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CARTER
Bearings Are Our Business



APPLICATION AND BEST PRACTICES FOR CARTER CAM FOLLOWER BEARINGS



CONTENTS

PAGE 3 - Application Considerations

Mounting Considerations

Cam Follower Mounting Details

PAGE 4 - Cam Follower Applications

PAGE 5 - Preferred Method for Cam Follower Bearings (w/ Jam nut and Lock Washer)

PAGE 6 - Preferred Method for Cam Follower Bearings (w/ Threaded Hole)

PAGE 7 - Non-Preferred Method for Cam Follower Bearings

PAGE 8 - Best Practices for Mounting Carter Yoke Roller Bearings

Preferred Method for Yoke Roller Bearings

PAGE 9 - Non-Preferred but Acceptable Method for Yoke Roller Bearings

PAGE 10 - Non-Preferred Method for Yoke Roller Bearings

PAGE 11 - Cam Follower and Yoke Roller Lubrication Best Practices



Application Considerations

The proper selection and application of cam follower bearings, including the related area of product safety, is the responsibility of the end user. Operating and performance requirements and potential associated issues will vary appreciably depending upon the use and application of such products and components. The scope of the technical and application information included in this publication is necessarily limited. Unusual operating environments and conditions, lubrication requirements, loading supports, and other factors can materially affect the application and operating results of the products and components, and the end user should carefully review their requirements. Any technical advice or review furnished by Carter Manufacturing Co., Inc. with respect to the use of products and components is given in good faith and without charge, and Carter Manufacturing Co., Inc. assumes no obligation or liability for the advice given, or results obtained, all such advice and review being given and accepted at end user's risk.

Mounting Considerations

The following should be considered in mounting Carter Cam Follower Bearings:

- ❖ The housing that supports the cam follower stud (or the shaft on which the cam yoke roller is mounted) should be of sufficient strength to resist excessive deformation under the expected applied load.
- ❖ The face of the housing should be flat and square with the housing bore, and must have a diameter of at least that listed in the dimensional tables for proper support of the bearing endplate.
- ❖ In order to obtain the best support for the Carter Cam Follower Bearing, the chamfer on the housing bore should not exceed 0.5 mm x 45.
- ❖ When mounting stud type Carter Cam Follower bearings in a machine member, the radial lubrication hole should be located in the unloaded portion of the raceway.
- ❖ Any pressure required for installation should be applied against the solid center portion of the flanged inner stud (not on the flange perimeter), and the cam follower should be drawn up tightly by the nut so the bearing endplate(washer) is securely backed up.
- ❖ Precaution should be taken to avoid excessive torque when tightening the clamping nut; otherwise undue stress may be set up in the stud(SEE PHOTO 1-1).



PHOTO 1-1

THIS PHOTO SHOWS A CAM FOLLOWER THAT WAS TORQUED BEYOND RECOMMENDED SPECIFICATIONS.

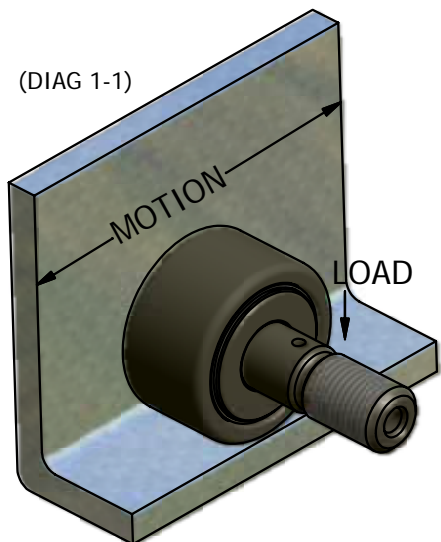
Cam Follower Mounting Details

1. The cam follower should be drawn up tightly endwise so the bearing endplate is securely backed up by the machine member.
2. A screw-driver slot is provided at the flanged end of the stud for the purpose of preventing the stud from turning when the nut is tightened. The bottom of the screw-driver slot is rounded and in some cases it may be necessary to use a special screw-driver having a rounded edge to hold the stud securely.
3. An optional hexagonal hole is provided in the stud face on selected sizes for use with applications involving bearings mounted in blind holes or with self-locking nuts requiring greater than average thread torque. In this modification, the ability to relubricate through the flange end of the stud is eliminated on sizes smaller than 3 inch outer diameter.
4. When driving the stud into the machine member, any pressure should be directed against the solid end of the stud, not against the flanged portion. This operation should be performed on an arbor press whenever possible.
5. The cam follower stud diameter should have a tight fit in the housing bore. Whenever possible follow the recommended housing bore diameters given in the dimensional tables found in the Carter Product Catalog.

