

# Reducer R48

## R48 Dimensions

### RCB type

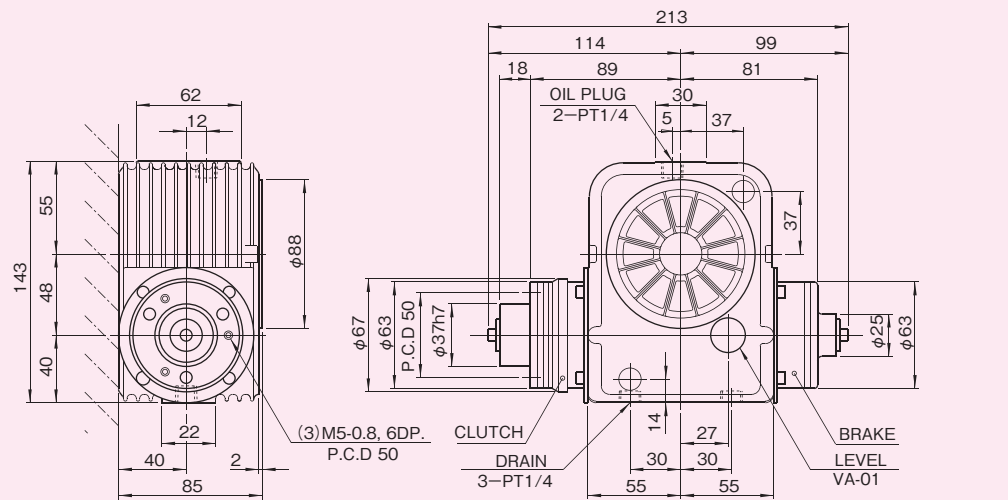


Figure R48-1

### RA type

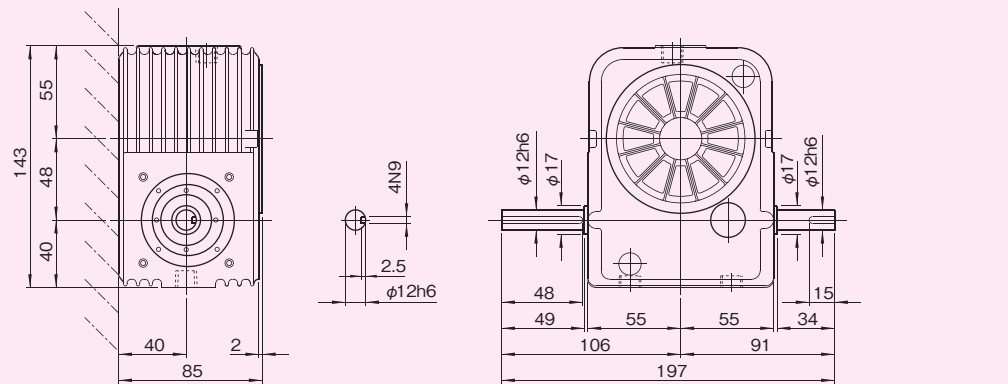


Figure R48-2

To find the dimensions for the clutch only RC type or the brake only RB type, compare figures R48-1 and R48-2.

## R48 Specifications

Table R48-1

Item	Symbol	Unit	R48
<b>Reducer specifications (R48)</b>			
Maximum speed	Nw	rpm	1800
Wheel inertia	C <sub>2</sub>	kg·m <sup>2</sup>	8.05×10 <sup>-4</sup>
Wormshaft inertia	C <sub>3</sub>	kg·m <sup>2</sup>	3.1×10 <sup>-5</sup>
Backlash on wheel shaft	b	degree	(0.2)
Wormshaft frictional torque	T <sub>xw</sub>	N·m	(0.45)
Product Weight		kg	3
<b>Clutch specifications (size 06)</b>			
Static frictional torque	T <sub>sc</sub>	N·m	5.5
Dynamic frictional torque	T <sub>dc</sub>	N·m	5
Stator and rotor weight	W <sub>sc</sub>	kg	0.4
Armature weight	W <sub>ac</sub>	kg	0.06
Rotor inertia	C <sub>4</sub>	kg·m <sup>2</sup>	7.35×10 <sup>-5</sup>
Armature inertia	C <sub>5</sub>	kg·m <sup>2</sup>	4.23×10 <sup>-5</sup>
Rated voltage		V	DC24
Minimum power		W	12
<b>Brake specifications (size 06)</b>			
Static frictional torque	T <sub>sb</sub>	N·m	5.5
Dynamic frictional torque	T <sub>db</sub>	N·m	5
Stator and rotor weight	W <sub>sb</sub>	kg	0.22
Armature weight	W <sub>ab</sub>	kg	0.06
Armature inertia	C <sub>6</sub>	kg·m <sup>2</sup>	4.23×10 <sup>-5</sup>
Rated voltage		V	DC24
Minimum power		W	12

### Precautions

- The values for T<sub>dc</sub> and T<sub>db</sub> (dynamic frictional torque) in the Table of Specifications apply for relative speeds of 100 rpm.
- Equivalent inertia : J1

$$J1 = \frac{C1+C2}{i^2} + C3+C4+C6 \quad (1)$$

i ..... Actual gear ratio  
C1..... Inertia of input shaft (cam shaft)

Table of Input power ratings and Output torque Table R48-2

Nominal gear ratio (Actual gear ratio i)	Input shaft rotating speed rpm	Output shaft rotating speed rpm	Nominal input power rating N <sub>IN</sub> kw	Allowable continuous output torque T <sub>2N</sub> N·m	Allowable maximum output torque T <sub>2max</sub> N·m
10 (10)	1800	180	0.52	24.5	37.24
	1500	150	0.51	28.42	44.1
	1000	100	0.39	32.34	49.98
	750	75	0.33	35.28	53.9
	500	50	0.26	42.14	64.68
	300	30	0.19	49.0	75.46
20 (20)	1800	90	0.25	21.56	33.32
	1500	75	0.23	23.52	36.26
	1000	50	0.18	26.46	40.18
	750	37.5	0.15	28.42	44.1
	500	25	0.12	33.32	50.96
	300	15	0.08	37.24	57.82
30 (30)	1800	60	0.18	20.58	31.36
	1500	50	0.16	21.56	33.32
	1000	33.3	0.13	25.48	39.2
	750	25	0.12	28.42	44.1
	500	16.7	0.09	31.36	49.0
	300	10	0.06	35.28	54.88
50 (50)	1800	36	0.1	15.68	24.5
	1500	30	0.09	16.66	25.48
	1000	20	0.08	19.6	30.38
	750	15	0.06	20.58	31.36
	500	10	0.05	23.52	36.26
	300	6	0.04	26.46	41.16
150	3	0.03	31.36	49.0	

