

## Option

### ● Worm reducer (CRG25/32 HO32 to 135 TE35 to 150)

#### ■ Features

1. Taking full advantage of the index drive performance  
These are specially designed worm reducers for the index drive. By directly mounting them onto the input shaft, optimum rotation and braking can be achieved, and you can take full advantage of the performance of the index drive series.
2. Space saving  
By mounting them directly onto the input shaft, you will get a compact drive system. In addition, you can reduce the steps for designing and assembling the drive system.
3. Clutch/Brake  
The 2 types of reducers are available: the 1 with clutch/brake and the other without. (except for CRG reducers)
4. Series expanding to 3 models in 16 sizes  
The wide range of sizes are standard in the series.



Product specifications

Compact

Standard

Table

Wide angle

Basic

Parallel cam drive

Linear Circular  
Pico and  
Pico drive

Option

## When designing or selecting

### CAUTION

- 1 The reducer load torque should be smaller than the dynamic rated output torque.
- 2 When the index drive is operated intermittently using clutch/brake, check the motion time of the clutch/brake.  
The motion time of the clutch/brake varies depending on the characteristics of the clutch/brake itself and the rotational speed and moment of inertia of the shaft/pulley to be operated.
- 3 When you install a detection switch, check the response time of the detection switch.  
If the input shaft speed is fast, the detection switch may not be able to detect it.
- 4 When you use a reducer for the purpose other than using with index drive, confirm the characteristics values.  
Please note that the nominal reduction ratio may vary from the actual reduction ratio for CRG reducers.
- 5 When you design the mounting and installation, take into consideration that inspection, disassembly and assembly should be easily conducted. And the oil level gauge should be accessible.
- 6 Piping for replacing the lubricating oil (not required for CRG reducer)  
When you install a reducer in an automated machine, replacing oil may become impossible. In this case, we recommend you provide piping for draining and refilling oil before installation to the automated machine so that you can replace it easily.
- 7 Reducers are filled with lubricating oil. Oil may seep out of the oil seal while being used. Conduct periodic inspection and provide countermeasures such as an oil drip pan if this may cause a product defect.

## Installation & adjustment

### CAUTION

- 1 When you install a pulley, sprocket, or table to the worm shaft, do not apply impact with a hammer.  
When you apply impact, the reducer may become damaged.  
For a reducer with a clutch, if you tighten a mounting bolt deeper than the specification, internal components may become damaged. (Refer to the dimensions.)
- 2 When you install a pulley or sprocket to the worm shaft to drive the system, pay attention to the allowable OHL, and apply appropriate tension. Excessive tension may cause noise, shorten service life, damage the worm shaft and result in malfunction of the clutch/brake.
- 3 When you connect shafts, align the centers of the shafts.  
If the centers are not aligned, noise may leak, the bearing service life may be shortened and the unit may break.
- 4 Install the unit in the position specified in the specifications.
- 5 Clutch/Brake is a dry. If water or oil is present on the friction surfaces, the transmission torque may be reduced. Avoid getting water or oil on the friction surfaces.  
When you use this unit in an environment where dust such as iron or sand powders are present, the dust may shorten the service life significantly if you get it on the friction surfaces. Be particular careful to avoid dust.
- 6 Rotate the input shaft at speeds specified in the specifications.
- 7 Be sure to attach the grease nipple to the HO reduction gear of the 5, 6 reducer before operation.

# Discontinue

## Option

### ● Worm reducer (CRG25/32 HO32 to 135 TE35 to 150)

**8** The reducers are sealed with lubricating oil. There is no need for initial lubrication. The product is sealed with a plug when shipped. Before operation, replace the plug with the one with breather holes included in the shipment. (TE reducers have a pressure vent. For TE35 and TE42, there is no need for replacement.)  
If not replaced, oil leak may occur leading to a fire.

**9** Do not use this product in an environment where ignition, explosion, or fire may occur.

**10** Do not touch any moving parts while the reducer is running. This would lead to injury.

#### **11** Clutch/Brake wiring

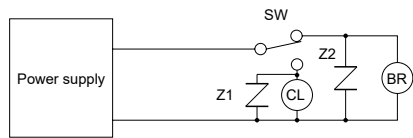
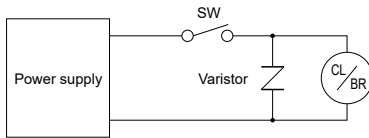
The ground terminals of the motor and the controller should be grounded. We recommend the Class III ground (100 Ω or less and ø1.6 mm or greater) as the grounding method. Choose the correct wire size for the power supply capacity. If a wire smaller in capacity is used, the insulation coating may melt resulting in electric shock or leakage leading to a fire.

##### (1) Connection

Power required for operating clutch/brake is 24 VDC. Control the voltage fluctuation within ±10%. If voltage varies, the performance will deteriorate resulting in coil overheating and/or damage. If the circuit is long, the voltage supplied to the clutch/brake may drop due to resistance of the circuit even if the power supply generates proper voltage. Check the voltage at the terminals of the clutch/brake. A switch on the DC side should turn on or off the clutch/brake. If this is done on the AC side, motion is delayed. In this case, allow time lag for switching.  
Do not pull or bend the lead wires.

##### (2) Surge absorbing protective element (varistor)

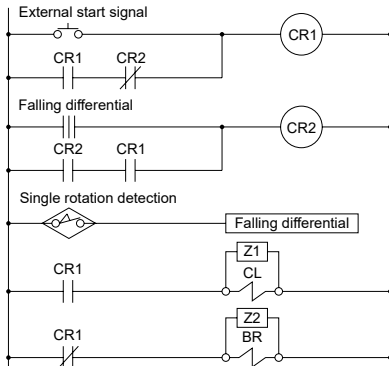
The surge absorbing protective element (varistor) which comes with the product should be connected in parallel to the clutch (or brake). This element does not have polarity.



Clutch/Brake connection circuit

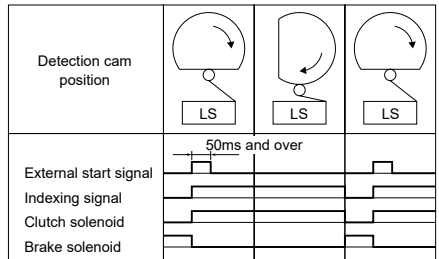
#### **12** Example circuit

Design the circuit based on universal electrical designing.



#### ● Timing chart example

Single rotation detection: For a limit switch (LS)



## During use & maintenance

### CAUTION

- 1** Inspect for any loosened bolts or screws.
- 2** Do not service or inspect the units while power is being supplied.  
It may sudden run due to an error or control circuit failure resulting in injury.
- 3** If any abnormal noise is heard, immediately stop the machine.  
Internal parts may be damaged. Contact your dealer of CKD.
- 4** Replacing lubricating oil  
Replace lubricating oil in the following manner.  
Be sure to perform the initial replacement in order to remove initial wear particles after running-in.  
The temperature of lubricating oil is very high immediately after the operation is stopped. Replace oil 1 to 2 hours after stopping the operation. Check the oil level every week. Be sure to refill oil with the identical manufacturer, brand and grade as necessary. If you recognize significant deterioration of oil performance (viscosity, color, etc.), shorten the replacement intervals.  
(1) HO reducer  
The first replacement should be done 50 hours after starting the operation. Afterward, replace it every 6 months. Supply with grease from the lubricating oil at the time of replacing the grease nipple.  
Model No.: Albania Grease S2 (Showa Shell)  
(2) TE reducer  
The first replacement should be done at 2,000 hours after starting the operation. Afterward, replace it every 2,000-8,000 hours.
- 5** Adjusting the gap  
When clutch/brake gap becomes as listed in the chart below, adjust the gap properly. When you adjust the gap, the brake time of the clutch/brake will change. Confirm that start and stop occur in a dwell section of index drive input shaft. Adjust the timing of clutch/brake with the input shaft detection cam.