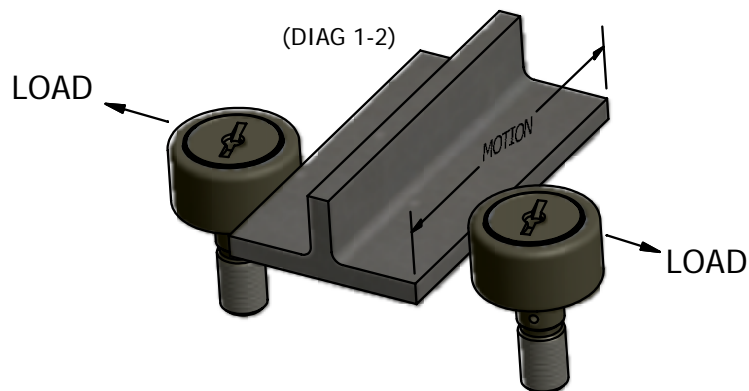


CAM FOLLOWER APPLICATIONS

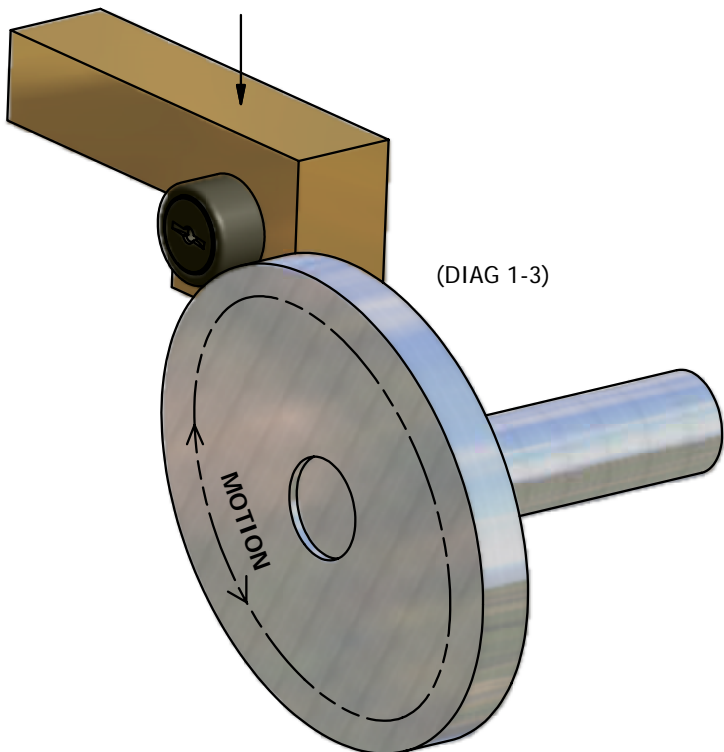
(DIAG 1-1)



(DIAG 1-2)



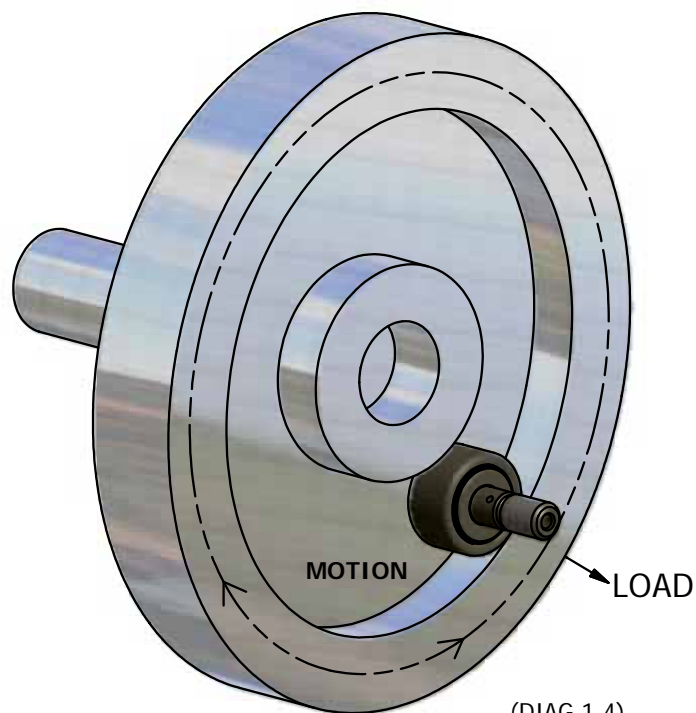
LOAD



(DIAG 1-3)

