

Proper Practice for the Cleaning, Mounting, and Removal of Bearings

Note: These are guidelines only...always use proper tools and exercise caution.

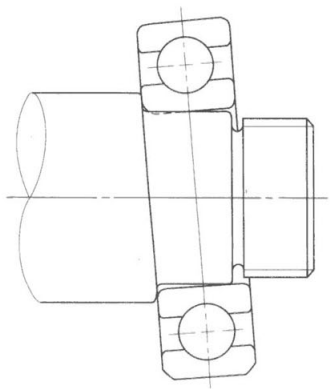
Precautions:

- (1 Use clean tools in clean areas
- (2 Use tools made from wood, light metal and don't chip surfaces
- (3 Open packaging just before using
- (4 Clean hands
- (5 Most bearings can be mounted without removing rust preventative from bearing
- (6 Do not bump or drop bearings

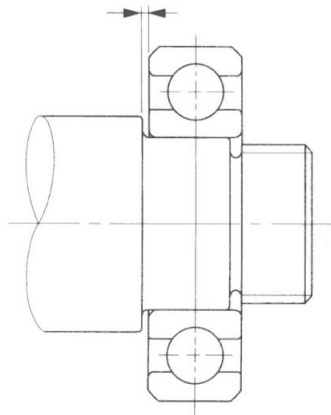


(1) Inspect Before Mounting

Wrong

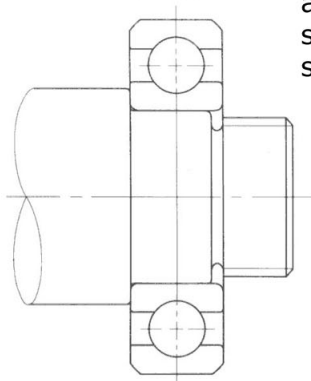


Wrong



Inspect shaft and bearing to be sure they have been finished to the correct dimension.

Correct

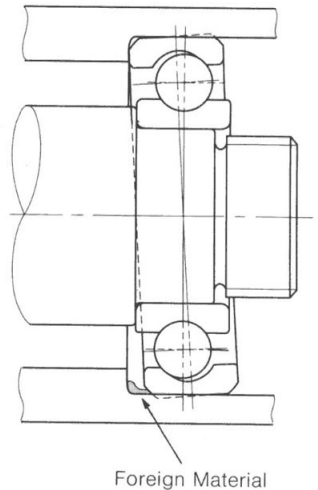
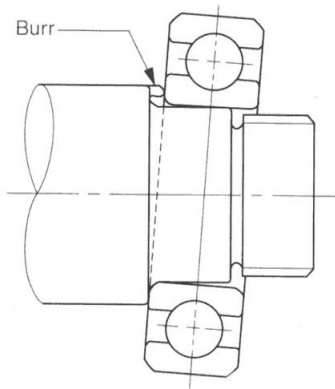


Check that the corners and right angle of the shaft and bearing fit the side of the bearing.



(2) Preparations for Mounting

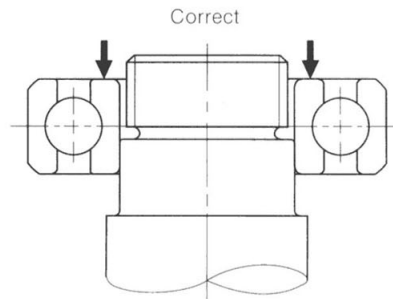
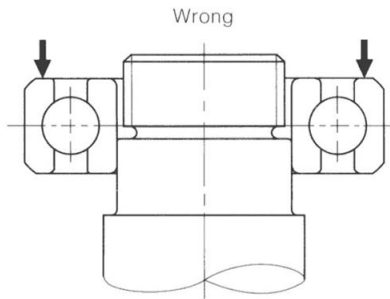
Make sure the fitting surfaces of the shaft and the bearing housing are free from scratches, burrs, dirt, and that no molding sand remains in the housing.



