



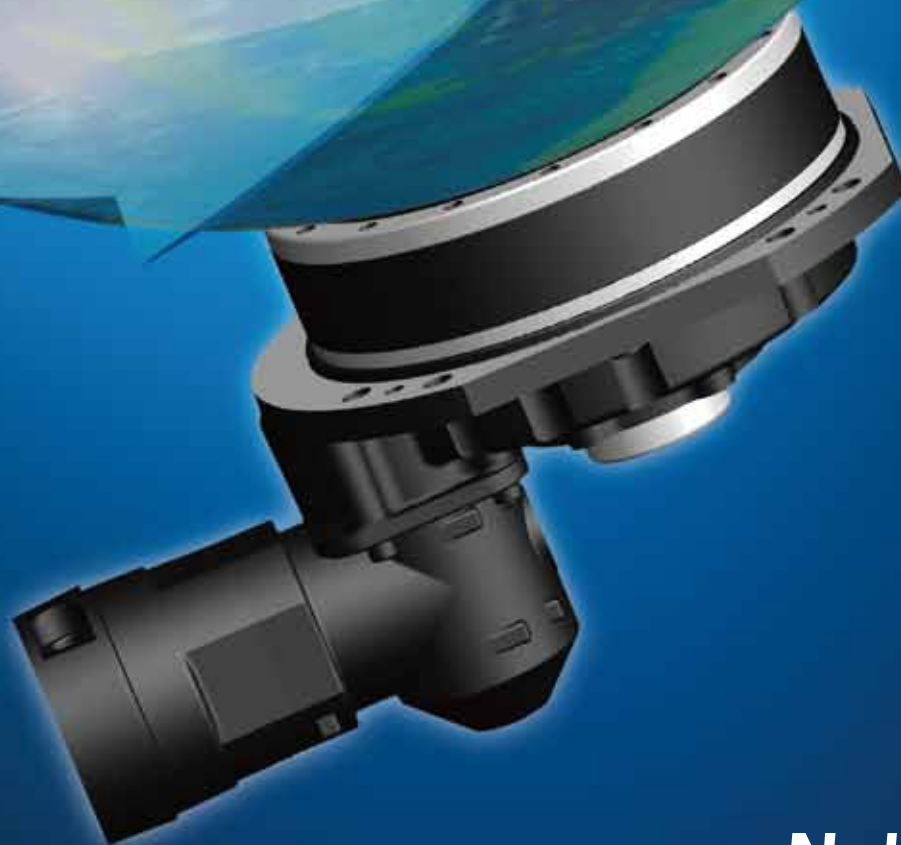
ISO 9001
JQA-1190

Moving the World

VIGO DRIVE™
RD2 **SERIES**
High Accuracy / High Rigidity /
High Precision Gearheads

The World's Top Class High-Precision Reduction Gears

The next stage of evolution in the RD SERIES
Introducing the full line-up of the new RD2 SERIES!

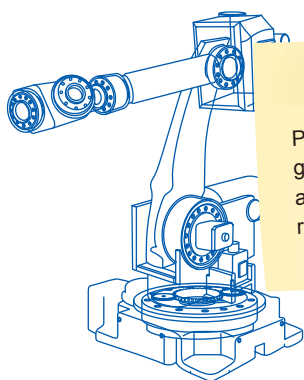


Nabtesco



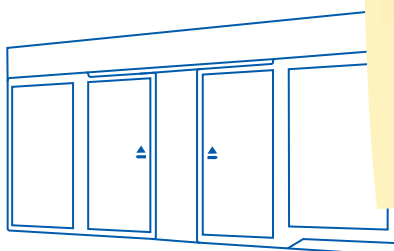
Contributing to Society with Our 'Moving it. Stopping it.' Technologies

Nabtesco manufactures products which are used in everyday life. Our high-accuracy components are essential for moving objects; they may be rarely visible, but are the foundation of everyday objects that you see moving and wonder how. Nabtesco's technologies are found throughout objects that move and stop people's lives.



Robots

Precision reduction gears precisely move and stop industrial robots.

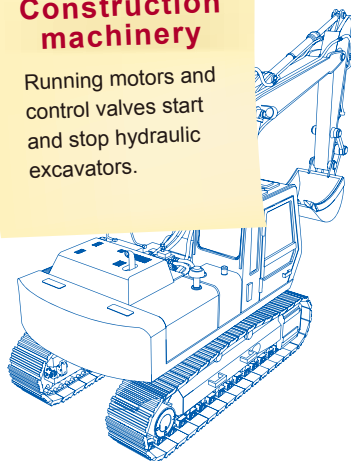


Doors

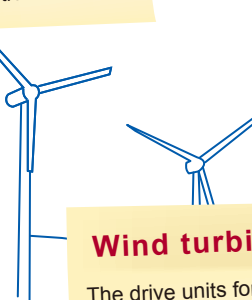
Nabtesco technology opens and closes automatic doors in buildings and platform doors at train stations.

Construction machinery

Running motors and control valves start and stop hydraulic excavators.

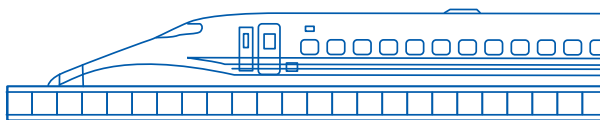


Nabtesco technologies are at work in many areas of our daily lives.



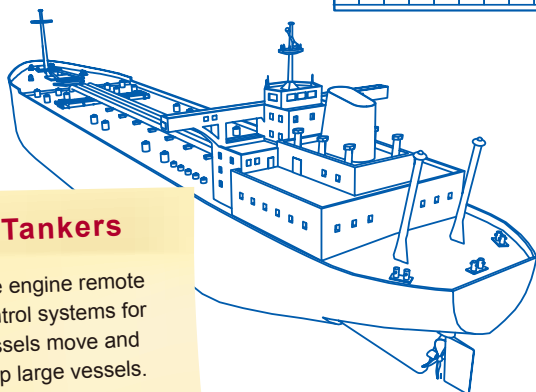
Wind turbines

The drive units for wind turbine generators control the orientation of the wind turbine and the angle of the blades.



Shinkansen bullet trains

Brakes and doors ensure safety and comfort for the world-famous Shinkansen bullet trains.



Tankers

The engine remote control systems for vessels move and stop large vessels.



Airplanes

The flight control systems are crucial for the flight safety of aircraft.

Who is Nabtesco?

The key word of Nabtesco is 'motion control.' We use our strengths in the fields of component and systems technologies to develop highly creative products. Through the Nabtesco Group as a whole, we can also utilize our advantage of expertise to maximum effect in order to further enhance these strengths.

In the air, on land and at sea, we have a leading share in various fields of both international and domestic markets. Nabtesco will continue to evolve by utilizing its strengths in many fields and by exploring the possibilities of the future.



Nabtesco

April 2002 Initiation of hydraulic equipment business alliance
October 2003 Business merger

The business alliance between Teijin Seiki and NABCO on hydraulic equipment projects was the beginning of a mutual confirmation by the companies of the other's product configuration, core technologies, corporate strategies and corporate culture. This led to a common recognition that a business merger would be an extremely effective means of increasing corporate value and achieving long-term development. Based on this mutual judgment, in 2003 an equity transfer was conducted to establish Nabtesco as a pure holding company, with both firms as wholly owned subsidiaries. After a year of preparation, both companies were absorbed and amalgamated by means of a short form merger, and Nabtesco was transitioned to an operating holding company.

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86-99	Outer Dimensions

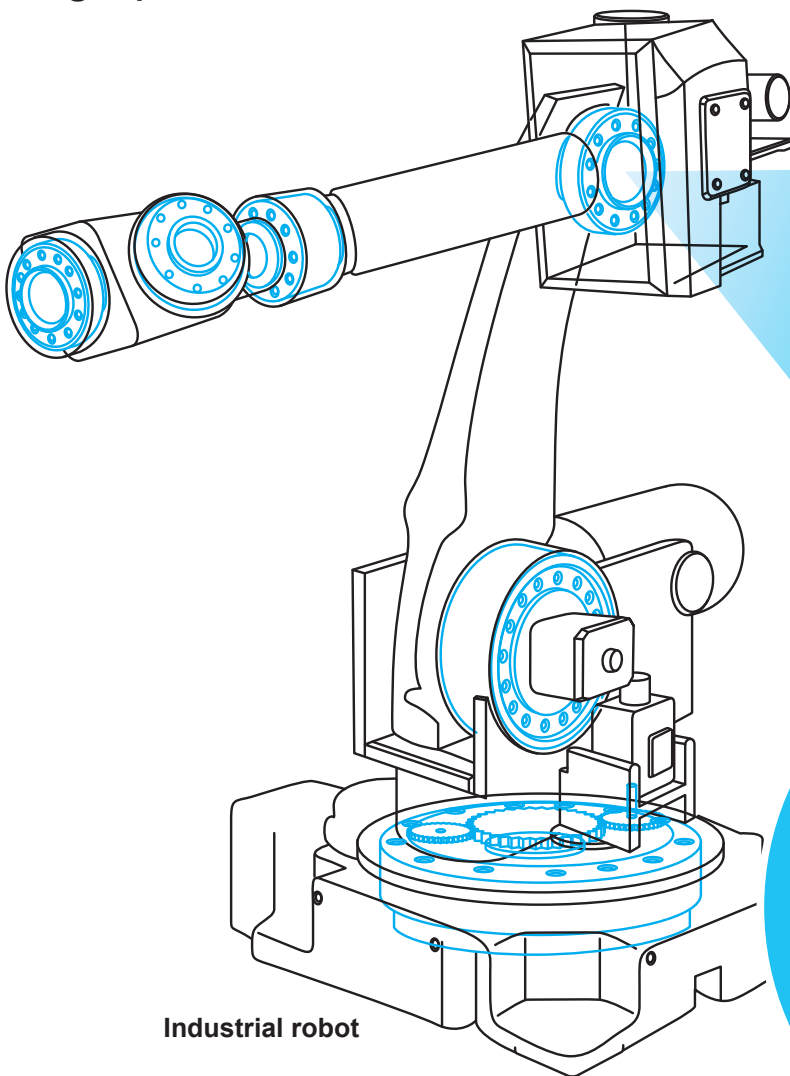
Technical Information

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What is the RD2 SERIES?

RD2: The gear that will change everything

A highly developed precision gear that offers high quality, high performance and ease of use.



The RV reduction gear

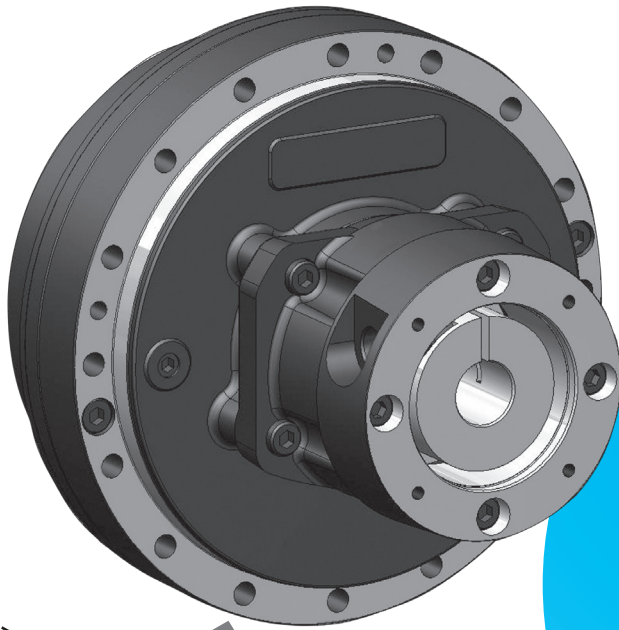
The RV reduction gear enables the precision movements of industrial robots and also ensures their strength. The RV reduction gear has been praised for being compact and lightweight while offering high precision and rigidity. Since its debut in 1985, the RV reduction gear has been selected for use by most major industrial robot manufacturers around the world.

Market share

Industrial robot (vertical articulated robot) joints — **60% share of global market***

Machine tool ATC drive units — **80% share of Japanese market***

* Based on Nabtesco studies

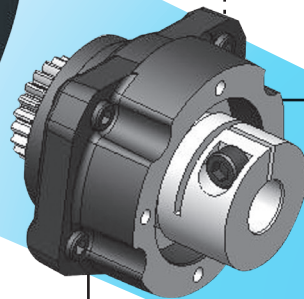
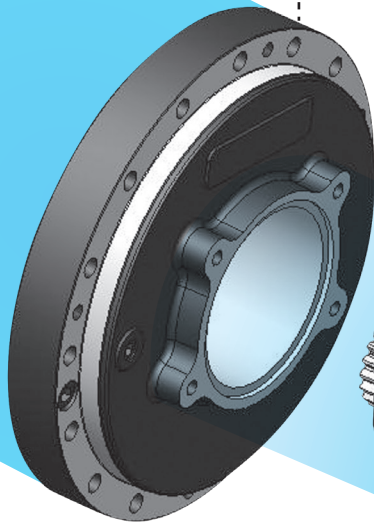


RD2 High Precision Gearheads **SERIES**

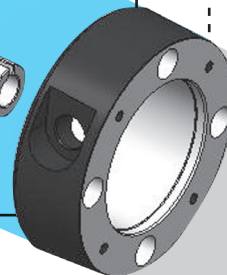
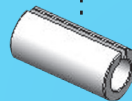
Nabtesco took the RV reduction gear, the most advanced in the industry, and created the RD SERIES.

The RD SERIES is a pre-lubricated model with a sealed structure that can be easily mounted on all major motors.

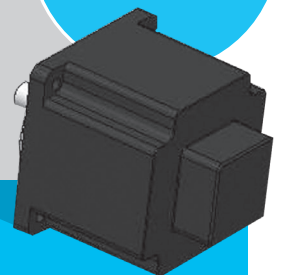
The RD2 SERIES, a new version with three input configurations, offers customers dramatically expanded freedom of design.



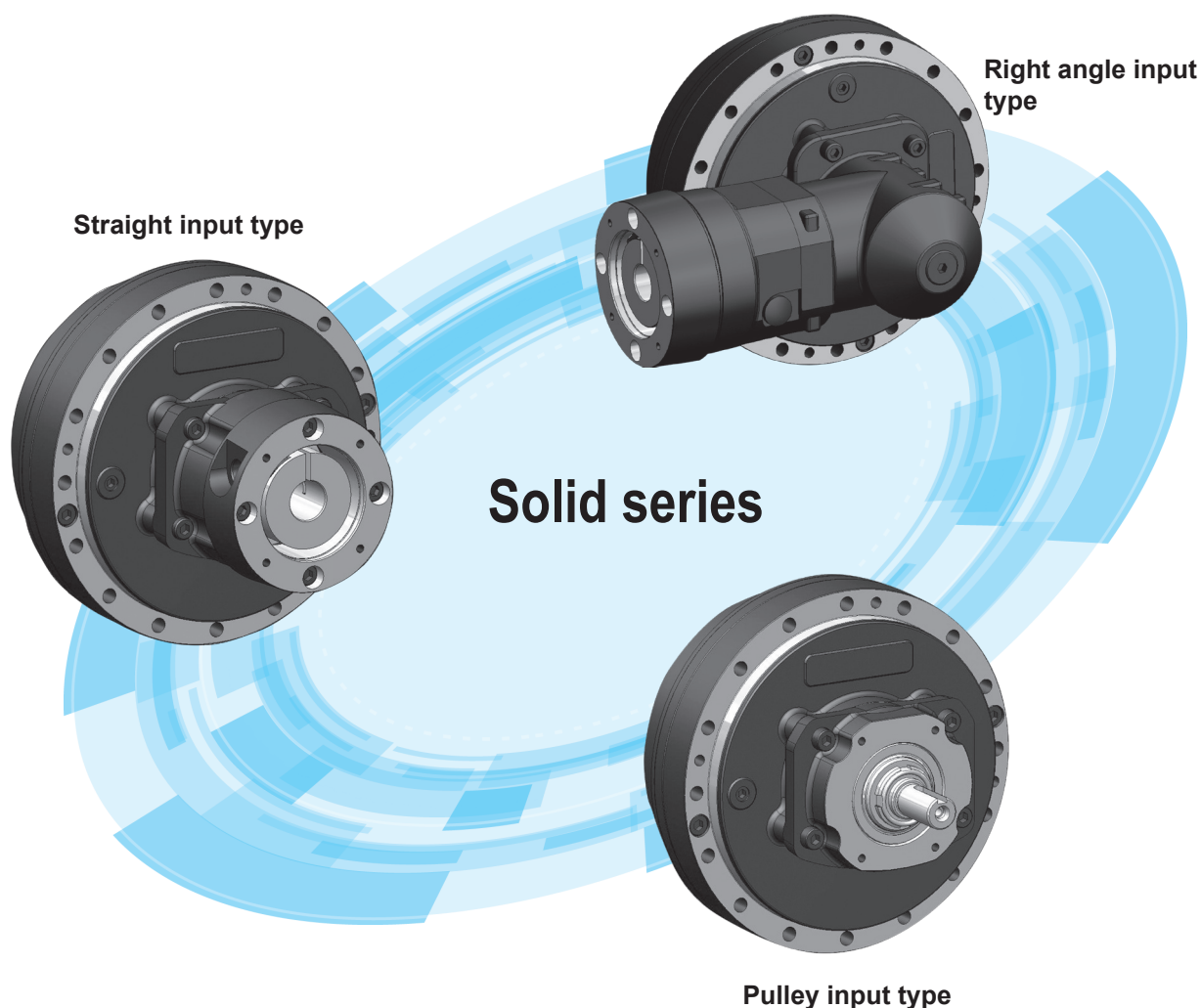
Motor fastener components



**Simple
mounting**



RD2 SERIES: Designed to meet a variety of customer needs



...Benefits

1

Allows compact equipment design

3...

...Advantages

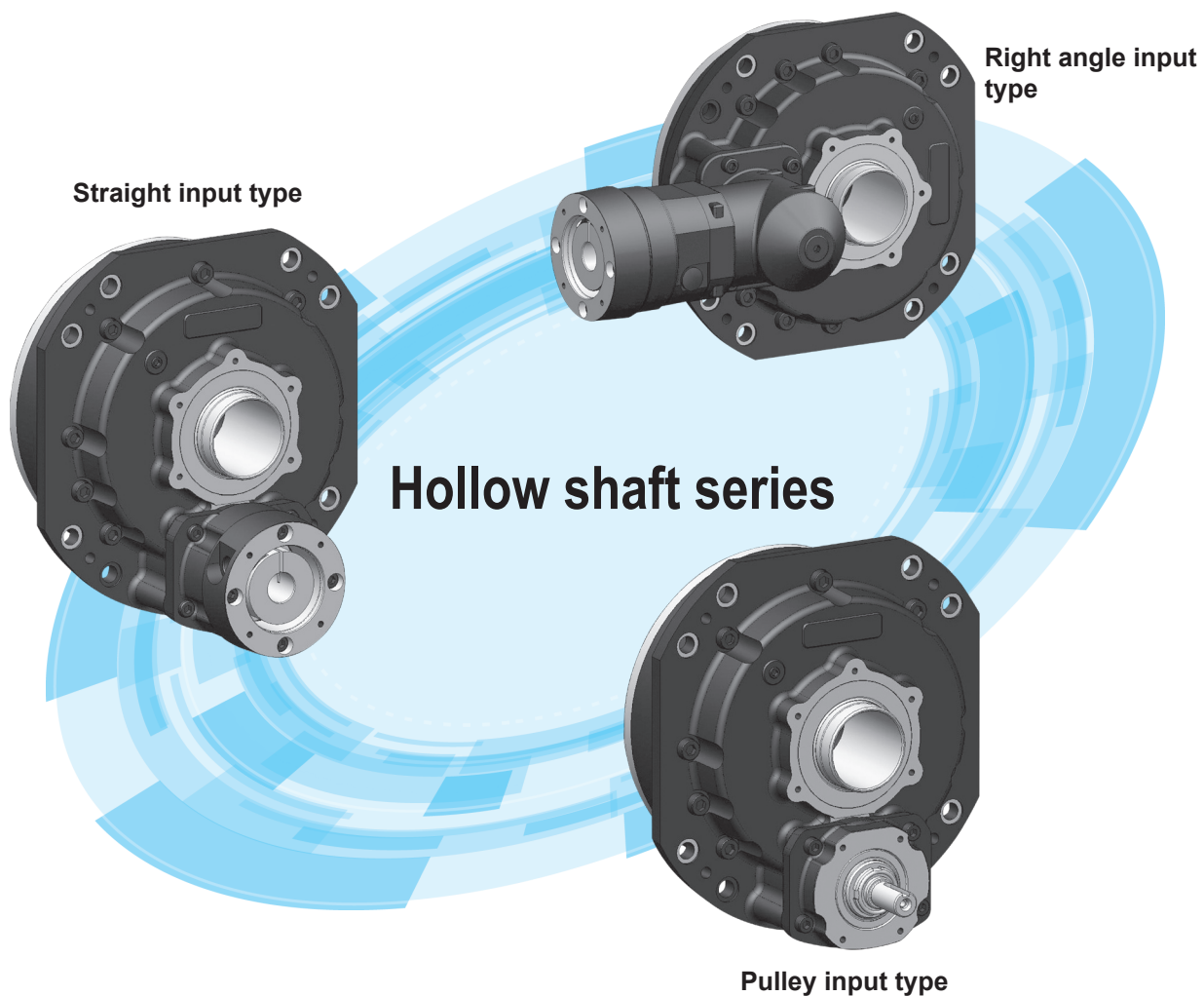
1

Flexibility

...User-friendly

1

Many ratios available



2 Reduces the number of components needed

3 High reliability

2 Pre-lubricated

3 Easy mount

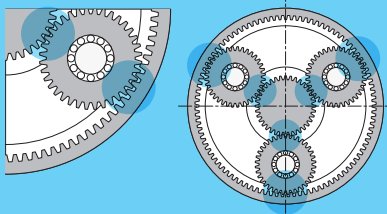
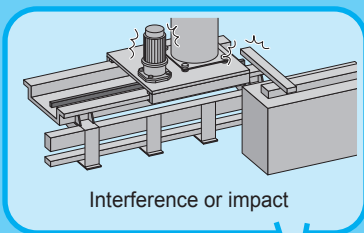
2 Easy installation

3 Fluorine is used for all oil seals

Nabtesco reduction gears offer a variety of solutions

■ Standard Epicyclic Gear

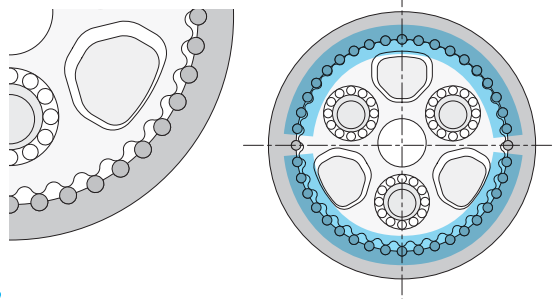
Low contact ratio and low resistance to impacts



Typical gear is damaged by shock load

■ RD2 SERIES

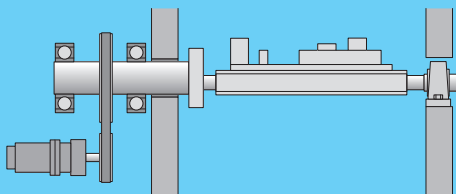
Use of pin/gear mechanism results in high contact ratio and considerable impact resistance



High reliability for your machine

■ Typical equipment

Bearings and external support table are needed

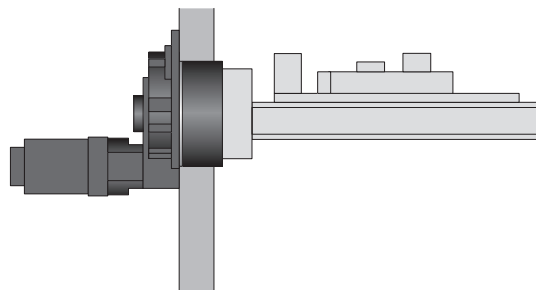


More components
Higher assembly cost
Higher design cost

■ RD2 SERIES

Integrated large-capacity

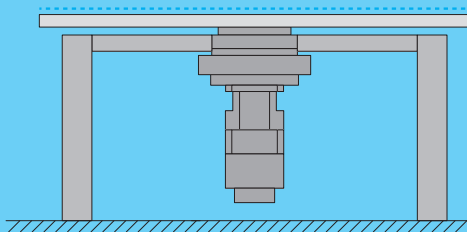
⇒ External bearings and support table are not needed



Reduced number of components
Reduced cost of assembly
Reduced cost of design

■ Typical equipment

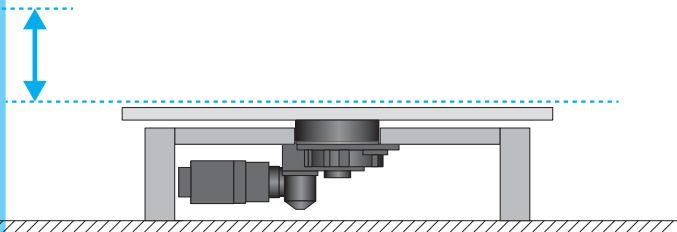
Reduction gear thickness + motor length + space for motor removal



Equipment needs increased space

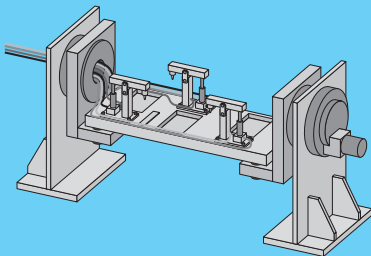
■ RD2 SERIES

Only the thickness of the reduction gear itself



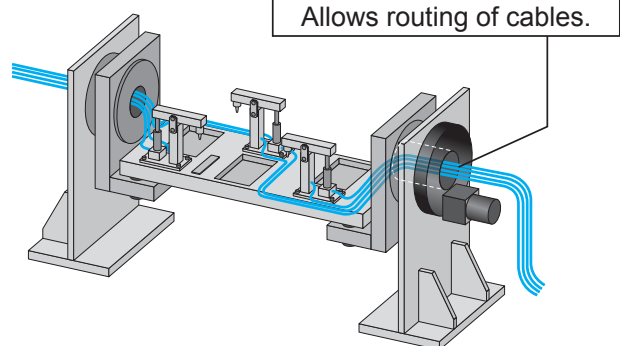
Right angle and pulley models can be used for a lower profile

■ Typical equipment



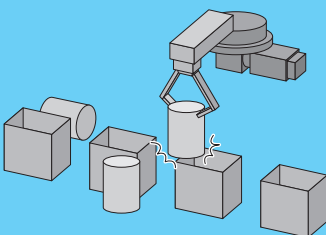
Cable routing is difficult

■ RD2 SERIES



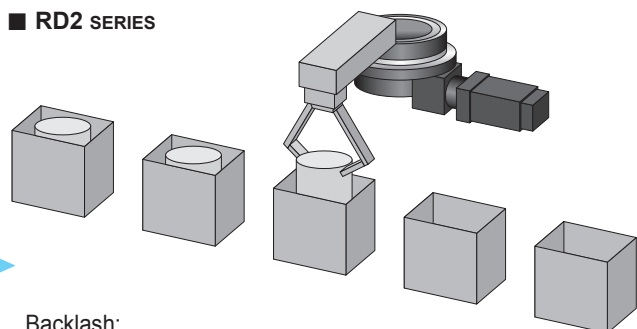
Hollow shaft series also available
Improved layout

■ Typical equipment



High backlash leads to poor repeatability

■ RD2 SERIES



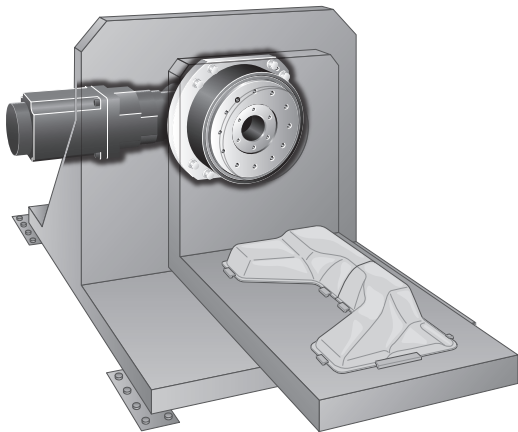
Backlash:
1 arc.min for straight input and pulley input type
1.5 arc.min for right angle input type (except some models)



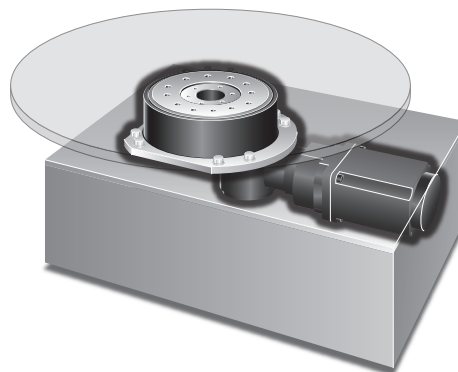
Highly precise positioning is possible

Examples of Uses for the RD2 SERIES (for reference)

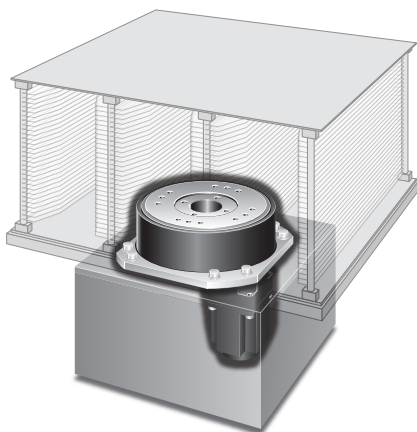
■ Positioner (tilting axis)



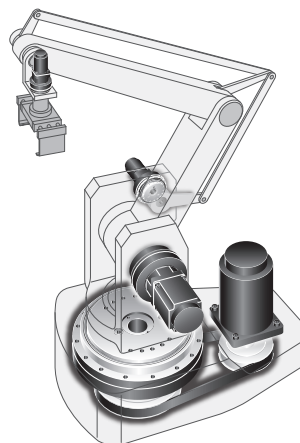
■ Positioner (rotary axis)



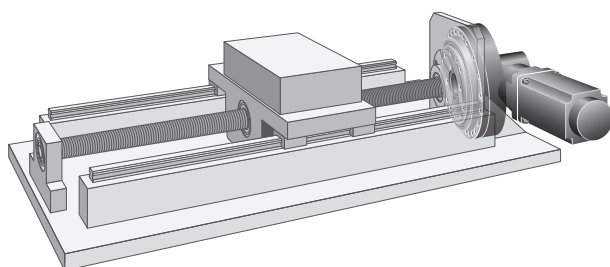
■ Glass Substrate/ Wafer Rotation and Positioning



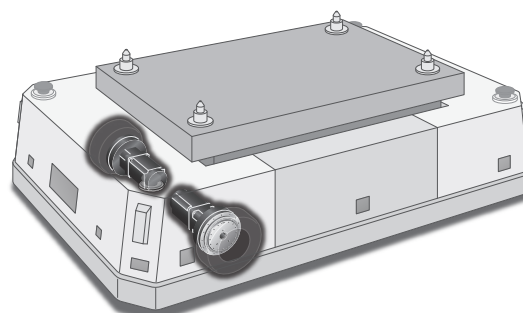
■ Palletizing Robots



■ Ball Screw Drive



■ AGV Drive

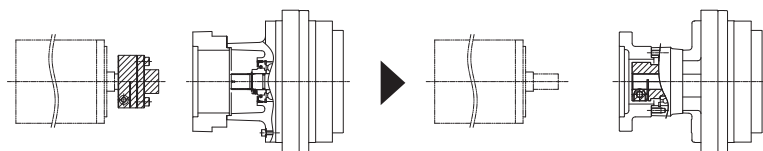


Difference Between RD SERIES and RD2 SERIES

1. Simplified motor mounting

Integrated coupling makes mounting easy

With the previous series, the coupling was an accessory, but on the RD2 SERIES the coupling is built into the input unit. This simplifies the process of mounting the servo motor to the reduction gear.

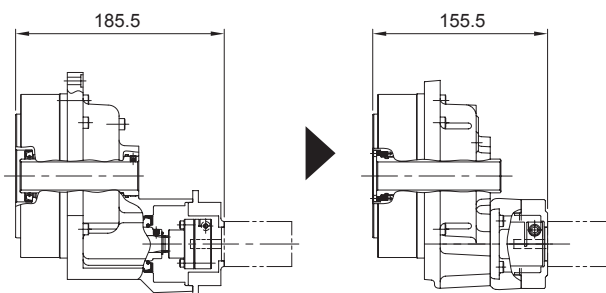


2. Compact design

Reduced total length

Compared to the previous series, the total length in the axial direction has been reduced by up to 15%.

Note: • Use of the same motor model is being studied.
• This diagram shows a comparison between the RD-010C and the RDS-010C.



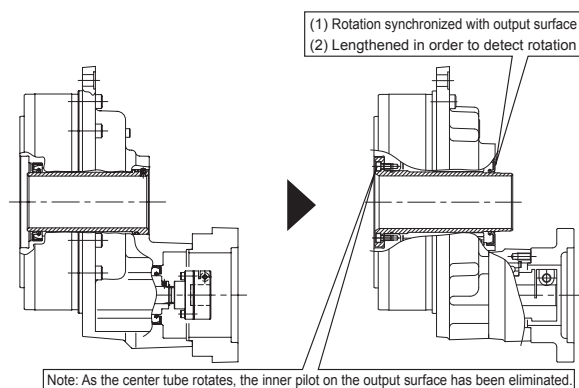
3. Center pipe rotates

For encoder

The center tube has been lengthened.

To protect the cable

On the RD2 SERIES, the center tube is designed to rotate (synchronized with the output face.)



4. Environmentally conscious lubricant

Product name: VIGO GREASE RE0

The barium sulfonate used up to now as a rust prevention agent has been replaced with calcium sulfonate to reduce the environmental impact.

Product Code Selection



<http://www.nabtesco-precision.de>

<http://www.nabtescomotioncontrol.com>

1. Verify reduction gear capacity (model code selection).

Step 1: Establish items needed for selection.

Step 2: Verify reduction gear load.

Step 3: Select reduction gear.

Step 4: Verify input unit specifications.

Note: For flow charts and calculation methods, see pages 101 – 109 of the Technical Documents.

2. Select input unit and motor flange / bushing.

Motor

Manufacturer
Series
Model

To product model number search



(1) Click on the manufacturer, series and model for the servo motor that you are using.

Product model number search

Solid series
Hollow shaft series

Straight input type
Right angle input type
Pulley input type

RDS
RDR
RDP

Straight input type
Right angle input type
Pulley input type

RDS
RDR
RDP

Search results

Product code
Details

Select an item.
The search results will appear.

(2) In the reduction gear list, click on the desired type of reduction gear.

(3) The product codes corresponding to that motor will be displayed.

Product code	Details
RDS-006E-031-B1-CH-ZZ	Product code
RDS-006E-043-B1-CH-ZZ	Product code
RDS-006E-054-B1-CH-ZZ	Product code
RDS-020E-081-B1-CH-ZZ	Product code
RDS-020E-105-B1-CH-ZZ	Product code

3. Download CAD data.

Product data



Download CAD data

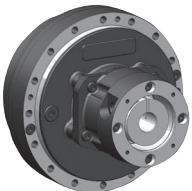
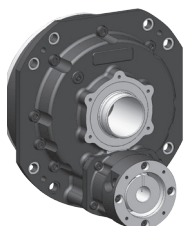
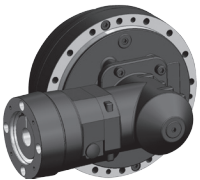
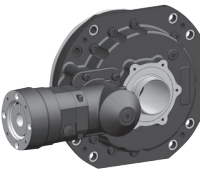
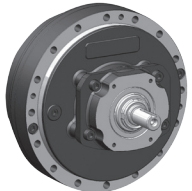
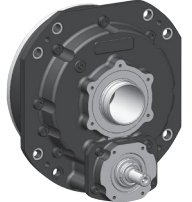
Model Code	Ratio code (actual gear ratio)	Rated Torque (N·m)	Rated Output Speed (rpm)	Life Rating (h)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)	Approx. Torque (N·m)
RDS-160E	066 (66)														
	081 (81)														
	101 (101)														
	121 (121)														
	145 (145)														
	171 (171)														

You may also download CAD data, either 3D CAD (STEP file) or 2D CAD (DXF file).

Note: Free membership registration is required to download the CAD data.

Note: Due to ongoing improvements, the website is subject to change without notice.

Overview of Features (listed by input type)

Input type	Reduction gear configuration	Product	Product features	Corresponding speed ratio	Allowable acceleration and deceleration torque (N-m)	Items not included	Pages for external dimension drawings
Straight input type	Solid series		The total length in the axial direction has been reduced by up to 15% as compared to the previous series.	31 to 258	117 to 7,840	Servo motor	P.16 ▼ P.27
	Hollow shaft series						P.28 ▼ P.39
Right angle input type	Solid series		- Equipment can be more compact - Can be installed in confined space - Table can be made shorter	31 to 258	117 to 7,840	Servo motor	P.44 ▼ P.55
	Hollow shaft series						P.56 ▼ P.67
Pulley input type	Solid series		- Belt input is possible - Motor can be installed anywhere - Speed ratio can be changed using pulley	57 to 157	412 to 7,840	Servo motor pulley	P.71 ▼ P.75
	Hollow shaft series						P.76 ▼ P.81

Straight input type

Right angle input type

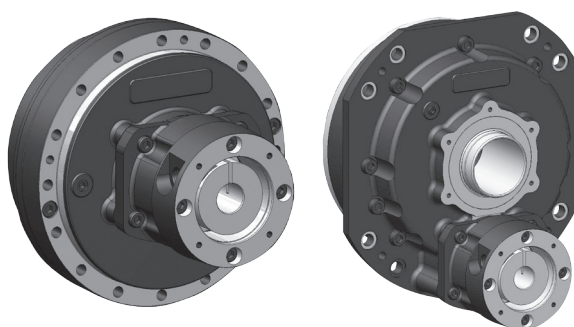
Pulley input type

Motor flange / bushing

Technical Documents



Straight input type



Straight Input Type Product Codes / Configuration Diagram

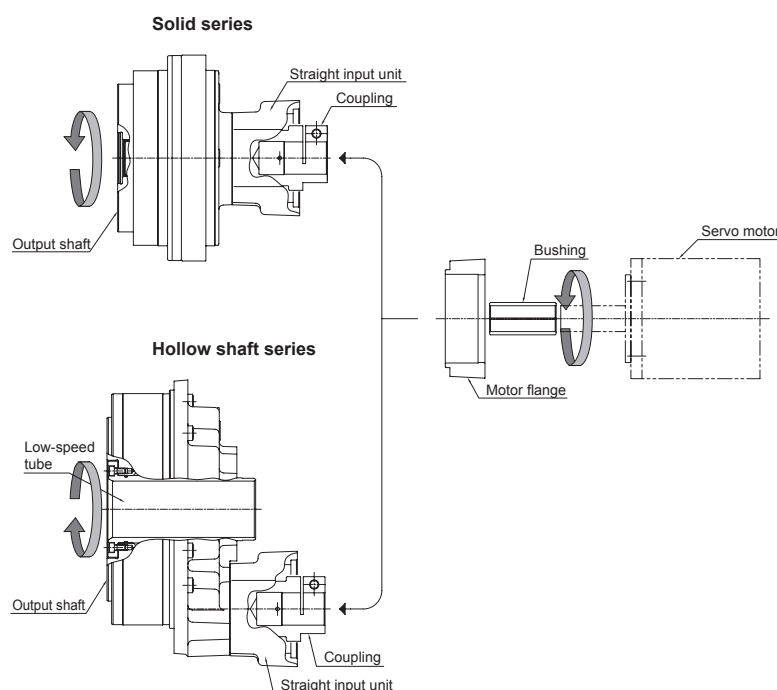
Product code

RD S - 040 E - 153 - B2 - CF - 2E

Model Code			Ratio Code	Input unit code	Motor flange code	Bushing code
Straight Input code	Torque code	Series code				
S	006	E: Solid series	031, 043, 054, 079, 103	B0 : Corresponding motor shaft diameter $\phi 8$ to 14 B1 : Corresponding motor shaft diameter $\phi 15$ to 24	2-letter code (code will differ depending on motor to be attached)	2-letter code (code will differ depending on motor to be attached)
	020		041, 057, 081, 105, 121, 161	B0 : Corresponding motor shaft diameter $\phi 8$ to 14 B1 : Corresponding motor shaft diameter $\phi 15$ to 24		
	040		041, 057, 081, 105, 121, 153	B2 : Corresponding motor shaft diameter $\phi 14$ to 24 B3 : Corresponding motor shaft diameter $\phi 25$ to 35		
	080		041, 057, 081, 101, 121, 153	B2 : Corresponding motor shaft diameter $\phi 14$ to 24 B3 : Corresponding motor shaft diameter $\phi 25$ to 35		
	160		066, 081, 101, 121, 145, 171	B4 : Corresponding motor shaft diameter $\phi 19$ to 28 B5 : Corresponding motor shaft diameter $\phi 32$ to 42		
	320		066, 081, 101, 121, 141, 185	B4 : Corresponding motor shaft diameter $\phi 19$ to 28 B5 : Corresponding motor shaft diameter $\phi 32$ to 42		
	010	C: Hollow shaft series	081, 108, 153, 189, 243	B0 : Corresponding motor shaft diameter $\phi 8$ to 14 B1 : Corresponding motor shaft diameter $\phi 15$ to 24		
	027		100, 142, 184, 233	B0 : Corresponding motor shaft diameter $\phi 8$ to 14 B1 : Corresponding motor shaft diameter $\phi 15$ to 24		
	050		109, 153, 196, 240	B2 : Corresponding motor shaft diameter $\phi 14$ to 24 B3 : Corresponding motor shaft diameter $\phi 25$ to 35		
	100		101, 150, 210, 258	B2 : Corresponding motor shaft diameter $\phi 14$ to 24 B3 : Corresponding motor shaft diameter $\phi 25$ to 35		
	200		106, 156, 206, 245	B4 : Corresponding motor shaft diameter $\phi 19$ to 28 B5 : Corresponding motor shaft diameter $\phi 32$ to 42		
	320		115, 157, 207, 253	B4 : Corresponding motor shaft diameter $\phi 19$ to 28 B5 : Corresponding motor shaft diameter $\phi 32$ to 42		

Note: For selection of motor flange and bushing, see the selection tables on pages 83 – 85 or visit the Nabtesco website (URL : <http://www.nabtesco-precision.de>, <http://www.nabtescomotioncontrol.com>).

Configuration Diagram



Straight input type

Right angle input type

Pulley input type

Motor flange / bushing

Technical Documents

Rating Table Straight Input Type

Solid series

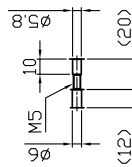
Model Code	Ratio code (actual gear ratio)	Reduction Gear														Outer Dimensions
		T ₀	N ₀	K	T _{S1}	T _{S2}	N _{in}	N _s	N _{to}	Backlash	Lost motion	Torsional rigidity	Start-up Efficiency	M ₀	α	
		Rated Torque (N-m)	Rated Output Speed (r.p.m.)	Life Rating (Hr)	Allowable Startup/Stop Torque (N-m)	Momentary maximum allowable torque (N-m)	Allowable Input Speed (Note 2) (r.p.m.)	Allowable Output Speed (Note 2) (r.p.m.)	Reference value to output speed during continuous operation at rated torque (r.p.m.)					Allowable moment (Note 3) (N-m)	Dimension α (mm)	
RDS-006E	031 (31)	58	30	6,000	117	294	3,500	100	100	1.5	1.5	20	70	196	77.8	Input Unit Code : B0 ———P.16 Input Unit Code : B1 ———P.17
	043 (43)							81	76							
	054 (53.5)							65	63							
	079 (79)							44	44							
	103 (103)							34	34							
RDS-020E	041 (41)	167	15	6,000	412	833	3,500	75	75	1.0	1.0	49	75	882	93.2	Input Unit Code : B0 ———P.18 Input Unit Code : B1 ———P.19
	057 (57)							61	56							
	081 (81)							43	42							
	105 (105)							33	33							
	121 (121)							29	29							
RDS-040E	161 (161)							22	22							
	041 (41)	412	15	6,000	1,029	2,058	3,000	70	37	1.0	1.0	108	70	1,666	114.6	Input Unit Code : B2 ———P.20 Input Unit Code : B3 ———P.21
	057 (57)							53	35							
	081 (81)							37	34							
	105 (105)							29	29							
	121 (121)							25	25							
RDS-080E	153 (153)							20	20							
	041 (41)	784	15	6,000	1,960	3,920	3,000	70	34	1.0	1.0	196	75	2,156	136.1	Input Unit Code : B2 ———P.22 Input Unit Code : B3 ———P.23
	057 (57)							53	31							
	081 (81)							37	29							
	101 (101)							30	28							
	121 (121)							25	25							
RDS-160E	153 (153)							20	20							
	066 (66)	1,568	15	6,000	3,920	7,840	2,000	30	20	1.0	1.0	392	75	3,920	167.3	Input Unit Code : B4 ———P.24 Input Unit Code : B5 ———P.25
	081 (81)							25	18							
	101 (101)							20	16							
	121 (121)							17	15							
	145 (145)							14	14							
RDS-320E	171 (171)							12	12							
	066 (66)	3,136	15	6,000	7,840	15,680	2,000	30	15	1.0	1.0	980	80	7,056	203	Input Unit Code : B4 ———P.26 Input Unit Code : B5 ———P.27
	081 (81)							25	12							
	101 (101)							20	9							
	121 (121)							17	7							
	141 (141)							14	6							
	185 (185)							11	4							

Hollow shaft series

Model Code	Ratio code (actual gear ratio)	Reduction Gear														Outer Dimensions
		T ₀	N ₀	K	T _{S1}	T _{S2}	N _{in}	N _S	N _{To}	Backlash	Lost motion	Torsional rigidity	Start-up Efficiency	M ₀	α	
		Rated Torque	Rated Output Speed	Life Rating	Allowable Startup/Stop Torque	Momentary maximum allowable torque	Allowable Input Speed (Note 2)	Allowable Output Speed (Note 2)	Reference value to output speed during continuous operation at rated torque							
		(N-m)	(r.p.m.)	(Hr)	(N-m)	(N-m)	(r.p.m.)	(r.p.m.)	(r.p.m.)	(arc.min.)	(arc.min.)	(N-m/arc.min.)	(%)	(N-m)	(mm)	
RDS-010C	081 (81)	98	15	6,000	245	490	3,500	43	43	1.0	1.0	47	65	686	91.2	Input Unit Code : B0 —————P.28 Input Unit Code : B1 —————P.29
	108 (108)							32	32							
	153 (153)							23	23							
	189 (189)							19	19							
	243 (243)							14	14							
RDS-027C	100 (99.82)	265	15	6,000	662	1,323	3,500	35	35	1.0	1.0	147	70	980	112	Input Unit Code : B0 —————P.30 Input Unit Code : B1 —————P.31
	142 (141.68)							25	25							
	184 (184)							19	19							
	233 (233.45)							15	15							
RDS-050C	109 (109)	490	15	6,000	1,225	2,450	3,000	28	28	1.0	1.0	255	70	1,764	136.8	Input Unit Code : B2 —————P.32 Input Unit Code : B3 —————P.33
	153 (152.6)							20	20							
	196 (196.2)							15	15							
	240 (239.8)							13	13							
RDS-100C	101 (100.5)	980	15	6,000	2,450	4,900	3,000	30	20	1.0	1.0	510	80	2,450	148.9	Input Unit Code : B2 —————P.34 Input Unit Code : B3 —————P.35
	150 (150)							20	17							
	210 (210)							14	14							
	258 (258)							12	12							
RDS-200C	106 (105.83)	1,960	15	6,000	4,900	9,800	2,000	19	16	1.0	1.0	980	80	8,820	204.4	Input Unit Code : B4 —————P.36 Input Unit Code : B5 —————P.37
	156 (155.96)							13	12							
	206 (206.09)							10	10							
	245 (245.08)							8	8							
RDS-320C	115 (115)	3,136	15	6,000	7,840	15,680	2,000	17	17	1.0	1.0	1,960	80	20,580	245.9	Input Unit Code : B4 —————P.38 Input Unit Code : B5 —————P.39
	157 (157)							13	13							
	207 (207)							10	10							
	253 (253)							8	8							

Notes:

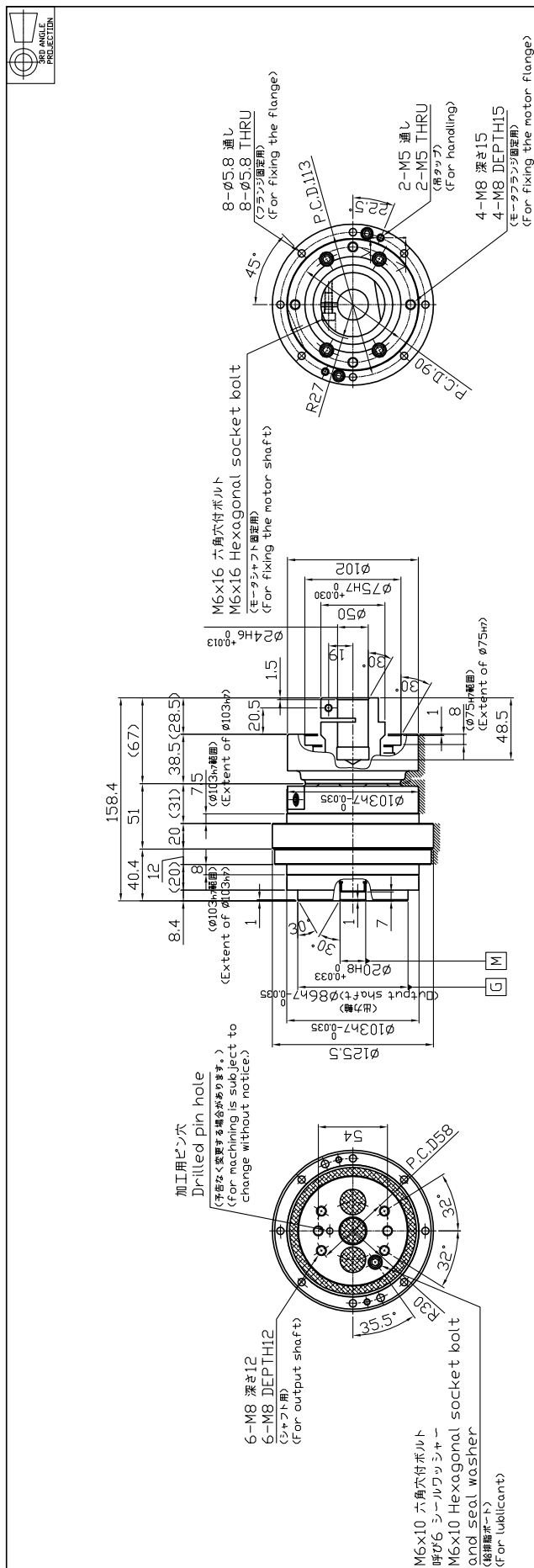
1. The rating table shows the specification values including the entry fields for reduction gear values.
2. The allowable speed may be limited by heat depending on the operating rate. Make sure the surface temperature of the reduction gear does not exceed 60°C during use.
3. The allowable moment will differ depending on the thrust load. Check the allowable moment diagram.
4. For the moment of inertia of the reduction gears, refer to the external dimension drawings for the reduction gear.