(1N=0.102kgf)

## Locations of oil plug, etc., and oil capacity

Figure R48-3

Mount	Worm shaft on top	Worm shaft positioned upright	Worm shaft on bottom
Location			
Oil capacity (ℓ)	0.23	0.30	0.20

# Reducer R65

## R65 Dimensions

### RCB type

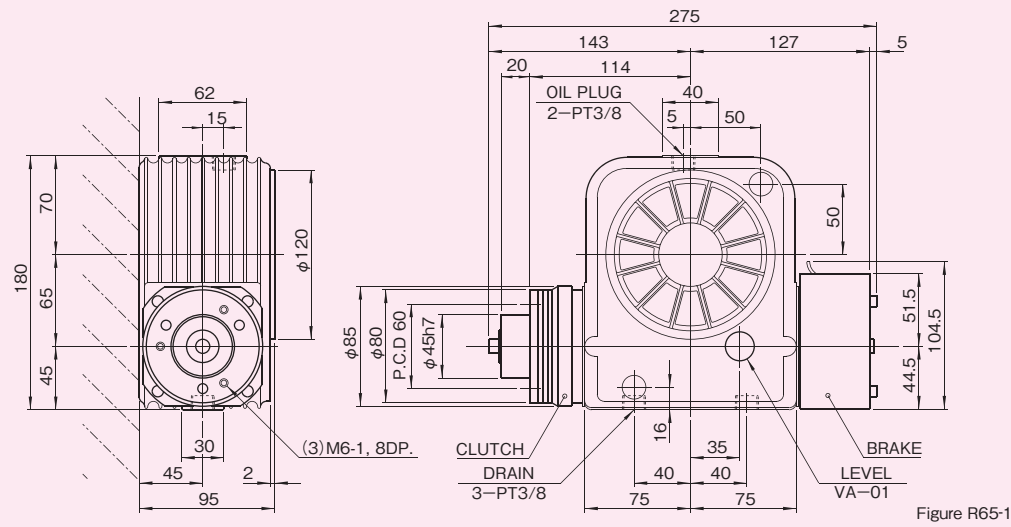


Figure R65-1

### RA type

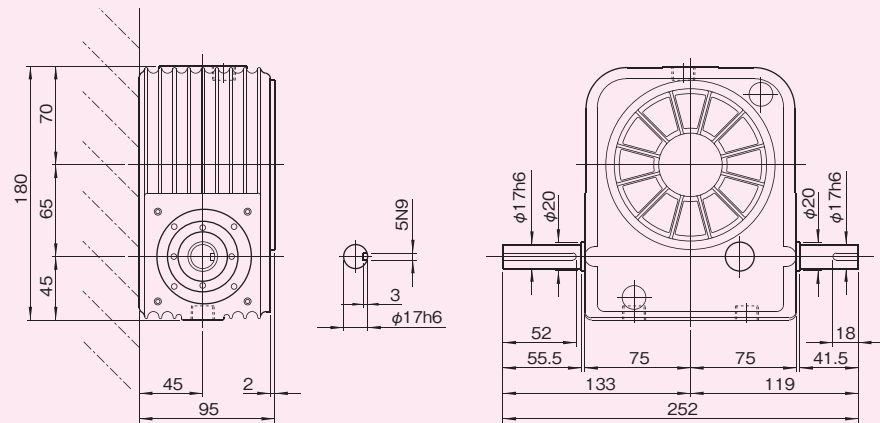


Figure R65-2

To find the dimensions for the clutch only RC type or the brake only RB type, compare figures R65-1 and R65-2.

## R65 Specifications

Table R65-1

Item	Symbol	Unit	R65
Reducer specifications (R65)			
Maximum speed	Nw	rpm	1800
Wheel inertia	C <sub>2</sub>	kg·m <sup>2</sup>	2.43×10 <sup>-3</sup>
Wormshaft inertia	C <sub>3</sub>	kg·m <sup>2</sup>	9.0×10 <sup>-5</sup>
Backlash on wheel shaft	b	degree	(0.12)
Wormshaft frictional torque	T <sub>xw</sub>	N·m	(0.6)
Product Weight		kg	10
Clutch specifications (size 08)			
Static frictional torque	T <sub>sc</sub>	N·m	11
Dynamic frictional torque	T <sub>dc</sub>	N·m	1.0
Stator and rotor weight	W <sub>sc</sub>	kg	0.725
Armature weight	W <sub>ac</sub>	kg	0.1
Rotor inertia	C <sub>4</sub>	kg·m <sup>2</sup>	2.24×10 <sup>-4</sup>
Armature inertia	C <sub>5</sub>	kg·m <sup>2</sup>	1.18×10 <sup>-4</sup>
Rated voltage		V	DC24
Minimum power		W	15
Brake specifications (size 08)			
Static frictional torque	T <sub>sb</sub>	N·m	11
Dynamic frictional torque	T <sub>db</sub>	N·m	10
Stator and rotor weight	W <sub>sb</sub>	kg	0.4
Armature weight	W <sub>ab</sub>	kg	0.1
Armature inertia	C <sub>6</sub>	kg·m <sup>2</sup>	1.18×10 <sup>-4</sup>
Fan inertia	C <sub>7</sub>	kg·m <sup>2</sup>	9.65×10 <sup>-5</sup>
Rated voltage		V	DC24
Minimum power		W	15

### Precautions

1. The values for T<sub>dc</sub> and T<sub>db</sub> (dynamic frictional torque) in the Table of Specifications apply for relative speeds of 100 rpm.

