



**Performance Spherical Roller Bearing  
Installation Instructions  
1 1/8" – 5"**

**Power Transmission Solutions**  
Regal Beloit America, Inc.  
7120 New Buffington Road  
Florence, KY 41042  
Application Engineering: 800 626 2093  
www.RegalPTS.com

**FORM**  
PN 787410, PS-740-0001  
**9568E**  
**Revised**  
**April 2015**

**WARNING**

- Read and follow all instructions carefully.
- Disconnect and lock-out power before installation and maintenance. Working on or near energized equipment can result in severe injury or death.
- Do not operate equipment without guards in place. Exposed equipment can result in severe injury or death.

**CAUTION**

- Periodic inspections should be performed. Failure to perform proper maintenance can result in premature product failure and personal injury.

**Mounting Lock Collar Units:**

**Step 1: Inspect Shaft and Bore-**

Shaft should be within tolerance range shown in Table I, clean and free of nicks and burrs. Mount bearings on unused section of shafting or repair/ replace shafting as required. Inspect both the shaft and the bearing bore for debris or contaminants. Wipe clean as necessary.

**Table I**

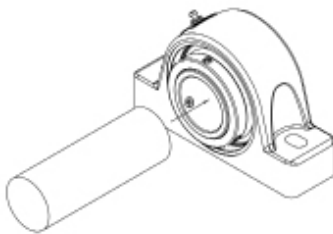
Recommended Shaft Tolerances	
Nominal Bore Diameter	Tolerance (inch)
1 1/8 - 2	+0.0000 / -0.0005
2 3/16 - 4	+0.0000 / -0.0010
4 7/16 - 5	+0.0000 / -0.0015

**Step 2: Check Support Surfaces:**

Make sure the base of the housing and the support surfaces are clean and free from burrs. If the housing elevation is adjusted with shims these must cover the entire contact area between the housing and the support surface.

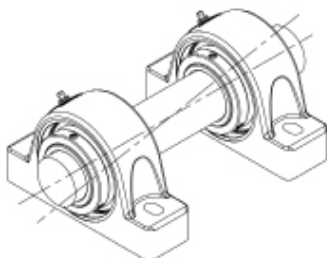
**Step 3: Install Unit:**

To aid installation, keep weight off bearing during mounting. Slide unit onto the shaft by pushing on the inner ring. If it is difficult to mount bearing on shaft, use a piece of emery cloth to reduce any high spots on the shaft.



**Step 4: Fasten Unit In Place:**

Install housing mounting bolts and check bearing alignment. Align the bearing units as closely as possible. Tighten mounting bolts to recommended fastener torques. Check the shaft for freedom of rotation by rotating shaft with hand in both directions.



**Step 5: Position Insert:**

Expansion units must be located in the housing to allow axial shaft expansion and/or contraction. Position bearing insert to obtain the required axial expansion in the desired directions. It may be necessary to unload the bearing while moving the assembly.

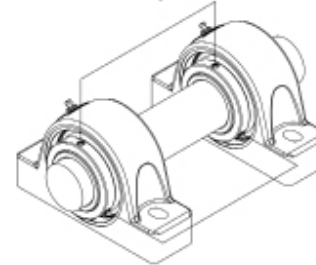
**Step 6: Tighten Setscrews:**

Setscrews in multiple bearing applications should be aligned as seen in Figure 1. Tighten the bearing units to the shaft as follows:

- Torque the first setscrew to one half of the recommended torque in Table II.
- Torque the second setscrew to the full torque. Go back to the first setscrew and tighten to the full torque.

If the bearing unit has two lock collars, one on either end, repeat the same procedure for the second lock collar. Check shaft again for freedom of rotation and then tighten second bearing unit in the same fashion. When all bearings are tightened, perform a final check to the shaft for freedom of rotation.

**Figure 1**



**Table II**

Lock Collar Setscrew Torque		
Bore Size	Hex Size	Foot-Pounds
1 1/8 - 1 3/4	5/32	14
1 15/16 - 2 1/2	3/16	25
2 11/16 - 3 1/2	1/4	55
3 11/16 - 4 1/2	5/16	120
4 15/16	3/8	180

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## Mounting Adapter Lock Units:

### Step 1: Inspect Shaft and Bore-

Shaft should be within tolerance range shown in Table III, clean and free of nicks and burrs. Mount bearings on unused section of shafting or repair/replace shafting as required. Inspect both the shaft and the adapter bore for debris or contaminants. Wipe clean as necessary.

**Notice:** Do not apply any additional lubricant (ex. Grease, oil, or anti-seize compound) to bearing tapered surfaces, bore or shafting. Bearing components have a light oil, rust preventative coating that should not be removed. Application of additional lubricant may cause reduction in bearing performance and may lead to equipment failure and/or personal injury.

