



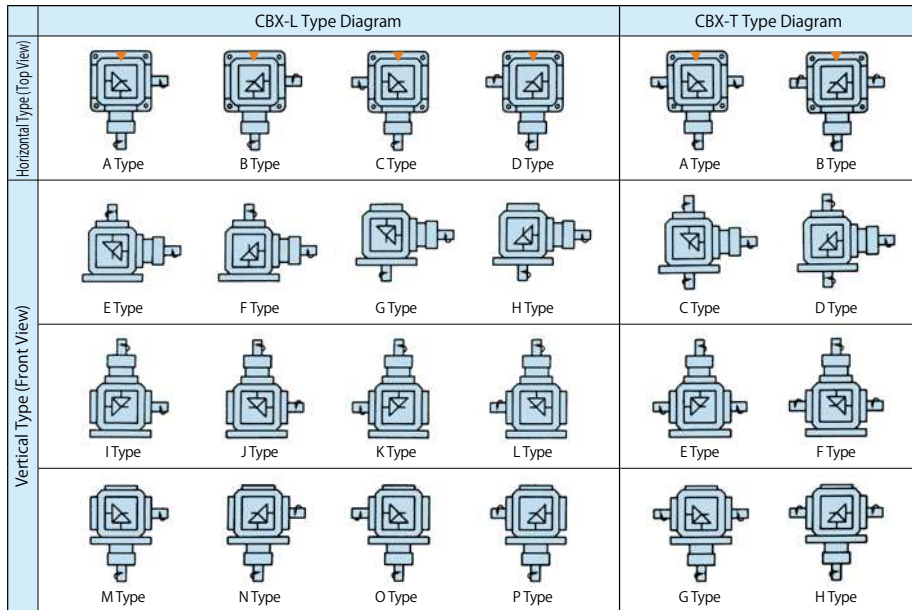
Shaft Orientations and Orientation Codes

There are 24 permutations of shaft orientations and rotations, which are standardized for CBX Bevel Gearboxes. Please pay attention to the shaft orientations in addition to the catalog number when selecting the units.

CAUTION

- The diagrams below show the mounting surface.
- The arrow marks on the shafts are intended to show the relative directions of rotation. The units can be driven in the opposite directions as well.
- * "▼" mark indications the surface on which the oiling and drain plugs are located when mounting horizontally. The ones without the marks have the plugs on the rear surface (Standard specifications).
- When the unit (other than LI-LL Type, TE-TF Type) is used with the input shaft (X-axis) pointing up and is wall mounted, the lubrication method for the bearings must be altered. Please notify us at the time of placing your order.
- For use other than mounting on a horizontal surface, please see page 407.

CBX Shaft Orientations Chart



Features

- Very strong**
The unit has high grade cast iron housing and uses tapered roller bearings.
- Low noise and high efficiency**
The spiral bevel gears are made of case-hardened alloy steel.
- Freedom of installing orientation**
The unit can be installed easily in any orientation. However, if you cannot use one of the standard orientations, please see page 407.
- Maintenance-free**
High-grade oil is added to the casing before shipping.
- Selective speed ratio**
Gear ratios of 1/1 or 1/2 are available to meet most applications.

Lubrication

A standard volume of lubricant is sealed at the factory before shipping.

Model	Volume of lubricant	Lubrication	
CBX-19 Type	0.3L	Oil	JIS Gear oil Industrial Type 2
CBX-25 Type	0.7L		
CBX-32 Type	1.0L		
CBX-40 Type	1.5L		

Operating preconditions

See KBX (Page 400)