2. Equivalent inertia : J1

$$J1 = \frac{C1 + C2}{i^2} + C3 + C4 + C6 + C7 \quad (1)$$

i ..... Actual gear ratio

C1 ..... Inertia of input shaft (cam shaft)

Table of Input power ratings and Output torque Table R65-2

Nominal gear ratio (Actual gear ratio) i	Input shaft rotating speed rpm	Output shaft rotating speed rpm	Nominal input power rating N <sub>in</sub> kw	Allowable continuous output torque T <sub>av</sub> N·m	Allowable maximum output torque T <sub>max</sub> N·m
5 (5.2)	1800	346	3.55	85.75	210.7
	1500	288	3.05	94.08	230.3
	1000	192	2.35	107.8	279.3
	750	144	2	122.5	318.5
	500	96.2	1.7	151.9	362.6
	300	57.7	1.35	200.9	411.6
10 (10.33)	150	28.8	1.05	303.8	460.6
	60	11.5	0.57	396.9	509.6
	10	1.92	0.105	406.7	539.0
	1800	174	2.1	102.9	225.4
	1500	145	1.9	112.7	245.0
	1000	96.8	1.45	127.4	289.1
20 (20.5)	750	72.6	1.25	147.0	323.4
	500	48.4	1.05	181.3	362.6
	300	29	0.88	240.1	401.8
	150	14.5	0.65	347.9	445.9
	60	5.81	0.285	362.6	485.1
	10	0.968	0.054	377.3	519.4
31.5 (31)	1800	87.8	1.4	132.3	245.0
	1500	73.2	1.3	147.0	259.7
	1000	48.8	1	166.6	303.8
	750	36.6	0.88	191.1	328.3
	500	24.4	0.76	240.1	367.5
	300	14.6	0.54	274.4	396.9
40 (41)	150	7.32	0.31	298.9	416.5
	60	2.93	0.145	333.2	431.2
	10	0.488	0.029	352.8	441.0
	1800	58.1	0.865	112.7	249.9
	1500	48.4	0.79	122.5	269.5
	1000	32.3	0.64	137.2	318.5
50 (51)	750	24.2	0.55	156.8	347.9
	500	16.1	0.46	191.1	392.0
	300	9.68	0.4	259.7	441.0
	150	4.84	0.325	396.9	490.0
	60	1.94	0.15	416.5	519.4
	10	0.323	0.03	431.2	539.0
50 (51)	1800	43.9	0.8	132.3	249.9
	1500	36.6	0.74	147.0	269.5
	1000	24.4	0.59	171.5	318.5
	750	18.3	0.53	205.8	343.0
	500	12.2	0.45	240.1	382.2
	300	7.32	0.345	294.0	411.6
50 (51)	150	3.66	0.21	323.4	421.4
	60	1.46	0.096	347.9	431.2
	10	0.244	0.02	372.4	441.0
	1800	35.3	0.695	137.2	225.4
	1500	29.4	0.64	147.0	240.1
	1000	19.6	0.51	171.5	274.4
50 (51)	750	14.7	0.45	191.1	298.9
	500	9.8	0.38	230.3	328.3
	300	5.88	0.295	289.1	343.0
	150	2.94	0.175	308.7	362.6
	60	1.18	0.078	323.4	377.3
	10	0.196	0.016	338.1	387.1

(1N=0.102kgf)

## Locations of oil plug, etc., and oil capacity

Figure R65-3

Mount	Worm shaft on top	Worm shaft positioned upright	Worm shaft on bottom
Location			
Oil capacity (ℓ)	0.41	0.59	0.27

# Reducer R80

## R80 Dimensions

### RCB type

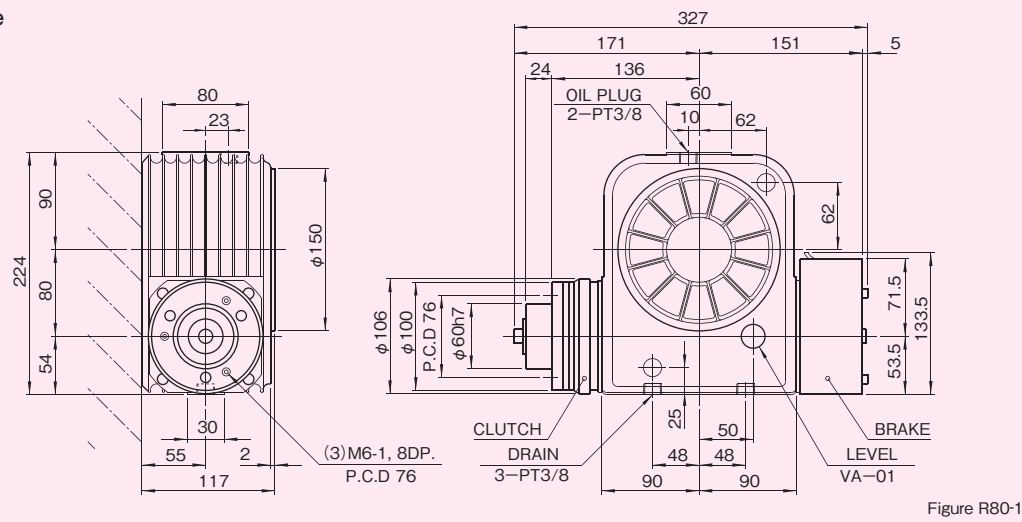


Figure R80-1

### RA type

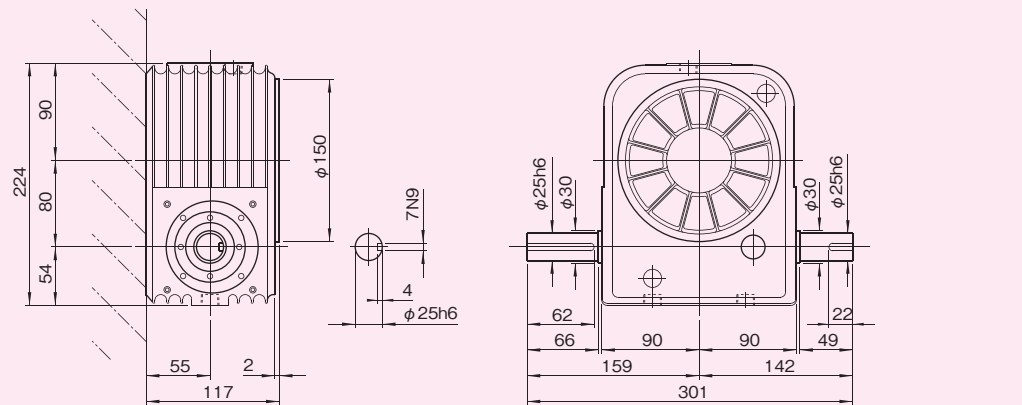


Figure R80-2

To find the dimensions for the clutch only RC type or the brake only RB type, compare figures R80-1 and R80-2.

