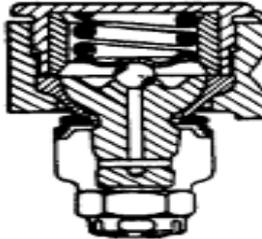


## CENTRE STEERING LEVERS & PIVOTS ON IMMEDIATE POST WAR CARS - by George Milburn



joint with  
spring to take up wear

While checking over my Bentley MK VI for its MOT test, I noticed that, although there was no sideways play in the various steering ball joints and steering idler pivots, there was a pronounced click as the steering was turned from lock to lock when the car was jacked up. This was found to be caused by a sudden vertical movement of one of the two steering idlers in the centre of the car. In order to investigate this it would be necessary to remove the assembly of both idlers, which are fitted into a central housing bracket, itself bolted to the front chassis cross member. Removal of this assembly would require the disconnection of several ball joints on the various idler & steering arms. Often not an easy task!

Initially the RR Service manual recommendation, in time honoured fashion, was used. Viz. belting the eye of the arm hard with a heavy, copper faced, hammer with a steel dolly on the other side of the joint. The rod was, simultaneously, jacked up to allow the joint to spring apart. This did not work

It was found that a normal, commercially available, ball joint splitter could not be fitted as the gap or free space between the joint arm and the lever arm is insufficient. Also the diameter of the ball pin taper, with its associated spring seal ring is too great for the slot in the splitter. Fortunately, Martin Carnell, who lives nearby, had tackled this problem before and had designed a simple two bolt clamp, which could be fastened onto the 4 steering idler ball joints to split them. Note that this design of clamp can only be applied to ball joints of the spring loaded type as the ball has to be, in effect, pushed into the space above the ball & taper pin against the spring. Lift up the outer sprung oil seal and insert a U shaped washer between the two lever arms. This is necessary to avoid the ball being forced up & hitting the top of its housing before the joint splits. To fit the clamp, loosen the nut on the bottom of the pin by about 1/16 inch to at least the bottom of the threads, sufficient to protect the threads and allow the pin to move upwards slightly. This should prevent the thread spreading as the clamp presses on the bottom of the pin. The upper arm is forced upwards by the gentle pressure of a screw jack so that the joint separates when it becomes unstuck. The clamp can then be assembled onto the ball joint and the two clamp bolts tightened to push up the taper pin into the ball joint housing. The taper will loosen with a crack as usual. The U shaped washer and clamp is then removed for use on the next joint.



Cross steering tube to wheel link  
Clamp  
Ball Joint  
Central cross steering tube between idlers  
Steering idler arm cross steering tube ball



Side steering tube connection  
Idler pin top covers  
Pin clamping bolts  
Idler arms  
Oil supply connection

The joint bottom nut can then be removed and the cross steering arm disconnected from the idler arm. If the thread has been spread and the nut seizes it will be necessary to jam the pin through the gap where the spring loaded oil seal is located to be able to remove the nut. In order to remove the whole steering arm assembly it is also necessary to split the ball joint onto the end of the side steering tube. This is a larger joint than on the 4 idler arms and so requires a larger splitter clamp. This and its associated U washer, was made following the design of the smaller clamp.

Once the lever arms are disconnected the central mounting bracket, which house the idler pins, can be removed from the car by disconnecting the chassis lubrication system supply connection, which is on top of the

## CENTRE STEERING LEVERS & PIVOTS ON IMMEDIATE POST WAR CARS - (Continued)

central mounting bracket, undoing the two angled horizontal securing nuts and sliding out the assembly. The idler pins are mounted in their bracket with brass bushes top & bottom. The bracket is taken apart by undoing the vertical pin top clamping bolt nuts. The idler pins are spring loaded axially in the bearings and it is recommended to remove these springs to more accurately check the end play. If there is sideways play in the bushes they will have to be machined out & new bushes pressed in, as advised in the manuals. The harder, forged pivot pin should also be checked for diameter & roundness, especially where rust is present. This will occur if there is inadequate oiling from the lubrication system. Normally the wear is more likely to be in the brass bush rather than the harder steel pin. If the pin is worn or corroded it will need turning to round and the brass bush will then have to be turned to size or the pin can be flame sprayed and finished to size, of course. One also has the option of white metalling the bush? Chrome plating has also been suggested in RR documents.



On the author's car, however, there was no sideways play in any of the 4 idler bushes. There was play, however, in the vertical movement of the pins, as originally observed. This is adjusted by inserting disc shims beneath each pin into the bottom of the lower bearing of the pin concerned. It will be found that the original shim will be worn somewhat, thus allowing this end play in the idler pin. The original worn shims were removed and their thicknesses measured across the outer worn areas. The centre of each disc was found to be relatively unworn as the centre of the pivot pin houses spring loaded pins, controlling oil flow . New shims were cut from shim steel in various thicknesses and fitted until there was no play while being able to rotate the levers easily. The assembly was then dismantled and the pivot pin end springs refitted. Pin end play & movement were then rechecked. The assembly was then refitted into the front chassis crossmember. The chassis lubrication supply pipe union was reconnected and the cross steering linkage rods connected to the steering idler levers with the ball joints. The side steering tube was then

reconnected. It may be wise, of course, to check the toe in following reassembly.