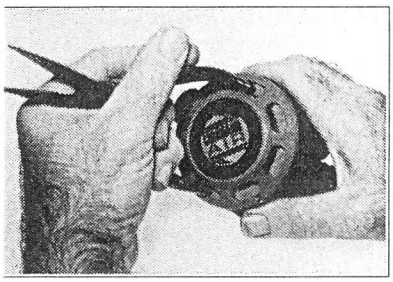
COMMAND AIR 2nd STAGE DESCRIPTION

The second stage is a downstream demand valve, semi-servo assisted with adjustable inhalation sensitivity and adjustable venturi assistance to boost air-flow.
The material used in manufacturing the second stage is:

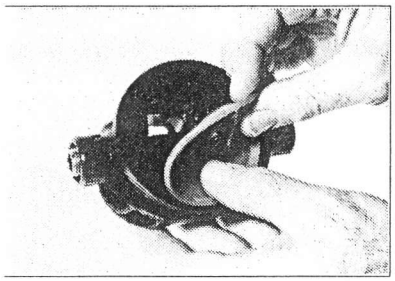
Housing:	Fibreglass re-inforced nylon
Front Cover:	Polycarbonate
Exhaust valve cover:	Polycarbonate
Diaphragm:	Silicone
Mouthpiece:	Silicone
Exhaust valve:	Rubber

2nd STAGE DISASSEMBLY (COMMAND AIR)

1. Remove the complete regulator from any air source.
2. Remove the Command Air 2nd stage from the LP hose using an 11/16'' spanner.

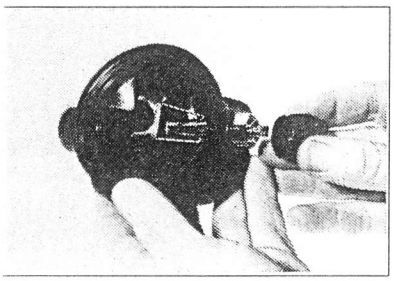


3. Remove the front cover (#2) by placing the plastic coated handles of the needle nosed pliers into the ambient ports and rotate anti-clockwise.

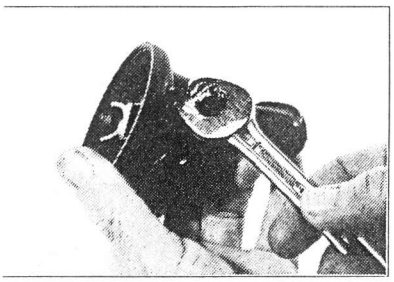


4. Lift out the nylon washer (#31) and the diaphragm (#30).

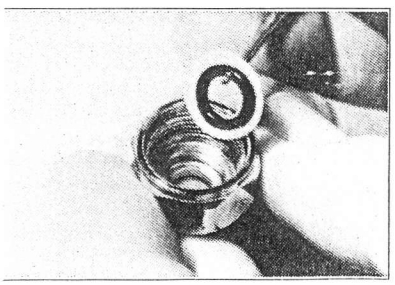
   NOTE: Do not disassemble the plastic inner (#16) from the diaphragm.



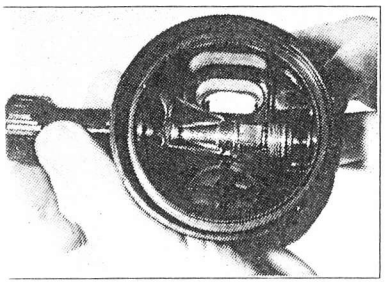
5. Undo retaining screw (#21) and remove the sensitivity knob (#5).



