

King-Pin Z [1953 to 1958]

If the king-pin [called a swivel pin in MG Magnette Workshop Manual AKD573A] and its bushes have developed a failing relationship, then perhaps it's necessary to try some serious reconciliation. If inspired; read Section K [of Manual AKD573A carefully] and consider the following as further information that may be helpful.

Introduction



Picture 1 Reconditioning Journals

Journals on these king-pins have been restored to original specification by a process known as hard chrome plating. Due to the expense involved a king-pin should be checked prior for:

- condition of threaded section
- fractures or breaks
- corrosion anywhere
- lower trunnion [internal condition]
- straightness when spun on end centres

NB. A bent king pin [needs to be straightened first] can be straightened but the process is only for a specialist!

Finding a good 'hard chrome' electroplating workshop is important as the process involves:

- Grinding the journals down to a good surface.
- Building up the journals by electroplating hard chrome onto them.
- Precision grinding the built up journals to original specification.

NB. Refer to section K11 of the workshop manual to determine

dimension and tolerance journals need to be ground to.

Cautionary Note; if the journals are reconditioned using hard chrome it is important to be mindful not to drop or hit them with anything as the hard chrome is easily chipped or damaged. As a precaution make a protective sleeve. See picture No2



Picture 2. Protect the journals from impacts and sandblasting



Picture 3. Trunnion Assembly: Trunnion, shims & housing [with thrust washers]

Disassembly

King-pins are [part of the front suspension /steering] located in the steering knuckle. To remove a king-pin: firstly remove its castellated nut [and split pin]; secondly extract the trunnion from the king pin's taper [preferably using a clamp and puller]; and lastly take off the shims and thrust washer housing as the king pin is slide down and out of the steering knuckle.



Picture 4. Bushes for the king-pin

Extracting the bushes {Original factory bush came split}

With the king-pin removed a hacksaw blade can be inserted into the steering knuckle {reattached to the hacksaw} and used to saw gently into both bushes. Take care to only cut into both bushes {keep the blade parallel}. Stop before completely cutting through the bush. An old thin screw driver blade can now be interposed between the bush and bore of the steering knuckle [if you have hack sawed deeply enough into the bush] to cause the bush to fracture and peel into a smaller diameter. The weakened bush should drive out easily. Other options can be employed; the workshop manual gives some advice if the bushes are knocked inwards.