V-V SECTION

速度 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia (kg·m ²) 入力軸質量 The Motor Axis Conversion (kg·m ²)
31	RDS-006E-031-B0		1.16×10 ⁻⁴
43	RDS-006E-043-B0		1.14×10 ⁻⁴
54	RDS-006E-054-B0	3.4	1.14×10 ⁻⁴
79	RDS-006E-079-B0		1.13×10 ⁻⁴
103	RDS-006E-103-B0		1.12×10 ⁻⁴

Model Code: RDS-006E-XXX-B1 (Corresponding motor shaft diameter: $\varnothing 15$ to $\varnothing 24$)



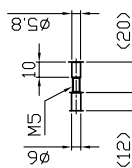
品類

1. フランジ固定用B-5六角穴付ボルトは、締付トルク9.01 $\pm$ 0.49N・mにて締付けること。
2. シヤフト用B-6六角穴付ボルトは、締付トルク37.2 $\pm$ 1.66N・mにて締付けること。
3. モータシャフト固定用B-6六角穴付ボルトは、締付トルク15.6 $\pm$ 0.76N・mにて締付けること。
4. ケース及びシヤフト締付ボルトは、六角穴付ボルト用皿バネを使用すること。
5. インロー部 $\square$ は、どちらか一方を選択し、使用のこと。
6. 減速機内部には、弊社指定潤滑油を充填済。

NOTE

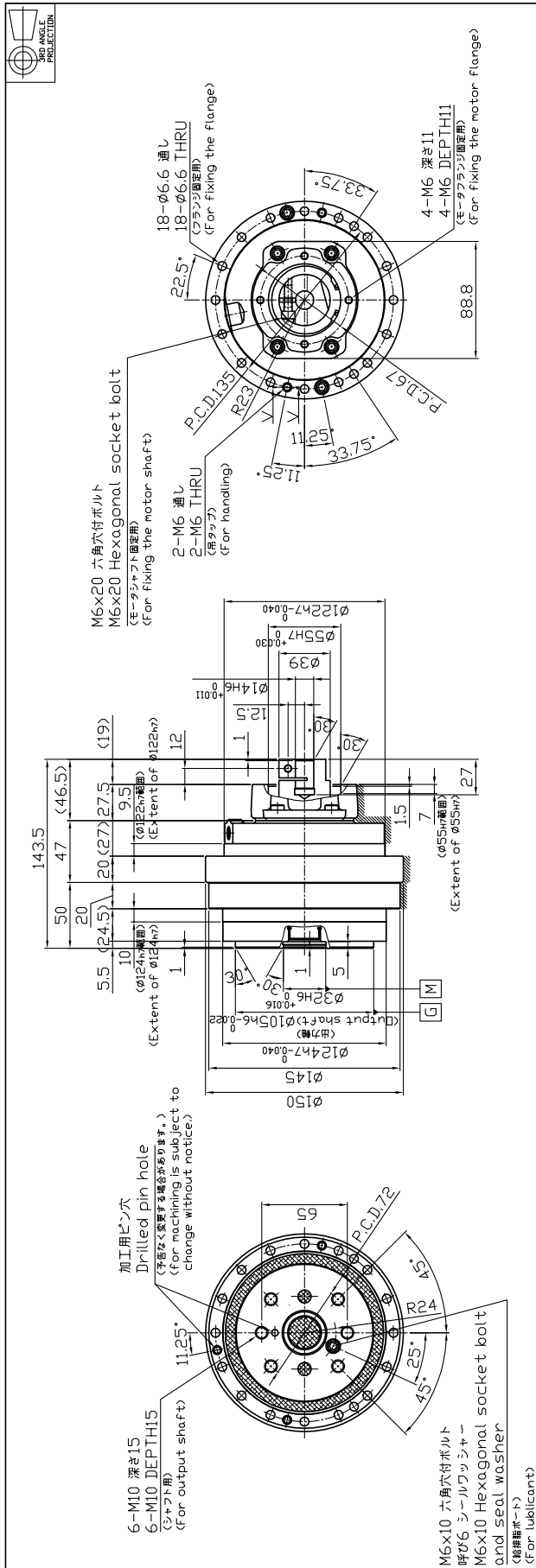
1. Tightening torque of 8-M5 hexagon socket headed bolt for fixing case is $9.01 \pm 0.49 \text{ N}\cdot\text{m}$.
2. Tightening torque of 6-M8 hexagon socket headed bolt on the output shaft is $37.2 \pm 1.86 \text{ N}\cdot\text{m}$.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is $15.6 \pm 0.78 \text{ N}\cdot\text{m}$.
4. Bolt shall be used with corned disk spring for heavy duty.
5. Use one of  or .
6. The specified lubricant is already sealed in before shipment.
7.  area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia I_p ($\gamma=GB/4$) 慣性モーメント The Moment of Inertia Conversion (kg $\cdot$ m 2)
31	RDS-006E-031-B1		2.50 $\times 10^{-4}$
43	RDS-006E-043-B1		2.48 $\times 10^{-4}$
54	RDS-006E-054-B1	4.3	2.47 $\times 10^{-4}$
79	RDS-006E-079-B1		2.47 $\times 10^{-4}$
103	RDS-006E-103-B1		2.46 $\times 10^{-4}$



V-V SECTION

Model Code: RDS-020E-XXX-B0 (Corresponding motor shaft diameter: $\varnothing 8$ to $\varnothing 14$)



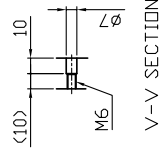
品名

1. プランジ固定用18-N6六角穴付ボルトは、締付トルク15.6~40.78N・mにて締付けること。
2. シャフト用6-M10六角穴付ボルトは、締付トルク73.5~43.9N・mにて締付けること。
3. モータシャフト固定用6六角穴付ボルトは、締付トルク15.6~40.78N・mにて締付けること。
4. ケース及びシャフト締付ボルトには、六角穴付ボルト用パネを使用すること。
5. インロー部には、どちらか一方を選択し、使用のこと。
6. 減速機内部には、弊社指定潤滑油を充填す。
7. 塗装 塗装色 エポキシ マンガン系No.15(黒色) 塗装範囲部分を//に示す。

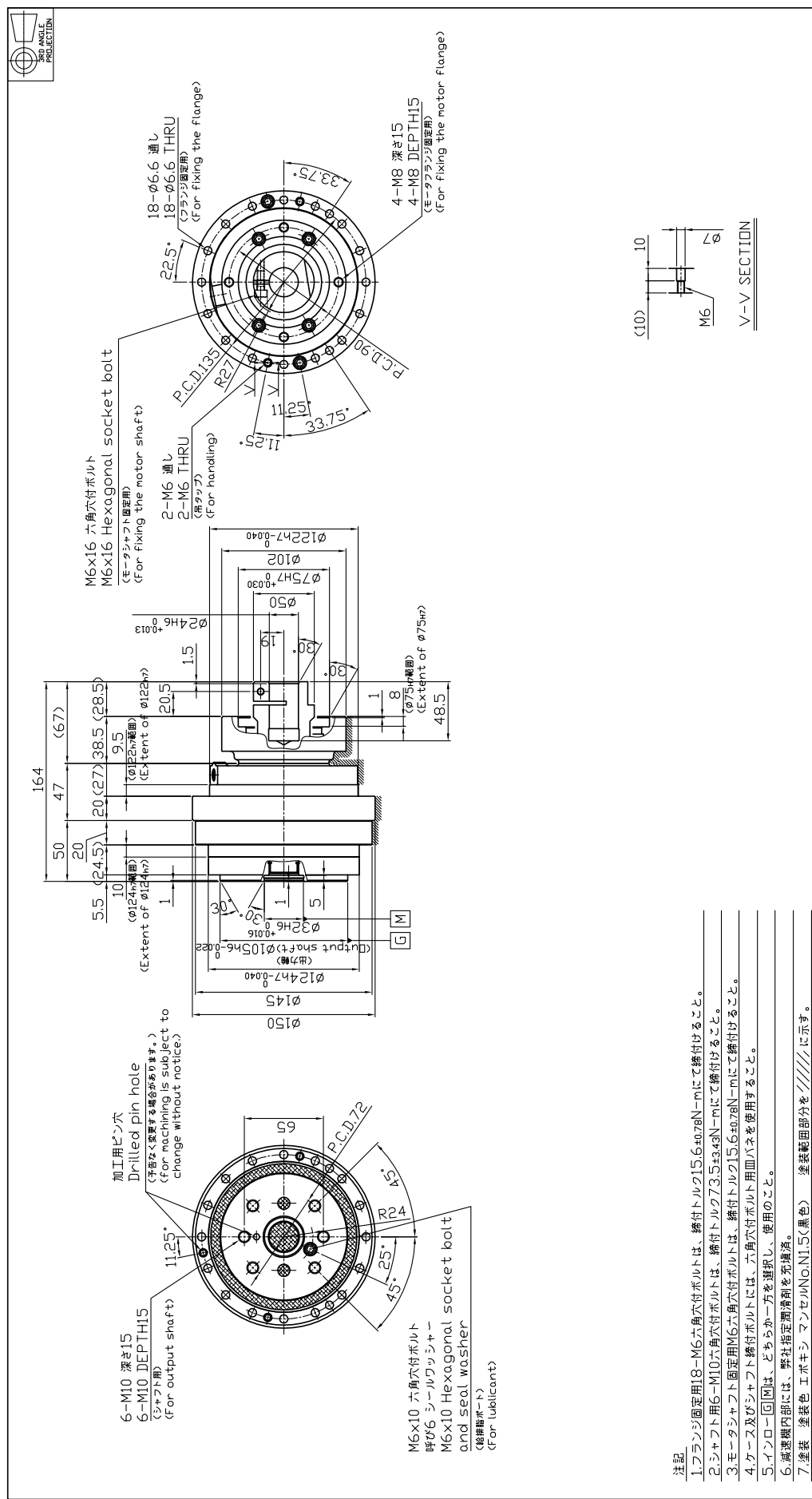
NOTE

1. Tightening torque of 18-M6 hexagon socket headed bolt for fixing case is 15.6 $\pm$ 0.78N·m.
2. Tightening torque of 6-M10 hexagon socket headed bolt on the output shaft is 73.5 $\pm$ 3.43N·m.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is 15.6 $\pm$ 0.78N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. Use one of  .
6. The specified lubricant is already sealed in before shipment.
7.  area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J ₁ (kg・m ² /4) (質量×半径 ²) The Moment of Inertia Axis Conversion (kg・m ²)
41	RDS-020E-041-B0		1.30×10 ⁻⁴
57	RDS-020E-057-B0		1.23×10 ⁻⁴
81	RDS-020E-081-B0	4.6	1.18×10 ⁻⁴
105	RDS-020E-105-B0		1.16×10 ⁻⁴
121	RDS-020E-121-B0		1.15×10 ⁻⁴
161	RDS-020E-161-B0		1.14×10 ⁻⁴



Model Code: RDS-020E-XXX-B1 (Corresponding motor shaft diameter: $\varnothing 15$ to $\varnothing 24$)

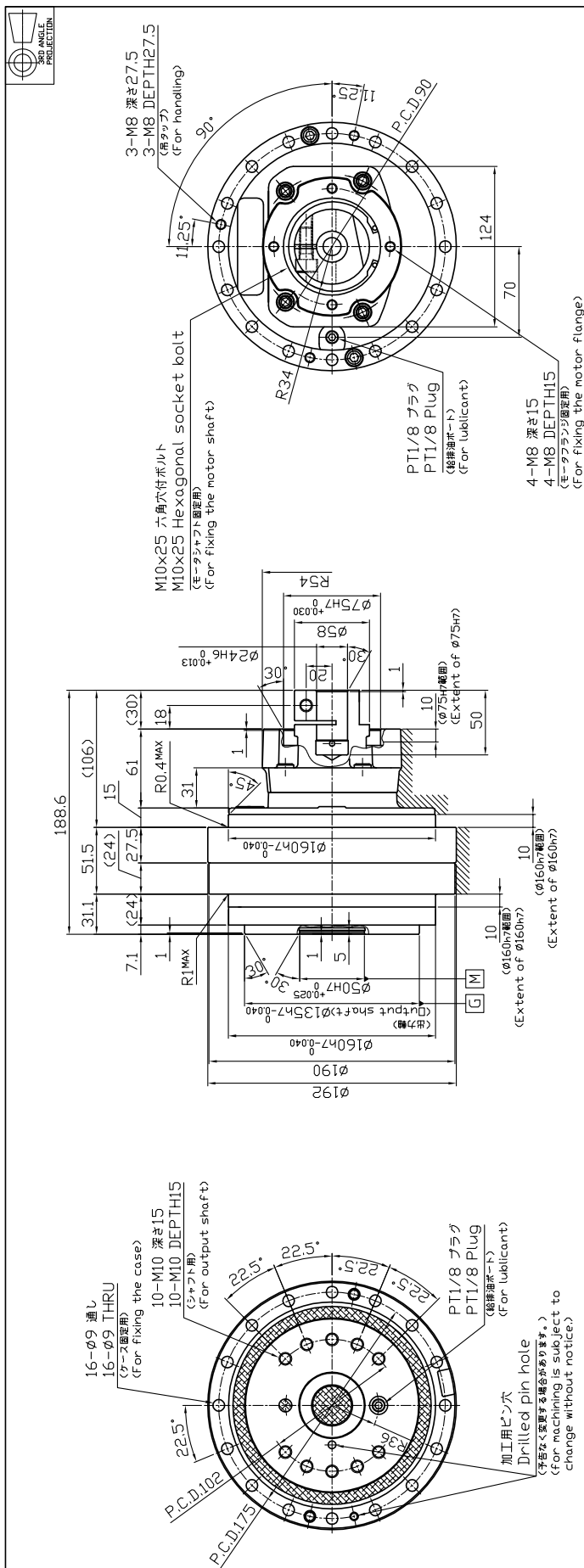


NOTE

1. Tightening torque of 18-M6 hexagon socket headed bolt for fixing case is 15.6±0.78N·m.
2. Tightening torque of 6-M10 hexagon socket headed bolt on the output shaft is 73.5±3.43N·m.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is 15.6±0.78N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. Use one of ☐ ☐ ☐ ☐.
6. The specified lubricant is already sealed in before shipment.
7. // // // area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J' ($\text{kg}\cdot\text{m}^2$) (GDBF) 及び慣性質量 力の換算質量 The Motor Axis Conversion Mass (kg)
41	RDS-020E-041-B1	5.5	2.64x10 ⁻⁴
57	RDS-020E-057-B1		2.57x10 ⁻⁴
81	RDS-020E-081-B1		2.52x10 ⁻⁴
105	RDS-020E-105-B1		2.50x10 ⁻⁴
121	RDS-020E-121-B1		2.49x10 ⁻⁴
161	RDS-020E-161-B1		2.48x10 ⁻⁴

Model Code: RDS-040E-XXX-B2 (Corresponding motor shaft diameter: $\varnothing 14$ to $\varnothing 24$)



注記

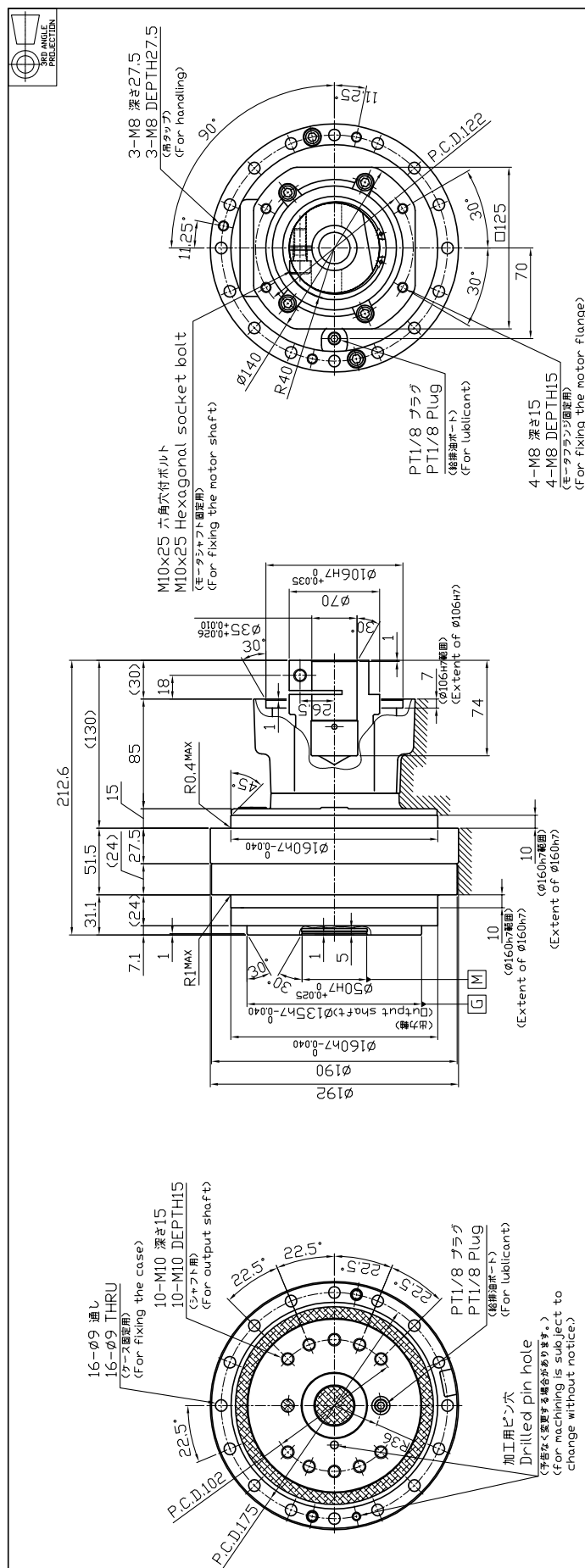
1. ケース固定用16-M8六角穴付ボルトは、締付トルク37.2(4.66N・m)にて締付けること。
2. モーターシャフト用10-M10六角穴付ボルトは、締付トルク73.5(3.43N・m)にて締付けること。
3. ケースシャフト用10-M10六角穴付ボルトは、締付トルク73.5(3.43N・m)にて締付けること。
4. ケースス及びシャフト用締付ボルトは、六角穴付ボルト用10-M10を使用すること。
5. 減速機内部には、弊社指定潤滑油を充填す。
6. 潤滑油[図 9]は、どちらか一方を選択し、使用のこと。
7. 塗料 塗色色マゼンタNo.1(黒色) 塗装範囲部分に // につき。

NOTE

1. Tightening torque of 16-M8 hexagon socket headed bolt for fixing case is 37.2186N-m.
2. Tightening torque of 10-M10 hexagon socket headed bolt on the output shaft is 73.5334N-m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5334N-m.
4. Bolt shall be used with corned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of G or M.
7. area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia, I _x (kg・m ²)
41	RDS-040E-041-B2	17.5	7.17×10 ⁻⁴
57	RDS-040E-057-B2		6.93×10 ⁻⁴
81	RDS-040E-081-B2		6.78×10 ⁻⁴
105	RDS-040E-105-B2		6.70×10 ⁻⁴
121	RDS-040E-121-B2		6.67×10 ⁻⁴
153	RDS-040E-153-B2		6.63×10 ⁻⁴

Model Code: RDS-040E-XXX-B3 (Corresponding motor shaft diameter: $\varnothing 25$ to $\varnothing 35$)



注記

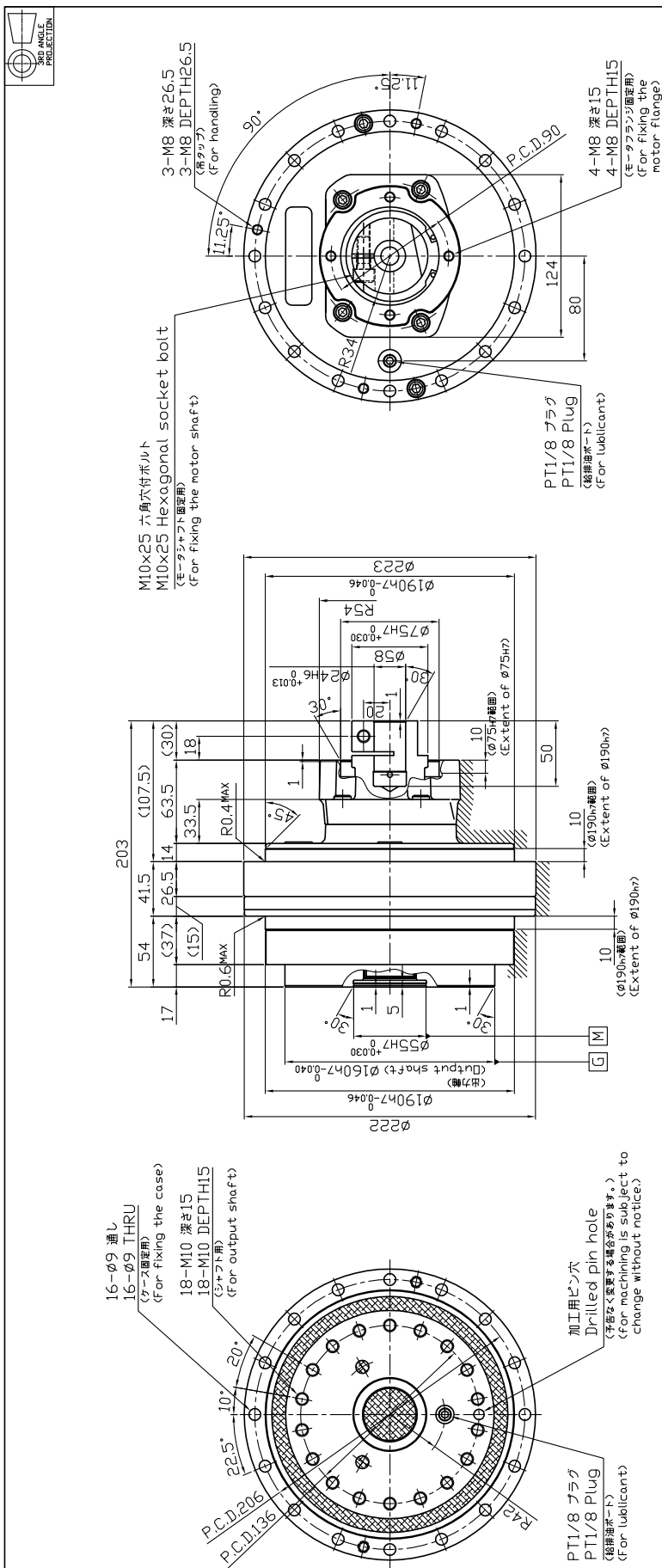
1. ケーブル定用[6-M8六角穴付ボルトは、締付トルク37.2±96N・mにて締付けること。
2. ケーブル定用[10-M10六角穴付ボルトは、締付トルク73.5±343N・mにて締付けること。
3. モータシャフト固定用M10六角穴付ボルトは、締付トルク73.5±343N・mにて締付けること。
4. ケース及びシャフト締付ボルトには、六角穴付ボルト用皿ワッシャーを使用すること。
5. 減速機内部には、必ず指定潤滑油を充填。
6. 図10-6「**図**」は、指定方向を選択し、使用のこと。
7. 塗装色(黄色)セルNo.15(黒色) 塗装被覆部分を////に示す。

NOTE

1. Tightening torque of 16-M8 hexagon socket headed bolt for fixing case is 37.2±1.86N-m.
2. Tightening torque of 10-M10 hexagon socket headed bolt on the output shaft is 73.5±3.43N-m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5±3.43N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of G or M.
7. //////// area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia "J" ($\text{kg}\cdot\text{m}^2$) 及び軸質量 及び軸質量 The Motor Axis Conversion ($\text{kg}\cdot\text{m}^2$)
41	RDS-040E-041-B3		1.31x10 ⁻³
57	RJS-040E-057-B3		1.28x10 ⁻³
81	RDS-040E-081-B3	19.0	1.27x10 ⁻³
105	RJS-040E-105-B3		1.26x10 ⁻³
121	RJS-040E-121-B3		1.26x10 ⁻³
153	RJS-040E-153-B3		1.25x10 ⁻³

Model Code: RDS-080E-XXX-B2 (Corresponding motor shaft diameter: $\varnothing 14$ to $\varnothing 24$)



注記

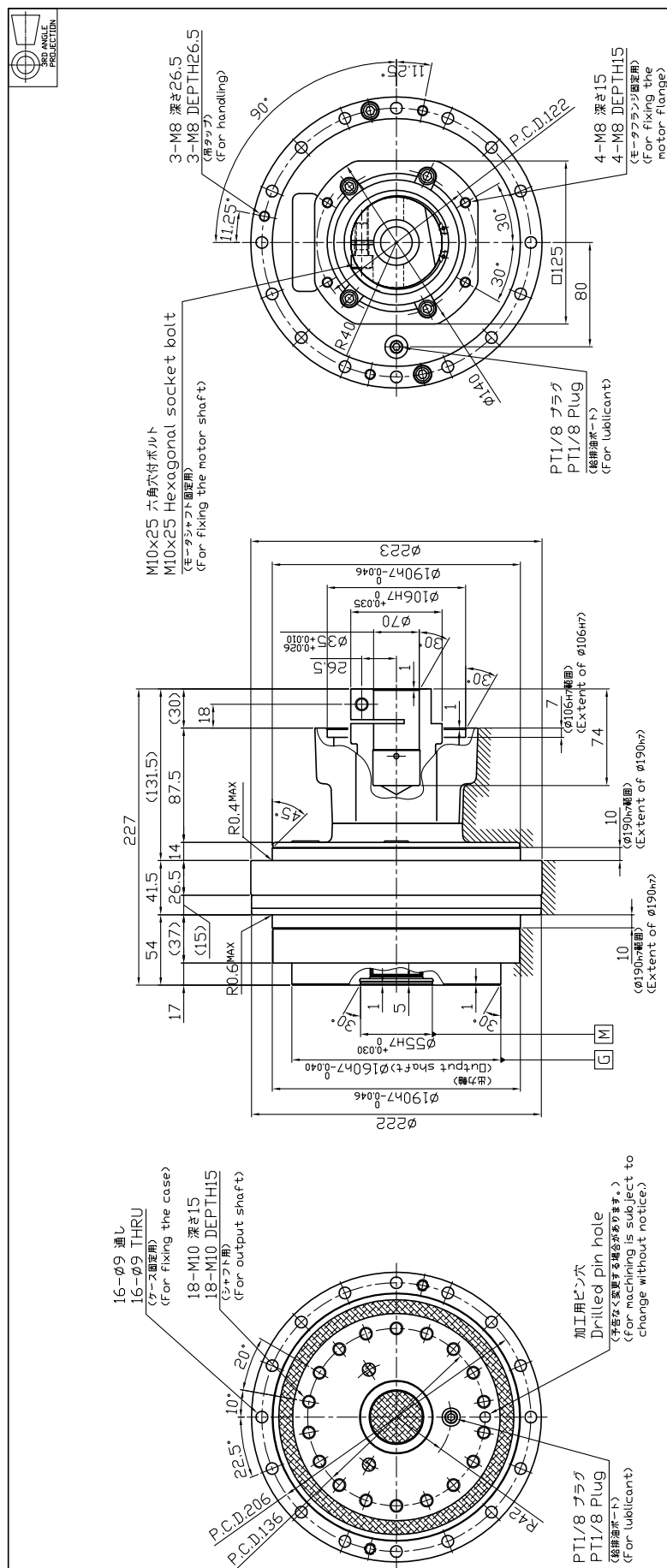
1. ケース固定用16-M8六角穴付ボルトは、締付トルク37.2±9.6N・mにて締付けること。
2. ケース用18-M10六角穴付ボルトは、締付トルク73.5±34.3N・mにて締付けること。
3. モータシャフト固定用M10六角穴付ボルトは、締付トルク73.5±34.3N・mにて締付けること。
4. ケース及びシャフト固定用ボルトには、六角穴付ボルト用油脂を使用すること。
5. 減速機内部には、弊社指定潤滑剤を充填す。
6. ラインロー[®] 図 1 は、指定方向を選択し、使用のこと。
7. 緑色マシナング油No.15(黒色) 塗装範囲部分に // // // に示す。

NOTE

1. Tightening torque of 16-M8 hexagon socket headed bolt for fixing case is 37.2±1.96N-m.
2. Tightening torque of 18-M10 hexagon socket headed bolt on the output shaft is 73.5±3.43N-m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5±3.43N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of ☐ or ☐.
7. ☐ area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J ₁ ($\times 10^4$ g $\cdot$ cm 2) X軸慣性モーメント The Motor Axis Conversion (kg $\cdot$ m 2)
41	RDS-080E-041-B2		7.91 $\times 10^{-4}$
57	RDS-080E-057-B2		7.44 $\times 10^{-4}$
81	RDS-080E-081-B2	22.0	7.13 $\times 10^{-4}$
101	RDS-080E-101-B2		6.99 $\times 10^{-4}$
121	RDS-080E-121-B2		6.90 $\times 10^{-4}$
153	RDS-080E-153-B2		6.80 $\times 10^{-4}$

Model Code: RDS-080E-XXX-B3 (Corresponding motor shaft diameter: $\varnothing 25$ to $\varnothing 35$)



品注

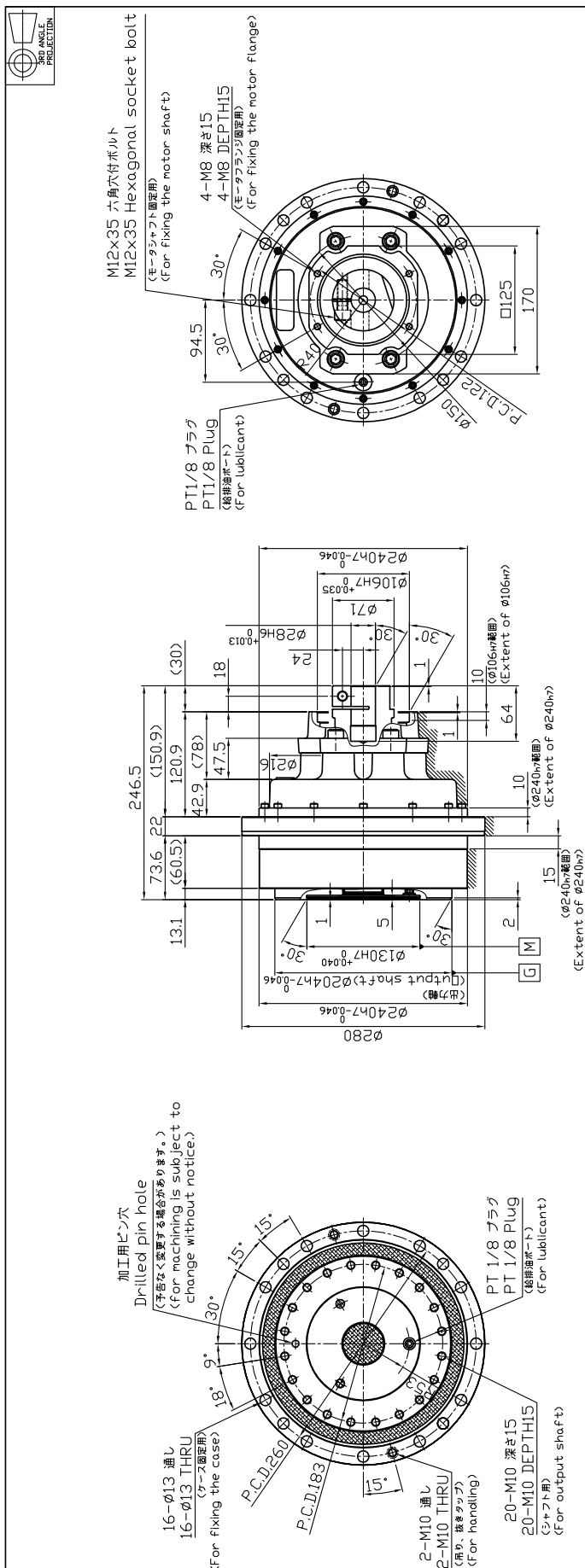
1. ケーブル固定用[6-M8六角穴付ボルトは、締付トルク37.2±9.6N・mにて締付けること。
2. シヤフト用[18-M10の六角穴付ボルトは、締付トルク73.5±3.3N・mにて締付けること。
3. モータシャフト固定用M10六角穴付ボルトは、締付トルク73.5±3.3N・mにて締付けること。
4. ケース及びシヤフト締付ボルトには、六角穴付ボルト用ワッシャーを使用すること。
5. 減速機内部には、弊社指定潤滑油を充填済。
6. 変速機内部には、ご当地の一方を選択し、使用のこと。
7. 塗装色は、黄色No.15(黒色)に直す。

NOTE

1. Tightening torque of 16-M8 hexagon socket headed bolt for fixing case is 37.2±1.66N-m.
2. Tightening torque of 18-M10 hexagon socket headed bolt on the output shaft is 73.5±3.43N-m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5±3.43N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of  or .
7.  area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia "J" ($\text{kg}\cdot\text{m}^2$) 及び軸荷重 軸荷重 Conversion kg $\cdot\text{m}^2$
41	RDS-080E-041-B3		1.35 $\times 10^{-3}$
57	RDS-080E-057-B3		1.33 $\times 10^{-3}$
81	RDS-080E-081-B3	24.0	1.30 $\times 10^{-3}$
101	RDS-080E-101-B3		1.29 $\times 10^{-3}$
121	RDS-080E-121-B3		1.28 $\times 10^{-3}$
153	RDS-080E-153-B3		1.27 $\times 10^{-3}$

Model Code: RDS-160E-XXX-B4 (Corresponding motor shaft diameter: $\varnothing 19$ to $\varnothing 28$)



注意

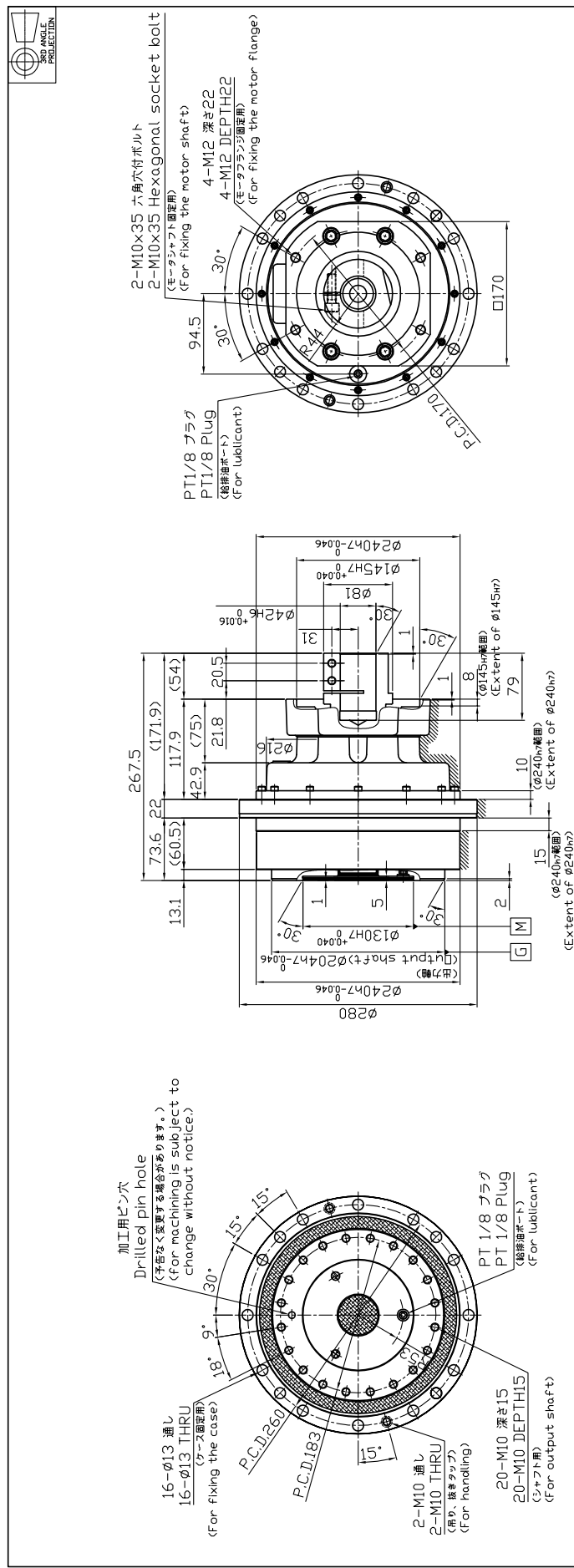
1. 1. ケーブル固定用 [6-M] 2. 六角穴付ボルトは、締付トルク $129 \pm 6.7 \text{ N} \cdot \text{m}$ にて締付けること。
2. 3. マスター用 [20-M10] 六角穴付ボルトは、締付トルク $73 \pm 3.43 \text{ N} \cdot \text{m}$ にて締付けること。
3. 3. マスター用 [20-M12] 六角穴付ボルトは、締付トルク $129 \pm 6.7 \text{ N} \cdot \text{m}$ にて締付けること。
4. 4. ケース及びシャフト締付ボルトには、六角穴付ボルト用皿爪を使用すること。
5. 減速機内部には、弊社指定潤滑油を充填。
6. 6. インポート [M] は、どちらか一方を選択し、使用のこと。
7. 塗装 緑色 エポキシ マンチン系 NO. 015 (黒色) 塗装範囲部分を $\diagup$ に示す。

NOTE

1. Tightening torque of 16-M12 hexagon socket headed bolt for fixing case is 129±37N·m.
2. Tightening torque of 20-M10 hexagon socket headed bolt on the output shaft is 73.5±34N·m.
3. Tightening torque of M12 hexagon socket headed bolt for fixing motor shaft is 129±37N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of  or  area is painted black.
7.   area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia I_p [cm^2/s^2] 及び慣性質量 The Motor Axis Conversion Inertia I_m [cm^2/s^2]
66	RDS-160E-066-B4		2.08×10^{-3}
81	RDS-160E-081-B4		2.03×10^{-3}
101	RDS-160E-101-B4	41	1.98×10^{-3}
121	RDS-160E-121-B4		1.94×10^{-3}
145	RDS-160E-145-B4		1.91×10^{-3}
171	RDS-160F-171-B4		1.88×10^{-3}

Model Code: RDS-160E-XXX-B5 (Corresponding motor shaft diameter: $\phi 32$ to $\phi 42$)



Note

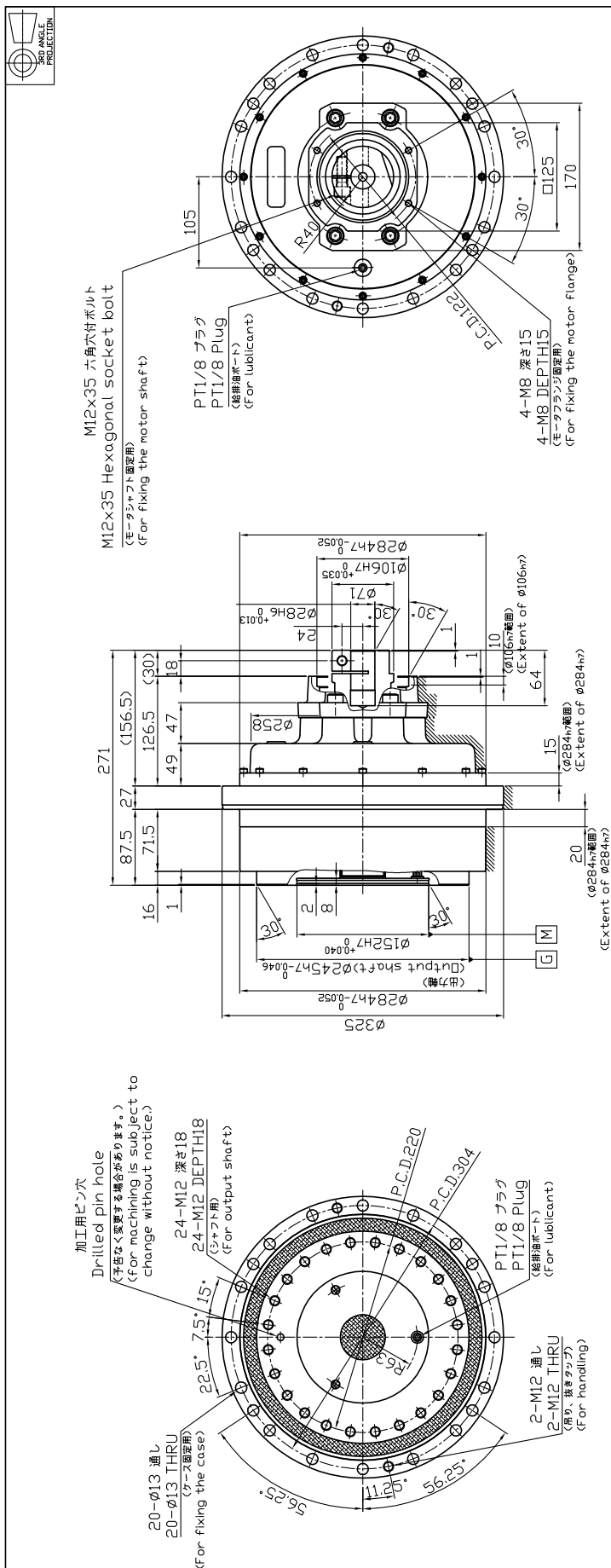
1. ケース固定用16-M12六角穴付ボルトは、締付トルク129 $\pm$ 637N・mにて締付けること。
2. シャフト用20-M10六角穴付ボルトは、締付トルク73.5 $\pm$ 343N・mにて締付けること。
3. モータシャフト固定用2-M10六角穴付ボルトは、締付トルク73.5 $\pm$ 343N・mにて締付けること。
4. ケース及びシャフト締付ボルトには、六角穴付ボルト用面バネを使用すること。
5. 減速機内部には、弊社指定潤滑剤を充填。
6. インロー [G] [M] は、どちらか一方を選択し、使用のこと。
7. 塗装 塗装色 エポキシ マンセルNo.115(黒色) 塗装範囲部分を////////に示す。

Note

1. Tightening torque of 16-M12 hexagon socket headed bolt for fixing case is 129 $\pm$ 637N・m.
2. Tightening torque of 20-M10 hexagon socket headed bolt on the output shaft is 73.5 $\pm$ 343N・m.
3. Tightening torque of 2-M10 hexagon socket headed bolt for fixing motor shaft is 73.5 $\pm$ 343N・m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of [G] or [M].
7. ////////// area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia (kg・m ²)	入力軸換算 The Motor Axis Conversion (kg・m ²)
66	RDS-160E-066-B5			3.17x10 ⁻³
81	RDS-160E-081-B5			3.11x10 ⁻³
101	RDS-160E-101-B5	41		3.06x10 ⁻³
121	RDS-160E-121-B5			3.03x10 ⁻³
145	RDS-160E-145-B5			2.99x10 ⁻³
171	RDS-160E-171-B5			2.96x10 ⁻³

Model Code: RDS-320E-XXX-B4 (Corresponding motor shaft diameter: $\varnothing 19$ to $\varnothing 28$)



注記

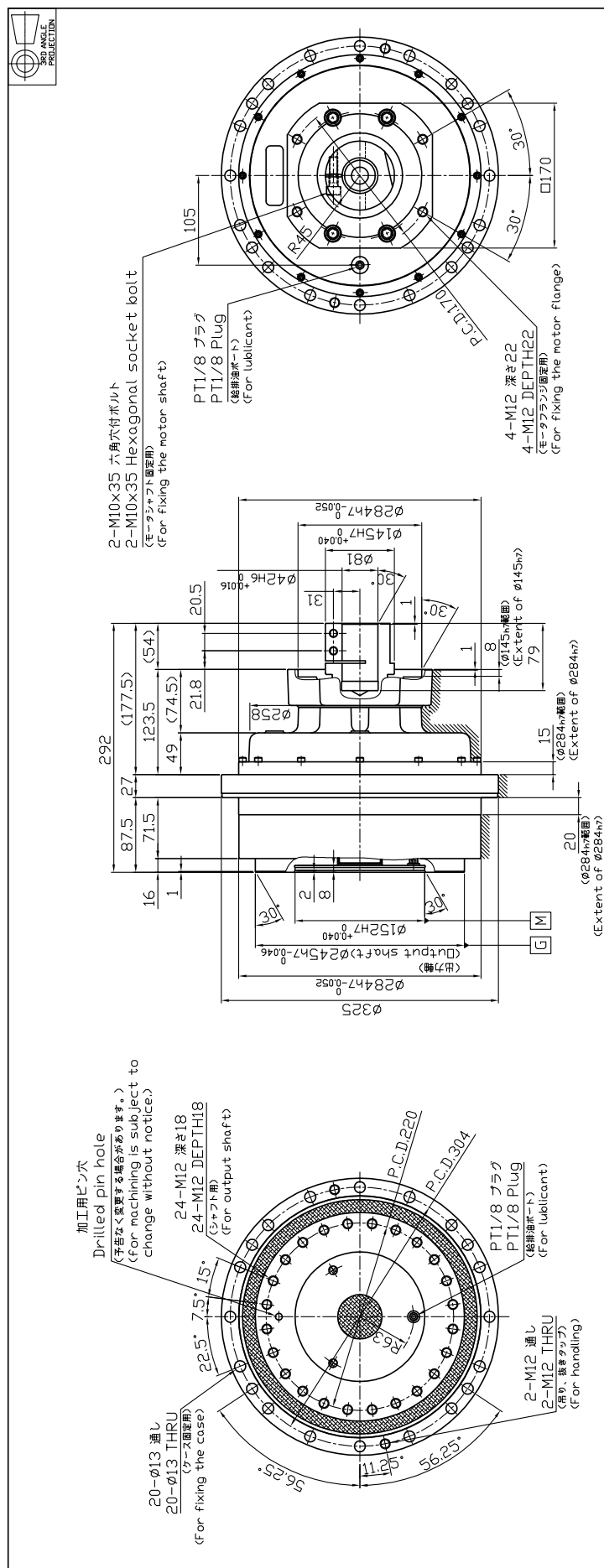
1. ケース固定用20-M12六角穴付ボルトは、締付トルク129.9±6.7N・mにて締付けること。
2. ショータ用24-M12六角穴付ボルトは、締付トルク129.9±6.3N・mにて締付けること。
3. マスターシヤット用M12六角穴付ボルトは、締付トルク129.9±6.7N・mにて締付けること。
4. ケーサー及びシヤット締付ボルトには、六角穴付ボルト用皿皿を使用すること。
5. 減速機内部には、弊社指定潤滑油を充填。
6. インポート[G] M は、どちらか一方を選択し、使用のこと。
7. 塗装 緑色 エボキシ マンシェンNO.N1.5 (黒色) 塗装範囲部分は//に示す。

NOTE

1. Tightening torque of 20-M12 hexagon socket headed bolt for fixing case is 129_{±3}N·m.
2. Tightening torque of 24-M12 hexagon socket headed bolt on the output shaft is 129_{±3}N·m.
3. Tightening torque of M12 hexagon socket headed bolt for fixing motor shaft is 129_{±3}N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of  or .
7.  area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J ¹⁾ [cm ⁴ /g] 2) 質量換算 The Mass Axis Conversion [kg·cm ²]
66	RDS-320E-066-B4		2.60×10 ⁻³
81	RDS-320E-081-B4		2.40×10 ⁻³
101	RDS-320E-101-B4	6.54	2.26×10 ⁻³
121	RDS-320E-121-B4		2.10×10 ⁻³
141	RDS-320E-141-B4		2.10×10 ⁻³
185	RDS-320F-185-B4		2.01×10 ⁻³

Model Code: RDS-320E-XXX-B5 (Corresponding motor shaft diameter: $\varnothing 32$ to $\varnothing 42$)



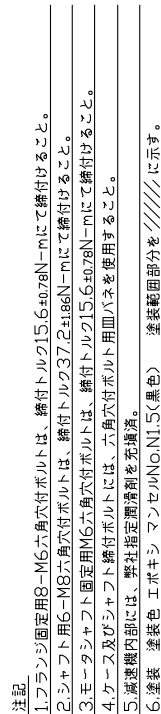
品注

1. **UC** = グラス面を用いた。20-M12は六角穴付ボルトは、締付トルク129±6.37N・mにて締付けること。
2. **2** = シャフト用24-M12は六角穴付ボルトは、締付トルク129±6.37N・mにて締付けること。
3. **4** = テーサ及びシャフトに締付けた2-M10六角穴付ボルトは、締付トルク73.5±3.43N・mにて締付けること。
4. **4** = テーサ及びシャフトに締付けた六角穴付ボルト用バルネを使用すること。
5. 減速機内部には、弊社指定潤滑油を充填す。
6. **インポート** **[G]** **[M]** は、どちらか一方を選択し、使用のこと。
7. **（表）**
（緑色）エボシ マンションNo.1（S/黒色）
（緑色）エボシ マンションNo.1（S/黒色）
※詳細な部品を//に示す。

NOTE

1. Tightening torque of 20-M12 hexagon socket headed bolt for fixing case is 129^{+6.37}_{-6.37}N·m.
2. Tightening torque of 24-M12 hexagon socket headed bolt on the output shaft is 129^{+6.37}_{-6.37}N·m.
3. Tightening torque of 2-M10 hexagon socket headed bolt for fixing motor shaft is 73.5^{+3.43}_{-3.43}N·m.
4. Bolt shall be used with conical disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of **G** or **M**.
7. **////////** area is painted black.

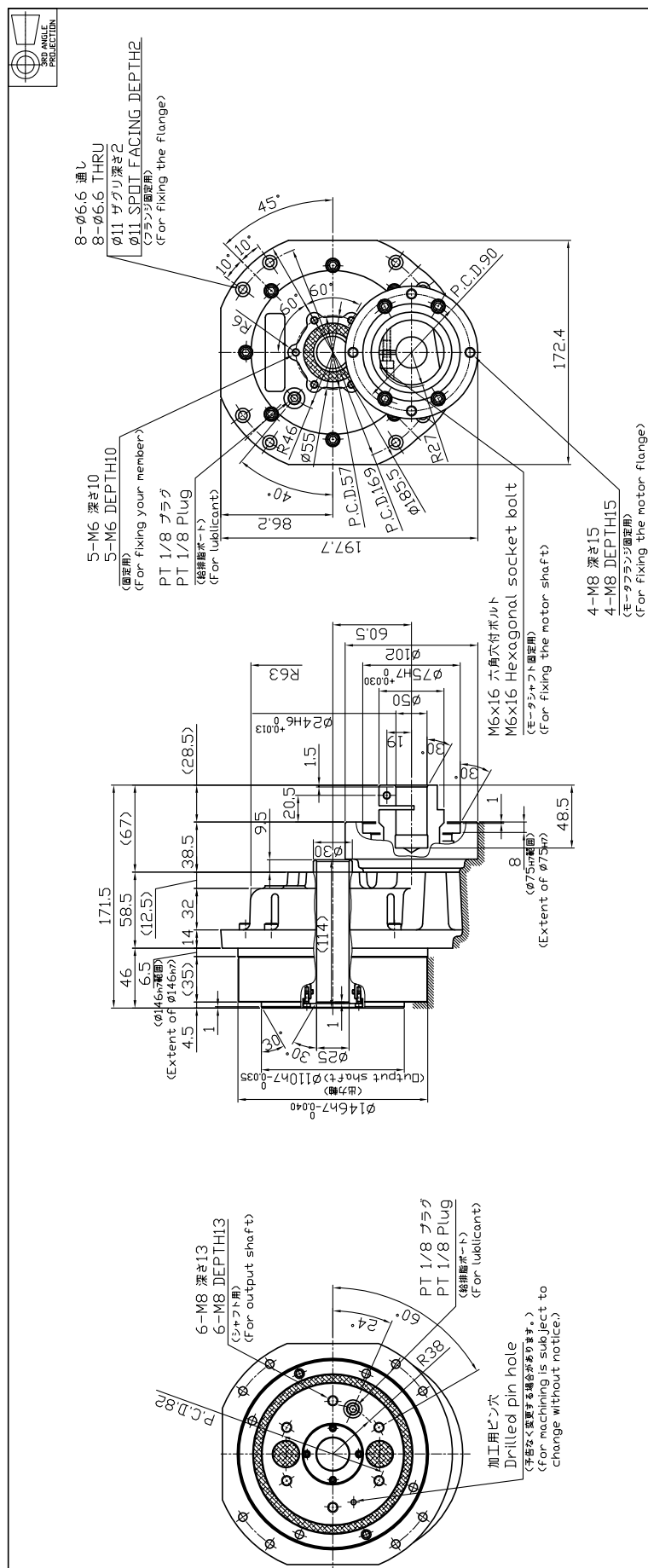
速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia (kg·m ²)	トルク 入力軸換算値 The Motor Axis Conversion Torque (kg·m)
66	RDS-320E-066-B5			3.68x10 ⁻³
81	RDS-320E-081-B5			3.49x10 ⁻³
101	RDS-320E-101-B5	68.4		3.34x10 ⁻³
121	RDS-320E-121-B5			3.25x10 ⁻³
141	RDS-320E-141-B5			3.18x10 ⁻³
185	RDS-320E-185-B5			3.09x10 ⁻³



1. Tightening torque of 8-M6 hexagon socket headed bolt for fixing case is 15.6±0.78N-m.
2. Tightening torque of 6-M8 hexagon socket headed bolt on the output shaft is 37.2±1.88N-m.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is 15.6±0.78N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia, I_x ($\text{kg}\cdot\text{cm}^2$) ($\text{kg}\cdot\text{m}^2$)	出力軸軸速 The Motor Axis Conversion (kg·m/s)
81	RDS-010C-081-B0			1.66×10^{-4}
108	RDS-010C-108-B0			1.48×10^{-4}
153	RDS-010C-153-B0	60		1.34×10^{-4}
189	RDS-010C-189-B0			1.27×10^{-4}
243	RDS-010C-243-B0			1.22×10^{-4}

Model Code: RDS-010C-XXX-B1 (Corresponding motor shaft diameter: $\varnothing 15$ to $\varnothing 24$)



注記

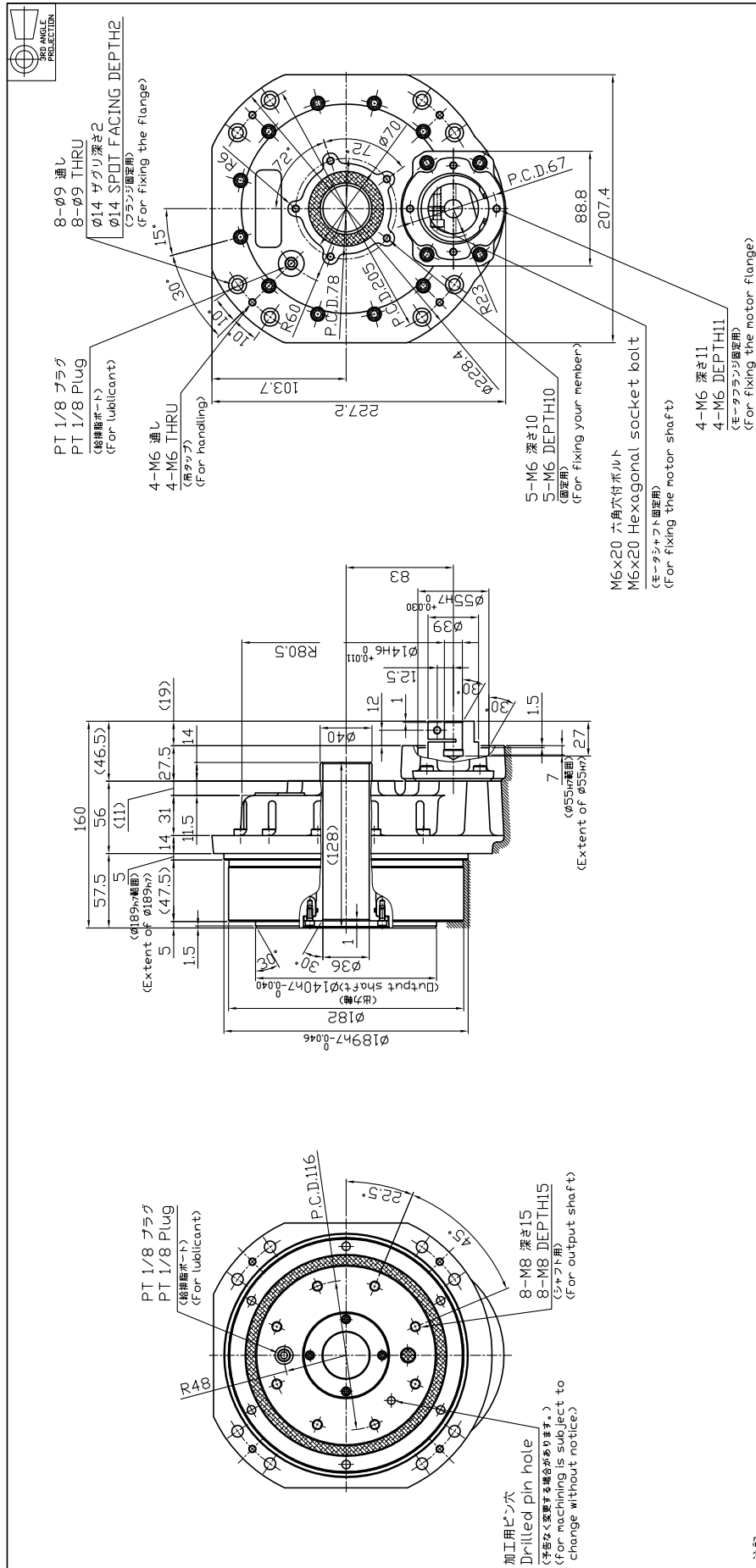
1. フランジ固定用8-M6六角穴付ボルトは、締付トルク15.6a7a78N・mにて締付けること。
 2. ショートヤム6六角穴付ボルトは、締付トルク37.2a186N・mにて締付けること。
 3. マスターヤム6六角穴付ボルトは、締付トルク65.6a7a78N・mにて締付けること。
 4. ケース及びシャフト締付ボルトは、六角穴付ボルト用ロバネを使用すること。
 5. 減速機内部には、弊社指定潤滑油を充填。
- ※ 塗装 表色 エポキシ マンガン系No1.5C(黒色) 塗装 配用部を//////に示す

NOTE

1. Tightening torque of 8-M6 hexagon socket headed bolt for fixing case is 15.6±0.78N-m.
2. Tightening torque of 6-M8 hexagon socket headed bolt on the output shaft is 37.2±1.86N-m.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is 15.6±0.78N-m.
4. Bolt shall be used with corned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J (cm^2/s^2) ($\text{kgm}^2/4$)
81	RJS-010C-081-B1		3.01×10^{-4}
108	RJS-010C-108-B1		2.83×10^{-4}
153	RJS-010C-153-B1	6.9	2.69×10^{-4}
189	RJS-010C-189-B1		2.63×10^{-4}
243	RJS-010C-243-B1		2.57×10^{-4}

