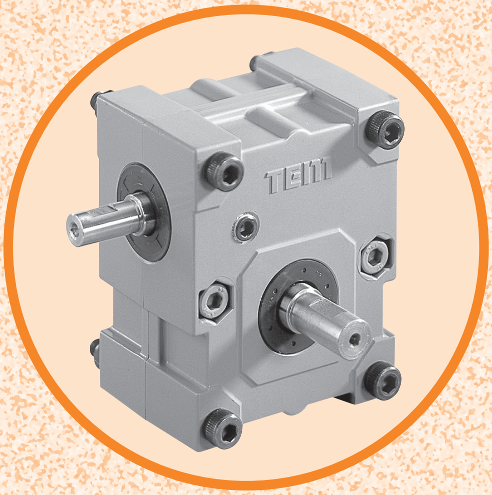
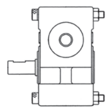
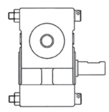
Worm Power Drive

High Balance Cylindrical Worm Gear

TM / TM-GCE Series



Model Number Designation

Series		Size	Series	Reduction Ratio	Input shaft	Shaft Arrangement	Motor kW	Motor Specifications
TM Series								
Without motor	TM	10	E	20		A		
Without motor (Double input shaft)	TM	13	E	50	-1-1-	B		
TM-GCE Series								
With motor	TM	16	GCE	30		C	040	S
With motor (Double input shaft)	TM	22	GCE	10	-1-1-	B	075	SX
		10 13 16 22	Without motor E With motor GCE	10 20 30 40 50 60	Single input shaft (leave blank) Double input shaft -1-1-	A: The input shaft is positioned above the output shaft. Looking at the input shaft, the output shaft is on the left side.  B: From the same position, the output shaft is on the right side.  C: From the same position, the output shaft is on both sides.	0.1 kW: 010 0.2 kW: 020 0.4 kW: 040 0.75 kW: 075	S Ship with standard motor mounted. SB Ship with standard motor with brake mounted. SX Ship with customer-supplied motor mounted. Y Customer to mount motor.

Note 1) TM Series with single input and single output shafts are stock items.
2) Allow one week for delivery for the TM Series with double input and double output shafts, and for all TM-GCE Series.

Motor and Reduction Ratio Combinations

Motor kW \ Reduction Ratio	10	20	30	40	50	60
0.1 kW						
0.2 kW				16GCE	16GCE	16GCE
0.4 kW	16GCE	16GCE	16GCE	22GCE	22GCE	22GCE
0.75 kW	22GCE	22GCE	22GCE			

1) For combinations in ☐ colored boxes, select from the Croise motor series. Refer to page 198.
2) Motor flanges in stock for model 16GCE with 0.75 kW, and 22GCE with 1.5 kw motor.
3) The standard motor is a flange motor (with or without a brake). Contact us for non-standard motors.

Specifications

Mounting direction	Mounts on any side.
Paint color	Munsell 2.5G6/3
Keyway	Old JIS (B1301-1959) flat key included. (D cut on models TM10 and TM13) * If the shaft type is double input or double output, the keyway may not be in the same phase. Contact us if the phases must be matched.
Actual reduction ratio	Reduction ratios for TM/TM-GCE series are all actual.

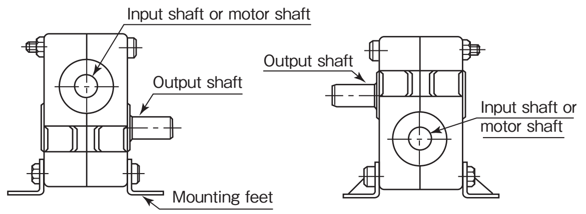
Handling

Usage Tips

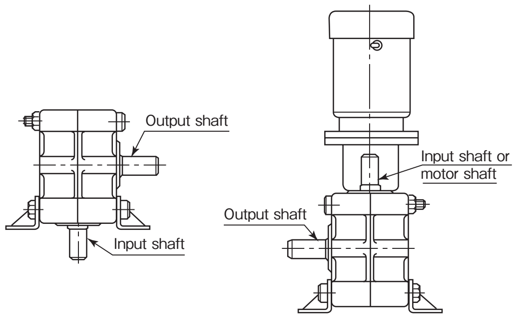
1. Mounting with standard feet

Loosen two of the four hex cap bolts and promptly attach the supplied feet.
(Feet sold separately for TM22E)

■ Standard feet-mount examples



Upright (use span A on housing)



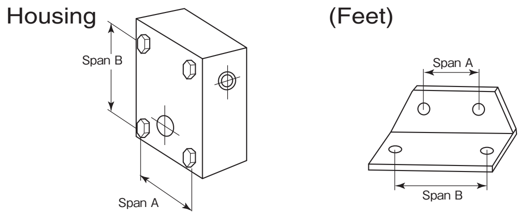
Horizontal (use span B on housing)

Bolt sizes and tightening torque

Size	Bolt size (mm)	Tightening torque N·m (kgf·m)
TM10E	4-M 6 x 60	4.9 to 5.9 (0.50 to 0.60)
TM13E	4-M 8 x 80	12 to 14 (1.2 to 1.4)
TM16E	4-M10 x 90	24 to 27 (2.4 to 2.7)
TM22E	2-M10 x 100	24 to 27 (2.4 to 2.7)
	2-M10 x 120	24 to 27 (2.4 to 2.7)

Pitch width Units: mm

Size	Span A	Span B
TM10E	57	76
TM13E	71	96
TM16E	88	111
TM22E	115	150

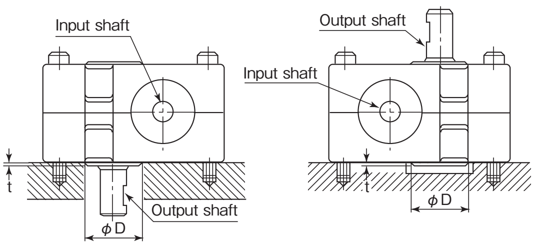


2. Mounting directly (flange mounting)

When mounting the reducer directly to the floor or wall, take note of the following:

(1) The oil seal and cap protrude about 1 mm from the mounting surface. Make sure to leave at least 1 mm of clearance between the reducer and mounting surface.

(2) After removing the four mounting bolts, promptly install the reducer.
Handle with care to prevent lubrication oil from leaking.



Model No.	D	t
TM10E	30	1
TM13E	35	1
TM16E	35	1
TM22E	72	0.5

3. When mounting a sprocket on the shaft

Do not apply excessive shock to the shaft. Doing so may damage the bearings.