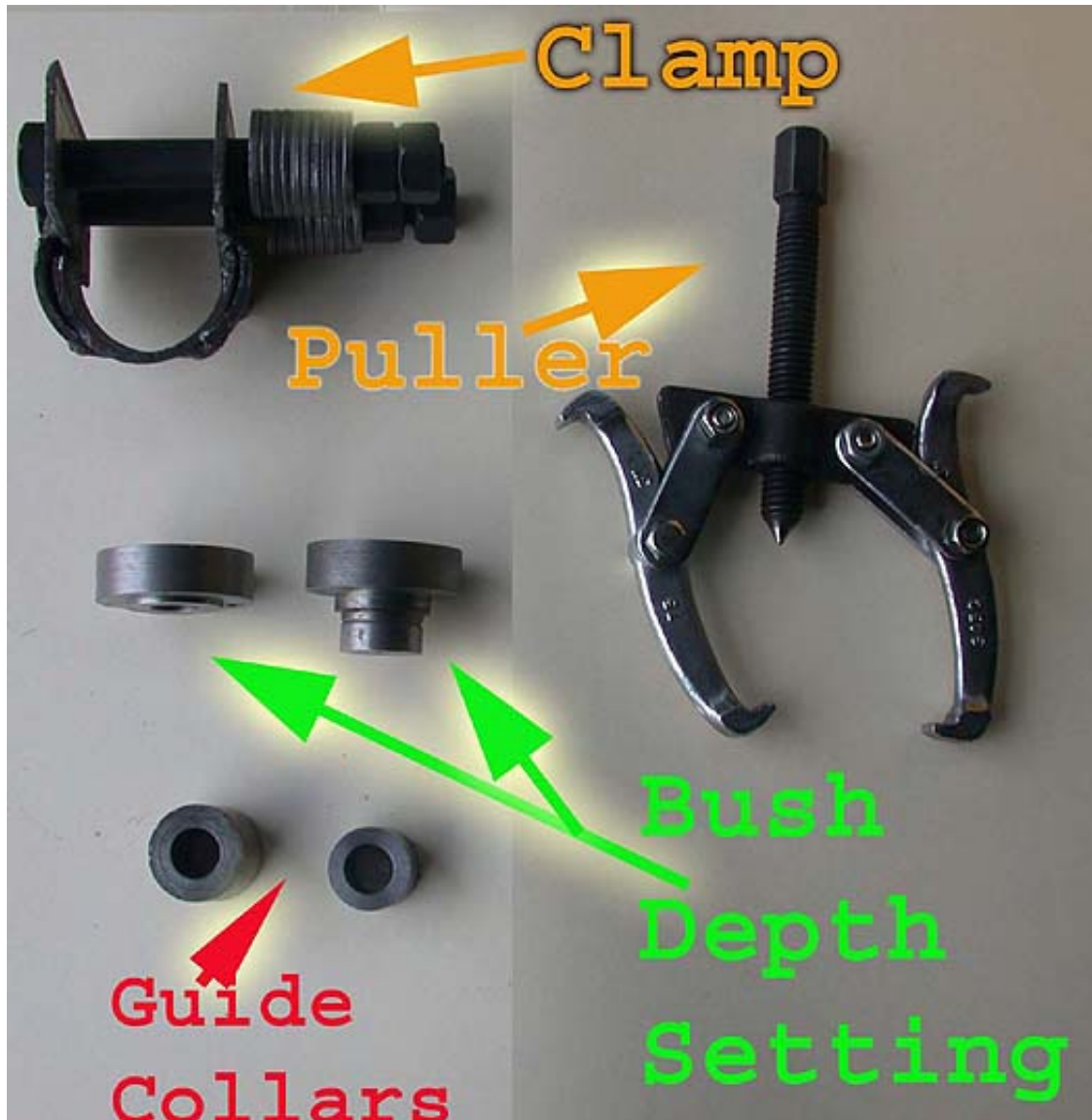
Preparing new bushes

Do not know what replacement bushes are available for the MG ZA/ZB Magnette but local supplier, [**Rob Hamilton Bearings; 2 Autumn St, Geelong West. Australia. 3216. Phone no. 035222 4866 & Fax No.035222 1104**] supplied a satisfactory Bush [**DUFOR BUSH DB80** 'stamped externally with TB9703']

Keep in mind this new bush will need to be reamed to fit the outside diameter of the king-pin's journal once, the bush is, correctly installed into the steering knuckle. Additionally the grease channels must retain an adequate depth after reaming. Picture 4 shows configuration of original factory grease channels. *Original factory bush was probably pre-sized for mass production.* The Dufor DB80 bush is internally smooth. Grease channels in this case were installed by machining an internal circular channel and manually creating off shoots [see picture 4] with a Dremel engraving cutter [bit].

Note [1] *the circular grease channel must lineup with the grease supply orifice to be of any practical use.*

[2]*It's simpler to drill a grease access hole in the bush once it has been correctly pressed into place. Take care though[Protect the thread of the hole to be drilled through].*



Picture 5. Clamp & Puller for Trunion; Gauges for bush depth; & Tool alignment collars

Pressing in the bushes

It's important to read and understand section K11 of the workshop manual AKD573A. Basically the bottom bush must be pressed into the steering knuckle and recessed 3/16 inch inside. To do this a depth setting gauge is used with a press; See pictures 5 and 6a. Whereas the top bush must be recessed, into the steering knuckle, to a depth of 1/16 inch; although special care must be taken to ensure the steering knuckle's dowel pin safely moves into the clearance hole of the gauge. See pictures 5 and 6b.

Note. *Guide collars not used with press and not applicable here.*



Picture 6a. Gauge correctly recesses lower bush



Picture 6b. Gauge used for correctly recessing the upper bush

Reaming

What can I say – do this poorly and the relationship suffers. Specifications are taken from section K11 of the Workshop manual and are not repeated here. Bushes when pressed into place have a diminished internal diameter. Dufor DB80 bush used in this description now needs to be precisely reamed [with a reamer] so the king-pin can enter into the bushes as a neat parallel fit.

Determining end float [shimming]

Once [the bushes are] reamed the king-pin needs to be reassembled- *note: without any grease or shims- to its steering knuckle and fully tightened.*

The purpose of this is to measure the end play, or float, so the correct amount of shimming can be determined. With shims added, correct end float 'factory specification' is achieved.

Comments:

[1] *To measure the end float [gap at lower part of king-pin to bottom of steering knuckle] it seemed prudent to whack the top of the king-pin with a lump of soft wood [pine] to maximize measurable end float gap.*

[2] *New shims for this application seemed to be impossible to obtain in Australia. It is possible to make your own from readily available shim material. Two methods are possible if no off the shelf option exists. First is to use a lathe and drill press, and the second is to employ chemical etching. Either manufacturing process should only be undertaken by a professional or experienced person operating with safety in mind.*



Picture 7. Clamp and puller used to release the upper trunnion

Releasing the Trunnion Assembly

Top trunnion is a tapered interference fit with the king-pin. Breaking the connection can be very difficult and typically may need additional assistance with either or both some shock or heat application. A couple of different options could be tried but it needs to be thought through as the means used may damage various parts such as: the king-pins threaded section, turning centre or straightness; plus other areas may be affected by the means of gripping the hub assembly.

Shown is a home made clamp that gives the puller something to attach to and align with the turning center of the king-pin. Additionally a piece of copper sheet is used to preserve the centering hole. Application of puller's screw can now apply a lot of tension. Try to gradually apply tension and judiciously strike the clamp or trunnion in a systematic way to see if the peak shock will release the taper. An alternative is to maintain the tension and judiciously apply heat to the trunnion. **This procedure will eventually release the trunnion; but be mindful to: seek advice, use safe work practices and protect yourself with good safety equipment**

Reassembly

Assuming the new bushes have been reamed, correct shims have been determined and thrust washers have been checked for condition and tolerance; all the parts can now be greased. Reassemble the king-pin and while doing so check the two dowel pins {they lock the thrust washers} are in good order and have not been compromised [bent/worn/shortened/lost]. Finally; correctly align the two trunnions and tighten the castellated nut {don't forget the nut's washer}. When tight secure the nut with its split pin.

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