

TroíDríve TD Series

High Performance Troidal Worm Gear



TroiDrive

High Performance Troidal Worm Gear

TD series



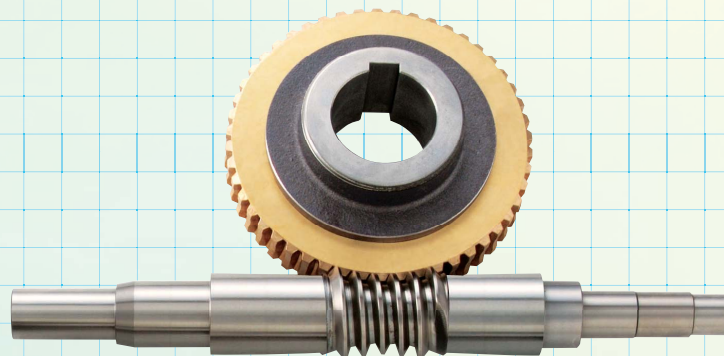
With its embrasure-shaped troidal worm gear, the TroiDrive realizes well-balanced capability and efficiency. Two different types of housing for foot mount/solid output shaft and flange mount/hollow output shaft are available. The ultimate in compactness and lightweight is possible for many applications.

High power & compact
high performance worm

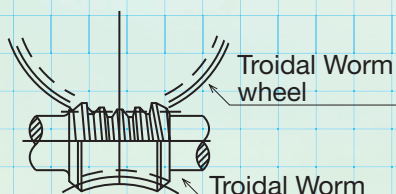
Medium-large sizes
[Center distance: 125 - 315mm]

Hollow output shaft & solid
output shaft types

Stable, smooth and
quiet rotation



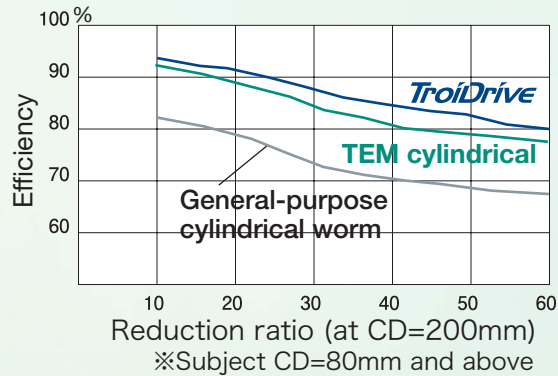
Troidal (plane enveloping troidal) worm gear



The troidal worm gear is an embrasure-shaped worm, which transmits power to the whole area, thus it has a high transmissible capability and function. This high performance worm is ideal for compact equipment.

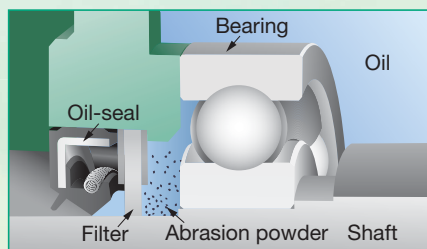
Increased efficiency

The friction coefficient on the teeth surface decreases while efficiency increases due to the special lubricant.

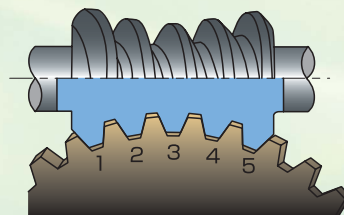


Improved function

The new oil-seal structure (filter specification) prevents abrasion powder from entering the Emerworm, prolonging oil-seal life. (Size 125-200)



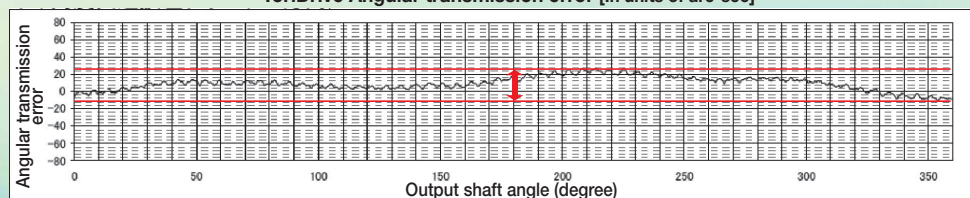
The troidal worm has a larger number of teeth meshing simultaneously, thus it has a higher transmissible capability and smoother rotation.



Number of teeth meshing simultaneously

TroiDrive	4 - 6.5 teeth
General-purpose cylindrical worm	1.7 - 2 teeth

TroiDrive Angular transmission error [In units of arc-sec]



Representative example; Size 125, Reduction ratio; 1/60

Standard Reducer specifications

TD Series

Item			Standard specifications
			TroiDrive TD Series
Reducer	Reduction system	Single reduction type	Worm Gear single Nominal reduction ratio 1/10, 1/20, 1/30, 1/40, 1/50, 1/60
		Double reduction type	Worm Gear x Worm Gear Nominal reduction ratio: 1/100, 1/150, 1/200, 1/250, 1/300, 1/450, 1/600, 1/750, 1/900, 1/1200, 1/1500, 1/1800, 1/2400, 1/3000, 1/3600
	Lubricating method		Single reduction type: Idemitsu Daphne Oil TE260 Double reduction type: Idemitsu Daphne Oil TE380
	Keyway		New JIS Normal Grade JIS B1301 - 1976 (solid output shaft; key is attached)
	Paint		Munsell 5PB2/6 (blue) Undercoat: lacquer primer Finish coating: lacquer-based paint
	Rust prevention		Rust prevention period Indoor storage: 6 months (after being shipped from the factory) Outside: rust-resistant grease coating Internal: seal after filling lubricant
Ambient conditions	Installation location		Indoors
	Ambient temperature		<minus 10°C> - <50°C>
	Ambient humidity		Less than 95%
	Altitude		Less than 1000m
	Atmosphere		Non corrosive or explosive gas or steam, as well little dust
Installation			Horizontal/vertical installation

Model No. TD Series

Single reduction

Solid output shaft type	TD	280	S	30	B	R	
Hollow output shaft type	TD	250	H	60	T	DF	K
	Series name	Size	Output shaft configuration	Nominal reduction ratio	Mounting position	Shaft arrangement	Options
		125 225 150 250 175 280 200 315	S : Solid shaft H : Hollow shaft	10: 1/10 ' ' 60: 1/60	B : B type T : T type V : V type	<Solid shaft> L, R, LU, RU, LD. RD: single output shaft LR, LUD, RUD: double output shaft <Hollow shaft> RF, LF, DF Refer to the right chart.	Refer to pages 50-56 for reducers.

Double reduction

Solid output shaft type	TD	250	S	100	B	L-R	
Hollow output shaft type	TD	250	H	300	B	R-LF	K
	Series name	Size	Output shaft configuration	Nominal reduction ratio	Mounting position	Shaft arrangement	Options
		125 225 150 250 175 280 200 315	S : Solid shaft H : Hollow shaft	100: 1/100 ' ' 3600: 1/3600	B : B type T : T type V : V type	<Solid shaft> L-R, R-L, L-RU, R-LU, L-RD, : R-LD: single output shaft L-LR, R-LR, R-LUD, L-RUD: double output shaft <Hollow shaft> L-RF, R-LF, L-DF, R-DF	Refer to pages 50-56 for reducers.

Model Chart

Nominal reduction ratio	1/10 - 1/60					1/100 - 1/3600				
	Solid shaft (S type)			Hollow shaft (H type)		Solid shaft (S type)			Hollow shaft (H type)	
	Standard shaft arrangement									
Output shaft	BL, BR, TL, TR	VLU, VLD, VRU, VRD	Double output shaft	Hollow shaft	Hollow w/Power Lock	BL-R, BR-L	VL-RU, VL-RD, VR-LU, VR-LD	Double output shaft	Hollow shaft	Hollow w/Power Lock
Shaft arrangement										
Size										
TD 125	○	○	△	○	△	○	○	△	○	△
TD 150	○	○	△	○	△	○	○	△	○	△
TD 175	○	○	△	○	△	○	○	△	○	△
TD 200	○	○	△	○	△	○	○	△	○	△
TD 225	○	○	△	○	△	○	○	△	○	△
TD 250	○	○	△	○	△	○	○	△	○	△
TD 280	○	○	△	○	△	○	○	△	○	△
TD 315	○	○	△	○	△	○	○	△	○	△
TD 400	※	※	※	※	※	※	※	※	※	※
TD 500	※	※	※	※	※	※	※	※	※	※

Note:

- are standard specifications.
- △ are semi-standard specifications.
- All models with standard reduction ratios correspond to this chart.
- Contact TEM on double input shaft type.
- ※Contact TEM for more information.

Shaft arrangement (relative rotational direction)

Single reduction

1. Solid output shaft type (S) (all sizes in common)

B type	BL		BR		BLR	
	T type	TL		TR		TLR
V type	VLU		VLD		VLUD	
	VRU		VRD		VRUD	

2. Hollow output shaft type (H)

B type	BLF (TD125~TD200)		BRF (TD125~TD200)		BDF (TD225~TD315)	
T type	TLF (TD125~TD200)		TRF (TD125~TD200)		TDF (TD225~TD315)	
V type	VLF (TD125~TD315)		VRF (TD125~TD315)			

Double reduction

1. Solid output shaft type (S) (all sizes in common)

B type	B L-R		B L-LR	
	B R-L		B R-LR	
V type	V L-RU		V L-RD	
	V R-LU		V R-LD	
			V L-RUD	
			V R-LUD	

2. Hollow output shaft type (H)

B type	B L-RF (TD125~TD200)		B L-DF (TD225~TD315)		B R-LF (TD125~TD200)		B R-DF (TD225~TD315)	
V type	V L-RF (TD125~TD315)		V R-LF (TD125~TD315)					

Arrows show the rotational relation.

Refer to p 12 for the actual reduction ratio.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD125	10	21.0	1112 {113}	20.1	1285 {131}	19.0	1532 {156}	20.3	1766 {180}	13.0	2382 {243}	3.0	2671 { 273}
	20	15.1	1515 {155}	14.5	1748 {178}	13.7	2076 {212}	12.5	2290 {234}	8.1	2783 {284}	1.8	2948 { 301}
	30	10.9	1631 {166}	10.4	1880 {192}	9.6	2189 {223}	8.5	2318 {237}	5.5	2809 {287}	1.6	3889 { 397}
	40	9.7	1812 {185}	9.3	2083 {213}	7.9	2232 {228}	7.0	2364 {241}	4.5	2865 {292}	1.1	3146 { 321}
	50	8.3	1861 {190}	7.7	2086 {213}	6.6	2236 {228}	5.8	2368 {242}	3.8	2870 {293}	1.1	3870 { 395}
	60	7.0	1877 {192}	6.4	2067 {211}	5.5	2217 {226}	4.9	2348 {240}	3.2	2846 {290}	1.0	3889 { 397}
TD150	10	32.3	1717 {175}	31.0	1989 {203}	29.4	2377 {243}	28.1	2745 {280}	22.6	4157 {424}	5.4	4861 { 496}
	20	23.5	2426 {248}	22.5	2803 {286}	21.3	3337 {341}	19.9	3761 {384}	11.2	3995 {408}	2.4	3995 { 408}
	30	16.6	2505 {256}	15.9	2895 {295}	15.1	3448 {352}	13.7	3771 {385}	8.9	4570 {466}	2.5	6002 { 612}
	40	15.1	2917 {298}	14.5	3365 {343}	12.6	3665 {374}	11.0	3881 {396}	6.5	4290 {438}	1.4	4290 { 438}
	50	13.7	3151 {322}	12.5	3448 {352}	10.6	3696 {377}	9.4	3914 {399}	5.7	4397 {449}	1.2	4397 { 449}
	60	10.7	2889 {295}	10.3	3336 {340}	8.9	3610 {368}	7.8	3823 {390}	5.1	4634 {473}	1.5	6166 { 629}
TD175	10	44.9	2392 {244}	43.3	2776 {283}	41.1	3325 {339}	39.4	3847 {393}	31.2	5769 {589}	8.6	7764 { 792}
	20	34.2	3556 {363}	32.8	4113 {420}	31.1	4905 {501}	26.9	5127 {523}	14.3	5127 {523}	3.0	5127 { 523}
	30	24.5	3863 {394}	23.5	4467 {456}	21.2	5048 {515}	18.6	5346 {546}	12.0	6478 {661}	3.1	7903 { 806}
	40	22.1	4323 {441}	20.4	4802 {490}	17.4	5148 {525}	15.3	5451 {556}	8.4	5588 {570}	1.8	5588 { 570}
	50	18.4	4194 {428}	17.3	4755 {485}	14.8	5097 {520}	13.0	5398 {551}	8.5	6542 {668}	2.2	7903 { 806}
	60	15.2	4271 {436}	14.2	4785 {488}	12.1	5129 {523}	10.6	5432 {554}	7.0	6584 {672}	1.9	7903 { 806}
TD200	10	59.6	3174 {324}	57.5	3689 {376}	54.8	4428 {452}	52.5	5135 {524}	44.9	8286 {846}	11.5	10314 {1052}
	20	43.2	4347 {444}	41.5	5043 {515}	39.5	6037 {616}	37.8	6981 {712}	26.6	9236 {942}	6.7	11138 {1137}
	30	31.2	4717 {481}	29.7	5417 {553}	28.6	6547 {668}	27.3	7569 {772}	18.0	9352 {954}	4.6	11138 {1137}
	40	27.8	5220 {533}	26.7	6050 {617}	25.4	7232 {738}	22.9	7858 {802}	14.8	9525 {972}	3.7	11138 {1137}
	50	23.4	5344 {545}	22.5	6193 {632}	21.4	7404 {756}	18.8	7841 {800}	12.2	9505 {970}	3.1	11138 {1137}
	60	20.1	5445 {556}	19.3	6311 {644}	18.0	7390 {754}	15.9	7826 {799}	10.4	9486 {968}	2.7	11138 {1137}

portions are limited to use by thermal rating. In regard to short time of usage, contact TEM for more information.

Refer to p 12 for the actual reduction ratio.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD225	10	78.0	4156 424	75.3	4836 493	71.8	5813 593	68.9	6749 689	54.4	10066 1027	15.0	13588 1387
	20	56.0	5793 591	53.9	6727 686	51.4	8063 823	47.1	8928 911	30.2	10795 1102	8.8	15179 1549
	30	43.6	6584 672	42.0	7640 780	37.5	8584 876	32.8	9085 927	21.2	10990 1121	6.7	16363 1670
	40	36.6	6924 707	35.3	8033 820	30.1	8617 879	26.4	9121 931	17.0	11036 1126	5.2	15762 1608
	50	31.5	7191 734	29.3	8044 821	25.0	8618 879	21.9	9122 931	14.2	11039 1126	4.7	16789 1713
	60	27.8	7380 753	25.2	8032 820	21.5	8606 878	18.9	9109 929	12.3	11024 1125	4.3	17542 1790
TD250	10	101.6	5421 553	98.1	6312 644	93.7	7596 775	90.0	8827 901	72.0	13352 1362	19.4	17560 1792
	20	73.5	7641 780	70.8	8879 906	67.5	10654 1087	62.5	11925 1217	40.0	14417 1471	9.7	16828 1717
	30	55.0	8297 847	53.0	9641 984	49.6	11351 1158	43.5	12014 1226	28.0	14534 1483	8.8	21558 2200
	40	48.7	9274 946	46.9	10768 1099	40.0	11546 1178	35.1	12220 1247	22.6	14785 1509	6.1	18630 1901
	50	41.1	9434 963	38.8	10737 1096	33.1	11503 1174	29.0	12175 1242	18.8	14733 1503	6.1	22147 2260
	60	35.3	9638 983	32.6	10711 1093	27.8	11475 1171	24.4	12147 1239	15.8	14700 1500	5.4	22646 2311
TD280	10	—	—	125.7	8083 825	120.3	9742 994	115.7	11339 1157	98.1	18195 1857	27.4	24854 2536
	20	95.7	9932 1013	92.4	11556 1179	88.2	13890 1417	84.6	16124 1645	54.9	19714 2012	15.3	26445 2698
	30	73.0	10886 1111	70.5	12663 1292	67.3	15216 1553	60.3	16466 1680	38.7	19920 2033	11.7	28664 2925
	40	61.7	12006 1225	59.6	13958 1424	53.5	15759 1608	46.9	16679 1702	30.2	20181 2059	9.1	28392 2897
	50	54.3	12535 1279	52.5	14571 1487	45.2	15806 1613	39.6	16729 1707	25.6	20244 2066	8.1	29634 3024
	60	46.9	12687 1295	45.0	14685 1498	38.4	15734 1606	33.7	16654 1699	21.8	20155 2057	7.1	30110 3072
TD315	10	—	—	—	—	169.1	13723 1400	162.9	15989 1632	136.8	25438 2596	33.2	30270 3089
	20	—	—	129.6	16242 1657	123.8	19548 1995	119.0	22720 2318	79.6	28704 2929	20.1	35090 3581
	30	—	—	96.2	17551 1791	92.0	21123 2155	86.5	24015 2451	55.6	29053 2965	17.8	44420 4533
	40	—	—	85.0	19552 1995	79.6	23076 2355	69.8	24423 2492	44.9	29549 3015	11.8	36685 3743
	50	—	—	71.7	19898 2030	65.9	22993 2346	57.7	24337 2483	37.3	29450 3005	12.1	44546 4546
	60	—	—	61.7	20404 2082	55.2	22938 2341	48.4	24280 2478	31.3	29384 2998	10.8	46790 4774

portions are limited to use by thermal rating. In regard to short time of usage, contact TEM for more information.

Refer to p 12 for the actual reduction ratio.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD125	100	4.04	1900 {194}	3.76	2107 {215}	3.39	2354 {240}	3.06	2537 {259}	1.77	2644 {270}	0.38	2511 {256}
	150	3.02	2034 {208}	2.81	2244 {229}	2.54	2511 {256}	2.28	2671 {273}	1.28	2671 {273}	0.29	2644 {270}
	200	2.41	2083 {213}	2.24	2297 {234}	1.99	2511 {256}	1.78	2671 {273}	1.01	2671 {273}	0.23	2564 {262}
	250	1.99	2083 {213}	1.83	2270 {232}	1.63	2484 {253}	1.47	2644 {270}	0.83	2618 {267}	0.19	2484 {253}
	300	2.88	3668 {374}	2.49	3759 {384}	2.09	3875 {395}	1.76	3889 {397}	1.00	3889 {397}	0.24	3889 {397}
	450	2.15	3866 {394}	1.83	3889 {397}	1.49	3889 {397}	1.27	3889 {397}	0.73	3889 {397}	0.18	3889 {397}
	600	1.69	3889 {397}	1.44	3889 {397}	1.18	3889 {397}	1.00	3889 {397}	0.58	3889 {397}	0.14	3889 {397}
	750	1.41	3889 {397}	1.20	3889 {397}	0.99	3889 {397}	0.84	3889 {397}	0.49	3889 {397}	0.12	3889 {397}
	900	1.26	3889 {397}	1.07	3889 {397}	0.89	3889 {397}	0.76	3889 {397}	0.45	3889 {397}	0.12	3889 {397}
	1200	1.01	3889 {397}	0.87	3889 {397}	0.72	3889 {397}	0.62	3889 {397}	0.37	3889 {397}	0.10	3889 {397}
	1500	0.86	3889 {397}	0.74	3889 {397}	0.61	3889 {397}	0.52	3889 {397}	0.31	3889 {397}	0.08	3889 {397}
	1800	0.77	3889 {397}	0.67	3889 {397}	0.56	3889 {397}	0.48	3889 {397}	0.29	3889 {397}	0.08	3889 {397}
	2400	0.63	3889 {397}	0.54	3889 {397}	0.45	3889 {397}	0.39	3889 {397}	0.24	3889 {397}	0.07	3889 {397}
	3000	0.54	3889 {397}	0.47	3889 {397}	0.39	3889 {397}	0.34	3889 {397}	0.21	3889 {397}	0.06	3889 {397}
3600	0.48	3889 {397}	0.41	3889 {397}	0.35	3889 {397}	0.30	3889 {397}	0.19	3889 {397}	0.05	3889 {397}	
TD150	100	5.63	2688 {274}	5.29	3014 {308}	4.76	3362 {343}	4.15	3500 {357}	2.61	3986 {407}	0.56	3792 {387}
	150	4.26	2926 {299}	3.87	3160 {322}	3.42	3451 {352}	2.99	3597 {367}	1.94	4180 {427}	0.43	3986 {407}
	200	3.41	3014 {308}	3.11	3257 {332}	2.71	3500 {357}	2.41	3694 {377}	1.50	4083 {417}	0.34	3937 {402}
	250	2.81	3014 {308}	2.60	3305 {337}	2.27	3549 {362}	2.02	3743 {382}	1.20	3937 {402}	0.27	3792 {387}
	300	4.31	5601 {572}	3.72	5733 {585}	3.10	5899 {602}	2.66	6002 {612}	1.50	6002 {612}	0.36	6002 {612}
	450	3.18	5887 {601}	2.75	6002 {612}	2.24	6002 {612}	1.89	6002 {612}	1.08	6002 {612}	0.26	6002 {612}
	600	2.54	6002 {612}	2.16	6002 {612}	1.77	6002 {612}	1.50	6002 {612}	0.86	6002 {612}	0.21	6002 {612}
	750	2.11	6002 {612}	1.80	6002 {612}	1.47	6002 {612}	1.25	6002 {612}	0.72	6002 {612}	0.18	6002 {612}
	900	1.86	6002 {612}	1.59	6002 {612}	1.31	6002 {612}	1.12	6002 {612}	0.66	6002 {612}	0.17	6002 {612}
	1200	1.50	6002 {612}	1.28	6002 {612}	1.06	6002 {612}	0.91	6002 {612}	0.54	6002 {612}	0.14	6002 {612}
	1500	1.32	6166 {629}	1.13	6166 {629}	0.93	6166 {629}	0.80	6166 {629}	0.47	6166 {629}	0.12	6166 {629}
	1800	1.17	6166 {629}	1.01	6166 {629}	0.84	6166 {629}	0.72	6166 {629}	0.43	6166 {629}	0.12	6166 {629}
	2400	0.95	6166 {629}	0.82	6166 {629}	0.68	6166 {629}	0.59	6166 {629}	0.36	6166 {629}	0.10	6166 {629}
	3000	0.81	6166 {629}	0.70	6166 {629}	0.59	6166 {629}	0.51	6166 {629}	0.31	6166 {629}	0.09	6166 {629}
3600	0.71	6166 {629}	0.62	6166 {629}	0.52	6166 {629}	0.45	6166 {629}	0.28	6166 {629}	0.08	6166 {629}	

Refer to p 12 for the actual reduction ratio.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD175	100	9.36	4524 462}	8.52	4917 502}	7.88	5657 577}	6.96	5978 610}	4.58	7143 729}	0.99	6832 697}
	150	6.99	4883 498}	6.44	5357 547}	5.72	5901 602}	4.99	6134 626}	3.34	7376 753}	0.75	7221 737}
	200	5.51	4969 507}	5.08	5435 555}	4.53	5978 610}	4.00	6289 642}	2.66	7453 761}	0.61	7221 737}
	250	4.45	4891 499}	4.23	5512 562}	3.78	6056 618}	3.35	6366 650}	2.12	7143 729}	0.48	6832 697}
	300	5.91	7903 806}	4.97	7903 806}	4.02	7903 806}	3.38	7903 806}	1.90	7903 806}	0.45	7903 806}
	450	4.00	7903 806}	3.38	7903 806}	2.74	7903 806}	2.32	7903 806}	1.31	7903 806}	0.32	7903 806}
	600	3.13	7903 806}	2.65	7903 806}	2.16	7903 806}	1.83	7903 806}	1.05	7903 806}	0.26	7903 806}
	750	2.58	7903 806}	2.19	7903 806}	1.79	7903 806}	1.52	7903 806}	0.87	7903 806}	0.22	7903 806}
	900	2.26	7903 806}	1.92	7903 806}	1.58	7903 806}	1.34	7903 806}	0.78	7903 806}	0.20	7903 806}
	1200	1.81	7903 806}	1.55	7903 806}	1.28	7903 806}	1.09	7903 806}	0.65	7903 806}	0.17	7903 806}
	1500	1.54	7903 806}	1.32	7903 806}	1.09	7903 806}	0.93	7903 806}	0.55	7903 806}	0.14	7903 806}
	1800	1.36	7903 806}	1.16	7903 806}	0.96	7903 806}	0.82	7903 806}	0.49	7903 806}	0.13	7903 806}
	2400	1.10	7903 806}	0.95	7903 806}	0.79	7903 806}	0.68	7903 806}	0.41	7903 806}	0.11	7903 806}
	3000	0.93	7903 806}	0.80	7903 806}	0.67	7903 806}	0.58	7903 806}	0.35	7903 806}	0.10	7903 806}
	3600	0.82	7903 806}	0.71	7903 806}	0.59	7903 806}	0.51	7903 806}	0.31	7903 806}	0.09	7903 806}
TD200	100	15.33	7462 761}	14.23	8285 845}	12.79	9271 946}	11.90	10314 1052}	6.54	10314 1052}	1.48	10314 1052}
	150	11.38	8036 820}	10.66	8973 916}	9.58	10005 1021}	8.28	10314 1052}	4.60	10314 1052}	1.07	10314 1052}
	200	9.00	8251 842}	8.32	9076 926}	7.57	10211 1042}	6.42	10314 1052}	3.59	10314 1052}	0.84	10314 1052}
	250	7.41	8251 842}	6.70	8870 905}	6.32	10314 1052}	5.32	10314 1052}	3.00	10314 1052}	0.72	10314 1052}
	300	8.31	11138 1137}	6.98	11138 1137}	5.66	11138 1137}	4.75	11138 1137}	2.67	11138 1137}	0.64	11138 1137}
	450	5.80	11138 1137}	4.89	11138 1137}	3.97	11138 1137}	3.35	11138 1137}	1.90	11138 1137}	0.47	11138 1137}
	600	4.50	11138 1137}	3.81	11138 1137}	3.01	11138 1137}	2.62	11138 1137}	1.50	11138 1137}	0.37	11138 1137}
	750	3.73	11138 1137}	3.16	11138 1137}	2.59	11138 1137}	2.19	11138 1137}	1.26	11138 1137}	0.32	11138 1137}
	900	3.25	11138 1137}	2.77	11138 1137}	2.27	11138 1137}	1.93	11138 1137}	1.13	11138 1137}	0.29	11138 1137}
	1200	2.58	11138 1137}	2.20	11138 1137}	1.81	11138 1137}	1.55	11138 1137}	0.91	11138 1137}	0.24	11138 1137}
	1500	2.24	11138 1137}	1.91	11138 1137}	1.58	11138 1137}	1.35	11138 1137}	0.79	11138 1137}	0.21	11138 1137}
	1800	1.97	11138 1137}	1.68	11138 1137}	1.39	11138 1137}	1.19	11138 1137}	0.71	11138 1137}	0.19	11138 1137}
	2400	1.57	11138 1137}	1.35	11138 1137}	1.12	11138 1137}	0.97	11138 1137}	0.58	11138 1137}	0.16	11138 1137}
	3000	1.34	11138 1137}	1.16	11138 1137}	0.97	11138 1137}	0.83	11138 1137}	0.51	11138 1137}	0.14	11138 1137}
	3600	1.18	11138 1137}	1.02	11138 1137}	0.85	11138 1137}	0.74	11138 1137}	0.45	11138 1137}	0.13	11138 1137}

Refer to p 12 for the actual reduction ratio.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD225	100	15.39	7520 { 767}	14.19	8289 { 846}	12.71	9240 { 943}	12.02	10463 {1068}	8.15	12909 {1317}	1.84	12909 {1317}
	150	11.50	8153 { 832}	10.61	8968 { 915}	9.59	10055 {1026}	8.80	11006 {1123}	5.92	13316 {1359}	1.38	13452 {1373}
	200	9.00	8289 { 846}	8.31	9104 { 929}	7.62	10327 {1054}	7.07	11414 {1165}	4.71	13588 {1387}	1.06	13044 {1331}
	250	7.41	8289 { 846}	6.64	8832 { 901}	6.30	10327 {1054}	5.86	11414 {1165}	3.93	13588 {1387}	0.89	12909 {1317}
	300	10.97	14993 {1530}	9.73	15849 {1617}	8.04	16204 {1653}	6.82	16363 {1670}	3.81	16363 {1670}	0.90	16363 {1670}
	450	8.37	16185 {1652}	7.13	16363 {1670}	5.78	16363 {1670}	4.87	16363 {1670}	2.76	16363 {1670}	0.67	16363 {1670}
	600	6.56	16363 {1670}	5.54	16363 {1670}	4.51	16363 {1670}	3.81	16363 {1670}	2.17	16363 {1670}	0.53	16363 {1670}
	750	5.43	16363 {1670}	4.59	16363 {1670}	3.75	16363 {1670}	3.18	16363 {1670}	1.83	16363 {1670}	0.46	16363 {1670}
	900	4.73	16363 {1670}	4.02	16363 {1670}	3.29	16363 {1670}	2.80	16363 {1670}	1.63	16363 {1670}	0.42	16363 {1670}
	1200	3.74	16363 {1670}	3.19	16363 {1670}	2.62	16363 {1670}	2.24	16363 {1670}	1.32	16363 {1670}	0.34	16363 {1670}
	1500	3.55	17542 {1790}	3.02	17542 {1790}	2.49	17542 {1790}	2.12	17542 {1790}	1.25	17542 {1790}	0.33	17542 {1790}
	1800	3.10	17542 {1790}	2.66	17542 {1790}	2.20	17542 {1790}	1.88	17542 {1790}	1.12	17542 {1790}	0.30	17542 {1790}
	2400	2.48	17542 {1790}	2.13	17542 {1790}	1.77	17542 {1790}	1.52	17542 {1790}	0.91	17542 {1790}	0.25	17542 {1790}
	3000	2.11	17542 {1790}	1.82	17542 {1790}	1.51	17542 {1790}	1.31	17542 {1790}	0.79	17542 {1790}	0.22	17542 {1790}
	3600	1.86	17542 {1790}	1.60	17542 {1790}	1.34	17542 {1790}	1.16	17542 {1790}	0.71	17542 {1790}	0.20	17542 {1790}
TD250	100	22.82	11238 {1147}	21.46	12643 {1290}	19.35	14224 {1451}	17.75	15628 {1595}	10.95	17560 {1792}	2.47	17560 {1792}
	150	17.15	12292 {1254}	15.82	13521 {1380}	14.54	15453 {1577}	13.30	16858 {1720}	7.68	17560 {1792}	1.77	17560 {1792}
	200	13.38	12468 {1272}	12.50	13872 {1416}	10.99	15102 {1541}	10.51	17209 {1756}	5.99	17560 {1792}	1.41	17560 {1792}
	250	10.91	12468 {1272}	10.08	13697 {1398}	9.20	15453 {1577}	8.61	17209 {1756}	4.94	17560 {1792}	1.17	17560 {1792}
	300	14.41	19831 {2024}	12.78	20964 {2139}	10.50	21354 {2179}	8.89	21558 {2200}	4.97	21558 {2200}	1.18	21558 {2200}
	450	10.93	21329 {2176}	9.30	21558 {2200}	7.53	21558 {2200}	6.35	21558 {2200}	3.59	21558 {2200}	0.87	21558 {2200}
	600	8.57	21558 {2200}	7.22	21558 {2200}	5.87	21558 {2200}	4.95	21558 {2200}	2.83	21558 {2200}	0.70	21558 {2200}
	750	7.02	21558 {2200}	5.94	21558 {2200}	4.84	21558 {2200}	4.09	21558 {2200}	2.34	21558 {2200}	0.58	21558 {2200}
	900	6.14	21558 {2200}	5.21	21558 {2200}	4.26	21558 {2200}	3.62	21558 {2200}	2.11	21558 {2200}	0.54	21558 {2200}
	1200	4.85	21558 {2200}	4.13	21558 {2200}	3.39	21558 {2200}	2.89	21558 {2200}	1.70	21558 {2200}	0.45	21558 {2200}
	1500	4.34	22646 {2311}	3.70	22646 {2311}	3.03	22646 {2311}	2.59	22646 {2311}	1.52	22646 {2311}	0.40	22646 {2311}
	1800	3.82	22646 {2311}	3.26	22646 {2311}	2.69	22646 {2311}	2.30	22646 {2311}	1.37	22646 {2311}	0.37	22646 {2311}
	2400	3.05	22646 {2311}	2.61	22646 {2311}	2.16	22646 {2311}	1.86	22646 {2311}	1.12	22646 {2311}	0.31	22646 {2311}
	3000	2.55	22646 {2311}	2.20	22646 {2311}	1.83	22646 {2311}	1.57	22646 {2311}	0.95	22646 {2311}	0.26	22646 {2311}
	3600	2.25	22646 {2311}	1.94	22646 {2311}	1.62	22646 {2311}	1.39	22646 {2311}	0.85	22646 {2311}	0.24	22646 {2311}

Refer to p 12 for the actual reduction ratio.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD280	100	32.11	15895 {1622}	29.72	17623 {1798}	26.54	19613 {2001}	23.28	20629 {2105}	15.36	24854 {2536}	3.46	24854 {2536}
	150	23.75	17137 {1749}	21.35	18392 {1877}	18.78	20132 {2054}	16.50	21126 {2156}	10.73	24854 {2536}	2.48	24854 {2536}
	200	18.79	17646 {1801}	17.07	19138 {1953}	14.86	20629 {2105}	13.05	21623 {2206}	8.37	24854 {2536}	1.96	24854 {2536}
	250	14.72	16901 {1725}	13.65	18641 {1902}	12.36	20877 {2130}	10.87	21872 {2232}	6.94	24854 {2536}	1.65	24854 {2536}
	300	18.59	25900 {2643}	16.12	26798 {2734}	13.56	27947 {2852}	11.65	28664 {2925}	6.49	28664 {2925}	1.53	28664 {2925}
	450	14.28	27860 {2843}	12.37	28664 {2925}	10.01	28664 {2925}	8.41	28664 {2925}	4.73	28664 {2925}	1.15	28664 {2925}
	600	11.38	28664 {2925}	9.58	28664 {2925}	7.78	28664 {2925}	6.55	28664 {2925}	3.73	28664 {2925}	0.91	28664 {2925}
	750	9.35	28664 {2925}	7.91	28664 {2925}	6.43	28664 {2925}	5.43	28664 {2925}	3.11	28664 {2925}	0.77	28664 {2925}
	900	8.12	28664 {2925}	6.87	28664 {2925}	5.61	28664 {2925}	4.76	28664 {2925}	2.75	28664 {2925}	0.71	28664 {2925}
	1200	6.39	28664 {2925}	5.43	28664 {2925}	4.45	28664 {2925}	3.79	28664 {2925}	2.22	28664 {2925}	0.58	28664 {2925}
	1500	5.74	30110 {3072}	4.88	30110 {3072}	4.00	30110 {3072}	3.40	30110 {3072}	1.99	30110 {3072}	0.52	30110 {3072}
	1800	5.01	30110 {3072}	4.27	30110 {3072}	3.52	30110 {3072}	3.00	30110 {3072}	1.78	30110 {3072}	0.48	30110 {3072}
	2400	3.99	30110 {3072}	3.41	30110 {3072}	2.82	30110 {3072}	2.41	30110 {3072}	1.45	30110 {3072}	0.40	30110 {3072}
	3000	3.36	30110 {3072}	2.89	30110 {3072}	2.39	30110 {3072}	2.05	30110 {3072}	1.25	30110 {3072}	0.35	30110 {3072}
	3600	2.92	30110 {3072}	2.51	30110 {3072}	2.09	30110 {3072}	1.80	30110 {3072}	1.10	30110 {3072}	0.31	30110 {3072}
TD315	100	32.13	15957 {1628}	29.82	17738 {1810}	26.51	19679 {2008}	23.16	20584 {2100}	15.27	24821 {2533}	4.19	30270 {3089}
	150	23.82	17261 {1761}	21.35	18465 {1884}	18.84	20281 {2069}	16.48	21189 {2162}	10.93	25427 {2595}	3.00	30270 {3089}
	200	18.61	17557 {1791}	16.96	19070 {1946}	14.76	20584 {2100}	13.10	21794 {2224}	8.73	26032 {2656}	2.37	30270 {3089}
	250	14.70	16951 {1730}	13.68	18767 {1915}	12.31	20886 {2131}	10.93	22097 {2255}	7.31	26335 {2687}	2.00	30270 {3089}
	300	28.16	39325 {4013}	24.69	41146 {4199}	20.89	43159 {4404}	18.00	44420 {4533}	10.03	44420 {4533}	2.37	44420 {4533}
	450	21.64	43006 {4388}	18.82	44420 {4533}	15.20	44420 {4533}	12.79	44420 {4533}	7.20	44420 {4533}	1.74	44420 {4533}
	600	17.28	44420 {4533}	14.57	44420 {4533}	11.83	44420 {4533}	9.97	44420 {4533}	5.66	44420 {4533}	1.39	44420 {4533}
	750	14.23	44420 {4533}	12.03	44420 {4533}	9.78	44420 {4533}	8.25	44420 {4533}	4.72	44420 {4533}	1.18	44420 {4533}
	900	12.33	44420 {4533}	10.45	44420 {4533}	8.53	44420 {4533}	7.23	44420 {4533}	4.19	44420 {4533}	1.08	44420 {4533}
	1200	9.71	44420 {4533}	8.25	44420 {4533}	6.77	44420 {4533}	5.76	44420 {4533}	3.38	44420 {4533}	0.89	44420 {4533}
	1500	8.75	46790 {4774}	7.43	46790 {4774}	6.10	46790 {4774}	5.18	46790 {4774}	3.03	46790 {4774}	0.80	46790 {4774}
	1800	7.63	46790 {4774}	6.50	46790 {4774}	5.35	46790 {4774}	4.57	46790 {4774}	2.71	46790 {4774}	0.74	46790 {4774}
	2400	6.07	46790 {4774}	5.19	46790 {4774}	4.29	46790 {4774}	3.68	46790 {4774}	2.20	46790 {4774}	0.61	46790 {4774}
	3000	5.12	46790 {4774}	4.40	46790 {4774}	3.65	46790 {4774}	3.13	46790 {4774}	1.90	46790 {4774}	0.54	46790 {4774}
	3600	4.45	46790 {4774}	3.83	46790 {4774}	3.18	46790 {4774}	2.74	46790 {4774}	1.64	46790 {4774}	0.47	46790 {4774}