4. Reducer temperature and lubrication

(1) Reducers are shipped filled with Mobile Cylinder Oil 600W and should be used as is. The reducer may generate heat during the first two or three days of operation. This is expected and is not a problem. However, if the housing temperature exceeds 93°C, it could indicate an undersized reducer or low oil level. Stop operation and inspect immediately.

(2) Contact us if the reducer is to be used in ambient temperatures below 5°C or above 40°C.

Sizing

Procedures

1. Determine the service factor based on the total hours of operation per day, load characteristics, and start/stop frequency.
2. For service conditions indicated in the ▭ boxes, use the Quick Sizing Chart instead of selecting by motor kW.
3. If the reducer is to be driven slower than 500 r/min, base your selection on the output torque in the Transfer Capacity table.
4. For service conditions that fall outside the ▭ boxes, calculate the compensation kW (or compensation load torque).

Compensation kW (or compensation load torque) = Motor kW (or load torque) x service factor

5. From the Transfer Capacity table, select the size that satisfies the compensation kW or compensation torque.
   If the reducer is to be driven slower than 100 r/min, select from the output torque column for 100 r/min.
6. Use formula 2 to check that the expected radial load on the output shaft is within the allowable radial load (page 178) of the size selected above.

$$\text{Allowable radial load} \geq \frac{T \times f \times Lf}{R} \quad \text{. . . Formula 2}$$

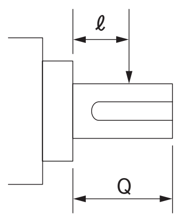
T: Compensation torque N·m (kgf·m),
f: OHL factor, Lf: Point of load factor
R: Pitch radius (m) of sprockets, and pulleys

Note) If using a belt, take initial belt tension into account when considering the radial load.

• **Service factor**

Load characteristics \ Operating hours (per day)	0.5		2		10		24	
Uniform load						(1.25)	1.25	(1.5)
Loads with moderate shock				(1.25)	1.25	(1.5)	1.5	(1.75)
Loads with heavy shock		(1.25)	1.25	(1.5)	1.5	(1.75)	1.75	(2.0)

Note 1) Use the value in ( ) above if the start/stop frequency is more than 10 times/hour.
2) Contact us if the start/stop frequency is more than 10 times/hour using a servo motor.



OHL Factor (f)

Chain	1.0
Gears, toothed belt	1.25
V belt, heavy duty toothed belt	1.5

Point of action factor (Lf)

When ℓ ≤ Q/2··Lf=1
When ℓ > Q/2··Lf=2 ℓ/Q

Quick Sizing Chart

Input r/min	Reduction Ratio	Motor kW 0.065	0.09	0.1	0.2	0.4	0.75
1750	10	10E	10E	10E	10E	13E	22E
	20	10E	10E	10E	13E	16E	22E
	30	10E	10E	10E	13E	22E	**EWJ50**
	40	10E	10E	10E	13E	22E	**EWJ63**
	50	10E	13E	13E	16E	22E	**EWJ63**
	60	10E	13E	13E	16E	22E	**EWJ63**
1450	10	10E	10E	10E	10E	13E	22E
	20	10E	10E	10E	13E	16E	22E
	30	10E	10E	10E	13E	22E	**EWJ50**
	40	10E	10E	13E	16E	22E	**EWJ63**
	50	10E	13E	13E	16E	22E	**EWJ63**
	60	13E	13E	13E	16E	22E	**EWJ63**
1150	10	10E	10E	10E	10E	13E	22E
	20	10E	10E	10E	13E	16E	22E
	30	10E	10E	10E	13E	22E	**EWJ63**
	40	10E	13E	13E	16E	22E	**EWJ63**
	50	10E	13E	13E	16E	22E	**EWJ63**
	60	13E	13E	13E	16E	22E	**EWJ70**
950	10	10E	10E	10E	13E	16E	22E
	20	10E	10E	10E	13E	22E	22E
	30	10E	13E	13E	16E	22E	**EWJ63**
	40	10E	13E	13E	16E	22E	**EWJ63**
	50	13E	13E	13E	16E	22E	**EWJ63**
	60	13E	13E	13E	22E	**EWJ63**	**EWJ70**
500	10	10E	10E	10E	13E	16E	22E
	20	10E	13E	13E	16E	22E	**EWJ63**
	30	13E	13E	13E	16E	22E	**EWJ70**
	40	13E	13E	16E	22E	**EWJ63**	**EWJ70**
	50	13E	16E	16E	22E	**EWJ63**	**EW80**
	60	13E	16E	16E	22E	**EWJ70**	**EW100**

* If the size you arrive at is a TM22E or larger, we recommend our EW/EWJ Series.

Moment of Inertia on Input Shaft

TM Series × 10^{-3} kg·m² (× 10^{-3} kgf·m²)

Size	1/10	1/20	1/30	1/40	1/50	1/60
10E	0.005 (0.02)	0.005 (0.02)	0.005 (0.02)	0.005 (0.02)	0.005 (0.02)	0.004 (0.02)
13E	0.01 (0.05)	0.01 (0.05)	0.01 (0.05)	0.01 (0.05)	0.01 (0.05)	0.01 (0.04)
16E	0.02 (0.10)	0.02 (0.10)	0.02 (0.10)	0.02 (0.09)	0.02 (0.09)	0.02 (0.08)
22E	0.11 (0.43)	0.10 (0.41)	0.10 (0.39)	0.09 (0.37)	0.09 (0.35)	0.08 (0.33)

TM-GCE Series (including motor) × 10^{-3} kg·m² (× 10^{-3} kgf·m²)

Size	1/10		1/20		1/30	
16GCE	0.4 kW	16.1 (4.02)	0.4 kW	16.1 (4.02)	0.2 kW	7.28 (1.82)
22GCE	0.75 kW	30.6 (7.63)	0.75 kW	30.5 (7.61)	0.4 kW	17.3 (4.31)
					0.75 kW	30.4 (7.59)
Size	**1/40**		**1/50**		**1/60**	
16GCE	0.2 kW	7.24 (1.81)	0.2 kW	7.24 (1.81)	0.2 kW	7.20 (1.80)
22GCE	0.4 kW	17.2 (4.29)	0.4 kW	17.1 (4.27)	0.4 kW	17.0 (4.25)