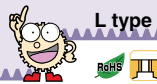
CBX Performance Chart

Speed Ratio	Type	Specifications	X-axis revolutions per minute (rpm)												
			20	50	100	200	300	400	600	900	1200	1500	1800	2500	3600
1 : 1	CBX-191	Allowable Power (kW)	0.08	0.20	0.39	0.77	1.15	1.50	2.05	2.67	3.30	3.95	4.40	4.40	4.40
		X&Y-axis torque (N · m) (kgf · m)	37.2 (3.8)	37.2 (3.8)	37.2 (3.8)	36.3 (3.7)	36.3 (3.7)	36.3 (3.6)	32.3 (3.3)	28.4 (2.9)	26.5 (2.7)	24.5 (2.5)	23.5 (2.4)	16.7 (1.7)	10.8 (1.1)
		X-axis O.H.L. (N) (kgf)	1760 (180)	1760 (180)	1760 (180)	1760 (180)	1760 (170)	1620 (165)	1270 (130)	1080 (110)	882 (90)	833 (85)	784 (80)	686 (70)	637 (65)
		Y-axis O.H.L. (N) (kgf)	1960 (200)	1960 (200)	1960 (200)	1960 (200)	1960 (200)	1810 (185)	1470 (150)	1180 (120)	1030 (105)	980 (98)	931 (95)	784 (80)	735 (75)
		Efficiency (Reference values)	95%						90%						
		Allowable Power (kW)	0.25	0.62	1.24	2.47	3.68	4.70	6.40	8.60	10.5	12.3	13.8	—	—
	CBX-251	X&Y-axis torque (N · m) (kgf · m)	118 (12.0)	118 (12.0)	118 (12.0)	118 (12.0)	116 (11.8)	112 (11.4)	101 (10.3)	91.1 (9.3)	83.3 (8.5)	78.4 (8.0)	73.5 (7.5)	—	—
		X-axis O.H.L. (N) (kgf)	3920 (400)	3920 (400)	3920 (400)	3920 (400)	3630 (370)	3330 (340)	2940 (300)	2450 (250)	2160 (220)	1960 (200)	1760 (180)	—	—
		Y-axis O.H.L. (N) (kgf)	4120 (420)	4120 (420)	4120 (420)	4120 (420)	4020 (410)	3920 (400)	3430 (350)	2940 (300)	2550 (260)	2450 (250)	2250 (230)	—	—
		Efficiency (Reference values)	95%						90%						
		Allowable Power (kW)	0.36	0.88	1.77	3.53	5.26	6.72	9.15	12.3	15.0	17.5	19.7	—	—
		X&Y-axis torque (N · m) (kgf · m)	167 (17.0)	167 (17.0)	167 (17.0)	167 (17.0)	165 (16.8)	160 (16.3)	144 (14.7)	130 (13.2)	119 (12.1)	112 (11.4)	104 (10.6)	—	—
CBX-321	X-axis O.H.L. (N) (kgf)	4900 (500)	4900 (500)	4900 (500)	4900 (500)	4610 (470)	4210 (430)	3720 (380)	3140 (320)	2740 (280)	2450 (250)	2160 (220)	—	—	
	Y-axis O.H.L. (N) (kgf)	5190 (530)	5190 (530)	5190 (530)	5190 (530)	5100 (520)	4900 (500)	4310 (440)	3720 (380)	3230 (330)	3140 (320)	2840 (290)	—	—	
	Efficiency (Reference values)	95%						90%							
	Allowable Power (kW)	0.62	1.59	3.18	6.32	9.50	12.0	16.1	22.0	26.5	—	—	—	—	
	X&Y-axis torque (N · m) (kgf · m)	294 (30.0)	294 (30.0)	294 (30.0)	294 (30.0)	284 (29.0)	225 (23.6)	211 (21.5)	—	—	—	—	—	—	
	X-axis O.H.L. (N) (kgf)	9800 (1000)	9800 (1000)	9800 (1000)	9800 (1000)	8800 (900)	7800 (800)	6800 (700)	5800 (600)	5100 (520)	4400 (450)	3800 (390)	—	—	
CBX-401	Y-axis O.H.L. (N) (kgf)	11760 (1200)	11760 (1200)	11760 (1200)	11760 (1200)	11000 (1100)	9800 (1000)	8600 (880)	7400 (760)	6300 (650)	5500 (570)	4800 (500)	—	—	
	Efficiency (Reference values)	95%						90%							