MOTION

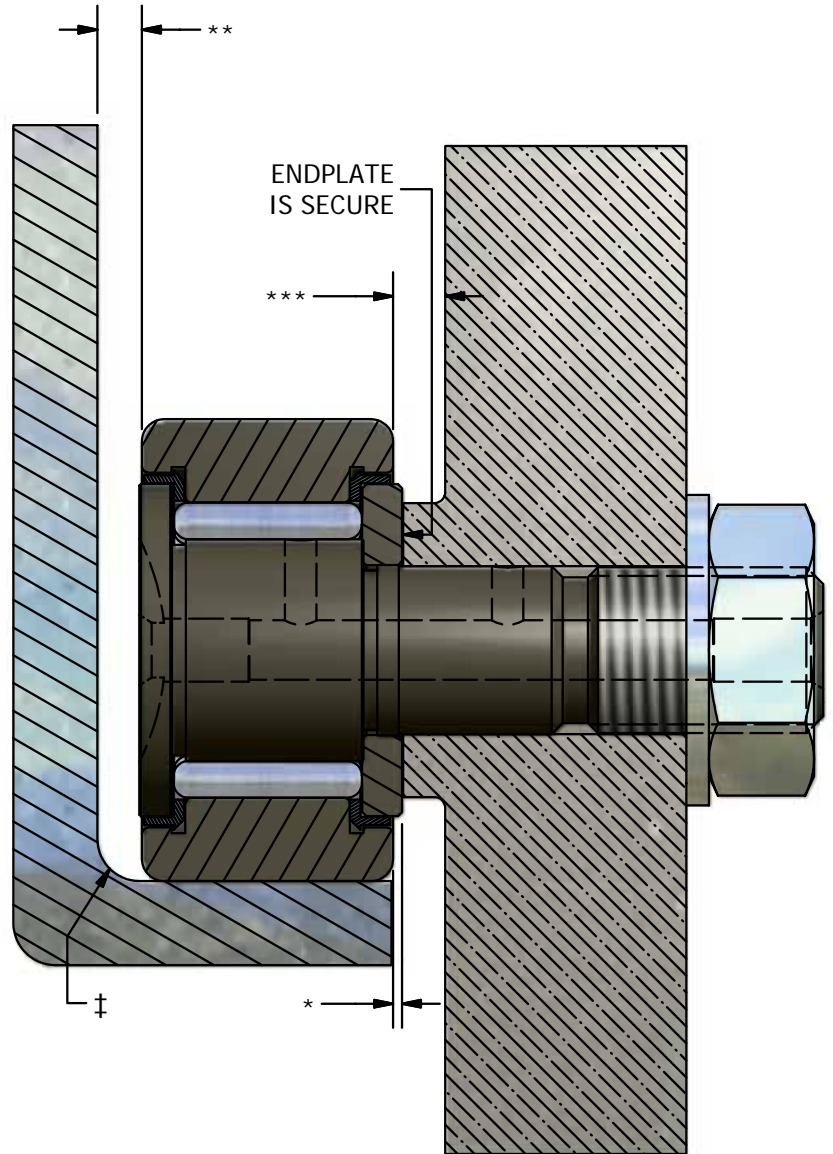
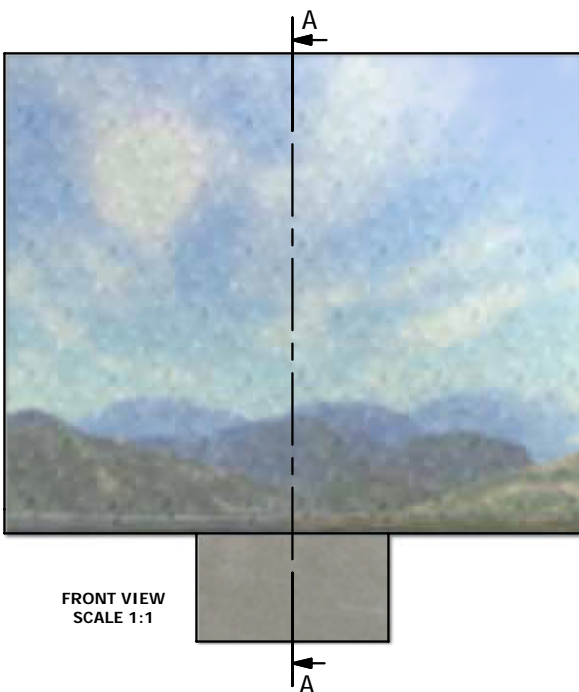
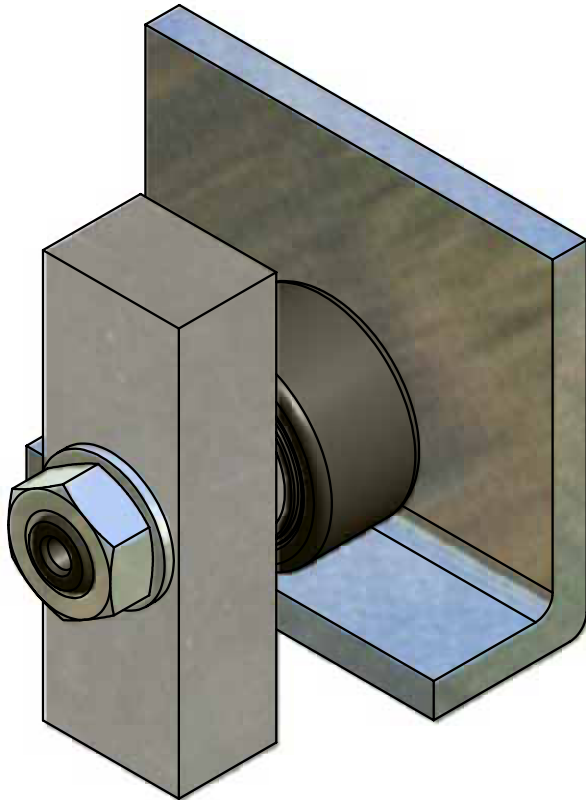
LOAD



(DIAG 1-4)



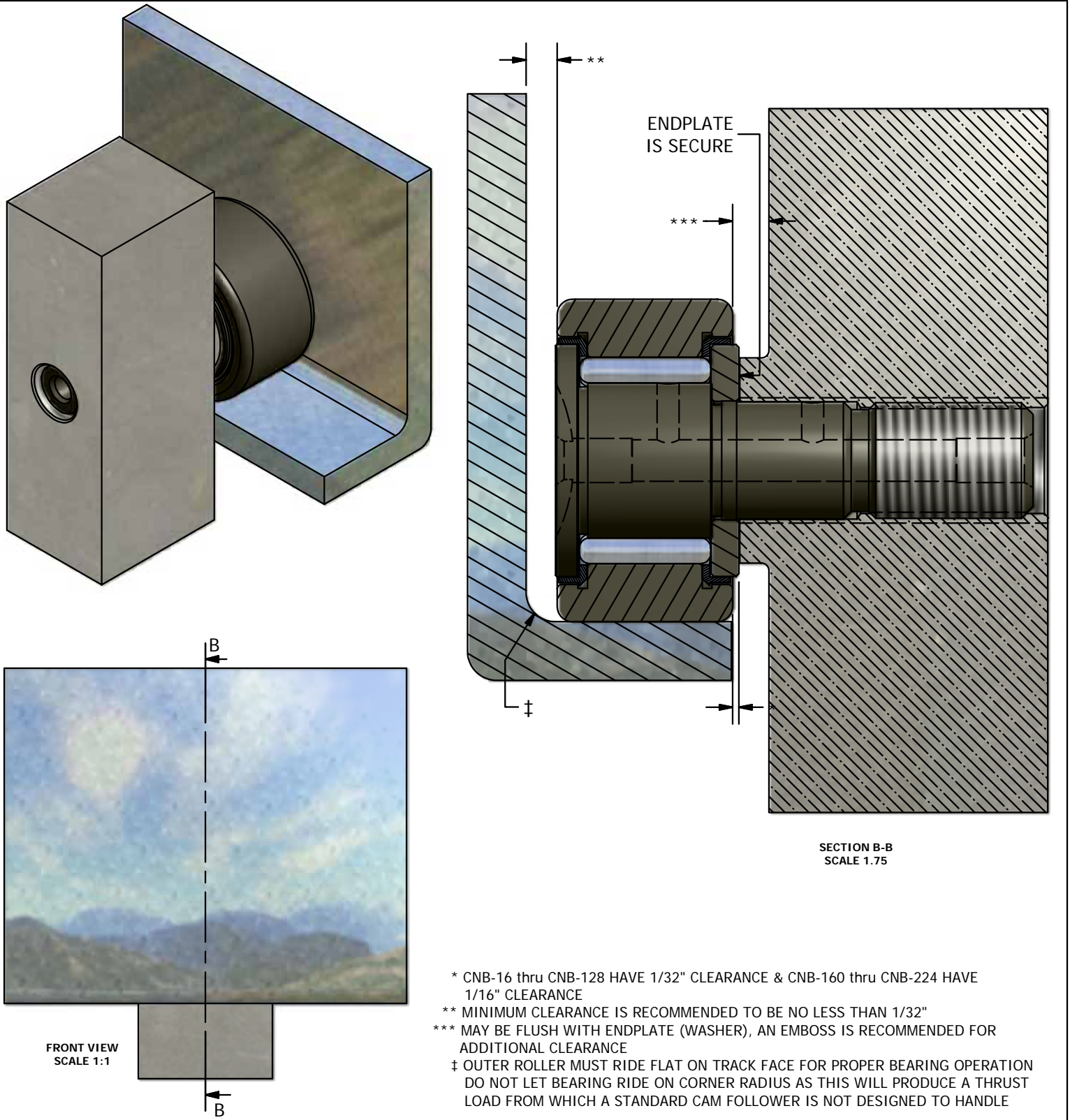
**THIS IS THE PREFERRED METHOD (W/ JAM NUT & LOCK WASHER)
TO MOUNT CARTER STUD TYPE CAM FOLLOWER BEARINGS**
(LOAD RATINGS APPLY WHEN CAM FOLLOWER IS MOUNTED AS SHOWN)



