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Shaft arrangement and shaft arrangement numbers

The CBX bevel box standardizes 24 different shaft arrangements depending on the rotation direction of the shaft. When using the product, consider not only the catalog number but also the shaft arrangement.

[NOTES]

- ① This figure shows the mounting base and flat surface mounting (floor mounting).
- ② The rotation direction of the arrow does not limit the direction. Both the forward and reverse rotations are allowed.
- ③ ▼ indicates the wall surface with fuel filler port and drain plug when mounted on a flat surface (floor mounting). Unmarked items are the back of this figure. (standard specifications)
- ④ Shaft arrangement: For products other than LI to LL and TE to TF, the input shaft (X-axis) cannot be installed facing upward.
- ⑤ When installing the product other than on a flat surface, consider adding an oil drain port (Page 453).

Features

- ① **Tough**
High-grade cast iron is used for the case and tapered roller bearing is used for the bearing
- ② **Low-noise and high-efficiency**
Uses spiral bevel gears that are made of carburized special steel
- ③ **Flexible mounting direction**
Various installations are possible depending on the shaft arrangement
- ④ **Lubricant enclosed**
High-grade oil enclosed upon shipment
- ⑤ **Speed ratio**
Gear ratio of 1/1 and 1/2 can be selected according to the applications

Lubrication

Lubricating oil of specified amount is enclosed at the time of shipment.

Machine Type	Approximate amount of oil	Lubricant type	
CBX-19	0.3L	Oil	JIS gear oil Class 2 for industrial use
CBX-25	0.7L		
CBX-32	1.0L		
CBX-40	1.5L		

Application Hints

Refer to KBX (Page 446).

CBX Shaft Arrangement Table

		CBX-L Diagram				CBX-T Diagram	
Horizontal (Plan View)	Vertical (Front View)						

 **CBX Performance Table**

Speed ratio	Model Code	Specification Symbol	X-axis Rotation Speed (rpm)												
			20	50	100	200	300	400	600	900	1200	1500	1800	2500	3600
1:1	CBX-191	Allowable Capacity (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
		Allowable 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)
		Allowable X-axis O.H.L. (N) (kgf)	1760 (180)	1760 (180)	1760 (180)	1760 (180)	1670 (170)	1620 (165)	1270 (130)	1080 (110)	882 (88)	833 (85)	784 (80)	686 (70)	637 (65)
		Allowable 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 (100)	931 (95)	784 (80)	735 (75)
		Transmission Efficiency (Reference)	95%						90%						
	CBX-251	Allowable Capacity (kW)	0.25	0.62	1.24	2.47	3.68	4.70	6.40	8.60	10.5	12.3	13.8	—	—
		Allowable 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)	—	—
		Allowable 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)	—	—
		Allowable 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)	—	—
		Transmission Efficiency (Reference)	95%						90%						
	CBX-321	Allowable Capacity (kW)	0.36	0.88	1.77	3.53	5.26	6.72	9.15	12.3	15.0	17.5	19.7	—	—
		Allowable 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 (13.3)	119 (12.1)	112 (11.4)	104 (10.6)	—	—
		Allowable 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)	—	—
		Allowable 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)	2900 (290)	—	—
		Transmission Efficiency (Reference)	95%						90%						
	CBX-401	Allowable Capacity (kW)	0.62	1.59	3.18	6.32	9.50	12.0	16.1	22.0	26.5	—	—	—	—
		Allowable X, Y-axis Torque (N·m) (kgf·m)	294 (30.0)	294 (30.0)	294 (30.0)	294 (30.0)	294 (30.0)	284 (29.0)	225 (26.0)	231 (23.6)	211 (21.5)	—	—	—	—
		Allowable X-axis O.H.L. (N) (kgf)	9800 (1000)	9800 (1000)	9800 (1000)	9800 (800)	5880 (600)	4900 (500)	4410 (450)	3720 (380)	3430 (350)	—	—	—	—
		Allowable Y-axis O.H.L. (N) (kgf)	11760 (1200)	11760 (1200)	11760 (1200)	9800 (1000)	7350 (750)	6370 (650)	5880 (600)	5100 (520)	4020 (410)	—	—	—	—
		Transmission Efficiency (Reference)	95%						90%						