6. Unscrew gland nut (#10) using an 11/16'' spanner.

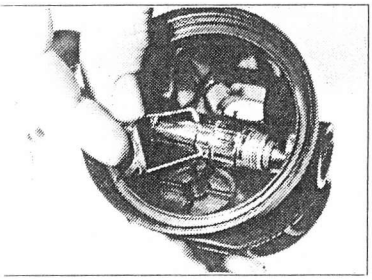


7. Remove delrin washer (#14) and small O ring (#24) from gland nut (#10).



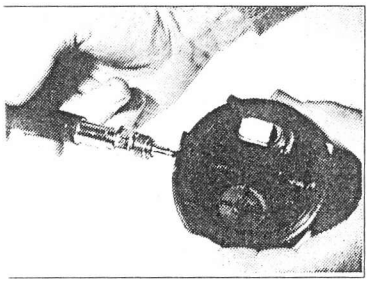
8. Gently push the sensitivity spindle (#9) into the 2nd stage housing (#1) approx. 2.5cm.

   NOTE: The entire sleeve assembly (#7) should move as a unit.

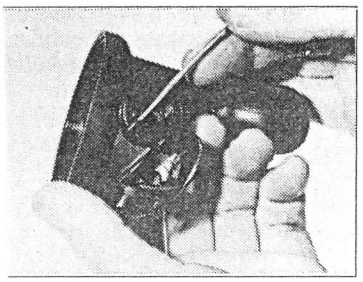


9. Gently remove the demand lever (#11) from the sleeve (#7).

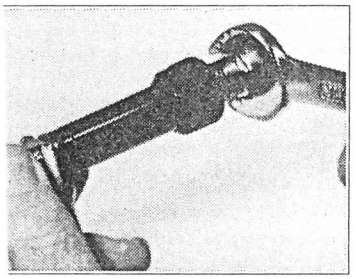
   NOTE: Care should be taken to remove one leg at a time.



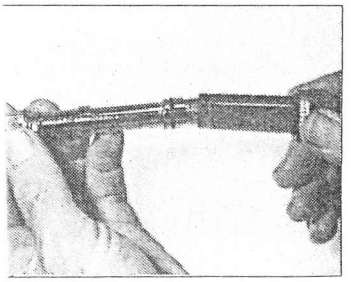
10. Complete the removal of the sleeve (#7) from the housing (#1).



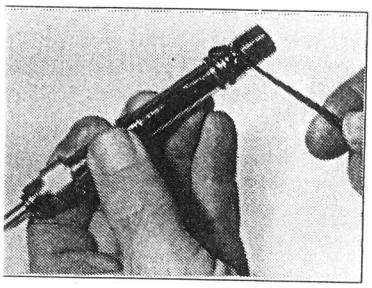
11. Using an O ring pick recover the large O ring (#27) either from the end of the sleeve (#7) or the spindle side of the housing (#1).



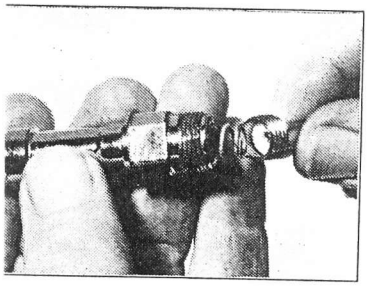
12. Using an 11/16'' spanner unscrew lock nut (#12) Hold the sleeve (#7) with a 19/32'' spanner.



13. Pull gently and remove the Turbo Boost control knob (#4).

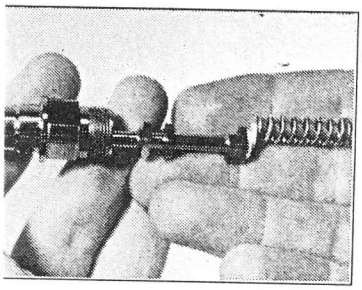


14. Using an O ring pick carefully remove O ring (#25) from the groove in the sleeve (#7).



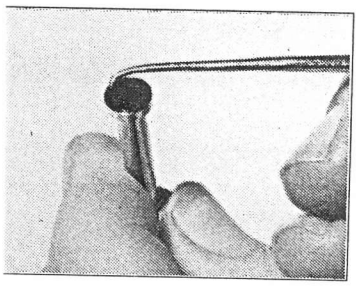
15. Turning anti-clockwise remove the sensitivity spindle (#9) from the sleeve (#7). Remove the teflon washer (#13) from the end of the spindle (#9).

