AQUA LUNG®

Authorized Dealer

SERVICE & REPAIR MANUAL

Divator II

Full Face Mask

Doc. No. 7802-86

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AQUA LUNG

Service & Repair Manual - Divator II Full Face Mask

Introduction

This manual provides factory prescribed procedures for the service and repair of the Divator II full face mask and second stage. It is not intended to be used as an instructional manual for untrained personnel. The procedures outlined within this manual are to be performed only by personnel who have received factory authorized training through either an Aqua Lung or Interspiro Service & Repair Seminar.

If you do not completely understand all of the procedures outlined in this manual, contact Aqua Lung or Interspiro to speak directly with a Technical Advisor before proceeding any further.

Warnings, Cautions, & Notes

Pay special attention to information provided in warnings, cautions, and notes that are accompanied by one of these symbols:

A **WARNING** indicates a procedure or situation that may result in serious injury or death if instructions are not followed correctly.

A **CAUTION** indicates any situation or technique that will result in potential damage to the product, or render the product unsafe if instructions are not followed correctly.

A **NOTE** is used to emphasize important points, tips, and reminders.

Scheduled Service

Because the Divator II Full Face Mask, complete with a first and second stage, is considered to be a life-supporting product, it is extremely critical that it receives service according to the procedures outlined in this manual on a regularly scheduled basis; at least once a year with normal or infrequent use.

NOTE: A unit that receives heavy or frequent use, such as in rental, instruction, or commercial applications, should be serviced at least twice each year - or more often - depending on the conditions of use and the manner in which it is maintained. (Refer to the care and maintenance procedures outlined in the Divator II Owner's Manual.)

GENERAL GUIDELINES

1. In order to correctly perform the procedures outlined in this manual, it is important to follow each step exactly in the order given. Read over the entire manual to become familiar with all procedures before attempting to disassemble or service the Divator II, and to learn which specialty tools and replacement parts will be required. Keep the manual open beside you for reference while performing each procedure. Do not rely on memory.
2. All service and repair should be carried out in a work area specifically set up and equipped for the task. Adequate lighting, cleanliness, and easy access to all required tools are essential for an efficient repair facility.
3. Before beginning any disassembly, it is important to first perform the Initial Inspection procedure, and refer to Table 1 - Troubleshooting to determine the possible cause of any symptoms which may be present.
4. As each individual mask and regulator is disassembled, reusable components should be segregated to prevent them from mixing with non-reusable parts or parts from other masks and regulators. Delicate parts, and those which contain critical sealing surfaces, must be protected and isolated from other parts to prevent damage during the cleaning procedure.
5. Use only genuine Interspiro factory parts purchased directly from Aqua Lung or Interpspiro when servicing the Divator II. Substitution with another manufacturer's parts constitutes an after-market modification of the product, and renders all warranties null and void.
6. Do not attempt to reuse mandatory replacement parts under any circumstances, regardless of the amount of use the product has received since it was manufactured or last serviced.
7. Do not overtighten parts when reassembling. Most parts are made of either marine brass or plastic, and can be permanently damaged by undue stress.

Initial Inspection Procedure

EXTERNAL INSPECTION (for masks used with SCUBA)

1. Visually inspect the first stage filter to check for any signs that contaminants may have entered the LP hose and mask.

NOTE: A white or rust colored residue usually indicates that the regulator has been used with a corroded aluminum or steel cylinder. A green discoloration positively indicates that moisture has entered the regulator, and internal corrosion is therefore likely to be found in the first stage.

2. Slide back the hose protector(s) to inspect the condition of the LP hose at its fittings and along its length. Check closely for any signs of blistering or abrasion, or corrosion of the fittings.
3. Inspect the overall condition of the mask assembly to check for any externally obvious signs of damage or deterioration.

PRESSURE TEST

1. Prior to performing any disassembly, connect the second stage to a first stage with the same stable intermediate pressure (no creep) that the mask was previously adjusted for; between 90-160 psi. Check to ensure there are no open ports or hoses.
2. Examine the second stage housing below the exhaust valve assembly to determine whether it is assembled with a positive pressure switch or a rubber sealing plug (see Fig. 1).
3. If the mask is configured for positive pressure, turn the positive pressure switch to the "OFF" position, nearest to the second stage housing (see Fig. 2).
4. Connect the first stage to a cylinder that is filled with 3,000 psi, and slowly open the cylinder valve to pressurize the mask.
5. Listen closely to check for any signs of leakage from the second stage. If necessary, immerse the mask in water to locate the source of any leakage detected and refer to Table 1 - Troubleshooting to determine its possible cause.

Fig. 1 – Comparison of Positive vs. Non-Positive Pressure

CAUTION: If the second stage freeflows uncontrollably, immediately shut the cylinder valve and proceed directly to the Disassembly Procedure. Do not attempt to further inspect the regulator while pressurized.

6. Depress the purge button to determine whether sufficient airflow is provided to clear the mask of water. If the second stage is configured for positive pressure, the positive pressure switch should automatically trip to the "ON" position, accompanied by a steady flow of air.
7. Release the purge button and reset the positive pressure switch (if applicable) to the "OFF" position. Listen closely to ensure that the second stage does not continue to flow any air.
8. Turn the cylinder valve shut and depress the purge button again to completely depressurize the regulator before proceeding to the following Disassembly Procedures.

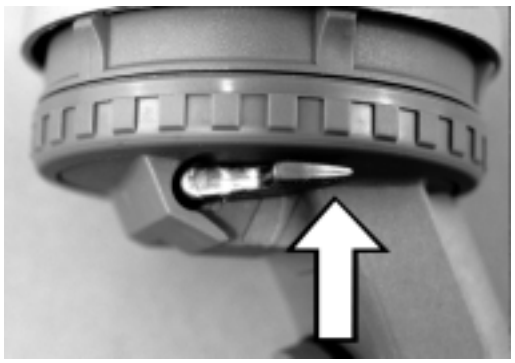


Fig. 2 - Positive Pressure Switch — "OFF" Position

Disassembly Procedures — Second Stage

WARNING: The procedures provided in this manual are intended for use only by Authorized Aqua Lung Dealer personnel who have received factory authorized training directly from Aqua Lung or Interspiro, for Divator II Full Face Masks which were originally sold by Aqua Lung/ U.S. Divers. Aqua Lung America, Inc. assumes no responsibility or liability for any service performed by unauthorized personnel, or for products not originally sold by Aqua Lung/ U.S. Divers.

CAUTION: It is imperative to use either the pinch method (squeezing the O-ring together between thumb and forefinger until it extrudes from the sealing surface) or a plastic O-ring tool whenever removing O-rings. Do not attempt to perform these disassembly procedures using a metal O-ring removal tool. Doing so permanently damage the delicate sealing surfaces of plastic parts, requiring their replacement.

1. If the low pressure hose is connected to the second stage, turn the knurled fitting counter-clockwise by hand to loosen and disconnect the hose from the second stage. Do not use pliers.

2a. Unscrew both of the knurled screws(23) until they are completely disengaged. If the mask is not assembled with a communications microphone, gently separate the com port cover(22) from the mask assembly and set it aside.

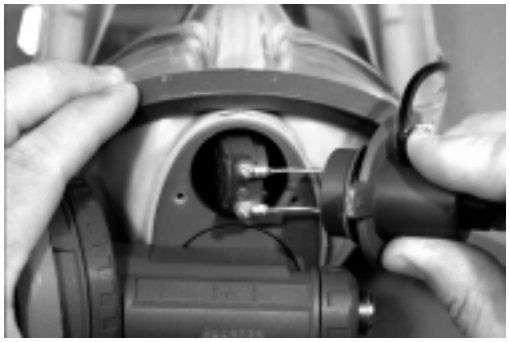


Fig. 3 - Microphone Removal

2b. If the mask is assembled with a communications microphone, be very careful to avoid stressing the microphone connection when removing the com port cover. After loosening the cover from the com port, rotate it 45 degrees counterclockwise, and then turn it over to the right so that the microphone is facing perpendicular towards the port (see Fig. 3). Gently pull the microphone through the com port and set the port cover with the microphone assembly on a protected surface, being careful to avoid stressing the connection with the receiver.

3. While firmly holding the chin cup of the mask with one hand, grasp the second stage assembly with the other and turn it approximately 20 degrees clockwise to disengage the bayonet connection (see Fig. 4). Pull the second stage assembly out and away from the connection port, and set the mask aside.

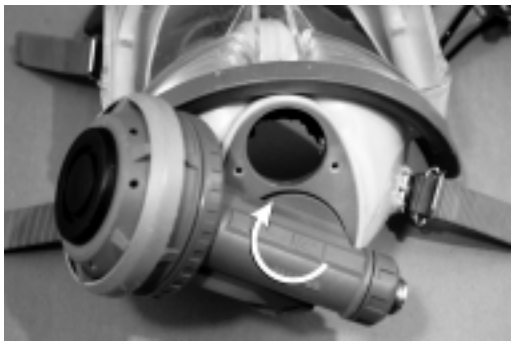


Fig. 4 - Bayonet Connection

4. If the second stage contains a positive pressure assembly, test the function of the switch by setting it to the “OFF” position, nearest to the valve housing. Rap the second stage lightly in one hand to determine the sensitivity of the switch. If it falls down too easily to the “ON” position, the switch has become weakened and needs to be replaced.

5. While holding the exhaust valve assembly(1) and valve housing secure, turn the exhaust valve retaining collar(17) counter-clockwise until it has completely disengaged from the threads of the exhaust valve housing. Remove the exhaust valve assembly and set it aside.

6. Remove the exhaust valve retaining collar from the valve housing and set it aside.
7. Turn the valve module retaining collar(43) counter-clockwise to loosen and remove from the valve housing(21), and set the collar aside.
8. If the second stage is configured with a positive pressure switch assembly(22b), ensure that the switch is set to the "ON" position by turning it down, away from the valve housing. This will prevent the locking spring from obstructing the lever as the valve module exits the housing.
9. While holding the second stage assembly secure, firmly grasp the threaded fitting of the inlet chamber(40) between thumb and forefinger, and pull the valve module assembly(23) straight out of the valve housing, being careful to avoid stressing the lever as it exits the housing. Set the valve module assembly aside on a padded surface.
10. Using the pinch method, remove and discard the O-ring(19) from the bayonet connector of the valve housing.
11. Place a wide blade screwdriver inside the inlet opening of the valve housing, so that the blade rests flat beneath the center of the non-return inlet valve(20). (See Fig. 5.) Lift the screwdriver straight up to unseat the inlet valve, and pull it out from the opposite side of the valve housing. Closely inspect the non-return inlet valve to check for any signs of deterioration or curling of the diaphragm. If found, discard the non-return inlet valve and do not attempt to reuse.

