	80	M6	66	MAL
30	35	80	M6	66	MAQ
35	40	80	M6	66	MAK
50	55	80	M6	66	MAS
40	45	95	M8	66	MBF
40	45	115	M6	66	MBA
35	40	95	M8	66	MAY
40	45	95	M8	66	MBB
50	55	95	M8	66	MBC
45	50	110	M8	66	MAW
40	45	110	M8	66	MBJ
35	40	110	M8	66	MBD
45	50	110	M8	66	MAY
50	55	110	M8	66	MAX
65	70	10	M8	66	MBE
55	60	110	M8	70	MAT

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. The MAB and MAA are the exception to this case. These types of coupling should be attached only after attaching the motor to the motor flange. Motor flanges are designed to allow the tightening of the coupling clamp bolts from their side openings.



*4 When selecting the motor flange for the CDG, assume that "d=f+26".

RD-27C Quick Selection Table of the Coupling and Motor Flange

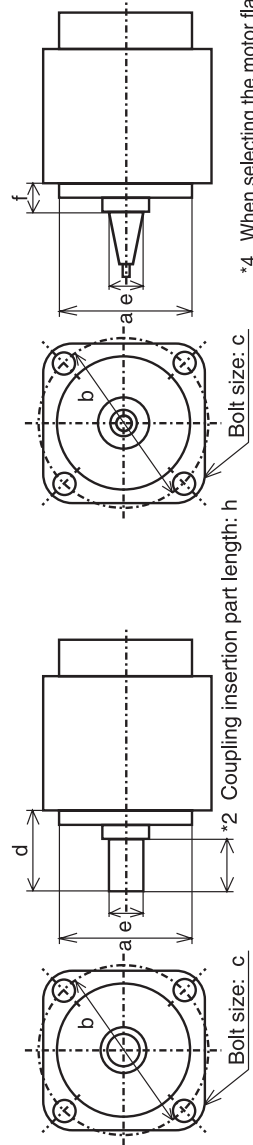
Reduction gear (Refer to the external dimension drawings on the following pages)		
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) *1
RD-027C-100	99.82	16.6
RD-027C-142	141.68	11.7
RD-027C-184	184	9.0
RD-027C-233	233.45	7.1

Coupling (Refer to external dimension drawings on the following pages)					
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) *1	Coupling insertion length (mm) *2	Coupling outside diameter (mm) *3	Coupling code	
8 h6 (0/-0.009)	10.3	18.5	44	CBS	
9 h6 (0/-0.009)	11.6	18.5	44	CBH	
10 h6 (0/-0.009)	12.9	18.5	44	CBK	
11 h6 (0/-0.011)	14.1	18.5	44	CBA	
14 h6 (0/-0.011)	18.0	18.5	44	CBB	
14 k6 (+0.012/+0.001)	18.0	18.5	44	CBC	
16 h6 (0/-0.011)	20.6	18.5	44	CBD	
16 k6 (+0.012/+0.001)	20.6	18.5	44	CBE	
17 h6 (0/-0.011)	21.9	18.5	44	CBL	
19 h6 (0/-0.013)	24.4	18.5	44	CBF	
19 k6 (+0.015/+0.002)	24.4	18.5	44	CBJ	
10 h6 (0/-0.009)	22.7	23.5	56	CDF	
14 h6 (0/-0.011)	31.7	23.5	56	CDS	
16 h6 (0/-0.011)	36.3	23.5	56	CDA	
19 h6 (0/-0.013)	43.1	23.5	56	CDB	
19 k6 (+0.015/+0.002)	43.1	23.5	56	CDG	
22 h6 (0/-0.013)	44.9	23.5	56	CDH	
24 h6 (0/-0.013)	54.4	23.5	56	CDE	
24 k6 (+0.015/+0.002)	54.4	23.5	56	CDI	
25 h6 (0/-0.013)	56.7	23.5	56	CDJ	
11 (+0.1/0) taper 1/10	-	-	56	*4 CDG	
16 (+0.1/0) taper 1/10	-	-	68	*5 CSS	

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor Shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code	
						over
25	30	45	M3	50	*3 MAB	
25	30	46	M4	50	*3 MAA	
25	30	60	M4	60	MAH	
25	30	70	M4	60	MAJ	
25	30	70	M5	60	MAF	
20	25	75	M5	60	MAE	
25	30	75	M5	60	MAE	
25	30	75	M6	60	MAC	
25	30	90	M5	66	MAN	
30	35	90	M5	66	MAR	
35	40	90	M5	66	MBH	
25	30	90	M6	66	MAZ	
35	40	90	M6	66	MAM	
25	30	100	M6	66	MAL	
30	35	100	M6	66	MAQ	
35	40	100	M6	66	MAK	
50	55	100	M6	66	MAS	
40	45	110	M8	66	MBF	
40	45	115	M6	66	MBA	
35	40	95	M8	66	MAY	
40	45	115	M8	66	MBB	
50	55	115	M8	66	MBC	
45	50	130	M8	66	MAW	
40	45	135	M8	66	MBJ	
35	40	145	M8	66	MBD	
45	50	145	M8	66	MAV	
50	55	145	M8	66	MAX	
65	70	145	M8	66	MBE	
55	60	145	M8	70	MAT	

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. The MAB and MAA are the exception to this case. These types of coupling should be attached only after attaching the motor to the motor flange. Motor flanges are designed to allow the tightening of the coupling clamp bolts from their side openings.



*4 When selecting the motor flange for the CDG, assume that "d=f+26".

*5 When selecting the motor flange for the CSS, assume that "d=f+42".

RD-50C Quick Selection Table of the Coupling and Motor Flange

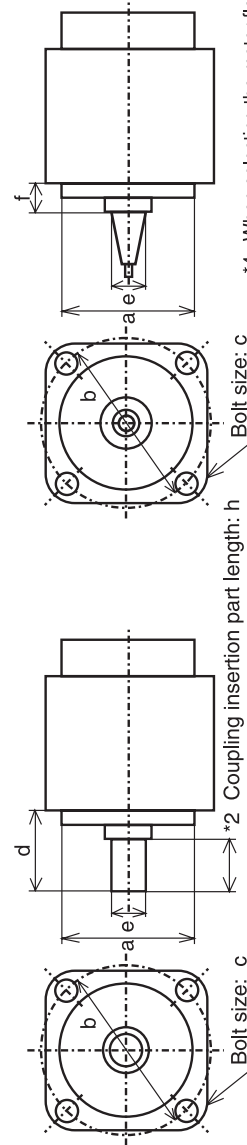
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) ^{*1}
RD-050C-109	109	28.1
RD-050C-153	152.6	20.1
RD-050C-196	196.2	15.6
RD-050C-240	239.8	12.8

Coupling (Refer to external dimension drawings on the following pages)				
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) ^{*1}	Coupling insertion length (mm) ^{*2}	Coupling outside diameter (mm) ^{*3}	Coupling code
8 h6 (0/-0.009)	10.3	18.5	44	CBS
9 h6 (0/-0.009)	11.6	18.5	44	CBH
10 h6 (0/-0.009)	12.9	18.5	44	CBK
11 h6 (0/-0.011)	14.1	18.5	44	CBA
14 h6 (0/-0.011)	18.0	18.5	44	CBB
14 k6 (+0.012/+0.001)	18.0	18.5	44	CBC
16 h6 (0/-0.011)	20.6	18.5	44	CBD
16 k6 (+0.012/+0.001)	20.6	18.5	44	CBE
17 h6 (0/-0.011)	21.9	18.5	44	CBL
19 h6 (0/-0.013)	24.4	18.5	44	CBF
19 k6 (+0.015/+0.002)	24.4	18.5	44	CBJ
10 h6 (0/-0.009)	22.7	23.5	56	CDF
14 h6 (0/-0.011)	31.7	23.5	56	CDS
16 h6 (0/-0.011)	36.3	23.5	56	CDA
19 h6 (0/-0.013)	43.1	23.5	56	CDB
19 k6 (+0.015/+0.002)	43.1	23.5	56	CDC
22 h6 (0/-0.013)	44.9	23.5	56	CDH
24 h6 (0/-0.013)	54.4	23.5	56	CDE
24 k6 (+0.015/+0.002)	54.4	23.5	56	CDD
25 h6 (0/-0.013)	56.7	23.5	56	CDJ
11 (+0.1/0) taper 1/10	-	-	56	*4 CDG
16 (+0.1/0) taper 1/10	-	-	68	*5 CSS

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code	Motor flange diameter (mm) H
25	30	45	M3	50	*3 MAB	50
25	30	46	M4	50	*3 MAA	50
25	30	60	M4	60	MAH	60
25	30	70	M4	60	MAJ	60
25	30	70	M5	60	MAF	60
20	25	75	M5	60	MAE	60
25	30	75	M5	60	MAD	60
25	30	75	M6	60	MAC	60
25	30	90	M5	66	MAN	66
30	35	90	M5	66	MAR	66
35	40	90	M5	66	MBH	66
25	30	90	M6	66	MAZ	66
35	40	90	M6	66	MAM	66
25	30	80	M6	66	MAL	66
30	35	80	M6	66	MAQ	66
35	40	80	M6	66	MAK	66
50	55	80	M6	66	MAS	66
40	45	95	M8	66	MBF	66
40	45	95	M8	66	MBA	66
35	40	95	M8	66	MAY	66
40	45	95	M8	66	MBB	66
50	55	95	M8	66	MBC	66
45	50	110	M8	66	MAW	66
40	45	110	M8	66	MBJ	66
35	40	110	M8	66	MBD	66
45	50	110	M8	66	MAV	66
50	55	110	M8	66	MAX	66
65	70	110	M8	66	MBE	66
55	60	110	M8	70	MAT	70

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. The MAB and MAA are the exception to this case. These types of coupling should be attached only after attaching the motor to the motor flange. Motor flanges are designed to allow the tightening of the coupling clamp bolts from their side openings.



*4 When selecting the motor flange for the CDG, assume that "d=f+26".
 *5 When selecting the motor flange for the CSS, assume that "d=f+42".

RD-100C Quick Selection Table of the Coupling and Motor Flange

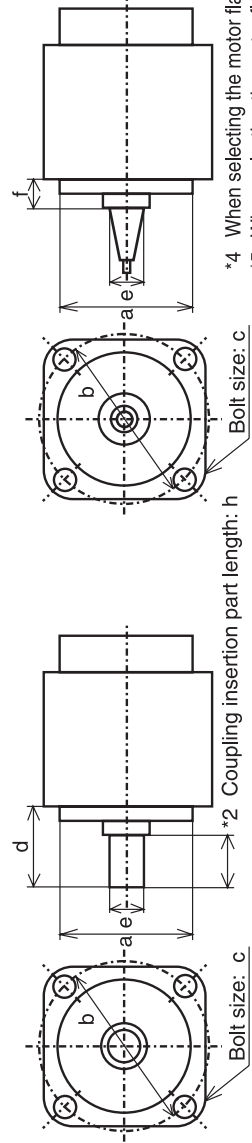
Reduction gear (Refer to the external dimension drawings on the following pages)		
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) ^{*1}
RD-100C-101	100.5	60.9
RD-100C-150	150	40.8
RD-100C-210	210	29.2
RD-100C-258	258	23.7

Coupling (Refer to external dimension drawings on the following pages)					
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) ^{*1}	Coupling insertion length (mm) ^{*2}	Coupling outside diameter (mm) ^{*3}	Coupling code	
10 h6 (0/-0.009)	22.7	23.5	56	CEF	
14 h6 (0/-0.011)	31.7	23.5	56	CEH	
14 h6 (+0.012/+0.001)	31.7	23.5	56	CEH	
16 h6 (0/-0.011)	36.3	23.5	56	CEA	
17 h6 (0/-0.011)	38.5	23.5	56	CEJ	
19 h6 (0/-0.013)	43.1	23.5	56	CEB	
19 h6 (+0.015/+0.002)	43.1	23.5	56	CEB	
24 h6 (0/-0.013)	54.4	23.5	56	CEE	
24 h6 (+0.015/+0.002)	54.4	23.5	56	CEE	
25 h6 (0/-0.013)	56.7	23.5	56	CEK	
19 h6 (0/-0.013)	73.0	27.5	68	CFA	
22 h6 (0/-0.013)	84.5	27.5	68	CFA	
24 h6 (0/-0.013)	92.2	27.5	68	CFD	
24 h6 (+0.015/+0.002)	92.2	27.5	68	CFB	
25 h6 (0/-0.013)	96.1	27.5	68	CFJ	
28 h6 (0/-0.013)	107.6	27.5	68	CFE	
32 h6 (0/-0.016)	123.0	27.5	68	CFH	
32 h6 (+0.018/+0.002)	123.0	27.5	68	CFC	
24 h6 (0/-0.013)	143.0	33.5	82	CJD	
28 h6 (0/-0.013)	166.9	33.5	82	CJC	
3 h6 (0/-0.016)	190.7	33.5	82	CJE	
32 h6 (+0.018/+0.002)	190.7	33.5	82	CJS	
35 h6 (0/-0.016)	208.6	33.5	82	CJA	
35 h6 (+0.018/+0.002)	208.6	33.5	82	CJB	
16 (+0.1/0) taper 1/10	-	-	68	*4 CFF	
32 (+0.1/0) taper 1/10	-	-	94	*5 CTS	

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)						
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code	
						over
30	35	70	M5	80	MKE	
35	40	70	M5	80	MLK	
35	40	90	M6	80	MKC	
25	30	80	M6	80	MKB	
35	40	100	M6	80	MKA	
50	55	100	M6	80	MKF	
40	45	110	M8	80	MLL	
40	45	95	M6	80	MKY	
40	45	95	M8	80	MKX	
50	55	95	M8	80	MKH	
35	40	95	M8	98	MKN	
45	50	110	M8	98	MKM	
40	45	110	M8	98	MLM	
50	55	110	M8	98	MLN	
35	40	110	M8	98	MLKZ	
45	50	110	M8	98	MKL	
50	55	110	M8	98	MKQ	
55	60	110	M8	98	MKK	
60	65	110	M8	98	MKS	
65	70	110	M8	98	MLA	
65	70	110	M12	98	MLB	
50	55	114.3	M12	98	MLC	
40	45	115	M8	98	MLD	
45	50	115	M8	98	MLQ	
45	50	130	M10	98	MLE	
55	60	130	M10	98	MKJ	
60	65	130	M10	98	MKR	
50	55	114.3	M12	98	MLF	
60	65	114.3	M12	98	MLH	
65	70	114.3	M12	98	MLJ	
75	80	114.3	M12	98	MKT	
100	105	114.3	M12	98	MKW	
75	80	180	M12	98	MKV	
80	85	180	M12	98	MLR	

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter.



*4 When selecting the motor flange for the CFF, assume that "d=f+42".

*5 When selecting the motor flange for the CTS, assume that "d=f+83".

RD-200C Quick Selection Table of the Coupling and Motor Flange

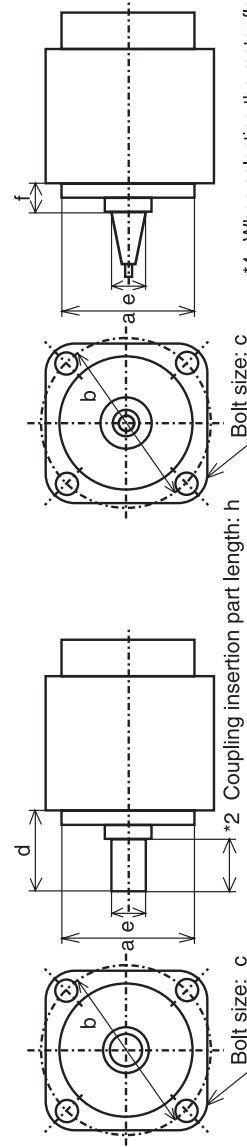
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) ^{*1}
RD-200C-106	105.83	115.8
RD-200C-156	155.96	78.5
RD-200C-206	206.09	59.4
RD-200C-245	245.08	50.0

Coupling (Refer to external dimension drawings on the following pages)				
Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) ^{*1}	Coupling insertion length (mm) ^{*2}	Coupling outside diameter (mm) ^{*3}	Coupling code
19 h6 (0/-0.013)	73.0	27.5	68	CVS
22 h6 (0/-0.013)	84.5	27.5	68	CVA
24 h6 (0/-0.013)	92.2	27.5	68	CVD
24 k6 (+0.015/+0.002)	92.2	27.5	68	CVB
28 h6 (0/-0.013)	107.6	27.5	68	CVE
32 h6 (0/-0.016)	123.0	27.5	68	CVH
32 k6 (+0.018/+0.002)	123.0	27.5	68	CVC
24 h6 (0/-0.013)	143.0	33.5	82	CKD
28 h6 (0/-0.013)	166.9	33.5	82	CKC
32 h6 (0/-0.016)	190.7	33.5	82	CKE
32 k6 (+0.018/+0.002)	190.7	33.5	82	CKS
35 h6 (0/-0.016)	208.6	33.5	82	CKA
35 k6 (+0.018/+0.002)	208.6	33.5	82	CKB
35 h6 (0/-0.016)	212.8	38.5	94	CMC
35 k6 (+0.018/+0.002)	212.8	38.5	94	CMS
38 k6 (+0.018/+0.002)	231.0	38.5	94	CMA
42 h6 (0/-0.016)	255.4	38.5	94	CMB
16 (+0.1/0) taper 1/10	-	-	68	*4 CVF
32 (+0.1/0) taper 1/10	-	-	94	*5 CMD

Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)					
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code
30	70	90	M5	80	MKE
35	70	90	M5	80	MLK
35	70	90	M6	80	MKC
25	80	100	M6	80	MKB
35	80	100	M6	80	MKA
50	80	100	M6	80	MKF
40	95	110	M8	80	MLL
40	95	115	M6	80	MKY
40	95	115	M8	80	MKX
50	95	115	M8	80	MKH
35	95	115	M8	98	MKN
45	110	130	M8	98	MKM
40	110	135	M8	98	MLM
50	110	135	M8	98	MLN
35	110	145	M8	98	MKZ
45	110	145	M8	98	MKL
50	110	145	M8	98	MKQ
55	110	145	M8	98	MKK
60	110	145	M8	98	MKS
65	110	145	M8	98	MLA
65	110	145	M12	98	MLB
50	114.3	145	M12	98	MLC
40	115	165	M8	98	MLD
45	115	165	M8	98	MLQ
45	130	165	M10	98	MLE
55	130	165	M10	98	MKJ
60	130	165	M10	98	MKR
50	114.3	200	M12	98	MLF
60	114.3	200	M12	98	MLH
65	114.3	200	M12	98	MLJ
75	114.3	200	M12	98	MKT
100	114.3	200	M12	98	MKW
75	180	215	M12	98	MKV
80	180	215	M12	98	MLR

Precautions for selecting a coupling

- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter.



*4 When selecting the motor flange for the CVF, assume that "d=f+42".
 *5 When selecting the motor flange for the CMD, assume that "d=f+83".

RD-320C Quick Selection Table of the Coupling and Motor Flange

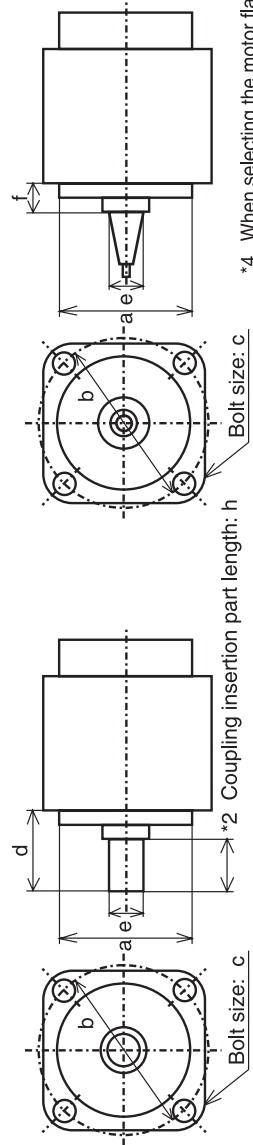
Model/ratio code	Ratio	Allowable torque for the reduction gear input shaft (N·m) *1
RD-320C-115	115	170.4
RD-320C-157	157	124.8
RD-320C-207	207	94.7
RD-320C-253	253	77.5

Motor shaft outside diameter (mm) e	Coupling allowable transmission torque (N·m) *1	Coupling insertion length (mm) *2	Coupling outside diameter (mm) *3	Coupling code
19 h6 (0/-0.013)	73.0	27.5	68	CHS
22 h6 (0/-0.013)	84.5	27.5	68	CHA
24 h6 (0/-0.013)	92.2	27.5	68	CHD
24 k6 (+0.015/+0.002)	92.2	27.5	68	CHB
28 h6 (0/-0.013)	107.6	27.5	68	CHE
32 h6 (0/-0.016)	123.0	27.5	68	CHF
32 k6 (+0.018/+0.002)	123.0	27.5	68	CHC
24 h6 (0/-0.013)	143.0	33.5	82	CLD
28 h6 (0/-0.013)	166.9	33.5	82	CLC
32 h6 (0/-0.016)	190.7	33.5	82	CLE
32 k6 (+0.018/+0.002)	190.7	33.5	82	CLS
35 h6 (0/-0.016)	208.6	33.5	82	CLA
35 k6 (+0.018/+0.002)	208.6	33.5	82	CLB
35 h6 (0/-0.016)	212.8	38.5	94	CNC
35 k6 (+0.018/+0.002)	212.8	38.5	94	CNS
38 k6 (+0.018/+0.002)	231.0	38.5	94	CNA
42 h6 (0/-0.016)	255.4	38.5	94	CNB
35 h6 (0/-0.016)	442.0	43.5	126	CWC
35 k6 (+0.018/+0.002)	442.0	43.5	126	CWS
38 k6 (+0.018/+0.002)	479.9	43.5	126	CWA
42 h6 (0/-0.016)	530.4	43.5	126	CWB
32 (+0.1/0) taper 1/10	-	-	94	*4 CND
38 (+0.1/0) taper 1/10	-	-	126	*5 CWD
16 (+0.1/0) taper 1/10	-	-	68	*6 CHG


Motor flange (Refer to external dimension drawings on the following pages, "H" in the drawing indicates the inside diameter of the motor flange)					
Motor shaft length (mm) d	Motor pilot diameter (mm) a	Motor mounting P.C.D (mm) b	Motor mounting bolt size c	Motor flange inside diameter (mm) H	Motor flange code
40	45	110	M8	110	MSZ
40	45	115	M8	110	MTC
50	55	115	M8	110	MSD
40	45	135	M8	110	MTA
50	55	135	M8	110	MTB
35	40	145	M8	110	MTD
45	50	145	M8	110	MSB
50	55	145	M8	110	MSC
55	60	145	M8	110	MSA
60	65	145	M8	110	MSE
65	70	145	M8	110	MSS
55	60	200	M12	137	MTF
60	65	200	M12	137	MTJ
65	70	200	M12	137	MSL
75	80	200	M12	137	MSF
95	100	200	M12	137	MST
100	105	200	M12	137	MSM
35	40	165	M10	137	MTE
45	50	165	M10	137	MTK
55	60	165	M10	137	MSH
60	65	165	M10	137	MSK
75	80	215	M12	137	MSR
85	90	215	M12	137	MTH
45	50	235	M12	137	MSV
50	55	235	M12	137	MSW
60	65	235	M12	137	MSX
65	70	235	M12	137	MSY
80	85	265	M14	137	MSQ
65	70	200	M12	137	*3 RSL
75	80	200	M12	137	*3 RSF
100	105	200	M12	137	*3 RSM
110	115	200	M12	137	*3 RST

Precautions for selecting a coupling

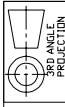
- *1 The allowable transmission torque of the coupling should be larger than the allowable torque of the reduction gear input shaft.
- *2 The coupling insertion length should be shorter than the motor shaft coupling insertion part length (h).
- *3 The coupling outside diameter should be smaller than both the motor pilot diameter and the motor flange inside diameter. Since the RSL, RSF, RSM and RST are the ring type, ensure that motor flange inside dimension is larger than the coupling outside dimension.



