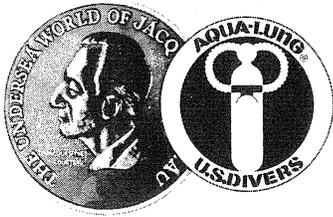


U.S. DIVERS CO.

**AQUA-LUNG
REPAIR
MANUAL**

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Introduction

This manual is designed for use only by individuals who have successfully completed a course of training in U.S. Divers Co. Technical School. This repair manual is to be used only in connection with the "Aqua-Lung" Maintenance and Repair Course as prescribed by the U.S. Divers Co., and is not for general distribution. Accordingly, U.S. Divers Co., makes no representations or warranties of any kind concerning any of the techniques or procedures contained in this manual. It is assumed that persons applying for this training have at least average mechanical ability, a good understanding of the basic operation and function of "Aqua-Lung" regulators, and some diving experience. It is not the purpose of this manual to provide a basic course in skin diving or the routine operation and care of "Aqua-Lung" regulators. This information is available from other sources and should be familiar to persons applying for repair and service instruction.

Also, this manual is not intended for use by divers in overhauling or repairing regulators in the field. Such practices by untrained persons should be discouraged and should only be attempted by trained personnel when absolutely necessary.

The reason for this policy is not because "Aqua-Lung" regulators are complicated or delicate. The contrary is the case. However, since an "Aqua-Lung" may be used in deep water, it is imperative that the regulator operate properly at all times. The diver's life depends upon its reliability. For this reason, the need for exceptional care in overhauling and adjusting a regulator cannot be overemphasized. Good workmanship and cleanliness are extremely important. As in any high pressure valve, a speck of dirt left in the assembly could cause a malfunction of the regulator at a time when a diver's life might be at stake.

For proper repairs, certain tools and equipment are indispensable. A good workshop, well lighted, and with surroundings arranged to insure that scrupulous cleanliness is observed, is required. Attempting regulator repairs or overhaul in a cluttered cubby hole or a dusty or oily atmosphere is inviting trouble.

Adequate washing and draining trays large enough to accommodate the unit must be prepared before repairs are started. Also, a source of clean, compressed air, separate from diving cylinders, must be provided. An "Aqua-Lung" may be tested by attaching to a diving tank, but it is definitely NOT good practice to assemble or disassemble a valve or regulator while attached to a cylinder.

TROUBLE SHOOTING

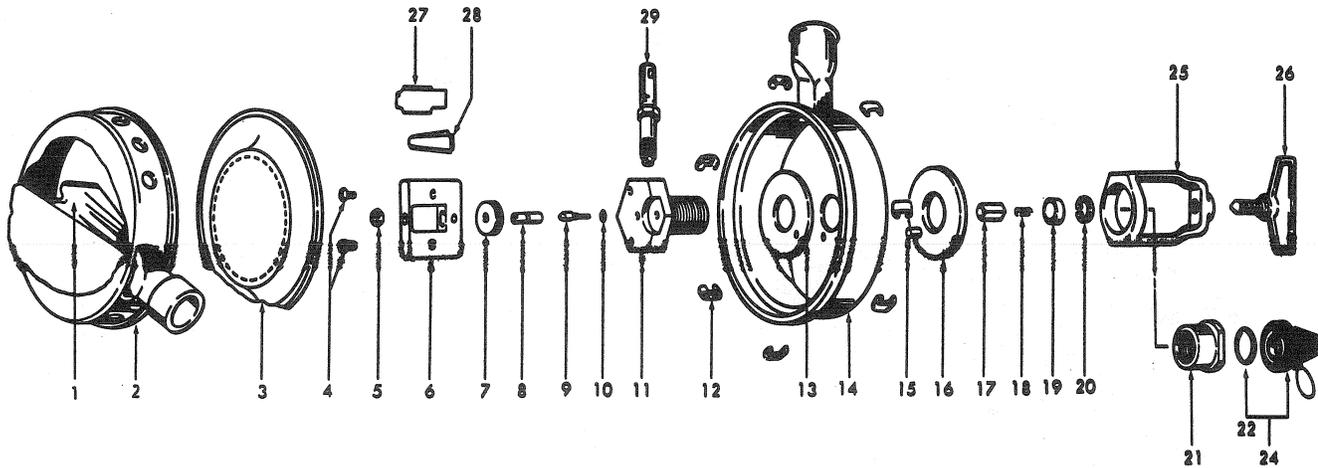
If a regulator is malfunctioning (leaking air or water or breathing improperly), it should be considered in need of a general overhaul. Even though the trouble can be traced to one particular valve or stage, it is not good practice to repair or replace only this part. Too often, the untreated parts or sections immediately develop trouble, and the customer is convinced he received poor repair service. The time required for a complete overhaul is often less than that required to muddle around with trouble shooting for separate causes. The cost of replacement parts is not great, and the customer is assured of a properly functioning regulator when a general overhaul is accomplished.

The various sections of this manual deal with general overhaul procedures on the various designs of regulators manufactured by U.S. Divers Co. Each type is in a separate section for easy reference. Recommended tools and materials for use during general overhaul and repair are listed in the TOOLS section of this manual.

PARTS LIST

"MISTRAL" REGULATOR No. 1008-00

SINGLE STAGE – TWO HOSE



**SEE 1010-00 AQUA MASTER REGULATOR
FOR 1128-00 HOSE ASSEMBLY**

Key Order Part	Description	Key Order Part	Description
1 – 1010-18	Exhaling Valve	15 – 1002-08	Dowel Pin
2 – 1002-16	Bottom Box	16 – 1002-06	Washer
3 – 9103-12	Diaphragm (L.P.)	17 – 1002-18	Seat Assembly
4 – 8360-05	Screw (2)	18 – 1002-10	Spring
5 – 1002-04	Nut	19 – 1000-38	Filter
6 – 1002-12	Lever Plate	20 – 8630-51	Retainer Ring
7 – 1002-23	Adjustment Nut	21 – 1005-02	Yoke Retainer
8 – 8350-04	Screw	22 – 8201-12	O'Ring
9 – 1002-11	Pin	24 – 1010-12	Cap Assembly
10 – 8200-06	O'Ring	25 – 1002-01	Yoke
11 – 1002-20	Body	26 – 1053-12	Yoke Screw
12 – 1000-15	Clip (7)	27 – 1002-17	Secondary Lever
13 – 1002-07	Gasket	28 – 1002-13	Primary Lever
14 – 1002-14	Top Box	29 – 1008-01	Orifice

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	12	Box Clips (7 reqd)	Remove by placing regulator on bench, yoke (25) up. Pry box clips off with diagonal pliers.
	2	Bottom Box	Lift off.
	3	Diaphragm (L.P.)	Remove.
2.	1	Exhaling Valve	Pull exhaling valve (1) out of bottom box (2).
	27	Secondary Lever	Remove secondary lever from lever plate (6).
3.	28	Primary Lever	Remove primary lever from lever plate (6).
	21	Yoke Retainer	Secure two sides of body (11) with an adjustable wrench. Invert regulator, and place handle of wrench in a vise. Loosen yoke retainer with 1" open-end wrench.



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Scuba Instructor*

4.	25	Yoke	Remove from body (11).
	26	Yoke Screw	Remove.
	16	Washer	Remove.
	11	Body	Push body (11) through the hole in the top box (14).
	15	Dowel Pin	Remove and note location in body (11).
	13	Gasket	Separate gasket (13) from body (11).
	9	Pin	Pull pin (9) out of body (11).
	4	Screw (2 reqd)	Unscrew from face of body (11).
	5	Nut	Unscrew from adjustment screw (8).
	6	Lever Plate	Remove from body (11).
5.	7	Adjustment Nut	Unscrew.
	8	Adjustment Screw	Remove with 3/32" allen wrench.
	29	Orifice	Remove from side of body (11) with 5/16" box wrench.
	20	Retainer Ring	With inlet of body (11) facing up, remove retainer ring (20) with circlip pliers (Ref 1111-00, TOOLS).
	19	Sintered Filter	Invert body (11), and remove.
	18	Spring	Remove.
	17	Seat Assembly	Remove.
NOTE: If seat assembly (18) is in body (11), it can be driven out by inserting a 1/16" punch in pin end of the body. Tap gently.			
	10	O'Ring	Remove from body (11) pin hole.

B. INSPECTION AND CLEANING

Step No.	Key No.	Description	Procedure (Ref exploded view)
INSPECTION			
1.	28	Primary Lever	Check for wear at the junctions.
	27	Secondary Lever	Check for wear at the junctions.
	6	Lever Plate	Check for wear.
2.	10	O'Ring	Check for wear in center hole.
	9	Pin	Look for verdigris on side.
	13	Gasket	Look for cracks and distortion.
3.	3	Diaphragm (L.P.)	Check for cracks in rubber, and separation from reinforced backing.
4.	1	Exhaling Valve	Look for rubber disintegration and salt deposit.
5.	11	Body	Look at the brass seat through a magnifying glass at the base of the inlet. Check for cuts and nicks in the seat.
6.	19	Sintered Filter	Look for discoloration on the outside of the sintered area.
	20	Retainer Ring	Check for distortion due to removal.
	18	Spring	Because it is difficult to check tension on this spring, it is suggested that this part be automatically replaced.
NOTE: We suggest that all parts in step 6 be replaced.			
7.	29	Orifice	Note any heavy verdigris that would distort, clog, or in any way affect the size of the openings.
CLEANING			
1.	All metal parts, except sintered filter (19) and seat assembly (17) are given an acid bath of 15-20% nitric acid solution. This solution is used only for removing deeply encrusted verdigris.		
CAUTION: Be sure that acid does not eat into metal.			
2.	Thoroughly wash metal parts in fresh water after acid bath.		
3.	Extremely heavy sedimentation can be removed with a soft wire wheel, or wire brush.		
4.	All rubber parts should be thoroughly washed in warm, soapy water, and rinsed in fresh water.		
5.	17	Seat Assembly	a. Heavy wear and verdigris: automatically replace.
			b. Light wear, no verdigris: in some cases this part can be reused. It might be necessary to reface with a fine crocus cloth.
6.	11	Body	If cuts or nicks are located on the brass seat, most of them can be polished off as follows:
			Place small amount of fine grinding compound on a 1/4" wooden dowel. Place dowel down into inlet of body, and invert so that body is resting on top of stick. Spin body to polish.
NOTE: The brass seat can be ground to a certain point after which the seat assembly (17) will not seat itself on the body (11). When this occurs, the body (11) must be replaced. Be sure to remove all grindings before reassembly. (Use air blasts and a fine cloth inserted on a pencil eraser end.)			
7.	Suggest automatic replacement of the following parts if there is heavy verdigris and sedimentation in the regulator.		
	10	O'Ring	
	13	Gasket	
	19	Sintered Filter	
	20	Retainer Ring	
	17	Seat Assembly	

C. ASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	11	Body	Place on table, inlet up.
	17	Seat Assembly	Insert in inlet of body (11), teflon edge facing down.
	18	Spring	Place inside seat assembly (17).
	19	Sintered Filter	Place over spring (18).
	20	Retaining Ring	Secure retainer ring (20) in body (11), using circlip pliers (Ref TOOLS).

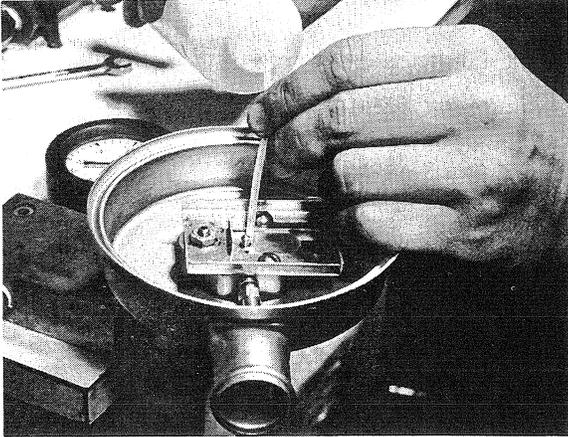


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Scuba Instructor*

CAUTION: Make sure that the sharp edges of the retainer ring (20) are facing up. This will insure perfect engagement in lip of body (11).

2.	29	Orifice	Screw snugly into body (11).
	10	O'Ring	Insert into body (11) pin hole by collapsing O'ring and pushing in place with a small dowel.
3.	15	Dowel Pin	Insert in body (11) in hole on side of body.
4.	13	Gasket	Place on body (11).
5.	11	Body	Assemble in top box (14), aligning dowel pin (15) with small hole in top box.
	16	Washer	Invert regulator with inlet opening up. Place washer (16) over body (11) and inside of top box (14), aligning dowel pin (15) with hole in washer (16).
6.	25	Yoke	Place over body (11).
	21	Yoke Retainer	Screw onto body (11). Tighten with a 1" open wrench or in vise.
	26	Yoke Screw	Screw into yoke (25).
7.	8	Adjustment Screw	Screw into body (11).
	7	Adjustment Nut	Screw onto adjustment screw (8).
	6	Lever Plate	Place in proper position over body (11), threading adjustment screw (8) through one end.
	4	Screw (2 reqd)	Screw into body (11) through lever plate (6). Do not tighten.
	9	Pin	Insert into body (11) through O'Ring (10).

"MISTRAL" REGULATOR No. 1008-00

Step No.	Key No.	Description	Procedure (Ref exploded view)
8.	28 27	Primary Lever Secondary Lever	Insert into lever plate (6). Insert into lever plate (6).
9.	Soap water test.		Attach regulator to "Aqua-Lung" tank. Turn on valve. Put soap water over pin (9) (Ref photo). Check for bubbles at 2000 psi to 3000 psi. There should be none.
			
10.	Adjustment of levers		<p>NOTE: Adjustment must be made under pressure.</p> <p>With one hand press down on sides of lever plate (6) next to the screws. With other hand raise or lower adjustment nut (7) until top of the secondary lever (27) is level with the top edge of the top box (14). If you were to lay a steel ruler across the edge of the top box, the secondary lever would touch the ruler (Ref photo).</p>
			
	5	Nut	If above adjustment is correct, tighten down nut (5).
11.	Shut off valve 3 Diaphragm (L.P.) 2 Bottom Box		Depress secondary lever (27) to bleed off air. Place diaphragm (3) securely on top box (14). Place on diaphragm (3).
NOTE: The inlet tubes must be approximately 120° apart, or have the upper left hand corner of the "Aqua-Lung" tag align with the center of the intake tube.			
12.	12	Box Clips (7 reqd)	Snap on box clips (12) – one on either side of the intake and exhaust tubes (4 reqd); one directly below the "Aqua-Lung" tag; and the remaining 2 box clips on either side, equi-distant between the box clips next to the intake tube and the box clip at the bottom of the "Aqua-Lung" tag. If the box clips do not snap on easily, spread them slightly.-
NOTE: It is important that the box clips (12) be put on tightly, so that there is no water leak at the diaphragm (3). This will also prevent the diaphragm (3) from being sucked into the top box (14).			

Step No.	Key No.	Description	Procedure (Ref exploded view)
13.	1	Exhaling Valve	Insert into bottom box (2) so that exhaling valve (1) lies parallel to diaphragm (3). Fold exhaling valve lips back over exhaust tube of bottom box (2).
14.		Install hoses (Ref 1010 Aqua-Master).	

TROUBLE SHOOTING CHART

COMPLAINT	ORIGIN	KEY NO.	CAUSE	REMEDY
Air leak	a. Levers	27, 28	Levers are set too high.	Readjust.
	b. Body	20	Scratched body seat.	Regrind seat or replace.
	c. Seat Assy	17	Damaged seat.	Reface seat or replace.
	d. Spring	18	Loss of tension.	Replace.
Water leak	a. Yoke Retainer	21	Loose.	Tighten.
	b. Box Clips	12	Loose.	Tighten.
	c. Hose	1128-00	Clamp not put on properly. Pin hole in hose.	Tighten all clamps. Check for pin holes. Replace.
	d. Diaphragm	3	Pinched by boxes.	Reset in top box (14).
	e. Exhaust Valve	1	Pinched by hose clamp.	Refit in bottom box (2).
Hard to inhale	a. Hose	1128-00	Faulty assembly.	Reassemble.
	b. Levers	27, 28	Levers are set too low.	Raise levers slightly (under pressure).
Hard to exhale	a. Exhaling Valve	1	Improper assembly or valve stuck.	Realign.
	b. Hose	1128-00	Hoses not assembled properly.	Reassemble.

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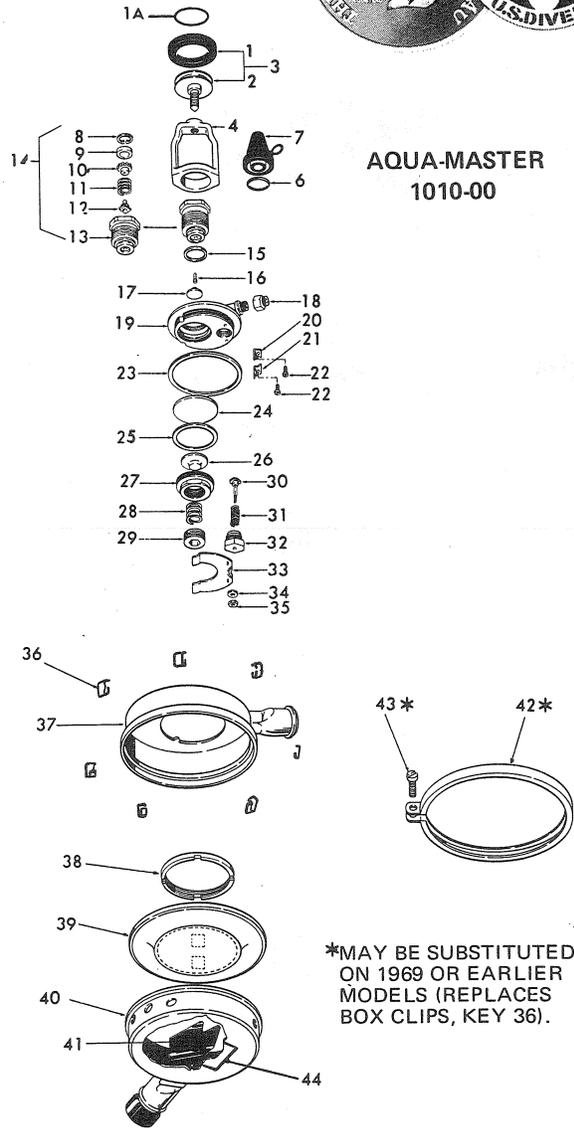
PARTS LIST

"AQUA-MASTER" No. 1010-00

TWO STAGE REGULATOR WITH KLEER E-Z MOUTHPIECE AND HOOKAH ATTACHMENT

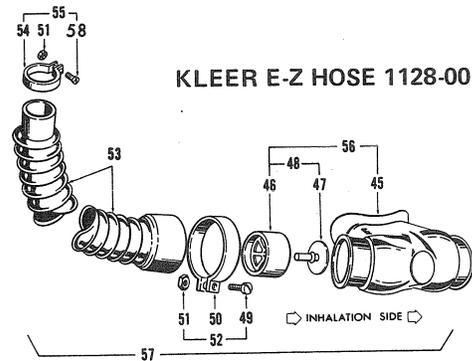


Key Order Part	Description
1A - 1010-88	Decal
1 - 1051-05	Ring, Yoke
2 - 1051-04	Screw, Yoke
3 - 1051-03	Screw, Yoke Assy
4 - 1010-11	Yoke
6 - 8201-12	O'Ring
7 - 1010-12	Cap, Assembly
8 - 8630-51	Retainer, Ring
9 - 1000-38	Filter
10 - 1000-23	Spring Block
11 - 1000-24	Spring
12 - 1010-65	Seat
13 - 1012-12	Nozzle
14 - 1012-05	Valve, Complete
15 - 8210-03	Gasket
16 - 1000-25	Pin
17 - 1000-27	Support
18 - 1012-08	Cap
19 - 1012-03	Body
20 - 1010-02	Lock Support, Left
21 - 1010-01	Lock Support, Right
22 - 8340-03	Screw (2 reqd)
23 - 1000-34	Gasket
24 - 1000-29	Diaphragm
25 - 8210-01	Gasket
26 - 1000-39	Pad
27 - 1000-05	Spring Retainer
28 - 1000-40	Spring
29 - 1023-43	Screw, Adjusting
30 - 1010-07	Disc & Retainer
31 - 1010-06	Spring
32 - 1010-04	Seat Holder
33 - 1010-05	Horseshoe
34 - 8450-04	Washer
35 - 8520-16	Nut
36 - 1000-15	Box Clip (7 reqd)
37 - 1012-06	Box, Top
38 - 1000-14	Ring
39 - 1000-37	Diaphragm
40 - 1012-02	Box, Bottom
41 - 1010-18	Valve, Exhaling
*42 - 1046-19	Clamp
*43 - 8340-19	Screw
44 - 1010-28	Decal



KLEER EZ HOSE 1128

Key Order Part	Description
45 - 1128-02	Mouthpiece
46 - 1108-03	Support
47 - 1108-02	Valve
48 - 1108-12	Valve Assembly
49 - 8340-02	Screw
50 - 1128-11	Clamp
51 - 8520-02	Nut
52 - 1128-13	Clamp Assembly
53 - 1128-08	Hose
54 - 1128-10	Clamp
55 - 1128-12	Clamp Assembly
56 - 1128-07	Mouthpiece & Valve
57 - 1128-00	Hose & Mouthpiece complete
58 - 8340-06	Screw

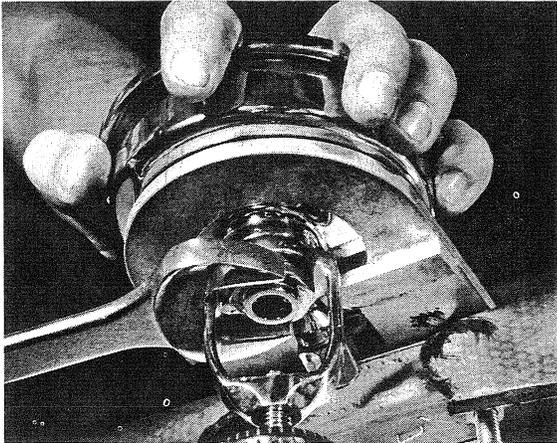


PROTECTION CAP, COMPLETE, NO. 7, IS THE SAME ON ALL "AQUA-LUNG" REGULATORS.