Speed ratio	Model Code	Specification Symbol	X-axis Rotation Speed (rpm)														
			20	50	100	200	300	400	600	900	1200	1500	1800	2500	3600		
1:2	CBX-192	Allowable Capacity (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		
		Allowable 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)		
		Allowable 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)		
		Allowable 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)		
		Transmission Efficiency (Reference)						90%						85%			
		CBX-252	Allowable Capacity (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	—	
	Allowable 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)	84.3 (8.6)	80.4 (8.2)	79.4 (8.1)	56.8 (5.8)	—		
	Allowable X-axis O.H.L. (N) (kgf)		3920 (400)	3920 (400)	3920 (400)	3920 (400)	3920 (400)	3720 (380)	3630 (370)	3530 (360)	3230 (330)	2740 (280)	2250 (230)	1670 (170)	—		
	Allowable 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)	—		
	Transmission Efficiency (Reference)						90%						85%				
	CBX-322		Allowable Capacity (kW)	0.13	0.32	0.64	1.28	1.91	2.54	3.80	5.72	7.57	9.05	10.7	—	—	
		Allowable Y-axis Torque (N·m) (kgf·m)	123 (12.5)	123 (12.5)	123 (12.5)	123 (12.5)	122 (12.4)	122 (12.4)	121 (12.3)	121 (12.3)	120 (12.2)	115 (11.7)	114 (11.6)	—	—		
		Allowable X-axis O.H.L. (N) (kgf)	4900 (500)	4900 (500)	4900 (500)	4900 (500)	4900 (500)	4700 (480)	4610 (470)	4410 (450)	4210 (430)	3430 (350)	2840 (290)	—	—		
		Allowable Y-axis O.H.L. (N) (kgf)	5190 (530)	5190 (530)	5190 (530)	5190 (530)	5100 (520)	4900 (500)	4800 (490)	4700 (480)	4310 (440)	3820 (390)	3330 (340)	—	—		
		Transmission Efficiency (Reference)						90%						85%			
		CBX-402	Allowable Capacity (kW)	0.20	0.48	0.96	1.93	2.90	3.84	5.72	8.55	11.0	13.8	16.4	—	—	
	Allowable 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)	181 (18.4)	174 (17.8)	173 (17.6)	172 (17.5)	—	—		
	Allowable X-axis O.H.L. (N) (kgf)		9800 (1000)	9800 (1000)	9800 (1000)	9800 (1000)	9800 (1000)	9800 (900)	8820 (800)	7840 (700)	6860 (600)	5880 (500)	4900 (400)	3920 (300)	—		
	Allowable Y-axis O.H.L. (N) (kgf)		11760 (1200)	11760 (1200)	11760 (1200)	11760 (1200)	11760 (1200)	11760 (1000)	9800 (900)	8820 (800)	8820 (700)	8820 (600)	7840 (500)	6860 (400)	—		
	Transmission Efficiency (Reference)						90%						85%				

[Note] ① Be sure to use the product below the permissible values. The speed ratio (1:2) decelerates to the Y axis.

② The values in this performance table are where the service factor is 1. When using the product under other conditions, refer to Table 1 (Page 454) Service Factors.

③ O.H.L. (overhang load) is the allowable load that can be applied to the center of the shaft length. When using the product under other conditions, refer to the coefficients K₁ and K₂ in Table 2 and 3 (Page 454).

④ When the speed ratio (1:2) type is used at increased speed (from Y-axis to X-axis), the allowable X-axis torque is 1/2 of the value in the performance table (allowable Y-axis torque).

⑤ Y-axis torque of the model CBX-T is the total value of the left and right axes.

⑥ Y-axis O.H.L. of the model CBX-T is the total value of the left and right axes.

⑦ The allowable thrust load is half of respective O.H.L. value.

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



■ Features

- ① **Compact**
The structure is simple and the case is made of aluminum die-cast
- ② **Low-noise and high-efficiency**
Uses spiral bevel gears that are made of carburized special steel
- ③ **Flexible mounting direction**
Can be installed in all directions and is easy to install
- ④ **Maintenance-free**
Shipped with high-grade grease enclosed
- ⑤ **Gear ratio**
Gear ratio of 1 and 2 can be selected according to the application

■ Lubrication

Lubricating oil of specified amount is enclosed at the time of shipment.