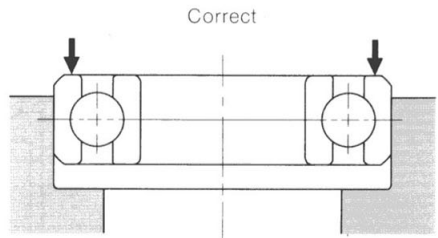
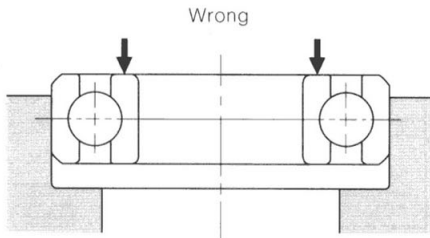
Remove scratches and burrs no matter how small they are, using oilstone or fine sandpaper. Coat the area where the shaft and bearing housing meet with mineral oil to facilitate mounting of the bearing and prevent the area of contact from being scratched.



(3) Bearing Mounting-Pressing Surfaces

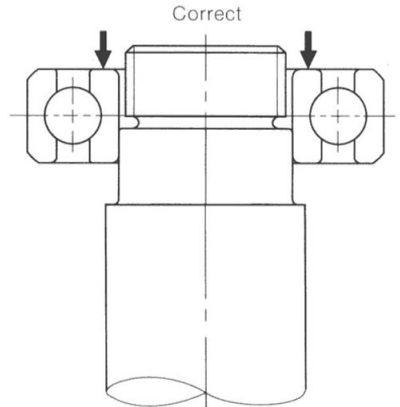
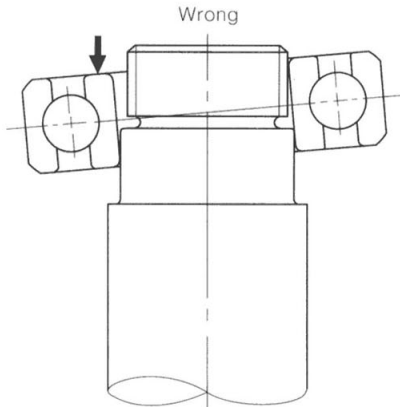


Press the inner ring to mount the bearing on the shaft.
Likewise, press the outer ring to mount it in the housing.
DO NOT press the outer ring to mount the bearing on the shaft, nor the inner ring to mount in the housing; the raceways may be scratched and noise or early failure will result.



(4) Bearing Mounting-Press Method

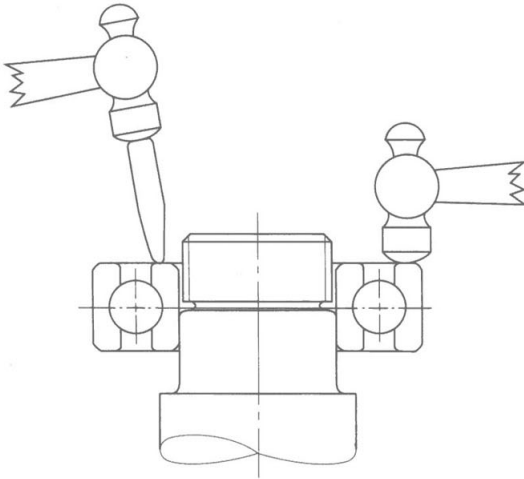
Apply even force to the bearing at a right angle.
Avoid driving on only one side as this can damage the bearing. NEVER apply force to the bearing retainer or seal.



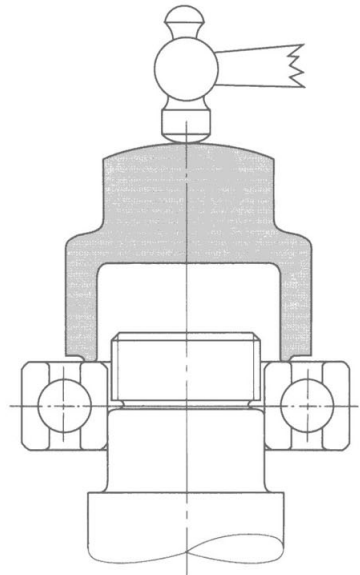
(5) Mounting with Hammer and Mounting Device

Bearings are frequently mounted with a hammer and mounting device. Do not strike the bearing directly; this can damage the bearing.