CAUTION: Do not pry out the non-return inlet valve from above or apply the screwdriver beneath it at an angle. Doing so may damage the inlet valve or valve housing, requiring the replacement of these parts.

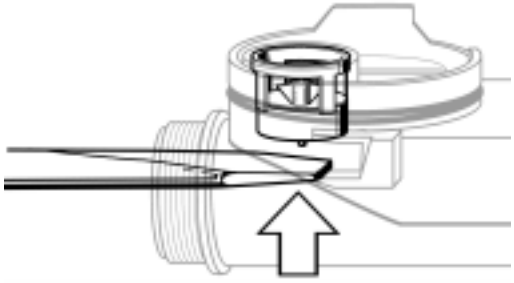


Fig. 5 - Non Return Valve Removal

EXHAUST VALVE

12. Place the exhaust valve assembly on a flat surface with the purge cover facing down. While gently holding the lever guide(12) in place to prevent the ejection of parts, grasp the exhaust valve housing between thumb and forefinger on opposite sides of the threads. Gradually squeeze the exhaust valve housing to release the diaphragm assembly(7).
13. Lift the diaphragm assembly straight off the purge spring(6), and set the sealing disc(8) aside. Remove the O-ring(16) from the control diaphragm retainer(15). Discard the O-ring, and do not attempt to reuse.
14. Gently remove the securing ring(10) from the control diaphragm(14), and peel the lip of the control diaphragm off the exhaust valve carrier(11).
15. Grasp the control diaphragm between thumb and forefinger at the base near the control diaphragm retainer, and gently work it completely out of the groove of the retainer, being careful to avoid stretching the midsection. Closely inspect the dia-

phragm on all sides to check for any signs of cracking, tears, or other signs of deterioration or damage. If found, discard it and do not attempt to reuse.

16. Gently remove the exhaust diaphragm(9) from the exhaust valve carrier, and closely inspect it to check for any signs of deterioration or distortion. If found, discard it and do not attempt to reuse.
17. Remove the lever guide(12) and washer(13) from the exhaust valve carrier, and separate the washer from the lever guide.
18. Lift out the purge button(5) and spring from the exhaust valve housing, and closely inspect the spring to check for any signs of damage or corrosion. If found, remove the spring from the purge button and do not reuse. It is otherwise not necessary to remove the spring from the purge button for cleaning.
19. Remove the purge cover(2) from the exhaust valve housing and examine it to check for any signs of obvious decay or damage. If found, discard it and do not attempt to reuse.
20. Closely inspect all plastic components of the exhaust valve assembly to check for any signs of thread damage, stress cracking, breakage, or other damage. If found, discard the affected item(s) and replace with new. All plastic parts which are found to be in reusable condition should be set aside for cleaning. (Refer to Procedure A, Cleaning & Lubrication.)

NOTE: It is not necessary to remove the shield ring(3) from the exhaust valve housing, unless it is found to be damaged upon inspection. If the shield ring is damaged, it can be lifted off the housing with a medium blade screwdriver.

21. <u>(Positive Pressure Units Only)</u>
    a. While holding the second stage valve housing secure, lift the hook of the return spring(22.5) off the locking spring(22.3) using the pin of the seat extracting tool.
    b. Set the positive pressure switch(22.2) to the “OFF” position by turning it towards the valve housing, and squeeze the two arms of the locking spring together until the arm which is nearest to the return spring can be removed from the switch (see Fig. 6). Pull the other arm out, and closely inspect the locking spring under magnification to check for any signs of corrosion, bending, or other damage. If found, discard the spring and do not attempt to reuse.
    c. While holding the return spring and spacer(22.4) stationary, pull the positive pressure switch out of the valve housing. Set the spacer aside, and closely inspect the spring under magnification to check for any signs of corrosion, bending, or other damage. If found, discard it and do not attempt to reuse.
    d. Remove the O-ring(22.1) from the positive pressure switch, and discard. If the switch was found to be in reusable condition, set it aside.

Fig. 6 - Positive Pressure Spring Removal

BREATHING VALVE MODULE

22. While holding the control valve assembly(25) and the inlet chamber(40) secure, gently spread the ends of the retaining ring(39) and pull it off to separate the inlet chamber from the control valve and main valve assemblies. Examine the retaining ring for any signs of cracking or breakage, and set it aside if it is in reusable condition
23. Remove and discard both O-rings(41&42) from the inlet chamber. Using a small penlight, closely examine the inlet chamber to ensure that there are no signs of damage or permanent corrosion inside, particularly around the sealing surface of the inlet orifice. If permanent corrosion or damage is found on the sealing surface, the inlet chamber must be replaced and cannot be reused.
24. Hold the control valve(25) and main valve(35) assemblies between thumb and forefinger, with the retaining pin(29) facing down. Squeeze the control valve body(28) and the main valve assembly together to relieve spring tension, and apply the pin of the seat extraction tool (P/N 1094-36) to press out the retaining pin. (See Fig. 7.) Slowly lift the control valve assembly off the control valve flange(36), and set the control valve assembly with the retaining pin aside.
25. While holding the control valve flange secure, turn the valve seat carrier(38) counter-clockwise to loosen and remove. Closely inspect the flange for any signs of cracking or thread damage, and set it aside if it is in reusable condition.
26. Using the smooth, rounded end of the O-ring installation tool (P/N 9440-22), carefully remove the balancing diaphragm(37) from the seat carrier by working out one side first, and then the other. Discard the valve seat carrier, and do not reuse.
27. Closely inspect the balancing diaphragm to check for any signs of decay, punctures, or tears. If found, discard and do not attempt to reuse.
28. Remove the spring(34) from the control valve body, and inspect it closely under magnification to check for any signs of permanent corrosion or damage. If found, discard the spring and do not attempt to reuse.
29. While holding the control valve body and lever support secure, pull the lever and rod assembly straight out of the lever support. Closely inspect the lever assembly for any signs of corrosion, or deformity of the crossbar which attaches the spoon to the rod. Discard the lever assembly if damage is found, or set it aside if it is in reuseable condition.
30. While holding the control valve body secure, turn the lever support(26) counter-clockwise to loosen and remove.
31. Using the seat extraction tool, gently remove the sealing sleeve(27) from inside the lever support, and closely inspect it to check for any signs of decay, punctures, or tears. If found, discard and do not attempt to reuse.

Fig. 7 - Removal of Large Pin

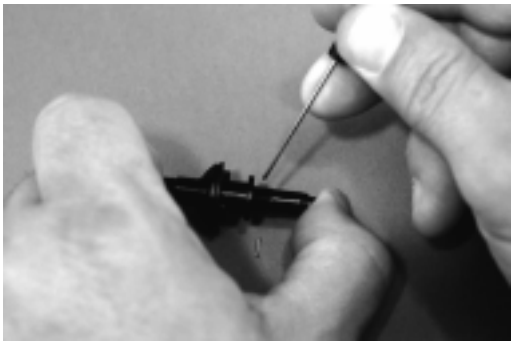


Fig. 8 - Removal of Small Pin

32. While holding the control valve body secure, unscrew the adjusting nut(31). Closely examine the adjusting nut to check for any signs of cracking, breakage, or thread damage, and set it aside if it is in reusable condition.
33. Hold the control valve body and control valve piston(33) between thumb and forefinger, with the retaining pin(30) positioned vertically. Depress the piston to allow the pin to fall out, and slowly relax to prevent any ejection of parts (see Fig. 8).

NOTE: If the pin does not fall out when the piston is completely depressed, it may be necessary to push it out using the seat extraction tool.

34. Pull the control valve piston with the spring(32) straight out of the control valve body, and closely inspect the spring under magnification to check for any signs of permanent corrosion or damage. If found, discard the spring and do not attempt to reuse.
35. Closely examine the control valve body and control valve piston to check for any signs of cracking, breakage, or thread damage, and set them aside if they are in reusable condition.

This concludes the disassembly of the Divator II second stage. Refer directly to Procedure A and Table A, titled Cleaning & Lubrication, before proceeding to the Reassembly Procedures.

Second Stage Reassembly

BREATHING VALVE MODULE

1. Place the spring(32) inside the open end of the control valve body(28) which faces toward the main valve.
2. Align the elliptical hole in the shaft of the control valve piston(33) with the elliptical hole in the control valve body (see Fig. 9). While maintaining this alignment, insert the shaft of the piston through the spring and into the body. Compress the control valve body and piston between thumb and forefinger until the hole in the piston shaft can be sighted through the small hole in the control valve body, and insert the small pin(30) through the control valve body and piston. When the pin is perfectly centered inside the control valve body, relax the piston to hold it in place.
3. With its knurled side facing in, mate the adjusting nut(31) over the piston and onto the control valve body. Turn it clockwise to engage the threads, being careful to avoid cross-threading, and continue turning it fully inward until it stops. Using a feeler gauge or similar gap measuring tool, turn it back counter-clockwise until it is set with a gap of exactly 1.5mm between the control valve body (see Fig. 10a).
4. Lay the sealing sleeve(27) inside the open end of the lever support(26) with the flat side facing in, and mate the lever support onto the shorter end of the control valve body. Turn the lever support clockwise to engage the threads, being careful to avoid cross-threading, and continue turning it fully inward until it stops. Using a feeler gauge, turn the lever support back counter-clockwise until it is set with a gap of exactly 0.7mm between the control valve body (see Fig. 10b).
5. While holding the control valve with its rounded index feature facing towards twelve o'clock, insert the rod of the lever assembly(24) into the lever support and partially through the sealing sleeve. Then, hold the lever support and control valve body stationary, and rotate the lever assembly until the end of the lever faces directly toward nine o'clock (see Fig. 11). Tamp the lever assembly inward so that the hinge pin seats inside the lever support, and lay the assembly horizontal without disturbing the alignment of these parts.
6. Fit the spring(34) over the piston end of the control valve body, so that it is seated evenly over the adjusting nut.
7. Mate the control valve flange(36) over the spring and onto the control valve body, with the arms mated through the keyed support of the body (see Fig. 12). Hold the body and the flange fully compressed between thumb and forefinger, and insert the pin(29) through the flange, lever rod, and the elliptical hole of the body. Relax the flange and body when the pin is centered between the arms of the flange.
8. Mate the cup of the balancing diaphragm(37) into the open end of the control valve flange, with the flat side facing in.