Model Code: RDS-027C-XXX-B0 (Corresponding motor shaft diameter: $\varnothing 8$ to $\varnothing 14$)



注記

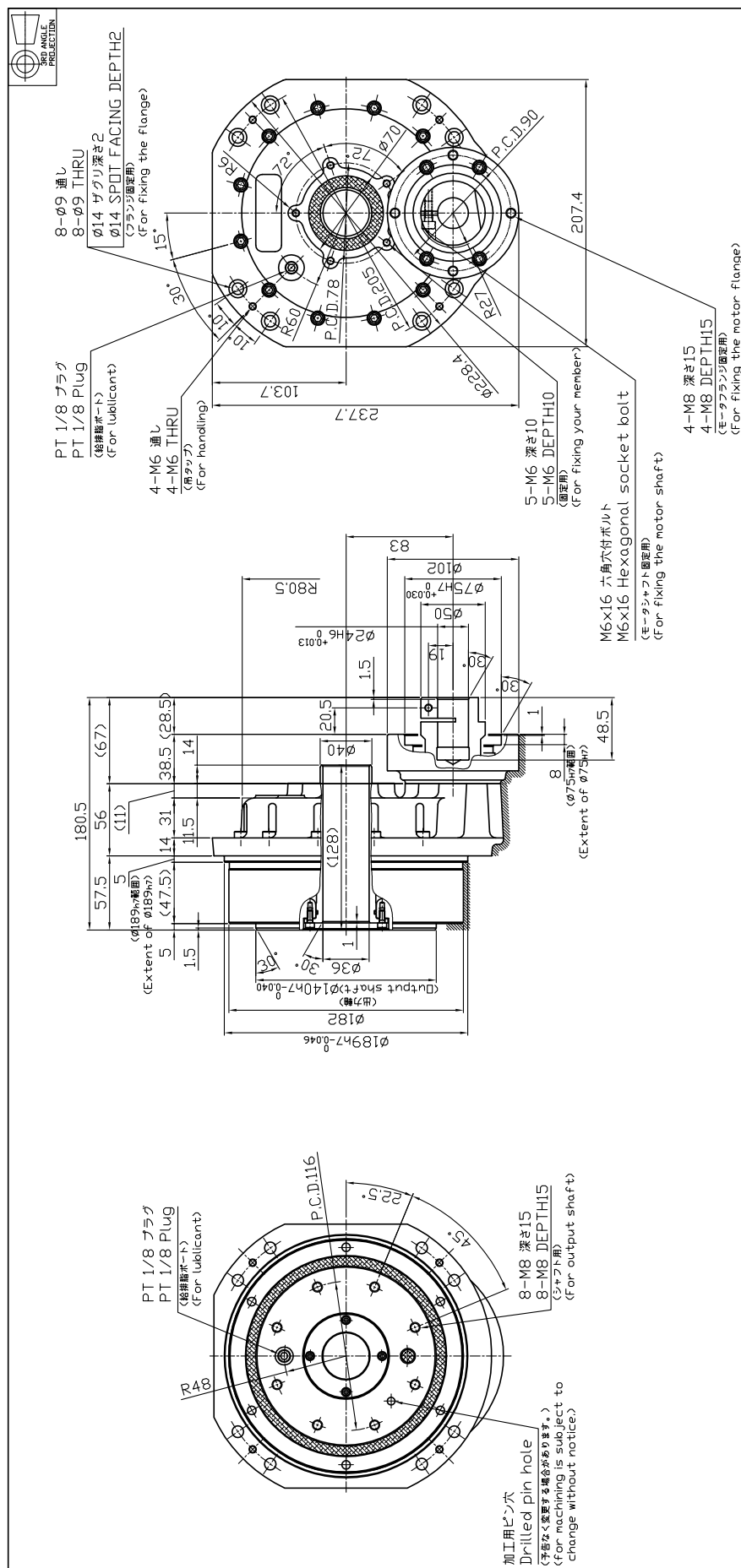
- ① 1. ランジ指定用8-N8六角穴付ボルトは、締付トルク 37.2 ± 0.6 N・mにて締付けること。
② 2. シェアット用8-M8六角穴付ボルトは、締付トルク 37.2 ± 0.6 N・mにて締付けること。
③ 3. モータシャフト用M6六角穴付ボルトは、締付トルク 15.6 ± 0.78 N・mにて締付けること。
④ 4. ケース及びシェアット締付ボルトには、六角穴付ボルト用ワッシャーを使用すること。
⑤ 5. 減速機内部には、弊社指定潤滑油を充填す。
- ※ 塗装内色はエポキシ中間層NoN15(黒色)に示す
※ 塗装外色はエポキシ指定潤滑剤を充填す。

NOTE

1. Tightening torque of 8-M8 hexagon socket headed bolt for fixing case is 37.2 ± 1.86 N-m.
2. Tightening torque of 8-M8 hexagon socket headed bolt on the output shaft is 37.2 ± 1.86 N-m.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is 15.6 ± 0.76 N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // // // area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント [Moment of Inertia] (kgf·cm ²) (kg·m ²)
99.82	RDS-027C-100-B0		3.05×10 ⁻⁴
141.68	RDS-027C-142-B0	8.5	2.26×10 ⁻⁴
184	RDS-027C-184-B0		1.93×10 ⁻⁴
233.45	RDS-027C-233-B0		1.69×10 ⁻⁴

Model Code: RDS-027C-XXX-B1 (Corresponding motor shaft diameter: $\varnothing 15$ to $\varnothing 24$)



注記

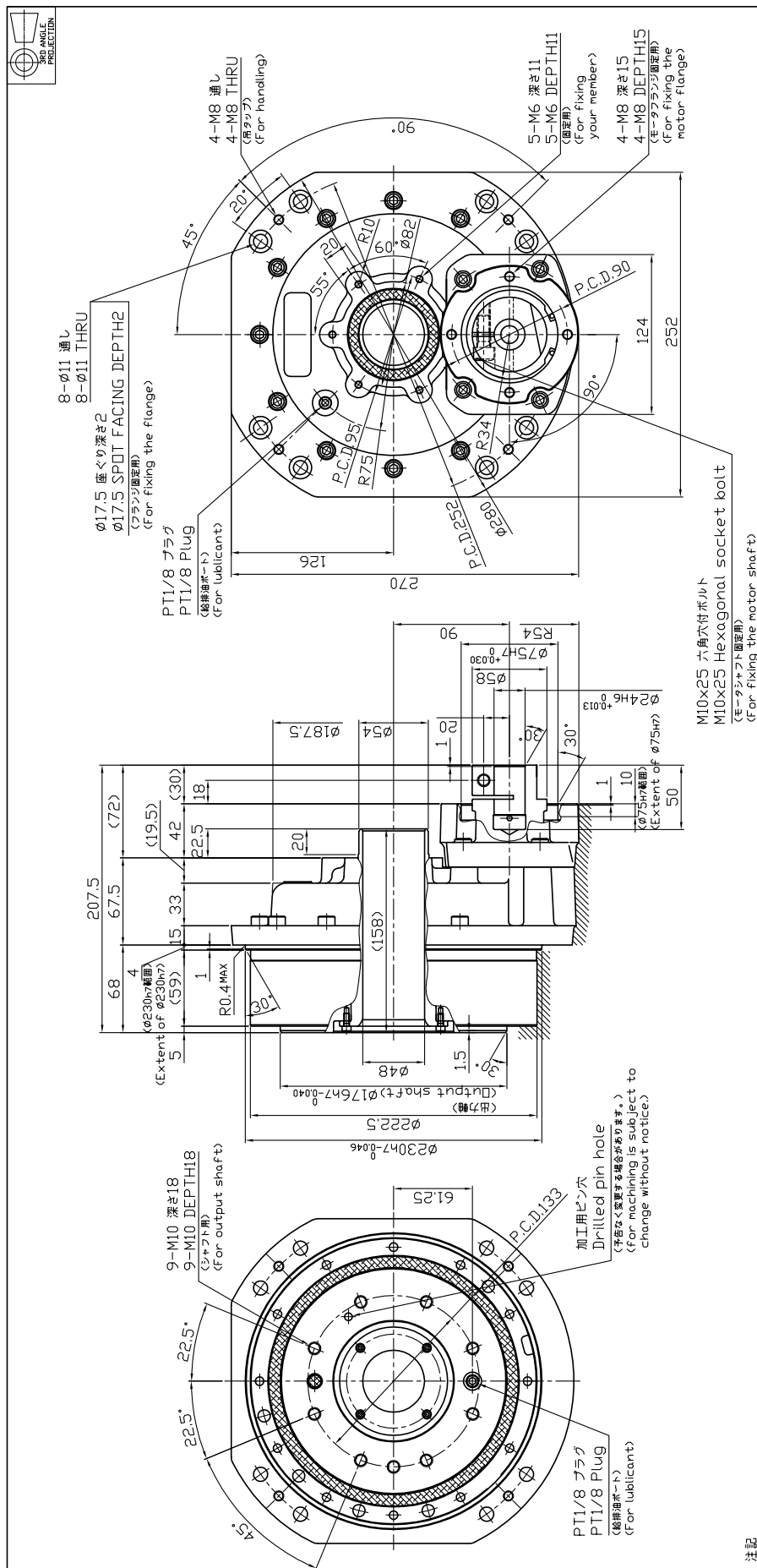
- ① 1. フランジ固定用8-M8六角穴付ボルトは、締付トルク37.2±16N・mにて締付けすること。
② 2. シャフト用8-M8六角穴付ボルトは、締付トルク37.2±16N・mにて締付けること。
③ 3. モータシャフト固定用M6六角穴付ボルトは、締付トルク15.6±7.0N・mにて締付けること。
④ 4. ケース及びシャフト締付ボルトには、六角穴付ボルト用皿爪を使用すること。
⑤ 5. 減速機内部には、弊社指定潤滑油を充填。
⑥ 6. 塗装：内装色 エポキシ マンガン系No1(5色) 塗装配図部分を//////に示す

NOTE

1. Tightening torque of 8-M8 hexagon socket headed bolt for fixing case is $37.2 \pm 1.68 \text{ N}\cdot\text{m}$.
2. Tightening torque of 8-M8 hexagon socket headed bolt on the output shaft is $37.2 \pm 1.68 \text{ N}\cdot\text{m}$.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is $15.6 \pm 0.78 \text{ N}\cdot\text{m}$.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6.  area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J _x (kg・m ²)
99.82	RDS-027C-100-B1		4.40×10 ⁻⁴
141.68	RDS-027C-142-B1	9.4	3.61×10 ⁻⁴
184	RDS-027C-184-B1		3.29×10 ⁻⁴
233.45	RDS-027C-233-B1		3.04×10 ⁻⁴

Model Code: RDS-050C-XXX-B2 (Corresponding motor shaft diameter: $\varnothing 14$ to $\varnothing 24$)



品類

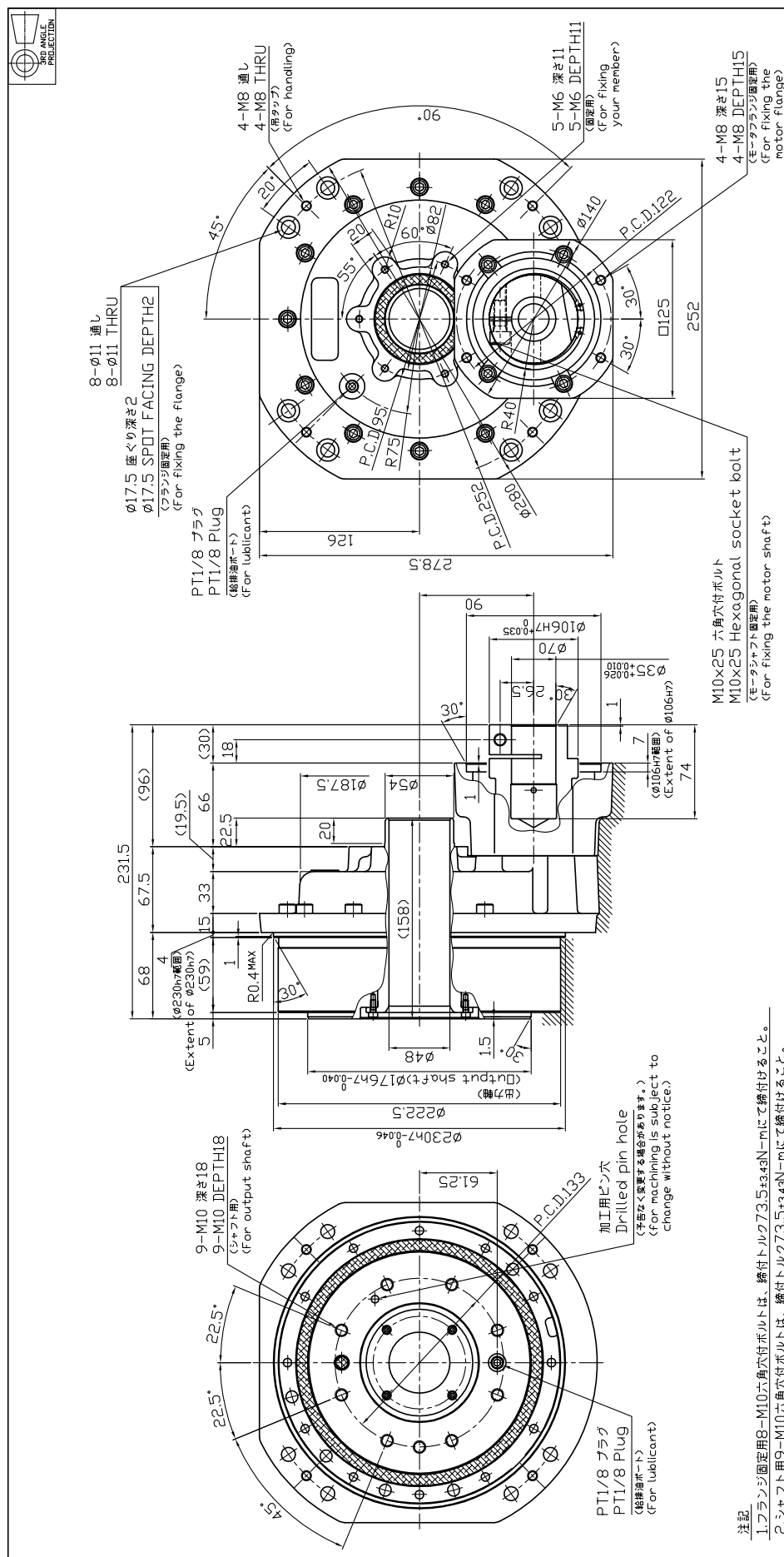
- ① フラジリ固定用8-M10六角穴付ボルトは、締付トルク73.5 $\pm$ 3.4N・mにて締付けすること。
② シャフト用9-M10六角穴付ボルトは、締付トルク73.5 $\pm$ 3.4N・mにて締付けすること。
③ モータシャフト固定用M10六角穴付ボルトは、締付トルク73.5 $\pm$ 3.4N・mにて締付けすること。
④ ケース及びジャケット締付ボルトには、六角穴付ボルト用皿皿を使用すること。
⑤ 減速機内部には、弊社指定油脂（No.15）を充填。
※ 塗装：亜鉛色（Zn-15（黒色））
※ 塗料：エポキシ樹脂系
※ 塗装箇所は、斜線部分に示す。

NOTE

1. Tightening torque of 8-M10 hexagon socket headed bolt for fixing case is 73.5*43N-m.
2. Tightening torque of 9-M10 hexagon socket headed bolt on the output shaft is 73.5*43N-m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5*43N-m.
4. Bolt shall be used with corned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. The area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia I ₀ (kg·m ²) 動力慣性モーメント 動力慣性モーメント The Motor Axis Conversion (kg·m ²)
109	RDS-050C-109-B2		8.23×10 ⁻⁴
152.6	RDS-050C-153-B2	29.5	7.52×10 ⁻⁴
196.2	RDS-050C-196-B2		7.18×10 ⁻⁴
239.8	RDS-050C-240-B2		6.99×10 ⁻⁴

Model Code: RDS-050C-XXX-B3 (Corresponding motor shaft diameter: $\varnothing 25$ to $\varnothing 35$)

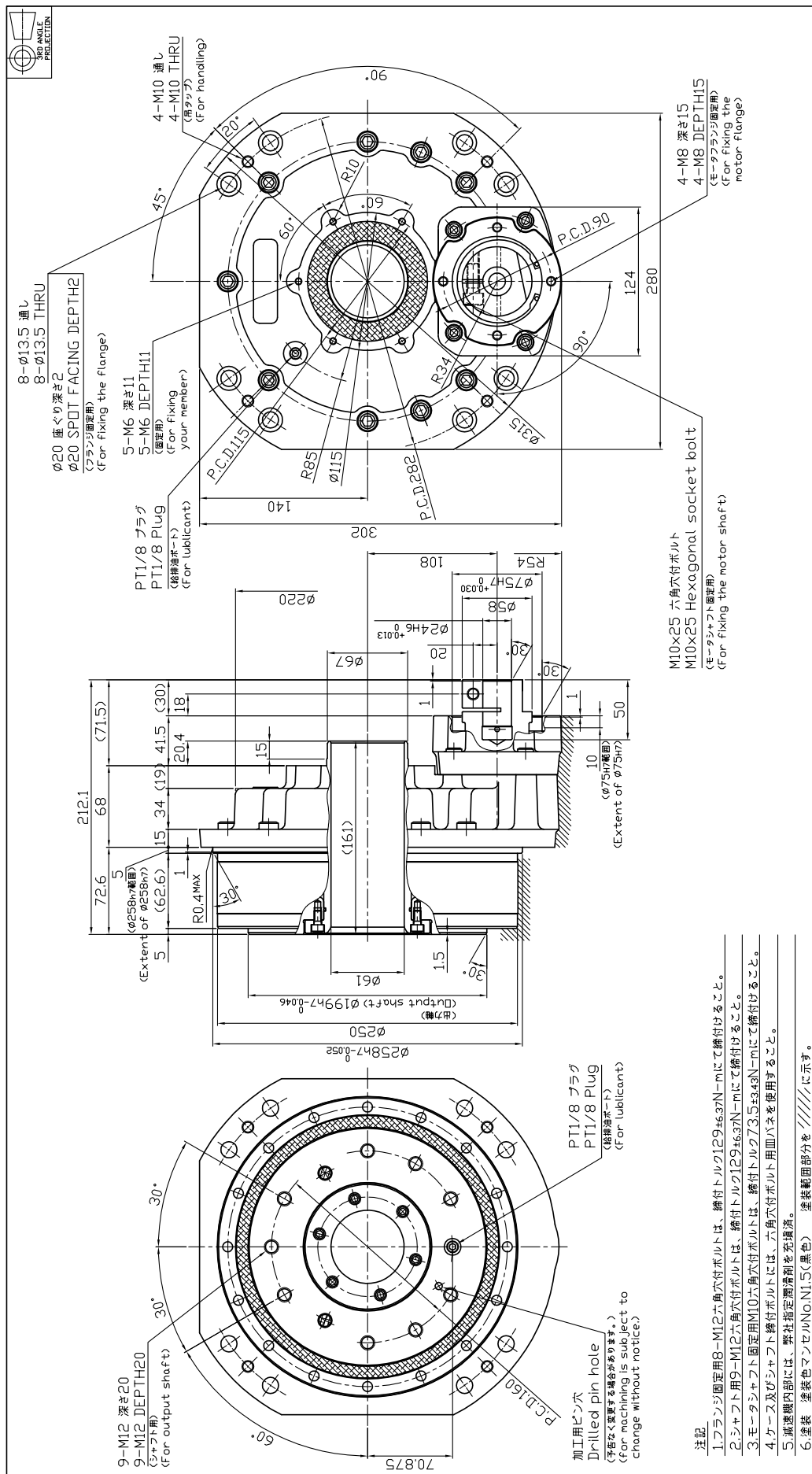


NOTE

1. Tightening torque of 8-M10 hexagon socket headed bolt for fixing case is 73.5*343N-m.
2. Tightening torque of 9-M10 hexagon socket headed bolt on the output shaft is 73.5*343N-m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5*343N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // // // // area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J ₀ [kg・m ²] The Motor Axis Conversion (kg・m ²)
109	RDS-050C-109-B3		1.41×10 ⁻³
152.6	RDS-050C-153-B3	31.0	1.34×10 ⁻³
196.2	RDS-050C-196-B3		1.31×10 ⁻³
239.8	RDS-050C-240-B3		1.29×10 ⁻³

Model Code: RDS-100C-XXX-B2 (Corresponding motor shaft diameter: $\varnothing 14$ to $\varnothing 24$)

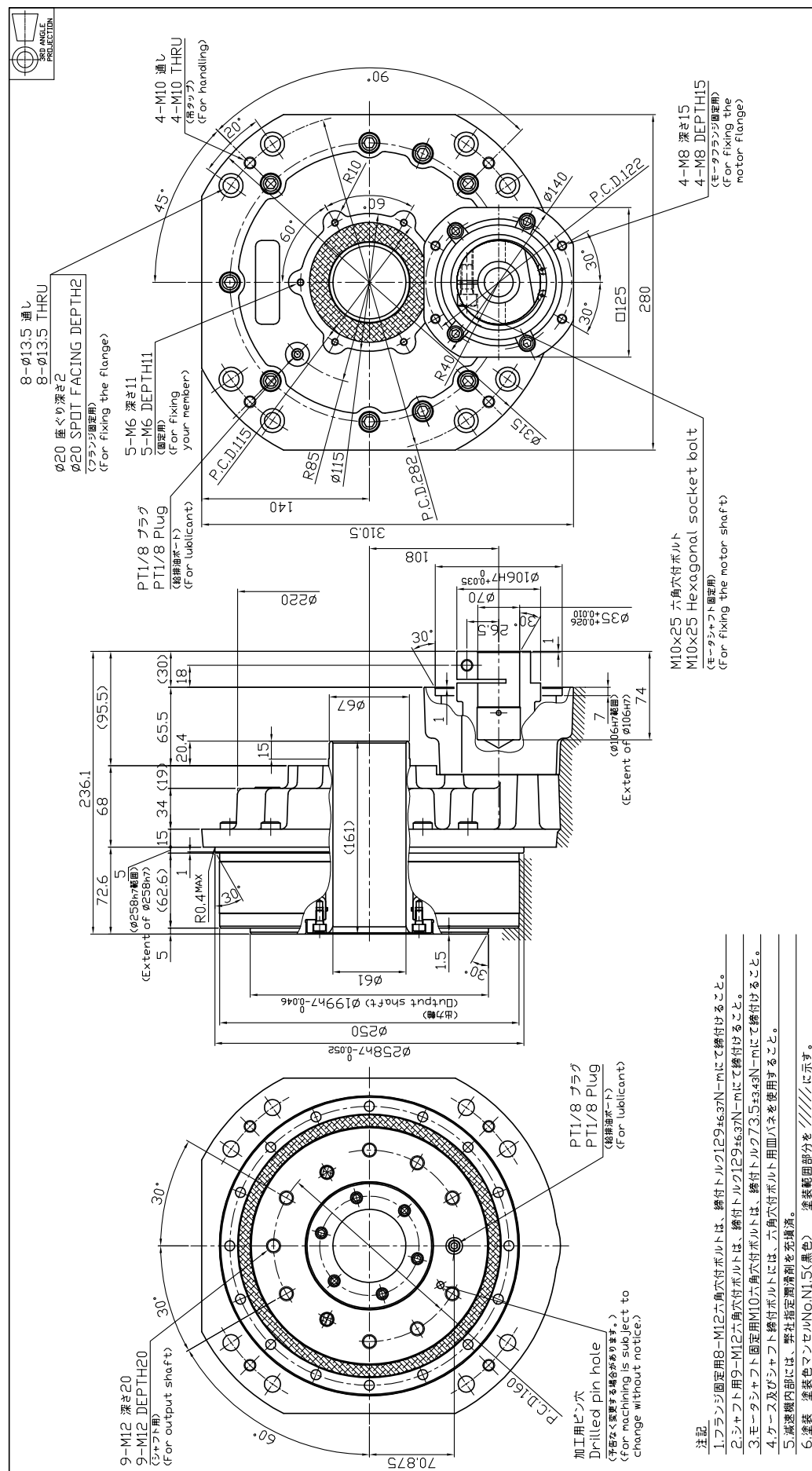


NOTE

1. Tightening torque of 8-M12 hexagon socket headed bolt for fixing case is 129₄₆₃N·m.
2. Tightening torque of 9-M12 hexagon socket headed bolt on the output shaft is 129₄₆₃N·m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5₄₃₄N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // // // // area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia (kg・m ²) トルク容量 T.Motor Axis Conversion (kg・m ²)
100.5	RDS-100C-101-B2		1.40x10 ⁻³
150	RDS-100C-150-B2	37.0	1.06x10 ⁻³
210	RDS-100C-210-B2		8.91x10 ⁻⁴
258	RDS-100C-258-B2		8.23x10 ⁻⁴

Model Code: RDS-100C-XXX-B3 (Corresponding motor shaft diameter: $\varnothing 25$ to $\varnothing 35$)

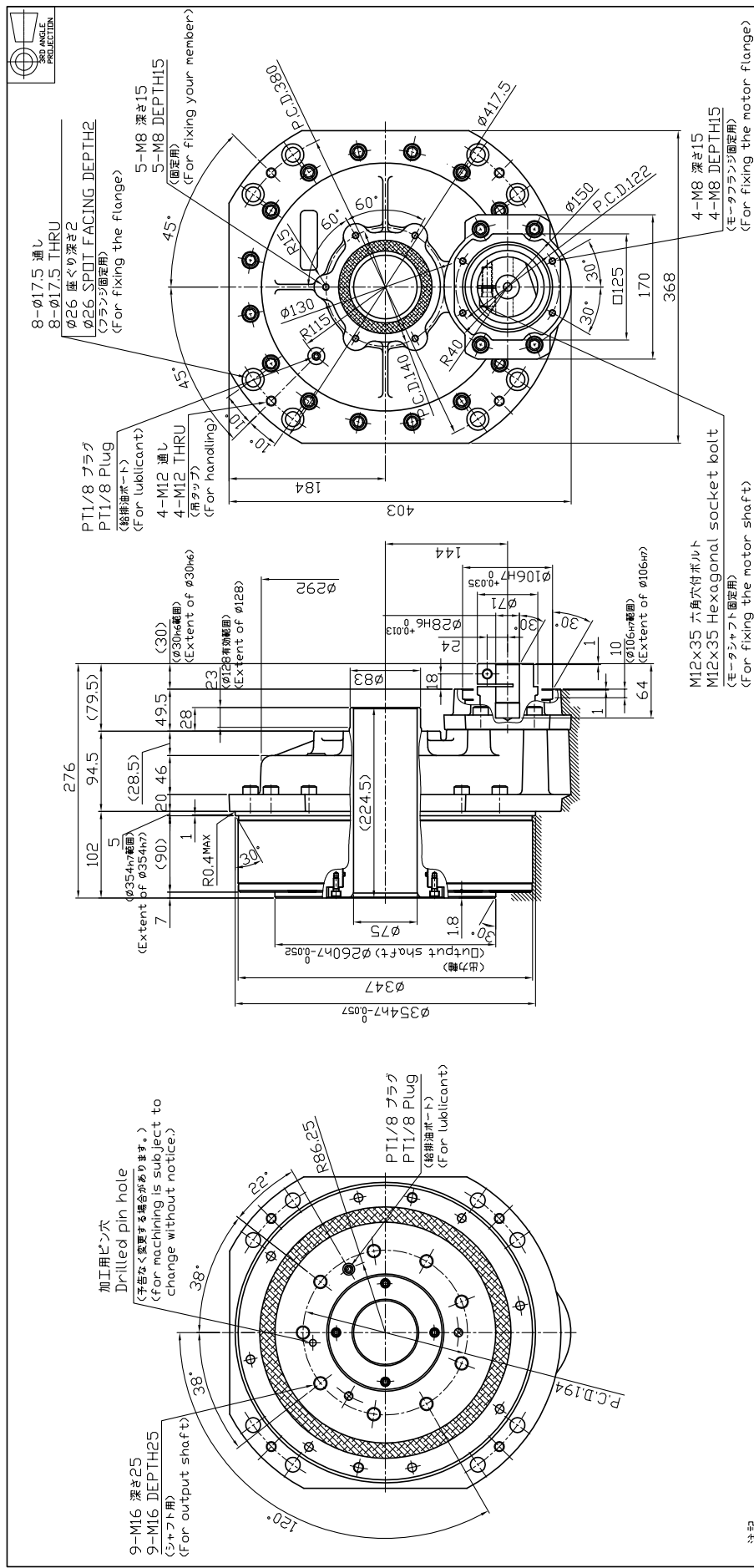


NOTE

1. Tightening torque of 8-M12 hexagon socket headed bolt for fixing case is 129_{±63}N·m.
2. Tightening torque of 9-M12 hexagon socket headed bolt on the output shaft is 129_{±63}N·m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5_{±3.4}N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // // // // area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J ₁ (kg・m ²) モータ質量 The Motor Axis Conversion (kg・m ²)
100.5	RDS-100C-101-B3		1.99x10 ⁻³
150	RDS-100C-150-B3	38.5	1.65x10 ⁻³
210	RDS-100C-210-B3		1.48x10 ⁻³
258	RDS-100C-258-R3		1.41x10 ⁻³

Model Code: RDS-200C-XXX-B4 (Corresponding motor shaft diameter: $\phi 19$ to $\phi 28$)



注記

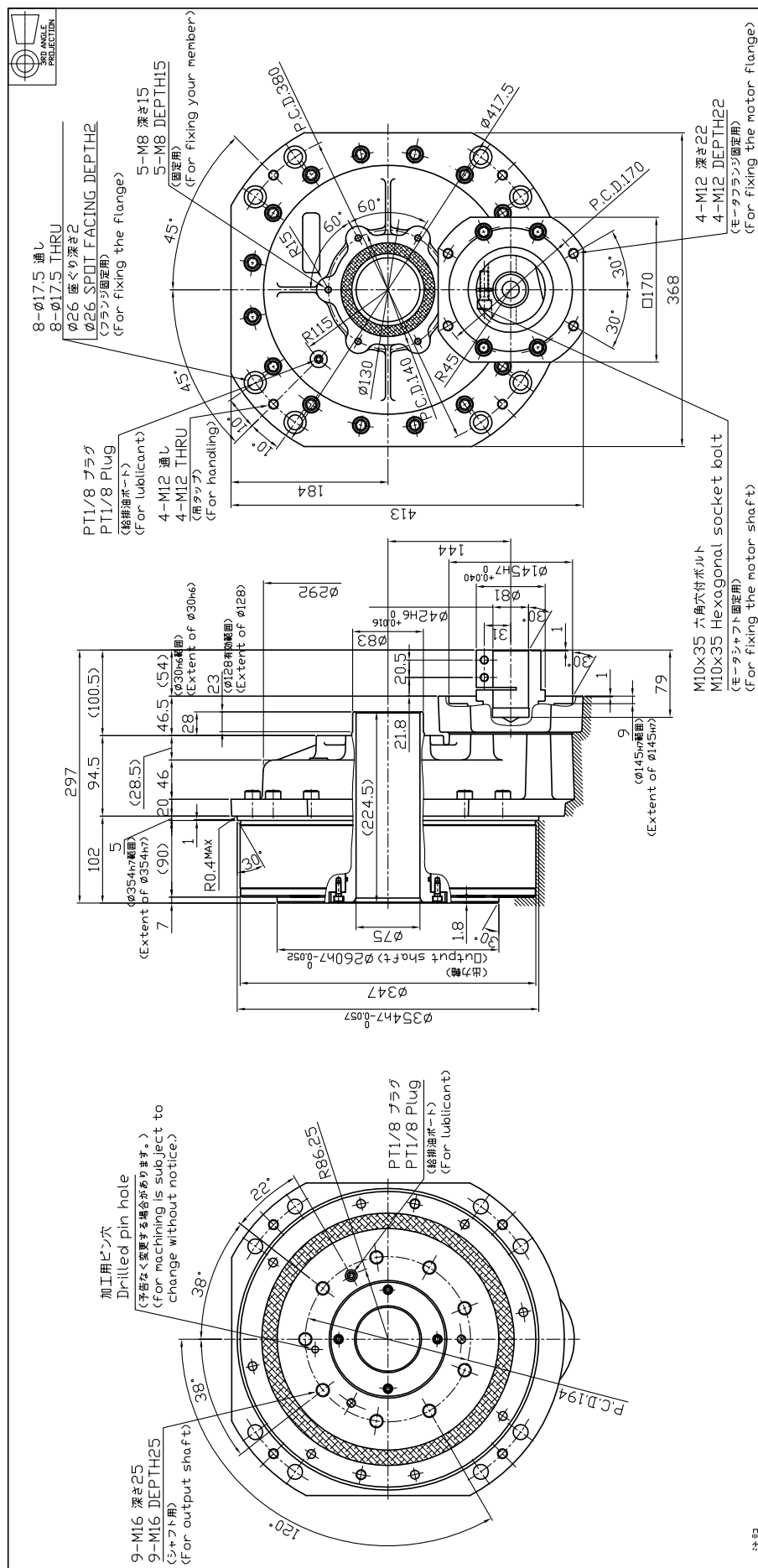
1. フランジ固定用8-M16六角穴付ボルトは、締付トルク319±59N-mにて締付けること。
2. シャフト用9-M16六角穴付ボルトは、締付トルク319±59N-mにて締付けること。
3. モータシャフト固定用M12六角穴付ボルトは、締付トルク129±6.37N-mにて締付けること。
4. ケース及びシャフト締付ボルトには、六角穴付ボルト用皿バネを使用すること。
5. 減速機内部には、弊社指定潤滑剤を充填済。
6. 塗装 塗装色 エポキシ マンセルNo.N1.5(黒色) 塗装範囲部分を/////に示す。

NOTE

1. Tightening torque of 8-M16 hexagon socket headed bolt for fixing case is 319±59N-m.
2. Tightening torque of 9-M16 hexagon socket headed bolt on the output shaft is 319±59N-m.
3. Tightening torque of M12 hexagon socket headed bolt for fixing motor shaft is 129±6.37N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. ///// area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia, I_p ($\text{kg}\cdot\text{cm}^2$)	入力軸換算 The Motor Axis Conversion $\text{kg}\cdot\text{cm}^2$
105.83	RDS-200C-106-B4			3.60×10 ⁻³
155.96	RDS-200C-156-B4			2.80×10 ⁻³
206.09	RDS-200C-206-B4	84.2		2.43×10 ⁻³
245.08	RDS-200C-245-B4			2.28×10 ⁻³

Model Code: RDS-200C-XXX-B5 (Corresponding motor shaft diameter: $\varnothing 32$ to $\varnothing 42$)



品名:

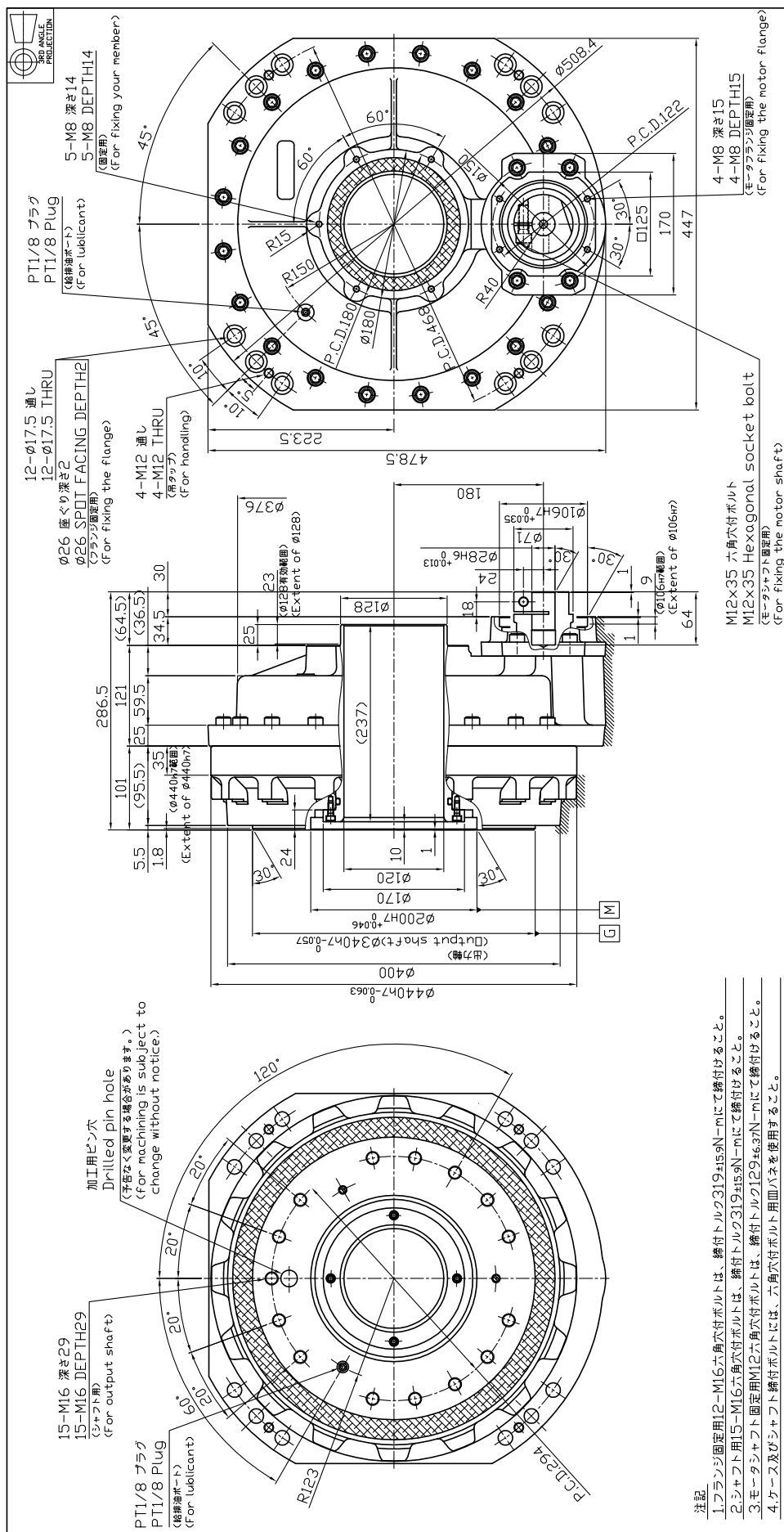
1. フランジ固定用8-M16六角穴付ボルトは、締付トルク319.5±19.5N・mにて締付けること。
 2. ショータン用9-M16六角穴付ボルトは、締付トルク319.5±19.5N・mにて締付けること。
 3. ショータン用9-M16六角穴付ボルトは、締付トルク319.5±19.5N・mにて締付けること。
 4. ケース及びシャフトに締付けた場合は、六角穴付ボルト用皿バネを使用すること。
 5. 減速機内部には、弊社指定潤滑油を充填す。
- ※ 塗装色 エポキシ マンテックNO.13(黒色) 塗装部を~~斜線~~に示す。

NOTE

1. Tightening torque of 8-M16 hexagon socket headed bolt for fixing case is 319⁴¹⁵N-m.
2. Tightening torque of 9-M16 hexagon socket headed bolt on the output shaft is 319⁴¹⁵N-m.
3. Tightening torque of 2-M10 hexagon socket headed bolt for fixing motor shaft is 73.5⁴³⁴N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6.  area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J [kg・m ²] The Motor Axis Conversion ω_g^{-2}
105.83	RDS-200C-106-B5		4.69x10 ⁻³
155.96	RDS-200C-156-B5	87.3	3.89x10 ⁻³
206.09	RDS-200C-206-B5		3.51x10 ⁻³
245.08	RDS-200C-245-B5		3.36x10 ⁻³

Model Code: RDS-320C-XXX-B4 (Corresponding motor shaft diameter: $\varnothing 19$ to $\varnothing 28$)

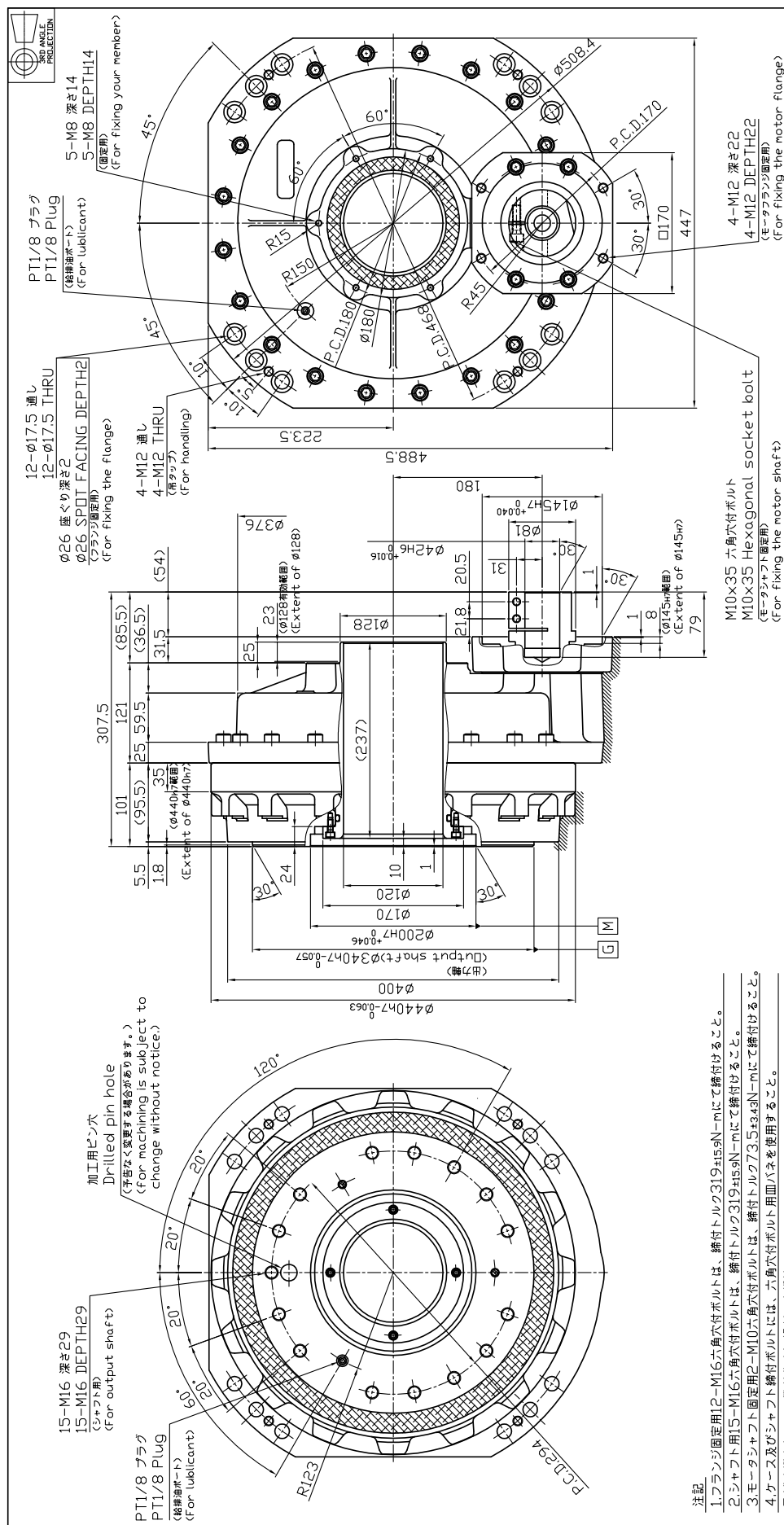


NOTE

1. Tightening torque of 12-M16 hexagon socket headed bolt for fixing case is 319_{±3}N-m.
2. Tightening torque of 15-M16 hexagon socket headed bolt on the output shaft is 319_{±3}N-m.
3. Tightening torque of M12 hexagon socket headed bolt for fixing motor shaft is 129_{±3}N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of  or .
7.  area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia "I" スラック質量値 The Motor Axis Conversion ($\text{kg}\cdot\text{m}^2$)
115	RDS-320C-115-B4		7.17×10^{-3}
157	RDS-320C-157-B4	140.8	5.10×10^{-3}
207	RDS-320C-207-B4		3.90×10^{-3}
253	RDS-320C-253-B4		3.29×10^{-3}

Model Code: RDS-320C-XXX-B5 (Corresponding motor shaft diameter: $\varnothing 32$ to $\varnothing 42$)



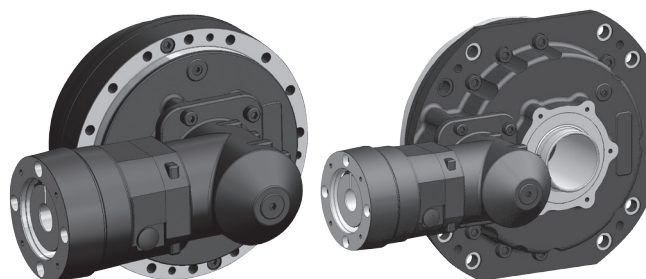
NOTE

1. Tightening torque of 12-M16 hexagon socket headed bolt for fixing case is 319.459N-m.
2. Tightening torque of 15-M16 hexagon socket headed bolt on the output shaft is 319.459N-m.
3. Tightening torque of 2-M10 hexagon socket headed bolt for fixing motor shaft is 73.5343N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of  or .
7.  area is painted black.

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia, I _x [kg・m ²] The Motor Axis Conversion [kg・m ²]
115	RDS-320C-115-B5		8.25×10 ⁻³
157	RDS-320C-157-B5	1438	6.18×10 ⁻³
207	RDS-320C-207-B5		4.98×10 ⁻³
253	RDS-320C-253-B5		4.37×10 ⁻³



Right angle input type



Right Angle Input Type Code Description and Configuration Diagram

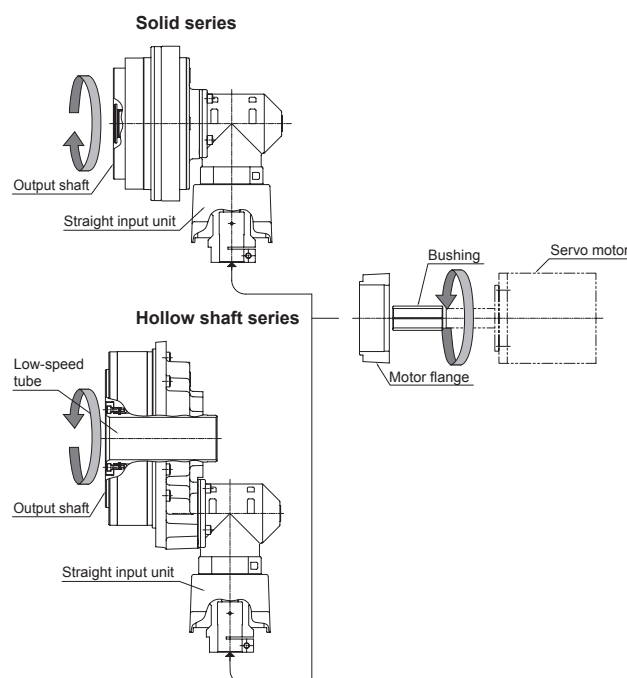
Product code

RD R - 080 E - 041 - C3 - GD - ZZ

Model Code			Ratio Code	Input unit code	Motor flange code	Bushing code
Right angle input code	Torque code	Series code				
R	006	E: Solid series	031, 043, 054, 079, 103	C0 : Corresponding motor shaft diameter $\phi 8$ to 14 C1 : Corresponding motor shaft diameter $\phi 15$ to 24	2-letter code (code will differ depending on motor to be attached)	2-letter code (code will differ depending on motor to be attached)
	020		041, 057, 081, 105, 121, 161	C0 : Corresponding motor shaft diameter $\phi 8$ to 14 C1 : Corresponding motor shaft diameter $\phi 15$ to 24		
	040		041, 057, 081, 105, 121, 153	C2 : Corresponding motor shaft diameter $\phi 14$ to 24 C3 : Corresponding motor shaft diameter $\phi 25$ to 35		
	080		041, 057, 081, 101, 121, 153	C2 : Corresponding motor shaft diameter $\phi 14$ to 24 C3 : Corresponding motor shaft diameter $\phi 25$ to 35		
	160		066, 081, 101, 121, 145, 171	C4 : Corresponding motor shaft diameter $\phi 19$ to 28 C5 : Corresponding motor shaft diameter $\phi 32$ to 42		
	320		066, 081, 101, 121, 141, 185	C4 : Corresponding motor shaft diameter $\phi 19$ to 28 C5 : Corresponding motor shaft diameter $\phi 32$ to 42		
	010	C: Hollow shaft series	081, 108, 153, 189, 243	C0 : Corresponding motor shaft diameter $\phi 8$ to 14 C1 : Corresponding motor shaft diameter $\phi 15$ to 24		
	027		100, 142, 184, 233	C0 : Corresponding motor shaft diameter $\phi 8$ to 14 C1 : Corresponding motor shaft diameter $\phi 15$ to 24		
	050		109, 153, 196, 240	C2 : Corresponding motor shaft diameter $\phi 14$ to 24 C3 : Corresponding motor shaft diameter $\phi 25$ to 35		
	100		101, 150, 210, 258	C2 : Corresponding motor shaft diameter $\phi 14$ to 24 C3 : Corresponding motor shaft diameter $\phi 25$ to 35		
	200		106, 156, 206, 245	C4 : Corresponding motor shaft diameter $\phi 19$ to 28 C5 : Corresponding motor shaft diameter $\phi 32$ to 42		
	320		115, 157, 207, 253	C4 : Corresponding motor shaft diameter $\phi 19$ to 28 C5 : Corresponding motor shaft diameter $\phi 32$ to 42		

Note: For selection of motor flange and bushing, see the selection tables on pages 83 – 85 or visit the Nabtesco website (URL : <http://www.nabtesco-precision.de>, <http://www.nabtescomotioncontrol.com>).

Configuration Diagram



Straight input type

Right angle input type

Pulley input type

Motor flange / bushing

Technical Documents

Rating Table Right angle input type

Solid series

Model Code	Ratio code (actual gear ratio)	Reduction Gear														Outer Dimensions
		T ₀	N ₀	K	T _{S1}	T _{S2}	N _{in}	N _S	N _{To}	Backlash	Lost motion	Torsional rigidity	Start-up Efficiency	M ₀	α	
		Rated Torque	Rated Output Speed	Life Rating	Allowable Startup/Stop Torque	Momentary maximum allowable torque	Allowable Input Speed (Note 2)	Allowable Output Speed (Note 2)	Reference value to output speed during continuous operation at rated torque							
		(N-m)	(r.p.m.)	(Hr)	(N-m)	(N-m)	(r.p.m.)	(r.p.m.)	(r.p.m.)	(arc.min.)	(arc.min.)	(N-m/arc.min.)	(%)	(N-m)	(mm)	
RDR-006E	031 (31)	58	30	6,000	117	294	3,500	100	100	2.0	2.0	20	70	196	77.8	Input Unit Code : C0 ————P.44 Input Unit Code : C1 ————P.45
	043 (43)							81	76							
	054 (53.5)							65	63							
	079 (79)							44	44							
	103 (103)							34	34							
RDR-020E	041 (41)	108	15	6,000	271	543	3,500	75	55	1.5	1.5	49	75	882	93.2	Input Unit Code : C0 ————P.46 Input Unit Code : C1 ————P.47
	057 (57)	151			378	755		61	44							
	081 (81)	167			412	833		43	35							
	105 (105)							33	30							
	121 (121)							29	28							
	161 (161)							22	22							
RDR-040E	041 (41)	400	15	6,000	1,000	2,000	3,000	70	32	1.5	1.5	108	70	1,666	114.6	Input Unit Code : C2 ————P.48 Input Unit Code : C3 ————P.49
	057 (57)	412			1,029	2,058		53	30							
	081 (81)							37	28							
	105 (105)							29	27							
	121 (121)							25	25							
	153 (153)							20	20							
RDR-080E	041 (41)	400	15	6,000	1,000	2,000	3,000	70	35	1.5	1.5	196	75	2,156	136.1	Input Unit Code : C2 ————P.50 Input Unit Code : C3 ————P.51
	057 (57)	556			1,390	2,781		53	31							
	081 (81)	784			1,960	3,920		37	29							
	101 (101)							30	27							
	121 (121)							25	25							
	153 (153)							20	20							
RDR-160E	066 (66)	1,568	15	6,000	3,920	7,840	2,000	30	20	1.5	1.5	392	75	3,920	167.3	Input Unit Code : C4 ————P.52 Input Unit Code : C5 ————P.53
	081 (81)							25	18							
	101 (101)							20	16							
	121 (121)							17	14							
	145 (145)							14	13							
	171 (171)							12	12							
RDR-320E	066 (66)	1,800	15	6,000	4,503	9,002	2,000	30	14	1.5	1.5	980	80	7,056	203	Input Unit Code : C4 ————P.54 Input Unit Code : C5 ————P.55
	081 (81)	2,209			5,527	11,048		25	9							
	101 (101)	2,755			6,892	13,776		20	7							
	121 (121)	3,136			7,840	15,680		17	6							
	141 (141)							14	5							
	185 (185)							11	4							

Hollow shaft series

Model Code	Ratio code (actual gear ratio)	Reduction Gear														Outer Dimensions
		T ₀	N ₀	K	T _{S1}	T _{S2}	N _{in}	N _S	N _{To}	Backlash	Lost motion	Torsional rigidity	Start-up Efficiency	M ₀	α	
		Rated Torque	Rated Output Speed	Life Rating	Allowable Startup/Stop Torque	Momentary maximum allowable torque	Allowable Input Speed (Note 2)	Allowable Output Speed (Note 2)	Reference value to output speed during continuous operation at rated torque							
		(N-m)	(r.p.m.)	(Hr)	(N-m)	(N-m)	(r.p.m.)	(r.p.m.)	(r.p.m.)	(arc.min.)	(arc.min.)	(N-m/arc.min.)	(%)	(N-m)	(mm)	
RDR-010C	081 (81)	98	15	6,000	245	490	3,500	43	39	1.5	1.5	47	65	686	91.2	Input Unit Code : C0 ———P.56
	108 (108)							32	31							
	153 (153)							23	23							
	189 (189)							19	20							
	243 (243)							14	14							
RDR-027C	100 (99.82)	265	15	6,000	662	1,323	3,500	35	23	1.5	1.5	147	70	980	112	Input Unit Code : C0 ———P.58
	142 (141.68)							25	18							
	184 (184)							19	15							
	233 (233.45)							15	14							
RDR-050C	109 (109)	490	15	6,000	1,225	2,450	3,000	28	28	1.5	1.5	255	70	1,764	136.8	Input Unit Code : C2 ———P.60
	153 (152.6)							20	20							
	196 (196.2)							15	15							
	240 (239.8)							13	13							
RDR-100C	101 (100.5)	980	15	6,000	2,450	4,900	3,000	30	19	1.5	1.5	510	80	2,450	148.9	Input Unit Code : C2 ———P.62
	150 (150)							20	17							
	210 (210)							14	14							
	258 (258)							12	12							
RDR-200C	106 (105.83)	1,960	15	6,000	4,900	9,800	2,000	19	11	1.5	1.5	980	80	8,820	204.4	Input Unit Code : C4 ———P.64
	156 (155.96)							13	8							
	206 (206.09)							10	6							
	245 (245.08)							8	5							
RDR-320C	115 (115)	3,136	15	6,000	7,840	15,680	2,000	17	14	1.5	1.5	1,960	80	20,580	245.9	Input Unit Code : C4 ———P.66
	157 (157)							13	11							
	207 (207)							10	7							
	253 (253)							8	8							

Notes:

1. The rating table shows the specification values including the entry fields for reduction gear values.
2. The allowable speed may be limited by heat depending on the operating rate. Make sure the surface temperature of the reduction gear does not exceed 60°C during use.
3. The allowable moment will differ depending on the thrust load. Check the allowable moment diagram.
4. For the moment of inertia of the reduction gears, refer to the external dimension drawings for the reduction gear.