Machine Type	Approximate amount of oil	Lubricant type	
KBX-10	10g	Grease	NLGI-00 with Li extreme pressure additive
KBX-15	30g		
KBX-20	50g		

■ Application Hints

1. Installation Location
 - ① Ambient temperature : -10°C to 40°C
 - ② Ambient humidity : 80% or less
 - ③ Atmosphere : A space free of corrosive gas and steam
A well-ventilated space free of dust and dirt
 - ④ Installation location : Indoors
2. Installation Method
 - ① Securely fix the mounting surface to a machined flat surface without vibration using bolts.
 - ② No secondary operations such as boring can be made on the case. Also, do not disassemble or modify the product. If the device is damaged, the product will not be covered by the warranty.
 - ③ For devices for which oil must be avoided such as food machinery, be sure to take measures to prevent damage such as oil reservoir in case of oil leakage due to failure, aging, etc.
3. Connection with the mating machine
 - ① Check the rotation direction before connecting to the mating machine. There is a risk of the device being damaged due to difference in rotation direction.
 - ② When attaching the coupling, sprocket, pulley, gear or the like to the shaft of the gear box, make sure that it does not interfere with the oil seal or case surface in models that have no steps on the shaft. We also recommend H7 for hole fitting.
 - ③ For direct connection, locate the center accurately so that the axial center of the gear box and mating axis match. We also recommend using flexible fastening supplies.
 - ④ When using a chain, belt or gear, make sure that the gear box shaft and mating shaft are parallel, and install it so that the line connecting the centers of two shafts is perpendicular to the shafts.
4. Precautions during driving
 - ① Do not approach or touch rotating objects such as the shafts during operation. There is a risk of entanglement and injury.
 - ② If there is abnormal noise or temperature rise, stop the operation immediately and do not operate until the cause of the abnormality is investigated and measures are taken.
 - ③ Forward and reverse rotations due to plucking adversely affect the gear box and mating machine, so be sure to stop the unit and then start in the opposite direction.
 - ④ Be sure to set the load torque and O.H.L. (overhang load) within the permissible values before operation.