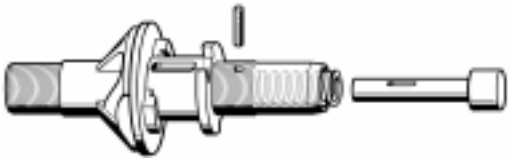


Fig. 9 - Control Valve Piston Alignment

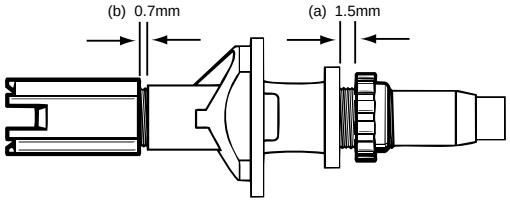


Fig. 10 - Preliminary Adjustment Settings

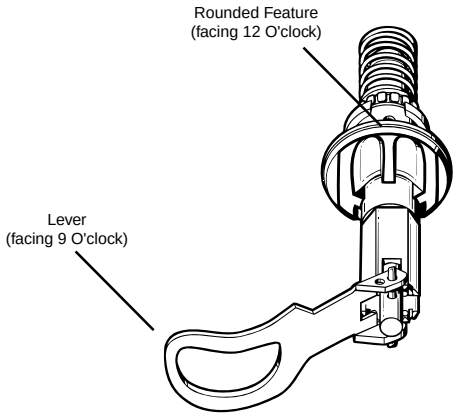


Fig. 11 - Lever Support Alignment

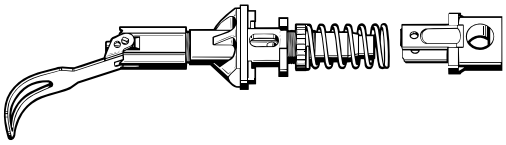


Fig. 12 - Control Valve Flange Alignment

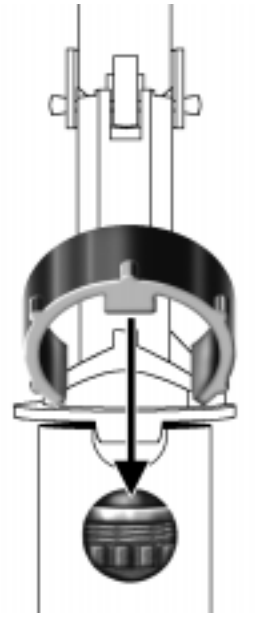


Fig. 13 - Retaining Ring Installation

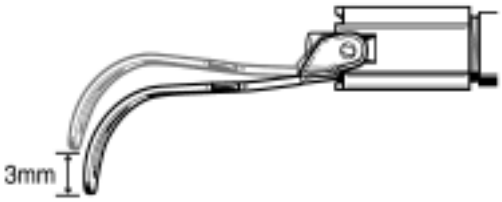


Fig. 14 - Lever Play

Fig. 15 - Control Valve Diaphragm Reassembly

Tamp it in gently with a forefinger to ensure that the sealing lip is seated evenly on all sides, and dress the sealing lip of the diaphragm with a very light film of silicone grease.

9. Mate the valve seat carrier(38) evenly over the male threads of the flange. While holding the flange secure, turn the valve seat clockwise to engage the threads, and then continue turning it by hand until snug. If resistance or binding is felt, unscrew the valve seat carrier and re-seat the balancing diaphragm before proceeding to the next step.
10. Install both O-rings(41&42) into their respective grooves of the inlet chamber(40).
11. Insert the valve assembly into the inlet chamber, and rotate the valve assembly as needed so that the tabs of the control valve body seat into the cutout recesses. Lay the valve assembly horizontal with the tip of the lever facing down.
12. While holding the valve assembly and inlet chamber securely together, fit the retaining ring(39) over the top of the inlet chamber, with the square tab mated through the hole in front of the control valve flange (see Fig. 13). Check to ensure that the inlet chamber and control valve body are securely held together, and the retaining ring is flush against the flange.
13. While holding the valve module assembly secure, move the lever up and down to ensure that there is at least 3mm of play (see Fig. 14). If necessary, readjust the lever support clockwise to increase the play, or counter-clockwise to decrease it.

EXHAUST VALVE

14. Install the purge cover(2) onto the front of the exhaust valve housing(4) by fitting the groove of the cover over the lip of the housing. Check to ensure that the purge cover is seated evenly on all sides. If the shield ring(3) was removed, fit it over the exhaust valve housing, and set the housing aside.
15. Unfold the control diaphragm(14) so that smaller circumference sealing lip is fully extended. Examine the features of the control diaphragm retainer(15) to locate the thin, deep groove in which the diaphragm seats. Lay the retainer on a flat surface with this groove facing up, and place the diaphragm directly over it with the lip facing down (see Fig. 15).
16. While holding a section of the diaphragm between thumbs and forefingers of both hands, insert a small section of the sealing lip into the groove of the retainer. Place a thumb over this section to hold it in place, and work the other thumb around to seat the remainder of the diaphragm. Tamp down the diaphragm above the sealing lip on all sides to ensure it is seated evenly and flush on all sides against the retainer.
17. Without disturbing the seating of the two parts, fold the upper lip of the control diaphragm down and over the outside of the retainer (see Fig. 16). Tamp down the sealing lip once again on all sides, to ensure that it is seated evenly and flush with the inside rim of the retainer.

18. Lay the exhaust valve carrier(11) above the control diaphragm retainer, with its stem facing up. While holding the carrier and retainer together, fold the control diaphragm up and over the exhaust valve carrier on all sides.
19. Without disturbing the seating of the control diaphragm with the retainer, gently work the inner lip of the diaphragm into the outer groove in the exhaust valve carrier on all sides.
20. Place the securing ring(10) above the exhaust valve carrier and control diaphragm, with the mating tabs facing down. Rotate the securing ring as needed so the outer ridges of the control diaphragm are centered between the mating tabs, and gently fit the securing ring down over the diaphragm so that it is seated evenly on all sides (see Fig. 17).
21. Install the washer(13) over the stem of the lever guide(12), and press the sleeve of the lever guide into the small groove in the center of the exhaust valve carrier(11).
22. Fit the exhaust valve diaphragm(9) over the stem of the exhaust valve carrier, with the raised feature in the center facing up. Check to ensure it is seated evenly on all sides.
23. Place the non-return sealing disc on a flat surface with the stem facing up. Turn the diaphragm assembly over so that the exhaust valve diaphragm is facing down, and seat the hollow center of the exhaust valve retainer over the sealing disc stem.
24. Dress the O-ring(16) with a visible film of silicone grease, and install it into the groove of the control diaphragm retainer.
25. Place the exhaust valve housing on a flat surface, with the purge cover facing down. If needed, assemble the purge valve spring(6) with the purge button(5), and place the purge button inside the housing with the mating stem and spring facing up.
26. Place the diaphragm assembly, complete with sealing disc, directly over the center of the purge valve spring. Using both hands to maintain this alignment, press the exhaust valve carrier straight down so that it snaps into the exhaust valve housing. Set the exhaust valve assembly aside.
27. <u>(Positive Pressure Units Only)</u>
    a. Install the O-ring(22.1) onto the shaft of the switch(22.2).
    b. Insert the shaft of the switch partially into the valve housing(21) and slide the spacer(22.4) over its length. Then, hold the return spring(22.5) secure in the recess beside it with the coil facing up and the hook facing toward the breathing valve. Turn the switch up to the “OFF” position and press it completely into the housing, through the coil of the return spring. Lay the straight end of the return spring to the outside of the small nub, and check to ensure the spacer is flush against the valve housing (see Fig. 18).
    c. Closely examine the ends of the locking spring(22.3) to note that one hook that is longer than the other. Squeeze both arms of the spring together, and insert the longer hook into the oval hole in the shaft that is nearest to the

Fig. 16 - Control Valve Diaphragm Reassembly

Fig. 17 - Securing Ring Alignment

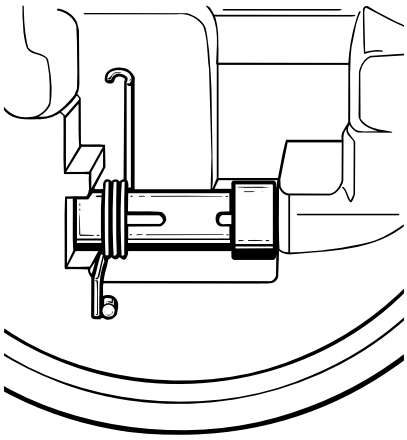


Fig. 18 - Return Spring Position

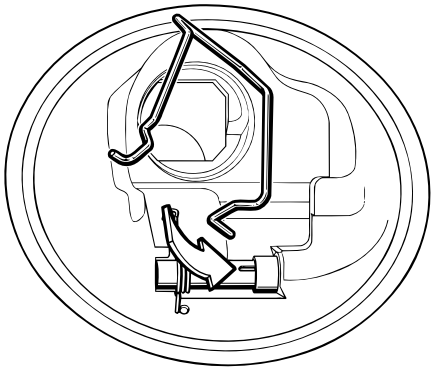


Fig. 19 - Locking Spring Installation

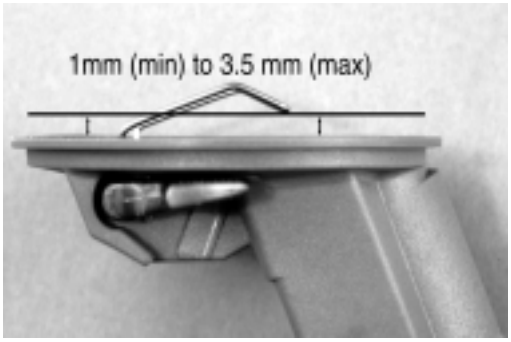


Fig. 20 - Pre-Set Locking Spring Height

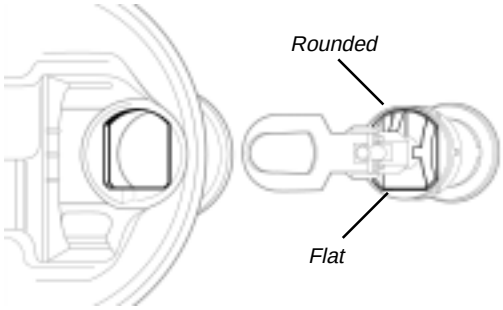


Fig. 21 - Valve Module & Housing Alignment

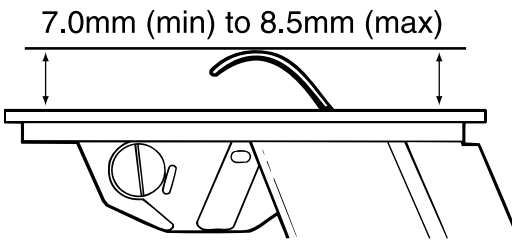


Fig. 22 - Pre-Set Lever Height

switch. Then, insert the shorter hook into the other oval hole that is nearest to the return spring (see Fig. 19). Relax the locking spring, and check to ensure it rests level.

d. Using the pin of the seat tool, lift the hook of the return spring and place it over the arm of the locking spring.

e. With the positive pressure switch set to the "OFF" position, against the valve housing, check the height of the locking spring to ensure that the end stands between 1 to 3.5mm above the rim of the valve housing (see Fig. 20).