■ Allowable output shaft load

1. Allowable output shaft radial load

Solid output shaft type (S)

N{kgf}

Output shaft rotational speed \ Size	TD125S	TD150S	TD175S	TD200S	TD225S	TD250S	TD280S	TD315S
59 r/min or less	15700{1602}	21600{2204}	25500{2602}	32400{3306}	37000{3776}	44000{4490}	49000{5000}	60800{6204}
60 - 175 r/min	15700{1602}	21600{2204}	25500{2602}	32400{3306}	25000{2551}	25000{2551}	36000{3673}	36500{3724}

Hollow output shaft type (H)

N{kgf}

Output shaft rotational speed \ Size	TD125H	TD150H	TD175H	TD200H	TD225H	TD250H	TD280H	TD315H
59 r/min or less	29537{3014}	25904{2643}	32614{3328}	38803{3960}	45821{4676}	64558{6588}	65415{6675}	127424{13002}
60 - 175 r/min	20300{2071}	17813{1818}	24452{2495}	26678{2722}	31404{3205}	44247{4515}	65415{6675}	87346 {8913}

2. Allowable output shaft axial load

Solid output shaft type (S)

N{kgf}

Output shaft rotational speed \ Size	TD125S	TD150S	TD175S	TD200S	TD225S	TD250S	TD280S	TD315S
59 r/min or less	19241{1963}	16607{1695}	21034{2146}	27161{2772}	24373{2487}	21906{2235}	26492{2703}	30202{3082}
60 - 175 r/min	13274{1354}	11477{1171}	14520{1482}	18737{1912}	16686{1703}	14957{1526}	18085{1845}	20567{2099}

Hollow output shaft type (H)

N{kgf}

Output shaft rotational speed \ Size	TD125H	TD150H	TD175H	TD200H	TD225H	TD250H	TD280H	TD315H
59 r/min or less	29725{3033}	26617{2716}	34255{3495}	37715{3848}	40643{4147}	57163{5833}	100123{10217}	108760{11098}
60 - 175 r/min	20472{2089}	18360{1873}	23599{2408}	25985{2652}	27878{2845}	39198{4000}	68680 {7008}	77559 {7914}

■ Actual reduction ratio

Single reduction type

	TD125	TD150	TD175	TD200	TD225	TD250	TD280	TD315
10	10.25	10.25	10.25	10.25	10.25	10.25	10.25	10.25
20	20.00	20.50	20.50	20.00	20.50	20.50	20.50	20.50
30	31.50	31.50	32.50	31.50	31.00	31.00	30.50	31.00
40	40.00	41.00	41.00	40.00	40.00	40.00	41.00	40.00
50	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
60	63.00	63.00	65.00	63.00	60.00	62.00	61.00	62.00

Double reduction type

	TD125	TD150	TD175	TD200	TD225	TD250	TD280	TD315
100	102.50	102.50	102.50	102.50	102.50	102.50	102.50	102.50
150	153.75	153.75	153.75	153.75	153.75	153.75	153.75	153.75
200	205.00	205.00	205.00	205.00	205.00	205.00	205.00	205.00
250	256.25	256.25	256.25	256.25	256.25	256.25	256.25	256.25
300	315.00	315.00	325.00	315.00	310.00	310.00	305.00	310.00
450	472.50	472.50	487.50	472.50	465.00	465.00	457.50	465.00
600	630.00	630.00	650.00	630.00	620.00	620.00	610.00	620.00
750	787.50	787.50	812.50	787.50	775.00	775.00	762.50	775.00
900	945.00	945.00	975.00	945.00	930.00	930.00	915.00	930.00
1200	1260.00	1260.00	1300.00	1260.00	1240.00	1240.00	1220.00	1240.00
1500	1575.00	1575.00	1625.00	1575.00	1500.00	1550.00	1525.00	1550.00
1800	1890.00	1890.00	1950.00	1890.00	1800.00	1860.00	1830.00	1860.00
2400	2520.00	2520.00	2600.00	2520.00	2400.00	2480.00	2440.00	2480.00
3000	3150.00	3150.00	3250.00	3150.00	3000.00	3100.00	3050.00	3100.00
3600	3780.00	3780.00	3900.00	3780.00	3600.00	3720.00	3660.00	3720.00

■ Moment of inertia (GD²)

Solid output shaft type (S)

Single reduction type

kg · m² {kgf · m²}

Nominal reduction ratio \ Size	TD125S	TD150S	TD175S	TD200S	TD225S	TD250S	TD280S	TD315S
10	0.0049 {0.0197}	0.0094 {0.0377}	0.0171 {0.0683}	0.0322 {0.1287}	0.0528 {0.2113}	0.0945 {0.3780}	0.1669 {0.6676}	0.3173 {1.2692}
20	0.0044 {0.0175}	0.0081 {0.0323}	0.0138 {0.0553}	0.0267 {0.1070}	0.0448 {0.1792}	0.0805 {0.3220}	0.1413 {0.5651}	0.2738 {1.0952}
30	0.0043 {0.0172}	0.0080 {0.0322}	0.0133 {0.0534}	0.0258 {0.1033}	0.0417 {0.1667}	0.0782 {0.3129}	0.1353 {0.5413}	0.2673 {1.0694}
40	0.0043 {0.0171}	0.0078 {0.0312}	0.0132 {0.0530}	0.0256 {0.1025}	0.4320 {0.1728}	0.0777 {0.3107}	0.1364 {0.5457}	0.2657 {1.0626}
50	0.0043 {0.0170}	0.0076 {0.0304}	0.0135 {0.0540}	0.0255 {0.1019}	0.0423 {0.1693}	0.0773 {0.3093}	0.1337 {0.5348}	0.2645 {1.0582}
60	0.0042 {0.0170}	0.0079 {0.0318}	0.0131 {0.0525}	0.0254 {0.1016}	0.0423 {0.1692}	0.0771 {0.3085}	0.1332 {0.5328}	0.2639 {1.0556}

Double reduction type

kg · m² {kgf · m²}

Nominal reduction ratio \ Size	TD125S	TD150S	TD175S	TD200S	TD225S	TD250S	TD280S	TD315S
100	0.0006 {0.0027}	0.0009 {0.0036}	0.0022 {0.0087}	0.0047 {0.0188}	0.0049 {0.0196}	0.0097 {0.0391}	0.0176 {0.0703}	0.0191 {0.0763}
150	0.0006 {0.0026}	0.0008 {0.0033}	0.0020 {0.0078}	0.0041 {0.0165}	0.0042 {0.0168}	0.0084 {0.0335}	0.0147 {0.0591}	0.0154 {0.0617}
200	0.0006 {0.0023}	0.0007 {0.0029}	0.0018 {0.0072}	0.0036 {0.0141}	0.0036 {0.0143}	0.0069 {0.0275}	0.0117 {0.0470}	0.0121 {0.0485}
250	0.0006 {0.0022}	0.0007 {0.0028}	0.0017 {0.0067}	0.0034 {0.0132}	0.0034 {0.0133}	0.0061 {0.0243}	0.0104 {0.0414}	0.0106 {0.0423}
300	0.0006 {0.0027}	0.0009 {0.0035}	0.0021 {0.0085}	0.0047 {0.0185}	0.0048 {0.0192}	0.0096 {0.0384}	0.0173 {0.0690}	0.0186 {0.0743}
450	0.0006 {0.0026}	0.0008 {0.0032}	0.0020 {0.0077}	0.0041 {0.0164}	0.0042 {0.0166}	0.0083 {0.0332}	0.0146 {0.0585}	0.0152 {0.0609}
600	0.0006 {0.0023}	0.0007 {0.0029}	0.0018 {0.0071}	0.0036 {0.0141}	0.0036 {0.0142}	0.0069 {0.0274}	0.0116 {0.0467}	0.0120 {0.0480}
750	0.0006 {0.0022}	0.0007 {0.0028}	0.0017 {0.0067}	0.0033 {0.0132}	0.0034 {0.0133}	0.0060 {0.0242}	0.0103 {0.0412}	0.0105 {0.0420}
900	0.0006 {0.0024}	0.0008 {0.0030}	0.0018 {0.0073}	0.0038 {0.0151}	0.0038 {0.0152}	0.0075 {0.0299}	0.0131 {0.0521}	0.0132 {0.0527}
1200	0.0006 {0.0023}	0.0007 {0.0028}	0.0017 {0.0068}	0.0033 {0.0134}	0.0033 {0.0134}	0.0064 {0.0256}	0.0108 {0.0431}	0.0109 {0.0435}
1500	0.0006 {0.0022}	0.0007 {0.0028}	0.0017 {0.0067}	0.0033 {0.0132}	0.0034 {0.0133}	0.0060 {0.0242}	0.0103 {0.0412}	0.0105 {0.0420}
1800	0.0006 {0.0024}	0.0008 {0.0030}	0.0018 {0.0073}	0.0038 {0.0151}	0.0038 {0.0152}	0.0075 {0.0299}	0.0130 {0.0521}	0.0132 {0.0527}
2400	0.0006 {0.0023}	0.0007 {0.0028}	0.0017 {0.0068}	0.0034 {0.0134}	0.0034 {0.0134}	0.0066 {0.0256}	0.0110 {0.0431}	0.0114 {0.0435}
3000	0.0006 {0.0022}	0.0007 {0.0027}	0.0016 {0.0065}	0.0032 {0.0127}	0.0032 {0.0128}	0.0057 {0.0230}	0.0098 {0.0391}	0.0098 {0.0393}
3600	0.0006 {0.0022}	0.0006 {0.0025}	0.0016 {0.0062}	0.0031 {0.0123}	0.0031 {0.0123}	0.0056 {0.0223}	0.0091 {0.0365}	0.0092 {0.0367}

Hollow output shaft type (H)

Single reduction type

kg · m² {kgf · m²}

Nominal reduction ratio \ Size	TD125H	TD150H	TD175H	TD200H	TD225H	TD250H	TD280H	TD315H
10	0.0052 {0.0208}	0.0098 {0.0391}	0.0177 {0.0706}	0.0332 {0.1327}	0.0534 {0.2136}	0.0953 {0.3812}	0.1723 {0.6893}	0.3251 {1.3003}
20	0.0045 {0.0178}	0.0082 {0.0327}	0.0140 {0.0559}	0.0270 {0.1081}	0.0450 {0.1798}	0.0807 {0.3230}	0.1427 {0.5708}	0.2758 {1.1034}
30	0.0043 {0.0173}	0.0081 {0.0323}	0.0134 {0.0536}	0.0259 {0.1038}	0.0417 {0.1670}	0.0783 {0.3133}	0.1360 {0.5439}	0.2682 {1.0730}
40	0.0043 {0.0172}	0.0078 {0.0313}	0.0133 {0.0531}	0.0257 {0.1028}	0.0433 {0.1730}	0.0777 {0.3110}	0.1368 {0.5471}	0.2662 {1.0648}
50	0.0043 {0.0171}	0.0076 {0.0305}	0.0135 {0.0541}	0.0255 {0.1021}	0.0424 {0.1694}	0.0774 {0.3095}	0.1339 {0.5358}	0.2649 {1.0596}
60	0.0043 {0.0170}	0.0080 {0.0318}	0.0131 {0.0526}	0.0254 {0.1017}	0.0423 {0.1692}	0.0771 {0.3086}	0.1334 {0.5335}	0.2641 {1.0565}

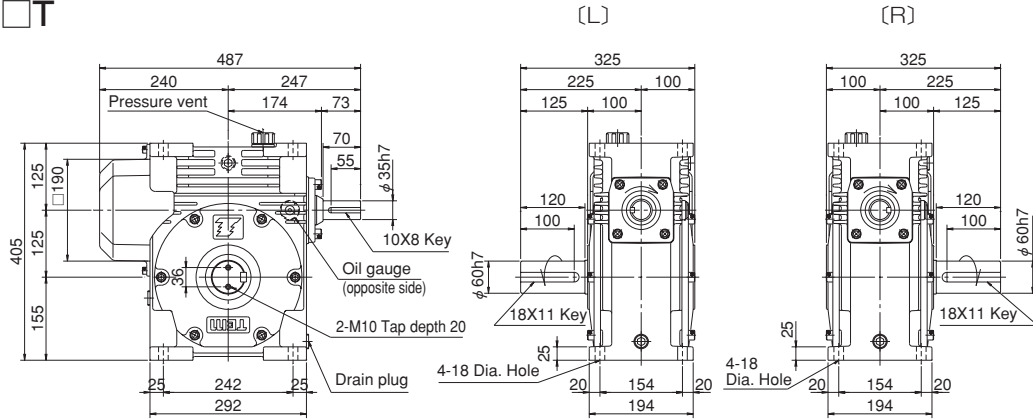
Double reduction type

kg · m² {kgf · m²}

Nominal reduction ratio \ Size	TD125H	TD150H	TD175H	TD200H	TD225H	TD250H	TD280H	TD315H
100	0.0007 {0.0027}	0.0009 {0.0036}	0.0022 {0.0087}	0.0047 {0.0188}	0.0049 {0.0196}	0.0098 {0.0391}	0.0176 {0.0705}	0.0192 {0.0766}
150	0.0006 {0.0026}	0.0008 {0.0033}	0.0020 {0.0078}	0.0041 {0.0165}	0.0042 {0.0168}	0.0084 {0.0335}	0.0148 {0.0592}	0.0154 {0.0619}
200	0.0006 {0.0024}	0.0007 {0.0029}	0.0018 {0.0072}	0.0036 {0.0141}	0.0036 {0.0143}	0.0069 {0.0276}	0.0117 {0.0470}	0.0121 {0.0486}
250	0.0006 {0.0022}	0.0007 {0.0028}	0.0017 {0.0067}	0.0034 {0.0132}	0.0034 {0.0133}	0.0061 {0.0243}	0.0104 {0.0414}	0.0106 {0.0424}
300	0.0006 {0.0027}	0.0009 {0.0035}	0.0021 {0.0085}	0.0047 {0.0185}	0.0048 {0.0192}	0.0096 {0.0384}	0.0173 {0.0690}	0.0186 {0.0743}
450	0.0006 {0.0026}	0.0008 {0.0032}	0.0020 {0.0077}	0.0041 {0.0164}	0.0042 {0.0166}	0.0083 {0.0332}	0.0146 {0.0585}	0.0152 {0.0609}
600	0.0006 {0.0023}	0.0007 {0.0029}	0.0018 {0.0071}	0.0036 {0.0141}	0.0036 {0.0142}	0.0069 {0.0274}	0.0116 {0.0467}	0.0120 {0.0480}
750	0.0006 {0.0022}	0.0007 {0.0028}	0.0017 {0.0067}	0.0033 {0.0132}	0.0034 {0.0133}	0.0060 {0.0242}	0.0103 {0.0412}	0.0105 {0.0420}
900	0.0006 {0.0024}	0.0008 {0.0030}	0.0018 {0.0073}	0.0038 {0.0151}	0.0038 {0.0152}	0.0075 {0.0299}	0.0131 {0.0521}	0.0132 {0.0527}
1200	0.0006 {0.0023}	0.0007 {0.0028}	0.0017 {0.0068}	0.0033 {0.0134}	0.0033 {0.0134}	0.0064 {0.0256}	0.0108 {0.0431}	0.0109 {0.0435}
1500	0.0006 {0.0022}	0.0007 {0.0028}	0.0017 {0.0067}	0.0033 {0.0132}	0.0034 {0.0133}	0.0060 {0.0242}	0.0103 {0.0412}	0.0105 {0.0420}
1800	0.0006 {0.0024}	0.0008 {0.0030}	0.0018 {0.0073}	0.0038 {0.0151}	0.0038 {0.0152}	0.0075 {0.0299}	0.0130 {0.0521}	0.0132 {0.0527}
2400	0.0006 {0.0023}	0.0007 {0.0028}	0.0017 {0.0068}	0.0034 {0.0134}	0.0034 {0.0134}	0.0066 {0.0256}	0.0110 {0.0431}	0.0114 {0.0435}
3000	0.0006 {0.0022}	0.0007 {0.0027}	0.0016 {0.0065}	0.0032 {0.0127}	0.0032 {0.0128}	0.0057 {0.0230}	0.0098 {0.0391}	0.0098 {0.0393}
3600	0.0006 {0.0022}	0.0006 {0.0025}	0.0016 {0.0062}	0.0031 {0.0123}	0.0031 {0.0123}	0.0056 {0.0223}	0.0091 {0.0365}	0.0092 {0.0367}

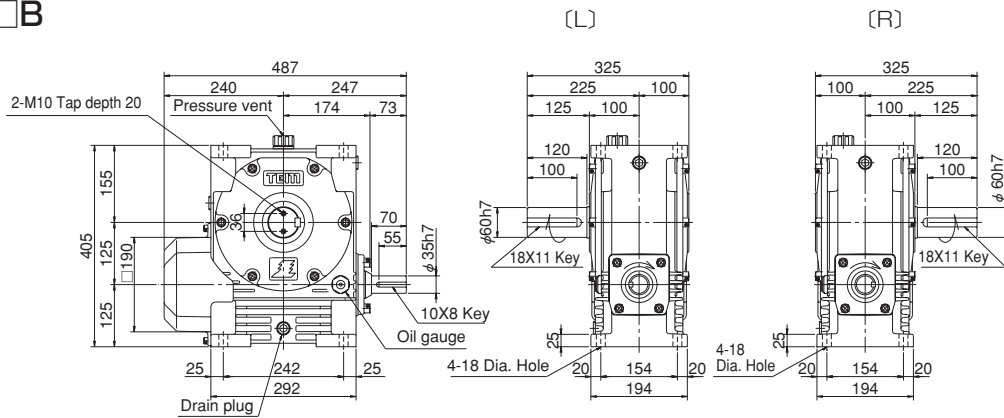
TD125S

TD125S□□T



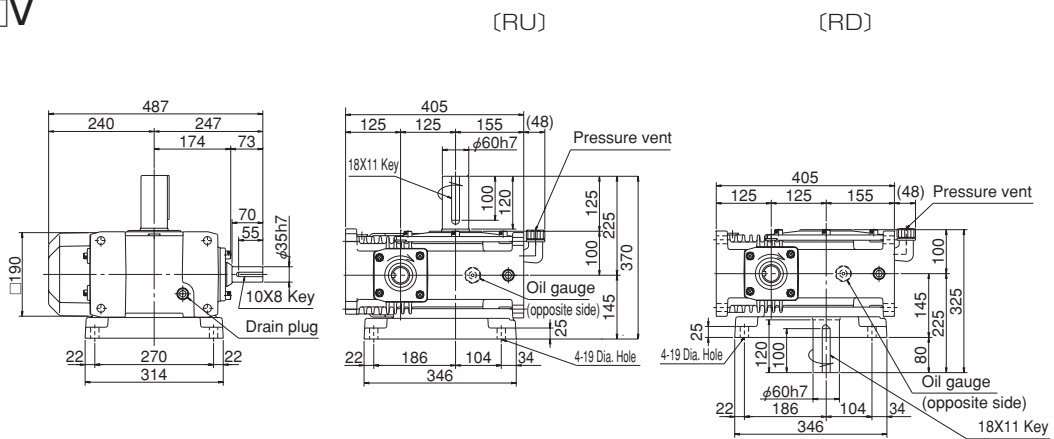
Mass: 85kg

TD125S□□B



Mass: 89kg

TD125S□□V



Mass: 97kg

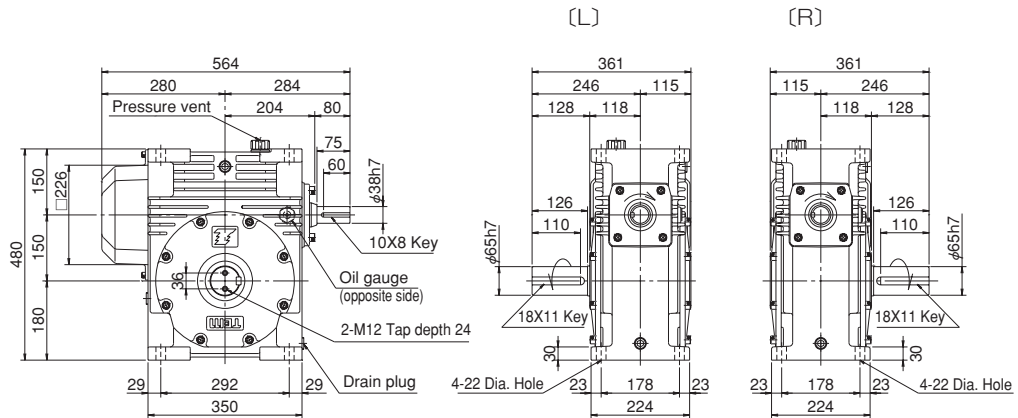
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD125	10	21.0	1112 {113}	20.1	1285 {131}	19.0	1532 {156}	20.3	1766 {180}	13.0	2382 {243}	3.0	2671 { 273}
	20	15.1	1515 {155}	14.5	1748 {178}	13.7	2076 {212}	12.5	2290 {234}	8.1	2783 {284}	1.8	2948 { 301}
	30	10.9	1631 {166}	10.4	1880 {192}	9.6	2189 {223}	8.5	2318 {237}	5.5	2809 {287}	1.6	3889 { 397}
	40	9.7	1812 {185}	9.3	2083 {213}	7.9	2232 {228}	7.0	2364 {241}	4.5	2865 {292}	1.1	3146 { 321}
	50	8.3	1861 {190}	7.7	2086 {213}	6.6	2236 {228}	5.8	2368 {242}	3.8	2870 {293}	1.1	3870 { 395}
	60	7.0	1877 {192}	6.4	2067 {211}	5.5	2217 {226}	4.9	2348 {240}	3.2	2846 {290}	1.0	3889 { 397}

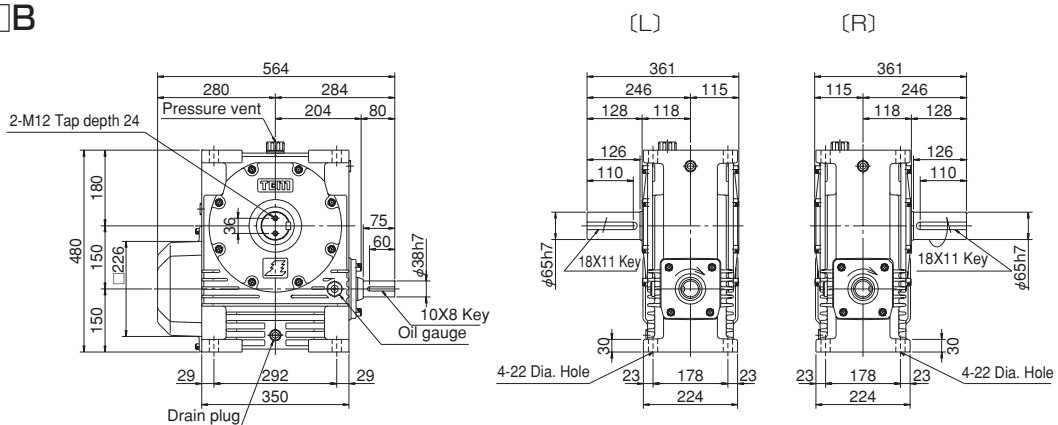
TD150S

TD150S□□T



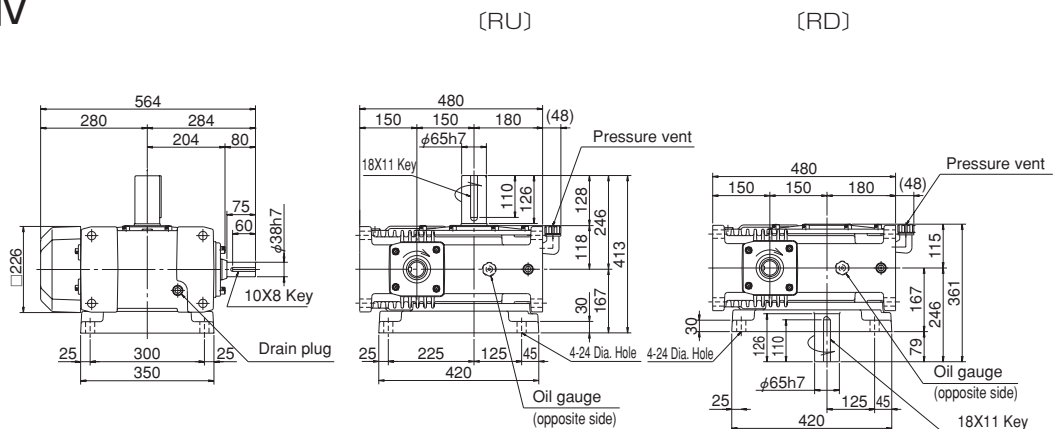
Mass: 131kg

TD150S□□B



Mass: 137kg

TD150S□□V



Mass: 157kg

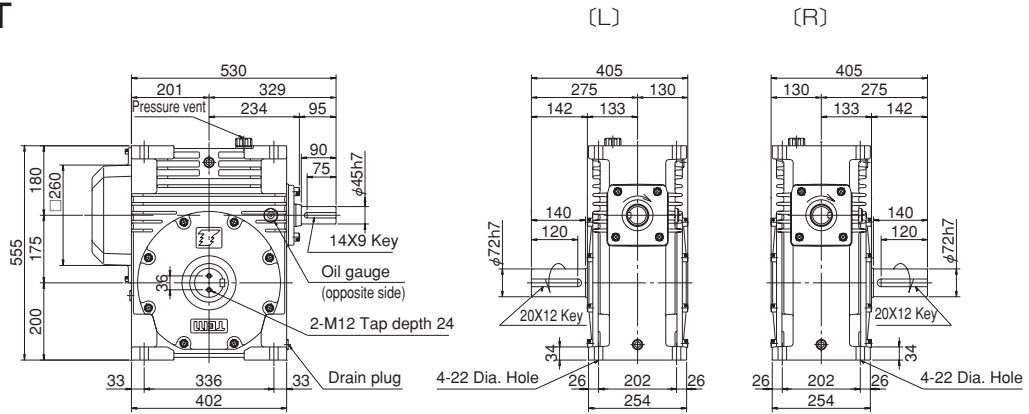
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD150	10	32.3	1717 {175}	31.0	1989 {203}	29.4	2377 {243}	28.1	2745 {280}	22.6	4157 {424}	5.4	4861 {496}
	20	23.5	2426 {248}	22.5	2803 {286}	21.3	3337 {341}	19.9	3761 {384}	11.2	3995 {408}	2.4	3995 {408}
	30	16.6	2505 {256}	15.9	2895 {295}	15.1	3448 {352}	13.7	3771 {385}	8.9	4570 {466}	2.5	6002 {612}
	40	15.1	2917 {298}	14.5	3365 {343}	12.6	3665 {374}	11.0	3881 {396}	6.5	4290 {438}	1.4	4290 {438}
	50	13.7	3151 {322}	12.5	3448 {352}	10.6	3696 {377}	9.4	3914 {399}	5.7	4397 {449}	1.2	4397 {449}
	60	10.7	2889 {295}	10.3	3336 {340}	8.9	3610 {368}	7.8	3823 {390}	5.1	4634 {473}	1.5	6166 {629}

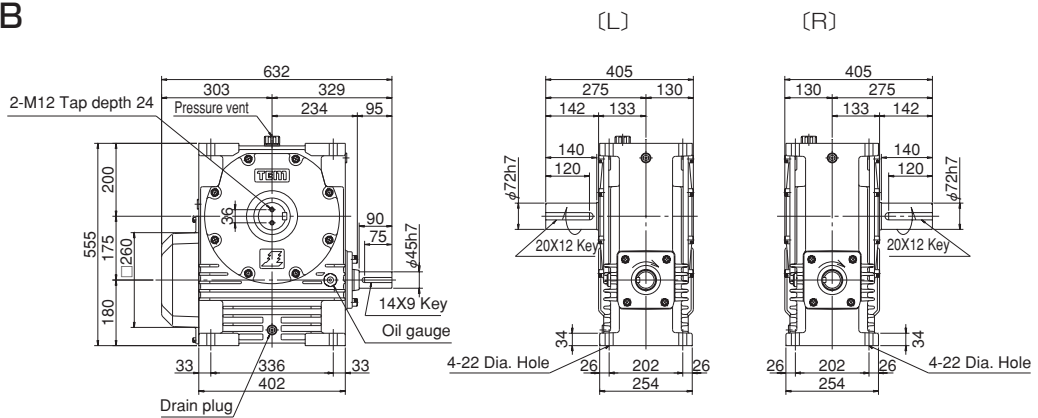
TD175S

TD175S□□□



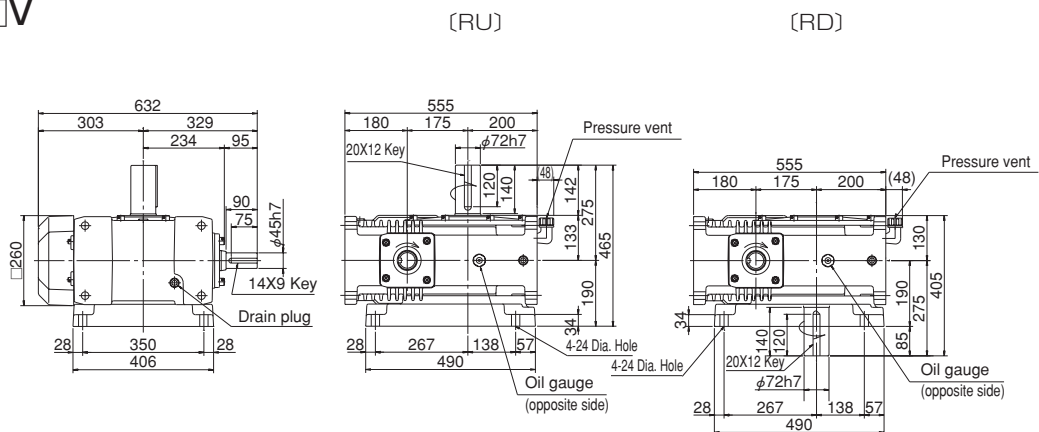
Mass: 195kg

TD175S□□□B



Mass: 201kg

TD175S□□□V



Mass: 225kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

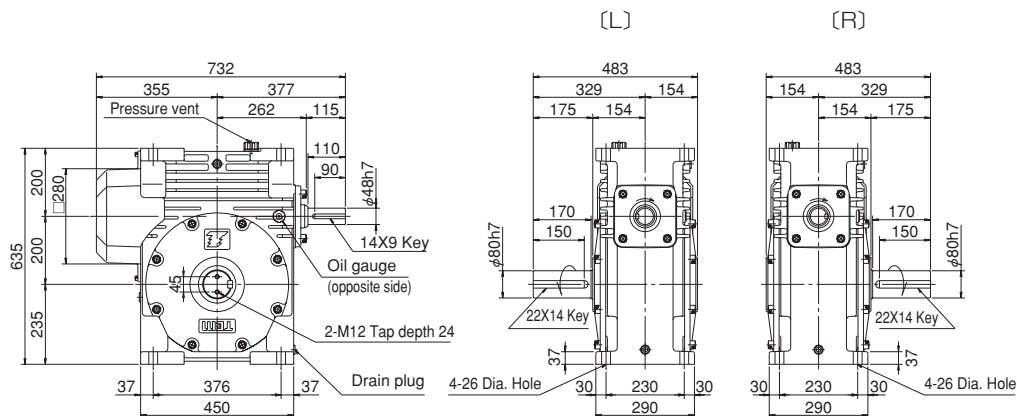
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD175	10	44.9	2392 {244}	43.3	2776 {283}	41.1	3325 {339}	39.4	3847 {393}	31.2	5769 {589}	8.6	7764 {792}
	20	34.2	3556 {363}	32.8	4113 {420}	31.1	4905 {501}	26.9	5127 {523}	14.3	5127 {523}	3.0	5127 {523}
	30	24.5	3863 {394}	23.5	4467 {456}	21.2	5048 {515}	18.6	5346 {546}	12.0	6478 {661}	3.1	7903 {806}
	40	22.1	4323 {441}	20.4	4802 {490}	17.4	5148 {525}	15.3	5451 {556}	8.4	5588 {570}	1.8	5588 {570}
	50	18.4	4194 {428}	17.3	4755 {485}	14.8	5097 {520}	13.0	5398 {551}	8.5	6542 {668}	2.2	7903 {806}
	60	15.2	4271 {436}	14.2	4785 {488}	12.1	5129 {523}	10.6	5432 {554}	7.0	6584 {672}	1.9	7903 {806}

