

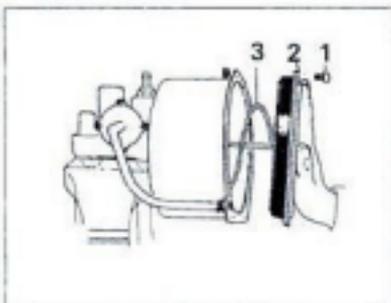
SERVO REPAIR KIT

FOR GIRLING MK2 & MK2A 7" SERVO 2.78:1 BOOST RATIO

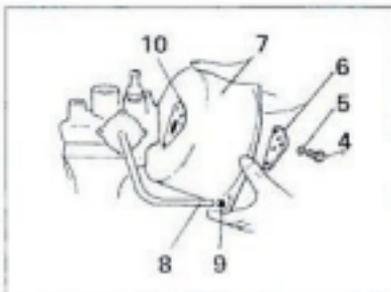
It is important that the following instructions should be read thoroughly before any attempt is made to strip and overhaul the unit. As new units are long obsolete reconditioning is the only option, however as the servo is likely to be twenty or thirty years old it is the responsibility of the reconditioner to satisfy himself that the unit is fit for reconditioning and he is able to carry out the work to a safe standard. The instructions are purely a procedural guide based upon original overhaul instructions and whilst every effort has been made to ensure accuracy no responsibility can be held for any injury, loss or damage resulting directly or indirectly from reliance upon these instructions.

Dismantling

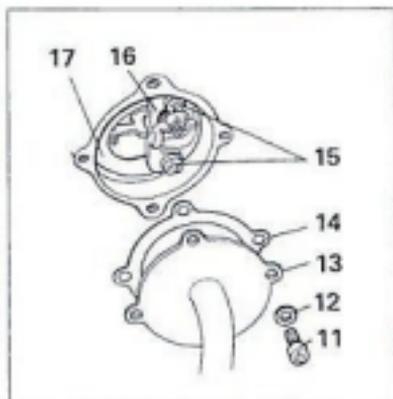
Before proceeding, obtain a 15in. (38cm) length of 1/8in. (3mm) welding wire and a good pair of circlip pliers.



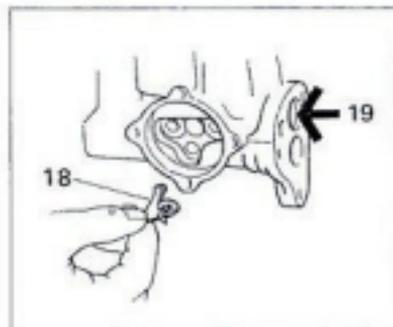
1. Clamp unit in bench vice as shown. Unscrew end cover bolts (1), supporting the end cover (2) against spring pressure (3) as last bolts are removed.



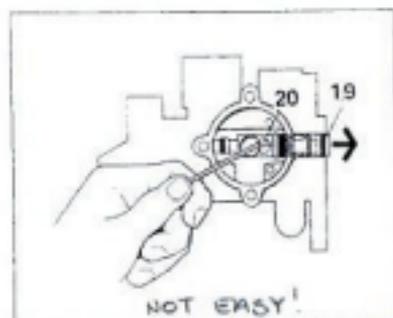
2. Remove bolts (4), washers (5) and plate (6). Carefully pull vacuum cylinder (7), to separate pipe (8) from its grommet (9). Remove gasket (10).



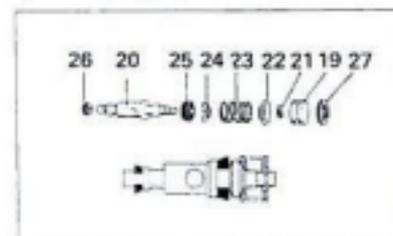
3. Remove set screws (11), washers (12), cover (13) and gasket (14). Remove set screws (15), lever guide (16) and spring plate (17).



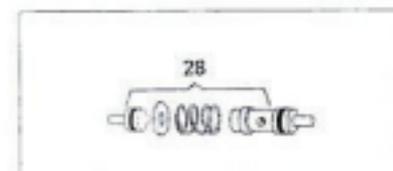
4. To release "T" lever valve (18), push in plug (19) and lift lever.



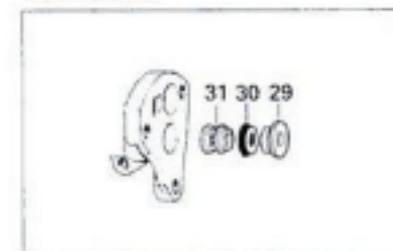
5. Insert bent 1/8 in. (3mm) welding wire into hole in control piston (20). Lever piston to push out plug (19) and lift out piston



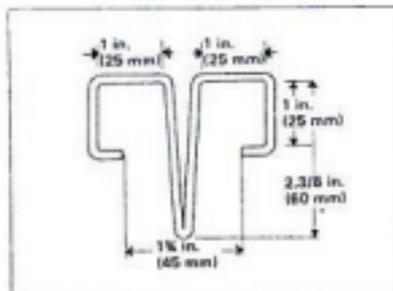
6. Compress spring (23) to remove circlip (21) and spring seats (22 and 24). Remove seals (25 and 26) from piston (20). Remove the seal (27) from the plug (19).



