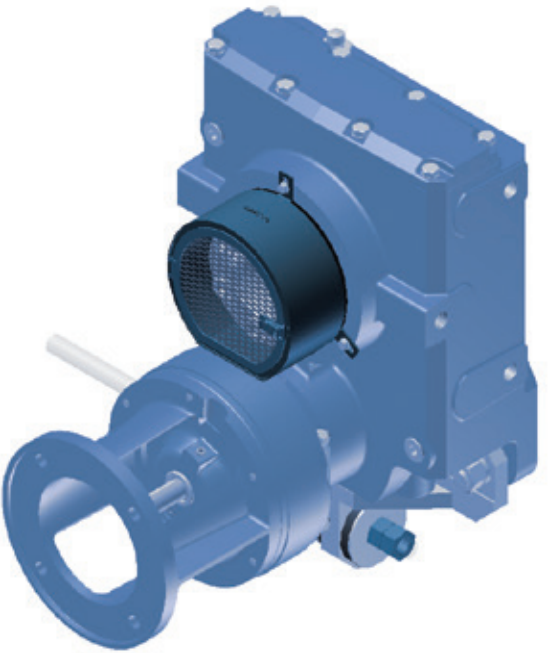
Sumitomo Drive Technologies

Installation Guide



Cyclo® HBB

Helical Buddybox®

Manual 07.401.61.103 • March 2016

Sumitomo Machinery Corporation of America

Installation Guide

Cyclo® HBB
Helical Buddybox

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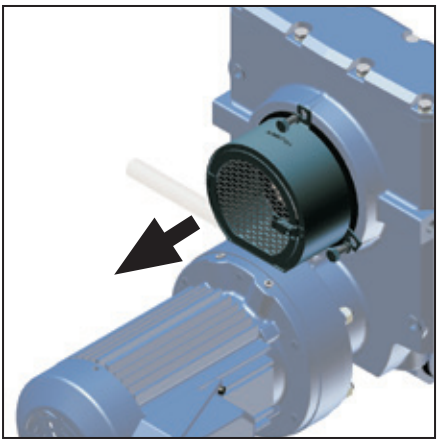
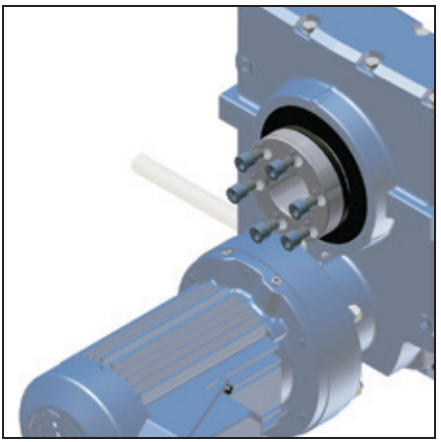
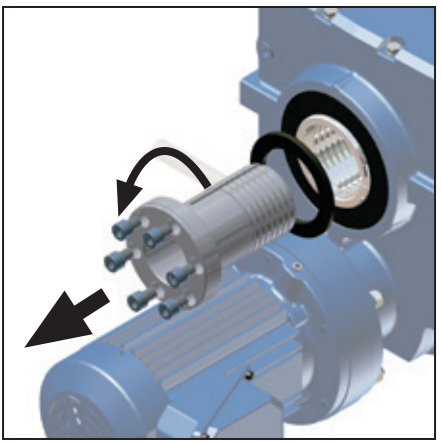
Shaft and Bushing



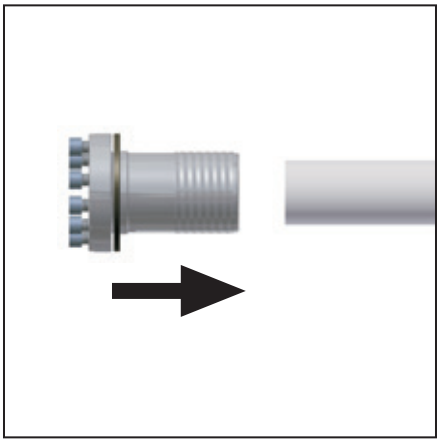
1
Remove bushing guard.



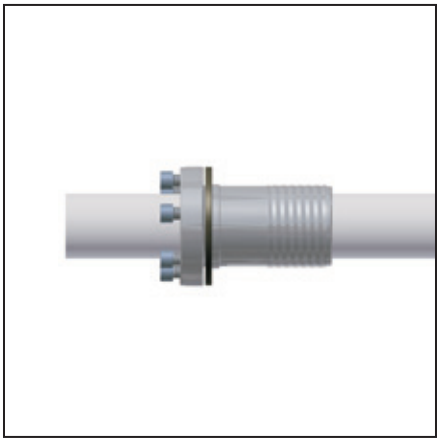
2
Loosen Taper-Grip® bolts.