Dimensional drawing Single reduction

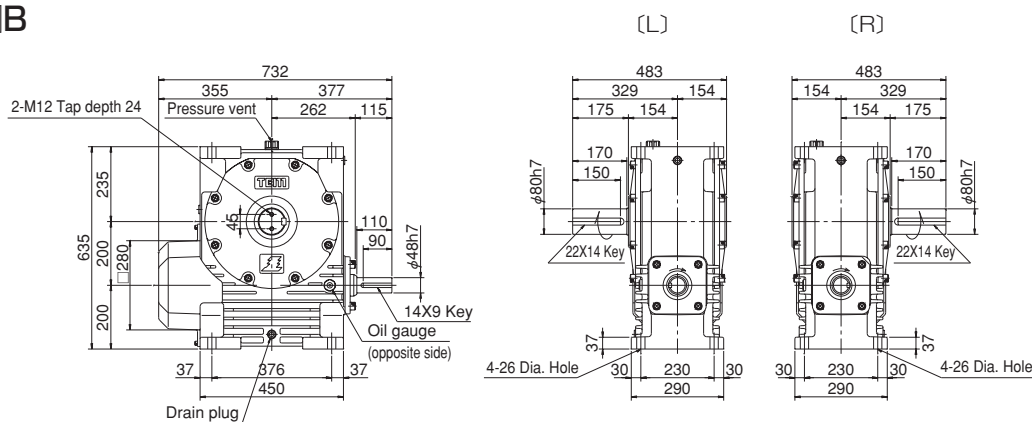
TD200S

TD200S□□T



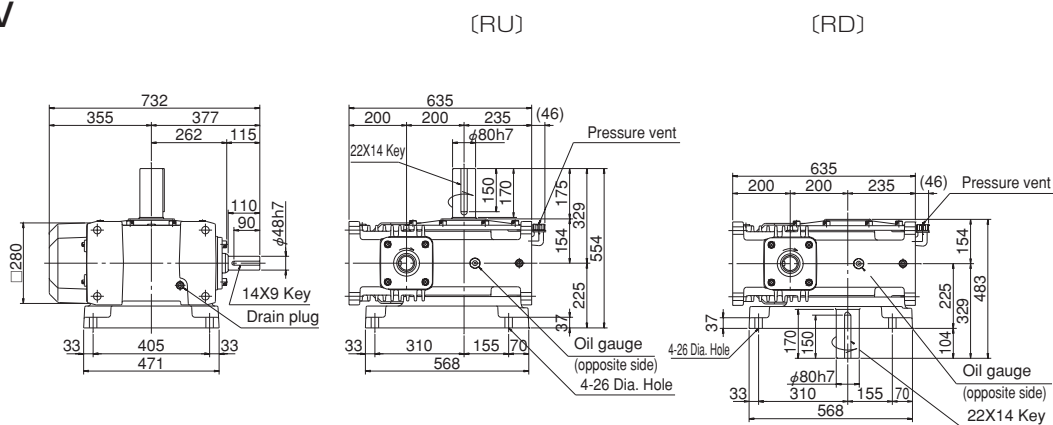
Mass: 309kg

TD200S□□B



Mass: 321kg

TD200S□□V



Mass: 225kg

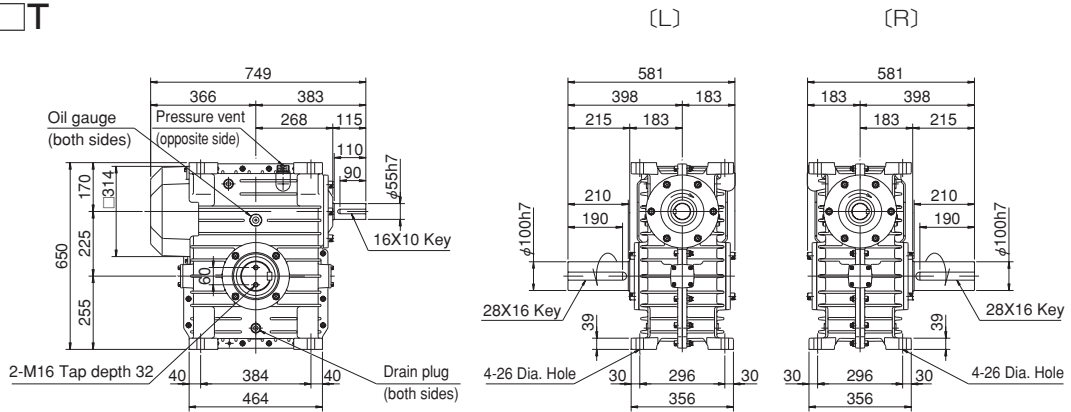
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD200	10	59.6	3174 {324}	57.5	3689 {376}	54.8	4428 {452}	52.5	5135 {524}	44.9	8286 {846}	11.5	10314 {1052}
	20	43.2	4347 {444}	41.5	5043 {515}	39.5	6037 {616}	37.8	6981 {712}	26.6	9236 {942}	6.7	11138 {1137}
	30	31.2	4717 {481}	29.7	5417 {553}	28.6	6547 {668}	27.3	7569 {772}	18.0	9352 {954}	4.6	11138 {1137}
	40	27.8	5220 {533}	26.7	6050 {617}	25.4	7232 {738}	22.9	7858 {802}	14.8	9525 {972}	3.7	11138 {1137}
	50	23.4	5344 {545}	22.5	6193 {632}	21.4	7404 {756}	18.8	7841 {800}	12.2	9505 {970}	3.1	11138 {1137}
	60	20.1	5445 {556}	19.3	6311 {644}	18.0	7390 {754}	15.9	7826 {799}	10.4	9486 {968}	2.7	11138 {1137}

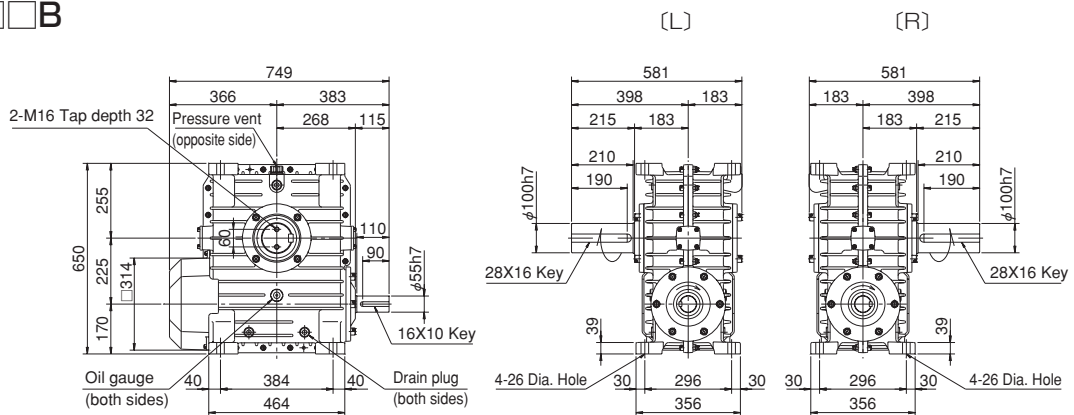
TD225S

TD225S□□T



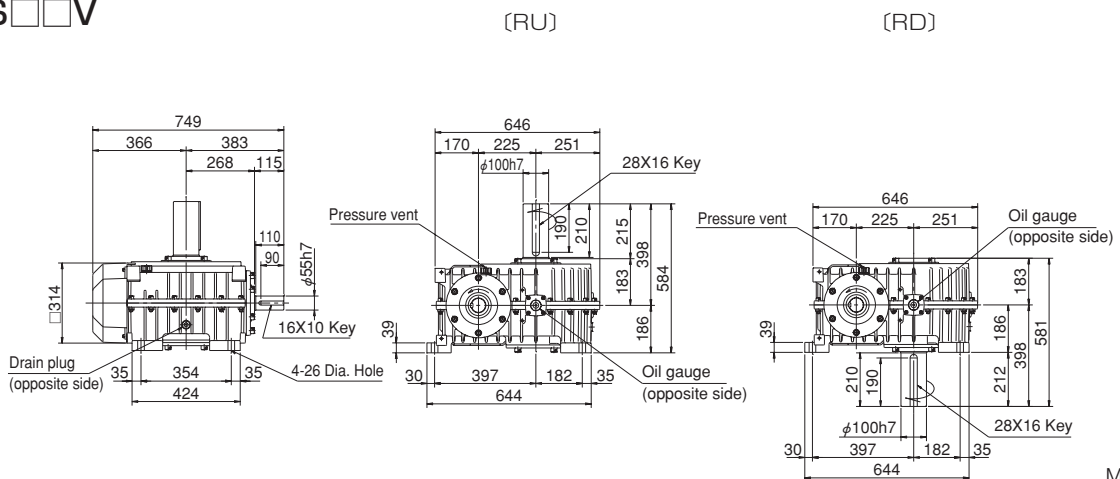
Mass: 331kg

TD225S□□B



Mass: 346kg

TD225S□□V



Mass: 336kg

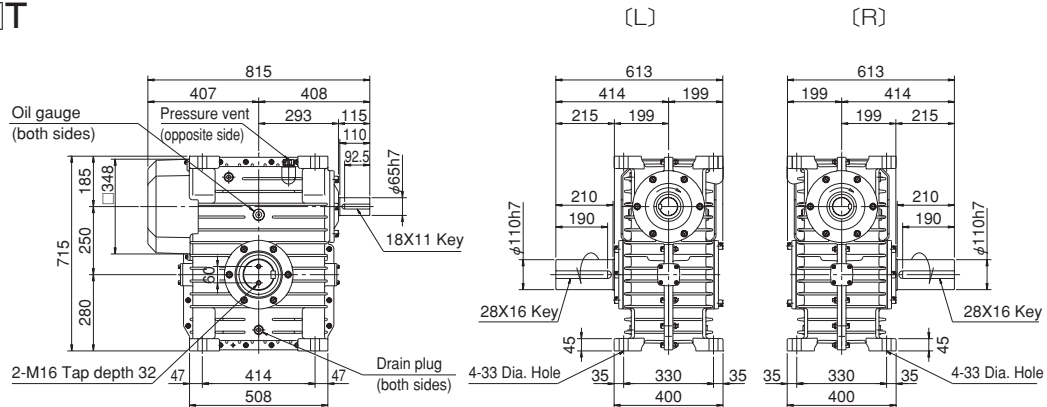
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Transmissible capability Refer to p 12 for the actual reduction ratio.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD225	10	78.0	4156 {424}	75.3	4836 {493}	71.8	5813 {593}	68.9	6749 {689}	54.4	10066 {1027}	15.0	13588 {1387}
	20	56.0	5793 {591}	53.9	6727 {686}	51.4	8063 {823}	47.1	8928 {911}	30.2	10795 {1102}	8.8	15179 {1549}
	30	43.6	6584 {672}	42.0	7640 {780}	37.5	8584 {876}	32.8	9085 {927}	21.2	10990 {1121}	6.7	16363 {1670}
	40	36.6	6924 {707}	35.3	8033 {820}	30.1	8617 {879}	26.4	9121 {931}	17.0	11036 {1126}	5.2	15762 {1608}
	50	31.5	7191 {734}	29.3	8044 {821}	25.0	8618 {879}	21.9	9122 {931}	14.2	11039 {1126}	4.7	16789 {1713}
	60	27.8	7380 {753}	25.2	8032 {820}	21.5	8606 {878}	18.9	9109 {929}	12.3	11024 {1125}	4.3	17542 {1790}

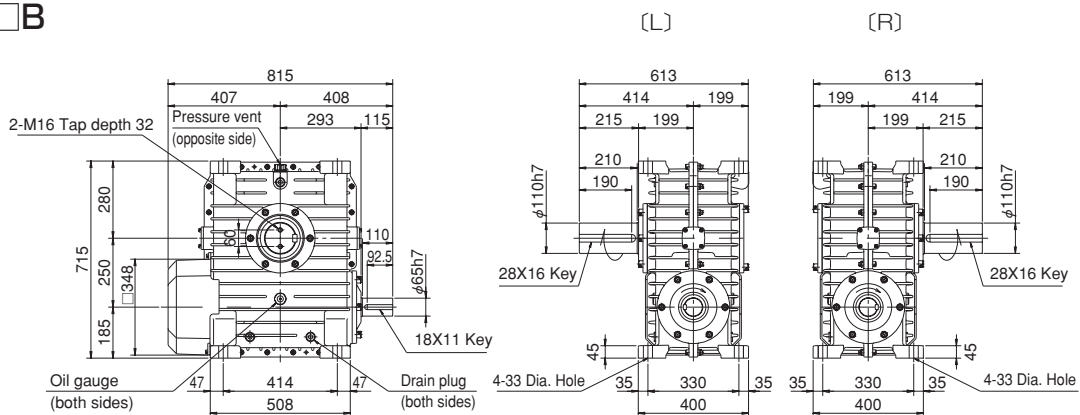
TD250S

TD250S□□T



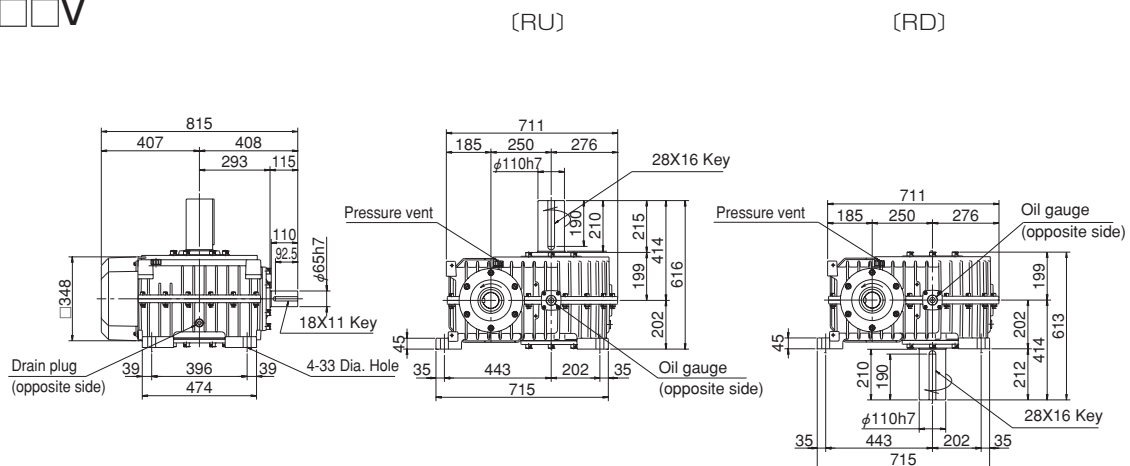
Mass: 428kg

TD250S□□B



Mass: 450kg

TD250S□□V



Mass: 418kg

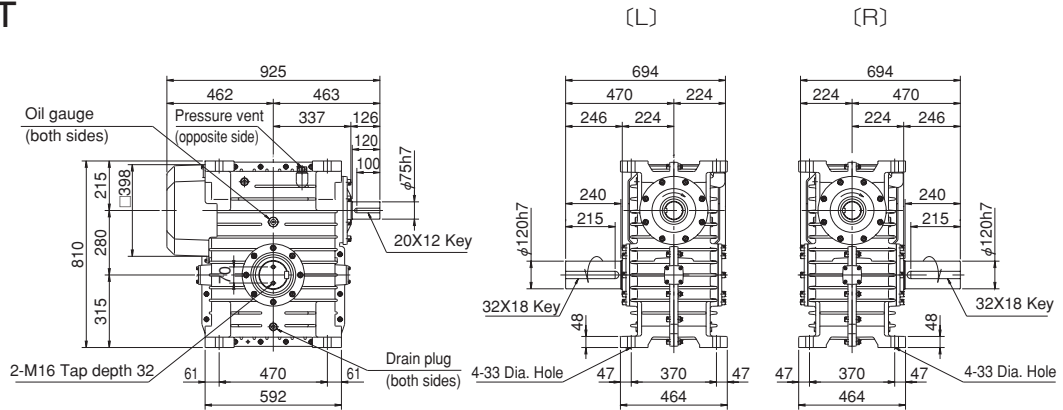
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD250	10	101.6	5421 {553}	98.1	6312 {644}	93.7	7596 {775}	90.0	8827 {901}	72.0	13352 {1362}	19.4	17560 {1792}
	20	73.5	7641 {780}	70.8	8879 {906}	67.5	10654 {1087}	62.5	11925 {1217}	40.0	14417 {1471}	9.7	16828 {1717}
	30	55.0	8297 {847}	53.0	9641 {984}	49.6	11351 {1158}	43.5	12014 {1226}	28.0	14534 {1483}	8.8	21558 {2200}
	40	48.7	9274 {946}	46.9	10768 {1099}	40.0	11546 {1178}	35.1	12220 {1247}	22.6	14785 {1509}	6.1	18630 {1901}
	50	41.1	9434 {963}	38.8	10737 {1096}	33.1	11503 {1174}	29.0	12175 {1242}	18.8	14733 {1503}	6.1	22147 {2260}
	60	35.3	9638 {983}	32.6	10711 {1093}	27.8	11475 {1171}	24.4	12147 {1239}	15.8	14700 {1500}	5.4	22646 {2311}

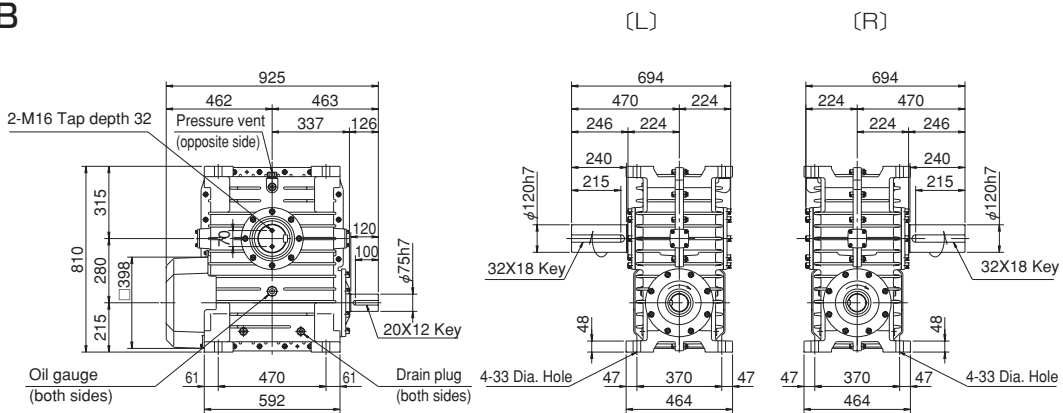
TD280S

TD280S□□T



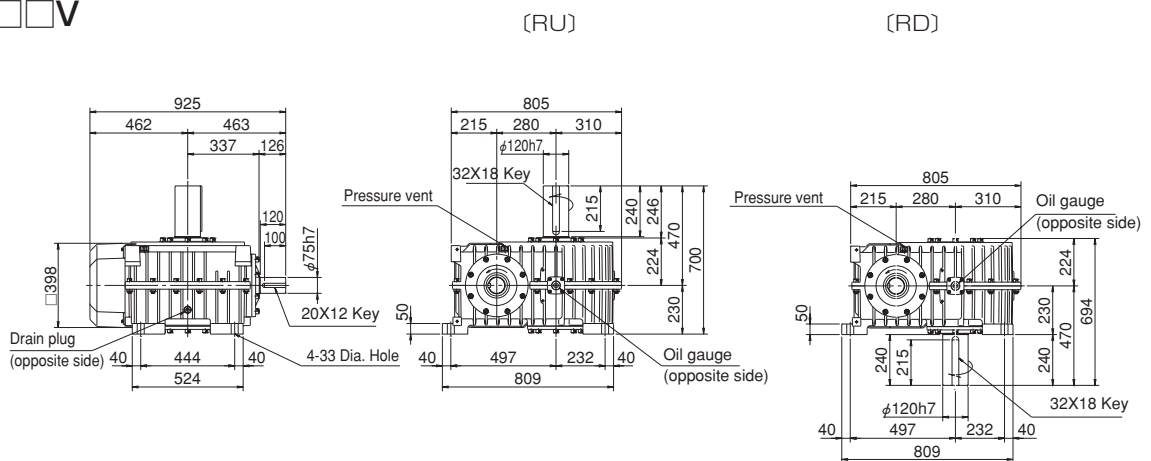
Mass: 601kg

TD280S□□B



Mass: 632kg

TD280S□□V



Mass: 587kg

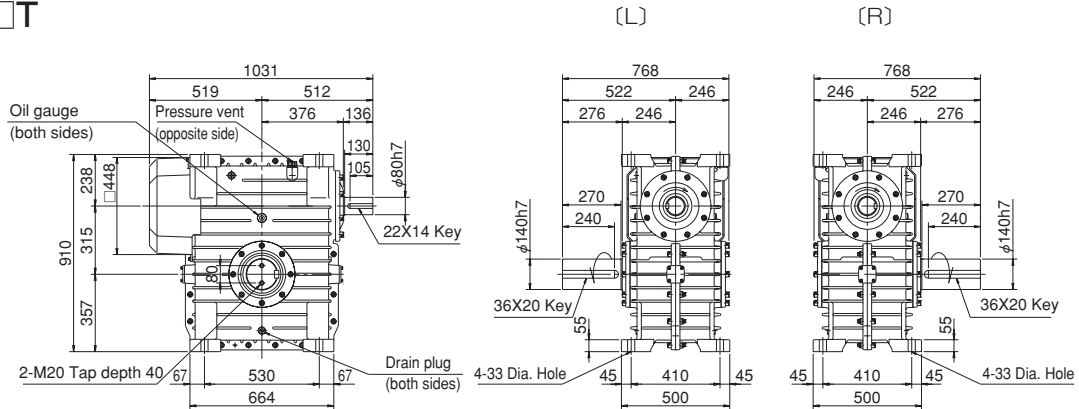
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Transmissible capability Refer to p 12 for the actual reduction ratio.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD280	10	—	—	125.7	8083 { 825}	120.3	9742 { 994}	115.7	11339 {1157}	98.1	18195 {1857}	27.4	24854 {2536}
	20	95.7	9932 {1013}	92.4	11556 {1179}	88.2	13890 {1417}	84.6	16124 {1645}	54.9	19714 {2012}	15.3	26445 {2698}
	30	73.0	10886 {1111}	70.5	12663 {1292}	67.3	15216 {1553}	60.3	16466 {1680}	38.7	19920 {2033}	11.7	28664 {2925}
	40	61.7	12006 {1225}	59.6	13958 {1424}	53.5	15759 {1608}	46.9	16679 {1702}	30.2	20181 {2059}	9.1	28392 {2897}
	50	54.3	12535 {1279}	52.5	14571 {1487}	45.2	15806 {1613}	39.6	16729 {1707}	25.6	20244 {2066}	8.1	29634 {3024}
	60	46.9	12687 {1295}	45.0	14685 {1498}	38.4	15734 {1606}	33.7	16654 {1699}	21.8	20155 {2057}	7.1	30110 {3072}

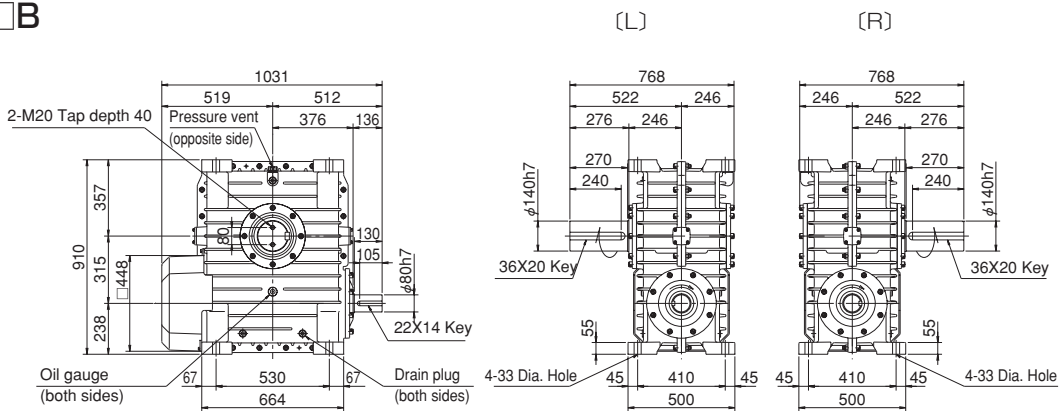
TD315S

TD315S□□T



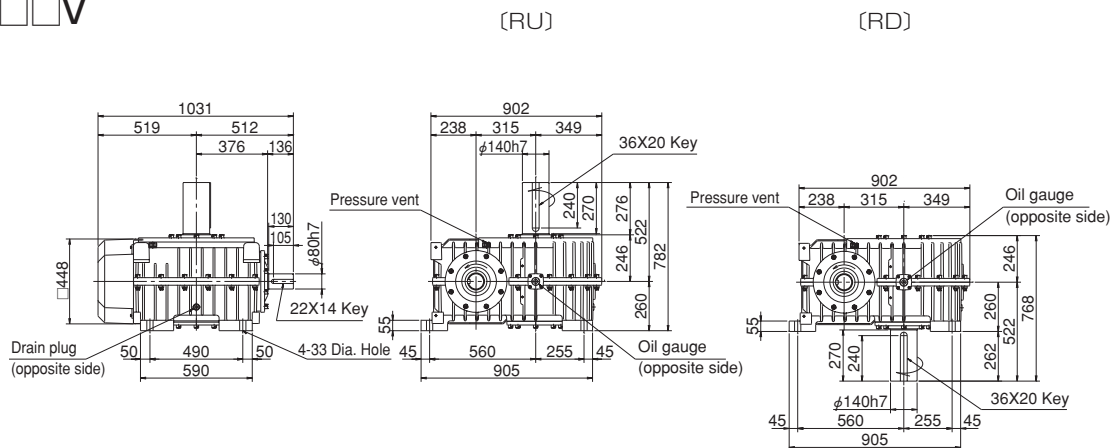
Mass: 861kg

TD315S□□B



Mass: 907kg

TD315S□□V



Mass: 869kg

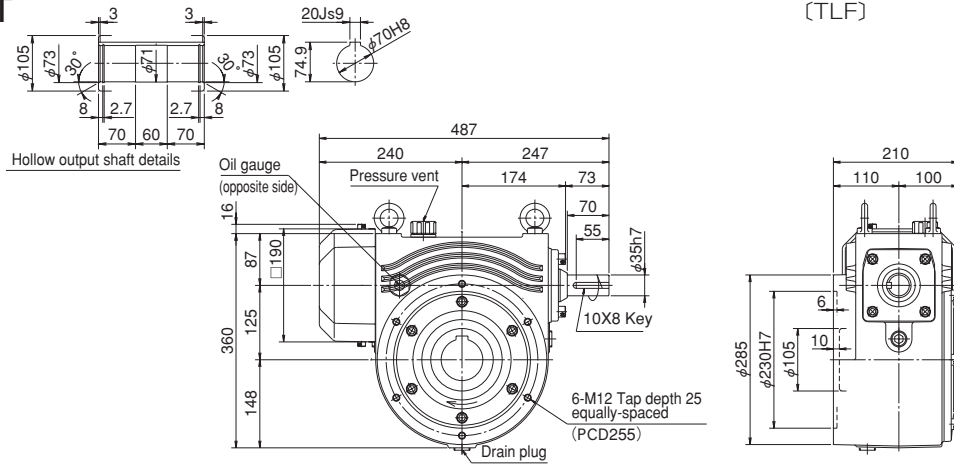
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD315	10	—	—	—	—	169.1	13723 {1400}	162.9	15989 {1632}	136.8	25438 {2596}	33.2	30270 {3089}
	20	—	—	129.6	16242 {1657}	123.8	19548 {1995}	119.0	22720 {2318}	79.6	28704 {2929}	20.1	35090 {3581}
	30	—	—	96.2	17551 {1791}	92.0	21123 {2155}	86.5	24015 {2451}	55.6	29053 {2965}	17.8	44420 {4533}
	40	—	—	85.0	19552 {1995}	79.6	23076 {2355}	69.8	24423 {2492}	44.9	29549 {3015}	11.8	36685 {3743}
	50	—	—	71.7	19898 {2030}	65.9	22993 {2346}	57.7	24337 {2483}	37.3	29450 {3005}	12.1	44546 {4546}
	60	—	—	61.7	20404 {2082}	55.2	22938 {2341}	48.4	24280 {2478}	31.3	29384 {2998}	10.8	46790 {4774}

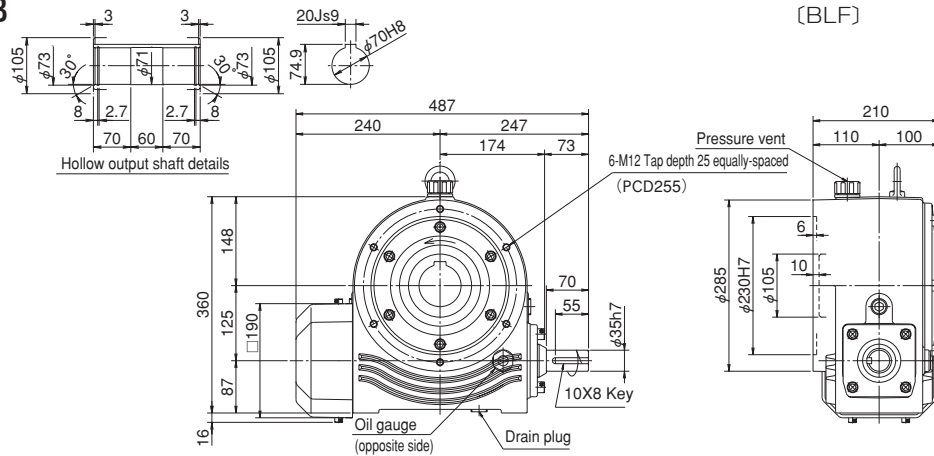
TD125H

TD125H□□□



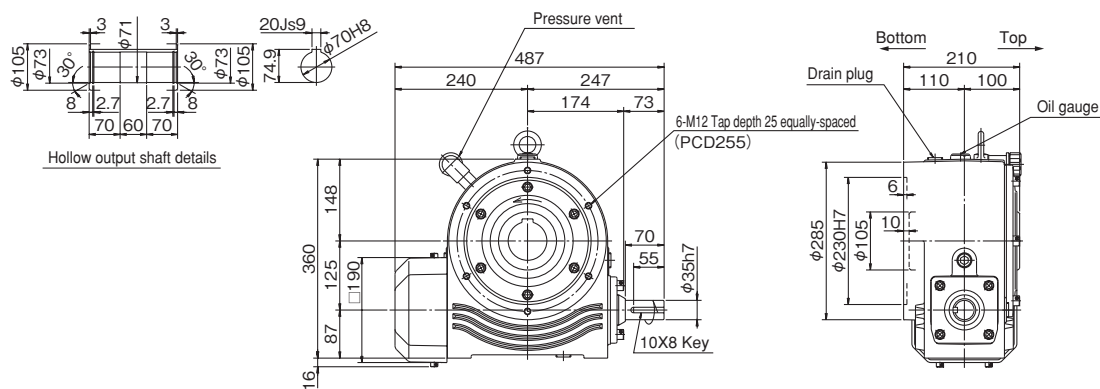
Mass: 77kg

TD125H□□B



Mass: 80kg

TD125H□□V



Mass: 78kg

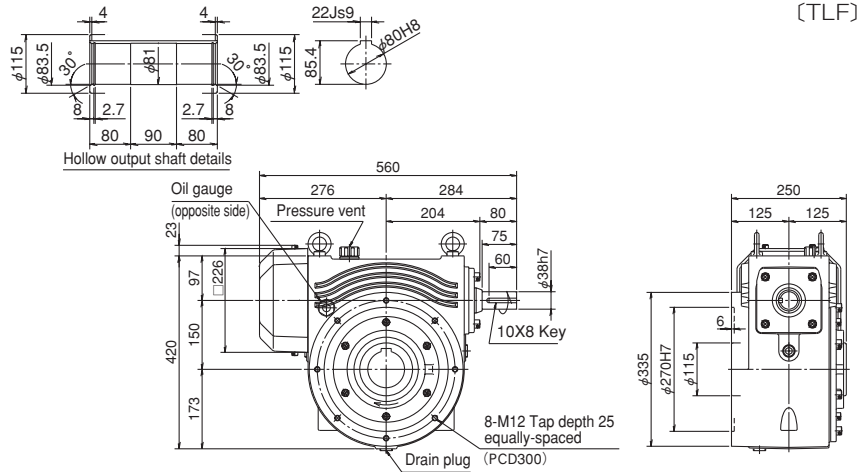
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD125	10	21.0	1112 {113}	20.1	1285 {131}	19.0	1532 {156}	20.3	1766 {180}	13.0	2382 {243}	3.0	2671 { 273}
	20	15.1	1515 {155}	14.5	1748 {178}	13.7	2076 {212}	12.5	2290 {234}	8.1	2783 {284}	1.8	2948 { 301}
	30	10.9	1631 {166}	10.4	1880 {192}	9.6	2189 {223}	8.5	2318 {237}	5.5	2809 {287}	1.6	3889 { 397}
	40	9.7	1812 {185}	9.3	2083 {213}	7.9	2232 {228}	7.0	2364 {241}	4.5	2865 {292}	1.1	3146 { 321}
	50	8.3	1861 {190}	7.7	2086 {213}	6.6	2236 {228}	5.8	2368 {242}	3.8	2870 {293}	1.1	3870 { 395}
	60	7.0	1877 {192}	6.4	2067 {211}	5.5	2217 {226}	4.9	2348 {240}	3.2	2846 {290}	1.0	3889 { 397}

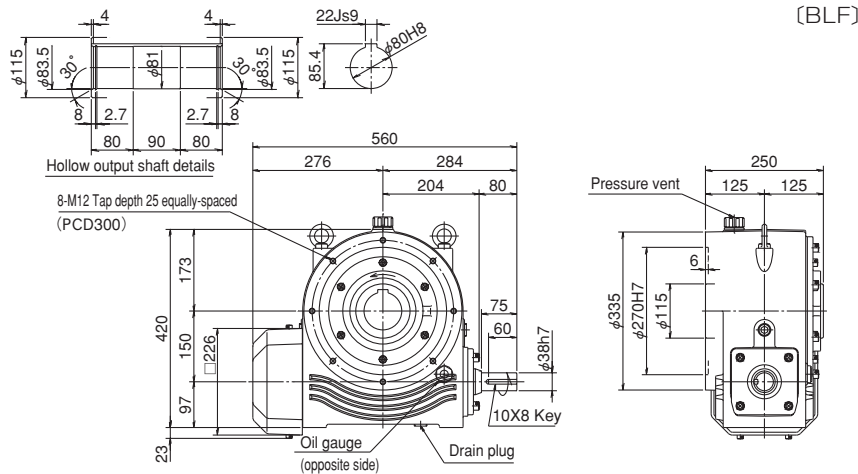
TD150H

TD150H□□T



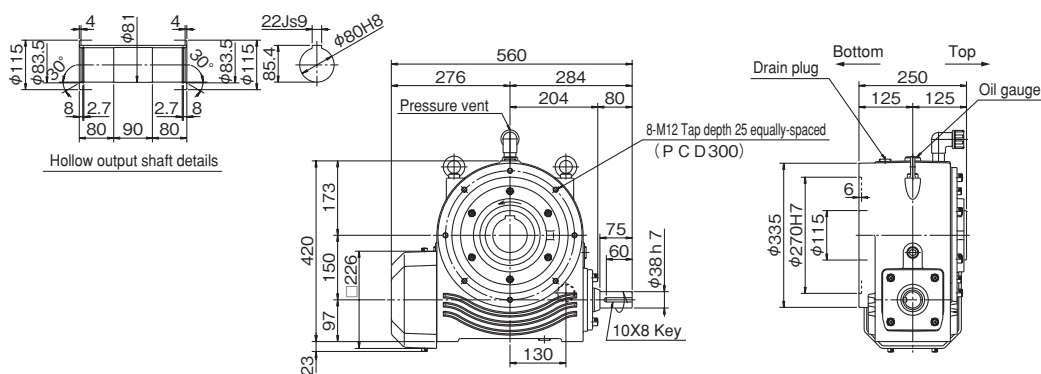
Mass: 123kg

TD150H□□B



Mass: 127kg

TD150H□□V



Mass: 125kg

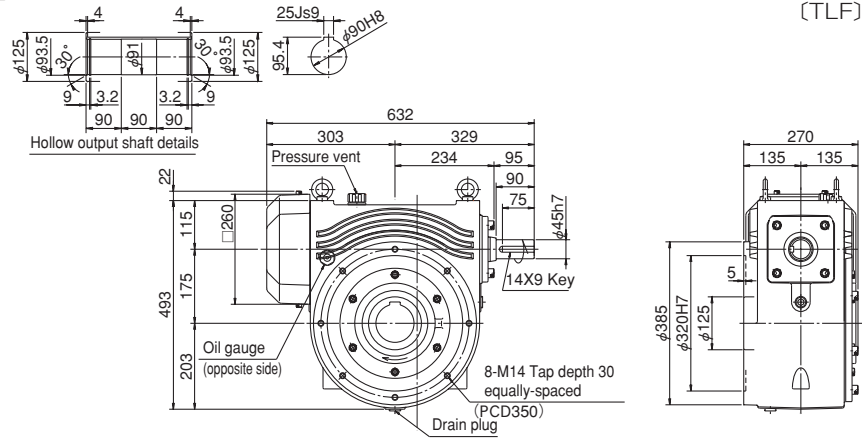
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD150	10	32.3	1717 {175}	31.0	1989 {203}	29.4	2377 {243}	28.1	2745 {280}	22.6	4157 {424}	5.4	4861 {496}
	20	23.5	2426 {248}	22.5	2803 {286}	21.3	3337 {341}	19.9	3761 {384}	11.2	3995 {408}	2.4	3995 {408}
	30	16.6	2505 {256}	15.9	2895 {295}	15.1	3448 {352}	13.7	3771 {385}	8.9	4570 {466}	2.5	6002 {612}
	40	15.1	2917 {298}	14.5	3365 {343}	12.6	3665 {374}	11.0	3881 {396}	6.5	4290 {438}	1.4	4290 {438}
	50	13.7	3151 {322}	12.5	3448 {352}	10.6	3696 {377}	9.4	3914 {399}	5.7	4397 {449}	1.2	4397 {449}
	60	10.7	2889 {295}	10.3	3336 {340}	8.9	3610 {368}	7.8	3823 {390}	5.1	4634 {473}	1.5	6166 {629}