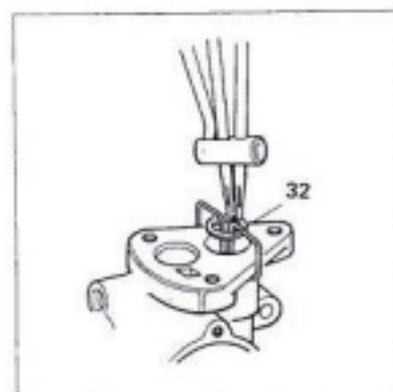
7. Early MK2 units originally had a two piece air control piston as illustrated above, for which extra seals are enclosed. The later and better one piece piston can however be substituted.



8. Lift off bush (29), hook out gland seal (30) and shake out spacer (31).

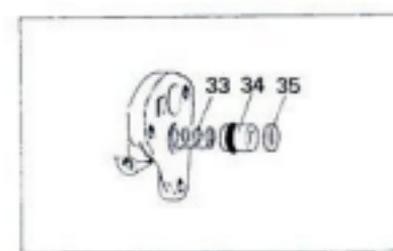


9. Using a 12 in. (30cm) length of 1/8 in. (3mm) welding wire, make up special tool to dimensions shown. This tool is designed to prevent the pressure of the piston spring forcing the circlip up the bore and scoring it.

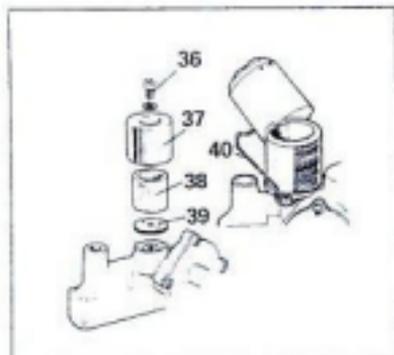


10. The tool clips under the body flange and with the output piston pushed down, the circlip (32) can be removed.

GOOD CIRCLIP PLIERS ARE ESSENTIAL FOR A SCORED BORE COULD RESULT IN A BRAKE FAILURE AND THE CIRCLIP MUST NOT SLIP WHEN BEING REMOVED.



11. Removal of the tool will release the spring (33), piston (34) and washer (35).



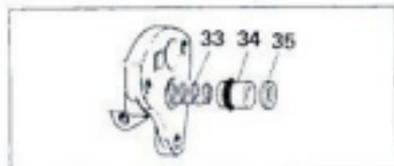
12. Unscrew the setscrew (36) to remove the air filter (38), cover (37) and base washer (39). Filter covers on early units were retained by a clip (40).

Cleaning

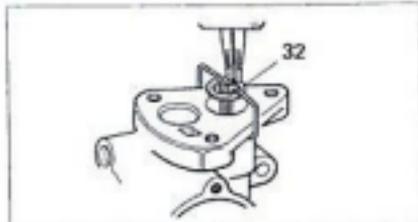
Scrupulous cleanliness is now essential. Wash hands before proceeding and lay out a clean sheet of paper on which to place the parts. The new parts in the repair kit will indicate which used parts should be discarded. However, retain the sponge strip if still serviceable as it may be required (see instruction 22).

All the remaining parts (except the leather piston and sponge seal) should be thoroughly cleaned using brake cleaning fluid, new brake fluid or alcohol. Examine all parts, particularly pistons and bores, for damage, scoring or corrosion. Slight marks can be polished out but the reconditioner must satisfy himself that it is safe to do so and ensure all traces of polish are removed. If there is any doubt another servo should be found and overhauled. The inside of the vacuum cylinder where the leather piston runs should be smooth to reduce the risk of binding and it may be found advantageous to polish this surface. This surface should be checked for dents, which if small may be carefully dressed out. The leather piston and sponge strip are often sodden in brake fluid and should be dried out by wrapping in absorbent tissue or cloth.

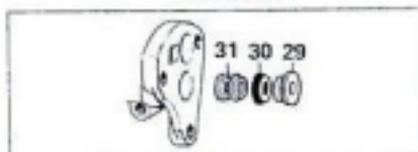
Reassembly



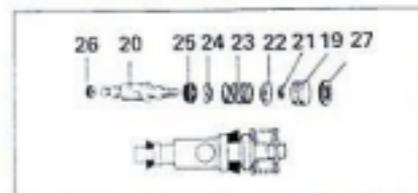
13. Fit a new seal to new output piston (34) as shown. Lubricate bore and seal with Girling red rubber grease and insert spring (33) into bore, place washer (35) on piston.



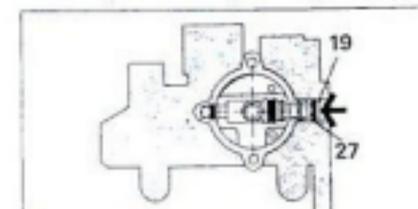
14. With wire tool, ease piston and seal into bore and clip tool under flange. REMEMBER THE CIRCLIP MUST NOT SLIP AND DAMAGE THE BORE, SO CAREFULLY FIT THE CIRCLIP INTO ITS GROOVE AND REMOVE THE WIRE TOOL.



