

■ Features

① Light weight and compact

Simple construction with plastic housing.
Uses a plastic resin which has superior chemical and thermal resistance.

② Freedom of installing orientation

Unit has through holes and counter-bores allowing mounting on any orientation.

③ Maintenance free

Grease is applied to gears before shipping.

④ Speed ratio

1:1

■ Points to observe during use

1. Environmental conditions

- Ambient temperature -10°C to 40°C
- Ambient humidity 80% or less
- Atmosphere Well-ventilated, dust-free air not including corrosive gas and steam.
- Location Indoors

2. Mounting Methods

- Bolt or screw the unit firmly on a flat surface free from variations.
- For screws, we recommend JIS Type 2 grooved screws.
- The dimensions of the mounting screws and the recommended tightening torques are given in the table below.
- No secondary operations such as adding bolt holes can be performed on the casing. There is a danger that the gearbox will break.

- When used in applications where oil contamination is undesirable such as in a food processing machines, please use preventive measures against oil leaks due to malfunction or the units wearing out.

3. Connection with mating machinery

- Before connecting to the mating machinery, please verify the directions of the shaft rotation to avoid breakage of the equipment.
- Please use a flexible coupling to connect the gearbox shaft to a mating shaft.
- Make sure that the shafts of the gearbox and the mating machinery are lined up center to center.
- If the gearbox shaft does not have a step, care should be exercised when attaching a coupling so that it does not interfere with the housing.
- There is no keyway on the gearbox shaft. Use clamping type couplings to avoid slippage.

4. Operating precautions

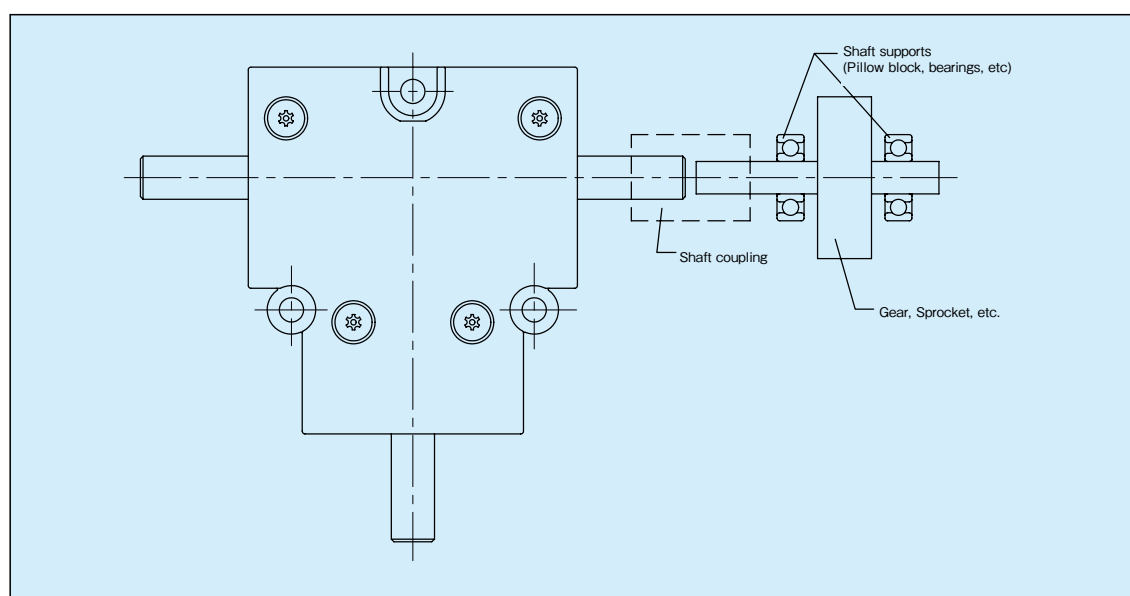
- Do not go near or touch rotating portions of the machine such as the shafts during operation. You may get caught and injure yourself.
- Stop the operation immediately when the noise level or the temperature rises abnormally. Do not restart until all of the causes are analyzed and proper repairs are made.
- Do not disassemble or modify these productions. You may destroy the unit.

■ Recommended tightening torques

Mode	Thru-hole		Tapped screw hole		
	Size	Tightening torque (N · m)	Nominal dia.	Effective length (mm)	Tightening torque (N · m)
PBX-04 Type	M3	0.3 ~ 0.6	3	7 ~ 11	0.4 ~ 0.8
PBX-06 Type	M3	0.4 ~ 0.8	3	9 ~ 13	0.5 ~ 1.0
PBX-08 Type	M4	0.5 ~ 1.0	4	9 ~ 14	0.5 ~ 1.0

Selection Hints

- ① PBX series are economical bevel gearboxes. For applications requiring high precision, strength and/or speed, we recommend the use of KBX type bevel gearboxes.
- ② Please avoid overhang and thrust loads on the shafts. By supporting both ends of the shaft on which a gear or sprocket is mounted by means of pillow blocks or bearings as shown below, you can eliminate overhang loads.
- ③ These units are not suitable when you have sudden reversals of rotation or impact loads. Please consider KBX type bevel gearboxes in such applications.



