

## Dodge® Imperial and ISAF spherical roller bearings: frequently asked questions

The Dodge Imperial/ISAF is an adapter mounted spherical roller bearing. The bearing is a complete unit ready for installation. Questions will occasionally arise about the installation process of these bearings. Below are the most frequently asked questions and answers that can be used to help better understand the procedure of mounting these bearings and mounting them correctly.

**Q. What is the zero reference point?**

A. The zero reference point is the point where the clearance between the adapter sleeve, bearing bore and shaft have all been removed and all of the surfaces are in metal to metal contact.

**Q. Why does the load need to be removed from the shaft before installing the Imperial/ISAF bearing?**

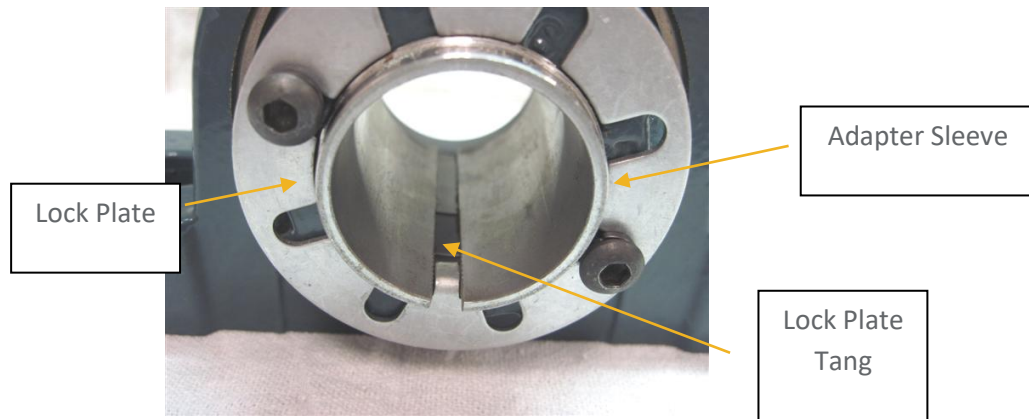
A. Keeping the load on the shaft will impede obtaining the zero reference point of the bearing. The extra weight counteracts the leverage from moving the bearing onto the adapter sleeve through the locknut and adapter assembly. It becomes more difficult to remove the clearance between the adapter sleeve, bearing bore and shaft. Thus results in a greater possibility of an improbable starting point for internal clearance reduction in the bearing. If that occurs, the bearing may not be properly mounted to the shaft and could eventually come loose.

**Q. Why are one expansion and one non-expansion required on an application?**

A. At least one non-expansion bearing is recommended for every shaft. The additional bearing(s) beyond the non-expansion can be expansion bearings. Expansion bearings are most often recommended to prevent overload problems from shaft thermal growth/contraction. However, expansion bearings also provide benefits during installation on tapered adapter mounted products. The Imperial/ISAF design is an adapter mounted product. The bearing will move up the adapter as the lock nut is tightened. Having an expansion bearing will allow the movement of the bearing up the adapter without pre-loading the bearing. Installing two non-expansion flange bearings or pillow block bearings that are already bolted down could result in the possibility of pre-loading the bearings; which could result in premature failure. Best practice for pillow blocks is to pre-mount the bearings to the shaft prior to locking them down to the support structure. In addition, and what is recommended for flange bearings, is to utilize an expansion bearing.

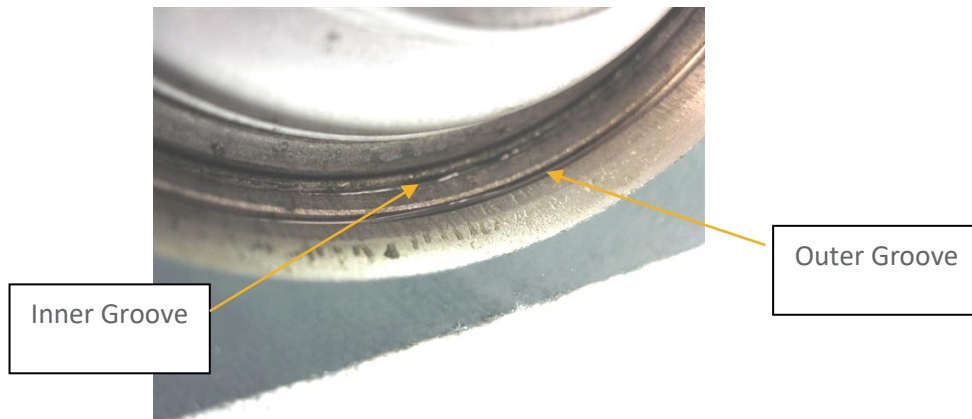
Q. Is the locking collar lock plate important for installation?

