

## INSTALLING LOAD BEARING ROLLER ASSEMBLIES

### PRE-LOADING CONDITION

PCI rollers are designed to prevent the application of pre-load to the assembly when properly installed. Pre-loading occurs when a load is applied to bearings during installation. This pre-load can be either radial, axial, or a combination of both. Over-torquing the jam nut can result in axial preloading of the bearing, and/or lead to stud deformation or breakage. Additionally, eccentric studs or yoke shafts, when adjusting alignment, can cause a radial pre-loaded condition. Bearings subjected to pre-loading become difficult to rotate and have a shorter working life. It's advisable to avoid pre-loading whenever possible, and the resulting pre-load should never exceed 10% of the bearing's dynamic capacity.

### TORQUE

When mounting rollers, do not exceed the maximum torque capacity or damage may occur. Maximum torque capacities are listed on item specification pages for units with dry threads. Decrease the listed torque by half if threads are lubricated.

### STUD MOUNTING

Through-hole mounting holes should be machined to the nominal stud size with a  $+.001"/-.000"$  ( $+.025\text{mm} / -.000\text{mm}$ ) tolerance. When properly aligned, the stud of the roller should slip into the mounting rail. Do not force the stud into the mounting hole or damage may occur. Be sure that the mounting rail surface is as large as the Shoulder Diameter (SD) of the roller and is of sufficient thickness to support the applied loads as well as provide positive clamping force once installed. Blind mounting is used when traditional through-hole mounting is not available. Fully threaded studs/mounting holes are recommended. The face of the Shoulder Length (SL) should rest flush against the mounting rail.

### YOKE MOUNTING

In applications where the roller is being mounted between two mounting rails, the rails should be spaced  $1/32"$  or  $0.031"$  wider than the stated inner race width (T) of the roller. The mounting rail should be at least as large in diameter as the Shoulder Diameter (SD) and of sufficient thickness to support the applied loads. In instances where a yoke roller is mounted on a shaft built into a carriage frame or trolley assembly, the inner race needs to be retained by positive clamping force. The use of retaining rings or keeper clips is not recommended, as they do not supply enough clamping force to immobilize the inner race. The inner race of yoke rollers must be immobilized and not allowed to rotate on the shaft. The bore of a yoke roller is designed to have a close slip fit on the shaft they are mounted on. Forcing the roller on the shaft or failure to immobilize the inner race may result in undesirable performance and/or failure of the unit.

### ADJUSTING ECCENTRIC ASSEMBLIES

Eccentric rollers are used when there is a need to make height adjustments between the roller and the track. To adjust the height or offset, simply rotate the stud while the Eccentric Diameter (ED) is installed in the mounting rail. This allows for easier refits and realignments.

When adjusting the roller, adjustments that result in a pre-loading condition on the bearing should be avoided if possible. If your application requires the bearing to be pre-loaded upon adjustment, please call PCI Customer Service for assistance to avoid premature failure.

### CHANNEL & I-BEAM

PCI Channel & I-Beam rollers have a profile designed to fit inside of C-Channel and I-Beam structural steel members. These rollers use the webbing of the structural member as their track. PCI's  $9.5^\circ$  taper design fits in C-Channel & I-Beam members manufactured to AISI standards. When sizing the roller to the size of channel, a good rule of thumb is the nominal size of roller is meant to fit inside that same nominal size of channel or beam. It is important to note that not all webbing from channel and beam manufacturers is the same. It is best to make sure the roller profile fits the channel during the design process to ensure proper fit.