- *4 When selecting the motor flange for the CND, assume that "d=f+83"
- *5 When selecting the motor flange for the CWD, assume that "g=f+83"
- *6 When selecting the motor flange for the CHG, assume that "d=f+42"

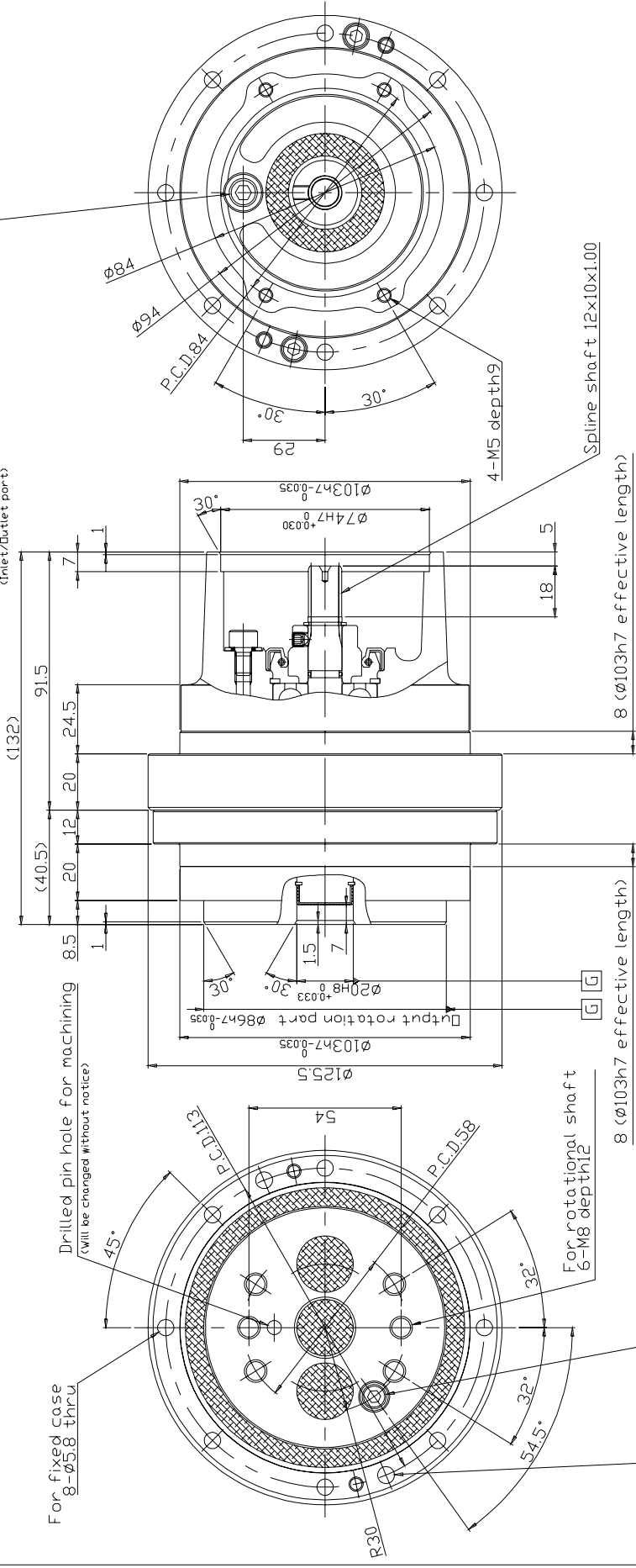


**Outside
dimension
drawing**



RD-6E Dimension Drawing

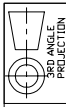
M6x10 hexagon socket head cap screw and seal washer (inlet/outlet port)



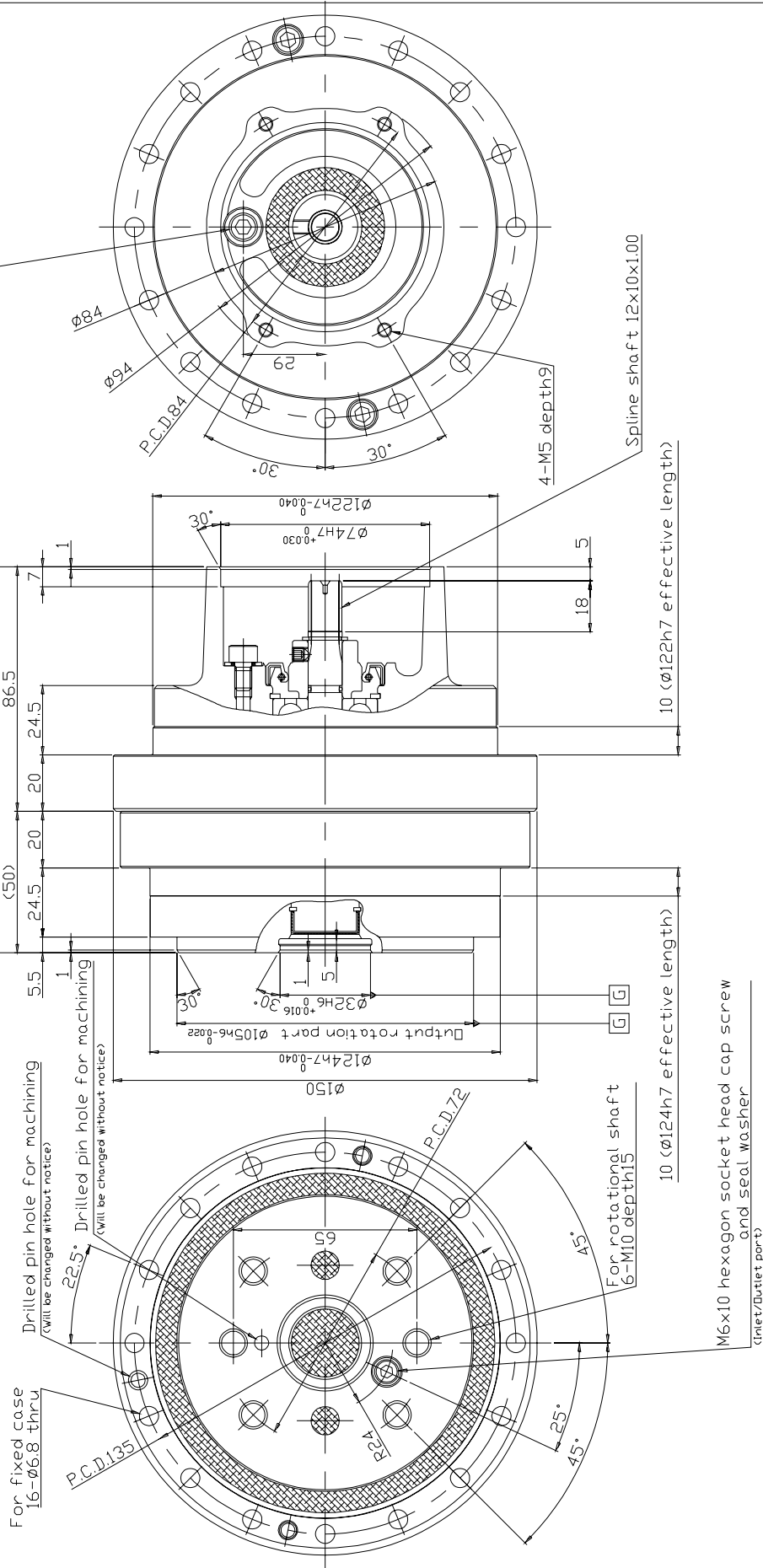
Note

1. Tightening torque of 8-M5 mounting bolts for the case : 9.01N-m(80lb-in)
2. Tightening torque of 6-M8 mounting bolts for the shaft : 37.2N-m(329lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of .

Speed Ratio	Model Code	Mass (kg)	Moment of Inertia, I ₁ (I=GD ² /4) The Motor Axis Conversion (kg·m ²)
31	RD-006E-031		1.22x10 ⁻⁵
43	RD-006E-043		1.08x10 ⁻⁵
53.5	RD-006E-054	5.5	1.00x10 ⁻⁵
79	RD-006E-079		8.86x10 ⁻⁶
103	RD-006E-103		8.42x10 ⁻⁶



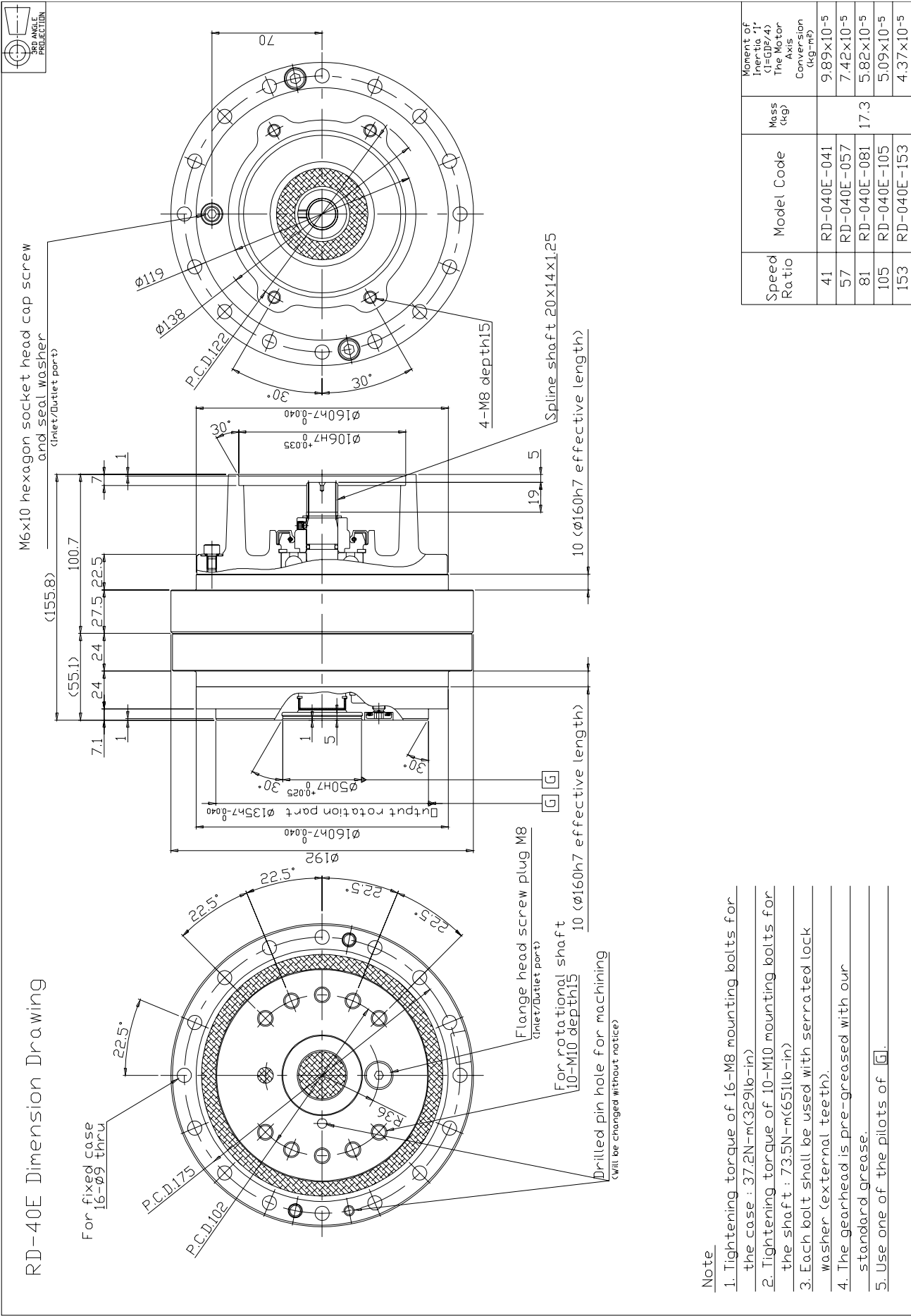
RD-20E Dimension Drawing



Note

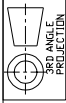
1. Tightening torque of 16-M6 mounting bolts for the case : 15.6N-m(138lb-in)
2. Tightening torque of 6-M10 mounting bolts for the shaft : 73.5N-m(651lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of .

Speed Ratio	Model Code	Mass (kg)	Moment of Inertia J _m (I=GD ² /4) The Motor Axis Conversion (kg-m ²)
41	RD-020E-041		2.63x10 ⁻⁵
57	RD-020E-057		1.89x10 ⁻⁵
81	RD-020E-081	8.2	1.45x10 ⁻⁵
105	RD-020E-105		1.24x10 ⁻⁵
161	RD-020E-161		1.01x10 ⁻⁵

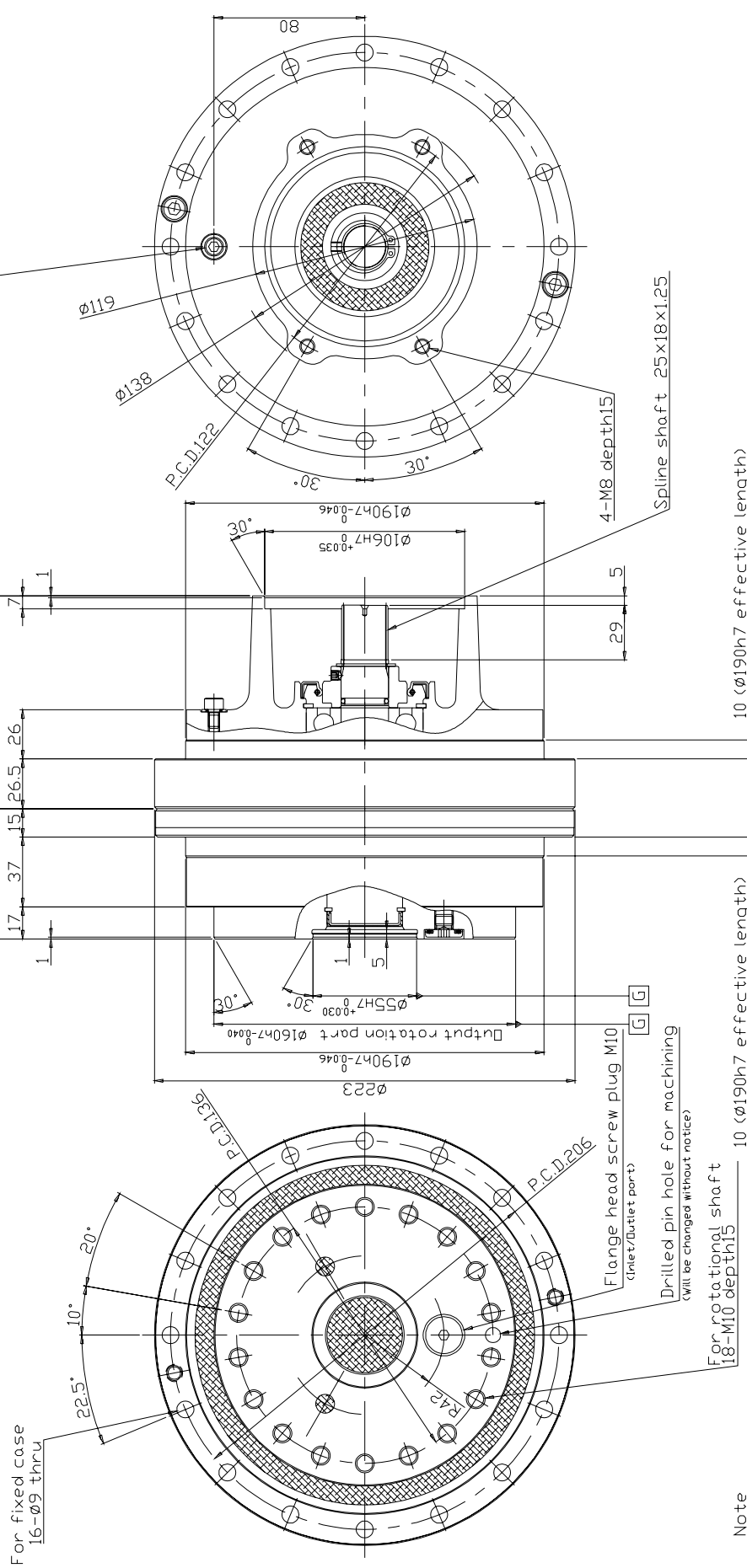


Note

1. Tightening torque of 16-M8 mounting bolts for the case : 37.2N-m(329lb-in)
2. Tightening torque of 10-M10 mounting bolts for the shaft : 73.5N-m(651lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of **G**.



RD-80E Dimension Drawing(1)



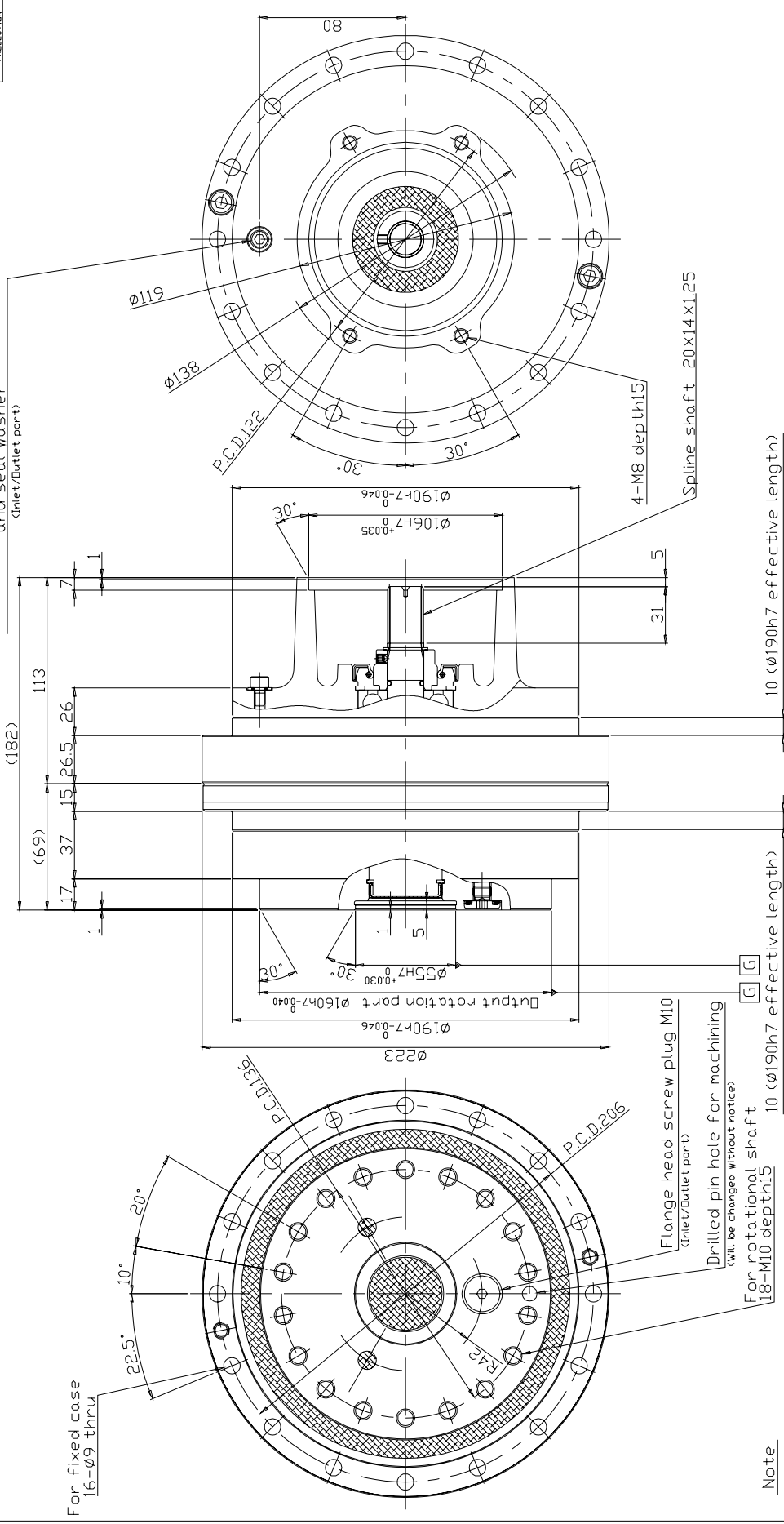
Note

1. Tightening torque of 16-M8 mounting bolts for the case : 37.2N-m(329lb-in)
2. Tightening torque of 18-M10 mounting bolts for the shaft : 73.5N-m(651lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of .

Speed Ratio	Model Code	Mass (kg)	Moment of Inertia J _r (I=GD ² /4)
41	RD-080E-041	25.2	The Motor Axis Conversion (kg-m ²)
57	RD-080E-057		2.24x10 ⁻⁴
			1.77x10 ⁻⁴



RD-80E Dimension Drawing(2)

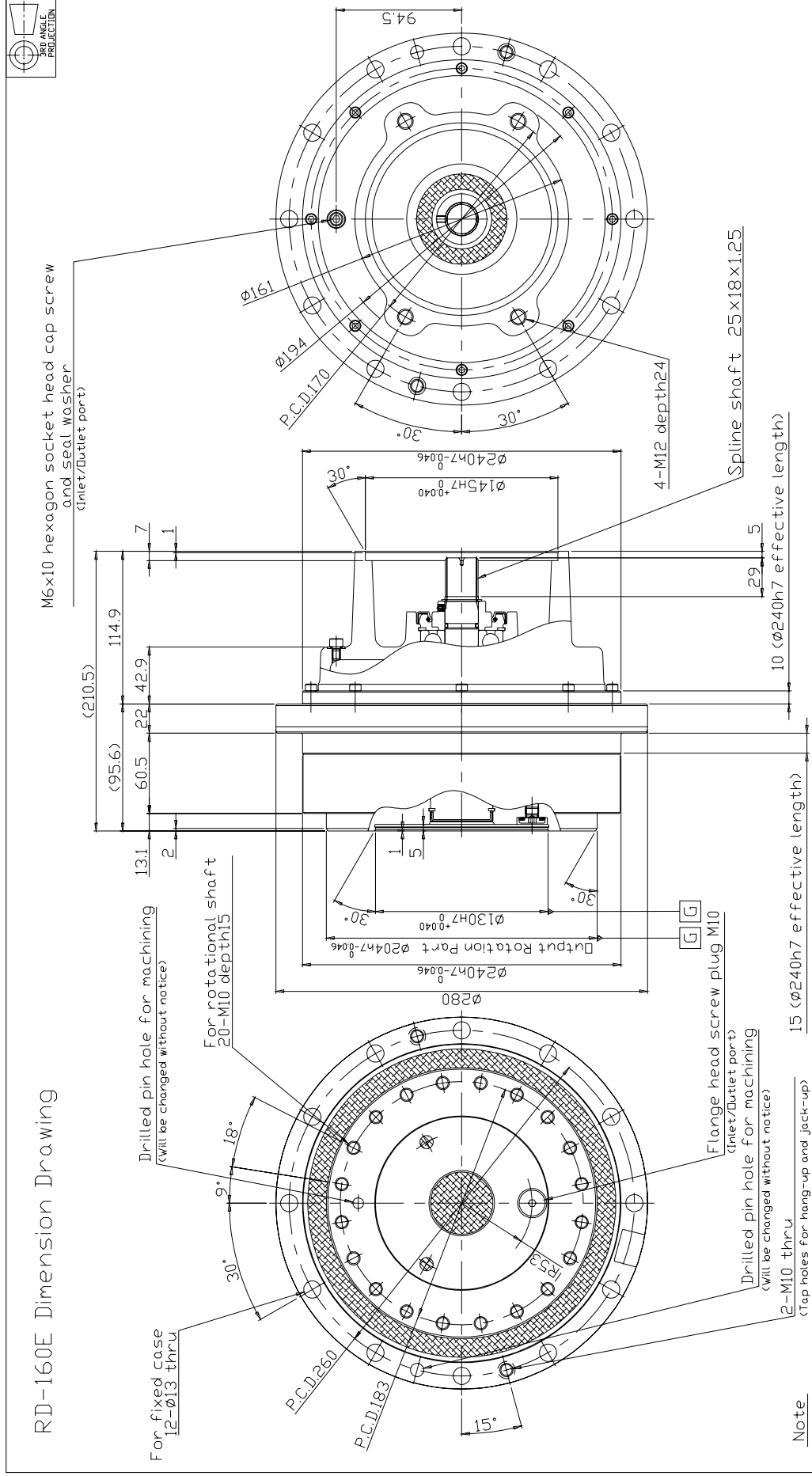



Note

1. Tightening torque of 16-M8 mounting bolts for the case : 37.2N-m(3291b-in)
2. Tightening torque of 18-M10 mounting bolts for the shaft : 73.5N-m(6511b-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of .