**Table III**

Recommended Shaft Tolerances (Adapter Lock)	
Nominal Bore Diameter	Tolerance (inch)
1 1/8 - 2	+0.000 / -0.003
2 3/16 - 4	+0.000 / -0.004
4 7/16 - 5	+0.000 / -0.005

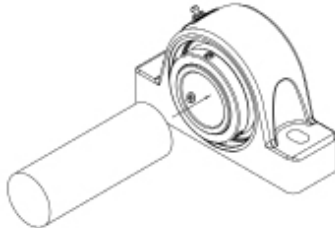
### Step 2: Check Support Surfaces:

Make sure the base of the housing and the support surfaces are clean and free from burrs. If the housing elevation is adjusted with shims these must cover the entire contact area between the housing and the support surface.

### Step 3: Install Unit:

**Notice:** One expansion unit is to be used in conjunction with one non-expansion unit for applications using an adapter lock unit. Failure to utilize one expansion and one non-expansion unit is likely to result in reduced bearing performance.

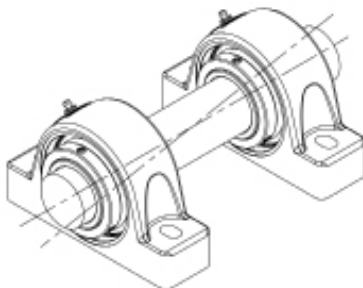
To aid installation, keep weight off bearing during mounting. Slide unit onto the shaft by pushing on the inner ring. If it is difficult to mount bearing on shaft, use a piece of emery cloth to reduce any high spots on the shaft.



### Step 4: Fasten Unit In Place:

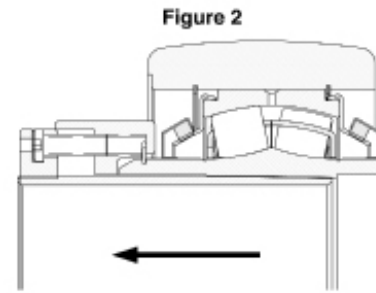
Install housing mounting bolts and check bearing alignment. Align the bearing units as closely as possible.

Tighten mounting bolts to recommended fastener torques. Check the shaft for freedom of rotation by rotating shaft with hand in both directions.



### Step 5: Position Insert:

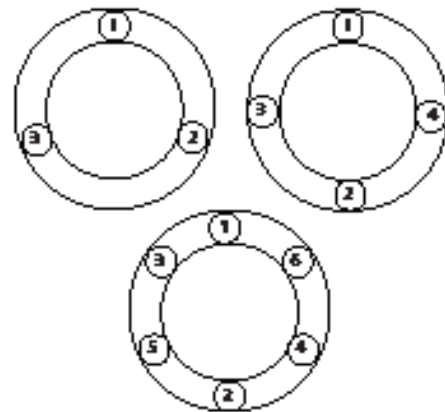
Expansion inserts must be located in the housing. If the direction of shaft growth is in the direction seen in Figure 2, align the insert as shown. If the direction of shaft growth is opposite to that shown in Figure 2, center the insert in the housing.



### Step 6: Shaft Lock:

Tighten the cap screws in the specified order as seen in Figure 3. Continue tightening until all cap screws have become snug. Using a torque wrench, tighten each cap screw to one half of the appropriate torque value in Table IV. In the same order, repeat the procedure tightening each cap screw to the full appropriate value. Once complete, follow the same pattern and verify each cap screw has met the appropriate torque value and all cap screws have achieved equivalent resistance. Repeat step 6 for other bearing(s). Rotate the shaft by hand to check for freedom of rotation.

**Figure 3**



**Table IV**

Adapter Lock Cap Screw Information			
Bore Size	Torque (inch - Pounds)	Hex Size	# Cap Screws
1 1/8 - 1 1/2	45	1/8	3
1 11/16 - 1 3/4	40	1/8	3
1 15/16 - 2	30	1/8	3
2 3/16	45	1/8	3
2 7/16 - 2 1/2	60	1/8	4
2 11/16 - 3	55	1/8	4
3 3/16 - 3 1/2	80	3/16	4
3 11/16 - 4	80	3/16	4
4 7/16 - 4 1/2	115	3/16	4
4 15/16 - 5	130	3/16	6

## Replacing Existing Sealmaster Inserts:

### Step 1: Remove Bearing from Shaft:

Remove housing mounting bolts. For set screw units, loosen the set screws and slide the bearing off the shaft. For adapter lock units, loosen cap screws in the specified order as seen in Figure 3 and slide the bearing off the shaft.

### Step 2: Remove Bearing:

Carefully remove retaining ring and spacer (non-expansion units) from housing bore. Clean rings before reuse. Remove insert from housing.