Transfer Capacity Table

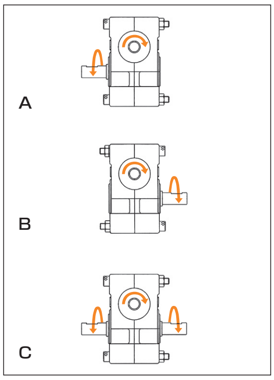
Size	Reduction Ratio	1750 r/min Input kW	1750 r/min Output torque N·m (kgf·m)	1750 r/min Allowable Radial Load on Output N (kgf)	1450 r/min Input kW	1450 r/min Output torque N·m (kgf·m)	1450 r/min Allowable Radial Load on Output N (kgf)	1150 r/min Input kW	1150 r/min Output torque N·m (kgf·m)	1150 r/min Allowable Radial Load on Output N (kgf)
10E	10	0.187	8.53 (0.87)	427 (43.6)	0.176	9.51 (0.97)	473 (48.3)	0.166	11.2 (1.14)	520 (53.1)
	20	0.127	10.6 (1.08)	636 (64.9)	0.121	12.0 (1.22)	687 (70.1)	0.104	12.7 (1.30)	738 (75.3)
	30	0.091	10.1 (1.03)	784 (80.0)	0.088	11.5 (1.17)	850 (86.7)	0.082	13.0 (1.33)	916 (93.5)
	40	0.081	11.1 (1.13)	880 (89.8)	0.076	12.2 (1.24)	944 (96.3)	0.064	12.5 (1.28)	944 (96.3)
	50	0.069	11.1 (1.13)	944 (96.3)	0.062	11.6 (1.18)	944 (96.3)	0.052	11.9 (1.21)	944 (96.3)
	60	0.058	10.4 (1.06)	944 (96.3)	0.051	10.8 (1.10)	944 (96.3)	0.044	11.2 (1.14)	944 (96.3)
13E	10	0.375	17.2 (1.76)	432 (44.1)	0.352	19.4 (1.98)	461 (47.0)	0.331	22.6 (2.31)	489 (49.9)
	20	0.253	21.4 (2.18)	671 (68.5)	0.237	23.7 (2.42)	718 (73.3)	0.224	27.7 (2.83)	765 (78.1)
	30	0.181	20.5 (2.09)	837 (85.4)	0.176	23.5 (2.40)	895 (91.3)	0.165	27.0 (2.75)	954 (97.3)
	40	0.161	22.7 (2.32)	916 (93.5)	0.152	25.1 (2.56)	954 (97.3)	0.144	29.1 (2.97)	954 (97.3)
	50	0.144	23.9 (2.44)	954 (97.3)	0.136	26.3 (2.68)	954 (97.3)	0.118	27.6 (2.82)	954 (97.3)
	60	0.127	23.3 (2.38)	954 (97.3)	0.116	24.7 (2.52)	954 (97.3)	0.102	26.4 (2.69)	954 (97.3)
16E	10	0.562	26.4 (2.69)	696 (71.0)	0.525	29.4 (3.00)	725 (74.0)	0.492	34.4 (3.51)	755 (77.0)
	20	0.378	32.5 (3.32)	931 (95.0)	0.359	36.8 (3.75)	970 (99.0)	0.333	42.0 (4.29)	1029 (105)
	30	0.281	32.8 (3.35)	1127 (115)	0.262	36.2 (3.69)	1176 (120)	0.238	40.2 (4.10)	1176 (120)
	40	0.239	34.8 (3.55)	1176 (120)	0.228	39.2 (4.00)	1176 (120)	0.214	44.7 (4.56)	1176 (120)
	50	0.214	36.8 (3.75)	1176 (120)	0.205	41.4 (4.22)	1176 (120)	0.193	47.1 (4.81)	1176 (120)
	60	0.197	38.8 (3.96)	1176 (120)	0.187	42.9 (4.38)	1176 (120)	0.166	46.4 (4.73)	1176 (120)
22E	10	1.110	53.0 (5.41)	2097 (214)	1.040	59.5 (6.07)	2215 (226)	0.977	69.8 (7.12)	2342 (239)
	20	0.738	65.7 (6.70)	2754 (281)	0.696	73.7 (7.52)	2891 (295)	0.656	86.3 (8.81)	3107 (317)
	30	0.537	65.6 (6.69)	3293 (336)	0.508	73.5 (7.50)	3430 (350)	0.476	84.7 (8.64)	3685 (376)
	40	0.463	71.3 (7.28)	3577 (365)	0.439	79.9 (8.15)	3812 (389)	0.414	92.3 (9.42)	4057 (414)
	50	0.414	75.9 (7.74)	3891 (397)	0.393	84.7 (8.64)	4126 (421)	0.371	97.6 (9.96)	4145 (423)
	60	0.379	79.6 (8.12)	4145 (423)	0.361	88.9 (9.07)	4145 (423)	0.323	96.6 (9.86)	4145 (423)