HO reducer

(unit: mm)

		HO size	32	40	50	60	80	100	135
Clutch	Limit gap		0.4	0.5	0.5	0.5	0.5	0.75	0.75
	Initial gap setting		0.15	0.2	0.2	0.2	0.2	0.3	0.3
Brake	Limit gap		0.4	0.5	0.5	0.5	0.5	0.75	0.75
	Initial gap setting		0.15	0.2	0.2	0.2	0.2	0.3	0.3

TE reducer (common to Clutch/Brake)

(unit: mm)

		TE size	35	42	51	63	80	100	150
Guidelines for re-adjusting the gap			0.4	0.4	0.4	0.5	0.6	0.6	0.8
Specified gap			0.15 to 0.25	0.15 to 0.25	0.15 to 0.25	0.15 to 0.25	0.20 to 0.35	0.20 to 0.35	0.20 to 0.35

# Option

## ● Worm reducer

### ■ Standard worm reducers

The chart below indicates the combinations of standard installations.

Check the reducer load torque ( $T_{er}$ ) and the worm reducer rated output torque before use.

#### Roller gear cam drive

##### For Compact

Main model No.		CRG reducer Size	Reduction ratio
<b>RGIS</b> <b>RGOS</b>	<b>025</b>	<b>CRG25</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>032</b>	<b>CRG32</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60

The reduction ratio is 1/19.5 for 1/20 and 1/39 for 1/40.

##### For Standard

Discontinued model

Main model No.		HO reducer Size	Reduction ratio <small>Value in ( ) represents the special reduction ratio.</small>	TE reducer Size	Reduction ratio
<b>RGIS</b>	<b>040</b>	<b>HO32</b>	1/20, 1/40, 1/60 (1/30, 1/50)	-	-
	<b>050</b>	<b>HO32</b>	1/20, 1/40, 1/60 (1/30, 1/50)	<b>TE35</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>063</b>	<b>HO40</b>	1/20, 1/40, 1/60 (1/30, 1/50)	<b>TE42</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
<b>RGOS</b>	<b>080</b>	<b>HO50</b>	1/20, 1/30, 1/40 1/50, 1/60	<b>TE51</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>110</b>	<b>HO60</b>	1/20, 1/30, 1/40 1/50, 1/60	<b>TE63</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
<b>RGCS</b>	<b>140</b>	<b>HO80</b>	1/20, 1/30, 1/40 1/50, 1/60	<b>TE80</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>180</b>	<b>HO100</b>	1/20, 1/30, 1/40 1/50, 1/60	<b>TE100</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>250</b>	<b>HO135</b>	1/20, 1/40, 1/60 (1/30, 1/50)	<b>TE150</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60

##### For Table type

Main model No.		HO reducer Size	Reduction ratio <small>Value in ( ) represents the special reduction ratio.</small>	TE reducer Size	Reduction ratio
<b>RGIT</b>	<b>063</b>	<b>HO32</b>	1/20, 1/40, 1/60 (1/30, 1/50)	<b>TE35</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>080</b>	<b>HO40</b>	1/20, 1/40, 1/60 (1/30, 1/50)	<b>TE42</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>110</b>	<b>HO50</b>	1/20, 1/30, 1/40 1/50, 1/60	<b>TE51</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
<b>RGCT</b>	<b>140</b>	<b>HO60</b>	1/20, 1/30, 1/40 1/50, 1/60	<b>TE63</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>180</b>	<b>HO80</b>	1/20, 1/30, 1/40 1/50, 1/60	<b>TE80</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	<b>250</b>	<b>HO100</b>	1/20, 1/30, 1/40 1/50, 1/60	<b>TE100</b>	1/10, 1/20, 1/30 1/40, 1/50, 1/60

# Discontinue

For Wide angle

Discontinued model

Main model No.		HO reducer Size	Reduction ratio Value in ( ) represents the special reduction ratio.	TE reducer Size	Reduction ratio
RGIL	063	HO32	1/20, 1/40, 1/60 (1/30, 1/50)	TE35	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	080	HO40	1/20, 1/40, 1/60 (1/30, 1/50)	TE42	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	110	HO50	1/20, 1/30, 1/40 1/50, 1/60	TE51	1/10, 1/20, 1/30 1/40, 1/50, 1/60
RGOL	140	HO60	1/20, 1/30, 1/40 1/50, 1/60	TE63	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	180	HO80	1/20, 1/30, 1/40 1/50, 1/60	TE80	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	250	HO100	1/20, 1/30, 1/40 1/50, 1/60	TE100	1/10, 1/20, 1/30 1/40, 1/50, 1/60

Parallel cam drive

Main model No.		HO reducer Size	Reduction ratio Value in ( ) represents the special reduction ratio.	TE reducer Size	Reduction ratio
PCIS PCOS	040	-	-	-	-
	050	HO32	1/20, 1/40, 1/60 (1/30, 1/50)	TE35	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	063	HO40	1/20, 1/40, 1/60 (1/30, 1/50)	TE42	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	080	HO50	1/20, 1/30, 1/40 1/50, 1/60	TE51	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	100	HO60	1/20, 1/30, 1/40 1/50, 1/60	TE63	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	125	HO80	1/20, 1/30, 1/40 1/50, 1/60	TE80	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	160	HO100	1/20, 1/30, 1/40 1/50, 1/60	TE100	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	200	HO100	1/20, 1/30, 1/40 1/50, 1/60	TE100	1/10, 1/20, 1/30 1/40, 1/50, 1/60
	HO135	1/20, 1/40, 1/60 (1/30, 1/50)	TE150	1/10, 1/20, 1/30 1/40, 1/50, 1/60	
250	HO135	1/20, 1/40, 1/60 (1/30, 1/50)	TE150	1/10, 1/20, 1/30 1/40, 1/50, 1/60	

Product specifications

Compact

Standard

Roller gear cam drive

Table

Wide angle

Basic

Parallel cam drive

Pick and Place drive  
Linear Circular

Option

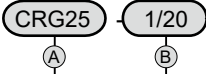
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## Option

### ● Worm reducer

#### ■ How to display the unit model number

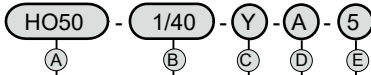
#### Worm reducer CRG Series



(A) Model No.	(B) Reduction ratio
CRG25	1/10
CRG32	1/20
	1/30
	1/40
	1/50
	1/60

Note. The actual reduction ratio of CRG25 and CRG32 is 1/19.5 for 1/20 and 1/39 for 1/40.

#### Worm reducer HO Series



(A) Model No.	(B) Reduction ratio	(C) Clutch/Brake
HO32	1/20	Y Clutch/Brake: Yes
HO40	1/30	N Clutch/Brake: No
HO50	1/40	
HO60	1/50	
HO80	1/60	
HO100		
HO135		

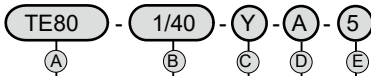
Note. Those of 1/30 and 1/50 for HO32, HO40 and HO135 have special ratio. Verify the delivery schedule.

(D) Worm shaft layout	
	Clutch/Brake: No
A	
B	

\* A: Input shaft comes to the left when you face it.  
B: Input shaft comes to the right when you face it.

Discontinued model

#### High torque worm reducer TE Series



(A) Model No.	(B) Reduction ratio	(C) Clutch/Brake
TE35	1/10	Y Clutch/Brake: Yes
TE42	1/20	N Clutch/Brake: No
TE51	1/30	
TE63	1/40	
TE80	1/50	
TE100	1/60	
TE150		

(D) Worm shaft layout	
	Clutch/Brake: No
A	
B	
G	

\* A: Input shaft comes to the left when you face it.  
B: Input shaft comes to the right when you face it.