- * CNB-16 thru CNB-128 HAVE 1/32" CLEARANCE & CNB-160 thru CNB-224 HAVE 1/16" CLEARANCE
- ** MINIMUM CLEARANCE IS RECOMMENDED TO BE NO LESS THAN 1/32"
- *** MAY BE FLUSH WITH ENDPLATE (WASHER), AN EMBOSS IS RECOMMENDED FOR ADDITIONAL CLEARANCE
- † OUTER ROLLER MUST RIDE FLUSH ON TRACK FACE FOR PROPER BEARING OPERATION DO NOT LET BEARING RIDE ON CORNER RADIUS AS THIS WILL PRODUCE A THRUST LOAD THAT A STANDARD CAM FOLLOWER IS NOT DESIGNED TO HANDLE

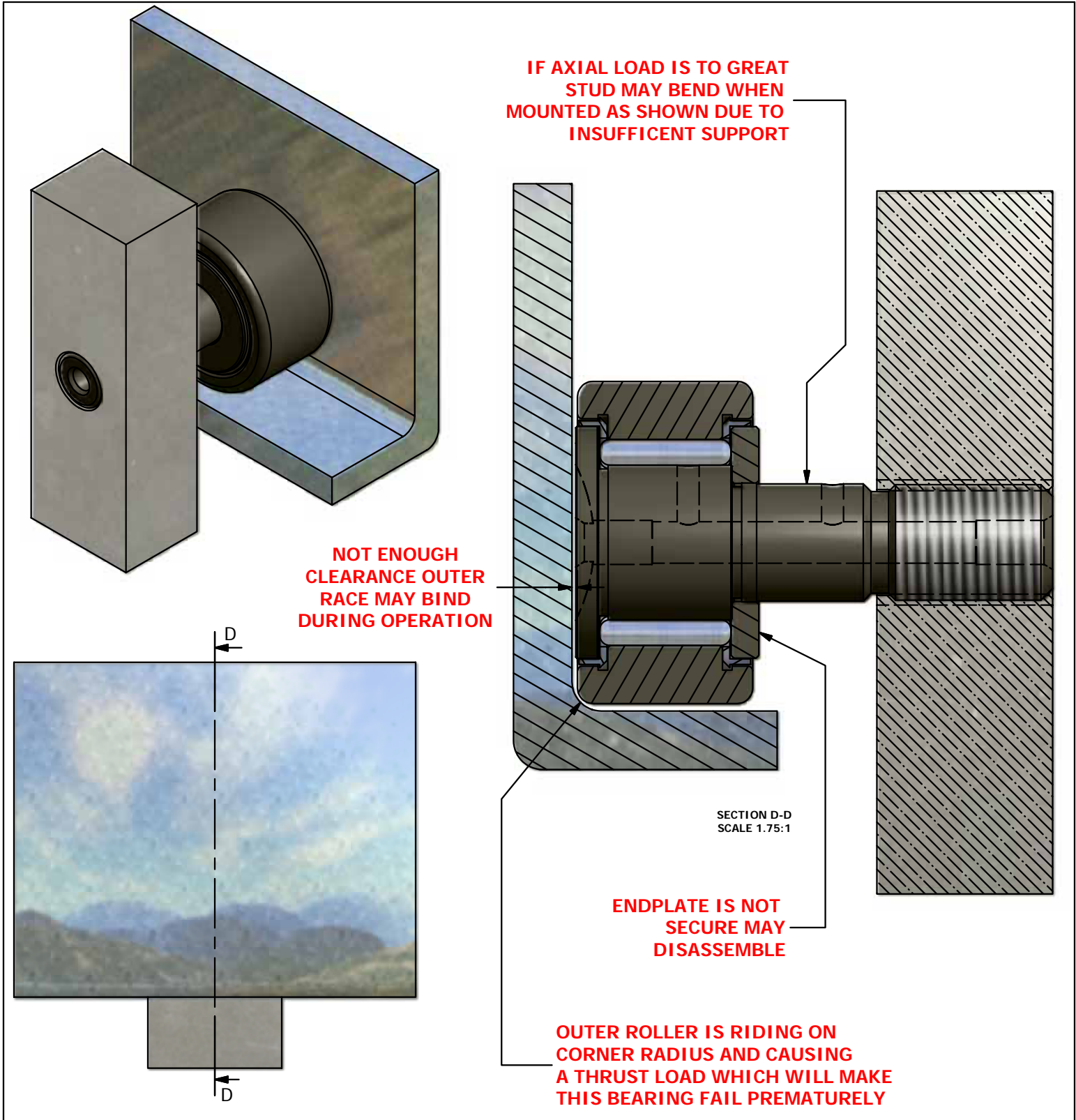


**THIS IS THE PREFERRED METHOD (W/ THREADED HOLE)
TO MOUNT CARTER STUD TYPE CAM FOLLOWER BEARINGS**
(LOAD RATINGS APPLY WHEN CAM FOLLOWER IS MOUNTED AS SHOWN)