    NOTE: Spindle is under slight spring tension.

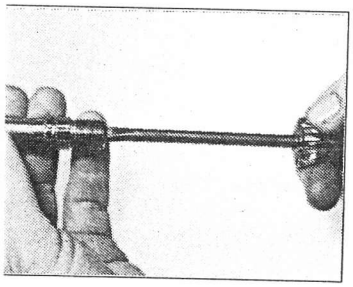


16. Tilt the sleeve (#7) and slide out the LP spring (#23), teflon washers (#13) 2 off and the LP valve (#8).

    NOTE: One teflon washer (#13) will be free floating and one will be located on the end of the LP valve (#8).



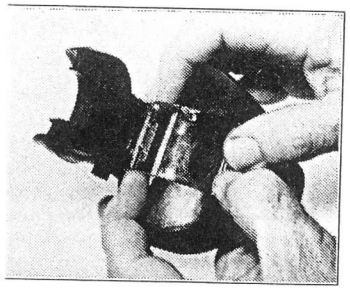
17. Using an O ring pick remove and discard the LP seat (#18) from the end of the LP valve (#8).



18. Unscrew the adjustable orifice (#20) from the end of the sleeve (#7) use a standard 1/4'' screwdriver.

    NOTE: To push the orifice out use a sharpened pencil end so as not to damage the knife edge.

19. Using an O ring pick carefully remove the O ring (#24) from the orifice (#20).



20. To remove the exhaust valve cover (#6) firmly push /slide the cover towards the mouthpiece barrel on the housing (#1).

21. Hold the exhaust valve (#28) between thumb and forefinger and gently pull to remove.

Inspection.

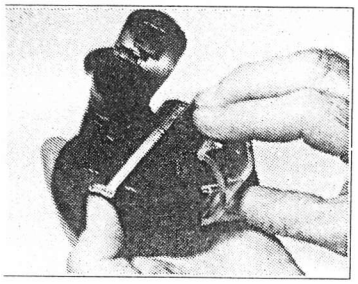
Carefully check you have all parts listed on the exploded view of the Command Air 2nd Stage.

Inspect all parts for any signs of wear or damage. All parts showing signs of wear or damage must be replaced. Ensure only genuine factory parts are used for replacements.

CAUTION: Do not use silicone aerosol sprays on the plastic components. The propellants can adversely affect these parts.

2nd STAGE ASSEMBLY PROCEDURES (COMMAND AIR)

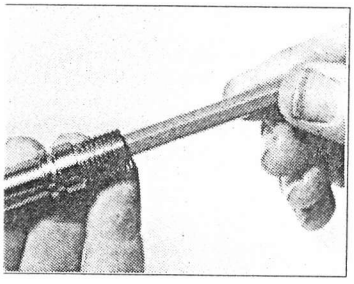
1. Install the exhaust valve (#28). Guide the valve stem through the exhaust support in the housing (#1), gently pulling from the inside until the valve snaps into position.



2. To install the exhaust valve cover (#6) locate the lower edge of the cover into the housing (#1). Pivot the top edge of the cover upwards and snap into position.

3. Inspect the knife edge of the adjustable orifice (#20) for nicks or other damage. Replace if necessary.

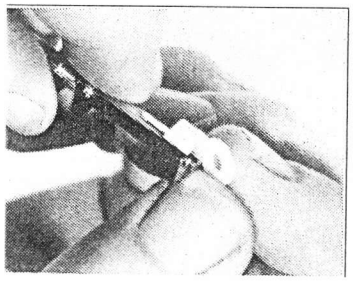
4. Inspect and assemble the O ring (#24) onto the orifice (#20).