3
Remove Taper-Grip® bushing.

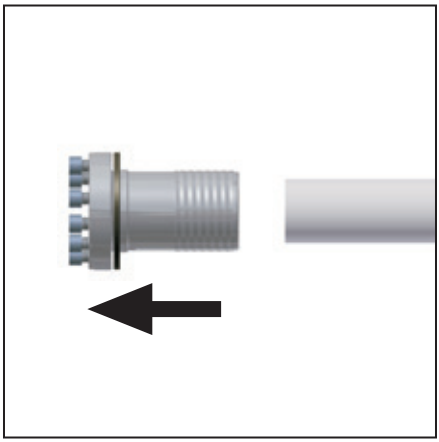


4
Clean shaft with solvent. Do not use lubricant. Remove all grease, oil and anti-seize from the pulley journal shaft. Slide Taper-Grip® bushing on to shaft.



5
Inspect and test Taper-Grip® bushing on shaft.

- Check shaft for burrs, corrosion or warpage.
- Slide bushing back and forth along shaft, checking for surface irregularities and fit.
- Verify bushing bore size.

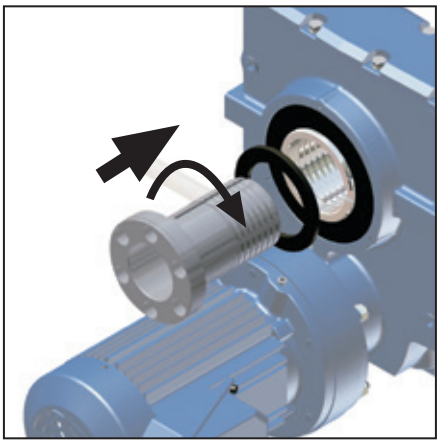


6
Remove Taper-Grip® bushing from shaft.

7

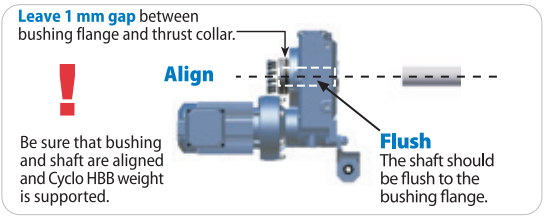
Apply a thin layer of anti-seize paste to the male threads of the Taper-Grip® bushing only. Ensure that anti-seize paste does not enter the Taper-Grip® bushing bore.

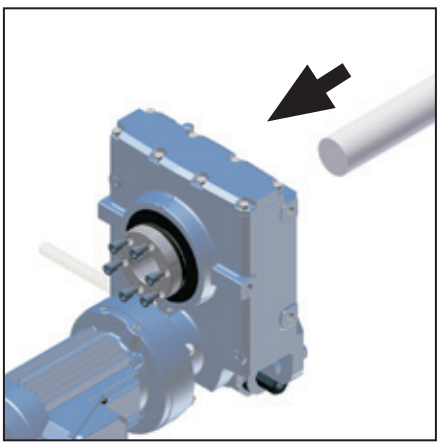
Important: Do NOT apply anti-seize paste to the female threads in the hub.



8

Screw Taper-Grip® bushing into Cyclo® HBB leaving approx. 1 mm gap between the bushing flange and thrust collar.

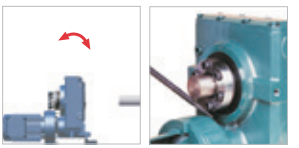




9

Mount Cyclo® HBB on to shaft.

Important: Do NOT rock or pry the unit.



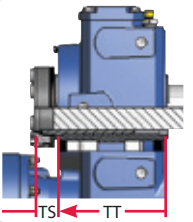
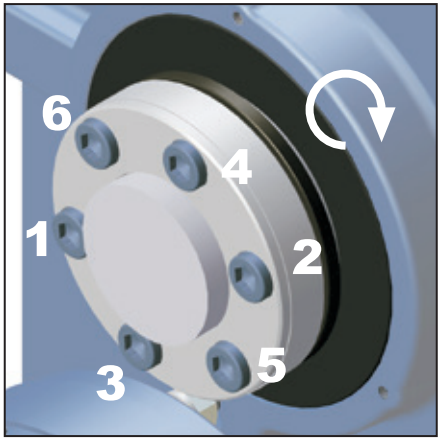


