128 PILOT SECOND STAGE
REPAIR PROCEDURES

DISASSEMBLY

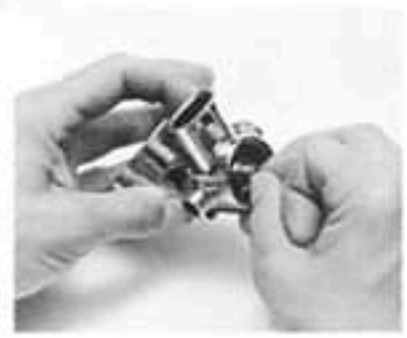
(REFER TO SCHEMATIC FOR PART IDENTIFICATION)

STEP 1
Remove guard using guard tool as shown. TURN 1" RIGHT OR LEFT

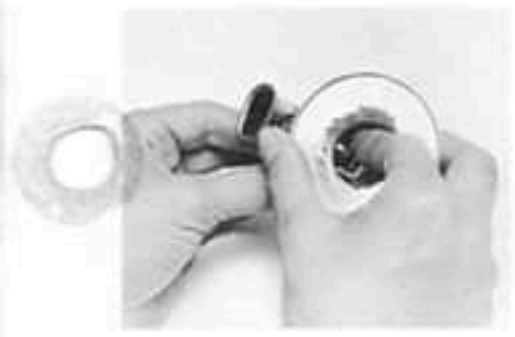
STEP 2
Remove clip using needle-nose pliers. Withdraw clip thru large round hole. LIFT ONE SIDE OF CLIP AND FORCE TO CENTER OF DIAPHRAGM

STEP 3
Remove diaphragm rod assembly by pulling up and tilting toward exhaust slots to disengage lever tabs. Then slide assembly off of lever. -TO THE RIGHT

STEP 4
Remove mouthpiece and lanyard. Then, using spanner wrench, unscrew and remove end cap. Also take out aspirator.

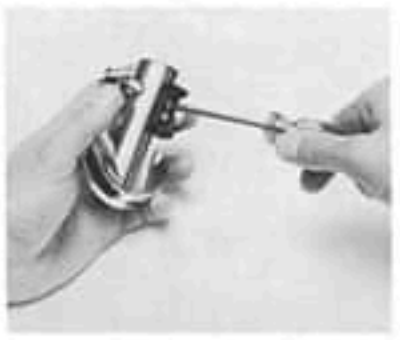


STEP 5
Remove poppet spring. Then grasp stop by placing fingernails in groove and pull out stop and poppet assembly as a unit.



STEP 6
Reach inside regulator and push on set screw with a wiggling motion to push out housing with lever installed.
DO NOT PULL OUT!

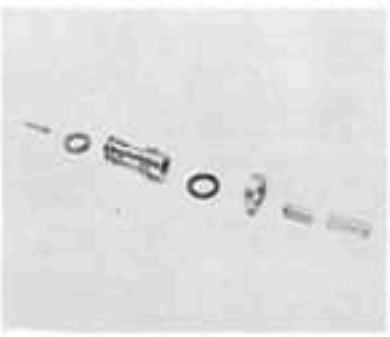
STEP 7
Remove lever and set screw. Then, using [illegible] * push out ball, orifice and o'ring being careful not to scratch large bore in housing. *COTTON SWAB
-REPLACE CORRODED PARTS-



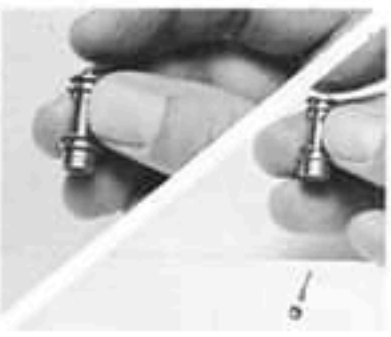
STEP 8
Remove switch label, then unscrew switch retaining screws. Remove switch and internal switch parts including the switch spring. You need not disassemble switch spring from switch spacer, unless the spring requires replacement.

STEP 9
Remove inlet cap and inlet plug using fingernail to grasp flange of plug. Plug can also be pushed out by pushing a probe into the open end of the inlet.