Product specifications

Compact

Standard

Roller gear cam drive

Table

Wide angle

Basic

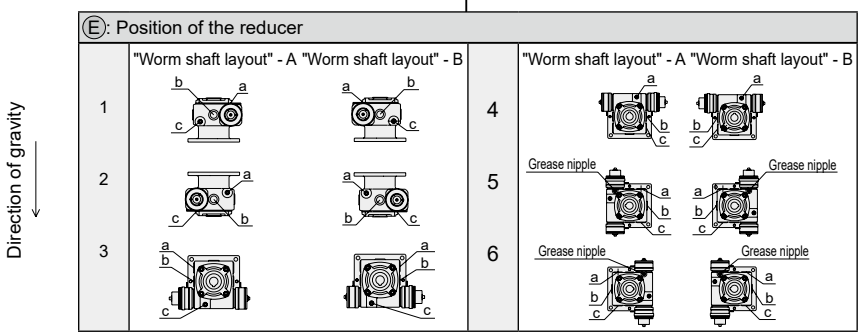
Parallel cam drive

Linear Circular  
Pneumatic  
Electric drive

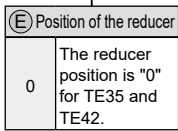
Option

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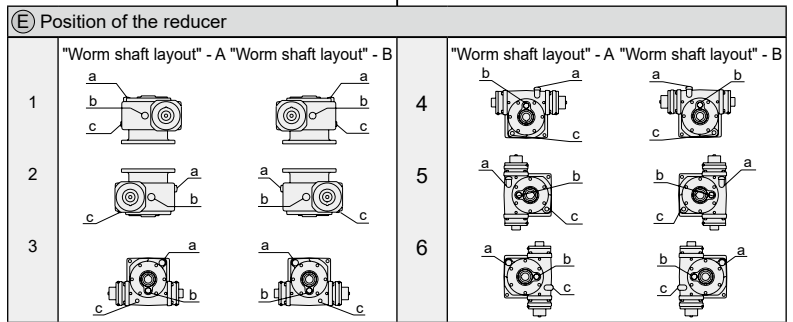
\* Reducers for PC\*S040 to 125, RG\*S040 and PPLX are custom order items. Contact CKD for details.



a: Oil supply port b: Oil level gauge c: Drain port  
 \* Grease nipple is attached at shipment.



Direction of gravity ↓



a: Oil supply port (pressure vent) b: Oil level gauge c: Drain port  
 \* Locations of these may vary depending on the reducer position for TE51 or higher.



# Option

## ● High torque worm reducer (TE35)

### ■ Characteristics table

Standard installation index		RG*S050	RG*T063	RG*L063	RC*S050
Reduction ratio		1/10, 1/20, 1/30, 1/40, 1/50, 1/60			
Max. speed of input shaft		1800 rpm			
Reducer input shaft		With C/B			
Converted moment of inertia		Without C/B			
Input shaft OHL		With C/B			
		Without C/B			
Internal frictional torque (T <sub>inr</sub> )		5°C			
		10°C			
		15°C			
		20°C			
		30°C			
		40°C			
Weight		With C/B			
		Without C/B			
Lubricating oil (when shipped)		Daphne Alpha Oil TE260 (Idemitsu)			
Oil level		t			
Worm torsion direction		Right helix			

### ■ Clutch/brake characteristics table

Descriptions		Clutch (CS-055-35-A-1G)	Brake (111-055-11-A-1G)
Dynamic frictional torque		3.9 N·m	3.9 N·m
Rotor moment of inertia		0.400×10 <sup>-4</sup> kg·m <sup>2</sup>	—
Armature moment of inertia		0.621×10 <sup>-4</sup> kg·m <sup>2</sup>	0.347×10 <sup>-4</sup> kg·m <sup>2</sup>
Exciting voltage (insulation class)		DC24 (Class B) V	DC24 (Class B) V
Current		0.25 A	0.25 A
Power consumption (20°C)		6 W	6 W
Coil resistance		96 Ω	96 Ω

### ■ TE35 rated output torque (N·m)

### ■ TE35 efficiency (%)

Reduction ratio Input rpm	1/10 1/20 1/30 1/40 1/50 1/60						
	1800	With C/B 20.8	21.6	20.9	21.5	21.7	21.5
1700	With C/B	21.3	22.1	21.4	21.9	22.2	22.1
	Without C/B	21.3	22.1	21.4	21.9	22.2	22.1
1600	With C/B	21.9	22.7	22.0	22.6	22.9	22.6
	Without C/B	21.9	22.7	22.0	22.6	22.9	22.6
1500	With C/B	22.6	23.4	22.6	23.3	23.6	23.2
	Without C/B	22.6	23.4	22.6	23.3	23.6	23.2
1400	With C/B	23.3	24.1	23.3	24.0	24.3	24.1
	Without C/B	23.3	24.1	23.3	24.0	24.3	24.1
1300	With C/B	24.1	24.9	24.1	24.8	25.2	24.9
	Without C/B	24.1	24.9	24.1	24.8	25.2	24.9
1200	With C/B	24.9	25.8	25.0	25.7	26.1	25.8
	Without C/B	24.9	25.8	25.0	25.7	26.1	25.8
1100	With C/B	25.9	26.9	25.9	26.7	27.0	26.6
	Without C/B	25.9	26.9	25.9	26.7	27.0	26.6
1000	With C/B	27.0	28.0	27.0	27.8	28.2	27.9
	Without C/B	27.0	28.0	27.0	27.8	28.2	27.9
900	With C/B	28.3	29.4	28.4	29.1	29.7	29.2
	Without C/B	28.3	29.4	28.4	29.1	29.7	29.2
800	With C/B	29.7	30.9	29.9	30.8	31.1	30.0
	Without C/B	29.7	30.9	29.9	30.8	31.1	30.0
700	With C/B	31.5	32.7	31.8	32.6	31.5	31.5
	Without C/B	31.5	32.7	31.8	32.6	31.5	31.5
600	With C/B	32.1	34.9	33.7	34.7	35.1	33.6
	Without C/B	33.7	34.9	33.7	34.7	35.1	33.6

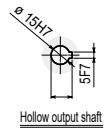
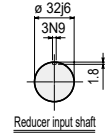
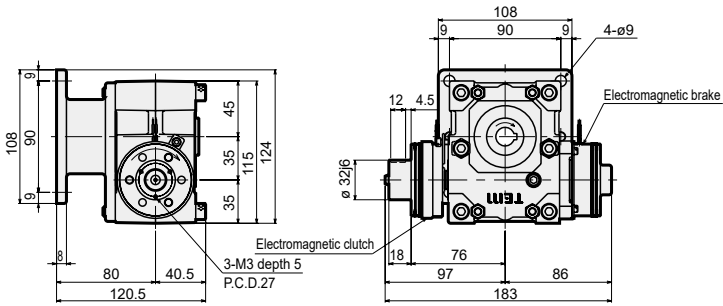
Reduction ratio Input rpm	1/10 1/20 1/30 1/40 1/50 1/60					
	1800	87.6	79.7	71.3	66.6	62.5
1700	87.3	79.3	70.7	66.0	61.9	57.1
1600	87.0	78.9	70.2	65.4	61.3	56.5
1500	86.7	78.4	69.6	64.8	60.7	55.8
1400	86.4	77.9	69.0	64.2	60.0	55.1
1300	86.0	77.4	68.3	63.5	59.3	54.4
1200	85.6	76.8	67.6	62.7	58.5	53.6
1100	85.1	76.2	66.9	61.9	57.7	52.7
1000	85.7	75.6	66.0	61.1	56.9	51.9
900	84.2	74.9	65.2	60.2	55.9	50.9
800	83.6	74.1	64.2	59.2	54.9	49.9
700	82.9	73.2	63.1	58.1	53.8	48.8
600	82.2	72.2	61.9	56.9	52.6	47.5

# Discontinue

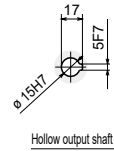
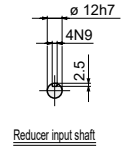
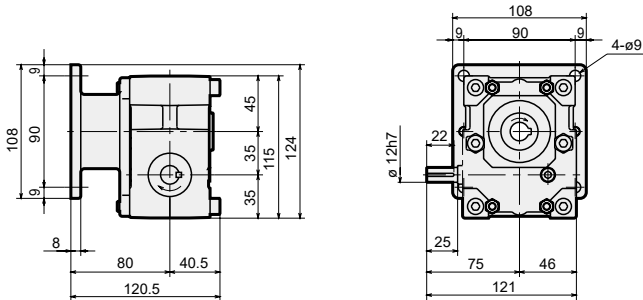