Table 1. Minimum Shaft Engagement

Cyclo HBB Size	Min. Shaft Engagement TT (in.)	Max Depth to Shaft End TS (in.)
Z	4.47	1.22
A	5.00	1.38
B	5.67	1.77
C	7.36	1.57
D	8.07	1.97
E	8.86	2.01



10
Screw bolts into Taper-Grip® bushing.

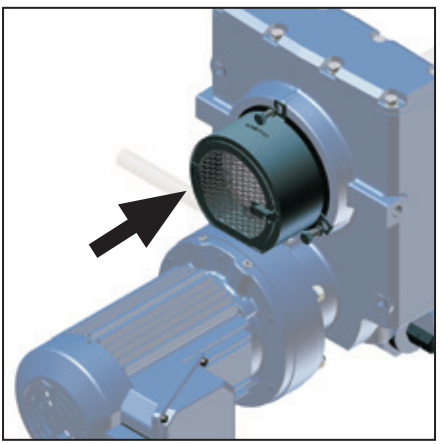
- Lightly oil each bolt before inserting.
- Finger tighten to secure in place.
- Using a torque wrench, gradually tighten each bolt in a star pattern to specified torque levels.

Table 2. Bushing Bolt Torque

HBB Size	Screw Size & Qty.	Screw Torque	
		lb. ft	Nm
AA/Z	6 X M10	22.9	31
A	6 X M12	37.6	51
B	6 X M12	37.6	51
C	6 X M16	94.4	128
D	6 X M16	147.5	200
E	8 X M16	147.5	200

11
Apply grease to shaft.

- Apply grease or an anti-corrosion product on the exposed shaft after installing and tightening bushing bolts with a torque wrench.

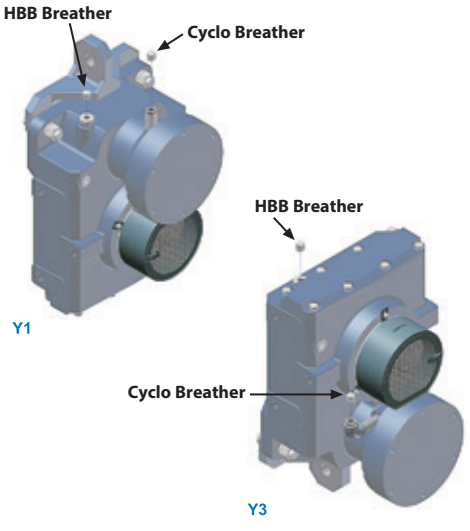


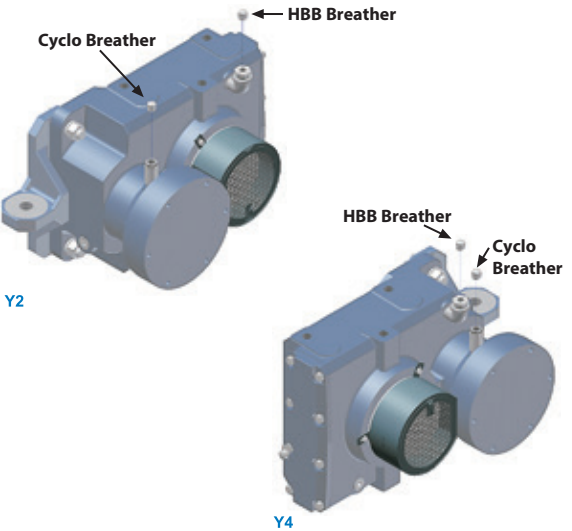
12
Reinstall bushing guard over Taper-Grip® bushing.

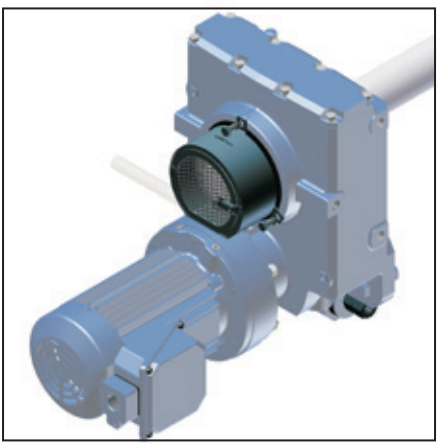
13
Verify lubrication and install air vents.

- Ensure reducer is in the proper mounting position.
- Remove plugs and install air vents included in reducer package.
- An elbow is included for:
  - ~ the gear portion when mounting in the Y2 and Y4 position.
  - ~ the Cyclo® portion when mounting in the Y3 position.