**THIS IS THE NON-PREFERED WAY (W/ THREADED HOLE)
TO MOUNT CARTER STUD TYPE CAM FOLLOWER BEARINGS**
(LOAD RATINGS DO NOT APPLY WHEN CAM FOLLOWER IS MOUNTED AS SHOWN)



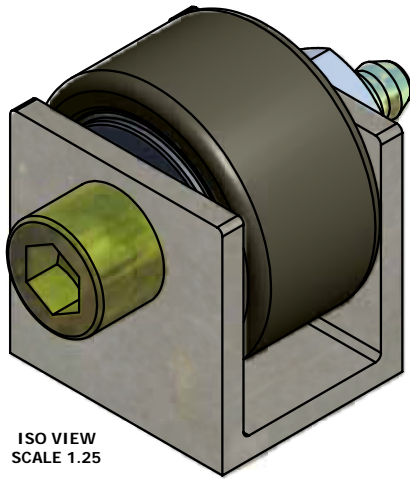


BEST PRACTICES FOR MOUNTING CARTER YOKE ROLLERS

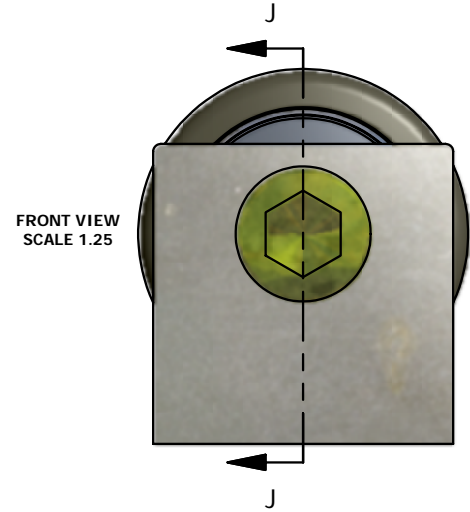
The illustrations below show an example of the recommended method to mount a yoke roller. Both sides of the assembly are supported and a full axial load is allowed per assembly size and specified load limits. In addition both endplates are secured and will not disassemble.

THIS IS THE PREFERRED METHOD TO MOUNT YOKE ROLLERS

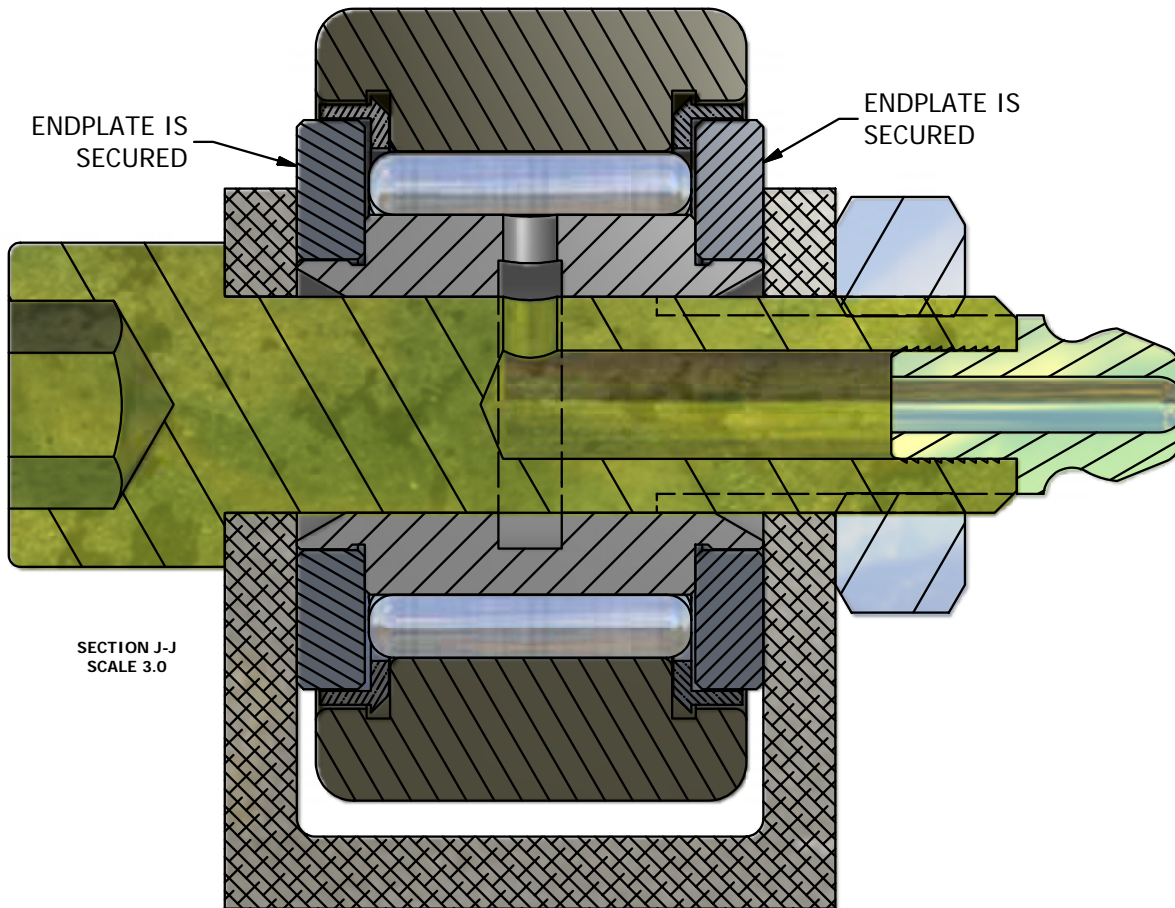
(LOAD RATINGS APPLY WHEN YOKE ROLLER IS MOUNTD AS SHOWN)