## R80 Specifications

Table R80-1

Item	Symbol	Unit	R80
Reducer specifications (R80)			
Maximum speed	Nw	rpm	1800
Wheel inertia	C <sub>2</sub>	kg·m <sup>2</sup>	5.32×10 <sup>-3</sup>
Wormshaft inertia	C <sub>3</sub>	kg·m <sup>2</sup>	2.63×10 <sup>-4</sup>
Backlash on wheel shaft	b	degree	(0.1)
Wormshaft frictional torque	T <sub>xw</sub>	N·m	(1.0)
Product Weight		kg	18
Clutch specifications (size 10)			
Static frictional torque	T <sub>sc</sub>	N·m	22
Dynamic frictional torque	T <sub>dc</sub>	N·m	20
Stator and rotor weight	W <sub>sc</sub>	kg	1.26
Armature weight	W <sub>ac</sub>	kg	0.24
Rotor inertia	C <sub>4</sub>	kg·m <sup>2</sup>	6.78×10 <sup>-4</sup>
Armature inertia	C <sub>5</sub>	kg·m <sup>2</sup>	4.78×10 <sup>-4</sup>
Rated voltage		V	DC24
Minimum power		W	20
Brake specifications (size 10)			
Static frictional torque	T <sub>sb</sub>	N·m	22
Dynamic frictional torque	T <sub>db</sub>	N·m	20
Stator and rotor weight	W <sub>sb</sub>	kg	0.67
Armature weight	W <sub>ab</sub>	kg	0.24
Armature inertia	C <sub>6</sub>	kg·m <sup>2</sup>	4.78×10 <sup>-4</sup>
Fan inertia	C <sub>7</sub>	kg·m <sup>2</sup>	2.95×10 <sup>-4</sup>
Rated voltage		V	DC24
Minimum power		W	20

### Precautions

1. The values for T<sub>dc</sub> and T<sub>db</sub> (dynamic frictional torque) in the Table of Specifications apply for relative speeds of 100 rpm.

2. Equivalent inertia : J<sub>1</sub>

$$J_1 = \frac{C_1 + C_2}{i^2} + C_3 + C_4 + C_6 + C_7 \quad (1)$$

i ..... Actual gear ratio

C<sub>1</sub> ..... Inertia of input shaft (cam shaft)

Table of Input power ratings and Output torque Table R80-2

Nominal gear ratio (Actual gear ratio i)	Input shaft rotating speed rpm	Output shaft rotating speed rpm	Nominal input power rating N <sub>ix</sub> kw	Allowable continuous output torque T <sub>av</sub> N·m	Allowable maximum output torque T <sub>max</sub> N·m
5 (4.8)	1800	375	5.45	127.4	357.7
	1500	313	4.85	137.2	396.9
	1000	208	3.75	156.8	480.2
	750	156	3.1	176.4	558.6
	500	104	2.55	215.6	646.8
	300	62.5	2.05	279.3	735.0
	150	31.5	1.6	426.3	833.0
	60	12.5	1.1	705.6	882.0
	10	2.08	0.205	744.8	911.4
	10 (10.33)	1800	174	3.35	166.6
1500		145	3.05	181.3	450.8
1000		96.8	2.35	210.7	539.0
750		72.6	2.05	235.2	597.8
500		48.4	1.65	284.2	676.2
300		29	1.35	377.3	764.4
150		14.5	1.1	597.8	852.6
60		5.81	0.51	656.6	921.2
10		0.968	0.094	676.2	940.8
20 (20.5)		1800	87.8	2.1	196.0
	1500	73.2	1.95	220.5	431.2
	1000	48.8	1.5	249.9	519.4
	750	36.6	1.35	289.1	568.4
	500	24.4	1.1	357.7	637.0
	300	14.6	0.91	465.5	715.4
	150	7.32	0.57	558.6	735.0
	60	2.93	0.27	617.4	744.8
	10	0.488	0.052	646.8	754.6
	31.5 (31)	1800	58.1	1.35	176.4
1500		48.4	1.25	196.0	480.2
1000		32.3	1	230.3	568.4
750		24.2	0.87	254.8	637.0
500		16.1	0.73	308.7	735.0
300		9.68	0.61	406.7	832.2
150		4.84	0.51	646.8	931.0
60		1.94	0.255	735.0	960.4
10		0.323	0.052	764.4	960.4
40 (41)		1800	43.9	1.25	210.7
	1500	36.6	1.15	230.3	445.9
	1000	24.4	0.89	259.7	529.2
	750	18.3	0.78	294.0	588.0
	500	12.2	0.65	357.7	666.4
	300	7.32	0.56	470.4	725.2
	150	3.66	0.355	568.4	744.8
	60	1.46	0.18	646.8	754.6
	10	0.244	0.036	676.2	764.4
	50 (51)	1800	35.3	1.05	215.6
1500		29.4	1	249.9	411.6
1000		19.6	0.81	284.2	475.3
750		14.7	0.71	318.5	529.2
500		9.8	0.6	392.0	597.8
300		5.88	0.43	436.1	617.4
150		2.94	0.28	529.2	646.8
60		1.18	0.135	578.2	666.4
10		0.196	0.027	607.6	686.0

(1N=0.102kgf)

## Locations of oil plug, etc., and oil capacity

Figure R80-3

Mount	Worm shaft on top	Worm shaft positioned upright	Worm shaft on bottom
Location			
Oil capacity (ℓ)	0.71	0.87	0.45