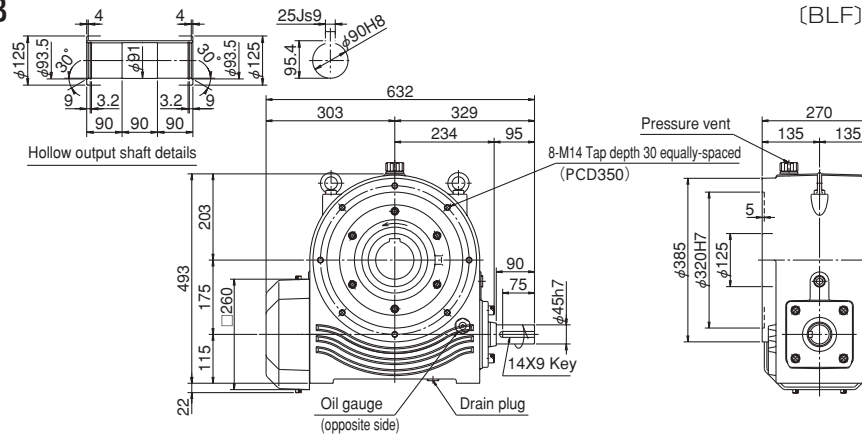
TD175H

TD175H□□□



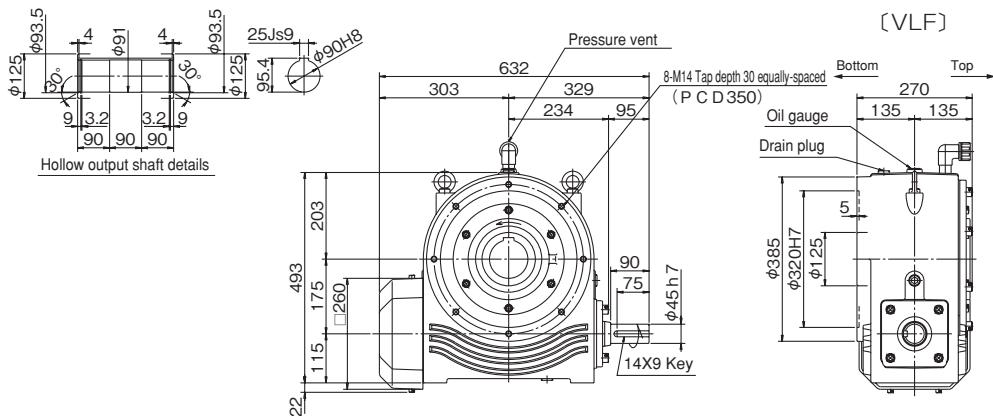
Mass: 179kg

TD175H□□□B



Mass: 185kg

TD175H□□□V



Mass: 182kg

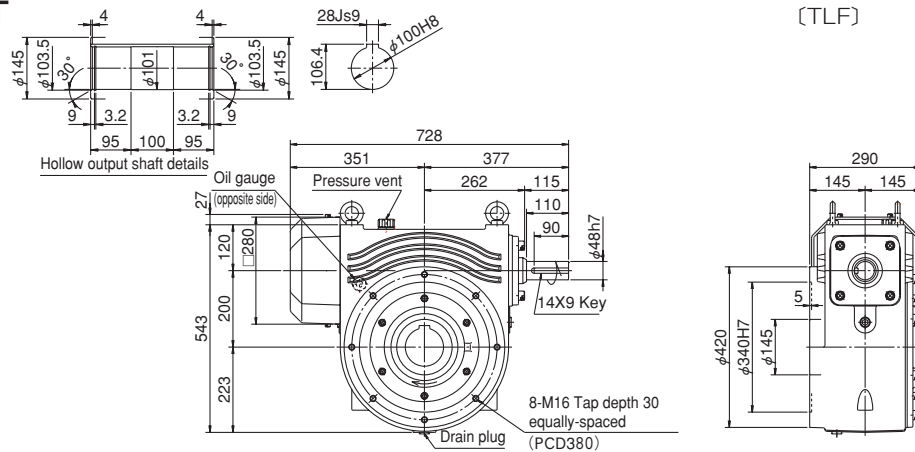
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD175	10	44.9	2392 {244}	43.3	2776 {283}	41.1	3325 {339}	39.4	3847 {393}	31.2	5769 {589}	8.6	7764 {792}
	20	34.2	3556 {363}	32.8	4113 {420}	31.1	4905 {501}	26.9	5127 {523}	14.3	5127 {523}	3.0	5127 {523}
	30	24.5	3863 {394}	23.5	4467 {456}	21.2	5048 {515}	18.6	5346 {546}	12.0	6478 {661}	3.1	7903 {806}
	40	22.1	4323 {441}	20.4	4802 {490}	17.4	5148 {525}	15.3	5451 {556}	8.4	5588 {570}	1.8	5588 {570}
	50	18.4	4194 {428}	17.3	4755 {485}	14.8	5097 {520}	13.0	5398 {551}	8.5	6542 {668}	2.2	7903 {806}
	60	15.2	4271 {436}	14.2	4785 {488}	12.1	5129 {523}	10.6	5432 {554}	7.0	6584 {672}	1.9	7903 {806}

TD200H

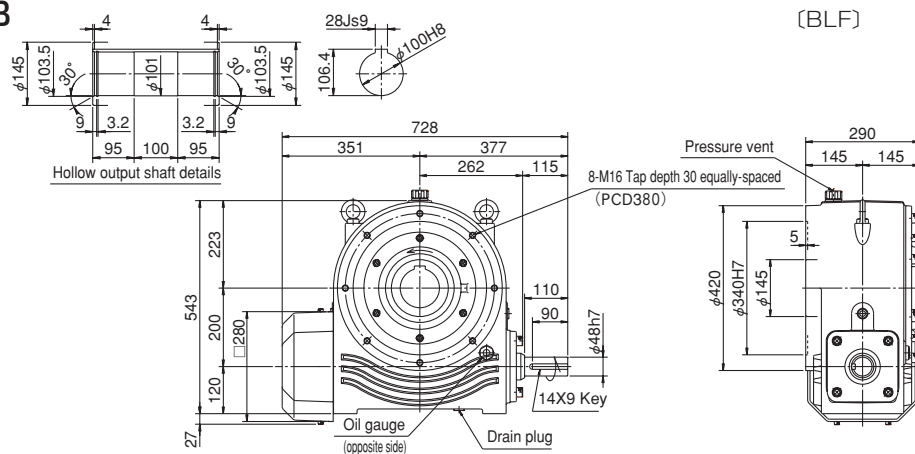
TD200H□□T



(TLF)

Mass: 249kg

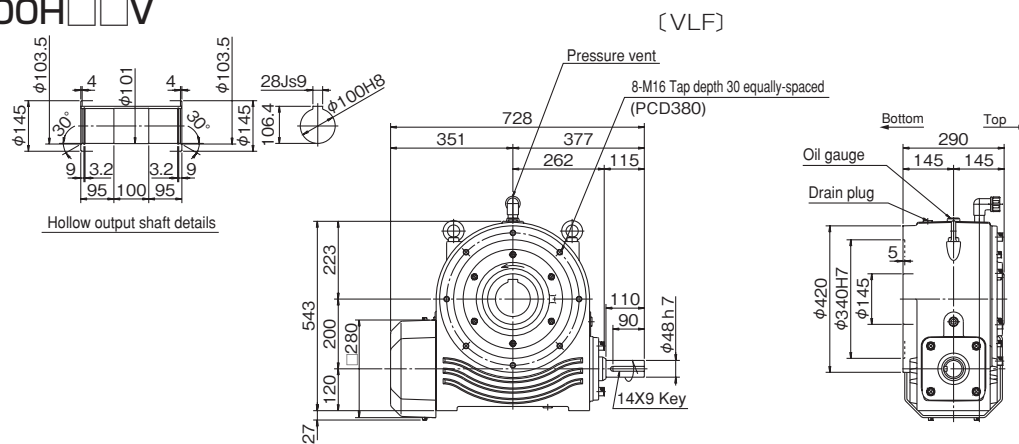
TD200H□□B



(BLF)

Mass: 255kg

TD200H□□V



(VLF)

Mass: 252kg

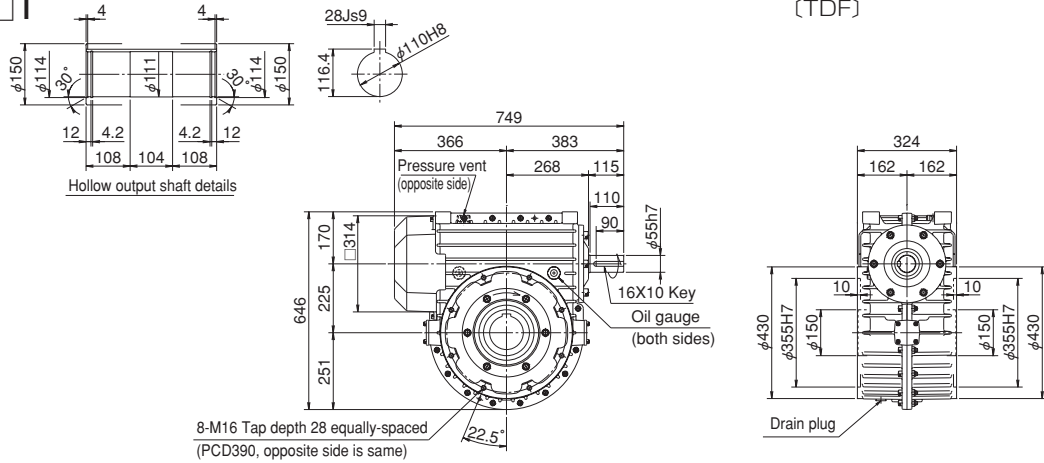
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

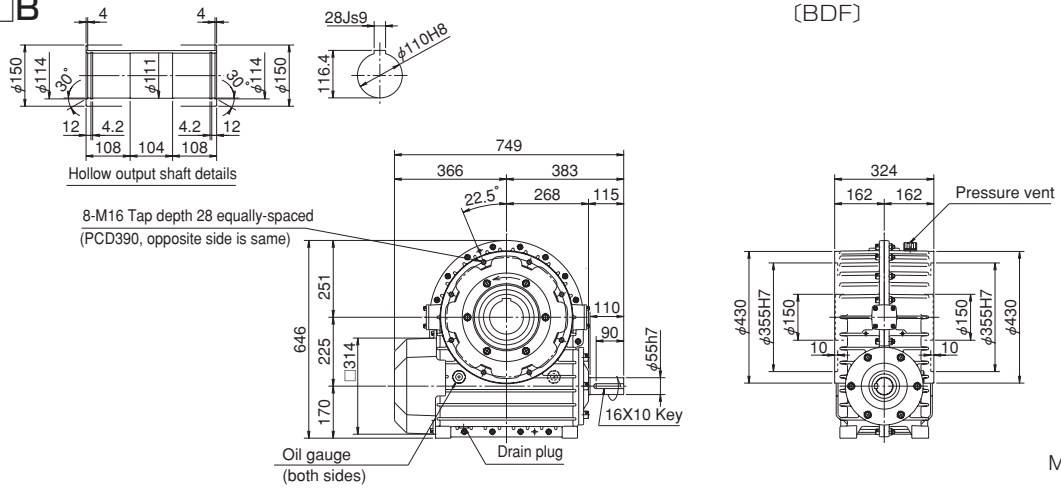
Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}
TD200	10	59.6	3174 {324}	57.5	3689 {376}	54.8	4428 {452}	52.5	5135 {524}	44.9	8286 {846}	11.5	10314 {1052}
	20	43.2	4347 {444}	41.5	5043 {515}	39.5	6037 {616}	37.8	6981 {712}	26.6	9236 {942}	6.7	11138 {1137}
	30	31.2	4717 {481}	29.7	5417 {553}	28.6	6547 {668}	27.3	7569 {772}	18.0	9352 {954}	4.6	11138 {1137}
	40	27.8	5220 {533}	26.7	6050 {617}	25.4	7232 {738}	22.9	7858 {802}	14.8	9525 {972}	3.7	11138 {1137}
	50	23.4	5344 {545}	22.5	6193 {632}	21.4	7404 {756}	18.8	7841 {800}	12.2	9505 {970}	3.1	11138 {1137}
	60	20.1	5445 {556}	19.3	6311 {644}	18.0	7390 {754}	15.9	7826 {799}	10.4	9486 {968}	2.7	11138 {1137}

TD225H

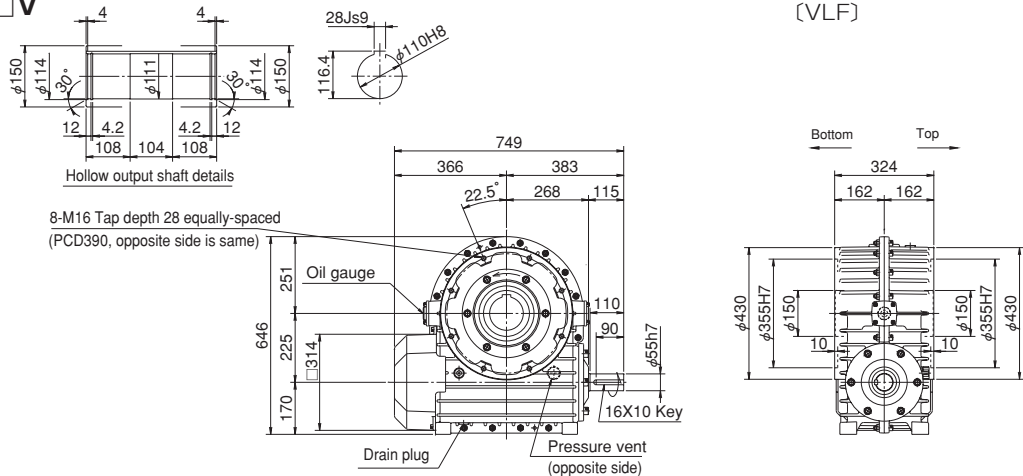
TD225H□□T



TD225H□□B



TD225H□□V



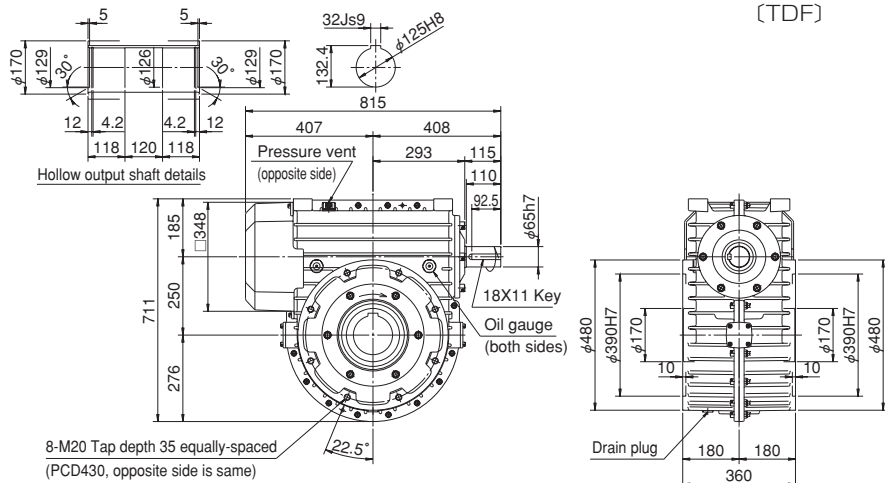
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD225	10	78.0	4156 {424}	75.3	4836 {493}	71.8	5813 {593}	68.9	6749 {689}	54.4	10066 {1027}	15.0	13588 {1387}
	20	56.0	5793 {591}	53.9	6727 {686}	51.4	8063 {823}	47.1	8928 {911}	30.2	10795 {1102}	8.8	15179 {1549}
	30	43.6	6584 {672}	42.0	7640 {780}	37.5	8584 {876}	32.8	9085 {927}	21.2	10990 {1121}	6.7	16363 {1670}
	40	36.6	6924 {707}	35.3	8033 {820}	30.1	8617 {879}	26.4	9121 {931}	17.0	11036 {1126}	5.2	15762 {1608}
	50	31.5	7191 {734}	29.3	8044 {821}	25.0	8618 {879}	21.9	9122 {931}	14.2	11039 {1126}	4.7	16789 {1713}
	60	27.8	7380 {753}	25.2	8032 {820}	21.5	8606 {878}	18.9	9109 {929}	12.3	11024 {1125}	4.3	17542 {1790}

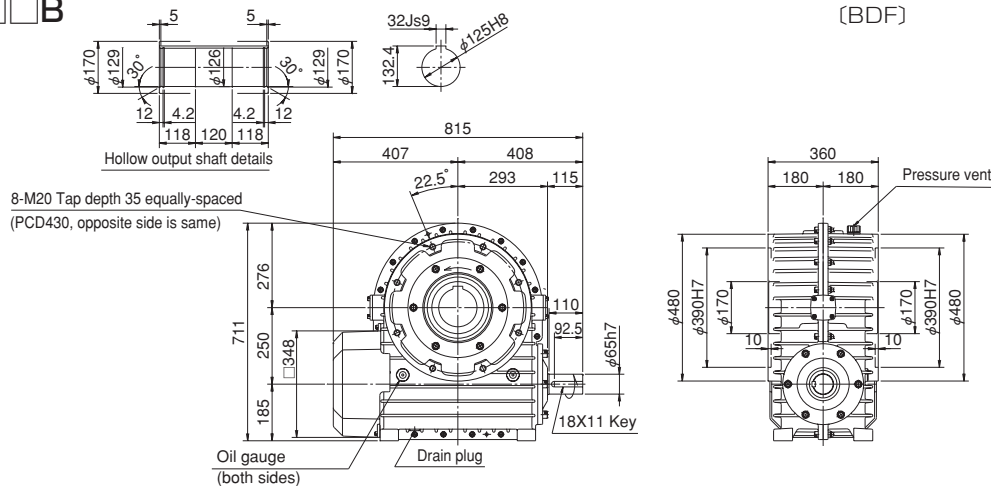
TD250H

TD250H□□T



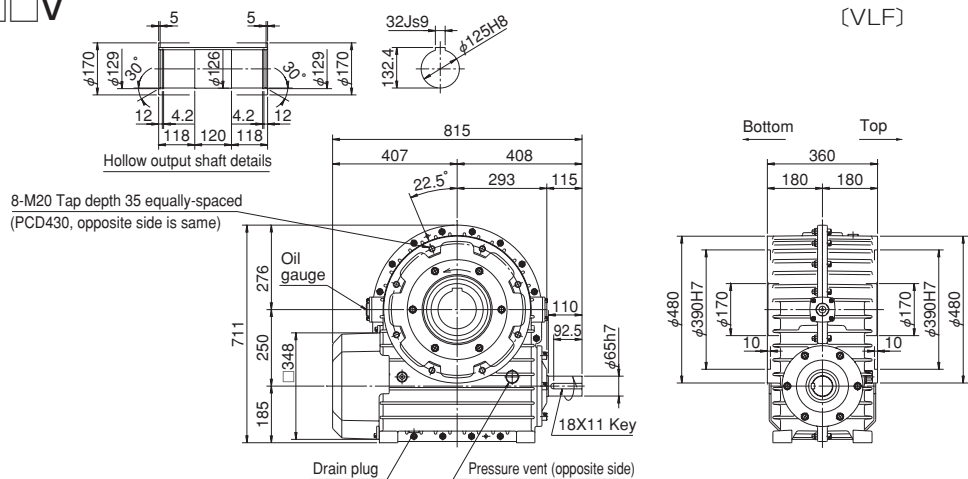
Mass: 396kg

TD250H□□B



Mass: 410kg

TD250H□□V



Mass: 430kg

Transmissible capability

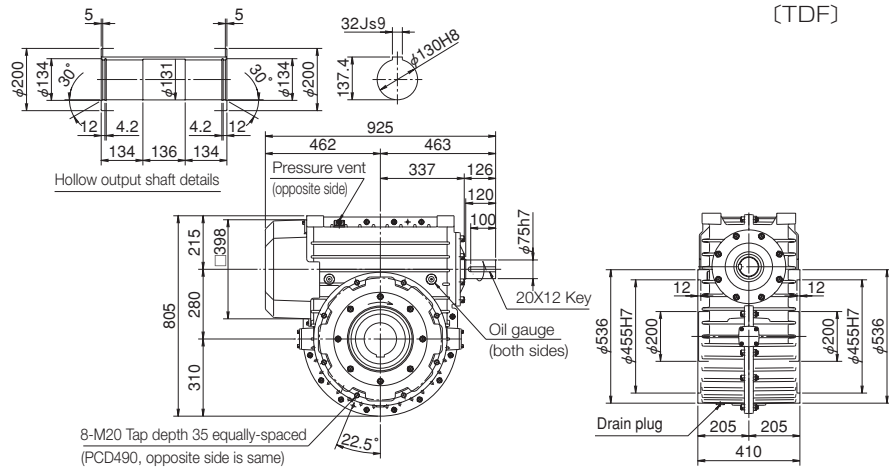
Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

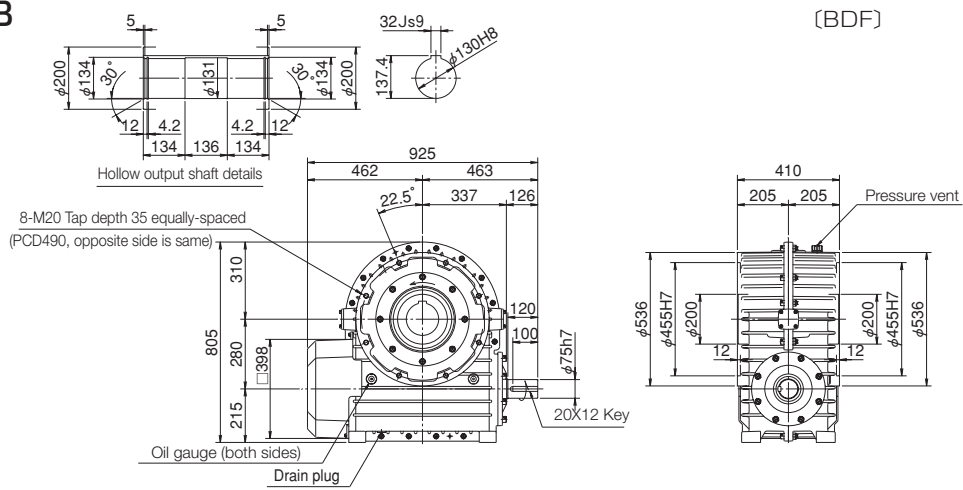
Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}	Input kW	Output torque N·m {kgf·m}
TD250	10	101.6	5421 {553}	98.1	6312 { 644}	93.7	7596 { 775}	90.0	8827 { 901}	72.0	13352 {1362}	19.4	17560 {1792}
	20	73.5	7641 {780}	70.8	8879 { 906}	67.5	10654 {1087}	62.5	11925 {1217}	40.0	14417 {1471}	9.7	16828 {1717}
	30	55.0	8297 {847}	53.0	9641 { 984}	49.6	11351 {1158}	43.5	12014 {1226}	28.0	14534 {1483}	8.8	21558 {2200}
	40	48.7	9274 {946}	46.9	10768 {1099}	40.0	11546 {1178}	35.1	12220 {1247}	22.6	14785 {1509}	6.1	18630 {1901}
	50	41.1	9434 {963}	38.8	10737 {1096}	33.1	11503 {1174}	29.0	12175 {1242}	18.8	14733 {1503}	6.1	22147 {2260}
	60	35.3	9638 {983}	32.6	10711 {1093}	27.8	11475 {1171}	24.4	12147 {1239}	15.8	14700 {1500}	5.4	22646 {2311}

TD280H

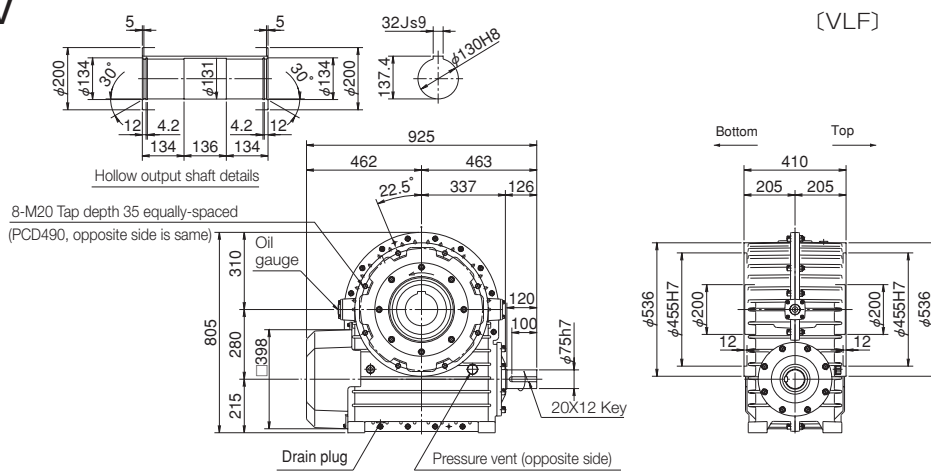
TD280H□□



TD280H□□B



TD280H□□V



Transmissible capability Refer to p 12 for the actual reduction ratio.

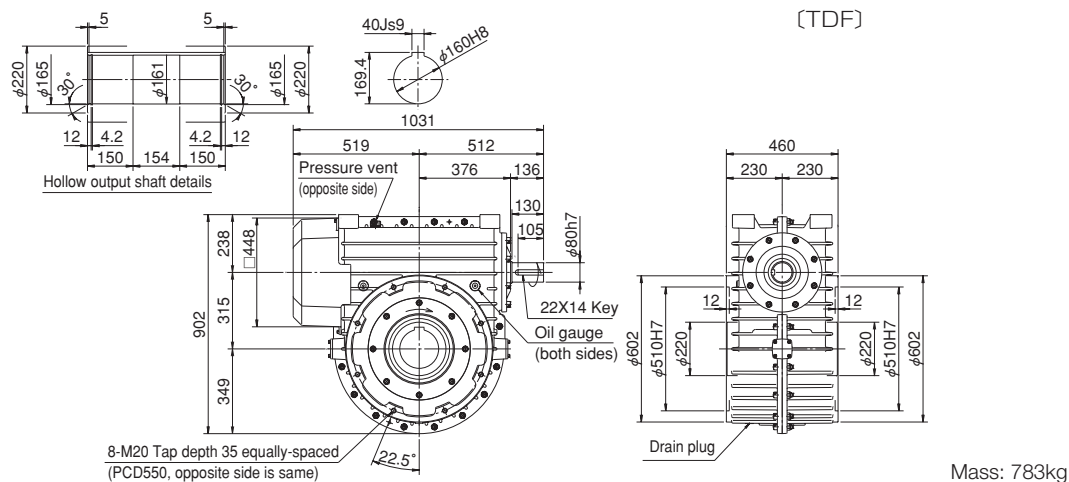
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD280	10	—	—	125.7	8083 { 825 }	120.3	9742 { 994 }	115.7	11339 { 1157 }	98.1	18195 { 1857 }	27.4	24854 { 2536 }
	20	95.7	9932 { 1013 }	92.4	11556 { 1179 }	88.2	13890 { 1417 }	84.6	16124 { 1645 }	54.9	19714 { 2012 }	15.3	26445 { 2698 }
	30	73.0	10886 { 1111 }	70.5	12663 { 1292 }	67.3	15216 { 1553 }	60.3	16466 { 1680 }	38.7	19920 { 2033 }	11.7	28664 { 2925 }
	40	61.7	12006 { 1225 }	59.6	13958 { 1424 }	53.5	15759 { 1608 }	46.9	16679 { 1702 }	30.2	20181 { 2059 }	9.1	28392 { 2897 }
	50	54.3	12535 { 1279 }	52.5	14571 { 1487 }	45.2	15806 { 1613 }	39.6	16729 { 1707 }	25.6	20244 { 2066 }	8.1	29634 { 3024 }
	60	46.9	12687 { 1295 }	45.0	14685 { 1498 }	38.4	15734 { 1606 }	33.7	16654 { 1699 }	21.8	20155 { 2057 }	7.1	30110 { 3072 }

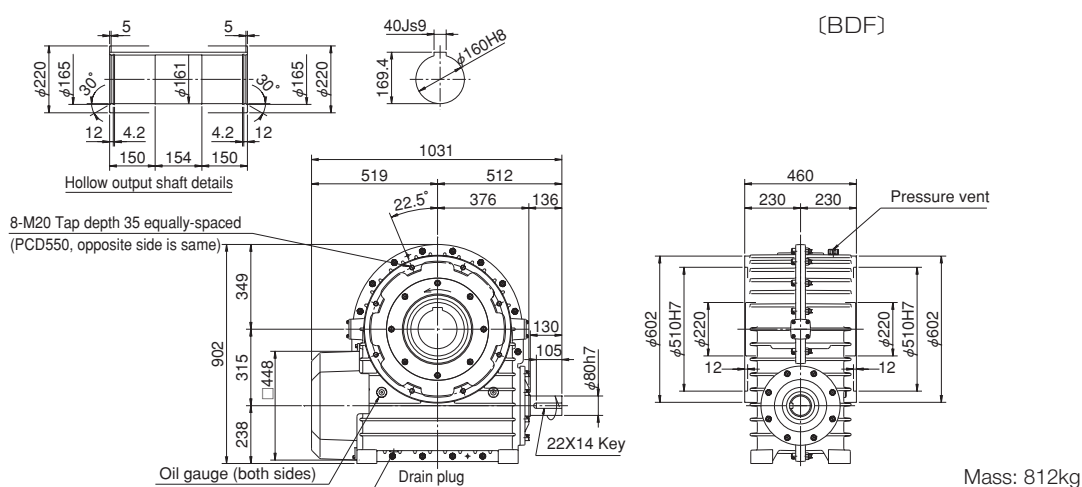
Dimensional drawing Single reduction

TD315H

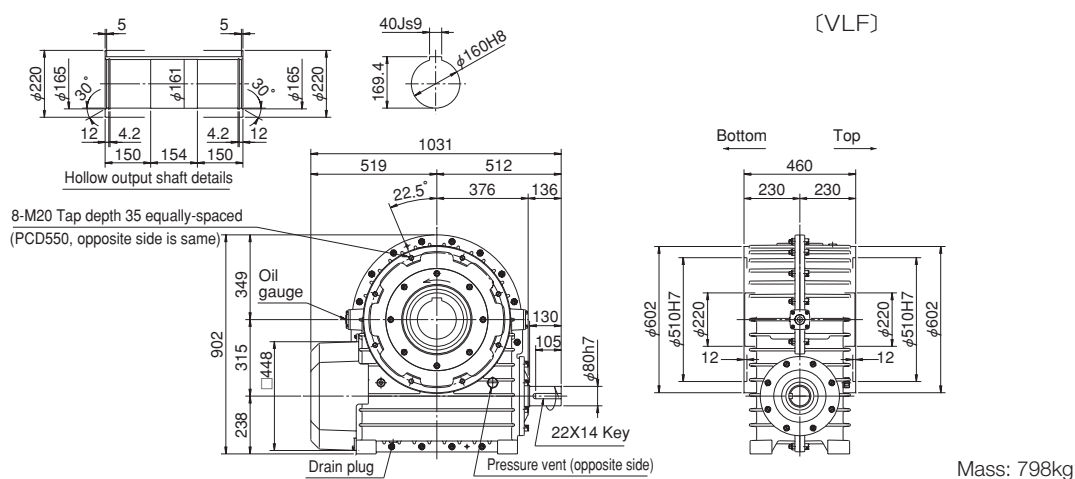
TD315H□□T



TD315H□□B



TD315H□□V



Transmissible capability Refer to p 12 for the actual reduction ratio.