## ■ Dimensions

### ● With C/B



### ● Without C/B



Product specifications

Option	Pick and Place drive Linear Circular	Roller gear cam drive		
		Table	Standard	Compact
Option	Pick and Place drive Linear Circular	Parallel cam drive	Wide angle	Basic
			Table	Table
			Table	Table

# Option

## ● High torque worm reducer (TE42)

### ■ Characteristics table

Standard installation index		RG*S063	RG*T080	RG*L080	PC*S063
Reduction ratio		1/10, 1/20, 1/30, 1/40, 1/50, 1/60			
Max. speed of input shaft rpm		1800			
Reducer input shaft	With C/B	1.64 × 10 <sup>-4</sup>			
	Without C/B	0.3 × 10 <sup>-4</sup>			
Converted moment of inertia kg·m <sup>2</sup>	With C/B	196			
	Without C/B	196			
Input shaft OHL N	5°C	0.61			
	10°C	0.52			
	15°C	0.45			
	20°C	0.40			
	30°C	0.33			
	40°C	0.29			
Internal frictional torque (T <sub>inr</sub> ) N·m	With C/B	6.3			
	Without C/B	5.0			
Lubricating oil (when shipped)		Daphne Alpha Oil TE260 (Idemitsu)			
Oil level t		0.29			
Worm torsion direction		Right helix			

### ■ Clutch/brake characteristics table

Descriptions	Clutch (CS-06-35-A-43G)	Brake (111-06-11-A-109G)
Dynamic frictional torque N·m	5.5	5.5
Rotor moment of inertia kg·m <sup>2</sup>	0.735×10 <sup>-4</sup>	—
Armature moment of inertia kg·m <sup>2</sup>	1.05×10 <sup>-4</sup>	0.603×10 <sup>-4</sup>
Exciting voltage (insulation class) V	DC24 (Class B)	DC24 (Class B)
Current A	0.46	0.46
Power consumption (20°C) W	11	11
Coil resistance Ω	52	52

### ■ TE42 rated output torque (N·m)

#### ● With C/B

Reduction ratio Input rpm	1/10	1/20	1/30	1/40	1/50	1/60
1800	30.5	31.4	30.5	31.1	31.5	31.9
1700	31.3	32.2	31.3	31.9	32.4	32.8
1600	32.2	33.1	32.1	32.8	33.3	33.7
1500	33.2	34.1	33.1	33.8	34.4	34.8
1400	34.2	35.3	34.2	34.8	35.3	35.9
1300	35.4	36.5	35.4	36.1	36.7	37.2
1200	36.7	37.8	36.6	37.4	38.1	38.4
1100	38.2	39.3	38.1	39.0	39.4	40.1
1000	39.9	41.0	39.8	40.6	41.3	41.8
900	41.8	43.0	41.7	42.6	43.3	43.9
800	44.1	45.4	43.9	44.8	45.4	46.1
700	46.0	48.2	46.7	47.6	48.2	49.0
600	45.6	51.5	49.8	51.0	51.9	52.4

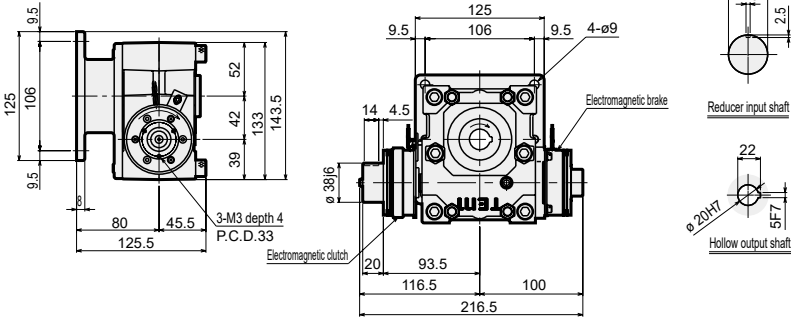
#### ● Without C/B

Reduction ratio Input rpm	1/10	1/20	1/30	1/40	1/50	1/60
1800	31.4	32.3	31.4	32.0	32.6	33.1
1700	32.3	33.2	32.3	32.8	33.4	33.9
1600	33.2	34.1	33.1	33.8	34.2	34.7
1500	34.1	35.1	34.1	34.8	35.3	35.7
1400	35.2	36.2	35.2	35.9	36.4	36.9
1300	36.4	37.5	36.3	37.1	37.6	38.2
1200	37.7	38.8	37.6	38.4	39.0	39.4
1100	39.2	40.4	39.1	39.9	40.4	41.2
1000	41.0	42.0	40.8	41.6	42.1	42.7
900	42.9	44.1	42.8	43.6	44.2	44.9
800	45.2	46.4	45.1	46.0	46.8	47.3
700	47.8	49.2	47.7	48.6	49.3	50.3
600	51.2	52.6	51.0	52.2	52.8	53.4

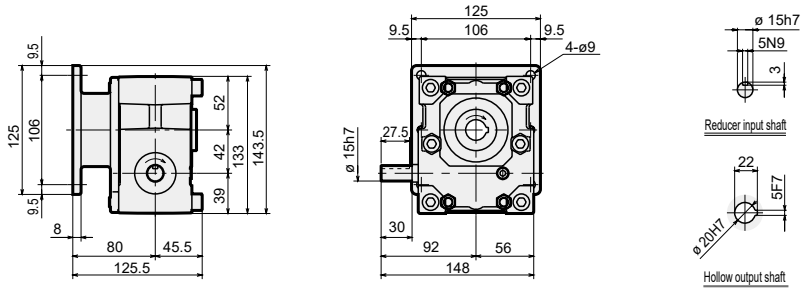


## ■ Dimensions

### ● With C/B



### ● Without C/B



## ■ TE42 Efficiency (%)

Reduction ratio Input rpm	1/10	1/20	1/30	1/40	1/50	1/60
1800	88.4	80.9	72.8	68.2	64.3	60.8
1700	88.1	80.5	72.3	67.7	63.7	60.2
1600	87.8	80.0	71.7	67.1	63.1	59.6
1500	87.5	79.6	71.2	66.4	62.4	58.9
1400	87.2	79.1	70.5	65.8	61.7	58.2
1300	86.8	78.6	69.9	65.0	61.0	57.4
1200	86.4	78.0	69.1	64.3	60.2	56.6
1100	85.9	77.4	68.4	63.5	59.3	55.8
1000	85.5	76.7	67.5	62.6	58.4	54.8
900	84.9	76.0	66.6	61.6	57.5	53.9
800	84.3	75.1	65.6	60.6	56.4	52.8
700	83.7	74.2	64.5	59.4	55.2	51.6
600	82.9	73.2	63.2	58.1	54.0	50.4

Roller gear cam drive	Compact
	Standard
	Table
Wide angle	Basic
	Basic

Pics and Pieces drive	Linear
	Circular

# Option

## ● High torque worm reducer (TE51)

### ■ Characteristics table

Standard installation index		RG*S080	RG*T110	RG*L110	PC*S080
Reduction ratio		1/10, 1/20, 1/30, 1/40, 1/50, 1/60			
Max. speed of input shaft		rpm 1800			
Reducer input shaft	With C/B	5.36 × 10 <sup>-4</sup>			
	Without C/B	1.42 × 10 <sup>-4</sup>			
Converted moment of inertia	kg·m <sup>2</sup>	196			
	With C/B	491			
Input shaft OHL	N	5°C			
		10°C			
		15°C			
		20°C			
		30°C			
		40°C			
Internal frictional torque (Tinr)	N·m	0.45			
		12.7			
Weight	kg	10.4			
		10.4			
Lubricating oil (when shipped)		Daphne Alpha Oil TE260 (Idemitsu)			
Worm torsion direction		Right helix			