PBX Specification Chart

Type	Specifications	X-axis revolutions per minute (rpm)						
		50	100	200	250	300	400	500
PBX-041	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}
	Efficiency (Reference values)	70%						
PBX-061	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}
	Efficiency (Reference values)	80%						
PBX-081	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}
	Efficiency (Reference values)	75%						

- [CAUTION]
- ① Be sure not to exceed the allowable values.
 - ② The values in the table are effective when the service factor is 1. When the units are used under other conditions, refer to the Selection Guide.



PBX Miniature Bevel Gearboxes

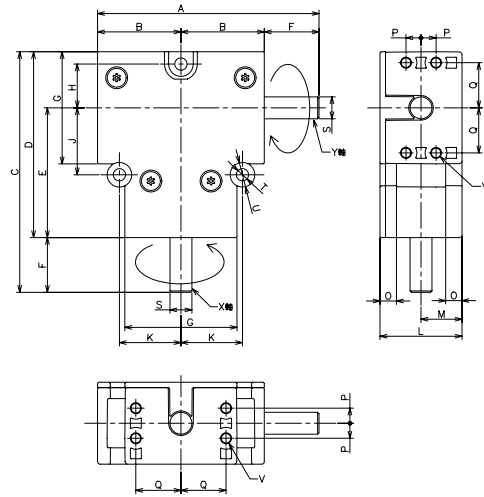
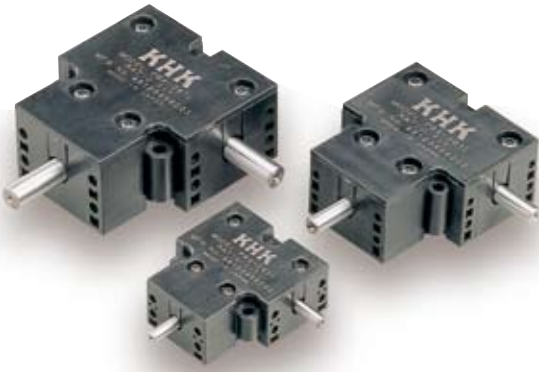
L Type



Spur Gears

Helical Gears

Internal Gears



Catalog No.	Speed Ratio	A	B	C	D	E	F	G	H	J	K	L	M	O	P	Q	S	T
PBX-041L	1:1	51	20.5	55	45	32	10	26	9.5	16	15	18	9	4.5	3	10	φ4	φ3.5
PBX-061L	1:1	70	27.5	73	58	41	15	34	13.5	20	19	26	13	4.5	4.5	14	φ6	φ3.5
PBX-081L	1:1	81	30.5	88	68	47.5	20	41	16	24.5	22.5	30	15	6	5.5	16.5	φ8	φ4.5

Racks

CP Racks & Pinions

Miter Gears



PBX Miniature Bevel Gearboxes

T Type



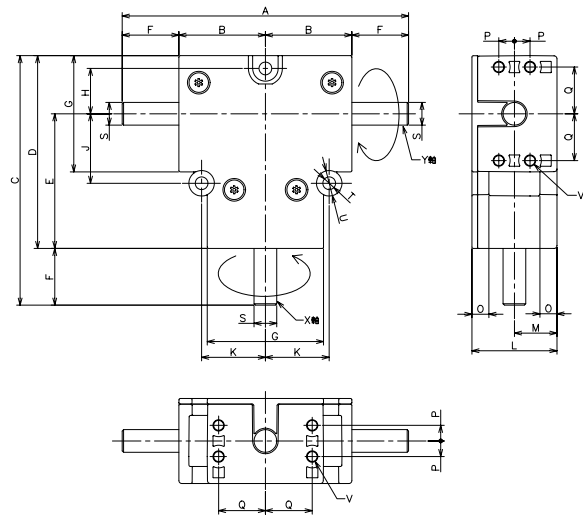
Bevel Gears

Screw Gears

Worm Gear Pair

Bevel Gearboxes

Other Products



Catalog No.	Speed Ratio	A	B	C	D	E	F	G	H	J	K	L	M	O	P	Q	S	T
PBX-041T	1:1	61	20.5	55	45	32	10	26	9.5	16	15	18	9	4.5	3	10	φ4	φ3.5
PBX-061T	1:1	85	27.5	73	58	41	15	34	13.5	20	19	26	13	4.5	4.5	14	φ6	φ3.5
PBX-081T	1:1	101	30.5	88	68	47.5	20	41	16	24.5	22.5	30	15	6	5.5	16.5	φ8	φ4.5

Bevel Gearboxes

- [Caution]
- ① The arrow marks on the shafts are intended to show the relative direction of rotation. The units can be driven in the opposite direction as well.
 - ② In the standard unit, the X-axis rotates clockwise, and the Y-axis counterclockwise.
 - ③ The tolerance of shaft diameter is JIS h8.
 - ④ The shafts do not have keyways. Please use clamping type couplings to avoid slippage.
 - ⑤ The backlash at the X-axis (input shaft) is about 3 degrees.

U	V		Weight (g)	Catalog No.
	Diameter	Depth		
7	ϕ 2.5	11	45	PBX-041L
7	ϕ 2.5	13	120	PBX-061L
9	ϕ 3.3	14	200	PBX-081L

PBX

Miniature Bevel Gearboxes

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Spur
GearsHelical
GearsInternal
Gears

Racks

CP Racks
& PinionsMiter
GearsBevel
GearsScrew
GearsWorm
Gear PairBevel
GearboxesOther
Products