TAPERED ROLLER BEARINGS

The bearing is in two parts. The outer part is known as the "outer race" or "cup", and fits in the housing. The inner part is known as the cone assembly, and consists of rollers secured in a "cage" to the "inner race" or "cone". The cone fits on the shaft. As a general rule the outer races are a drive fit into their housings and the cones a drive fit into their shafts. Where bearings are adjustable, either the cone or outer race is made a push fit.

Removal

Unnecessary dismantling is to be avoided since dismantling is apt to cause deterioration of the components. Bearings which are a drive fit should only be removed when renewal is necessary.

Cups and cones should always be removed with a suitable extractor. Remember that the claw of the extractor should bear on the cone, not the cage. Removal will be assisted if the shaft is first lubricated with oil.

If the outer race is to be removed, a suitable pressor extractor must always be used.

IMPORTANT. On no account should a heavy blow or force of any kind be applied to one race to remove the other. Such a force will be transmitted through the rollers and cause indentations in the tracks, resulting in reduced bearing life and noisy running.

Cleaning

The bearing should be cleaned meticulously, using petrol, white spirit, or flushing oil. Chemical degreasers are not recommended. A good quality brush will assist in removing the worst of the foreign matter. The bearings should then be left to soak in clean solvent.

Bearings should under no circumstances be cleaned by blowing out with a high pressure air line after they have been degreased. This practice causes flats to develop where the rollers or balls skid on the casing and materially reduces the useful life of the bearings.

After cleaning bearings should be filled with fresh oil, as exposure to atmosphere causes rapid corrosion.

If new bearings are to be fitted, providing that they have been kept in their wrappings, no cleansing will be required.

Inspection

The general condition of a bearing may be checked to a certain extent by listening to the sound it produces when running. This may be accomplished by placing an ear against the handle of a screwdriver, the other end of which is firmly pressed against the bearing housing. If, for instance, a whistling sound is heard, lack of lubrication is indicated; a rumbling noise is usually due to pitted bearings or dirt. Sometimes it is not practical to check the noise of a bearing when running, as in the case of the front hub bearings. Removal and careful inspection is then the only course to take. On inspection, certain types of defect such as cracks, etc., may become immediately evident. Other faults, however, may not be so obvious. Listed below are common faults of the latter type.

Flaking—On removing the bearings, the tracks of both races should be examined for flaking. Since the track of the cone is not normally visible, this track can only be checked by "feeling" for any roughness when the cage and rollers are rotated slowly by hand. The bearing must be absolutely free from dirt since it is virtually impossible to feel the difference between flaking and grit. If flaking is apparent on either track the bearing must be renewed.

Wear—Precise measurement of wear on tapered roller bearings is not normally a practical service operation. Reference should be made to the manufacturers of the bearing if, for special reasons, this should be deemed necessary. An assessment of how much wear has taken place can be made by examination of the rollers and races. A track with a dull grey "lapped" appearance has suffered abrasive wear probably due to fine particles of dirt within the bearing. Experience will enable one to determine whether the wear is such that the bearings should be scrapped. In cases of doubt, renew. The cage should also be examined for signs of undue wear, cracking, or distortion. If such defects are discovered, the complete bearing must be renewed.