Important: Unit is filled with oil. Removing plugs before placing unit in correct mounting position will cause oil to spill.







Installation Date Sticker

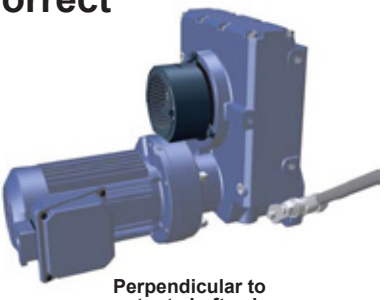
14
Finished Installation.

- Install Torque Arm assembly (see following pages).
- Check the following items:
  - Oil Levels
  - Pre-wiring
  - Breather installed in HBB only for Cyclo® HBB sizes Z (AA), A and B
  - Breather installed in HBB and Cyclo® for Cyclo® HBB sizes C, D and E
- Check the Taper-Grip bushing screw torques after 20 - 30 hours of operation. If necessary, tighten the screws according to the torque chart in step 10. Check the screw torques every 6 months thereafter.

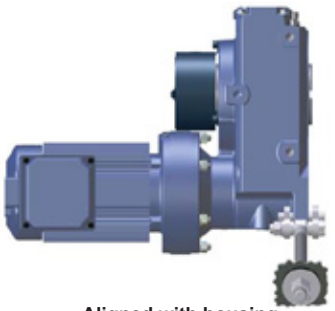
Torque Arm Mounting Options

Turnbuckle and Clevis Type Torque Arm Installation

Correct



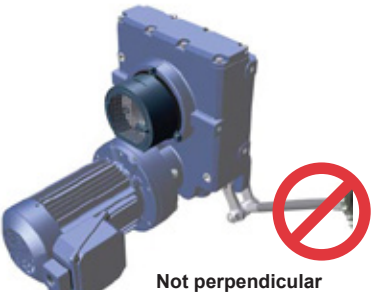
Perpendicular to output shaft axis



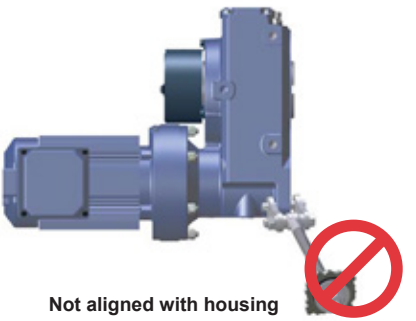
Aligned with housing

Incorrect

Not perpendicular



Not perpendicular



Not aligned with housing

Direct Mount Torque Arms in Tension

"Y3" Mounting Position

"Y1" Mounting Position

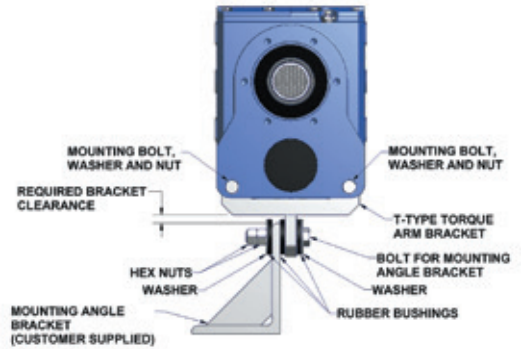
Mount with “T” Type Torque Arm

The Cyclo® HBB torque arm design allows for reversing rotation and can be mounted to accept loads in tension or compression.

In operation, the Cyclo® HBB will rotate in the opposite direction of the driven shaft, pulling away from the torque arm.

Important: Tighten both pairs of nuts against the mounting tab so that there is zero clearance between the rubber bushings and the tab, but you can still rotate the rubber bushings by hand. Do not overtighten, but ensure that the nuts in each pair are tightened securely against each other so vibration will not cause them to loosen. Be sure that the bottom of the mounting angle bracket is secured to a rigid surface.