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	36	Box Clips (7 reqd)	Remove by placing regulator on bench, yoke (4) up. Pry box clips (36) off with diagonal pliers (Ref photo).
			
	40	Bottom Box	Lift off.
	39	Diaphragm (L.P.)	Remove.
	41	Exhaling Valve	Pull out of bottom box (40).
DISASSEMBLY OF 2ND STAGE			
2.	21	Lock Support, Right	Straighten twist in support.
	20	Lock Support, Left	Straighten twist in support.
	33	Horseshoe	Insert screw driver through intake tube of top box (37), and lift up disc and retainer (30); remove horseshoe (33).
	22	Screws (2 reqd)	Remove.
	21	Lock Support, Right	Remove.
	20	Lock Support, Left	Remove.
	32	Seat Holder	Unscrew. Seat holder (32) contains disc and retainer (30), spring (31), washer (34), and nut (35).
3.	35	Nut	Using a 3/8" wrench, hold the disc and retainer (30), and unscrew nut (35) with 1/4" wrench.
	34	Washer	Remove.
	31	Spring	Remove.
	30	Disc and Retainer	Remove.
DISASSEMBLY OF 1ST STAGE			
4.	29	Adjusting Screw	Remove with 3/8" allen wrench.
	28	Spring	Lift out.
	27	Spring Retainer	Unscrew using diaphragm bonnet socket wrench (Ref 1114-00, TOOLS).
	26	Pad	Take out.
	25	Gasket	Remove.
	NOTE: Do not remove high pressure diaphragm (24) from body (19).		

"AQUA-MASTER" REGULATOR No. 1010-00

Step No.	Key No.	Description	Procedure (Ref exploded view)
5.	13	Nozzle (H.P.)	Place regulator in body wrench (Ref 1113-00, TOOLS). Unscrew from body (19), using 15" adjustable wrench, turning counter-clockwise.
			
	4	Yoke	Remove.
	2	Yoke Screw	Remove.
6.	15	Gasket	Remove from body (19).
	16	Pin	Remove.
	17	Support	Remove.
	24	Diaphragm (H.P.)	With a blunt instrument, push diaphragm (24) out of body (19).
7.	38	Dented Ring.	Remove with wrench (Ref 1112-00, TOOLS).
	37	Top Box	Remove from body (19).
	23	Gasket	Remove from body (19).
	18	Cap (for hookah outlet)	Remove.
8.	8	Retainer Ring	Remove from nozzle (13) using circlip pliers (Ref 1111-00, TOOLS).
	9	Sintered Filter	Remove.
	10	Spring Block	Remove.
	11	Spring	Remove.
	12	Seat	Remove.

NOTE: If parts in step 8 are frozen in nozzle (13), they can be removed by inserting a 1/16" punch into the base of the nozzle and tapping gently. If all the internal parts are frozen together do not attempt to separate, replace.

B. INSPECTION AND CLEANING

INSPECTION

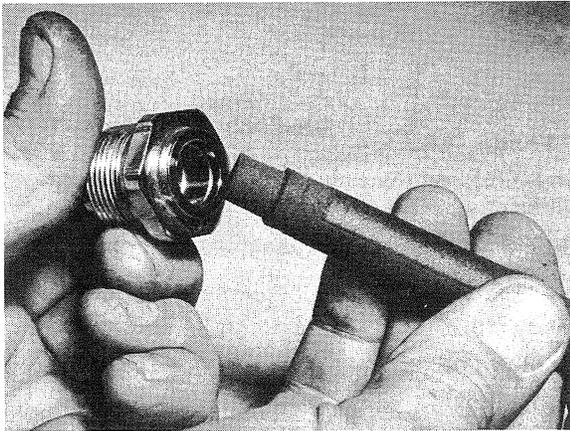
1.	13	Nozzle (H.P.)	Check seat located at the bottom of nozzle for verdigris and nicks.
2.	39	Diaphragm (L.P.)	Check for separation of neoprene from metal plate, and for cracks and pinching at outer edges.
3.	15	Gasket	Check for wear and cracking.
	23	Gasket	Check for wear and cracking.
	25	Gasket	Check for wear and cracking.
4.	9	Sintered Filter	See if any sedimentation has occurred on the outside of the sintered area.
	12	Seat	Look at the teflon seat for any fine particles of foreign matter of deep markings.

Step No.	Key No.	Description	Procedure (Ref exploded view)
	8	Retainer Ring	Check to see if the retainer ring is distorted due to removal.
	30	Disc and Retainer	Check seat for excessive wear and verdigris.
	35	Nut	Check for distortion due to crimping.
	20	Lock Support, Left	Note cracks in metal due to untwisting.
	21	Lock Support, Right	Note cracks in metal due to untwisting.

CLEANING

1. All metal parts, except sintered filter (9), seat (12), disc and retainer (30), and diaphragm (39), are given an acid bath of 15-20% nitric acid solution. This solution is used only for removing deeply incrustated verdigris. Be sure that acid does not eat metal parts.
2. Wash metal parts thoroughly in fresh water after acid bath.
3. Extremely heavy verdigris and sedimentation can be removed with a soft wire wheel or wire brush.
4. All rubber parts should be thoroughly washed in warm soapy water, and rinsed in fresh water.
5. 13 Nozzle (H.P.)

If the nozzle seat is nicked, polish with a reseating device. This can be made out of a 7/16" abrasive stick. The nozzle is then spun a few times with the stick. If the seat has been satisfactory ground, clean grindings out with compressed air and soft cloth.



6. 39 Diaphragm
If rubber is separating from metal plate, clean both surfaces with rubber solvent and reglue with weatherstrip cement.
7. Replacement of the following parts is suggested:
 - 15 Gasket
 - 23 Gasket
 - 25 Gasket
 - 9 Sintered Filter
 - 8 Retainer Ring
 - 12 Seat
Depending on the amount of wear and verdigris.
 - 21 Lock Support, Right
If ends are twisted.
 - 20 Lock Support, Left
If ends are twisted.
 - 30 Disc and Retainer

C. ASSEMBLY

1. 12 Seat
Insert spring block (10). Check for movement. Cylindrical end of seat (12) should slide freely up and down hole in spring block (10).

"AQUA-MASTER" REGULATOR No. 1010-00

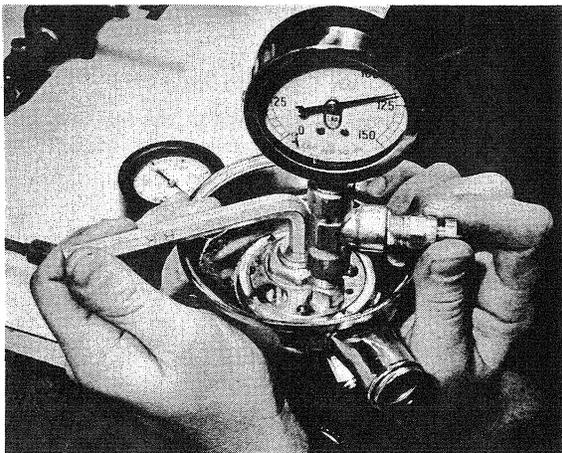
Step No.	Key No.	Description	Procedure (Ref exploded view)										
2.	13	Nozzle (H.P.)	Place on hard clean surface. Assemble the following parts:										
			<table> <tr><td>12</td><td>Seat</td></tr> <tr><td>11</td><td>Spring</td></tr> <tr><td>10</td><td>Spring Block</td></tr> <tr><td>9</td><td>Filter</td></tr> <tr><td>8</td><td>Retainer Ring</td></tr> </table>	12	Seat	11	Spring	10	Spring Block	9	Filter	8	Retainer Ring
12	Seat												
11	Spring												
10	Spring Block												
9	Filter												
8	Retainer Ring												
			With sharp edge facing up, place retainer ring (8) into high pressure block assembly guide (Ref 1110-00, TOOLS). Mount assembly guide on top of nozzle (13), and force retainer ring (8) into its ridge with a 1/2" wooden dowel (Ref photo).										
													

ASSEMBLY AND ADJUSTMENT OF THE 1ST STAGE.

3.	16	Pin	Invert nozzle (13), and place pin (16) in hole, being sure it seats in center of seat (12).
	17	Support	Place on top of pin (16).
4.	18	Hookah Cap	Screw onto body (19).
	23	Gasket	Place on body (19).
	37	Top Box	Insert over body (19).
	38	Dented Ring	Screw onto body (19).
5.	15	Gasket	Insert in body (19), with regulator facing downward.
	13	Nozzle (H.P.)	Thread yoke (4) onto nozzle (13), and screw unit into body (19).
		NOTE: Make sure that yoke (4) moves freely about nozzle (13).	
	2	Yoke Screw	Screw into yoke (4).
6.	24	Diaphragm (H.P.)	With fabric side of diaphragm (24) facing upwards, place into body (19). Edges of diaphragm (24) may be seated with a blunt instrument.
	25	Gasket	Place on top of diaphragm (24).
	26	Pad	Lay on top of diaphragm (24).
	27	Spring Retainer	Screw into body (19) until it seats hard against diaphragm gasket (21).
	28	Spring	Place on top of pad (26).
	29	Adjusting Screw	Screw into spring retainer (27) 1 or 2 threads.
		NOTE: Do not screw adjusting screw (29) in tightly. This can increase intermediate pressure and cause damage to the test pressure gauge used later.	

Step No.	Key No.	Description	Procedure (Ref exploded view)
----------	---------	-------------	-------------------------------

7.



Screw test pressure gauge (Ref 1116-00, TOOLS) with adapter (Ref 1125-00, TOOLS) into second stage seat of body (19). (Ref photo.)

NOTE: Be sure that there is a gasket between test pressure gauge and the adapter.

CAUTION: Be sure the bleeder of the test gauge is open.

NOTE: The intermediate pressure of this regulator is to be set at 110 pounds per square inch (psi).

TESTING THE INTERMEDIATE STAGE.

8. With the test pressure gauge installed on the regulator:
 - a. Attach to an "Aqua-Lung" cylinder.
 - b. Slowly turn on valve.
 - c. Close bleeder knob of gauge.
 - d. Turn adjusting screw (29) slowly in a clockwise direction until the test gauge reads 110 psi.
 - e. Open and shut bleeder a few times to check correct reading of the gauge.
 - f. Readjust adjusting screw (29) as necessary.

SLOW RISE OF GAUGE PRESSURE.

This is an indication of a leak in the high pressure nozzle (13), and can be due to one or more of the following reasons:

- | | | |
|----|--------|----------------------------------|
| 13 | Nozzle | Not fitting seat (12) correctly. |
| 12 | Seat | Dirt on seat, or seat marred. |

Turn off valve of high pressure air source. Leave bleeder closed. If pressure reading remains same for 1 minute adjustment of regulator is completed.

PRESSURE DROP IN GAUGE.

This is an indication of an air leak from one or more of the following places:

- | | | |
|----|-------------------------------|--|
| 18 | Hookah Cap | Not tight; tighten. |
| 13 | Nozzle | Not tight; tighten. |
| 15 | Gasket | Cracked; replace. |
| 24 | Diaphragm | Seal not complete. Tighten spring retainer (27). |
| | Test Pressure Gauge (1116-00) | Not tightly screwed onto body; tighten. |

NOTE: A quick way for locating leaks.

While test pressure gauge is still attached to the body (19), and regulator is under pressure, immerse unit in water making sure the test pressure gauge does not get wet. Bubbles will indicate leak.

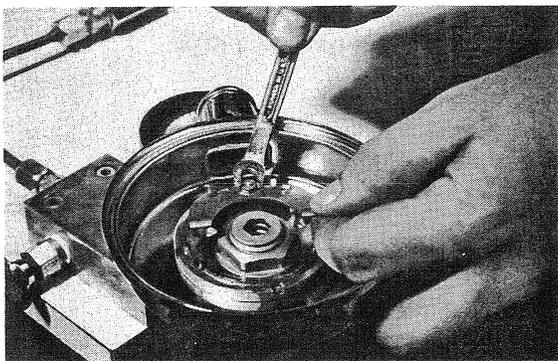
ASSEMBLY AND ADJUSTMENT OF 2ND STAGE.

9. **NOTE:** Assemble the following parts as a unit before installing into body (19).

30	Disc and Retainer	Stand upright on bench, seat facing down.
31	Spring	Thread over stem of seat holder (32).
32	Seat Holder	Place over stem of disc and retainer (30), and push down compressing spring (31) so that threaded end of disc and retainer (30) is exposed through seat holder (32).

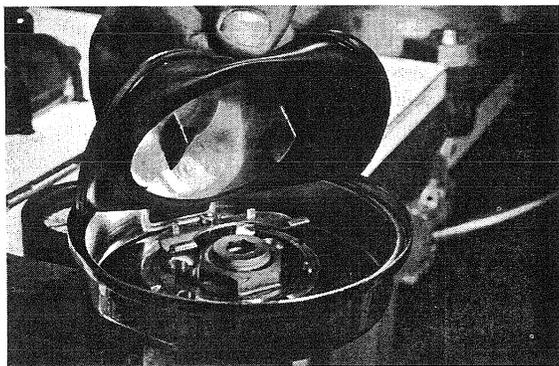
"AQUA-MASTER" REGULATOR No. 1010-00

Step No.	Key No.	Description	Procedure (Ref exploded view)
	34	Washer	Thread onto disc and retainer (30).
	35	Nut	Screw onto seat (12) 2 or 3 threads.
10.	32	Seat Holder	Assembled unit is screwed finger tight into body (19).
		NOTE:	Align one of 3 holes in sides of seat holder (32) to point directly down intake tube of the top box (37). If hole does not point directly down tube, align by tightening or backing seat holder (32) with 5/8" wrench.
11.	35	Nut	Remove.
	34	Washer	Remove.
12.	21	Lock Support, Right	"V" slot facing towards center of body (19).
	20	Lock Support, Left	"V" slot facing towards center of body (19).
	22	Screw (2 reqd)	Screw lock supports (20, 21) to body (19).
		NOTE:	Install screws (22) using Loctite.
13.	33	Horseshoe	Place over lock supports (20, 21). If horseshoe (33) does not move freely, check alignment of lock supports.
14.	34	Washer	Place over disc and retainer (30) onto horseshoe (33).
	35	Nut	Screw loosely onto seat holder (32).
15.			Attach regulator to "Aqua-Lung" tank, and turn on air. Check for leaks in 2nd stage.
16.			NOTE: While regulator is still under pressure, screw down nut (35) until approximately a 3/16" lift is attained on horseshoe (33) between the point of activation and the highest point it can be lifted. After adjustment has been made turn off air. (Ref photo.)



17. Secure nut (35) to disc and retainer (30). Center punch shaft of disc and retainer (30) to nut (34) on both sides. This should be done lightly. Test to see that the nut is secured to the disc and retainer shaft by turning. If the nut turns, it must be repunched.
18. Lift end of horseshoe (33) to its highest position. With a pair of pliers, grab very top of lock support, right (21), and twist approximately 30° in a counter-clockwise direction. Do the same to lock support, left (20), except twist in a clockwise direction.
19. 39 Diaphragm

Lay directly over horseshoe (33) so that bent metal edges of diaphragm (39) are riding on ends of horseshoe (33).



Step No.	Key No.	Description	Procedure (Ref exploded view)
20.	40	Bottom Box	Place over diaphragm (39). NOTE: Inlet and outlet tubes must be approximately 120° apart or have the upper left hand corner of the "Aqua-Lung" nameplate align with the center of the intake tube.
21.	36	Box Clips (7 reqd)	Snap on box clips (36) — one on either side of the intake and exhaust tubes (4 reqd), one directly below the "Aqua-Lung" tag, and the 2 remaining box clips on either side, equi-distant between the box clips next to the intake tube and the box clip at the bottom of the "Aqua-Lung" nameplate. If the box clips do not snap on easily, spread them slightly. NOTE: Ring clamp (42) and screw (43) may be used in place of box clips (36) on 1969 or earlier models. NOTE: It is important that the box clips (36) or ring clamp (42) be put on tightly so that there is no water leak at the diaphragm (39). This will also prevent the diaphragm (39) from being sucked into the top box (37).
22.	41	Exhaling Valve	Insert into bottom box (40) so that exhaling valve lies parallel to diaphragm (39). Fold exhaling valve lips back over exhaust tube of bottom box (40).
23.		Install hoses. (Ref Kleer-Ez Hose 1128.)	