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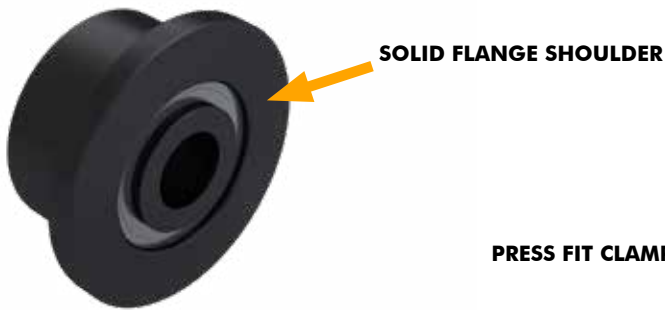
### TRACK ROLLER ALIGNMENT – FLANGE, DOUBLE FLANGE, U-GROOVE, AND V-GROOVE PROFILES

Flange (single or double), U-Groove, or V-Groove Yoke style rollers are used for precision alignment and guidance. For alignment purposes, they are engineered and assembled with a “Locational” side and a “Non-Locational” side. To identify the locational side, examine the inner race. The side with the solid shoulder is the locational side. The side with a discontinuity, or two-piece construction (a clamp ring), is the nonlocational side.

Align locational sides of multiple rollers with respect to a common reference (mounting surface, rail, etc.) to minimize tolerance stack-up and ensure feature alignment.

Note: PCI plain or crowned roller profiles can utilize either side of the roller to serve as the locational side due to their symmetrical construction.

**LOCATIONAL SIDE**



**NON-LOCATIONAL SIDE**



**CORRECT MOUNTING ALIGNMENT**



**INCORRECT MOUNTING ALIGNMENT**



## INSTALLING STUD TYPE LOAD BEARING ROLLER ASSEMBLIES

Be sure that the mounting rail surface is as large as the Shoulder Diameter (SD) of the roller and is of sufficient thickness to support the applied loads as well as provide positive clamping force once installed. The mounting hole should be machined to the nominal size of the stud within  $+.001"/-.000"$  ( $+.025\text{mm}/-.000\text{mm}$ ) tolerance. Do not force the stud into the mounting hole or damage may occur. When installing the jam nut, do not go beyond the maximum torque capacities listed on the item specification pages. The published maximum torque capacities are for dry threads. If the threads are lubricated, than decrease the value by half. A general torque capacities chart is provided below if the exact roller or shaft specification page cannot be located.

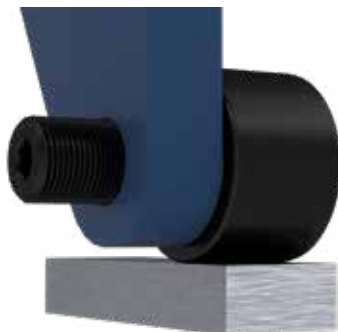
## BLIND MOUNTING IS NOT RECOMMENDED

When replacing stud type rollers that were previously blind mounted, consideration should be given to redesigning the mounting bracket to a through mount style. If blind mounting cannot be avoided, the use of a fully threaded stud is highly recommended to ensure flush seating of the Shoulder Diameter (SD) to the mounting rail. For more information on blind mounting, contact PCI Customer Service.

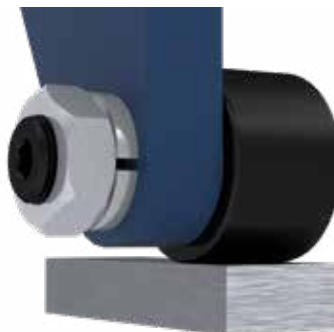
*\*Generalized Torque Requirements Chart*

STUD/SHAFT DIAMETER	DRY THREADS	LUBRICATED THREADS
UNDER 5/8" (16mm)	180 in-lbf (20 Nm)	96 in-lbf (10 Nm)
5/8" (16mm) to 1" (25mm)	600 in-lbf (68 Nm)	300 in-lbf (34 Nm)
OVER 1" (25mm)	1200 in-lbf (136 Nm)	600 in-lbf (68 Nm)