### ■ Clutch/brake characteristics table

Descriptions		Clutch (101-08-15-A-139G)	Brake (111-08-11-A-61G)
Dynamic frictional torque	N·m	11	11
Rotor moment of inertia	kg·m <sup>2</sup>	2.24×10 <sup>-4</sup>	—
Armature moment of inertia	kg·m <sup>2</sup>	3.00×10 <sup>-4</sup>	1.71×10 <sup>-4</sup>
Exciting voltage (insulation class)	V	DC24 (Class B)	DC24 (Class B)
Current	A	0.63	0.63
Power consumption (20°C)	W	15	15
Coil resistance	Ω	38	38

### ■ TE51 rated output torque (N·m)

### ■ TE51 efficiency (%)

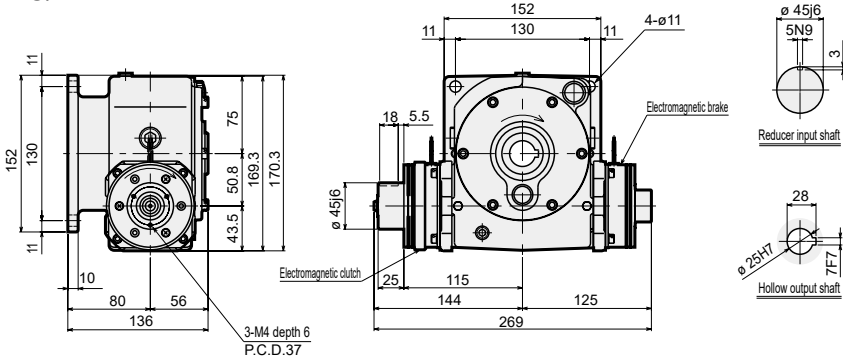
Reduction ratio	Input rpm	1/10	1/20	1/30	1/40	1/50	1/60	Reduction ratio	input rpm	1/10	1/20	1/30	1/40	1/50	1/60
		1800	With C/B	82.7	90.4	92.0	90.3			87.2	82.5	1800	90.3	84.2	77.1
1800	Without C/B	82.7	90.4	92.0	90.3	87.2	82.5	1700	90.1	83.8	76.6	72.6	68.6	65.0	
	With C/B	85.0	92.5	94.3	92.4	89.2	84.3								
1700	Without C/B	85.0	92.5	94.3	92.4	89.2	84.3	1600	89.8	83.5	76.1	72.1	68.0	64.4	
	With C/B	87.3	94.7	96.8	94.5	91.2	86.1								
1600	Without C/B	87.3	94.7	96.8	94.5	91.2	86.1	1500	89.5	83.1	75.6	71.5	67.4	63.7	
	With C/B	89.6	97.0	99.3	96.7	93.3	88.0								
1500	Without C/B	89.6	97.0	99.3	96.7	93.3	88.0	1400	89.2	82.6	75.0	70.9	66.7	63.0	
	With C/B	92.1	99.3	102	99.0	97.5	90.0								
1400	Without C/B	92.1	99.3	102	99.0	97.5	90.0	1300	88.9	82.2	74.4	70.2	66.0	62.3	
	With C/B	94.6	102	104	101	98.1	92.0								
1300	Without C/B	94.6	102	104	101	98.1	92.0	1200	88.6	81.7	73.8	69.5	65.3	61.5	
	With C/B	97.1	104	107	103	98.1	92.0								
1200	Without C/B	97.1	104	107	103	98.1	92.0	1100	88.2	81.1	73.0	68.8	64.5	60.7	
	With C/B	97.0	104	109	103	98.1	92.0								
1100	Without C/B	97.0	104	109	103	98.1	92.0	1000	87.8	80.5	72.3	67.9	63.6	59.8	
	With C/B	99.8	104	109	103	98.1	92.0								
1000	Without C/B	99.8	104	109	103	98.1	92.0	900	87.3	79.9	71.4	67.0	62.7	58.8	
	With C/B	96.6	104	109	103	98.1	92.0								
900	Without C/B	96.6	104	109	103	98.1	92.0	800	86.8	79.2	70.5	66.1	61.6	57.8	
	With C/B	100	104	109	103	98.1	92.0								
800	Without C/B	100	104	109	103	98.1	92.0	700	86.2	78.4	69.4	65.0	60.5	56.6	
	With C/B	96.0	104	109	103	98.1	92.0								
700	Without C/B	96.0	104	109	103	98.1	92.0	600	85.5	77.4	68.3	63.8	59.3	55.3	
	With C/B	100	104	109	103	98.1	92.0								
600	Without C/B	100	104	109	103	98.1	92.0								
	With C/B	94.1	104	109	103	98.1	92.0								

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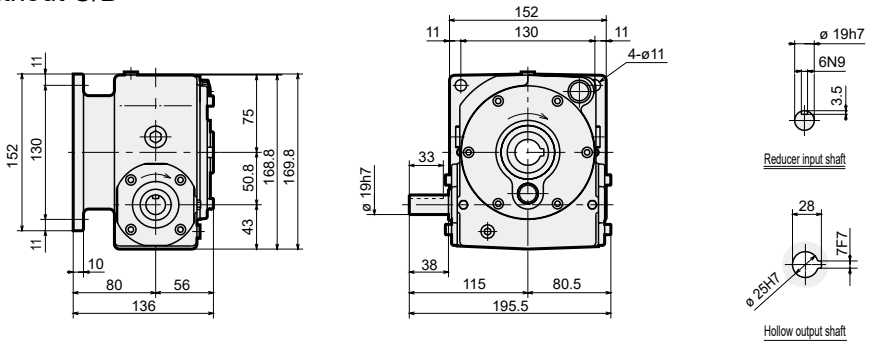


## ■ Dimensions

### ● With C/B



### ● Without C/B



## ■ Oil volume and positions of oil level gauge, pressure vent and drain port are determined by the installation direction of the TE reducer.

Position	1	2	3	4	5	6
Dimensions						
Oil level (l)	0.45	0.46	0.32	0.58	0.47	0.43

Product specifications

Compact

Standard

Roller gear cam drive

Table

Wide angle

Basic

Parallel cam drive

Pick and Place drive

Linear

Circular

Option

# Option

## ● High torque worm reducer (TE63)

### ■ Characteristics table

Standard installation index		RG*S110	RG*T140	RG*L140	PC*S100
Reduction ratio		1/10, 1/20, 1/30, 1/40, 1/50, 1/60			
Max. speed of input shaft rpm		1800			
Reducer input shaft	With C/B	$16.7 \times 10^{-4}$			
	Without C/B	$3.28 \times 10^{-4}$			
Converted moment of inertia kg·m <sup>2</sup>	With C/B	294			
	Without C/B	785			
Internal frictional torque (Tinr) N·m	5°C	2.03			
	10°C	1.63			
	15°C	1.34			
	20°C	1.14			
	30°C	0.90			
	40°C	0.76			
Weight kg	With C/B	20.2			
	Without C/B	16.0			
Lubricating oil (when shipped)		Daphne Alpha Oil TE260 (Idemitsu)			
Worm torsion direction		Right helix			

### ■ Clutch/brake characteristics table

Descriptions		Clutch (101-10-15-A-131G)	Brake (111-10-11-A-64G)
Dynamic frictional torque	N·m	22	22
Rotor moment of inertia	kg·m <sup>2</sup>	$6.78 \times 10^{-4}$	—
Armature moment of inertia	kg·m <sup>2</sup>	$9.45 \times 10^{-4}$	$6.63 \times 10^{-4}$
Exciting voltage (insulation class)	V	DC24 (Class B)	DC24 (Class B)
Current	A	0.83	0.83
Power consumption (20°C)	W	20	20
Coil resistance	Ω	29	29