ISO VIEW
SCALE 1.25



FRONT VIEW
SCALE 1.25



SECTION J-J
SCALE 3.0

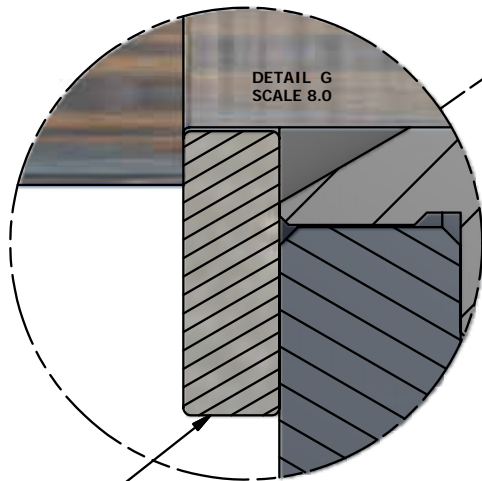
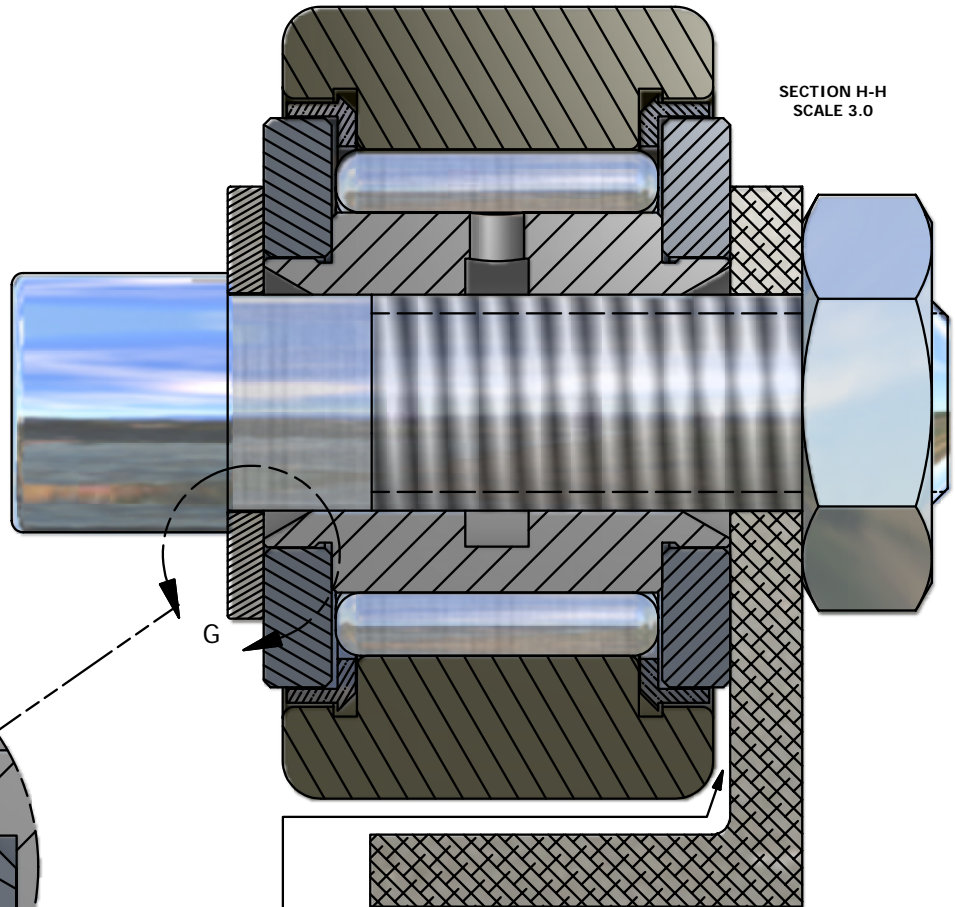
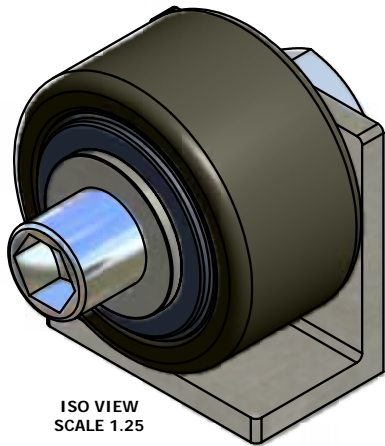
BEST PRACTICES FOR MOUNTING CARTER YOKE ROLLERS (CONT.)

The illustrations below show an example of an acceptable method a yoke roller may be mounted if it is not possible to clamp the bearing endwise. If the radial load is too great when mounted as shown the bearing can tip and bind. Even though this is an acceptable method to mount the yoke roller bearing it is not recommended or encouraged. Page 3 shows the correct and recommended method to mount a yoke roller. A cam follower with a stem (CNB) is preferred for use in this application.



