Scope: These instructions describe the steps required for disassembly, overhaul, and assembly of Glasair II/III main and nose NDI landing gear struts.

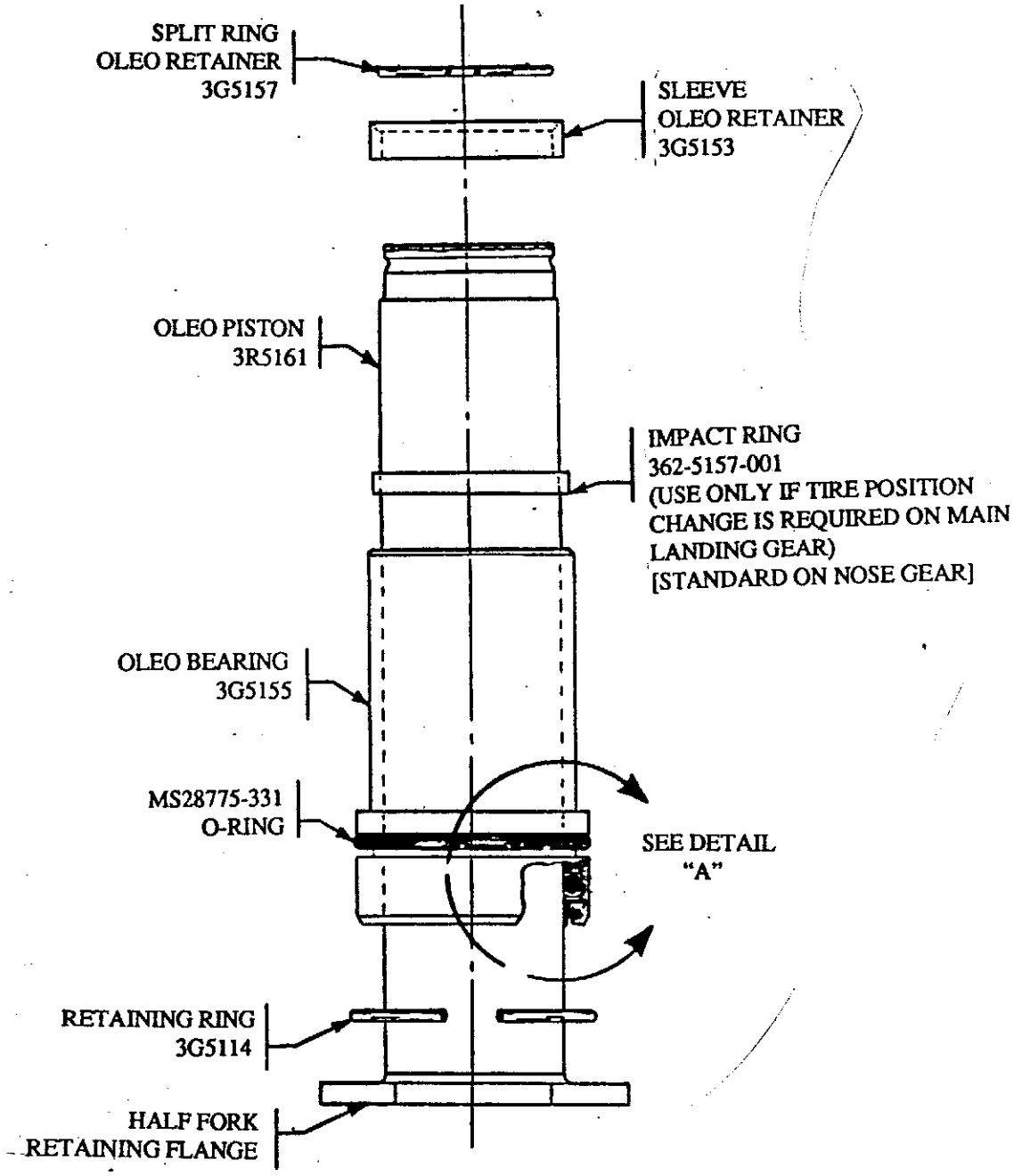
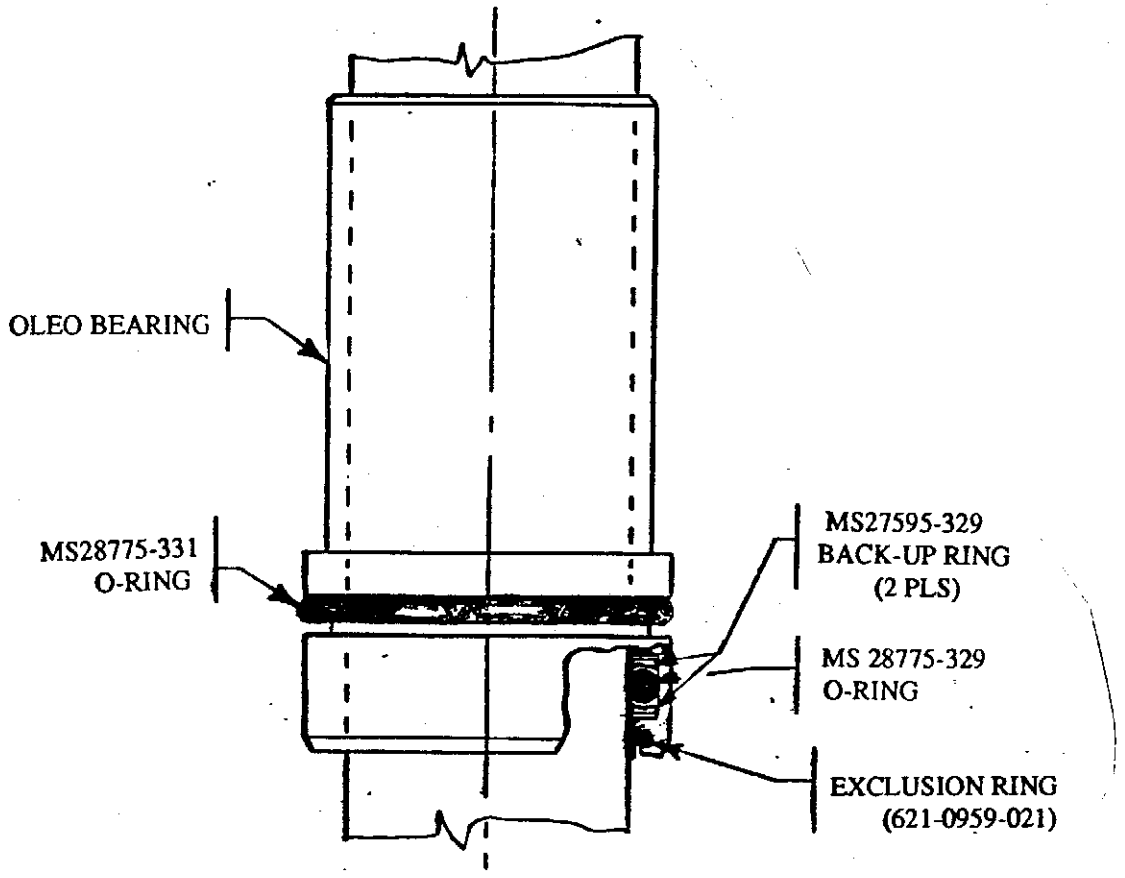