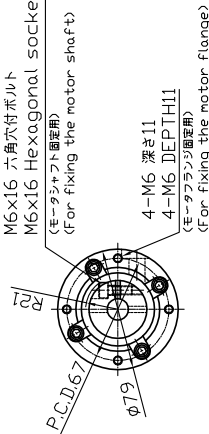
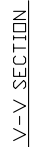
3RD ANGLE
PROJECTION



1. フランジ型変圧器7-15六角穴付ボルトは、締付トルク9.01±0.49N・mにて締付けること。
2. 1, 2, 2.1, 2.2, 2.3六角穴付ボルトは、締付トルク37.2±1.86N・mにて締付けること。
3. モータシヤ7-15六角穴付ボルトは、締付トルク15.6±0.78N・mにて締付けること。
4. ケース及びシャフト締付ボルトには、六角穴付ボルト用皿バネを使用すること。
5. インポート図^①は、どちらか一方を選択し、使用のこと。
6. 減速機内部には、弊社指定潤滑剤を充填す。
7. 塗装 塗色 エポキシ マンテックNO.G.NI.15(黒色) 塗装乾固部分を $\diagup\diagup\diagup$ に示す。
8. 塗装 塗色 エポキシ マンテックNO.G.NI.15(黒色) 塗装乾固部分を $\diagup\diagup\diagup$ に示す。

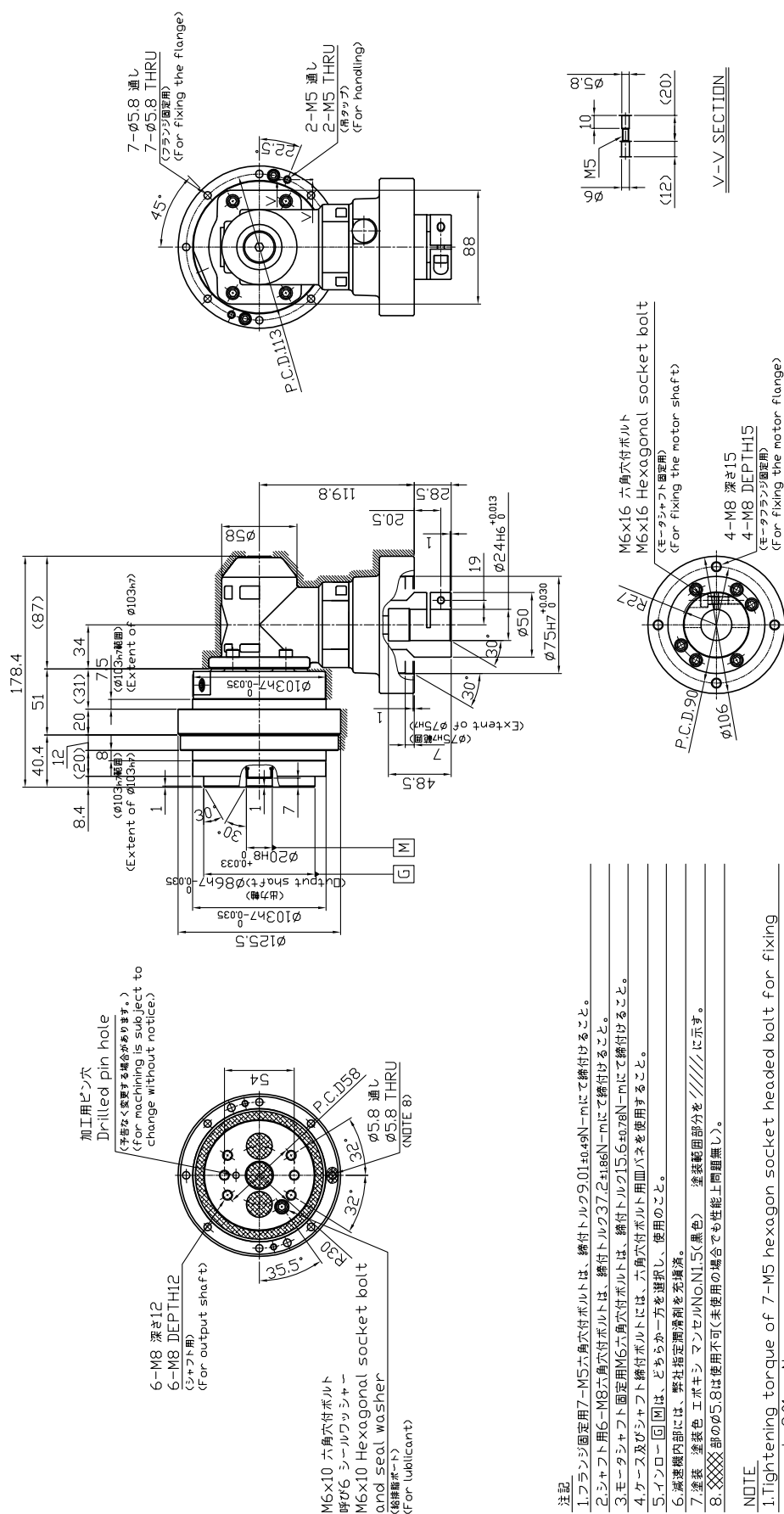
1. Tightening torque of 7-M5 hexagon socket headed bolt for fixing case is $9.01 \pm 0.49 \text{ N} \cdot \text{m}$.

2. Tightening torque of 6-M8 hexagon socket headed bolt on the output shaft is $37.2 \pm 1.86 \text{ N}\cdot\text{m}$.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is $15.6 \pm 0.78 \text{ N}\cdot\text{m}$.
4. Bolt shall be used with coned disk spring for heavy duty.
5. Use one of  DIN 913.
6. The specified lubricant is already sealed in before shipment.
7.  area is painted black.
8.  area cannot be used. (Even if it does not tighten M5($\phi 5.8$), the performance of the gear reducer is not influence.)



速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia (kg・m ²)
31	RDR-006E-031-C0		1.58×10 ⁻⁴
43	RDR-006E-043-C0		1.57×10 ⁻⁴
54	RDR-006E-054-C0	4.6	1.56×10 ⁻⁴
79	RDR-006E-079-C0		1.55×10 ⁻⁴
103	RDR-006E-103-C0		1.55×10 ⁻⁴

Model Code: RDR-006E-XXX-C1 (Corresponding motor shaft diameter: $\varnothing 15$ to $\varnothing 24$)

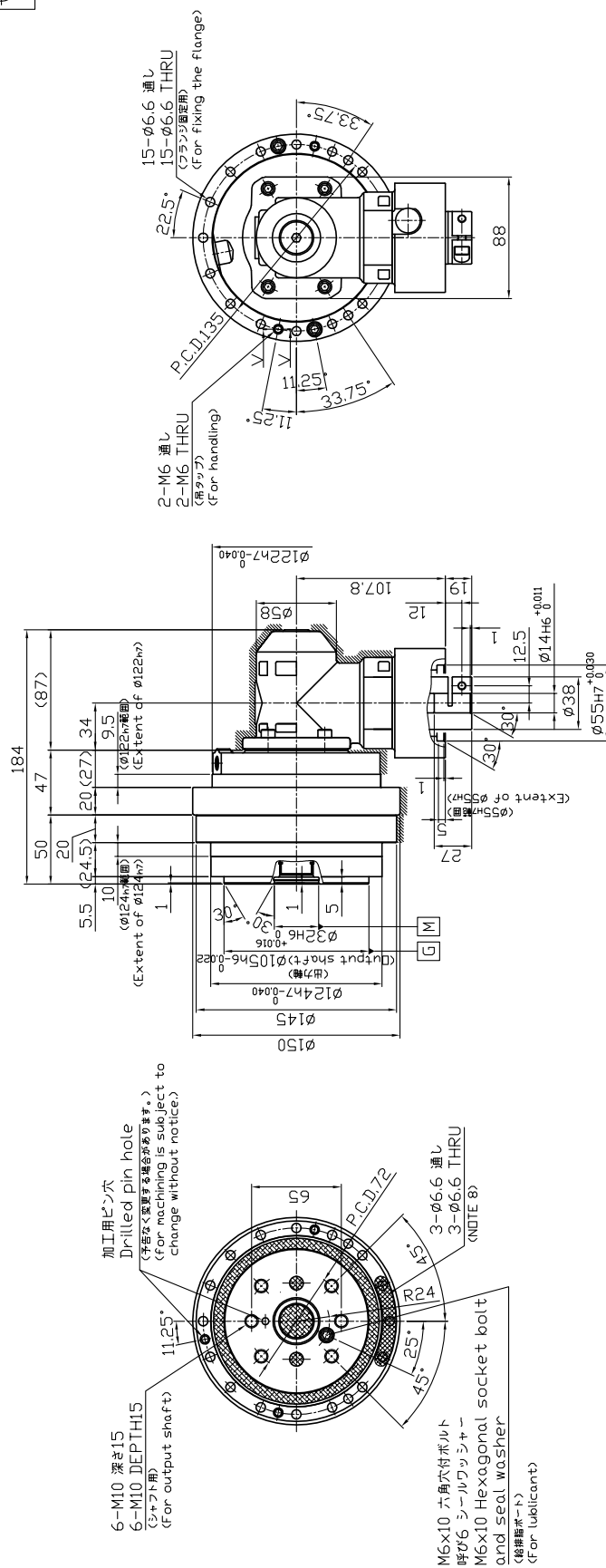


NOTE

1. Tightening torque of 7-M5 hexagon socket headed bolt for fixing case is $9.01 \pm 0.49 \text{ N} \cdot \text{m}$.
2. Tightening torque of 6-M8 hexagon socket headed bolt on the output shaft is $37.2 \pm 1.86 \text{ N} \cdot \text{m}$.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is $15.6 \pm 0.78 \text{ N} \cdot \text{m}$.
4. Bolt shall be used with coned disk spring for heavy duty.
5. Use one of  DIN.
6. The specified lubricant is already sealed in before shipment.
7.  area is painted black.
8. $\phi 5.8$ of  area cannot be used. (Even if it does not tighten M5($\phi 5.8$), the performance of the gear reducer is not influence.)

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia I_p ($\text{kg}\cdot\text{m}^2/4$) 慣性モーメント The Moment of Inertia Axis ($\text{kg}\cdot\text{m}^2$)
31	RDR-006E-031-C1		2.81×10^{-4}
43	RDR-006E-043-C1		2.62×10^{-4}
54	RDR-006E-054-C1	5.7	2.61×10^{-4}
79	RDR-006E-079-C1		2.60×10^{-4}
103	RDR-006E-108-C1		2.60×10^{-4}

Model Code: RDR-020E-XXX-C0 (Corresponding motor shaft diameter: $\varnothing 8$ to $\varnothing 14$)

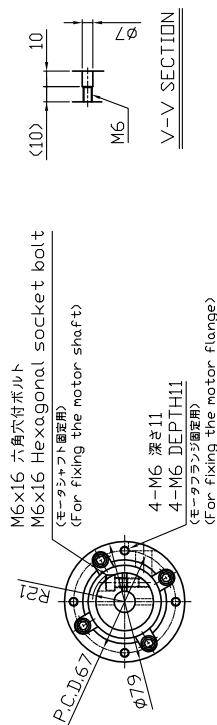


品名

1. フランジ固定用15-M6六角穴付ボルトは、締付トルク15.6m²N・mにて締付けること。
2. 締付用6-M10六角穴付ボルトは、締付トルク13.5m²N・mにて締付けること。
3. モータシャフト固定用M6六角穴付ボルトは、締付トルク15.6m²N・mにて締付けること。
4. G-スロー及びシャフトに締付ボルトは、六角穴付ボルト用皿入キを使用すること。
5. インポート用  は、どちらか一方を選択し、使用のこと。
6. 減速機内部には、弊社指定潤滑油を充填。
7. 塗装 塗料色 エポキシ マンテンペル15C(黒色) 塗装配団部分を  に示す。
8. 塗装 塗料色 6.6は、使用できません(使用の場合でも性能上問題無し)。

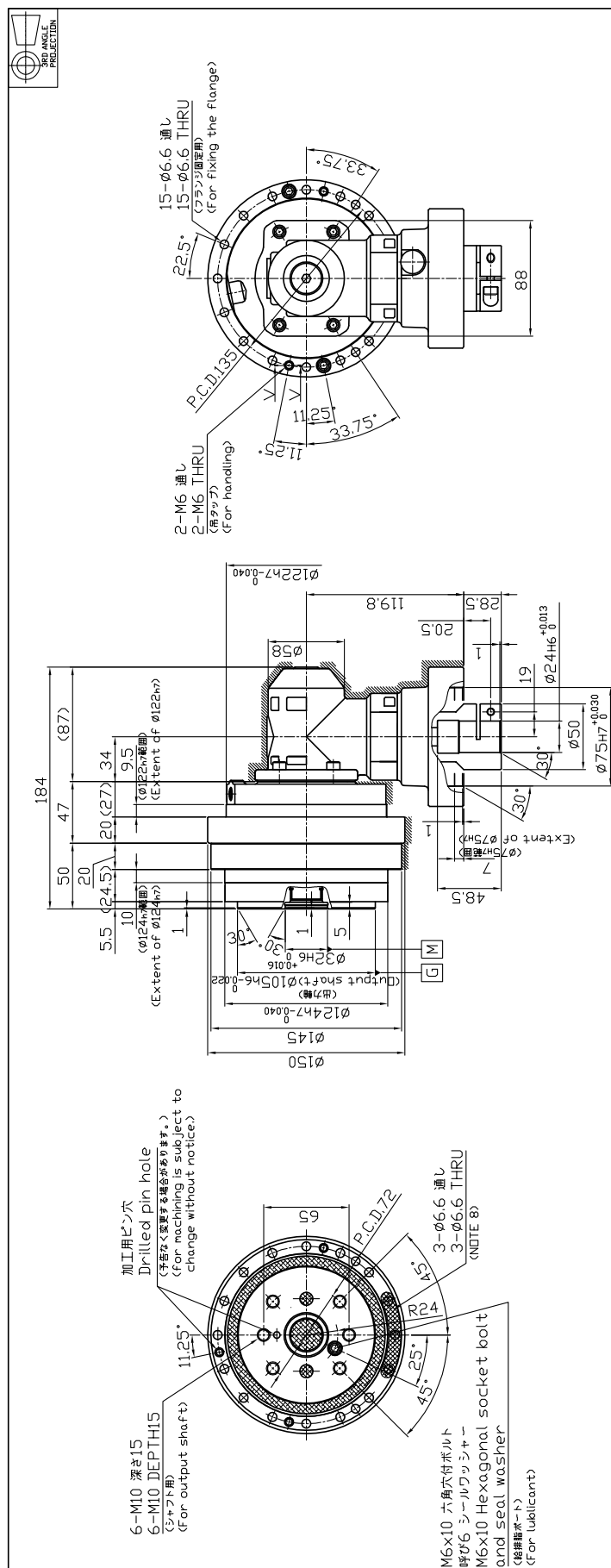
NOTE

1. Tightening torque of 15-M6 hexagon socket headed bolt for fixing case is 15.6±0.78N·m.
2. Tightening torque of 6-M10 hexagon socket headed bolt on the output shaft is 73.5±3.43N·m.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is 15.6±0.78N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
SUSE one of  DIN 913.
5. The specified lubricant is already sealed in before shipment.
6.  area is painted black.
7.  area cannot be used.(Even if it does not tighten 8.3-96.6 of  area, the performance of the gear reducer is not influence.)



速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J _r (=GJ/4) X ₁ 軸線周回 The Motor Axis Conversion (kg·m ²)
41	RDR-020E-041-C0	58	1.73x10 ⁻⁴
57	RDR-020E-057-C0		1.65x10 ⁻⁴
81	RDR-020E-081-C0		1.61x10 ⁻⁴
105	RDR-020E-105-C0		1.59x10 ⁻⁴
121	RDR-020E-121-C0		1.58x10 ⁻⁴
161	RDR-020E-161-C0		1.57x10 ⁻⁴

Model Code: RDR-020E-XXX-C1 (Corresponding motor shaft diameter: $\varnothing 15$ to $\varnothing 24$)



品共

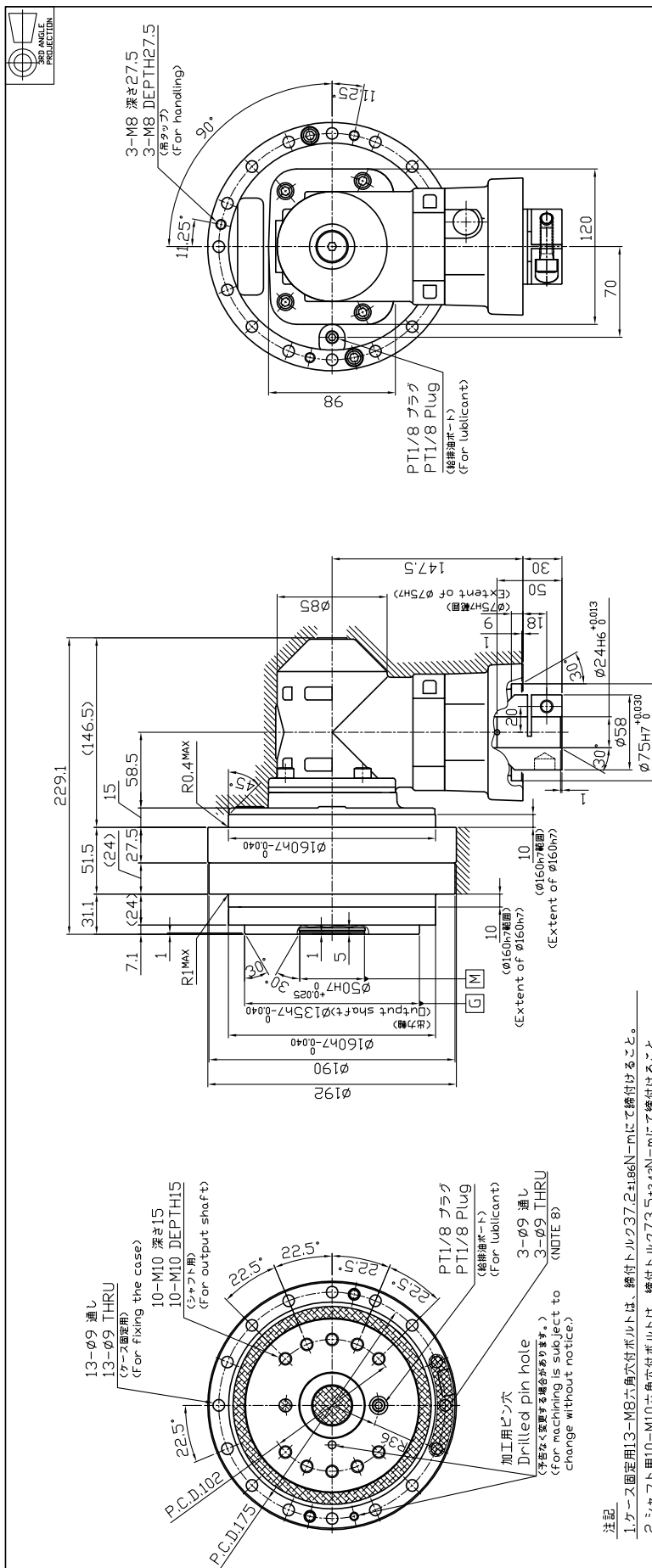
1. プランケット固定用IS-M6、角穴付ボルトは、締付トルク15.6±0.7N・mにて締付けること。
2. シャフト用6-M10六角穴付ボルトは、締付トルク37.5±3.3N・mにて締付けること。
3. モーター固定用M6六角穴付ボルトは、締付トルク15.6±0.7N・mにて締付けること。
4. ケース及びシヤフト締付ボルトには、六角穴付トルク用印入を使用すること。
5. インロー^①は、どちらか一方を選択し、使用のこと。
6. 減速機内部には、弊社指定潤滑油を充填す。
7. 塗装 塗装色 エポキシノボル(5黒色) 塗装部分^②を^③に示す。
8. 各部の3-φ6.6は使用不可(未使用の場合でも性能上問題無し)。

NOTE

1. Tightening torque of 15-M6 hexagon socket headed bolt for fixing case is 15.6±0.78N-m.
2. Tightening torque of 6-M10 hexagon socket headed bolt on the output shaft is 73.5±3.43N-m.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is 15.6±0.78N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. Use one of □ or ▢.
6. The specified lubricant is already sealed in before shipment.
7. / area is painted black.
8. 3-φ6.6 of XXXX area cannot be used.(Even if it does not tighten 3-M6(3-φ6.6), the performance of the gear reducer is not influence.)

速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia "J" (1=GD/4) kg・m ²
41	RDR-020E-041-C1		2.78x10 ⁻⁴
57	RDR-020E-057-C1		2.70x10 ⁻⁴
81	RDR-020E-081-C1	6.8	2.66x10 ⁻⁴
105	RDR-020E-105-C1		2.64x10 ⁻⁴
121	RDR-020E-121-C1		2.63x10 ⁻⁴
161	RDR-020E-161-C1		2.61x10 ⁻⁴

Model Code: RDR-040E-XXX-C2 (Corresponding motor shaft diameter: $\varnothing 14$ to $\varnothing 24$)



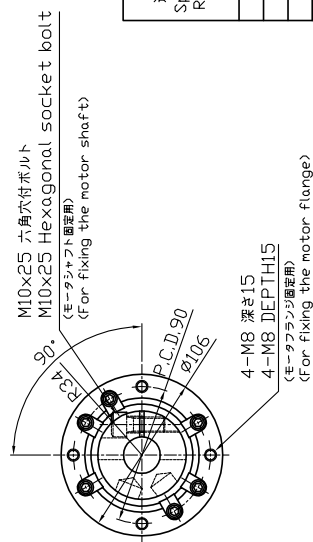
注記

1. ケース固定用[3-M8六角穴付ボルトは、納付トルク37.2±96N・mにて締付けすること。
2. シヤフト用[10-M10六角穴付ボルトは、納付トルク73.5±343N・mにて締付けすること。
3. モータースタッド固定用[10六角穴付ボルトは、納付トルク73.5±343N・mにて締付けすること。
4. ケース及びシヤフト締付ボルトは、六角穴付ボルト用ワッシャーを使用すること。
5. 減速機内部には、弊社指定潤滑剤を充填す。
6. インローグワン は、どちらか一方を選択し、使用すること。
7. 塗装 塗色はラメツェルNo.N1.5(黒色) ※塗面部分を//〃〃〃〃で示す。
※部品の3-6の9は使用不可(未使用の場合でも性能上問題無し)。

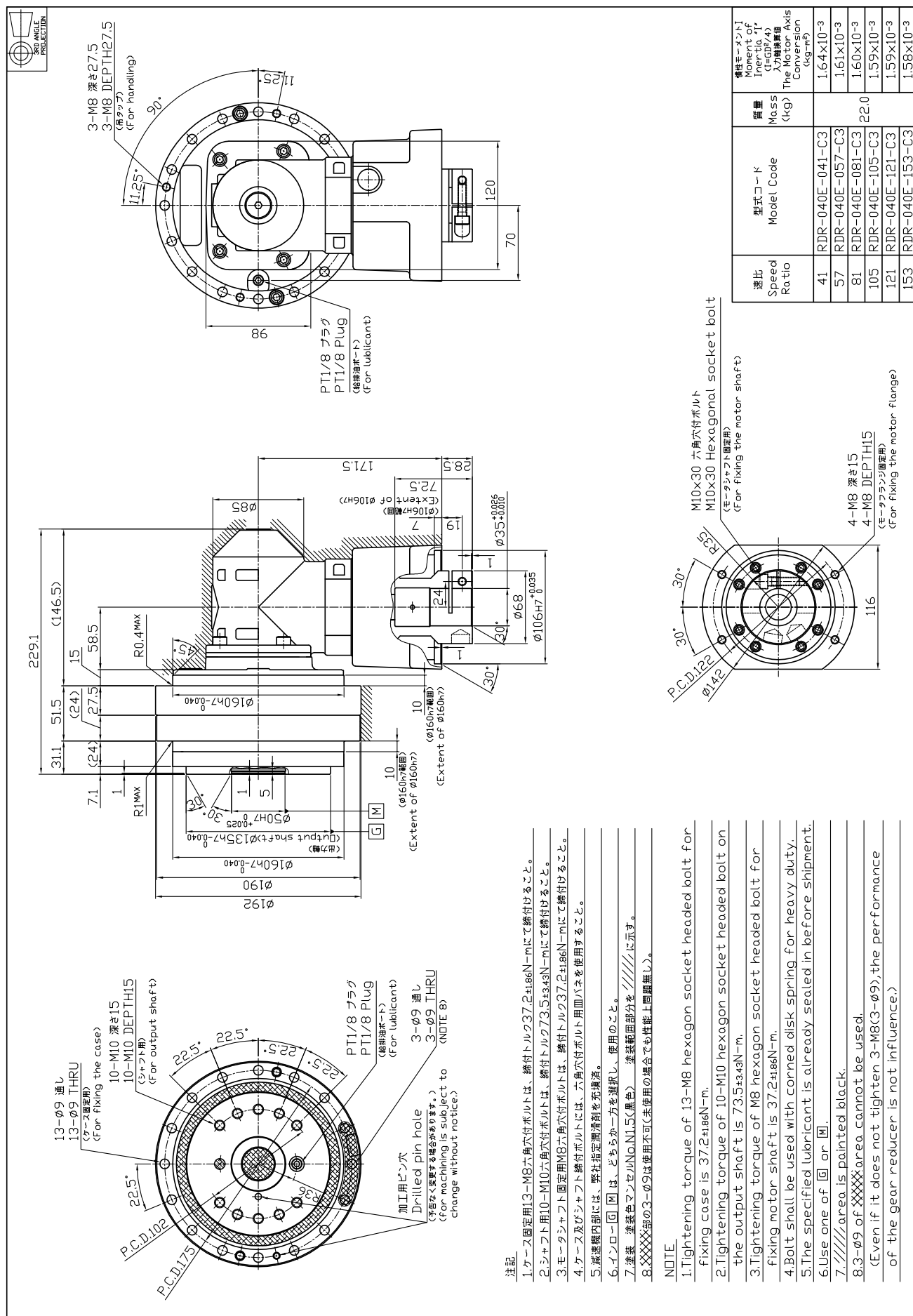
NOTE

1. Tightening torque of 13-M8 hexagon socket headed bolt for fixing case is 37.2 $\pm$ 1.6N-m.
2. Tightening torque of 10-M10 hexagon socket headed bolt on the output shaft is 73.5 $\pm$ 3.4N-m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5 $\pm$ 3.4N-m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of  or .
7.  area is painted black.
8. 3- ϕ 9 of  area cannot be used.
(Even if it does not tighten 3-M8(3- ϕ 9), the performance of the gear reducer is not influence.)

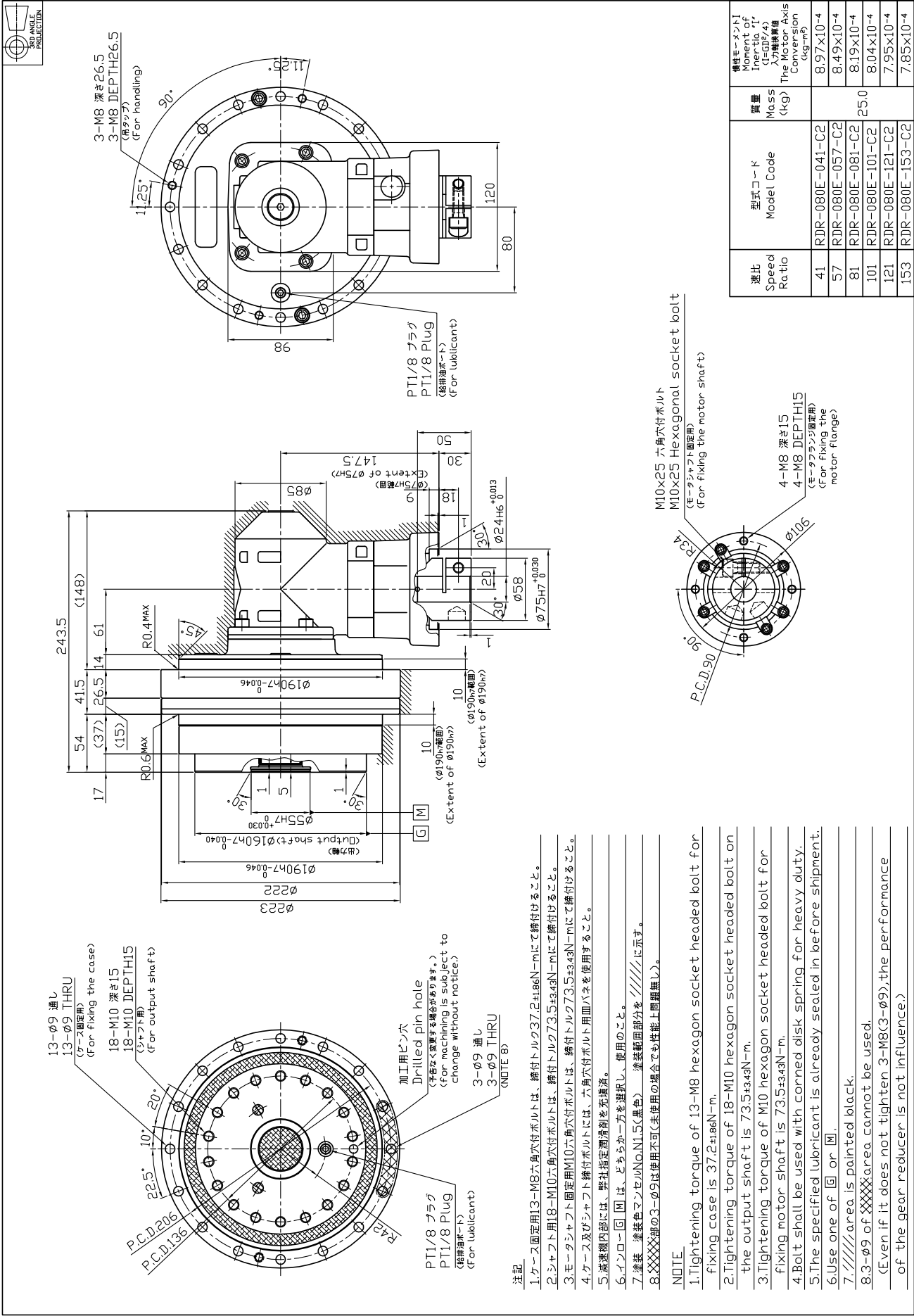
速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia J ₁ ($\times 10^4$ g $\cdot$ cm 2) X軸慣性モーメント The Motor Axis Conversion ($\text{kg}\cdot\text{m}^2$)
41	RDR-040E-041-C2	20.5	8.86 $\times 10^{-4}$
57	RDR-040E-057-C2		8.62 $\times 10^{-4}$
81	RDR-040E-081-C2		8.46 $\times 10^{-4}$
105	RDR-040E-105-C2		8.39 $\times 10^{-4}$
121	RDR-040E-121-C2		8.36 $\times 10^{-4}$
153	RDR-040E-153-C2		8.32 $\times 10^{-4}$



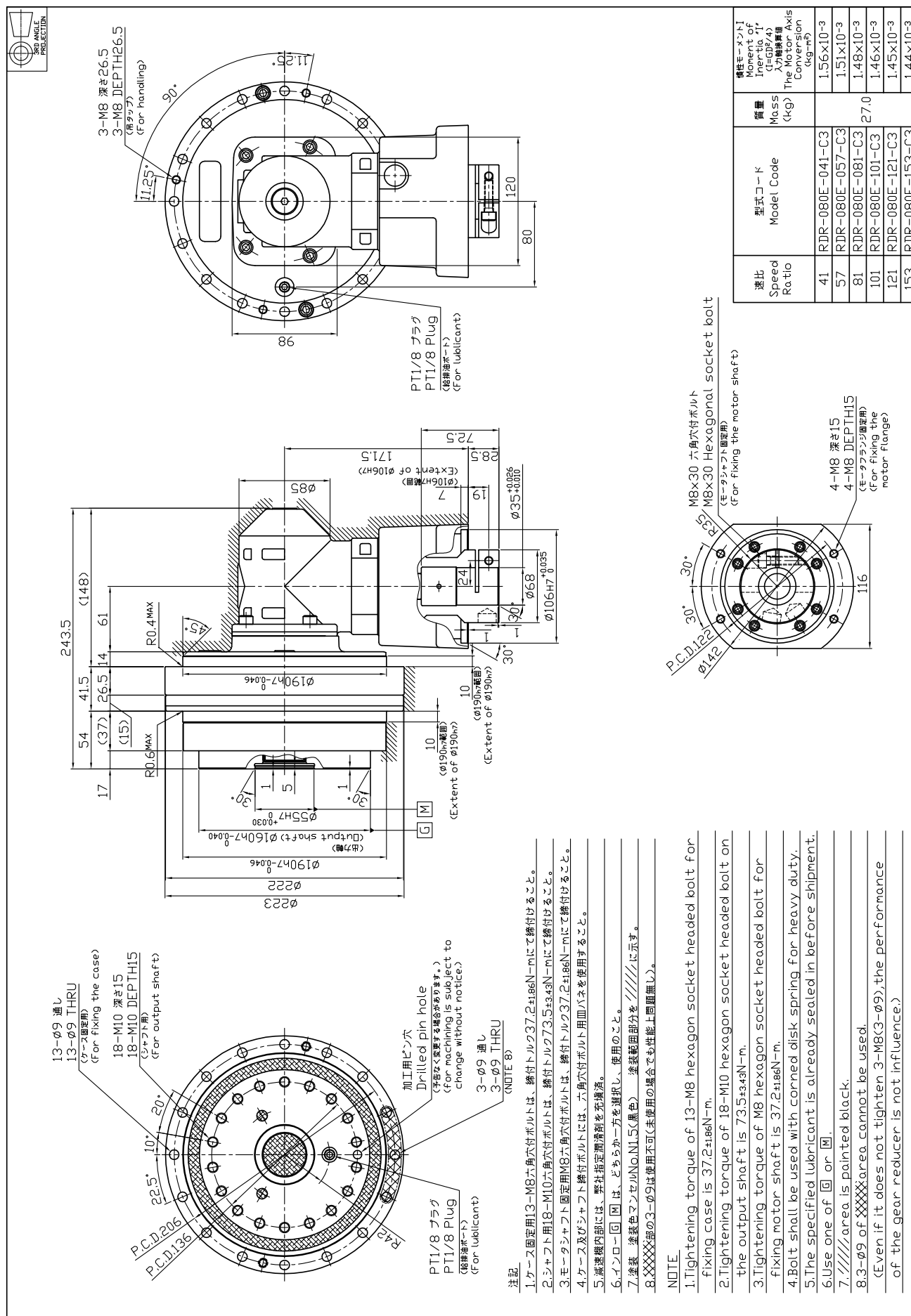
Model Code: RDR-040E-XXX-C3 (Corresponding motor shaft diameter: $\varnothing 25$ to $\varnothing 35$)



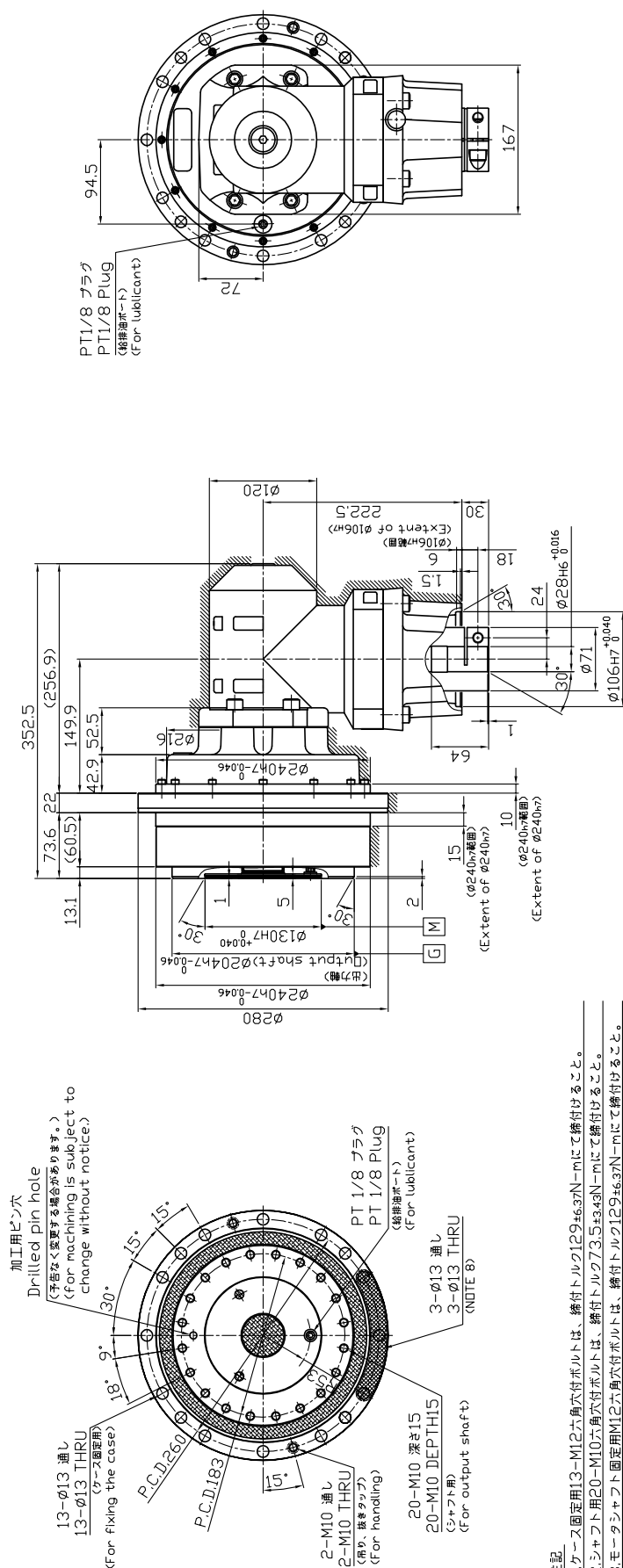
Model Code: RDR-080E-XXX-C2 (Corresponding motor shaft diameter: $\phi 14$ to $\phi 24$)



Model Code: RDR-080E-XXX-C3 (Corresponding motor shaft diameter: $\varnothing 25$ to $\varnothing 35$)



Model Code: RDR-160E-XXX-C4 (Corresponding motor shaft diameter: $\varnothing 19$ to $\varnothing 28$)

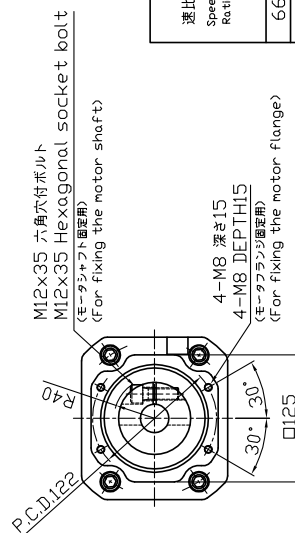


品注

1. ケース固定用13-M12六角穴付ボルトは、締付トルク129.4637N・mにて締付けること。
2. 締付トルク用20-M10六角穴付ボルトは、締付トルク73.33437N・mにて締付けること。
3. モータシャフト固定用M12六角穴付ボルトは、締付トルク129.4637N・mにて締付けること。
4. ケース及びシャフト固定用ボルトには、六角穴付ボルト用皿バネを使用すること。
5. 減速機内部には、弊社指定潤滑油を充填済。
6. インロー  M は、どちらか一方を選択し、使用のこと。
7. 蓋板 蓋板エポキシ マンテックNO.NI.5(黒色) 蓋板配向部分を  に示す。
8.  部の○31は使用不可/使用不能の場合でも性能に問題無し。

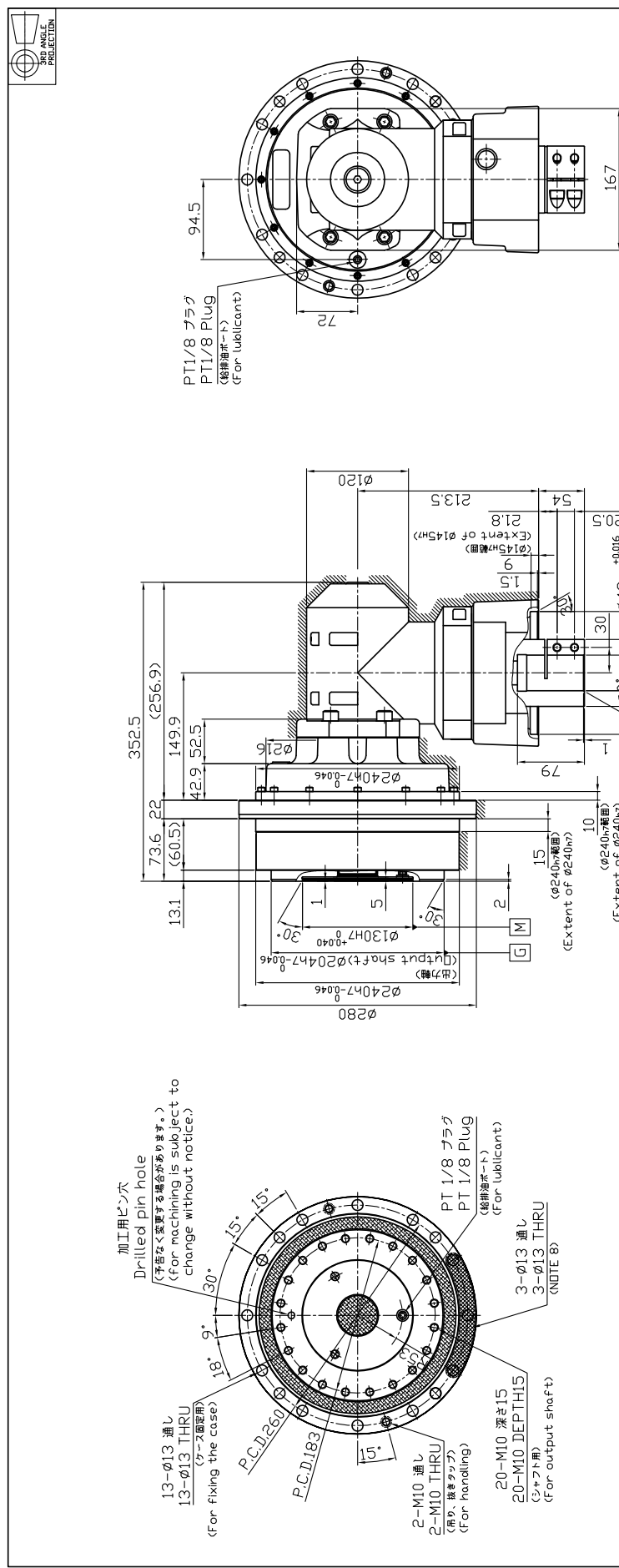
NOTE

1. Tightening torque of 13-M12 hexagon socket headed bolt for fixing case is 129 $\pm$ 33N $\cdot$ m.
2. Tightening torque of 20-M10 hexagon socket headed bolt on the output shaft is 73.5 $\pm$ 3.3N $\cdot$ m.
3. Tightening torque of M12 hexagon socket headed bolt for fixing motor shaft is 129 $\pm$ 33N $\cdot$ m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of  or .
7.  area is painted black.
8. 3- ϕ 13 of  area cannot be used.
(Even if it does not tighten 3-M12(3- ϕ 13), the performance of the gear reducer is not influence.)



速比 Speed Ratio	型式コード Model Code	質量 Mass (kg)	慣性モーメント Moment of Inertia [kg·cm ²] スリカ軸質量 スリカ軸長 The Motor Axis Conversion Length (mm)
66	RDR-160E-066-C4		5.01×10 ⁻³
81	RDR-160E-081-C4		4.95×10 ⁻³
101	RDR-160E-101-C4	55.6	4.90×10 ⁻³
121	RDR-160E-121-C4		4.87×10 ⁻³
145	RDR-160E-145-C4		4.83×10 ⁻³
171	RDR-160E-171-C4		4.80×10 ⁻³

Model Code: RDR-160E-XXX-C5 (Corresponding motor shaft diameter: $\varnothing 32$ to $\varnothing 42$)



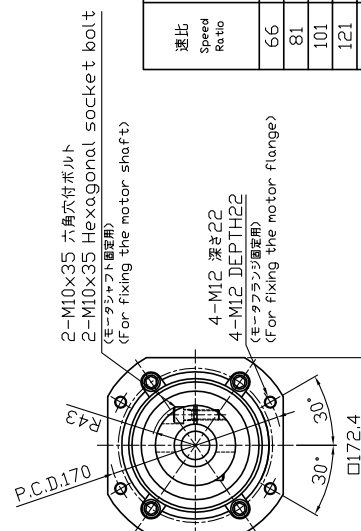
注意

1. ケース固定用13-M12六角穴付ボルトは、締付トルク1219±37N・mにて締付けること。
2. ケース固定用20-M12六角穴付ボルトは、締付トルク37.5±3.4N・mにて締付けること。
3. モータシャフト固定用2-M10六角穴付ボルトは、締付トルク37.5±3.4N・mにて締付けること。
4. ケース及びシャフト締付ボルトには、六角穴付ボルト用皿バネを使用すること。
5. 減速機内部には、弊社指定潤滑剤を充填。
6. インロー「G」M は、どちらかを選択、使用のこと。
7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 8

NOTE

- NOTE.
- | | |
|----|---|
| 1. | Tightening torque of 13-M12 hexagon socket headed bolt for fixing case is 129±3N·m. |
| 2. | Tightening torque of 20-M10 hexagon socket headed bolt on the output shaft is 73.5±3N·m. |
| 3. | Tightening torque of 2-M10 hexagon socket headed bolt for fixing motor shaft is 73.5±3N·m. |
| 4. | Bolt shall be used with coned disk spring for heavy duty. |
| 5. | The specified lubricant is already sealed in before shipment. |
| 6. | Use one of  or  . |
| 7. | ////// area is painted black. |
| 8. | 3-φ13 of  area cannot be used. |
| | (Even if it does not tighten 3-M12(3-φ13), the performance of the gear reducer is not influence.) |

| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia I_p
[cm^2/s^2]
及び慣性質量
The Motor Axis
Conversion
[$\text{kg}\cdot\text{cm}^2$] |
|----------------------|---------------------|--------------------|--|
| 66 | RDR-160E-066-C5 | | 6.68×10^{-3} |
| 81 | RDR-160E-081-C5 | | 6.62×10^{-3} |
| 101 | RDR-160E-101-C5 | 581 | 6.57×10^{-3} |
| 121 | RDR-160E-121-C5 | | 6.54×10^{-3} |
| 145 | RDR-160E-145-C5 | | 6.50×10^{-3} |
| 171 | RDR-160E-171-C5 | | 6.47×10^{-3} |



Technical Documents

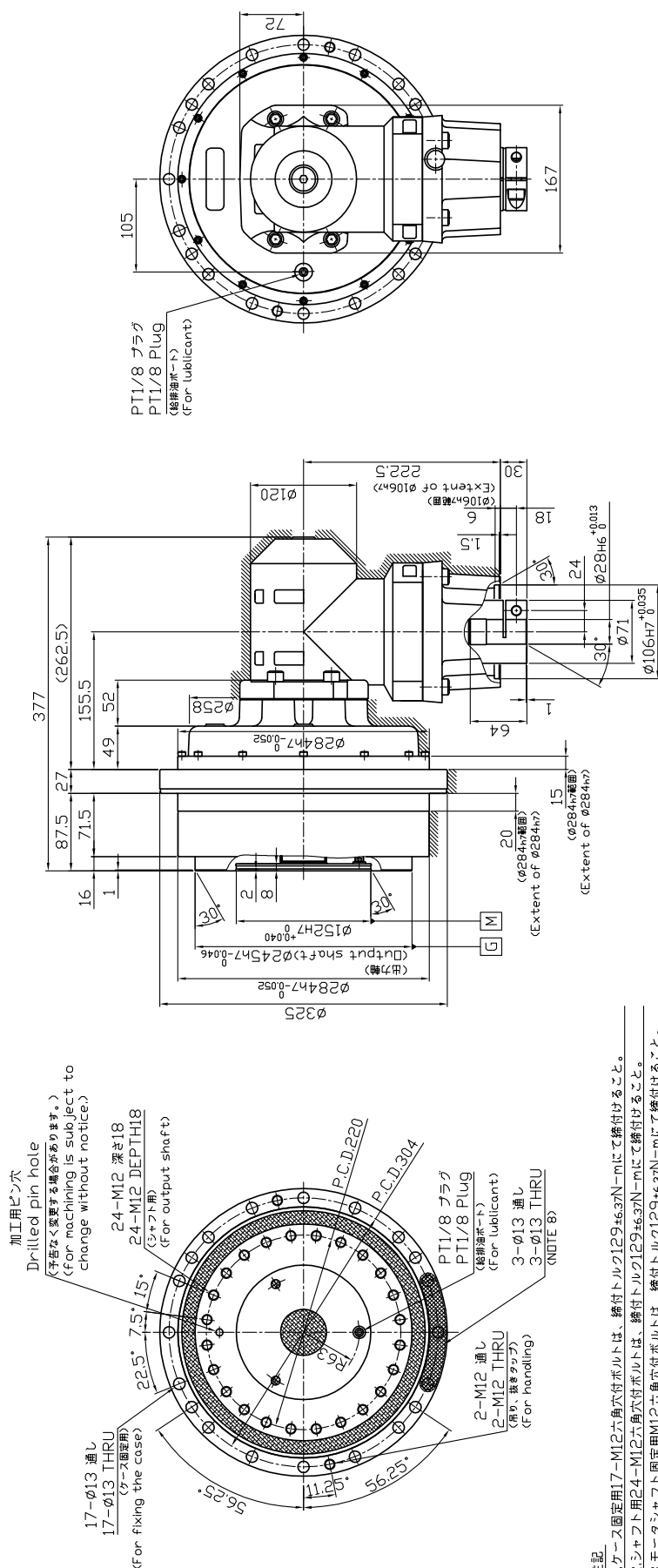
Motor flange / bushing

Pulley input type

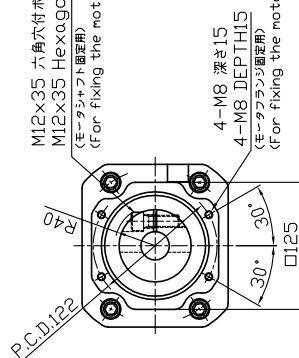
Right angle input type

Straight input type

Model Code: RDR-320E-XXX-C4 (Corresponding motor shaft diameter: $\varnothing 19$ to $\varnothing 28$)



M12×35 六角付ボルト
M12×35 Hexagonal socket bolt
(モータシャフト固定用)
(For fixing the motor shaft)



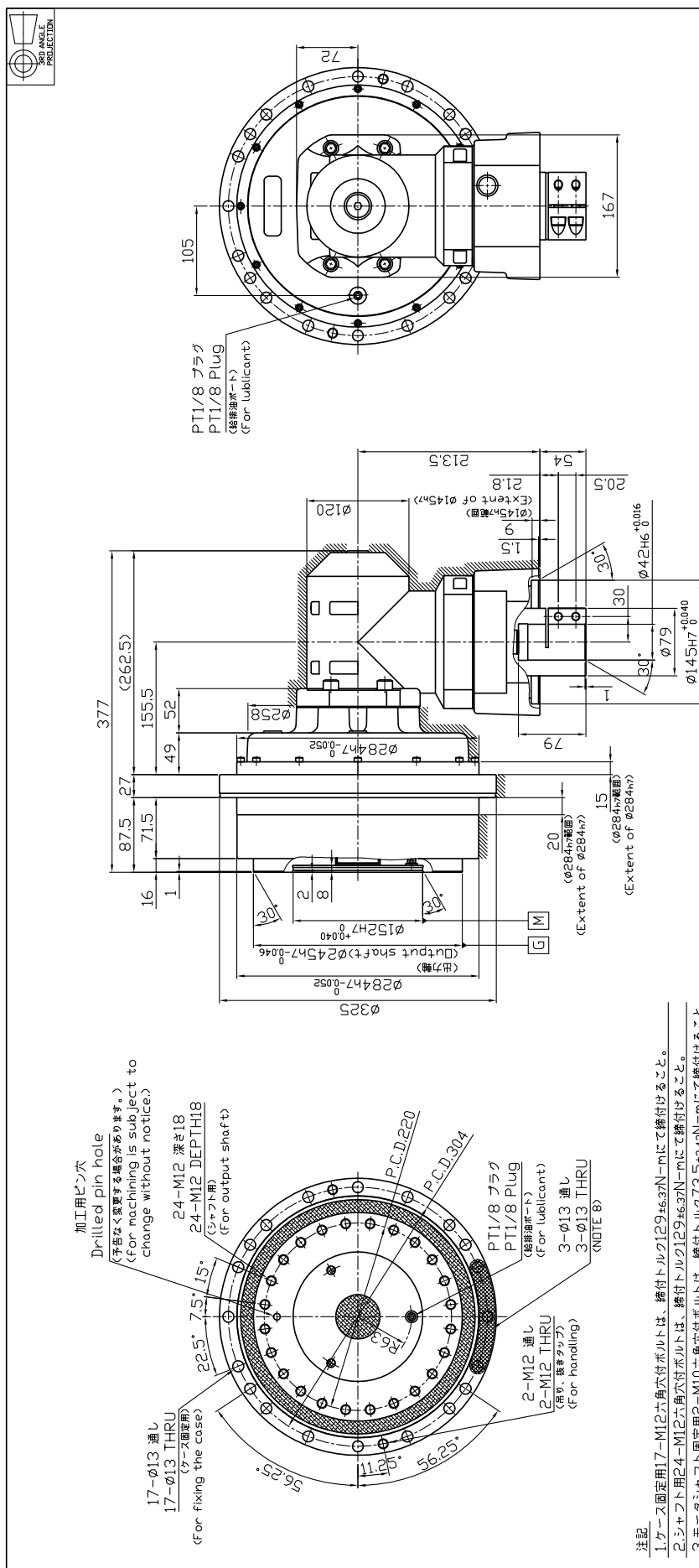
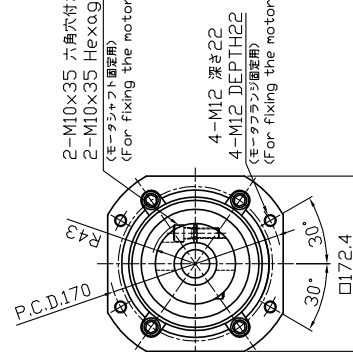
| 速比
Speed
Ratio | 型式コード
Model Code | 質量
(kg)
Mass | 慣性モーメント
Moment of Inertia
[kg・cm ²]
慣性モーメント
[kg・m ²]
The Motor Axis
Conversion
α=9.5 |
|----------------------|---------------------|--------------------|---|
| 66 | RDR-320E-066-C4 | | 5.52×10 ⁻³ |
| 81 | RDR-320E-081-C4 | | 5.33×10 ⁻³ |
| 101 | RDR-320E-101-C4 | 80.1 | 5.18×10 ⁻³ |
| 121 | RDR-320E-121-C4 | | 5.09×10 ⁻³ |
| 141 | RDR-320E-141-C4 | | 5.02×10 ⁻³ |
| 185 | RDR-320E-185-C4 | | 4.93×10 ⁻³ |

- 注記**
1. ケーシング固定用7-M12六角穴付ボルトは、締付トルク129.463.7N・mにて締付けること。
 2. ケーシング固定用24-M12六角穴付ボルトは、締付トルク129.463.7N・mにて締付けること。
 3. モータシャフト固定用M12六角穴付ボルトは、締付トルク129.463.7N・mにて締付けること。
 4. ケーシング及びシャフト締付ボルトには、六角穴付ボルト用皿ハネを使用すること。
 5. 減速機内部には、弊社指定潤滑油を充填。
 6. インロー  M は、どちらか一方を選択し、使用のこと。
 7. 塗装 塗装色 エポキシ マンゼンコ.NI.5 (黒色) 塗装試験部分  に示す。
 8. 各部の3/13は使用不可(未使用の場合でも性能上問題無し)。

NOTE

1. Tightening torque of 17-M12 hexagon socket headed bolt for fixing case is 129₊₃₇N·m.
2. Tightening torque of 24-M12 hexagon socket headed bolt on the output shaft is 129₊₃₇N·m.
3. Tightening torque of M12 hexagon socket headed bolt for fixing motor shaft is 129₊₃₇N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. Use one of  or .
7.  area is painted black.
8. 3-Ø13 of  area cannot be used.
(Even if it does not tighten 3-M12(3-Ø13), the performance of the gear reducer is not influence.)