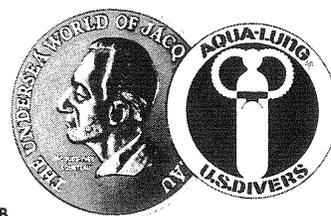
TRUBLE SHOOTING CHART

COMPLAINT	ORIGIN	KEY NO.	CAUSE	REMEDY
1st stage air leak. (After inhaling, hissing starts in about a second.)	Seat	12	Damaged seat.	Reface or replace.
	Nozzle	13	Damaged seat.	Reface or replace.
2nd stage air leak. (After inhaling, hissing starts immediately.)	Body	19	Scratched orifice.	Reface.
	Disc and Retainer	30	Damaged seat.	Replace.
Hard to Breathe.	Adjusting screw	29	Out of adjustment.	Turn in a clockwise direction.
	Hose	57	Faulty assy.	Reassemble.
Water leak.	Hose	53	Pin hole in hose.	Replace.
	Diaphragm	39	Not in seat properly.	Reassemble.
	Box Clips or Ring Clamp	36	Loose.	Tighten.
	Ring Clamp	42	Loose.	Tighten screw (43).
	Ring	38	Loose.	Tighten.

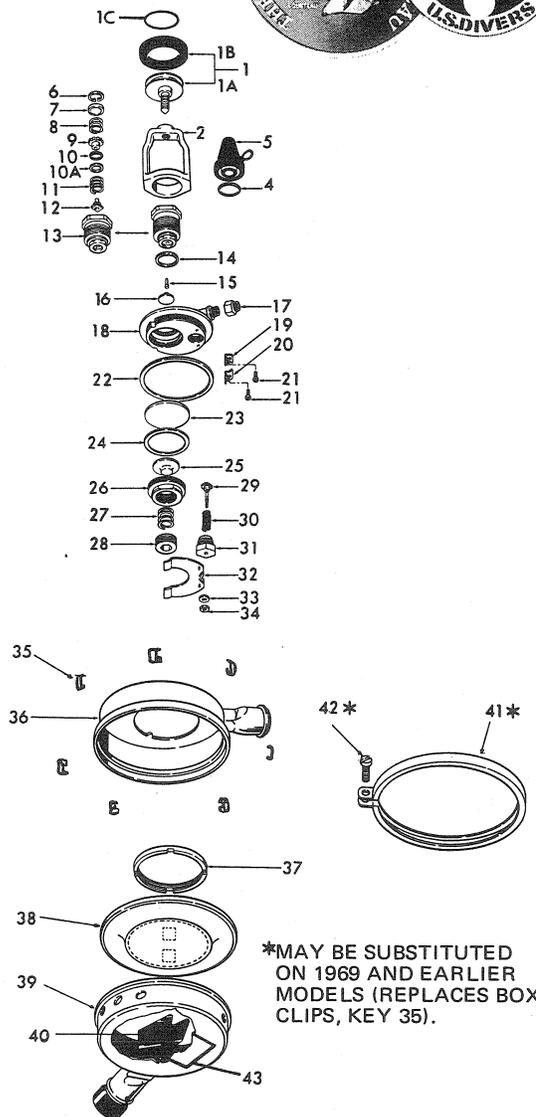
PARTS LIST

"ROYAL AQUA-MASTER" No. 1046-00

TWO STAGE REGULATOR WITH
KLEER-E-Z MOUTHPIECE,
HOSE ASSEMBLY AND HOOKAH
ATTACHMENT.

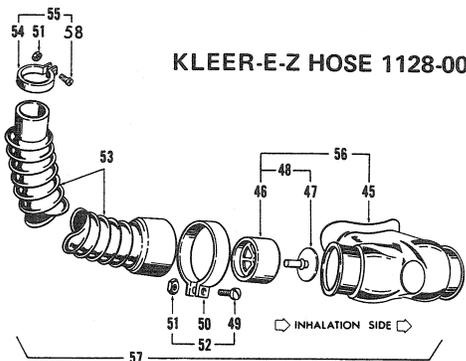


Key Order Part	Description
1 - 1051-03	Yoke Screw Assy
1A - 1051-04	Screw, Yoke
1B - 1051-05	Ring, Yoke Screw
1C - 1046-88	Decal
2 - 1010-11	Yoke
4 - 8201-12	O'Ring
5 - 1010-12	Cap, Assembly
6 - 8630-51	Retainer, Ring
7 - 1000-38	Filter
8 - 1046-13	Spring
9 - 1053-24	Spring Block
10 - 8200-06	O'Ring
10A - 8280-05	Back-up Ring
11 - 1053-05	Spring
12 - 1053-20	Seat
13 - 1046-02	Nozzle
14 - 8210-03	Gasket
15 - 1046-18	Pin
16 - 1000-27	Support
17 - 1012-08	Hookah Cap
18 - 1012-03	Body
19 - 1010-02	Lock Support, Left
20 - 1010-01	Lock Support, Right
21 - 8340-03	Screw (2 reqd)
22 - 1000-34	Gasket
23 - 1000-29	Diaphragm
24 - 8210-01	Gasket
25 - 1000-39	Pad
26 - 1000-05	Spring Retainer
27 - 1000-40	Spring
28 - 1023-43	Adjustment Screw
29 - 1010-07	Disc & Retainer
30 - 1010-06	Spring
31 - 1010-04	Seat Holder
32 - 1010-05	Horseshoe
33 - 8450-04	Washer
34 - 8520-16	Nut
35 - 1000-15	Box Clips (7 reqd)
36 - 1012-06	Top Box
37 - 1000-14	Ring
38 - 1000-37	Diaphragm
39 - 1012-02	Bottom Box
40 - 1010-18	Exhalation Valve
*41 - 1046-19	Clamp
*42 - 8340-19	Screw
43 - 1046-28	Decal



KLEER E-Z HOSE 1128-00

Key Order Part	Description
45 - 1128-02	Mouthpiece
46 - 1108-03	Support
47 - 1108-02	Valve
48 - 1108-12	Valve Assembly
49 - 8340-02	Screw
50 - 1128-11	Clamp
51 - 8520-02	Nut
52 - 1128-13	Clamp Assembly
53 - 1128-08	Hose
54 - 1128-10	Clamp
55 - 1128-12	Clamp Assembly
56 - 1128-07	Mouthpiece & Valve
57 - 1128-00	Hose & Mouthpiece complete
58 - 8340-06	Screw



PROTECTION CAP, COMPLETE, NO. 7,
IS THE SAME ON ALL "AQUA-LUNG"
REGULATORS.

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	57	Hose	Unscrew two screws (49) and remove from hose tubes on top box (36) and bottom box (39). (Ref 1128-00, REPAIR.)
2.	35	Box Clips (7 reqd)	Place regulator, yoke (2) up, on repair bench, and remove seven box clips (35) by prying off with diagonal pliers.
3.	36	Top Box	Lift off bottom box (39); remove diaphragm (38).
4.	40	Exhalation Valve	Remove from bottom box (39).
5.	19, 20	Lock Supports	Straighten by twisting with pliers.
6.	32	Horseshoe	Insert a screwdriver through hose tube of top box (36), and lift up disc & retainer (29); then, remove horseshoe (32).
7.	21	Screws (2 reqd)	Unscrew, and remove lock supports (19, 20).
8.	31	Seat Holder	Unscrew from body (18).
9.	34	Nut	Using a 3/8" wrench to hold disc & retainer (29), unscrew nut (34) with a 1/4" wrench. Remove disc & retainer (29), spring (30), and washer (33) from seat holder (31). Lift disc & retainer (29) with point of a needle applied at outside diameter of disc to remove.
10.	28	Adjusting Screw	Remove from body (18) with 3/8" Allen wrench. Remove spring (27).
11.	26	Spring Retainer	Remove from body (18) with 1-3/8" wrench. Remove pad (25) and gasket (24).
12.	23	Diaphragm	Slip a small screwdriver between diaphragm (23) and bottom box (36), and pry up to remove.
13.	16	Support	Remove support (16) and pin (15) from nozzle (13).
14.	1	Yoke Screw	Remove from yoke (2).
15.	5	Cap	Untie; remove O'ring (4) with small tool.
16.	13	Nozzle	Place regulator in body wrench (Ref 1113-00, TOOLS), and unscrew nozzle (13) from body (18) with 15" adjustable wrench. Remove yoke (2) and gasket (14).
17.	37	Ring	Remove from body (18) with wrench (Ref 1112-00, TOOLS). Remove gasket (22) and body (18) from top box (36).
18.	6	Retainer Ring	Remove with circlip pliers (Ref 1111-00, TOOLS). Then, remove filter (7), spring (8), spring block (9), spring (11), and seat (12) from nozzle (13). Remove O'ring (10) from spring block (9) with a small tool.
19.	17	Hookah Cap	Remove from body (18) with 3/4" wrench.

B. INSPECTION AND CLEANING

INSPECTION

1.		All O'Rings, gaskets, and soft goods.	Check for nicks, wear, deterioration, and other damage. Replace if necessary.
2.	12	Seat	Check for nicks, deep embedding, loose seat rubber, etc., on seat face. Replace if necessary.
3.	13	Nozzle	Check for nicks, dents, etc., on seat face. Replace if necessary.
4.	7	Filter	Check for foreign matter or verdigris. Replace if necessary.
5.	29	Disc & Retainer	Replace or reverse by placing used side into retainer. Before doing this, clean off old glue, and add a small drop of rubber cement to inside of retainer face.
6.	38	Diaphragm	Check for cuts and deterioration. Replace if necessary.
7.	40	Exhalation Valve	Check for cuts and deterioration, especially in the area that folds over inlet tube of bottom box (39).

"ROYAL AQUA MASTER" No. 1046-00

Step No.	Key No.	Description	Procedure (Ref exploded view)
CLEANING			
1.		All metal parts, except filter (7), seat (12), horseshoe (32), and nozzle (13), are given an acid bath of 15-20% nitric acid solution. This solution is used only for removing deeply incrustated heavy verdigris and sedimentation. Be sure that acid does not eat into metal.	
2.		Thoroughly wash metal parts in fresh running water immediately after acid bath.	
3.		Extremely heavy verdigris may be removed with a soft wire wheel or wire brush.	
4.		Thoroughly wash all rubber parts in warm, soapy water, and rinse in fresh water.	
5.		The following parts are suggested for replacement:	
	6	Retainer Ring	
	7	Filter	
	12	Seat	
	14	Gasket	
	22	Gasket	
	32	Horseshoe	

C. ASSEMBLY

1.	12	Seat	Install with spring (11) inside nozzle (13), using needle nose pliers.
2.	9	Spring Block	Add O'ring (10); then, place on top of spring (8). Install spring (8), filter (7), and ring retainer (6) in nozzle (13). Using circlip pliers (Ref 1111-00, TOOLS), compress ends of retainer ring (6) together, and push complete assembly down with thumb, and lock into place.
3.	18	Body	Place body (18) and gasket (22) on top of top box (36), and secure with ring (37).
4.	13	Nozzle	Place gasket (14) in groove in nozzle (13). Place nozzle (13) through yoke (2), and screw into body (18). Install hookah cap (17) on body (18).
5.	15	Pin	Carefully run pointed head of pin (15) through hole of nozzle (13) so that the pin (15) recesses into hole of seat (12). For proper assembly, the large end of the pin (15) should be about 1/32" above surface of nozzle (13).
6.	16	Support	Place over pin (15).
7.	23	Diaphragm	Push into body (18) with a large screwdriver. Place so that smooth side of diaphragm (23) is against support (16).
8.	24	Gasket	Place on diaphragm (23).
9.	25	Pad	Place on diaphragm (23).
10.	26	Spring Retainer	Screw into body (18).
11.	27	Spring	Place on top of pad (25). Secure with adjustment screw (28).
12.		Test, 1st Stage	Screw test gauge (Ref 1116-00, TOOLS) with adapter (Ref 1125-00, TOOLS) into 2nd stage seat of body (18). Open bleeder valve of test gauge. Raise air supply to 2000 pounds per square inch (psi). After flow begins, slowly close bleeder valve on test gauge off. Adjust adjustment screw (28) until test gauge indicates approximately 100 psi. Bleed air and repeat check two or three times to check stability of setting. If there is a slow rise in test gauge pressure, this is an indication of an air leak in the high pressure nozzle (13); refer to TROUBLE SHOOTING, 1st Stage.

Step No.	Key No.	Description	Procedure (Ref exploded view)
			Turn off air pressure supply, and watch test gauge needle for 1 minute. If pressure holds, adjustment is complete. However, if pressure drops, air is escaping from a loose hookah cap (17), nozzle (13), gasket (22), diaphragm (23), or test gauge. Correct as necessary. A quick method of checking leakage is to immerse the regulator into water while under pressure; leakage will be indicated by air bubbles. If there is no leakage, turn off air pressure supply and remove test gauge.
13.	29	Disc & Retainer	Place spring (30) on disc & retainer (29), install seat holder (31) over spring (30), place washer (33) on outside of seat holder (31) and on stem of disc & retainer (29), and secure with nut (34). Screw seat holder (31) into body (18), and align one of the three holes found in the side of the seat holder (31) with outlet for hookah cap (17) in body (18).
14.	19, 20	Supports	Place supports next to seat holder (31) so that "V" groove is located at one corner of hex on seat holder (31). NOTE: Maintain hole position established in previous step. Secure supports (19, 20) in place on body (18) with two screws (21). Use a small amount of Loctite to secure.
15.	32	Horseshoe	Remove nut (34) and washer (33) from stem of disc & retainer (29). Place horseshoe (32) over lock supports (19, 20). Check freedom of movement. Realign supports (19, 20), if necessary to obtain freedom of movement for horseshoe (32). Then, place washer (33) on stem of disc & retainer (29), and install nut (34) loosely.
16.		Test, 2nd Stage	Connect regulator to 2000 psi air pressure supply, and check for leakage from 2nd stage. If leakage is observed, refer to TROUBLE SHOOTING, 2nd Stage.
17.		Adjustment 2nd Stage	While regulator is still pressurized, hold disc & retainer (29) with needle nose pliers, and tighten nut (34) until horseshoe (32) will lift disc & retainer (29) approximately 5/32". After adjustment is accomplished, turn off the air pressure supply. Secure disc & retainer (29) by center-punching stem to nut (34), on both sides. CAUTION: Center-punch lightly so as to not bend stem of disc & retainer (29). If nut (34) turns, center-punch again. Next, depress, horseshoe (32) to its maximum, and with pliers, twist top of right lock support (20) about 30 degrees counterclockwise. Do the same to the left lock support (19), except twist clockwise. Check horseshoe (32) travel for any catching or binding from the twisting operation.
18.	38	Diaphragm	Align metal fingers directly over horseshoe (32) so that edges ride on end of horseshoe (32).
19.	40	Exhaling Valve	Place exhalation valve (40) through hose port of bottom box (39) so that flat end portion lies parallel with diaphragm (38). Fold end back over hose tube at end of large diameter of exhalation valve (40).
20.	36	Top Box	Position over diaphragm (38) so that hose tubes on top and bottom boxes (36, 39) are about 120° apart, or so that upper lefthand corner of nameplate is aligned with center of intake hose tube.
21.	35	Box Clips (7 reqd)	Snap on each side of hose tubes (4 reqd) of top and bottom boxes (36, 39), one directly below nameplate, and the remaining two on both sides, equi-distant between next box clips. If box clips (35) do not go on easily, spread open. Once in location, crimp down tight with pliers (Ref 1119-00, TOOLS).
22.		NOTE: Ring clamp (41) and screw (42) may be substituted for box clips (35) on 1969 and earlier models. Ref Hose Assembly 1128-00 for completion of unit.	

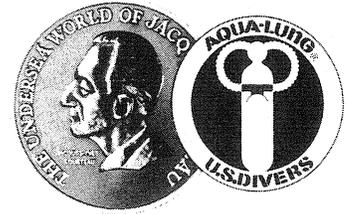
TROUBLE SHOOTING CHART

NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

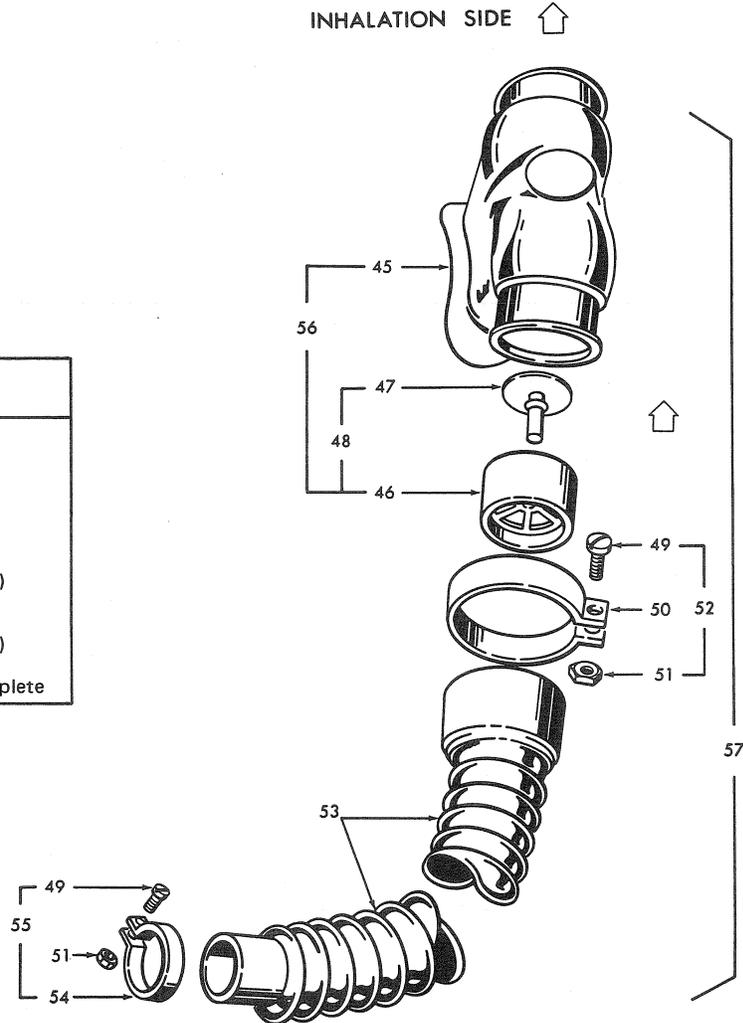
COMPLAINT	ORIGIN	KEY NO.	CAUSE	REMEDY
1st stage air leak (before or after inhalation)	Seat	12	Deep embedding, nicks, cuts, deterioration, etc.	Replace where necessary.
	O'Ring	10		
	Nozzle	13		
2nd Stage air leak (before or after inhalation)	Disc & Retainer	29	Deep embedding, nicks, cuts, deterioration, etc.	Replace where necessary.
	Spring	30		
	Body	18		
2nd Stage air leak (before or after inhalation)	Seat Holder	31	Improper height.	Readjust.
2nd Stage air leak (before or after inhalation)	Horseshoe	32	Set too high.	Readjust.
2nd Stage air leak (before or after inhalation)	Adjustment Screw	28	Intermediate pressure too high.	Decrease.
Hard to breathe	Adjustment Screw	28	Intermediate pressure too low.	Increase pressure.
Hard to breathe.	Horseshoe	32	Set too low.	Readjust.
Air leak or water leak	Diaphragm	38	Not seated properly between top and bottom box.	Reassemble.
Air leak or water leak	Box Clips	35	Loose.	Tighten.
	Clamp	41		
Air leak or water leak	Ring	37	Loose.	Tighten.
Air leak or water leak	Nozzle	13	Loose.	Tighten.
Air leak or water leak	Hose and Mouthpiece	57	(Ref 1128-00, REPAIR)	

NOTE: *Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.