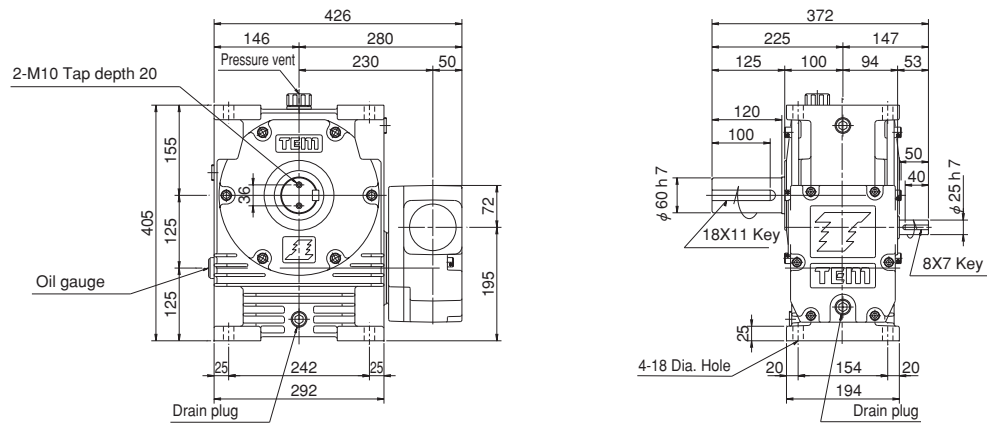
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD315	10	—	—	—	—	169.1	13723 {1400}	162.9	15989 {1632}	136.8	25438 {2596}	33.2	30270 {3089}
	20	—	—	129.6	16242 {1657}	123.8	19548 {1995}	119.0	22720 {2318}	79.6	28704 {2929}	20.1	35090 {3581}
	30	—	—	96.2	17551 {1791}	92.0	21123 {2155}	86.5	24015 {2451}	55.6	29053 {2965}	17.8	44420 {4533}
	40	—	—	85.0	19552 {1995}	79.6	23076 {2355}	69.8	24423 {2492}	44.9	29549 {3015}	11.8	36685 {3743}
	50	—	—	71.7	19898 {2030}	65.9	22993 {2346}	57.7	24337 {2483}	37.3	29450 {3005}	12.1	44546 {4546}
	60	—	—	61.7	20404 {2082}	55.2	22938 {2341}	48.4	24280 {2478}	31.3	29384 {2998}	10.8	46790 {4774}

TD125S

TD125S□□B

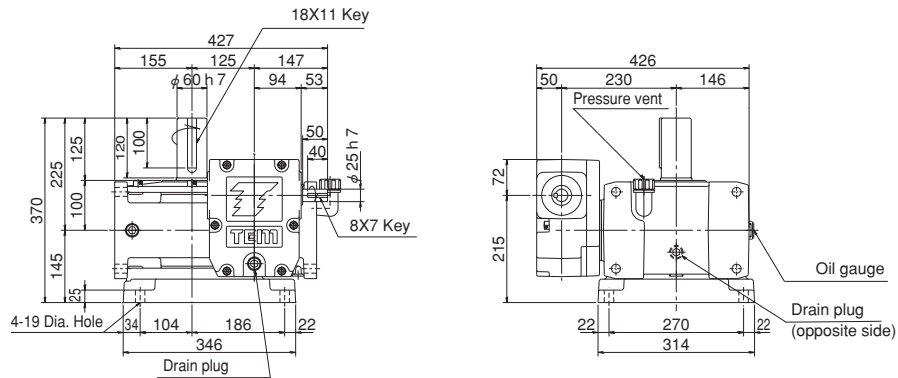
(BR-L)



Mass: 98kg

TD125S□□V

(VR-LU)



Mass: 109kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

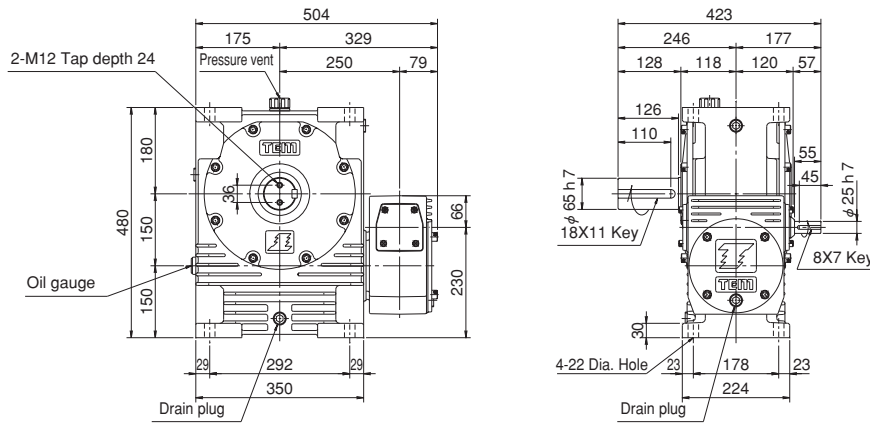
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD125	100	4.04	1900 {194}	3.76	2107 {215}	3.39	2354 {240}	3.06	2537 {259}	1.77	2644 {270}	0.38	2511 {256}
	150	3.02	2034 {208}	2.81	2244 {229}	2.54	2511 {256}	2.28	2671 {273}	1.28	2671 {273}	0.29	2644 {270}
	200	2.41	2083 {213}	2.24	2297 {234}	1.99	2511 {256}	1.78	2671 {273}	1.01	2671 {273}	0.23	2564 {262}
	250	1.99	2083 {213}	1.83	2270 {232}	1.63	2484 {253}	1.47	2644 {270}	0.83	2618 {267}	0.19	2484 {253}
	300	2.88	3668 {374}	2.49	3759 {384}	2.09	3875 {395}	1.76	3889 {397}	1.00	3889 {397}	0.24	3889 {397}
	450	2.15	3866 {394}	1.83	3889 {397}	1.49	3889 {397}	1.27	3889 {397}	0.73	3889 {397}	0.18	3889 {397}
	600	1.69	3889 {397}	1.44	3889 {397}	1.18	3889 {397}	1.00	3889 {397}	0.58	3889 {397}	0.14	3889 {397}
	750	1.41	3889 {397}	1.20	3889 {397}	0.99	3889 {397}	0.84	3889 {397}	0.49	3889 {397}	0.12	3889 {397}
	900	1.26	3889 {397}	1.07	3889 {397}	0.89	3889 {397}	0.76	3889 {397}	0.45	3889 {397}	0.12	3889 {397}
	1200	1.01	3889 {397}	0.87	3889 {397}	0.72	3889 {397}	0.62	3889 {397}	0.37	3889 {397}	0.10	3889 {397}
	1500	0.86	3889 {397}	0.74	3889 {397}	0.61	3889 {397}	0.52	3889 {397}	0.31	3889 {397}	0.08	3889 {397}
	1800	0.77	3889 {397}	0.67	3889 {397}	0.56	3889 {397}	0.48	3889 {397}	0.29	3889 {397}	0.08	3889 {397}
	2400	0.63	3889 {397}	0.54	3889 {397}	0.45	3889 {397}	0.39	3889 {397}	0.24	3889 {397}	0.07	3889 {397}
	3000	0.54	3889 {397}	0.47	3889 {397}	0.39	3889 {397}	0.34	3889 {397}	0.21	3889 {397}	0.06	3889 {397}
3600	0.48	3889 {397}	0.41	3889 {397}	0.35	3889 {397}	0.30	3889 {397}	0.19	3889 {397}	0.05	3889 {397}	

TD150S

TD150S□□B

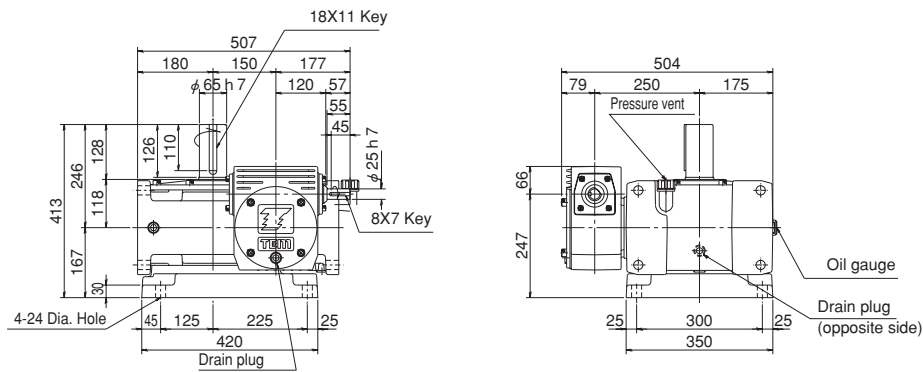
[BR-L]



Mass: 154kg

TD150S□□V

[VR-LU]



Mass: 182kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

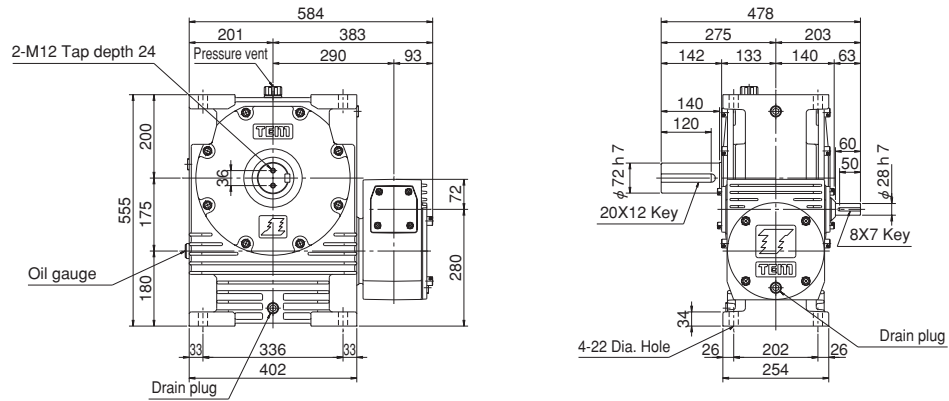
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD150	100	5.63	2688 {274}	5.29	3014 {308}	4.76	3362 {343}	4.15	3500 {357}	2.61	3986 {407}	0.56	3792 {387}
	150	4.26	2926 {299}	3.87	3160 {322}	3.42	3451 {352}	2.99	3597 {367}	1.94	4180 {427}	0.43	3986 {407}
	200	3.41	3014 {308}	3.11	3257 {332}	2.71	3500 {357}	2.41	3694 {377}	1.50	4083 {417}	0.34	3937 {402}
	250	2.81	3014 {308}	2.60	3305 {337}	2.27	3549 {362}	2.02	3743 {382}	1.20	3937 {402}	0.27	3792 {387}
	300	4.31	5601 {572}	3.72	5733 {585}	3.10	5899 {602}	2.66	6002 {612}	1.50	6002 {612}	0.36	6002 {612}
	450	3.18	5887 {601}	2.75	6002 {612}	2.24	6002 {612}	1.89	6002 {612}	1.08	6002 {612}	0.26	6002 {612}
	600	2.54	6002 {612}	2.16	6002 {612}	1.77	6002 {612}	1.50	6002 {612}	0.86	6002 {612}	0.21	6002 {612}
	750	2.11	6002 {612}	1.80	6002 {612}	1.47	6002 {612}	1.25	6002 {612}	0.72	6002 {612}	0.18	6002 {612}
	900	1.86	6002 {612}	1.59	6002 {612}	1.31	6002 {612}	1.12	6002 {612}	0.66	6002 {612}	0.17	6002 {612}
	1200	1.50	6002 {612}	1.28	6002 {612}	1.06	6002 {612}	0.91	6002 {612}	0.54	6002 {612}	0.14	6002 {612}
	1500	1.32	6166 {629}	1.13	6166 {629}	0.93	6166 {629}	0.80	6166 {629}	0.47	6166 {629}	0.12	6166 {629}
	1800	1.17	6166 {629}	1.01	6166 {629}	0.84	6166 {629}	0.72	6166 {629}	0.43	6166 {629}	0.12	6166 {629}
	2400	0.95	6166 {629}	0.82	6166 {629}	0.68	6166 {629}	0.59	6166 {629}	0.36	6166 {629}	0.10	6166 {629}
	3000	0.81	6166 {629}	0.70	6166 {629}	0.59	6166 {629}	0.51	6166 {629}	0.31	6166 {629}	0.09	6166 {629}
3600	0.71	6166 {629}	0.62	6166 {629}	0.52	6166 {629}	0.45	6166 {629}	0.28	6166 {629}	0.08	6166 {629}	

TD175S

TD175S□□B

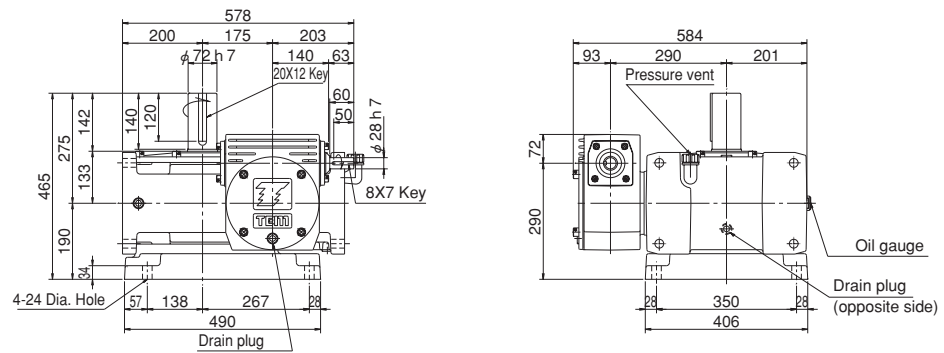
(BR-L)



Mass: 242kg

TD175S□□V

(VR-LU)



Mass: 264kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

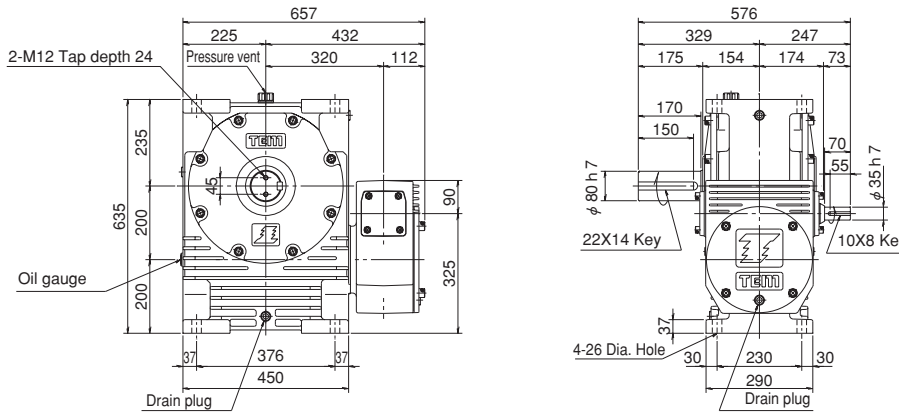
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD175	100	9.36	4524 {462}	8.52	4917 {502}	7.88	5657 {577}	6.96	5978 {610}	4.58	7143 {729}	0.99	6832 {697}
	150	6.99	4883 {498}	6.44	5357 {547}	5.72	5901 {602}	4.99	6134 {626}	3.34	7376 {753}	0.75	7221 {737}
	200	5.51	4969 {507}	5.08	5435 {555}	4.53	5978 {610}	4.00	6289 {642}	2.66	7453 {761}	0.61	7221 {737}
	250	4.45	4891 {499}	4.23	5512 {562}	3.78	6056 {618}	3.35	6366 {650}	2.12	7143 {729}	0.48	6832 {697}
	300	5.91	7903 {806}	4.97	7903 {806}	4.02	7903 {806}	3.38	7903 {806}	1.90	7903 {806}	0.45	7903 {806}
	450	4.00	7903 {806}	3.38	7903 {806}	2.74	7903 {806}	2.32	7903 {806}	1.31	7903 {806}	0.32	7903 {806}
	600	3.13	7903 {806}	2.65	7903 {806}	2.16	7903 {806}	1.83	7903 {806}	1.05	7903 {806}	0.26	7903 {806}
	750	2.58	7903 {806}	2.19	7903 {806}	1.79	7903 {806}	1.52	7903 {806}	0.87	7903 {806}	0.22	7903 {806}
	900	2.26	7903 {806}	1.92	7903 {806}	1.58	7903 {806}	1.34	7903 {806}	0.78	7903 {806}	0.20	7903 {806}
	1200	1.81	7903 {806}	1.55	7903 {806}	1.28	7903 {806}	1.09	7903 {806}	0.65	7903 {806}	0.17	7903 {806}
	1500	1.54	7903 {806}	1.32	7903 {806}	1.09	7903 {806}	0.93	7903 {806}	0.55	7903 {806}	0.14	7903 {806}
	1800	1.36	7903 {806}	1.16	7903 {806}	0.96	7903 {806}	0.82	7903 {806}	0.49	7903 {806}	0.13	7903 {806}
	2400	1.10	7903 {806}	0.95	7903 {806}	0.79	7903 {806}	0.68	7903 {806}	0.41	7903 {806}	0.11	7903 {806}
3000	0.93	7903 {806}	0.80	7903 {806}	0.67	7903 {806}	0.58	7903 {806}	0.35	7903 {806}	0.10	7903 {806}	
3600	0.82	7903 {806}	0.71	7903 {806}	0.59	7903 {806}	0.51	7903 {806}	0.31	7903 {806}	0.09	7903 {806}	

TD200S

TD200S□□B

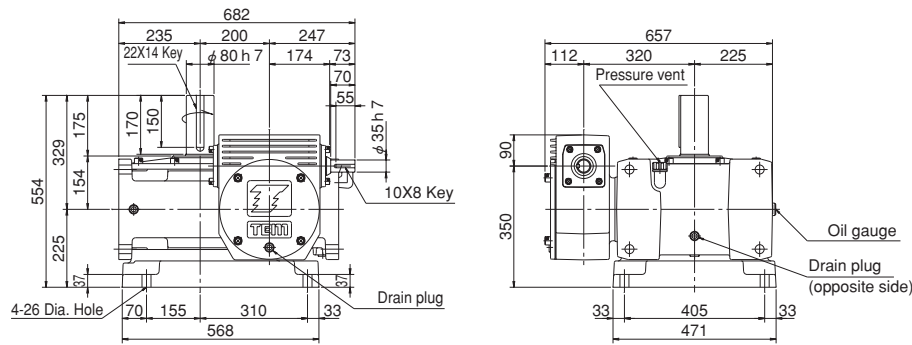
(BR-L)



Mass: 407kg

TD200S□□V

(VR-LU)



Mass: 462g

Transmissible capability Refer to p 12 for the actual reduction ratio.

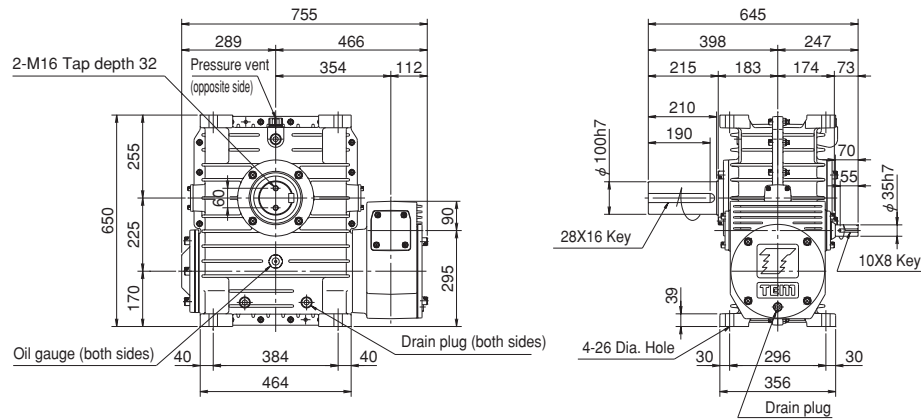
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD200	100	15.33	7462 { 761}	14.23	8285 { 845}	12.79	9271 { 946}	11.90	10314 {1052}	6.54	10314 {1052}	1.48	10314 {1052}
	150	11.38	8036 { 820}	10.66	8973 { 916}	9.58	10005 {1021}	8.28	10314 {1052}	4.60	10314 {1052}	1.07	10314 {1052}
	200	9.00	8251 { 842}	8.32	9076 { 926}	7.57	10211 {1042}	6.42	10314 {1052}	3.59	10314 {1052}	0.84	10314 {1052}
	250	7.41	8251 { 842}	6.70	8870 { 905}	6.32	10314 {1052}	5.32	10314 {1052}	3.00	10314 {1052}	0.72	10314 {1052}
	300	8.31	11138 {1137}	6.98	11138 {1137}	5.66	11138 {1137}	4.75	11138 {1137}	2.67	11138 {1137}	0.64	11138 {1137}
	450	5.80	11138 {1137}	4.89	11138 {1137}	3.97	11138 {1137}	3.35	11138 {1137}	1.90	11138 {1137}	0.47	11138 {1137}
	600	4.50	11138 {1137}	3.81	11138 {1137}	3.01	11138 {1137}	2.62	11138 {1137}	1.50	11138 {1137}	0.37	11138 {1137}
	750	3.73	11138 {1137}	3.16	11138 {1137}	2.59	11138 {1137}	2.19	11138 {1137}	1.26	11138 {1137}	0.32	11138 {1137}
	900	3.25	11138 {1137}	2.77	11138 {1137}	2.27	11138 {1137}	1.93	11138 {1137}	1.13	11138 {1137}	0.29	11138 {1137}
	1200	2.58	11138 {1137}	2.20	11138 {1137}	1.81	11138 {1137}	1.55	11138 {1137}	0.91	11138 {1137}	0.24	11138 {1137}
	1500	2.24	11138 {1137}	1.91	11138 {1137}	1.58	11138 {1137}	1.35	11138 {1137}	0.79	11138 {1137}	0.21	11138 {1137}
	1800	1.97	11138 {1137}	1.68	11138 {1137}	1.39	11138 {1137}	1.19	11138 {1137}	0.71	11138 {1137}	0.19	11138 {1137}
	2400	1.57	11138 {1137}	1.35	11138 {1137}	1.12	11138 {1137}	0.97	11138 {1137}	0.58	11138 {1137}	0.16	11138 {1137}
3000	1.34	11138 {1137}	1.16	11138 {1137}	0.97	11138 {1137}	0.83	11138 {1137}	0.51	11138 {1137}	0.14	11138 {1137}	
3600	1.18	11138 {1137}	1.02	11138 {1137}	0.85	11138 {1137}	0.74	11138 {1137}	0.45	11138 {1137}	0.13	11138 {1137}	

TD225S

TD225S□□B

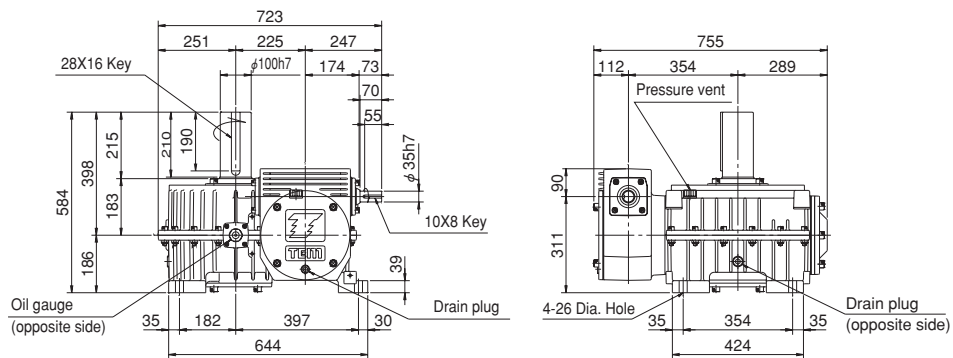
(BR-L)



Mass: 415kg

TD225S□□V

(VR-LU)



Mass: 420kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

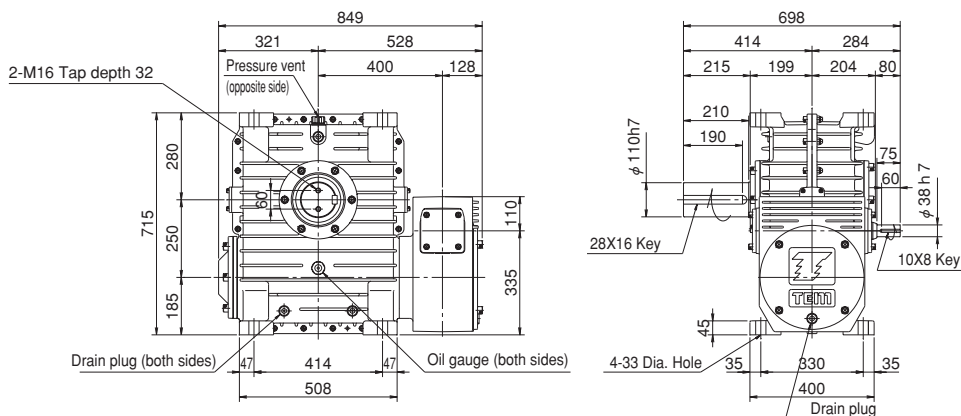
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD225	100	15.39	7520 { 767 }	14.19	8289 { 846 }	12.71	9240 { 943 }	12.02	10463 { 1068 }	8.15	12909 { 1317 }	1.84	12909 { 1317 }
	150	11.50	8153 { 832 }	10.61	8968 { 915 }	9.59	10055 { 1026 }	8.80	11006 { 1123 }	5.92	13316 { 1359 }	1.38	13452 { 1373 }
	200	9.00	8289 { 846 }	8.31	9104 { 929 }	7.62	10327 { 1054 }	7.07	11414 { 1165 }	4.71	13588 { 1387 }	1.06	13044 { 1331 }
	250	7.41	8289 { 846 }	6.64	8832 { 901 }	6.30	10327 { 1054 }	5.86	11414 { 1165 }	3.93	13588 { 1387 }	0.89	12909 { 1317 }
	300	10.97	14993 { 1530 }	9.73	15849 { 1617 }	8.04	16204 { 1653 }	6.82	16363 { 1670 }	3.81	16363 { 1670 }	0.90	16363 { 1670 }
	450	8.37	16185 { 1652 }	7.13	16363 { 1670 }	5.78	16363 { 1670 }	4.87	16363 { 1670 }	2.76	16363 { 1670 }	0.67	16363 { 1670 }
	600	6.56	16363 { 1670 }	5.54	16363 { 1670 }	4.51	16363 { 1670 }	3.81	16363 { 1670 }	2.17	16363 { 1670 }	0.53	16363 { 1670 }
	750	5.43	16363 { 1670 }	4.59	16363 { 1670 }	3.75	16363 { 1670 }	3.18	16363 { 1670 }	1.83	16363 { 1670 }	0.46	16363 { 1670 }
	900	4.73	16363 { 1670 }	4.02	16363 { 1670 }	3.29	16363 { 1670 }	2.80	16363 { 1670 }	1.63	16363 { 1670 }	0.42	16363 { 1670 }
	1200	3.74	16363 { 1670 }	3.19	16363 { 1670 }	2.62	16363 { 1670 }	2.24	16363 { 1670 }	1.32	16363 { 1670 }	0.34	16363 { 1670 }
	1500	3.55	17542 { 1790 }	3.02	17542 { 1790 }	2.49	17542 { 1790 }	2.12	17542 { 1790 }	1.25	17542 { 1790 }	0.33	17542 { 1790 }
	1800	3.10	17542 { 1790 }	2.66	17542 { 1790 }	2.20	17542 { 1790 }	1.88	17542 { 1790 }	1.12	17542 { 1790 }	0.30	17542 { 1790 }
	2400	2.48	17542 { 1790 }	2.13	17542 { 1790 }	1.77	17542 { 1790 }	1.52	17542 { 1790 }	0.91	17542 { 1790 }	0.25	17542 { 1790 }
	3000	2.11	17542 { 1790 }	1.82	17542 { 1790 }	1.51	17542 { 1790 }	1.31	17542 { 1790 }	0.79	17542 { 1790 }	0.22	17542 { 1790 }
3600	1.86	17542 { 1790 }	1.60	17542 { 1790 }	1.34	17542 { 1790 }	1.16	17542 { 1790 }	0.71	17542 { 1790 }	0.20	17542 { 1790 }	

TD250S

TD250S□□B

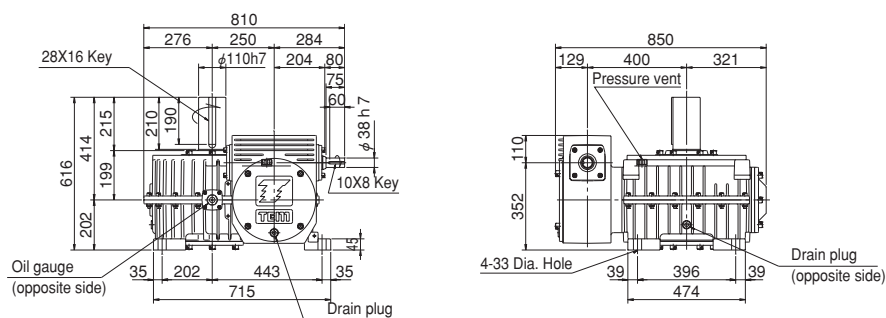
(BR-L)



Mass: 554kg

TD250S□□V

(VR-LU)



Mass: 544kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

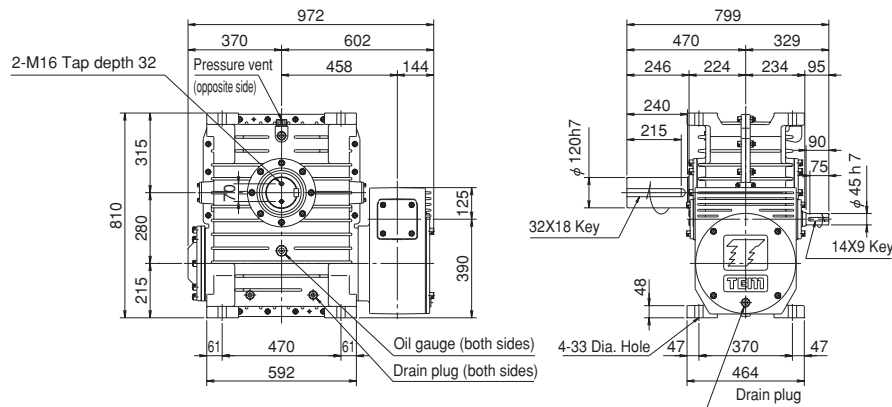
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD250	100	22.82	11238 {1147}	21.46	12643 {1290}	19.35	14224 {1451}	17.75	15628 {1595}	10.95	17560 {1792}	2.47	17560 {1792}
	150	17.15	12292 {1254}	15.82	13521 {1380}	14.54	15453 {1577}	13.30	16858 {1720}	7.68	17560 {1792}	1.77	17560 {1792}
	200	13.38	12468 {1272}	12.50	13872 {1416}	10.99	15102 {1541}	10.51	17209 {1756}	5.99	17560 {1792}	1.41	17560 {1792}
	250	10.91	12468 {1272}	10.08	13697 {1398}	9.20	15453 {1577}	8.61	17209 {1756}	4.94	17560 {1792}	1.17	17560 {1792}
	300	14.41	19831 {2024}	12.78	20964 {2139}	10.50	21354 {2179}	8.89	21558 {2200}	4.97	21558 {2200}	1.18	21558 {2200}
	450	10.93	21329 {2176}	9.30	21558 {2200}	7.53	21558 {2200}	6.35	21558 {2200}	3.59	21558 {2200}	0.87	21558 {2200}
	600	8.57	21558 {2200}	7.22	21558 {2200}	5.87	21558 {2200}	4.95	21558 {2200}	2.83	21558 {2200}	0.70	21558 {2200}
	750	7.02	21558 {2200}	5.94	21558 {2200}	4.84	21558 {2200}	4.09	21558 {2200}	2.34	21558 {2200}	0.58	21558 {2200}
	900	6.14	21558 {2200}	5.21	21558 {2200}	4.26	21558 {2200}	3.62	21558 {2200}	2.11	21558 {2200}	0.54	21558 {2200}
	1200	4.85	21558 {2200}	4.13	21558 {2200}	3.39	21558 {2200}	2.89	21558 {2200}	1.70	21558 {2200}	0.45	21558 {2200}
	1500	4.34	22646 {2311}	3.70	22646 {2311}	3.03	22646 {2311}	2.59	22646 {2311}	1.52	22646 {2311}	0.40	22646 {2311}
	1800	3.82	22646 {2311}	3.26	22646 {2311}	2.69	22646 {2311}	2.30	22646 {2311}	1.37	22646 {2311}	0.37	22646 {2311}
	2400	3.05	22646 {2311}	2.61	22646 {2311}	2.16	22646 {2311}	1.86	22646 {2311}	1.12	22646 {2311}	0.31	22646 {2311}
	3000	2.55	22646 {2311}	2.20	22646 {2311}	1.83	22646 {2311}	1.57	22646 {2311}	0.95	22646 {2311}	0.26	22646 {2311}
3600	2.25	22646 {2311}	1.94	22646 {2311}	1.62	22646 {2311}	1.39	22646 {2311}	0.85	22646 {2311}	0.24	22646 {2311}	

TD280S

TD280S□□B

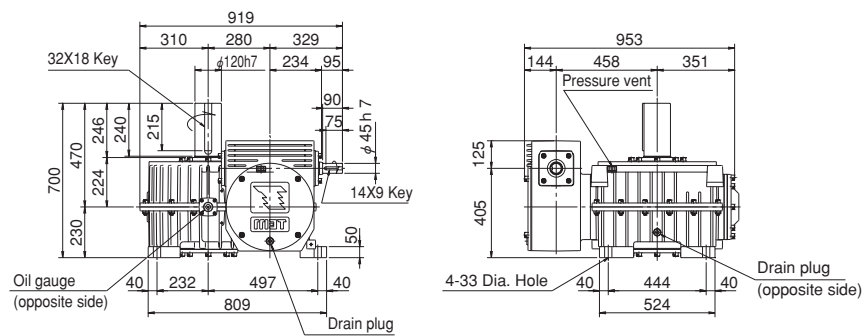
(BR-L)



Mass: 793kg

TD280S□□V

(VR-LU)



Mass: 779kg

Transmissible capability Refer to p.12 for the actual reduction ratio.

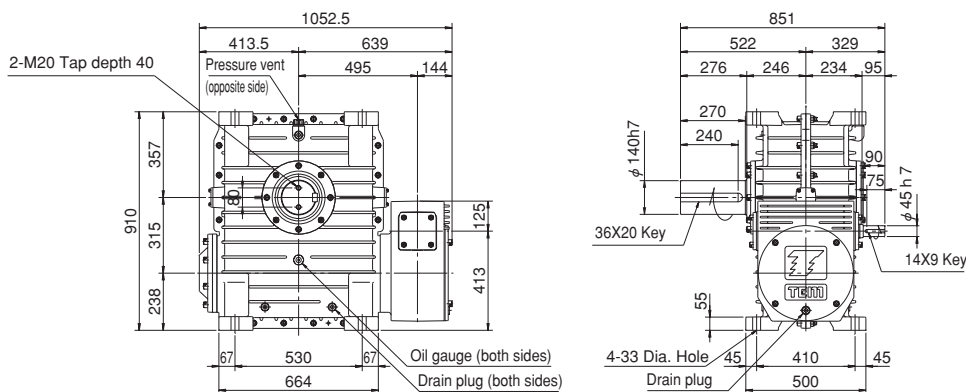
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD280	100	32.11	15895 {1622}	29.72	17623 {1798}	26.54	19613 {2001}	23.28	20629 {2105}	15.36	24854 {2536}	3.46	24854 {2536}
	150	23.75	17137 {1749}	21.35	18392 {1877}	18.78	20132 {2054}	16.50	21126 {2156}	10.73	24854 {2536}	2.48	24854 {2536}
	200	18.79	17646 {1801}	17.07	19138 {1953}	14.86	20629 {2105}	13.05	21623 {2206}	8.37	24854 {2536}	1.96	24854 {2536}
	250	14.72	16901 {1725}	13.65	18641 {1902}	12.36	20877 {2130}	10.87	21872 {2232}	6.94	24854 {2536}	1.65	24854 {2536}
	300	18.59	25900 {2643}	16.12	26798 {2734}	13.56	27947 {2852}	11.65	28664 {2925}	6.49	28664 {2925}	1.53	28664 {2925}
	450	14.28	27860 {2843}	12.37	28664 {2925}	10.01	28664 {2925}	8.41	28664 {2925}	4.73	28664 {2925}	1.15	28664 {2925}
	600	11.38	28664 {2925}	9.58	28664 {2925}	7.78	28664 {2925}	6.55	28664 {2925}	3.73	28664 {2925}	0.91	28664 {2925}
	750	9.35	28664 {2925}	7.91	28664 {2925}	6.43	28664 {2925}	5.43	28664 {2925}	3.11	28664 {2925}	0.77	28664 {2925}
	900	8.12	28664 {2925}	6.87	28664 {2925}	5.61	28664 {2925}	4.76	28664 {2925}	2.75	28664 {2925}	0.71	28664 {2925}
	1200	6.39	28664 {2925}	5.43	28664 {2925}	4.45	28664 {2925}	3.79	28664 {2925}	2.22	28664 {2925}	0.58	28664 {2925}
	1500	5.74	30110 {3072}	4.88	30110 {3072}	4.00	30110 {3072}	3.40	30110 {3072}	1.99	30110 {3072}	0.52	30110 {3072}
	1800	5.01	30110 {3072}	4.27	30110 {3072}	3.52	30110 {3072}	3.00	30110 {3072}	1.78	30110 {3072}	0.48	30110 {3072}
	2400	3.99	30110 {3072}	3.41	30110 {3072}	2.82	30110 {3072}	2.41	30110 {3072}	1.45	30110 {3072}	0.40	30110 {3072}
	3000	3.36	30110 {3072}	2.89	30110 {3072}	2.39	30110 {3072}	2.05	30110 {3072}	1.25	30110 {3072}	0.35	30110 {3072}
	3600	2.92	30110 {3072}	2.51	30110 {3072}	2.09	30110 {3072}	1.80	30110 {3072}	1.10	30110 {3072}	0.31	30110 {3072}

TD315S

TD315S□□B

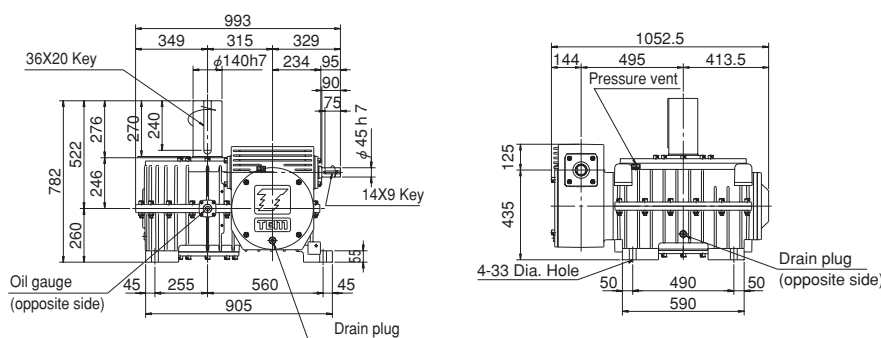
(BR-L)



Mass: 1053kg

TD315S□□V

(VR-LU)



