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REPAIR AND REBUILD MANUAL

for

AIR AMPLIFIER

Model # GPLV2

DIS-ASSEMBLY

1. Remove snap ring, #17, from the spool valve housing, # 9.
2. With a long screw driver or wooden dowel, from the ½" FNPT side of the housing, #9, push out the spool plug, #15, and spool, #12, from the housing.
3. Remove the four (4) cap screws, #21, that hold the housing to the top cap, #1, and remove housing.
4. Holding the housing in a vise, use special tool, P/N 101-0033, to remove the spool sleeve, #10, from the housing. **DO NOT SCRATCH THE BORE OF THE SLEEVE.**
5. Remove both tappet screws, #2, from both ends of the amplifier. With needle nose pliers, remove the springs, #4, and tappets, #5 from the end caps
6. Using a 3/4" socket or open end wrench, remove the four (4) tie rods, #50, and pull both end caps away from the air cylinders, # 28 and #48.
7. Push either of the air pistons, #43, all the way to one side, on the side where the piston is closest to the center air separation plate, #29, tap on the outside of the air cylinder, #28 or #48, near the end, with your hand or a soft hammer, and remove cylinder from piston. Push the piston to the opposite side and repeat the procedure to remove the other cylinder.
8. Using a 15/16" socket and open end wrench, remove one of the nuts, #45, from the piston rod, #41, and remove the piston from the rod. Both pistons do not have to be removed from the rod. Pull the piston and rod from the center air separation plate, #29.
9. Remove the snap rings, #36, that hold the four (4) check valve assemblies in place and remove the check seats, #30, O-Rings, #31, plates, #32, springs, # 33, holders, #34, and retainer rings, #35.
10. Remove all old O-Rings and seals. Clean all other parts in mineral spirits to remove all dirt and grease.

NOTE!! Before re-assembling, inspect **all** parts for damage, such as scratches on the bores of cylinders and spool sleeves and surfaces of the piston rod.

ASSEMBLY

1. Start with the check valve assemblies. Refer to the attached drawing 3630.0658 for an expanded view of the parts and their orientation for proper order of assembly. Use a small amount of grease on all O-Rings. Note that the angle side of the seats face the plate. The two (2) check valve assemblies that are on the inlet, or "A" side, have the seat installed first, then the O-Ring, check plate, spring, holder, retaining ring and snap ring. On the outlet, or "B" side, the order is opposite, starting with the holder, then the spring, check plate, O-Ring, seat, retaining ring and snap ring.

2. Install the O-Rings, #46, in the pistons, #43, then install the seals, #47, on the pistons, over the O-Rings. The seals can be installed on the pistons by starting them on one side of the piston, then insert a length of plastic banding material under the seal. The seal can then be worked around until it is in place all around the piston. The plastic banding can then be pulled out from under the seal.
3. Apply a light coat of grease to the piston seal and the inside of both air cylinders. Take the piston that is attached to the piston rod and insert it into the appropriate air cylinder at a 45 angle. When the piston is all the way inside the cylinder, straighten it out. This will prevent damage to the seals.
4. Put a light coat of grease on the O-Rings, #23, and install them in the grooves on the center air separation plate, #29, and both end caps, #1 and #49. Insert the piston rod through the bushings in the center air separation plate.
5. The second piston can now be installed on the piston rod and the nut. #45 tightened down.
6. The second air cylinder can be installed by holding it at a 45 angle to the piston until the seal is all the way inside, then straighten the air cylinder and push it all the way into the center air separation plate.
7. Both end caps can be put in place, while installing pressure tube, #25 in between. Insert the four (4) tie rods and tighten the nuts to a torque of approximately 50 ft-lbs.
8. Install both tappets, #5, into the end caps followed by the springs, gaskets and screws.
Note: There are two styles of pilot tappets, the older style has a seal bonded to the tappet, and the new style has an o- ring groove in the Tappet. On the new style tappet, change the o- ring in the o- ring groove. On the old style be sure that the O-Ring on the tappets are in good shape, and that they are bonded to the metal piece.
9. Assemble the spool valve. All O-Rings should be installed on the spool sleeve, #10.
NOTE: There is no O-Ring placed in the groove with the small cross drilled hole in it. The O-Rings and bore of the spool housing, #9 should be greased. Install the spool sleeve into the housing, #9, inserting the smallest I.D. end in first and push all the way down to the bottom.
10. Install the six (6) O-Rings on the spool, #12, putting a light coat of grease on the O-Rings and in the bore of the spool sleeve. Insert the spool into the spool sleeve small side first, gently moving the spool from side to side with very little pressure on the end of the spool, DO NOT FORCE. The O-Rings fit loosely on the spool and can be cut if they are forced in. Install the Spool plug, #15, and snap ring, #17.
11. Attach the spool housing to the top cap, with greased O-Rings, #13 and #18, while inserting pressure tube, #27, between housing and bottom cap, using the four (4) cap screws and tighten.

*** The recommended grease is a high temperature grease, Kluber Lube, Polyube GA352P**

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SUGGESTED PREVENTATIVE MAINTENANCE FOR FOR AIR DRIVEN AIR AMPLIFIERS

The suggested maintenance schedule is intended only as a guideline. The operating conditions of the amplifier, such as air drive pressure, air supply pressure, air outlet pressure, air cleanliness and actual running time at pressure, combine for an almost infinite range of variable conditions and **all** directly relate to the life of the amplifier and it's components. Even the external environment around the amplifier, such as dust and heat can affect the service life.

The following suggestions are based on average operating conditions and a 50% to 60% run time factor for the amplifier. These times could be shorter or longer based on operating conditions listed above

EVERY 3 MONTHS

Remove spool, remove spool O-Rings and clean spool. Place New O-Rings on spool and apply a thin coat of grease* to the O-Rings and bore of the spool sleeve housing. Insert spool gently back in spool sleeve, by working it in and not forcing it straight in.

Remove and check pilot tappets and the bonded O-Ring. Make sure the O-Ring is still attached. If the tappet is damaged or the O-Ring is loose, replace the tappet.

Inspect muffler to make sure it is not coated with dirt and/or oil. Replace if necessary.

EVERY 6 MONTHS

Rebuild the Spool, Air and Gas sections and clean and inspect the check valve sections as well as all major components for scratches or damage.

EVERY 12 MONTHS

Rebuild and clean the entire amplifier

* **Recommended grease is a high temperature type, Kluber Lube, Polyube GA352P**