Wrong



Correct



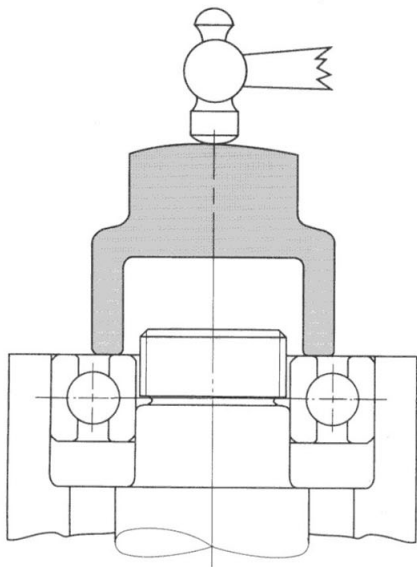
Hit the mounting device with a hammer, as illustrated above. Tap the mounting device lightly, using many strokes.



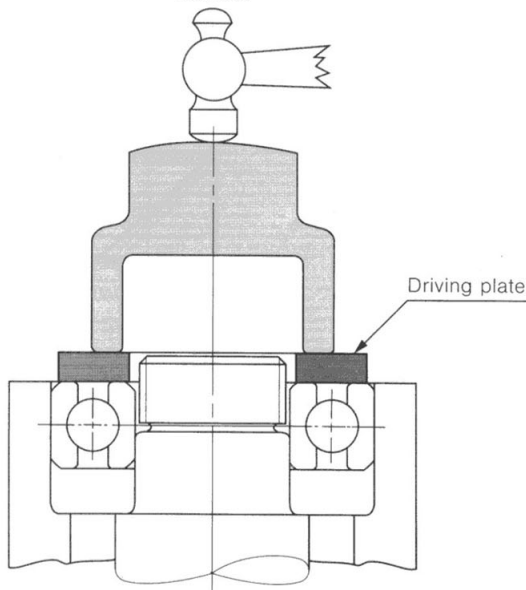
(6) Mounting Inner and Outer Rings Together

If both the inner and outer rings must be mounted in an interference fit because of machine construction, then use a driving plate as illustrated below.

Wrong



Correct

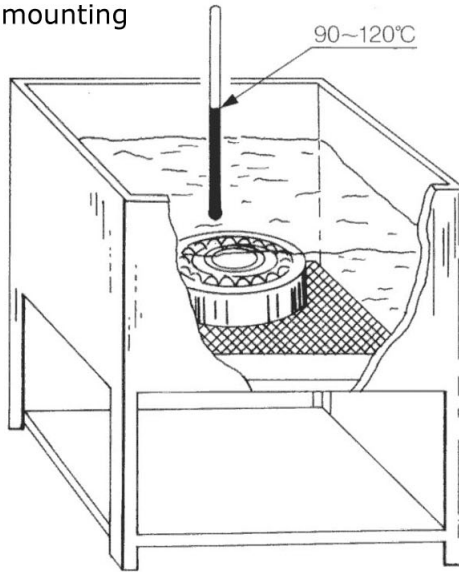


The driving force must be applied uniformly to the inner and the outer rings. If force is applied only to the inner ring, then damage to the bearing can result.



(7) Temperature Mounting

A popular method of mounting bearings to obtain a high interference fit is to heat the bearing in clean mineral oil to between 90 and 120 degrees C. This will expand the bore and facilitate mounting on the shaft.



Heating container

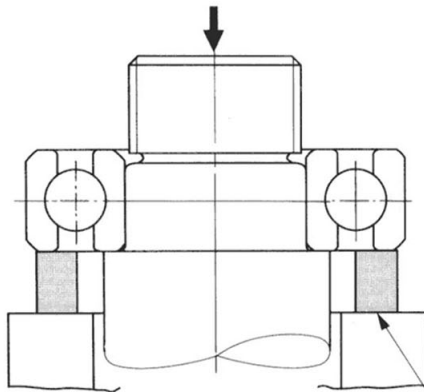
DO NOT HEAT BEARING ABOVE 120 DEGREES C. This may reduce the hardness of the bearing. Suspend the bearing in the oil with a wire, or support it on a screen; **DO NOT** place the bearing on the bottom of the container. When the temperature of the bearing reaches the desired level (120 deg's C or less), mount it rapidly. The bearing will contract when cooled and a gap may occur between the shoulder of the shaft and side of the bearing. If this should occur, press the bearing against the shoulder using a mounting device.