# Reducer R100

## R100 Dimensions

### RCB type

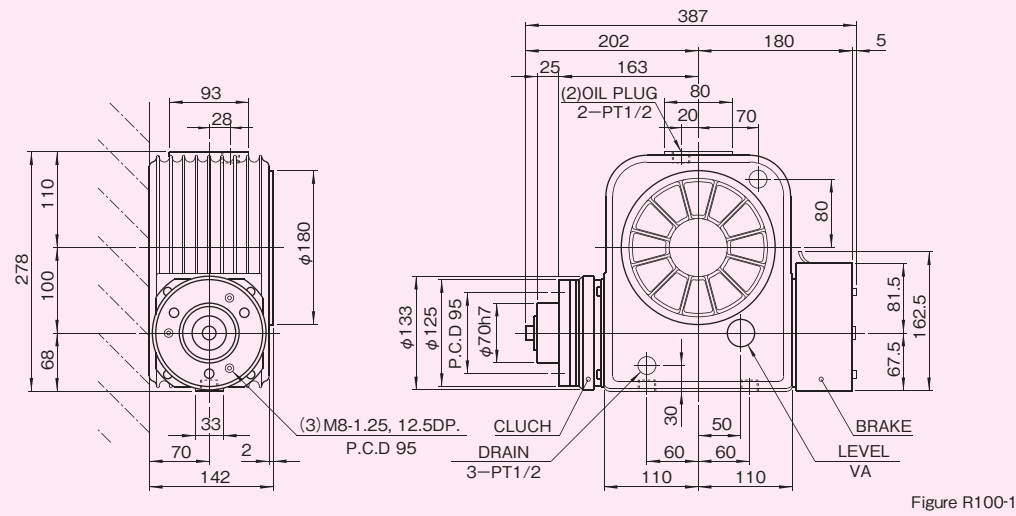


Figure R100-1

### RA type

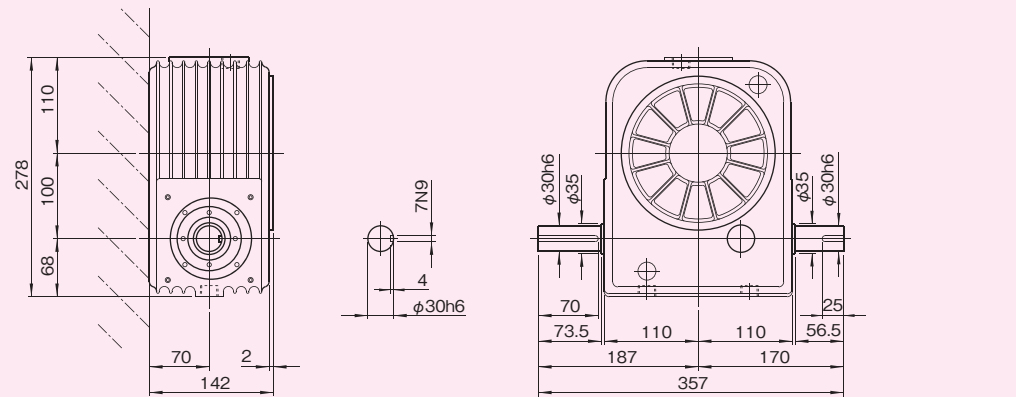


Figure R100-2

To find the dimensions for the clutch only RC type or the brake only RB type, compare figures R100-1 and R100-2.

## R100 Specifications

Table R100-1

Item	Symbol	Unit	R100
Reducer specifications (R100)			
Maximum speed	Nw	rpm	1800
Wheel inertia	C <sub>2</sub>	kg·m <sup>2</sup>	1.73×10 <sup>-2</sup>
Wormshaft inertia	C <sub>3</sub>	kg·m <sup>2</sup>	6.68×10 <sup>-4</sup>
Backlash on wheel shaft	b	degree	(0.09)
Wormshaft frictional torque	T <sub>xw</sub>	N·m	(1.5)
Product Weight		kg	30
Clutch specifications (size 12)			
Static frictional torque	T <sub>sc</sub>	N·m	45
Dynamic frictional torque	T <sub>dc</sub>	N·m	40
Stator and rotor weight	W <sub>sc</sub>	kg	2.3
Armature weight	W <sub>ac</sub>	kg	0.46
Rotor inertia	C <sub>4</sub>	kg·m <sup>2</sup>	2.14×10 <sup>-3</sup>
Armature inertia	C <sub>5</sub>	kg·m <sup>2</sup>	1.31×10 <sup>-3</sup>
Rated voltage		V	DC24
Minimum power		W	25
Brake specifications (size 12)			
Static frictional torque	T <sub>sb</sub>	N·m	45
Dynamic frictional torque	T <sub>db</sub>	N·m	40
Stator and rotor weight	W <sub>sb</sub>	kg	1.22
Armature weight	W <sub>ab</sub>	kg	0.46
Armature inertia	C <sub>6</sub>	kg·m <sup>2</sup>	1.31×10 <sup>-3</sup>
Fan inertia	C <sub>7</sub>	kg·m <sup>2</sup>	8.35×10 <sup>-4</sup>
Rated voltage		V	DC24
Minimum power		W	25

### Precautions

1. The values for T<sub>dc</sub> and T<sub>db</sub> (dynamic frictional torque) in the Table of Specifications apply for relative speeds of 100 rpm.

2. Equivalent inertia : J1

$$J1 = \frac{C1+C2}{i^2} + C3+C4+C6+C7 \quad (1)$$

i ..... Actual gear ratio

C1..... Inertia of input shaft (cam shaft)