### ■ TE63 rated output torque (N·m)

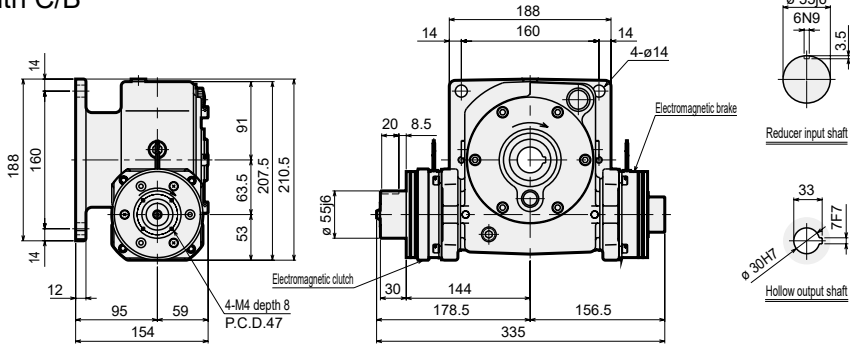
### ■ TE63 efficiency (%)

Reduction ratio	Input rpm	1/10	1/20	1/30	1/40	1/50	1/60	Reduction ratio	input rpm	1/10	1/20	1/30	1/40	1/50	1/60
		1800	With C/B	150	167	168	167			162	153	1800	91.1	85.0	78.6
1700	Without C/B	150	167	168	167	162	153	1700	90.8	84.6	78.2	73.7	70.5	67.6	
	With C/B	155	172	174	172	167	157								
1600	Without C/B	155	172	174	172	167	157	1600	90.6	84.2	77.7	73.2	69.9	66.9	
	With C/B	161	178	179	177	171	162								
1500	Without C/B	161	178	179	177	171	162	1500	90.3	83.8	77.2	72.6	69.3	66.3	
	With C/B	166	183	185	183	176	166								
1400	Without C/B	166	183	185	183	176	166	1400	90.1	83.4	76.6	71.9	68.7	65.6	
	With C/B	172	189	191	189	181	170								
1300	Without C/B	172	189	191	189	181	170	1300	89.7	82.9	76.0	71.2	67.9	64.9	
	With C/B	178	195	198	195	187	175								
1200	Without C/B	178	195	198	195	187	175	1200	89.4	82.4	75.3	70.5	67.2	64.1	
	With C/B	184	201	204	201	192	180								
1100	Without C/B	184	201	204	201	192	180	1100	89.0	81.8	74.6	69.7	66.3	63.2	
	With C/B	191	208	211	207	197	185								
1000	Without C/B	191	208	211	207	197	185	1000	88.6	81.2	73.8	68.8	65.4	62.3	
	With C/B	195	214	218	213	202	186								
900	Without C/B	195	214	218	213	202	186	900	88.1	80.5	72.9	67.9	64.4	61.3	
	With C/B	194	218	224	216	202	186								
800	Without C/B	194	218	224	216	202	186	800	87.6	79.8	71.9	66.8	63.4	60.2	
	With C/B	204	218	224	216	202	186								
700	Without C/B	193	218	224	216	202	186	700	87.0	78.9	70.8	65.6	62.2	59.0	
	With C/B	206	218	224	216	202	186								
600	Without C/B	206	218	224	216	202	186	600	86.3	77.9	69.6	64.3	60.8	57.6	
	With C/B	190	218	224	216	202	186								

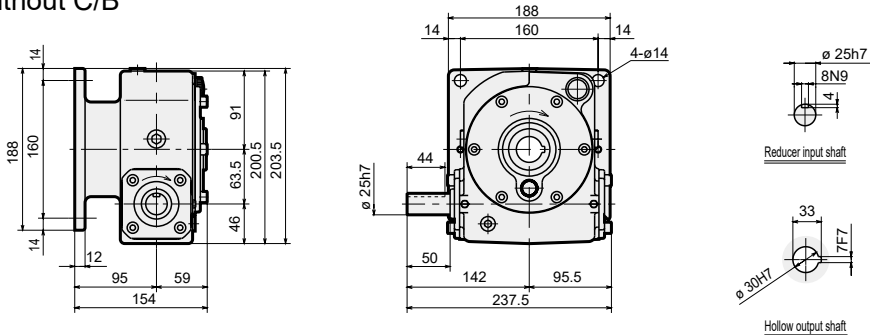


## ■ Dimensions

### ● With C/B



### ● Without C/B



## ■ Oil volume and positions of oil level gauge, pressure vent and drain port are determined by the installation direction of the TE reducer.

Position	1	2	3	4	5	6
Dimensions						
Oil level (l)	0.62	0.64	0.45	0.78	0.65	0.61

Product specifications

Compact

Standard

Table

Roller gear cam drive

Wide angle

Basic

Parallel cam drive

Pics and Paces drive

Option

Linear

Circular



# Option

## ● High torque worm reducer (TE80)

### ■ Characteristics table

Standard installation index		RG*S140	RG*T180	RG*L180	PC*S125
Reduction ratio		1/10, 1/20, 1/30, 1/40, 1/50, 1/60			
Max. speed of input shaft rpm		1800			
Reducer input shaft	With C/B	$46.0 \times 10^{-4}$			
	Without C/B	$6.49 \times 10^{-4}$			
Converted moment of inertia kg·m <sup>2</sup>	With C/B	687			
	Without C/B	1570			
Internal frictional torque (Tinr) N·m	5°C	3.56			
	10°C	2.72			
	15°C	2.19			
	20°C	1.83			
	30°C	1.40			
	40°C	1.21			
Weight kg	With C/B	35.6			
	Without C/B	28.5			
Lubricating oil (when shipped)		Daphne Alpha Oil TE260 (Idemitsu)			
Worm torsion direction		Right helix			

### ■ Clutch/brake characteristics table

Descriptions		Clutch (101-12-15-A-164G)	Brake (111-12-11-A-83G)
Dynamic frictional torque N·m		45	45
Rotor moment of inertia kg·m <sup>2</sup>		$21.4 \times 10^{-4}$	—
Armature moment of inertia kg·m <sup>2</sup>		$27.5 \times 10^{-4}$	$18.1 \times 10^{-4}$
Exciting voltage (insulation class) V		DC24 (Class B)	DC24 (Class B)
Current A		1.09	1.09
Power consumption (20°C) W		25	25
Coil resistance Ω		23	23

### ■ TE80 rated output torque (N·m)

### ■ TE80 efficiency (%)

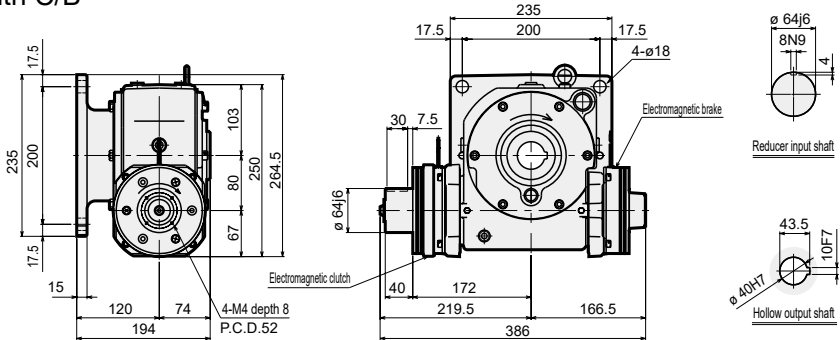
Reduction ratio	Input rpm	1/10	1/20	1/30	1/40	1/50	1/60	Reduction ratio	input rpm	1/10	1/20	1/30	1/40	1/50	1/60
		1800	With C/B	280	315	316	316			308	292	1800	92.2	86.8	81.0
1800	Without C/B	280	315	316	316	308	292	1700	92.0	86.5	80.6	76.6	73.4	70.8	
	With C/B	291	327	328	327	318	301								
1700	Without C/B	291	327	328	327	318	301	1600	91.7	86.2	80.1	76.1	72.8	70.2	
	With C/B	304	339	342	339	329	311								
1600	Without C/B	304	339	342	339	329	311	1500	91.5	85.8	79.6	75.5	72.2	69.6	
	With C/B	316	352	355	352	341	321								
1500	Without C/B	316	352	355	352	341	321	1400	91.2	85.4	79.1	74.9	71.6	68.9	
	With C/B	330	365	369	365	353	332								
1400	Without C/B	330	365	369	365	353	332	1300	91.0	85.0	78.5	74.3	70.9	68.2	
	With C/B	343	379	384	379	365	342								
1300	Without C/B	343	379	384	379	365	342	1200	90.6	84.5	77.9	73.6	70.1	67.4	
	With C/B	358	393	399	393	378	353								
1200	Without C/B	358	393	399	393	378	353	1100	90.3	83.9	77.2	72.8	69.3	66.5	
	With C/B	373	408	415	407	391	365								
1100	Without C/B	373	408	415	407	391	365	1000	89.9	83.4	76.4	71.9	68.4	65.6	
	With C/B	389	423	431	422	404	377								
1000	Without C/B	389	423	431	422	404	377	900	89.5	82.7	75.6	71.0	67.4	64.6	
	With C/B	403	439	448	438	418	386								
900	Without C/B	403	439	448	438	418	386	800	89.0	82.0	74.6	69.9	66.3	63.5	
	With C/B	401	454	466	451	423	386								
800	Without C/B	422	454	466	451	423	386	700	88.4	81.1	73.5	68.8	65.1	62.2	
	With C/B	398	454	470	451	423	386								
700	Without C/B	398	454	470	451	423	386	600	87.7	80.2	72.3	67.5	63.7	60.8	
	With C/B	433	454	470	451	423	386								
600	Without C/B	433	454	470	451	423	386								
	With C/B	395	454	470	451	423	386								
	Without C/B	395	454	470	451	423	386								
	With C/B	433	454	470	451	423	386								