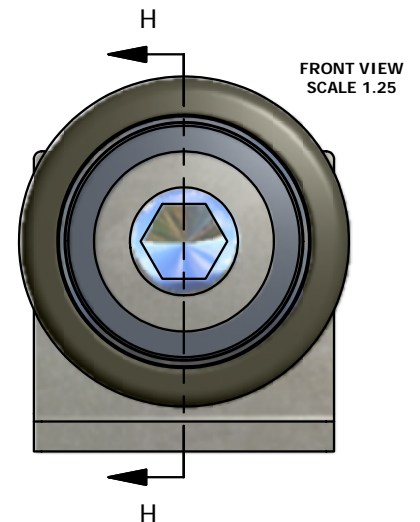
THIS IS THE NON-PREFERED BUT ACCEPTABLE WAY TO MOUNT YOKE ROLLERS

(WHEN YOKE ROLLER IS MOUNTED AS SHOWN LOAD RATINGS DO NOT APPLY)



WHEN YOKE ROLLER IS MOUNTED FROM ONLY ONE SIDE, BEARING ASSEMBLY MAY TIP AND BIND HERE IF RADIAL LOAD IS TOO GREAT

THE ADDITION OF A FLAT WASHER SECURES THE ENDPLATE FROM DISASSEMBLY



BEST PRACTICES FOR MOUNTING CARTER YOKE ROLLERS (CONT.)

For heavily loaded applications, the ideal mounting arrangement is to have a drive or press fit in the bore of the inner ring, the bearing clamped endways over the endplates and the shaft hardened.

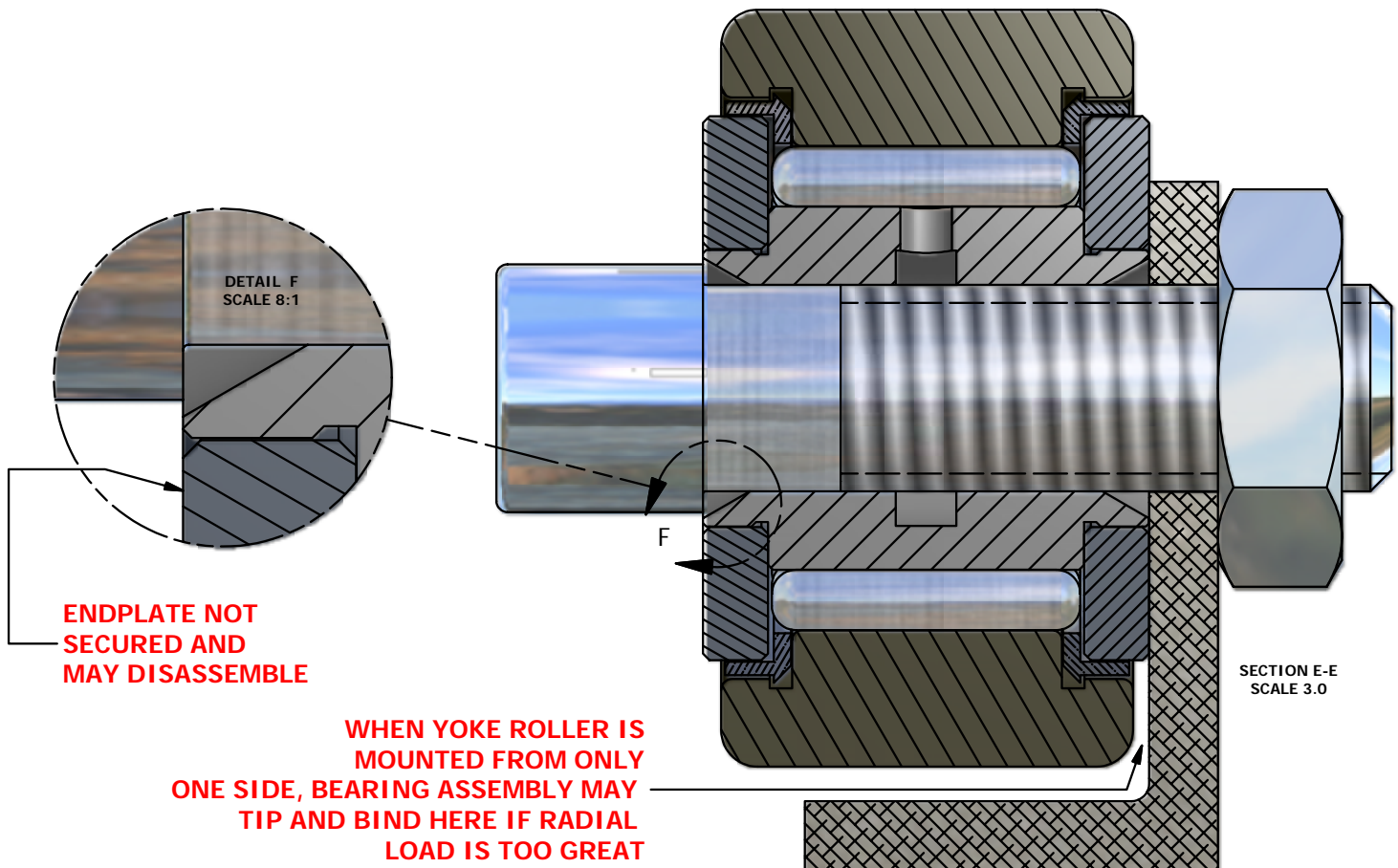
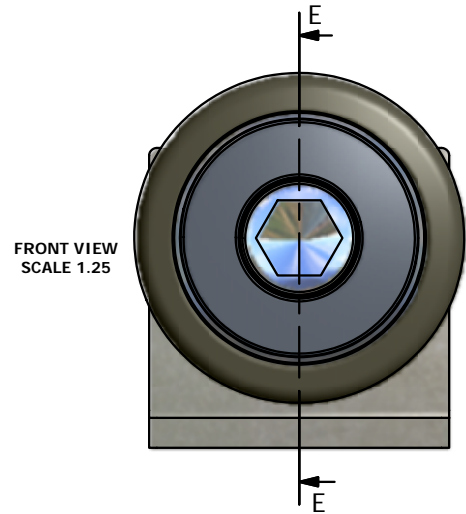
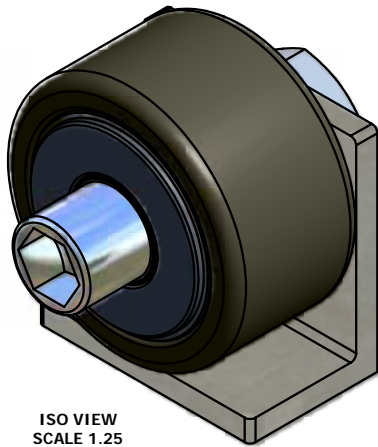
If the load requirement is moderate a push fit may be used and the shaft may not need to be hardened.