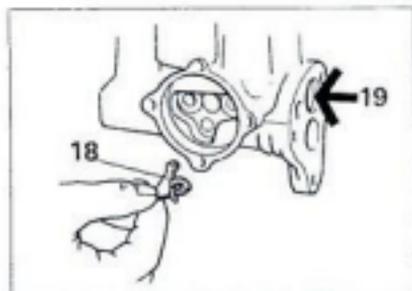
15. Fit spacer (31), gland seal (30) and bush (29) into bore as shown. On early MK2 units the bush (29) may have a smaller flange diameter than the new one supplied, so either re-use the old bush or file down the new bush to fit the vacuum cylinder.



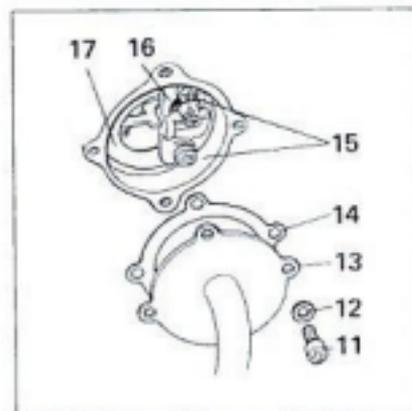
16. Fit new seals (26 & 25) to the control piston (20) as shown. Follow with the spring and spring seats, securing with the circlip. Lubricate the bore and seals with Girling red rubber grease. It's vital that there should be nothing to prevent this piston moving freely in the bore, otherwise the brakes could bind and grab. Therefore the bore and piston must be absolutely smooth and generously lubricated.



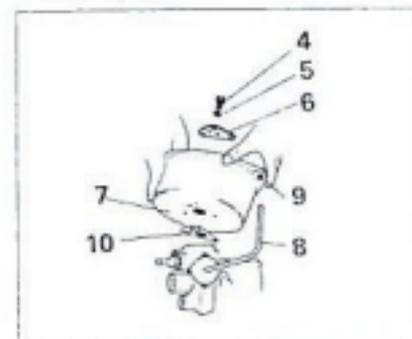
17. Aligning the hole in the control piston with that in the valve chest, insert the piston into the bore. Fit the seal (19) to the plug (27) and press into bore.



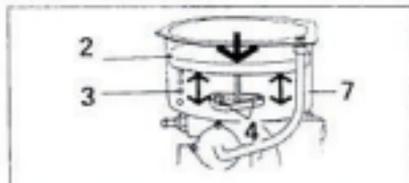
18. Insert T lever valve (18) and press in plug (19) to allow round end of lever to fit easily into the hole in control piston.



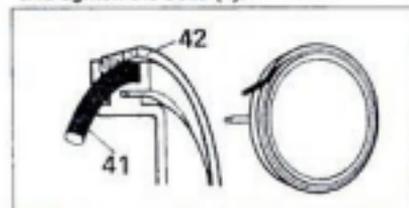
19. Fit spring plate (17) and lever guide (16). Secure with screws (15). Position new gasket (14) and cover (13) over the valve chest and secure with screws (11) and washers (12).



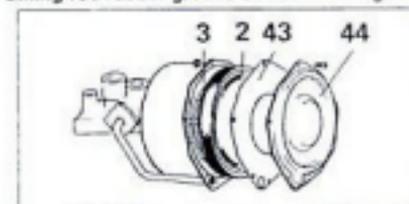
20. With unit body held in bench vice, place a new gasket (10) in position. Locate the vacuum cylinder (7) on gasket (10) with vacuum pipe (8) in new rubber grommet (9). Fit plate (6) and using bolts (4) with new copper washers (5); **TIGHTEN BOLTS FINGER TIGHT ONLY.**



21. Before tightening the bolts, place the piston return spring (3) and piston (2) in position and push it down through the full stroke several times to align the bearing bush. Taking care not to move the vacuum cylinder (7) remove the piston and spring and tighten the bolts (4).



22. Fit new rubber strip (41) under leather outer seal (42) and coat the seal with special black castor based molybdenum disulphide servo grease from kit. Keep the grease away from hydraulic parts and do not mix with other lubricant. The original extremely soft sponge strips are unobtainable. Due to production tolerances of the metal and leather components the replacement sponge may on rare occasions be found to be too firm, which could lead to binding brakes. In these cases the old sponges, if reusable, should be fitted. Polishing the vacuum cylinder bore, working in plenty of grease into the leather to make it supple, and adequately lubricating the vacuum cylinder bore should also help prevent binding. Smear the piston rod with Girling red rubber grease before inserting.



23. Refit spring (3) and piston (2). Fit a new gasket (43) to the cover plate (44) and place the cover plate on top on the piston. Press down, fit the nuts and bolts round the flange and tighten securely.

If the unit is not fitted to the vehicle immediately, the open ports should be covered with suitable tape to prevent the entry of foreign matter.