STEP 10
Grasp poppet with modified pliers as shown. Then unscrew stop using small crescent wrench.



STEP 11
Remove pilot pin, o'ring retainer, pilot spring, piston, and external o'rings from poppet.



STEP 12
Using a pilot pin, push out the pilot o'ring and the o'ring button. The pilot pin will fall thru with the o'ring and o'ring button.

128 PILOT SECOND STAGE REPAIR PROCEDURES

DISASSEMBLY

(REFER TO SCHEMATIC FOR PART IDENTIFICATION)

STEP 13
Remove all o'rings from metallic parts. The following o'rings should be discarded and replaced with new o'rings: 128-149, 128-141, 128-140, 101-10 (2 req'd). Clean and inspect all other o'rings replacing those that appear to be bad.

STEP 14
Degrease all metallic and plastic parts in trichloroethylene and then dry. Caution: Do not set rubber parts in trichloroethylene.

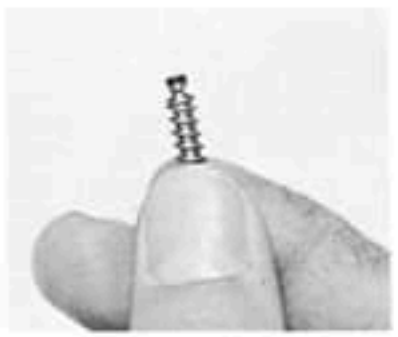
STEP 15
Put all metallic parts in a solution of 50% muriatic acid and 50% water. Swimming pool acid in gallon plastic containers is easily obtainable. Caution: ADD ACID TO COLD WATER. FOR CALCIUM OR RUST CORROSION ONLY!

STEP 16
Thoroughly rinse all parts with water and blow dry with compressed air.

GENERAL ASSEMBLY PRACTICE
Lubricate o'rings using silicone grease Part =494. Lubricate o'rings just before assembly into unit in order to minimize lint and dirt attraction. Closely inspect all sharp seats making sure they are free of nicks and scratches.

STEP 20
Using forefinger as shown, hold switch plate in place, then turn case over and proceed with next step.

STEP 21
Using forefinger, center switch plate screw holes in slot, then install switch.



STEP 22
Place piston into pilot spring. Put a small dab of silicone grease on the end of the piston before placing o'ring button and new o'ring (128-141) in place. The grease will hold the o'ring and button in place.

STEP 17
Apply silicone grease to inside of case around switch slot as shown.

STEP 18
Place switch spring attached to switch spacer into case as shown. Then place switch plate directly over switch spacer.

STEP 19
Lube and install o'ring 128-142 in groove in underside of switch. Also, place switch screws through holes on switch as shown.

STEP 23
Insert o'ring, o'ring button, piston and spring into poppet as shown.

STEP 24
Using stop, compress spring and screw stop into poppet. Tighten stop holding poppet with modified pliers as shown. Note: Tightening stop only hand tight is not acceptable.

STEP 25
Look through hole in bottom end of poppet to make certain that pilot o'ring has centered itself in its respective bore.

128 PILOT SECOND STAGE REPAIR PROCEDURES

(REFER TO SCHEMATIC FOR PART IDENTIFICATION)

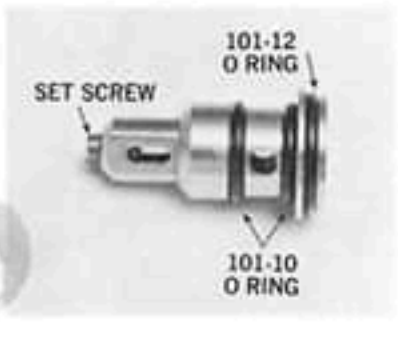
STEP 26
Lube and install o'rings as shown. Be sure not to get silicone grease on surface "A".

2 pc. PRESS FITTED

STEP 32
Install poppet assembly from Step 27 into housing as shown, being careful not to unseat o'ring retainer on poppet.