If it is not possible to clamp the bearing endwise, it is essential to have a close fit axially on the yoke in which the bearing is mounted. This is to prevent the bearing end plates displacing axially.



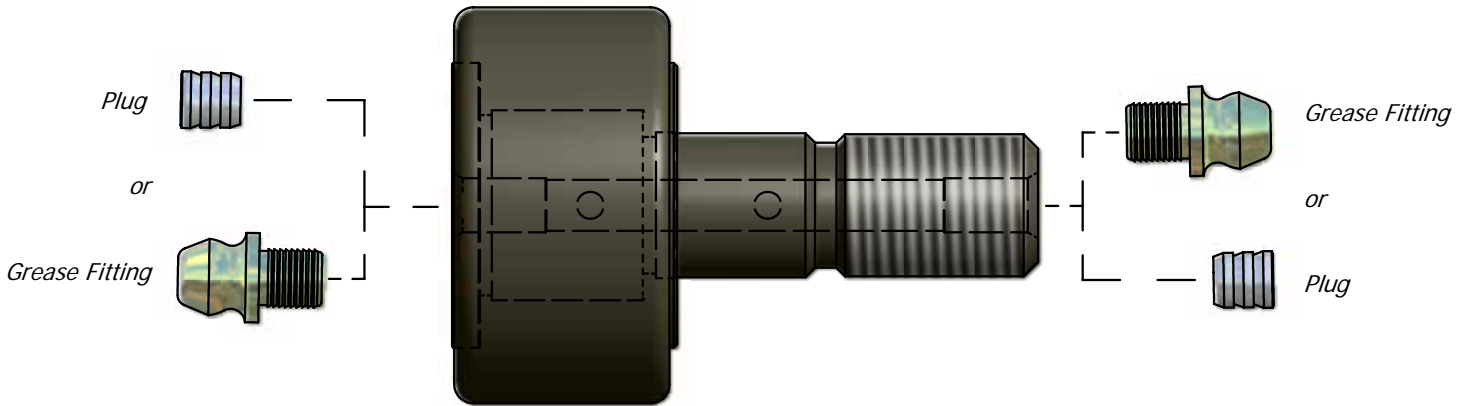
THIS IS THE NON-PREFERRED METHOD TO MOUNT YOKE ROLLERS

(WHEN YOKE ROLLER IS MOUNTED AS SHOWN LOAD RATINGS DO NOT APPLY)





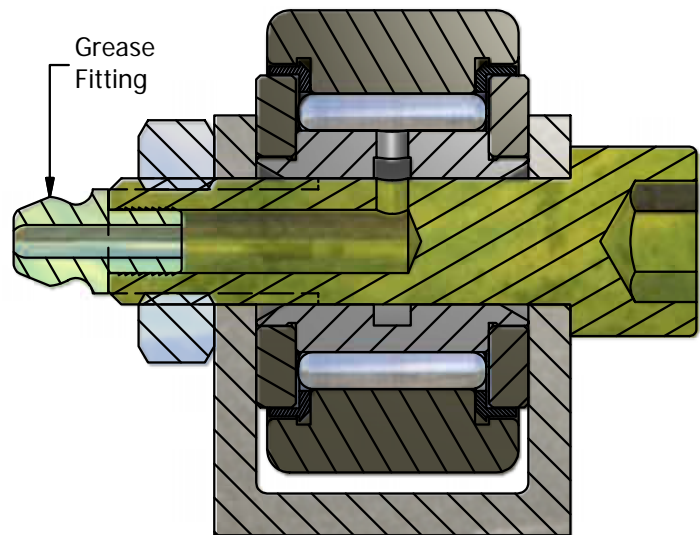
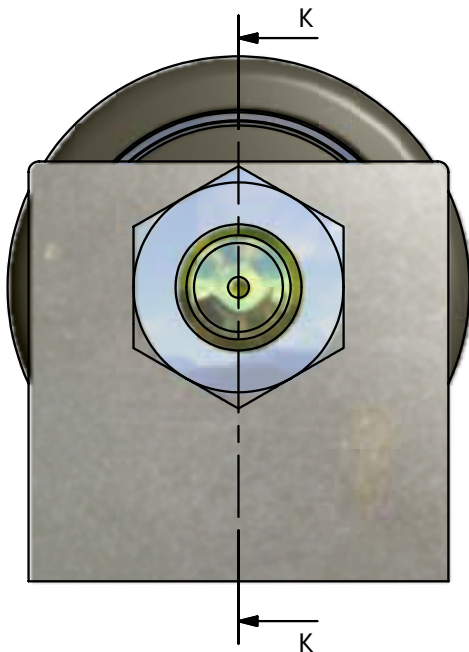
CAM FOLLOWER & YOKE ROLLER LUBRICATION BEST PRACTICES



Cam Follower Lube Holes

In the above diagram you will see that a standard Carter Cam Follower bearing has a hole on each end of the assembly. This feature allows the end user more flexibility when configuring their relube requirements. A plug or grease fitting may be installed in each end of the assembly. Assemblies with the hex option only have grease holes in threaded end of stud.

Relubing of the yoke roller (below) depends on the application and shaft configuration; this is a typical relube configuration. Grease fittings may go in either end of bolt or shaft. Lube channel from the grease fitting to lube hole need to be configured so that the lube hole on the diameter of the shaft is centered with the lube groove that is centered in the yoke roller bore.



SECTION K-K
SCALE 1.75