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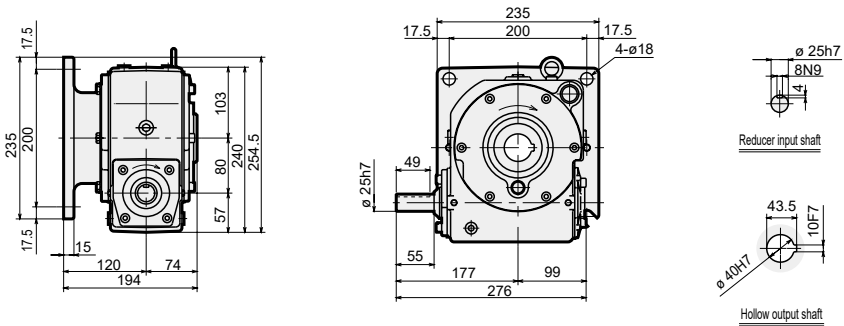


## ■ Dimensions

### ● With C/B



### ● Without C/B



## ■ Oil volume and positions of oil level gauge, pressure vent and drain port are determined by the installation direction of the TE reducer.

Position	1	2	3	4	5	6
Dimensions						
Oil level (t)	1.2	1.2	0.8	1.6	1.2	1.2

Product specifications

Compact

Standard

Table

Roller gear cam drive

Wide angle

Basic

Parallel cam drive

Pick and Place drive

Linear

Circular

Option

# Option

## ● High torque worm reducer (TE100)

### ■ Characteristics table

Standard installation index		RG*S180	RG*T250	RG*L250	PC*S160
Reduction ratio		1/10, 1/20, 1/30, 1/40, 1/50, 1/60			
Max. speed of input shaft rpm		1800			
Reducer input shaft	With C/B	$53.2 \times 10^{-4}$			
	Without C/B	$13.7 \times 10^{-4}$			
Converted moment of inertia kg·m <sup>2</sup>	With C/B	883			
	Without C/B	1962			
Input shaft OHL N	5°C	6.11			
	10°C	4.56			
	15°C	3.55			
	20°C	2.90			
	30°C	2.18			
	40°C	1.82			
Weight kg	With C/B	61.1			
	Without C/B	54.0			
Lubricating oil (when shipped)		Daphne Alpha Oil TE260 (Idemitsu)			
Worm torsion direction		Right helix			

### ■ Clutch/brake characteristics table

Descriptions		Clutch (101-12-15-A-164G)	Brake (111-12-11-A-83G)
Dynamic frictional torque N·m		45	45
Rotor moment of inertia kg·m <sup>2</sup>		$21.4 \times 10^{-4}$	—
Armature moment of inertia kg·m <sup>2</sup>		$27.5 \times 10^{-4}$	$18.1 \times 10^{-4}$
Exciting voltage (insulation class) V		DC24 (Class B)	DC24 (Class B)
Current A		1.09	1.09
Power consumption (20°C) W		25	25
Coil resistance Ω		23	23

### ■ TE100 rated output torque (N·m)

### ■ TE100 efficiency (%)

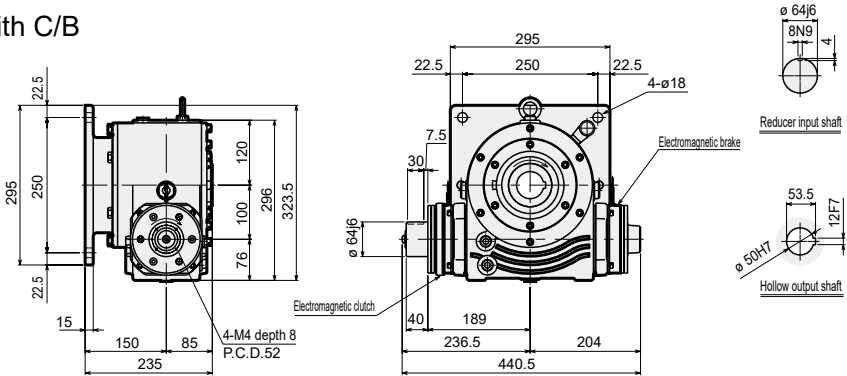
Reduction ratio Input rpm	1/10	1/20	1/30	1/40	1/50	1/60	Reduction ratio input rpm	1/10	1/20	1/30	1/40	1/50	1/60	
	1800	419	525	530	525	494		474	1800	93.1	88.2	83.3	79.2	76.5
1700	With C/B	418	542	548	526	515	492	1700	92.9	87.9	82.9	78.8	76.0	73.4
	Without C/B	486	542	548	526	515	492							
1600	With C/B	417	547	553	550	537	512	1600	92.7	87.5	82.5	78.3	75.4	72.9
	Without C/B	503	547	553	550	537	512							
1500	With C/B	416	573	579	575	559	532	1500	92.5	87.2	82.0	77.7	74.8	72.2
	Without C/B	508	573	579	575	559	532							
1400	With C/B	415	599	606	601	583	553	1400	92.3	86.8	81.5	77.1	74.2	71.6
	Without C/B	534	599	606	601	583	553							
1300	With C/B	414	627	634	628	607	574	1300	92.0	86.4	81.0	76.5	73.5	70.9
	Without C/B	561	627	634	628	607	574							
1200	With C/B	413	656	664	657	633	597	1200	91.7	86.0	80.4	75.8	72.8	70.1
	Without C/B	589	656	664	657	633	597							
1100	With C/B	411	687	695	687	659	620	1100	91.4	85.5	79.7	75.1	72.0	69.2
	Without C/B	618	687	695	687	659	620							
1000	With C/B	410	719	727	719	687	645	1000	91.0	84.9	79.0	74.2	71.1	68.3
	Without C/B	649	719	727	719	687	645							
900	With C/B	408	752	761	751	716	670	900	90.6	84.3	78.2	73.3	70.1	67.3
	Without C/B	682	752	761	751	716	670							
800	With C/B	406	752	797	786	746	696	800	90.2	83.6	77.3	72.3	69.0	66.2
	Without C/B	716	787	797	786	746	696							
700	With C/B	403	744	834	822	765	701	700	89.6	82.7	76.2	71.1	67.8	64.9
	Without C/B	752	824	834	822	765	701							
600	With C/B	401	736	844	826	765	701	600	89.0	81.8	75.0	69.7	66.4	63.5
	Without C/B	775	832	844	826	765	701							

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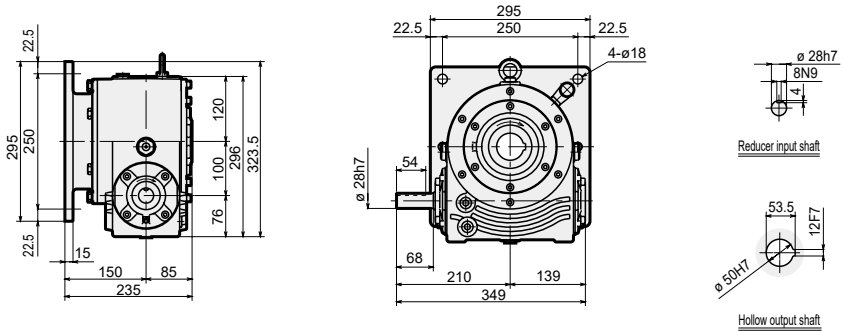


## ■ Dimensions

### ● With C/B



### ● Without C/B



## ■ Oil volume and positions of oil level gauge, pressure vent and drain port are determined by the installation direction of the TE reducer.