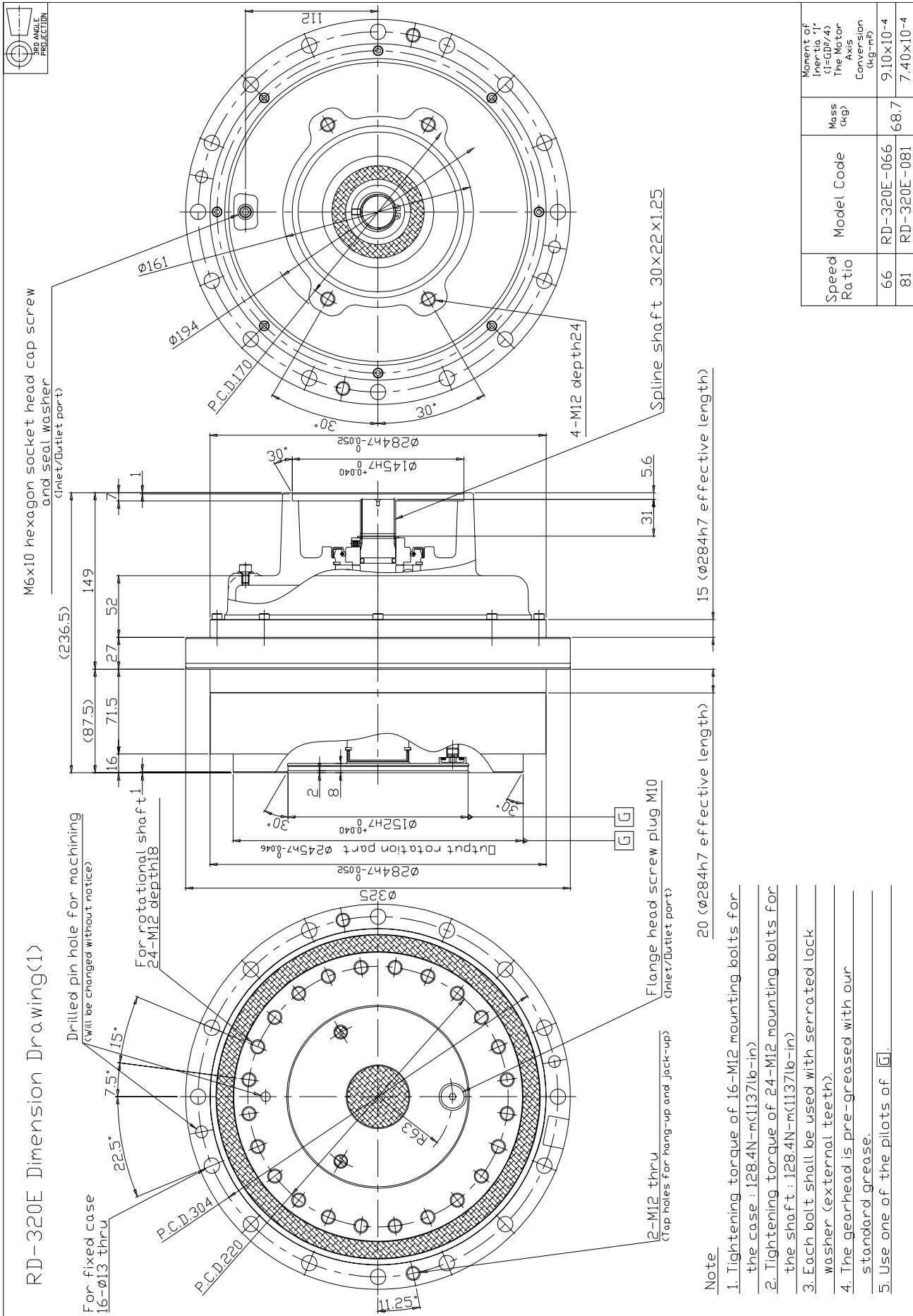
Speed Ratio	Model Code	Mass (kg)	Moment of Inertia J* (I=GD ² /4) Axis Conversion (kg-m ²)
81	RD-080E-081		9.67x10 ⁻⁵
101	RD-080E-101	25.2	8.14x10 ⁻⁵
153	RD-080E-153		6.16x10 ⁻⁵

RD-160E Dimension Drawing

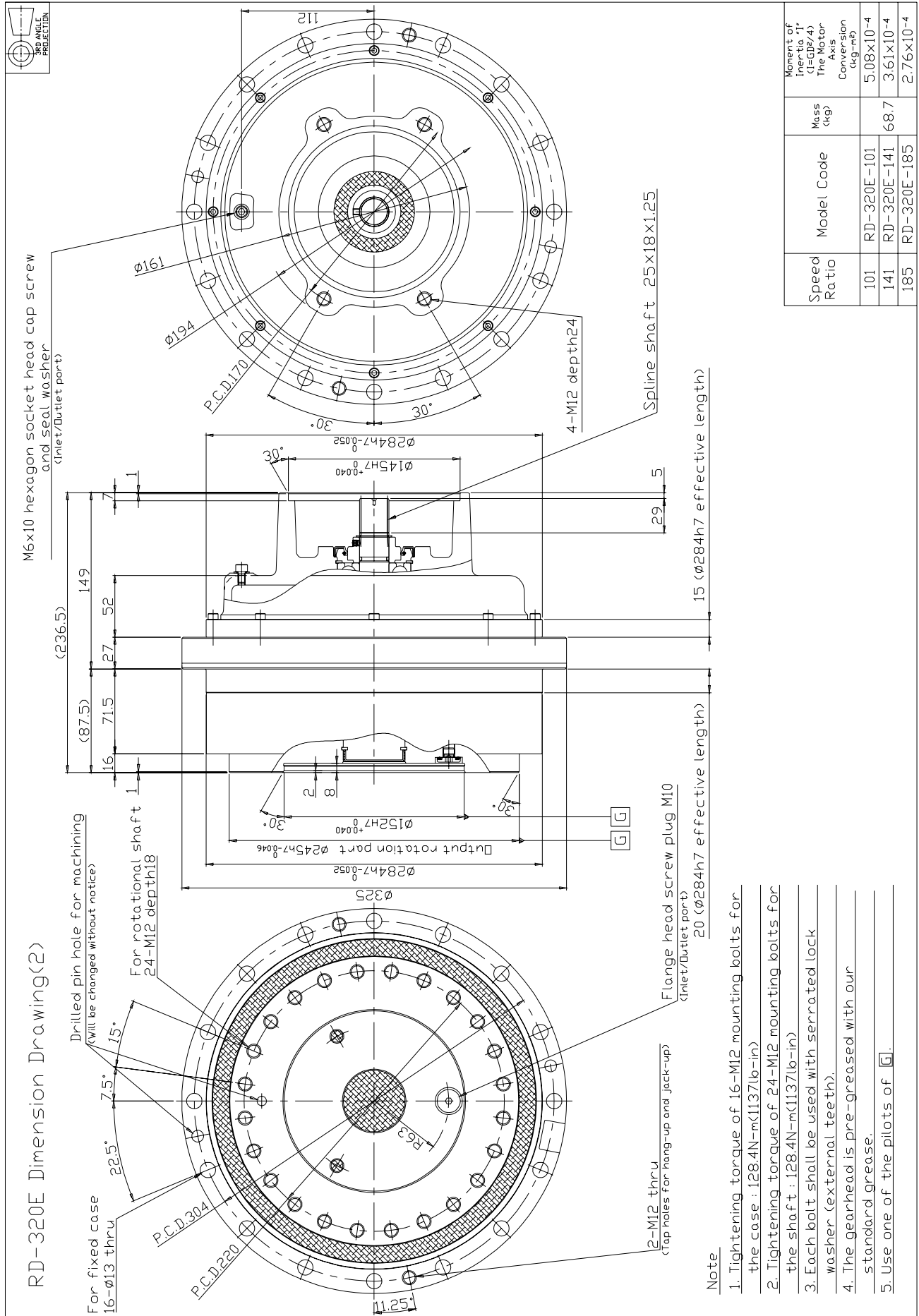


- Note**
1. Tightening torque of 12-M12 mounting bolts for the case : 128.4N-m(1137lb-in)
 2. Tightening torque of 20-M10 mounting bolts for the shaft : 73.5N-m(651lb-in)
 3. Each bolt shall be used with serrated lock washer (external teeth).
 4. The gearhead is pre-greased with our standard grease.
 5. Use one of the pilots of .

Speed Ratio	Model Code	Mass (kg)	Moment of Inertia J ₁ (EGP/4) Axis Conversion (kg-m ²)
66	RD-160E-066		3.71x10 ⁻⁴
81	RD-160E-081		3.12x10 ⁻⁴
101	RD-160E-101	44.5	2.58x10 ⁻⁴
145	RD-160E-145		1.90x10 ⁻⁴
171	RD-160E-171		1.62x10 ⁻⁴



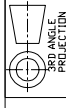
RD-320E Dimension Drawing(2)



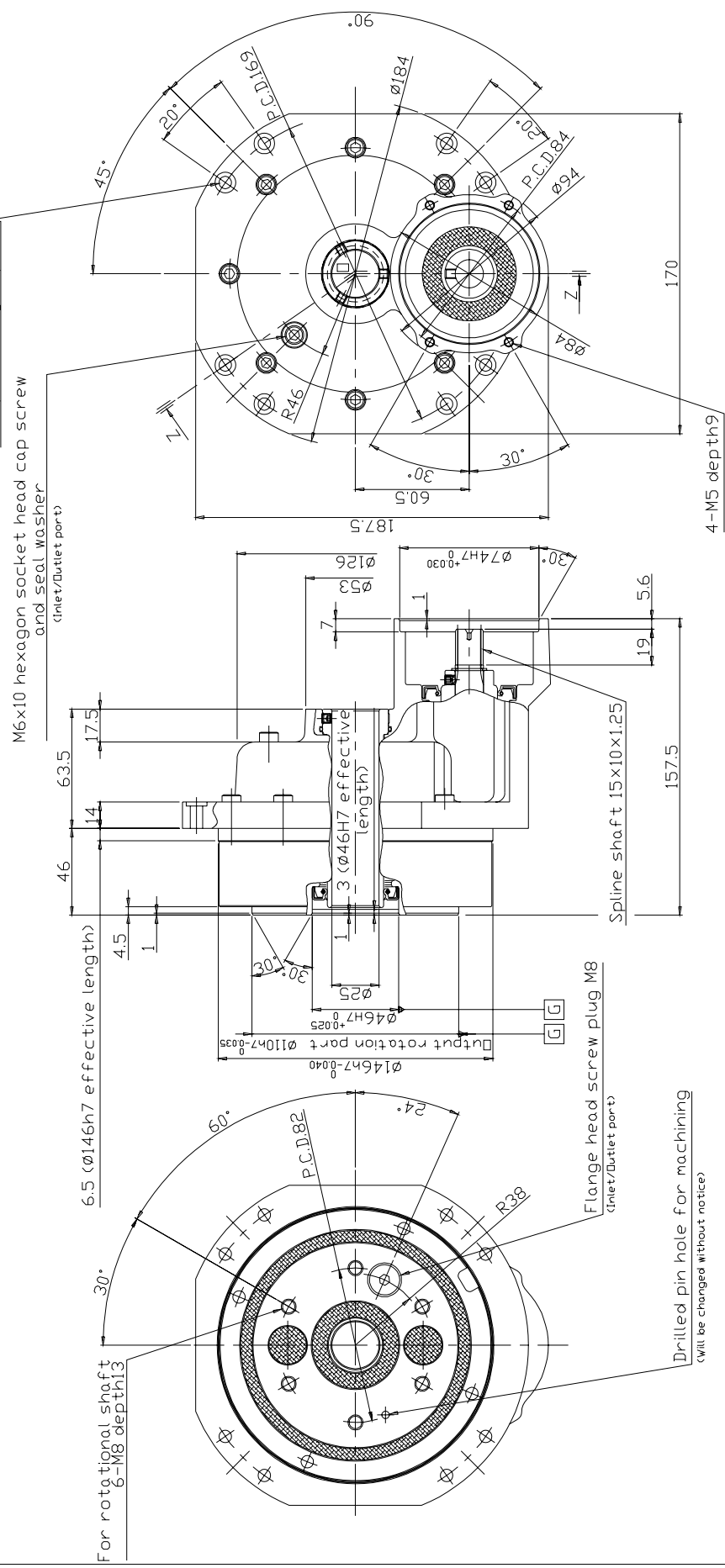
Speed Ratio	Model Code	Mass (kg)	Moment of Inertia J _r (I=GJ _r /4) The Motor Axis Conversion (kg-m ²)
101	RD-320E-101	5.08x10 ⁻⁴	5.08x10 ⁻⁴
141	RD-320E-141	68.7	3.61x10 ⁻⁴
185	RD-320E-185		2.76x10 ⁻⁴

Note

1. Tightening torque of 16-M12 mounting bolts for the case : 128.4N-m(1137lb-in)
2. Tightening torque of 24-M12 mounting bolts for the shaft : 128.4N-m(1137lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of



RD-10C Dimension Drawing



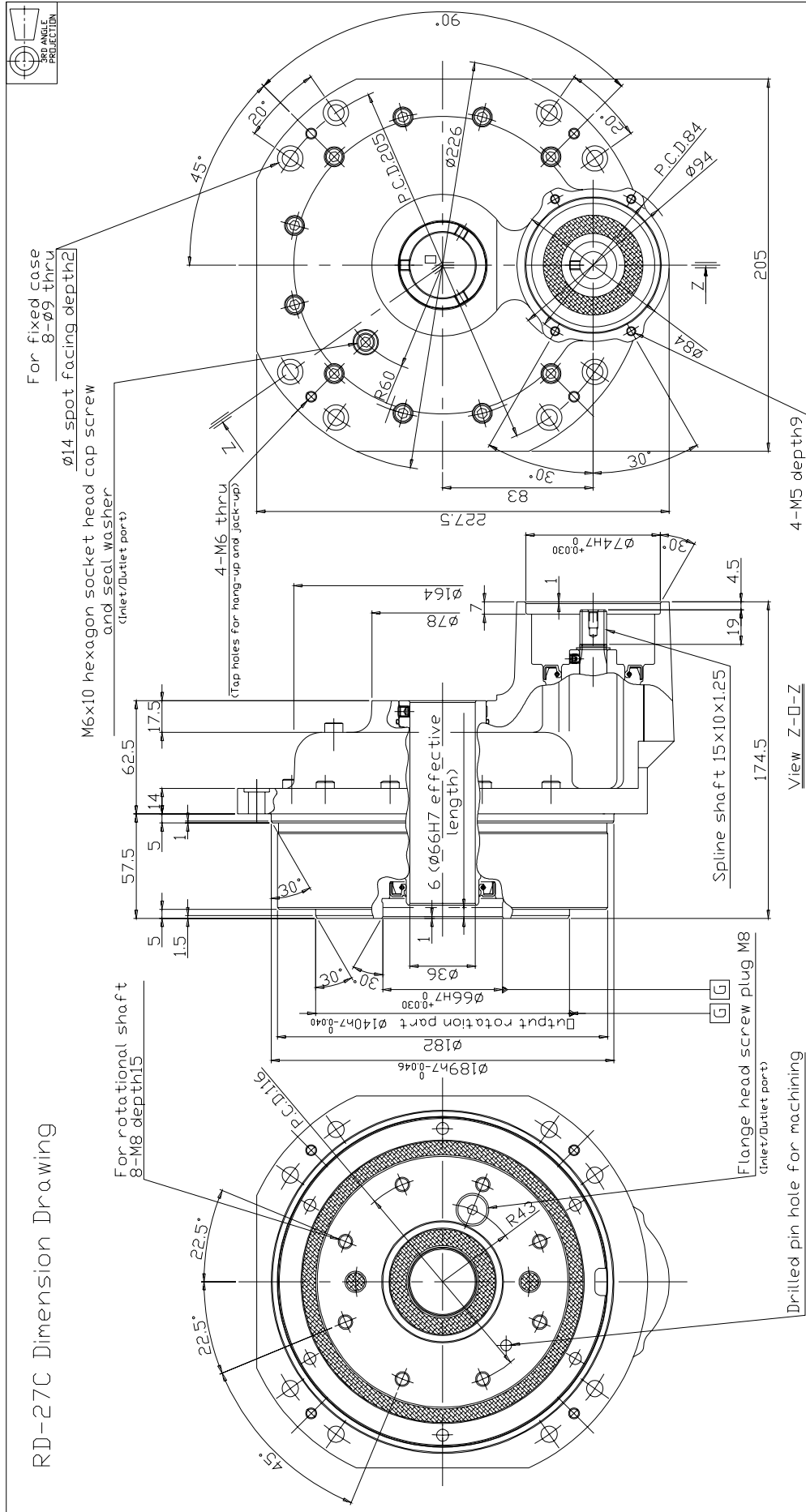
View Z-0-Z

Note

1. Tightening torque of 8-M6 mounting bolts for the case : 15.6N-m(138lb-in)
2. Tightening torque of 6-M8 mounting bolts for the shaft : 37.2N-m(329lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of .

Speed Ratio	Model Code	Mass (kg)	Moment of Inertia, I _r (I=GD ² /4) The Motor Axis Conversion (kg-m ²)
81	RD-010C-081		6.75x10 ⁻⁵
108	RD-010C-108		5.00x10 ⁻⁵
153	RD-010C-153	10.0	3.55x10 ⁻⁵
189	RD-010C-189		2.92x10 ⁻⁵
243	RD-010C-243		2.39x10 ⁻⁵

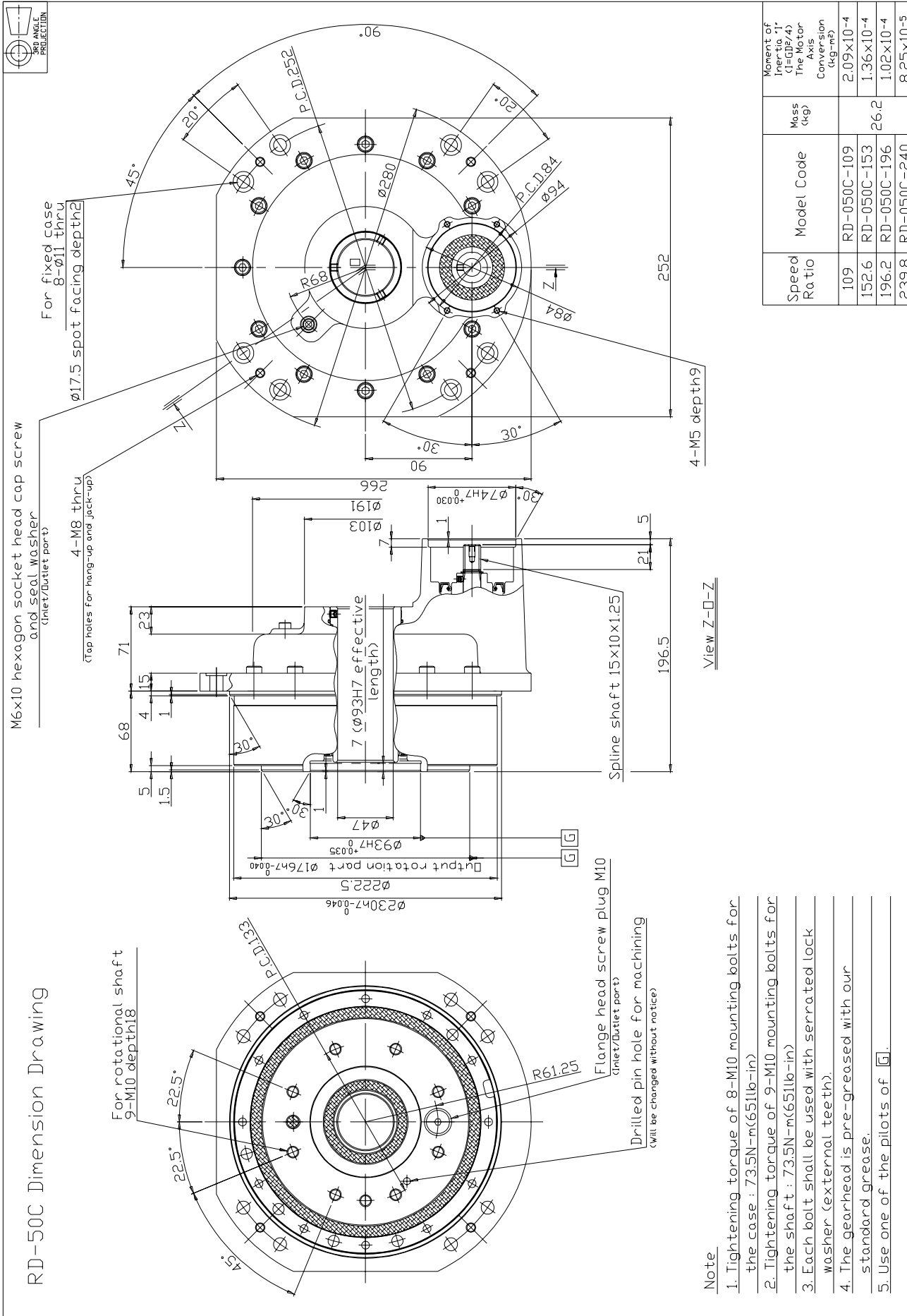
RD-27C Dimension Drawing



- Note
1. Tightening torque of 8-M8 mounting bolts for the case : 37.2N-m(329lb-in)
 2. Tightening torque of 8-M8 mounting bolts for the shaft : 37.2N-m(329lb-in)
 3. Each bolt shall be used with serrated lock washer (external teeth).
 4. The gearhead is pre-greased with our standard grease.
 5. Use one of the pilots of

Speed Ratio	Model Code	Mass (kg)	Moment of Inertia (kg·m ²)
99.82	RD-027C-100		2.32x10 ⁻⁴
141.68	RD-027C-142	16.1	1.52x10 ⁻⁴
184	RD-027C-184		1.20x10 ⁻⁴
233.45	RD-027C-233		9.36x10 ⁻⁵