KBX Performance Table

Speed ratio	Model Code	Specification Symbol	X-axis Rotation Speed (rpm)												Allowable Thrust Load (N) [kgf]		
			50	100	200	300	400	600	900	1200	1500	1800	2500	3600	X-axis	Y-axis	
1:1	KBX-101	Allowable Capacity (kW)	0.01	0.02	0.05	0.07	0.09	0.14	0.20	0.26	0.31	0.35	0.38	0.44	59 (6)	69 (7)	Spur Gears
		Allowable X, Y-axis Torque (N·m) [kgf·m]	2.35 (0.24)	2.35 (0.24)	2.25 (0.23)	2.25 (0.23)	2.16 (0.22)	2.16 (0.22)	2.06 (0.21)	2.06 (0.21)	1.96 (0.20)	1.86 (0.19)	1.47 (0.15)	1.18 (0.12)			
		Allowable X-axis O.H.L. (N) [kgf]	78 (8)	78 (8)	78 (8)	78 (8)	69 (7)	69 (7)	69 (7)	69 (7)	69 (7)	59 (6)	49 (5)	39 (4)			
		Allowable Y-axis O.H.L. (N) [kgf]	127 (13)	127 (13)	118 (12)	118 (12)	118 (12)	118 (12)	108 (11)	108 (11)	108 (11)	98 (10)	78 (8)	59 (6)			
		Transmission Efficiency (Reference)	90%														98 (10)
	KBX-151	Allowable Capacity (kW)	0.05	0.09	0.18	0.27	0.35	0.51	0.75	0.96	1.16	1.30	1.44	1.66			
		Allowable X, Y-axis Torque (N·m) [kgf·m]	8.82 (0.90)	8.82 (0.90)	8.62 (0.88)	8.53 (0.87)	8.33 (0.85)	8.13 (0.83)	7.94 (0.81)	7.64 (0.78)	7.35 (0.75)	6.86 (0.70)	5.49 (0.56)	4.41 (0.45)			
		Allowable X-axis O.H.L. (N) [kgf]	255 (26)	255 (26)	255 (26)	245 (25)	245 (25)	235 (24)	225 (23)	216 (22)	216 (22)	186 (19)	157 (16)	127 (13)			
		Allowable Y-axis O.H.L. (N) [kgf]	294 (30)	294 (30)	284 (29)	284 (29)	274 (28)	265 (27)	265 (27)	255 (26)	245 (25)	216 (22)	176 (18)	147 (15)			
	Transmission Efficiency (Reference)	90%												196 (20)	274 (28)	Racks	
	KBX-201	Allowable Capacity (kW)	0.09	0.18	0.36	0.52	0.68	0.95	1.38	1.78	2.15	2.50	2.55				2.95
		Allowable X, Y-axis Torque (N·m) [kgf·m]	17.6 (1.80)	17.6 (1.80)	17.2 (1.75)	16.7 (1.70)	16.2 (1.65)	15.2 (1.55)	14.7 (1.50)	14.2 (1.45)	13.7 (1.40)	13.2 (1.35)	9.80 (1.00)				7.84 (0.80)
		Allowable X-axis O.H.L. (N) [kgf]	353 (36)	353 (36)	343 (35)	333 (34)	333 (34)	323 (33)	314 (32)	304 (31)	294 (30)	265 (27)	216 (22)				176 (18)
		Allowable Y-axis O.H.L. (N) [kgf]	529 (54)	529 (54)	519 (53)	510 (52)	500 (51)	490 (50)	470 (48)	451 (46)	441 (45)	392 (40)	314 (32)			255 (26)	
	Transmission Efficiency (Reference)	90%												59 (6)	69 (7)	CP Racks & Pinions	
KBX-102	Allowable Capacity (kW)	0.005	0.01	0.02	0.03	0.04	0.06	0.09	0.12	0.14	0.16	0.17	0.20				
	Allowable X, Y-axis Torque (N·m) [kgf·m]	2.06 (0.21)	2.06 (0.21)	2.06 (0.21)	1.96 (0.20)	1.96 (0.20)	1.96 (0.20)	1.86 (0.19)	1.86 (0.19)	1.76 (0.18)	1.67 (0.17)	1.27 (0.13)	1.08 (0.11)				
	Allowable X-axis O.H.L. (N) [kgf]	88 (9)	88 (9)	88 (9)	88 (9)	88 (9)	78 (8)	78 (8)	78 (8)	78 (8)	69 (7)	59 (6)	49 (5)				
	Allowable Y-axis O.H.L. (N) [kgf]	137 (14)	137 (14)	137 (14)	127 (13)	127 (13)	127 (13)	127 (13)	118 (12)	118 (12)	108 (11)	88 (9)	69 (7)				
Transmission Efficiency (Reference)	90%												98 (10)	118 (12)	Miter Gears		
KBX-152	Allowable Capacity (kW)	0.02	0.04	0.08	0.13	0.17	0.25	0.36	0.46	0.55	0.62	0.69				0.80	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	8.43 (0.86)	8.43 (0.86)	8.23 (0.84)	8.13 (0.83)	8.04 (0.82)	7.84 (0.80)	7.55 (0.77)	7.25 (0.74)	7.06 (0.72)	6.57 (0.67)	5.29 (0.54)				4.21 (0.43)	
	Allowable X-axis O.H.L. (N) [kgf]	255 (26)	255 (26)	255 (26)	245 (25)	245 (25)	235 (24)	225 (23)	216 (22)	216 (22)	186 (19)	157 (16)				127 (13)	
	Allowable Y-axis O.H.L. (N) [kgf]	294 (30)	294 (30)	284 (29)	284 (29)	274 (28)	265 (27)	265 (27)	255 (26)	245 (25)	216 (22)	176 (18)			147 (15)		
Transmission Efficiency (Reference)	90%												196 (20)	274 (28)	Bevel Gears		
KBX-202	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												98 (10)	118 (12)	Screw Gears		
KBX-152	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												196 (20)	274 (28)	Worm Gears		
KBX-202	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												98 (10)	118 (12)	Other Products		
KBX-152	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												196 (20)	274 (28)	Gearboxes		
KBX-202	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												98 (10)	118 (12)	Other Products		
KBX-152	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												196 (20)	274 (28)	Other Products		
KBX-202	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												98 (10)	118 (12)	Other Products		
KBX-152	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												196 (20)	274 (28)	Other Products		
KBX-202	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												98 (10)	118 (12)	Other Products		
KBX-152	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)	235 (24)				186 (19)	
	Allowable Y-axis O.H.L. (N) [kgf]	588 (60)	588 (60)	578 (59)	568 (58)	559 (57)	539 (55)	529 (54)	510 (52)	490 (50)	441 (45)	363 (37)			294 (30)		
Transmission Efficiency (Reference)	90%												196 (20)	274 (28)	Other Products		
KBX-202	Allowable Capacity (kW)	0.05	0.10	0.19	0.28	0.37	0.53	0.77	0.99	1.15	1.31	1.40				1.57	
	Allowable X, Y-axis Torque (N·m) [kgf·m]	19.6 (2.00)	19.6 (2.00)	18.6 (1.90)	18.1 (1.85)	17.6 (1.80)	17.0 (1.73)	16.4 (1.67)	15.7 (1.60)	14.7 (1.50)	13.9 (1.42)	10.8 (1.10)				8.33 (0.85)	
	Allowable X-axis O.H.L. (N) [kgf]	372 (38)	372 (38)	363 (37)	363 (37)	353 (36)	343 (35)	333 (34)	323 (33)	314 (32)	274 (28)						