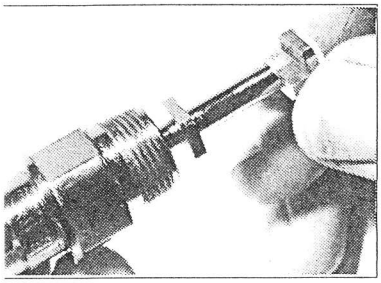
5. Install the adjustable orifice (#20) into the sleeve (#7). Gently push into position using the eraser end of the pencil.

   IMPORTANT: Screw the orifice in until it stops, using a 1/4'' screwdriver.

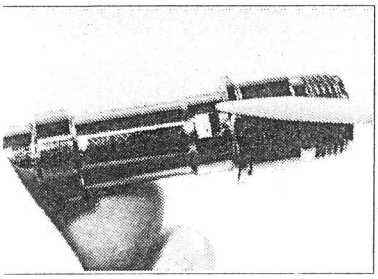
6. Install a new LP seat (#18), large end first, onto piston assembly (#8). The rubber seat should sit flat with no air trapped between the seat and the piston.



7. Snap one teflon friction washer (#13) over the opposite end of the piston assy. (#8).

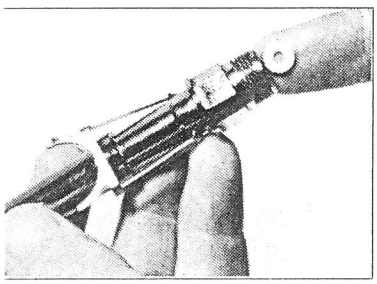


8. Insert piston (#8), LP seat end first, into the demand valve sleeve (#7) making sure the notch at the spring end is facing up.

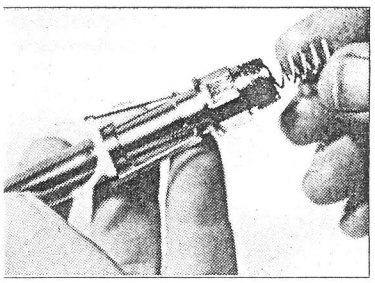


9. The notch in the piston (#8) must be aligned with the square holes in the side of the demand valve sleeve (#7). This can be accomplished by snapping the demand lever (#11) into position through the squared holes in the sleeve (#7). Shake the unit back and forth to ensure the piston (#8) is floating freely.

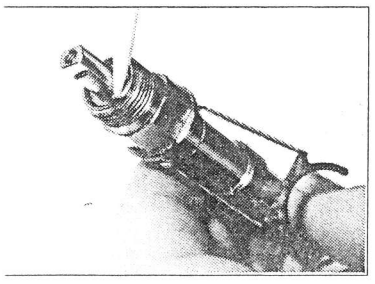
   NOTE: This alignment is critical for proper installation of the demand lever later during assembly.



10. Place a second teflon friction washer (#13) into the demand valve sleeve (#7). (sensitivity knob end)



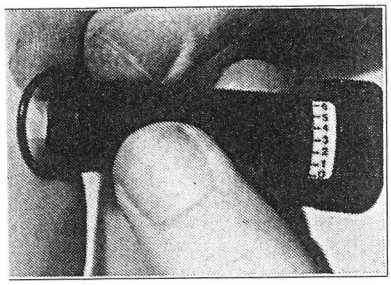
11. Insert the LP spring (#23) into the demand valve sleeve (#7) on top of the friction washers.



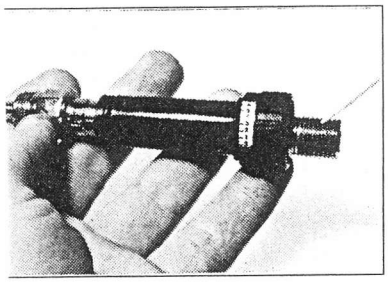
12. Place the third friction washer (#13) into the end of the sensitivity spindle (#9) and screw the spindle into the demand valve sleeve (#7). Stop screwing when the last thread of the spindle (#9) is slightly below the edge of the sleeve (#7).