RD-50C Dimension Drawing

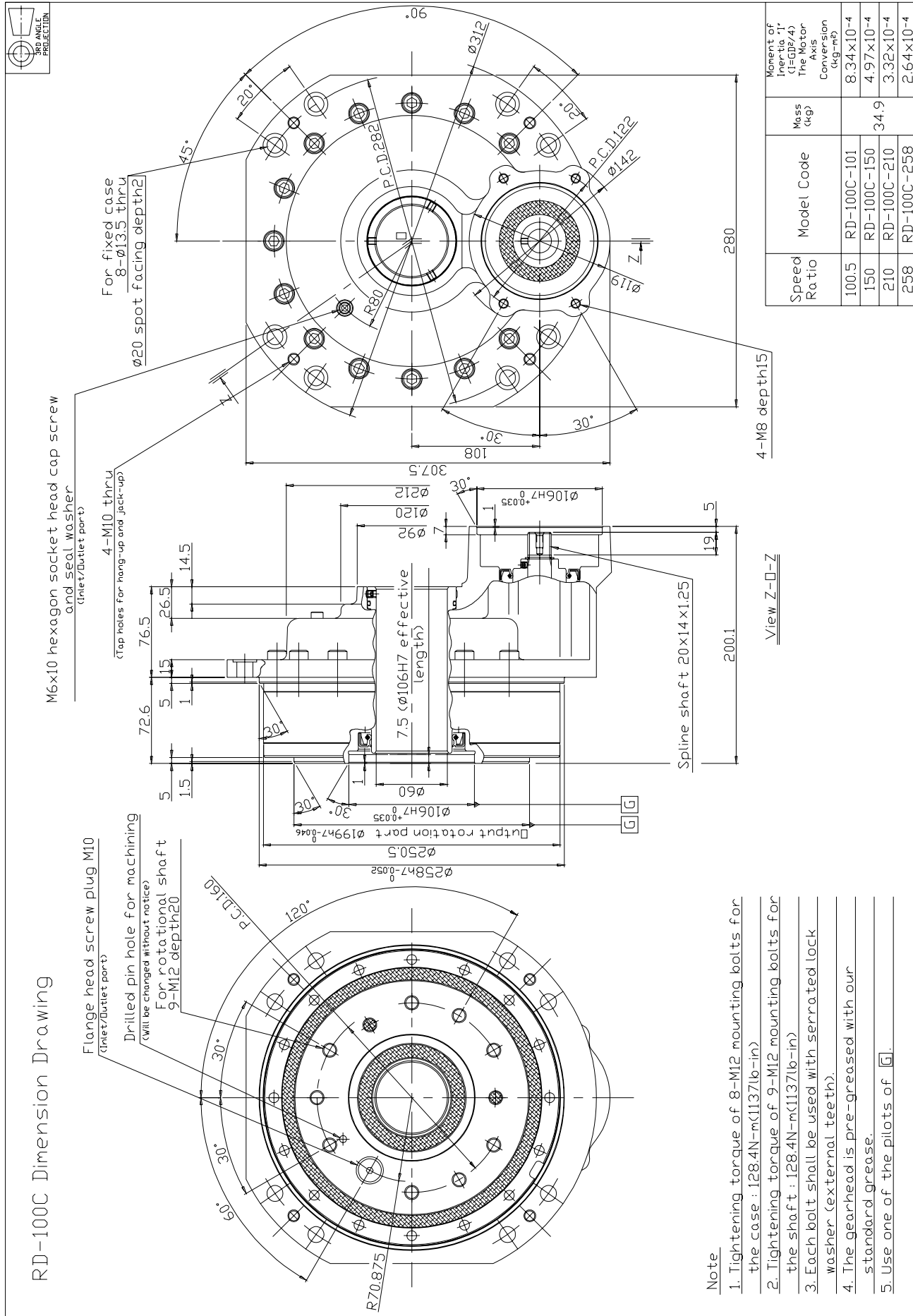


Speed Ratio	Model Code	Mass (kg)	Moment of Inertia I_x ($I_y=I_z/4$) Axis Conversion (kg-m ²)
109	RD-050C-109		2.09x10 ⁻⁴
152.6	RD-050C-153	26.2	1.36x10 ⁻⁴
196.2	RD-050C-196		1.02x10 ⁻⁴
239.8	RD-050C-240		8.25x10 ⁻⁵

Note

1. Tightening torque of 8-M10 mounting bolts for the case : 73.5N-m(651lb-in)
2. Tightening torque of 9-M10 mounting bolts for the shaft : 73.5N-m(651lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of .

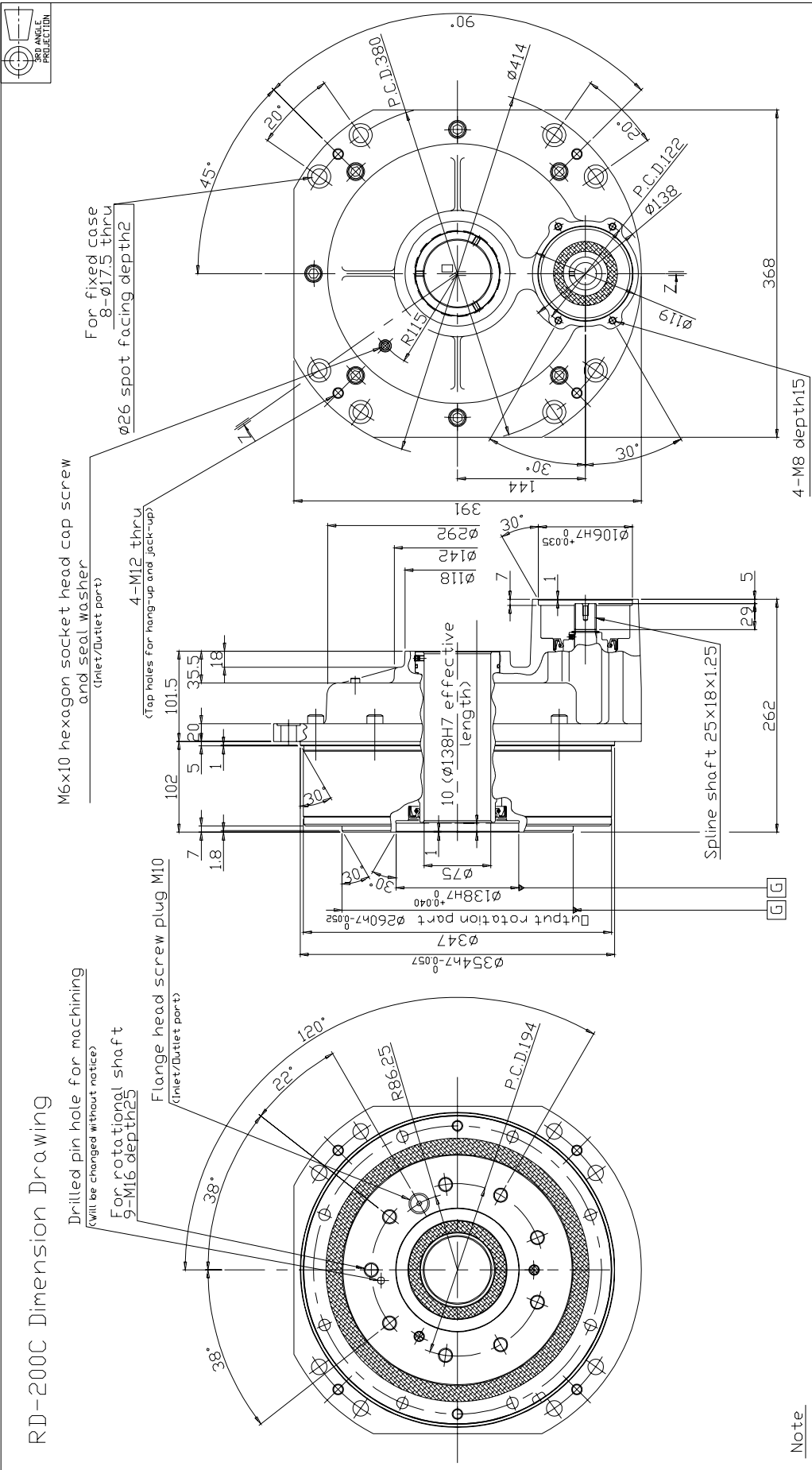
RD-100C Dimension Drawing




Note

1. Tightening torque of 8-M12 mounting bolts for the case : 128.4N-m(1137lb-in)
2. Tightening torque of 9-M12 mounting bolts for the shaft : 128.4N-m(1137lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of G.

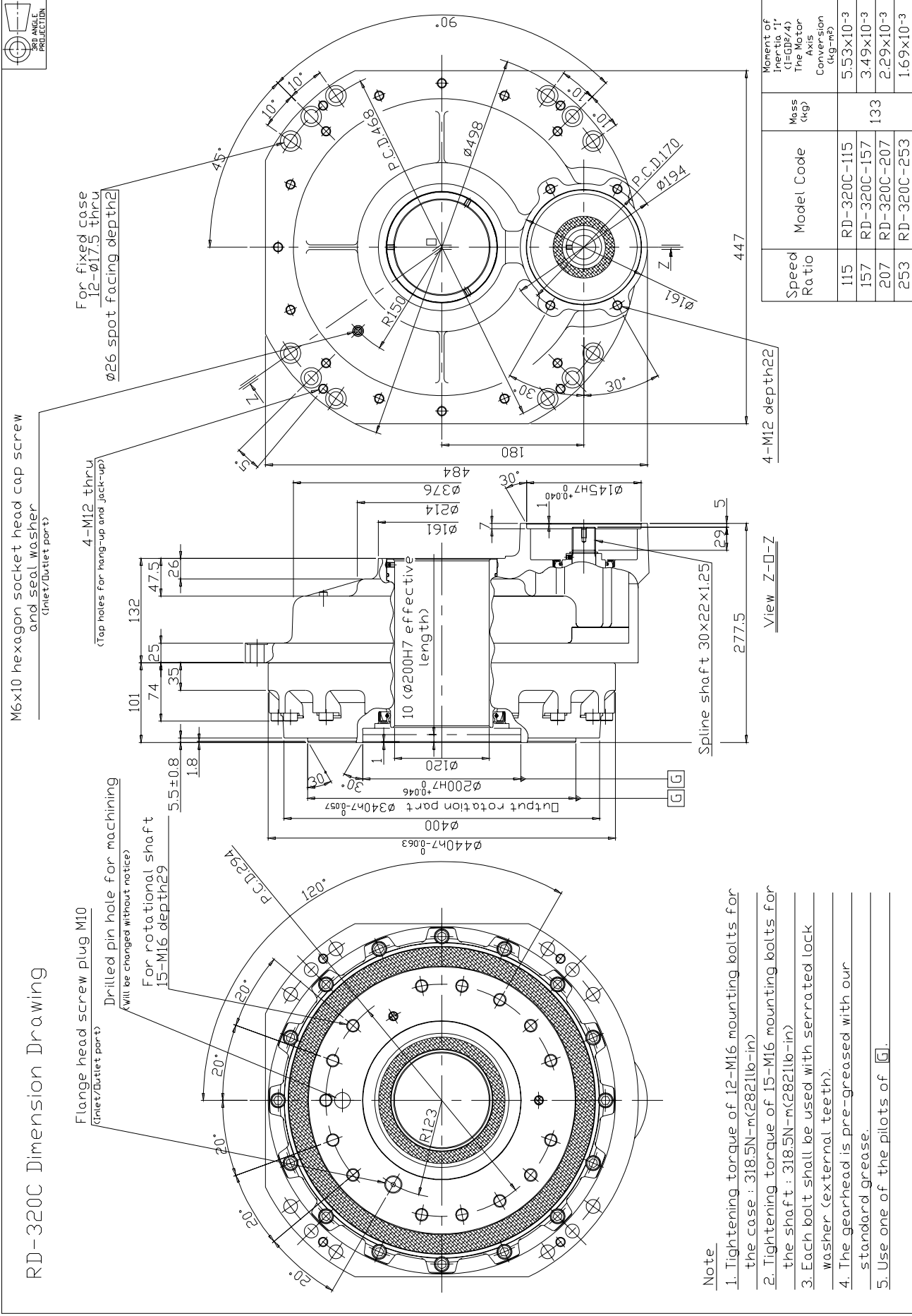
RD-200C Dimension Drawing



Note

1. Tightening torque of 8-M16 mounting bolts for the case : 318.5N-m(2821lb-in)
2. Tightening torque of 9-M16 mounting bolts for the shaft : 318.5N-m(2821lb-in)
3. Each bolt shall be used with serrated lock washer (external teeth).
4. The gearhead is pre-greased with our standard grease.
5. Use one of the pilots of .

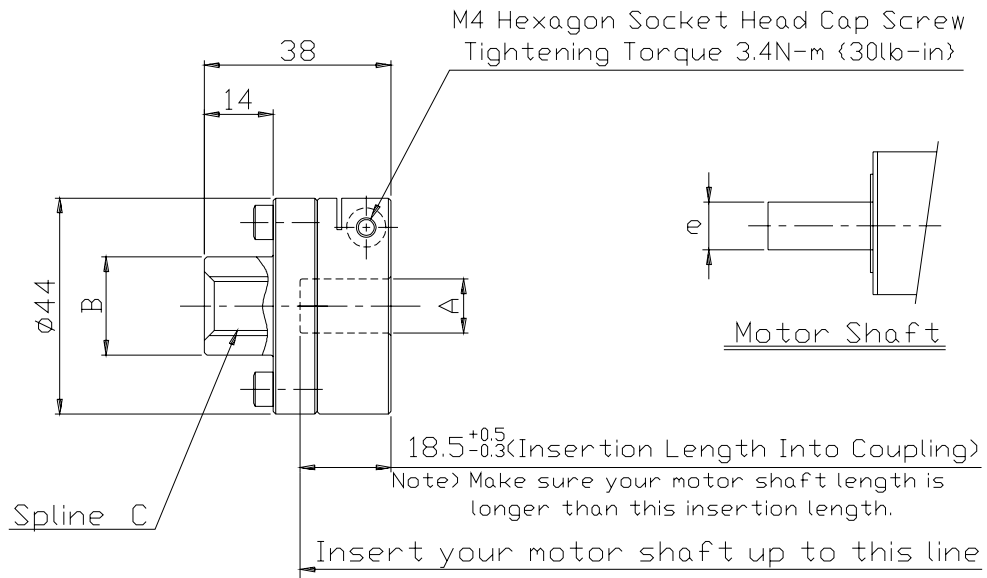
Speed Ratio	Model Code	Mass (kg)	Moment of Inertia J (J=GD ² /4) (kg-m ²)
105.83	RD-200C-106		1.98x10 ⁻³
155.96	RD-200C-156		1.18x10 ⁻³
206.09	RD-200C-206	86.5	7.98x10 ⁻⁴
245.08	RD-200C-245		6.44x10 ⁻⁴



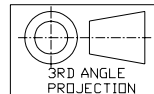
- Note
- Tightening torque of 12-M16 mounting bolts for the case : 318.5N-m(2821lb-in)
 - Tightening torque of 15-M16 mounting bolts for the shaft : 318.5N-m(2821lb-in)
 - Each bolt shall be used with serrated lock washer (external teeth).
 - The gearhead is pre-greased with our standard grease.
 - Use one of the pilots of

Reduction gear dim. drawing

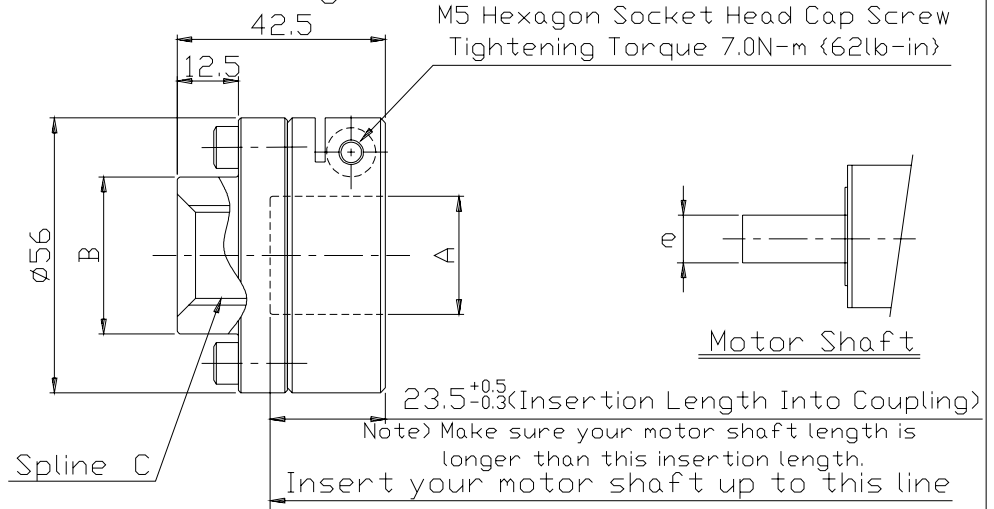
Coupling Dimension Drawing



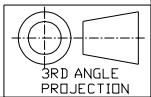
Code	Dimensions mm			Allowable transmission torque N-m (lb-in)	Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C				
CAS	φ8H8	φ20	12×10×1.00	10.3 {91}	0.19	1.705×10 ⁻⁴	φ 8h6
CAH	φ9H8			11.6 {103}	0.19	1.704×10 ⁻⁴	φ 9h6
CAK	φ10H8			12.9 {114}	0.19	1.703×10 ⁻⁴	φ10h6
CAA	φ11H8			14.1 {125}	0.19	1.702×10 ⁻⁴	φ11h6
CAB	φ14H8			18.0 {159}	0.18	1.695×10 ⁻⁴	φ14h6
CAC	φ14F8			18.0 {159}	0.18	1.695×10 ⁻⁴	φ14k6
CAD	φ16H8			20.6 {182}	0.18	1.687×10 ⁻⁴	φ16h6
CAE	φ16F8			20.6 {182}	0.18	1.687×10 ⁻⁴	φ16k6
CAL	φ17H8			21.9 {194}	0.18	1.682×10 ⁻⁴	φ17h6
CAF	φ19H7			24.4 {216}	0.17	1.668×10 ⁻⁴	φ19h6
CAJ	φ19F7			24.4 {216}	0.17	1.668×10 ⁻⁴	φ19k6
CBS	φ8H8	φ25	15×10×1.25	10.3 {91}	0.18	1.697×10 ⁻⁴	φ 8h6
CBH	φ9H8			11.6 {103}	0.18	1.696×10 ⁻⁴	φ 9h6
CBK	φ10H8			12.9 {114}	0.18	1.695×10 ⁻⁴	φ10h6
CBA	φ11H8			14.1 {125}	0.18	1.694×10 ⁻⁴	φ11h6
CBB	φ14H8			18.0 {159}	0.18	1.687×10 ⁻⁴	φ14h6
CBC	φ14F8			18.0 {159}	0.18	1.687×10 ⁻⁴	φ14k6
CBD	φ16H8			20.6 {182}	0.17	1.679×10 ⁻⁴	φ16h6
CBE	φ16F8			20.6 {182}	0.17	1.679×10 ⁻⁴	φ16k6
CBL	φ17H8			21.9 {194}	0.17	1.674×10 ⁻⁴	φ17h6
CBF	φ19H7			24.4 {216}	0.17	1.660×10 ⁻⁴	φ19h6
CBJ	φ19F7			24.4 {216}	0.17	1.660×10 ⁻⁴	φ19k6



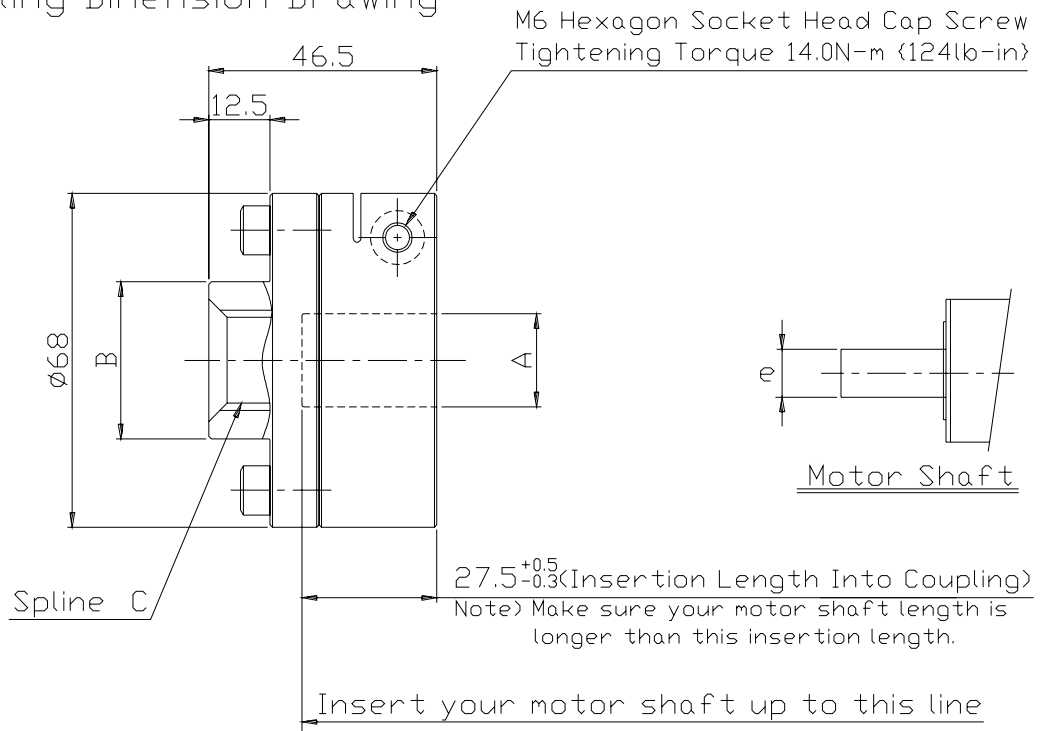
Coupling Dimension Drawing



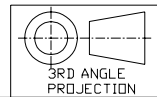
Code	Dimensions mm			Allowable transmission torque N-m (lb-in)	Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e		
	A	B	C						
CCF	φ10H8	φ20	12×10×1.00	22.7 (201)	0.35	5.203×10 ⁻⁴	φ10h6		
CCS	φ14H8			31.7 (281)	0.34	5.193×10 ⁻⁴	φ14h6		
CCJ	φ14F8			31.7 (281)	0.34	5.193×10 ⁻⁴	φ14k6		
CCA	φ16H8			36.3 (321)	0.33	5.183×10 ⁻⁴	φ16h6		
CCK	φ17H8			38.5 (341)	0.33	5.177×10 ⁻⁴	φ17h6		
CCB	φ19H7			43.1 (381)	0.33	5.160×10 ⁻⁴	φ19h6		
CCC	φ19F7			43.1 (381)	0.33	5.160×10 ⁻⁴	φ19k6		
CCL	φ22H7			49.9 (442)	0.32	5.124×10 ⁻⁴	φ22h6		
CCE	φ24H7			54.4 (481)	0.31	5.089×10 ⁻⁴	φ24h6		
CCD	φ24F7			54.4 (481)	0.31	5.089×10 ⁻⁴	φ24k6		
CCM	φ25H7			56.7 (502)	0.31	5.068×10 ⁻⁴	φ25h6		
CDF	φ10H8			φ25	15×10×1.25	22.7 (201)	0.36	5.284×10 ⁻⁴	φ10h6
CDS	φ14H8	31.7 (281)	0.35			5.274×10 ⁻⁴	φ14h6		
CDA	φ16H8	36.3 (321)	0.35			5.264×10 ⁻⁴	φ16h6		
CDB	φ19H7	43.1 (381)	0.34			5.241×10 ⁻⁴	φ19h6		
CDC	φ19F7	43.1 (381)	0.34			5.241×10 ⁻⁴	φ19k6		
CDH	φ22H7	44.9 (442)	0.33			5.204×10 ⁻⁴	φ22h6		
CDE	φ24H7	54.4 (481)	0.32			5.170×10 ⁻⁴	φ24h6		
CDD	φ24F7	54.4 (481)	0.32			5.170×10 ⁻⁴	φ24k6		
CDJ	φ25H7	56.7 (502)	0.32			5.149×10 ⁻⁴	φ25h6		
CEF	φ10H8	φ32	20×14×1.25			22.7 (201)	0.37	5.499×10 ⁻⁴	φ10h6
CES	φ14H8					31.7 (281)	0.36	5.489×10 ⁻⁴	φ14h6
CEH	φ14F8					31.7 (281)	0.36	5.489×10 ⁻⁴	φ14k6
CEA	φ16H8			36.3 (321)	0.36	5.479×10 ⁻⁴	φ16h6		
CEJ	φ17H8			38.5 (341)	0.36	5.473×10 ⁻⁴	φ17h6		
CEB	φ19H7			43.1 (381)	0.35	5.456×10 ⁻⁴	φ19h6		
CEC	φ19F7			43.1 (381)	0.35	5.456×10 ⁻⁴	φ19k6		
CEE	φ24H7			54.4 (481)	0.34	5.385×10 ⁻⁴	φ24h6		
CED	φ24F7			54.4 (481)	0.34	5.385×10 ⁻⁴	φ24k6		
CEK	φ25H7			56.7 (502)	0.34	5.258×10 ⁻⁴	φ25h6		