Option 1: “T” Type Bracket Mounting



Option 2: “T” Type Bracket Mounting

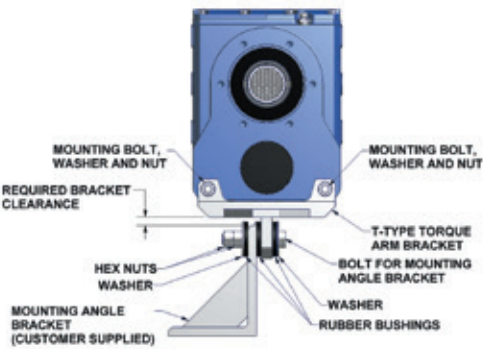
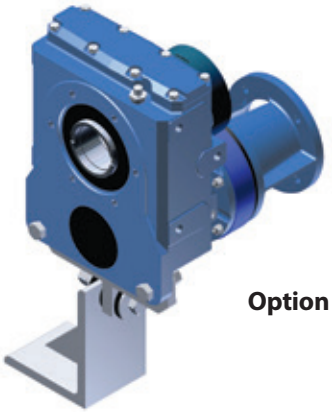


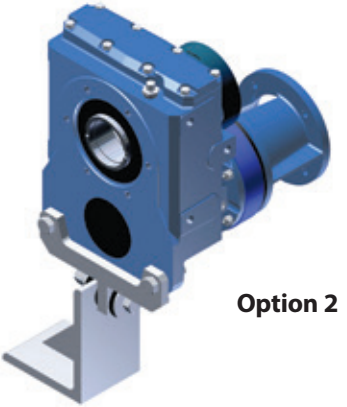
Table 3. Mount with “T” Type Torque Arm Bracket Part Numbers

Item (Qty) Supplier	6000 Series / 4000 Series	Cyclo HBB Size Z609 / AA409	A610 / A410	B612 / B411	C614 / C415	D616 / D416	E617 / E417
Assembly No.		998TATBBB-AAG	998TATBBB--AG	998TATBBB--BG	998TATBBB--CG	998TATBBB--DG	998TATBBB--EG
Torque Arm (1) SMA		AN7610G	NKML6166	NKML6167	NKML6168	NKML6169	NKML6170
Hardware Set, SMA • Rubber Bushing (3) • Washer (2) • Hex Nut (2) • Mounting Hardware (1 Set)		998TATPARTAAG	998TATPART-AG	998TATPART-BG	998TATPART-CG	998TATPART-DG	998TATPART-EG
Replacement Parts (ind.)							
Rubber Bushing (3) SMA		NKPA6379-5	NKPA6379-4	NKPA6379-3	NKPA6379-2	NKPA6379-2	NKPA6379-1
Washer (2) SMA		NKPA6391-5	NKPA6391-4	NKPA6391-3	NKPA6391-2	NKPA6391-2	NKPA6391-1
Bolt and Nut (2) Customer		M12	M16	M20	M24	M24	M30
Mounting Hardware (2 ea.) SMA		M12 X 50 Hex-screw M12 Spring Lock Washer M12 Hex Nut	M16 X 55 Hex-screw M16 Spring Lock Washer M16 Hex Nut	M16 X 60 Hex-screw M16 Spring Lock Washer M16 Hex Nut	M20 X 75 Hex-screw M20 Spring Lock Washer M20 Hex Nut	M24 X 90 Hex-screw M24 Spring Lock Washer M24 Hex Nut	M30 X 110 Hex-screw M30 Spring Lock Washer M30 Hex Nut
Mounting Angle Bracket Hole Diameter (mm) (1) Customer		16	20	24	28	28	35
Required Bracket Clearance (mm)		13	16	16	21	21	26

“T” Type Bracket Mounting - Two Options



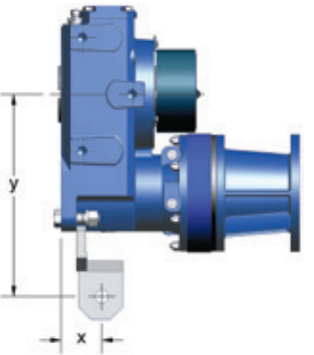
Option 1



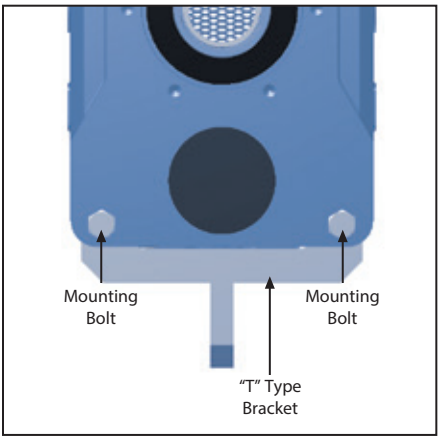
Option 2

HBB Size	y Dimension	x Dimension	
		Opt. 1	Opt. 2
Z609	8.94	–	0.51
A610	9.39	1.97	0.71
B612	11.52	2.40	0.87
C614	14.06	3.11	1.22
D616	17.05	3.54	1.30
E617	18.98	4.72	1.93

