

My R12 came to Aust just after the war and has been in storage ever since so it was in very good condition, except that the forks were bent....maybe this made the wear worse as the lowers were bent slightly as well the main tubes were bent about 25mm at the lower triple tree but were straight the rest of the way, these were able to be straightened, the problem is always able to be solved with a little lateral thinking and new technology. The main problem is that the top white metal bush is fixed....that is the bulk of the bush is machined up as part of the lower tube,....it is then wiped with white metal (about point 7 of a mm) and the re machined insitu, to 34mm

The lower bush is a spiral flute arrangement, which allows the oil to return but the angle of the flute allows for more surface area to be in contact and not create vertical grooves in the lower tube.....clever ...Huh.....the bottom bush is 33.5....this can be made with phosphorous bronze if you are very clever or have a friend who has a CNC machining center with a rotary table i.e. 4 axis machine.....the old one can be recovered...this is what I did.....heat the old bush with oxy acetyleneremove the old white metal because it is contaminated with oil.....obtain some 60/40 plumbers solder in the big sticks...(my supplier said that for our purpose the composition was close enough)using standard soldering methods and a large soldering iron (not a toy) re-tin the bush apply the lead to the appropriate thickness and re machine to desired size.....33.5mm

The problem arises if the lowers are worn.....sure you can remove the axel mount re-machine the lower tube to over size say 34 mm if you are lucky, and make the bush over size.....Ah you say but the FIXED top bush is 34mm how do you get it in????? Well you could then make the top bush over size also.....this means you will have to machine out the white metal and some of the steel that supports it.....then re apply white metal and re-machine to say 34.5mm

You then need to have the Fork tubes inner (stanchions) nickel plated and hard chromed over size to suit....34.5.....Don't forget top clearance for top bush is give by BMW as.025 to .1mm Bottom is 025 to 075mm

You say that's a lot of work....it is ...what's the alternative.....re-sleeve the lower worn area...I couldn't get any one to remachine a blind hole.....which is what is needed.....I concluded that to re sleeve and then weld the axel mount back on would cause distortion to the sleeve....Dietmar tells me he had his done in plastic of some sort maybe he can elaborate for us....I thought that you could cut off the axel re machine over size....replace axel mount then press the sleeve in from the other end.....No you cant the other end is only 34mm bugger!!!

So I have had my son draw up a new lower leg in auto cad and he will machine up 4 for me.... I have changed the top bush arrangement somewhat to allow for replaceable bronze bushes I have used certified hollow bar for the material..... If you would like some I am sure he would consider making a batch....or you can have the drawing for free.....There is more to come on the Valving....Regards Peter Ardron

R12 FORK REPAIR PART 2

The next problem I had to address was the seals and valve assembly... First problem was that the fork tubes had been dismantled by the PO and were left out in our sub tropical climate for about 3 years without any protection as a result they were rusted and pitted on one side.....I put them in the lathe and using a tool post grinder I ground 1thou at a time until I removed all the pits.....This resulted it about point 2 of a mm undersize...So theses have now gone for Hard chrome(at our local Air Force base).... and regrinding to standard size.....you can build up to about 15 thou with hard chromeif you need more, builds of up to 40 thou or more is achievable by first putting down nickel then hard chrome on top...Only the wear area was Hard chromed and the balance area was silver cad plated...just for protection....yes I know that cad plating is difficult to get done but the Air force it, seems are allowed. As is I think other aviation companies.

The advantage of hard chrome is less sticktion....hard chrome having 50% less coefficient friction than steel or so I am told.....sealsVech has these about US \$16 each or you can go to any large stockist of hydraulic seals and they will machine the new one up on a CNC lathe from your sampleclever stuffmachining rubber on a lathe....actually it's a composite but I am told they will work

The next little thing to attack was the piston that goes up inside the main fork leg...this looks like a little tin whistle.....the piston is attached to the lower, (outer) fork leg and goes up and down with each bump.....If you look at this piston if you are VERY lucky you will see that there is a leather washer on it with the cup facing down....if like mostyou will find nothing as it will have disintegrated over the years.....this leather washer is just like an old bicycle pump washer 19mm Dia and about a 12mm hole in the middle (I forgot to write it down) but you can check it when you get the old one off....Ahhhhh Haaaa how to get it off....well I am not as smart as some so it took me a little while to work it outthere is a 12mm wide collar behind the washer which has a small 2mm groove in itit is simply pressed on with a slight interference fit,, it also has a bevel on the leading edge which partly goes over that washer to hold it in place.....check you parts book this give the clue....I should have had a new washer made at the same time as the seals but I found some NOS pump washers so I used them and cut out the center hole with a wad punch.....Then replaced the washers and the holding collar from behind.....NOTE measure the distance from the end of the collar to the end of the piston and write it down ...make reassembly easy.....

You will notice that at the bottom (or the leading edge) of the leather washer there is a step in the shaft and on the underside there are three holes.....these let the oil into the piston at a controlled rate as there is a one way valve just inside.....this valve is held in place by an internal spring the pressure on the spring and therefore the rate of damping is effected by the threaded section on the end...NOTE BEFORE YOU REMOVE THE END CAP MEASURE THE DISTACE FROM THE END OF THE BOLT AND THE

SHOLDER THIS DICTATES THE PRESSURE AND THEREFORE THE RATE OF DAMPING...MINE WAS 1.5MM.....to remove the spring and valve tap out the pin and unscrew the end. The spring will fall out but the valve may need a little tap...it could be stuckdepending on the condition of you forks....Clean it all up and reassemble....Now check inside the long fork legs (staunch ions) where the piston was running and hopefully it is in good shape....it may need a little hone to clean it up...Its not that critical....Well I hope this is of some help to you all....If I have made any errors please feel free to point them out....If any of you have additional wisdom to pass on please do...

Peter Ardron