28. Place the non-return inlet valve(20) inside the recess in the rear of the valve housing(21). Place a forefinger over the rim of the inlet valve, and firmly press it inward to seat the rim flush with the surrounding valve housing. Be careful to avoid pressing directly against the retainer in the center of the inlet valve, as this may cause the diaphragm to lift up at the edges.
29. Install the O-ring(19) onto the bayonet of the valve housing.
30. If the valve housing(21) is assembled with a positive pressure switch, set the switch to the "ON" position, away from the valve housing. Carefully guide the valve module assembly into the valve housing, with the indexed feature of the control valve body aligned with the indexed feature of the housing (see Fig. 21). When done, ensure that the top surface of the lever is aligned parallel with the outer rim of the housing.
31. Mate the retaining collar(43) onto the end of the valve housing, and tighten clockwise by hand until snug.
32. Check the height of the lever by measuring the vertical distance between the highest portion of the lever and the outer rim of the valve housing (see Fig. 22). The lever must be set at a height of between 7.0-8.5mm, or it will be necessary to readjust the lever support according to the procedure outlined in the following section, titled Testing & Adjustment, before proceeding.
33. Pass the threaded end of the retaining collar(17) over the small end of the valve housing, and fit it into place below the rim of the large end of the housing.
34. Place the exhaust valve assembly(1) directly over the rim of the valve housing, and align the lever guide(12) inside the spoon of the lever. While holding both assemblies secure, mate the retaining collar onto the threads of the exhaust valve housing(4) and turn the collar clockwise by hand until snug.

This concludes the reassembly of the Divator II second stage. Refer directly to the following section, titled Testing & Adjustment.

Testing & Adjustment

OVERVIEW OF ADJUSTMENTS

The second stage breathing valve is designed so that it is possible to finely adjust both the opening effort and the volume of air that can flow through the second stage at peak demand. If it becomes necessary to perform either or both of these adjustments, based on the results of the following test procedures and the troubleshooting instructions in Table 1, it is important to first understand the affect that each adjustment can have on the regulator's performance.

Always remember to perform each adjustment in very fine increments, to avoid over-adjusting and losing the starting point of reference.

Adjustment "A" (Sealing Spring) – The sealing spring adjustment primarily affects the opening effort required to initiate airflow, but it can also affect the airflow capacity. The objective of this adjustment is to ensure that there is only enough spring tension to cause the valve seat to seal against the cone inside the inlet chamber, without causing excessive inhalation resistance.

To perform this adjustment, it is not necessary to disassemble the breathing valve module. After removing the valve module from the housing, the nut can be turned in either direction by applying the pin of the seat extraction tool or a jeweler's screwdriver through either circular port of the inlet chamber. To increase the tension of the sealing spring (and the gap measurement), screw the adjustment nut counter-clockwise toward the spring, or unscrew the nut clockwise away from the spring to decrease the tension.

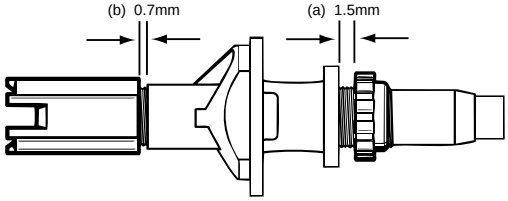


Fig. 23 - Preliminary Adjustment Settings

Adjustment "B" (Lever Support) – The lever support can be adjusted to set the lever's height and range of movement. The lever's range of movement, or “play,” is critical because it determines the distance that the valve can open, and thus can limit the volume of air that flows from it at peak demand. If the lever is set too high, however, it may cause the regulator to freeflow undesirably. If it is set too low, the airflow may be restricted and the opening effort may become excessive. The objective of this adjustment is to set the lever at the correct height, and with the correct amount of play to provide optimum airflow capacity and minimal inhalation resistance.

After removing the breathing valve from the housing, it will be necessary to remove the valve module from the inlet chamber, and disassemble the control valve from the main valve assembly. The lever support can then be adjusted as follows:

a. Pull the lever slightly out from the lever support, and hold it stationary to maintain its correct alignment with the control valve body while turning the lever support.
b. Turn the lever support clockwise to lower the lever height and increase the play, or counter-clockwise to raise it and decrease the play, no more than 180 degrees in either direction.
c. Reassemble the valve module with the valve housing, and repeat the test to determine whether further adjustment is necessary.

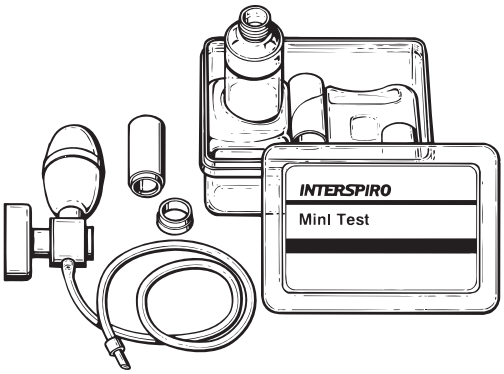


Fig. 24 - Interspiro Mini Test Kit (P/N 3007-81)

1. LEAKAGE TEST

a. Connect the second stage assembly to the first stage with which it will be used, adjusted to provide a stable intermediate pressure of between 90-140 psi, via the LP hose. Ensure that the hose is securely connected at both ends.

NOTE: If the second stage is configured for positive pressure, set the positive pressure switch to the "OFF" position.

b. Slowly open the air supply to pressurize the regulator with filtered air and listen closely for any audible leakage. If leakage can be heard, refer to the Troubleshooting Guide, Table 1, and correct the problem as needed before continuing.

NOTE: The second stage valve will begin to open when the intermediate pressure exceeds 175–230 psi, depending on the adjustment. If this is determined to be the cause of leakage, shut off the air supply and depressurize the regulator to repair or replace the first stage, and then repeat steps a & b.

c. Attach the measuring housing of the Interspiro mini test kit (P/N 3007-81) onto the bayonet connection of the second stage, and check to ensure that it is seated evenly and securely over the mounting O-ring. Fit the rubber bulb securely inside the larger port on one side of the housing swivel ring, and fit the non-weighted end of the clear tubing over the nipple on the opposite side.

d. Place a thumb over the flanged opening of the measuring housing, and crimp the tubing to seal off the flow of air while performing the following steps.

e. Purge the second stage several times, and then completely immerse it in a large container of fresh water, being careful to prevent water from entering the small inlet hole of the rubber bulb. Allow the water to settle, and check closely for any steady bubble streams that may indicate leakage.

f. After no leakage can be detected, gently squeeze the rubber bulb to simulate exhalation, and check once more to determine whether any leakage occurs.

g. If any leakage is detected while performing the above steps, remove the valve module from the housing if necessary to locate the source of the leak. Correct the problem as needed, and repeat this test before proceeding to any of the following tests.

2. EXHALATION RESISTANCE TEST

This test will ensure that the exhaust valve is correctly assembled, and measure the exhalation resistance to ensure it does not exceed the maximum tolerance.

a. Fill the test kit measuring bottle to the fill line with fresh water, and press the bottle into the round cavity of the box.

b. Feed the clear tubing into the bottle until the weighted end touches the bottom.

c. Place a thumb over the top of the measuring housing to seal off the airflow.

d. Set the positive pressure switch (if applicable) to the "ON" position (away from the second stage housing).

e. Slowly squeeze the rubber bulb while watching to check that no bubbles escape from the end of the tubing.

NOTE: If bubbles can be seen escaping from the end of the tubing, this indicates that the exhaust valve is improperly assembled, or that the flow of air through the exhaust valve is obstructed by a foreign object. Disassemble to correct as needed, and repeat the above test.

3. AUTOMATIC POSITIVE PRESSURE TEST

This test is used for masks equipped with positive pressure to determine whether the positive pressure is turned on automatically by inhaling through the second stage mouthpiece.

a. Check to ensure that the positive pressure switch is turned to the "OFF" position (against the second stage housing).
b. Fit a paper mouthpiece over the flanged opening of the measuring housing.
c. Crimp the clear tubing to seal off the flow of air, and inhale sharply through the paper mouthpiece connected to the second stage. The positive pressure switch should automatically open to the "ON" position.
d. If the switch does not automatically open, it may be necessary to replace the locking spring, the return spring, and/ or the switch with O-ring.
e. When the positive pressure mechanism functions correctly, proceed to the following test.

4. OPENING EFFORT TEST (Non-Positive Pressure)

This test is used to measure the inhalation effort that is required to actuate the flow of air at the beginning of each breathing cycle, and determine whether it is within the minimum and maximum tolerances.

a. Ensure that the test kit measuring bottle is filled to the fill line with fresh water, and the bottle is securely held in the round cavity of the box.
b. Feed the clear tubing into the bottle until the weighted end touches the bottom.
c. Inhale lightly through the paper mouthpiece, and watch the tubing closely to mark the point that the water level reaches as the valve begins to open.

△ **NOTE:** The breathing valve must open before the water level inside the tubing rises higher than the bottle rim (40mm water column), but not before the water level has risen at least 15mm. If the opening effort does not meet these specifications, refer to the Troubleshooting Guide, Table 1, and correct as needed.