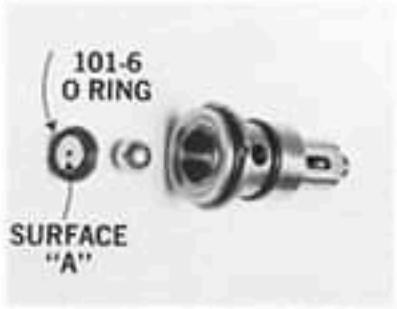
STEP 27
Install o'ring retainer using finger nails as shown to squeeze o'ring into o'ring groove. When in place, rotate o'ring retainer 2 revolutions to be sure o'ring is in place and seated. INSTALL IN SIDE PORT

STEP 33
Insert housing assembly into case being careful to locate notch in housing flange above index pin protruding from inlet inside the case. Be sure o'rings are pushed all the way down in inlet.



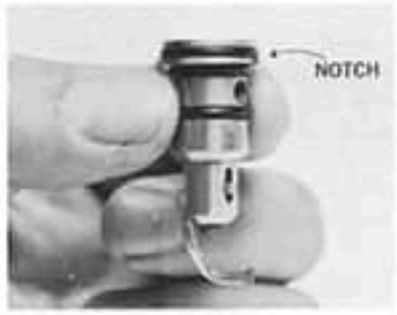
STEP 28
Install o'rings as shown. Install new set screw. Screw set screw in about halfway.

STEP 34
Install poppet spring as shown.

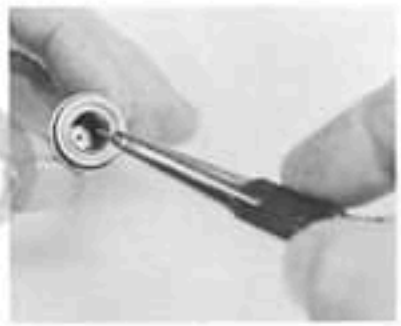


STEP 29
Install o'ring on orifice as shown. Surface "A" to be free of grease. Drop ball into housing. Then insert orifice with o'ring into bore of housing. Using a spare poppet, w/o o'rings installed, push the orifice and o'ring all the way down in the housing bore.

STEP 35
Install aspirator in aspirator retainer, then screw this assembly into case using spanner wrench.



STEP 30
Install lever between ball and spherical end of set screw in housing. Lever should be installed 180° from notch in housing flange.



STEP 31
Using needle-nose pliers insert pilot pin into small hole in orifice.

STEP 36
Install inlet plug and inlet cap to either right or left side of inlet depending on whether you desire a left or right handed 2nd stage.

128 PILOT SECOND STAGE REPAIR PROCEDURES

(REFER TO SCHEMATIC FOR PART IDENTIFICATION)

STEP 37

Adjust pilot as follows: Pressurize the pilot using any one of the Scubapro first stages. Place the second stage underwater with the mouthpiece downward. Using ball-end Allen wrench, turn the set screw clockwise until a leak is apparent. Then back off the set screw just until the leak stops. Note: Sometimes the leak will not stop completely. However, this small amount of leakage is insignificant. Therefore, adjustment should proceed as follows: Turn the set screw counter-clockwise noting how the bubble rate changes. When you notice that backing out the set screw does not cause the bubble rate to decrease, screw the set screw clockwise just until the bubble rate starts to increase. At this point, check the lever to make sure it has not become slack. Now count the amount of bubbles per second emitting from the pilot. You will need this information when making the diaphragm adjustment.

STEP 38

Move switch to "pre-dive" position. Check clearance between switch spring and lever. The spring should be as close to the lever as possible but should not touch the lever.

STEP 39

To adjust spring, bend spring wire using switch spring adjusting tool as shown. Correct functioning can be checked after completion of Step 44. Return switch to "dive" position.

STEP 40

Remove the regulator from the water and de-pressurize. Reinstall the diaphragm and rod assembly as shown by reaching in with the keyed-hole end of the rod and lifting the lever up to align the lever key with the keyed hole in the rod end. Important: the slotted hole in the rod must be oriented as shown.

STEP 41

Slip rod onto lever and put diaphragm inside case.