Table of Input power ratings and Output torque Table R100-2

Nominal gear ratio (Actual gear ratio i)	Input shaft rotating speed rpm	Output shaft rotating speed rpm	Nominal input power rating N <sub>ix</sub> kw	Allowable continuous output torque T <sub>av</sub> N·m	Allowable maximum output torque T <sub>max</sub> N·m
5 (4.8)	1800	375	14.6	346.92	710.5
	1500	313	12.9	367.5	774.2
	1000	208	10.4	441.0	960.4
	750	156	8.0	457.66	1078.0
	500	104	5.7	490.0	1274.0
	300	62.5	4.1	563.5	1470.0
	150	31.5	2.8	759.5	1715.0
	60	12.5	1.7	1102.5	1911.0
	10	2.08	0.3	1183.84	2009.0
	10 (10.33)	1800	174	7.5	371.42
1500		145	6.8	408.66	803.6
1000		96.8	6.0	539.0	980.0
750		72.6	5.1	595.84	1127.0
500		48.4	3.7	644.84	1274.0
300		29	2.7	751.66	1470.0
150		14.5	1.7	980.0	1715.0
60		5.81	0.8	1021.16	1813.0
10		0.968	0.1	1061.34	1813.0
20 (20.5)		1800	87.8	4.2	403.76
	1500	73.2	4.0	448.84	823.2
	1000	48.8	3.7	571.34	980.0
	750	36.6	3.0	661.5	1127.0
	500	24.4	2.1	693.84	1225.0
	300	14.6	1.4	735.0	1274.0
	150	7.32	0.9	857.5	1372.0
	60	2.93	0.4	898.66	1470.0
	10	0.488	0.07	980.0	1519.0
	31.5 (31)	1800	58.1	3.7	497.84
1500		48.4	3.3	531.16	882.0
1000		32.3	2.7	629.16	1078.0
750		24.2	2.1	644.84	1225.0
500		16.1	1.6	686.0	1372.0
300		9.68	1.2	800.66	1617.0
150		4.84	0.8	1102.5	1813.0
60		1.94	0.4	1183.84	1862.0
10		0.323	0.07	1225.0	1862.0
40 (41)		1800	43.9	2.7	465.5
	1500	36.6	2.5	506.66	862.4
	1000	24.4	2.1	644.84	1029.0
	750	18.3	1.8	710.5	1127.0
	500	12.2	1.3	751.66	1274.0
	300	7.32	0.9	791.84	1372.0
	150	3.66	0.6	938.84	1421.0
	60	1.46	0.3	1021.16	1470.0
	10	0.244	0.05	1061.34	1519.0
	50 (51)	1800	36	2.1	428.26
1500		30	1.9	465.5	764.4
1000		20	1.7	588.0	921.2
750		15	1.4	620.34	1029.0
500		10	1.0	644.84	1127.0
300		6	0.7	727.16	1176.0
150		3	0.4	816.34	1225.0
60		1.2	0.2	898.66	1274.0
10		0.2	0.04	938.84	1323.0

(1N=0.102kgf)

## Locations of oil plug, etc., and oil capacity

Figure R100-3

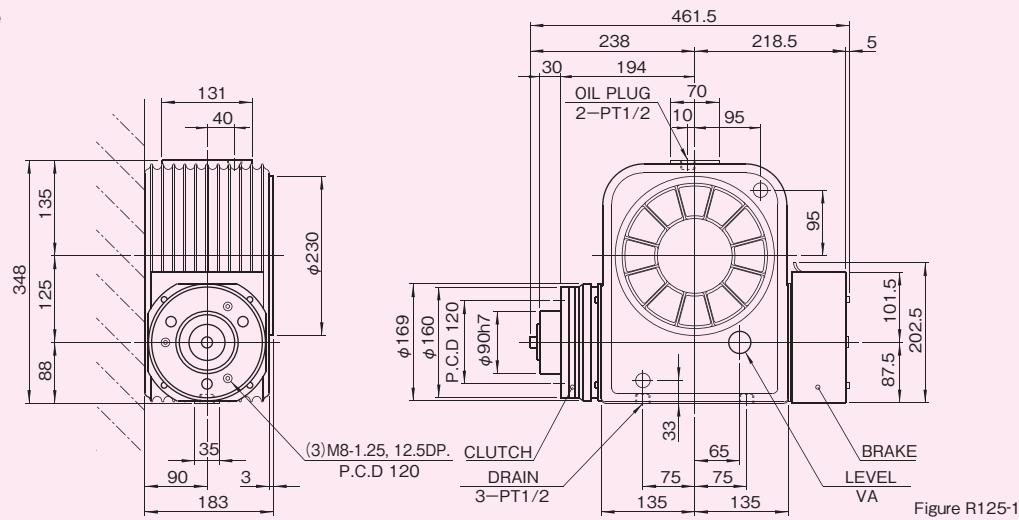
Mount	Worm shaft on top	Worm shaft positioned upright	Worm shaft on bottom
Location			
Oil capacity (ℓ)	1.34	1.73	0.80



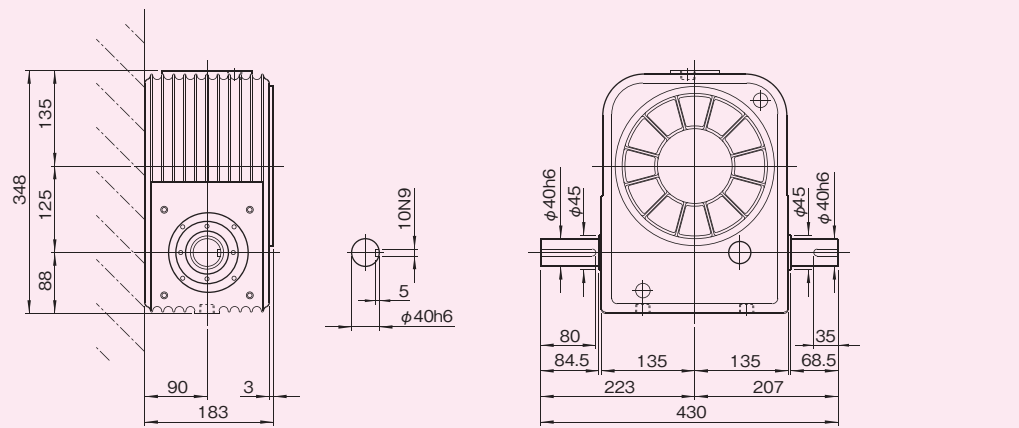
# Reducer R125

## R125 Dimensions

### RCB type



### RA type



To find the dimensions for the clutch only RC type or the brake only RB type, compare figures R125-1 and R125-2.

## R125 Specifications

Table R125-1

Item	Symbol	Unit	R125
Reducer specifications (R125)			
Maximum speed	Nw	rpm	1800
Wheel inertia	C <sub>2</sub>	kg·m <sup>2</sup>	5.5×10 <sup>-2</sup>
Wormshaft inertia	C <sub>3</sub>	kg·m <sup>2</sup>	2.09×10 <sup>-3</sup>
Backlash on wheel shaft	b	degree	(0.08)
Wormshaft frictional torque	T <sub>xw</sub>	N·m	(2.2)
Product Weight		kg	45
Clutch specifications (size 16)			
Static frictional torque	T <sub>sc</sub>	N·m	90
Dynamic frictional torque	T <sub>dc</sub>	N·m	80
Stator and rotor weight	W <sub>sc</sub>	kg	4.2
Armature weight	W <sub>ac</sub>	kg	0.9
Rotor inertia	C <sub>4</sub>	kg·m <sup>2</sup>	6.3×10 <sup>-3</sup>
Armature inertia	C <sub>5</sub>	kg·m <sup>2</sup>	4.8×10 <sup>-3</sup>
Rated voltage		V	DC24
Minimum power		W	35
Brake specifications (size 16)			
Static frictional torque	T <sub>sb</sub>	N·m	90
Dynamic frictional torque	T <sub>db</sub>	N·m	80
Stator and rotor weight	W <sub>sb</sub>	kg	2.25
Armature weight	W <sub>ab</sub>	kg	0.9
Armature inertia	C <sub>6</sub>	kg·m <sup>2</sup>	4.8×10 <sup>-3</sup>
Fan inertia	C <sub>7</sub>	kg·m <sup>2</sup>	2.5×10 <sup>-3</sup>
Rated voltage		V	DC24
Minimum power		W	35

### Precautions

1. The values for T<sub>dc</sub> and T<sub>db</sub> (dynamic frictional torque) in the Table of Specifications apply for relative speeds of 100 rpm.