PARTS LIST
"KLEER 'E-Z' MOUTHPIECE" No. 1128-00
AND HOSE ASSEMBLY



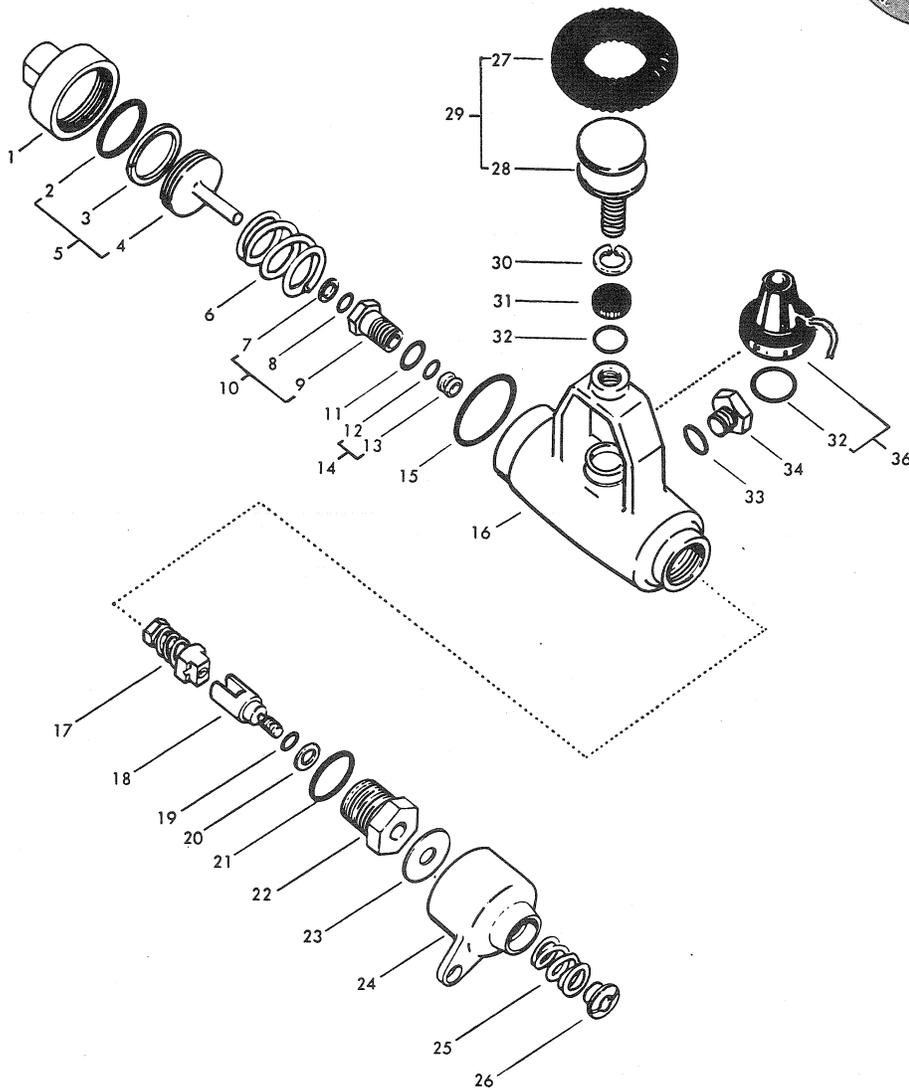
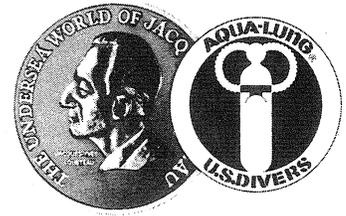
Key Order Part	Description
45 - 1128-02	Mouthpiece
46 - 1108-03	Support (2 reqd)
47 - 1108-02	Valve (2 reqd)
48 - 1108-12	Valve Assembly (2 reqd)
49 - 8350-02	Screw (4 reqd)
50 - 1128-11	Clamp (2 reqd)
51 - 8520-02	Nut (4 reqd)
52 - 1128-13	Clamp Assembly (2 reqd)
53 - 1128-08	Hose (2 reqd)
54 - 1128-10	Clamp (2 reqd)
55 - 1128-12	Clamp Assembly (2 reqd)
56 - 1128-07	Mouthpiece & Valve
57 - 1128-00	Hose & Mouthpiece complete



PARTS LIST

1051 CALYPSO J (1st Stage)

FIRST STAGE FOR 1048-00 CALYPSO J REGULATOR



Key Order Part	Description	Key Order Part	Description
1 - 1051-07	Cap	20 - 1051-26	Gasket
2 - 8200-20	O'Ring	21 - 8201-13	O'Ring
3 - 8280-20	Back-up Ring	22 - 1051-27	Bonnett
4 - 1051-10	Piston	23 - 8450-32	Washer
5 - 1051-09	Piston Assembly	24 - 1051-23	Lever
6 - 1051-11	Spring (H.P.)	25 - 0527-15	Spring
7 - 8280-08	Back-up Ring	26 - 0527-16	Nut
8 - 8200-08	O'Ring	27 - 1051-05	Yoke Ring
9 - 1051-12	Piston, Bushing	28 - 1051-04	Yoke Screw
10 - 1051-29	Piston, Bushing Assy	29 - 1051-03	Yoke Screw Assembly
11 - 8200-12	O'Ring	30 - 8630-51	Retainer Ring
12 - 8241-08	O'Ring	31 - 1051-06	Filter
13 - 1051-15	Seat	32 - 8200-12	O'Ring
14 - 1051-13	Piston, Seat Assembly	33 - 8200-11	O'Ring
15 - 8200-24	O'Ring	34 - 9109-12	Plug
16 - 1051-01	Body, 1st Stage	36 - 1010-12	Cap Assembly
17 - 1051-17	Poppet Assy		
18 - 1051-25	Reserve Lever Stem	- 1051-00	1st Stage
19 - 8200-10	O'Ring	- 1048-50	2nd Stage

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	49	Screw (2 reqd)	Remove from each nylon clamp (54).
	54	Nylon Clamp (2 reqd)	Remove from hoses (53) from regulator.
2.	49	Screw (2 reqd)	Remove from each nylon clamp (50).
	50	Nylon Clamp (2 reqd)	Remove from hoses (53) and mouthpiece (45).
	53	Neoprene Hose (2 reqd)	Remove from mouthpiece (45).
3.	46	Valve Support	Take out of mouthpiece (45).
	47	Rubber Valve	Pull out of valve support (46).

B. INSPECTION AND CLEANING

INSPECTION

1.	53	Hoses	Stretch out hose, with both hands, and look for cracks and holes in the neoprene.
	47	Rubber Valve	Check to see if it is warped.
	45	Mouthpiece	Check to see that rubber plugs are intact.
	50,54	Nylon Clamps	Be sure threads are in good order.

CLEANING

1.	All rubber and nylon parts should be cleaned in warm, clean, soapy water (scrub interior of hoses with long handle "bottle brush") and rinse in fresh water. In hot, humid climates, rinse in 20% vinegar solution; then, wash in fresh water.		
	53	Hoses	Make absolutely sure that the inside of each has been cleaned and rinsed.
	46	Valve Supports	Wash in fresh water.
	45	Mouthpiece	Clean inside thoroughly, and rinse.

C. ASSEMBLY

1.	45	Mouthpiece	Lay upright on a table with mouthpiece facing toward you.
2.	47	Rubber Valves (2 reqd)	Insert into valve supports (46).
	CAUTION: When inserting valve (47) into support (46), make sure valve lies on smooth side of support.		
3.	46	Valve Support (2 reqd)	Insert into mouthpiece (45).
	CAUTION: When assembling, make absolutely sure that the intake is on the right hand side and the exhaust is on the left hand side. Failure to insert valves properly will prevent proper operation of the regulator.		
4.	53	Neoprene Hoses (2 reqd)	Insert large end over mouthpiece (45) and support (46).
	CAUTION: Make sure that edge of hose (53) butts flat against edges of mouthpiece (45).		
5.	50	Nylon Clamps (2 reqd)	Place over hose (53) 1/4" away from seam on hose and mouthpiece (45), with ends of clamp (50) facing forward.
6.	Place regulator on table so that the nameplate is facing mouthpiece (45), and insert (53) over intake and exhaust openings.		
	54	Nylon Clamps (2 reqd)	Place clamp (54) on hose (53) and regulator 1/4" from end, with ends of clamp facing rear of regulator.
7.	Be sure to test operation of hose assembly by putting regulator on an "Aqua-Lung" tank and testing.		

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure
1.		Hose	Unscrew from cap (1) with 9/16" wrench.
2.	1	Cap	Unscrew from body (16) with 9/16" wrench.
3.	5	Piston Assembly	Carefully pull back. Remove spring (6). With small tool, slip under back-up ring (3), and lift up. Roll O'ring (2) over end of piston (5). Handle piston (5) carefully, especially small end.
4.	10	Bushing Assembly	Unscrew with 9/16" socket wrench. With small hook tool, remove back-up ring (7) and O'ring (8) from inside of hex end of bushing (9). Remove O'ring (11).
5.	14	Seat Assembly	Place air hose nozzle (low pressure) on surface of seat, and apply air pressure. Seat should pop loose. Remove O'ring (12). There should be no need to disassemble metal tube insert.
6.	15	O'Ring	Remove from body (16).
7.	26	Nut	Unscrew from stem (18). Remove spring (25), lever (24), and washer (23).
8.	22	Bonnet	Unscrew with 13/16" wrench. Remove poppet assembly (17) from body (16). Remove O'ring (21) and gasket (20).
9.	18	Stem	With small hook tool, carefully pry O'ring (19) off stem (18).
10.	34	Plug	Unscrew from body (16) with 1/2" wrench. Remove O'ring (33).
11.	29	Yoke Screw Assembly	Unscrew by hand, and with small tool placed under ring (27), pry up to remove.
12.	36	Cap Assembly	Untie line from body (16). Remove O'ring (32).
13.	30	Retainer Ring	Remove from body with circlip pliers (Ref TOOLS). Remove filter (31) and O'ring (32) from body (16).

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, back-up rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	4	Piston	Check for nicks, dents, etc. on seat face, stem diameter and O'ring groove. Replace if necessary.
3.	9	Bushing	Check for nicks, wear, etc. on inside diameter. Replace if necessary.
4.	13	Seat	This seat is reversible. Check both ends for nicks, wear, etc. If one end is good, see Step No. 17 in Assembly section. If not, replace.
5.	18	Stem	Check for excessive wear. Replace if necessary.
6.	17	Poppet Assembly	Check for excessive wear. Replace if necessary.
7.	31	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

1.	All plastic and rubber parts. (Note: poppet assembly (17) and filter (31) should be cleaned at this step and not in acid.	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
2.	All metal parts except as previously noted. (Note: Remove all rubber and plastic parts first.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning might be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

D. ASSEMBLY PROCEDURE

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	27	Ring	Place on yoke screw (28).
2.	32	O'Ring	Place in protection cap (36), and tie it to yoke of body (16).
3.	33	O'Ring	Place on plug (34), and screw into body (16).
4.	32	O'Ring	Place inside body (16).
5.	31	Filter	Place on top of O'ring (32).
6.	30	Retainer Ring	With circlip pliers (Ref TOOLS), place in groove of body (16).
7.	29	Yoke Screw	Screw into body (16).
8.	21	O'Ring	Place on bonnet (22).
9.	20	Gasket	Place inside bonnet (22).
10.	19	O'Ring	Place on stem (18).
11.	17	Poppet Assembly	Place in square area of body (16).
12.	18	Stem	Place slot over cam of poppet assembly (17).
13.	22	Bonnet	Screw into place in body (16).
14.	23	Washer	Place over hex surface of bonnet (22).
15.	24	Lever	Place over stem (18). Check for proper location of reserve by blowing air through opposite end of body (16). If air comes through filter (31) when lever (24) is in "reserve" position, place spring (25) into lever, and secure assembly with nut (26). If air does not come out, remove lever (24) and turn stem (18) into its next position, and check again. Rotate lever (24) and check for proper location with respect to arrow found on body (16).
16.	15	O'Ring	Place on body (16).
17.	12	O'Ring	Place on seat (13). Check for good end. Push other end all the way into body (16).
18.	11	O'Ring	Place on bushing (9). Insert small O'ring (8) on inside followed by back-up ring (7). Do not reverse order. Screw assembly into body (16).
19.	3	Back-up Ring	Place on piston (4). Add O'ring (2). Locate O'ring (2) so that it is at extreme end of piston (4). Do not reverse.
20.	6	Spring	Place into body (16).
21.	5	Piston Assembly	Wipe thin coat of silicone grease over seat (13) face, stem (18), O'ring (2) and back-up ring (3). Insert through bushing (9). Note: When seat face touches O'ring on inside of bushing, proceed very carefully due to possibility of face cutting O'ring.
22.	1	Cap	Place body (16) in a soft jaw vise. Clamp on flat edges of yoke of body (16). Place cap (1) squarely on spring (6), and compress so that cap threads engage body threads; tighten.
23.		Hose	Screw into cap (1).

ADJUSTMENT PROCEDURE

This unit has been designed for a breathing resistance which is agreeable to the majority of users. You may, however, wish to increase the intermediate pressure for easier breathing. To do this, add washer No. 8210-17 to the 1st stage body (16), directly under spring (6).

Standard intermediate pressure is approximately 128 psig at 2000 psig supply. One washer will add approximately 10 psig. This pressure is checked by screwing a test gauge (Ref 1116-00, TOOLS) in place of 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within specified range. If, however, it continue to climb, close supply; 1st stage might have high pressure leak.

Step No.	Key No.	Description	Procedure (Ref exploded view)
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Proper ease of breathing can be checked by placing 2nd stage (connected to 1st stage) in a pan of water so that rim of mouthpiece is facing up and slightly above the surface of the water. At this point, a small amount of air should pass through the 2nd stage.

TROUBLE SHOOTING CHART

NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak from 3 drain ports	O'Rings or Bushing	2, 8, 11 10	Bushing not tight or O'rings damaged.	Tighten or replace O'rings as necessary.
Air leak from cap	O'Ring or Cap	15 1	Cap not tight or O'ring damaged.	Tighten cap or replace O'ring as necessary.
H.P. air leak to 2nd stage	Piston O'Ring Seat	5 12 13	Piston seat, O'ring or seat damaged.	Reverse seat (See Inspection Step No. 4.) or replace parts as necessary.
Air leak from reserve lever	O'Rings or Bonnet	19, 21 22	Bonnet not tight or O'rings damaged.	Tighten or replace O'rings as necessary.
Reserve operation	Poppet	17	Foreign matter or damage.	Check operation. With supply pressure between 300 and 400 psig, noticeable restriction with average inhalation should be felt. If not, clean and/or replace.

NOTES:

- *Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.
- See "Adjustment Procedure" in this and also 2nd stage (1048-00, 1050-00, 1052-00 and 1056-00) section for breathing characteristics.

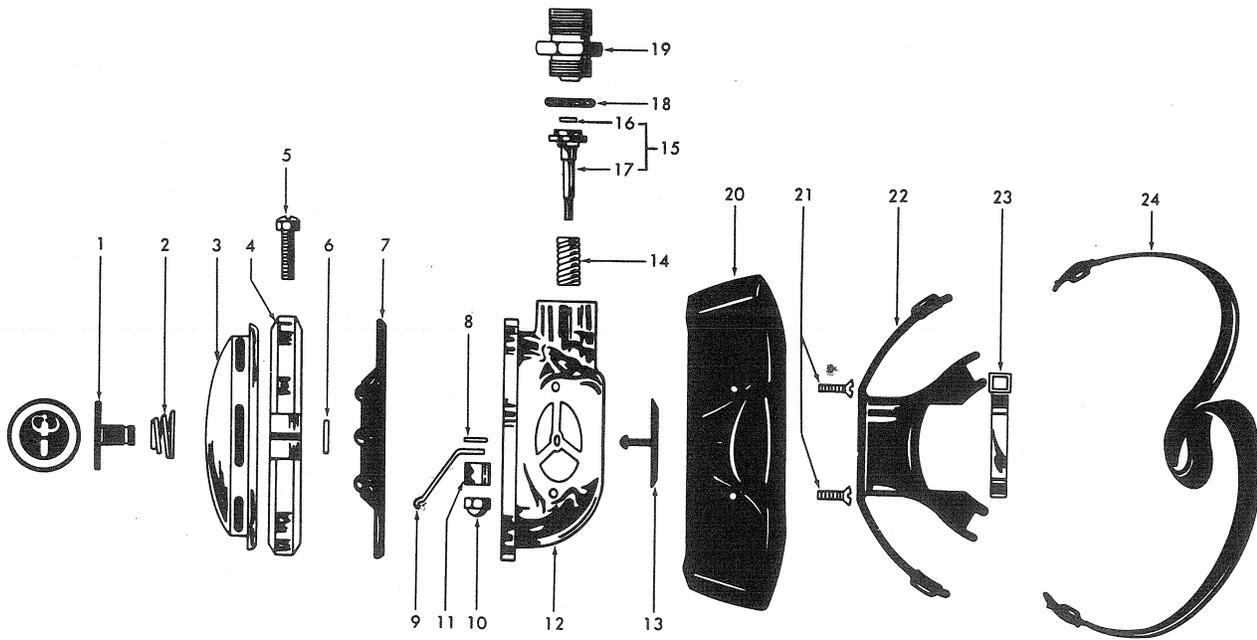
*Richard Drew
Scuba Instructor*

PARTS LIST

SECOND STAGE FOR 1048-00 CALYPSO J

1050-00 CALYPSO, 1052-00 CONSHELF VI* AND

1056-00 DEEPSTAR*



Key Order Part	Description	Key Order Part	Description
1 - 1049-14	Button & Decal Assy	14 - 1049-04	Spring
2 - 1027-08	Spring Button	15 - 1049-08	Disc & Retainer
3 - 1049-05	Box top, Bare	16 - 1019-30	Disc
3A- 1050-52	Decal, Calypso	17 - 1049-08	Retainer
3B- 1048-52	Decal, Calypso J	18 - 8200-14	O'Ring
3C- 1052-52	Decal, Conshef VI	19 - 1049-02	Nipple, Inlet
3D- 1056-52	Decal, Deepstar	20 - 1049-12	Exhaust Tube
4 - 1019-14	Clamp	* - 1049-12	Exhaust Tube
* - 1039-11	Clamp	21 - 8330-03	Screw
5 - 8340-04	Screw	22 - 1058-64	Mouthpiece
6 - 8600-37	Retainer Ring	23 - 1049-13	Clamp, Mouthpiece
7 - 1037-30	Diaphragm	24 - 1058-67	Strap
8 - 8450-22	Washer	- 8200-10	O'Ring (to 2nd Stage)
9 - 1037-29	Lever	- 1048-04	Hose
10 - 1025-10	Nut	- 8200-16	O'Ring (to 1st Stage)
11 - 1025-17	Spacer		
12 - 1049-10	Box Bottom		
* - 1057-10	Box Bottom		
13 - 1051-39	Exhaust Valve		

*Parts Exclusive to Conshef VI and Deepstar.

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from nipple (19) with 11/16" wrench.
2.	5	Screw	Unscrew from clamp (4).
3.	4	Clamp	Spread and remove. Lift top box (3) from bottom box (12). Lift diaphragm (7) from bottom box (12).
4.	1	Button Assembly	Spread ring (6) from button with circlip pliers (Ref TOOLS). Lift button (1) from top box (3) and remove spring (2).
5.	19	Nipple	Unscrew from bottom box (12) with 3/4" wrench.
6.	15	Disc & Retainer	Place tool (Ref 1100-05, TOOLS), so that its finger catches retainer fingers. Take hold of nut (10) with needle nose pliers. Hold nut, and turn tool to remove disc and retainer (15), spring (14), washer (8), lever (9), spacer (11), and nut (10) from bottom box (12).
7.	15	Disc & Retainer	Lift disc (16) from retainer (17) with point of needle applied to outside diameter of disc (16).
8.	20	Exhaust Tube	Unscrew screws (21), and remove exhaust tube (20).
9.	13	Exhaust Valve	Bend valve diameter in half with first finger and thumb, and pull lightly.
10.	22	Mouthpiece	Unsnap strap (24). Place small knife between clamp (23) and mouthpiece (22) and lift up to remove.