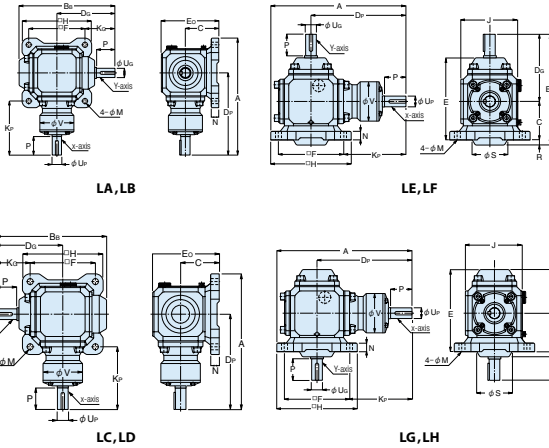
Speed Ratio	Type	Specifications	X-axis revolutions per minute (rpm)												
			20	50	100	200	300	400	600	900	1200	1500	1800	2500	3600
1 : 2	CBX-192	Allowable Power (kW)	0.03	0.07	0.14	0.27	0.40	0.53	0.78	1.15	1.50	1.85	2.17	2.20	2.20
		Y-axis torque (N · m) (kgf · m)	25.5 (2.6)	25.5 (2.6)	25.5 (2.6)	25.5 (2.6)	25.5 (2.6)	24.5 (2.5)	24.5 (2.5)	24.5 (2.5)	23.5 (2.4)	23.5 (2.4)	22.5 (2.3)	16.7 (1.7)	10.8 (1.1)
		X-axis O.H.L. (N) (kgf)	1180 (120)	1180 (120)	1180 (120)	1180 (120)	1180 (120)	1130 (115)	1130 (115)	1080 (110)	1080 (110)	882 (90)	833 (85)	784 (80)	735 (75)
		Y-axis O.H.L. (N) (kgf)	1760 (180)	1760 (180)	1760 (180)	1760 (180)	1760 (180)	1720 (175)	1670 (170)	1470 (150)	1270 (130)	1080 (110)	980 (100)	833 (85)	784 (80)
		Efficiency (Reference values)	90%						85%						
		Allowable Power (kW)	0.09	0.23	0.45	0.90	1.34	1.78	2.67	4.00	5.30	6.33	7.50	7.50	—
	CBX-252	Y-axis torque (N · m) (kgf · m)	85.3 (8.7)	85.3 (8.7)	85.3 (8.7)	85.3 (8.7)	85.3 (8.7)	84.3 (8.6)	84.3 (8.6)	84.3 (8.6)	80.4 (8.2)	79.4 (8.1)	56.8 (5.8)	—	—
		X-axis O.H.L. (N) (kgf)	3920 (400)	3920 (400)	3920 (400)	3920 (400)	3920 (400)	3720 (380)	3630 (370)	3530 (360)	3320 (330)	3230 (320)	2740 (280)	2250 (230)	1670 (170)
		Y-axis O.H.L. (N) (kgf)	4120 (420)	4120 (420)	4120 (420)	4120 (420)	4020 (410)	3920 (400)	3820 (390)	3720 (380)	3430 (350)	3040 (310)	2650 (270)	2350 (240)	—
		Efficiency (Reference values)	90%						85%						
		Allowable Power (kW)	0.13	0.32	0.64	1.28	1.91	2.54	3.80	5.72	7.57	9.05	10.7	—	—
		X&Y-axis torque (N · m) (kgf · m)	123 (12.5)	123 (12.5)	123 (12.5)	122 (12.4)	122 (12.4)	122 (12.4)	121 (12.3)	121 (12.3)	120 (12.2)	115 (11.7)	114 (11.6)	—	—
CBX-322	X-axis O.H.L. (N) (kgf)	4900 (500)	4900 (500)	4900 (500)	4900 (500)	4900 (500)	4700 (480)	4610 (470)	4410 (450)	4120 (420)	3430 (350)	2840 (290)	—	—	
	Y-axis O.H.L. (N) (kgf)	5190 (530)	5190 (530)	5190 (530)	5190 (530)	5100 (520)	4900 (500)	4800 (490)	4700 (480)	4400 (450)	4310 (440)	3820 (390)	3330 (340)	—	
	Efficiency (Reference values)	90%						85%							
	Allowable Power (kW)	0.20	0.48	0.96	1.93	2.90	3.84	5.72	8.55	11.0	13.8	16.4	—	—	
	Y-axis torque (N · m) (kgf · m)	183 (18.7)	183 (18.7)	183 (18.7)	183 (18.7)	183 (18.7)	182 (18.6)	181 (18.5)	180 (18.4)	174 (17.8)	173 (17.6)	172 (17.5)	—	—	
	X-axis O.H.L. (N) (kgf)	9800 (1000)	9800 (1000)	9800 (1000)	9800 (1000)	9800 (1000)	8820 (900)	7840 (800)	6860 (700)	5880 (600)	4900 (500)	3920 (400)	—	—	
CBX-402	Y-axis O.H.L. (N) (kgf)	11760 (1200)	11760 (1200)	11760 (1200)	11760 (1200)	11760 (1200)	9800 (1000)	8820 (900)	8820 (900)	8820 (900)	7840 (800)	6860 (700)	—	—	
	Efficiency (Reference values)	90%						85%							

