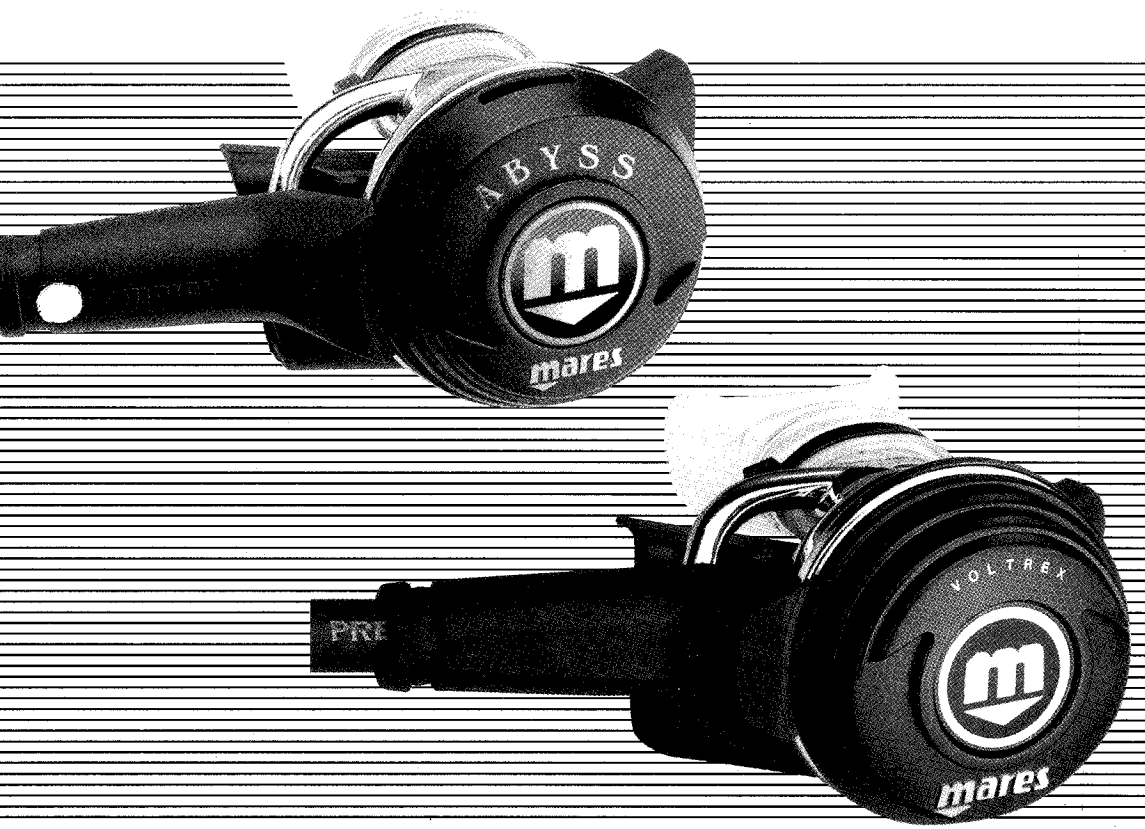
ABYSS/VOLTREX

DEALER MANUAL

SECOND STAGE



mares®

☐ ABYSS/VOLTREX SECOND STAGE SERVICE

• Disassembly

1. Slide hose protector (46) away from second stage.
2. Using two wrenches (B17) remove hose (26) from second stage.
3. Remove hose connector assembly (28-29-21-27) from second stage using wrench (B17).
4. Remove o-ring (29) from hose connector (28).
5. Using a 5 mm allen wrench (B4) remove the seat connector (21) and o-ring (27) from hose connector.
6. Remove o-ring (27) from seat connector.
7. Remove clamp ring screw (38).
8. Expand the clamp ring (37) until it will slide over the flange of the second stage body.
9. Remove the second stage purge cover (39), diaphragm (36) and clamp ring (37).

NOTE

DISASSEMBLY OF THE PURGE COVER (PURGE BUTTON, SPRING AND COVER) IS NOT NECESSARY, UNLESS THE COVER IS SEVERELY ENCRUSTED, DIRTY OR WHENEVER THE PURGE BUTTON DOES NOT RETURN TO ITS NORMAL POSITION. UNLESS EXTREME CARE IS TAKEN, REMOVAL OF THE PURGE BUTTON MAY CAUSE DAMAGE TO THE COVER COMPONENTS.