5. AIR FLOW TEST (Non-Positive Pressure)

This test is used to check the flow capacity of the complete regulator (first and second stage), and ensure that the system can supply airflow exceeding a minimum of 300 liters per minute (flow at extreme demand).

△ **NOTE:** If the second stage will be used with surface supplied air, it will be necessary to test the second stage while connected to the low pressure supply hose, to ensure that the pressure differential caused by the length of the hose does not seriously impair its performance.

a. Remove the measuring housing from the second stage, and fit the smaller flanged opening into the large end of the plastic connecting tube. Then, fit the connecting tube directly over the non-return inlet valve of the second stage.
b. Feed the clear tubing into the bottle until the weighted end touches the bottom.
c. While holding the second stage horizontal, fully depress the purge button. Closely watch the end of the tubing to determine whether bubbles escape, indicating that the airflow exceeds 300 liters per minute.

△ **NOTE:** If the regulator fails to pass this test, the first stage may not have the airflow capacity to satisfactorily meet the demand of the Divator II second stage. Otherwise, refer to the Troubleshooting Guide, Table 1, and readjust the second stage as needed.

6. AIR FLOW TEST (Positive Pressure)

This test is used to check the flow capacity of the complete regulator (first stage and second stage), and ensure that the system can supply airflow exceeding a minimum of 300 1iters per minute (flow at extreme demand).

△ **NOTE:** If the second stage will be used with surface supplied air, it will be necessary to test the second stage while connected to the low pressure supply hose, to ensure that the pressure differential caused by the length of the hose does not seriously impair its performance.

a. Set the positive pressure switch to the "OFF" position (against the housing).
b. Remove the measuring housing from the second stage, and fit the smaller flanged opening into the large end of the plastic connecting tube. Then, fit the connecting tube directly over the non-return inlet valve of the second stage.
c. Feed the clear tubing into the bottle until the weighted end touches the bottom.
d. Hold the second stage horizontal, and slowly move the positive pressure switch to the "ON" position, away from the second stage housing, only until bubbles begin to escape from the end of the clear tube. Return the positive pressure switch to the "OFF" position.

△ **NOTE:** Do not turn the positive pressure switch too suddenly to the "ON" position. Strong airflow will empty the measuring bottle of water.

△ **NOTE:** If bubbles do not escape from the clear test tube while the switch is set to the "ON" position during the above test procedure, refer to the Troubleshooting Guide, Table 1, and correct as needed.

7. SEAL INTEGRITY OF NON-RETURN INLET VALVE

This test ensures that the diaphragm of the non-return inlet valve is in satisfactory condition and properly seated to provide a watertight seal.

a. While holding the second stage with the non-return inlet valve level and facing upward, fill the cavity above the valve with clean water.
b. Observe the water level for a full minute to determine whether leakage occurs.
c. If any water leaks past the diaphragm, remove and replace the complete non-return inlet valve assembly.

FINAL ASSEMBLY

1. With the full face mask facing upright, orient the second stage assembly with the mask manifold, so that the exhaust valve faces directly to the left and the mask faces upright. Turn the second stage assembly approximately 20 degrees clockwise so that the exhaust valve is cocked slightly upward, and mate the bayonet connection of the second stage into the mounting port of the mask manifold. Turn the second stage downward until it is horizontally level to secure the connection with the mask.
2. Install the O-ring(20) onto the com port cover(22), and mate the cover (with or without microphone assembly) onto the com port of the mask manifold. Turn each screw(23) clockwise by hand to engage the threads, and then tighten alternately until they are both uniformly snug.

This concludes the service procedures for the Divator II second stage. If service or repair of the mask assembly is required, refer directly to the following section, titled Disassembly Procedures - Full Face Mask.

Disassembly Procedures — Full Face Mask

NOTE: Before performing any disassembly of the mask, refer to the second stage disassembly procedure, steps 2-3, to remove the second stage regulator.

1. While maintaining tension on the frame, apply a small Phillips screwdriver to partially loosen first one screw(5) on either side of the mask, and then the other. Alternately loosen both screws until they are disengaged from the threaded inserts inside the frame, and pull them straight out to remove.

NOTE: On earlier models, the spacer washer(6) may come loose and fall out when the screw is removed. On later models, the washer may be permanently installed into the frame section and cannot be removed. If necessary, be sure to reinstall the washer before reassembling the frame.

2. While holding one section of the frame secure, firmly grasp the other and carefully pull it away on first one side, and then the other, until it is completely removed from the skirt. Pull off the remaining section, and closely examine the threaded metal inserts in both sections to check for any signs of thread damage or separation from the surrounding plastic. If found, replace the frame with new and do not attempt to reuse.

NOTE: If either section of the frame is found to be damaged and requires replacement, it will be necessary to replace both sections as a complete assembly.

3. Gently pull the lens(4) out of the mask body assembly(2), and inspect the skirt of the mask body for any blemishes, tears, cuts, distortion, or signs of deterioration. If any damage or deterioration is found which may cause leakage of the mask, it will be necessary to replace the mask body with new.
4. Examine the lens to check for any signs of cracking or other damage, especially around the edge which seals inside the mask body. If excessive scratching is found on the inside surface of the lens, consult with the owner to determine whether replacement may be necessary.

NOTE: Opaque haze, multiple cracks, or crazing may be caused by a chemical reaction with certain aerosol spray propellants. If the lens exhibits these signs of chemical attack, it must be replaced and cannot be reused.

5. Squeeze together both sides of the push pad(11), and twist it free of the support(10) to remove (see Fig. 25). Examine the condition of the push pad, and set it aside if it is found to be in reusable condition.
6. Carefully remove both of the non-return valve retainers(13) from the oral/nasal inner mask(15). Remove and discard each diaphragm(14) and replace with new. Be careful to avoid stretching the new diaphragms, and check each one to ensure it is seated evenly over its retainer.

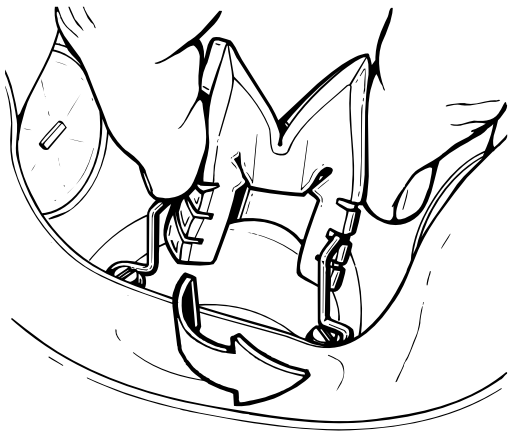


Fig. 25 - Removal of Push Pad

7. If removal or replacement of the oral/nasal inner mask or its manifold(17) is necessary, apply a medium blade screwdriver to each screw(9) of the push pad support, and turn them counter-clockwise to loosen and remove. Set the support and both screws aside.
8. Pull back the chin cup of the mask body(2) to expose the screw(16) at the bottom of the inner mask manifold. Apply a medium blade screwdriver to the screw, and turn counter-clockwise to loosen and remove. Set this screw aside together with the screws and push pad support, noting that it is shorter in length than the other two screws.
9. Pull the oral/nasal inner mask straight away from the mask body, and carefully separate the inner mask from the manifold. Inspect the condition of the inner mask to check for any blemishes, tears, cuts, distortion, or signs of deterioration. Discard the inner mask if any damage or deterioration is found which may prevent it from sealing properly. Otherwise, set it aside for cleaning.
10. Closely inspect the condition of the inner mask manifold to check for any signs of cracking or other damage. Discard the manifold if any damage is found, or set it aside for cleaning if it is found to be in reusable condition.
11. Closely inspect the outer manifold of the mask body, and the metal tension band which holds it in place (see Fig. 26). The tension band should be snug and secure around the manifold, and the manifold should be free of any signs of cracking or other damage. If any damage is found, or if the tension band is not securely snug, the mask body assembly must either be returned directly to Aqua Lung America, Inc. for factory service, or replaced with new.

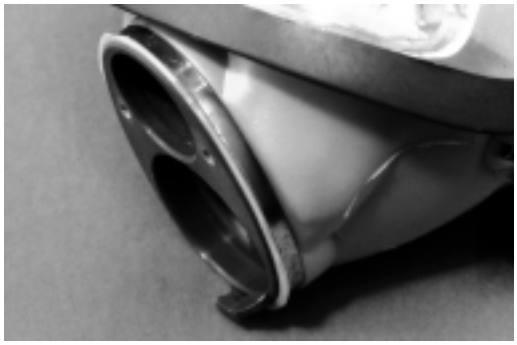


Fig. 26 - Outer Manifold with Tension Band

DO NOT REMOVE!

WARNING: Do not attempt to remove or replace the metal tension band which holds the full face mask body together with the outer manifold. Removal of the outer manifold or the tension band must only be performed either by Aqua Lung America Inc., or Interspiro.

12. To remove the head harness(1) from the mask body assembly, simply pull each strap through its respective buckle while holding the roller down to provide maximum clearance for the tapered end.
13. If a buckle(3) exhibits signs of rust or other damage that requires its replacement, it is important to remove it as carefully as possible, to avoid tearing the material of the mask body. To prevent any damage to the mask body, bend both hooks of the buckle upward with a medium blade screwdriver, until the buckle can easily be pulled out without stressing the body. Discard the buckle after it has been removed, and do not attempt to reuse.

Reassembly Procedures — Full Face Mask

⚠ **CAUTION**: Because it is difficult to bend the hooks of a buckle back to their original shape without breaking them, it is important to avoid reusing a buckle once it has been removed. The buckle may otherwise not provide proper retention if it is reused, and it may become disengaged from the mask body unexpectedly.