Size	Reduction Ratio	950 r/min Input kW	950 r/min Output torque N·m (kgf·m)	950 r/min Allowable Radial Load on Output N (kgf)	500 r/min Input kW	500 r/min Output torque N·m (kgf·m)	500 r/min Allowable Radial Load on Output N (kgf)	100 r/min Input kW	100 r/min Output torque N·m (kgf·m)	100 r/min Allowable Radial Load on Output N (kgf)
10E	10	0.157	12.7 (1.30)	563 (57.4)	0.094	14.0 (1.43)	659 (67.2)	0.022	14.9 (1.52)	944 (96.3)
	20	0.089	12.9 (1.32)	764 (78.0)	0.052	13.8 (1.41)	944 (96.3)	0.012	14.2 (1.45)	944 (96.3)
	30	0.071	13.4 (1.37)	944 (96.3)	0.042	14.1 (1.44)	944 (96.3)	0.011	14.9 (1.52)	944 (96.3)
	40	0.056	13.0 (1.33)	944 (96.3)	0.033	13.6 (1.39)	944 (96.3)	0.008	13.8 (1.41)	944 (96.3)
	50	0.045	12.3 (1.25)	944 (96.3)	0.027	12.8 (1.31)	944 (96.3)	0.007	13.4 (1.37)	944 (96.3)
	60	0.037	11.3 (1.15)	944 (96.3)	0.023	12.1 (1.23)	944 (96.3)	0.006	12.5 (1.28)	944 (96.3)
13E	10	0.313	25.7 (2.62)	534 (54.5)	0.220	33.1 (3.38)	632 (64.5)	0.053	36.3 (3.70)	954 (97.3)
	20	0.205	30.2 (3.08)	835 (85.2)	0.123	32.7 (3.34)	954 (97.3)	0.030	35.2 (3.59)	954 (97.3)
	30	0.156	30.1 (3.07)	954 (97.3)	0.099	33.8 (3.45)	954 (97.3)	0.025	36.1 (3.68)	954 (97.3)
	40	0.127	30.1 (3.07)	954 (97.3)	0.078	32.4 (3.31)	954 (97.3)	0.020	34.5 (3.52)	954 (97.3)
	50	0.104	28.6 (2.92)	954 (97.3)	0.064	30.8 (3.14)	954 (97.3)	0.017	32.9 (3.36)	954 (97.3)
	60	0.091	27.3 (2.79)	954 (97.3)	0.057	29.6 (3.02)	954 (97.3)	0.015	31.1 (3.17)	954 (97.3)
16E	10	0.463	38.7 (3.95)	823 (84.0)	0.364	55.9 (5.70)	853 (87.0)	0.087	61.5 (6.28)	1176 (120)
	20	0.317	47.7 (4.87)	1058 (108)	0.213	57.8 (5.90)	1176 (120)	0.053	63.2 (6.45)	1176 (120)
	30	0.231	46.2 (4.71)	1176 (120)	0.174	61.4 (6.27)	1176 (120)	0.045	67.2 (6.86)	1176 (120)
	40	0.205	50.5 (5.15)	1176 (120)	0.134	57.7 (5.89)	1176 (120)	0.035	62.3 (6.36)	1176 (120)
	50	0.173	49.6 (5.06)	1176 (120)	0.109	54.5 (5.56)	1176 (120)	0.029	59.1 (6.03)	1176 (120)
	60	0.148	48.0 (4.90)	1176 (120)	0.094	53.0 (5.41)	1176 (120)	0.025	56.5 (5.77)	1176 (120)
22E	10	0.923	79.1 (8.07)	2470 (252)	0.771	121 (12.3)	2852 (291)	0.189	138 (14.1)	4145 (423)
	20	0.614	96.0 (9.80)	3263 (333)	0.460	129 (13.2)	3940 (402)	0.115	145 (14.8)	4145 (423)
	30	0.450	94.7 (9.66)	4145 (423)	0.362	134 (13.7)	4145 (423)	0.095	151 (15.4)	4145 (423)
	40	0.391	102 (10.4)	4145 (423)	0.284	129 (13.2)	4145 (423)	0.075	144 (14.7)	4145 (423)
	50	0.351	108 (11.0)	4145 (423)	0.228	122 (12.4)	4145 (423)	0.058	127 (13.0)	4145 (423)
	60	0.290	102 (10.4)	4145 (423)	0.187	113 (11.5)	4145 (423)	0.050	123 (12.6)	4145 (423)

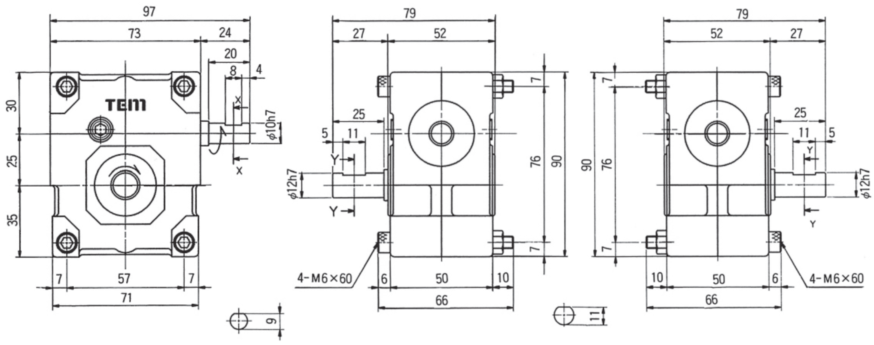
Dimensional Drawings TM10E

TM10E

(Relative rotational directions)



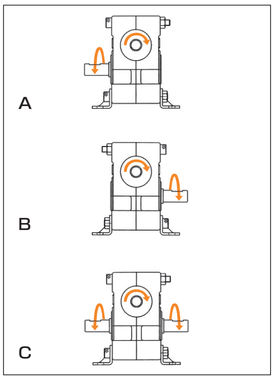
[A] [B]

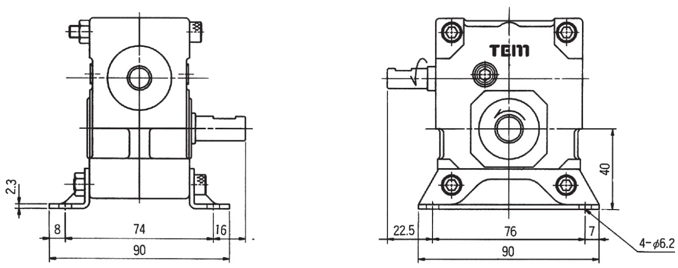


Estimated mass 0.9 g

[Input horizontal feet-mount]

(Relative rotational directions)



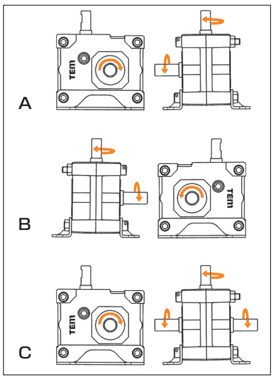


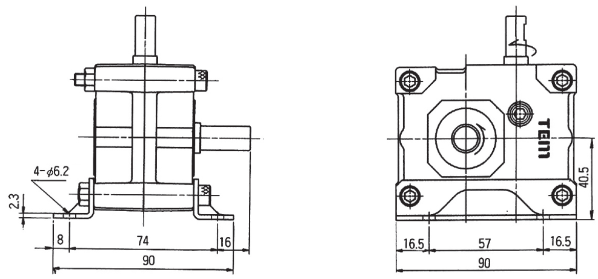
Estimated mass 1.0 kg

Note) Feet supplied with TM10E.

[Input vertical feet-mount]

(Relative rotational directions)





Estimated mass 1.0 kg

Note) Feet supplied with TM10E.