13. Check the demand lever (#11) for smooth and proper function. Remove the lever (#11) from the sleeve (#7).

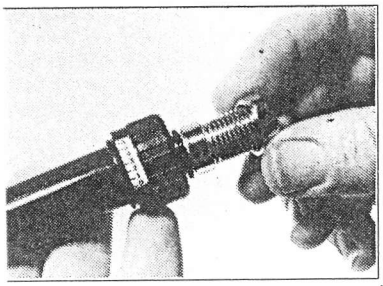
14. Install O ring (#25) into the groove on the hose end of the demand valve sleeve (#7).



15. Slide O ring (#26) onto the Turbo Boost adjustment knob (#4). Ensure the O ring is hard up against the shoulder.

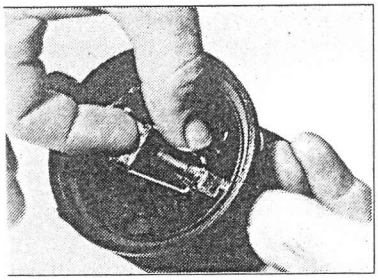


16. Fit the Turbo boost knob (#4) over the demand valve sleeve (#7) from the LP hose end. Slide the knob completely onto the sleeve exposing the threaded end.

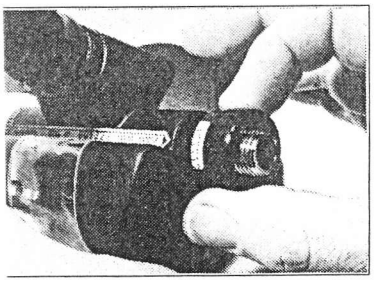


17. Install the boost knob retaining nut (#12) onto the hose thread of the sleeve (#7). Use an 11/16'' spanner to turn the nut, use a 5/8'' spanner to hold the sleeve. Tighten to approx. 40 in/lbs only.

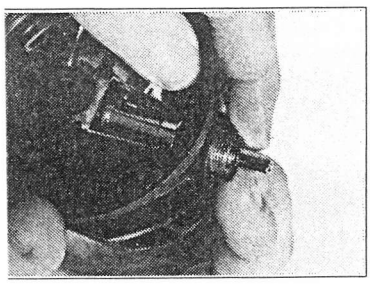
18. Insert the complete demand valve assembly (sensitivity side first) into the housing (#1). Install only partially at this time.



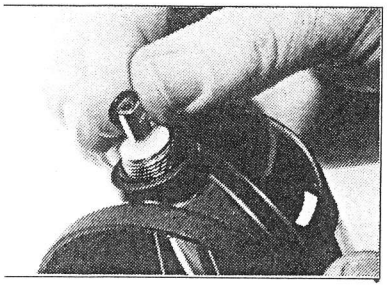
19. Next fit the demand lever (#11) back into the sleeve (#7). Ensure the lever is correctly located in the LP valve (#8) slots. Check for smooth and proper function.



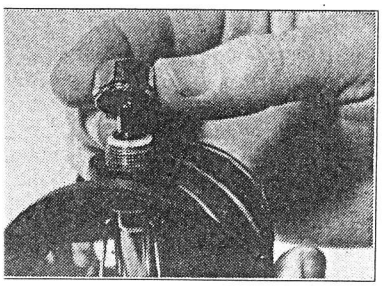
20. Align the Turbo boost knob (#4) with the housing (#1) in either the fixed (non adjustable) or the variable position and slide the sleeve completely into the housing.