Model Code: RDR-320E-XXX-C5 (Corresponding motor shaft diameter: $\varnothing 32$ to $\varnothing 42$)

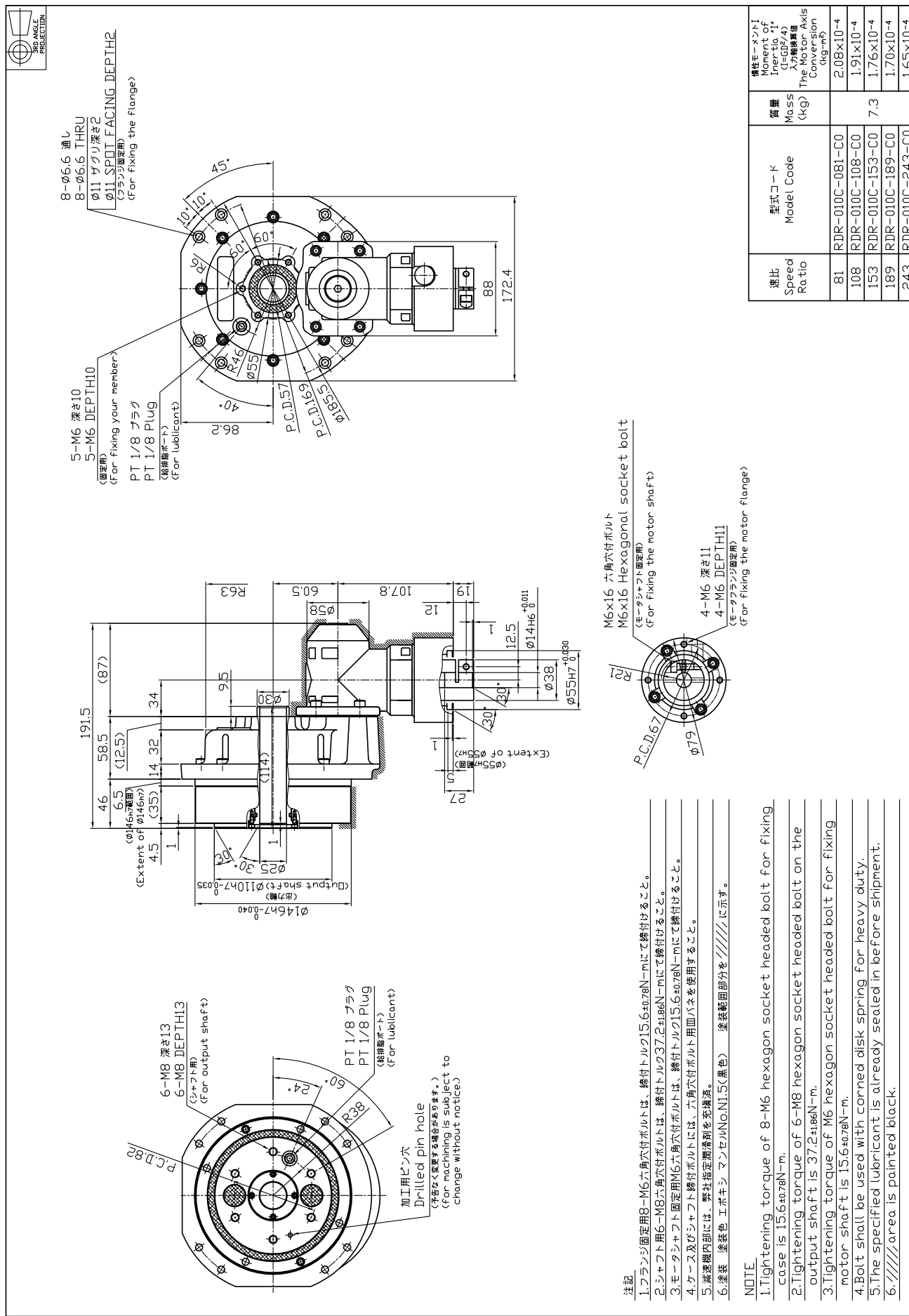
2-M10x35 六角穴付ボルト
2-M10x35 Hexagonal socket bolt

| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメントI
Moment of
Inertia 1)
cm^2/s^2
2) 軸換算値
The Motor Axis
Conversion
(cm^2/s^2) |
|----------------------|---------------------|--------------------|--|
| 66 | RDR-320E-066-C5 | | 7.19x10 ⁻³ |
| 81 | RDR-320E-081-C5 | | 7.00x10 ⁻³ |
| 101 | RDR-320E-101-C5 | 82.6 | 6.85x10 ⁻³ |
| 121 | RDR-320E-121-C5 | | 6.76x10 ⁻³ |
| 141 | RDR-320E-141-C5 | | 6.69x10 ⁻³ |
| 185 | RDR-320E-185-C5 | | 6.60x10 ⁻³ |

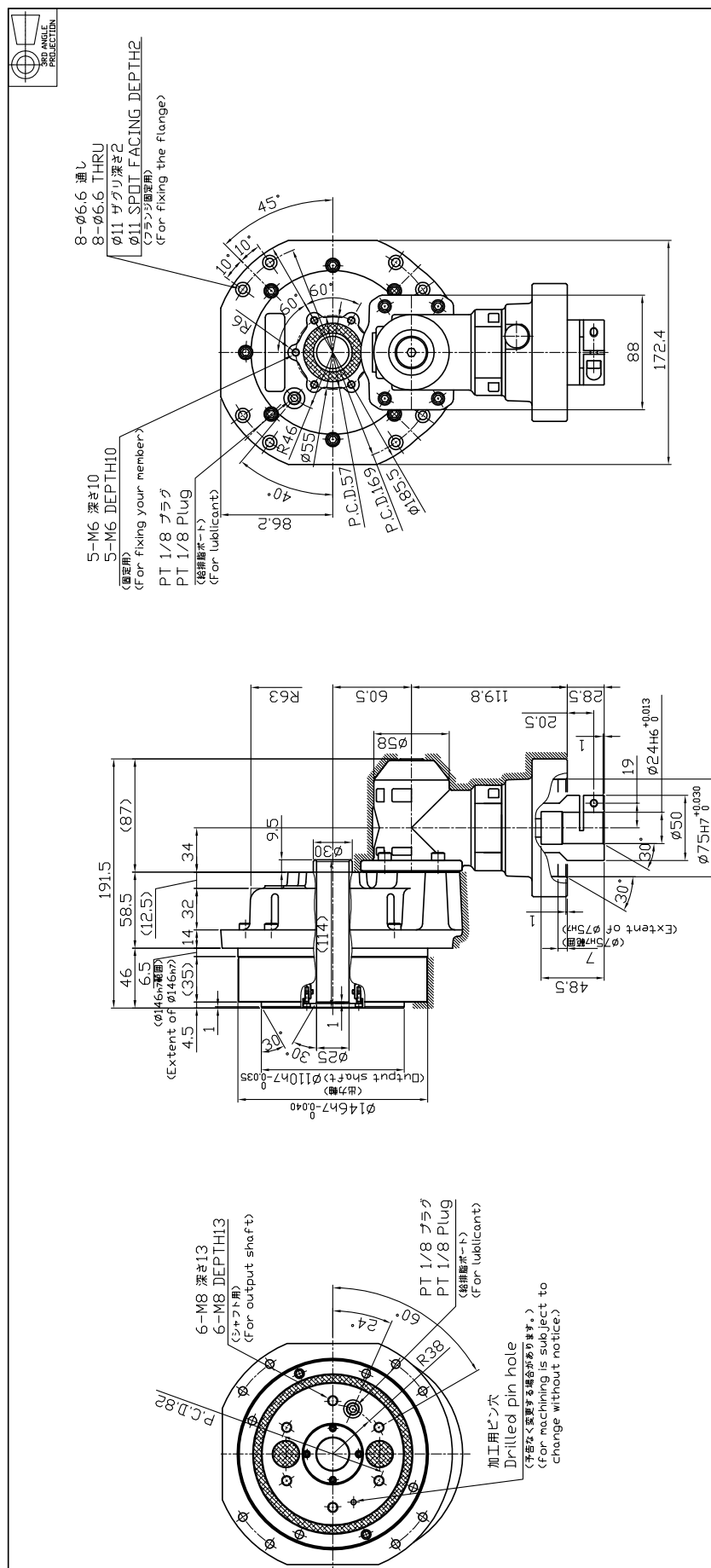
4-M12 深き22
4-M12 DEPTH22
モータフランチン(固定用)
For fixing the motor flange)

2-M10×35 六角穴付ボルト
2-M10×35 Hexagonal
モータシャフト固定用)

- NOTE
- | |
|--|
| 1. Tightening torque of 17-M12 hexagon socket headed bolt for fixing case is 129 $\pm$ 3N $\cdot$ m. |
| 2. Tightening torque of 24-M12 hexagon socket headed bolt on the output shaft is 129 $\pm$ 3N $\cdot$ m. |
| 3. Tightening torque of 2-M10 hexagon socket headed bolt for fixing motor shaft is 73.5 $\pm$ 3.4N $\cdot$ m. |
| 4. Bolt shall be used with coned disk spring for heavy duty. |
| 5. The specified lubricant is already sealed in before shipment. |
| 6. Use one of  or  . |
| 7.  area is painted black. |
| 8. 3- ϕ 13 of  area cannot be used. |
| (Even if it does not tighten 3-M12(3- ϕ 13), the performance of the gear reducer is not influence.) |



Model Code: RDR-010C-XXX-C1 (Corresponding motor shaft diameter: $\varnothing 15$ to $\varnothing 24$)



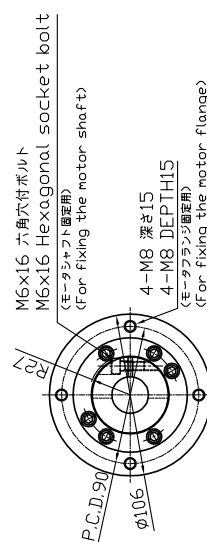
品注

1. フランジ固定用8-M6六角穴付ボルトは、締付トルク15.647N・mにて締付けること。
 2. ショート用16-M8六角穴付ボルトは、締付トルク37.2496N・mにて締付けること。
 3. マーチャップ用16-M8六角穴付ボルトは、締付トルク15.647N・mにて締付けること。
 4. ケース及びシャフト締付ボルトには、六角穴付ボルト用皿皿を使用すること。
 5. 減速機内部には、弊社指定潤滑油を充填。
- 塗装 塗色 エポキシ マンガン系MoN1.5(黒色) 塗装範囲部分を////に示す

NOTE

1. Tightening torque of 8-M6 hexagon socket headed bolt for fixing case is 15.6±0.78N·m.
2. Tightening torque of 6-M8 hexagon socket headed bolt on the output shaft is 37.2±1.98N·m.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is 15.6±0.78N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // area is painted black.

| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia J^*
($\text{kg}\cdot\text{m}^2/4$)
The Moment of
Inertia Axis
Conversion
($\text{kg}\cdot\text{m}^2$) |
|----------------------|---------------------|--------------------|--|
| 81 | RDR-010C-081-C1 | | 9.34×10^{-4} |
| 108 | RDR-010C-108-C1 | | 9.26×10^{-4} |
| 153 | RDR-010C-153-C1 | 8.3 | 9.11×10^{-4} |
| 189 | RDR-010C-189-C1 | | 9.05×10^{-4} |
| 243 | RDR-010C-243-C1 | | 8.99×10^{-4} |



Technical Documents

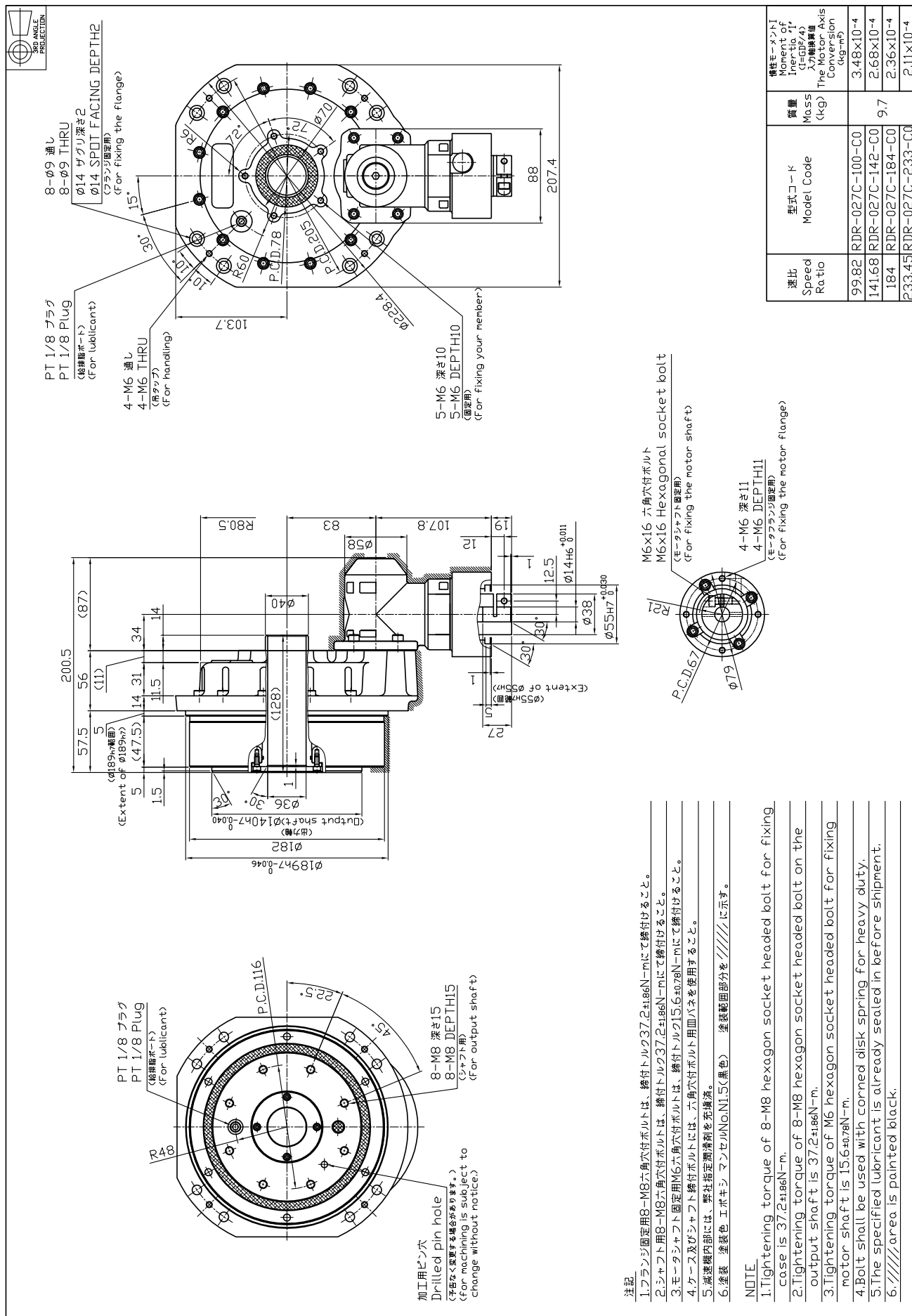
Motor flange / bushing

Pulley input type

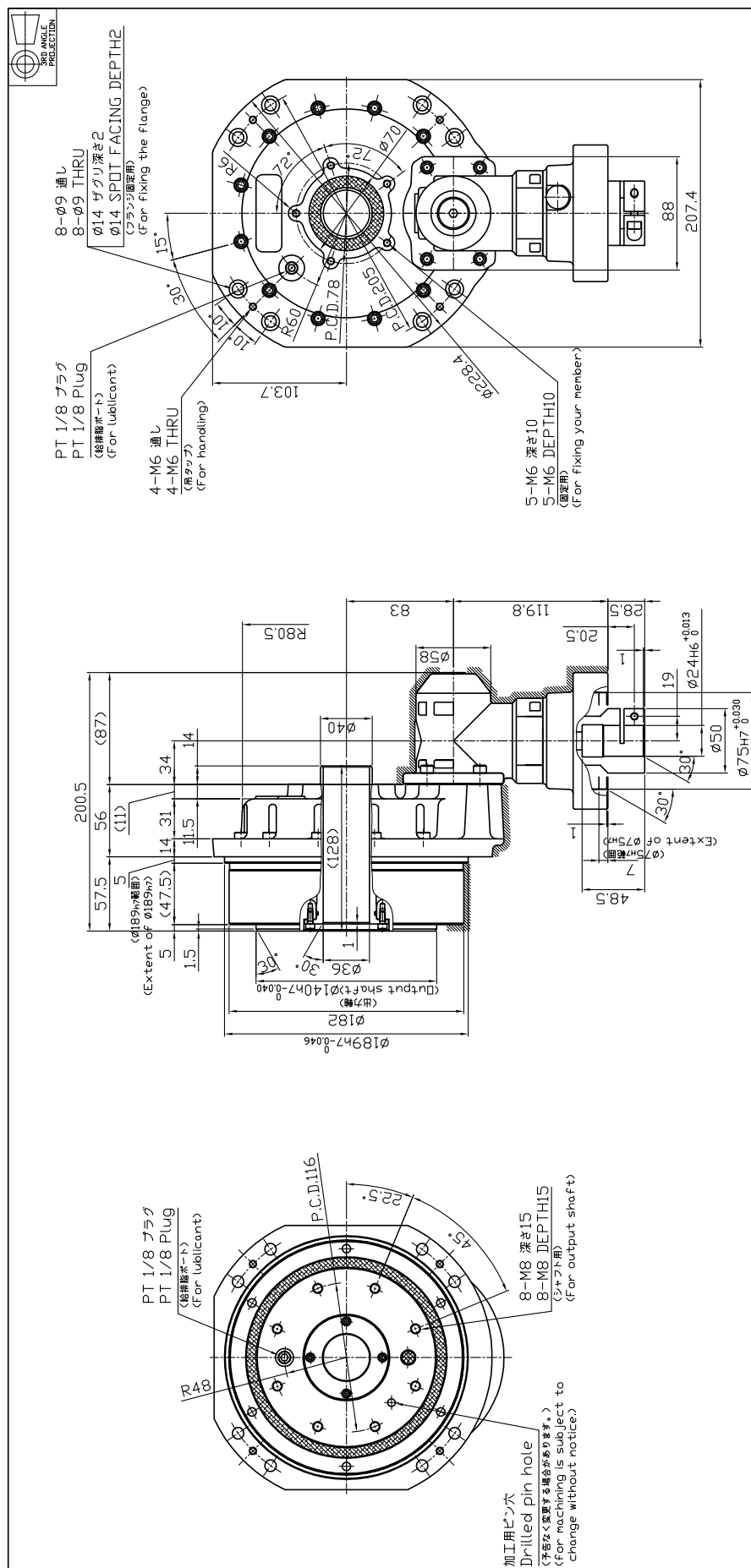
Right angle input type

Straight input type

Model Code: RDR-027C-XXX-C0 (Corresponding motor shaft diameter: $\varnothing 8$ to $\varnothing 14$)



Model Code: RDR-027C-XXX-C1 (Corresponding motor shaft diameter: $\varnothing 15$ to $\varnothing 24$)



注記

1. 1. フランジ固定用8-N8六角穴付ボルトは、締付トルク37.2±1.96N・mにて締付けること。
2. 3. モータ用8-N8固定用ボルトは、締付トルク37.2±1.96N・mにて締付けること。
3. 4. ショータン用8-N8固定用M6六角穴付ボルトは、締付トルク21.6±0.78N・mにて締付けること。
4. 4. ケース及びシャフトボルトには、六角穴付ボルト用用パスを使用すること。
5. 5. 減速機内部には、弊社指定潤滑油を充填。
6. 6. 減速機内色エボキシマンガンNo1(SG(黒色))に示す。塗装配図部分を//に示す。

NOTE

1. Tightening torque of 8-M8 hexagon socket headed bolt for fixing case is $37.2 \pm 1.68 \text{ N}\cdot\text{m}$.
2. Tightening torque of 8-M8 hexagon socket headed bolt on the output shaft is $37.2 \pm 1.68 \text{ N}\cdot\text{m}$.
3. Tightening torque of M6 hexagon socket headed bolt for fixing motor shaft is $15.6 \pm 0.78 \text{ N}\cdot\text{m}$.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // // // area is painted black.

| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia J ₁
[kg・m ²]
The Motor Axis
Conversion
(kg・m ²) |
|----------------------|---------------------|--------------------|--|
| 99.82 | RDR-027C-100-C1 | | 4.53x10 ⁻⁴ |
| 141.68 | RDR-027C-142-C1 | 10.8 | 3.73x10 ⁻⁴ |
| 184 | RDR-027C-184-C1 | | 3.41x10 ⁻⁴ |
| 233.45 | RDR-027C-233-C1 | | 3.15x10 ⁻⁴ |

Technical Documents

Motor flange / bushing

Pulley input type

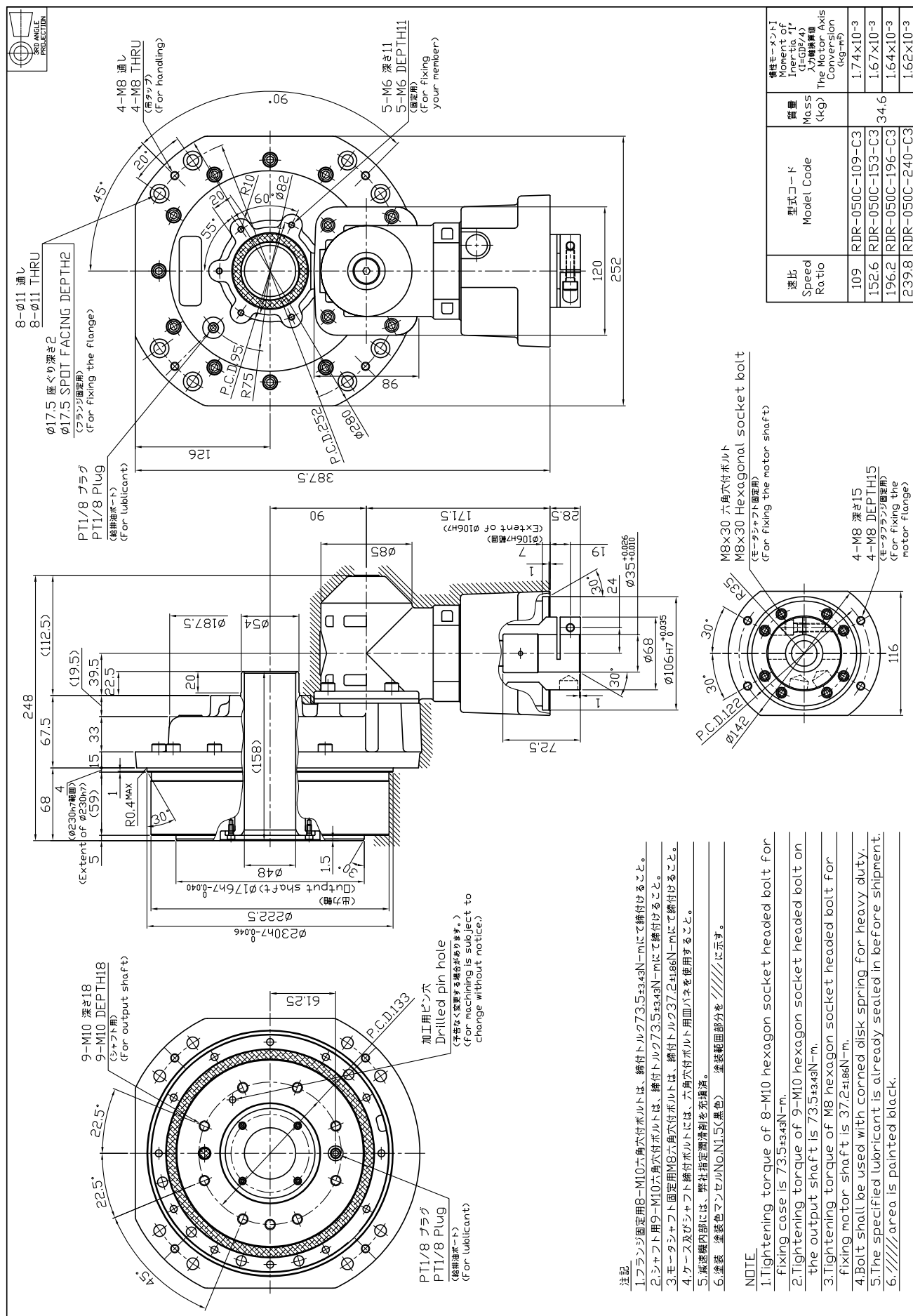
Right angle input type

Straight input type

60



Model Code: RDR-050C-XXX-C3 (Corresponding motor shaft diameter: $\varnothing 25$ to $\varnothing 35$)



Technical Documents

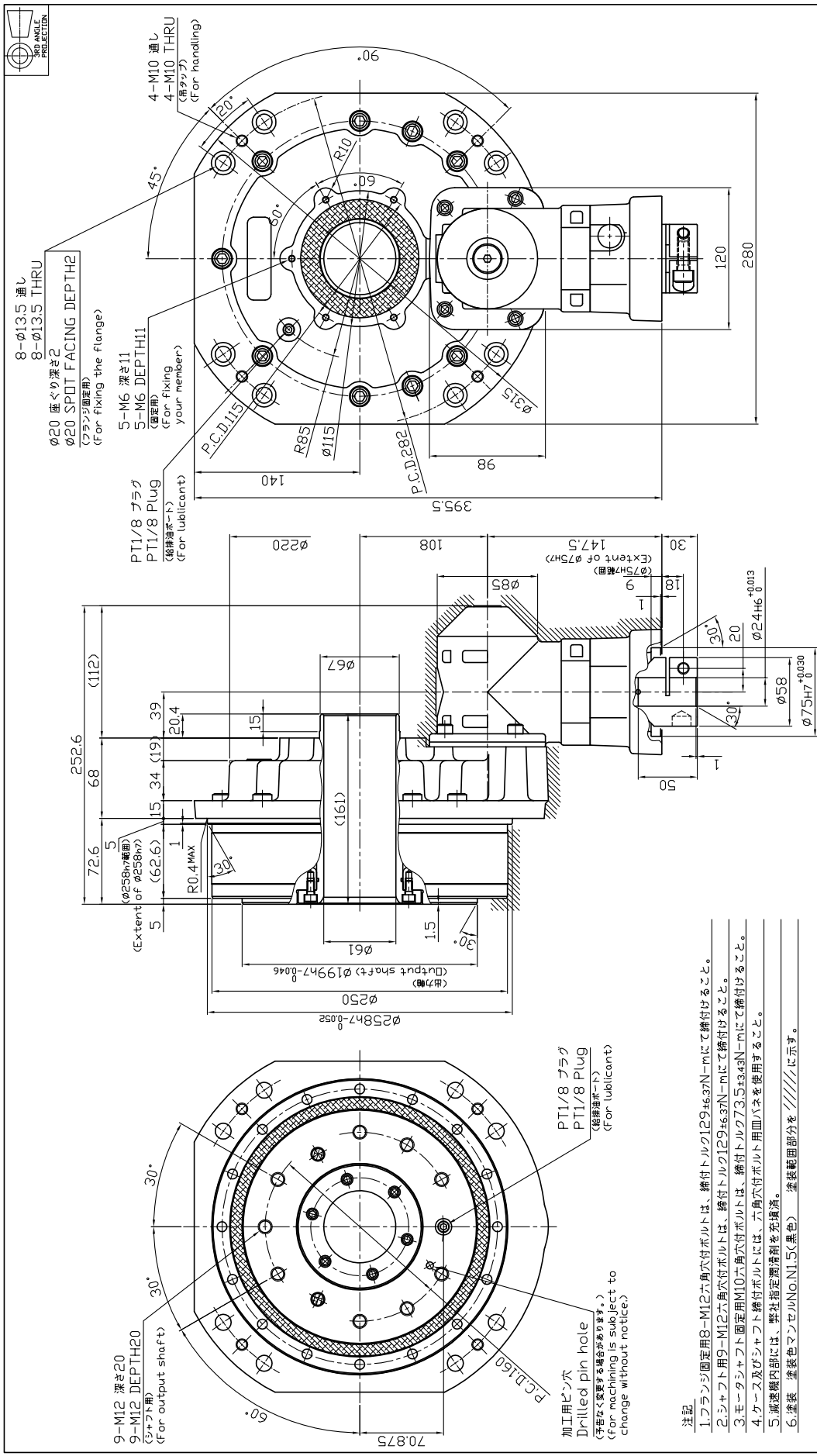
Motor flange / bushing

Pulley input type

Right angle input type

Straight input type

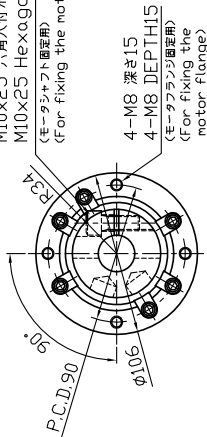
Model Code: RDR-100C-XXX-C2 (Corresponding motor shaft diameter: $\varnothing 14$ to $\varnothing 24$)



NOTE

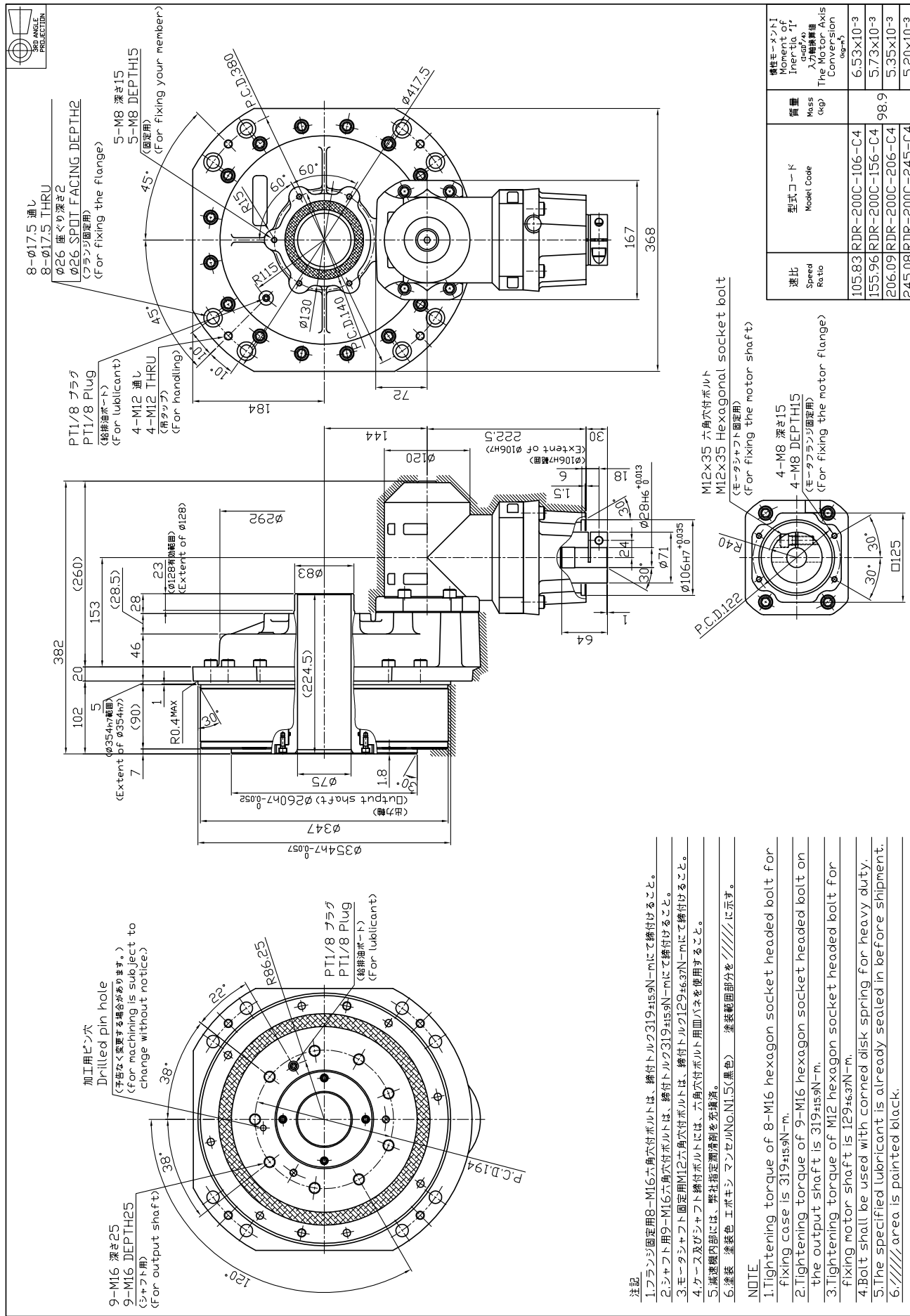
1. Tightening torque of 8-M12 hexagon socket headed bolt for fixing case is 129*63N·m.
2. Tightening torque of 9-M12 hexagon socket headed bolt on the output shaft is 129*63N·m.
3. Tightening torque of M10 hexagon socket headed bolt for fixing motor shaft is 73.5*43N·m.
4. Bolt shall be used with coned disk spring for heavy duty.
5. The specified lubricant is already sealed in before shipment.
6. // // // area is painted black.

M10×25 六角穴付ボルト
M10×25 Hexagonal socket bolt
(モータシャフト固定用)
(For fixing the motor shaft)

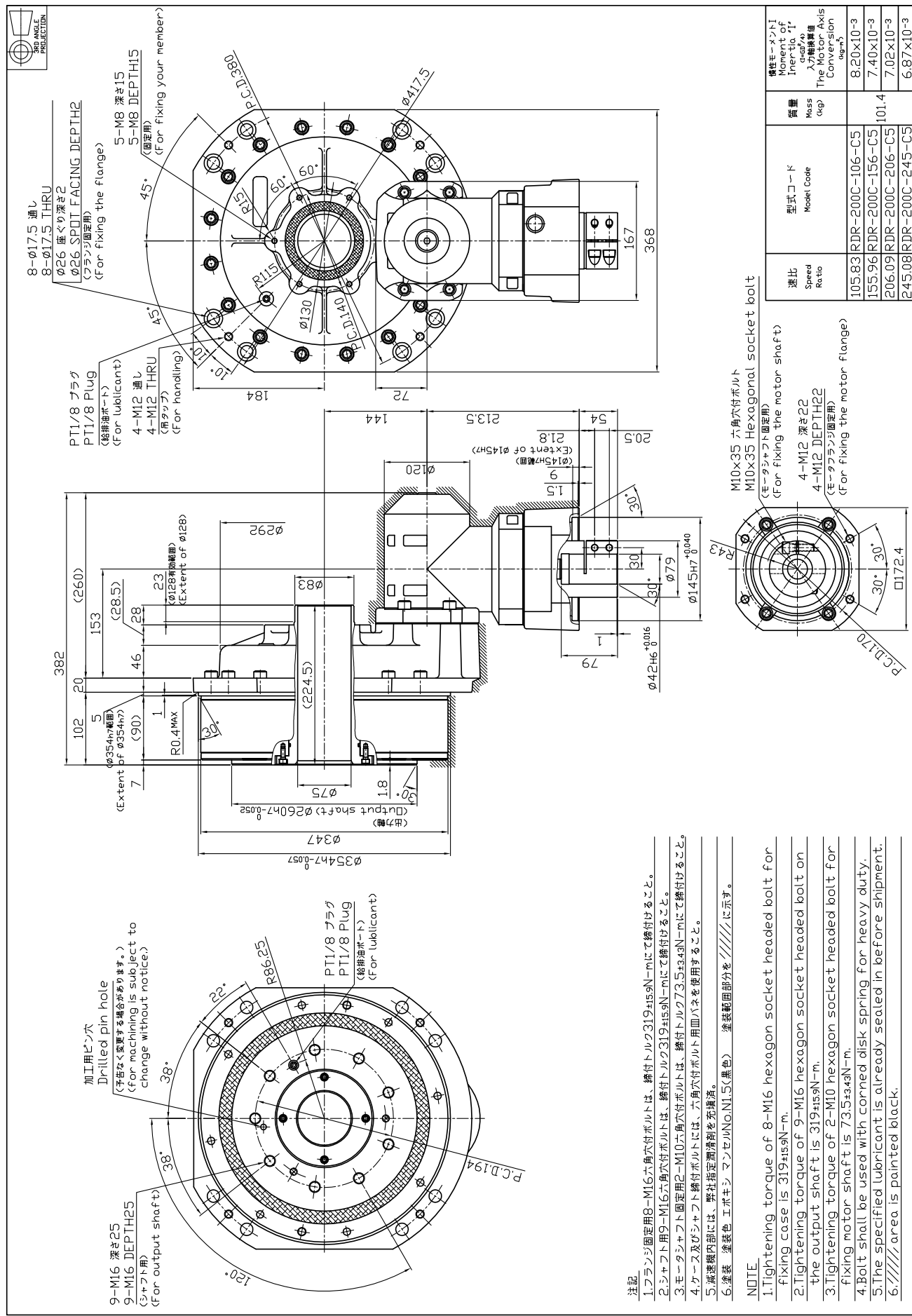


| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia J _r
(J=GD ² /4)
入力軸側慣性
The Motor Axis
Conversion
(kg-m ²) |
|----------------------|---------------------|--------------------|--|
| 100.5 | RDR-100C-101-C2 | | 1.50×10 ⁻³ |
| 150 | RDR-100C-150-C2 | 40.0 | 1.16×10 ⁻³ |
| 210 | RDR-100C-210-C2 | | 9.97×10 ⁻⁴ |
| 258 | RDR-100C-258-C2 | | 9.28×10 ⁻⁴ |

Model Code: RDR-200C-XXX-C4 (Corresponding motor shaft diameter: $\phi 19$ to $\phi 28$)



Model Code: RDR-200C-XXX-C5 (Corresponding motor shaft diameter: $\phi 32$ to $\phi 42$)



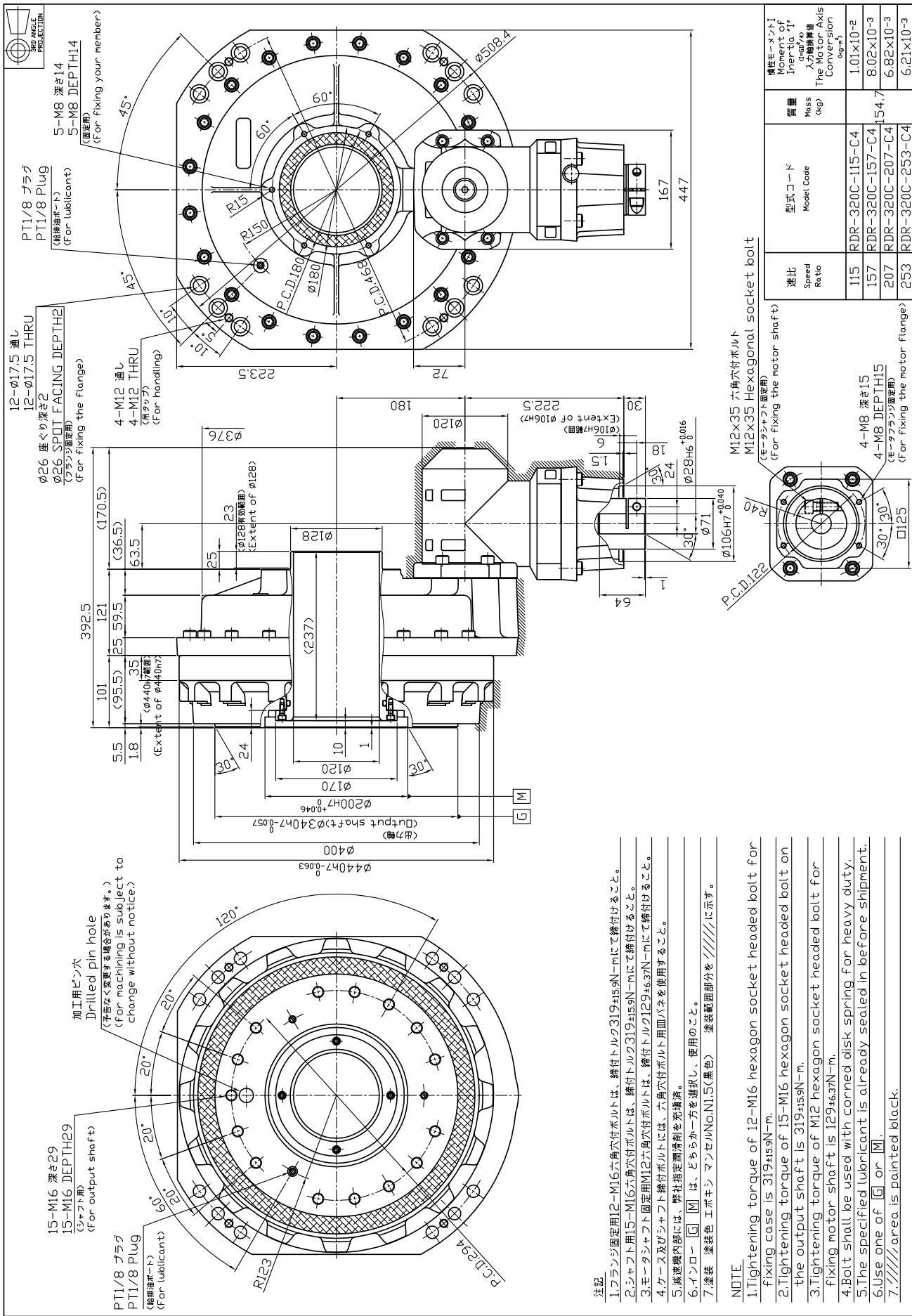
注記

- 1.フランジ固定用8-M16六角穴付ボルトは、締付トルク319±59N・mにて締付けること。
- 2.シャフト用9-M16六角穴付ボルトは、締付トルク319±59N・mにて締付けること。
- 3.モータシャフト固定用2-M10六角穴付ボルトは、締付トルク73.5±3.43N・mにて締付けること。
- 4.ケース及びシャフト締付ボルトには、六角穴付ボルト用面バネを使用すること。
- 5.減速機内部には、弊社指定潤滑油を充填。
- 6.塗装 塗装色 エポキシ マンゼルNo.11.5(黒色) 塗装範囲部分を//////に示す。

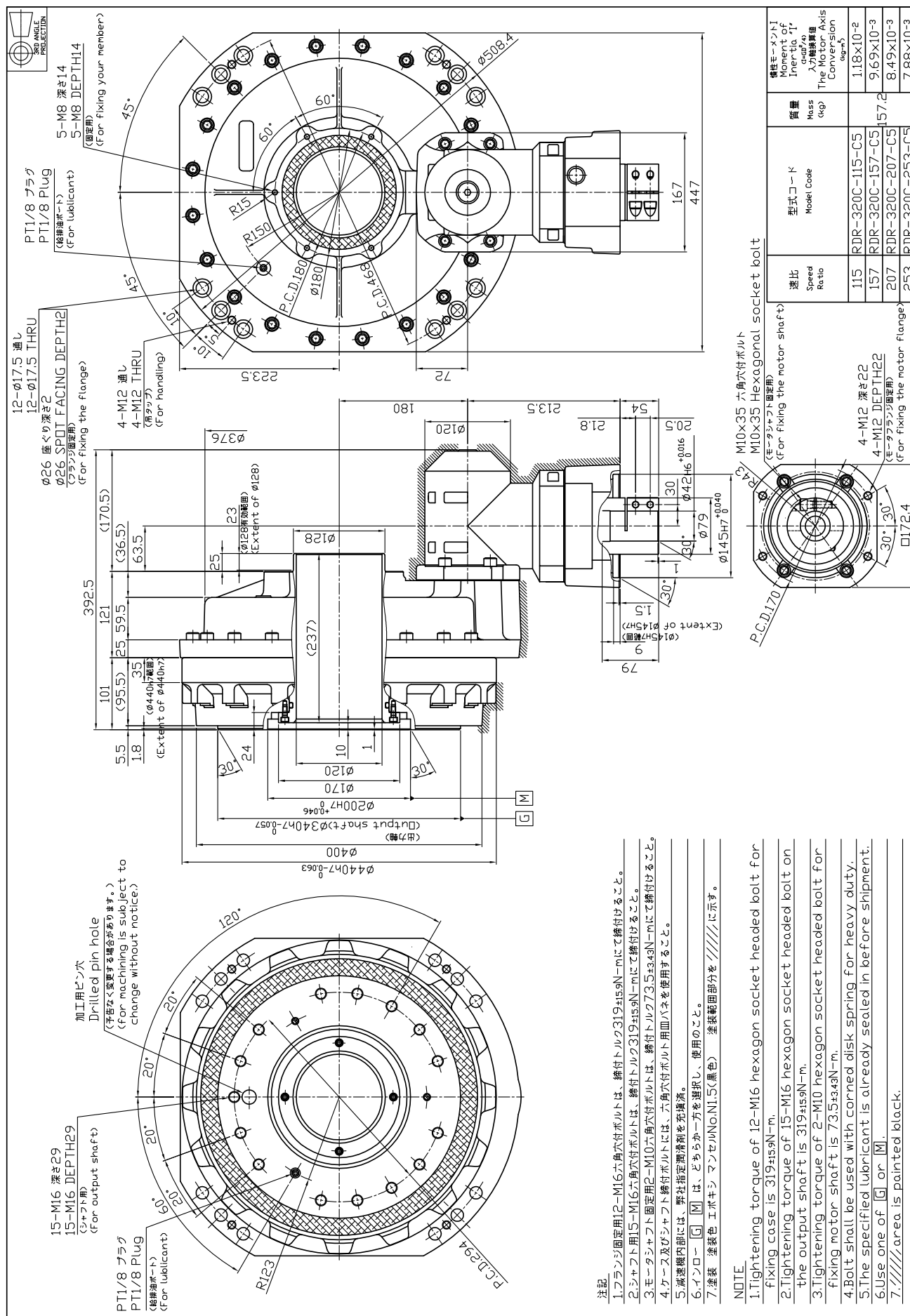
NOTE

- 1.Tightening torque of 8-M16 hexagon socket headed bolt for fixing case is 319±59N·m.
- 2.Tightening torque of 9-M16 hexagon socket headed bolt on the output shaft is 319±59N·m.
- 3.Tightening torque of 2-M10 hexagon socket headed bolt for fixing motor shaft is 73.5±3.43N·m.
- 4.Bolt shall be used with coned disk spring for heavy duty.
- 5.The specified lubricant is already sealed in before shipment.
- 6.////// area is painted black.

Model Code: RDR-320C-XXX-C4 (Corresponding motor shaft diameter: $\varnothing 19$ to $\varnothing 28$)



Model Code: RDR-320C-XXX-C5 (Corresponding motor shaft diameter: $\varnothing 32$ to $\varnothing 42$)



Technical Documents

Motor flange / bushing

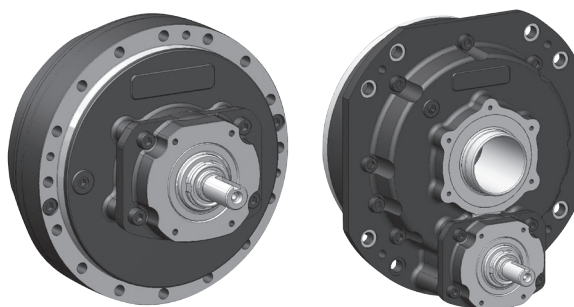
Pulley input type

Right angle input type

Straight input type



Pulley input type



Pulley Input Type Code Description and Configuration Diagram

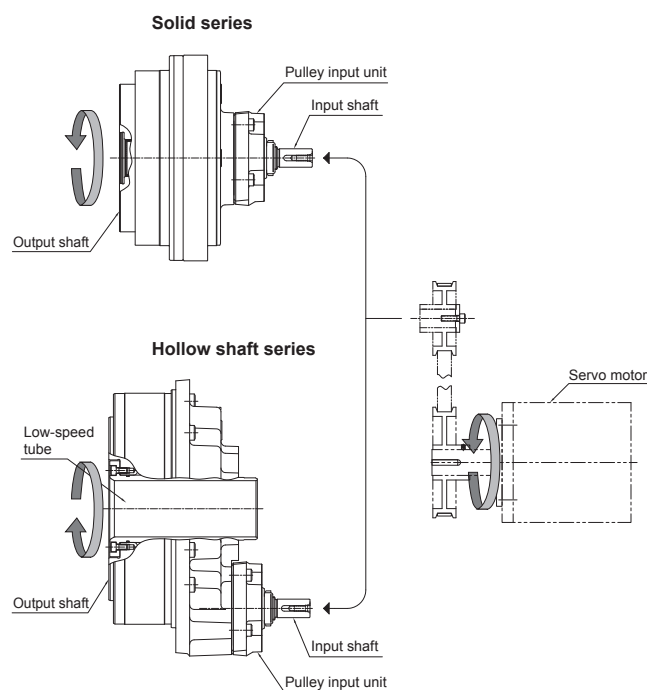
Product code

RD P - 050 C - 109 - A3 - ZZ - ZZ

| Model Code | | | Ratio Code | Input unit code | Motor flange code | Bushing code |
|-------------------|-------------|------------------------|------------|-----------------|---|---|
| Pulley input code | Torque code | Series code | | | | |
| P | 020 | E: Solid series | 081 | A0 | ZZ: No motor flange
(The pulley input type does not come with a motor flange.) | ZZ: No bushing
(The pulley input type does not come with a bushing.) |
| | 040 | | 057 | A3 | | |
| | 080 | | 081 | A4 | | |
| | 160 | | 066 | A6 | | |
| | 320 | | 081 | A7 | | |
| | 010 | C: Hollow shaft series | 108 | A1 | | |
| | 027 | | 100 | A2 | | |
| | 050 | | 109 | A3 | | |
| | 100 | | 101 | A5 | | |
| | 200 | | 106 | A8 | | |
| | 320 | | 157 | A9 | | |

The input unit code for the pulley input type is one code for each model number.