- CAUTION**
- Be sure not to exceed the allowable values. Units with (1:2) reduction ratio have the slower speed in the Y-axis.
 - The values in the table are in effect when the service factor is 1. When the units are used under other conditions, refer to the Service Factor Tables 2 and 3 (Page 408).
 - Overhang load (O.H.L.) means the load applied to the middle of the overhang shaft, perpendicular to the axis. When using the units under other conditions, refer to the factors K1 and K2 described in Tables 2 and 3 (Page 408).
 - When the 1:2 speed ratio unit is used as a speed increaser (from the Y-axis to the X-axis), the X-axis torque becomes one half of the Y-axis torque shown in the table.
 - The Y-axis torque of CBX-T Type is the sum of the values on both right and left axis.
 - The Y-axis O.H.L. of CBX-T Type is the sum of the values on both right and left axis.
 - The allowable thrust load is half of O.H.L. value in each case.

CBX Bevel Gearboxes



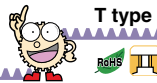
L type



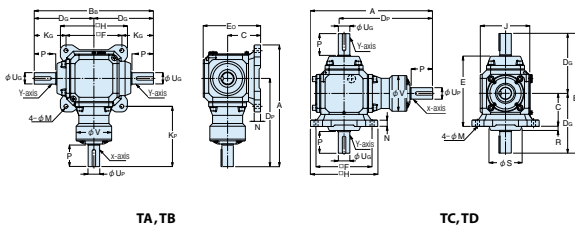
Catalog No.	Speed ratio	A	B _B	C	D _P	D _G	E	E _o	F	H	J	K _P	K _G	φM	N	P	R	φS
CBX-191L	1:1	257	193	76	180	116	146	129	125	154	109	117.5	53.5	10.5	17	38	—	—
CBX-192L	1:2																	
CBX-251L	1:1	316	259	90	222	157	177.5	155	152	188	133	146	81	14	20	50	12	82.5
CBX-252L	1:2																	
CBX-321L	1:1	340	277	100	242	168	192.5	174	160	196	151	162	88	14	20	55	9	88.5
CBX-322L	1:2																	
CBX-401L	1:1	425	337	115	308	208	225	200	195	234	173	210.5	110.5	14	22	75	14	114.5
CBX-402L	1:2																	

Please place one of the orientation codes (A to P) from Page 404 on the box at the end of the catalog number.

CBX Bevel Gearboxes



T type



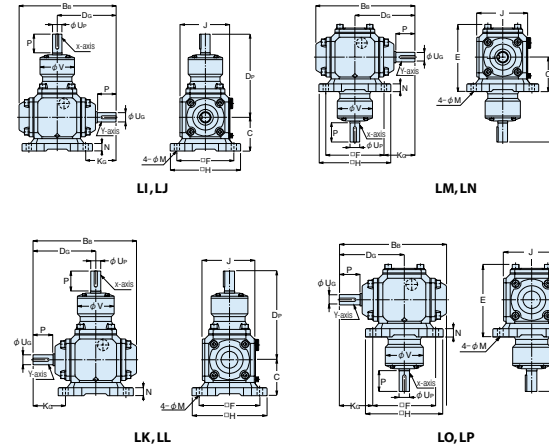
Catalog No.	Speed ratio	A	B _B	C	D _P	D _G	E	E _o	F	H	J	K _P	K _G	φM	N	P	R	φS
CBX-191T	1:1	257	232	76	180	116	146	129	125	154	109	117.5	53.5	10.5	17	38	—	—
CBX-192T	1:2																	
CBX-251T	1:1	316	314	90	222	157	177.5	155	152	188	133	146	81	14	20	50	12	82.5
CBX-252T	1:2																	
CBX-321T	1:1	340	336	100	242	168	192.5	174	160	196	151	162	88	14	20	55	9	88.5
CBX-322T	1:2																	
CBX-401T	1:1	425	416	115	308	208	225	200	195	234	173	210.5	110.5	14	22	75	14	114.5
CBX-402T	1:2																	