Dimensions in Inches



"T" Type Bracket Mounting
Installation

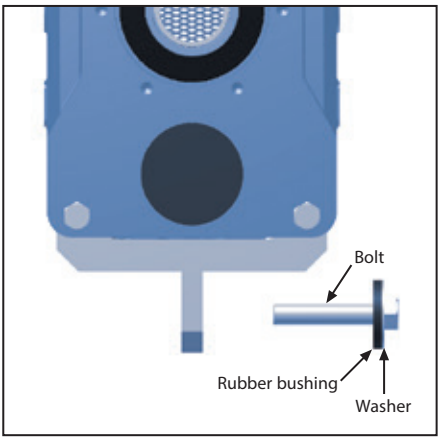


1
Attach the "T" Type Bracket to the Cyclo® HBB using mounting hardware.

• "T" Type Bracket and mounting bolts supplied by Sumitomo.

Table 4. "T" Type Bracket Bolt Torques

HBB Size		Bolt Size	Torque	
4000 Series	6000 Series		lb. ft	Nm
AA409	Z609	M12	40-46	54-62
A410	A610	M16	92-130	125-176
B411	B612	M16	92-130	125-176
C415	C614	M20	191-270	259-366
D416	D616	M24	330-466	447-632
E417	E617	M30	655-923	888-1251



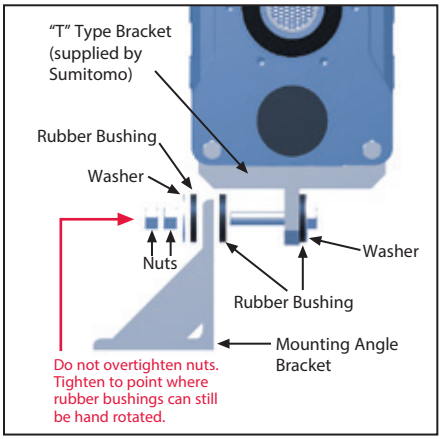
2
Place one washer and one rubber bushing on bolt.

• Three rubber bushings and two washers supplied by Sumitomo.

Insert bolt through mounting tab on Cyclo® HBB.

• Bolt supplied by conveyor vendor. Minimum bolt grade is 8.8.

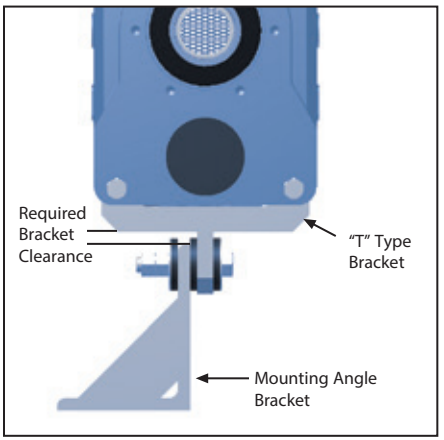
Important: Make sure bolt is parallel to HBB when fully installed. See next page.



3
Follow these steps to attach the mounting angle bracket:

- Place rubber bushing and mounting angle bracket on bolt
- Verify that the mounting angle bracket hole is the correct diameter (see table on page 6).
- Place remaining bushing, washer and two nuts on bolt.

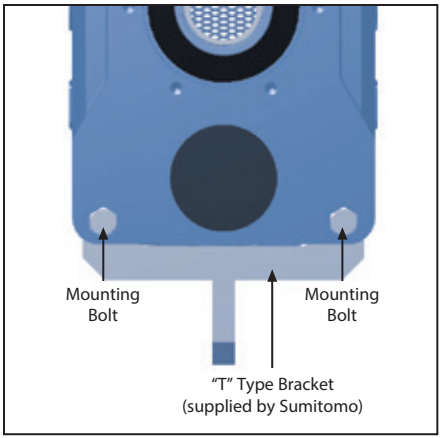
Important: Do not overtighten nuts. Tighten to point where rubber bushings can still be hand rotated.