B. INSPECTION AND REPAIR PROCEDURE

1.	7	Diaphragm	Check for deterioration. Replace if necessary.
2.	19	Nipple	Check seat surface for pits or scratches, etc. Replace if necessary.
3.	16	Disc	(See Step No. 1 in Cleaning Procedure.) Replace or reverse by placing used side into retainer. Before doing this, first clean old glue off and add small drop of rubber glue to inside retainer (17) face.
4.	13	Exhaust Valve	Check for deterioration. Replace if necessary.
5.	22	Mouthpiece	Check for deterioration. Replace if necessary.
6.	24	Strap	Check for deterioration. Replace if necessary.
7.		Hose	Check for abusive treatment or deterioration. Replace if necessary. If either or both O'rings are cut or cracked, replace. Before replacing, wipe them with silicone grease.

C. CLEANING PROCEDURE

1.	All plastic and rubber parts	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces (except inside hose, mouthpiece, exhaust tube and sealing edges of diaphragm). Wipe with clean cloth to remove excess silicone or loose dirt.
2.	All metal parts (Note: Remove all rubber and plastic parts first. Nut (10) should not be placed in acid.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning might be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

CALYPSO J SECOND STAGE

D. ASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	14	Spring	Place in bottom box (12). Insert disc and retainer (15) through bottom box (12). Hold in place with thumb.
2.	8	Washer	Place on threaded end of disc and retainer (15), together with lever (9), spacer (11), and nut (10). Thread nut (10) by hand until tight. Additional tightening must be done with needle nose pliers and tool (Ref 1100-05, TOOLS) until disc and retainer (15) is approximately 5/16" from inlet nipple (19).
3.	19	Inlet Nipple	Place O'ring (18) on nipple (19). Thread nipple (19) into bottom box (12) with 3/4" wrench.
4.		Hose & 1st Stage	Screw hose into nipple (19) with 11/16" wrench.
5.	9	Lever	With bottom box (12) held so that lever (9) faces up, place a straight edge tool over lever and outer diameter of bottom box. Make final adjustment with pliers on nut (10) and small screwdriver in slot of retainer (17). Adjust so that top of lever (9) just touches straight edge when air supply of 2000 ±200 psig is applied to 1st stage.
6.	13	Exhaust Valve	Pull stem through bottom box (12) so that stem barb lies on inside.
7.	20	Exhaust Tube	Secure in place with 2 screws (21); chin rest in up position.
8.	22	Mouthpiece	Push over bottom box (12) tube. Secure with new clamp (23) by pulling straight end through lock with a pair of pliers. Locate so that lock is on side of mouthpiece. Cut excess length off at lock.
9.	7	Diaphragm	Place inside bottom box (12) so that its two rubber nubs do not interfere with lever (9) action.
10.	3	Top Box	Assemble button (1) and spring (2) into box (3). Secure in place with retainer ring (6). Place over diaphragm (7) in bottom box (12). Locate so that nameplate is in up position.
11.	4	Clamp	Spread clamp (4) and wrap around top and bottom boxes (3, 12) so that screw box is in down position. Tighten with screw (5) so that it will not rotate.
12.	24	Strap	Snap onto mouthpiece (22).

ADJUSTMENT PROCEDURE

NOTE: See "Adjustment" and "Repair Procedures" under corresponding 1st Stage regulator. Also see "Assembly" and "Repair" sections of this regulator.

If you have adjusted the 1st stage for easier breathing, the 2nd stage will have a tendency to let a small amount of air escape when the unit happens to be on the surface of the water with the mouthpiece in the up position. In this situation, it is only necessary to submerge the unit under the surface or turn it over so the mouthpiece points down.

TROUBLE SHOOTING CHART

COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Hard to breathe	Lever	9	Set too low.	Readjust (See Assembly Step No. 5).
	1st Stage		Intermediate pressure set too low.	Increase pressure where applicable.
Hissing sound after inhaling	Disc & Retainer	15	Damaged seat.	Reverse seat (see Inspection Step No. 3).
	Nipple	19	Damaged seat.	Replace.

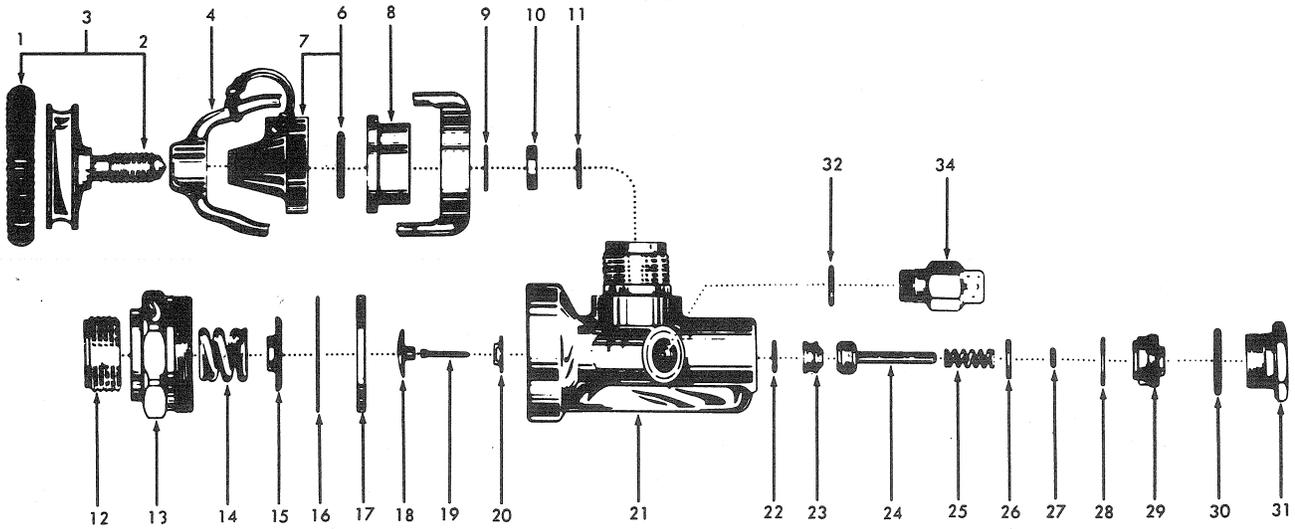
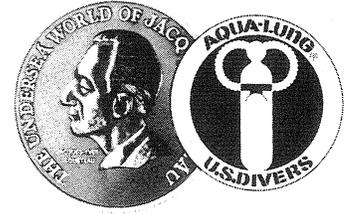
COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Hissing sound after inhaling	Lever	9	Set too high.	Readjust (see Assembly Step No. 5).
	1st Stage		Intermediate pressure set too high.	Decrease pressure where applicable.
	1st Stage		1st Stage high pressure leak.	Repair. (See 1st Stage Repair Instructions.)
Water leak	Diaphragm	7	Not seated properly between top and bottom box.	Reassemble.
	Mouthpiece	22	Not clamped properly.	Reassemble.
	Exhaust Valve	13	Damaged.	Replace.
Air around hose fitting	1st or 2nd Stage		O'ring or loose nipple.	Replace O'ring (18) or tighten nipple (19).

NOTE:

*Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.

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PARTS LIST
FIRST STAGE FOR 1050-00 CALYPSO REGULATOR
1023-00 CALYPSO 1st STAGE



SECOND STAGE FOR THE 1050-00 CALYPSO
SEE: SECOND STAGE 1048-00 CALYPSO J

Key Order Part	Description	Key Order Part	Description
1 - 1051-05	Ring	19 - 1031-03	Pin
2 - 1051-04	Yoke Screw	20 - 1023-15	Pin Guide
3 - 1051-03	Yoke Screw Assy.	21 - 1023-01	Body
4 - 1054-22	Yoke	22 - 8200-11	O'Ring
6 - 8201-12	O'Ring	23 - 1023-08	Seat Orifice
7 - 1010-12	Cap Assembly	24 - 1023-19	Disc & Retainer
8 - 1023-46	Yoke Retainer	25 - 1023-48	Spring
9 - 8630-51	Retainer Ring	26 - 1023-14	Washer
10 - 1000-38	Filter	27 - 8200-06	O'Ring
11 - 8200-12	O'Ring	28 - 8210-02	Gasket
12 - 1023-43	Adjusting Screw	29 - 1023-04	Bushing
13 - 1023-47	Spring Retainer	30 - 8200-16	O'Ring
14 - 1000-40	Spring	31 - 1023-05	Cap
15 - 1000-39	Pad	32 - 8200-11	O'Ring
16 - 8210-01	Gasket	34 - 1023-57	Stem Gauge
17 - 1000-29	Diaphragm	- 1023-00	First Stage
18 - 1000-27	Support		

FIRST STAGE FOR 1050-00 CALYPSO REGULATOR

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from cap (31) with 9/16" wrench.
2.	12	Adjusting Screw	Unscrew from spring retainer (13) with 3/8" Allen wrench.
3.	14	Spring	Remove by hand.
4.	13	Spring Retainer	Unscrew from body (21) with 1-3/8" wrench.
5.	15	Pad	Remove by hand.
6.	16	Gasket	Lift up with small screwdriver.
7.	17	Diaphragm	Slip small screwdriver between diaphragm (17) and body (21), and pry up.
8.	18	Support	Remove support (18) and pin (19) by hand.
9.	20	Pin Guide	(Normally not necessary to remove.)
10.	31	Cap	Unscrew from body (21), with 7/8" wrench, and remove O'ring (30).
11.	29	Bushing	Place body (21) in a soft jaw vise. Clamp on flat edges of yoke (4). Unscrew with screwdriver (Ref 1100-06, TOOLS). Remove gasket (28), O'ring (27), washer (26), spring (25), disc and retainer (24), seat (23), and O'ring (22).
12.	34	Stem Gauge	Unscrew from body (21) with 1/2" wrench. Remove O'ring (32) and washer (33). Normally, the following parts (not shown) do not require disassembly: remove screw with 1/8" Allen wrench, remove Part No. 1023-26 plunger, Part No. 1023-25 spring, Part No. 0516-04 washer, and Part No. 8200-04 O'ring.
13.	3	Yoke Screw Assembly	Unscrew by hand; then, place a small tool under ring (1), and pry up to disassemble.
14.	7	Cap Assembly	Untie line from yoke (4). Remove O'ring (6).
15.	8	Yoke Retainer	Unscrew from body (21) with 1" wrench. Remove yoke (4).
16.	9	Retainer Ring	Remove from body (21) with circlip pliers (Ref 1111-00, TOOLS). Remove filter (10) and O'ring (11).

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	24	Disc & Retainer	Check for nicks, deep embedding, poor bonding, etc. on seat face. Replace if necessary.
3.	23	Seat	Check for nicks, dents, etc. on seat face. Replace if necessary.
4.	10	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

1.	All plastic and rubber parts. (Note: Filter (10), disc & retainer (24) and stem gauge (34), if not taken apart, should be cleaned at this step and not in acid.)	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
2.	All metal parts, except as previously noted. (Note: Remove all rubber and plastic parts first.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

FIRST STAGE FOR 1050-00 CALYPSO REGULATOR

D. ASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	1	Ring	Place on yoke screw (2). Screw yoke screw (2) into yoke (4).
2.	11	O'Ring	Place inside body (21). Add filter (10), and secure with retainer ring (9).
3.	4	Yoke	Place on body (21), and secure with yoke retainer (8).
4.	34	Stem Gauge	(If unit has been disassembled, reverse procedure to reassemble.) Add O'ring (32). Screw stem gauge (34) into body (21).
5.	7	Cap Assembly	Tie onto yoke (4).
6.	22	O'Ring	Place on seat (23). Insert seat (23) into body (21).
7.	24	Disc & Retainer	Place face into body (21) against seat (23). With needle nose pliers, add spring (25) and washer (26) to retainer stem.
8.	29	Bushing	Place O'ring (27) in groove. Add gasket (28). Screw tightly into body (21).
9.	31	Cap	Add O'ring (30) and screw into body (21).
10.	19	Pin	Carefully run pointed head of pin (19) through hole of guide (20) so that it recesses into hole of disc and retainer (24). To check proper assembly, large end of pin (19) should be about 1/32" above surface of guide (20).
11.	18	Support	Place over pin (19).
12.	17	Diaphragm	Push into body (21) with large screwdriver. Place so that smooth side is against support (18).
13.	16	Gasket	Add to diaphragm (17).
14.	15	Pad	Add to diaphragm (17).
15.	13	Spring Retainer	Screw into body (21).
16.	14	Spring	Place on top of pad (15). Secure with adjusting screw (12).
17.		Hose	Screw into cap (31).

ADJUSTMENT PROCEDURE

This regulator has been adjusted at the factory for a breathing resistance which is agreeable to the majority of users. You may, however, adjust this to suit your preference if desired.

This balanced first stage has a hexagon socket adjusting screw (Key No. 12) in the large end. With a 3/8" Allen wrench, you can turn it clockwise for easier breathing or counterclockwise for harder breathing.

Standard intermediate pressure is approximately 120 psig at 2000 psig supply. This pressure is checked by screwing test gauge (Ref 1116-00, TOOLS) in place of 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within specified range. If, however, it continues to climb, close supply; 1st stage might have a high pressure leak. (Ref Trouble Shooting.)

Another means of adjustment is to place the 2nd stage (connected to 1st stage) in a pan of water so that rim of mouthpiece is facing up and slightly above the surface of the water. At this point, adjust the 1st stage so that a small amount of air begins to pass through the 2nd stage.

135 PSI
100

TROUBLE SHOOTING CHART

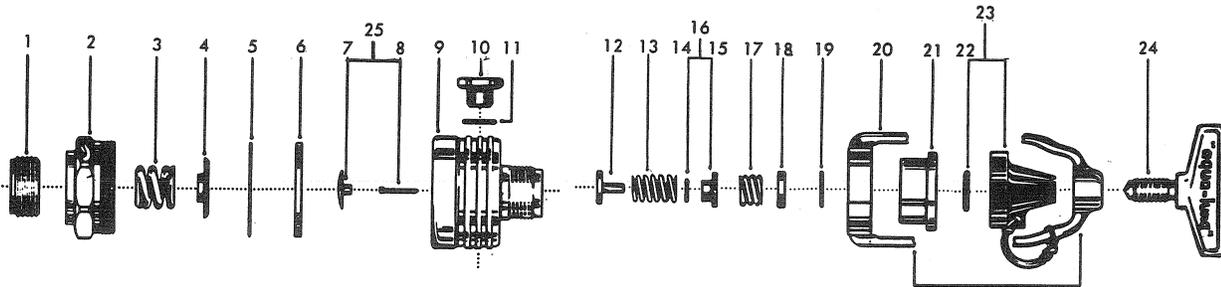
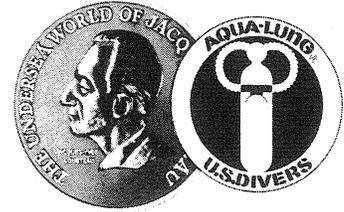
NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak around spring retainer	Diaphragm	17	Loose spring retainer (13).	Tighten.
Air leak around cap	Cap	31	O'ring (30) damaged or loose cap (31).	Replace O'ring or tighten cap.
Air leak from stem gauge	Between gauge and body or stem of gauge	34 21	O'ring (32) damaged or loose fittings.	Replace O'ring or tighten gauge.
High pressure air leak to 2nd stage	Seat	23	Nicks, cut, deterioration, etc.	Replace where necessary.
	Disc & Retainer	24		
	O'Rings	27		
	or Gasket	28		

NOTES:

- *Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.
- See "Adjustment Procedure" in this and also 2nd Stage (1048-00, 1050-00, 1052-00 and 1056-00) for breathing characteristics.

PARTS LIST
FIRST STAGE FOR 1052-00 CONSHELF VI REGULATOR
1053-00 CONSHELF VI 1st STAGE



SECOND STAGE 1052-00 CONSHELF VI
SEE: SECOND STAGE 1048-00 CALYPSO J

Key Order Part	Description	Key Order Part	Description
1 - 1041-13	Screw, Adjusting	16 - 1053-16	Spring Block Assy.
2 - 1023-47	Spring Retainer	17 - 1046-13	Spring
3 - 1000-40	Spring	18 - 1000-38	Filter
4 - 1000-39	Pad	19 - 8630-51	Retainer Ring
5 - 8210-01	Gasket	20 - 1053-18	Yoke
6 - 1000-29	Diaphragm	21 - 1053-10	Yoke Retainer
7 - 1000-27	Support	22 - 8201-12	O'Ring
8 - 1053-07	Pin	23 - 1010-12	Cap Assembly
9 - 1053-03	Body	24 - 1053-12	Yoke Screw
10 - 1053-17	Plug	- 8200-10	O'Ring (to 2nd Stage)
11 - 8200-11	O'Ring	- 1048-04	Hose Complete
12 - 1053-06	Disc & Retainer	- 8200-16	O'Ring (to 1st Stage)
13 - 1053-05	Spring	- 1053-00	1st Stage
14 - 8200-06	O'Ring	25 - 1053-19	Pin & Support Assy
15 - 1053-16	Spring Block		

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from body (9) with 9/16" wrench.
2.	1	Adjusting Screw	Unscrew from spring retainer (2) with 3/8" Allen wrench.
3.	3	Spring	Remove by hand.
4.	2	Spring Retainer	Place body (9) in soft jaw vise. Clamp on flat edges of yoke (20). Unscrew from body (9) with 1-3/8" wrench.
5.	4	Pad	Remove by hand.
6.	5	Gasket	Lift up with small screwdriver.
7.	6	Diaphragm	Slip small screwdriver between diaphragm (6) and body (9), and pry up.
8.	7	Pad	Remove pad (7) and pin (8) by hand.
9.	24	Yoke Screw	Unscrew from yoke (20) by hand.
10.	23	Cap Assembly	Untie from yoke (20). Remove O'ring (22) with small tool.
11.	21	Yoke Retainer	Unscrew with 1" wrench.
12.	19	Retainer Ring	Remove from body (9) with circlip pliers (Ref 1111-00, TOOLS). In addition, remove filter (18), spring (17), guide (16), spring (13), and disc and retainer (12) with needle nose pliers.
13.	15	Spring Block	Remove O'ring (14) with small hook tool.
14.	10	Plug	Unscrew from body (9) with 5/8" wrench. Remove O'ring (11).

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	12	Disc & Retainer	Check for nicks, deep embedding, loose seat rubber, etc. on seat face. Replace if necessary.
3.	9	Body	Check for nicks, dents, etc. on seat face. Replace if necessary.
4.	18	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

1.		All plastic and rubber parts. (Note: Filter (18) and disc & retainer (12) should be cleaned at this step and not in acid.)	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
2.		All metal parts except as previously noted. (Note: Remove all rubber and plastic parts first.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

D. ASSEMBLY

1.	12	Disc & Retainer	Place it and spring inside body (9) with needle nose pliers. Use small paper clip wire to guide from diaphragm area.
2.	16	Spring Block Assembly	Add O'ring (14); then, place on top of spring (13). Place spring (13), filter (18) and retainer ring (19) in body (9). With circlip pliers (Ref 1111-00, TOOLS), compress retainer ring ends together and push complete assembly down with thumb. Use small screwdriver to pop in retainer ring (19).

