



TA/DV Series, Blue Brute Bearing Installation Guide

Choose one of the three following methods for installing your bearing(s) depending on your situation. QM Bearings recommends the Axial Drive-Up Method for most applications. If your application is not as critical, the more simple Tang Counting Method is fine. For the most precise installation, use the Internal Clearance Reduction Method.

Axial Drive-Up Method:

1. Clean all components of any debris and apply a thin oil film to all mating surfaces to ensure proper seating.
2. If using an open-end cover, slide open-end cover/seal combination into position on shaft.
3. Slide the adapter sleeve into position on the shaft, then put the bearing unit into place on the adapter sleeve.
4. Put the lockwasher on and thread the locknut onto the adapter sleeve, leaving approximately 1/4" between the lockwasher and the inner ring of bearing.
5. Use a large screw driver or pry bar to lever the sleeve into position until there is no relative movement between the shaft, the adapter sleeve, and the bearing's inner ring.
6. Rotate the locknut until hand tight.
7. Tighten the locknut while using a dial indicator to measure the axial movement of the tapered adapter sleeve relative to the bearing's inner ring (see Table 1).
8. Bend a tang on the lockwasher into a slot on the locknut to prevent the locknut from loosening.

TABLE 1. Axial Movement of Tapered Adapter Sleeve Relative to Inner Ring (in)

Shaft Size	Bearing Number	Minimum Axial Movement	Maximum Axial Movement
1-15/16" 2"	50mm 22211	.018	.022
2-3/16" 2-1/4"	60mm 22213	.018	.022
2-7/16" 2-1/2"	65mm 22215	.025	.030
2-15/16" 3"	75mm 22217	.027	.038
3-7/16" 3-1/2"	90mm 22220	.027	.038
3-15/16" 4"	100mm 22222	.030	.042
4-7/16" 4-1/2"	115mm 22226	.035	.050

9. If using covers:

- a. Make sure mating surface of cover is clean and dry.
- b. Using sandpaper, slightly roughen the mating surface of the cover.
- c. Place a 1/8" - 1/4" bead of polyurethane adhesive sealant on mating surface of the cover.
- d. Start two tabs of the cover into the cover slots on bearing making sure that the grease fitting on the cover is accessible
- e. Using a deadblow hammer, drive the remaining tabs into place to lock the cover onto the bearing.

Tang Counting Method:

1. Clean all components of any debris and apply a thin oil film to all mating surfaces to ensure proper seating.
2. If using an open-end cover, slide open-end cover/seal combination into position on shaft.
3. Slide the adapter sleeve into correct position on the shaft, then put the bearing unit into place on the adapter sleeve.
4. Put the lockwasher on and thread the locknut onto the adapter sleeve, leaving approximately 1/4" between lockwasher and inner ring of bearing.
5. Use a large screw driver or pry bar to lever the sleeve into position until there is no relative movement between the shaft, the adapter sleeve, and the bearing's inner ring.
6. Rotate the locknut until hand tight.
7. Note which tang is in line with one slot on the locknut.
8. Tighten locknut until the slot on the locknut passes the number of tangs shown on Table 2.
9. Bend a tang on the lockwasher into a slot on the locknut to prevent the locknut from loosening.

TABLE 2. Number of Tangs to Locking

Shaft Size	Bearing Number	Number of Tangs	
1-15/16" 2"	50mm	22211	4-5
2-3/16" 2-1/4"	60mm	22213	4-5
2-7/16" 2-1/2"	65mm	22215	5-6
2-15/16" 3"	75mm	22217	8-9
3-7/16" 3-1/2"	90mm	22220	8-9
3-15/16" 4"	100mm	22222	10-11
4-7/16" 4-1/2"	115mm	22226	10-11

10. If using covers:
 - a. Make sure mating surface of cover is clean and dry.
 - b. Using sandpaper, slightly roughen the mating surface of the cover.
 - c. Place a 1/8" - 1/4" bead of polyurethane adhesive sealant on mating surface of the cover.
 - d. Start two tabs of the cover into the cover slots on bearing making sure that the grease fitting on the cover is accessible
 - e. Using a deadblow hammer, drive the remaining tabs into place to lock the cover onto the bearing.