2. Equivalent inertia : J<sub>1</sub>

$$J_1 = \frac{C_1 + C_2}{i^2} + C_3 + C_4 + C_6 + C_7 \quad (1)$$

i ..... Actual gear ratio

C<sub>1</sub> ..... Inertia of input shaft (cam shaft)

Table of Input power ratings and Output torque Table R125-2

Nominal gear ratio (Actual gear ratio i)	Input shaft rotating speed rpm	Output shaft rotating speed rpm	Nominal input power rating N <sub>is</sub> kw	Allowable continuous output torque T <sub>av</sub> N·m	Allowable maximum output torque T <sub>max</sub> N·m
5 (4.8)	1800	375	23.3	553.66	1176.0
	1500	313	20.8	595.84	1323.0
	1000	208	17.5	750.68	1666.0
	750	156	13.7	767.34	1911.0
	500	104	9.6	808.5	2303.0
10 (10.33)	300	62.5	6.7	938.84	2744.0
	150	31.5	4.6	1271.06	3234.0
	60	12.5	3.1	2041.34	3724.0
	10	2.08	0.6	2205.0	4018.0
	20 (20.5)	1800	174	12.5	629.16
1500		145	11.7	693.84	1421.0
1000		96.8	10.4	938.84	1764.0
750		72.6	8.7	1021.16	2009.0
500		48.4	6.2	1102.5	2352.0
31.5 (31)	300	29	4.4	1266.16	2744.0
	150	14.5	3.0	1673.84	3185.0
	60	5.81	1.5	1960.0	3675.0
	10	0.968	0.3	2041.34	3675.0
	1800	87.8	7.2	697.76	1323.0
1500		73.2	6.8	791.84	1470.0
1000		48.8	6.0	1021.16	1813.0
750		36.6	5.4	1102.5	2009.0
500		24.4	4.0	1347.5	2352.0
300	14.6	2.6	1388.66	2548.0	
	150	7.32	1.5	1551.34	2744.0
	60	2.93	0.8	1837.5	2940.0
	10	0.488	0.1	1918.84	2989.0
	1800	60	6.4	816.34	1421.0
1500		50	5.7	898.66	1568.0
1000		33.3	4.6	1061.34	1911.0
750		25	3.6	1102.5	2205.0
500		16.7	2.7	1143.66	2548.0
300	10	2.0	1347.5	2989.0	
	150	5	1.4	1756.16	3528.0
	60	2	0.8	2246.16	3724.0
	10	0.333	0.2	2450.0	3773.0
	1800	43.9	4.6	812.42	1421.0
1500		36.6	4.2	898.66	1568.0
1000		24.4	3.7	1143.66	1862.0
750		18.3	3.2	1306.34	2107.0
500		12.2	2.4	1388.66	2450.0
300	7.32	1.7	1511.16	2744.0	
	150	3.66	1.0	1715.0	2891.0
	60	1.46	0.5	2001.16	2989.0
	10	0.244	0.1	2082.5	3038.0
	1800	36	3.5	731.08	1225.0
1500		30	3.2	808.5	1372.0
1000		20	2.8	1026.06	1666.0
750		15	2.5	1183.84	1911.0
500		10	1.8	1225.0	2156.0
300	6	1.2	1347.5	2303.0	
	150	3	0.8	1551.34	2450.0
	60	1.2	0.4	1756.16	2597.0
	10	0.2	0.07	1796.34	2646.0

(1N=0.102kgf)

## Locations of oil plug, etc., and oil capacity

Figure R125-3

Mount	Worm shaft on top	Worm shaft positioned upright	Worm shaft on bottom
Location			
Oil capacity (ℓ)	2.66	3.50	1.79