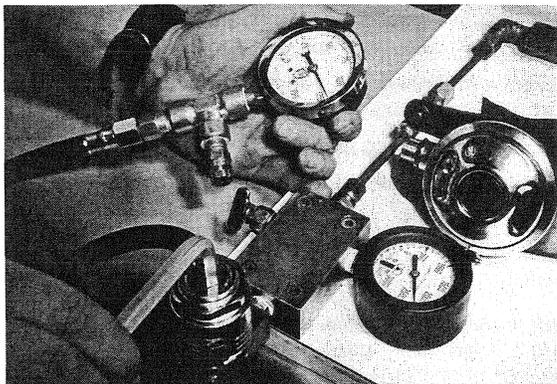
FIRST STAGE FOR 1052-00 CONSELF VI REGULATOR

Step No.	Key No.	Description	Procedure (Ref exploded view)
3.	20	Yoke	Place on body (9), and secure with yoke retainer (21).
4.	22	O'Ring	Place in cap assembly (23), and tie to yoke (20).
5.	24	Yoke Screw	Screw into yoke (20).
6.	8	Pin	Carefully run pointed head of pin (8) through hole of body (9) so that it recesses into hole of disc and retainer (12). To check proper assembly, large end of pin (8) should be about 1/32" above surface of body (9).
7.	7	Support	Place over pin (8).
8.	6	Diaphragm	Push into body (9) with large screwdriver. Place so that smooth side is against support (7).
9.	5	Gasket	Add to diaphragm (6).
10.	4	Pad	Add to diaphragm (6).
11.	2	Spring Retainer	Screw into body (9).
12.	3	Spring	Place on top of pad (4). Secure with adjusting screw (1).
13.	11	O'Ring	Add to plug (10), and screw into body (9).
14.		Hose	Screw into body (9).

ADJUSTMENT PROCEDURE

This regulator has been adjusted at the factory for a breathing resistance which is agreeable to the majority of users. You may, however, adjust this to suit your preference if desired.

This balanced first stage has a hexagon socket adjusting screw (Key No. 1) in the large end. With a 3/8" Allen wrench you can turn it clockwise for easier breathing or counterclockwise for harder breathing.



Standard intermediate pressure is approximately 110 psig at 2000 psig supply. This pressure is checked by screwing test gauge (Ref 1116-00, TOOLS) in place of the 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within specified range. If, however, it continues to climb, close supply; 1st stage might have high pressure leak.

Another means of adjusting is to place the 2nd stage (connected to 1st stage) in a pan of water so that rim of mouthpiece is facing up and slightly above the surface of the water. At this point, adjust the 1st stage so that a small amount of air begins to pass through the 2nd stage.

TROUBLE SHOOTING CHART

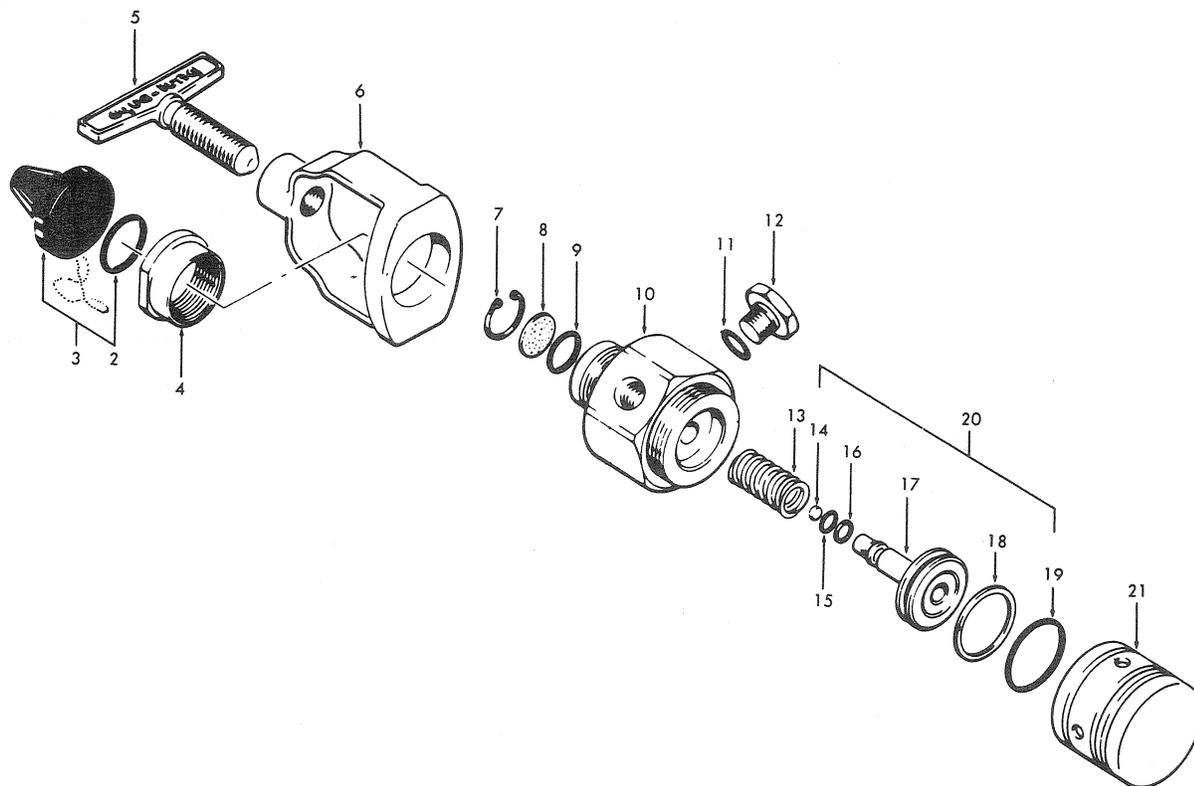
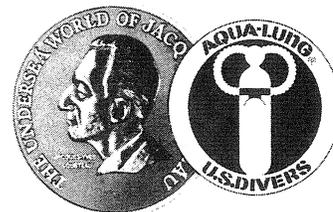
NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak around spring retainer	Diaphragm	6	Loose spring retainer (2).	Tighten.
High pressure air leak to 2nd stage	Body Seat Disc & Retainer O'Ring	9 12 14	Nicks, cuts, deterioration, etc.	Replace where necessary.

NOTES:

- *Cause could be dirt, sand, wear or verdigris in addition to items already listed.
- See "Adjustment Procedure" in this and also the 2nd Stage (1048-00, 1050-00, 1052-00 and 1056-00) section for breathing characteristics.

PARTS LIST
FIRST STAGE FOR 1056-00 DEEPSTAR REGULATOR
1055-00 DEEPSTAR 1st STAGE



SECOND STAGE 1056-00 DEEPSTAR
SEE: SECOND STAGE 1048-00 CALYPSO J

Key Order Part	Description	Key Order Part	Description
2 - 8201-12	O'Ring	15 - 8200-07	O'Ring
3 - 1010-12	Cap Assembly	16 - 8280-07	Back-up Ring
4 - 1023-46	Nut, Yoke	17 - 1055-07	Piston
5 - 1053-12	Screw, Yoke	18 - 8280-20	Back-up Ring
6 - 1053-18	Yoke	19 - 8200-20	O'Ring
7 - 8630-51	Retainer Filter	20 - 1055-06	Piston & Seat Assy.
8 - 1051-06	Filter	21 - 1055-10	Cap
9 - 8200-12	O'Ring		
10 - 1055-01	Body	- 8200-10	O'Ring (to 2nd Stage)
11 - 9109-12	Plug	- 1048-04	Hose Complete
12 - 8200-11	O'Ring	- 8200-16	O'Ring (to 1st Stage)
13 - 1055-11	Spring	- 1055-00	1st Stage
14 - 1055-08	Seat	- 1056-50	2nd Stage

FIRST STAGE FOR 1056-00 DEEPSTAR REGULATOR

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from body (10) with 9/16" wrench.
2.	21	Cap	Place body (10) in soft jaw vise. With two 3/16" diameter rods inserted into drain holes of cap (21), 180° apart, unscrew.
3.	20	Piston & Seat Assembly	Remove by hand. From piston (17), remove spring (13), back-up ring (18), O'ring (19), back-up ring (16) and O'ring (15) with small hook tool. Note: Normally, it is not necessary to remove seat (14); however, if required, push out with 1/16" diameter by 2" or 3" long rod placed through back end of piston (17).
4.	5	Yoke Screw	Unscrew from yoke (6).
5.	3	Cap Assembly	Untie from yoke (6). Remove O'ring (2) with small hook tool.
6.	4	Yoke Nut	Unscrew from body (10) with 1" wrench.
7.	7	Retainer Ring	Remove from body with circlip pliers (Ref 1111-00, TOOLS). Also remove filter (8) and O'ring (9).
8.	12	Plug	Unscrew with 5/8" wrench, and remove O'ring (11).

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	14	Seat	This seat is reversible. Check both ends for deep embedding, nicks, wear, etc. If one end is good, place it on the outside at time of assembly. Replace if necessary.
3.	10	Body	Check seat for nicks, dents, etc. Replace if necessary.
4.	8	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

1.		All plastic and rubber parts. (Note: Filter (8) and piston (17), if seat not taken apart, should be cleaned at this step and not in acid.)	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
2.		All metal parts, except as previously noted. (Note: Remove all rubber and plastic parts first.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

D. ASSEMBLY

1.	9	O'Ring	Place in body (10), and add filter (8).
2.	7	Retainer Ring	With circlip pliers (Ref 1111-00, TOOLS), compress retainer ring (7) ends together and push complete assembly down with thumb.
3.	5	Yoke Screw	Screw into yoke (6).
4.	6	Yoke	Place on body (10), and secure with yoke nut (4).
5.	1	Cap Assembly	Tie onto yoke (6) after adding O'ring (2).
6.	17	Piston	Place large end on bench. Align seat (14) (good side up) on top of small end. Press seat (14) to bottom of recess.
7.	15	O'Ring	Place on piston (17) so it is located at seat (14) end. Add back-up ring (16). Do not reverse.

FIRST STAGE FOR 1056-00 DEEPSTAR REGULATOR

Step No.	Key No.	Description	Procedure (Ref exploded view)
8.	19	O'Ring	Place on piston (17) so it is located at extreme end. Add back-up ring (18). Do not reverse.
9.	13	Spring	Add to body (10). Place piston and seat assembly (20) into body (10). Screw cap (21) tightly into place.
10.	12	Plug	Add O'ring (11) and screw into body (10).
11.		Hose	Screw into body (10).

ADJUSTMENT PROCEDURE

This unit has been designed for a breathing resistance which is agreeable to the majority of users. You may, however, wish to increase the intermediate pressure for easier breathing. To do this, add washer, Part No. 8210-18 to the 1st stage body (10), directly under spring (13).

Standard intermediate pressure is approximately 125 psig at 2000 psig supply. One washer will add approximately 10 psig. This pressure is checked by screwing test gauge (Ref 1116-00, TOOLS) in place of 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within specified range. If, however, it continues to climb, close supply; 1st stage might have high pressure leak (Ref Trouble Shooting).

Proper ease of breathing can be checked by placing 2nd stage (connected to 1st stage) in a pan of water so that rim of mouthpiece is facing up and slightly above the surface of the water. At this point, a small amount of air should pass through the 2nd stage.

TROUBLE SHOOTING CHART

NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

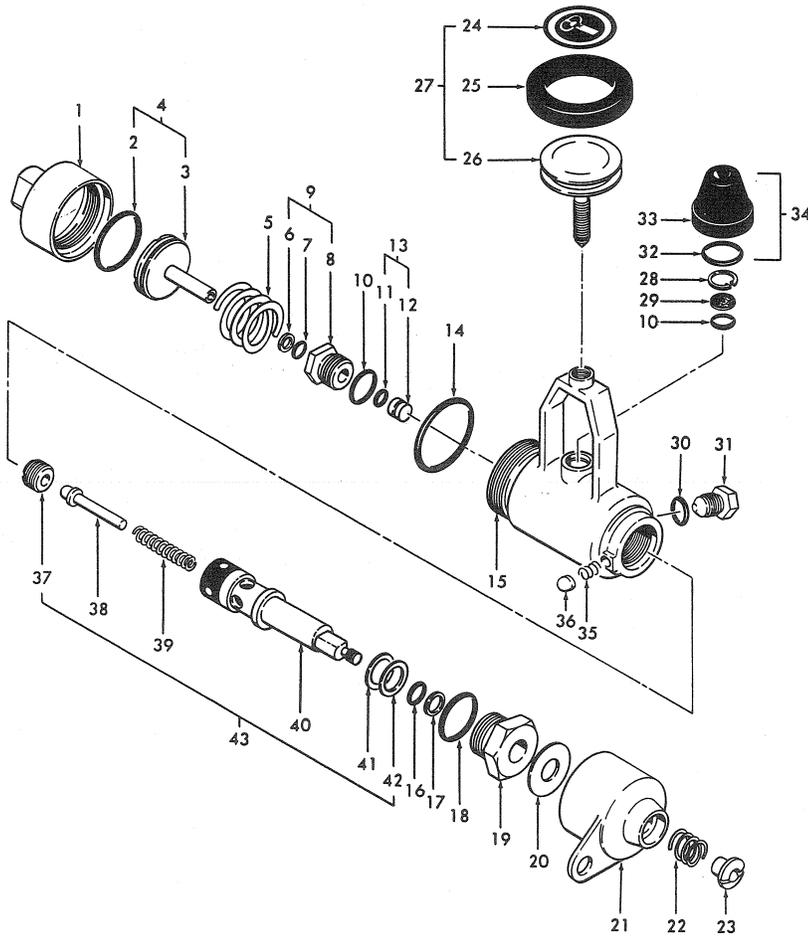
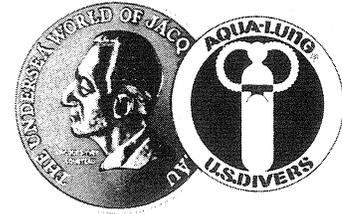
COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak from 4 drain ports	O'Rings Back-up Rings	15, 19 16, 18	O'ring or back-up ring damage.	Replace as necessary.
High pressure air leak to 2nd Stage	Seat	14	Deep embedding, nicks, cuts, etc.	Replace (see "Repair" Step No. 2).

NOTES:

- *Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.
- See "Adjustment Procedure" in this and also 2nd Stage (1048-00, 1050-00, 1052-00 and 1056-00) for breathing characteristics.

PARTS LIST
FIRST STAGE FOR 1070-00 CALYPSO J REGULATOR

CALYPSO J 1051-45



Key Order Part	Description	Key Order Part	Description
1 - 1051-07	Cap, Reg. Hose	23 - 0527-16	Nut
2 - 8201-17	O'Ring	24 - ---	Decal
3 - 1051-66	Piston	25 - 1051-05	Ring, Yoke
4 - 1051-67	Piston Assembly	26 - 1051-04	Screw, Yoke
5 - 1051-11	Spring (H.P.)	27 - 1051-03	Screw, Yoke Assy
6 - 8285-01	Backup Ring	28 - 8630-51	Retainer Ring
7 - 8200-08	O'Ring	29 - 1051-06	Filter
8 - 1051-12	Bushing, Piston	30 - 8200-11	O'Ring
9 - 1051-29	Bushing Piston Assy	31 - 9109-12	Plug
10 - 8200-12	O'Ring	32 - 8200-12	O'Ring
11 - 8251-08	O'Ring	33 - ---	Cap
12 - 1051-15	Seat	34 - 1010-12	Cap Assy
13 - 1051-13	Seat Piston Assy	35 - 1069-14	Spring, Detent
14 - 8200-24	O'Ring	36 - 1069-15	Pin, Detent
15 - 1051-71	1st Stage Body	37 - 1069-04	Screw
16 - 8200-11	O'Ring	38 - 1069-03	Poppet
17 - 8280-11	Backup Ring	39 - 1069-02	Spring
18 - 8200-14	O'Ring	40 - 1069-10	Piston, Reserve
19 - 1069-06	Bonnet	41 - 1069-11	Washer
20 - 8450-32	Washer	42 - 1069-19	Washer
21 - 1051-44	Lever	43 - 1069-01	Reserve Assy
22 - 0527-15	Spring		

FIRST STAGE FOR 1070-00 CALYPSO J REGULATOR

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from cap (1) with 9/16" wrench.
2.	1	Cap	Unscrew from body (15) with 9/16" wrench.
3.	4	Piston Assembly	Carefully pull back. Remove spring (5). Roll O'ring (2) over end of piston (3). Handle piston carefully, especially small end.
4.	9	Bushing Assembly	Unscrew with 9/16" socket wrench. With small hook tool, remove back-up ring (6) and O'ring (7) from inside of hex end of bushing (8). Remove O'ring (10).
5.	13	Seat Assembly	Place air hose nozzle (low pressure) on surface of seat (12), and apply air pressure. Seat (12) should pop loose. Remove O'ring (11). Their should be no need to disassemble metal tube insert.
6.	14	O'Ring	Remove from body (15).
7.	23	Nut	Unscrew from stem of reserve piston (40). Remove spring (23), lever (21), and washer (20). Remove detent pin (36) and detent spring (35).
8.	19	Bonnet	Unscrew with 13/16" wrench. Remove reserve assembly (43) from body (15). Remove O'ring (16) and gasket (17). Remove O'ring (18) from bonnet (19).
9.	43	Reserve Assembly	Remove washers (42) and (41). (See Inspection and Repair Procedure Step 5.)
10.	31	Plug	Unscrew from body (15) with 1/2" wrench. Remove O'ring (30).
11.	27	Yoke Assembly Screw	Unscrew by hand, and with small tool placed under yoke ring (25), pry up.
12.	34	Cap Assembly	Untie line from body (15). Remove O'ring (32).
13.	28	Retainer Ring	Remove from body with circlip pliers (Ref 1111-00, TOOLS). Remove filter (29) and O'ring (10).