Configuration Diagram



Straight input type

Right angle input type

Pulley input type

Motor flange / bushing

Technical Documents

Rating Table Pulley input type

Solid series

| Model Code | Ratio code (actual gear ratio) | Reduction Gear | | | | | | | | | | | | | | Input shaft | | | Outer Dimensions |
|------------|--------------------------------|----------------|--------------------|-------------|-------------------------------|------------------------------------|--------------------------------|---------------------------------|---|------------|-------------|--------------------|---------------------|----------------|------------|------------------|------------------|------|--------------------------------|
| | | T ₀ | N ₀ | K | T _{S1} | T _{S2} | N _{in} | N _S | N _{To} | Back-lash | Lost motion | Torsional rigidity | Start-up Efficiency | M _O | α | M _{Oin} | M _{Sin} | β | |
| | | Rated Torque | Rated Output Speed | Life Rating | Allowable Startup/Stop Torque | Momentary maximum allowable torque | Allowable Input Speed (Note 2) | Allowable Output Speed (Note 2) | Reference value to output speed during continuous operation at rated torque | | | | | (arc.min.) | (arc.min.) | (%) | (N-m) | (mm) | |
| | | (N-m) | (r.p.m.) | (Hr) | (N-m) | (N-m) | (r.p.m.) | (r.p.m.) | (r.p.m.) | (arc.min.) | (arc.min.) | (N-m/arc.min.) | (%) | (N-m) | (mm) | (N-m) | (N-m) | (mm) | |
| RDP-020E | 081 (81) | 167 | 15 | 6,000 | 412 | 833 | 3,500 | 43 | 43 | 1.0 | 1.0 | 49 | 75 | 882 | 93.2 | 38 | 38 | 58 | Input Unit Code : A0
——P.71 |
| RDP-040E | 057 (57) | 412 | | | 1,029 | 2,058 | 3,000 | 53 | 25 | | | 108 | 80 | 1,666 | 114.6 | 78 | 122 | 73.8 | Input Unit Code : A3
——P.72 |
| RDP-080E | 081 (81) | 784 | | | 1,960 | 3,920 | | 37 | 24 | | | 196 | 80 | 2,156 | 136.1 | | 133 | | Input Unit Code : A4
——P.73 |
| RDP-160E | 066 (66) | 1,568 | | | 3,920 | 7,840 | 2,000 | 30 | 15 | | | 392 | 80 | 3,920 | 167.3 | 158 | 295 | 86.6 | Input Unit Code : A6
——P.74 |
| RDP-320E | 081 (81) | 3,136 | | | 7,840 | 15,680 | | 25 | 12 | | | 980 | 85 | 7,056 | 203 | | 417 | | Input Unit Code : A7
——P.75 |

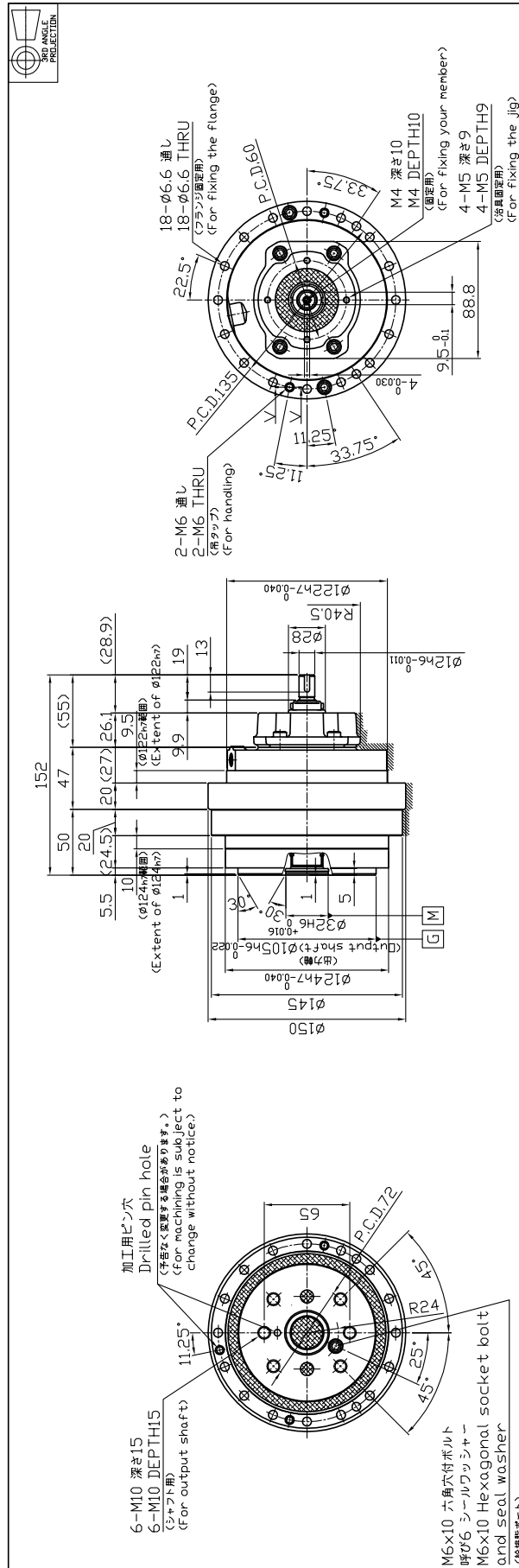
Hollow shaft series

| Model Code | Ratio code (actual gear ratio) | Reduction Gear | | | | | | | | | | | | | | Input shaft | | | Outer Dimensions |
|------------|--------------------------------|----------------|--------------------|-------------|-------------------------------|------------------------------------|--------------------------------|---------------------------------|---|------------|-------------|--------------------|---------------------|----------------|-------|------------------|------------------|--------------|--------------------------------|
| | | T ₀ | N ₀ | K | T _{S1} | T _{S2} | N _{in} | N _S | N _{To} | Back-lash | Lost motion | Torsional rigidity | Start-up Efficiency | M _O | α | M _{Oin} | M _{Sin} | β dimensions | |
| | | Rated Torque | Rated Output Speed | Life Rating | Allowable Startup/Stop Torque | Momentary maximum allowable torque | Allowable Input Speed (Note 2) | Allowable Output Speed (Note 2) | Reference value to output speed during continuous operation at rated torque | | | | | | | | | | |
| | | (N-m) | (r.p.m.) | (Hr) | (N-m) | (N-m) | (r.p.m.) | (r.p.m.) | (r.p.m.) | (arc.min.) | (arc.min.) | (N-m/arc.min.) | (%) | (N-m) | (mm) | (N-m) | (N-m) | (mm) | |
| RDP-010C | 108 (108) | 98 | 15 | 6,000 | 245 | 490 | 3,500 | 32 | 32 | 1.0 | 1.0 | 47 | 75 | 686 | 91.2 | 38 | 38 | 58 | Input Unit Code : A1
——P.76 |
| RDP-027C | 100 (99.82) | 265 | | | 662 | 1,323 | | 35 | 28 | | | 147 | 75 | 980 | 112 | | 40 | | Input Unit Code : A2
——P.77 |
| RDP-050C | 109 (109) | 490 | | | 1,225 | 2,450 | 3,000 | 28 | 23 | | | 255 | 80 | 1,764 | 136.8 | 78 | 90 | 73.8 | Input Unit Code : A3
——P.78 |
| RDP-100C | 101 (100.5) | 980 | | | 2,450 | 4,900 | | 30 | 18 | | | 510 | 80 | 2,450 | 148.9 | | 134 | | Input Unit Code : A5
——P.79 |
| RDP-200C | 106 (105.83) | 1,960 | | | 4,900 | 9,800 | 2,000 | 19 | 14 | | | 980 | 80 | 8,820 | 204.4 | 158 | 230 | 86.6 | Input Unit Code : A8
——P.80 |
| RDP-320C | 157 (157) | 3,136 | | | 7,840 | 15,680 | | 13 | 13 | | | 1,960 | 85 | 20,580 | 245.9 | | 215 | | Input Unit Code : A9
——P.81 |

Notes:

1. The rating table shows the specification values including the entry fields for reduction gear values.
2. The allowable speed may be limited by heat depending on the operating rate. Make sure the surface temperature of the reduction gear does not exceed 60°C during use.
3. The allowable moment will differ depending on the thrust load. Check the allowable moment diagram.
4. For the moment of inertia of the reduction gears, refer to the external dimension drawings for the reduction gear.

Model Code: RDP-020E-081-A0

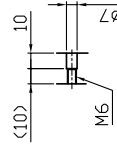


注記

1. フランジ固定用18-M6六角穴付ボルトは、締付トルク15.6~40.78N・mにて締付けること。
2. シヤット用6-M10六角穴付ボルトは、締付トルク173.5~434N・mにて締付けること。
3. ケース及びシムボルト締付用ボルトには、六角穴付締付用皿皿を使用すること。
4. インロー $\square$ 田は、どちらか一方を選択し、使用のこと。
5. 高圧機内装には、弊社指定潤滑剤を充填。
6. 高圧機内装色はエポキシチタンNo1N1.5(黒色)に示す。
7. 塗装乾固部分は $\parallel\parallel\parallel\parallel$ に示す。

NOTE

1. Tightening torque of 18-M6 hexagon socket headed bolt for fixing case is 15.6±0.78N·m.
2. Tightening torque of 6-M10 hexagon socket headed bolt on the output shaft is 73.5±3.43N·m.
3. Bolt shall be used with coned disk spring for heavy duty.
4. Use one of  QR [M].
5. The specified lubricant is already sealed in before shipment.
6.  area is painted black.



V-V SECTION

| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia, J _r
(=GD ² /4)
kg・m ²
The Motor-Axis
Conversion
(kg・m ²) |
|----------------------|---------------------|--------------------|---|
| 81 | RDP-020E-081-A0 | 4.6 | 2.24E+10-5 |



① 1. ケーブル固定用16-M8六角付ボルトは、締付トルク73.7±21aN・mにて締付けること。
2. ケーブル固定用10-M10六角付ボルトは、締付トルク73.7±53.4aN・mにて締付けること。
3. ジャスアース及びシャフトには、六角付付ボルト用印字ペンを使用すること。

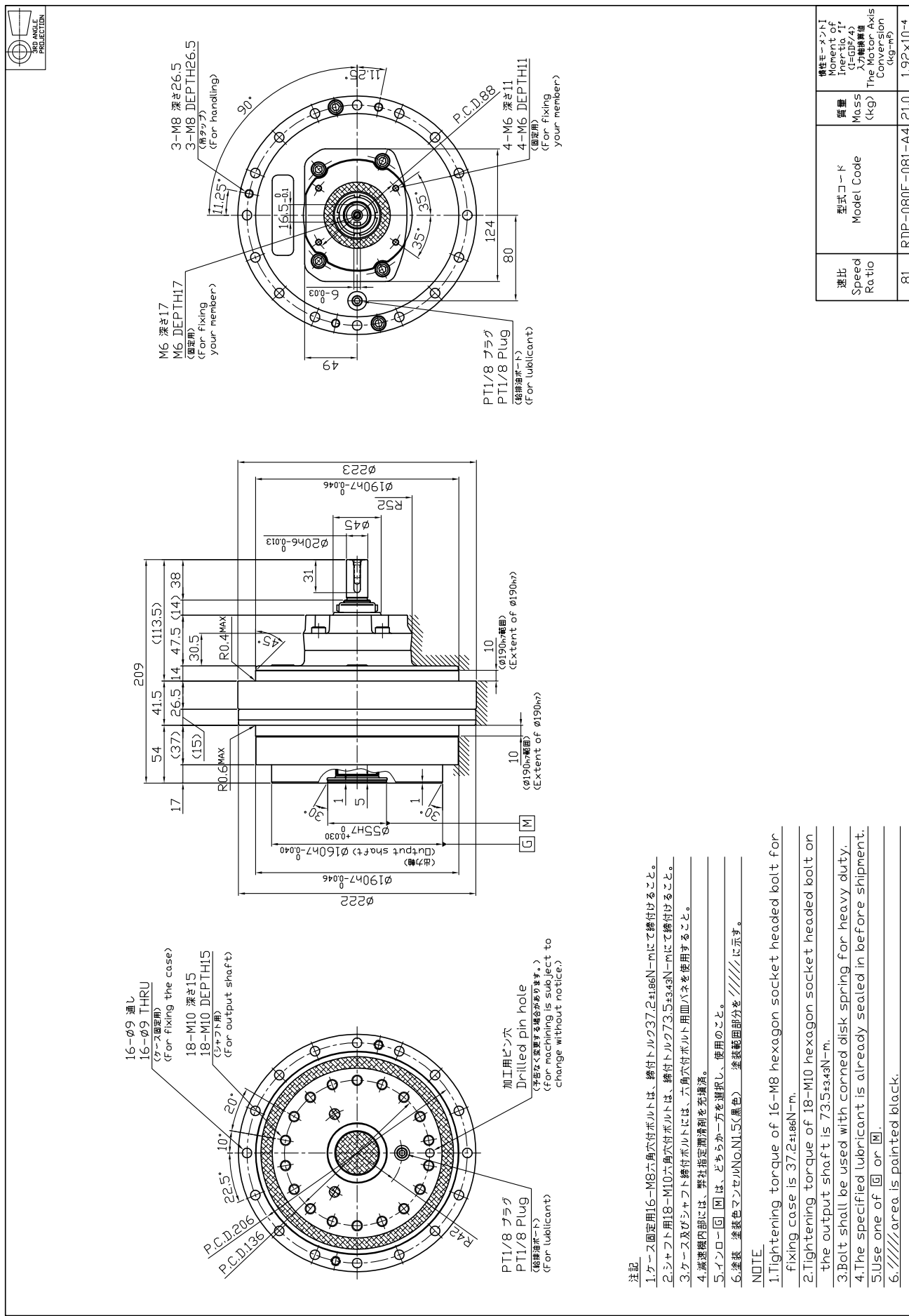
② 減速機内部には、弊社指定潤滑剤を充填済。

③ 5. インポート用「G」型とは、どちらか一方を選択し、使用のこと。

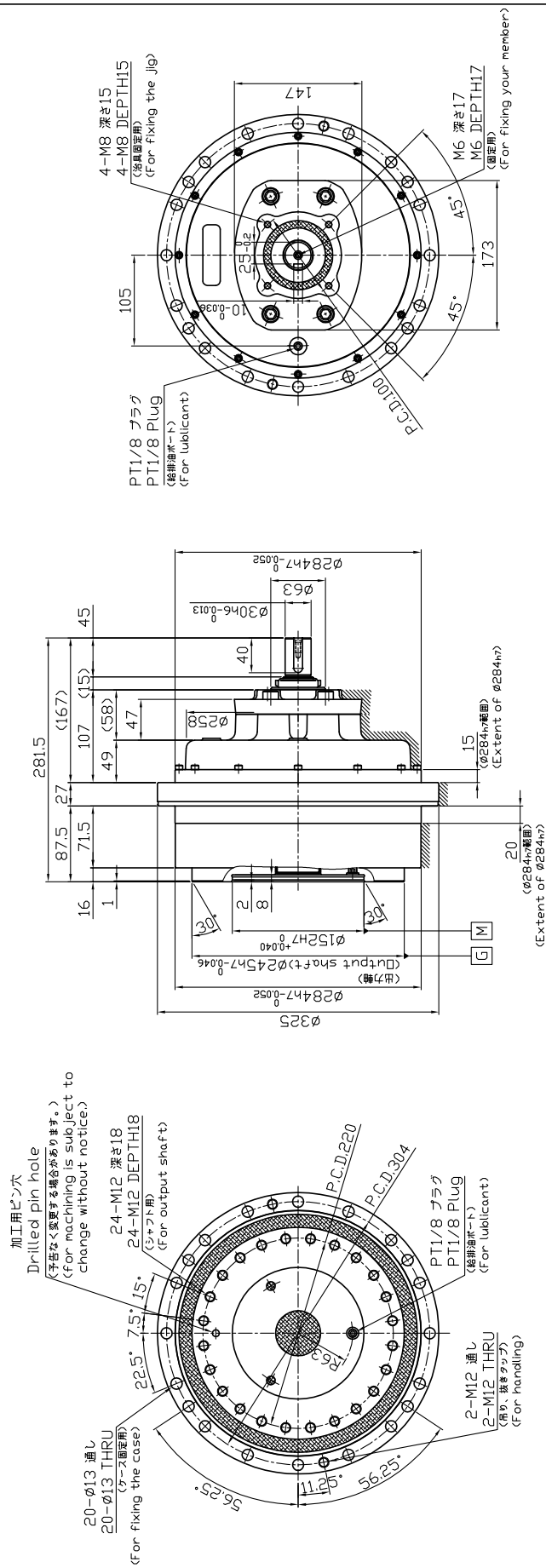
④ 塗装
塗料色 No.15(黒色) 塗装乾膜厚分 〃〃〃〃に示す。

1. Tightening torque of 16-M8 hexagon socket headed bolt for fixing case is 37.2±1.6N-m.
2. Tightening torque of 10-M10 hexagon socket headed bolt on the output shaft is 73.5±3.4N-m.
3. Bolt shall be used with coned disk spring for heavy duty.
4. The specified lubricant is already sealed in before shipment.
5. Use one of □ or M.
6. area is painted black.

Model Code: RDP-080E-081-A4



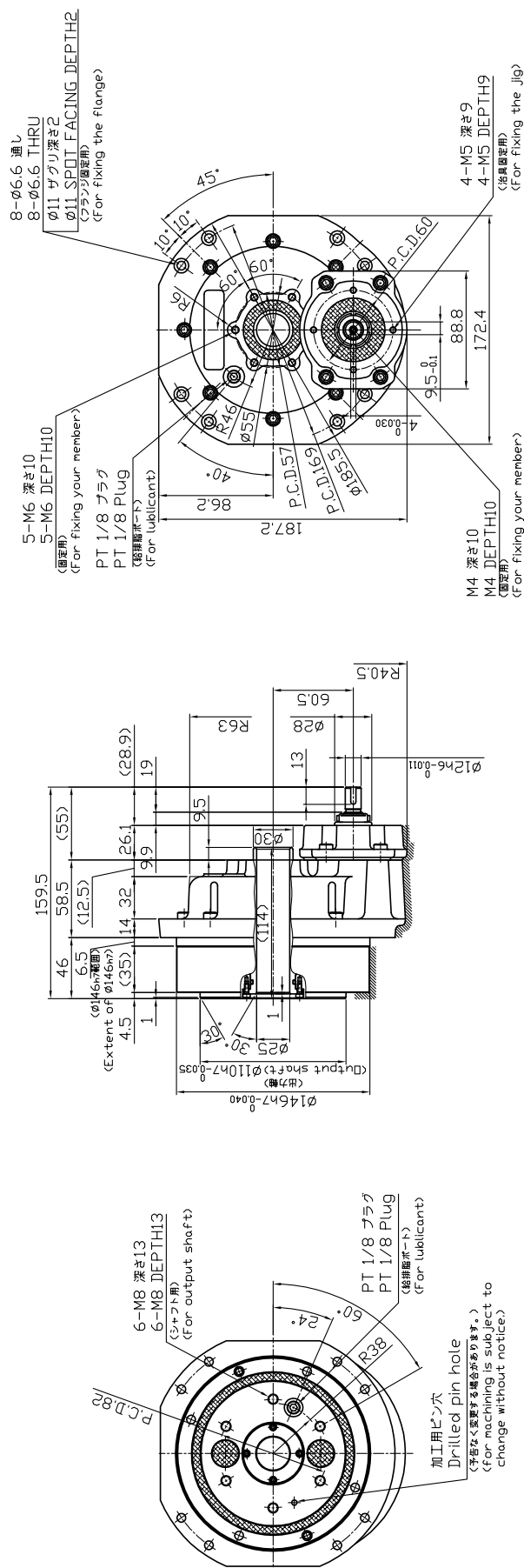
| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia 1)
αg ² /4
λ ² /4換算値
The Motor Axis
Conversion
αg ² /4 |
|----------------------|---------------------|--------------------|--|
| 66 | R1P-160E-066-A6 | 39 | 8.94x10 ⁻⁴ |



1. ケーブル固定用20-M12六角付ボルトは、締付トルク129±9.3N・mにて締付けること。
2. シャフト用24-M12六角付ボルトは、締付トルク129±9.3N・mにて締付けること。
3. ケーブル及びシャフト内部には、六角付ボルト用皿バネを使用すること。
4. 減速機内部には、弊社指定潤滑剤を充填。
5. 5インポート [G] [M] は、どちらか一方を選択し、使用すること。
6. 塗装色はエポキシ マンゼンNo.N1.5、黒色に示す。

1. Tightening torque of 20-M12 hexagon socket headed bolt for fixing case is 129*637N-m.
2. Tightening torque of 24-M12 hexagon socket headed bolt on the output shaft is 129*637N-m.
3. Bolt shall be used with coned disk spring for heavy duty.
4. The specified lubricant is already sealed in before shipment.
5. Use one of  or .
6.  area is painted black.

| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia I_1
[cm^2/s^2]
入力軸側
The Motor Axis
Conversion
$\text{kg}\cdot\text{m}^2/10^{-3}$ |
|----------------------|---------------------|--------------------|---|
| 81 | PMP-320E-081-A7 | 6.35 | 1.17×10^{-3} |



注記

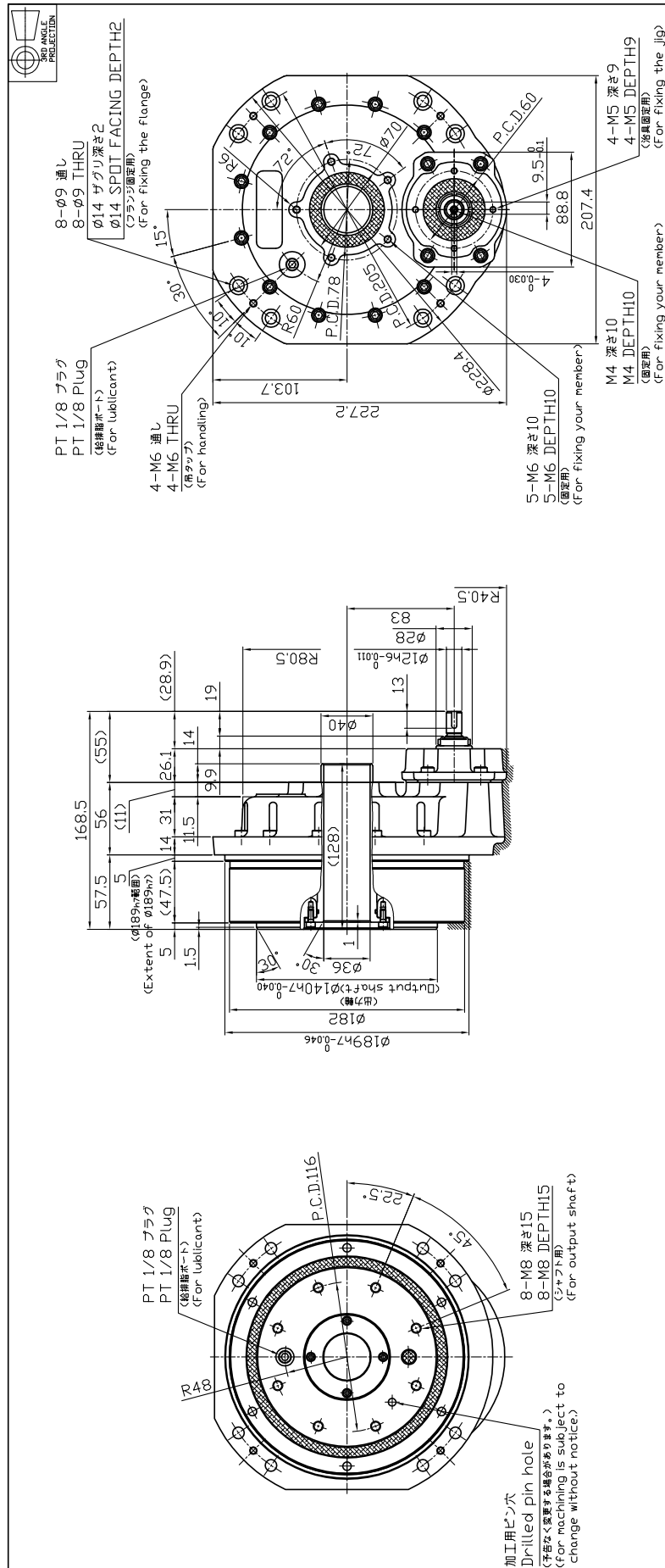
1. 1. フランジ固定用B-M6六角穴付ボルトは、締付トルク15.6~70.8N・mにて締付けること。
2. 2. シャフト用6-M8六角穴付ボルトは、締付トルク37.2±0.6N・mにて締付けること。
3. 3. シャフト及びシャフト締付ボルトには、六角穴付ボルト用皿ハネを使用すること。
4. 4. 減速機内部には、弊社指定潤滑油を充填。
5. 5. 装填 装填色 エポキシマセラン(NaNO_{1.5}(黒色)) 塗装範囲部分を////に示す。

NOTE

1. Tightening torque of 8-M6 hexagon socket headed bolt for fixing case is 15.6±0.78N-m.
2. Tightening torque of 6-M8 hexagon socket headed bolt on the output shaft is 37.2±1.86N-m.
3. Bolt shall be used with corned disk spring for heavy duty.
4. The specified lubricant is already sealed in before shipment.
5. // area is painted black.

| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia "I"
(I=GD ² /4)
入力係数/質量
The Motor Axis
Conversion
(kg·m ²) |
|----------------------|---------------------|--------------------|--|
| 108 | PMP-110C-108-A1 | 6.1 | 5.52×10 ⁻⁵ |

Model Code: RDP-027C-100-A2



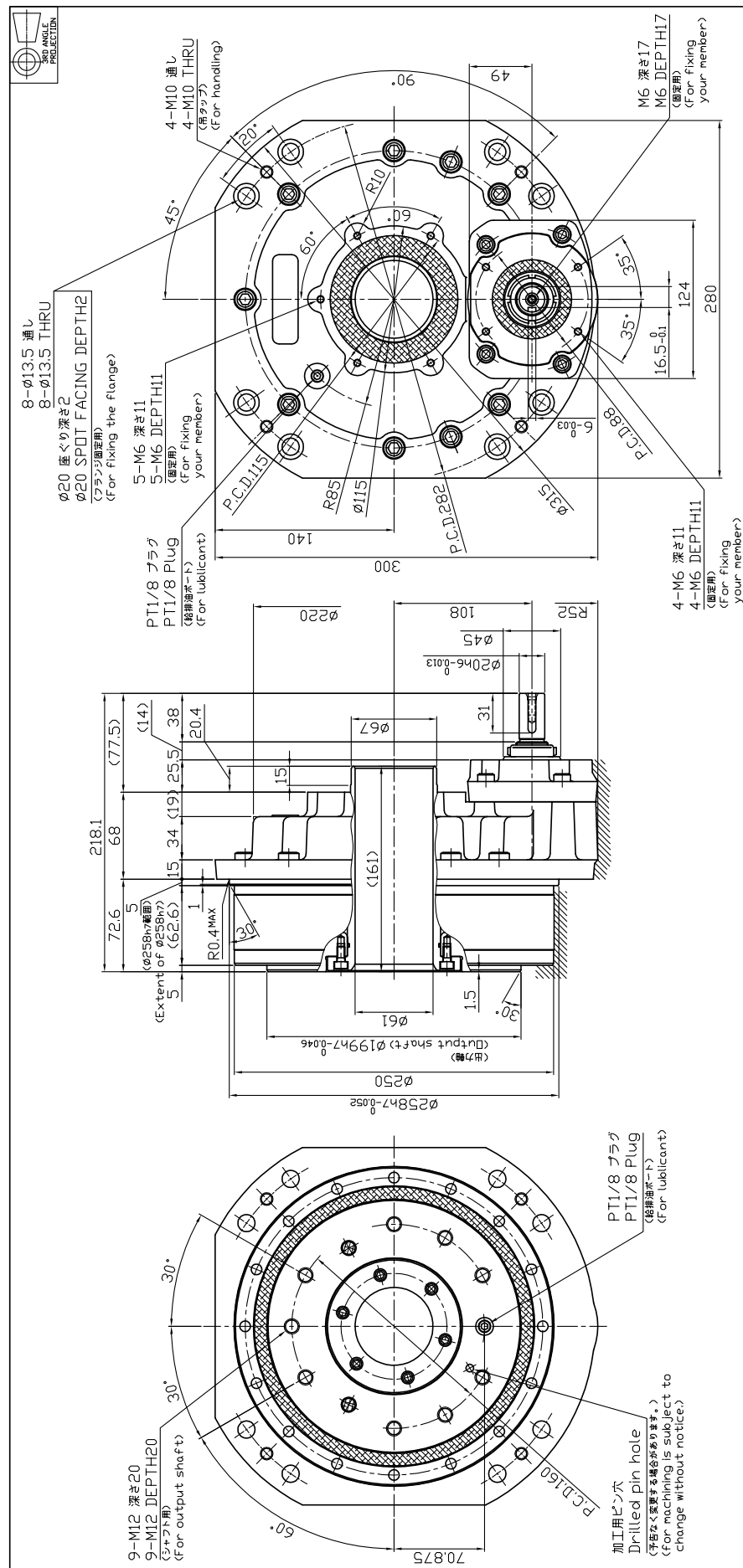
- 注記
- 1.フランジ固定用8-M8六角穴付ボルトは、締付トルク37.2±1.66N・mにて締付けること。
 - 2.シャフト用8-M8六角穴付ボルトは、締付トルク37.2±1.66N・mにて締付けること。
 - 3.ケース及びシャフト締付ボルトには、六角穴付ボルト用皿パネを使用すること。
 - 4.減速機内部には、弊社指定潤滑剤を充填済。
 - 5.塗装 塗装色 エポキシ マンセルNo.15(黒色) 塗装被覆部分を//////に示す。

- NOTE
- 1.Tightening torque of 8-M8 hexagon socket headed bolt for fixing case is 37.2±1.66N・m.
 - 2.Tightening torque of 8-M8 hexagon socket headed bolt on the output shaft is 37.2±1.66N・m.
 - 3.Bolt shall be used with corned disk spring for heavy duty.
 - 4.The specified lubricant is already sealed in before shipment.
 - 5.//////area is painted black.

| 速度
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia J _r
(1=GD ² /4)
入力軸側算出
The Motor Axis
Conversion
(kg·m ²) |
|----------------------|---------------------|--------------------|--|
| 99.82 | RDP-027C-100-A2 | 8.6 | 2.13×10 ⁻⁴ |



Model Code: RDP-100C-101-A5



記注

1. フランジ固定用-M12六角穴付ボルトは、締付トルク129±6.3N・mにて締付けること。
2. シヤット用9-M12六角穴付ボルトは、締付トルク129±6.3N・mにて締付けること。
3. ケース及びシヤット締付ボルトには、六角穴付ボルト用皿ハネを使用すること。
4. 減速機内部には、弊社指定潤滑剤を充填済。
5. 塗装（塗料名マンゼンNo.15（黒色））に示す。 塗装部（部品名）を////に示す。

NOTE

1. Tightening torque of 8-M12 hexagon socket headed bolt for fixing case is 129 $\pm$ 37N $\cdot$ m.
2. Tightening torque of 9-M12 hexagon socket headed bolt on the output shaft is 129 $\pm$ 37N $\cdot$ m.
3. Bolt shall be used with coned disk spring for heavy duty.
4. The specified lubricant is already sealed in before shipment.
5. area is painted black.

| | | | |
|----------------------|---------------------|--------------------|---|
| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia J ₁
(kg・m ²)
(J=GD ² /4)
入力軸慣性
The Motor Axis
Conversion
Conversion
(kg・m ²) |
| 100.5 | PH1P-100C-101-A5 | 36.3 | 9.05×10 ⁻⁴ |

80



1. Tightening torque of 8-M16 hexagon socket headed bolt for fixing case is 319±159N·m.
2. Tightening torque of 9-M16 hexagon socket headed bolt on the output shaft is 319±159N·m.
3. Bolt shall be used with coned disk spring for heavy duty.
4. The specified lubricant is already sealed in before shipment.
5. // area is painted black.

| 速比
Speed
Ratio | 型式コード
Model Code | 質量
Mass
(kg) | 慣性モーメント
Moment of
Inertia, J
($\text{kg}\cdot\text{cm}^2$)
入力側慣性
The Motor Axis
Conversion
($\text{kg}\cdot\text{cm}^2$) |
|----------------------|---------------------|--------------------|---|
| 105:83 | RDP-200C-106-A8 | 82.3 | 2.37×10^{-3} |



Motor flange / bushing

Selection Table of Motor Flange Code and Bushing Code-1

Select the motor flange code and bushing code based on the dimension of the motor to be used.
Applicable model code: RD□-006E, 020E, 010C, 027C

Supported motor shaft diameter: Φ8 to Φ14

| Model Code | Input unit code |
|---|-----------------|
| Reduction gear (straight input type) | |
| RDS-006E | B0 |
| RDS-020E | |
| RDS-010C | |
| RDS-027C | |
| Reduction gear (right angle input type) | |
| RDR-006E | C0 |
| RDR-020E | |
| RDR-010C | |
| RDR-027C | |

| Motor flange code | Motor flange | | | | | | | | |
|-------------------|------------------------------|------|---|--------------------------------|---|------------------|----------------|--|--|
| | Motor shaft length (mm)
a | | Motor mounting pilot diameter (mm)
b | Motor mounting pilot tolerance | Motor mounting pilot length (mm)
c (°) | Bolt P.C.D.
d | Bolt size
e | | |
| | Max. | Min. | | | | | | | |
| AA | 23 | 30 | 30 | h7 | 3 | 46 | M4 | | |
| AB | 23 | 31 | 50 | h7 | 5 | 60 | M4 | | |
| AC | 23 | 31 | 50 | h7 | 5 | 70 | M4 | | |
| AD | 23 | 31 | 50 | h7 | 5 | 70 | M5 | | |
| AE | 23 | 31 | 70 | h7 | 6 | 90 | M5 | | |
| AF | 23 | 31 | 70 | h7 | 6 | 90 | M6 | | |
| AG | 30 | 38 | 80 | h7 | 6 | 100 | M6 | | |
| AH | 23 | 31 | 80 | h7 | 6 | 100 | M6 | | |
| AJ | 30 | 38 | 95 | h7 | 6 | 115 | M8 | | |
| AK | 35 | 43 | 115 | h7 | 6 | 165 | M8 | | |

* The motor mounting pilot length indicates the maximum value of the capable range.

Supported motor shaft diameter: Φ15 to Φ24

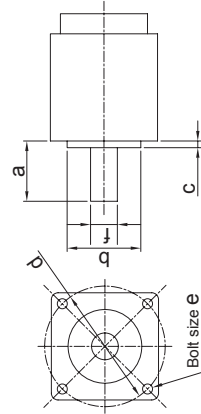
| Model Code | Input unit code |
|---|-----------------|
| Reduction gear (straight input type) | |
| RDS-006E | B1 |
| RDS-020E | |
| RDS-010C | |
| RDS-027C | |
| Reduction gear (right angle input type) | |
| RDR-006E | C1 |
| RDR-020E | |
| RDR-010C | |
| RDR-027C | |

| Motor flange | | | | | | | | | |
|-------------------|------------------------------|------|---|--------------------------------|---|------------------|----------------|--|--|
| Motor flange code | Motor shaft length (mm)
a | | Motor mounting pilot diameter (mm)
b | Motor mounting pilot tolerance | Motor mounting pilot length (mm)
c (°) | Bolt P.C.D.
d | Bolt size
e | | |
| | Max. | Min. | | | | | | | |
| CA | 28 | 55 | 50 | h7 | 6 | 70 | M5 | | |
| CB | 28 | 55 | 70 | h7 | 5.5 | 90 | M5 | | |
| CC | 28 | 55 | 70 | h7 | 5.5 | 90 | M6 | | |
| CD | 30 | 57 | 80 | h7 | 6 | 100 | M6 | | |
| CE | 30 | 57 | 95 | h7 | 6 | 115 | M6 | | |
| CF | 30 | 57 | 95 | h7 | 6 | 115 | M8 | | |
| CG | 32 | 59 | 110 | h7 | 7 | 135 | M8 | | |
| CH | 32 | 59 | 110 | h7 | 7 | 145 | M8 | | |
| CJ | 47 | 74 | 110 | h7 | 7 | 145 | M8 | | |
| CK | 32 | 59 | 114.3 | h7 | 5 | 200 | M12 | | |
| CL | 32 | 59 | 115 | h7 | 6 | 165 | M8 | | |
| CM | 32 | 59 | 130 | h7 | 6 | 165 | M10 | | |
| CN | 32 | 59 | 200 | h7 | 5 | 235 | M12 | | |

* The motor mounting pilot length indicates the maximum value of the capable range.

| Bushing code | Bushing | |
|--------------|--------------------------|-----------------------|
| | Motor shaft diameter(mm) | Motor shaft tolerance |
| 0A | 8 | h6 |
| 0B | 9 | h6 |
| 0C | 10 | h6 |
| 0D | 11 | h6 |
| ZZ | None | |

| Bushing code | Bushing | |
|--------------|--------------------------|-----------------------|
| | Motor shaft diameter(mm) | Motor shaft tolerance |
| 1B | 15 | h6 |
| 1C | 16 | h6 |
| 1D | 17 | h6 |
| 1E | 19 | h6 |
| 1F | 22 | h6 |
| 1G | 23 | h6 |
| ZZ | None | |



Selection Table of Motor Flange Code and Bushing Code-2

Select the motor flange code and bushing code based on the dimension of the motor to be used.
Applicable model code: RD□-040E,080E,050C,100C

Supported motor shaft diameter: Φ14 to Φ24

| Model Code | Input unit code |
|---|-----------------|
| Reduction gear (straight input type) | |
| RDS-040E | B2 |
| RDS-080E | |
| RDS-050C | |
| RDS-100C | |
| Reduction gear (right angle input type) | |
| RDR-040E | C2 |
| RDR-080E | |
| RDR-050C | |
| RDR-100C | |

| Motor flange | | | | | | | | |
|-------------------|---------------------------|------|--------------------------------------|--------------------------------|--|---------------|-------------|--|
| Motor flange code | Motor shaft length (mm) a | | Motor mounting pilot diameter (mm) b | Motor mounting pilot tolerance | Motor mounting pilot length (mm) c (*) | Bolt P.C.D. d | Bolt size e | |
| | Max. | Min. | | | | | | |
| CA | 34 | 55 | 50 | h7 | 6 | 70 | M5 | |
| CB | 34 | 55 | 70 | h7 | 5.5 | 90 | M5 | |
| CC | 34 | 55 | 70 | h7 | 5.5 | 90 | M6 | |
| CD | 36 | 57 | 80 | h7 | 6 | 100 | M6 | |
| CE | 36 | 57 | 95 | h7 | 6 | 115 | M6 | |
| CF | 36 | 57 | 95 | h7 | 6 | 115 | M8 | |
| CG | 38 | 59 | 110 | h7 | 7 | 135 | M8 | |
| CH | 38 | 59 | 110 | h7 | 7 | 145 | M8 | |
| CJ | 53 | 74 | 110 | h7 | 7 | 145 | M8 | |
| CK | 38 | 59 | 114.3 | h7 | 5 | 200 | M12 | |
| CL | 38 | 59 | 115 | h7 | 6 | 165 | M8 | |
| CM | 38 | 59 | 130 | h7 | 6 | 165 | M10 | |
| CN | 38 | 59 | 200 | h7 | 5 | 235 | M12 | |

* The motor mounting pilot length indicates the maximum value of the capable range.

Supported motor shaft diameter: Φ25 to Φ35

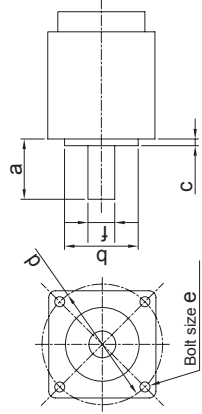
| Model Code | Input unit code |
|---|-----------------|
| Reduction gear (straight input type) | |
| RDS-040E | B3 |
| RDS-080E | |
| RDS-050C | |
| RDS-100C | |
| Reduction gear (right angle input type) | |
| RDR-040E | C3 |
| RDR-080E | |
| RDR-050C | |
| RDR-100C | |

| Motor flange code | Motor flange | | | | | | | Bolt size
e |
|-------------------|------------------------------|------|---|--------------------------------|---|------------------|-----|----------------|
| | Motor shaft length (mm)
a | | Motor mounting pilot diameter (mm)
b | Motor mounting pilot tolerance | Motor mounting pilot length (mm)
c (*) | Bolt P.C.D.
d | | |
| | Max. | Min. | | | | | | |
| GA | 36 | 81 | 95 | h7 | 8 | 115 | M8 | |
| GB | 38 | 83 | 110 | h7 | 7 | 135 | M8 | |
| GC | 38 | 83 | 110 | h7 | 7 | 145 | M8 | |
| GD | 38 | 83 | 114.3 | h7 | 5 | 200 | M12 | |
| GE | 38 | 83 | 130 | h7 | 6 | 165 | M10 | |
| GF | 38 | 83 | 200 | h7 | 6 | 235 | M12 | |

* The motor mounting pilot length indicates the maximum value of the capable range.

| Bushing code | Bushing | |
|--------------|----------------------------|-----------------------|
| | Motor shaft diameter(mm) f | Motor shaft tolerance |
| 1A | 14 | h6 |
| 1B | 15 | h6 |
| 1C | 16 | h6 |
| 1D | 17 | h6 |
| 1E | 19 | h6 |
| 1F | 22 | h6 |
| 1G | 23 | h6 |
| ZZ | None | |

| Bushing code | Bushing | |
|--------------|----------------------------|-----------------------|
| | Motor shaft diameter(mm) f | Motor shaft tolerance |
| 3A | 25 | h6 |
| 3B | 28 | h6 |
| ZZ | None | |



Selection Table of Motor Flange Code and Bushing Code-3

Select the motor flange code and bushing code based on the dimension of the motor to be used.
Applicable model code: RD□-160E,320E,200C,320C

Supported motor shaft diameter: Φ19 to Φ28

| Model Code | Input unit code |
|---|-----------------|
| Reduction gear (straight input type) | |
| RDS-160E | B4 |
| RDS-320E | |
| RDS-200C | |
| RDS-320C | |
| Reduction gear (right angle input type) | |
| RDR-160E | C4 |
| RDR-320E | |
| RDR-200C | |
| RDR-320C | |

| Motor flange code | Motor flange | | | | | | | | |
|-------------------|------------------------------|------|---|--------------------------------|---|------------------|----------------|--|--|
| | Motor shaft length (mm)
a | | Motor mounting pilot diameter (mm)
b | Motor mounting pilot tolerance | Motor mounting pilot length (mm)
c (*) | Bolt P.C.D.
d | Bolt size
e | | |
| GA | Max. | Min. | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

* The motor mounting pilot length indicates the maximum value of the capable range.

| Bushing code | Bushing | |
|--------------|----------------------------|-----------------------|
| | Motor shaft diameter(mm) f | Motor shaft tolerance |
| 2A | 19 | h6 |
| 2B | 22 | h6 |
| 2C | 24 | h6 |
| ZZ | None | |

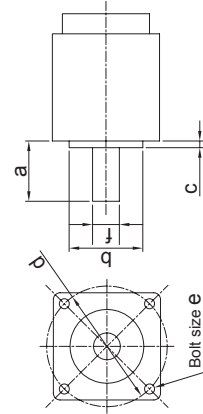
Supported motor shaft diameter: Φ32 to Φ42

| Model Code | Input unit code |
|---|-----------------|
| Reduction gear (straight input type) | |
| RDS-160E | B5 |
| RDS-320E | |
| RDS-200C | |
| RDS-320C | |
| Reduction gear (right angle input type) | |
| RDR-160E | C5 |
| RDR-320E | |
| RDR-200C | |
| RDR-320C | |

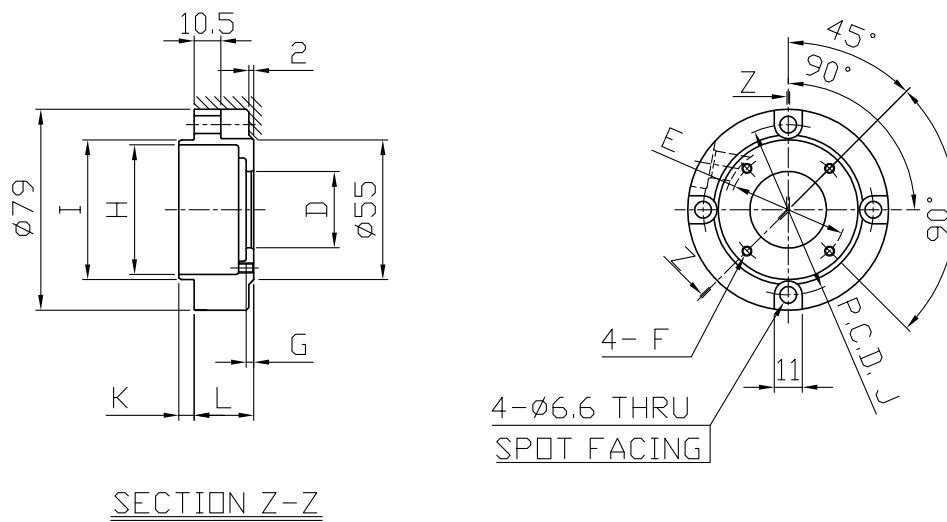
| Motor flange code | Motor flange | | | | | | | | | |
|-------------------|------------------------------|------|---|--------------------------------|---|------------------|----------------|--|--|--|
| | Motor shaft length (mm)
a | | Motor mounting pilot diameter (mm)
b | Motor mounting pilot tolerance | Motor mounting pilot length (mm)
c (*) | Bolt P.C.D.
d | Bolt size
e | | | |
| | Max. | Min. | | | | | | | | |
| JA | 56 | 86 | 110 | h7 | 7 | 145 | M8 | | | |
| JB | 54 | 84 | 114.3 | h7 | 5 | 200 | M12 | | | |
| JC | 85 | 115 | 114.3 | h7 | 5 | 200 | M12 | | | |
| JD | 57 | 87 | 180 | h7 | 5 | 215 | M12 | | | |
| JE | 54 | 84 | 200 | h7 | 5 | 235 | M12 | | | |
| JF | 87 | 117 | 200 | h7 | 5 | 235 | M12 | | | |

* The motor mounting pilot length indicates the maximum value of the capable range.

| Bushing code | Bushing | |
|--------------|----------------------------|-----------------------|
| | Motor shaft diameter(mm) f | Motor shaft tolerance |
| 4A | 32 | h6 |
| 4B | 35 | k6 |
| 4C | 38 | k6 |
| 4D | 32 | k6 |
| ZZ | None | |



Motor Flange Dimension Drawing



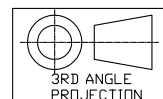
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass
(kg) |
|-------------|---|-----|---------|---|-----|-------------------------|----|---|------|--------------------|
| | D | E | F | G | H | I | J | K | L | |
| AA | Ø30 ^{+0.030} _{-0.009} | Ø46 | M4 THRU | 3 | Ø51 | Ø55 _{h7-0.030} | 67 | 6 | 23.5 | 0.45 |

注記

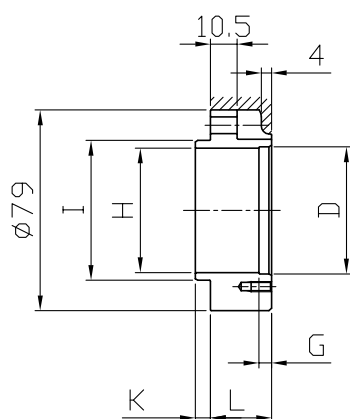
1. 塗装 塗装色 エポキシ マンセルNo.N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

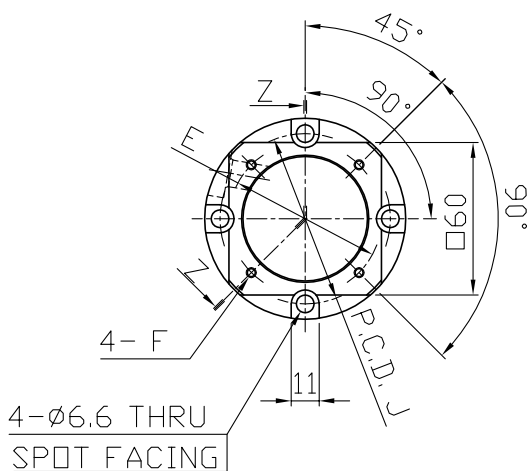
1. ///// area is painted black.



Motor Flange Dimension Drawing



SECTION Z-Z



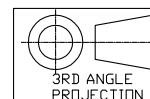
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass
(kg) |
|-------------|-----------------------------|-----------|------------|---|-----------|----------------------|----|---|----|--------------------|
| | D | E | F | G | H | I | J | K | L | |
| AB | $\phi 50^{+0.036}_{+0.011}$ | $\phi 60$ | M4 DEPTH 8 | 5 | $\phi 49$ | $\phi 55_{h7-0.030}$ | 67 | 6 | 24 | 0.44 |
| AC | | $\phi 70$ | M5 DEPTH 9 | | | | | | | |
| AD | | | | | | | | | | |

注記

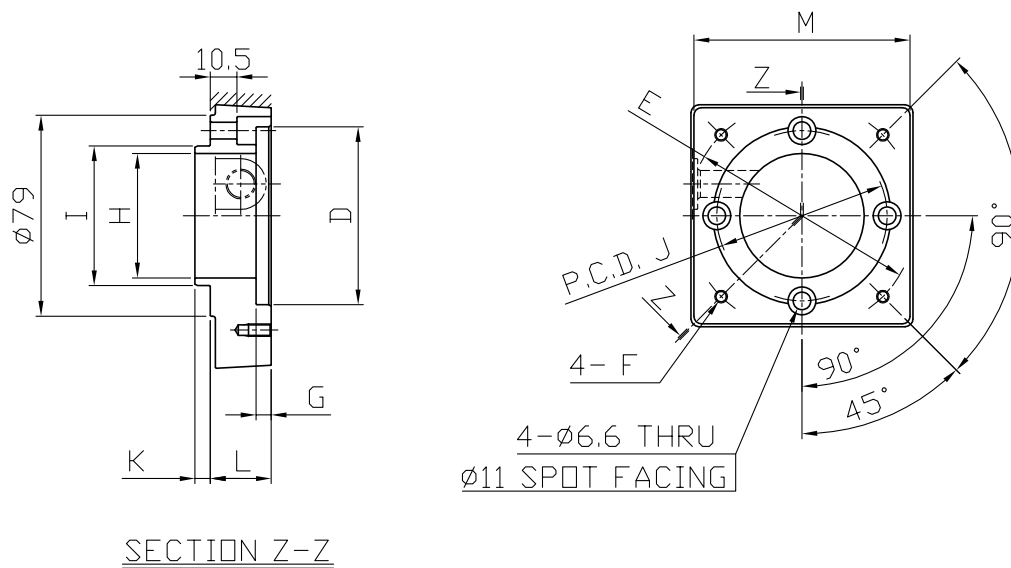
1. 塗装 塗装色 エポキシ マンセルNo. N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Motor Flange Dimension Drawing



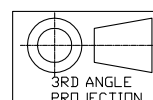
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | | 質量
Mass
(kg) |
|-------------|------------------------------|------------|---------------|---|-----------|----------------------|----|---|-------------|--------------|--------------------|
| | D | E | F | G | H | I | J | K | L | M | |
| AE | $\phi 70^{+0.037}_{+0.012}$ | $\phi 90$ | M5 DEPTH 9 | 6 | $\phi 49$ | $\phi 55_{h7-0.030}$ | 67 | 6 | 24 | $\square 85$ | 0.8 |
| AF | | | M6 DEPTH 11 | | | | | | 31 | | 1.0 |
| AG | $\phi 80^{+0.037}_{+0.012}$ | $\phi 100$ | | | | | | | 24 | 0.75 | |
| AH | | | | | | | | | 31 | 1.7 | |
| AJ | $\phi 95^{+0.038}_{+0.013}$ | $\phi 115$ | | | | | | | M8 DEPTH 15 | 36 | $\square 105$ |
| AK | $\phi 115^{+0.038}_{+0.013}$ | $\phi 165$ | $\square 150$ | | | | | | | 4.8 | |

注記

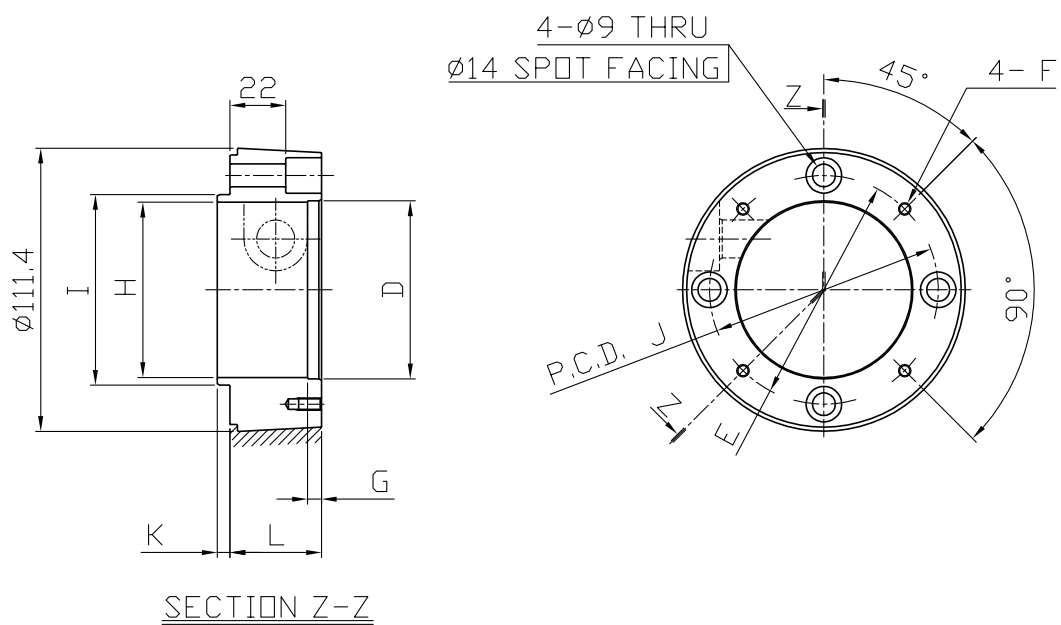
1. 塗装 塗装色 エポキシ マンセルNo.N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Motor Flange Dimension Drawing



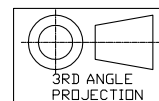
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass
(kg) |
|-------------|-----------------------------|-----------|-------------|-----|-----------|------------------------|----|---|----|--------------------|
| | D | E | F | G | H | I | J | K | L | |
| CA | $\phi 50^{+0.036}_{-0.011}$ | $\phi 70$ | M5 DEPTH 9 | 3.5 | $\phi 69$ | $\phi 75_{h7-0.030}^0$ | 90 | 5 | 36 | 1.3 |
| CB | $\phi 70^{+0.037}_{-0.012}$ | $\phi 90$ | | 5.5 | | | | | | |
| CC | | | M6 DEPTH 11 | | | | | | | |

注記

1. 塗装 塗装色 エポキシ マンセルNo. N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Straight input type

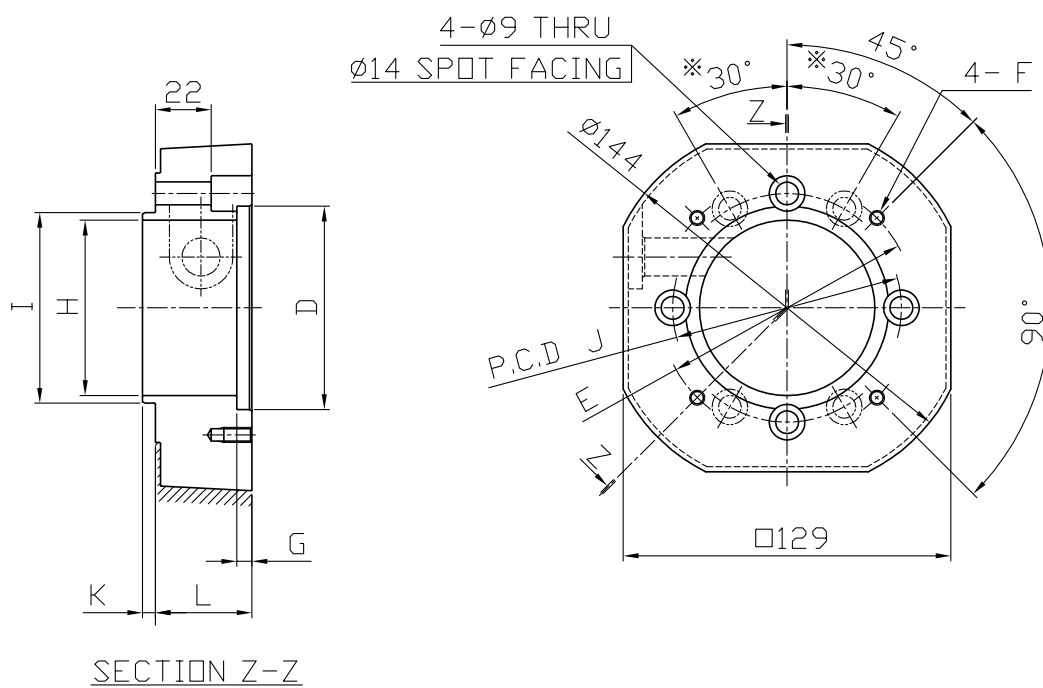
Right angle input type

Pulley input type

Motor flange / bushing

Technical Documents

Motor Flange Dimension Drawing



※ 印の角度寸法は、コード"GA"に適用とする。

※ Applied to Code "GA"

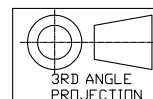
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass |
|-------------|-----------------------------|------------|-------------|---|-----------|----------------------|----|---|----|-------------|
| | D | E | F | G | H | I | J | K | L | (kg) |
| CD | $\phi 80^{+0.037}_{-0.012}$ | $\phi 100$ | M6 DEPTH 11 | 6 | $\phi 69$ | $\phi 75_{h7-0.030}$ | 90 | 5 | 38 | 2.5 |
| CE | $\phi 95^{+0.038}_{-0.013}$ | $\phi 115$ | | | | | | | | M8 DEPTH 15 |
| CF | | | | | | | | | | |
| GA | | | | | | | | | | |

注記

1. 塗装 塗装色 エポキシ マンセルNo.N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Straight input type

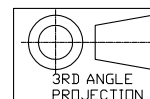


Pulley input type

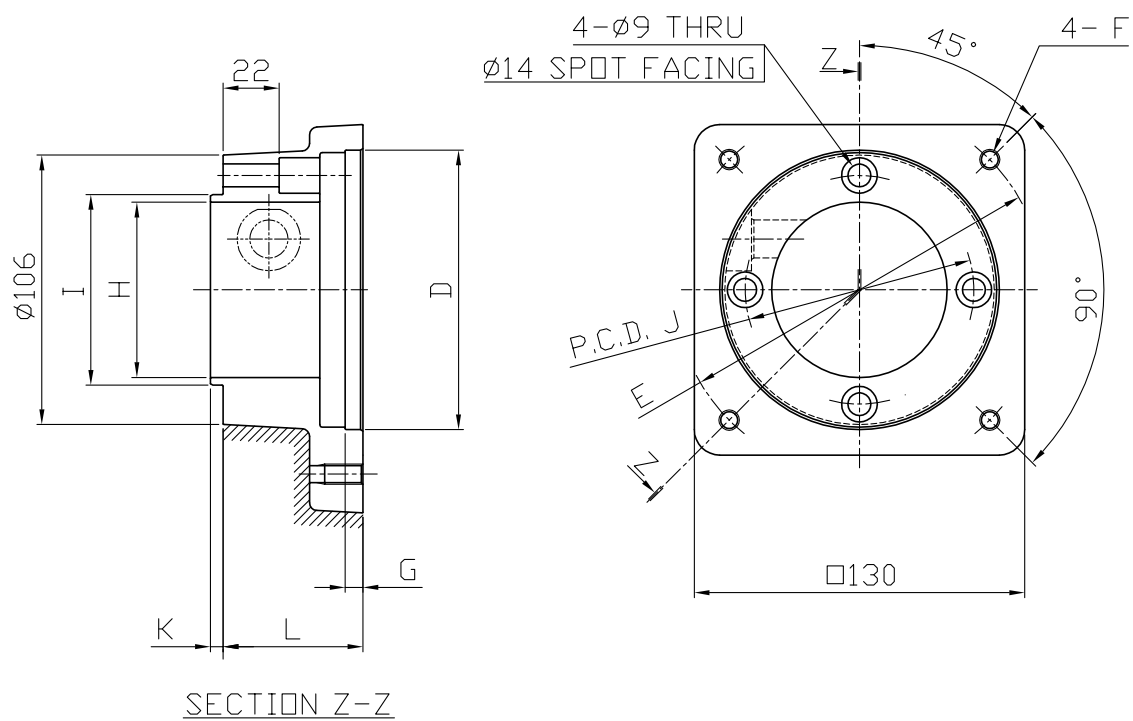
Motor flange / bushing

Technical Documents

1. $\frac{1}{4}$ area is painted black.