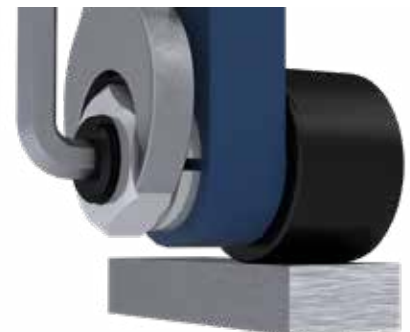
### STEP 1 MOUNT



### STEP 2 FASTEN

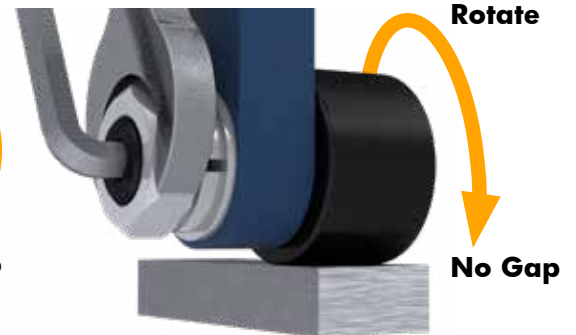


### STEP 3 TIGHTEN\*



### OPTIONAL Eccentric adjustability:

For applications requiring precision alignment within either the mounting hole, or the mating roller contact surface, use a hex wrench to rotate the eccentric stud to the desired height prior to tightening the fasteners.



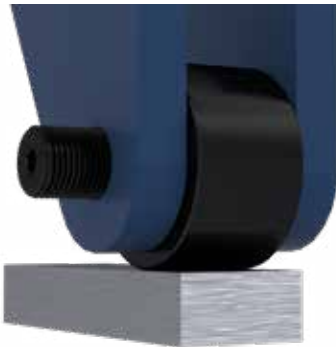
## INSTALLING YOKE TYPE LOAD BEARING ROLLER ASSEMBLIES

Be sure that the mounting rail surface is as large as the Shoulder Diameter (SD) of the roller and is of sufficient thickness to support the applied loads as well as provide positive clamping force once installed. If you are using a PCI manufactured Yoke Shaft, the mounting hole should be machined to the nominal size of the yoke shaft within  $+.001"/-.000"$  ( $+.025\text{mm}/-.000\text{mm}$ ) tolerance. Customer manufactured or non-PCI manufactured yoke shafts need to be machined to the nominal bore diameter of the roller assembly within  $+.000"/-.001"$  ( $+.000\text{mm}/-.025\text{mm}$ ) tolerance. The inner race of PCI yoke rollers needs to be immobilized and not allowed to rotate on the yoke shaft. The use of retaining rings or keeper clips is not recommend, as they do not supply enough clamping force to immobilize the inner race. Forcing the roller on the shaft or failure to immobilize the inner race may result in undesirable performance and/or failure of the unit. When installing the jam nut, do not go beyond the maximum torque capacities listed on the item specification pages. The published maximum torque capacities are for dry threads. If the threads are lubricated, than decrease the value by half. A general torque capacities chart is provided below if the exact roller or shaft specification page cannot be located.

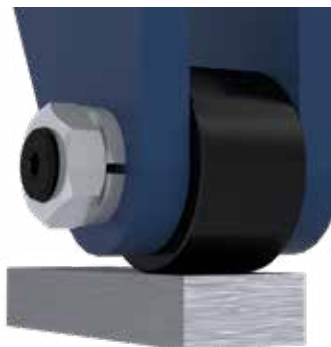
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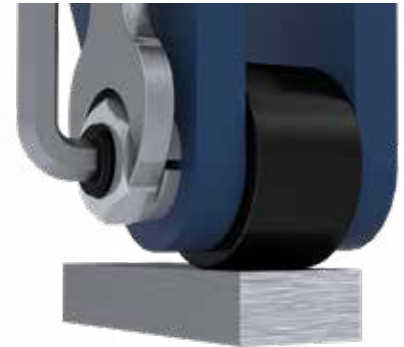
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### STEP 2 FASTEN



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