Internal Clearance Reduction Method (*Note – requires new seal to complete installation*):

This method of installation measures the amount of internal clearance in the bearing while tightening it to the shaft to determine how much to tighten it. The clearance is always the distance between the bearing's outer raceway and roller on an unloaded roller or rollers located opposite the load zone in the bearing.

1. Clean all components of any debris and apply a thin oil film to all mating surfaces to ensure proper seating.
2. If using an open-end cover, slide open-end cover/seal combination into position on shaft.
3. Slide the adapter sleeve into position on the shaft, then put the bearing unit into place on the adapter sleeve.
4. Remove the retaining nut and the seal to access the rollers behind them.
5. Rotate the bearing a few revolutions to ensure the rollers are in their normal running pathway.
6. Lightly press the rollers toward the centerline of the bearing, and then slide a feeler gauge between the roller and outer raceway.
7. Tighten the locknut until clearance falls into range shown on Table 3.
8. Bend a tang on the lockwasher into a slot on the locknut.
9. Install a new seal in housing and replace the retaining nut when the clearance has been set.
10. If using covers:
 - a. Make sure mating surface of cover is clean and dry.
 - b. Using sandpaper, slightly roughen the mating surface of the cover.
 - c. Place a 1/8" - 1/4" bead of polyurethane adhesive sealant on mating surface of the cover.
 - d. Start two tabs of the cover into the cover slots on bearing making sure that the grease fitting on the cover is accessible
 - e. Using a deadblow hammer, drive the remaining tabs into place to lock the cover onto the bearing.

Pillow Block vs. Flange Block Housing

Procedures for measuring internal clearance are slightly different between pillow block housings and flange block housings:

Blue Brute TA/DV pillow blocks are assembled so that the nut on the sleeve-nut-washer assembly is opposite the housing retaining nut in the housing. This makes it possible to replace the seal and housing retaining nut with the nut and washer in position.

Blue Brute TA/DV flange blocks are assembled so that the nut on the sleeve-nut-washer assembly is on the same side as the housing retaining nut. When using a flange block, the location of the nut relative to the sleeve should be marked once the proper clearance is achieved. Then the washer and nut must be removed to allow the seal and housing retaining nut to be installed. Tighten nut and washer back to the position where the internal clearance was measured and determined to be correct once the seal and housing nut have been replaced.

TABLE 3. Radial Internal Clearance of Spherical Bearings with Tapered Bore (in)

Shaft Size	Bearing Number	Radial Internal Clearance Prior to Mounting		Reduction of Radial Internal Clearance		Minimum Radial Internal Clearance After Installation
		Minimum	Maximum	Minimum	Maximum	
1-15/16" 2"	50mm 22211	.0030	.0037	.0012	.0015	.0015
2-3/16" 2-1/4"	60mm 22213	.0030	.0037	.0012	.0015	.0015
2-7/16" 2-1/2"	65mm 22215	.0037	.0047	.0015	.0020	.0017
2-15/16" 3"	75mm 22217	.0043	.0055	.0018	.0025	.0020
3-7/16" 3-1/2"	90mm 22220	.0043	.0055	.0018	.0025	.0020
3-15/16" 4"	100mm 22222	.0053	.0067	.0020	.0028	.0025
4-7/16" 4-1/2"	115mm 22226	.0063	.0079	.0025	.0035	.0030

Suggested Lubrication for Bearings

QM Bearings is dedicated to using the highest quality components in everything we do; this is why we use Dow Corning Molykote® G4700 grease. It is a lithium complex extreme pressure synthetic grease that combines the benefits of wide operating temperatures and broad compatibility with varied materials. This grease offers excellent thermal stability through temperatures ranging from -40 F/C to 350 F (177 C). When dealing with extremely high temperature applications, consult a QM Bearings Customer Service Specialist for optional grease recommendations. QM Bearing's Blue Brute bearings are factory lubricated and are ready for use without additional lubrication. Re-lubrication intervals noted below in Table 3 depend on the type of application, speed, operating temperature and other environmental conditions. Knowledge of a particular application will determine the best re-lubrication interval but use the intervals shown below for general purposes.