Mass: 1061kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

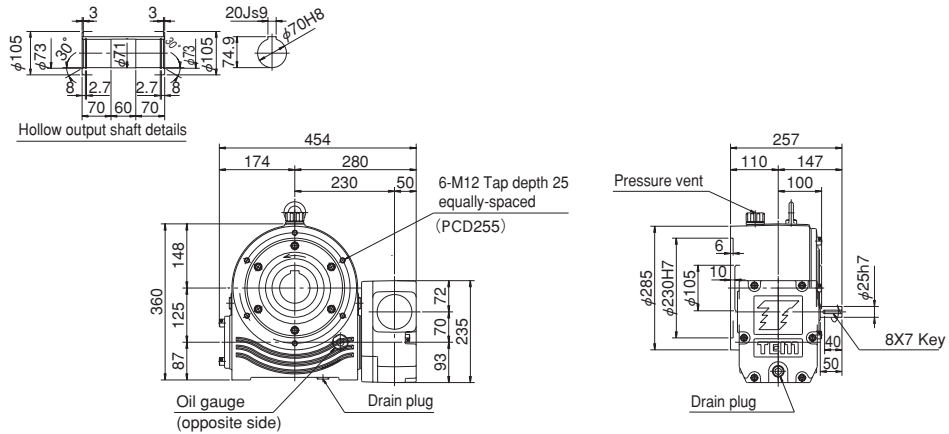
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD315	100	32.13	15957 {1628}	29.82	17738 {1810}	26.51	19679 {2008}	23.16	20584 {2100}	15.27	24821 {2533}	4.19	30270 {3089}
	150	23.82	17261 {1761}	21.35	18465 {1884}	18.84	20281 {2069}	16.48	21189 {2162}	10.93	25427 {2595}	3.00	30270 {3089}
	200	18.61	17557 {1791}	16.96	19070 {1946}	14.76	20584 {2100}	13.10	21794 {2224}	8.73	26032 {2656}	2.37	30270 {3089}
	250	14.70	16951 {1730}	13.68	18767 {1915}	12.31	20886 {2131}	10.93	22097 {2255}	7.31	26335 {2687}	2.00	30270 {3089}
	300	28.16	39325 {4013}	24.69	41146 {4199}	20.89	43159 {4404}	18.00	44420 {4533}	10.03	44420 {4533}	2.37	44420 {4533}
	450	21.64	43006 {4388}	18.82	44420 {4533}	15.20	44420 {4533}	12.79	44420 {4533}	7.20	44420 {4533}	1.74	44420 {4533}
	600	17.28	44420 {4533}	14.57	44420 {4533}	11.83	44420 {4533}	9.97	44420 {4533}	5.66	44420 {4533}	1.39	44420 {4533}
	750	14.23	44420 {4533}	12.03	44420 {4533}	9.78	44420 {4533}	8.25	44420 {4533}	4.72	44420 {4533}	1.18	44420 {4533}
	900	12.33	44420 {4533}	10.45	44420 {4533}	8.53	44420 {4533}	7.23	44420 {4533}	4.19	44420 {4533}	1.08	44420 {4533}
	1200	9.71	44420 {4533}	8.25	44420 {4533}	6.77	44420 {4533}	5.76	44420 {4533}	3.38	44420 {4533}	0.89	44420 {4533}
	1500	8.75	46790 {4774}	7.43	46790 {4774}	6.10	46790 {4774}	5.18	46790 {4774}	3.03	46790 {4774}	0.80	46790 {4774}
	1800	7.63	46790 {4774}	6.50	46790 {4774}	5.35	46790 {4774}	4.57	46790 {4774}	2.71	46790 {4774}	0.74	46790 {4774}
	2400	6.07	46790 {4774}	5.19	46790 {4774}	4.29	46790 {4774}	3.68	46790 {4774}	2.20	46790 {4774}	0.61	46790 {4774}
3000	5.12	46790 {4774}	4.40	46790 {4774}	3.65	46790 {4774}	3.13	46790 {4774}	1.90	46790 {4774}	0.54	46790 {4774}	
3600	4.45	46790 {4774}	3.83	46790 {4774}	3.18	46790 {4774}	2.74	46790 {4774}	1.64	46790 {4774}	0.47	46790 {4774}	

TD125H

TD125H□□B

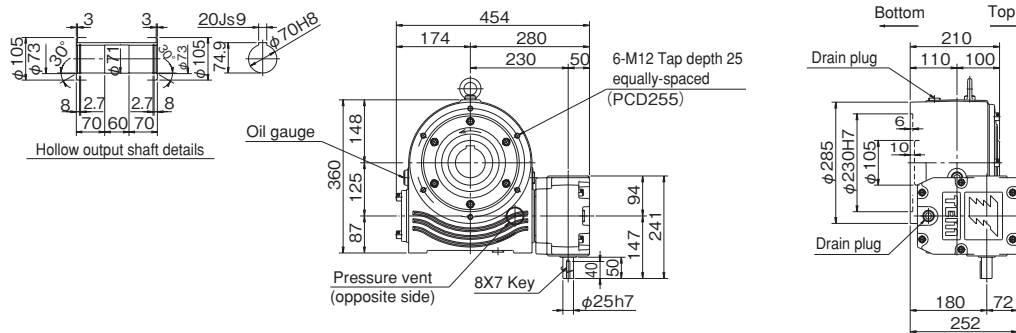
(BR-LF)



Mass: 89kg

TD125H□□V

(VR-LF)



Mass: 90kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

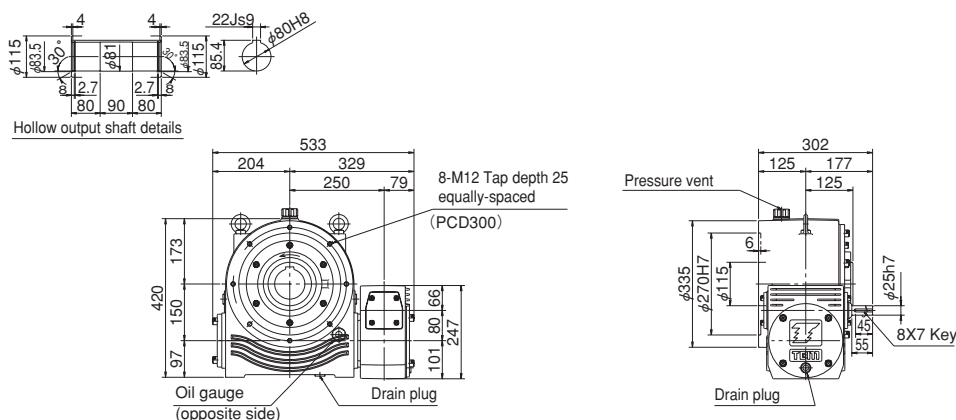
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD125	100	4.04	1900 {194}	3.76	2107 {215}	3.39	2354 {240}	3.06	2537 {259}	1.77	2644 {270}	0.38	2511 {256}
	150	3.02	2034 {208}	2.81	2244 {229}	2.54	2511 {256}	2.28	2671 {273}	1.28	2671 {273}	0.29	2644 {270}
	200	2.41	2083 {213}	2.24	2297 {234}	1.99	2511 {256}	1.78	2671 {273}	1.01	2671 {273}	0.23	2564 {262}
	250	1.99	2083 {213}	1.83	2270 {232}	1.63	2484 {253}	1.47	2644 {270}	0.83	2618 {267}	0.19	2484 {253}
	300	2.88	3668 {374}	2.49	3759 {384}	2.09	3875 {395}	1.76	3889 {397}	1.00	3889 {397}	0.24	3889 {397}
	450	2.15	3866 {394}	1.83	3889 {397}	1.49	3889 {397}	1.27	3889 {397}	0.73	3889 {397}	0.18	3889 {397}
	600	1.69	3889 {397}	1.44	3889 {397}	1.18	3889 {397}	1.00	3889 {397}	0.58	3889 {397}	0.14	3889 {397}
	750	1.41	3889 {397}	1.20	3889 {397}	0.99	3889 {397}	0.84	3889 {397}	0.49	3889 {397}	0.12	3889 {397}
	900	1.26	3889 {397}	1.07	3889 {397}	0.89	3889 {397}	0.76	3889 {397}	0.45	3889 {397}	0.12	3889 {397}
	1200	1.01	3889 {397}	0.87	3889 {397}	0.72	3889 {397}	0.62	3889 {397}	0.37	3889 {397}	0.10	3889 {397}
	1500	0.86	3889 {397}	0.74	3889 {397}	0.61	3889 {397}	0.52	3889 {397}	0.31	3889 {397}	0.08	3889 {397}
	1800	0.77	3889 {397}	0.67	3889 {397}	0.56	3889 {397}	0.48	3889 {397}	0.29	3889 {397}	0.08	3889 {397}
	2400	0.63	3889 {397}	0.54	3889 {397}	0.45	3889 {397}	0.39	3889 {397}	0.24	3889 {397}	0.07	3889 {397}
	3000	0.54	3889 {397}	0.47	3889 {397}	0.39	3889 {397}	0.34	3889 {397}	0.21	3889 {397}	0.06	3889 {397}
3600	0.48	3889 {397}	0.41	3889 {397}	0.35	3889 {397}	0.30	3889 {397}	0.19	3889 {397}	0.05	3889 {397}	

TD150H

TD150H□□B

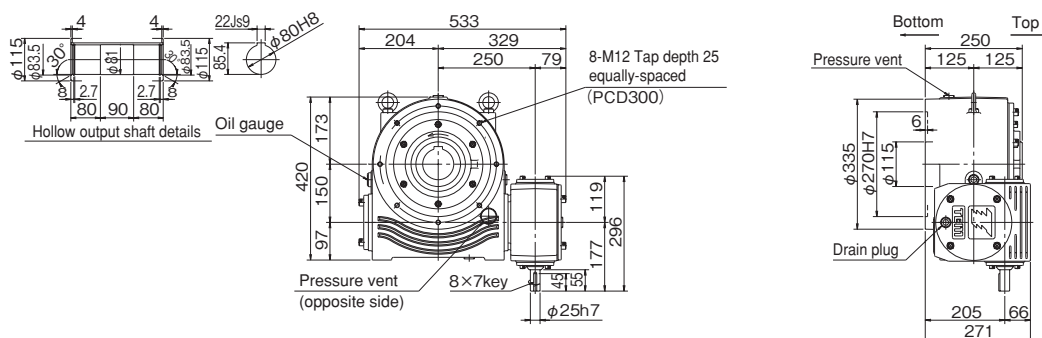
(BR-LF)



Mass: 146kg

TD150H□□V

(VR-LF)



Mass: 148kg

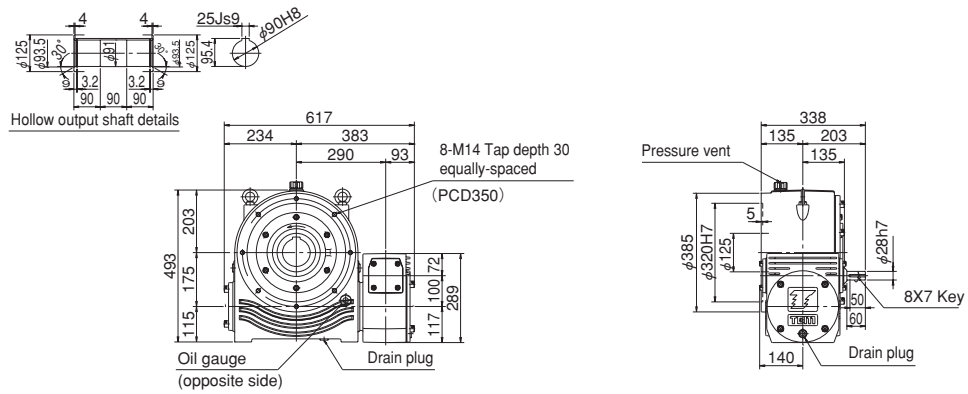
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD150	100	5.63	2688 {274}	5.29	3014 {308}	4.76	3362 {343}	4.15	3500 {357}	2.61	3986 {407}	0.56	3792 {387}
	150	4.26	2926 {299}	3.87	3160 {322}	3.42	3451 {352}	2.99	3597 {367}	1.94	4180 {427}	0.43	3986 {407}
	200	3.41	3014 {308}	3.11	3257 {332}	2.71	3500 {357}	2.41	3694 {377}	1.50	4083 {417}	0.34	3937 {402}
	250	2.81	3014 {308}	2.60	3305 {337}	2.27	3549 {362}	2.02	3743 {382}	1.20	3937 {402}	0.27	3792 {387}
	300	4.31	5601 {572}	3.72	5733 {585}	3.10	5899 {602}	2.66	6002 {612}	1.50	6002 {612}	0.36	6002 {612}
	450	3.18	5887 {601}	2.75	6002 {612}	2.24	6002 {612}	1.89	6002 {612}	1.08	6002 {612}	0.26	6002 {612}
	600	2.54	6002 {612}	2.16	6002 {612}	1.77	6002 {612}	1.50	6002 {612}	0.86	6002 {612}	0.21	6002 {612}
	750	2.11	6002 {612}	1.80	6002 {612}	1.47	6002 {612}	1.25	6002 {612}	0.72	6002 {612}	0.18	6002 {612}
	900	1.86	6002 {612}	1.59	6002 {612}	1.31	6002 {612}	1.12	6002 {612}	0.66	6002 {612}	0.17	6002 {612}
	1200	1.50	6002 {612}	1.28	6002 {612}	1.06	6002 {612}	0.91	6002 {612}	0.54	6002 {612}	0.14	6002 {612}
	1500	1.32	6166 {629}	1.13	6166 {629}	0.93	6166 {629}	0.80	6166 {629}	0.47	6166 {629}	0.12	6166 {629}
	1800	1.17	6166 {629}	1.01	6166 {629}	0.84	6166 {629}	0.72	6166 {629}	0.43	6166 {629}	0.12	6166 {629}
	2400	0.95	6166 {629}	0.82	6166 {629}	0.68	6166 {629}	0.59	6166 {629}	0.36	6166 {629}	0.10	6166 {629}
3000	0.81	6166 {629}	0.70	6166 {629}	0.59	6166 {629}	0.51	6166 {629}	0.31	6166 {629}	0.09	6166 {629}	
3600	0.71	6166 {629}	0.62	6166 {629}	0.52	6166 {629}	0.45	6166 {629}	0.28	6166 {629}	0.08	6166 {629}	

TD175H
TD175H□□B

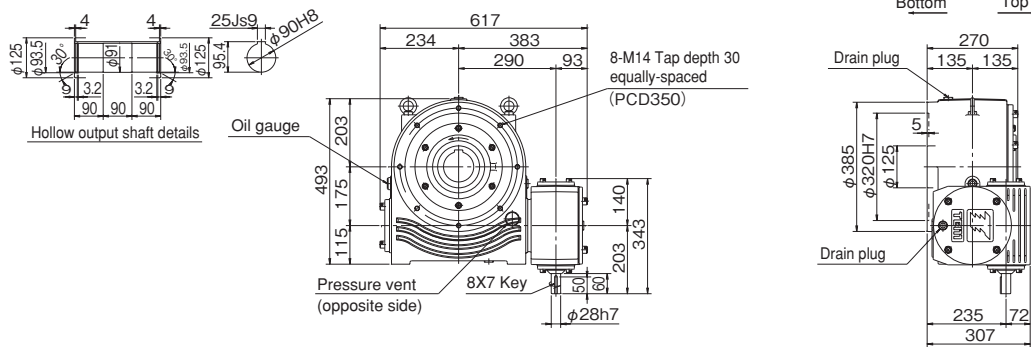
{BR-LF}



Mass: 219kg

TD175H□□V

{VR-LF}



Mass: 222kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

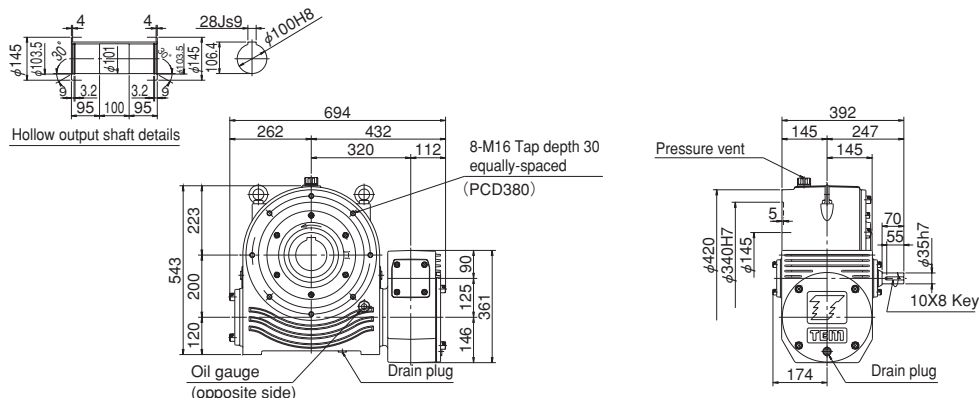
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD175	100	9.36	4524 {462}	8.52	4917 {502}	7.88	5657 {577}	6.96	5978 {610}	4.58	7143 {729}	0.99	6832 {697}
	150	6.99	4883 {498}	6.44	5357 {547}	5.72	5901 {602}	4.99	6134 {626}	3.34	7376 {753}	0.75	7221 {737}
	200	5.51	4969 {507}	5.08	5435 {555}	4.53	5978 {610}	4.00	6289 {642}	2.66	7453 {761}	0.61	7221 {737}
	250	4.45	4891 {499}	4.23	5512 {562}	3.78	6056 {618}	3.35	6366 {650}	2.12	7143 {729}	0.48	6832 {697}
	300	5.91	7903 {806}	4.97	7903 {806}	4.02	7903 {806}	3.38	7903 {806}	1.90	7903 {806}	0.45	7903 {806}
	450	4.00	7903 {806}	3.38	7903 {806}	2.74	7903 {806}	2.32	7903 {806}	1.31	7903 {806}	0.32	7903 {806}
	600	3.13	7903 {806}	2.65	7903 {806}	2.16	7903 {806}	1.83	7903 {806}	1.05	7903 {806}	0.26	7903 {806}
	750	2.58	7903 {806}	2.19	7903 {806}	1.79	7903 {806}	1.52	7903 {806}	0.87	7903 {806}	0.22	7903 {806}
	900	2.26	7903 {806}	1.92	7903 {806}	1.58	7903 {806}	1.34	7903 {806}	0.78	7903 {806}	0.20	7903 {806}
	1200	1.81	7903 {806}	1.55	7903 {806}	1.28	7903 {806}	1.09	7903 {806}	0.65	7903 {806}	0.17	7903 {806}
	1500	1.54	7903 {806}	1.32	7903 {806}	1.09	7903 {806}	0.93	7903 {806}	0.55	7903 {806}	0.14	7903 {806}
	1800	1.36	7903 {806}	1.16	7903 {806}	0.96	7903 {806}	0.82	7903 {806}	0.49	7903 {806}	0.13	7903 {806}
	2400	1.10	7903 {806}	0.95	7903 {806}	0.79	7903 {806}	0.68	7903 {806}	0.41	7903 {806}	0.11	7903 {806}
	3000	0.93	7903 {806}	0.80	7903 {806}	0.67	7903 {806}	0.58	7903 {806}	0.35	7903 {806}	0.10	7903 {806}
3600	0.82	7903 {806}	0.71	7903 {806}	0.59	7903 {806}	0.51	7903 {806}	0.31	7903 {806}	0.09	7903 {806}	

TD200H

TD200H□□B

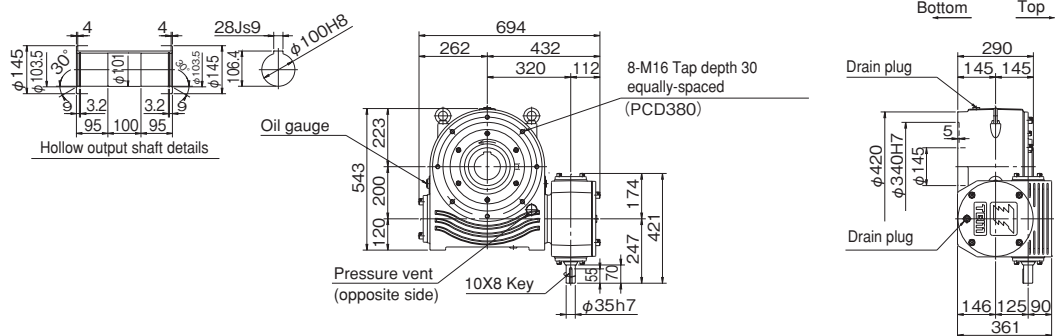
(BR-LF)



Mass: 327kg

TD200H□□V

(VR-LF)



Mass: 330kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

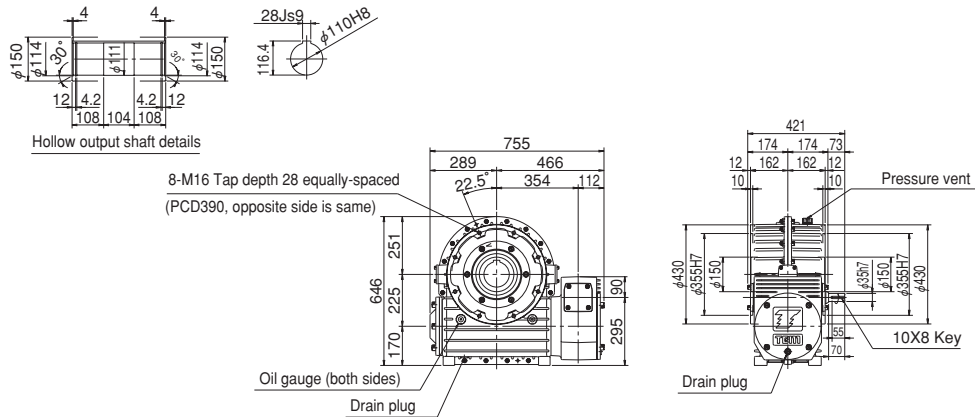
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD200	100	15.33	7462 { 761}	14.23	8285 { 845}	12.79	9271 { 946}	11.90	10314 {1052}	6.54	10314 {1052}	1.48	10314 {1052}
	150	11.38	8036 { 820}	10.66	8973 { 916}	9.58	10005 {1021}	8.28	10314 {1052}	4.60	10314 {1052}	1.07	10314 {1052}
	200	9.00	8251 { 842}	8.32	9076 { 926}	7.57	10211 {1042}	6.42	10314 {1052}	3.59	10314 {1052}	0.84	10314 {1052}
	250	7.41	8251 { 842}	6.70	8870 { 905}	6.32	10314 {1052}	5.32	10314 {1052}	3.00	10314 {1052}	0.72	10314 {1052}
	300	8.31	11138 {1137}	6.98	11138 {1137}	5.66	11138 {1137}	4.75	11138 {1137}	2.67	11138 {1137}	0.64	11138 {1137}
	450	5.80	11138 {1137}	4.89	11138 {1137}	3.97	11138 {1137}	3.35	11138 {1137}	1.90	11138 {1137}	0.47	11138 {1137}
	600	4.50	11138 {1137}	3.81	11138 {1137}	3.01	11138 {1137}	2.62	11138 {1137}	1.50	11138 {1137}	0.37	11138 {1137}
	750	3.73	11138 {1137}	3.16	11138 {1137}	2.59	11138 {1137}	2.19	11138 {1137}	1.26	11138 {1137}	0.32	11138 {1137}
	900	3.25	11138 {1137}	2.77	11138 {1137}	2.27	11138 {1137}	1.93	11138 {1137}	1.13	11138 {1137}	0.29	11138 {1137}
	1200	2.58	11138 {1137}	2.20	11138 {1137}	1.81	11138 {1137}	1.55	11138 {1137}	0.91	11138 {1137}	0.24	11138 {1137}
	1500	2.24	11138 {1137}	1.91	11138 {1137}	1.58	11138 {1137}	1.35	11138 {1137}	0.79	11138 {1137}	0.21	11138 {1137}
	1800	1.97	11138 {1137}	1.68	11138 {1137}	1.39	11138 {1137}	1.19	11138 {1137}	0.71	11138 {1137}	0.19	11138 {1137}
	2400	1.57	11138 {1137}	1.35	11138 {1137}	1.12	11138 {1137}	0.97	11138 {1137}	0.58	11138 {1137}	0.16	11138 {1137}
3000	1.34	11138 {1137}	1.16	11138 {1137}	0.97	11138 {1137}	0.83	11138 {1137}	0.51	11138 {1137}	0.14	11138 {1137}	
3600	1.18	11138 {1137}	1.02	11138 {1137}	0.85	11138 {1137}	0.74	11138 {1137}	0.45	11138 {1137}	0.13	11138 {1137}	

TD225H

TD225H□□B

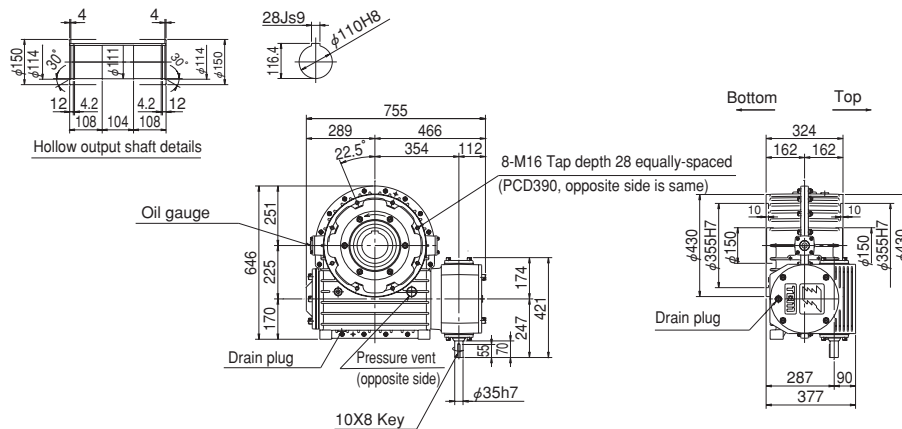
(BR-DF)



Mass: 388kg

TD225H□□V

(VR-LF)



Mass: 394kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

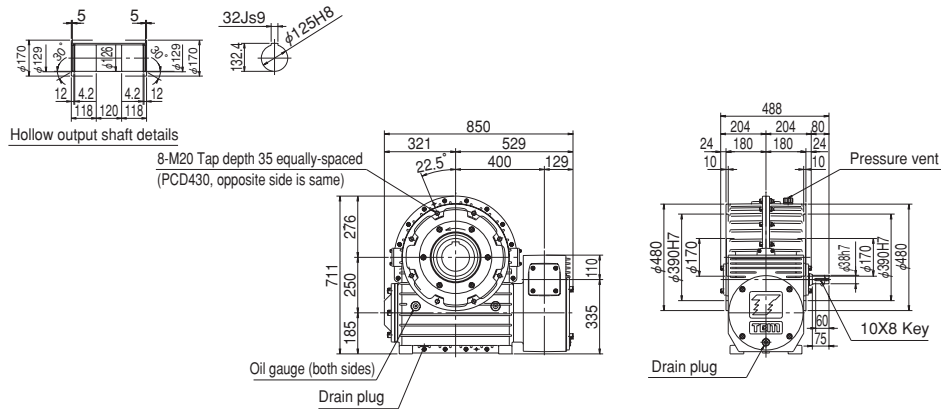
Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		Input kW	Output torque N-m {kgf-m}	Input kW	Output torque N-m {kgf-m}	Input kW	Output torque N-m {kgf-m}	Input kW	Output torque N-m {kgf-m}	Input kW	Output torque N-m {kgf-m}	Input kW	Output torque N-m {kgf-m}
TD225	100	15.39	7520 { 767 }	14.19	8289 { 846 }	12.71	9240 { 943 }	12.02	10463 { 1068 }	8.15	12909 { 1317 }	1.84	12909 { 1317 }
	150	11.50	8153 { 832 }	10.61	8968 { 915 }	9.59	10055 { 1026 }	8.80	11006 { 1123 }	5.92	13316 { 1359 }	1.38	13452 { 1373 }
	200	9.00	8289 { 846 }	8.31	9104 { 929 }	7.62	10327 { 1054 }	7.07	11414 { 1165 }	4.71	13588 { 1387 }	1.06	13044 { 1331 }
	250	7.41	8289 { 846 }	6.64	8832 { 901 }	6.30	10327 { 1054 }	5.86	11414 { 1165 }	3.93	13588 { 1387 }	0.89	12909 { 1317 }
	300	10.97	14993 { 1530 }	9.73	15849 { 1617 }	8.04	16204 { 1653 }	6.82	16363 { 1670 }	3.81	16363 { 1670 }	0.90	16363 { 1670 }
	450	8.37	16185 { 1652 }	7.13	16363 { 1670 }	5.78	16363 { 1670 }	4.87	16363 { 1670 }	2.76	16363 { 1670 }	0.67	16363 { 1670 }
	600	6.56	16363 { 1670 }	5.54	16363 { 1670 }	4.51	16363 { 1670 }	3.81	16363 { 1670 }	2.17	16363 { 1670 }	0.53	16363 { 1670 }
	750	5.43	16363 { 1670 }	4.59	16363 { 1670 }	3.75	16363 { 1670 }	3.18	16363 { 1670 }	1.83	16363 { 1670 }	0.46	16363 { 1670 }
	900	4.73	16363 { 1670 }	4.02	16363 { 1670 }	3.29	16363 { 1670 }	2.80	16363 { 1670 }	1.63	16363 { 1670 }	0.42	16363 { 1670 }
	1200	3.74	16363 { 1670 }	3.19	16363 { 1670 }	2.62	16363 { 1670 }	2.24	16363 { 1670 }	1.32	16363 { 1670 }	0.34	16363 { 1670 }
	1500	3.55	17542 { 1790 }	3.02	17542 { 1790 }	2.49	17542 { 1790 }	2.12	17542 { 1790 }	1.25	17542 { 1790 }	0.33	17542 { 1790 }
	1800	3.10	17542 { 1790 }	2.66	17542 { 1790 }	2.20	17542 { 1790 }	1.88	17542 { 1790 }	1.12	17542 { 1790 }	0.30	17542 { 1790 }
	2400	2.48	17542 { 1790 }	2.13	17542 { 1790 }	1.77	17542 { 1790 }	1.52	17542 { 1790 }	0.91	17542 { 1790 }	0.25	17542 { 1790 }
	3000	2.11	17542 { 1790 }	1.82	17542 { 1790 }	1.51	17542 { 1790 }	1.31	17542 { 1790 }	0.79	17542 { 1790 }	0.22	17542 { 1790 }
3600	1.86	17542 { 1790 }	1.60	17542 { 1790 }	1.34	17542 { 1790 }	1.16	17542 { 1790 }	0.71	17542 { 1790 }	0.20	17542 { 1790 }	

Double reduction
Dimensional drawing

TD250H

TD250H□□B

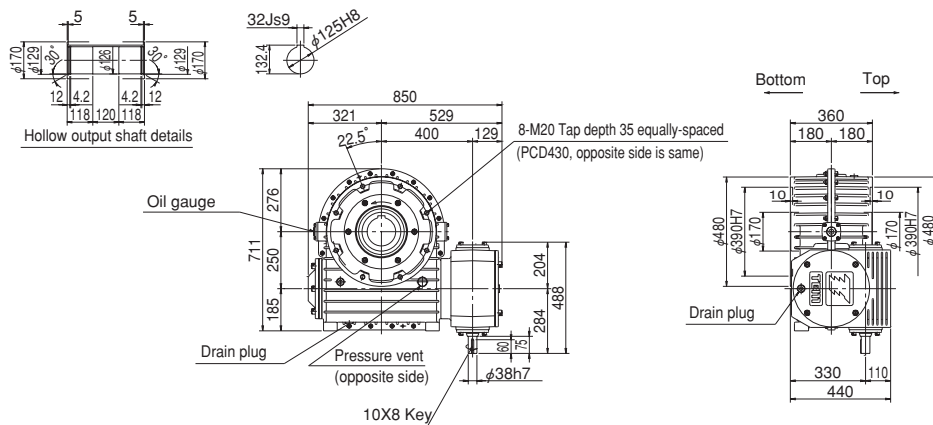
(BR-DF)



Mass: 522kg

TD250H□□V

(VR-LF)



Mass: 529kg

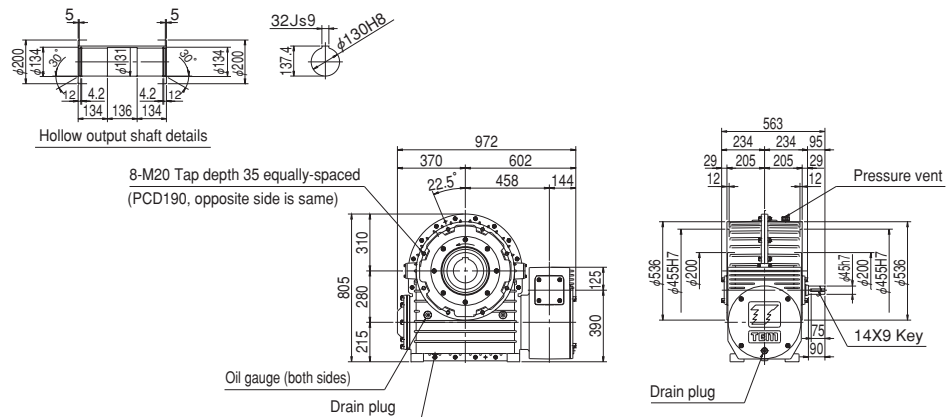
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD250	100	22.82	11238 {1147}	21.46	12643 {1290}	19.35	14224 {1451}	17.75	15628 {1595}	10.95	17560 {1792}	2.47	17560 {1792}
	150	17.15	12292 {1254}	15.82	13521 {1380}	14.54	15453 {1577}	13.30	16858 {1720}	7.68	17560 {1792}	1.77	17560 {1792}
	200	13.38	12468 {1272}	12.50	13872 {1416}	10.99	15102 {1541}	10.51	17209 {1756}	5.99	17560 {1792}	1.41	17560 {1792}
	250	10.91	12468 {1272}	10.08	13697 {1398}	9.20	15453 {1577}	8.61	17209 {1756}	4.94	17560 {1792}	1.17	17560 {1792}
	300	14.41	19831 {2024}	12.78	20964 {2139}	10.50	21354 {2179}	8.89	21558 {2200}	4.97	21558 {2200}	1.18	21558 {2200}
	450	10.93	21329 {2176}	9.30	21558 {2200}	7.53	21558 {2200}	6.35	21558 {2200}	3.59	21558 {2200}	0.87	21558 {2200}
	600	8.57	21558 {2200}	7.22	21558 {2200}	5.87	21558 {2200}	4.95	21558 {2200}	2.83	21558 {2200}	0.70	21558 {2200}
	750	7.02	21558 {2200}	5.94	21558 {2200}	4.84	21558 {2200}	4.09	21558 {2200}	2.34	21558 {2200}	0.58	21558 {2200}
	900	6.14	21558 {2200}	5.21	21558 {2200}	4.26	21558 {2200}	3.62	21558 {2200}	2.11	21558 {2200}	0.54	21558 {2200}
	1200	4.85	21558 {2200}	4.13	21558 {2200}	3.39	21558 {2200}	2.89	21558 {2200}	1.70	21558 {2200}	0.45	21558 {2200}
	1500	4.34	22646 {2311}	3.70	22646 {2311}	3.03	22646 {2311}	2.59	22646 {2311}	1.52	22646 {2311}	0.40	22646 {2311}
	1800	3.82	22646 {2311}	3.26	22646 {2311}	2.69	22646 {2311}	2.30	22646 {2311}	1.37	22646 {2311}	0.37	22646 {2311}
	2400	3.05	22646 {2311}	2.61	22646 {2311}	2.16	22646 {2311}	1.86	22646 {2311}	1.12	22646 {2311}	0.31	22646 {2311}
3000	2.55	22646 {2311}	2.20	22646 {2311}	1.83	22646 {2311}	1.57	22646 {2311}	0.95	22646 {2311}	0.26	22646 {2311}	
3600	2.25	22646 {2311}	1.94	22646 {2311}	1.62	22646 {2311}	1.39	22646 {2311}	0.85	22646 {2311}	0.24	22646 {2311}	

TD280H
TD280H□□B

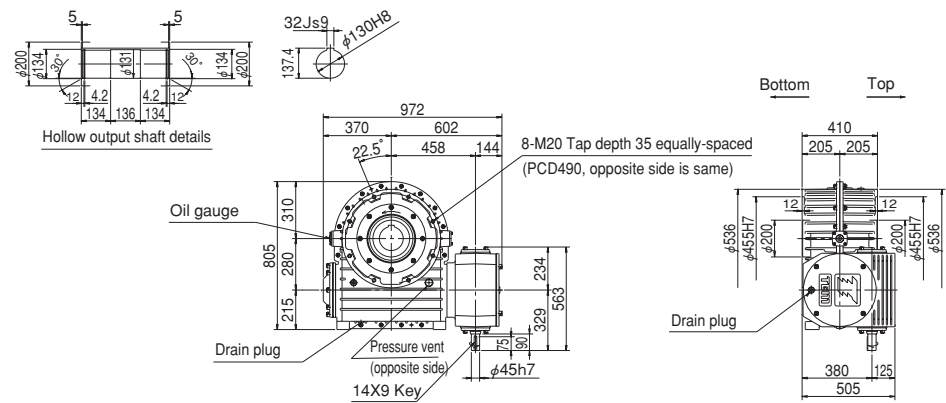
(BR-DF)



Mass: 748kg

TD280H□□V

(VR-LF)



Mass: 758kg

Transmissible capability Refer to p 12 for the actual reduction ratio.