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, back-up rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	3	Piston	Check for nicks, dents, etc. on seat face, stem diameter and O'ring groove. Replace if necessary.
3.	8	Bushing	Check for nicks, wear, etc. on inside diameter. Replace if necessary.
4.	12	Seat	This seat is reversible. Check both ends for nicks, wear, etc. If one end is good, see Step No. 18 in ASSEMBLY section. If not, replace.
5.	43	Reserve Assembly	Reserve assembly may be replaced as a complete factory preset unit, Part No. 1069-01. To inspect and repair existing unit, remove adjustable screw (37) with small screwdriver. Check seat for nicks or wear; replace if necessary. Seat may be polished clean with extra fine polish compound or stick. Remove poppet (38) and check for wear; replace if necessary. Remove spring (39). See Cleaning Procedure No. 1 for piston assembly (4). Replace spring (39), poppet (38), Screw seat into place until edge of seat lines up with leading edges of the four holes in piston body. This is an approximate setting. For precise adjustment, an inlet pressure of 500 psig shall be introduced to the first stage. Slowly reduce inlet pressure by bleeding 2nd stage until reserve poppet reseats and restricts flow. The reserve poppet should reseat at an inlet pressure of

FIRST STAGE FOR 1070-00 CALYPSO J REGULATOR

Step No.	Key No.	Description	Procedure (Ref exploded view)
		Reserve Assembly (Continued)	325 ±50 psig. If pressure is low, adjust with screw (37) by turning inward in 1/4 turn increments. To reduce high pressure, unscrew in 1/4 turn increments. Retest as above for seating pressure of 325 ±50 psig.
6.	29	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

- All plastic and rubber parts. (Note: Reserve assembly (43) and filter (29) should be cleaned at this step and not in acid.) Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
- All metal parts except as previously noted. (Note: Remove all rubber and plastic parts first.) Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

D. ASSEMBLY

- 25 Ring Place on yoke screw (26).
- 32 O'Ring Place in cap (33), and tie it to yoke of body (15).
- 30 O'Ring Place on plug (31), and screw it into body (15).
- 10 O'Ring Place inside body (15).
- 29 Filter Place on top of O'ring (10).
- 28 Retainer Ring With circlip pliers (Ref 1111-00, TOOLS), place in groove of body (15).
- 27 Yoke Screw Screw into body (15).
- 18 O'Ring Place on bonnet (19).
- 17 Gasket Place inside bonnet (19).
- 16 O'Ring Place on stem of reserve piston (40).
- 43 Reserve Assembly Lube rubber end of piston (40) lightly with silicone grease. With washers (41) and (42) in place, insert piston (40), rubber end first. Curved shoulder on piston (40) stem to face towards yoke on body (15).
- 19 Bonnet Replace O'ring (18) on outside. Insert O'ring (16) and gasket (17). (Gasket located at large end of bonnet.) Screw into place.
- 20 Washer Place over hex surface of bonnet (19).
- 36 Detent Pin Place detent spring (35) and detent pin (36) in retaining hole in body (15).
- 21 Lever Place over stem. Check for proper location of reserve by blowing air through opposite end of body. If air comes through filter (29) when lever (21) is in "reserve" position, place spring (22) into lever, and secure assembly with nut (23). If air does not come out, set lever (21) in start dive position, then check stem of piston (40) for position of curved shoulder. Curved side must face yoke. Check air flow again with lever (21) in reserve position.
- 14 O'Ring Place on body (15).
- 11 O'Ring Place on seat (12). Check for good end. Push other end all the way into body (15).
- 10 O'Ring Place on bushing (8). Insert small O'ring (7) on inside followed by back-up ring (6). Do not reverse order. Screw assembly into body (15).

FIRST STAGE FOR 1070-00 CALYPSO J REGULATOR

Step No.	Key No.	Description	Procedure (Ref exploded view)
19.	2	O'Ring	Place on piston (3).
20.	5	Spring	Place into body (15).
21.	4	Piston Assembly	Wipe thin coat of silicone grease over seat face, stem, and O'ring (2). Insert through bushing (8). Note: When seat face touches O'ring on inside of bushing, proceed very carefully due to possibility of face cutting O'ring.
22.	1	Cap	Place body (15) in a soft jaw vise. Clamp on flat edges of yoke. Place cap (1) squarely on spring (5), and compress so that cap threads engage body threads and tighten.
23.		Hose	Screw into cap (1).

ADJUSTMENT PROCEDURE

This unit has been designed for a breathing resistance which is agreeable to the majority of users. You may, however, wish to increase the intermediate pressure for easier breathing. To do this, add washer, Part No. 8210-17, to the 1st stage body (15) directly under spring (5).

Standard intermediate pressure is approximately 128 psig at 2000 psig supply. One washer will add approximately 10 psig. This pressure is checked by screwing test gauge (Ref 1116-00, TOOLS) in place of 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within specified range. If, however, it continues to climb, close supply; 1st stage might have high pressure leak. (Ref TROUBLE SHOOTING.)

Proper ease of breathing can be checked by placing 2nd stage (connected to 1st stage) in a pan of water so that rim of mouthpiece is facing up and slightly above the surface of the water. At this point, a small amount of air should pass through the 2nd stage.

TROUBLE SHOOTING CHART

NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak from 3 drain ports	O'Rings Bushing	2, 7, 10 8	Bushing (8) not tight or O'rings (2, 7, 10) damaged.	Tighten or replace O'rings as necessary.
Air leak from cap	O'Ring Cap	14 1	Cap (1) not tight or O'ring (14) damaged.	Tighten cap or replace O'ring as necessary.
High pressure air leak to 2nd stage	Piston O'Ring Seat	3 11 12	Piston (3) seat, O'ring (11) or seat (12) damaged.	Reverse seat (see Inspection Step No. 4) or replace parts as necessary.
Air leak from reserve lever	O'Rings Bonnet	16, 17 19	Bonnet (19) not tight or O'rings (16, 17) damaged.	Tighten or replace O'rings as necessary.
Reserve operation	Poppet	38	Foreign matter or damage.	Check operation. With supply pressure between 300 and 400 psig, noticeable restriction with average inhalation should be felt. If not, clean and/or replace. See Inspection and Repair Procedure No. 5.

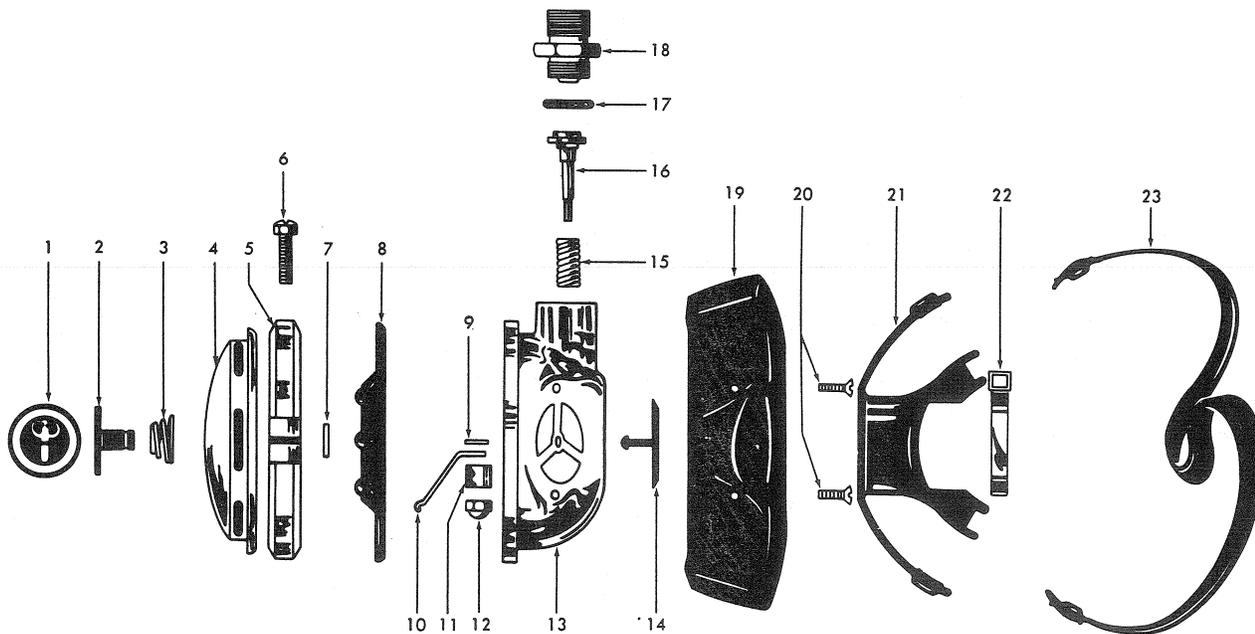
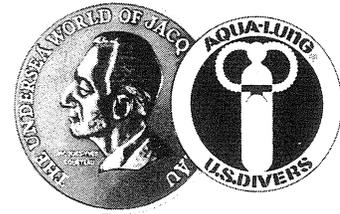
NOTES:

1. *Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.
2. See "Adjustment Procedure" in this and also 2nd stage (1048-00, 1050-00, 1052-00 and 1056-00) section for breathing characteristics.

PARTS LIST

SECOND STAGE 1070-00 CALYPSO J

**CALYPSO J 1050-50, CALYPSO III 1048-50,
CONSHELF XI 1052-50, & DEEPSTAR II 1056-50 2nd STAGES**



Key Order Part	Description	Key Order Part	Description
1A – 1049-11	Decal (CALYPSO III)	16 – 1049-08	Disc & Retainer
1B – 1048-88	Decal (CALYPSO J)	17 – 8200-14	O'Ring
1C – 1052-88	Decal (CONSHELF XI)	18 – 1049-02	Nipple, Inlet
1D – 1056-88	Decal (DEEPSTAR II)	19 – 1049-12	Tube, Exhaust
2 – 1037-04	Button	20 – 8330-03	Screw
3 – 1027-08	Spring, Button	21 – 1058-64	Mouthpiece
4 – 1070-01	Box, Top	22 – 1049-13	Clamp, Mouthpiece
5 – 1039-11	Clamp	23 – 1058-67	Strap
6 – 8340-20	Screw	– 1048-50	2nd Stage (CALYPSO J)
7 – 8600-37	Retainer Ring	– 1050-50	2nd Stage (CALYPSO III)
8 – 1037-30	Diaphragm	– 1072-50	2nd Stage (CONSHELF XI)
9 – 8450-22	Washer	– 1056-50	2nd Stage (DEEPSTAR II)
10 – 1037-29	Lever		
11 – 1025-17	Spacer		
12 – 1025-10	Nut		
13 – 1049-10	Box, Bottom		
14 – 1051-39	Exhaust Valve		
15 – 1049-04	Spring		

*All the above parts are interchangeable and can be used on 1969 models & earlier, with the exception of the 1051-39 exhaust valve.

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from inlet nipple (18) with 11/16" wrench.
2.	6	Screw	Unscrew from clamp (5).
3.	5	Clamp	Spread and remove. Lift top box (4) from bottom box (13). Lift diaphragm (8) from bottom box (13).
4.	2	Button	Spread retainer ring (7) from button (2) with circlip pliers (Ref 1111-00, TOOLS). Lift button (2) from top box (4) and remove spring (3).
5.	18	Inlet Nipple	Unscrew from bottom box (13) with 3/4" wrench.
6.	16	Disc & Retainer	Place tool (Ref 1100-05, TOOLS) so that its finger catches retainer fingers. Take hold of nut (12) with needle nose pliers. Hold nut (12), and turn tool to remove disc and retainer (16), spring (15), washer (9), lever (10), spacer (11) and nut (12), from bottom box (13).
7.	16	Disc & Retainer	Lift disc from retainer with point of needle applied to outside diameter of disc.
8.	19	Exhaust Tube	Remove screws (20) and exhaust tube (19) from bottom box (13).
9.	14	Exhaust Valve	Bend valve's diameter in half with first finger and thumb and pull lightly out of bottom box (13).
10.	21	Mouthpiece	Unsnap strap (23). Place small knife between clamp (22) and mouthpiece (21), and lift up to separate.

B. INSPECTION AND REPAIR PROCEDURE

1.	8	Diaphragm	Check for deterioration. Replace if necessary.
2.	18	Inlet Nipple	Check seat surface for pits or scratches, etc. Replace if necessary.
3.	16	Disc & Retainer	(See Step No. 1 in Cleaning Procedure.) Replace disc or reverse by placing used side into retainer. Before doing this, first clean old glue off and add small drop of rubber glue to inside retainer face.
4.	14	Exhaust Valve	Check for deterioration. Replace if necessary.
5.	21	Mouthpiece	Check for deterioration. Replace if necessary.
6.	23	Strap	Check for deterioration. Replace if necessary.
7.		Hose	Check for abusive treatment or deterioration. Replace if necessary. If either or both O'rings are cut or cracked, replace. Before replacing, wipe them with silicone grease.

C. CLEANING PROCEDURE

1.	All plastic and rubber parts.	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces (except inside hose, mouthpiece, exhaust tube and sealing edges of diaphragm). Wipe with clean cloth to remove excess silicone or loose dirt.
2.	All metal parts. (Note: Remove all rubber and plastic parts first. Nut (12) should not be placed in acid.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

SECOND STAGE 1070-00 CALYPSO J

D. ASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	15	Spring	Place in bottom box (13). Insert disc and retainer (16) through bottom box (13). Hold in place with thumb.
2.	9	Washer	Place on threaded end of disc and retainer (16) together with lever (10), spacer (11), and nut (12). Thread nut (12) by hand until tight. Additional tightening must be done with needle nose pliers and tool (Ref 1100-05, TOOLS) until disc and retainer is approximately 5/16" from nipple inlet.
3.	18	Inlet Nipple	Place O'ring (17) on inlet nipple (18). Thread inlet nipple (18) into bottom box (13) with 3/4" wrench.
4.		Hose & 1st Stage	Screw hose into inlet nipple (18) with 11/16" wrench.
5.	10	Lever	With bottom box (13) held so that lever (10) faces up, place a straight edge tool over lever (10) and bottom box (13) outer diameter. Make final adjustment with pliers on nut (12) and small screwdriver in slot of retainer. Adjust so that top of lever (10) just touches straight edge when air supply of 2000 ±200 psig is applied to 1st stage.
6.	14	Exhaust Valve	Pull stem of exhaust valve (14) through bottom box (13) so that stem barb lies on inside.
7.	19	Exhaust Tube	Secure in place with 2 screws (20), with chin rest in up position.
8.	21	Mouthpiece	Push over bottom box (13) tube. Secure with new clamp (22) by pulling straight end through lock with a pair of pliers. Locate so that lock is on side of mouthpiece (21). Cut excess length off at lock.
9.	8	Diaphragm	Place inside bottom box (13) so that two rubber nubs do not interfere with lever (10) action.
10.	4	Top Box	Assemble button (2) and spring (3) into top box (4). Secure in place with retainer ring (7). Place over diaphragm (8) in bottom box (13). Locate so that nameplate is in up position.
11.	5	Clamp	Spread clamp (5), and wrap around top and bottom boxes (4, 13) so that screw boss is in down position. Tighten with screw (6) so that it will not rotate.
12.	23	Strap	Snap onto mouthpiece (21).

ADJUSTMENT PROCEDURE

NOTE: See "Adjustment" and "Repair Procedures" under corresponding 1st Stage regulator. Also see "Assembly" and "Repair" sections of this regulator.

If you have adjusted the 1st stage for easier breathing, the 2nd stage will have a tendency to let a small amount of air escape when the unit happens to be on the surface of the water with the mouthpiece in the up position. In this situation, it is only necessary to submerge the unit under the surface or turn it over so the mouthpiece points down.

TROUBLE SHOOTING CHART

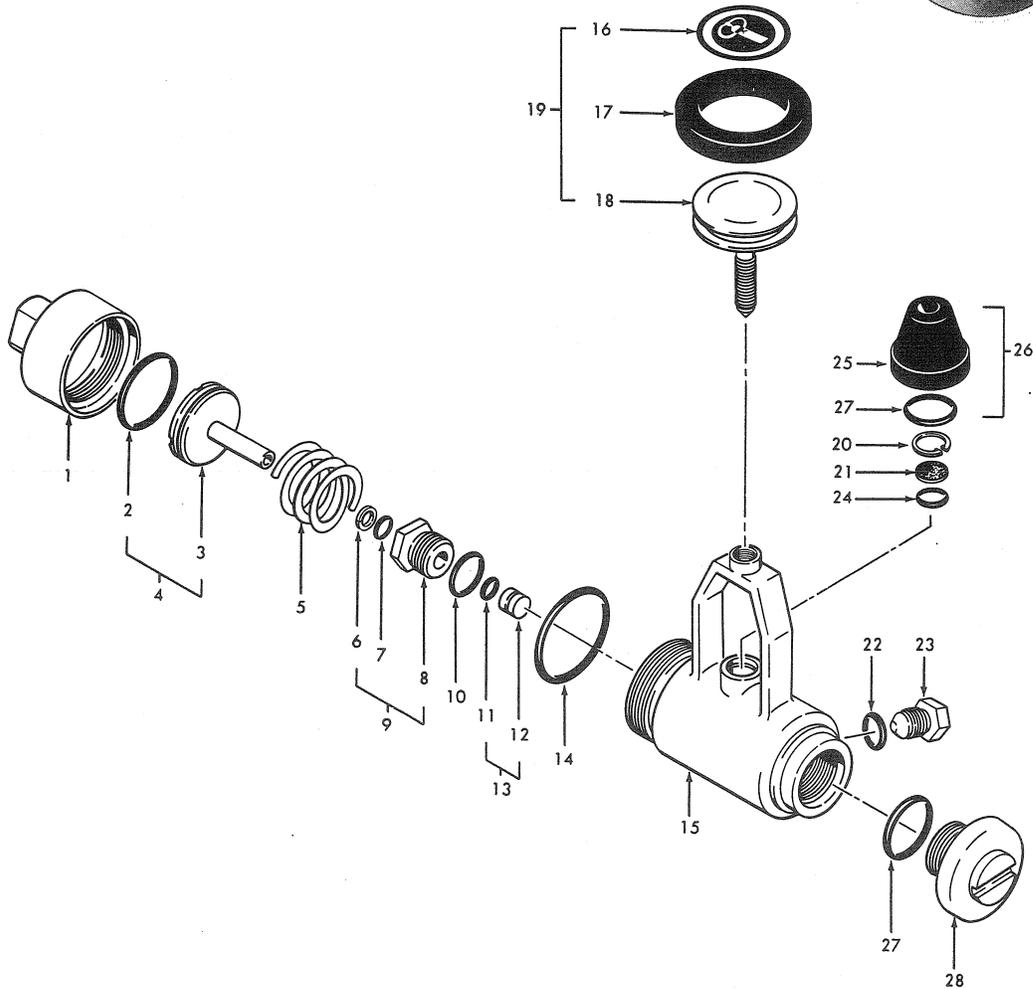
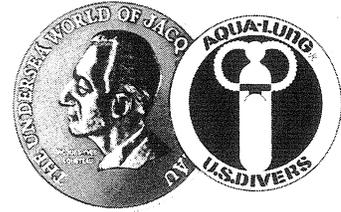
NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Hard to breathe	Lever	10	Set too low.	Readjust (see Assembly Step No. 5).
	1st Stage		Intermediate pressure set too low.	Increase pressure where applicable.
Hissing sound after inhaling	Disc & Retainer	16	Damaged seat.	Reverse seat (see Inspection Step No. 3).
	Nipple	18	Damaged seat.	Replace.
	Lever	10	Set too high.	Readjust (see Assembly Step No. 5).
	1st Stage		Intermediate pressure set too high.	Decrease pressure where applicable.
	1st Stage		1st Stage high pressure leak.	Repair (see 1st Stage Repair Instructions).
Water leak	Diaphragm	8	Not seated properly between top and bottom box.	Reassemble.
	Mouthpiece	21	Not clamped properly.	Reassemble.
	Exhaust Valve	14	Damaged.	Replace.
Air leak around hose	1st or 2nd Stage		O'ring (17) or loose nipple (18).	Replace O'ring or tighten inlet nipple.

NOTE:

*Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.