Transfer Capacity Table

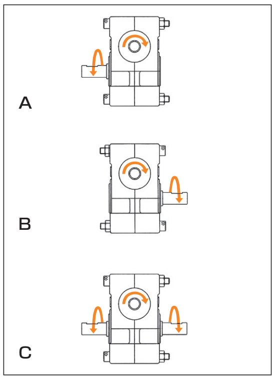
Size	Input	1750 r/min		1450 r/min		1150 r/min		950 r/min		500 r/min		100 r/min	
	Reduction Ratio	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)
TM10E	10	0.187	8.53 (0.87)	0.176	9.51 (0.97)	0.166	11.2 (1.14)	0.157	12.7 (1.30)	0.094	14.0 (1.43)	0.022	14.9 (1.52)
	20	0.127	10.6 (1.08)	0.121	12.0 (1.22)	0.104	12.7 (1.30)	0.089	12.9 (1.32)	0.052	13.8 (1.41)	0.012	14.2 (1.45)
	30	0.091	10.1 (1.03)	0.088	11.5 (1.17)	0.082	13.0 (1.33)	0.071	13.4 (1.37)	0.042	14.1 (1.44)	0.011	14.9 (1.52)
	40	0.081	11.1 (1.13)	0.076	12.2 (1.24)	0.064	12.5 (1.28)	0.056	13.0 (1.33)	0.033	13.6 (1.39)	0.008	13.8 (1.41)
	50	0.069	11.1 (1.13)	0.062	11.6 (1.18)	0.052	11.9 (1.21)	0.045	12.3 (1.25)	0.027	12.8 (1.31)	0.007	13.4 (1.37)
	60	0.058	10.4 (1.06)	0.051	10.8 (1.10)	0.044	11.2 (1.14)	0.037	11.3 (1.15)	0.023	12.1 (1.23)	0.006	12.5 (1.28)

Note) Feet supplied with TM10E.

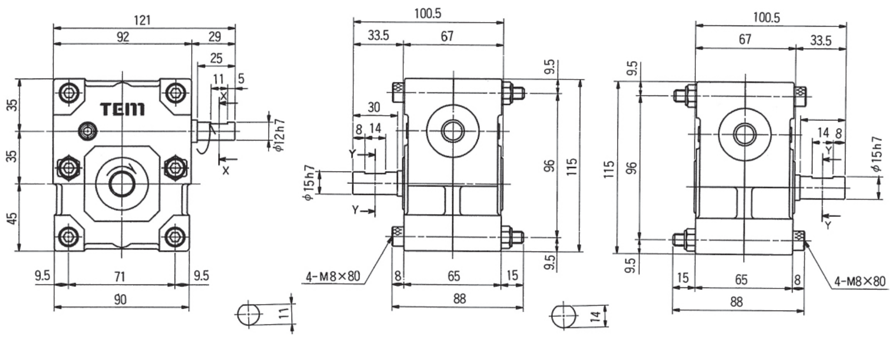
Dimensional Drawings TM13E

TM13E

(Relative rotational directions)



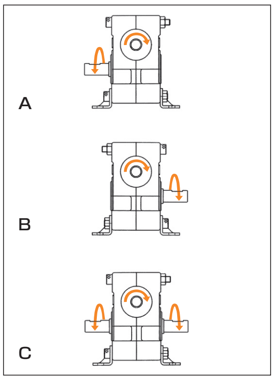
[A] [B]

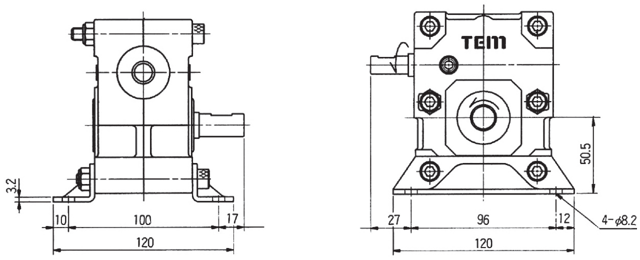


Estimated mass
1.8 kg

[Input horizontal feet-mount]

(Relative rotational directions)



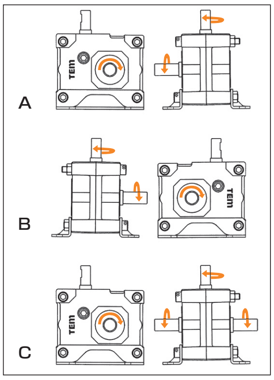


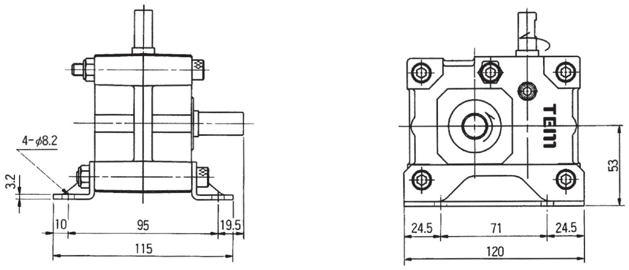
Estimated mass
2.0 kg

Note) Feet supplied with TM13E.

[Input vertical feet-mount]

(Relative rotational directions)





Estimated mass
2.0 kg

Note) Feet supplied with TM13E.

Transfer Capacity Table

Size	Input	1750 r/min		1450 r/min		1150 r/min		950 r/min		500 r/min		100 r/min	
	Reduction Ratio	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)
TM13E	10	0.375	17.2 (1.76)	0.352	19.4 (1.98)	0.331	22.6 (2.31)	0.313	25.7 (2.62)	0.220	33.1 (3.38)	0.053	36.3 (3.70)
	20	0.253	21.4 (2.18)	0.237	23.7 (2.42)	0.224	27.7 (2.83)	0.205	30.2 (3.08)	0.123	32.7 (3.34)	0.030	35.2 (3.59)
	30	0.181	20.5 (2.09)	0.176	23.5 (2.40)	0.165	27.0 (2.75)	0.156	30.1 (3.07)	0.099	33.8 (3.45)	0.025	36.1 (3.68)
	40	0.161	22.7 (2.32)	0.152	25.1 (2.56)	0.144	29.1 (2.97)	0.127	30.1 (3.07)	0.078	32.4 (3.31)	0.020	34.5 (3.52)
	50	0.144	23.9 (2.44)	0.136	26.3 (2.68)	0.118	27.6 (2.82)	0.104	28.6 (2.92)	0.064	30.8 (3.14)	0.017	32.9 (3.36)
	60	0.127	23.3 (2.38)	0.116	24.7 (2.52)	0.102	26.4 (2.69)	0.091	27.3 (2.79)	0.057	29.6 (3.02)	0.015	31.1 (3.17)

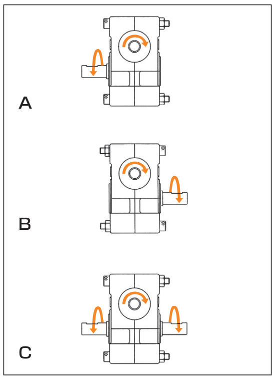
Note) Feet supplied with TM13E.

