

2. WHEEL BEARINGS

2.1 GENERAL

2.1.1 BEARING TYPES

With the exception of the unbraked range eg P6e, there have been three types of wheel bearing in use at Ifor Williams Trailers.

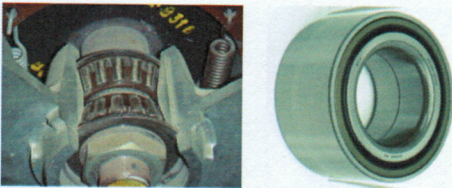
Early trailers were fitted with bearings of the separate "cup and cone" type. Trailers fitted with these bearings can be identified by the deep pattern hub and Al-Ko brakes. Cup and cone bearings can be greased and adjusted.



Bearing Cone

Bearing Cup

In September 1992, the hub was changed to incorporate one-piece "unitized" bearings. These bearings are sealed for life and are not user serviceable.



Unitized taper-roller bearing

In December 1995, the size of the unitized bearing was changed. The earlier unitized bearing is no longer available as a spare. IWT Spares department can supply a kit comprising of a hub with the new size bearing already installed plus the components illustrated below, in particular, a collar to allow the new bearing to be fitted to the original size axle.



Replacement kit for early unitized bearings
Kit also includes hub and bearing

PART NUMBERS

Unitized bearing	P00002
Bearing Cup	P0001
Bearing Cone	P0002

Replacement kits for early unitized bearings:

KS0825 200mm brake, 4-stud hub

KS0826 200mm brake, 5-stud hub

KS0827 150mm brake, 5-stud hub

2.1.2 PLAY IN BEARINGS

There is a widely held misconception that there should be no play in a wheel bearing. This is untrue. A running clearance is essential to the long term performance of wheel bearings and this clearance can be felt if the wheel is rocked from side to side.

Detectable play on its own is not sufficient reason for changing a bearing. If the bearing is damaged or worn, there will be other symptoms such as noise or roughness when the wheel is rotated.

Play in cup and cone bearings can increase during normal use but this can be adjusted out during servicing.

2.1.3 CHECK ON THE TRAILER

Raise the trailer from the ground and support securely.

Rotate each wheel in turn. The wheel should rotate freely, smoothly and quietly.

Grasp the wheel and rock it. There should be detectable movement,

Please note that end play is essential to the life of the bearing. It designed into unitary bearings and adjusted into cup and cone bearings. The presence of end play does not necessarily indicate a faulty bearing.

If there is a rumbling noise or excessive free play, the bearings must be replaced.

For cup and cone bearings, remove the grease cap. Inspect the bearing.



2.2 UNITIZED BEARINGS

2.2.1 PRE-ASSEMBLED BEARINGS

If there is any wear or damage to the bearing bore caused for example by removal of the original bearing, the security of the bearing in the hub may be compromised and the correct final running clearance of the bearing will not be achieved. For these reasons IWT Spares Department offer ready assembled hub/drum/bearing units.

2.2.2 INTERFERENCE FIT

The interference fit of the bearing in the hub affects the internal clearances of the bearing and the running-in of the bearing components. If a run-in bearing is removed from a hub and replaced, its life is likely to be very short. In practice, the bearing is scrap and should be replaced by a new one.

2.2.3 MEASURING BEARING CLEARANCE

Raise the trailer from the ground, support securely. Remove the hub cap.

Mount a Dial Test Indicator (DTI) to the end of the axle using a magnetic base or a special nut (IWT Spares, torque to 350 Nm). The axle tube may be used if access is available to the back of the wheel. Do not mount to any other part of the trailer. The DTI should read from the outer flat side of the bead well.

Rock the wheel from side to side with an estimated load of 5Kg. The free play in the bearing will be felt

quite distinctly. Observe the total indicator reading (TIR) of the DTI – ie total movement of the needle

Note that 5 Kg is enough to move the wheel through the full range of the free play in the bearing without flexing of the bearing surfaces or the wheel.

The limits for new and worn bearings are shown below. A "new" bearing is defined as a bearing fitted to a trailer which has never been run on the road.

Wheel dia. inches	Max TIR new mm	Max TIR used mm
10	0.10	0.15
12	0.12	0.18
13	0.13	0.20
16	0.16	0.24

2.2.4 REPLACEMENT

A mechanical or hydraulic press is necessary to install unitized bearings.

Remove the circlip and press the bearing out. If the bearing has been run-in or pressed in on the inner race, then discard it.

For installation, the press should bear on the outer part of the bearing. If installation forces are applied to the inner, the bearing races will be indented and the life will be extremely short.

Inspect the hub for wear, cracks or damage before installing a new bearing. Ensure that the bearing bore is clean.

Ensure that the new bearing is pressed in square and fully home.

Replace the circlip.