

THE AUSTRALIAN MOTOR CAR AXLE BEARING SETUP

BY: MARK 'STEW' SWABY

I am often asked how the Australian axle bearing setup is put together. What are the bearing part numbers and how are they different from the original factory Fairmont fit. How do they perform and how are they assembled. Prompted by Dick Ray I forward this article for those of you who are interested.

Some History First.

After WW2 an Australian Equipment company Tutt-Bryant Pty Ltd won the right and started importing the modern post war Fairmont Motor cars to Australia with the first two in 1948, an M19-F1 and ST2-H1 as demonstrators. Some early wooden bodied 'S' series cars were imported in the 1920's but other than a handful of Fairmont engines in the 1930's nothing else in between.

Tutt-Bryant must have run a good sales campaign as they managed to convince three main state railways, SAR (South Australia Railways), QGR (Queensland Government Railways), NSWGR (New South Wales Government Railways) and the Commonwealth Railways based in South Australia to take up Fairmont Motor Cars in a big way. They were the main stay motor car fleet for QGR, SAR and Commonwealth Railways (the latter two becoming Australian National Railways /ANR in 1975) from the 1950's until High Rail introduction in the 80's with NSWGR having Fairmont's at about a third of their motor car fleet. Over 1600 Fairmont Motor Cars of various models and four different gauges were on the rails in Australia.

Apart from the initial two demonstrators sent as complete units Fairmont Motor Cars were first imported in kit form until big orders were secured in the mid fifties and local manufacture under license was commenced in 1956. Engines, belts, transmissions, wheels and some minor components were still imported but frames from the axles up were manufactured locally. Standards were high with regular inspections by representatives from the Minnesota plant to ensure the cars were of the same high standards and identical to the

Minnesota built cars. Small anomalies like different size letter/numbers on Australian manufactured parts and Australian stamped steel frames the only discernible differences and only then to the much trained eye.

It is not clear when the Australian bearing setup was first utilized but in 1956 the Australian manufacture of the MT14-H1-3 was commenced fitting them with the rare (Not to Australia) spring suspension option. Initially I assumed the two cone setup was a standard option both here and Stateside along with the MT14 (and some ST2's) sprung suspension. It was not until my hobby grew and I started liaising with a number of you across the Pacific Ocean that I realized both were unique to Australia.

A number of the MT14's of both 42" and standard gauge manufactured in 1956 survive today and while not conclusive the few I have worked on from two different railroad systems have the Australian bearing setup where as other models assembled before 1956 still have the original Minnesota standard factory bearings. I feel that the local manufacture of motor cars along with the spring suspension was the instigator for using the different bearing setup but as it is nearly 60 years ago the reason for its inception is well lost in time.

I do know for a fact that in 1963 QGR started increasing their motor car orders and so motor car manufacturing increased quite considerably. A new company, Pacific Ace Equipment Company, which was a subsidiary of Tutt-Bryant, was formed along with two new assembly plants in New South Wales and then later in Queensland to cater for these new orders. I note Pacific Ace also manufactured a lot of other non railway mechanical



MT14 Original fit double cone on the left and the Australian Bearing Setup on the right showing spacer between two single cones.

plant itmes, with Fairmont Motor Cars just one aspect.

All MT14's and ST2's, including un-sprung cars from then on definitely had the Australian bearing setup fitted so it must have been a well proven option by then to have it as a factory standard. Interestingly the M15's and M19's appear to have kept the original double cone bearing setup in most cases. When I started motor car restoration in the early 90's the double cone axle bearings for M19's were relatively cheap and plentiful unlike today where they are virtually unobtainable and cost a small fortune if you can source them. It would appear there was no need to seek a cheaper alternative for the M19 bearings at the time.

The Australian Bearing Setup

All bearings are Timken brand but equivalents are available from other manufacturers. The bearings listed are the exact Timken bearing number. All measurements are in inches.

The M19, 1-3/16" (1.1875") axle

The original bearings cups remain the same. The double cone is replaced with two single cones back to back and a spacer in between as back to back the single cones are not as wide as the double cone.

2x Timken 17244 cups which are original factory standard.

2 x Timken 17119 cones. (Replaces Double cone 17116D)

The spacer is mild steel tube ID 1.1875 (+.005") x OD 1.500" x W .0706"

The MT14, 1-7/16" (1.4375") axle

The original bearings cups remain the same. The double cone is replaced with two single cones back to back and a spacer in between as back to back the single cones are not as wide as the double cone.

2 x Timken 19283 cups which are original factory standard. Cup 19283X will also fit.

2 x Timken 19143 cones. (Replaces double cone 19145D)

The spacer is mild steel tube ID 1.4375 (+.005") x OD 1.750" x W .1992" (nominal .2000")

The ST2 Rear Axle and A3, 1-11/16" (1.6875") axle

The 1-11/16" axle requires a complete new bearing setup. The two new single cones back to back are wider than the original double cone and therefore require

extra spacer shims fitted under the bearing cover rather than a spacer between the single cones. The new single cones do not match the original fit cups and require new matching cups.

2 x Timken cups 25526. (Replaces Timken Cups 354)

There are a number of cones that will fit. While the axle measures at 1.6875" a lot of the bearing cones fitted in service used cone 25577 with a slightly larger ID of 1.6880" I have used the 25578 cones which have an ID 1.6875" matching the axle and have had no fitting or in service problems. The 25577 cones are also slightly sloppy on the axle which I don't like. I suspect lower cost/availability may have been one reason for using the 25577 cones. According to the Timken catalogue cones 25576 will also fit but I have not seen or tried to date. The original double cone was 358D.

.0250"+ of extra shims are required to set the bearing float. Standard factory shims can be used without the need to make special ones.

Reference

Along with actual physical examination and measurements I have also used the Timken Dimension Catalogue, http://www.timken.com/en-us/products/bearings/Documents/7011_Dimension_Catalog.pdf which is a great bearing data dimension source and a definitive reference point for the spacer dimensions plus comparing the original fit bearings specs to the Australian substitutes to ensure accuracy for this article.

Some spacers in service varied slightly from the original factory fit both in ID, OD and width and I suspect they were manufactured by railroads repair depots with what they had on hand during bearing overhaul or conversion from double cone to two single cones. Along with the bearing running surfaces there is also some wear component with the width of the spacer after long service. Slight variations in width can be adjusted with cover spacers as per norm.

As for bearing end float I adjust as per the Fairmont Bulletins and aim for .0030" maximum to keep the two cones snug together.

Mark 'Stew' Swaby

Melbourne, Australia