TM Series

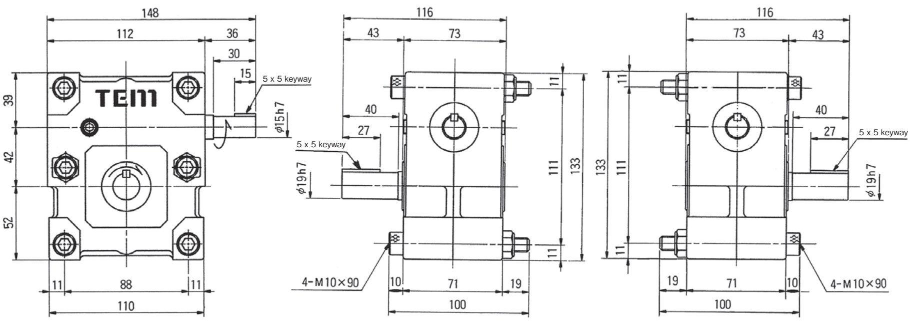
Dimensional Drawings TM16E

TM16E

(Relative rotational directions)



[A] [B]

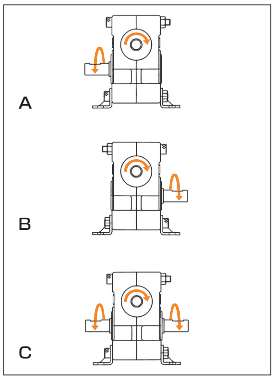


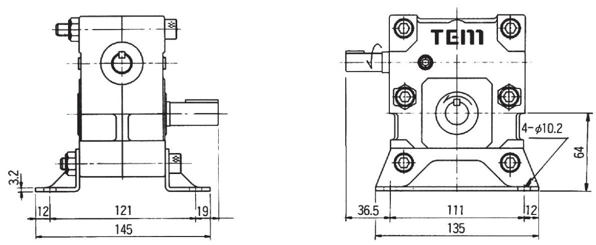
Estimated mass
2.8 kg

Note) Old JIS (B1301-1959) flat key included.

[Input horizontal feet-mount]

(Relative rotational directions)



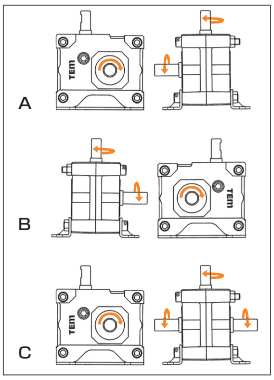


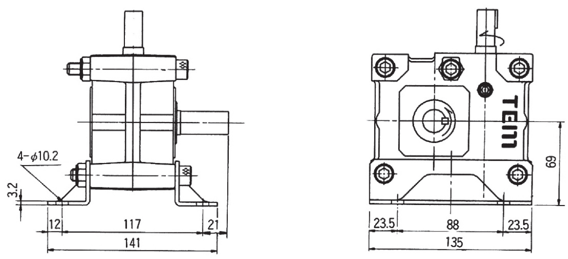
Estimated mass
3.3 kg

Note 1) Old JIS (B1301-1959) flat key included.
2) Feet supplied with TM16E.

[Input vertical feet-mount]

(Relative rotational directions)





Estimated mass
3.3 kg

Note 1) Old JIS (B1301-1959) flat key included.
2) Feet supplied with TM16E.

Transfer Capacity Table

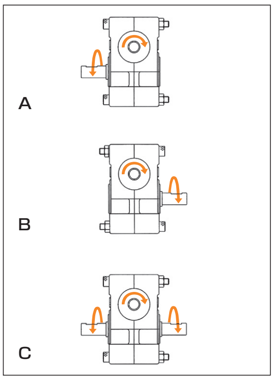
Size	Input	1750 r/min		1450 r/min		1150 r/min		950 r/min		500 r/min		100 r/min	
	Reduction Ratio	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)
TM16E	10	0.562	26.4 (2.69)	0.525	29.4 (3.00)	0.492	34.4 (3.51)	0.463	38.7 (3.95)	0.364	55.9 (5.70)	0.087	61.5 (6.28)
	20	0.378	32.5 (3.32)	0.359	36.8 (3.75)	0.333	42.0 (4.29)	0.317	47.7 (4.87)	0.213	57.8 (5.90)	0.053	63.2 (6.45)
	30	0.281	32.8 (3.35)	0.262	36.2 (3.69)	0.238	40.2 (4.10)	0.231	46.2 (4.71)	0.174	61.4 (6.27)	0.045	67.2 (6.86)
	40	0.239	34.8 (3.55)	0.228	39.2 (4.00)	0.214	44.7 (4.56)	0.205	50.5 (5.15)	0.134	57.7 (5.89)	0.035	62.3 (6.36)
	50	0.214	36.8 (3.75)	0.205	41.4 (4.22)	0.193	47.1 (4.81)	0.173	49.6 (5.06)	0.109	54.5 (5.56)	0.029	59.1 (6.03)
	60	0.197	38.8 (3.96)	0.187	42.9 (4.38)	0.166	46.4 (4.73)	0.148	48.0 (4.90)	0.094	53.0 (5.41)	0.025	56.5 (5.77)

Note) Feet supplied with TM16E.

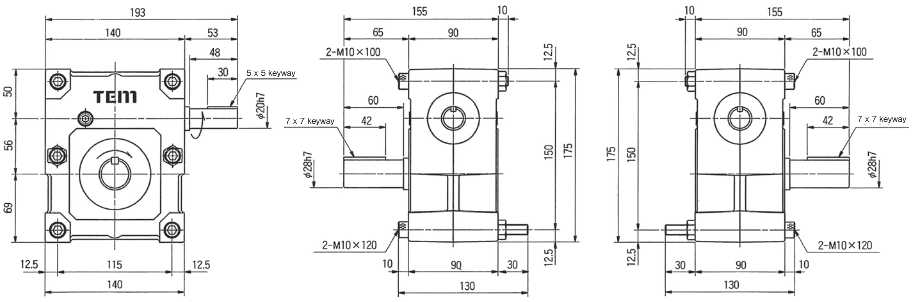
Dimensional Drawings TM22E

TM22E

(Relative rotational directions)



[A] [B]

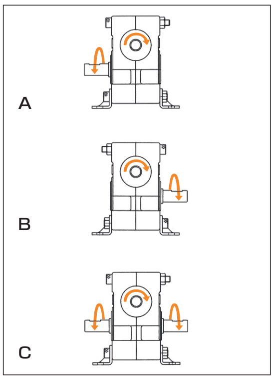


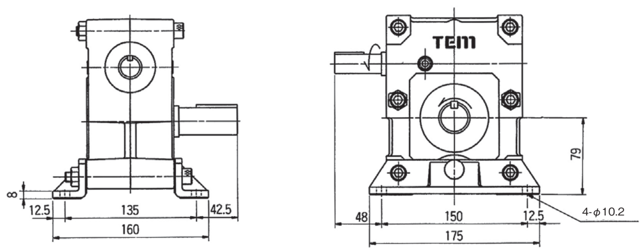
Estimated mass 7.0 kg

Note) Old JIS (B1301-1959) flat key included.