10. Remove lock nut (33), washer (34) and demand lever (35) using tool (B12).

NOTE

THE POPPET BODY (30) IS UNDER SPRING TENSION. COVER THE SECOND STAGE INLET FITTING WITH YOUR HAND TO PREVENT THE POPPET BODY (30) AND SPRING (31) FROM BEING EJECTED WHEN THE LOCK NUT IS REMOVED.

11. Remove poppet body (30) and spring (31) from second stage inlet.
12. Remove poppet seat (47) from poppet body.
13. Remove exhaust tee (41) from second stage case.
14. Remove exhaust valve (40).
15. Remove mouthpiece clamp (43) by cutting it with an appropriate tool.
16. Remove mouthpiece (44).

• CLEANING

Cleaning requires all reusable rubber and plastic parts to be carefully cleaned by scrubbing with a soft brush in a mild detergent and water solution. Do not use solvents or acids on rubber or plastic parts. Metal parts should be cleaned in an ultrasonic cleaner with fresh water or a mild acid solution. (White vinegar diluted with warm water is recommended). Before reassembly make sure all parts have been carefully rinsed and dried.

⚠ WARNING

PROTECT EYES AND SKIN ADEQUATELY WHEN WORKING WITH ANY KIND OF ACID. BEFORE CLEANING METAL PARTS MAKE SURE THAT ALL RUBBER AND PLASTIC PARTS HAVE BEEN REMOVED. ACIDS OR OTHER SOLVENTS MAY DAMAGE RUBBER AND PLASTIC PARTS.

• Inspection

The following second stage components should be replaced during routine service.

Description	Part Number
Exhaust valve	184006
Poppet seat	184062
Lock nut	185051
Mouthpiece clamp	157984
O-ring seat connector	110205
O-ring hose connector	110191

If the following parts are not replaced, they should be inspected with a jewler's loop for the flaws listed below. Replace any part with these flaws.

Seat connector (21): Inspect the tapered seating surface for nicks, flat spots and deep scratches.

Poppet seat: Inspect for cuts, cracking and any deformation. If a new poppet seat is not available, the poppet seat can be reversed if the surface is not damaged, or previously used.

Demand lever: Inspect the pivot points for wear and straightness.

Spring: Inspect for cracking or broken coils.

Second stage case: Inspect the exhaust valve seat for any signs of oxidation.

Exhaust valve: Inspect for any cracks, tears or deterioration.

O-rings: Inspect for cuts, tears, flat spots or contamination. The presence of any of these flaws may cause leakage.

Diaphragm: Inspect for any tears or pin holes around the metal disk, for any distortion of the outer bead or for any signs of the disk detaching from the diaphragm.

Clamp: Inspect for cracks and signs of corrosion.

Mouthpiece: Inspect for deterioration or cuts.

Exhaust tee: Inspect for cracks or tears.

Second stage hose: Inspect for any cracks, blisters, cuts and other signs of damage. Inspect the hose o-rings for cuts or foreign matter.

• Reassembly

Before reassembly, lightly lubricate all o-rings with silicone grease (General Electric, Versalube G-322 or equivalent). Lubricating the o-rings before reassembly will minimize the risk of damage during reassembly.

1. Carefully install a new exhaust valve (40) by pulling the stem through the center hole of the exhaust valve seat until it locks in place. The valve stem should not be pulled excessively as damage to the valve may occur. Using scissors, cut approximately 1/4" off of the end of the valve stem.
2. Press poppet seat (47) into poppet body (30).
3. Place poppet body (30) onto tool (B6).
4. Place spring (31) over poppet body.

5. Insert poppet body and spring into the second stage inlet. Align the square of the poppet stem with the square hole of the case and press inward to compress the spring (Fig. 31).
6. Place the demand lever (35) into the second stage case groove.

ne second stage poppet stem and on top of the demand

the second stage poppet stem and tighten the lock nut, the poppet stem is protruding from the nut (Fig 32).

7. Place the demand lever washer (34) over th lever.
8. Place a new demand lever lock nut (33) on with tool (B12), until approximately 1/16" of

NOTE

LOCK NUT. IF THE DEMAND LEVER LOCK NUT IS OND STAGE TO FREE FLOW DURING INTERMEDIATE

DO NOT OVER TIGHTEN DEMAND LEVER L OVER TIGHTENED, IT WILL CAUSE THE SECO PRESSURE ADJUSTMENT.