- [Note] ① Be sure to use the product below the permissible values. The speed ratio (1:2) decelerates to the Y axis.
 ② The values in this performance table are where the service factor is 1. When using the product under other conditions, refer to the Selection Guide.
 ③ O.H.L. (overhang load) is the allowable load that can be applied to the center of the shaft. When using the product under other conditions, refer to the coefficients K₁ and K₂ in the Selection Guide (Page 454).
 ④ When the speed ratio (1:2) type is used at increased speed (from Y-axis to X-axis), the allowable X-axis torque is 1/2 of the value in the performance table (allowable Y-axis torque).
 ⑤ Y-axis torque of the model T is the total value of the left and right axes.
 ⑥ Y-axis O.H.L. of the model T is the total value of the left and right axes.



PBX

Miniature Bevel Gearboxes

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

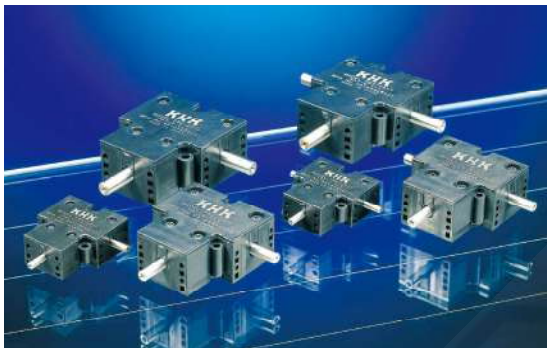
Bevel Gears

Screw Gears

Worm Gears

Gearboxes

Other Products



Features

① Lightweight and compact

The structure is simple and the case is made of resin

The resin has excellent chemical resistance and heat resistance

② Flexible mounting direction

Through holes and pilot holes are available, allowing mounting in all directions

③ Maintenance-free

Grease is applied to the tooth surface before shipment

④ Speed ratio

1:1

Application Hints

1. Installation Location

- Ambient temperature: -10°C to 40°C
- Ambient humidity: 80% or less
- Atmosphere: A space free of corrosive gas and steam
A well-ventilated space free of dust and dirt
- Installation location: Indoors

2. Installation

- Fix the unit on a flat surface without vibration with bolts, screws, etc.
- JIS Class 2 grooved screws are recommended for tap screws.
- The table below shows the recommended tightening torque and dimensions for installation.
- No secondary operations such as boring can be made on the case. The gear box may be damaged.
- For devices for which oil must be avoided such as food machinery, be sure to take measures to prevent damage such as oil reservoir in case of oil leakage due to failure, aging, etc.