1. To reinstall each buckle(3) of the head harness(1), apply a small amount of soapy water to the retainers of the mask body. With the ends facing up, insert the pre-bent hooks of each buckle assembly into the slotted retainer of the mask body (see Fig. 27). When the ends of the hooks have passed through to the opposite side, pull the buckle backward to seat the hooks securely over the top of the retainer and into their respective grooves.
2. Install the oral/nasal inner mask(15) onto its manifold(17), with the channeled side of the manifold facing outward (see Fig. 28). Align the positioning marks of the mask with the manifold at top and bottom, and check to ensure that the mask is securely seated all around.
3. Install both of the non return valves(13) with diaphragms(14) into the inner mask, with the diaphragms facing inward. Check to ensure that they are securely seated all around.
4. Place the oral/nasal inner mask inside chin cup of the mask body, and mate the two manifolds together with all three screw holes approximately aligned. Insert the short screw(16) into the bottom hole, and turn clockwise by hand to engage the threads.
5. Insert both of the long screws(9) through the ends of the push pad support, and position the support over the manifold with the arc facing up, towards the nose pocket of the inner mask (see Fig. 29). Mate both screws into the manifold, and turn clockwise by hand to engage the threads.
6. Apply a medium blade screwdriver to turn each screw clockwise until snug, alternating between all three screws to ensure that they are uniformly tightened. Do not cross-thread or overtighten.
7. Fit the push pad(11) securely onto the support, using the positioning slot previously chosen by the user. Check afterward with the user to ensure the push pad is correctly set to allow equalization, but does not obstruct normal breathing through the nose.
8. Fit the lens(4) into the skirt of the mask body, with the nasal cavity positioned over the inner mask. Check to ensure that it is evenly seated on all sides, and that the positioning marks in the center of the lens and the mask body are perfectly aligned with each other at top and bottom.

Fig. 27 - Buckle Installation

Fig. 28 - Oral Nasal Cup Assembly

Fig. 29 - Correct Position of Push Pad Support

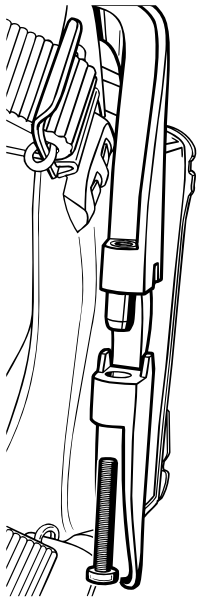


Fig. 30 - Correct Frame Reassembly

Fig. 31 - Correct Mounting of Second Stage Onto Full Face Mask

9. Closely examine each section of the lens frame assembly(7) to identify the threaded (male) and unthreaded (female) ends which face in opposite directions on either side. If either spacer washer(6) was removed, reinstall it into the female end of the frame section.
10. Apply soapy water to the area of the mask body surrounding the lens, and fit one section of the frame securely over the bottom portion of the mask body, exactly centered below the lens. Check to ensure that there is no binding or crimping of the mask body around the lens, and fit the other section over the top of the lens. Using two hands, squeeze both sections of the frame together until the male end of each section mates into the opposing female opening.
11. Insert each screw(5) into the female (non-threaded) ends on opposite sides of the frame sections, and turn clockwise by hand to engage with the threaded insert that is molded into the male end on the opposite side (see Fig. 30). After checking to ensure that the screws have engaged the threads of the frame inserts, apply a Phillips screwdriver to turn each screw clockwise, alternating between them several times to ensure that they are uniformly tightened snug. When finished, check the fit of the frame assembly to ensure it is securely held together on both sides.

WARNING: Separation of the lens frame assembly may occur if the screws are not correctly installed in opposing directions, and could result in serious injury or death if water leaks into the mask underwater.

12. Orient the head harness(1) with the mask body so that the grooved edges face inward towards the head, and insert each tapered strap end through its respective buckle.
13. With the full face mask facing upright, orient the second stage assembly with the mask manifold, so that the exhaust valve faces directly to the left and the mask faces upright. Turn the second stage assembly approximately 20 degrees clockwise so that the exhaust valve is cocked slightly upward, and mate the bayonet connection of the second stage into the mounting port of the mask manifold. Turn the second stage downward until it is horizontally level to secure the connection with the mask (see Fig. 31).
14. Install the O-ring(20) onto the com port cover(22), and mate the cover (with or without microphone assembly) onto the com port of the mask manifold. Turn each screw(23) clockwise by hand to engage the threads, and then tighten alternately until they are both uniformly snug.

This concludes the service and repair procedures for the Divator II Full Face Mask.

Table 1
Troubleshooting Guide

SYMPTOM	POSSIBLE CAUSE	TREATMENT
Leakage or freeflow from second stage (with mask not worn on face)	1. Positive pressure switch(22b) is set to the "ON" position. 2. High first-stage intermediate pressure. (in excess of 175 psi) 3. Retaining collar(43) not fastened snug. 4. Lever support(26) is adjusted incorrectly (too high), or lever(24) is bent. 5. Adjusting nut(31) is adjusted incorrectly, with insufficient spring tension. 6. Exhaust valve assembly(1) is incorrectly aligned with lever. 7. Valve seat(38) damaged or worn. 8. Inlet chamber(40) sealing surface damaged.	1. Reset switch to "OFF" position and retest. 2. Refer to troubleshooting guide for specific model of first-stage. 3. Hand tighten retaining collar onto valve housing until snug. 4. Inspect lever height and readjust (lower) or replace as needed. 5. Readjust the adjusting nut to increase spring tension. 6. Remove the exhaust valve assembly from the valve housing, and reassemble per instructions. 7. Replace valve seat assembly with new. 8. Replace inlet chamber with new.
Low purge or excessive work of breathing (full cylinder)	1. Low intermediate pressure. (less than 90 psi) 2. Lever support (26) or adjusting nut(31) adjusted incorrectly. 3. Retaining ring(39) incorrectly installed on inlet chamber and control valve. 4. Purge spring(6) incorrectly installed onto purge button. 5. Sealing sleeve(27) is damaged or improperly seated.	1. Refer to troubleshooting guide for specific model of first-stage. 2. Check both gap measurements, and readjust per instructions. 3. Remove valve module and reassemble per instructions. 4. Inspect and reassemble as needed. 5. Replace sealing sleeve with new.
External air leakage	1. Intermediate pressure hose loose. 2. O-ring(42) damaged or decayed. 3. O-ring(16) damaged or decayed. 4. Balancing diaphragm(37) punctured or improperly seated.	1. Tighten knurled fitting snug onto second stage. 2. Replace O-ring with new. 3. Replace O-ring with new. 4. Replace balancing diaphragm with new.
Water entering second-stage	1. O-ring(19 or 41) damaged or decayed. 2. Sealing disk(8) damaged or contaminated. 3. Control diaphragm(14) damaged or decayed. 4. O-ring(16) improperly seated, damaged, or decayed. 5. Non-return inlet valve diaphragm(20) damaged or improperly seated. 5. Valve housing(21) damaged.	1. Disassemble and replace O-ring 2. Clean or replace sealing disk. 3. Replace diaphragm with new. 4. Replace O-ring with new. 5. Inspect non-return valve and reseat or replace as needed. 5. Replace valve housing with new.

Table 2
Recommended Tool List

PART NO.	DESCRIPTION	APPLICATION
3007-82	Lever Height Measurement Card	Setting second stage lever height
1116-00	I.P. test gauge	Intermediate pressure testing
9440-22	O-ring tools	O-ring removal & installation
N/A	Medium blade screwdriver	Removal of non-return valve
N/A	Gap feeler gauges - .07 & 1.5mm	Preliminary adjustment settings
N/A	Magnifier w/ illumination	Sealing surface inspection
N/A	Ultrasonic cleaner	Brass & stainless steel parts cleaning
N/A	13mm wrench & crow foot	LP hose first stage fitting (older models)
N/A	9/16" wrench & crow foot	LP hose first stage fitting (newer models)
1094-36	Seat extraction/installation tool	Pin removal & installation
3007-81	Second stage test kit	Final adjustment & tuning

Table 3
Standard Parts Replacement Schedule

PART NUMBER	DESCRIPTION	KEY #	PAGE #	QTY
3006-69	O-ring	16	25 & 27	1
3006-72	O-ring	19	25 & 27	1
3006-71	O-ring	22.1	27	1
3006-64	Valve Seat	38	25 & 27	1
3006-73	O-ring	41	25 & 27	1
3006-74	O-ring	42	25 & 27	1
8200-11	O-ring	18a	29	1
8200-26	O-ring	18b	29	1
3006-68	O-ring	20 (FFM)	29	1
3006-82	Non Return Valve Diaphragm	14 (FFM)	29	2

Procedure A
Cleaning & Lubrication
(All Aqua Lung Regulators)

1. Acid Bath - Aqua Lung strongly recommends ChromeSafe™ regulator cleaner (P/N 0201-05) for cleaning all reusable brass and stainless steel parts. ChromeSafe™ is a specially formulated cleaner that does not harm rubber or Teflon parts, yet effectively removes silicone grease, corrosion, and grime from metal parts, leaving only a brilliant shine. For best results, soak parts in an ultrasonic cleaner for 5 to 15 minutes, unless the chrome finish is chipped or flaking. Parts with damage to their chrome finish should be cleaned separately outside the ultrasonic cleaner to avoid agitation. Be certain to isolate more delicate parts, such as orifice cones, to prevent damage to sealing surfaces.

CAUTION: Harsh acids, such as muriatic acid, may cause damage to parts and must be strictly avoided. White vinegar, although less effective, is one suitable substitute for ChromeSafe™.

CAUTION: Ultrasonic cleaning times in excess of 15 minutes may damage the chrome finish of certain parts. Be certain to use a timer, and do not leave parts unattended while cleaning.

NOTE: Although ChromeSafe™ contains a degreasing agent, cleaning heavily greased parts in ChromeSafe™ will shorten the effective life of the solution, and require it to be replaced on a more frequent basis. Heavily greased parts may be degreased in a solution of warm water and mild dish detergent prior to being placed in the acid bath.

2. Fresh Water Rinse - If tap water is extremely "hard," distilled water may be used to prevent any mineral residue. Remove parts from the acid bath and place directly into this rinse. Agitate lightly, and allow to soak for 5-10 minutes. Remove and blow dry with low pressure (25 psi) filtered air, and inspect closely to ensure proper cleaning and like-new condition.

ANODIZED ALUMINUM, PLASTIC & RUBBER PARTS

Anodized aluminum parts and parts made of plastic or rubber, such as box bottoms, box tops, dust caps, etc., may be soaked and cleaned in a solution of warm water mixed with mild dish soap. Use only a soft nylon toothbrush to scrub away any deposits. Thoroughly blow dry, using low pressure filtered air.

HOSES

If buildup of corrosion is severe, it is permissible to soak only the hose fittings in ChromeSafe™ cleaner as needed, and not allow any solution to enter the hose. Rinse in fresh water and allow to dry with the cleaned ends hanging down. Blow filtered air through them prior to installing onto the regulator.