Motor Flange Dimension Drawing



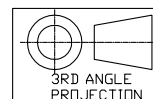
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass
(kg) |
|-------------|--|------|-------------|---|-----|-------------------------|----|---|----|--------------------|
| | D | E | F | G | H | I | J | K | L | |
| CJ | Ø110 ^{+0.038} _{-0.013} | Ø145 | M8 DEPTH 15 | 7 | Ø69 | Ø75 _{h7-0.030} | 90 | 5 | 55 | 2.5 |

注記

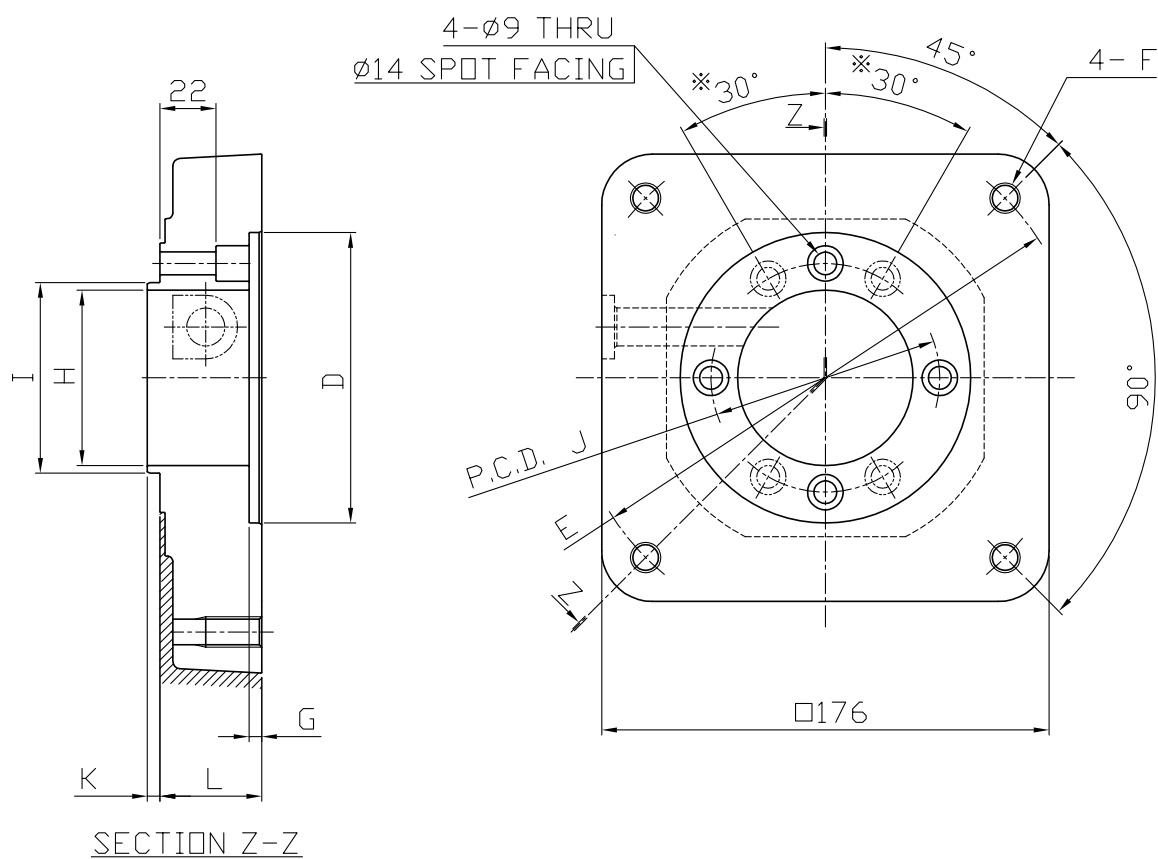
1. 塗装 塗装色 エポキシ マンセルNo.N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Motor Flange Dimension Drawing



※ 印の角度寸法は、コード"GD"、"GE"に適用とする。

※ Applied to Code "GD" or "GE"

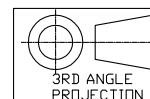
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass
(kg) |
|-------------|--------------------------------|------------|--------------|---|-----------|-----------------------|-----|---|----|--------------------|
| | D | E | F | G | H | I | J | K | L | |
| CK | $\phi 114.3^{+0.038}_{+0.013}$ | $\phi 200$ | M12 DEPTH 22 | 5 | $\phi 69$ | $\phi 75_{h7-0.030}$ | 90 | 5 | 40 | 6.7 |
| CL | $\phi 115^{+0.038}_{+0.013}$ | $\phi 165$ | M8 DEPTH 15 | 6 | | | | | | 6.8 |
| CM | $\phi 130^{+0.039}_{+0.014}$ | | M10 DEPTH 18 | | | | | | | 6.6 |
| GD | $\phi 114.3^{+0.038}_{+0.013}$ | $\phi 200$ | M12 DEPTH 22 | 5 | $\phi 96$ | $\phi 106_{h7-0.035}$ | 122 | | | 6.1 |
| GE | $\phi 130^{+0.039}_{+0.014}$ | $\phi 165$ | M10 DEPTH 18 | 6 | | | | | | 6.0 |

注記

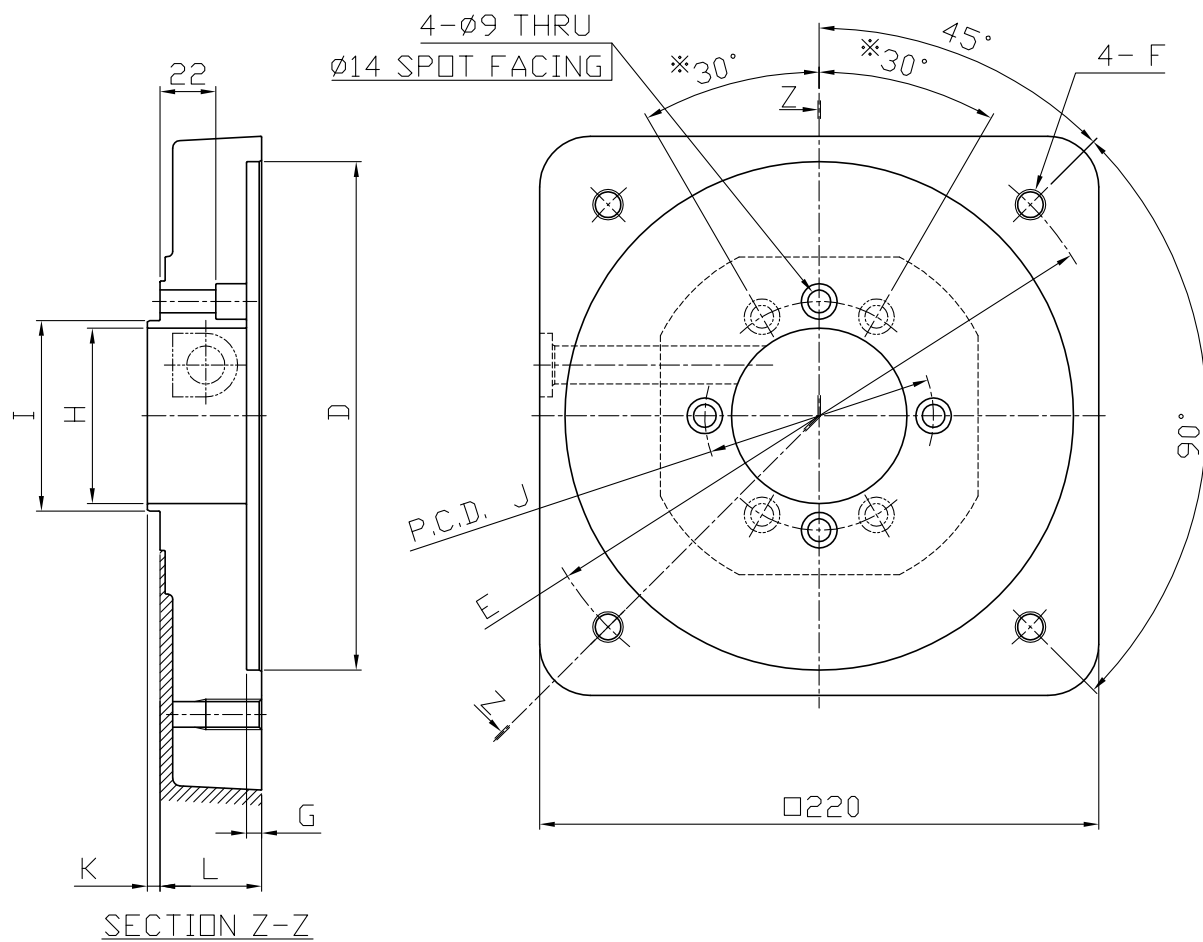
1. 塗装 塗装色 エポキシ マンセルNo. N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Motor Flange Dimension Drawing



※ 印の角度寸法は、コード"GF"に適用とする。

※ Applied to Code "GF"

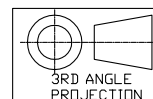
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass
(kg) |
|-------------|--|------|--------------|---|-----|--------------------------|-----|---|----|--------------------|
| | D | E | F | G | H | I | J | K | L | |
| CN | Ø200 ^{+0.040} _{+0.015} | Ø235 | M12 DEPTH 22 | 6 | Ø69 | Ø75 _{h7-0.030} | 90 | 5 | 40 | 10.3 |
| GF | | | | | Ø96 | Ø106 _{h7-0.035} | 122 | | | 9.8 |

注記

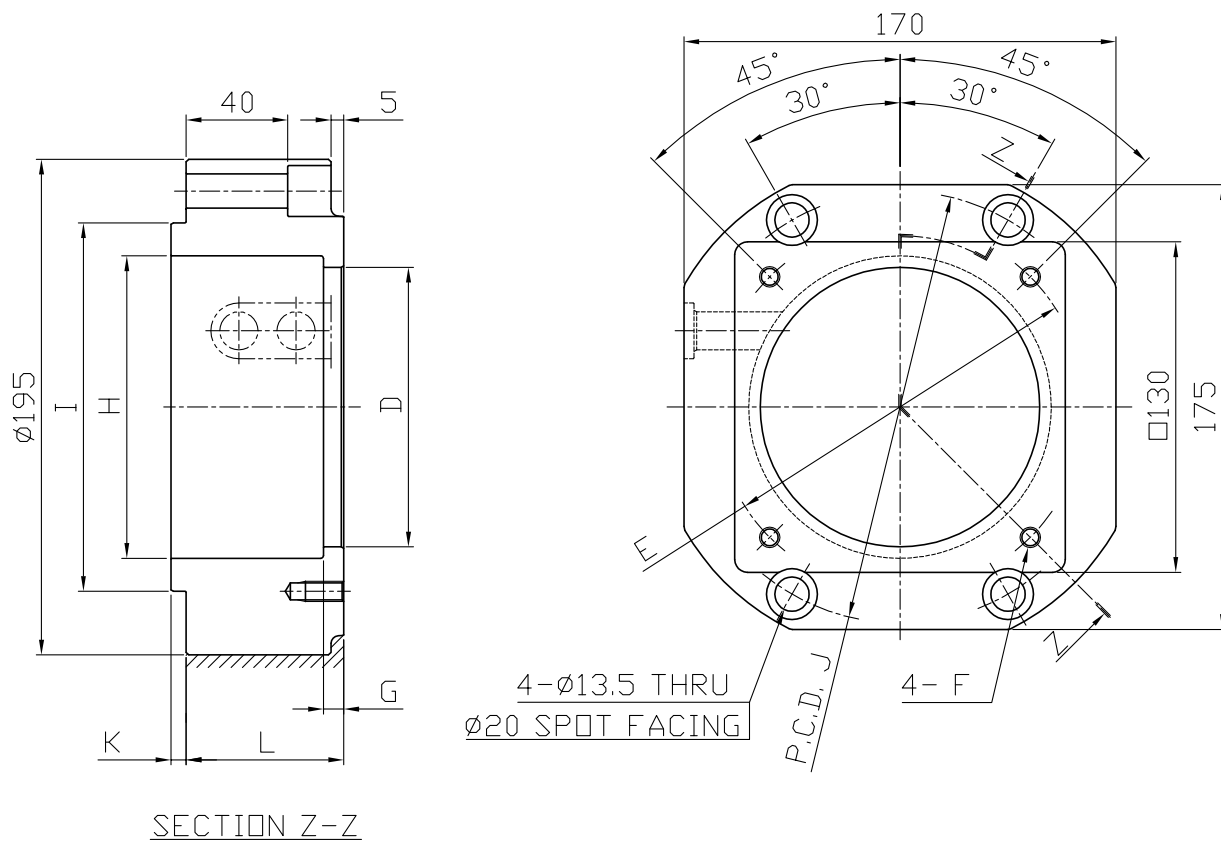
1. 塗装 塗装色 エポキシ マンセルNo.N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Motor Flange Dimension Drawing



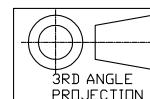
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass |
|-------------|--|------|-------------|---|------|---------------------------------------|-----|---|----|------------|
| | D | E | F | G | H | I | J | K | L | (kg) |
| JA | φ110 ^{+0.038} _{+0.013} | φ145 | M8 DEPTH 15 | 8 | φ119 | φ145 _{h7-0.040} ⁰ | 170 | 6 | 62 | 6.9 |

注記

1. 塗装 塗装色 エポキシ マンセルNo. N1.5 (黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Straight input type

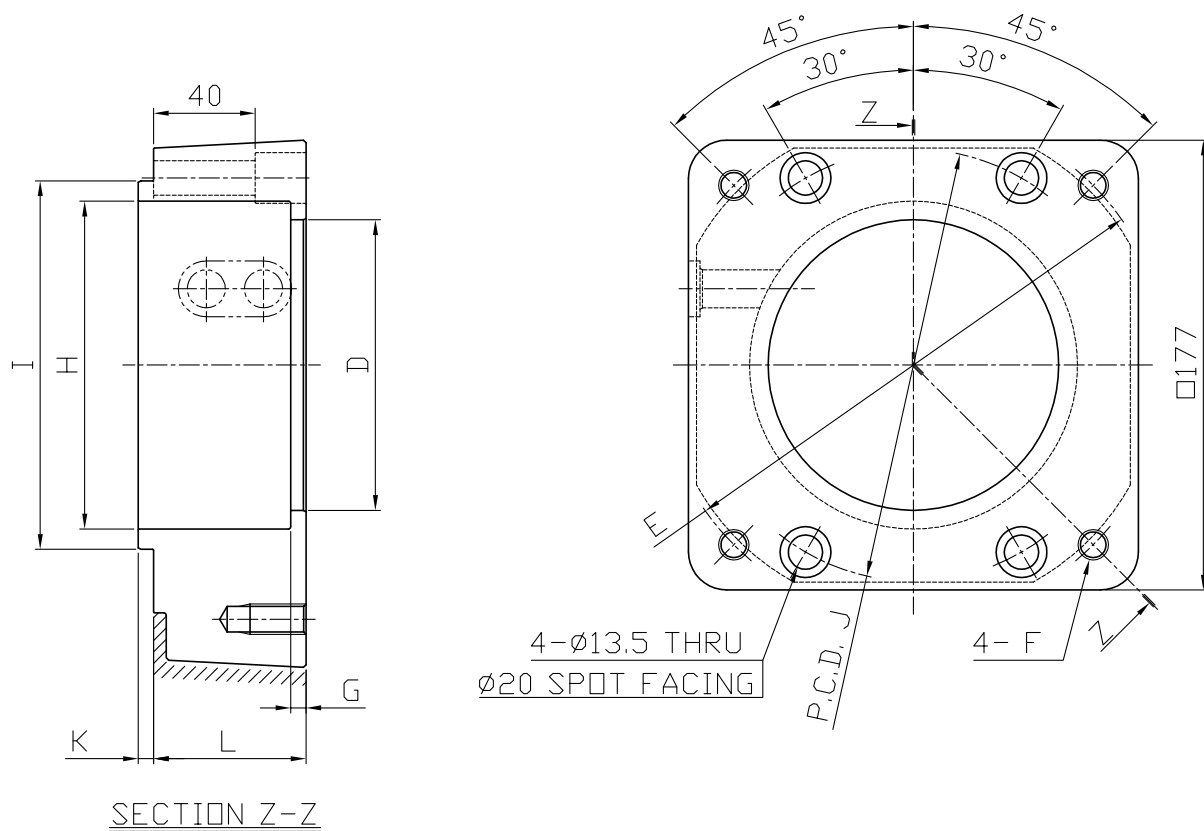
Right angle input type

Pulley input type

Motor flange / bushing

Technical Documents

Motor Flange Dimension Drawing



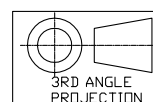
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass
(kg) |
|-------------|--|------|--------------|---|------|--------------------------|-----|---|----|--------------------|
| | D | E | F | G | H | I | J | K | L | |
| JB | Ø114.3 ^{+0.038} _{-0.013} | Ø200 | M12 DEPTH 22 | 6 | Ø129 | Ø145 _{h7-0.040} | 170 | 6 | 60 | 8 |

注記

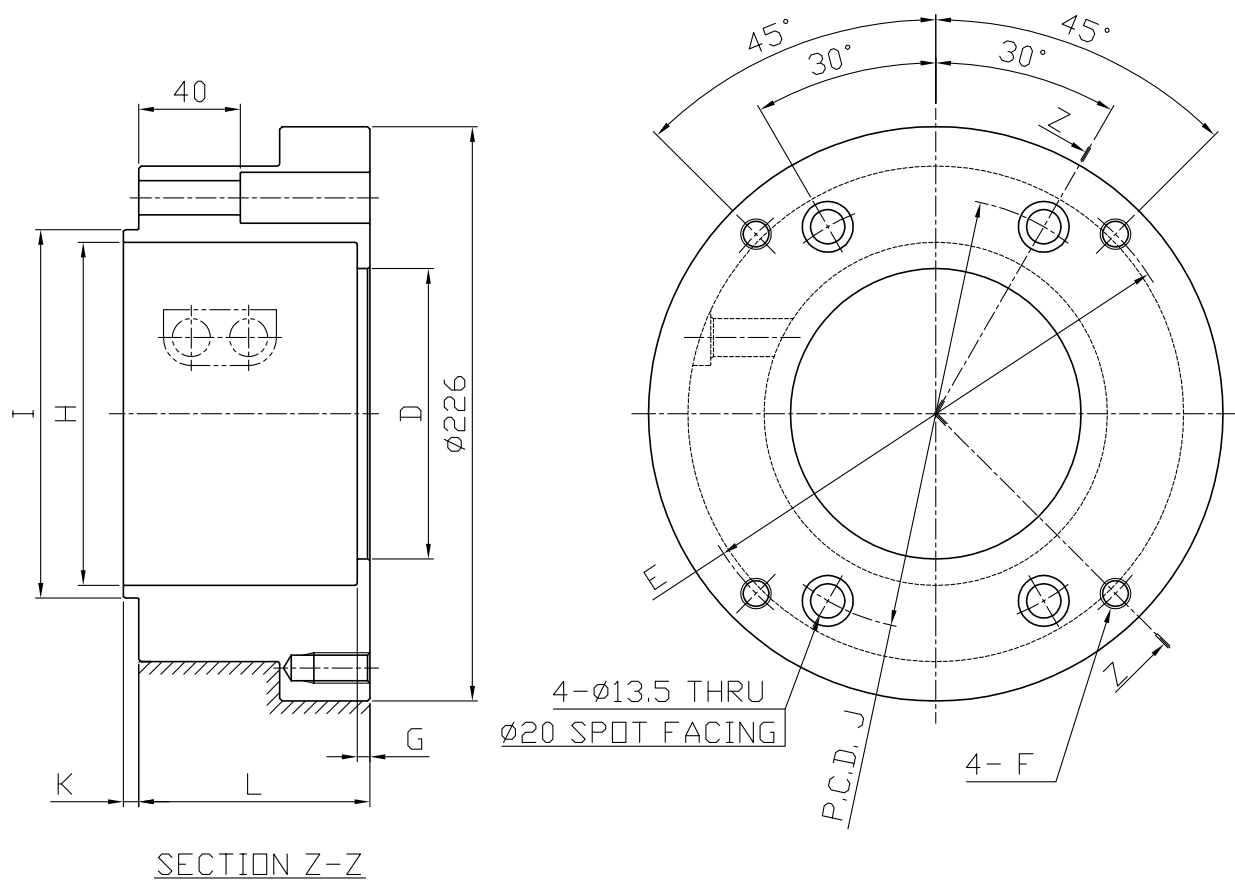
1. 塗装 塗装色 エポキシ マンセルNo.N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Motor Flange Dimension Drawing



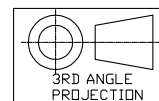
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | 質量
Mass
(kg) |
|-------------|--|------|--------------|---|------|--------------------------|-----|---|----|--------------------|
| | D | E | F | G | H | I | J | K | L | |
| JC | Ø114.3 ^{+0.038} _{-0.013} | Ø200 | M12 DEPTH 22 | 5 | Ø135 | Ø145 _{h7-0.040} | 170 | 6 | 91 | 12.2 |

注記

1. 塗装 塗装色 エポキシ マンセルNo. N1.5 (黒色) 塗装範囲部分を ///// に示す。

NOTE

1. ///// area is painted black.



Straight input type

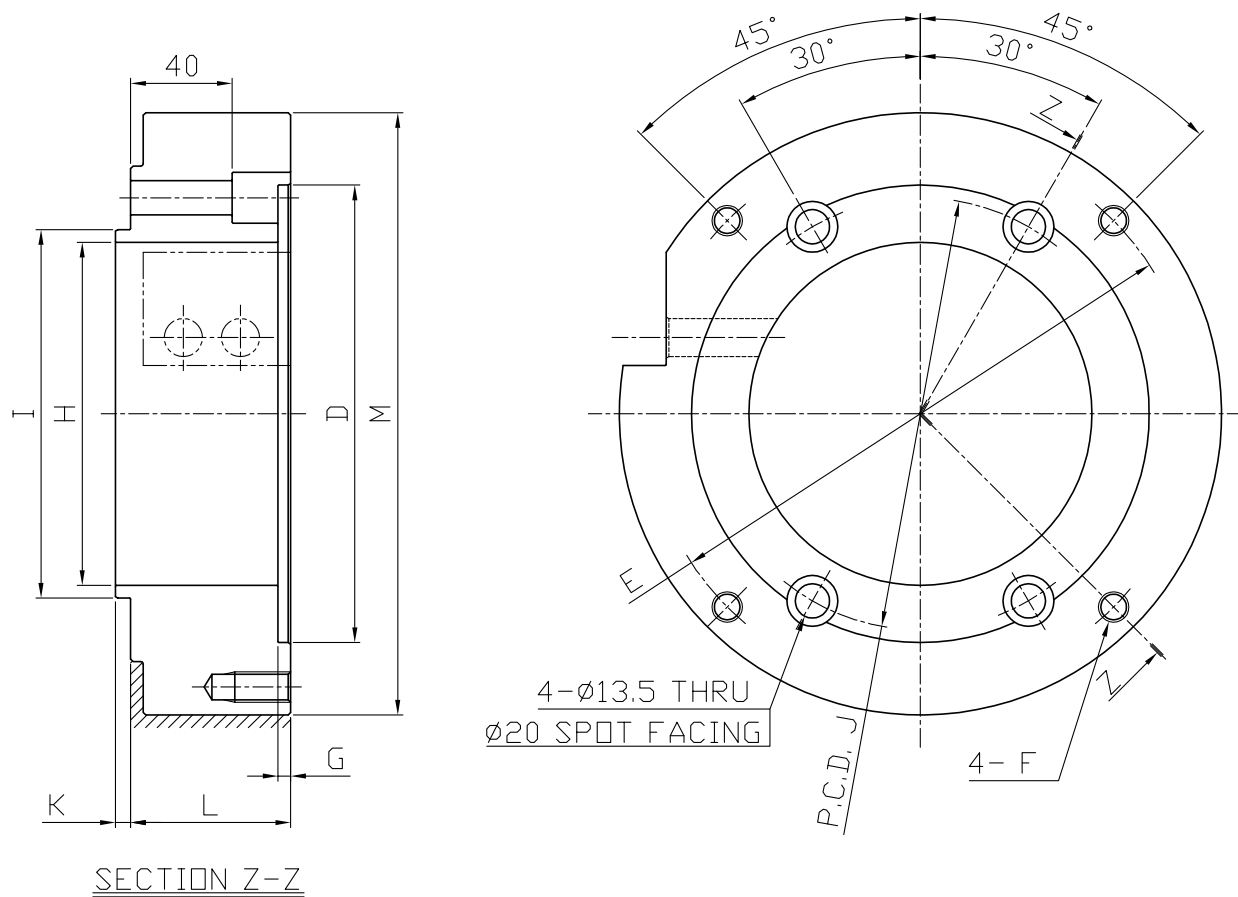
Right angle input type

Pulley input type

Motor flange / bushing

Technical Documents

Motor Flange Dimension Drawing



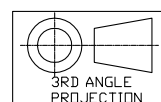
| コード
Code | モータ取付部寸法
Dimensions (mm) | | | | | | | | | | 質量
Mass
(kg) |
|-------------|--|------|--------------|---|------|--------------------------|-----|---|----|------|--------------------|
| | D | E | F | G | H | I | J | K | L | M | |
| JD | Ø180 ^{+0.039} _{+0.014} | Ø215 | | | | | | | 63 | Ø237 | 12 |
| JE | Ø200 ^{+0.040} _{+0.015} | Ø235 | M12 DEPTH 22 | 5 | Ø135 | Ø145 _{h7-0.040} | 170 | 6 | 60 | Ø255 | 13.7 |
| JF | | | | | | | | | 93 | | 18.7 |

注記

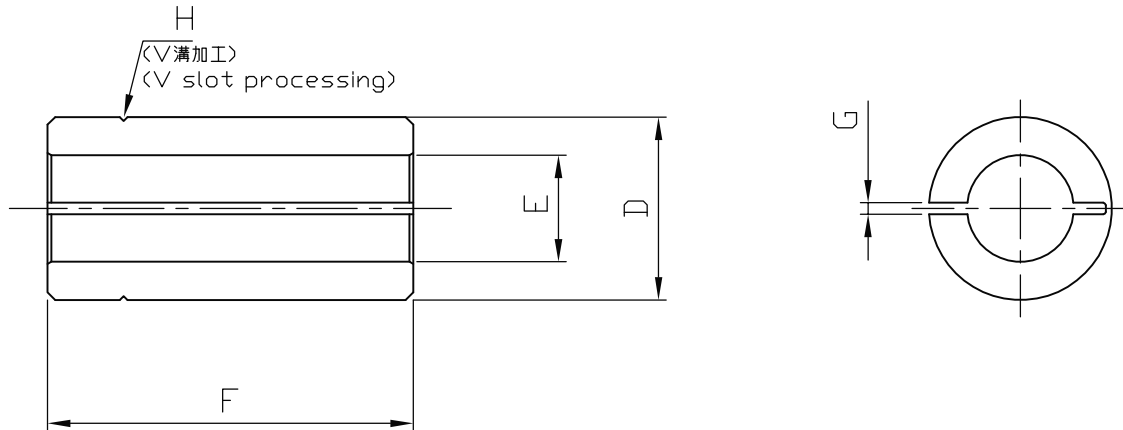
1. 塗装 塗装色 エポキシ マンセルNo.N1.5(黒色) 塗装範囲部分を ///// に示す。

NOTE

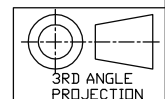
1. ///// area is painted black.



Bushing Dimension Drawing



| コード
Code | ブッシュ寸法
Dimensions (mm) | | | | |
|-------------|--|---|----|-----|---------------|
| | D | E | F | G | H |
| 0A | ø14 _{h7-0.018} ⁰ | ø8 ^{+0.025} _{+0.005} | 26 | 1.5 | 無し
Nothing |
| 0B | | ø9 ^{+0.025} _{+0.005} | | | |
| 0C | | ø10 ^{+0.025} _{+0.005} | | | |
| 0D | | ø11 ^{+0.025} _{+0.005} | | | |
| 1A | ø24 _{h7-0.021} ⁰ | ø14 ^{+0.030} _{+0.005} | 48 | | |
| 1B | | ø15 ^{+0.030} _{+0.005} | | | |
| 1C | | ø16 ^{+0.030} _{+0.005} | | | |
| 1D | | ø17 ^{+0.030} _{+0.005} | | | |
| 1E | | ø19 ^{+0.030} _{+0.005} | | | |
| 1F | | ø22 ^{+0.030} _{+0.005} | | | |
| 2A | ø28 _{h7-0.021} ⁰ | ø19 ^{+0.030} _{+0.005} | 62 | | |
| 2B | | ø22 ^{+0.030} _{+0.005} | | | |
| 2C | | ø24 ^{+0.030} _{+0.005} | | | |
| 3A | ø35 ^{+0.01} _{-0.015} | ø25 ^{+0.030} _{+0.005} | 72 | | |
| 3B | | ø28 ^{+0.030} _{+0.005} | | | |
| 4A | ø42 _{h7-0.025} ⁺⁰ | ø32 ^{+0.030} _{+0.005} | 77 | | 有り
It is. |
| 4B | | ø35 ^{+0.040} _{+0.015} | | | |
| 4C | | ø38 ^{+0.048} _{+0.023} | | | |
| 4D | | ø32 ^{+0.048} _{+0.023} | | | |



Straight input type

Right angle input type

Pulley input type

Motor flange / bushing

Technical Documents



Technical Information

Cautions for use of RD2 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.

Installation environment

Use the reduction gear under the following environment:

- Location where the ambient temperature is between -10°C to 40°C.
- Location where the humidity is less than 85% and no condensation occurs.
- Location where the altitude is less than 1000 m.
- Well-ventilated location

Do not install the reduction gear at the following locations.

- Location where a lot of dust is collected.
- Outdoors that can be directly affected by wind and rain
- Location near the environment that contains combustible, explosive, or corrosive gases and flammable materials.
- Location where the performance of the servo motor can be affected by magnetic fields or vibration.

Note 1: If the required installation environment cannot be established, contact our service department in advance.

When using the reduction gear under special conditions (clean room, equipment for food, concentrated alkali, high-pressure steam, etc.), contact our agent or nearest business office in advance.

Maintenance

- The reduction gear is filled with grease and the standard replacement time is 20,000 hours.
- When using the reduction gear with deteriorated grease or under an inappropriate ambient temperature condition (40°C or higher), check the deterioration condition of the grease and determine the appropriate replacement cycle.

Reduction gear temperature

- Be careful so that the surface temperature of the reduction gear does not exceed 60°C.

Manuals

- Safety information and detail product instructions are indicated in the operation manual. The operation manual can be downloaded from the following web address.

<http://www.nabtesco-precision.de>

<http://www.nabtescomotioncontrol.com>

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

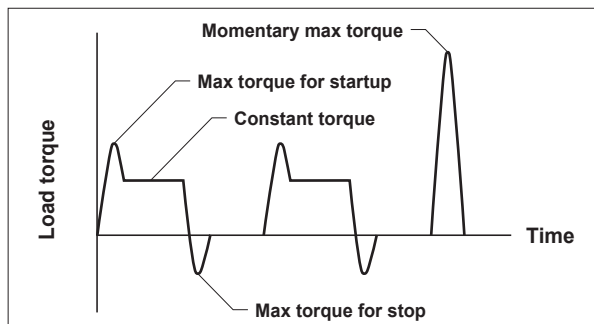
When the machine starts or stops, the load torque to be applied to the reduction gear is larger than the constant-speed load torque due to the effect of the inertia torque of the rotating part. In such a situation, the allowable torque during acceleration/deceleration is referred to as "allowable acceleration/deceleration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

Note: Be careful that the load torque, which is applied at startup and stop, 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 Input Speed

The allowable value of the input speed is referred to as "allowable input speed".

Note: The reduction gear temperature may increase significantly even when the speed is under the allowable speed depending on the speed ratio. In such a case, use the reduction gear at the speed so that the gear temperature is 60°C or lower.

Allowable Output Speed

The allowable value of the output speed is referred to as "allowable output speed".

Note: The reduction gear temperature may exceed 60°C even when the speed is under the allowable output speed depending on the specification conditions (duty, ambient temperature). In such a case, use the reduction gear at the speed so that the gear temperature is 60°C or lower.

Allowable Output Speed Reference Value

This is a reference value of the output speed at which the temperature increase of the reduction gear is 40°C or lower when the rated torque is applied to the reduction gear and the gear is operated continuously in one direction.

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

Torsional Rigidity, Lost Motion, Backlash

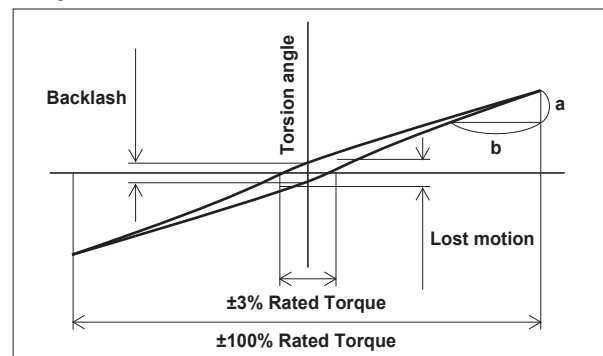
When a torque is applied to the output shaft while the input shaft is fixed, torsion is generated according to the torque value. The torsion can be shown in the hysteresis curves.

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

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

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

■ Hysteresis curve



Startup Efficiency

The efficiency of the moment when the reduction gear starts up is referred to as "startup efficiency."

No-load running torque (input shaft)

The torque for the input shaft that is required to run the reduction gear without load is referred to as "no-load running torque."

Allowable Moment and Maximum Thrust Load

The external load moment may be applied to the reduction gear during normal operation. The allowable values of the external moment and the external axial load at this time are each referred to as "allowable moment" and "maximum thrust load."

For pulley input type only

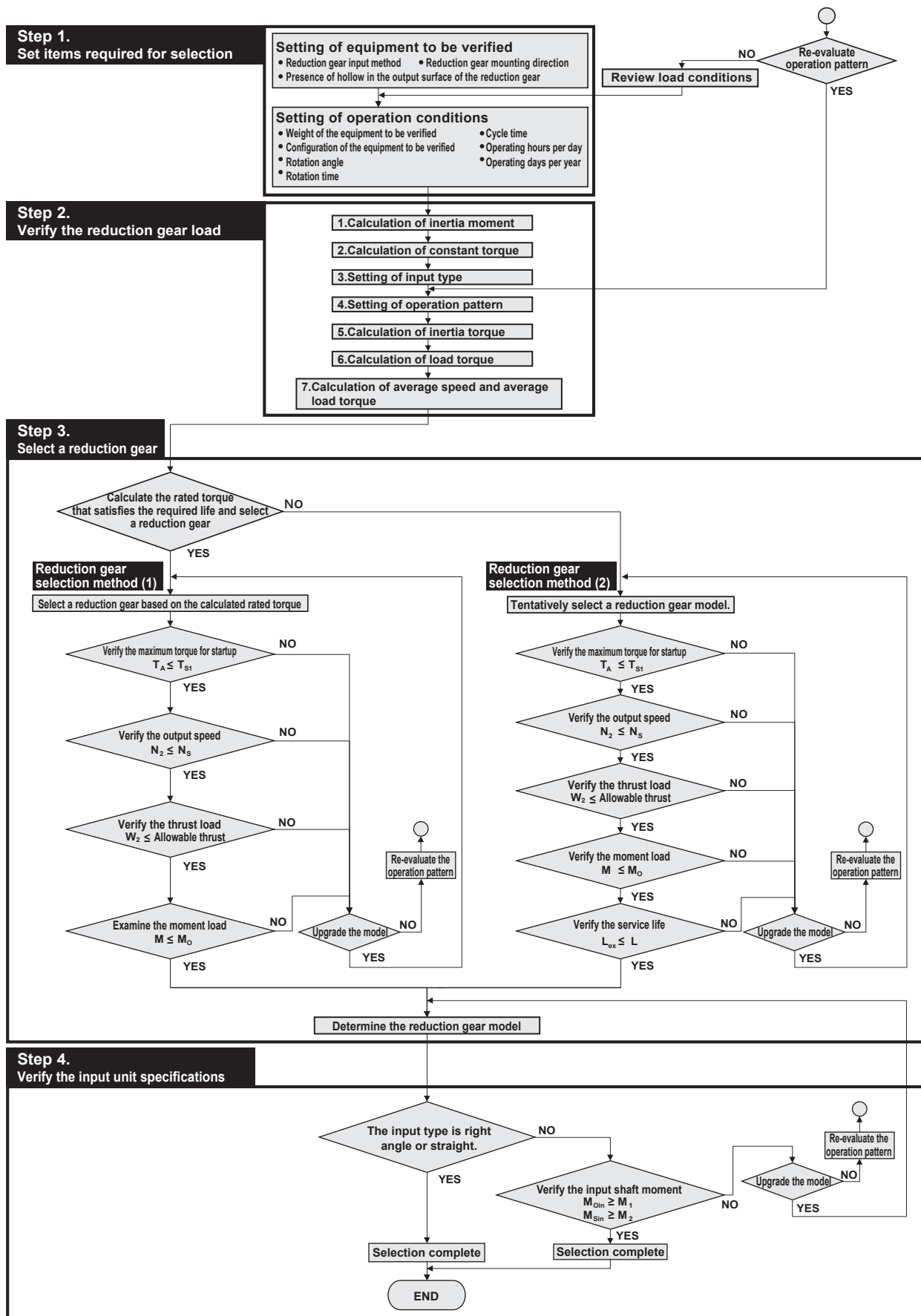
Input Shaft Rated Moment

This is the moment load that satisfies the life rating. The moment to be applied normally must be less than the rated moment.

Input Shaft Allowable Moment

This is the allowable value of the load that can be applied for startup and stop.

Product Selection Flowchart



Straight input type

Right angle input type

Pulley input type

Motor flange / bushing

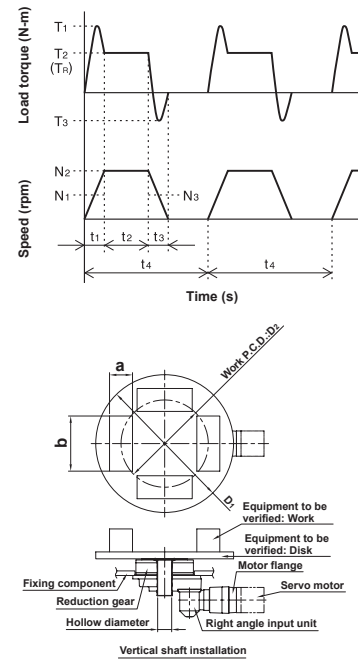
Technical Documents

Selection of Product Code-1-(1) (With vertical shaft installed)

Step 1. Set items required for selection

Specification example for the equipment to be verified (1) (with vertical shaft installed)

| Specification example for the equipment to be verified (1) | Setting item and value |
|--|-----------------------------|
| Reduction gear input method | Right angle input type |
| Presence of hollow in the output surface of the reduction gear | Hollow (C type) |
| Reduction gear mounting direction | Vertical shaft installation |
| Installed equipment weight | |
| W_A ——— Disk weight (kg) | 450 |
| W_B ——— Work weight (kg) | 100 x 4 pieces |
| Installed equipment configuration | |
| D_1 ——— Disk: D dimension (mm) | 1,200 |
| a ——— Work piece: a dimension (mm) | 200 |
| b ——— Work piece: b dimension (mm) | 400 |
| D_2 ——— Work piece: P.C.D. (mm) | 800 |
| Operation conditions | |
| θ ——— Rotation angle (°) | 180 |
| $[t_1+t_2+t_3]$ ——— Rotation time (sec) | 2.5 |
| $[t_4]$ ——— Cycle time (sec) | 20 |
| Q_1 ——— Equipment operation hours per day (hours/day) | 12 |
| Q_2 ——— Equipment operation days per year (days/year) | 365 |



Step 2-1. Examine the reduction gear load

| Setting item | Calculation formula | Selection examples |
|--------------|---------------------|--------------------|
|--------------|---------------------|--------------------|

1. Calculate the inertia moment based the calculation formula on page 120.

| | | | |
|-------|--|--|---|
| I_R | Load inertia moment (kg-m ²) | $I_{R1} = \frac{W_A \times \left(\frac{D_1}{2 \times 1,000} \right)^2}{2}$ $I_{R2} = \left[\frac{W_B}{12} \left\{ \left(\frac{a}{1,000} \right)^2 + \left(\frac{b}{1,000} \right)^2 \right\} + W_B \times \left(\frac{D_2}{2 \times 1,000} \right)^2 \right] \times 4$ $I_{R1} = \text{Disk inertia moment}$ $I_{R2} = \text{Work inertia}$ $I_R = I_{R1} + I_{R2}$ | $I_{R1} = \frac{450 \times \left(\frac{1,200}{2 \times 1,000} \right)^2}{2}$ $= 81 \text{ (kg - m}^2\text{)}$ $I_{R2} = \left[\frac{100}{12} \left\{ \left(\frac{200}{1,000} \right)^2 + \left(\frac{400}{1,000} \right)^2 \right\} + 100 \times \left(\frac{800}{2 \times 1,000} \right)^2 \right] \times 4$ $= 70.7 \text{ (kg - m}^2\text{)}$ $I_R = 81 + 70.7$ $= 151.7 \text{ (kg - m}^2\text{)}$ |
|-------|--|--|---|

2. Examine the constant torque.

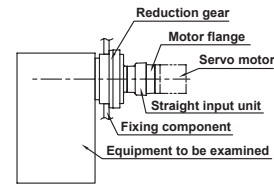
| | | | |
|-------|---|--|---|
| T_R | Constant torque with vertical shaft installed (N-m) | $T_R = (W_A + W_B) \times 9.8 \times \frac{D_{in}}{2 \times 1,000} \times \mu$ $\mu = \text{Friction factor}$ <p>Note: Use 0.015 for this example as the load is applied to the bearing of the RD2 reduction gear.</p> <p>D_{in} = Rolling diameter: Use the pilot diameter which is almost equivalent to the rolling diameter in this selection calculation.</p> <p>* If the reduction gear model is not determined, select the following pilot diameter:
 Solid series = 284 (mm) – Maximum pilot diameter
 Hollow shaft series = 440 (mm) – Maximum pilot diameter</p> | $T_R = (450 + 100 \times 4) \times 9.8 \times \frac{440}{2 \times 1,000} \times 0.015$ $= 27.5 \text{ (N - m)}$ |
|-------|---|--|---|

Selection of Product Code-1-(2) (With horizontal shaft installed)

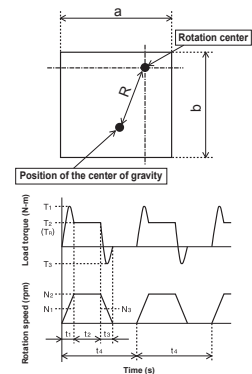
Step 1. Set items required for selection

Equipment specification example (2) (with horizontal shaft installed)

| Equipment specification example (2) | Setting item and value |
|--|-------------------------------|
| Reduction gear input method | Straight input type |
| Presence of hollow in the output surface of the reduction gear | Without hollow (Solid series) |
| Reduction gear mounting direction | Horizontal shaft installation |
| Installed equipment weight | |
| W_C ————— Mounted work weight (kg) | 490 |
| Installed equipment configuration | |
| a ————— a dimension (mm) | 500 |
| b ————— b dimension (mm) | 500 |
| c ————— R dimension (mm) | 320 |
| Operation conditions | |
| θ ————— Rotation angle (°) | 90 |
| $[t_1+t_2+t_3]$ ————— Rotation time (sec) | 1.5 |
| $[t_4]$ ————— Cycle time (sec) | 20 |
| Q_1 ————— Equipment operation hours per day (hours/day) | 24 |
| Q_2 ————— Equipment operation days per year (days/year) | 365 |



Horizontal shaft installation



Step 2-1. Examine the reduction gear load

| Setting item | Calculation formula | Selection examples |
|---|--|--|
| 1. Calculate the inertia moment based the calculation formula on page 120. | | |
| I_R
Load inertia moment (kg-m ²) | $I_R = \frac{W_C}{12} \times \left(\left(\frac{a}{1,000} \right)^2 + \left(\frac{b}{1,000} \right)^2 \right) + W_C \times \left(\frac{R}{1,000} \right)^2$ | $I_R = \frac{490}{12} \times \left(\left(\frac{500}{1,000} \right)^2 + \left(\frac{500}{1,000} \right)^2 \right) + 490 \times \left(\frac{320}{1,000} \right)^2$
$= 70.6 \text{ (kg-m}^2\text{)}$ |
| 2. Examine the constant torque. | | |
| T_R
Constant torque with horizontal shaft installed (N-m) | $T_R = W_C \times 9.8 \times \frac{R}{2 \times 1,000}$ | $T_R = 490 \times 9.8 \times \frac{320}{2 \times 1,000}$
$= 768 \text{ (N-m)}$ |

Selection of Product Code-2 (With vertical shaft installed)

* For Selection examples, the calculation for specification example for the equipment to be verified (1) (with vertical shaft installed) is listed.

Step 2-2. Set items required for selection

| Setting item | Calculation formula | Selection examples
(Specification example for the equipment to be verified (1)) |
|---|--|--|
| (3)-1 Examine the input type. | | |
| RDS ——— Straight input type
RDR ——— Right angle input type
RDP ——— Pulley input type | | Select RDR (right angle input type) based on the equipment to be verified. |
| (3)-2 Examine the in-line type and hollow type of the reduction gear output shaft. | | |
| Solid series or hallow shaft series | | Select the hollow shaft type (C type) based on the equipment to be verified. |
| (4) Set the acceleration/deceleration time, constant-speed operation time, and output speed. | | |
| t_1 ——— Acceleration time (sec)
t_2 ——— Constant-speed operation time (sec)
t_3 ——— Deceleration time (sec)
N_2 ——— Constant speed (rpm) | <ul style="list-style-type: none">The operation pattern does not need to be verified if it is already set.If the operation pattern has not been determined, use the following formula to calculate the reference operation pattern. $t_1 = t_3 = \text{Rotation time} [t_1 + t_2 + t_3] - \frac{\theta}{\left(\frac{N_2}{60} \times 360\right)}$ $t_2 = \text{Rotation time} [t_1 + t_2 + t_3] - (t_1 + t_3)$ <p>Note: 1. Assume that t_1 and t_3 are the same.
Note: 2. $N_2 = 15$ rpm if the reduction gear output speed (N_2) is not known.
Note: 3. If t_1 and t_3 is less than 0, increase the output speed or extend the rotation time.</p> | Examine the operation pattern using $N_2 = 15$ rpm as the reduction gear output speed is unknown.
$t_1 = t_3 = 2.5 - \frac{180}{\left(\frac{15}{60} \times 360\right)} = 0.5 \text{ (sec)}$ $t_2 = 2.5 - (0.5 + 0.5) = 1.5 \text{ (sec)}$ <p>$\therefore t_1 = t_3 = 0.5 \text{ (sec)}$
$t_2 = 1.5 \text{ (sec)}$
$N_2 = 15 \text{ (rpm)}$</p> |
| N_1 ——— Average speed for startup (rpm) | $N_1 = \frac{N_2}{2}$ | $N_1 = \frac{15}{2} = 7.5 \text{ (rpm)}$ |
| N_3 ——— Average speed for stop (rpm) | $N_3 = \frac{N_2}{2}$ | $N_3 = \frac{15}{2} = 7.5 \text{ (rpm)}$ |
| (5) Calculate the inertia torque for acceleration/deceleration. | | |
| T_A ——— Inertia torque for acceleration (N-m) | $T_A = \left\{ \frac{I_R \times (N_2 - 0)}{t_1} \right\} \times \frac{2\pi}{60}$ | $T_A = \left\{ \frac{151.7 \times (15 - 0)}{0.5} \right\} \times \frac{2\pi}{60}$
$= 476.6 \text{ (N-m)}$ |
| T_D ——— Inertia torque for deceleration (N-m) | $T_D = \left\{ \frac{I_R \times (0 - N_2)}{t_3} \right\} \times \frac{2\pi}{60}$ | $T_D = \left\{ \frac{151.7 \times (0 - 15)}{0.5} \right\} \times \frac{2\pi}{60}$
$= -476.6 \text{ (N-m)}$ |
| (6) Calculate the load torque for acceleration/deceleration. | | |
| T_1 ——— Maximum torque for startup (N-m) | $T_1 = T_A + T_R $
T_R : Constant torque See page 104. | $T_1 = 476.6 + 27.5 $
$= 504.1 \text{ (N-m)}$ |
| T_2 ——— Constant maximum torque (N-m) | $T_2 = T_R $ | $T_2 = 27.5 \text{ (N-m)}$ |
| T_3 ——— Maximum torque for stop (N-m) | $T_3 = T_D + T_R $
T_R : Constant torque See page 104. | $T_3 = -476.6 + 27.5 $
$= 449.1 \text{ (N-m)}$ |
| (7)-1 Calculate the average speed. | | |
| N_m ——— Average speed (rpm) | $N_m = \frac{t_1 \times N_1 + t_2 \times N_2 + t_3 \times N_3}{t_1 + t_2 + t_3}$ | $N_m = \frac{0.5 \times 7.5 + 1.5 \times 15 + 0.5 \times 7.5}{0.5 + 1.5 + 0.5}$
$= 12 \text{ (rpm)}$ |
| (7)-2 Calculate the average load torque. | | |
| T_m ——— Average load torque (N-m) | $T_m = \sqrt[10]{\frac{t_1 \times N_1 \times T_1^{\frac{10}{3}} + t_2 \times N_2 \times T_2^{\frac{10}{3}} + t_3 \times N_3 \times T_3^{\frac{10}{3}}}{t_1 \times N_1 + t_2 \times N_2 + t_3 \times N_3}}$ | $T_m = \sqrt[10]{\frac{0.5 \times 7.5 \times 504.1^{\frac{10}{3}} + 1.5 \times 15 \times 27.5^{\frac{10}{3}} + 0.5 \times 7.5 \times 449.1^{\frac{10}{3}}}{0.5 \times 7.5 + 1.5 \times 15 + 0.5 \times 7.5}}$
$= 315.7 \text{ (N-m)}$ |

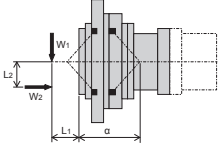
Go to Page 107 if the reduction gear model is verified based on the required life.

Go to Page 108 if the service life is verified based on the reduction gear model.