FIGURE (1)



(detail "A" from FIGURE (1))
FIGURE (2)

STEP 1: RELEASE INTERNAL PRESSURE AND REMOVE VALVE STEM

With the landing gear in the upright and vertical position, slowly depress the charge valve stem to release the nitrogen pressure. Once all of the pressure has been released, remove the internal valve stem using a standard valve stem removal tool.

STEP 2: SCISSOR REMOVAL

Collapse the oleo strut to the mid position and remove the lower cotter pin and scissor pin from the fork assembly. Take care to ensure all washers and shims are recovered upon removal.

When removing the nose gear scissor, it is advantageous to remove the forward and aft clamp halves rather than the lower pin. This simplifies the reinstallation of the scissor assembly.

STEP 3: RETAINER RING AND OLEO ASSEMBLY

The oleo and bearing are held in place by a retainer ring installed in the bottom of the trunnion assembly. To remove the retainer ring, insert a pick, drill rod, or equivalent tool into the 1/16 diameter hole located on the circumference of the trunnion.

Once the retainer ring is removed, the oleo bearing can be pulled out of the trunnion via a firm tug on the oleo piston. Once the bearing has been removed, drain all hydraulic fluid from the trunnion assembly.

NOTE:

(1) It is not necessary to remove the full fork or half fork to perform this task.
(2) Be sure the charge valve stem is removed, otherwise a vacuum will develop during bearing removal which severely hampers this operation.
(3) Anytime the oleo bearing is removed, it is imperative that the O.D. seal on the bearing be replaced.