LUBRICATION AND DRESSING

All O-rings should be lubricated with either Christo-Lube® (preferred for high pressure systems) or Dow Corning® 111 food grade silicone grease . Dress the O-rings with a very light film of grease, and remove any visible excess by running the O-ring between thumb and forefinger. Avoid applying excessive amounts of silicone grease, as this will attract particulate matter that may cause damage to the O-ring.

Hoses and other black rubber parts may be dressed and preserved using a clean cloth impregnated with a pump silicone milk.

CAUTION: Aerosol spray silicone must be strictly avoided. Do not attempt to use as a substitute for silicone grease.

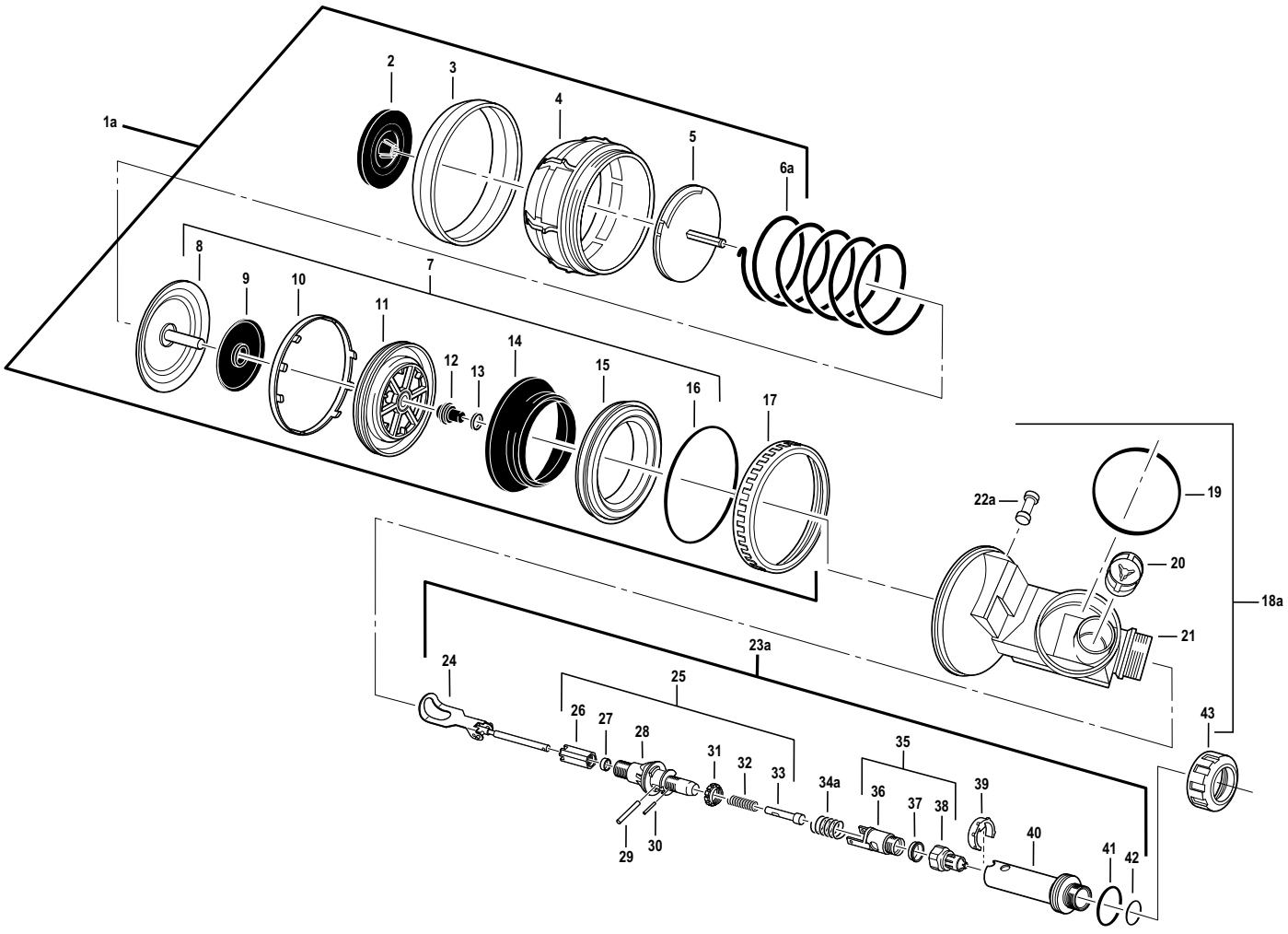
CAUTION: Do not apply any form of silicone lubricant to silicone rubber parts, as this will cause them to deteriorate prematurely.

Table A
Recommended Lubricants & Cleaners
(All Aqua Lung Regulators)

LUBRICANT / CLEANER	APPLICATION	SOURCE
Christo-Lube®	All O-rings seals; cylinder valve threads (preferred for high pressure DIN systems)	Lubrication Technologies 310 Morton Street Jackson, OH 45640 (614) 286-2644
Dow Corning® 111 (pure silicone grease)	All O-ring seals	Dow Corning Corp. P.O. Box 1767-T Midland, MI 48640 800-248-2481
CAUTION: Silicone rubber requires no lubrication or preservative treatment. DO NOT apply silicone grease or spray to silicone rubber parts. Doing so will cause a chemical breakdown and premature deterioration of the material.		
Silicone Pump™ (non-aerosol silicone milk spray)	General preservative/conditioner for hoses, instrument console boots, etc.	McNett Corp. P.O. Box 996 Bellingham, WA 98227 800-221-7325
CAUTION: Aerosol spray silicone should be avoided because (1) common aerosol propellants may attack plastic and rubber parts, and (2) because only a slight amount of silicone remains after the solvent evaporates, and provides no lasting benefit.		
Anti-Seize Lubricant #80208 (food grade - U.S.D.A. approved for conformance to MIL-A-907-E)	M.A.S. cylinder adapter - female threads Micra ADJ adjustment screw	Permatex Industrial Corp. 705 N. Mountain Rd. Newington, CT 06111 (860) 520-5000
ChromeSafe™ (ultrasonic cleaning solution)	Degreaser and acid bath for reusable stainless steel and brass parts.	Aqua Lung P/N 0201-05 (1 quart)
Oakite #31	Acid bath for reusable stainless steel and brass parts.	Oakite Products, Inc. 50 Valley Road Berkeley Heights, NJ 07922
White distilled vinegar (100 gr.)	Acid bath for reusable stainless steel and brass parts.	"Household" grade
CAUTION: DO NOT use muriatic acid for the cleaning of any parts. Muriatic acid, even when strongly diluted, can harm chrome plating, and may leave a residue that is harmful to O-ring seals and other parts.		
Liquid dishwashing detergent (diluted with warm water)	Degreaser for brass and stainless steel parts, general cleaning solution for plastic, rubber, and anodized aluminum parts.	"Household" grade
Snoop™	Leak testing	Nupro Company 400 E. 345th St. Willoughby, OH 44094 440-951-7100

Divator II Full Face Mask

Second-Stage w/out Positive Pressure



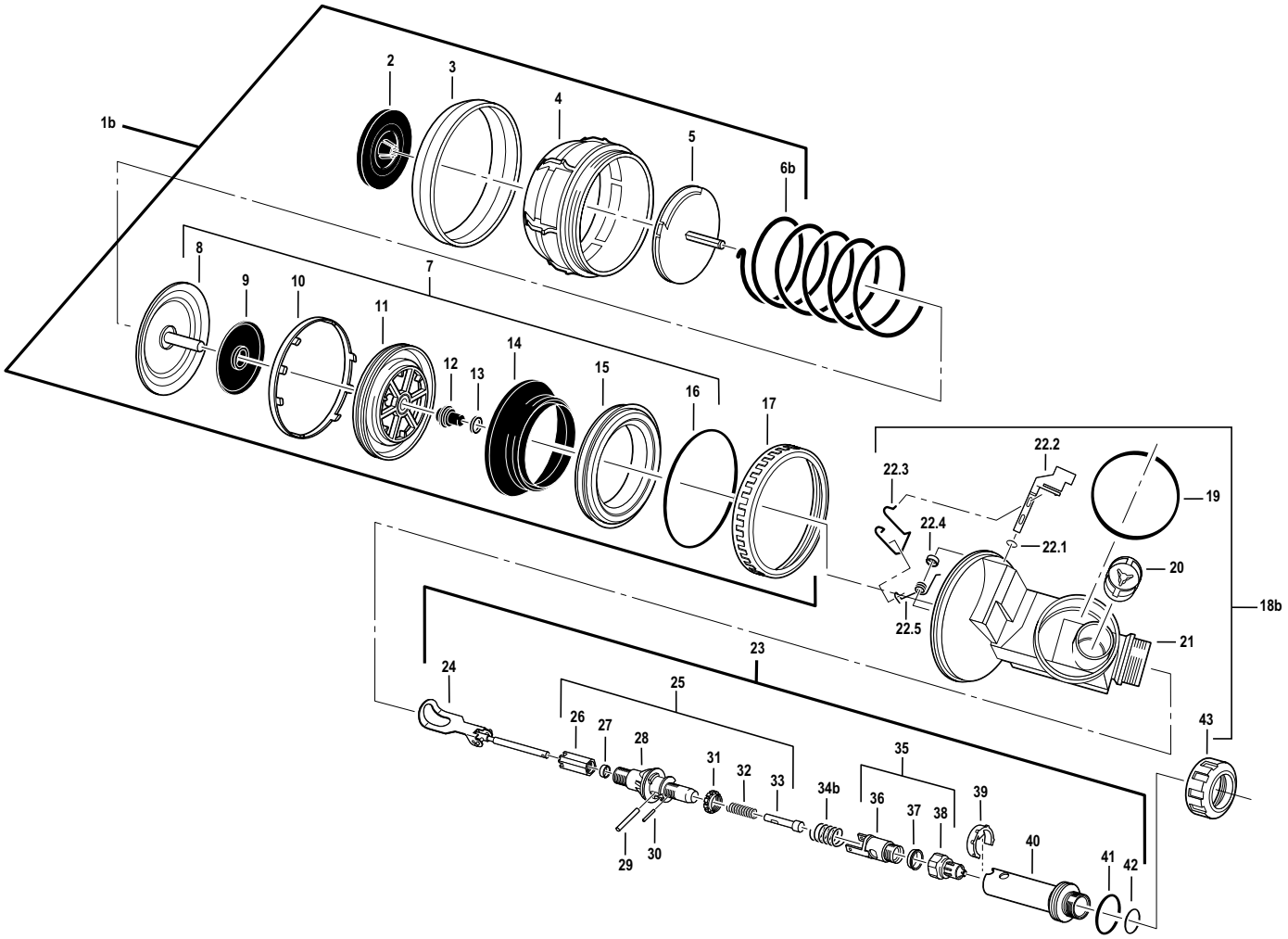
Key #	Part #	Description
-----	3007-07	Second Stage Assy (w/out positive pressure)
1a ----	3006-97	Exhaust Valve Assy (non-positive pressure)
2 -----	3006-47	Purge Cover
3 -----	3006-19	Shield Ring
4 -----	3006-48	Exhaust Valve Housing
5 -----	3006-21	Purge Button
6a ----	3006-17	Purge Valve Spring (non-positive pressure)
7 -----	3006-93	Diaphragm Assy
8 -----	3006-22	Non-Return Sealing Disc
9 -----	3006-23	Exhaust Valve Diaphragm
10 ----	3006-26	Securing Ring
11 ----	3006-24	Exhaust Valve Carrier
12 ----	3006-29	Lever Guide
13 ----	3006-51	Washer
14 ----	3006-27	Control Diaphragm
15 ----	3006-28	Control Diaphragm Retainer
16 ----	3006-69	O-ring
17 ----	3006-13	Exhaust Valve Retaining Collar
18a ---	3006-99	Valve Housing Assy (non-positive pressure)
19 ----	3006-72	O-ring
20 ----	3006-86	Non-Return Inlet Valve
21 ----	3006-53	Valve Housing