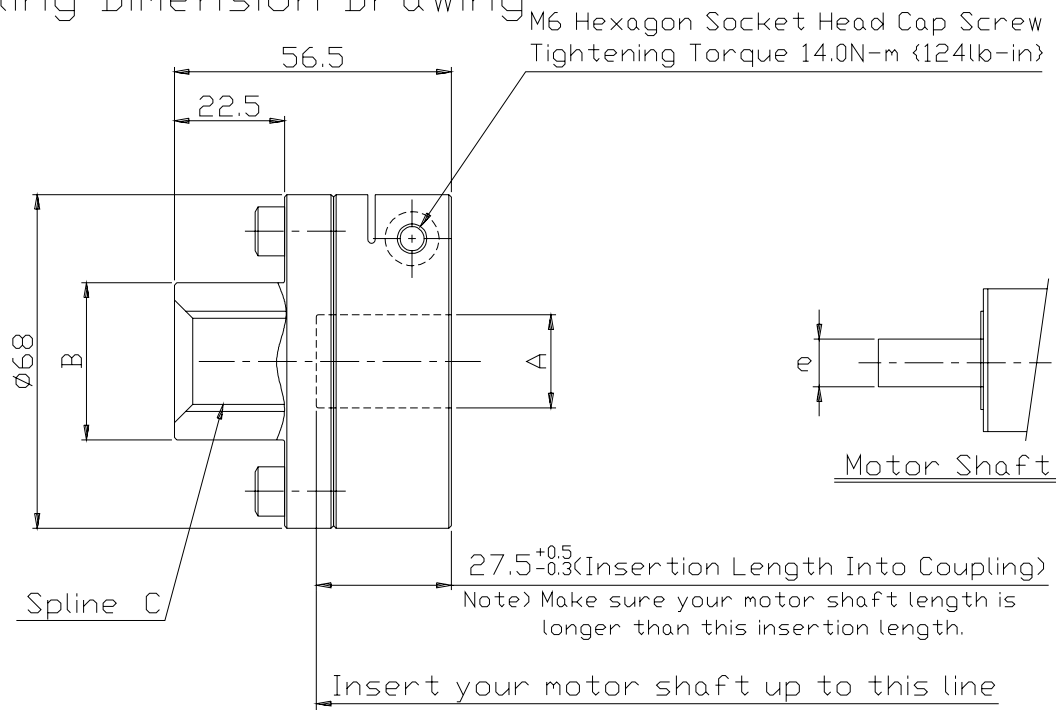
Coupling Dimension Drawing



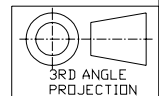
Code	Dimensions mm			Allowable transmission torque N-m (lb-in)	Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C				
CFS	φ19H7	φ32	20×14×1.25	73.0 (646)	0.55	1.241×10 ⁻³	φ19h6
CFA	φ22H7			84.5 (748)	0.54	1.237×10 ⁻³	φ22h6
CFD	φ24H7			92.2 (816)	0.53	1.233×10 ⁻³	φ24h6
CFB	φ24F7			92.2 (816)	0.53	1.233×10 ⁻³	φ24k6
CFJ	φ25H7			96.1 (851)	0.53	1.230×10 ⁻³	φ25h6
CFE	φ28H7			107.6 (952)	0.51	1.221×10 ⁻³	φ28h6
CFH	φ32H7			123.0 (1089)	0.49	1.204×10 ⁻³	φ32h6
CFC	φ32F7			123.0 (1089)	0.49	1.204×10 ⁻³	φ32k6



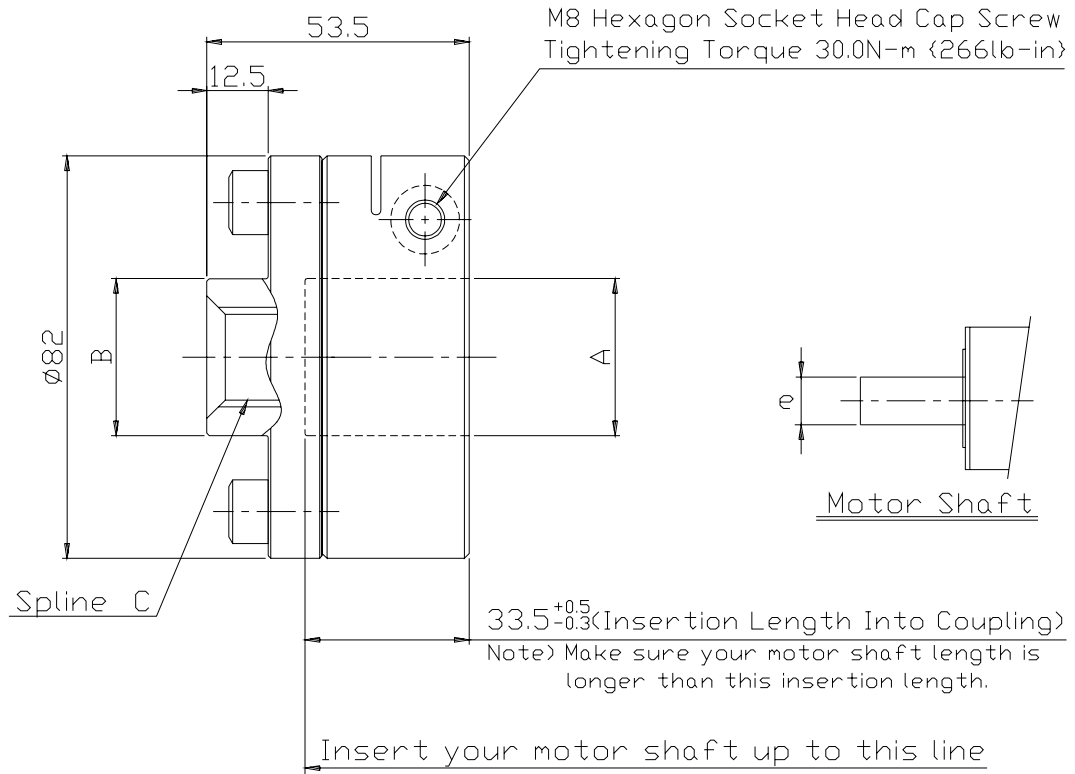
Coupling Dimension Drawing



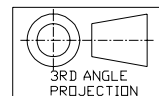
Code	Dimensions mm			Allowable transmission torque N·m {lb-in}	Mass kg	Moment of Inertia ($I=GD^2/4$) kg·m ²	Applicable Motor Shaft Diameter e
	A	B	C				
CVS	Ø19H7	Ø37	25×18×1.25	73.0 {646}	0.60	1.313×10 ⁻³	Ø19h6
CVA	Ø22H7			84.5 {748}	0.59	1.309×10 ⁻³	Ø22h6
CVD	Ø24H7			92.2 {816}	0.59	1.305×10 ⁻³	Ø24h6
CVB	Ø24F7			92.2 {816}	0.59	1.305×10 ⁻³	Ø24k6
CVE	Ø28H7			107.6 {952}	0.57	1.294×10 ⁻³	Ø28h6
CVH	Ø32H7			123.0 {1089}	0.55	1.277×10 ⁻³	Ø32h6
CVC	Ø32F7			123.0 {1089}	0.55	1.277×10 ⁻³	Ø32k6
CHS	Ø19H7	Ø40	30×22×1.25	73.0 {646}	0.59	1.334×10 ⁻³	Ø19h6
CHA	Ø22H7			84.5 {748}	0.58	1.330×10 ⁻³	Ø22h6
CHD	Ø24H7			92.2 {816}	0.58	1.326×10 ⁻³	Ø24h6
CHB	Ø24F7			92.2 {816}	0.58	1.326×10 ⁻³	Ø24k6
CHE	Ø28H7			107.6 {952}	0.56	1.314×10 ⁻³	Ø28h6
CHF	Ø32H7			123.0 {1089}	0.54	1.297×10 ⁻³	Ø32h6
CHC	Ø32F7			123.0 {1089}	0.54	1.297×10 ⁻³	Ø32k6



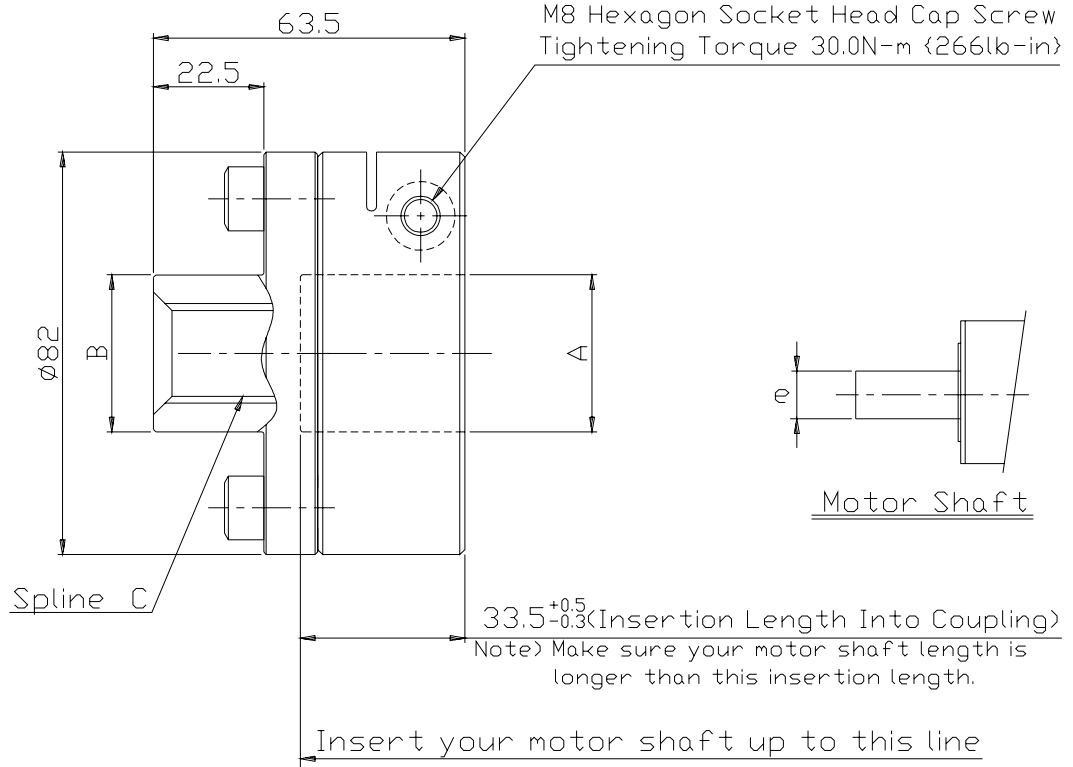
Coupling Dimension Drawing



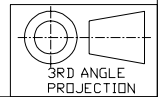
Code	Dimensions mm			Allowable transmission torque N·m {lb-in}	Mass kg	Moment of Inertia ($I=GD^2/4$) kg·m ²	Applicable Motor Shaft Diameter e
	A	B	C				
CJD	$\phi 24H7$	$\phi 32$	20x14x1.25	143.0 {1266}	0.88	2.999×10^{-3}	$\phi 24h6$
CJC	$\phi 28H7$			166.9 {1477}	0.87	2.987×10^{-3}	$\phi 28h6$
CJE	$\phi 32H7$			190.7 {1688}	0.84	2.967×10^{-3}	$\phi 32h6$
CJS	$\phi 32F7$			190.7 {1688}	0.84	2.967×10^{-3}	$\phi 32K6$
CJA	$\phi 35H7$			208.6 {1846}	0.83	2.947×10^{-3}	$\phi 35h6$
CJB	$\phi 35F7$			208.6 {1846}	0.83	2.947×10^{-3}	$\phi 35k6$



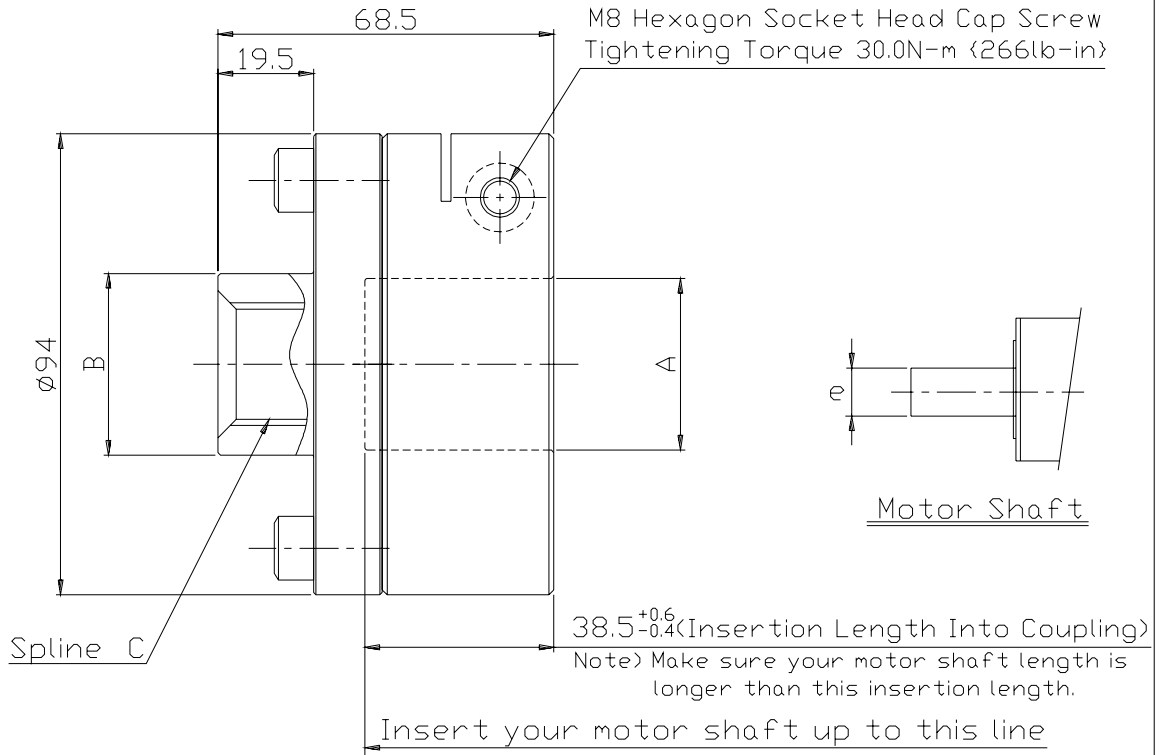
Coupling Dimension Drawing



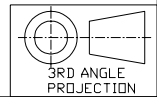
Code	Dimensions mm			Allowable transmission torque N-m {lb-in}	Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C				
CKD	$\phi 24H7$	$\phi 37$	25x18x1.25	143.0 {1266}	0.94	3.072×10^{-3}	$\phi 24h6$
CKC	$\phi 28H7$			166.9 {1477}	0.92	3.059×10^{-3}	$\phi 28h6$
CKE	$\phi 32H7$			190.7 {1688}	0.90	3.039×10^{-3}	$\phi 32h6$
CKS	$\phi 32F7$			190.7 {1688}	0.90	3.039×10^{-3}	$\phi 32k6$
CKA	$\phi 35H7$			208.6 {1846}	0.88	3.019×10^{-3}	$\phi 35h6$
CKB	$\phi 35F7$			208.6 {1846}	0.88	3.019×10^{-3}	$\phi 35k6$
CLD	$\phi 24H7$	$\phi 42$	30x22x1.25	143.0 {1266}	0.95	3.129×10^{-3}	$\phi 24h6$
CLC	$\phi 28H7$			166.9 {1477}	0.93	3.117×10^{-3}	$\phi 28h6$
CLE	$\phi 32H7$			190.7 {1688}	0.91	3.097×10^{-3}	$\phi 32h6$
CLS	$\phi 32F7$			190.7 {1688}	0.91	3.097×10^{-3}	$\phi 32k6$
CLA	$\phi 35H7$			208.6 {1846}	0.89	3.077×10^{-3}	$\phi 35h6$
CLB	$\phi 35F7$			208.6 {1846}	0.89	3.077×10^{-3}	$\phi 35k6$



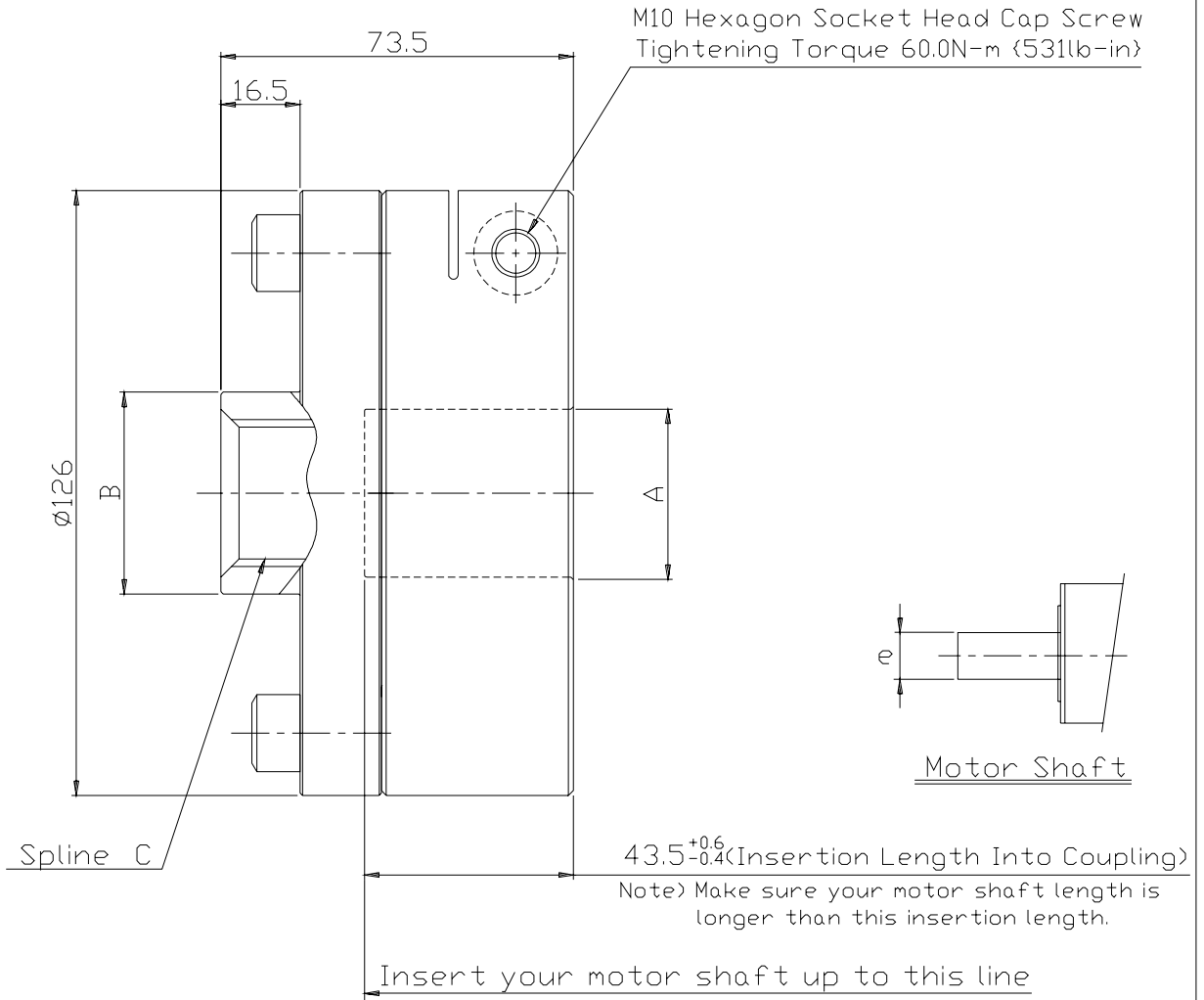
Coupling Dimension Drawing



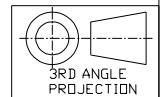
Code	Dimensions mm			Allowable transmission torque N-m (lb-in)	Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C				
CMC	$\phi 35H7$	$\phi 37$	25x18x1.25	212.8 (1883)	1.38	6.302×10^{-3}	$\phi 35h6$
CMS	$\phi 35F7$			212.8 (1883)	1.38	6.302×10^{-3}	$\phi 35k6$
CMA	$\phi 38F7$			231.0 (2045)	1.36	6.272×10^{-3}	$\phi 38k6$
CMB	$\phi 42H7$			255.4 (2260)	1.33	6.221×10^{-3}	$\phi 42h6$
CNC	$\phi 35H7$	$\phi 42$	30x22x1.25	212.8 (1883)	1.39	6.348×10^{-3}	$\phi 35h6$
CNS	$\phi 35F7$			212.8 (1883)	1.39	6.348×10^{-3}	$\phi 35k6$
CNA	$\phi 38F7$			231.0 (2045)	1.36	6.319×10^{-3}	$\phi 38k6$
CNB	$\phi 42H7$			255.4 (2260)	1.33	6.267×10^{-3}	$\phi 42h6$