STEP 42

Install diaphragm clip as shown making sure diaphragm is not wrinkled under clip and is in no way prevented from making even contact against its seat. Also be sure tab of clip protrudes through round hole in case.

STEP 43

Install guard without purge button in place by placing it in the case and rotating it 1/8 turn using guard installation tool.

STEP 44

Be sure the diaphragm is well centered in the assembly, pressurize, and place the unit underwater again orienting the mouthpiece at the top so that you can look into the mouthpiece in order to make your next adjustment. If, when making the pilot adjustment, the pilot sealed completely, adjust the diaphragm as follows: Turn the plastic knob (a 10 mm long reach socket works best) counter-clockwise until bubbles appear through the mouthpiece opening, then turn the knob clockwise just until the bubbles stop. If, when making the pilot adjustment, a small leak was apparent (such as 4 or 5 bubbles per second), adjust as follows: Turn the plastic knob counter-clockwise until the bubble rate increases, then turn the knob clockwise until the bubble rate duplicates that of the pilot adjustment. This adjustment has a great deal to do with the inhalation effort. The inhalation effort will be at a minimum when the diaphragm knob is adjusted so that it is just on the verge of turning on the pilot valve.

STEP 45

With the switch in pre-dive, check switch spring adjustment by placing regulator in water as shown. If adjustment is correct, the regulator will not free flow in this position. A very slight leak at this position is acceptable and will stop upon complete submerging.

128 PILOT SECOND STAGE REPAIR PROCEDURES

(REFER TO SCHEMATIC FOR PART IDENTIFICATION)

STEP 46
Install purge spring and purge button as shown.

STEP 47
Before making the following adjustment, be sure the switch is in the "dive" position. Then, with the rubber mouthpiece installed on the regulator and the regulator still pressurized, press the purge button all the way in and release. This, of course, will open the valve and cause air to flow out of the mouthpiece. If, upon releasing the button, the regulator stays in a free-flow state, the aspirator is adjusted too strongly.

STEP 48
The aspirator is a cylindrical-shaped piece with an elongated hole and can be viewed through the mouthpiece. It can be adjusted by inserting a flat-blade screwdriver through the mouthpiece and pushing against either edge of the elongated hole being careful not to touch the inner part of the mechanism. This will cause the aspirator to rotate. To decrease the aspirator effect, rotate it toward the left. Again, push the knob all the way in and release. If the regulator does not free-flow, you know that the aspirator is not adjusted too heavily. The aspirator is adjusted correctly when it is set just to the left of, but as close to the point of free-flow as possible. NOTE: The regulator should not free-flow when the purge button is pressed all the way in and then released. The regulator should not be breathed upon until this adjustment is complete. Due to the unprecedented flow of this second stage, if the aspirator is out of adjustment to the extent that it points directly out of the mouthpiece tube, it is possible for an injury to occur upon deep inhalation.

STEP 49
Clean switch with trichloroethylene, then apply new switch label.

TROUBLE SHOOTING

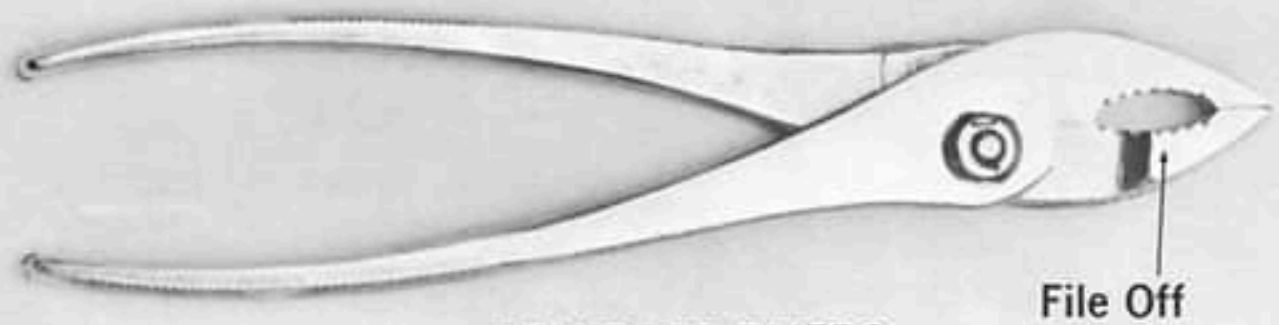
PROBLEM	CORRECTION
1. **Audible Air Leak**	A. Adjust pilot or diaphragm knob. B. Replace main seal o'ring or pilot o'ring. C. Inspect housing seat and pilot seat for nicks. Replace if nicked. D. Inspect housing o'rings. E. Inspect entire mechanism for dirt. F. Check first stage output pressure.
2. **Water Leaking into Regulator**	A. Inspect diaphragm and clip to make sure they are installed properly. B. Foreign matter under exhaust valve.
3. **Too Much Positive Pressure Breathing**	A. Adjust aspirator toward left of center.
4. **Breathing Effort Too High**	A. Adjust pilot and/or diaphragm knob. B. Adjust aspirator. C. Orifice hole enlarged because of wear. Replace orifice and pilot pin. D. Lube poppet o'ring #128-140 and pilot o'ring #128-141.
5. **Free Flows in Pre-Dive Position**	A. Adjust switch spring. B. Check for audible leak.