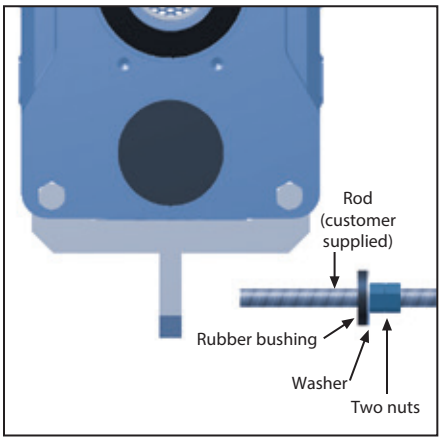


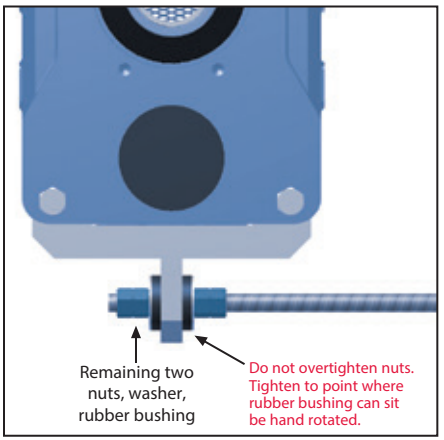
4
Attach mounting angle bracket to mounting surface.

- Check that bushings can still be hand rotated.
- Ensure that the **required bracket clearance** is correct (see table on page 6).

Important: The mounting angle bracket must not interfere with the T-type torque arm bracket; there should be no contact during a 360° rotation of the pulley. Failure to maintain the required bracket clearance will cause catastrophic failure of the unit.







Threaded Rod with "T" Type Bracket Mount Installation

1 Attach the "T" Type Bracket to the Cyclo® HBB using mounting hardware.

• T-bracket and mounting bolts supplied by Sumitomo.

Table 4. "T" Type Bracket Bolt Torques

HBB Size		Bolt Size	Torque	
4000 Series	6000 Series		lb. ft	Nm
AA409	Z609	M12	40-46	54-62
A410	A610	M16	92-130	125-176
B411	B612	M16	92-130	125-176
C415	C614	M20	191-270	259-366
D416	D616	M24	330-466	447-632
E417	E617	M30	655-923	888-1251

2 Place two nuts, washer, and rubber bushing on rod.

• Rubber bushings and washers supplied by Sumitomo.

Insert rod through mounting tab on Cyclo® HBB.

Important: Make sure rod is parallel to HBB when fully installed. See next page.

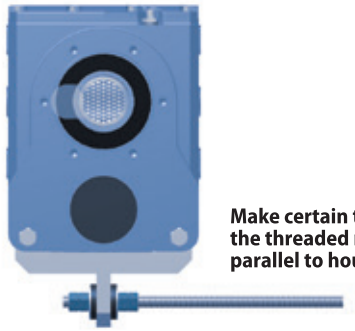
3 Place remaining two nuts, washer, and rubber bushing on rod.

Important: Do not overtighten nuts. Tighten to point where rubber bushings can still be hand rotated.

Correct and Incorrect
Threaded Rod with "T" Type Bracket Installation

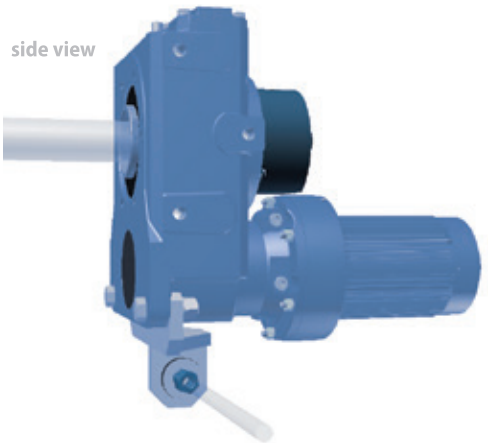
Correct

back view



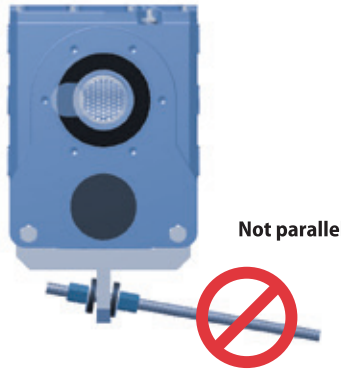
Make certain that the threaded rod is parallel to housing.

side view

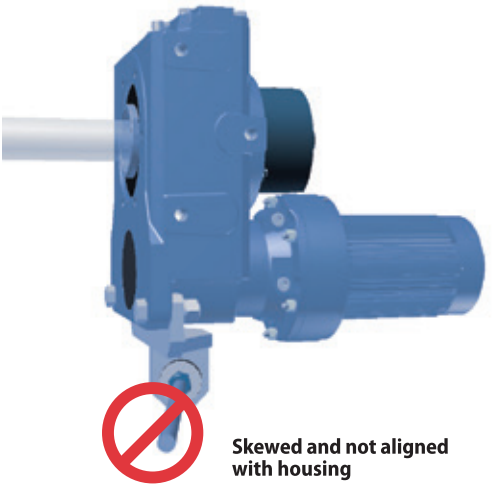


Check that the rod is not skewed when viewed from the sides.