Key #	Part #	Description
22a ---	3006-57	Sealing Plug (non-positive pressure)
23a ---	3006-98	Valve Module Assy (non-positive pressure)
24 ----	3006-87	Lever Assy
25 ----	3006-92	Control Valve Assy
26 ----	3006-46	Lever Support
27 ----	3006-36	Sealing Sleeve
28 ----	3006-38	Control Valve Body
29 ----	3006-78	Pin
30 ----	3006-79	Pin
31 ----	3006-16	Adjusting Nut
32 ----	3006-44	Spring
33 ----	3006-14	Control Valve Piston
34a ---	3006-18	Spring (non-positive pressure)
35 ----	3006-83	Main Valve Assy
36 ----	3006-41	Control Valve Flange
37 ----	3006-11	Balancing Diaphragm
38 ----	3006-64	Valve seat
39 ----	3006-58	Retaining Ring
40 ----	3006-37	Inlet Chamber
41 ----	3006-73	O-ring
42 ----	3006-74	O-ring
43 ----	3006-12	Valve Module Retaining Collar

TECHNICIAN'S NOTES

Divator II Full Face Mask

Second-Stage w/ Positive Pressure



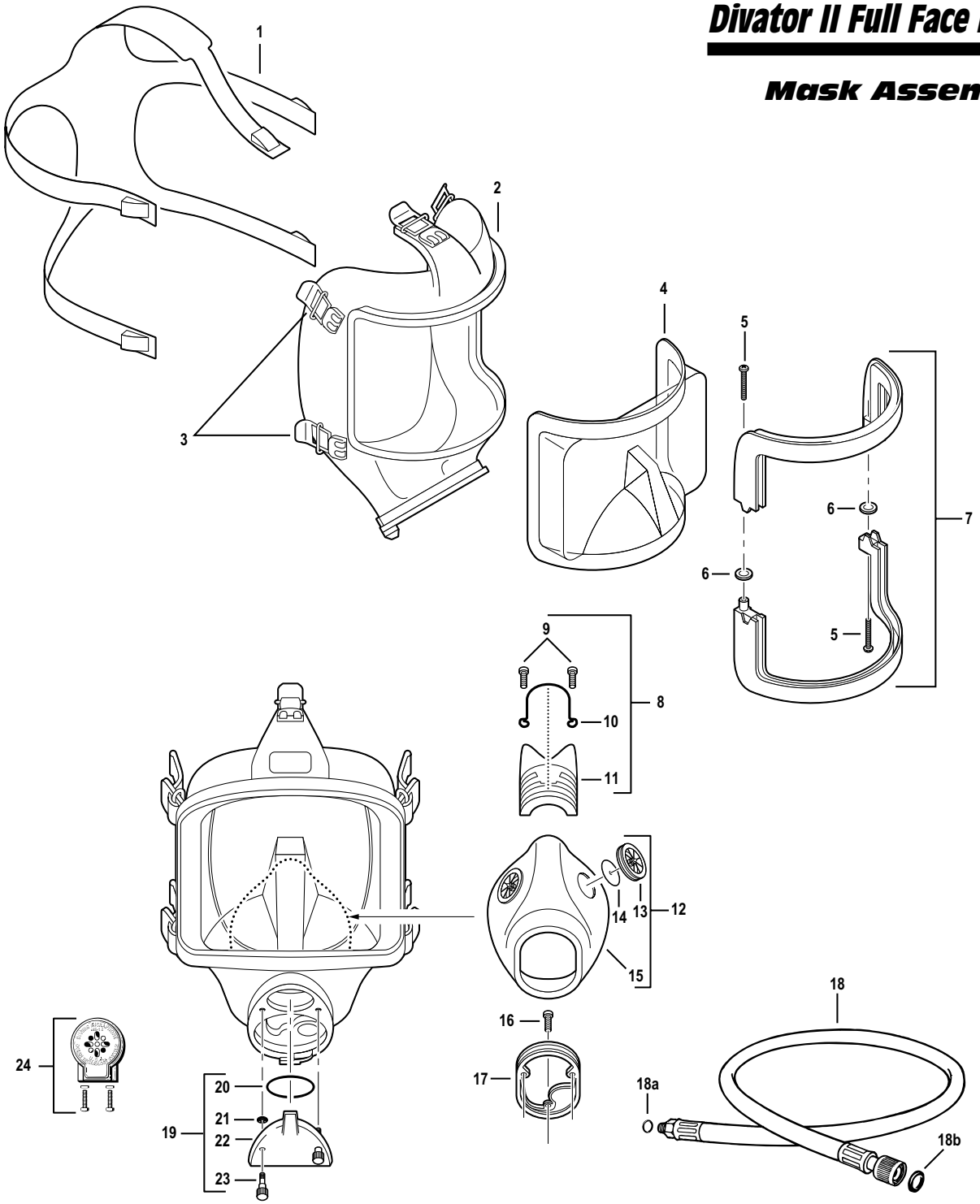
Key #	Part #	Description
-----	3006-88	Second Stage Assy (Positive Pressure)
1b ----	3007-06	Exhaust Valve Assy (Positive Pressure)
2 -----	3006-47	Purge Cover
3 -----	3006-19	Shield Ring
4 -----	3006-48	Exhaust Valve Housing
5 -----	3006-21	Purge Button
6b ----	3006-49	Purge Valve Spring (Positive Pressure)
7 -----	3006-93	Diaphragm Assy
8 -----	3006-22	Non-Return Sealing Disc
9 -----	3006-23	Exhaust Valve Diaphragm
10 ----	3006-26	Securing Ring
11 ----	3006-24	Exhaust Valve Carrier
12 ----	3006-29	Lever Guide
13 ----	3006-51	Washer
14 ----	3006-27	Control Diaphragm
15 ----	3006-28	Control Diaphragm Retainer
16 ----	3006-69	O-ring
17 ----	3006-13	Exhaust Valve Retaining Collar
18b ---	3006-96	Valve Housing Assy (Positive Pressure)
19 ----	3006-72	O-ring
20 ----	3006-86	Non-Return Inlet Valve
21 ----	3006-53	Valve Housing
22b ---	3006-67	Positive Pressure Switch Assy
22.1 --	3006-71	O-ring
22.2 --	3006-33	Positive Pressure Switch

Key #	Part #	Description
22.3 --	3006-31	Locking Spring
22.4 --	3006-32	Spacer
22.5 --	3006-39	Return Spring
23b ---	3006-91	Valve Module Assy (Positive Pressure)
24 ----	3006-87	Lever Assy
25 ----	3006-92	Control Valve Assy
26 ----	3006-46	Lever Support
27 ----	3006-36	Sealing Sleeve
28 ----	3006-38	Control Valve Body
29 ----	3006-78	Pin
30 ----	3006-79	Pin
31 ----	3006-16	Adjusting Nut
32 ----	3006-44	Spring
33 ----	3006-14	Control Valve Piston
34b ---	3006-52	Spring (Positive Pressure)
35 ----	3006-83	Main Valve Assy
36 ----	3006-41	Control Valve Flange
37 ----	3006-11	Balancing Diaphragm
38 ----	3006-64	Valve seat
39 ----	3006-58	Retaining Ring
40 ----	3006-37	Inlet Chamber
41 ----	3006-73	O-ring
42 ----	3006-74	O-ring
43 ----	3006-12	Valve Module Retaining Collar

TECHNICIAN'S NOTES

Divator II Full Face Mask

Mask Assembly



Key #	Part #	Description
1	3006-61	Head Harness
2	3006-89	Mask Body Assy
3	3006-81	Buckle Assy
4	3006-59	Low Volume Lens
5	3007-03	Screw
6	3006-62	Washer
7	3006-66	Lens Frame Assy
8	3006-94	Equalizer Assy
9	3007-04	Screw
10	3006-56	Push Pad Support
11	3006-54	Push Pad
12	3006-84	Oral/Nasal Inner Mask Assy
13	3007-01	CO_2 Non-Return Valve Retainer

Key #	Part #	Description
14	3006-82	CO_2 Non-Return Valve Diaphragm
15	3007-02	Oral/Nasal Inner Mask
16	3006-76	Screw
17	3006-34	Inner Mask Manifold
18	3006-40	LP Hose
18a	8200-11	O-ring (LP Hose to First Stage)
18b	8200-26	O-ring (LP Hose to Second Stage)
19	3006-63	Com Port Cover Assy
20	3006-68	O-ring
21	3006-77	Circlip
22	3006-42	Com Port Cover
23	3006-43	Knurled Screw
24	3007-31	Hot Mic w/ Screws & Washers

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