

■ 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.

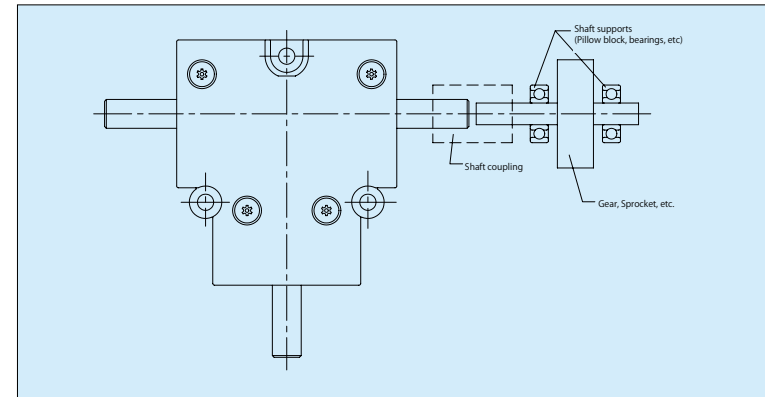
■ Recommended tightening torques

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

- 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.

■ 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.

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

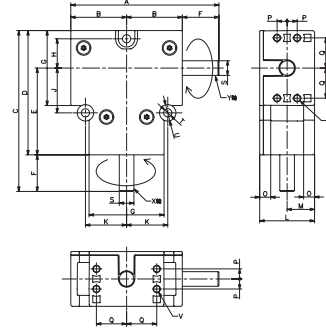
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## PBX Miniature Bevel Gearboxes



L Type



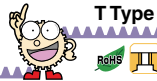
Catalog No.	Speed Ratio	A	B	C	D	E	F	G	H	J	K	L	M	O	P	Q	S	T
<b>PBX-041L</b>	1:1	51	20.5	55	45	32	10	26	9.5	16	15	18	9	4.5	3	10	φ4	φ3.5
<b>PBX-061L</b>	1:1	70	27.5	73	58	41	15	34	13.5	20	19	26	13	4.5	4.5	14	φ6	φ3.5
<b>PBX-081L</b>	1:1	81	30.5	88	68	47.5	20	41	16	24.5	22.5	30	15	6	5.5	16.5	φ8	φ4.5

- [ 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.

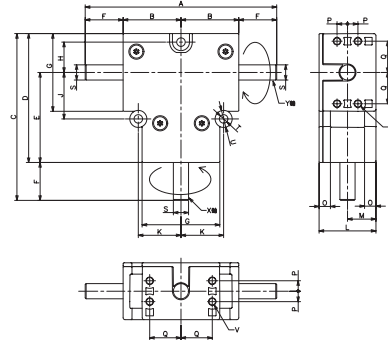
U	V		Weight (g)	Catalog No.
	Diameter	Depth		
7	φ2.5	11	45	<b>PBX-041L</b>
7	φ2.5	13	120	<b>PBX-061L</b>
9	φ3.3	14	200	<b>PBX-081L</b>



## PBX Miniature Bevel Gearboxes



T Type



Catalog No.	Speed Ratio	A	B	C	D	E	F	G	H	J	K	L	M	O	P	Q	S	T
<b>PBX-041T</b>	1:1	61	20.5	55	45	32	10	26	9.5	16	15	18	9	4.5	3	10	φ4	φ3.5
<b>PBX-061T</b>	1:1	85	27.5	73	58	41	15	34	13.5	20	19	26	13	4.5	4.5	14	φ6	φ3.5
<b>PBX-081T</b>	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

- [ 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.
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U	V		Weight (g)	Catalog No.
	Diameter	Depth		
7	φ2.5	11	45	<b>PBX-041T</b>
7	φ2.5	13	120	<b>PBX-061T</b>
9	φ3.3	14	200	<b>PBX-081T</b>