Please place one of the orientation codes (A - P) from Page 404 on the box at the end of the catalog number.

Since these products are assembled to each customer's specifications, the delivery lead time is about 10 working days after placing an order. These units are not available from stock.

CBX

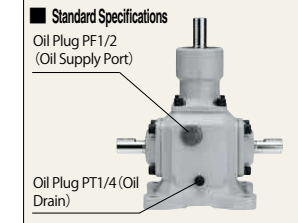
Bevel Gearboxes



φV	X-axis φU _P	Y-axis φU _G	Key	Backlash of shaft rotation	Weight (kg)	Catalog No.
66	19	19	6 x 6 x 27 l	11' ~30'	10.0	CBX-191L
	18			17' ~47'		CBX-192L
92	25	25	8 x 7 x 40 l	9' ~22'	17.0	CBX-251L
				15' ~36'		CBX-252L
100	32	32	10 x 8 x 50 l	9' ~21'	22.0	CBX-321L
				15' ~36'		CBX-322L
124	40	40	12 x 8 x 60 l	8' ~20'	33.0	CBX-401L
				15' ~37'		CBX-402L

[Caution]

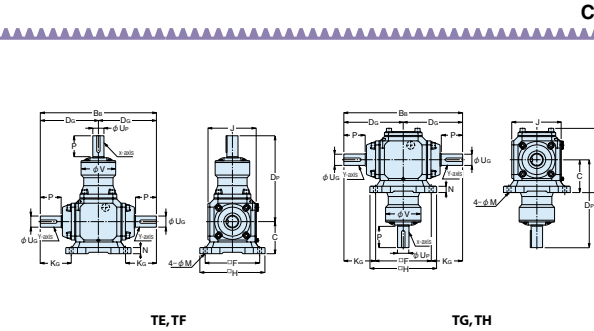
- The key grooves in the X-axis and the Y-axis do not always coincide in phase with each other.
- The tolerance of shaft diameter is JIS h6.
- The key dimensions are per JIS B 1301-1976 (Standard Grade)
- The backlash angle are measured at the X-axis (Input Shaft).
- Sides of the oil plugs are for the supply port → PF 1/2 and for the drain port → PT 1/4 (standard specifications). We can accept as a special order units that are mounted on the ceiling or on a wall. Please let us know at the time or ordering.



Additional Oil Plug Locations

The mark "•" indicates the possible positions for additional oil plug.

※ Staring on the surface containing the standard oil plug as A, go clockwise looking from the top as B, C and D surfaces.



φV	X-axis φU _P	Y-axis φU _G	Key	Backlash of shaft rotation	Weight (kg)	Catalog No.
66	19	19	6 x 6 x 27 l	11' ~30'	10.0	CBX-191T
	18			17' ~47'		CBX-192T
92	25	25	8 x 7 x 40 l	9' ~22'	18.0	CBX-251T
				15' ~36'		CBX-252T
100	32	32	10 x 8 x 50 l	9' ~21'	23.0	CBX-321T
				15' ~36'		CBX-322T
124	40	40	12 x 8 x 60 l	8' ~20'	34.0	CBX-401T
				15' ~37'		CBX-402T

Spur Gears
 Helical Gears
 Internal Gears
 Racks
 CP Racks & Pinions
 Miter Gears
 Bevel Gears
 Screw Gears
 Worm Gear Pair
 Bevel Gearboxes
 Other Products

Spur Gears
 Helical Gears
 Internal Gears
 Racks
 CP Racks & Pinions
 Miter Gears
 Bevel Gears
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 Other Products