[Input horizontal feet-mount]

(Relative rotational directions)



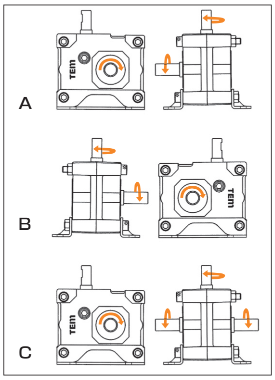


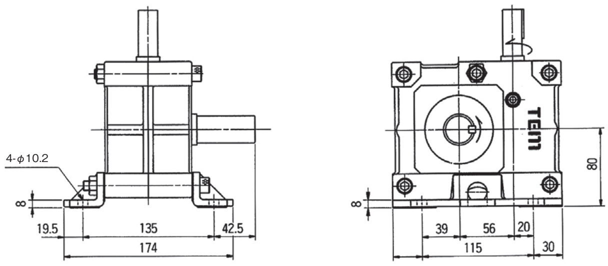
Estimated mass 13 kg

Note 1) Old JIS (B1301-1959) flat key included.
2) Feet sold separately for TM22E.

[Input vertical feet-mount]

(Relative rotational directions)





Estimated mass 13 kg

Note 1) Old JIS (B1301-1959) flat key included.
2) Feet sold separately for TM22E.

Transfer Capacity Table

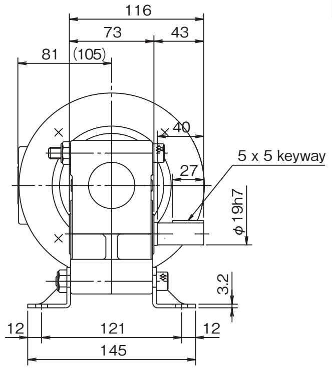
Size	Input	1750 r/min		1450 r/min		1150 r/min		950 r/min		500 r/min		100 r/min	
	Reduction Ratio	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)
TM22E	10	1.110	53.0 (5.41)	1.040	59.5 (6.07)	0.977	69.8 (7.12)	0.923	79.1 (8.07)	0.771	121 (12.3)	0.189	138 (14.1)
	20	0.738	65.7 (6.70)	0.696	73.7 (7.52)	0.656	86.3 (8.81)	0.614	96.0 (9.80)	0.460	129 (13.2)	0.115	145 (14.8)
	30	0.537	65.6 (6.69)	0.508	73.5 (7.50)	0.476	84.7 (8.64)	0.450	94.7 (9.66)	0.362	134 (13.7)	0.095	151 (15.4)
	40	0.463	71.3 (7.28)	0.439	79.9 (8.15)	0.414	92.3 (9.42)	0.391	102 (10.4)	0.284	129 (13.2)	0.075	144 (14.7)
	50	0.414	75.9 (7.74)	0.393	84.7 (8.64)	0.371	97.6 (9.96)	0.351	108 (11.0)	0.228	122 (12.4)	0.058	127 (13.0)
	60	0.379	79.6 (8.12)	0.361	88.9 (9.07)	0.323	96.6 (9.86)	0.290	102 (10.4)	0.187	113 (11.5)	0.050	123 (12.6)

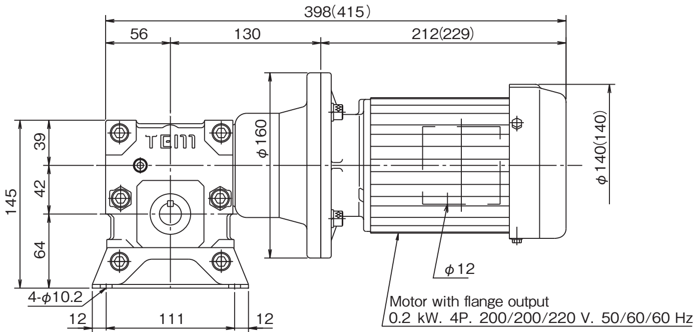
Note) Feet sold separately for TM22E.

Dimensional Drawings TM16GCE

TM16GCE□□A020S(B)

Figure shows shaft arrangement A. For type B, the output shaft is on the opposite side, and for type C it is on both sides.
Figure in ( ) are for motors with a brake.

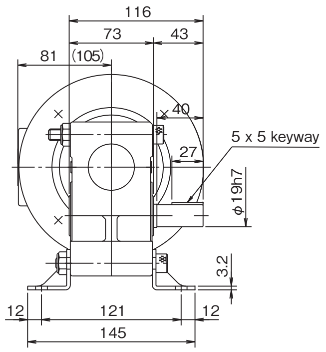


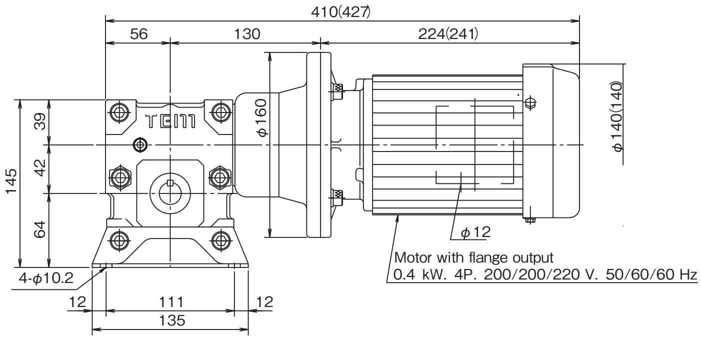


Estimated mass 12 kg

Note) Old JIS (B1301-1959) flat key included.