STEP 4: OLEO BEARING REMOVAL

The bearing is retained on the oleo piston via a machined retainer and split ring. To remove the ring, insert a small pick or similar tool under the ring and pry it loose. Take care not to overly deflect or stretch the ring beyond its normal elastic limit. Once the ring has been removed, the machined retainer and oleo bearing will slide off the oleo piston.

STEP 5: OLEO PLUG REMOVAL (II RG ONLY)

Some models of II RG landing gear have an aluminum plug installed in the I.D. of the main and nose oleos. To extract the plug, the half fork and full fork must be removed from the oleo assembly.

Once the forks are removed, the plug can be pushed through the oleo cylinder using a wooden rod or equivalent tool.

STEP 6: METERING PISTON REMOVAL

NOTE: The metering piston need not be removed if the reason for overhauling the gear strut is leaking of fluid past the oleo bearing.

The metering piston assembly is installed in the I.D. of the trunnion and retained by a threaded fastener located on the trunnion cap. To prevent the metering piston from rotating when removing the fastener, fabricate an extraction/anti-rotation tool. The tool is essentially a 20 inch rod which incorporates a 5/16-24 male thread on one end and a handle, or some other means to react torque during fastener removal, on the other end.

Insert the threaded end of the extraction tool into the trunnion assembly. Thread the tool into the metering piston (approximately four turns) until the tool bottoms. While grasping the extractor tool to resist torque, the metering piston fastener can be removed. Once the fastener is removed, the metering piston can be pulled out of the trunnion with a light tug on the tool. Take care to recover the stat-o-seal which fits between the metering piston rod and trunnion cap.

NOTE: III RG landing gear serial no. 001 through 051 do not incorporate metering piston extraction threads. The extraction tool must be modified, therefore, to react torque via the metering holes located in the piston rather than the 5/16 threads. The two metering holes are .118 inch in diameter and 1.25 inches apart measured from centerline.

STEP 7: CLEANING AND VISUAL INSPECTION

Oleo Assembly: Thoroughly clean the oleo assembly using acetone, alcohol, or an equivalent solvent. If any rust has developed on non-chromed surfaces, it must be removed by using a wire brush. Carefully inspect all welded joints for evidence of cracks or abnormalities. The chromed oleo shaft should exhibit a smooth surface (16RMS) with no evidence of scratches. A scratch in the chrome can be detected by dragging a sharp object (knife edge, pointed pin, profolometer) across the surface.

Oleo Bearing: Remove the o-ring installed on the bearing O.D. Remove the two retainer packings (back-ups) and o-ring from the I.D. Remove the exclusion ring from the outboard I.D. gland. Thoroughly clean the bearing using recommended solvents.

Oleo Plug: (II RG Only) Remove the o-ring and two back-up rings installed in the O.D. of the plug. Thoroughly clean the plug using recommended solvents.

Metering Piston: (III RG Only) Remove the o-ring installed in the O.D. and the stat-o-seal installed on the metering piston rod. Thoroughly clean using a recommended solvent.

Trunnion Assembly: Thoroughly clean the trunnion assembly using recommended solvents. If any rust is apparent, it must be removed using steel wool, Scotch Brite, or equivalent. It is advantageous to attach the Scotch Brite to a long rod and chuck it in a standard hand drill. This approach works well for cleaning the trunnion I.D.

Carefully inspect all welded joint for evidence of cracks or abnormality.

NOTE: (III RG only) The cross tube of the main landing gear trunnions will fill with solvent during cleaning. Take care to ensure all solvents are completely drained after flushing.

STEP 8: METERING PISTON INSTALLATION

Generously lubricate the metering piston o-ring (MS28775-137: III RG only) using Vaseline, petroleum jelly, or the equivalent. Install the o-ring on the O.D. of the metering piston. Install the stat-o-seal (620-0600-001) on the threaded end of the metering piston. Using the metering piston extraction tool, install the metering piston in the trunnion assembly. Install the 5/16 washer and AN nut and torque to 140 inch-pounds, maximum. To ensure the integrity of the stat-o-seal, take care that the metering piston does not rotate while torquing the fastener.

NOTE: (III RG only) Substitute o-ring MS28775-138 for landing gear serial numbers 001 through 051.