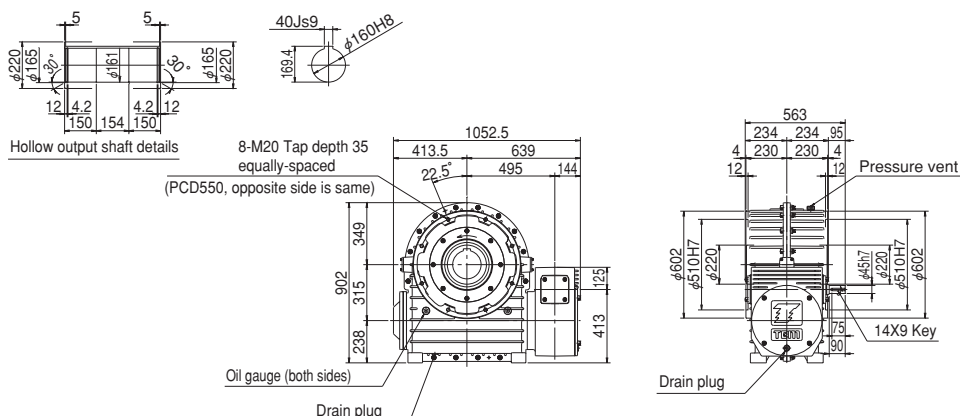
*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD280	100	32.11	15895 {1622}	29.72	17623 {1798}	26.54	19613 {2001}	23.28	20629 {2105}	15.36	24854 {2536}	3.46	24854 {2536}
	150	23.75	17137 {1749}	21.35	18392 {1877}	18.78	20132 {2054}	16.50	21126 {2156}	10.73	24854 {2536}	2.48	24854 {2536}
	200	18.79	17646 {1801}	17.07	19138 {1953}	14.86	20629 {2105}	13.05	21623 {2206}	8.37	24854 {2536}	1.96	24854 {2536}
	250	14.72	16901 {1725}	13.65	18641 {1902}	12.36	20877 {2130}	10.87	21872 {2232}	6.94	24854 {2536}	1.65	24854 {2536}
	300	18.59	25900 {2643}	16.12	26798 {2734}	13.56	27947 {2852}	11.65	28664 {2925}	6.49	28664 {2925}	1.53	28664 {2925}
	450	14.28	27860 {2843}	12.37	28664 {2925}	10.01	28664 {2925}	8.41	28664 {2925}	4.73	28664 {2925}	1.15	28664 {2925}
	600	11.38	28664 {2925}	9.58	28664 {2925}	7.78	28664 {2925}	6.55	28664 {2925}	3.73	28664 {2925}	0.91	28664 {2925}
	750	9.35	28664 {2925}	7.91	28664 {2925}	6.43	28664 {2925}	5.43	28664 {2925}	3.11	28664 {2925}	0.77	28664 {2925}
	900	8.12	28664 {2925}	6.87	28664 {2925}	5.61	28664 {2925}	4.76	28664 {2925}	2.75	28664 {2925}	0.71	28664 {2925}
	1200	6.39	28664 {2925}	5.43	28664 {2925}	4.45	28664 {2925}	3.79	28664 {2925}	2.22	28664 {2925}	0.58	28664 {2925}
	1500	5.74	30110 {3072}	4.88	30110 {3072}	4.00	30110 {3072}	3.40	30110 {3072}	1.99	30110 {3072}	0.52	30110 {3072}
	1800	5.01	30110 {3072}	4.27	30110 {3072}	3.52	30110 {3072}	3.00	30110 {3072}	1.78	30110 {3072}	0.48	30110 {3072}
	2400	3.99	30110 {3072}	3.41	30110 {3072}	2.82	30110 {3072}	2.41	30110 {3072}	1.45	30110 {3072}	0.40	30110 {3072}
	3000	3.36	30110 {3072}	2.89	30110 {3072}	2.39	30110 {3072}	2.05	30110 {3072}	1.25	30110 {3072}	0.35	30110 {3072}
3600	2.92	30110 {3072}	2.51	30110 {3072}	2.09	30110 {3072}	1.80	30110 {3072}	1.10	30110 {3072}	0.31	30110 {3072}	

TD315H

TD315H□□B

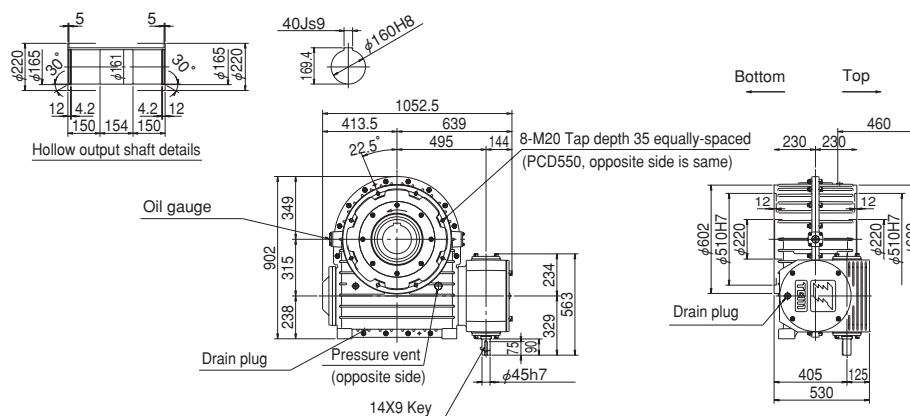
(BR-DF)



Mass: 975kg

TD315H□□V

(VR-LF)



Mass: 990kg

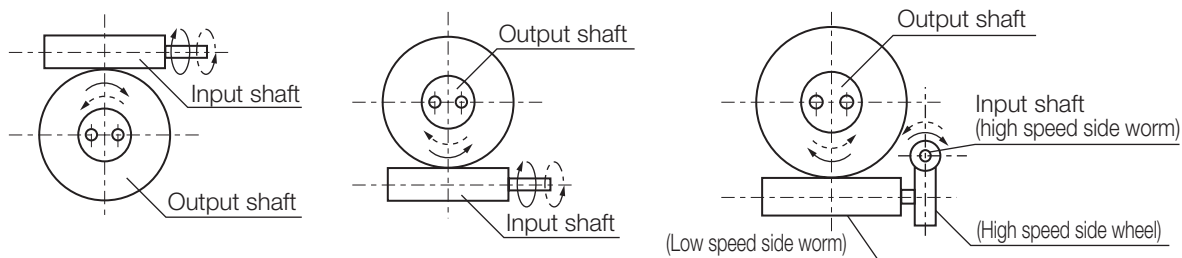
Transmissible capability Refer to p 12 for the actual reduction ratio.

*Refer to p. 5 for shaft arrangement and relative rotational direction.

Size	Nominal reduction ratio	1750r/min		1450r/min		1150r/min		950r/min		500r/min		100r/min	
		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}
TD315	100	32.13	15957 {1628}	29.82	17738 {1810}	26.51	19679 {2008}	23.16	20584 {2100}	15.27	24821 {2533}	4.19	30270 {3089}
	150	23.82	17261 {1761}	21.35	18465 {1884}	18.84	20281 {2069}	16.48	21189 {2162}	10.93	25427 {2595}	3.00	30270 {3089}
	200	18.61	17557 {1791}	16.96	19070 {1946}	14.76	20584 {2100}	13.10	21794 {2224}	8.73	26032 {2656}	2.37	30270 {3089}
	250	14.70	16951 {1730}	13.68	18767 {1915}	12.31	20886 {2131}	10.93	22097 {2255}	7.31	26335 {2687}	2.00	30270 {3089}
	300	28.16	39325 {4013}	24.69	41146 {4199}	20.89	43159 {4404}	18.00	44420 {4533}	10.03	44420 {4533}	2.37	44420 {4533}
	450	21.64	43006 {4388}	18.82	44420 {4533}	15.20	44420 {4533}	12.79	44420 {4533}	7.20	44420 {4533}	1.74	44420 {4533}
	600	17.28	44420 {4533}	14.57	44420 {4533}	11.83	44420 {4533}	9.97	44420 {4533}	5.66	44420 {4533}	1.39	44420 {4533}
	750	14.23	44420 {4533}	12.03	44420 {4533}	9.78	44420 {4533}	8.25	44420 {4533}	4.72	44420 {4533}	1.18	44420 {4533}
	900	12.33	44420 {4533}	10.45	44420 {4533}	8.53	44420 {4533}	7.23	44420 {4533}	4.19	44420 {4533}	1.08	44420 {4533}
	1200	9.71	44420 {4533}	8.25	44420 {4533}	6.77	44420 {4533}	5.76	44420 {4533}	3.38	44420 {4533}	0.89	44420 {4533}
	1500	8.75	46790 {4774}	7.43	46790 {4774}	6.10	46790 {4774}	5.18	46790 {4774}	3.03	46790 {4774}	0.80	46790 {4774}
	1800	7.63	46790 {4774}	6.50	46790 {4774}	5.35	46790 {4774}	4.57	46790 {4774}	2.71	46790 {4774}	0.74	46790 {4774}
	2400	6.07	46790 {4774}	5.19	46790 {4774}	4.29	46790 {4774}	3.68	46790 {4774}	2.20	46790 {4774}	0.61	46790 {4774}
	3000	5.12	46790 {4774}	4.40	46790 {4774}	3.65	46790 {4774}	3.13	46790 {4774}	1.90	46790 {4774}	0.54	46790 {4774}
3600	4.45	46790 {4774}	3.83	46790 {4774}	3.18	46790 {4774}	2.74	46790 {4774}	1.64	46790 {4774}	0.47	46790 {4774}	

Rotational relationship of input/output shafts

All worms are right-hand helices. The diagrams show the rotational relationship between the input and output shafts.



T type (Single reduction ratio 1/10 to 1/60) **B type** (Single reduction ratio 1/10 to 1/60) **B type** (Double reduction ratio 1/100 to 1/3600)

Reduction ratio

Actual reduction ratio

Single reduction type

Reduction ratio \ Size	TD125	TD150	TD175	TD200	TD225	TD250	TD280	TD315
10	10.25	10.25	10.25	10.25	10.25	10.25	10.25	10.25
20	20.00	20.50	20.50	20.00	20.50	20.50	20.50	20.50
30	31.50	31.50	32.50	31.50	31.00	31.00	30.50	31.00
40	40.00	41.00	41.00	40.00	40.00	40.00	41.00	40.00
50	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00
60	63.00	63.00	65.00	63.00	60.00	62.00	61.00	62.00

Double reduction type

Reduction ratio \ Size	TD125	TD150	TD175	TD200	TD225	TD250	TD280	TD315
100	102.50	102.50	102.50	102.50	102.50	102.50	102.50	102.50
150	153.75	153.75	153.75	153.75	153.75	153.75	153.75	153.75
200	205.00	205.00	205.00	205.00	205.00	205.00	205.00	205.00
250	256.25	256.25	256.25	256.25	256.25	256.25	256.25	256.25
300	315.00	315.00	325.00	315.00	310.00	310.00	305.00	310.00
450	472.50	472.50	487.50	472.50	465.00	465.00	457.50	465.00
600	630.00	630.00	650.00	630.00	620.00	620.00	610.00	620.00
750	787.50	787.50	812.50	787.50	775.00	775.00	762.50	775.00
900	945.00	945.00	975.00	945.00	930.00	930.00	915.00	930.00
1200	1260.00	1260.00	1300.00	1260.00	1240.00	1240.00	1220.00	1240.00
1500	1575.00	1575.00	1625.00	1575.00	1500.00	1550.00	1525.00	1550.00
1800	1890.00	1890.00	1950.00	1890.00	1800.00	1860.00	1830.00	1860.00
2400	2520.00	2520.00	2600.00	2520.00	2400.00	2480.00	2440.00	2480.00
3000	3150.00	3150.00	3250.00	3150.00	3000.00	3100.00	3050.00	3100.00
3600	3780.00	3780.00	3900.00	3780.00	3600.00	3720.00	3660.00	3720.00

Backlash

Solid output shaft type (S)

Single reduction type Note: The values are at the OD of the output shaft.

Angle°

Size Nominal reduction ratio	TD125S	TD150S	TD175S	TD200S	TD225S	TD250S	TD280S	TD315S
10	0.09~0.50	0.09~0.45	0.07~0.40	0.07~0.37	0.06~0.33	0.05~0.31	0.05~0.30	0.05~0.26
20	0.09~0.49	0.08~0.44	0.07~0.39	0.07~0.36	0.06~0.33	0.05~0.31	0.05~0.30	0.05~0.26
30	0.09~0.47	0.09~0.45	0.07~0.38	0.07~0.36	0.06~0.32	0.05~0.30	0.05~0.28	0.05~0.25
40	0.09~0.49	0.08~0.44	0.07~0.39	0.07~0.36	0.06~0.33	0.05~0.31	0.05~0.30	0.05~0.26
50	0.09~0.49	0.08~0.44	0.07~0.38	0.07~0.37	0.06~0.33	0.05~0.30	0.05~0.28	0.05~0.26
60	0.09~0.47	0.09~0.45	0.07~0.38	0.07~0.36	0.06~0.32	0.05~0.30	0.05~0.28	0.05~0.25

Double reduction type Note: The values are at the OD of the output shaft.

Angle°

Size Nominal reduction ratio	TD125S	TD150S	TD175S	TD200S	TD225S	TD250S	TD280S	TD315S
100~150	0.10~0.56	0.09~0.48	0.08~0.43	0.08~0.40	0.06~0.37	0.06~0.34	0.06~0.33	0.06~0.29
200~250	0.10~0.56	0.09~0.48	0.08~0.43	0.08~0.39	0.06~0.36	0.06~0.34	0.06~0.32	0.05~0.28
300~450	0.09~0.49	0.09~0.46	0.07~0.39	0.07~0.37	0.06~0.33	0.05~0.31	0.06~0.29	0.05~0.26
600~750	0.09~0.49	0.09~0.46	0.07~0.39	0.07~0.36	0.06~0.33	0.05~0.31	0.05~0.29	0.05~0.26
900	0.09~0.49	0.09~0.46	0.07~0.39	0.07~0.37	0.06~0.33	0.05~0.31	0.06~0.29	0.05~0.26
1200	0.09~0.49	0.09~0.46	0.07~0.39	0.07~0.36	0.06~0.33	0.05~0.31	0.05~0.29	0.05~0.26
1500~3600	0.09~0.48	0.09~0.45	0.07~0.39	0.07~0.36	0.06~0.33	0.05~0.31	0.05~0.29	0.05~0.25

Hollow output shaft type (H)

Single reduction type Note: The values are at the ID of the output hollow shaft bore.

Angle°

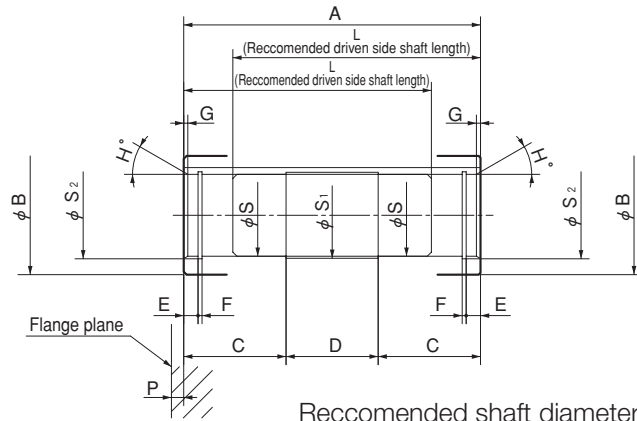
Size Nominal reduction ratio	TD125H	TD150H	TD175H	TD200H	TD225H	TD250H	TD280H	TD315H
10	0.09~0.28	0.09~0.25	0.07~0.23	0.07~0.21	0.06~0.18	0.05~0.17	0.05~0.17	0.05~0.14
20	0.09~0.28	0.08~0.24	0.07~0.22	0.07~0.21	0.06~0.18	0.05~0.17	0.05~0.16	0.05~0.14
30	0.09~0.26	0.09~0.25	0.07~0.21	0.07~0.20	0.06~0.17	0.05~0.16	0.05~0.15	0.05~0.13
40	0.09~0.28	0.08~0.24	0.07~0.22	0.07~0.21	0.06~0.18	0.05~0.17	0.05~0.16	0.05~0.14
50	0.09~0.28	0.08~0.24	0.07~0.21	0.07~0.21	0.06~0.18	0.05~0.16	0.05~0.15	0.05~0.14
60	0.09~0.26	0.09~0.25	0.07~0.21	0.07~0.20	0.06~0.17	0.05~0.16	0.05~0.15	0.05~0.13

Double reduction type Note: The values are at the ID of the output hollow shaft bore.

Angle°

Size Nominal reduction ratio	TD125H	TD150H	TD175H	TD200H	TD225H	TD250H	TD280H	TD315H
100~150	0.10~0.35	0.09~0.29	0.08~0.26	0.08~0.24	0.06~0.21	0.06~0.20	0.06~0.20	0.06~0.17
200~250	0.10~0.35	0.09~0.28	0.08~0.26	0.08~0.24	0.06~0.21	0.06~0.20	0.06~0.19	0.05~0.17
300	0.09~0.28	0.09~0.26	0.07~0.22	0.07~0.21	0.06~0.18	0.05~0.17	0.06~0.16	0.05~0.14
600~750	0.09~0.28	0.09~0.26	0.07~0.22	0.07~0.21	0.06~0.18	0.05~0.17	0.05~0.16	0.05~0.14
900~1200	0.09~0.28	0.09~0.26	0.07~0.22	0.07~0.21	0.06~0.18	0.05~0.17	0.06~0.16	0.05~0.14
1500	0.09~0.27	0.09~0.25	0.07~0.21	0.07~0.20	0.06~0.17	0.05~0.16	0.05~0.15	0.05~0.14
1800	0.09~0.27	0.09~0.25	0.07~0.21	0.07~0.20	0.06~0.17	0.05~0.16	0.05~0.16	0.05~0.14
2400~3600	0.09~0.27	0.09~0.25	0.07~0.21	0.07~0.20	0.06~0.17	0.05~0.16	0.05~0.15	0.05~0.14

Hollow output shaft dimension details



Size	A	B	C	D	E	F	G	H°	P	S	S1	S2	L
TD125H	200	105	70	60	8	2.7	3	30°	10	70	71	73	170
TD150H	250	115	80	90	8	2.7	4	30°	0	80	81	83.5	220
TD175H	270	125	90	90	9	3.2	4	30°	0	90	91	93.5	238
TD200H	290	145	95	100	9	3.2	4	30°	0	100	101	103.5	258
TD225H	320	150	108	104	12	4.2	4	30°	2	110	111	114	272
TD250H	356	170	118	120	12	4.2	5	30°	2	125	126	129	303
TD280H	404	200	134	136	12	4.2	5	30°	3	130	131	134	344
TD315H	454	220	150	154	12	4.2	5	30°	3	160	161	165	386

Note) Dimension "P" is the distance from the flange plane to the end face of the hollow shaft.

■ Efficiency

● Calculation of efficiency

In case to calculate the efficiency (catalog value) at the rotational speed in catalog, use the following formula;

$$* \text{Efficiency in catalog (\%)} = \frac{\text{Output torque (N} \cdot \text{m)} \times \text{Input rotational speed (r/min)} \times 100}{9550 \times \text{Input kW} \times \text{Reduction ratio}}$$

* Efficiency in catalog; efficiency with load ratio 100%, use of our recommended lubrication oil, continuous operation, static oil temperature, gears are fitted in, while subtracting theoretical efficiency of gears, supposed sliding resistance of bearing and oil-seal, agitating resistance of lubrication oil.

● Start up efficiency

In case of the elevator application or inverter drive, it is essential to check up the required input torque with the start up efficiency.

In regard to the start up efficiency, contact TEM for the details.

$$\text{Required input torque} = \frac{\text{Load torque}}{(\text{Start up efficiency} \times \text{Reduction ratio})}$$

● Start up efficiency

In case the size of reducer is overmuch to compare with that of the motor, motor current might exceed the rated current due to the no-load loss of the reducer itself. Select the motor with enough capacity.

● Transmissible capability while the oil temperature is not a static condition

Transmissible capability described in this catalog is that at the condition of 100% load ratio/ use of our recommended lubrication oil/ continuous operation/ static oil temperature condition.

Therefore, it might happen to get not enough transmissible capability due to low efficiency, because fluidity falls off while agitation resistance increases when the starting up in cold temperature or under the condition of frequent start/stop and short time operation, and oil temperature does not rise

The discount factor of lubricant while temperature is not in a static condition (reference value)

Reduction ratio	Discount factor
10-15	minus 4-8%
20-30	minus 7-11%
40-60	minus 12-15%

· Contact TEM on the double reduction type.

● Self-locking and braking effect

Self-locking; when worm reducers are in a stationary condition – the input shaft (worm) is not driven by the output shaft (wheel).

Braking effect; large force is required to the output shaft (wheel) though the input shaft (worm) is driven by the output shaft.

These effects are determined by the worm gear lead angle, the condition of the tooth surface and lubrication.

On the TD Series single reduction type, self-locking can be expected at the ratio 1/60 in a stationary condition.

While braking effect can be expected on the TD Series single reduction type at the ratio 1/10 to 1/50.

Note for self-locking and braking effect

- 1) In regard to the self-locking, when the impact and/or the vibration are added, the effect of self-locking may decrease. Self-locking is not guaranteed, so if certain stoppage or holding is required, make sure to install a separate holding device such as a mechanical brake.
- 2) For applications with a very large load inertia (travelling device, traversing device, etc.), it is very dangerous to happen an urgent braking due to self-locking and braking effect.
For these kinds of applications, select a reduction ratio of 1/10 or 1/20.

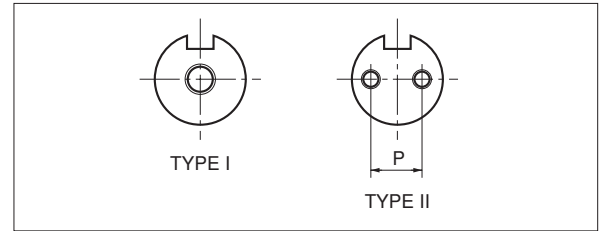
In case of the input with servo motor

In this case, it is possible to use the reducer within the range of the input capacity (kW) of each input rotational speed. In addition, consider the slow start/slow down as much as possible when acceleration/deceleration. In case the input rotational speed exceeds 1750r/min, contact TEM.

In addition, input rotational speed up to 3000 r/min is available with “TERVO Reducer for servo motor”. Contact TEM for the details.

Input shaft tap

Input shaft end face tap to prevent sprockets and gears from coming off.
(The TD Series output shaft end face tap is standard.)



Single reduction type

Size	TD125	TD150	TD175	TD200	TD225	TD250	TD280	TD315
TYPE	II	II	II	II	II	II	II	II
Size	M8	M8	M8	M10	M10	M12	M12	M12
Depth (L)	12	12	12	15	15	18	18	18
Pitch (P)	18	20	22	26	32	40	45	50

Double reduction type

Size	TD125	TD150	TD175	TD200	TD225	TD250	TD280	TD315
TYPE	I	I	I	II	II	II	II	II
Size	M8	M8	M8	M8	M8	M8	M8	M8
Depth (L)	12	12	12	12	12	12	12	12
Pitch (P)	—	—	—	18	18	20	22	22

Double input shaft type

Double input shaft type is available.
(Opposite side input shaft is identical in dimensions/configurations as the standard input shaft.)

TD 250 H 60 1-1 - BDF

Double input shaft type

*Keyways phase of double input shaft are not always aligned.
Contact TEM for more information if it is necessary to align the keyway phase.

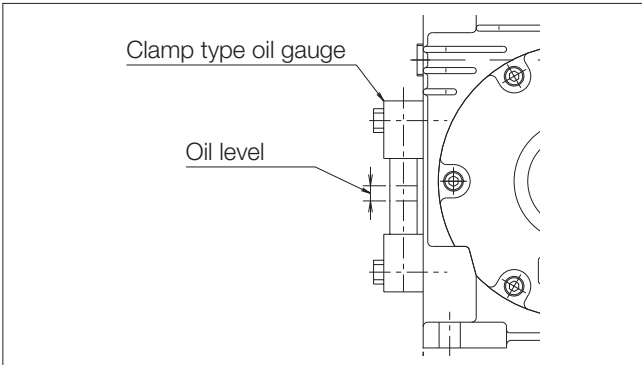
Oil gauges

Standard oil gauges are round in shape (plastic). Other oil gauges are available upon request.

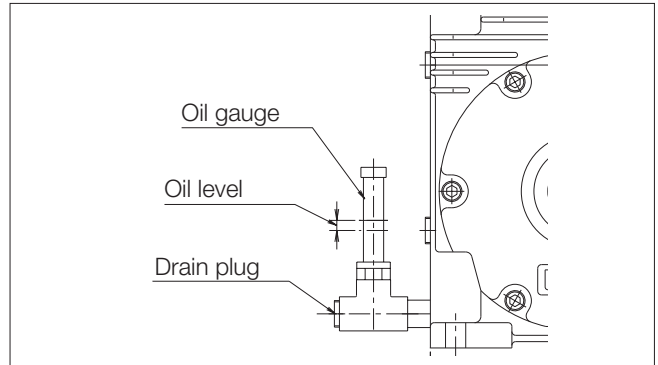
1. Metal oil gauge

It is possible to change from plastic to metal oil gauges.

2. Clamp type oil gauge

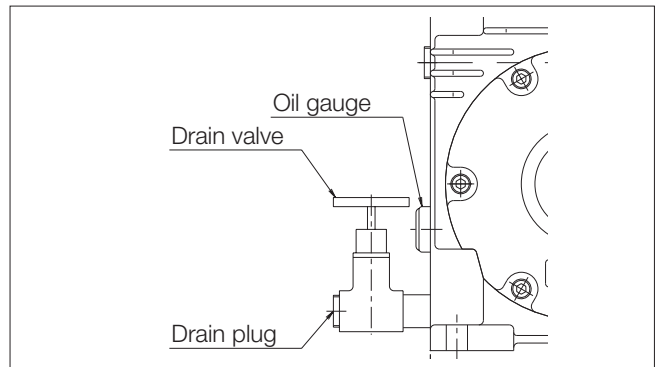


3. Vertical oil gauge (indoor type only)



Drain valve

A drain valve can be installed to improve the efficiency of drain work when changing oil or it can be convenient when pipe working.



Housing material: ductile iron (FCD)

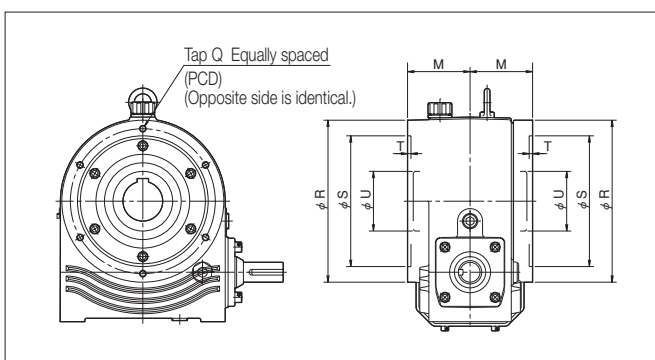
Depending on the conditions of use, housing material can be changed to FCD. Contact TEM for more information.

Double-sided flange

Double-sided flange types are available for TD125 to 200 hollow output shaft types (H).

TD 175 H 40 B DF

<Double-sided flange>



Size	M	R	S _{H7}	T	U	PCD	Q
TD 125H	110	285	230	6	105	255	6-M12×25
TD 150H	125	335	270	6	115	300	8-M12×25
TD 175H	135	385	320	5	125	350	8-M14×29
TD 200H	145	420	340	5	145	380	8-M16×30

■ Output shaft Power Lock type

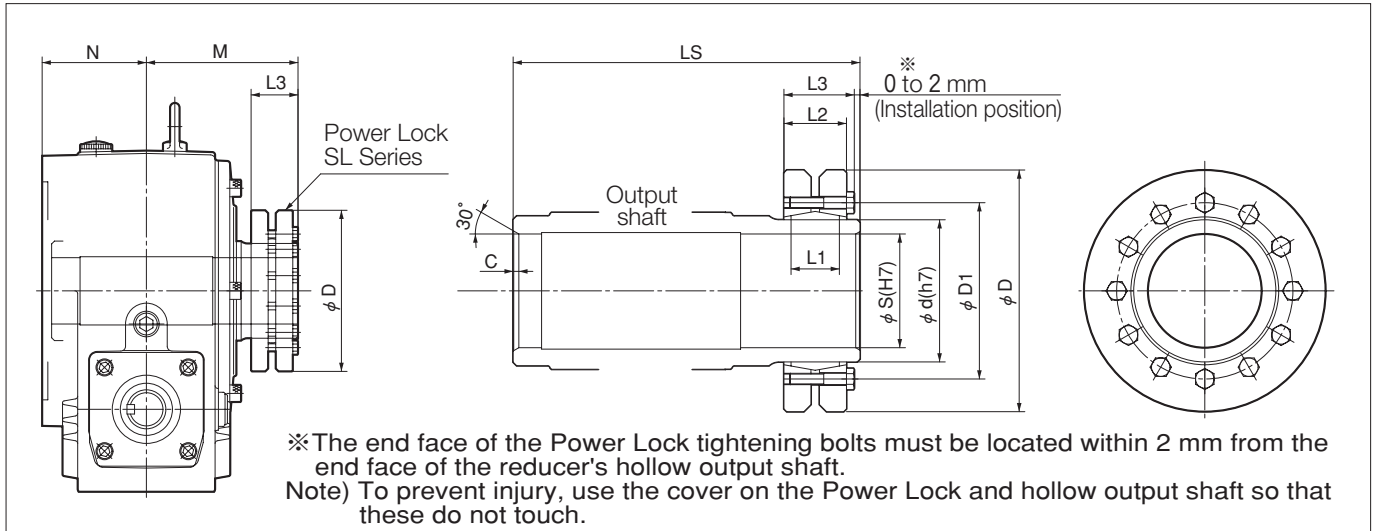
1. Model No.:

TD 200 H 30 B LF - K

<Power Lock type>

<Position of flange mounting plane>

2. Dimensions (The Power Lock's location on the reducer's counter flange side is the standard position.)



3. Power Lock Model No. list: Combinations/dimensions/capabilities

Reducer size	Power Lock specifications														
	Power Lock SL Series { Hub OD x OD d x D }	Transmissible torque N · m {kgf · m}	Dimensions (mm)										Tightening bolt		Mass kg
			φS (H7)	D1	L1	L2	L3	M	M1	LS	C	Number of bolts	Size	Tightening torque MA N · m {kgf · m}	
TD125H	PL 90×170 SL-TK	3889 { 397.0}	70	127	50	64.5	72.5	110	184.5	284.5	3	8	M12	245 {25.0}	7
TD150H	PL 110×205 SL-TK	6166 { 629.0}	80	160	88	104	114	125	256	381	4	8	M16	245 {25.0}	16
TD175H	PL 110×205 SL-TK	7903 { 806.0}	90	160	88	104	114	135	261	396	4	8	M16	480 {49.0}	16
TD200H	PL 140×250 SL-TK	11138 {1137.0}	100	201	103	120	133	145	300	445	4	6	M20	480 {49.0}	27
TD225H	PL 140×250 SL-TK	17542 {1790.0}	110	201	103	120	133	162	312	472	4	6	M20	480 {49.0}	27
TD250H	PL 165×290 SL-TK	22646 {2311.0}	125	231	114	134	147	180	349	527	5	9	M20	480 {49.0}	40
TD280H	PL 175×305 SL-TK	30110 {3072.0}	130	239	122	142	155	205	384.5	586.5	5	10	M20	480 {49.0}	46
TD315H	PL 200×350 SL-TK	46790 {4774.0}	160	264	122	142	155	230	407	634	5	12	M20	480 {49.0}	61

- Note) 1. The above list shows combinations with the Tsubaki Power Lock SL Series.
Contact TEM for more information if the combination required is different from the above.
2. Power Lock transmissible torque is the maximum Power Lock torque, but not the reducer's transmissible capability.
3. Specify the installation position on TD225 to 315H.
4. Refer to the reducer outline drawings for reducer dimensions.

4. Power Lock Handling

1. Installation

☆With torque arm mounting the basis, follow the procedures below.

●The Power Lock is shipped temporarily fixed to the output shaft. After removing the Power Lock from the reducer, install it to the machine/ equipment using the below procedures.

●The below procedures are for standard installation procedures. (Install the Power Lock on the counter flange face side, position on the flange face on the machine/ equipment's side, and install the Power Lock to the end portion of the driven shaft.)

●Recommended tolerance for driven shaft diameter: h6

(1)Verify that the periphery of the driven shaft and the hollow output shaft inner periphery of the reducer have no scratches, marks or dust on them. Using the hanging bolt on the top plane of the reducer, suspend the reducer in the air and insert it into the driven shaft.

(2)Completely wipe off any dust or oil from the periphery of the output shaft of the reducer and inner periphery of the Power Lock with a cloth, and lightly push down the Power Lock onto the reducer's output shaft periphery.

Note: If the Power Lock is too heavy, disassemble it and reassemble it on the output shaft.

Note: The bolts and main unit of the Power Lock SL Series have a special lubrication coating, so it is not necessary for the customer to coat the product.

(3)After inserting to the prescribed position, determine the relative positions (circumferential, axial) of the driven shaft and reducer output shaft. Once the position has been determined, use a torque wrench to lightly tighten the virtually diagonal tightening bolts (Fig. 2: example bolt ①→ bolt ⑤)

Note: 1/4 fastening torque (Contact TEM or refer to Power-Lock catalog) is ideal.

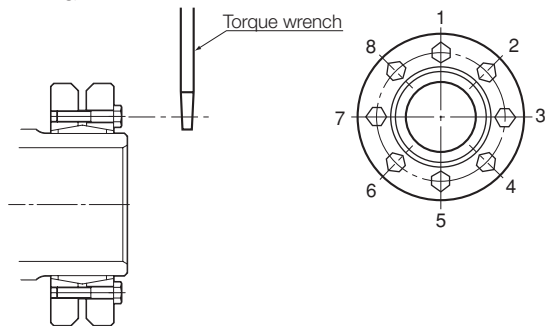


Fig. 1: Installation

Fig. 2: Example of bolt tightening sequence

(4)After the positioning is fixed, fasten the other bolts in sequence.

Note: As in (3) above, tighten the tightening bolts to approximately 1/4.

Note: When tightening, start with a base bolt and tighten in sequence CW. Tighten until the angle of the head of the bolts is no more than 30°.

(Fig. 2: example: repeat ①→②→③→④→⑤→⑥→⑦→⑧→①)

(5)Increase tightening torque (Contact TEM or refer to Power-Lock catalog) to 1/2 <(3) above>, and tighten the bolts in the same sequence.

(6)Tighten in the same sequence <(3) above> with the specified tightening torque (Contact TEM or refer to Power-Lock catalog).

(7)Finally, tighten all of the bolts in sequence in a clock-wise direction with the specified torque. Repeat this several times. This should complete the installation.

2. Removal

☆With torque arm mounting the basis, follow the procedures below.

Note: Make sure machine and equipment power is off when removing.

Note: When the tightening bolts are loosened, the Power Lock may suddenly release and allow the machine to spin or come off. The reducer will then become unbalanced, making rotation highly dangerous. Verify the following points:

●Make sure there is no torque or thrust load on the reducer's output shaft portion. Make sure to remove any load.

●If the weight of the reducer and the Power Lock is large, make sure it is placed in a stable position. (The reducer's hanging bolt can be used for this.)

Note: Attempting to forcibly remove any rust can leave scratches on the shaft, making it impossible to use. If rust occurs, use a commercially available rust removal spray to eliminate the rust.

Make sure to follow the above directions before moving to the procedures below.

(1)Loosen the Power Lock's tightening bolts in sequence. As mentioned in the notes, do not completely remove the bolts at once. Loosen each bolt by about 30°.

(2)After completely disassembling the Power Lock, use the hanging bolt on the reducer's top portion to suspend the reducer. Remove the reducer from the driven shaft.