### Step 3: Inspect Shaft and Bore:

Shaft should be within tolerance range, clean and free of nicks and burrs. Mount bearings on unused section of shafting or repair/replace shafting as required. Inspect both the shaft and the bearing bore for debris or contaminants. Also be sure to inspect the housing bore and the stabilizing ring. Wipe clean as necessary.

### Step 4: Load New Insert:

Slide the bearing into the housing.

### Step 5: Secure Bearing in Housing:

Be sure to check the bearing inserts for proper alignment. Align the bearing.

Replace spacer into housing (nonexpansion units only). Install retaining rings into the grooves in the housing bore.

### Step 6: Refer to the Previous Installation Sections for the Respective Shaft Locking Mechanism

## Pre-Mounting Checklist:

### Lubrication:

All Sealmaster Spherical Roller Bearings are delivered with a high quality lithium complex base grease with an EP additive. The bearing is ready for use with no initial lubrication required. The grease is a lithium complex base, mineral oil, NLGI grade 2 consistency, with a base oil viscosity of ISO VG 220.

Compatibility of grease is critical; therefore consult with Sealmaster Application Engineering and your grease supplier to insure greases are compatible. For best performance it is recommended to relubricate with lithium complex thickened grease with a comparable NLGI consistency and base oil viscosity.

Relubricatable Sealmaster bearings are supplied with grease fittings or zerks for ease of lubrication with hand or automatic grease guns. Always wipe the fitting and grease nozzle clean.

**Notice:** If possible, it is recommended to lubricate the bearing while rotating, until grease purge is seen from the seals. If this is not an option due to safety reasons, follow the alternate lubrication procedure below.

### Alternate Lubrication Procedure:

Stop rotating equipment. Add one half the recommended amount shown in Table VI. Start the bearing and run for a few minutes. Stop bearing and add the second half of the recommended amount. A temperature rise after lubrication, sometimes 30°F (17°C), is normal. Bearing should operate at temperatures less than 200°F (94°C) and should not exceed 250°F (121°C) for intermittent operation. For lubrication guides, see Tables VII and VIII.

**Notice:** Tables VI & VII are general recommendations. Experience and testing may be required for specific applications.

Table V

Grease Charge for Relubrication	
Shaft Size (Inches)	Grease Charge (Ounces)
1 1/8 - 1 1/2	0.20
1 11/16 - 1 3/4	0.20
1 15/16 - 2	0.25
2 3/16	0.40
2 7/16 - 2 1/2	0.60
2 11/16 - 3	0.75
3 3/16 - 3 1/2	1.25
3 11/16 - 4	2.00
4 7/16 - 4 1/2	2.75
4 15/16 - 5	6.00

Table VI

Relubrication Recommendations				
Environment	Temperature (°F)	Speed (% Catalog Max)	Frequency	
Dirty	-20 to 250	0 - 100 %	Daily to 1 week	
		0 - 25%	4 to 10 months	
Clean	-20 to 125	26 - 50%	1 to 4 months	
		51 - 75%	1 week to 1 month	
		76 - 100%	Daily to 1 week	
		0 - 25%	2 to 6 weeks	
	125 to 175	26 - 50%	1 week to 1 month	
		51 - 75%	Daily to 1 week	
		76 - 100%	Daily to 1 week	
		0 - 100 %	Daily to 1 week	
		175 to 250	0 - 100 %	Daily to 1 week

Table VII

Maximum Operational Speed		
Bore Size	Felt Seal (RPM)	Contact Seal (RPM)
1 1/8 - 1 1/2	4000	3000
1 11/16 - 1 3/4	4000	2750
1 15/16 - 2	4000	2500
2 3/16	3750	2200
2 7/16 - 2 1/2	3250	1750
2 11/16 - 3	3000	1600
3 3/16 - 3 1/2	2500	1350
3 11/16 - 4	2250	1200
4 7/16 - 4 1/2	2000	1100
4 15/16 - 5	1750	900

### Expansion Bearing Applications:

Before installation, make certain proper expansion is accounted for. Expansion units should be placed in a location where relative movement between the bearing insert and the housing can be tolerated. For most applications using expansion type units, the fixed unit (non-expansion unit) is placed at the drive end of the shaft. Use Table VIII to review the total available bearing expansion. If the application requires additional expansion, consult engineering.

**Notice:** One expansion unit must be used in conjunction with one non-expansion unit for applications using an adapter lock unit. Failure to utilize one expansion and one non-expansion unit is likely to result in reduced bearing performance.

Table VIII

Total Available Housing Expansion		
Nominal Shaft Diameter	Setscrew	Adapter Lock
1 1/8 - 1 1/2	3/16"	5/32"
1 11/16 - 3 1/2	1/4"	7/32"
3 11/16 - 4	5/16"	1/4"
4 7/16 - 5	3/8"	9/32"

**NOTES:**

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