128 PILOT REGULATOR
SPECIAL TOOLS REQUIRED

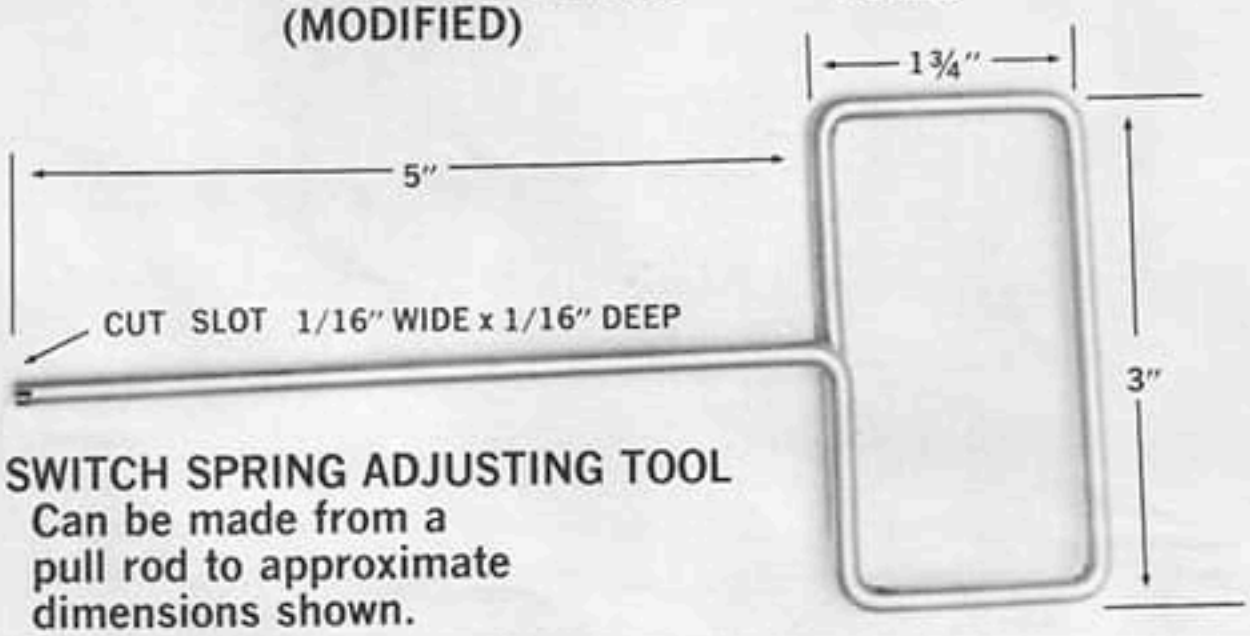
128-154
GUARD INSTALLATION TOOL

193
SPANNER WRENCH

128-153
BALL-END ALLEN WRENCH



STANDARD PLIERS
(MODIFIED)



SWITCH SPRING ADJUSTING TOOL
Can be made from a
pull rod to approximate
dimensions shown.