(8) Removal with Hand Press and Precautions

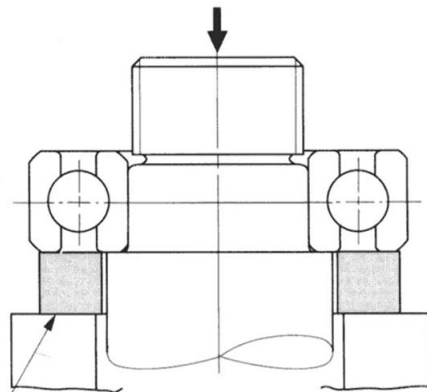
Apply the force for removal to the inner ring when removing the bearing from the shaft, and to the outer ring when removing it from the housing. Apply even force around the side of the bearing ring at a right angle.

Wrong



The most appropriate tool for removing a bearing is a hand press. When using the press, be sure that the arbor center and bearing center are aligned; and that the inner ring is supported by a bearing support plate.

Correct



Soft metal

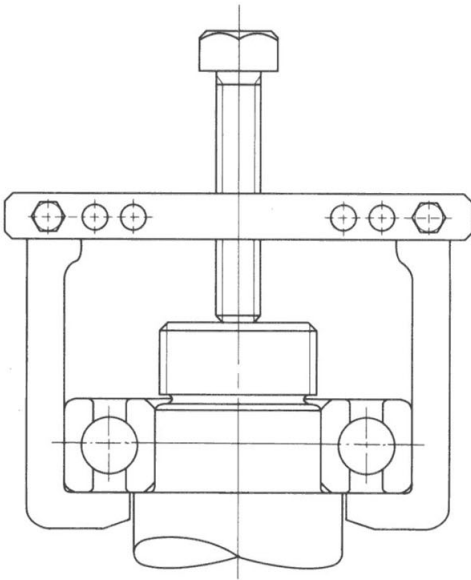
If the plate supports the outer ring only, a driving force passes from the outer ring to the inner ring through the balls, causing brinell dents on the outer ring, which will lead to premature failure.



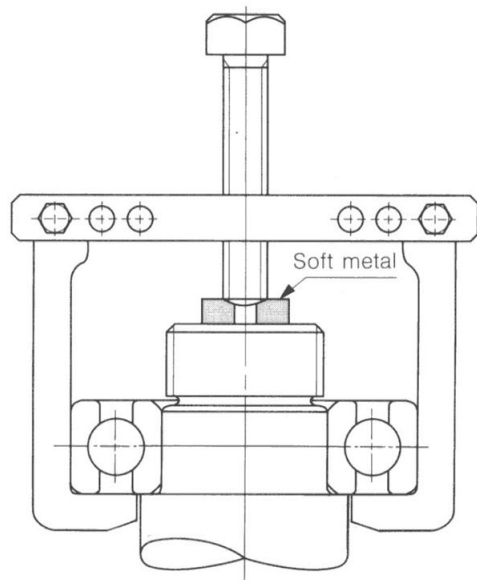
(9) Removal Using Bearing Puller and Soft Metal Device

When removing the bearing with a bearing puller, use a piece of soft metal to protect the shaft from being scratched.