STEP 9: OLEO BEARING/OLEO PISTON ASSEMBLY

Install the oleo bearing retainer ring on the oleo. Generously lubricate the o-ring (MS28775-331) with a recommended lubricant and install on the O.D. of the oleo bearing. Install two retainer packings (MS27595-329) in the I.D. gland of the oleo bearing. Install one o-ring (MS28775-329) in the I.D. gland of the oleo bearing. Verify that the o-ring is between the retainer packings with one on each side of the o-ring. Install the exclusion ring (620-0959-021) in outboard I.D. gland.

Install the oleo bearing on the oleo shaft. The bearing will slide onto the shaft with less than 10 pounds force. While applying thrust, carefully rock the bearing until the exact concentric fit is achieved. At this point, the bearing will easily slide onto the shaft.

NOTE: Do not hammer or force the oleo bearing onto the shaft.

Once the bearing is installed on the shaft, install the machined oleo retainer and the split retainer ring. Once the ring is seated, carefully inspect the installation for proper assembly. This is a very critical joint and care must be taken to ensure integrity.

STEP 10: OLEO PLUG INSTALLATION (II RG ONLY)

Generously lubricate the oleo plug o-ring (MS28775-222) using Vaseline, Petroleum Jelly, or the equivalent. Install the o-ring on the O.D. of the plug. Install two back-up rings (MS28774-222) in the o-ring groove. Take care to ensure one back-up ring is installed on either side of the o-ring.

NOTE: (II RG only) Perform Step 12 (Oleo Bearing Installation) followed by Step 11 (Fill Strut With Oil) prior to continuing. The oil can be poured directly into the I.D. of the oleo cylinder.

Install the plug in the I.D. of the oleo cylinder. Reinstall the half forks and the full forks using threaded fasteners.

NOTE: 1/4-28 bolts are torqued to 70 inch-pounds, maximum. 10-32 bolts are torqued to 25 inch-pounds, maximum.

STEP 11: FILL STRUT WITH OIL

Lay the trunnion assembly on a flat surface and tilt the open end up at approximately 30 degrees. Fill the trunnion with MIL-H-5606 hydraulic oil as indicated below:

II RG:

Main Landing Gear:	500 ml =	16.9 fluid oz.
Nose Landing Gear:	400 ml =	13.5 fluid oz.

III RG:

Main Landing Gear:	450 ml =	15.2 fluid oz.
Nose Landing Gear:	620 ml =	21.0 fluid oz.

Allow the oil to drain past the metering piston; however, do not let it drain out the charge valve. The charge valve stem must be removed, otherwise it will not be possible to install the oleo bearing due to pressure build-up.

STEP 12: OLEO BEARING INSTALLATION

Grasp the oleo assembly and insert the oleo bearing into the trunnion. Firmly seat the oleo bearing to ensure adequate clearance for the retainer ring. If necessary, the oleo bearing may be seated by using a wood or plastic block and hammer. Take care to strike the bearing only at its O.D. perimeter to avoid damage to the exclusion ring groove. Once the bearing is installed, insert the retainer ring into its groove.

NOTE: Take extra care to inspect the installation of the retainer ring. This installation is very critical to safety.

STEP 13: CHARGE VALVE INSTALLATION

Place the landing gear assembly in the upright vertical position. Allow the hydraulic fluid to drain through the metering piston. Slowly compress the strut to purge air from the trunnion assembly. With the strut fully collapsed, install the charge valve stem using a standard installation tool.

STEP 14: SCISSOR INSTALLATION

With the strut in the mid stroke position, re-install the scissor assembly. Take care to ensure all washers and shims are in place. Make sure the cotter pin is in place.

STEP 15: CHARGING PROCEDURE

With the strut in the fully collapsed position, apply sufficient Nitrogen pressure (30 PSI) to fully extend the oleo.

WARNING: Make sure there are no people in the line of fire of the oleo/trunnion. If the retainer ring installation is faulty, the unit could blow apart. Before charging, very carefully re-inspect the oleo bearing retainer ring to ensure it is properly seated in its groove.

Once you are satisfied that the installation is correct, slowly raise the Nitrogen pressure to the specified value:

III RG:

Main Landing Gear:	150 PSI
Nose Landing Gear:	120 PSI

II RG:

Nose Landing Gear:	110 PSI
Main Landing Gear:	90 PSI

WARNING: Take extra care to ensure that nobody will be injured in case the unit fails due to improper assembly. Please remember that compressed gas can be very dangerous.

STEP 16: STRUT SERVICE INTERVAL

It is recommended that the fluid level in the struts be checked every 500 hrs of aircraft service.