A. Yes. The lock plate is mounted to the locking collar and the lock nut tang is placed in the adapter sleeve slot. This allows the locking plate to turn with the adapter sleeve thus not allowing the locking collar to loosen as the bearing turns. Without the lock plate, over time the locking nut could loosen from the adapter sleeve which in turn will loosen the bearing from the shaft.



Q. Is it possible to convert a non-expansion bearing into an expansion bearing and vice-versa?

A. Yes. The non-expansion Imperial can be turned into an expansion by changing the snap ring that is located on the opposite side of the locking collar to the outer most groove and back to a non-expansion by moving the snap ring to the inner most groove. This can be done with a set of snap ring pliers. The non-expansion ISAF can be changed to an expansion ISAF by removing the top of the pillow block housing and then removing the stabilizing ring that rests next to the bearing.





Imperial Snap Ring



ISAF Stabilizing Ring

- Q. What is the best way to tighten the locking collar?
- A. There are two effective ways of tightening the locking collar of the Dodge Imperial/ISAF bearing. The first is with a drift and hammer. The other option is a spanner wrench (pictured below) that is designed specifically for the Dodge Imperial/ISAF bearings. Impacting the wrench with a hammer or using a cheater bar is also effective.



Spanner Wrench

- Q. What is the misalignment capability of the Dodge Imperial/ISAF?
- A. The Dodge Imperial/ISAF has up to  $\pm 1^\circ$  of misalignment.
- Q. Why did the Imperial bearing come loose from the shaft?
- A. The main reason that the bearing could come loose from the shaft is that the (1) zero reference point is not achieved. The load always needs to be removed from the shaft to get the zero reference point. When the load is removed; hand tighten until the lock nut can not go any further. Next take a small hammer and gently tap the top of the lock nut. See if you can hand tighten the lock nut more. Continue this process until you can no longer hand tighten the lock nut. This is when the zero reference point is achieved. Other reasons for loosening include (2) lock plate not installed or improperly installed, (3) incomplete rotation with drift and hammer or spanner wrench after the zero reference point is achieved, (4) undersize/worn shafting, and/or (5) excessive thrust load.



Q. What is the difference between the Dodge Imperial and the Dodge ISAF?

A. The difference is in the housing. The Imperial is a one piece housing which uses a snap ring to change from expansion to non-expansion. The ISAF is a two piece housing that uses a stabilizing ring to convert expansion from non-expansion. The ISAF is dimensionally interchangeable with SAF housings and provides all the benefits of the two piece split pillow block housings. Both the Imperial and the ISAF use the same bearing inserts, have the same seal options and both units have the same speed and load capability.



Dodge® Imperial



Dodge® ISAF

Q. Is the Imperial available in the larger SDAF sizes

A. Yes. In 2008 Dodge introduced the Hydraulic ISAF bearing. This bearing is offered from 8” thru 15” bore size. The Hydraulic ISAF bearing has the same mounting dimensions as a SAF and SDAF bearings, but comes as a complete unit ready to mount on the shaft. This bearing uses hydraulic fluid to mount and dismount from the shaft, thus the name “Hydraulic ISAF”.

Dodge introduced the adapter mounted Imperial product in 1996, but did not stop there by adding the ISAF in 1999 and the Hydraulic ISAF in 2008 to the Imperial product family. Dodge continues to show improved product innovation by continually developing easy on/off adapter mounted spherical roller bearing products that make the customer’s job easier.

Visit the Dodge website at [www.dodgeindustrial.com](http://www.dodgeindustrial.com) to view an instructional installation video of the Dodge Imperial product.