TABLE 4. Re-Lubrication Intervals (Please note: The average manual grease gun will produce approximately 1 ounce of grease per 33 strokes. Please check with the manufacturer of your grease delivery system for specific information.)

Shaft Size	Bearing Number	Initial Weight (oz)	Relubrication Weight (oz)	Relubrication Interval (Hours of Service Based On RPM and Temperature)											
				100 RPM		250 RPM		500 RPM		1000 RPM		2000 RPM		3000 RPM	
				<160°	>160°	<160°	>160°	<160°	>160°	<160°	>160°	<160°	>160°	<160°	>160°
1-15/16" 2"	50mm 22211	1.0	0.3	1200	600	800	400	440	220	160	80	100	50	60	30
2-3/16" 2-1/4"	60mm 22213	1.4	0.4	1120	560	720	360	360	180	120	60	80	40	40	20
2-7/16" 2-1/2"	65mm 22215	2.7	0.7	1040	520	680	340	340	170	100	50	60	30		
2-15/16" 3"	75mm 22217	3.4	0.9	1000	500	640	320	320	160	100	50	60	30		
3-7/16" 3-1/2"	90mm 22220	6.5	1.6	840	420	520	260	240	120	60	30				
3-15/16" 4"	100mm 22222	7.4	1.9	680	340	440	220	200	100	60	30				
4-7/16" 4-1/2"	115mm 22226	12.0	3.0	600	300	360	180	160	80	40	20				

How to Convert a Blue Brute Bearing from Fixed to Expansion (floating)**Flange Cartridge & Flange Block**

1. Make a reference mark on the housing and retaining nut.
2. Loosen teflon tipped set screw that locks the retaining nut in place.
3. Loosen retaining nut by tapping with a hammer and punch, rotating retaining nut counter clockwise one complete revolution.
4. Tighten teflon tipped set screw.

***Please note:** When converting a Blue Brute bearing from fixed to expansion, it is imperative that the unit to be converted to expansion is oriented correctly. Since the insert in a Blue Brute flange bearing is held against either a shoulder or snap ring opposite the housing retaining nut, a flange bearing that has been converted to expansion can only float in the direction of the retaining nut. Based on this the retaining nut must be on the side of the housing opposite the fixed bearing.*

Pillow Block

1. Decide amount and direction of expansion needed. If uni-directional expansion is required, follow directions as outlined above for flange bearings on the nut that is on the side you want the expansion.
2. If multi-directional expansion is required follow the directions as outlined above for flange bearings on both nuts except the rotation should be one-half a revolution on each nut instead of one complete revolution.

How to Convert a Blue Brute Bearing from Expansion (floating) to Fixed**Flange Cartridge & Flange Block**

1. Loosen teflon tipped set screw that locks the retaining nut in place.
2. Tighten retaining nut by tapping with a hammer and punch, rotating retaining nut clockwise until tight. It is not possible to over-tighten the retaining nut.
3. Tighten teflon tipped set screw.

Pillow Block

1. Follow directions above for Flange bearings on both nuts on either side of the housing. If the bearing originally came from the factory as expansion, only one nut will have been rotated out and it will be stamped with an “E” for identification purposes.

***Please Note:** When converting a Blue Brute from expansion to fixed on a bearing that is mounted, the locking collar set screws must be released to allow the insert to move both in the housing and on the shaft.*

North American Locations: Western Canada – Prince George, BC Eastern Canada – Mississauga, ON Western US – Ferndale, WA Southern US – Irving, TX Eastern US – Cuyahoga Falls, OH

QM Bearings designs, manufactures and markets rugged Blue Brute® bearings, Quick-Flex® couplings and rigid compression couplings. The company's precise manufacturing methods and innovative solutions have won over thousands of customers in over 40 countries. For more information, visit www.qmbearings.com for the distributor nearest you or call (800) 661-5568 or (360) 384-6673.