# Reducer R160

## R160 Dimensions

### RCB type

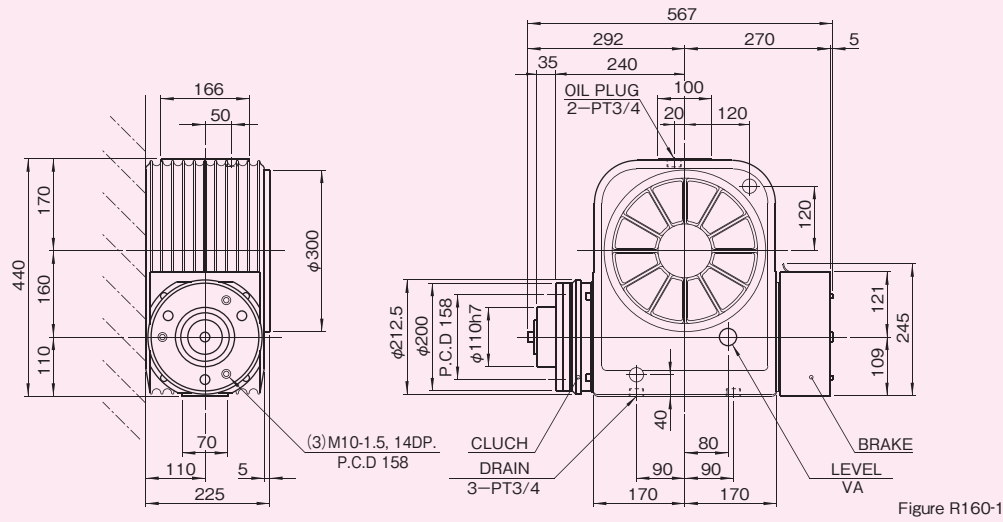


Figure R160-1

### RA type

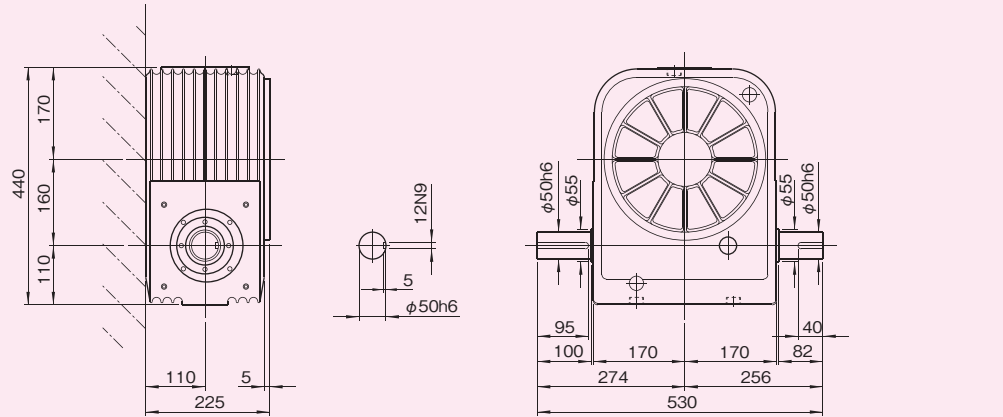


Figure R160-2

To find the dimensions for the clutch only RC type or the brake only RB type, compare figures R160-1 and R160-2.

## R160 Specifications

Table R160-1

Item	Symbol	Unit	R160
Reducer specifications (R160)			
Maximum speed	Nw	rpm	1800
Wheel inertia	C <sub>2</sub>	kg·m <sup>2</sup>	0.22
Wormshaft inertia	C <sub>3</sub>	kg·m <sup>2</sup>	6.05×10 <sup>-3</sup>
Backlash on wheel shaft	b	degree	(0.07)
Wormshaft frictional torque	T <sub>xw</sub>	N·m	(3.0)
Product Weight		kg	100
Clutch specifications (size 20)			
Static frictional torque	T <sub>sc</sub>	N·m	175
Dynamic frictional torque	T <sub>dc</sub>	N·m	160
Stator and rotor weight	W <sub>sc</sub>	kg	7.5
Armature weight	W <sub>ac</sub>	kg	1.8
Rotor inertia	C <sub>4</sub>	kg·m <sup>2</sup>	1.93×10 <sup>-2</sup>
Armature inertia	C <sub>5</sub>	kg·m <sup>2</sup>	1.37×10 <sup>-2</sup>
Rated voltage		V	DC24
Minimum power		W	45
Brake specifications (size 20)			
Static frictional torque	T <sub>sb</sub>	N·m	175
Dynamic frictional torque	T <sub>db</sub>	N·m	160
Stator and rotor weight	W <sub>sb</sub>	kg	4.1
Armature weight	W <sub>ab</sub>	kg	1.8
Armature inertia	C <sub>6</sub>	kg·m <sup>2</sup>	1.37×10 <sup>-2</sup>
Fan inertia	C <sub>7</sub>	kg·m <sup>2</sup>	9.25×10 <sup>-3</sup>
Rated voltage		V	DC24
Minimum power		W	45

### Precautions

1. The values for T<sub>dc</sub> and T<sub>db</sub> (dynamic frictional torque) in the Table of Specifications apply for relative speeds of 100 rpm.

2. Equivalent inertia : J<sub>1</sub>

$$J_1 = \frac{C_1 + C_2}{i^2} + C_3 + C_4 + C_6 + C_7 \quad (1)$$

i ..... Actual gear ratio

C<sub>1</sub> ..... Inertia of input shaft (cam shaft)

Table of Input power ratings and Output torque Table R160-2

Nominal gear ratio (Actual gear ratio) i	Input shaft rotating speed rpm	Output shaft rotating speed rpm	Nominal input power rating N <sub>ix</sub> kw	Allowable continuous output torque T <sub>ix</sub> N·m	Allowable maximum output torque T <sub>max</sub> N·m
5 (4.8)	1800	375	41.6	980.0	1871.8
	1500	313	36.6	1058.4	2077.6
	1000	208	29.5	1264.2	2646.0
	750	156	23.3	1303.4	3057.6
	500	104	16.2	1381.8	3675.0
	300	62.5	11.2	1548.4	4488.4
10 (10.33)	1800	174	22.5	1097.6	1999.2
	1500	145	20.4	1225.0	2205.0
	1000	96.8	18.3	1626.8	2773.4
	750	72.6	14.5	1715.0	3185.0
	500	48.4	10.4	1871.8	3792.6
	300	29	7.3	2116.8	4566.8
20 (20.5)	1800	87.8	12.9	1264.2	2156.0
	1500	73.2	12.0	1421.0	2361.8
	1000	48.8	10.8	1832.6	2940.0
	750	36.6	9.5	2116.8	3302.6
	500	24.4	6.8	2283.4	3831.8
	300	14.6	4.9	2646.0	4165.0
31.5 (31)	1800	58.1	11.25	1548.4	2322.6
	1500	48.4	10	1626.8	2528.4
	1000	32.3	7.5	1832.6	3096.8
	750	24.2	6	1991.0	3508.4
	500	16.1	4.4	1999.2	4243.4
	300	9.68	3.1	2283.4	5056.8
40 (41)	1800	43.9	8.3	1509.2	2205.0
	1500	36.6	7.5	1626.8	2450.0
	1000	24.4	6.7	2116.8	3057.6
	750	18.3	5.4	2205.0	3508.4
	500	12.2	4	2361.8	4076.8
	300	7.32	3	2812.6	4566.8
50 (51)	1800	36	6.1	1347.5	2038.4
	1500	30	5.8	1470.0	2244.2
	1000	20	5.1	1911.0	2773.4
	750	15	4.6	2244.2	3136.0
	500	10	3.4	2401.0	3586.8
	300	6	2.3	2695.0	3831.8
150	3	1.5	3057.6	4076.8	
60	1.2	0.73	3430.0	4243.4	
10	0.2	0.15	3547.6	4321.8	

(1N=0.102kgf)

## Locations of oil plug, etc., and oil capacity

Figure R160-3

Mount	Worm shaft on top	Worm shaft positioned upright	Worm shaft on bottom
Location			
Oil capacity (ℓ)	4.85	6.46	3.46