Incorrect



Not parallel



Skewed and not aligned with housing

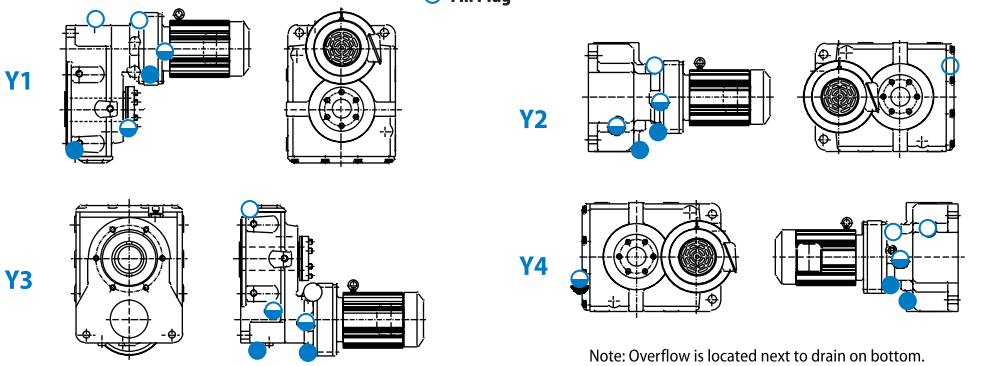
Lubrication

Cyclo HBB reducers and gearmotors are filled with oil prior to shipping.

Oil Plug Locations

Floor–All Positions

- Drain Plug
- Oil Level (Oil Gauge)
- Fill Plug



Note: Overflow is located next to drain on bottom.

Sumitomo Recommended Lubricant Replenishment and Change Interval

- Maintain proper oil levels at all times.
- Check oil quantity every 2500 hours. If oil is contaminated, burned or waxed, change oil immediately and flush if necessary.
- Under normal operating conditions, Sumitomo recommends an oil change every 5000 hours of operation.
- Changing the oil after the first 500 hours of operation is highly recommended.
- If the Cyclo® BBB is running in a high ambient, high humidity, or corrosive environment, lubricant must be changed more frequently. Consult the factory for recommendations.
- Cyclo portion and helical portion must be filled with oil separately. Oil does not flow from one section to the other.

Lubrication (cont.)

Table L-1. Approved Oils

Oil lubricated reducers must be filled with oil prior to operation. Fill the reducer to the correct level with the recommended oil.

Recommended Oils

ExxonMobil	Spartan EP	**Idemitsu**	Daphne Super Gear Oil	**BP**	Energol GR-XP
Mobil	Mobilgear 600XP	**Kluber**	Kluberoll GEM1	**Castrol**	Alpha SP
Shell	Omala S2 G	**Caltex**	Meropa	**Gulf**	EP Lubricant HD

Ambient Temperature

°F	14	32	50	68	86	104	122
°C	-10	0	10	20	30	40	50
ISO VG	68						
		100/150					
					220/320/460		

Table L-2. Oil Quantity

Helical Buddybox Size	Output side (HBB)								Input side (Cyclo)							
	Y1		Y2		Y3		Y4		Y1		Y2		Y3		Y4	
	gal	ℓ	gal	ℓ	gal	ℓ	gal	ℓ	gal	ℓ	gal	ℓ	gal	ℓ	gal	ℓ
AA,Z	0.16	0.60	0.16	0.60	0.13	0.49	0.16	0.60	G*	G	G	G	G	G	G	G
A	0.21	0.80	0.24	0.91	0.18	0.68	0.24	0.91	G	G	G	G	G	G	G	G
B	0.26	0.98	0.40	1.51	0.26	0.98	0.40	1.51	G	G	G	G	G	G	G	G
C	0.45	1.70	0.55	2.10	0.34	1.30	0.55	2.10	0.11	0.40	0.11	0.40	0.11	0.40	0.11	0.40
D	0.71	2.70	0.92	3.50	0.53	2.00	0.92	3.50	0.18	0.70	0.18	0.70	0.18	0.70	0.18	0.70
E	0.92	3.50	1.11	4.20	0.66	2.50	1.11	4.20	0.24	0.90	0.24	0.90	0.24	0.90	0.24	0.90

*G indicates maintenance-free grease lubrication

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