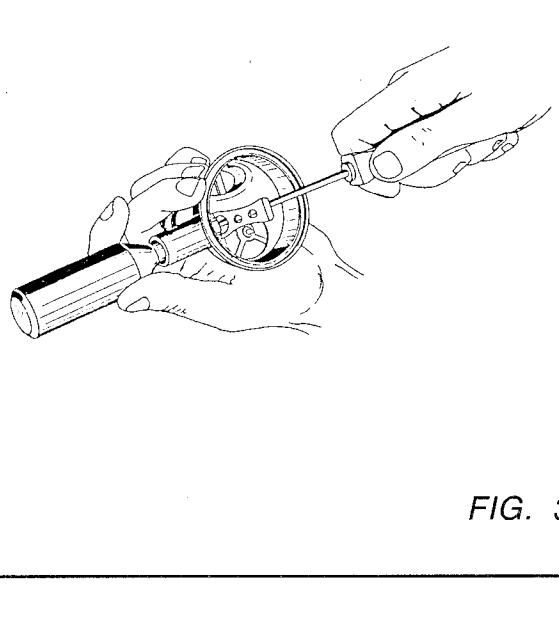


FIG. 32

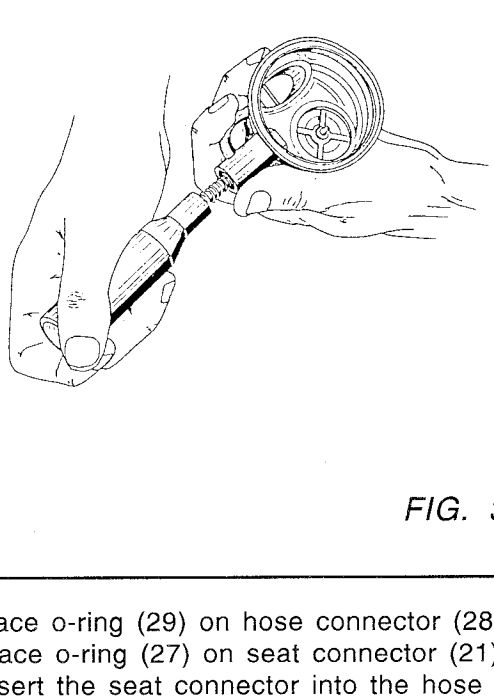


FIG. 31

nnector. Turn the seat connector clockwise using a 5 mm. he seat connector 3 complete turns (360 degrees) counter

9. Place o-ring (29) on hose connector (28).
10. Place o-ring (27) on seat connector (21).
11. Insert the seat connector into the hose cor allen wrench (B4), until it stops, then turn th clockwise to obtain the correct position.

NOTE

CTOR. TURN THE SEAT CONNECTOR CLOCKWISE N THE HOSE CONNECTOR. OVER TIGHTENING THE GE TO THE SEAT CONNECTOR AND/OR HOSE

DO NOT OVER TIGHTEN THE SEAT CONNE ONLY TO THE POINT AT WHICH IT STOPS I SEAT CONNECTOR MAY CAUSE DAMAG CONNECTOR.

ector.
connector (28) into second stage case using wrench (B17).
2 wrenches (B17).

12. Remove allen wrench (B4) from seat conne
13. Depress the demand lever and install hose
14. Connect hose (26) to hose connector using

- **Adjustment**

NOTE

CORRECT INTERMEDIATE PRESSURE ADJUSTMENTS ARE NEEDED FOR SECOND STAGE OPENING PRESSURES TO FALL WITHIN FACTORY-SET RATINGS. SECOND STAGE SENSITIVITY MAY BE CHANGED BY ADJUSTING INTERMEDIATE PRESSURE. ALL SECOND STAGE ADJUSTMENTS SHOULD BE MADE WHILE THE SECOND STAGE IS SUPPLIED WITH THE APPROPRIATE INTERMEDIATE PRESSURE.

1. Connect an intermediate pressure gauge to a 3/8" LP port on the first stage.

⚠ DANGER

EXPLOSION HAZARD

DO NOT CONNECT THE INTERMEDIATE PRESSURE GAUGE TO THE HIGH PRESSURE PORT OF THE FIRST STAGE. CONNECTING THE INTERMEDIATE PRESSURE GAUGE TO THE HIGH PRESSURE PORT OF THE FIRST STAGE WILL CAUSE THE HOSE AND/OR INTERMEDIATE PRESSURE GAUGE TO EXPLODE AND COULD RESULT IN SERIOUS PERSONAL INJURY OR DEATH.