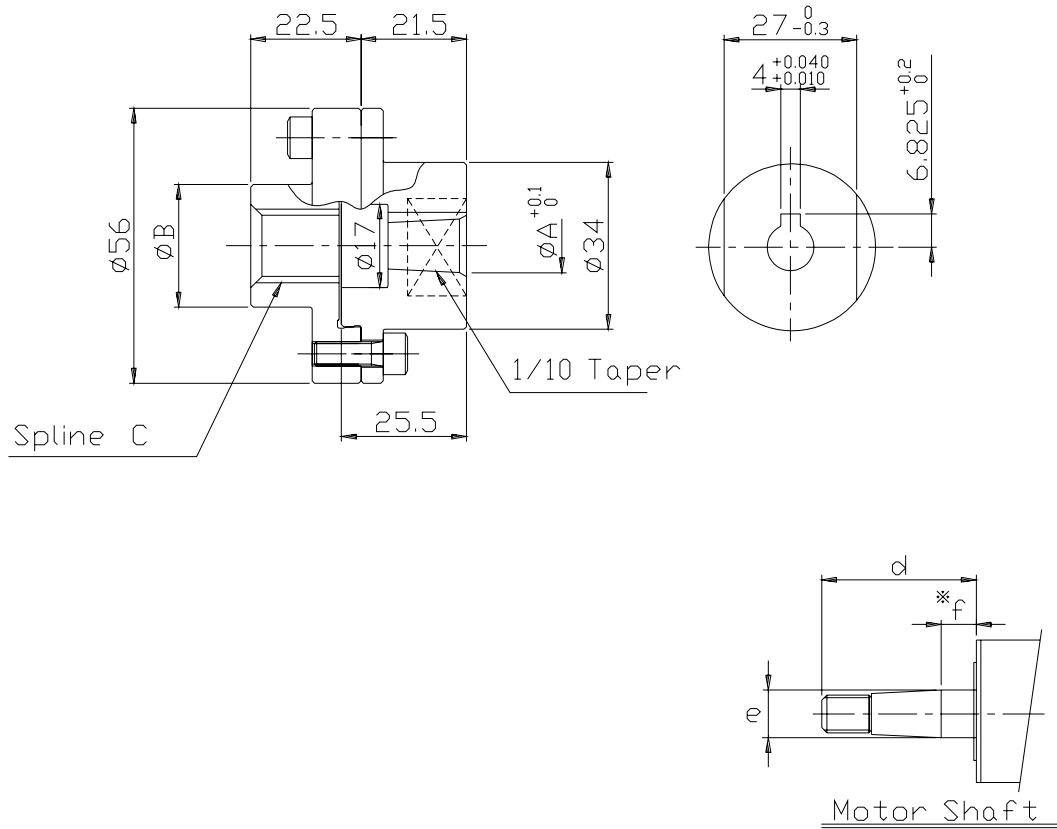
Coupling Dimension Drawing



Code	Dimensions mm			Allowable transmission torque N-m (lb-in)	Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C				
CWC	$\phi 35H7$	$\phi 42$	30x22x1.25	442.0 (3912)	5.25	4.403×10^{-2}	$\phi 35h6$
CWS	$\phi 35F7$			442.0 (3912)	5.25	4.403×10^{-2}	$\phi 35k6$
CWA	$\phi 38F7$			479.9 (4247)	5.20	4.395×10^{-2}	$\phi 38k6$
CWB	$\phi 42H7$			530.4 (4694)	5.11	4.382×10^{-2}	$\phi 42h6$

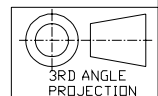


Coupling Dimension Drawing (For 1/10 Taper Shaft)



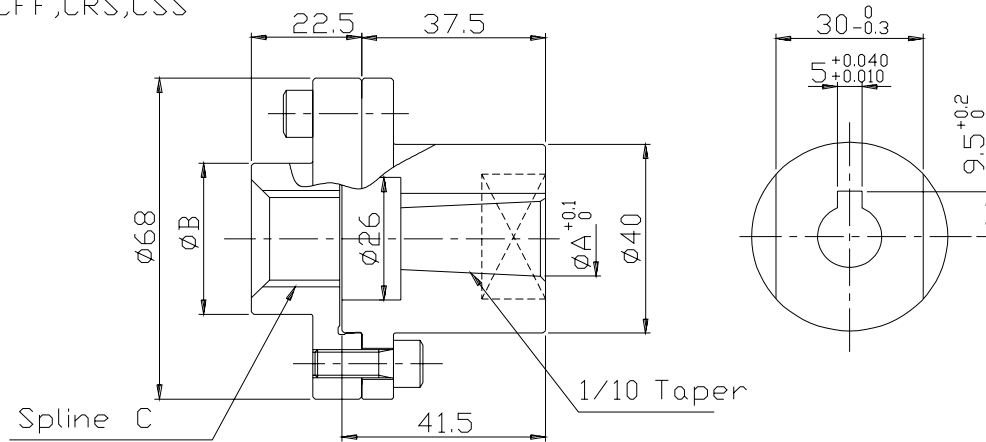
*Select a Motor Flange with the motor shaft length as $(d)=f+26$ mm when using coupling for a taper shaft : CCH,CDG

Code	Dimensions mm			Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C			
CCH	φ11	φ20	12×10×1.00	0.37	5.316×10^{-4}	φ11
CDG	φ11	φ25	15×10×1.25	0.39	5.397×10^{-4}	φ11



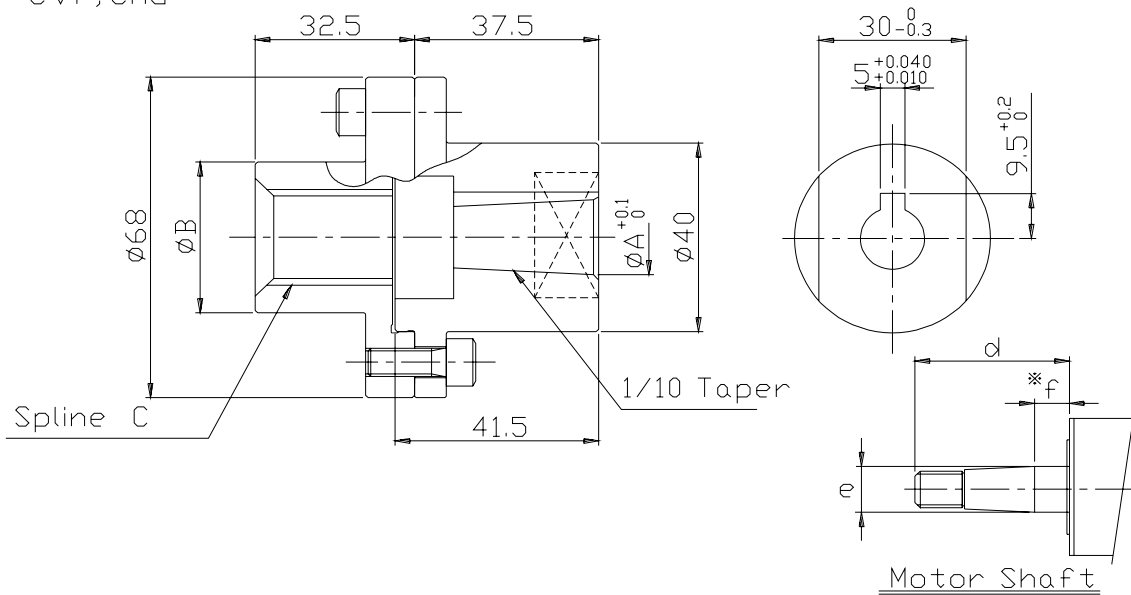
Coupling Dimension Drawing (For 1/10 Taper Shaft)

CFF,CRS,CSS

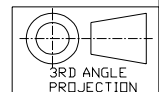


Code	Dimensions mm			Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C			
CFF	φ16	φ32	20×14×1.25	0.67	1.316×10^{-3}	φ16
CRS	φ16	φ20	12×10×1.00	0.64	1.286×10^{-3}	φ16
CSS	φ16	φ25	15×10×1.25	0.65	1.294×10^{-3}	φ16
CVF	φ16	φ37	25×18×1.25	0.72	1.389×10^{-3}	φ16
CHG	φ16	φ42	30×22×1.25	0.71	1.409×10^{-3}	φ16

CVF, CHG

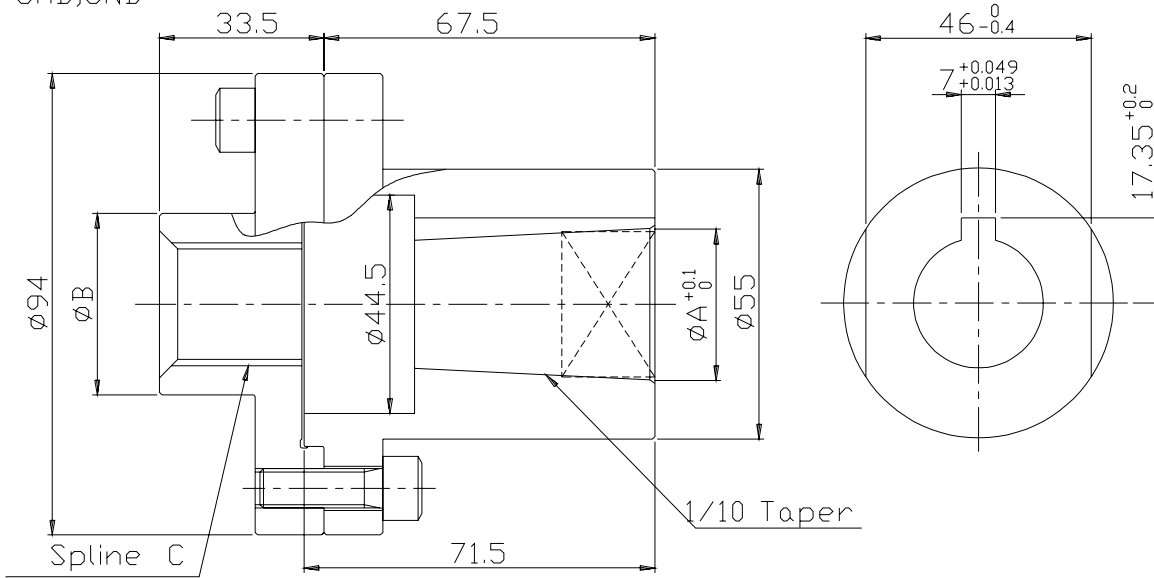


* Select a Motor Flange with the motor shaft length as " $d=f+42$ mm" when using coupling for a taper shaft : CFF,CRS,CSS,CVF,CHG

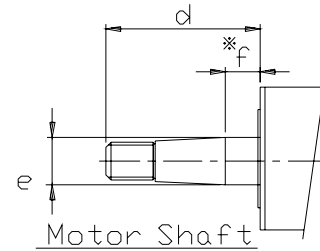
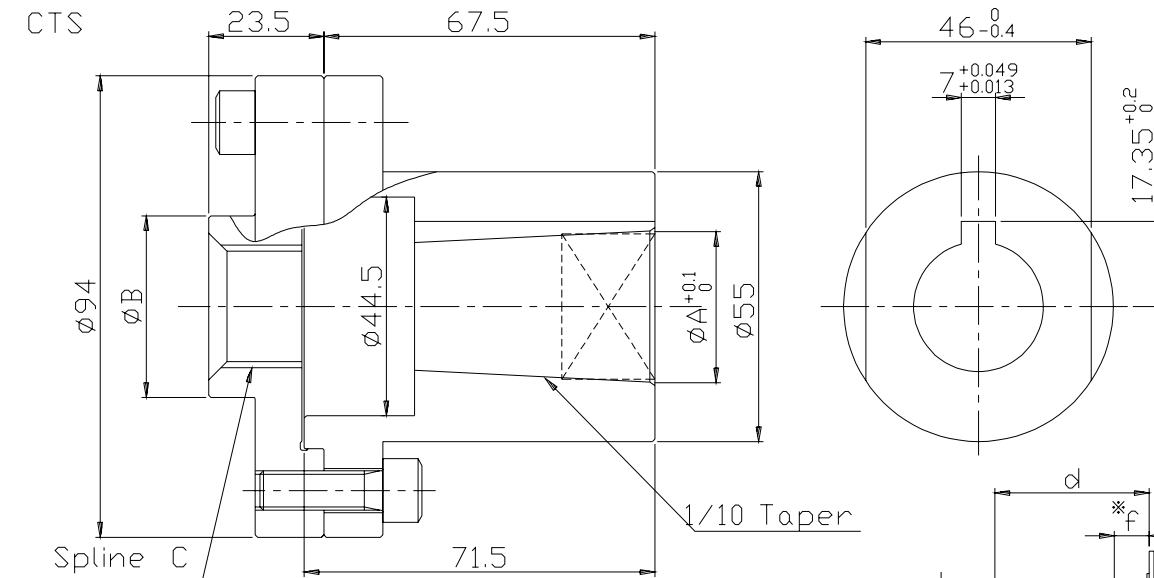


Coupling Dimension Drawing (For 1/10 Taper Shaft)

CMD,CND

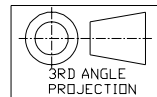


Code	Dimensions mm			Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C			
CMD	ø30.8	ø37	25×18×1.25	1.83	7.057×10^{-3}	ø32
CND	ø30.8	ø42	30×22×1.25	1.83	7.103×10^{-3}	ø32
CTS	ø30.8	ø32	20×14×1.25	1.78	6.992×10^{-3}	ø32

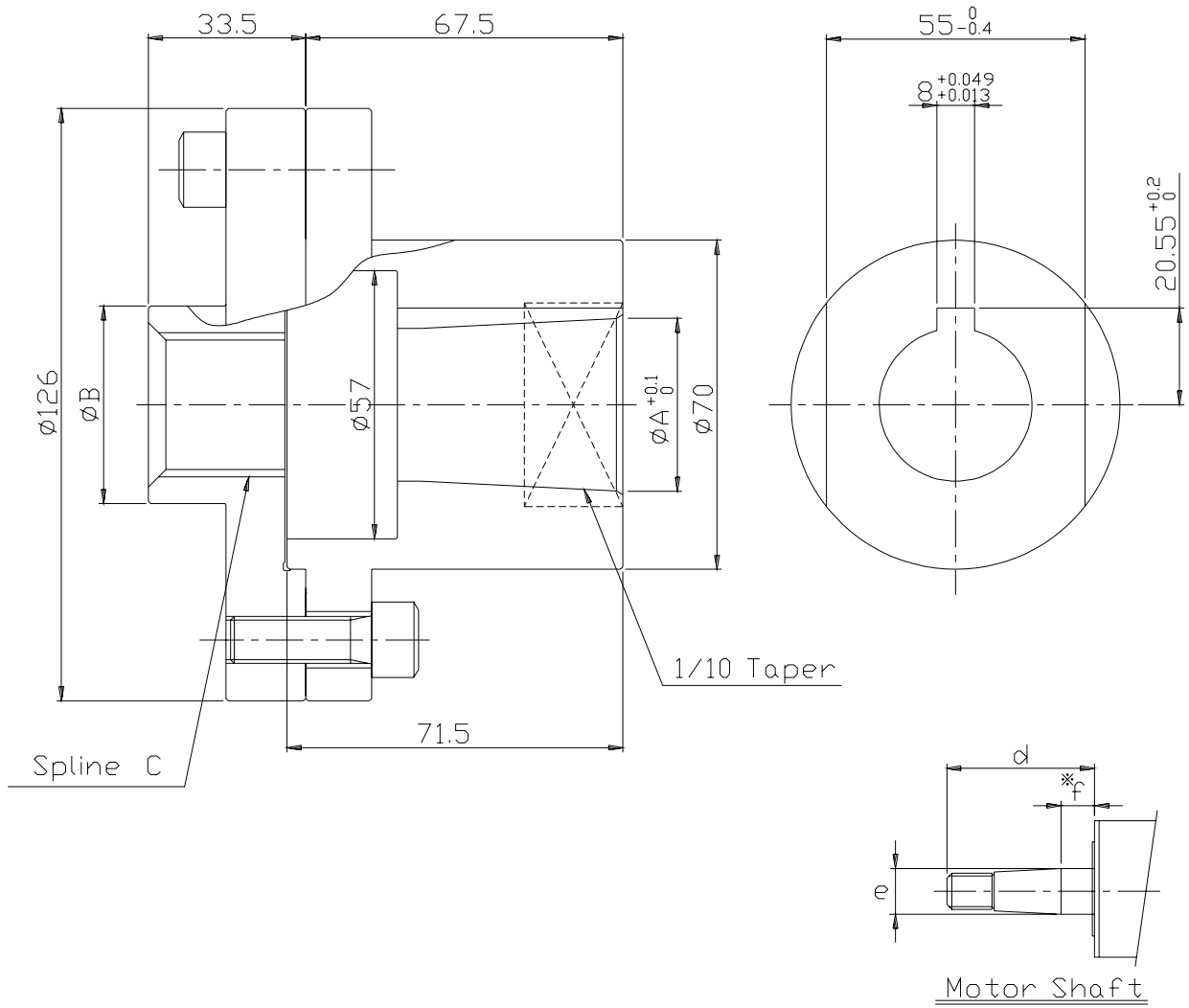


Motor Shaft

*Select a Motor Flange with the motor shaft length as " $(d)=f+83$ mm" when using coupling for a taper shaft : CMD,CND,CTS

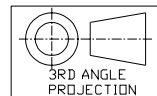


Coupling Dimension Drawing (For 1/10 Taper Shaft)



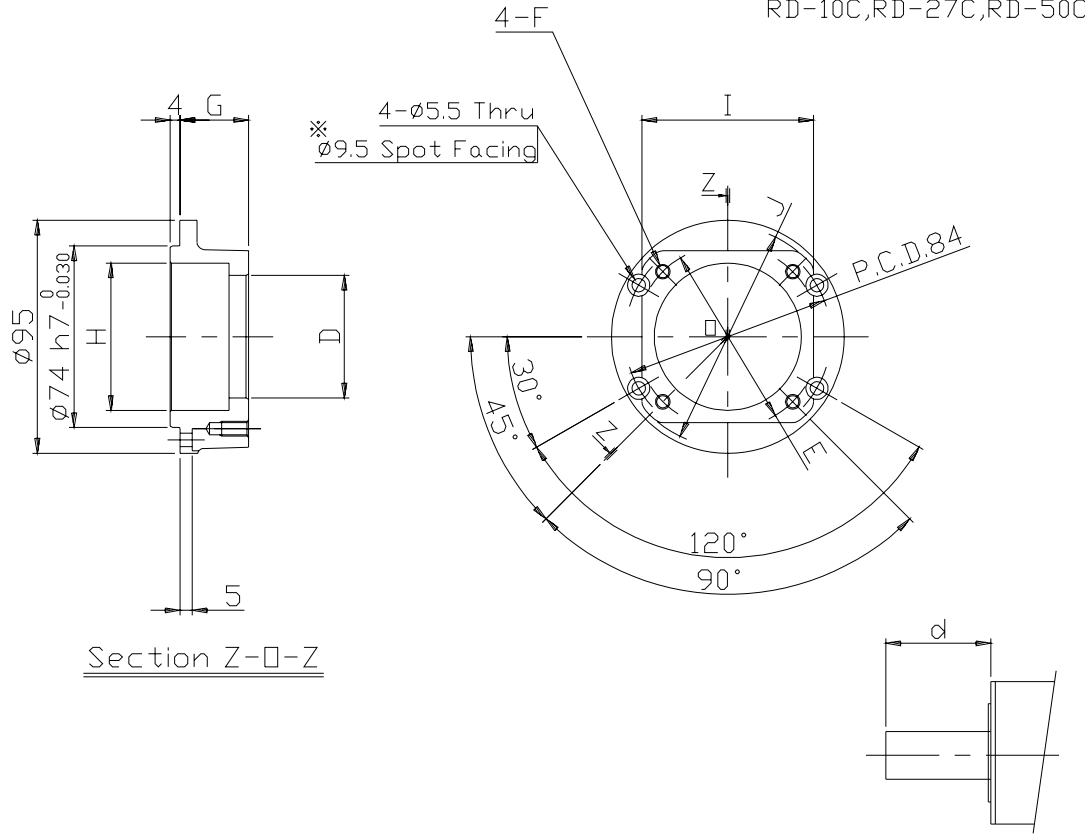
* Select a Motor Flange with the motor shaft length as " $d=f+83$ mm" when using coupling for a taper shaft : CWD,CPS

Code	Dimensions mm			Mass kg	Moment of Inertia ($I=GD^2/4$) kg-m ²	Applicable Motor Shaft Diameter e
	A	B	C			
CWD	$\phi 36.8$	$\phi 42$	30x22x1.25	5.51	4.485×10^{-2}	$\phi 38$
CPS	$\phi 36.8$	$\phi 37$	25x18x1.25	5.55	4.481×10^{-2}	$\phi 38$



Motor Flange Dimension Drawing

Applicable Reduction Gear : RD-6E, RD-20E
RD-10C, RD-27C, RD-50C

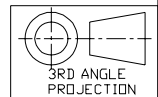


Section Z-Z

Motor Shaft

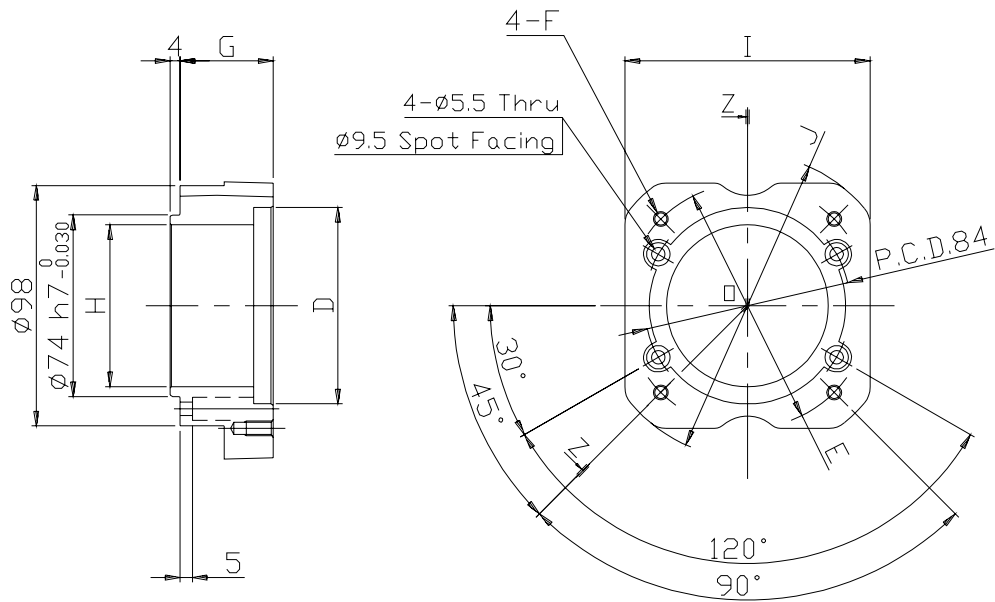
※ MAA, MAB : Without Spot Facing

Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
MAB	$\phi 30^{+0.030}_{+0.009}$	$\phi 45$	M3 Thru	28	$\phi 50$	$\square 40$	—	0.70	25	30
MAA		$\phi 46$	M4 Thru					0.70		
MAH	$\phi 50^{+0.036}_{+0.011}$	$\phi 60$	M4 Depth8	28	$\phi 60$	$\square 70$	$\phi 90$	0.68	25	30
MAJ		$\phi 70$	M5 Depth9					0.68		
MAF			0.68							
MAE	$\phi 60^{+0.037}_{+0.012}$	$\phi 75$	M5 Depth9	23				0.54	20	25
MAD			28	0.62				25	30	
MAC			M6 Depth11	0.62						