Position	1	2	3	4	5	6
Dimensions						
Oil level (l)	2.1	2.1	2.6	3.0	2.1	2.1

Product specifications

Compact

Standard

Roller gear cam drive

Table

Wide angle

Basic

Parallel cam drive

Option

Pick and Place drive

Linear

Circular

# Option

## ● High torque worm reducer (TE150)

### ■ Characteristics table

Standard installation index		RG S250	PC S200	PC S250
Reduction ratio		1/10, 1/20, 1/30, 1/40, 1/50, 1/60		
Max. speed of input shaft		rpm 1800		
Reducer input shaft		With C/B $185 \times 10^{-4}$		
Converted moment of inertia		kg·m <sup>2</sup> Without C/B $58.3 \times 10^{-4}$		
Input shaft OHL N		With C/B 1275		
		Without C/B 3924		
Internal frictional torque (Tinr) N·m		5°C 10.6		
		10°C 7.96		
		15°C 6.15		
		20°C 4.95		
		30°C 3.58		
Weight kg		With C/B 156.5		
		Without C/B 144		
Lubricating oil (when shipped)		Daphne Alpha Oil TE260 (Idemitsu)		
Worm torsion direction		Right helix		

### ■ Clutch/brake characteristics table

Descriptions	Clutch	Brake
	(101-16-15-A-131G)	(111-16-11-A-65G)
Dynamic frictional torque N·m	90	90
Rotor moment of inertia kg·m <sup>2</sup>	$63.0 \times 10^{-4}$	—
Armature moment of inertia kg·m <sup>2</sup>	$90.5 \times 10^{-4}$	$63.5 \times 10^{-4}$
Exciting voltage (insulation class) V	DC24 (Class B)	DC24 (Class B)
Current A	1.46	1.46
Power consumption (20°C) W	35	35
Coil resistance Ω	16	16

### ■ TE150 rated output torque (N·m) (With C/B)

Reduction ratio Input rpm	1/10	1/20	1/30	1/40	1/50	1/60
	1800	848	1290	1310	1300	1250
1700	846	1340	1350	1340	1300	1230
1600	845	1380	1400	1390	1340	1270
1500	843	1440	1450	1440	1390	1320
1400	842	1490	1490	1500	1450	1370
1300	840	1550	1520	1540	1460	1390
1200	837	1580	1550	1580	1550	1470
1100	835	1582	1590	1620	1640	1560
1000	832	1573	1640	1660	1710	1650
900	829	1564	1690	1710	1760	1750
800	825	1552	1750	1780	1820	1810
700	821	1539	1820	1850	1890	1880
600	815	1523	1910	1930	1980	1970

### ■ TE150 rated output torque (N·m) (Without C/B)

Reduction ratio Input rpm	1/10	1/20	1/30	1/40	1/50	1/60
	1800	1160	1290	1310	1230	1250
1700	1200	1340	1350	1340	1300	1200
1600	1240	1380	1400	1390	1340	1270
1500	1290	1440	1440	1440	1390	1320
1400	1340	1490	1470	1490	1450	1370
1300	1400	1530	1500	1520	1460	1390
1200	1470	1570	1540	1560	1550	1470
1100	1540	1610	1580	1600	1640	1560
1000	1580	1660	1623	1650	1690	1650
900	1660	1710	1680	1700	1740	1740
800	1730	1770	1740	1760	1800	1800
700	1800	1840	1810	1830	1874	1870
600	1880	1930	1890	1910	1960	1950

### ■ TE150 Efficiency (%)

Reduction ratio Input rpm	1/10	1/20	1/30	1/40	1/50	1/60
	1800	94.2	90.2	85.6	68.2	80.5
1700	94.0	90.0	85.3	67.7	80.1	77.1
1600	93.9	89.7	84.9	67.1	79.6	76.5
1500	93.7	89.4	84.6	66.4	79.1	76.0
1400	93.5	89.1	84.1	65.8	78.6	75.4
1300	93.3	88.8	83.6	65.0	77.9	74.7
1200	93.0	88.4	83.1	64.3	77.3	74.0
1100	92.8	87.9	82.5	63.5	76.5	73.1
1000	92.4	87.4	81.8	62.6	75.7	72.2
900	92.1	86.9	81.1	61.6	74.8	71.2
800	91.7	86.2	80.2	60.6	73.7	70.1
700	91.2	85.5	79.2	59.4	72.5	68.8
600	90.6	84.6	78.0	58.1	71.1	67.3

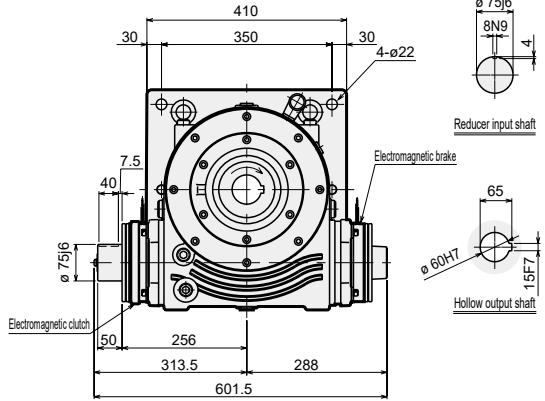
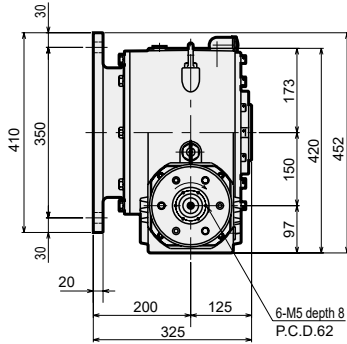
Product specifications  
 Compact  
 Standard  
 Table  
 Roller gear cam drive  
 Wide angle  
 Basic  
 Parallel cam drive  
 Linear  
 Circular  
 Rack and Pinion  
 Option

# Discontinue

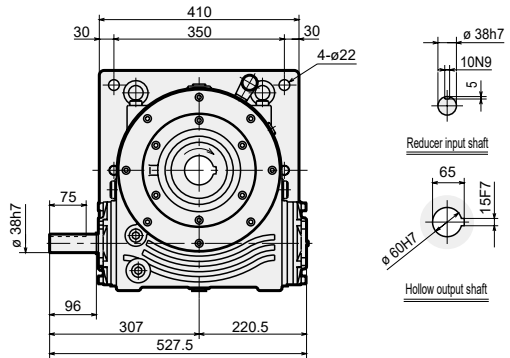
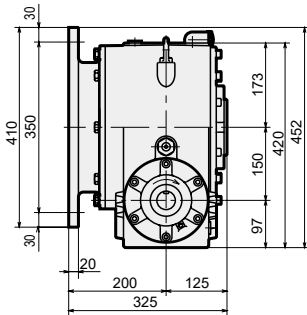


## ■ Dimensions

### ● With C/B



### ● Without C/B



## ■ Oil volume and positions of oil level gauge, pressure vent and drain port are determined by the installation direction of the TE reducer.

Position	1	2	3	4	5	6
Dimensions						
Oil level (l)	6.0	6.0	6.9	8.0	6.0	6.0

Product specifications

Compact

Standard

Table

Roller gear cam drive

Wide angle

Basic

Parallel cam drive

Pick and Place drive  
Linear  
Circular

Option