3. Connection with the mating machine

- Check the rotation direction before connecting to the mating machine. There is a risk of injury or the device being damaged due to difference in rotation direction.
- Use flexible fasteners to connect the gear box shaft and mating shaft.
- Install so that the axes of the gear box shaft and mating shaft are aligned.
- There is no step on the gear box shaft. When installing the coupling or the like, make sure that it does not interfere with the case surface.
- There is no keyway on the gear box shaft. Use clamping type couplings or the like so that the product does not slip.

4. Precautions during driving

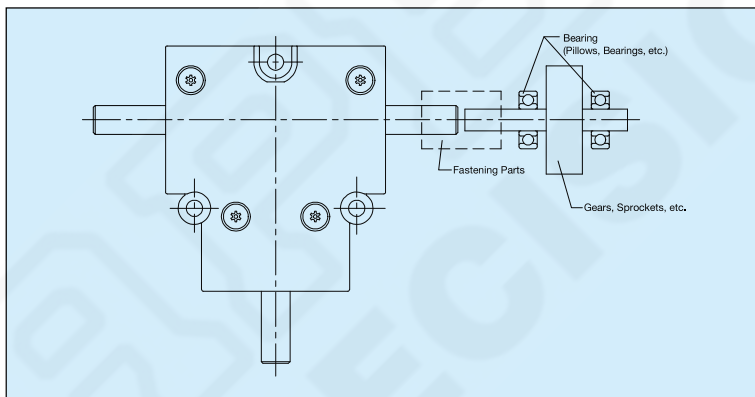
- Do not approach or touch rotating objects such as the shafts during operation. There is a risk of entanglement and injury.
- If there is abnormal noise or temperature rise, stop the operation immediately and do not operate until the cause of the abnormality is investigated and measures are taken.
- Do not disassemble or modify the product. If the device is damaged, the product will not be covered by the warranty.

Recommended Tightening Torque

Machine Type	Through Hole		Hole for End Face Tapping Screw		
	Size	Fastening Torque (N·m)	Nominal Diameter	Effective Length (mm)	Fastening Torque (N·m)
PBX-04	M3	0.3~0.6	3	7~11	0.4~0.8
PBX-06	M3	0.4~0.8	3	9~13	0.5~1.0
PBX-08	M4	0.5~1.0	4	9~14	0.5~1.0

Selection Hints

- PBX is an economy type gear box. If high accuracy, high strength and high rotation speed are required, consider using the KBX type.
- Make sure that O.H.L. (overhang load) and thrust load are not applied to the shaft of the gear box. If O.H.L. or thrust load is applied, support both ends of the sprocket, gear and the like with bearings such as pillows so that O.H.L. and thrust load are not applied to the gear box. (See the diagrams below)
- It cannot be used under conditions where forward/reverse rotation occurs due to plucking or heavy impact load is applied. Consider using the KBX type.



PBX Performance Table

Model Code	Specification Symbol	X-axis Rotation Speed (rpm)						
		50	100	200	250	300	400	500
PBX-041	Allowable X, Y-axis Torque (N-cm) {kgf-cm}	9.8 {1.0}	9.8 {1.0}	9.6 {0.98}	9.5 {0.97}	9.4 {0.96}	9.3 {0.95}	9.1 {0.93}
	Transmission Efficiency (Reference)	70%						
PBX-061	Allowable X, Y-axis Torque (N-cm) {kgf-cm}	39.2 {4.0}	39.2 {4.0}	38.5 {3.93}	38.2 {3.90}	37.9 {3.87}	37.2 {3.80}	36.5 {3.72}
	Transmission Efficiency (Reference)	80%						
PBX-081	Allowable X, Y-axis Torque (N-cm) {kgf-cm}	78.4 {8.0}	78.4 {8.0}	77.0 {7.86}	76.5 {7.80}	75.7 {7.72}	74.4 {7.59}	73.1 {7.46}
	Transmission Efficiency (Reference)	75%						

[Note] ① Be sure to use the product below the permissible values.

② The values in this performance table are where the service factor is 1. When using the product under other conditions, refer to the Selection Hints.