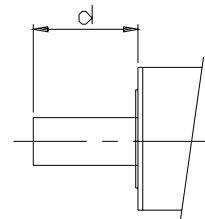


Motor Flange Dimension Drawing

Applicable Reduction Gear : RD-6E, RD-20E
RD-10C, RD-27C, RD-50C

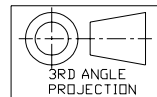


Section Z-Z



Motor Shaft

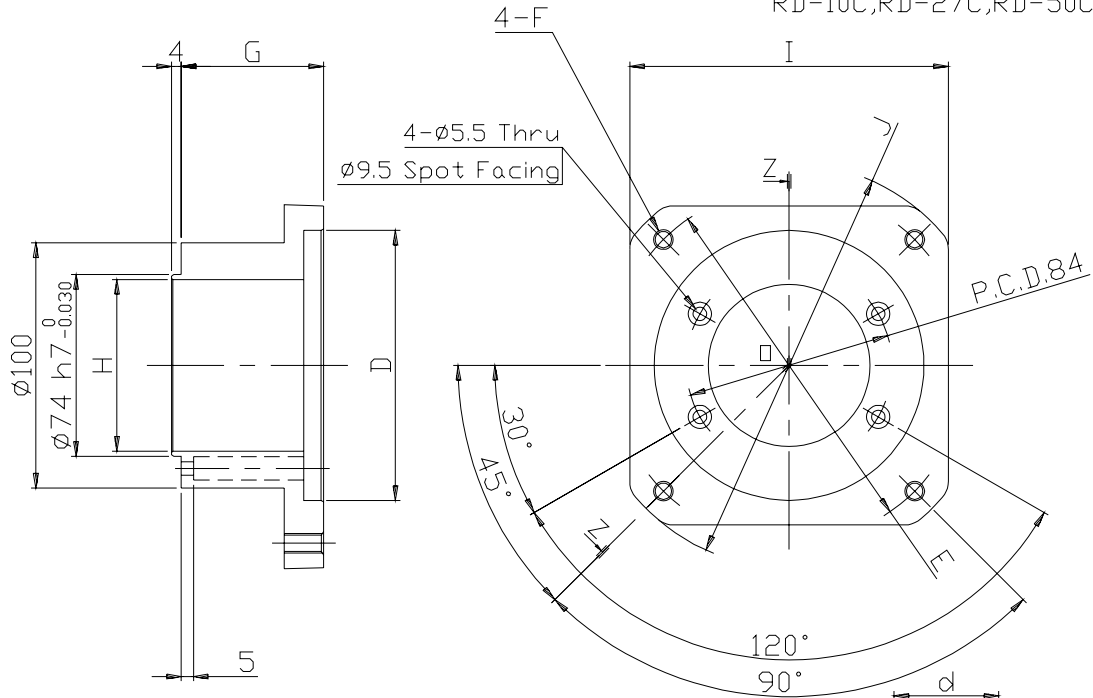
Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
MAN	$\phi 70^{+0.037}_{+0.012}$	$\phi 90$	M5 Depth9	28	$\phi 66$	$\square 100$	$\phi 124$	1.20	25	30
MAR				33				1.40	30	35
MBH			38	1.50				35	40	
MAZ			28	1.20				25	30	
MAM	$\phi 80^{+0.037}_{+0.012}$	$\phi 100$	M6 Depth11	38	$\phi 66$	$\square 100$	$\phi 124$	1.50	35	40
MAL				28				1.20	25	30
MAQ			33	1.40				30	35	
MAK			38	1.50				35	40	
MAS			53	2.00				50	55	



Motor flange dim. drawing

Motor Flange Dimension Drawing

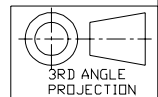
Applicable Reduction Gear : RD-6E, RD-20E
RD-10C, RD-27C, RD-50C



Section Z-Z

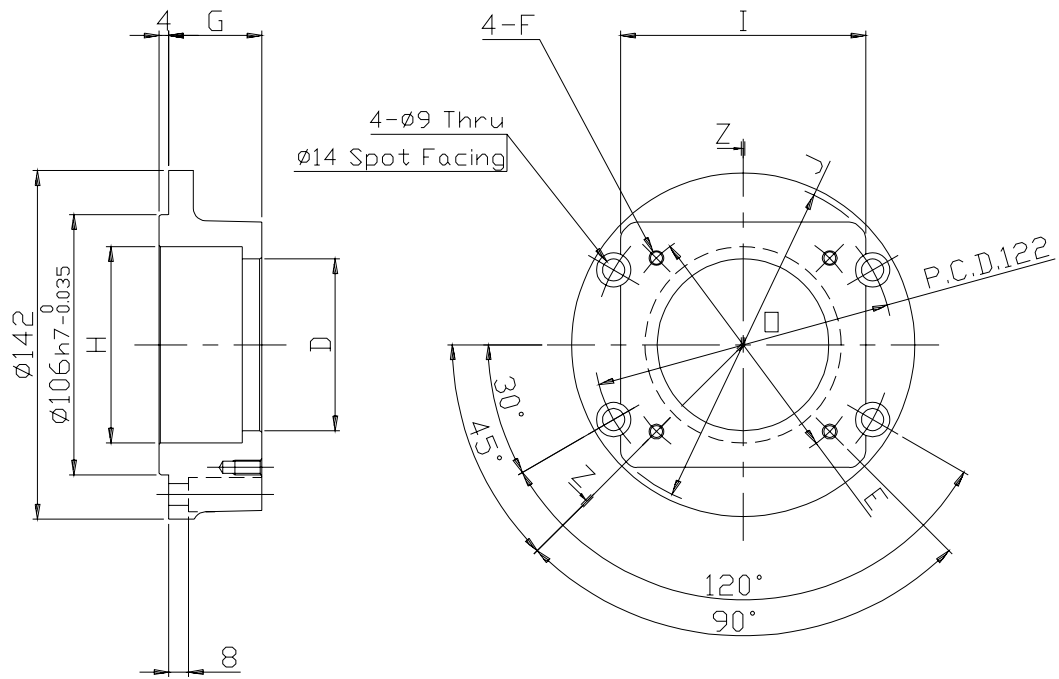
Motor Shaft

Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
MBF	$\phi 95_{+0.013}^{+0.038}$	$\phi 110$	M8 Thru	43	$\phi 66$	$\square 130$	$\phi 165$	2.30	40	45
MBA			M6 Thru	43				2.30	40	45
MAY		$\phi 115$	M8 Thru	38				2.10	35	40
MBB				43				2.30	40	45
MBC				53				2.60	50	55
MAW	$\phi 110_{+0.013}^{+0.038}$	$\phi 130$	M8 Thru	48	$\phi 70$			2.40	45	50
MBJ		$\phi 135$	M8 Thru	43				2.20	40	45
MBD		$\phi 145$	M8 Thru	38				2.10	35	40
MAV				48				2.40	45	50
MAX				53				2.70	50	55
MBE				68				3.00	65	70
MAT				58				2.40	55	60

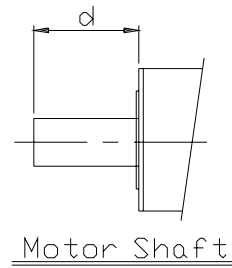


Motor Flange Dimension Drawing

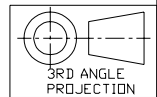
Applicable Reduction Gear : RD-40E, RD-80E
RD-100C, RD-200C



Section Z-Z

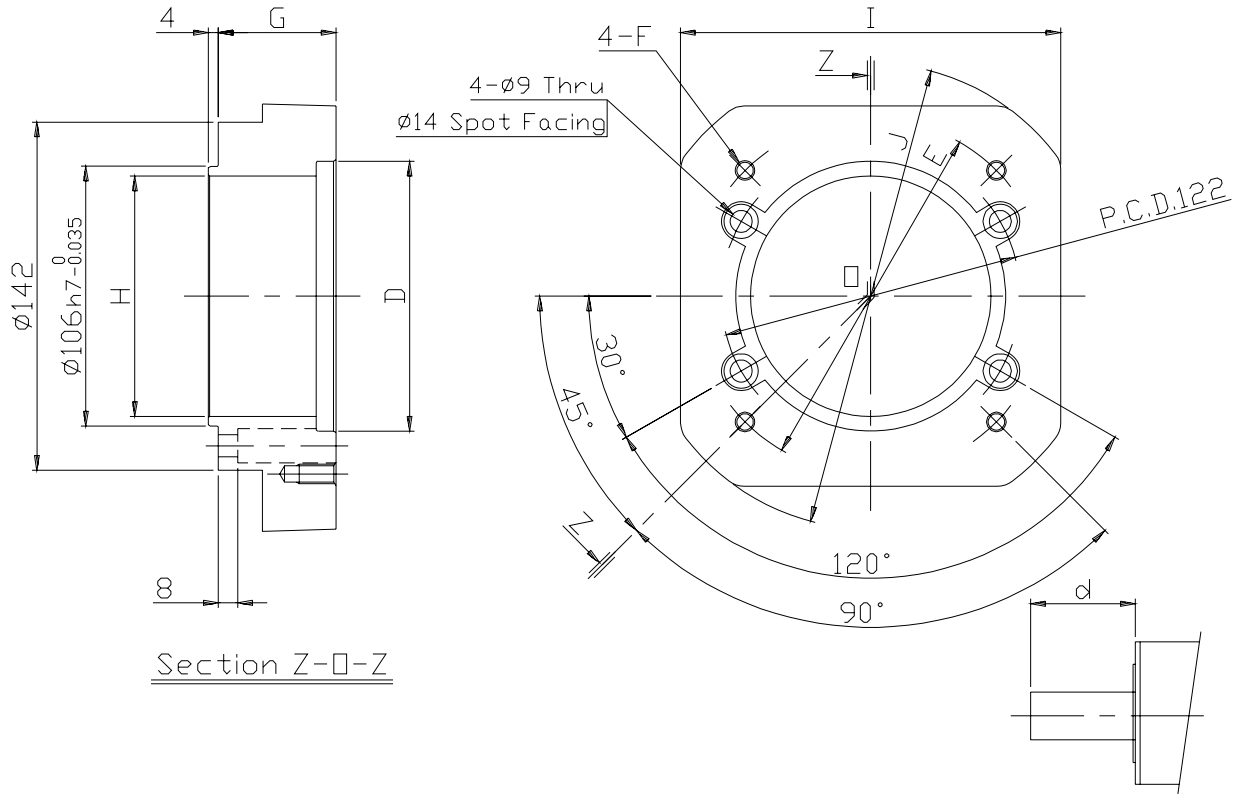


Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
MKE	$\phi 70^{+0.037}_{+0.012}$	$\phi 90$	M5 Depth9	33	$\phi 80$	$\square 100$	$\phi 135$	1.80	30	35
MLK			M6 Depth11	38				2.00	35	40
MKC				38				2.00	35	40
MKB	$\phi 80^{+0.037}_{+0.012}$	$\phi 100$	M6 Depth11	28				1.60	25	30
MKA				38				2.00	35	40
MKF				53				3.00	50	55
MLL				43				2.70	40	45
MKY	$\phi 95^{+0.038}_{+0.013}$	$\phi 110$	M8 Depth15	43				2.70	40	45
MKX			M6 Depth11	43				2.70	40	45
MKH		$\phi 115$	M8 Depth15	43				2.70	40	45
				53				3.00	50	55



Motor Flange Dimension Drawing

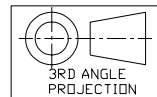
Applicable Reduction Gear : RD-40E, RD-80E
RD-100C, RD-200C



Section Z-Z

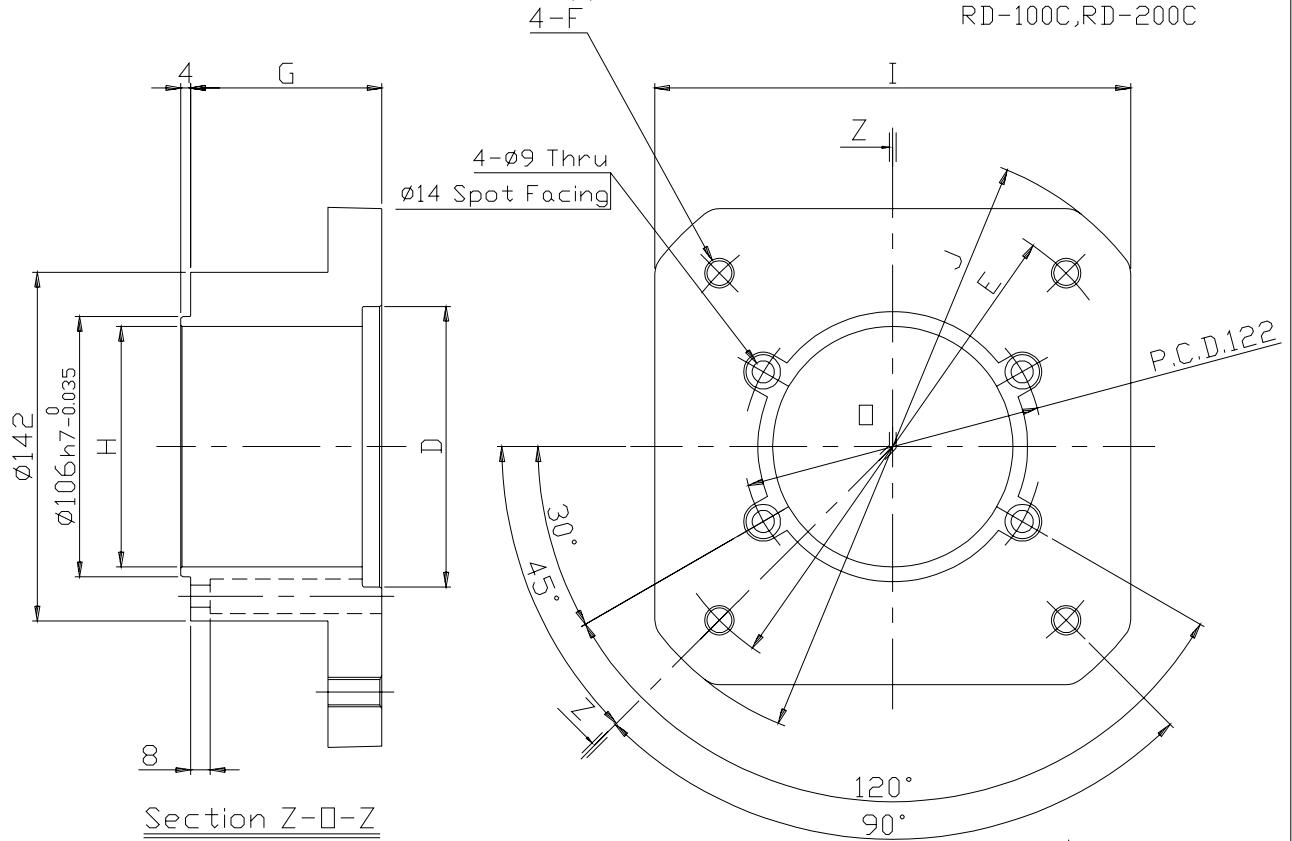
Motor Shaft

Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm		
	D	E	F	G	H	I	J		Over	To	
MKN	$\phi 95^{+0.038}_{+0.013}$	$\phi 115$	M8 Depth15	38	$\phi 98$	$\square 155$	$\phi 190$	3.70	35	40	
MKM	$\phi 110^{+0.038}_{+0.013}$	$\phi 130$	M8 Depth15	48				4.80	45	50	
MLM		$\phi 135$	M8 Depth15	43				4.30	40	45	
MLN				53				5.10	50	55	
MKZ				38				4.20	35	40	
MKL		$\phi 145$		48				4.80	45	50	
MKQ				53				5.10	50	55	
MKK			M8 Depth15	58				5.40	55	60	
MKS				63				5.70	60	65	
MLA				68				6.00	65	70	
MLB			M12 Depth22	68				6.00	65	70	
MLC		$\phi 114.3^{+0.038}_{+0.013}$	$\phi 145$	M12 Depth22				53	5.00	50	55
MLD		$\phi 115^{+0.038}_{+0.013}$	$\phi 165$	M8 Depth15				43	4.50	40	45
MLQ								48	4.80	45	50
MLE					48	4.60	45	50			
MKJ	$\phi 130^{+0.039}_{+0.014}$	$\phi 165$	M10 Depth18	58	5.20	55	60				
MKR				63	5.50	60	65				

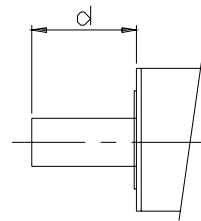


Motor Flange Dimension Drawing

Applicable Reduction Gear : RD-40E, RD-80E
RD-100C, RD-200C

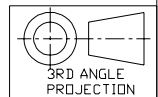


Section Z-Z



Motor Shaft

Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
MLF	$\phi 114.3^{+0.038}_{+0.013}$	$\phi 200$	M12 Thru	53	$\phi 98$	$\square 194$	$\phi 244$	7.10	50	55
MLH				63				7.70	60	65
MLJ				68				8.00	65	70
MKT				78				8.60	75	80
MKW				103				10.00	100	105
MKV	$\phi 180^{+0.039}_{+0.014}$	$\phi 215$	M12 Thru	78				7.60	75	80
MLR				83				7.90	80	85

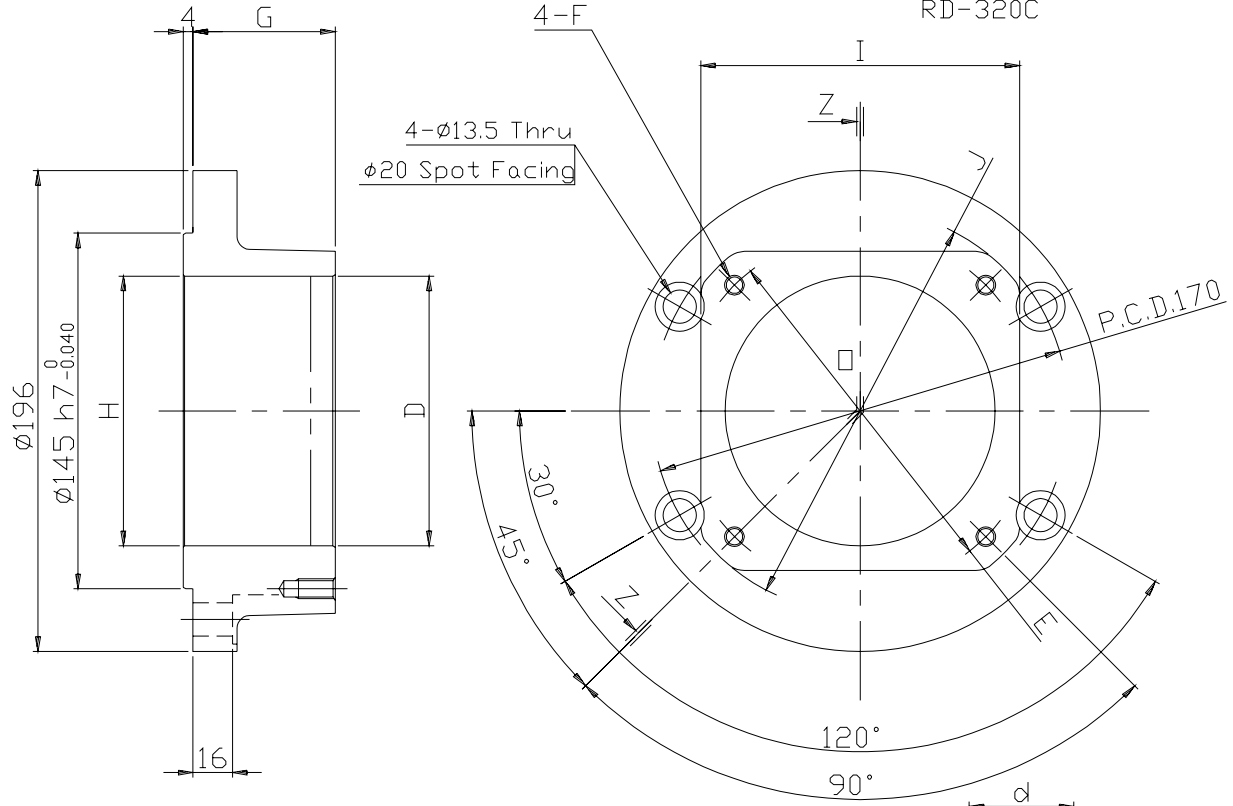


3RD ANGLE PROJECTION

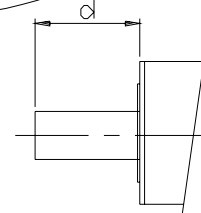
Motor flange dim. drawing

Motor Flange Dimension Drawing

Applicable Reduction Gear : RD-160E, RD-320E
RD-320C

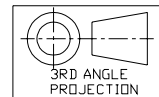


Section Z-Z



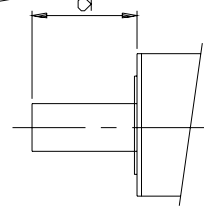
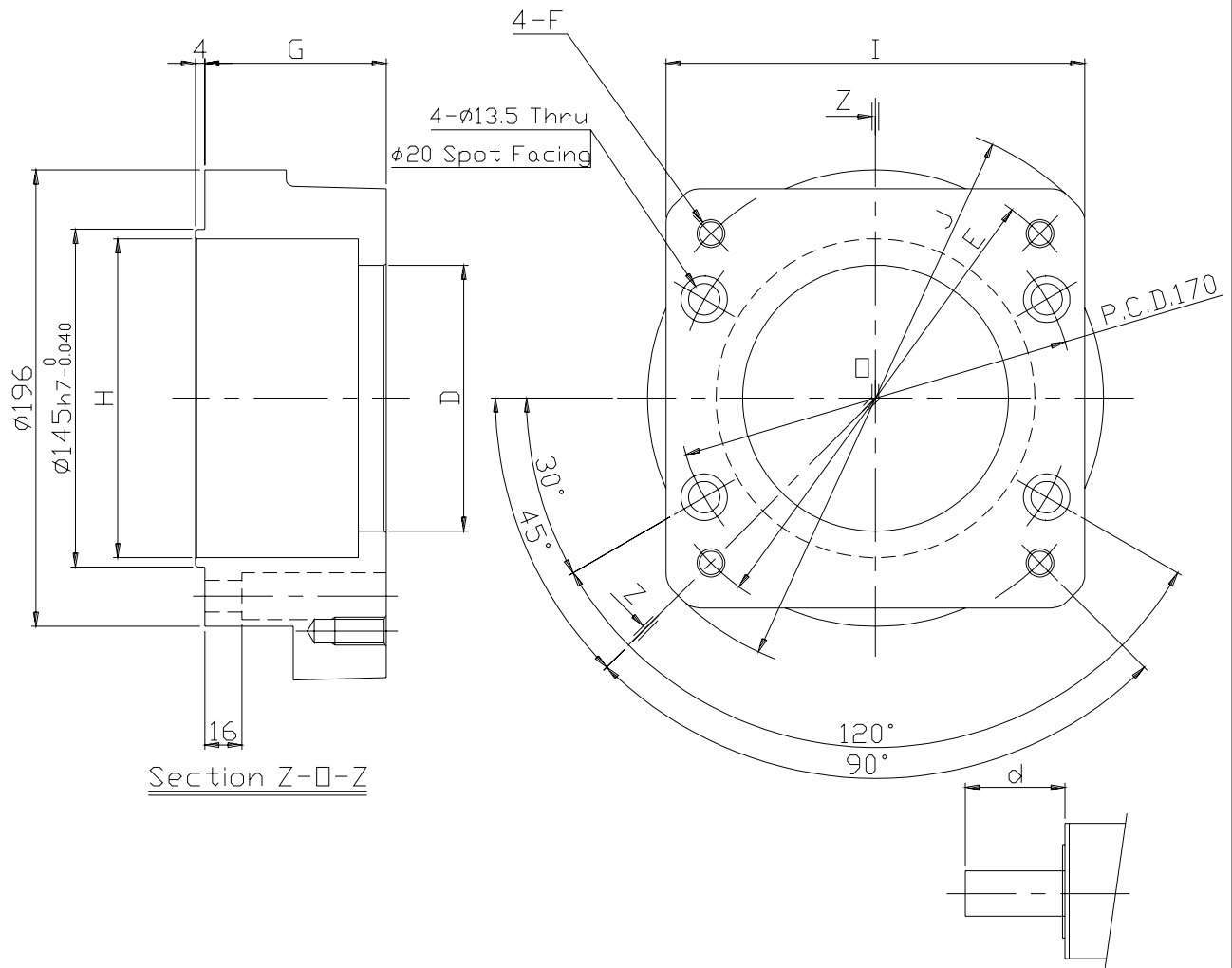
Motor Shaft

Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
MSZ	$\phi 95^{+0.038}_{+0.013}$	$\phi 110$	M8 Depth15	43	$\phi 110$	$\square 130$	$\phi 165$	4.80	40	45
MTC				43						
MSD		53								
MTA	$\phi 110^{+0.038}_{+0.013}$	$\phi 135$	M8 Depth15	43				4.40	40	45
MTB				53						
MTD				38						
MSB				48						
MSC				53						
MSA				58						
MSE				63						
MSS	68						6.10	65	70	



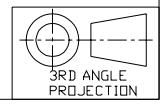
Motor Flange Dimension Drawing

Applicable Reduction Gear : RD-160E, RD-320E
RD-320C



Motor Shaft

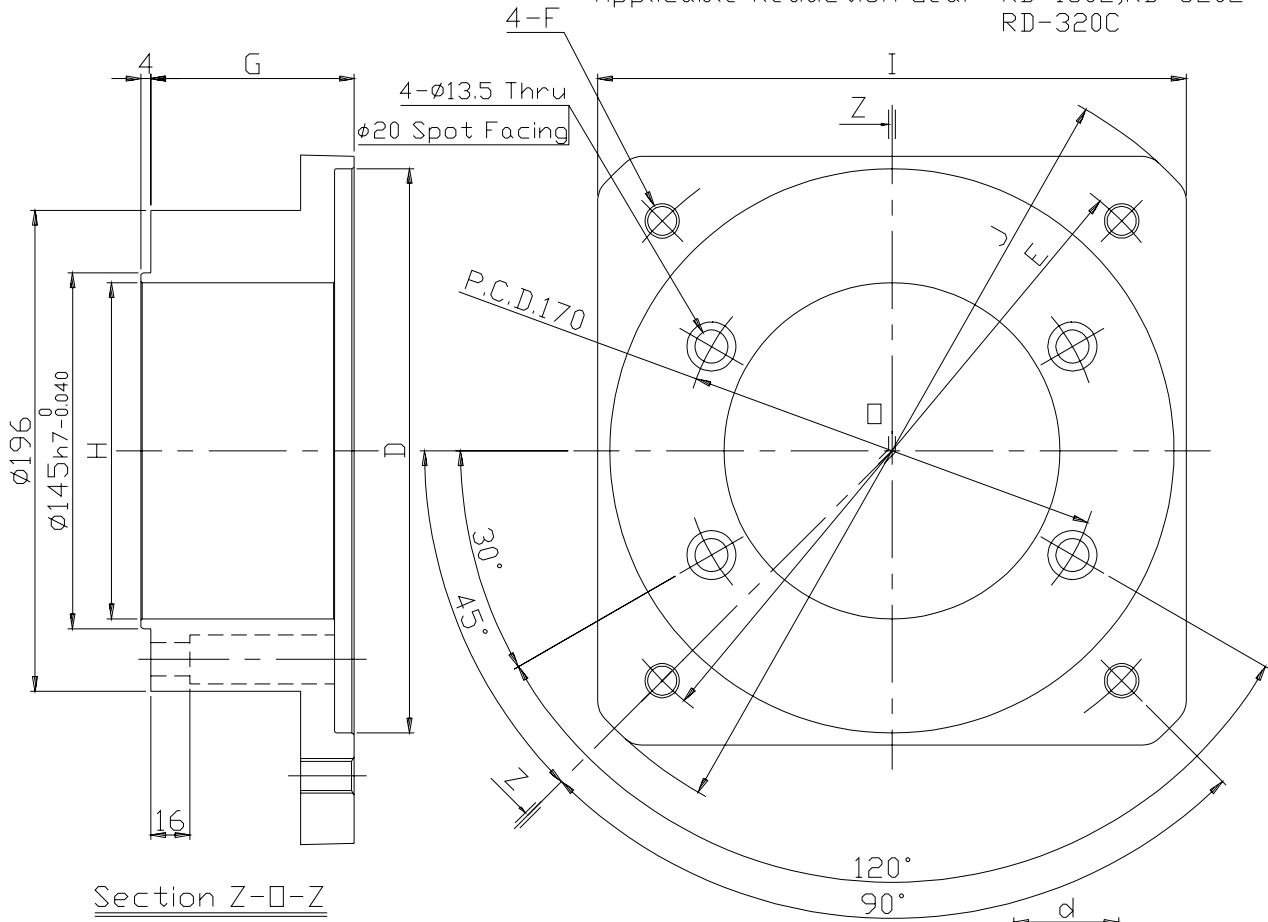
Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
MTF	$\phi 114.3^{+0.038}_{+0.013}$	$\phi 200$	M12 Depth22	58	$\phi 137$	$\square 180$	$\phi 240$	8.10	55	60
MTJ				63				9.00	60	65
MSL				68				9.80	65	70
MSF				78				11.00	75	80
MST				98				14.90	95	100
MSM				103				15.80	100	105
MTE	$\phi 130^{+0.039}_{+0.014}$	$\phi 165$	M10 Depth18	38				4.60	35	40
MTK				48				6.30	45	50
MSH				58				8.00	55	60
MSK				63				8.60	60	65



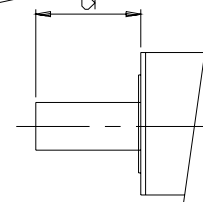
Motor flange dim. drawing

Motor Flange Dimension Drawing

Applicable Reduction Gear : RD-160E, RD-320E
RD-320C

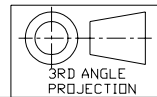


Section Z-□-Z



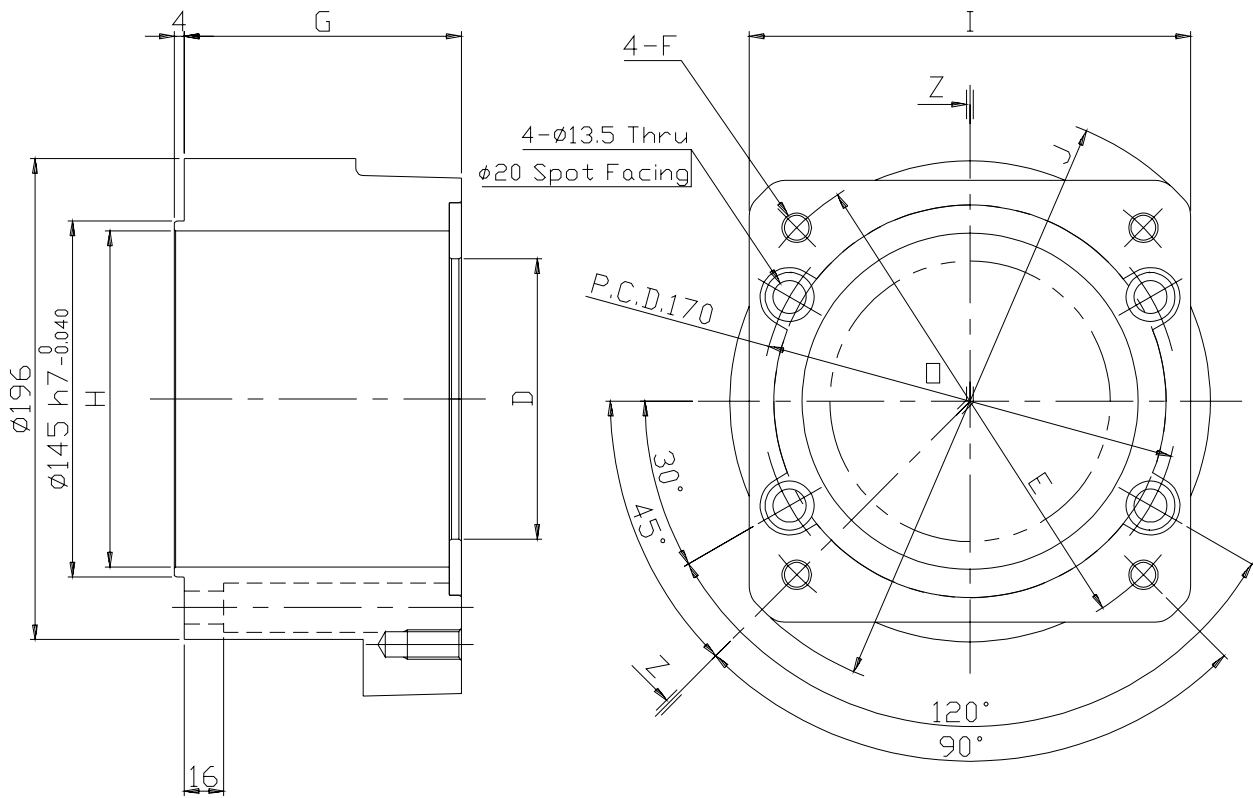
Motor Shaft

Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
MSR	$\phi 180^{+0.039}_{+0.014}$	$\phi 215$	M12 Thru	78	$\phi 137$	$\square 240$	$\phi 320$	13.00	75	80
MTH				88				14.10	85	90
MSV	$\phi 200^{+0.040}_{+0.015}$	$\phi 235$	M12 Thru	48	$\phi 137$	$\square 240$	$\phi 320$	9.70	45	50
MSW				53				10.30	50	55
MSX				63				11.40	60	65
MSY				68				11.90	65	70
MSQ	$\phi 230^{+0.041}_{+0.016}$	$\phi 265$	M14 Thru	83				13.00	80	85

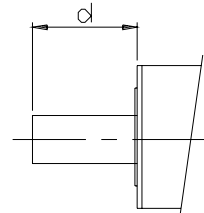


Motor Flange Dimension Drawing

Applicable Reduction Gear : RD-160E, RD-320E
RD-320C

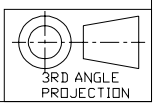


Section Z-Z



Motor Shaft

Code	Dimensions mm							Mass kg	Applicable Motor Shaft Length "d" mm	
	D	E	F	G	H	I	J		Over	To
RSL	$\phi 114.3^{+0.035}_0$	$\phi 200$	M12 Depth 22	68	$\phi 137$	$\square 180$	$\phi 240$	8.80	65	70
RSF				78				10.00	75	80
RSM				103				12.10	100	105
RST				113				14.00	110	115



Motor flange dim. drawing

Installation of the reduction gear and mounting it to the output shaft

When installing the reduction gear and mounting it to the output shaft, use hexagon socket head cap screws and tighten to the torque, as specified below, in order to satisfy the momentary maximum allowable torque, which is noted in the rating table.

Employment of the Belleville spring washer is recommended to prevent the bolt from loosening and protect the bolt seat surface from flaws.

<Bolt tightening torque and tightening force>

Hexagon socket head cap screw nominal size x pitch (mm)	Tightening torque (N-m)	Tightening force F (N)	Bolt specification
M5 x 0.8	9.01 ± 0.49	9310	◆ Hexagon socket head cap screw JIS B 1176 or Equivalent ◆ Strength class JIS B 1051 12.9 or Equivalent ◆ Thread JIS B 0205 6 g or class 2 or Equivalent
M6 x 1.0	15.6 ± 0.78	13180	
M8 x 1.25	37.2 ± 1.86	23960	
M10 x 1.5	73.5 ± 3.43	38080	
M12 x 1.75	128.4 ± 6.37	55100	
M14 x 2.0	204.8 ± 10.2	75860	
M16 x 2.0	318.5 ± 15.9	103410	

Note: 1. The tightening torque values listed are for steel or cast iron material.

2. If softer material, such as aluminum or stainless, is used, limit the tightening torque. Also pay attention to the system requirements of the transmission torque.

<Calculation of allowable transmission torque of bolts>

$T = F \times \frac{D}{2} \times \mu \times n \times 10^{-3}$	T	Allowable transmission torque by tightening bolt (N-m)
	F	Bolt tightening force (N)
	D	Bolt mounting P.C.D (mm)
	μ	Friction factor μ=0.15: When grease remains on the mating face. μ=0.20: When grease is removed from the mating face.
	n	Number of bolts (pcs.)

<Serrated lock washer External teeth for hexagonal socket bolt>

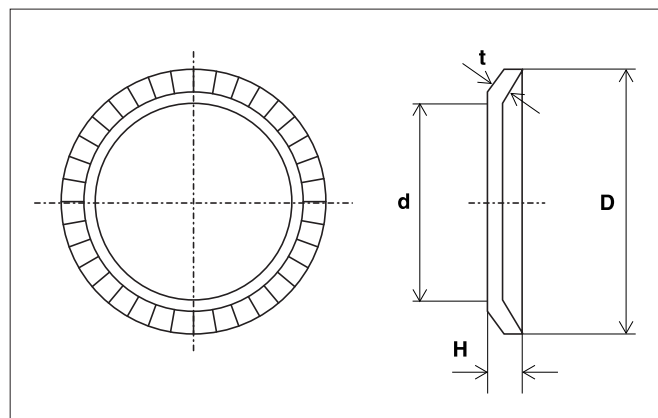
TS Corporation symbol: Bell-SW-2H (nominal size)

Material: Steel

Hardness: HRC 40 to 48

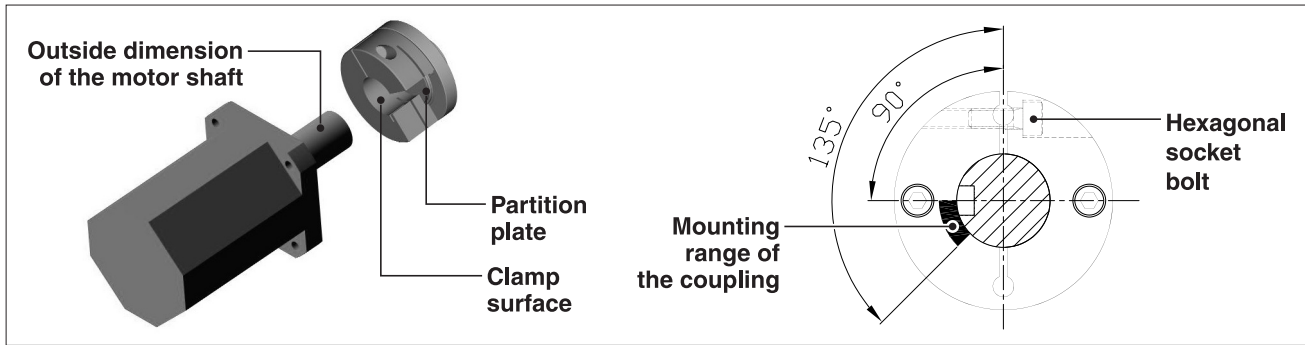
(Unit: mm)

Nominal size	ID and OD of Belleville spring washer		t	H
	d	D		
5	5.25	8.5	0.6	0.85
6	6.4	10	1.0	1.25
8	8.4	13	1.2	1.55
10	10.6	16	1.5	1.9
12	12.6	18	1.8	2.2
14	14.6	21	2.0	2.5
16	16.9	24	2.3	2.8



Note: When using any equivalent washer, select it with special care given to its outside diameter.

Coupling Assembly



The clamp coupling is stored in a packing box.

Note: Ensure that grease (Pyronoc Universal N6B) has been applied to the spline hole of the input shaft insertion opening. Without grease, the spline may be damaged on fitting.

Wipe the outside of the motor shaft and the clamp surface with a rag.

Note: If there is any foreign material or oil adhered to the outside of the motor shaft or the clamp surface of the clamp coupling motor shaft, tight fitting will not be achieved.

Insert the motor shaft into the coupling until its tip comes into contact with the partition plate of the coupling. Note that you can easily insert the motor shaft at first, but will feel greater pressure while inserting it the last several millimeters.

Note: 1.If there is a keyway on the motor shaft, remove the key and align the center of the keyway with the keyed shaft mounting range of the coupling. Otherwise, a tight fitting will not be achieved.

2.Forciful insertion of the motor shaft may damage the coupling.

3.If the motor shaft is not inserted up to the partition plate, the gear head may be damaged.

Confirm that the motor shaft has been inserted into the coupling until its tip comes into contact with the partition plate of the coupling and then tighten the coupling to the specified torque using the hexagon socket head cap screw.

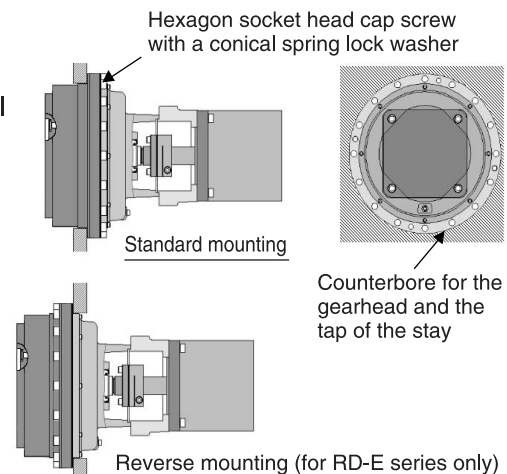
Outside diameter of the coupling (mm)	Ø44	Ø56	Ø68	Ø82	Ø94	Ø126
Bolt size	M4	M5	M6	M8	M8	M10
Tightening torque (N-m)	3.4 ± 0.17	7 ± 0.35	14 ± 0.7	30 ± 1.5	30 ± 1.5	60 ± 3.0
Coupling insertion length (mm)	18.5	23.5	27.5	33.5	38.5	43.5

Note that when your motor shaft is tapered, attach the supplied adapter, which is tapered inside and straight outside, to the shaft before performing the above procedure.

Gearhead Installation

- Mount the gearhead onto the specified position. At this point, align the counterbore for the gearhead with the tap of the stay.
- Tighten all the hexagon socket head cap screws (with a conical spring lock washer) uniformly, by using the specified tightening torque.

Bolt size	Tightening torque (N-m)	Bolt specification
M5	9.01 ± 0.49	Hexagon socket head cap screw JIS B 1176
M6	15.6 ± 0.78	
M8	37.2 ± 1.86	Strength class
M10	73.5 ± 3.43	JIS B 1051 12.9
M12	128.4 ± 6.37	Thread
M14	204.8 ± 10.2	JIS B 0205 6 g or class 2 or equivalent
M16	318.5 ± 15.9	



Note: Do not apply external load to the hollow section of the RD-C series. It could warp the oil seal.

▶ Area In North and South America / In Europe and Africa / In Asia and others
 ▶ FAX USA: / Germany: / Tokyo Head Office:
 1-248-553-3070 / 49-211-364677 / 81-3-3578-7471

Order Information Sheet (Please complete the form below and send it with your order.) Date: _____

Company Name: _____

Dept. Name: _____

Name: _____

E-mail: _____

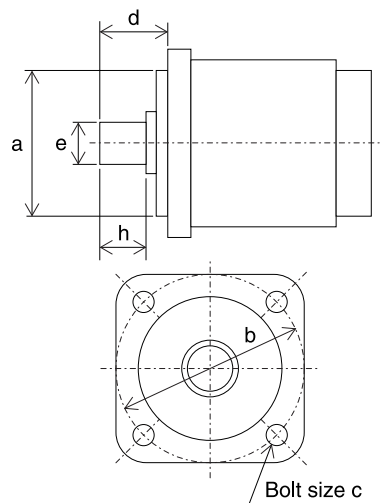
TEL. - -

FAX. - -

◆ System configuration and selected motor

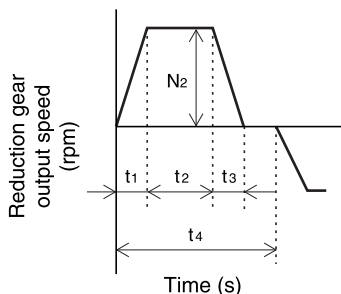
We would appreciate if you could provide your system configuration drawing that helps us to understand the speed, constant torque, and load inertia moment of the output shaft for the reduction gear.

System configuration



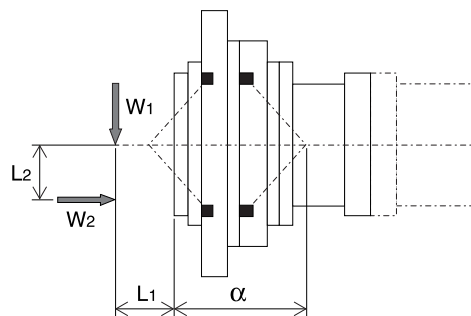
Motor model		a	Motor mounting pilot diameter (mm)	
P	Motor rated output (KW)	b	Motor mounting bolt P.C.D (mm)	
T_{M0}	Motor rated torque (N-m)	c	Motor mounting bolt size (mm)	
T_{M1}	Motor momentary maximum torque (N-m)	d	Motor shaft length (mm)	
N_{M0}	Motor rated speed (rpm)	e	Motor shaft diameter (mm)	
		h	Motor shaft coupling insertion part length (mm)	

◆ Operation pattern (output shaft for the reduction gear)



t₁	Acceleration time (s)	
t₂	Constant speed operation time (s)	
t₃	Deceleration time (s)	
t₄	One operation cycle time (s)	
Q₁	Number of operation cycles per day (times)	
Q₂	Number of operating days per year (days)	
N₂	Constant speed (rpm)	
T₁	Maximum torque for startup (N-m)	
T₂	Constant torque (N-m)	
T₃	Maximum torque for stop (N-m)	

◆ External load (output shaft for the reduction gear)



W₁	Radial load (N)	
L₁	Distance to the point of radial load application (mm)	
W₂	Axial load (N)	
L₂	Distance to the point of axial load application (mm)	

Cautions for use of RD series

- If the end user of the product is a military interest or if the product is to be used in the manufacture of weapons, the product may be subject to export regulations prescribed in the Foreign Trade Control Act. Confirm these conditions before exporting the product and take the necessary steps.
 - If failure or malfunction of the product may directly endanger human life or if it is used in units which may injure the human body (atomic facilities, space equipment, medical equipment, safety units, etc.), examination of individual situations is required. Contact our agent or nearest business office in such a case.
 - Although this product has been manufactured under strict quality control, if it is to be used in equipment that could cause serious injury or damage to facilities as a result of failure of the product, all appropriate safety measures must be taken.
 - When this product is used in a special environment (clean room, food handling facility, etc.), please contact our agent or nearest business office.
-

Guarantee

- Nabtesco Corporation guarantees that the RD Gearheads are free from defects in materials and workmanship.
 - The term of guarantee shall be one year after delivery or 2,000 hours of operation after the installation on an actual machine, whichever is earlier, on condition that the product is operated under the rated operation conditions specified by us, under normal assembly and lubrication conditions.
 - If any defect in materials or workmanship is detected during the above guarantee term, the product will be repaired or replaced at our expense, provided that the number of man-hours required for demounting and remounting the product from the machine, transportation expenses for re-delivery, warehousing and other incidental expenses shall be excluded from our obligation.
 - No compensation will be provided for the lost opportunities or any other type of loss due to a shutdown of operation that was caused by a defect in the product.
 - If compensation under the guarantee is discharged monetarily, the upper limit of the amount shall not exceed the selling price of the product which is the subject of the claim.
-

Nabtesco

Nabtesco Corporation

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• *Specifications are subject to change without notice.*