Step 3. Select a reduction gear

Reduction gear selection method (1) Calculate the required torque based on the load conditions and required life and select a reduction gear.

| Setting item | Calculation formula | Selection examples |
|--|--|---|
| (1) Calculate the rated torque for the reduction gear that satisfies the required life. | | |
| L_{ex} Required life (year) | Based on the operation conditions | 5 years |
| Q_{1cy} Number of cycles per day (times) | $Q_{1cy} = \frac{Q_1 \times 60 \times 60}{t_4}$ | $Q_{1cy} = \frac{12 \times 60 \times 60}{20}$
= 2,160 (times) |
| Q_3 Operating hours of reduction gear per day (Hr) | $Q_3 = \frac{Q_{1cy} \times (t_1 + t_2 + t_3)}{60 \times 60}$ | $Q_3 = \frac{2,160 \times (0.5 + 1.5 + 0.5)}{60 \times 60}$
= 1.5 (Hr) |
| Q_4 Operating hours of reduction gear per year (Hr) | $Q_4 = Q_3 \times Q_2$ | $Q_4 = 1.5 \times 365$
= 548 (Hr) |
| L_{hour} Reduction gear service life (Hr) | $L_{hour} = Q_4 \times L_{ex}$ | $L_{hour} = 548 \times 5$
= 2,740 (Hr) |
| $T_{O'}$ Reduction gear rated torque that satisfies the required life (N-m) | $T_{O'} = T_m \times \sqrt[10]{\frac{L_{hour} \times N_m}{K \times N_0}}$
K : Reduction gear rated life (Hr)
N_0 : Reduction gear rated torque (N-m) | $T_{O'} = 315.7 \times \sqrt[10]{\frac{2,740 \times 12}{6,000 \times 15}}$
= 233.5 (N-m) |

| | | |
|--|--|--|
| (2) Select a reduction gear model based on the calculated rated torque. | | |
| Tentative selection of the reduction gear model and actual reduction ratio | Tentatively select a reduction gear model that T_0 is equal to or greater than $T_{O'}$.
Then check that T_{S1} of the tentatively selected model is equal to or greater than the maximum torque for startup T_1 and N_s of the tentatively selected model is equal to or greater than the output speed N_2 . If the tentatively selected reduction gear is outside of the specifications, increase the reduction gear model.
T_{S1} : Check the rating table.
N_s : The allowable output speed varies depending on the actual reduction ratio.
Tentatively select the actual reduction ratio alongside the allowable output speed. | Tentatively select RDR-027C ($T_0 = 265$ N-m) based on the calculated rated torque.
Rated torque: 265 (N-m) ≥ 233.5 (N-m)
Allowable acceleration/deceleration torque: 662 (N-m) ≥ 504.4 (N-m)
Allowable output speed: 15 (rpm) (when the actual reduction ratio is 233.45) is equal to or greater than 15 (rpm), tentatively selecting RDR-027C-233 should be no problem. |
| W_1 Radial load (N) |  $M = \frac{W_1 \times (L_1 + \alpha) + W_2 \times L_2}{1,000}$ <p>Refer to the rating table of α = each input type.</p> | 0(N) |
| L_1 Distance to the point of radial load application (mm) | | 0(mm) |
| W_2 Thrust load (N) | | $W_2 = (450 + 100 \times 4) \times 9.8$
= 8,330 (N) |
| L_2 Distance to the point of thrust load application (mm) | | 0(mm) |
| M Calculation of the moment load (N-m) | | As α dimension of RDR-027C is 112 (mm) based on the rating table
$M = \frac{0 \times (0 + 112) + 8,330 \times 0}{1,000}$
= 0 (N-m) |
| Determination of the reduction gear model | From the allowable moment diagram on Page 110
• Thrust load
• Moment load
Select a reduction gear for which the above fall within the allowable moment diagram.
Specify the actual reduction ratio so it is lower than the actual reduction ratio that was selected when the allowable output speed was examined.
The actual reduction ratio is determined based on the motor speed, input torque, and inertia moment. Check with the motor manufacturer. | For this equipment,
Thrust load $W_2 = 8,330$ (N)
Moment load $M = 0$ (N)
As the above values are within the RCR-027C allowable moment diagram, RDR-027C is selected.
The actual reduction ratio lower than 233.45 which was selected when the allowable output speed was verified is selected. |

Select a motor flange and bushing.

Refer to the selection table on page 83 to 85 or our Web site for the motor flange and bushing selection.

URL : <http://www.nabtesco-precision.de>, <http://www.nabtescomotioncontrol.com>

Selection of the motor flange and bushing.

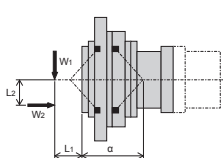
| | | |
|---|--|--|
| T_{M1} Motor momentary maximum torque (N-m) | Determine based on the motor specifications. | For example, $T_{M1} = 25$ (N-m) |
| T_{M1OUT} Maximum torque generated at the output shaft for the reduction gear (N-m) | $T_{M1out} = T_{M1} \times R \times \eta$
R: Actual reduction ratio
η : Startup efficiency(%)

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. | For example, calculate the maximum torque generated at the output shaft for the reduction gear based on the specifications when RDR-027C-233.45 was selected.
$T_{M1out} = T_{M1} \times R \times \eta$
= $25 \times 233.45 \times \frac{70}{100}$
= 4,085 (N-m)

As T_{M1out} is equal to or greater than T_{S2} (1,323 N-m), a limitation is required for the motor torque. |

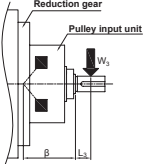
Selection of Product Code-3-(2)

Reduction gear selection method (2) Calculate the required torque based on the load conditions and required life and select a reduction gear.

| Setting item | Calculation formula | Selection examples |
|--|---|--|
| (1) Select a reduction gear model based on the maximum torque for startup T_1, output speed N_2, thrust load, and moment load. | | |
| Tentative selection of the reduction gear model and actual reduction ratio | <p>If T_{S1} of the tentatively selected model is equal to or greater than the maximum torque for startup T_1 and the tentatively selected model is outside of the reduction gear specifications, upgrade the reduction gear model.</p> <p>T_{S1}: Check the rating table.</p> <p>N_2: The allowable output speed varies depending on the actual reduction ratio.</p> <p>Tentatively select the actual reduction ratio alongside the allowable output speed.</p> | <p>Allowable acceleration/deceleration torque: 662 (N-m) $\geq$ 504.4 (N-m)</p> <p>Allowable output speed: 15 (rpm) (when the actual reduction ratio is 233.45) is equal to or greater than 15 (rpm), tentatively select RDR-027C-233.</p> |
| W_1 — Radial load (N)
L_1 — Distance to the point of radial load application (mm)
W_2 — Thrust load (N)
L_2 — Distance to the point of thrust load application (mm) |  $M = \frac{W_1 \times (L_1 + \alpha) + W_2 \times L_2}{1,000}$ <p>Refer to the rating table of α = each input type.</p> | <p>0(N)</p> <p>0(mm)</p> <p>$W_2 = (450 + 100 \times 4) \times 9.8$
 $= 8,330$ (N)</p> <p>0(mm)</p> <p>As α dimension of RDR-027C is 112 (mm) based on the rating table</p> <p>$M = \frac{0 \times (0 + 112) + 8,330 \times 0}{1,000}$
 $= 0$ (N-m)</p> |
| Determination of the reduction gear model | <p>From the allowable moment diagram on Page 110</p> <ul style="list-style-type: none"> • Thrust load • Moment load <p>Select a reduction gear for which the above fall within the allowable moment diagram.</p> <p>Specify the actual reduction ratio so it is lower than the actual reduction ratio that was selected when the allowable output speed was examined.</p> <p>The actual reduction ratio is determined based on the motor rotation speed, input torque, and inertia moment. Check with the motor manufacturer.</p> | <p>For this equipment,</p> <p>Thrust load $W_2 = 8,330$ (N)</p> <p>Moment load $M = 0$ (N)</p> <p>As the above fall within the RCR-027C allowable moment diagram, RDR-027C is selected.</p> <p>The actual reduction ratio lower than 233.45 which was selected when the allowable output speed was examined is selected.</p> |
| (2) Calculate the reduction gear service life and compare to the required life. | | |
| L_h — Life (Hr) | $L_h = 6,000 \times \frac{N_0}{N_m} \times \left(\frac{T_0}{T_m} \right)^{\frac{10}{3}}$ | $L_h = 6,000 \times \frac{15}{12} \times \left(\frac{265}{315.7} \right)^{\frac{10}{3}}$
$= 4,184$ (Hr) |
| Q_{1cy} — Number of cycles per day (times) | $Q_{1cy} = \frac{Q_1 \times 60 \times 60}{t_4}$ | $Q_{1cy} = \frac{12 \times 60 \times 60}{20} = 2,160$ (times) |
| Q_3 — Operating hours per day (Hr) | $Q_3 = \frac{Q_1 \times (t_1 + t_2 + t_3)}{60 \times 60}$ | $Q_3 = \frac{2,160 \times (0.5 + 1.5 + 0.5)}{60 \times 60} = 1.5$ (Hr) |
| Q_4 — Operating hours per year (Hr) | $Q_4 = Q_3 \times Q_2$ | $Q_4 = 1.5 \times 365 = 548$ (Hr) |
| L_{year} — Reduction gear service life (year) | $L_{year} = \frac{L_h}{Q_4}$ | $L_{year} = \frac{4,180}{548} = 7.6$ (year) |
| L_{ex} — Required life (year) | <p>Based on the required specifications.</p> <p>If the required life is longer than the service life, upgrade the reduction gear model and re-calculate the service life.</p> | As L_{ex} 5 (year) is equal to or smaller than 7.6 (year), a reduction gear model is RDR-027C. |
| Select a motor flange and bushing | | |
| Refer to the selection table on page 83 to 85 or our Web site for the motor flange and bushing selection.
URL : http://www.nabtesco-precision.de , http://www.nabtescomotioncontrol.com | | |
| Cautions for selecting a motor | | |
| T_{M1} — Motor momentary maximum torque (N-m) | Determine based on the motor specifications. | For example, $T_{M1} = 25$ (N-m) |
| T_{M1OUT} — Maximum torque generated at the output shaft for the reduction gear (N-m) | <p>$T_{M1out} = T_{M1} \times R \times \eta$</p> <p>$R$: Actual reduction ratio</p> <p>η: Startup efficiency(%)</p> <p>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.</p> | <p>For example, calculate the maximum torque generated at the output shaft for the reduction gear based on the specifications when RDR-027C-233.45 was selected.</p> <p>$T_{M1out} = T_{M1} \times R \times \eta$</p> <p>$= 25 \times 233.45 \times \frac{70}{100}$</p> <p>$= 4,085$ (N-m)</p> <p>As T_{M1out} is equal to or greater than T_{S2} (1,323 N-m), a limitation is required for the motor torque.</p> |

Step 4. Verify the input unit specifications (calculation method of pulley input unit specifications)

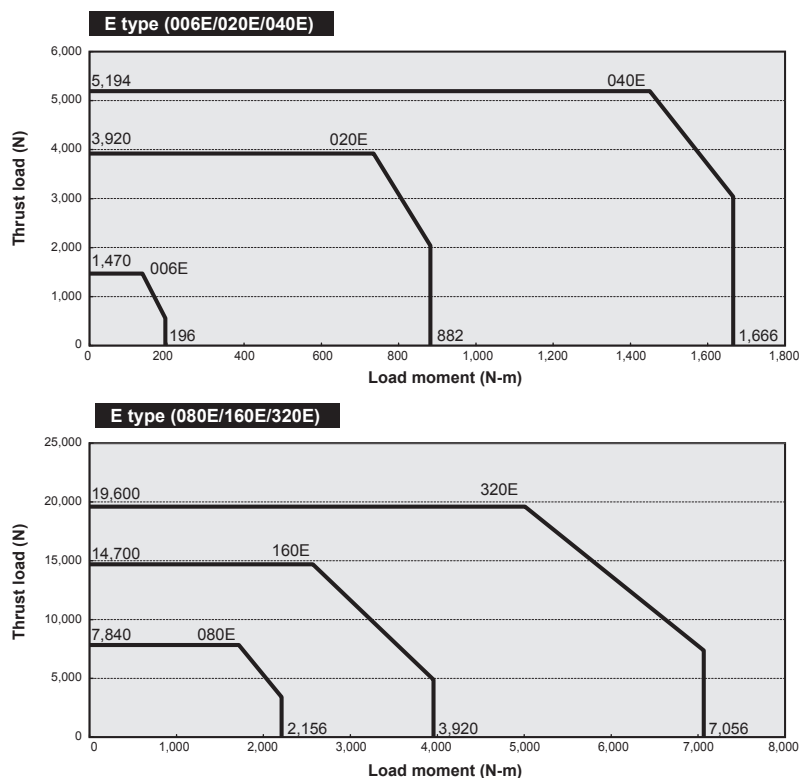
* Examine only when selecting a pulley input unit.

| Setting item | Calculation formula | Selection examples |
|--|--|---|
| Calculate the moment load for the input shaft. | | |
| M_1 — Input shaft load moment to be applied during normal operation (N-m) |  $M_1 = W_3 \times \frac{(\beta + L_3)}{1,000}$ $\beta = \text{Refer to the rating table on Page 70.}$ | When RDP-027C-100 is selected
$W_3 = 150 \text{ (N)}$
$\beta = 58 \text{ (mm)}$
$L_3 = 10 \text{ (mm)}$
$M_1 = 150 \times \frac{(58 + 10)}{1,000} = 10.2 \text{ (N-m)}$ |
| M_2 — Input shaft load moment to be applied at startup and stop (N-m) | $M_2 = \frac{\left(\frac{\text{Maximum output torque for startup (N-m)}}{\text{Actual reduction ratio} \times \frac{\text{Efficiency (\%)}}{100}} \right)}{\text{Pulley pitch diameter (mm)} \times 10^{-3}} \times \frac{(\beta + L_3)}{1,000}$ $\beta = \text{Refer to the rating table on Page 70.}$ | When the maximum torque for startup is 600 N-m at the output stage and the pulley pitch diameter is 50 mm
$M_2 = \frac{\left(\frac{600}{99.82 \times 0.75} \right)}{\left(\frac{50}{1,000} \right)} \times \frac{(58 + 10)}{1,000}$ $= 10.9 \text{ (N-m)}$ |
| Select a pulley input unit based on the moment load of the input shaft. | | |
| Determination of the input shaft | $M_{Oin} \geq M_1$
$M_{Sin} \geq M_2$
* M_{Oin}, M_{Sin} = Refer to the rating table on Page 70.
Select an input unit that meets the above conditions. | If RDP-027C-100 is selected, $M_{Oin} = 38 \text{ (N-m)}$ and $M_{Sin} = 40 \text{ (N-m)}$ and there is no problem with the pulley input shaft. |

Allowable Moment Diagram

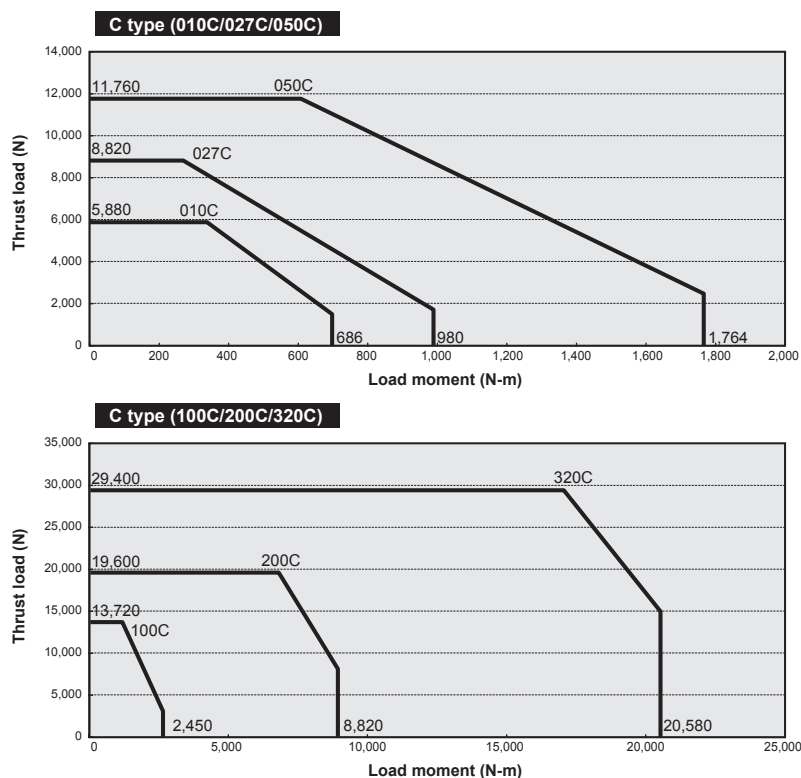
Solid series

RD□-E



Hollow shaft series

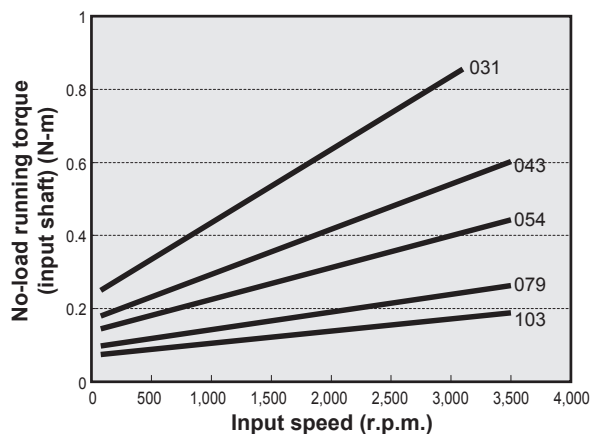
RD□-C



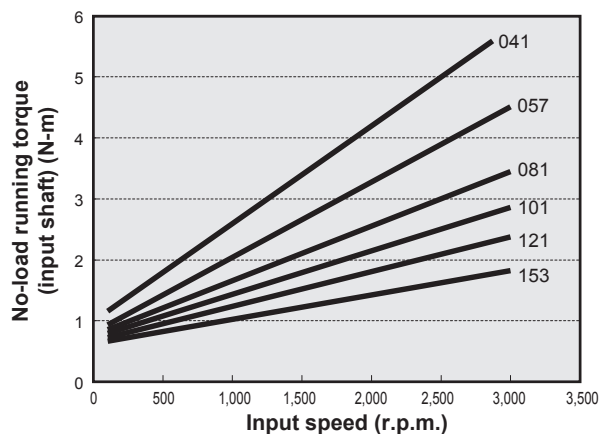
No-load running torque (straight input type)

Solid series

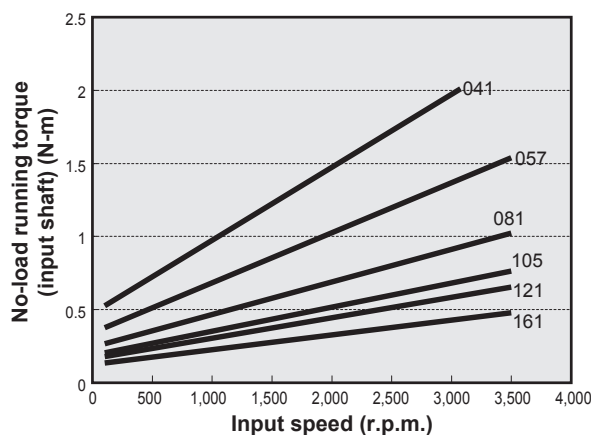
RDS-006E



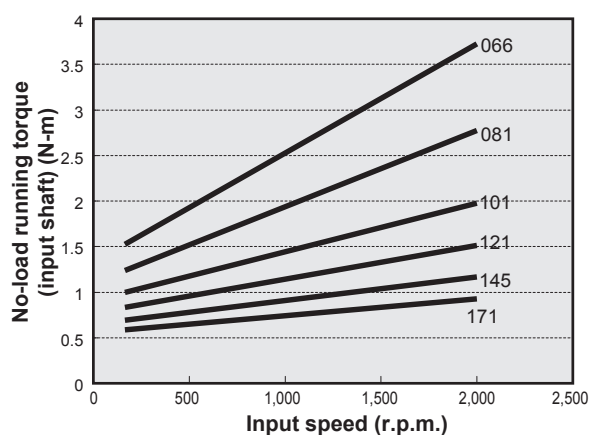
RDS-080E



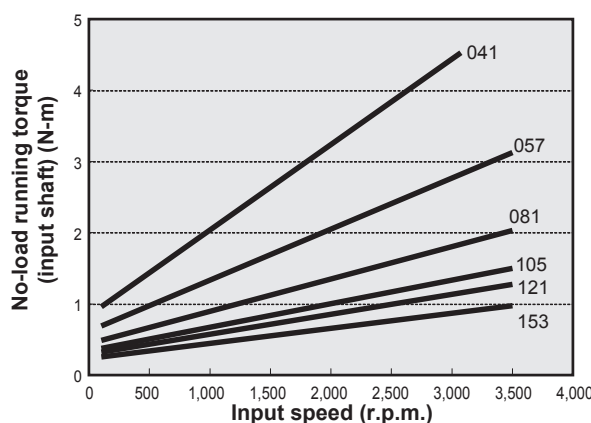
RDS-020E



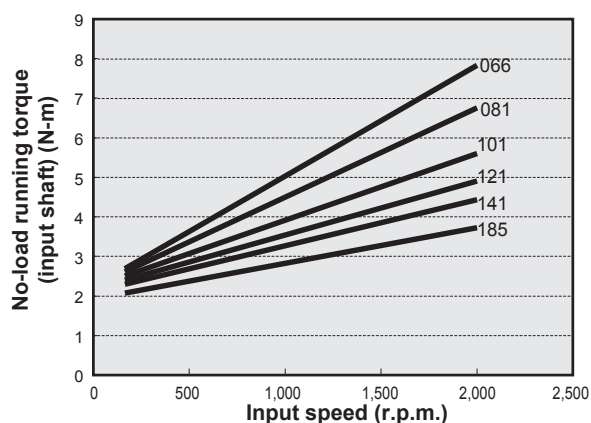
RDS-160E



RDS-040E



RDS-320E



Straight input type

Right angle input type

Pulley input type

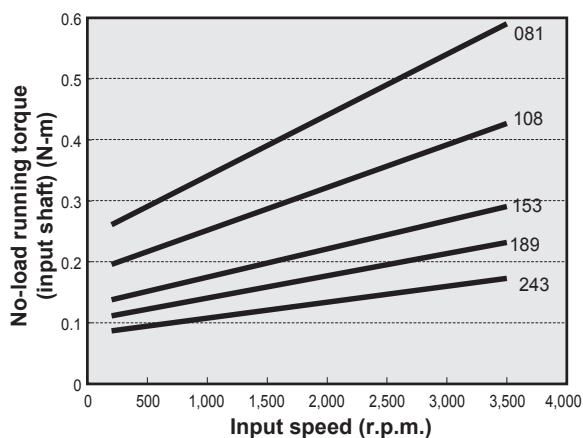
Motor flange / bushing

Technical Documents

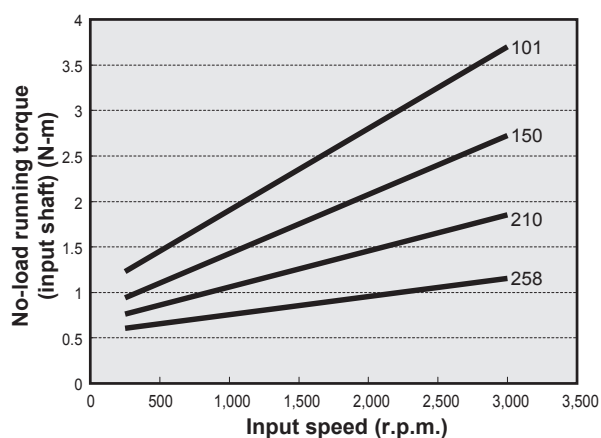
No-load running torque (straight input type)

Hollow shaft series

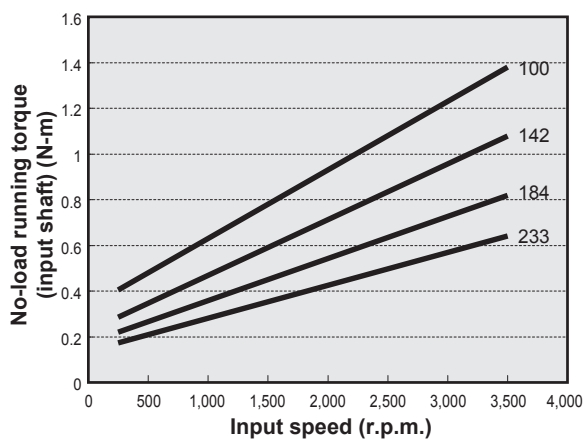
RDS-010C



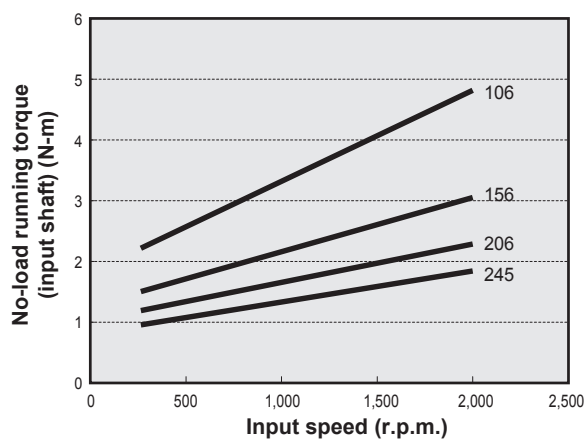
RDS-100C



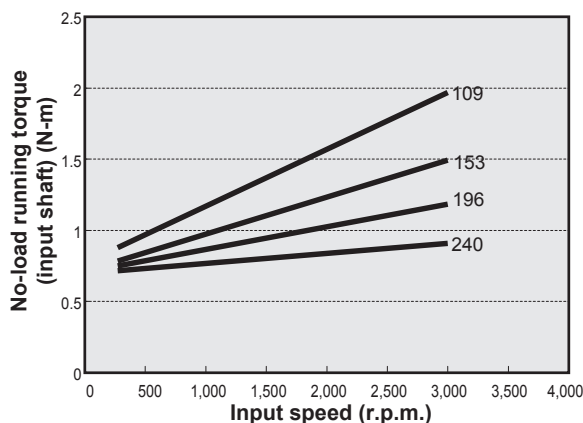
RDS-027C



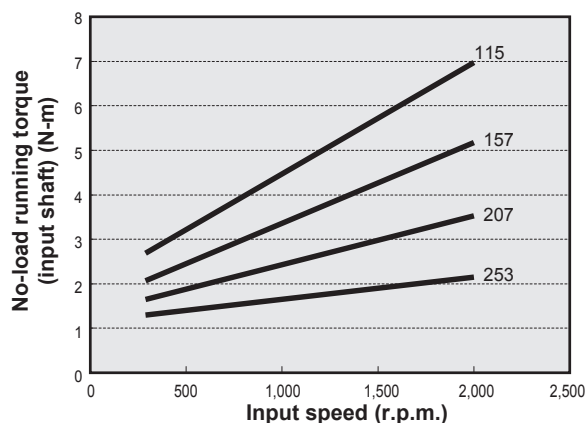
RDS-200C



RDS-050C



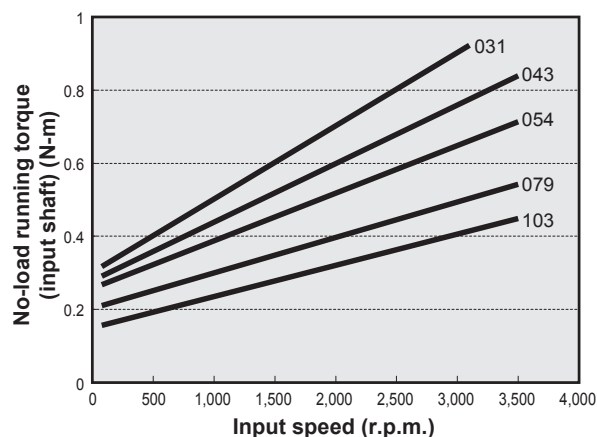
RDS-320C



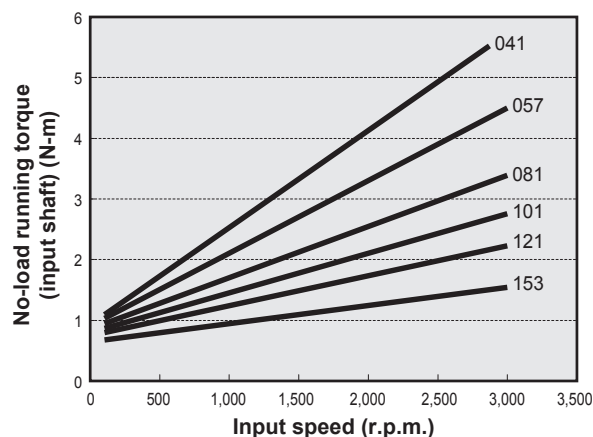
No-load running torque (Right angle input type)

Solid series

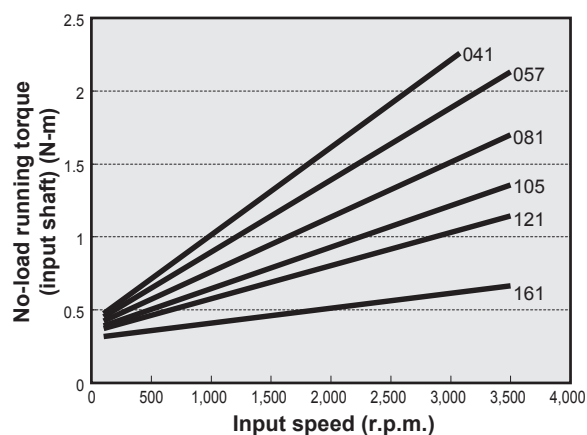
RDR-006E



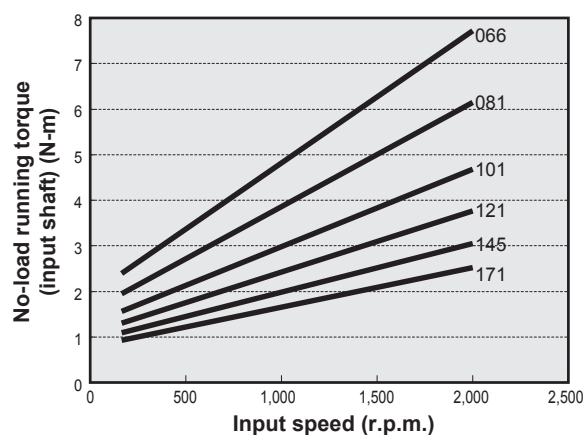
RDR-080E



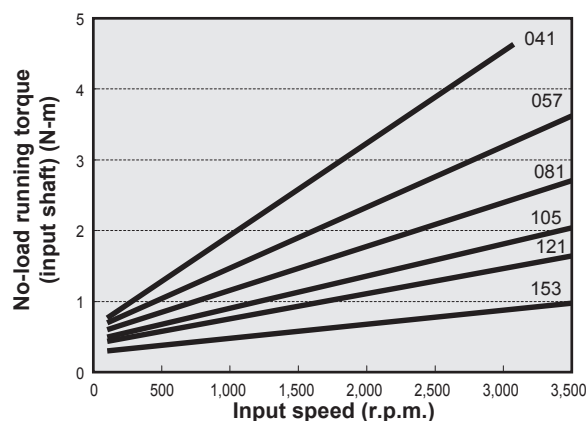
RDR-020E



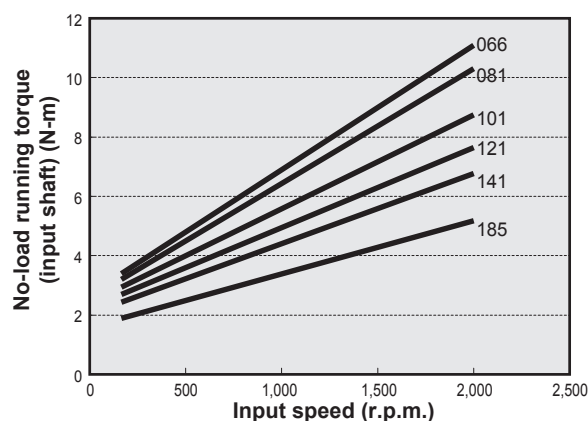
RDR-160E



RDR-040E



RDR-320E



Straight input type

Right angle input type

Pulley input type

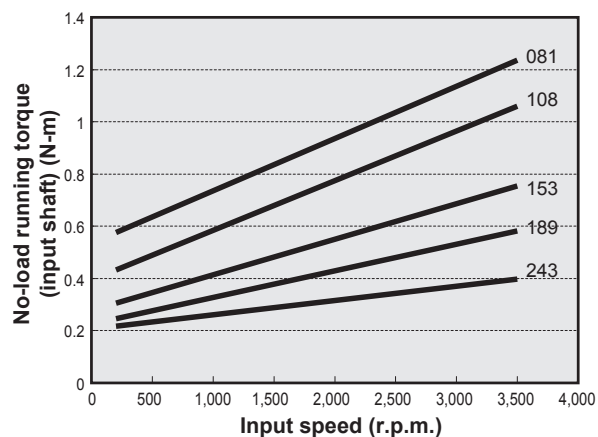
Motor flange / bushing

Technical Documents

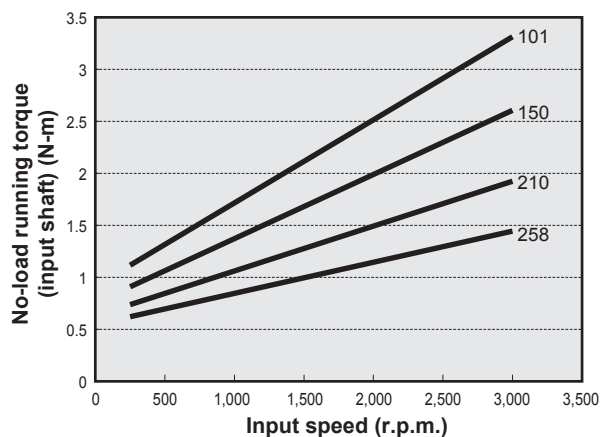
No-load running torque (Right angle input type)

Hollow shaft series

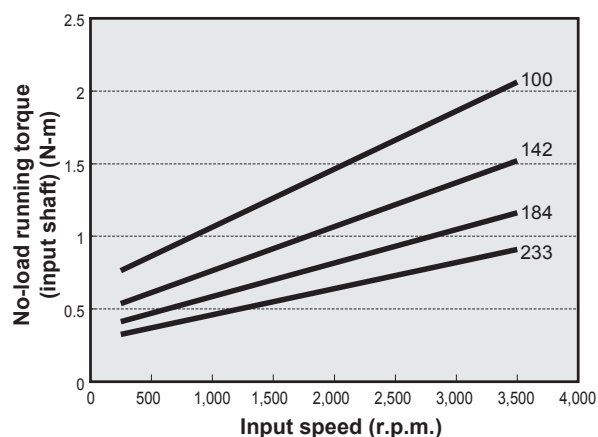
RDR-010C



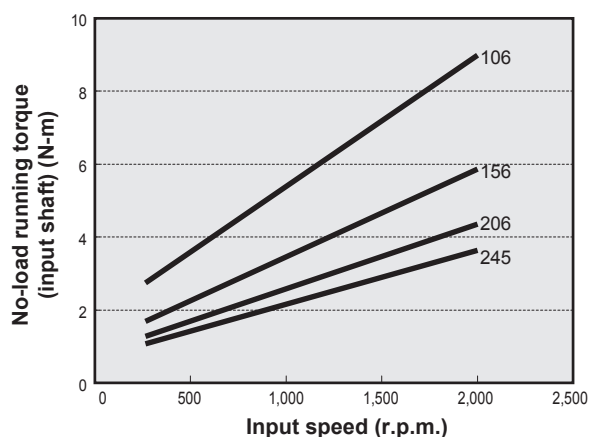
RDR-100C



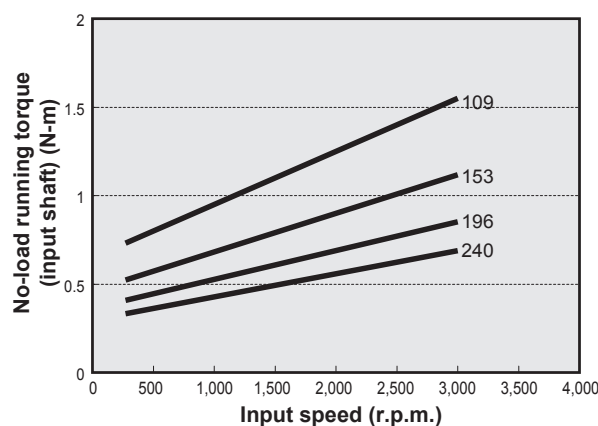
RDR-027C



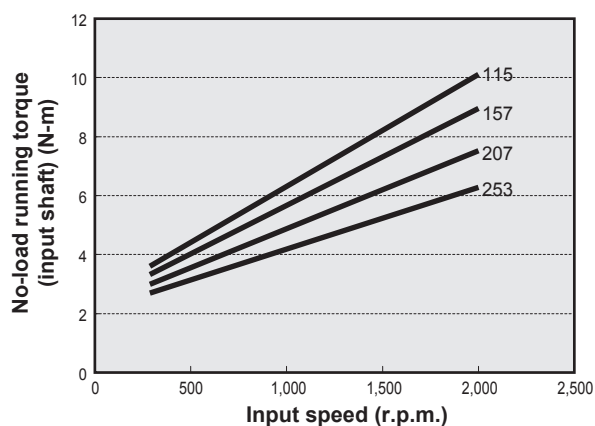
RDR-200C



RDR-050C

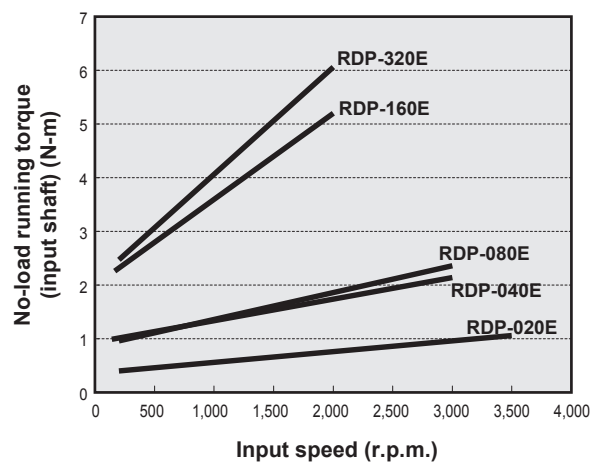


RDR-320C

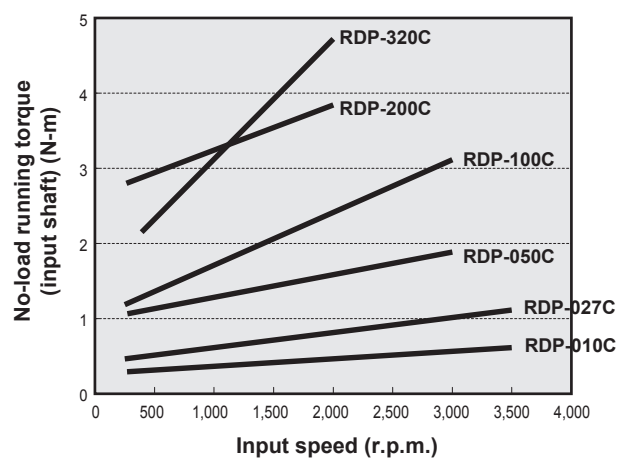


No-load running torque (Pulley input type)

Solid series



Hollow shaft series



Calculation of tilt angle and torsion angle

Calculation of tilt angle

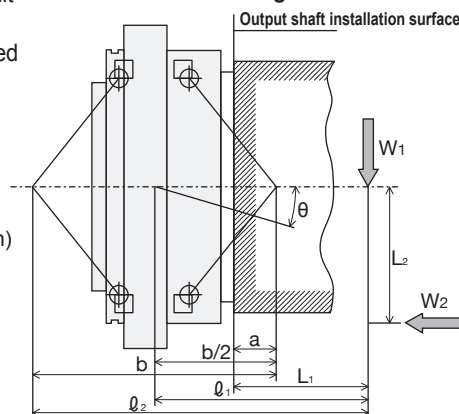
When a load moment occurs with an external load applied, the output shaft will tilt in proportion to the load moment (if $\varnothing_2$ is larger than b).

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.

$$\theta = \frac{W_1 \varnothing_1 + W_2 L_2}{M_1 \times 10^3}$$

θ : Tilt angle of the output shaft (arc.min)
 M_1 : Moment rigidity (N-m/arc.min.)
 W_1, W_2 : Load (N)
 $\varnothing_1, L_2$: Distance to the point of load application (mm)
 $\varnothing_1$: $L_1 + \frac{b}{2} - a$
 L_1 : Distance from the output shaft installation surface to the point of load application (mm)

External load diagram



| 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 | 1,176 | 27.9 | 164.0 |
| RD□-160E | 2,940 | 42.7 | 210.0 |
| RD□-320E | 4,900 | 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 | 1,068 | 38.0 | 150.0 |
| RD□-050C | 1,960 | 50.5 | 187.3 |
| RD□-100C | 2,813 | 58.7 | 207.6 |
| RD□-200C | 9,800 | 76.0 | 280.4 |
| RD□-320C | 12,740 | 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 (ST_1)

- 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 1,300 N-m Torsion angle (ST_2)

- When the load torque is within the rated range:

$$ST_2 = \frac{1}{2} + \frac{1,300 - 47.0}{392} = 3.70 \text{ arc.min.}$$

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

| Model code | Torsion rigidity
N-m/arc.min. | Lost motion | | Backlash
arc.min. |
|------------|----------------------------------|---|------------------------|---|
| | | Lost motion
arc.min. | Measured torque
N-m | |
| RD□-006E | 20 | For RDS or RDP
1.5
For RDR
2.0 | ± 1.76 | For RDS or RDP
1.5
For RDR
2.0 |
| RD□-020E | 49 | | ± 5.00 | |
| RD□-040E | 108 | | ± 12.3 | |
| RD□-080E | 196 | For RDS or RDP
1.0
For RDR
1.5 | ± 23.5 | For RDS or RDP
1.0
For RDR
1.5 |
| 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 | For RDS or RDP
1.5
For RDR
2.0 | ± 2.94 | For RDS or RDP
1.5
For RDR
2.0 |
| RD□-027C | 147 | | ± 7.94 | |
| RD□-050C | 255 | | ± 14.7 | |
| RD□-100C | 510 | For RDS or RDP
1.0
For RDR
1.5 | ± 29.4 | For RDS or RDP
1.0
For RDR
1.5 |
| RD□-200C | 980 | | ± 58.8 | |
| RD□-320C | 1,960 | | ± 94.1 | |

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 hexagonal socket head cap screw 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 × 0.8 | 9.01 ± 0.49 | 9,310 | 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 × 1.0 | 15.6 ± 0.78 | 13,180 | |
| M8 × 1.25 | 37.2 ± 1.86 | 23,960 | |
| M10 × 1.5 | 73.5 ± 3.43 | 38,080 | |
| M12 × 1.75 | 129 ± 6.37 | 55,360 | |
| M16 × 2.0 | 319 ± 15.9 | 103,410 | |

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 head cap screw>

Name: Belleville spring washer (made by Heiwa Hatsujo Industry Co., Ltd.)

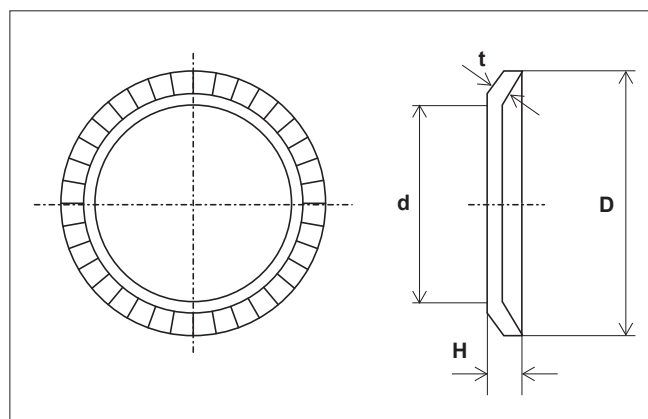
Corporation symbol: Bell SW-2H (nominal size)

Material: S50CM to S65CM

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 |
| 16 | 16.9 | 24 | 2.3 | 2.8 |



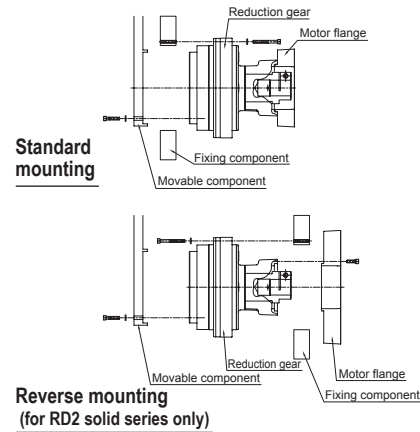
Note: When using any equivalent washer, select it with special care given to its outside diameter.

Engineering Notes-2

Gearhead Installation

- ➔ Mount the gearhead onto the specified position. Please take care to use the specified number of bolts.
- ➔ Tighten all the hexagonal socket head cap screw (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
Strength class
JIS B 1051 12.9
Thread
JIS B 0205 6 g or class 2 or equivalent |
| M6 | 15.6 ± 0.78 | |
| M8 | 37.2 ± 1.86 | |
| M10 | 73.5 ± 3.43 | |
| M12 | 129 ± 6.37 | |
| M16 | 319 ± 15.9 | |

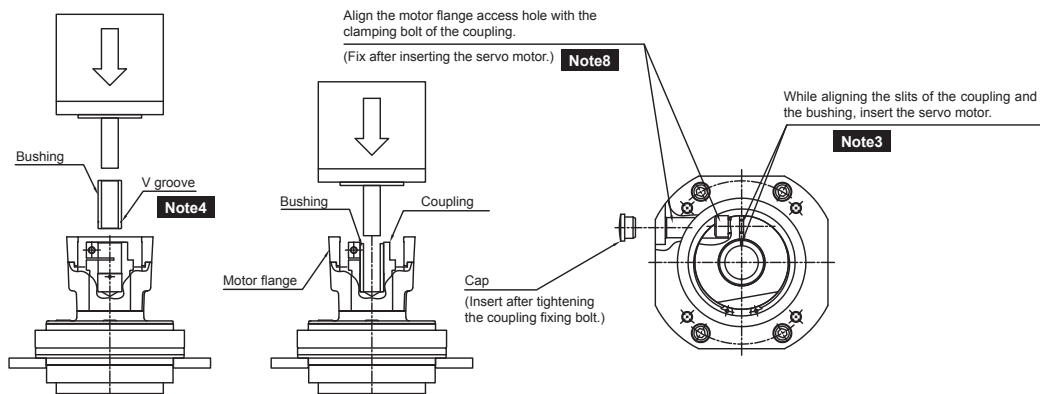


Note: When the gearhead is delivered, a motor flange may already be mounted. Depending on the situation, the gearhead might not be normally assembled unless the motor flange is removed. In the following cases, remove the motor flange before assembling the gearhead into the equipment.

- In the standard mounting, the torque wrench cannot be used because it makes contact with the motor flange
- In the reverse mounting, the motor flange is larger than the mating hole

Do not apply external load to the hollow section of the RD2 hollow shaft series. It could warp the oil seal.

Installation of the servo motor (for straight and right angle input units)



Step 1. Wipe the outside of the servo motor shaft and the clamping surface inside the coupling with a clean cloth.
(Make sure that the clamping bolt of the coupling is not tightened.)

When using a bushing, wipe the inside and outside of the bushing using a clean cloth.

- Note:**
1. Make sure that there is no damage inside of the coupling, bushing, and the motor shaft which before performing the assembly.
 2. Make sure that there is no foreign material or oil on the outside of the servo motor shaft, the clamping surface of the coupling, or the inside and outside of the bushing.

Step 2. When using a bushing, insert the bushing into the coupling, and then align the position of the clamping bolt of the coupling and the motor flange hole.

- Note:**
3. When inserting the bushing, align the slit of the bushing and the slit of the coupling.
If the slits of the bushing and coupling are not aligned, proper tightening force cannot be achieved.
 4. When using the bushing with a V groove on the circumference, turn the V groove toward the back (reduction gear side).
If the direction is not correct, proper tightening force cannot be achieved.

Step 3. Wipe off the oil on the installation face of the motor flange and servo motor, and apply the liquid sealing agent on the face.

Note: 5. If the servo motor is forcibly inserted into the reduction gear, the servo motor and reduction gear may be damaged.

Step 4. Align the mating part of the motor flange and insert the servo motor straight.

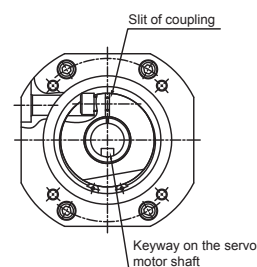
If there is a keyway on the servo motor shaft, set the keyway in a reverse direction against the slit of the coupling and then insert the motor.

Note 6: Make sure that the flange of the servo motor and the edge of the motor flange are in close contact.

If either of the surfaces is tilting or there is a gap, remove the servo motor and repeat Step 4.

7: Adjust the positional relationship between the slit of the coupling and the keyway of the servo motor shaft, as specified in this manual.

If the relational position is not correct, proper tightening force cannot be achieved.



Step 5. Fix the servo motor to the motor flange with bolts.

Check the bolt tightening torque specified by the servo motor manufacturer.

Step 6. Tighten the clamping bolt of the coupling at the specified tightening torque.

Note 8: After step 5 is completed, perform step 6. If the sequence is wrong, the servo motor or the reduction gear could be damaged.

| Code | Input type | Input unit code | Nominal size x pitch (mm) | Tightening torque |
|--|-------------|-----------------|---------------------------|-------------------|
| RD□-006E, RD□-020E
RD□-010C, RD□-027C | Straight | B0 | M6 x 1.0 | 15.6 ± 0.78 N-m |
| | | B1 | | |
| | Right angle | C0 | | |
| | | C1 | | |
| RD□-040E, RD□-080E
RD□-050C, RD□-100C | Straight | B2 | M10 x 1.5 | 73.5 ± 3.43 N-m |
| | | B3 | | |
| | Right angle | C2 | M8 x 1.25 | 37.2 ± 1.86 N-m |
| | | C3 | | |
| RD□-160E, RD□-320E
RD□-200C, RD□-320C | Straight | B4 | M12 x 1.75 | 129 ± 6.37 N-m |
| | | B5 | M10 x 1.5 | 73.5 ± 3.43 N-m |
| | Right angle | C4 | M12 x 1.75 | 129 ± 6.37 N-m |
| | | C5 | M10 x 1.5 | 73.5 ± 3.43 N-m |
| | | | | |

Step 7. Insert the cap into the access hole of the motor flange.

Installation of the pulley (for pulley input unit)

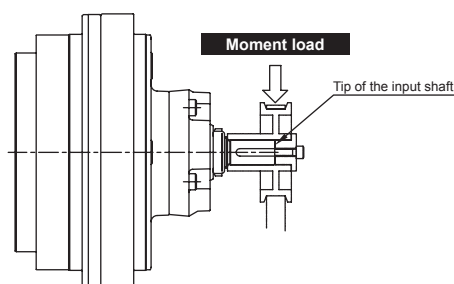
Step 1. Install the pulley using the keyway on the input shaft of the reduction gear and the tap on the tip or set screws.

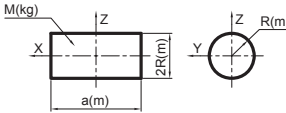
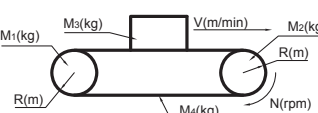
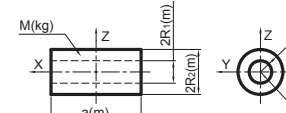
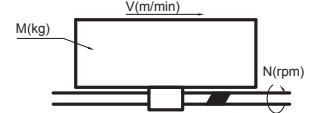
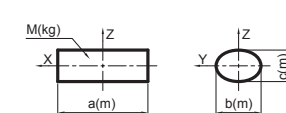
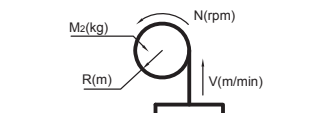
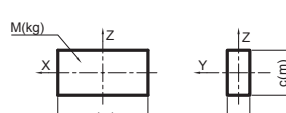
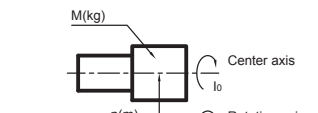
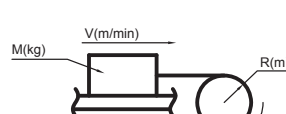
When using the keyway, prepare a key yourself.

Note 1: Design so that the moment load applied to the tip of the input shaft is less than the rated moment and allowable moment.

2: Unreasonable force that is applied to the input shaft of the reduction gear can cause damage to the reduction gear or customer's equipment.

3: When inserting the pulley, do not use a hammer to avoid impact on the input shaft.



| Shape | I(kg, m ²) | Shape | I(kg, m ²) |
|---|------------------------|--|------------------------|
| 1. Cylinder solid
 $I_x = \frac{1}{2} MR^2$ $I_y = \frac{1}{4} M \left(R^2 + \frac{R^2}{3} \right)$ $I_z = I_y$ | | 6. Horizontal movement by conveyor
 $I = \left(\frac{M_1 + M_2}{2} + M_3 + M_4 \right) \times R^2$ | |
| 2. Cylinder hollow
 $I_x = \frac{1}{2} M (R_1^2 + R_2^2)$ $I_y = \frac{1}{4} M \left\{ (R_1^2 + R_2^2) + \frac{a^2}{3} \right\}$ $I_z = I_y$ | | 7. Horizontal movement by lead screw
 $I = \frac{M}{4} \left(\frac{V}{\pi \times N} \right)^2 = \frac{M}{4} \left(\frac{P}{\pi} \right)^2$ | |
| 3. Oval cross section
 $I_x = \frac{1}{16} M (b^2 + c^2)$ $I_y = \frac{1}{4} M \left(\frac{c^2}{4} + \frac{a^2}{3} \right)$ $I_z = \frac{1}{4} M \left(\frac{b^2}{4} + \frac{a^2}{3} \right)$ | | 8. Up/down movement by hoist
 $I = M_1 R^2 + \frac{1}{2} M_2 R^2$ | |
| 4. Rectangle
 $I_x = \frac{1}{12} M (b^2 + c^2)$ $I_y = \frac{1}{12} M (a^2 + c^2)$ $I_z = \frac{1}{12} M (a^2 + b^2)$ | | 9. Parallel axis theorem
 $I = I_0 + M \eta^2$ <p> I_0 : Moment of inertia of any object about an axis through its center of mass
 I : Moment of inertia about any axis parallel to the axis through its center of mass
 η : Perpendicular distance between the above two axes </p> | |
| 5. General application
 $I = \frac{M}{4} \left(\frac{V}{\pi \times N} \right)^2 = MR^2$ | | | |

Warranty

1. In the case where Nabtesco confirms that a defect of the Product was caused due to Nabtesco's design or manufacture within the Warranty Period of the Product, Nabtesco shall repair or replace such defective Product at its cost. The Warranty Period shall be from the delivery of the Product by Nabtesco or its distributor to you ("Customer") until the end of one (1) year thereafter, or the end of two thousand (2,000) hours running of the Product installed into Customer's equipment, whichever comes earlier.
 2. Unless otherwise expressly agreed between the parties in writing, the warranty obligations for the Product shall be limited to the repair or replacement set forth herein. OTHER THAN AS PROVIDED HEREIN, THERE ARE NO WARRANTIES ON THE PRODUCT, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.
 3. The warranty obligation under the Section 1 above shall not apply if:
 - a) the defect was caused due to the use of the Product deviated from the Specifications or the working conditions provided by Nabtesco;
 - b) the defect was caused due to exposure to foreign substances or contamination (dirt, sand etc.)
 - c) lubricant or spare part other than the ones recommended by Nabtesco was used in the Product;
 - d) the Product was used in an unusual environment (such as high temperature, high humidity, a lot of dust, corrosive/volatile/inflammable gas, pressurized/depressurized air, under water/liquid or others except for those expressly stated in the Specifications);
 - e) the Product was disassembled, re-assembled, repaired or modified by anyone other than Nabtesco;
 - f) the defect was caused due to the equipment into which the Product was installed;
 - g) the defect was caused due to an accident such as fire, earthquake, lightning, flood or others; or
 - h) the defect was due to any cause other than the design or manufacturing of the Product.
 4. The warranty period for the repaired/replaced Product/part under the Section 1 above shall be the rest of the initial Warranty Period of the defective Product subjected to such repair/replace.
-

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