Wrong

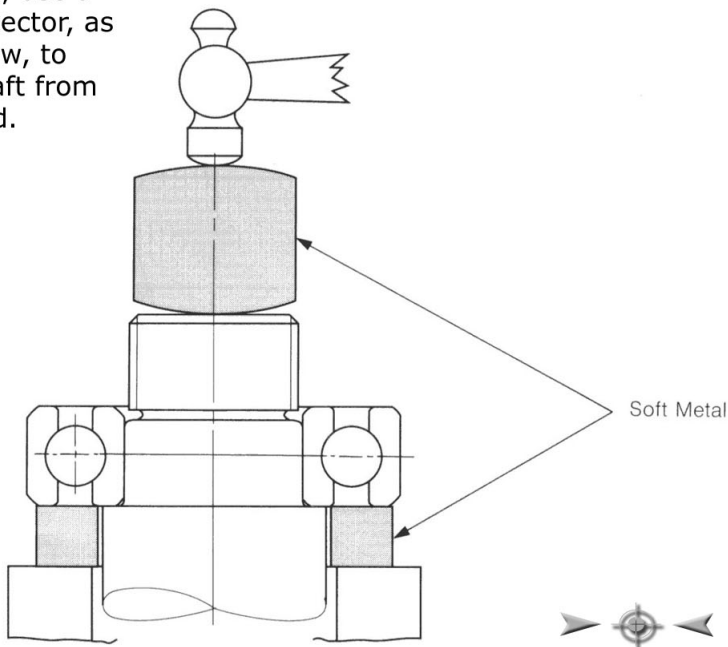


Correct



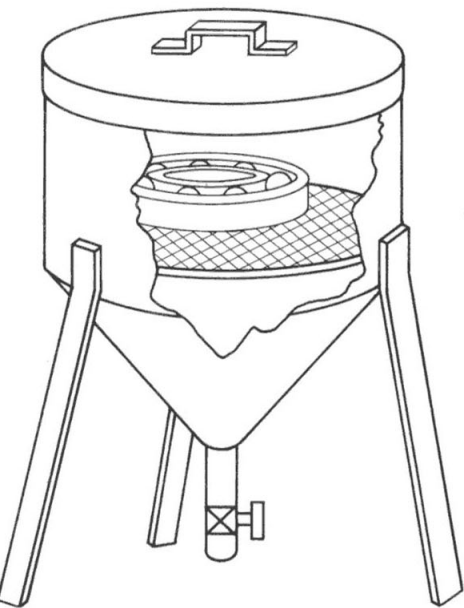
(10) Removal with Hammer and Soft Metal Protector

When removing the bearing with a hammer, use a soft metal protector, as illustrated below, to protect the shaft from being damaged.

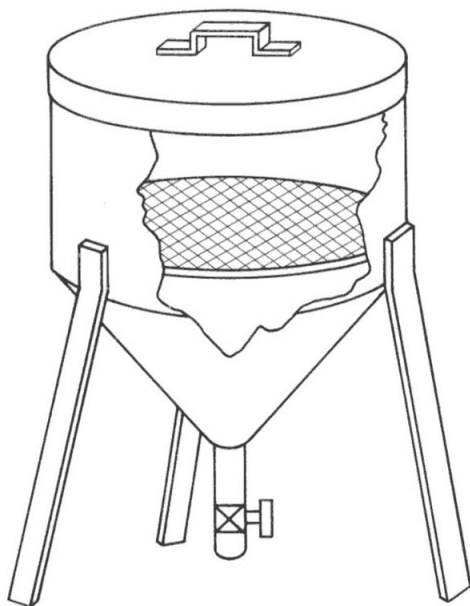


(11) Bearing Cleaning-Containers and Oil

Use separate containers for rough cleaning and final cleaning and provide a screen to support a bearing in both steps. Containers like those illustrated below are desirable.



Rough cleaning

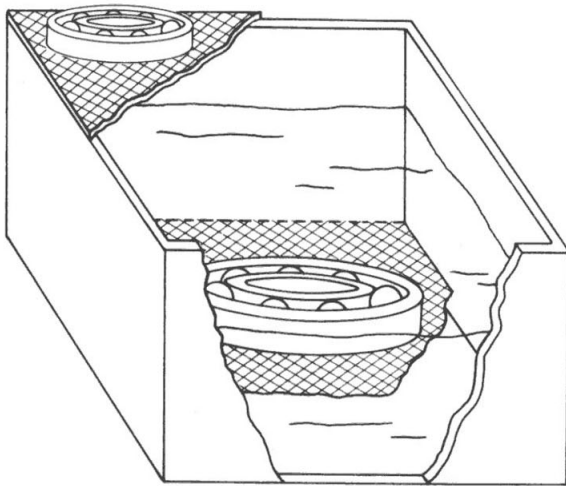


Final cleaning

Clean paraffin is appropriate for cleaning bearings. If bearings are very dirty, gasoline may be used. Care should be taken however, to prevent gasoline from igniting and to prevent rusting after cleaning.



(12) Rough Cleaning



Do not revolve the inner or outer rings of a dirty bearing after immersing it in oil because the inside surfaces are easily scratched. Leave it in the oil until dirt or grease separate from the bearing. If the oil is heated it cleans the bearing effectively. However, never heat the oil above 120 degrees C.

Final Cleaning

After washing off the dirty grease in the rough cleaning process, place the bearing in the final cleaning container. While the bearing is submerged in clean oil, rotate the inner or outer ring so that the inside of the bearing will also be cleansed. After cleaning, carefully wipe the bearing with a clean cloth, apply a coat of rust preventive oil to the bearing, and wrap it in rust preventive paper if the bearing will not be used immediately.