21. Install O ring (#27) onto the demand valve sleeve (#7) and into the O ring groove in the housing. (#1)



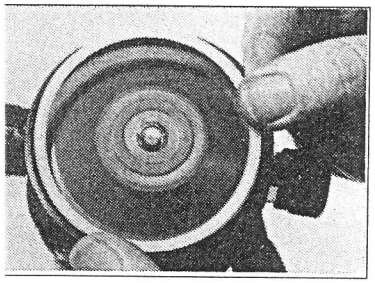
22. Install first the delrin washer (#14) then O ring (#24) onto the spindle (#9).



23. Fit the gland nut (#10) over the spindle (#9). Using an 11/16'' spanner tighten the gland nut to approx. 40 in/lbs.

24. Position the adjusting knob (#5) onto the spindle (#9) and secure with screw (#21) Tighten screw hand tight only. Turn the adjusting knob (#5) anti-clockwise until it stops, this is the starting position for tuning later.

25. Install the diaphragm assembly (#33) into the diaphragm groove in the housing (#1) making sure the diaphragm is properly seated.



26. Place nylon friction washer (#31) over the diaphragm. (#33)

27. Screw the front cover assembly (#2) into the housing (#1). For the final tightening use the plastic coated handles of the needle nosed pliers in the front cover ambient ports.

    NOTE: Assemble the front cover (#2) and purge button (#3) as follows: Install purge spiral spring (#15) into the front cover (#2) large diameter first. Place the purge button (#3) over the spring (#15) prongs first and snap into position. Check for proper function.

28. Check for smooth and proper function of both adjusting knobs.

Final Adjustment

Secure the second stage to an LP hose, hand tight only, with a supply pressure of 145 psi (1000 KPa). Turn the sensitivity knob (#5) completely anti-clockwise and the boost knob (#4) completely clock-wise. Submerge the entire second stage and check for air leaks.

If a freeflow is present, depress the purge button sharply several times and recheck for freeflow. If the freeflow continues either O ring (#24) or the seat edge on the adjustable orifice (#20) is damaged or LP seat (#18) is defective. Refer to the previous sections on Disassembly and Assembly to change these parts. After replacing any damaged parts repeat the freeflow test.

Shake the second stage assembly. If a rattling is heard this indicates too much play between the demand lever (#11) and the second stage diaphragm (#33).

Eliminate play by first shutting off the air supply, purging the second stage and removing the LP hose assembly.

Insert a 1/4'' screw driver into the demand valve sleeve (#7), engage the adjustable orifice (#20) depress the purge button and turn anti-clockwise ¼ of a turn. Reassemble the LP hose and pressurize the system. Check for play. Repeat this procedure if necessary.

Tighten the LP hose assembly (40 in/lbs max.) check for proper regulator function.

2ND STAGE SETTINGS.

Inhalation Effort Adjustable from 0.2''

Measured with the:
Turbo Boost Knob set Anti-clockwise to Position 6.
Sensitivity Knob set completely Anti-clockwise.

PARTS TO BE CHANGED ANNUALLY.

LP Valve seat	Item No.18	P/No. 360218

CAREFUL INSPECTION OF THE FOLLOWING PARTS IS REQUIRED BEFORE REFITTING.

Exhaust Valve Cover	Item No. 6	P/No. 360204
Demand Lever	Item No. 11	P/No. 360209
Adjustable Orifice	Item No. 20	P/No. 340001A
Exhaust Valve	Item No. 28	P/No. 340026
Mouthpiece	Item No. 29	P/No. 360227
Diaphragm	Item No. 33	P/No. 360226

Remaining parts to be visually inspected before refitting.

SPECIAL NOTES.

DEMAND LEVER (Item No. 11) is manufactured from phosphor bronze, this will prevent any rusting of the lever. Phosphor bronze is a soft material and so can be easily bent. Check the lever for any distortion before refitting. If distortion is noted simply reform the lever by careful bending.

Final adjustment can be accomplished utilizing in-line adjusting tool (part No. 3400 TOOL) in preference to adjusting procedure shown above (final adjustment).