3. General notes

(1)Make sure to use a torque wrench to tighten the tightening bolts. If the bolts are tightened without the use of a torque wrench, the correct torque may not be obtained, causing slippage or deformation of the Power Lock and result in an accident. As well, do not use a torque wrench with a pipe as a lever because it will give inaccurate tightening torque.

(2)Do not use any bolts other than those supplied with this product. If a new bolt is required, contact TEM

4. Reusability

●If reusing the removed Power Lock, thoroughly remove any dirt from it with a cloth. There is a special lubricant coating on the Power Lock/SL Series bolts and the unit itself. If the coating is peeled off, coat with molybdenum anti-friction grease (Molycoat, etc.) prior to reuse.

5. Ambient conditions

●The Power Lock SL Series itself can be used outdoors in an ambient temperature range of -30°C to +200°C. However this Power Lock SL Series is considered as a part of the reducer and it is limited to the environmental conditions of the reducer and the motor. Make sure the Power Lock conforms to the standard specifications on P. 3 for operation.

With motor type

With motor type is available upon request.
(Depending on the size and motor kW combination, it may have a coupling connection.)

Model No.:

TDM 150 S 30 T L 750 S

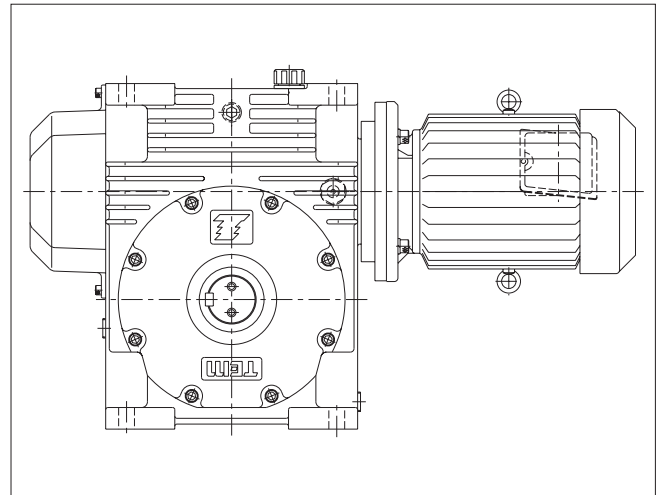
<With motor type>

<Motor kW>

- 370 : 3.7kW
- 550 : 5.5kW
- 750 : 7.5kW
- 1100 : 11kW
- 1500 : 15kW
- 1850 : 18.5kW
- 2200 : 22kW
- 3000 : 30kW
- 3700 : 37kW

<Motor handling>

- S : Shipped with standard motor attached
- SB: Shipped with standard brake motor attached
- SX: Shipped with supplied motor attached
- Y : Installed by the customer

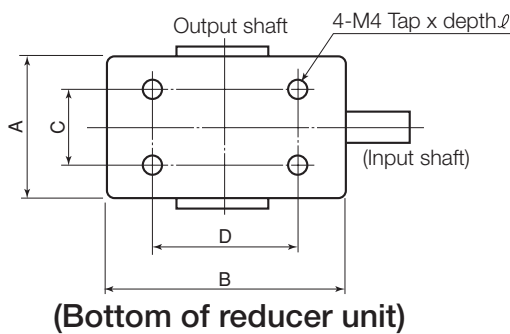


Low backlash type

In case the precise positioning is required, low backlash type is available.
Contact TEM for the details.

Taps on housing bottom

By utilizing the taps, the mounting base or motor mounting base can be attached to the housing.



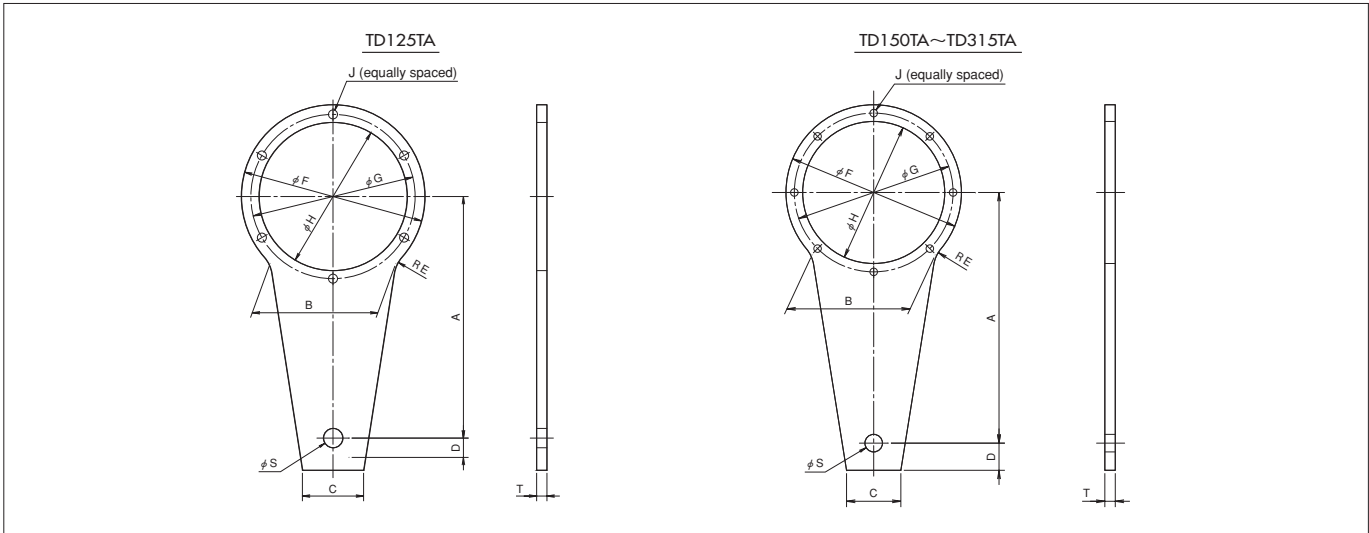
Size	Reducer		Details of taps on the bottom		
	A	B	C	D	M Tap × depth ℓ
TD 125	145	290	115	245	M16 × 28
TD 150	175	340	140	290	M16 × 28
TD 175	205	400	168	344	M20 × 35
TD 200	210	440	170	380	M20 × 35

Notes) 1. The above tap machining is available by additional machining order.

2. Tap size x depth is the maximum value.

Torque arm

Parts Model No.: **TD225 TA**



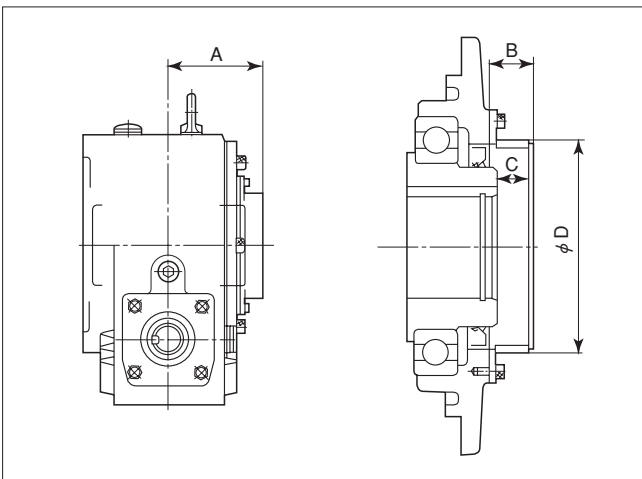
mm

Size	A	B	C	D	RE	F	G	H	J	S	T
TD125TA	375	195	95	50	50	285	255	230	6- ϕ 14	30	16
TD150TA	450	235	110	55	60	335	300	270	8- ϕ 14	36	19
TD175TA	525	265	120	60	70	385	350	320	8- ϕ 16	39	22
TD200TA	600	295	130	65	80	420	380	340	8- ϕ 18	42	25
TD225TA	675	305	140	70	90	430	390	355	8- ϕ 18	45	32
TD250TA	750	325	150	75	100	480	430	390	8- ϕ 22	48	36
TD280TA	840	375	170	85	110	535	490	455	8- ϕ 22	56	36
TD315TA	945	420	190	90	120	600	550	510	8- ϕ 22	60	45

Output shaft cover

Protection cover for standard hollow output shaft. Indicate when ordering because it is necessary to carry out additional machining on the reducer unit. (Contact TEM for information on the Power Lock type.)

Parts Model No.: **TD175CP**



Size	A	B	C	D
TD125CP	123	28	20	140
TD150CP	154	35	24	140
TD175CP	165	35	25	140
TD200CP	175	35	25	165
TD225CP	196	40	31	170
TD250CP	214	40	31	190
TD280CP	240	45	33	220
TD315CP	267	50	35	240

Special painting

Special painting is available upon request.

Qualification	Category	Paint specification		Weather resistance	Water resistance	Acid resistance	Alkali resistance	Applications
	Paint	Generic name						
Standard	Indoor standard	Primer coat	Soluble nitrocellulose	-	-	△	△	Standard paint specification
		Top coat	Acrylic lacquer					
Semi-standard	Outdoor standard	Primer coat	Soluble nitrocellulose	△	△	△	△	Outdoor standard paint specification
		Top coat	Phthalic acid (alkyd) resin					
Semi-standard	Waterproof standard	Primer coat	Special modified epoxy	○	◎	○	◎	Water proof standard paint specification
		Top coat	Two-component urethane resin					
special	Long-oil phthalic acid resin	Primer coat	Long-oil alkyd resin rust prevention	○	○	△	△	Ship, bridge, coastline, outdoor humid environment
		Top coat	Long-oil alkyd resin top coat					
	Phenolic resin	Primer coat	Rust prevention JIS-K-5623 (2 grade)	○	○	◎	△	Outdoor/indoor of plant where acid used, chemical plant, on the water
		Top coat	Phenolic resin acid-resistant					
	Chlorinated rubber	Primer coat	Epoxide resin for prime coat					Ship, bridge, coastline, outdoor humid environment, corrosive gas
		Middle coat	Chlorinated rubber for middle coat	◎	○	○	○	
		Top coat	Chlorinated rubber for top coat					
	Heat-resistant	Primer coat	Special alkyd for heat-resistant prime coat	○	×	×	×	Can normally withstand up to 100°C, but can instantaneously withstand a maximum of 150°C.
		Top coat	Special alkyd for heat-resistant top coat					
	Epoxide resin	Primer coat	Epoxide resin for prime coat	○	◎	○	◎	Superior in seawater and chemical resistance.
		Top coat	Epoxide resin for top coat					
	Tar epoxide	Primer coat	Organic zinc rich primer					Superior in chemical, oil, seawater and water resistance.
Top coat		Tar epoxide resin JIS-K-5664 (1grade)	×	◎	◎	◎		

Note) Contact TEM for application details.

◎: Most suitable ○: Suitable △: Contact TEM before making your selection ×: Unsuitable

Special rust prevention painting

If a longer period of rust prevention than the standard or rust prevention for export is necessary, contact TEM for more information.

(Standard rust prevention specifications: Indoor storage, within 6 months after shipment from TEM.)

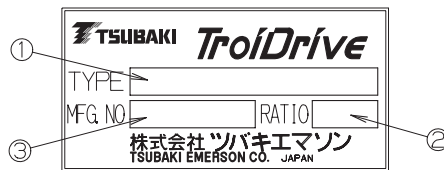
General information is described in these pages. Refer to the manual that comes with the product for details.

1. Upon receipt of reducer

Confirm the following upon receipt of your reducer. If any of the following conditions are not met, contact your distributor.

- 1) The specifications on the nameplate correspond to your order. Check the input/output shafts, oil gauge and plug positions to make sure the shaft alignment and rotational direction meet your requirements.
- 2) All accessories such as pressure vents are included.
- 3) No damage sustained during transportation.
- 4) Each bolt is securely fastened.

1-1. Name plate



When contacting TEM, please provide us with: ①TYPE (Model No.), ②RATIO, ③MFG No.

1-2. Model No.

Make sure the Model No. of the unit delivered matches your order.

2. Storage

If the reducers are not used immediately upon delivery, store by observing the following:

2-1. Storage Location

Store in a clean and dry indoor environment.

Do not store outside where the reducer/motor may be exposed to humidity, dust, extreme temperature fluctuations or corrosive gas.

2-2. Storing Position

The reducer is delivered in the appropriate installation position. Store it as is, in the upright position. For those reducers with special installation styles, if stored in the wrong position or direction, the bearing grease and general lubrication may mix and also leak from the unit.

2-3. Storage Period

- (1) Maximum storage period is 6 months.
- (2) A special anti-rust treatment is required for storage over 6 months. Contact TEM for details.
- (3) An export anti-rust treatment is required for export. Contact TEM for details.

2-4. Operating the reducer after storage

- (1) Non-metallic parts like oil seals, oil gauges and oil plugs wear easily from environmental conditions such as extreme temperatures and ultraviolet rays. Make sure to inspect these parts and replace them if damaged, before operation.
- (2) Make sure there is no abnormal noise, vibration or overheating. Stop operation immediately upon noticing these signs, and contact your distributor.

3. Transportation

Be sure to use the eye-nut on the top plane of the housing when transporting the reducer. Do not hook wires to the input/output shafts.

Doing so may cause unexpected load to the shaft/bearing and shorten the life of the reducer or cause a malfunction.

For the with motor type, use the hanging hook for motor balancing.

4. Installation

Ambient temperature: 0°C to 40°C, well ventilated, low humidity and free from dust.

No corrosive, explosive or flammable liquid/gas environment.

In case of outdoor use, attach cover to avoid direct exposure to rain.

- (1) When installing or removing the reducer to the driven shaft, make sure to shut off the power source before working.
- (2) Make sure to use the hook bolt on the top plane of the reducer when installing or removing the reducer to the driven shaft. Do not hook wires to the input/ output shafts.
- (3) Make sure the reducer is balanced and it is stable when installing or removing the reducer to the driven shaft. It is dangerous to work if the reducer is in an unbalanced position because it turns. Make sure to maintain a stable position.

4-1. Solid output shaft type

TD-S Series

4-1-1. Foot mount(TD-S)

- * Confirm whether the installation is standard.
- * If non-standard installation, refer to the outline drawing or contact TEM because lubricant volume or method is different from the standard.
- * Use an installation plane that can easily withstand the weight of the equipment. The installation angle should be within $\pm 1^\circ$.
- * Use JIS strength class 10.9T or equivalent for installation bolts.

Recommended installation bolts

TD-S size	TD125	TD150	TD175	TD200	TD225	TD250	TD280	TD315
Recommended bolt	M16 × 55	M20 × 60	M20 × 70	M24 × 80	M24 × 80	M30 × 100	M30 × 100	M30 × 110

mm

- * Avoid installing in such a way that housing becomes deformed.
- * Lubricant is filled before shipment; however, the oil filler is plugged to avoid leakage during transportation. Replace the plug to the attached pressure vent before usage. Otherwise, oil may leak from the oil seal due to high inside pressure.

4-2. Hollow output shaft type

There are 2 types to prevent reducer rotation: Torque arm and flange mountings. Driven shaft tolerance: g7 is recommended.

- (1) Make sure there are no scratches or dust on the outer circumference portion of the driven shaft, or inside of the output hollow shaft of the reducer when inserting into the driven shaft.
- (2) To make insertion easier, coat the driven shaft with grease or molybdenum disulfide.
- (3) If the shafts fit very tightly, help the hollow shaft slide smoothly by lightly tapping its opposite end with a plastic hammer. When you do this, be careful not to damage the oilseal.
- (4) The hollow shaft keyway has New JIS Key Normal Grade finishing. As for key length, refer to the following recommended driven shaft length table.

Recommended driven shaft length

Reducer size	125	150	175	200	225	250	280	315
Output shaft length: A	200	250	270	290	320	356	404	454
Recommended driven shaft length: L	170	220	238	258	272	303	344	386

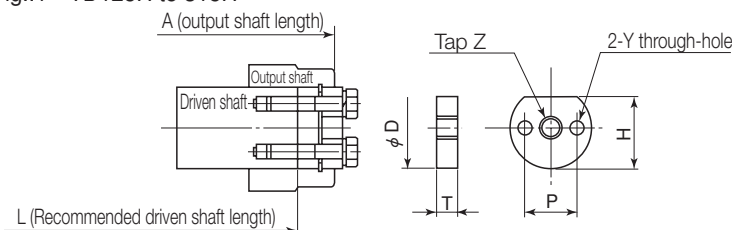
4-2-1. Installation/removal of torque arm

1. Installation procedures

- (1) Fix the torque arm to the reducer with bolts.
 Note) If the torque arm is purchased from TEM, use the attached bolts. If you make the torque arm, use a bolt strength class of 10.9 or equivalent.
- (2) Insert the reducer to the driven shaft.
- (3) Fix the reducer to the driven shaft axial direction.
 ©TD125H to 315H: TEM recommends fixing the stop ring and end plate by using the snap ring groove on the hollow output shaft. (Fig. 1) Refer to hollow output shaft dimension details from page 22.
- (4) After determining the installation position of the reducer, fix the torque arm to prevent rotation of the reducer and driven shaft. Provide sufficient room so that the torque arm is free to move axially.

Note) Do not fix the tip of the torque arm before fixing the reducer. Doing so may damage the reducer. Follow the work procedure.

Fig..1 TD125H to 315H



Note) The following dimensions and configurations are recommended for the end plate (can be used as a pulling plate).

Table 1. End plate recommended dimensions (double with the pulling plate)

Size	Output shaft bore (mm)	Recommended dimensions						Bolt for plate (with spring washer)	Stop ring
		φD	T	H	Z	Y Through hole	P		
TD 125	φ 70	69.5	14	62	M24	2-14	44	2-M12 × 60	C 70
TD 150	φ 80	79.5	17	70	M24	2-14	52	2-M12 × 65	C 80
TD 175	φ 90	89.5	17	80	M30	2-14	60	2-M12 × 65	C 90
TD 200	φ 100	99.5	17	89	M30	2-18	65	2-M16 × 75	C100
TD 225	φ 110	109.6	20	99	M30	2-18	65	2-M16 × 85	C110
TD 250	φ 125	124.4	20	113	M30	2-18	70	2-M16 × 85	C125
TD 280	φ 130	129.4	24	118	M36	2-22	80	2-M20 × 100	C130
TD 315	φ 160	159.4	24	146	M36	2-22	85	2-M20 × 100	C160

2. Removal procedures

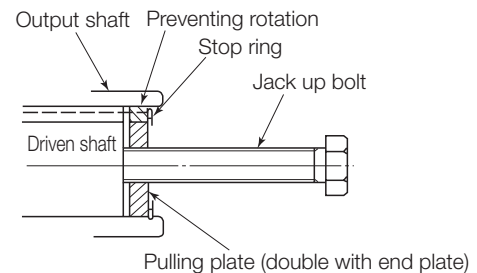
- (1) Suspend the reducer with a hanging bolt.
- (2) Loosen the end plate bolt which fixes (axial direction) the reducer to the driven shaft.
- (3) Allow the tip of the torque arm, which stops the shaft from rotational movement, to move freely.
- (4) Remove the hollow output shaft from the driven shaft while maintaining no excessive force between the housing and the hollow output shaft.

Removal becomes much easier if the procedures shown on Fig. 2, and with the removal plate (Table 1) and jack up bolt (Table 2) are followed.

Table 2 Jack up bolt dimensions

Size	Output shaft bore (mm)	Jack up bolt (fully threaded)
TD125H	φ 70	M24 × 150
TD150H	φ 80	M24 × 150
TD175H	φ 90	M30 × 180
TD200H	φ 100	M30 × 180
TD225H	φ 110	M30 × 180
TD250H	φ 125	M30 × 180
TD280H	φ 130	M36 × 250
TD315H	φ 160	M36 × 250

Fig 2 Jack up bolt installation procedures



4-2-2. Installation/removal of flange mounting

1. Installation procedure

☆If fixing the reducer to the driven machine

- (1) Insert the reducer into the driven shaft.
 - (2) Use the taps on the housing flange plane to fix.
- Note) Handle with care as rough handling may lead to lubrication leaks or damage to the reducer.
After removing the bolts, complete installation immediately.
- (3) Use the spigot facing on the housing for positioning.
- Note) The end plate is not necessary for flange mounting. If the hollow output shaft is fixed to the end plate, the bearing may be damaged due to the thrust to the bearing on the hollow output shaft.

☆If the reducer is fixed to the driven machine with a flange mounting

- (1) Insert the reducer into the driven shaft.
 - (2) Adjust the radial run out of the driven shaft, and install the reducer freely in the thrust direction.
 - (3) Use the taps on the housing flange plane to fix the reducer, while using the spigot facing on the housing for positioning.
 - (4) After fixing the reducer, fix the driven shaft in the thrust direction.
- Note) If the driven shaft is fixed in the thrust direction first, the bearing may be damaged due to the thrust to the bearing of the hollow output shaft.

2. Removal procedures

☆If the reducer is fixed to the driven machine

- (1) Loosen the flange bolts which fix the reducer and the driven shaft.
 - (2) Remove the hollow output shaft from the driven shaft while maintaining no excessive force between the housing and the hollow output shaft.
- Removal becomes much easier if the procedures shown on Fig. 2, and with the removal plate (Table 1) and jack up bolt (Table 2) are followed.

☆If the reducer is fixed to the driven machine with flange mounting

- (1) Make sure the reducer is balanced and it is stable when removing the reducer from the driven shaft.
 - (2) Loosen the flange bolts which fix the reducer and the driven shaft.
 - (3) Remove the hollow output shaft from the driven shaft while maintaining no excessive force between the housing and the hollow output shaft.
- Removal becomes much easier if the procedures shown on Fig. 2, and with the removal plate (Table 1) and jack up bolt (Table 2) are followed.

5. Connection

5-1. Verification of rotational direction

The worm is a right-hand helix. Verify the rotational direction of the input and output shafts.

5-2. Connection

- * Do not apply impact or excessive thrust loads to the shaft when installing pulleys, sprockets or couplings to the reducer input/output shafts.
- * Align accurately. Refer to pulley, sprocket or coupling catalogs/manuals to ensure alignment accuracy.
- * Shaft eccentricity or overhang load that exceeds allowable values may cause vibration or noise, possibly shortening gear, bearing and shaft life.

6. Operation

- * The reducer is factory lubricated and the oil filler is plugged to avoid leakage during transportation. Replace the plug with the attached pressure vent before use. Otherwise oil may leak from the oil seal due to high inside pressure.

6-1. Double checking before operation

- * Upon completing installation, confirm the following prior to operation:
 - (1) The correct amount of lubrication oil has been filled. (For the mounting position T with oil gauge, if the oil level can be seen on the oil gauge, it is the correct amount.)
 - (2) Pressure vent is installed. (If a grease nipple is attached, install it as well.)
 - (3) Connection to the driven machine is secure.
 - (4) Each bolt is tightly fastened.
 - (5) Rotational direction is correct.
- * Install a protection device to your equipment as a countermeasure against mechanical failure or danger.
- * For the motor type reducer, verify the following:
 - *The appropriate earth leakage breaker or overcurrent relay is set.
 - *Wiring is correct.
 - *The grounding cable is securely connected.

6-2. Trial run

- * No trial run is made prior to shipment. To get the best performance, in general, apply a 1/2 to 1/3 load and run for roughly one day.

6-3. Verification after operation starts

- * Verify the following upon starting operation:
 - (1) There is no abnormal vibration or noise.
 - (2) There is no shock or overload.
 - (3) The temperature is not unusually high.

Note) Usually during the first two to three days of operation, the reducer will experience a sudden increase in temperature; however, a surface temperature exceeding as high as 100°C may be indicative of insufficient reducer capacity. To prevent burn injuries, do not touch the reducer with bare hands.

7. Daily inspection and maintenance

7-1. Daily inspection

To ensure smooth operation, make sure to conduct daily maintenance using the following table:

Inspection items	Inspection Details
Noise	Is the noise louder than usual? Are there any unusual noises?
Vibration	Is there any unusual vibration? Any rapid changes in vibration?
Temperature	Is the surface temperature of the reducer higher than usual? Any rapid changes in temperature?
Oil level	Is the oil level correct when the machine is stopped?
Installation bolt	Are the installation bolts loose?
Chain/belt	Are the chains/belts loose?
Lubricant condition	Has the lubricant blackened due to abrasion powder?
Oil leakage	Are there any leakages from the reducer joining portion, oilseal or bracket portion?
Pressure vent	Are the holes for air bleeding clogged?

If during daily inspection some kind of abnormality is discovered, refer to “9. Handling methods for when abnormalities occur.” If this does not work, contact your dealer for a consultation.

7-2. Lubrication

The Emerworm is delivered filled with special oil. It can be used as is.

(1) Recommended oil

* Follow the lubrication instructions provided in the manual. The use of lubricants other than those recommended below may result in damage to the reducer, and/or reduce its capability, life and efficiency. (Do not mix the oil with other brands.)

TD Series Single reduction	Idemitsu Daphne Alpha Oil TE260
Double reduction	Idemitsu Daphne Alpha Oil TE380

* The above oils are recommended for normal operation.

If single reduction and input is 500 r/min or less, switching to Idemitsu Daphne Alpha Oil TE380 will lengthen product life.

(Note) If the temperature is below -10° or above 50° , contact TEM for more information.

(2) Lubrication change

* Change the oil for TD125 to 315 as shown below:

*First change: 1000 hours or 3 months after starting operation-whichever comes first.

*Subsequent changes: 5000 hours or 1 year-depending on operational conditions.

(3) Approximate oil volume

* Even with the same size reducer, oil volume varies depending on the reduction ratio. Make sure to check oil volume with the oil gauge by referring to the following table. Lubricant is vital to reducer capability, life and efficiency. Make sure to use the recommended oil. TEM recommends washing the inside of the housing with the new oil.

Note 1) Do not mix with other brands.

Note 2) Do not mix up the single reduction and double reduction oils.

■TD Series (Solid and hollow output shaft)

[Single reduction Ratio: 1/10 to 1/60]

① Solid output shaft (S)

Type	Size	125	150	175	200	225	250	280	315
Mounting position	B	3.1	5.1	8.4	13.0	9.0	13.0	18.0	29.0
	T	6.5	11.0	16.0	25.0	24.0	35.0	49.0	75.0
	V	4.8	8.2	12.0	19.0	16.0	22.0	31.0	46.0

② Hollow output shaft (H)

Type	Size	125	150	175	200	225	250	280	315
Mounting position	B	2.2	4.2	6.5	8.5	9.0	13.0	18.0	29.0
	T	5.1	8.0	13.0	15.0	20.0	27.0	38.0	58.0
	V	3.7	5.9	9.6	12.0	15.0	20.0	28.0	44.0

[Double reduction Ratio: 1/100 to 1/3600]

① Solid output shaft (S)

Type	Size	125	150	175	200	225	250	280	315
Mounting position	B	4.1	7	11	17	13	19	28	39
	V	5.8	10	13	22	20	28	41	56

② Hollow output shaft (H)

Type	Size	125	150	175	200	225	250	280	315
Mounting position	B	3.2	6	9	13	13	19	28	39
	V	4.7	8	12	16	19	26	38	54

7-3. Inspection and replacement of the oilseal

- * Abrasion of the oil seal can lead to oil leakage. Inspect the oil seal at regular intervals. If during inspection an oil leakage is discovered, quickly replace it with a new oil seal of the same model type and material.
- * For TD Series filter specifications, the oilseal and filter must be replaced at the same time. Contact TEM for details.
- * Do not use different materials for the oil seal because an oil leakage may occur.
- * Contact TEM for a consultation when replacing the oil seal.

8. Disassembly/assembly

- 1) Do not disassemble the Emerworm.
- 2) Tooth contact and bearings have been adjusted for optimal Emerworm performance.
- 3) Contact TEM if the Emerworm needs to be disassembled.

9. Handling Methods for when abnormalities occur

If an abnormality with the reducer occurs, refer to the following points to quickly fix it:

Problem	Possible Cause	Action
Abnormal temperature rise	Overload operation	Check and apply the correct load.
	Insufficient or too much lubricant	Fill with the appropriate volume.
	Oil contamination or wrong oil	Replace with new and correct oil.
	Bearing has been tightened too much	Contact TEM for adjustment.
Loud noise, strong vibration	Damage to the bearing	Contact TEM for repair
	Bad tooth contact	
	Bearing has been tightened too much	
	Damage to the teeth	
	Insufficient oil	Contact TEM for repair and lubrication
	Foreign objects have been mixed in	Contact TEM for repair and lubrication
Oil leak	Wear and damage to oil seal	Replace the oil seal (including filter, depending on model)
	Damage to oil gauge	Replace the oil gauge
	Bolts/plugs have become loose.	Retighten the loosened section.
Output shaft does not rotate	Wear of worm wheel	Contact TEM for repair
	Breakage of worm shaft or worm wheel	
	Breakage of worm wheel hub and output shaft key	
Both input and output shafts do not rotate	Foreign objects have been jammed	Contact TEM for repair
	Damage or breakage of bearing	
	Sear of gear tooth surface	

Parts list

Reduction ratio 1/10 to 1/60

Part name	Q'ty	TD125	TD150	TD175	TD200	Q'ty	TD225	TD250	TD280	TD315
Input shaft bearing I	2	30309D	30311D	30312D	30314D	1	NF314	NF316	NF318	NF320
Input shaft bearing II	–	–	–	–	–	2	30314D	30316D	30318D	31320
Solid output shaft bearing	2	32213	32214	32216	32218	2	32022	32024	32026	32030
Hollow output shaft bearing	2	32022	32024	32026	32030	2	32030	32034	32040	32044
Input shaft oil seal I	1	D45.62.9	D55.72.9	D58.80.12	D68.90.12	2	D58.80.12	D68.90.12	D80.100.13	D90.115.13
Input shaft oil seal II	1	D32.52.8	D45.68.12	D45.68.12	D45.68.12	2	D58.80.12	D68.90.12	D80.100.13	D90.115.13
Solid output shaft oil seal	1 (2)	DM63.80.9	DM68.90.12	DM75.100.13	D85.110.13	2 (4)	DM105.135.14	DM115.145.14	D130.160.14	DM145.175.14
Hollow output shaft oil seal	2	DM105.135.14	DM115.145.14	DM125.155.14	DM145.175.14	4	DM150.180.14	D170.200.16	D200.235.18	D220.250.16

Note) 1. Input shaft oil seal material is acrylic. 2. Output shaft oil seal is nitrile rubber. (): when double shafts

Reduction ratio 1/100 to 1/3600

Part name	Q'ty	TD125	TD150	TD175	TD200	Q'ty	TD225	TD250	TD280	TD315
Input shaft bearing I	1	6208ZZ	32009	32011	32211	1	32211	30311	30312	30312
Input shaft bearing II	1	6208ZZ	32206	32207	33208	1	33208	32309	32310	32310
Intermediate shaft bearing I	2	30309D	30311D	30312	30314D	1	NF314	NF316	NF318	NF320
Intermediate shaft bearing II	–	–	–	–	–	2	30314D	30316D	30318D	31320
Solid output shaft bearing	2	32213	32214	32216	32218	2	32022	32024	32026	32030
Hollow output shaft bearing	2	32022	32024	32026	32030	2	32030	32034	32040	32044
Input shaft oil seal I	1	D40.72.9	DM45.68.12	D55.72.9	D55.72.9	1	D55.72.9	D55.72.9	D58.80.12	D58.80.12
Solid output shaft oil seal	1 (2)	DM63.80.9	DM68.90.12	DM75.100.13	D85.110.13	2 (4)	DM105.135.14	DM115.145.14	D130.160.14	DM145.175.14
Hollow output shaft oil seal	2	DM105.135.14	DM115.145.14	DM125.155.14	DM145.175.14	4	DM150.180.14	D170.200.16	D200.235.18	D220.250.16

Note) 1. Input shaft oil seal material is acrylic. 2. Output shaft oil seal is nitrile rubber. (): when double shafts

(Common TD Series.)

Single reduction ratio 1/10 to 1/60: for sizes 80 to 200 input and output.

Double reduction ratio 1/100 to 1/3600, for size 125 output, for sizes 150 to 200 input and output and for sizes 225 to 300 input.

The oil seal and filter must be replaced at the same time. Contact TEM for details.



Inquiry sheet

Name of machine/equipment to be used		
Application		
Motor	Type	General purpose, inverter, servo, hydraulic, other
	Capacity (kW)	
	Rotational speed	
	Brake	YES (torque: _____), NO
	Other	
Connection	Motor side	Coupling, belt, other
	Driven side	Coupling, chain, gear, other
Operating conditions	Operating time	() hours/day Continuous or intermittent operation
	Intermittent operation	Frequency () operation time () stoppage time ()
	Starting frequency	() times/hour
	Impact	YES or NO
	Load torque	
	Peak torque	YES or NO () % of load Operating time () Frequency ()
	Radial load	YES or NO (N) Operating position (mm from shaft end)
	Thrust load	YES or NO (N)
Working conditions	Installation location	Indoor/Outdoor (rain cover available: YES or NO, gets rain) Freezer Furnace
	Ambient temperature	Normal temperature (°C) tropical climate (°C) cold climate (°C)
	Atmosphere	Salt wind (ocean) Dusty: cement Acid: alkali, etc.
Paint/rust prevention	Paint specifications	Standard Outdoor specifications Salt resistant coating Chemical resistant coating Other
	Paint color	Munsell () Japan Painting Contractors Associate No. ()
Other	Accessories	YES or NO
	Spare parts	YES or NO
Diagrammatic sketch	Connection	

Limited Warranty

Tsubaki Emerson Co.: hereinafter referred to as "Seller"
Customer: hereinafter referred to as "Buyer"
Goods sold or supplied by Seller to Buyer: hereinafter referred to as "Goods"

1. Warranty period without charge

18 months effective the date of shipment or 12 months effective the first use of Goods, including installation of Goods to Buyer's equipment or machine - whichever comes first.

2. Warranty coverage

Should any damage or problem with the Goods arise within the warranty period, given that the Goods were operated and maintained according to the instructions provided in the manual, Seller will repair and replace at no charge once the Goods are returned to the Seller. This warranty does not include the following:

- (1) Any costs related to the removal or re-installation of Goods from the Buyer's equipment or machine to repair or replace parts.
- (2) Cost to transport Buyer's equipment or machines to replace or repair.
- (3) Costs to reimburse any profit loss due to any repair or damage and consequential losses caused by the Buyer.

3. Warranty with charge

Seller will charge for any investigation and repair of Goods caused by:

- (1) Improper installation by failing to follow the instruction manual.
- (2) Insufficient maintenance or improper operation by the Buyer.
- (3) Incorrect installation of Goods onto other equipment or machines.
- (4) Structure change of the Goods by any modifications or alterations by the Buyer.
- (5) Any repair by engineers other than the Seller or those designated by the Seller.
- (6) Operation in an inappropriate environment not specified in the manual.
- (7) Force Majeure or forces beyond the Seller's control such as a natural disaster and injustices committed by a third party.
- (8) Secondary damage or problems incurred by the Buyer's equipment or machines.
- (9) Defective parts supplied or specified by the Buyer.
- (10) Wear, tear or deterioration of parts including bearings and oil seals.
- (11) Loss or damage not liable to the Seller.

Safety precautions

(General)

- Comply with the required safety regulations where the reducer is set or used. (Ordinance on Labor Safety Law by government, electrical system technical standards, building standard laws, etc.)
- To ensure optimum performance is obtained from the Emerworm, it is necessary to read and understand the instructions and safety precautions contained in the manual.
If the instruction manual is not at hand, request one from the distributor where you purchased the product, or TEM with product name and model number.
This manual should remain with the product at all times, including when redistributed.
Make sure this manual is available to every person who operates the product.

(Selection)

- Select the products which are suitable for the usage environment and application.
- When using with equipment for transporting humans or an elevating device, install a suitable protection device on the equipment for safety purposes. Otherwise an accident resulting in death, injury or damage to the equipment may occur due to accidental falling.
- Use explosion-proof type motors in an explosive atmosphere. Use an explosion-proof type motor suitable for dangerous environments to prevent possible explosions, ignitions, electrical shock, injuries, fires and damage to the device.
- When driving an explosion-proof motor with an inverter, be sure to use a verified inverter with a motor because an inverter and a motor mate one-on-one. In addition, install an inverter in a non-explosive atmosphere because inverters have a non-explosive structure.
- When a 400V class inverter is used to drive the product, install a suppression filter or reactor to the inverter side or use reinforced insulation type motors.
- When the product is used for food processing machinery, install devices such as oil pans to prevent grease from leaking. Lubricant oil can damage food or other such products.



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