2. Attach the first stage to a full tank (2000-3000 psi Fig. 33).

FIRST STAGE CALIBRATION

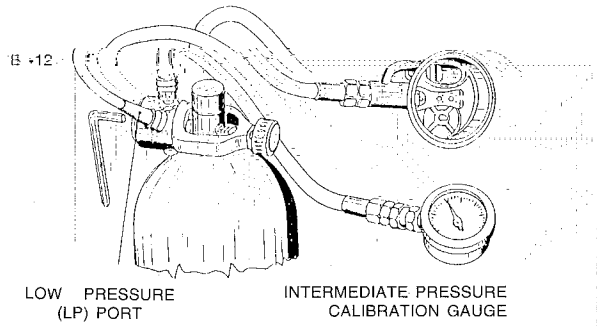


FIG. 33

C-SHAPED GAUGE FOR DEMAND LEVER HEIGHT INSPECTION

For the correct adjustment stand the gauge on the Second Stage case and adjust lever height until it makes contact with the gauge.

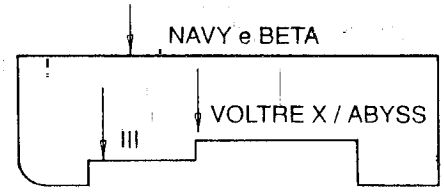


FIG. 34

3. Depress the second stage demand lever while slowly opening the tank valve. When air begins to flow from the second stage slowly release the demand lever and fully open the tank valve.
4. Read the intermediate pressure indicated by the gauge. Intermediate pressure specification for specific models are given below. If the intermediate pressure is incorrect refer to the appropriate first stage section of this manual for adjustment procedure.

MR 22 Abyss	**142-148 psi**
MR 12 Voltrex	**138-142 psi**

NOTE

IF THE REGULATOR IS TO BE USED FOR COLD WATER DIVING (BELOW 47 F) OR IS EQUIPPED WITH A CWD KIT, REFER TO THE COLD WATER DIVING KIT SECTION OF THIS MANUAL FOR INSTALLATION/SERVICING OF THE CWD KIT AND INTERMEDIATE PRESSURE SPECIFICATIONS.

5. Adjust demand lever height using the demand lever height gauge. The demand lever height gauge sides are marked with the second stage model. Place the side of the demand lever height gauge marked with the corresponding model across the second stage case (Fig. 34).

    a. If the demand lever height is too low, tighten the demand lever lock nut, using tool (B12), until the demand lever contacts the lower edge of the gauge.
    b. If the demand lever height is too high, loosen the demand lever lock nut, using tool (B12), until the demand lever contacts the lower edge of the gauge.

6. Depress and release the demand lever several times to ensure freedom of movement.
7. After second stage adjustment, depressurize the regulator and remove the intermediate pressure gauge.

• Final assembly

1. Expand the clamp ring (37) until it will slide over the flange of the second stage body.
2. Place the second stage diaphragm (36) on to the second stage body making sure the metal disk is against the demand lever.
3. Place the purge cover (39) on the diaphragm. Make sure the diaphragm bead is engaged in the case and cover grove. Position the purge cover so the logos are properly positioned.
4. Position the clamp ring over the flange of the second stage and the flange of the purge cover. Rotate the clamp ring so the split end is facing the second stage hose.
5. Install clamp ring screw (38) and tighten.
6. Slide the second stage hose protector (46) into position over the clamp ring.
8. Install the exhaust tee (41) over the second stage case mounting flange. Make sure the lip of the exhaust tee fits fully over the mounting flange.

NOTE

LIQUID SOAP CAN BE USED TO LUBRICATE THE EXHAUST TEE TO MAKE ASSEMBLY EASIER. DO NOT USE SILICONE GREASE TO LUBRICATE THE EXHAUST TEE. THE USE OF SILICONE GREASE MAY CAUSE THE EXHAUST TEE TO COME OFF DURING OPERATION.

9. Install mouth piece (44) and secure in place with a new clamp (43). The locking tab of the clamp should be positioned to line up with the V.A.D. tube.