TM16GCE□□A040S(B)

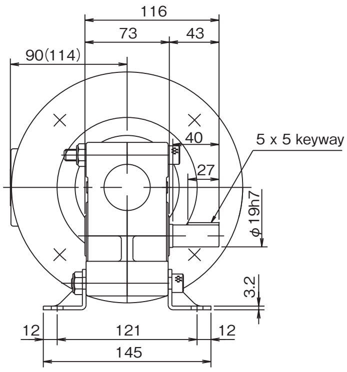


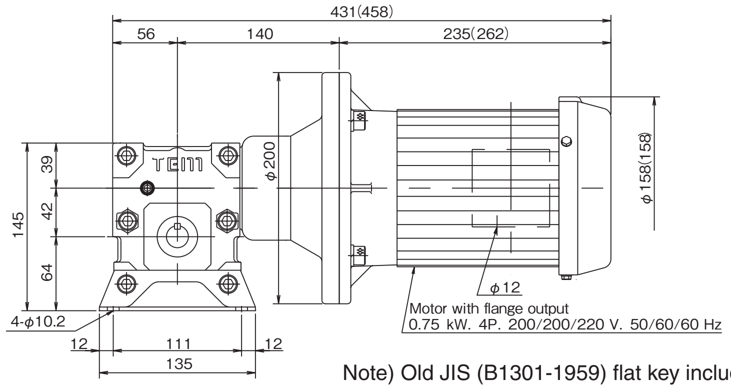


Estimated mass 18 kg

Note) Old JIS (B1301-1959) flat key included.

TM16GCE□□A075S(B)





Estimated mass 25 kg

Note) Old JIS (B1301-1959) flat key included.

Transfer Capacity Table

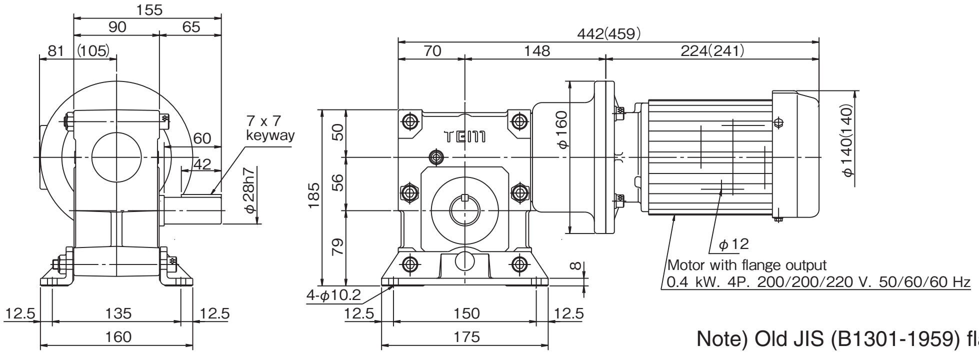
Size	Reduction Ratio	10		20		30		40		50		60	
	Transfer capacity	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)
16GCE	1750 r/min	0.562	26.4 (2.69)	0.378	32.5 (3.32)	0.281	32.8 (3.35)	0.239	34.8 (3.55)	0.214	36.8 (3.75)	0.197	38.8 (3.96)
	1450 r/min	0.525	29.4 (3.00)	0.359	36.8 (3.75)	0.262	36.2 (3.69)	0.228	39.2 (4.00)	0.205	41.4 (4.22)	0.187	42.9 (4.38)

Note) Transfer capacities are given for the reducer only. Calculate the transfer capacity according to the actual motor capacity.

Dimensional Drawings TM22GCE

TM22GCE□□A040S(B)

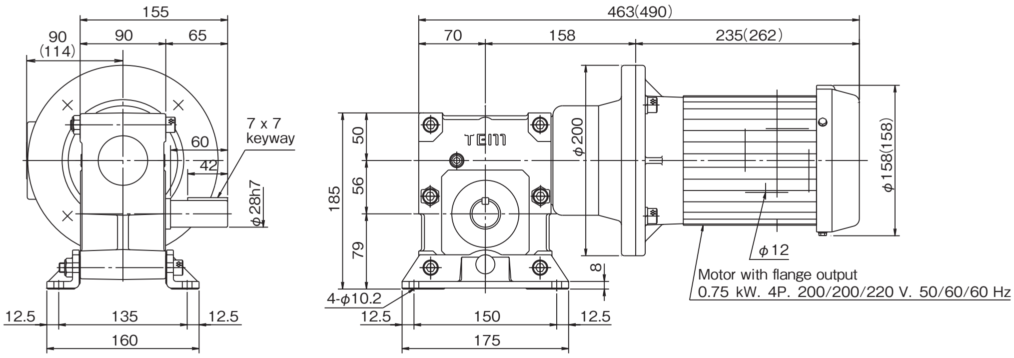
Figure shows shaft arrangement A. For type B, the output shaft is on the opposite side, and for type C it is on both sides.
Figure in ( ) are for motors with a brake.



Estimated mass 27 kg

Note) Old JIS (B1301-1959) flat key included.

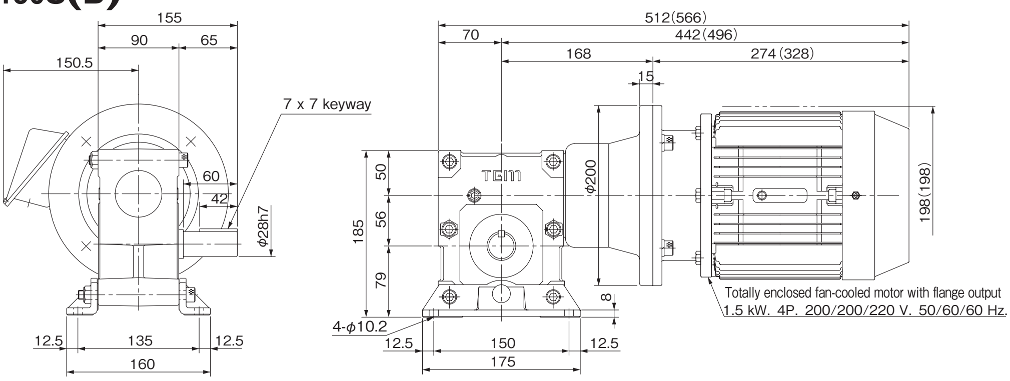
TM22GCE□□A075S(B)



Estimated mass 34 kg

Note) Old JIS (B1301-1959) flat key included.

TM22GCE□□A150S(B)



Estimated mass 42 kg

Note) Old JIS (B1301-1959) flat key included.

Transfer Capacity Table

Size	Reduction Ratio	10		20		30		40		50		60	
	Transfer capacity	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)	Input kW	Output torque N·m (kgf·m)
22GCE	1750 r/min	1.110	53.0 (5.41)	0.738	65.7 (6.70)	0.537	65.6 (6.69)	0.463	71.3 (7.28)	0.414	75.9 (7.74)	0.379	79.6 (8.12)
	1450 r/min	1.040	59.5 (6.07)	0.696	73.7 (7.52)	0.508	73.5 (7.50)	0.439	79.9 (8.15)	0.393	84.7 (8.64)	0.361	88.9 (9.07)

Note) Transfer capacities are given for the reducer only. Calculate the transfer capacity according to the actual motor capacity.