PARTS LIST
FIRST STAGE FOR 1071-00 CALYPSO III REGULATOR
CALYPSO III 1064-65 1st STAGE



Key Order Part	Description	Key Order Part	Description
1 - 1051-07	Cap, Reg. Hose	15 - 1051-71	1st Stage Body
2 - 8201-17	O'Ring	16 - ---	Decal
3 - 1051-66	Piston	17 - 1051-05	Ring, Yoke
4 - 1051-67	Piston Assembly	18 - 1051-04	Screw, Yoke
5 - 1051-11	Spring (H.P.)	19 - 1051-03	Yoke Screw Assy
6 - 8285-01	Backup Ring	20 - 8630-51	Retainer Ring
7 - 8200-08	O'Ring	21 - 1051-06	Filter
8 - 1051-12	Bushing, Piston	22 - 8200-11	O'Ring
9 - 1051-29	Bushing Piston Assy	23 - 9109-12	Plug
10 - 8200-12	O'Ring	24 - 8200-12	O'Ring
11 - 8251-08	O'Ring	25 - ---	Cap
12 - 1051-15	Seat	26 - 1010-12	Cap Assy
13 - 1051-13	Piston Assy Seat	27 - 8200-14	O'Ring
14 - 8200-24	O'Ring	28 - 1063-10	Plug

FIRST STAGE FOR 1071-00 CALYPSO III REGULATOR

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from cap (1) with 9/16" wrench.
2.	1	Cap	Unscrew from body (15) with 9/16" wrench.
3.	4	Piston Assembly	Carefully pull back. Remove spring (5). Roll O'ring (2) over end of piston (3). Handle piston carefully, especially small end.
4.	9	Bushing Assembly	Unscrew with 9/16" socket wrench. With small hook tool, remove back-up ring (6) and O'ring (7) from inside of hex end of bushing (8). Remove O'ring (10).
5.	13	Seat	Place air hose nozzle (low pressure) on surface of seat and apply air pressure. Seat should pop loose. Remove O'ring (11). There should be no need to disassemble metal tube insert.
6.	14	O'Ring	Remove from body (15).
7.	23	Plug	Unscrew from body (15) with 1/2" wrench. Remove O'ring (22).
8.	19	Yoke Screw Assembly	Unscrew by hand, and with small tool placed under ring (17), pry up to remove.
9.	26	Cap Assembly	Untie line from body (15). Remove O'ring (27).
10.	20	Retainer Ring	Remove from body with circlip pliers (Ref 1111-00, TOOLS). Remove filter (21) and O'ring (24).

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, back-up rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	3	Piston	Check for nicks, dents, etc. on seat face, stem diameter and O'ring groove. Replace if necessary.
3.	8	Bushing	Check for nicks, wear, etc. on inside diameter. Replace if necessary.
4.	12	Seat	This seat is reversible. Check both ends for nicks, wear, etc. If one end is good, see Step No. 9 in Assembly section, If not, replace.
5.	21	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

1.		All plastic and rubber parts. (Note: Filter (31) should be cleaned at this step and not in acid.)	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
2.		All metal parts except as previously noted. (Note: Remove rubber and plastic parts first.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

D. ASSEMBLY

1.	17	Ring	Place on yoke screw (18).
2.	27	O'Ring	Place in cap (25) and tie it to yoke of body (15).
3.	22	O'Ring	Place on plug (23) and screw plug (23) into body (15).
4.	24	O'Ring	Place inside body (15).
5.	21	Filter	Place on top of O'ring (24).

FIRST STAGE FOR 1071-00 CALYPSO III REGULATOR

Step No.	Key No.	Description	Procedure (Ref exploded view)
6.	20	Retainer Ring	With circlip pliers (Ref 1111-00, TOOLS), place in groove of body (15).
7.	19	Yoke Screw	Screw into body (15).
8.	14	O'Ring	Place on body (15).
9.	11	O'Ring	Place on seat (12). Check for good end. Push other end all the way into body (15).
10.	10	O'Ring	Place on bushing (8). Insert small O'ring (7) on inside followed by back-up ring (6). Do not reverse order. Screw assembly into body (15).
11.	2	O'Ring	Place on piston (3).
12.	5	Spring	Place into body (15).
13.	4	Piston Assembly	Wipe thin coat of silicone grease over seat face, stem, and O'ring. Insert through bushing (8). Note: When seat face touches O'ring on inside of bushing, proceed very carefully due to possibility of face cutting O'ring.
14.	1	Cap	Place body (15) in a soft jaw vise. Clamp on flat edges of yoke. Place cap (1) squarely on spring (5) and compress so that cap threads engage body threads and tighten.
15.		Hose	Screw into cap (1).

ADJUSTMENT PROCEDURE

This unit has been designed for a breathing resistance which is agreeable to the majority of users. You may, however, wish to increase the intermediate pressure for easier breathing. To do this, add washer, Part No. 8210-17, to the 1st stage body (15) directly under spring (6).

Standard intermediate pressure is approximately 128 psig at 2000 psig supply. One washer will add approximately 10 psig. This pressure is checked by screwing test gauge (Ref 1116-00, TOOLS) in place of 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within specified range. If, however, it continues to climb, close supply; 1st stage might have high pressure leak. (Ref Trouble Shooting.)

Proper ease of breathing can be checked by placing 2nd stage (connected to 1st stage) in a pan of water so that rim of mouthpiece is facing up and slightly above the surface of the water. At this point, a small amount of air should pass through the 2nd stage.

TROUBLE SHOOTING CHART

NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

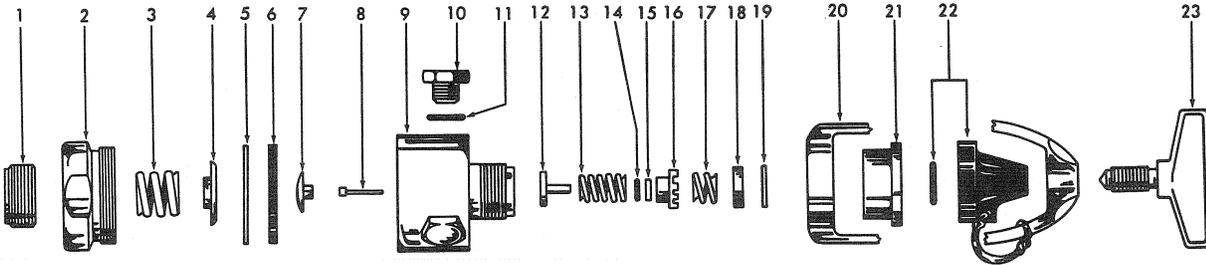
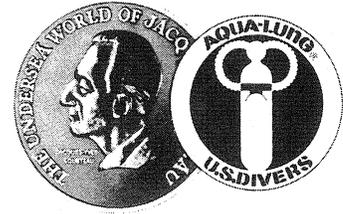
COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak from 3 drain ports	O'Rings Bushing	2, 7, 10 8	Bushing (8) not tight or O'rings (2, 7, 10).	Tighten or replace O'rings as necessary.
Air leak from cap	O'Ring Cap	14 1	Cap (1) not tight or O'ring (14) damaged.	Tighten cap or replace O'ring as necessary.
H.P. air leak to 2nd stage	Piston Assembly O'Ring Seat	4 11 12	Piston seat assy (13), O'ring (11), or seat (12) damage.	Reverse seat (see Inspection Step No. 4) or replace parts as necessary.

NOTES:

- *Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.
- See "Adjustment Procedure" in this and also 2nd stage (1048-00, 1050-00, 1052-00 and 1056-00) section for breathing characteristics.

PARTS LIST
FIRST STAGE FOR 1072-00 CONSHLIF XI REGULATOR

CONSHLIF XI 1st STAGE 1053-00



Key Order Part	Description	Key Order Part	Description
1 - 1041-13	Screw, Adjusting	17 - 1046-13	Spring
2 - 1053-47	Spring Retainer	18 - 1051-06	Filter
3 - 1000-40	Spring	19 - 8630-50	Retainer Ring
4 - 1000-39	Pad	20 - 1053-18	Yoke
5 - 8210-01	Gasket	21 - 1053-10	Yoke Retainer
6 - 1000-29	Diaphragm	22 - 1010-12	Cap Assembly
7 - 1000-27	Support	23 - 1053-12	Yoke Screw
*8 - 1053-23	Pin	- 1048-04	Hose Complete (Shown Above)
9 - 1053-03	Body	- 8200-16	O'Ring (to 1st stage)
10 - 1053-17	Plug (2 Reqd)	- 8200-10	O'Ring (to 2nd stage)
11 - 8200-11	O'Ring (2 Reqd)	- 1053-00	1st Stage
*12 - 1053-20	Seat		
13 - 1053-05	Spring		
14 - 8200-06	O'Ring		
15 - 8280-05	Backup Ring		
16 - 1053-24	Spring Block		

*Pin & Seat must be replaced as a pair on 1969 model CONSHLIF VI & earlier. All other parts can be replaced interchangeably on 1969 models & later.

FIRST STAGE FOR 1072-00 CONSHELF XI REGULATOR

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from body (9) with 9/16" wrench.
2.	1	Adjusting Screw	Unscrew from spring retainer (2) with 3/8" Allen wrench.
3.	3	Spring	Remove by hand.
4.	2	Spring Retainer	Place body (9) in soft jaw vise. Clamp on flat edges of yoke (20). Unscrew from body (9) with 1-3/8" wrench.
5.	4	Pad	Remove by hand.
6.	5	Gasket	Lift up with small screwdriver.
7.	6	Diaphragm	Slip small screwdriver between diaphragm (6) and body (9), and pry up.
8.	7	Pad	Remove pad (7) and pin (8) by hand.
9.	23	Yoke Screw	Unscrew from yoke (20) by hand.
10.	22	Cap Assembly	Untie from yoke (20). Remove O'ring, Part No. 8200-12, from cap (22) with small tool.
11.	21	Yoke Retainer	Unscrew with 1" wrench.
12.	19	Retainer Ring	Remove from body with circlip pliers (Ref 1111-00, TOOLS). In addition, remove filter (18), spring (17), guide (16), spring (13), and seat (12) with needle nose pliers.
13.	16	Spring Block	Remove O'ring (14) and back-up ring (15) with small hook tool.
14.	10	Plug	Unscrew with 5/8" wrench. Remove O'ring (11).

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	12	Seat	Check for nicks, deep embedding, loose seat rubber, etc. on seat face. Replace if necessary.
3.	9	Body	Check for nicks, dents, etc. on seat face. Repolish, or replace if necessary.
4.	18	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

1.		All plastic and rubber parts. (Note: Filter (18) and seat (12) should be cleaned at this step and not in acid.)	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
2.		All metal parts except as previously noted. (Note: Remove all rubber and plastic parts first.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

D. ASSEMBLY

1.	12	Seat	Place it and spring (13) inside body (9) with needle nose pliers. Use small paper clip wire to guide from diaphragm area.
2.	16	Spring Block	Add O'ring (14) and back-up ring (15); then, place on top of spring (13). Place spring (17), filter (18), and retainer ring (19) in body (9). With circlip pliers (Ref 1111-00, TOOLS), compress retainer ring (19) ends together, and push complete assembly down with thumb. Use small screwdriver to pop in retainer ring (19).

FIRST STAGE FOR 1072-00 CONSHELF XI REGULATOR

Step No.	Key No.	Description	Procedure (Ref exploded view)
3.	20	Yoke	Place on body (9), and secure with yoke retainer.
4.	22	O'Ring	Place in protection cap and tie to yoke (21).
5.	23	Yoke Screw	Screw into yoke (20).
6.	8	Pin	Carefully run pointed head of pin through hole of body (9) so that it recesses into hole of seat (12). To check proper assembly, large end of pin (5) should be about 1/32" above surface of body (9).
7.	7	Support	Place over pin (8).
8.	6	Diaphragm	Push into body (9) with large screwdriver. Place so that smooth side is against support (7).
9.	5	Gasket	Add to diaphragm (6).
10.	4	Pad	Add to diaphragm (6).
11.	2	Spring Retainer	Screw into body (9).
12.	3	Spring	Place on top of pad (4). Secure with adjusting screw (1).
13.	11	O'Ring (2 reqd)	Add one to each plug (10), and screw into body (9).
14.		Hose	Screw into body (9).

ADJUSTMENT PROCEDURE

This regulator has been adjusted at the factory for a breathing resistance which is agreeable to the majority of users. You may, however, adjust this to suit your preference if desired.

This balanced first stage has a hexagon socket adjusting screw (Key No. 1) in the large end. With a 3/8" Allen wrench you can turn it clockwise for easier breathing or counterclockwise for harder breathing.

Standard intermediate pressure is approximately 110 psig at 2000 psig supply. This pressure is checked by screwing test gauge (Ref 1116-00, TOOLS) in place of the 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within specified range. If, however, it continues to climb, close supply; 1st stage might have high pressure leak. (Ref Trouble Shooting.)

Another means of adjustment is to place the 2nd stage (connected to 1st stage) in a pan of water so that rim of mouth-piece is facing up and slightly above the surface of the water. At this point, adjust the 1st stage so that a small amount of air begins to pass through the 2nd stage.

TROUBLE SHOOTING CHART

NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

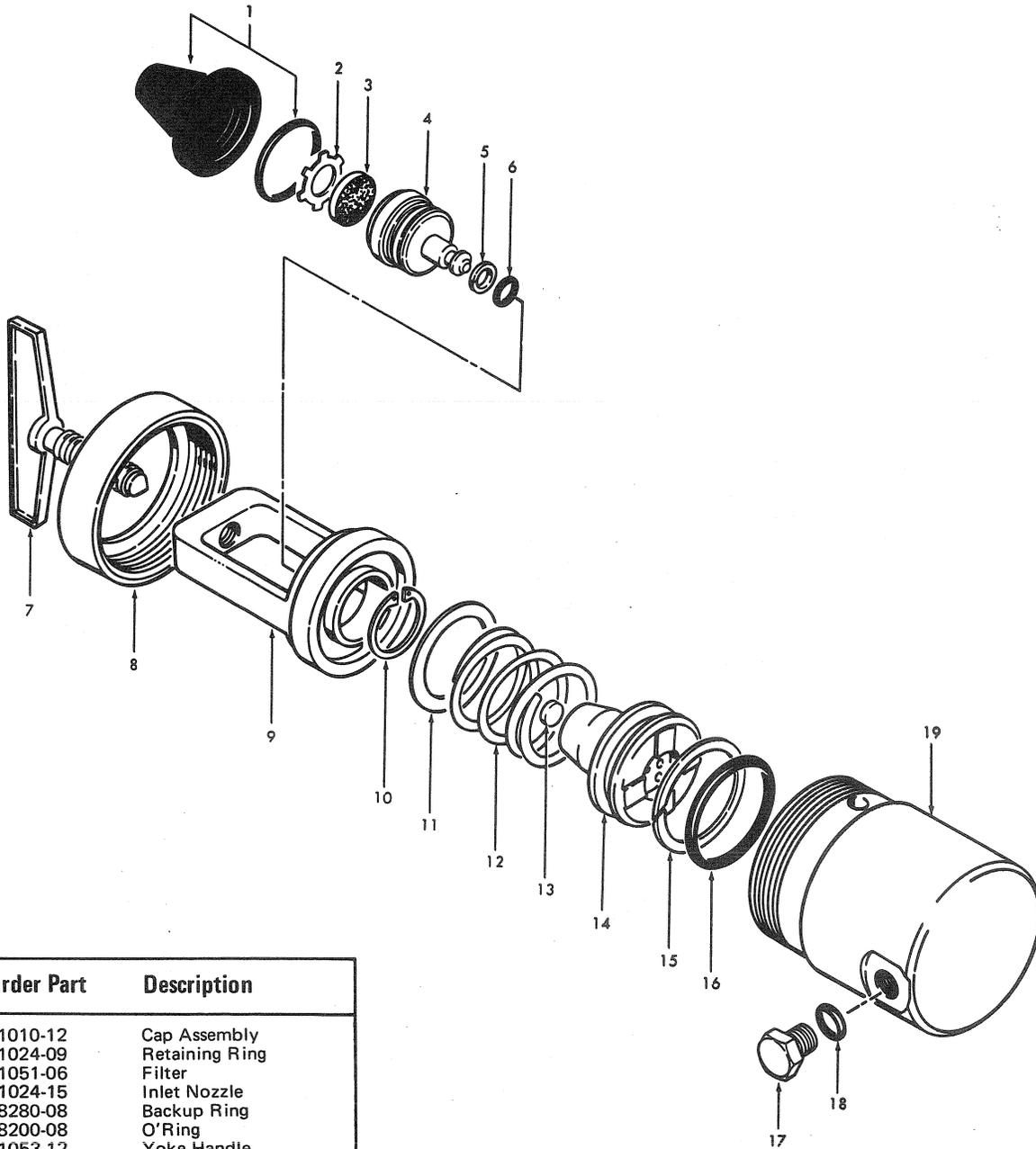
COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak around spring retainer	Diaphragm	6	Loose spring retainer (2).	Tighten.
H.P. air leak to 2nd stage	Body Seat Seat O'Ring	9 12 14	Nicks, cuts, deterioration, etc.	Replace where necessary.

NOTES:

- *Cause could be dirt, sand, wear or verdigris in addition to items already listed.
- See "Adjustment Procedure" in this and also the 2nd stage (1048-00, 1050-00, 1052-00 and 1056-00) section for breathing characteristics.

PARTS LIST
FIRST STAGE FOR 1073-00 DEEPSTAR II REGULATOR

DEEPSTAR II 1st STAGE 1024-00



Key Order Part	Description
1 - 1010-12	Cap Assembly
2 - 1024-09	Retaining Ring
3 - 1051-06	Filter
4 - 1024-15	Inlet Nozzle
5 - 8280-08	Backup Ring
6 - 8200-08	O'Ring
7 - 1053-12	Yoke Handle
8 - 1024-08	Cap
9 - 1024-02	Yoke
10 - 8600-62	Retaining Ring
11 - 1024-16	Shim
12 - 1024-05	Spring
13 - 1055-08	Seat
14 - 1024-04	Piston
15 - 8282-14	Backup Ring
16 - 8202-14	O'Ring
17 - 9109-12	Plug
18 - 8200-11	O'Ring
19 - 1024-01	Body

DEEPSTAR II 1st STAGE 1024-00

FIRST STAGE FOR 1073-00 DEEPSTAR II REGULATOR

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from body (19) with 9/16" wrench.
2.	8	Cap	Remove plug (17) and O'ring (18). Place port flats in soft jaw vise. Remove yoke handle (7). Depress yoke (9) by hand and unscrew cap (1) (if cap (1) binds, tap gently with soft mallet. Strap wrench may be used).
3.	14	Piston	Remove by hand (if difficulty encountered, replace plug (17) and O'ring (18), and apply low pressure air to hose port). From piston (14), remove spring (12), back-up ring (15), and O'ring (16) with small hook tool. Note: Normally, it is not necessary to remove seat (13); however, if required, push out with 1/16" diameter by 2" or 3" long rod placed through back end of piston (14).
4.	4	Inlet Nozzle	Remove retaining ring (10) with circlip pliers (Ref 1111-00, TOOLS). Remove O'ring (6) and back-up ring (5) with small hook tool.
5.	3	Filter	Remove press-fit retaining ring (2) with small hook tool.

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	13	Seat	Check for deep embedding, nicks, wear, etc. Seat may be reversed. Replace if necessary.
3.	4	Inlet Nozzle	Check orifice seat for nicks, dents, etc. Seat may be polished lightly to remove marks. Replace if necessary.
4.	3	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

1.		All plastic and rubber parts. (Note: Filter should be cleaned at this step and not in acid.)	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
2.		All metal parts, except as previously noted. (Note: Remove all rubber and plastic parts first.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

D. ASSEMBLY

1.	3	Filter	Replace in inlet nozzle (4). Insert retaining ring (10), and compress with 5/16" wooden dowel or equivalent.
2.	4	Inlet Nozzle	Replace back-up ring (5) and O'ring (6) with O'ring towards inlet nozzle seat. Insert inlet nozzle (4) through yoke (9), and secure with retaining ring (10) using circlip pliers (Ref 1111-00, TOOLS).
3.	14	Piston	Replace back-up ring (15) and O'ring (16). Back-up ring (16) to be closest to small end of piston (14).
4.	19	Body	Insert piston (14) into body (large end first). Add spring (12). Add shim (11), if necessary. (Note: See Adjustment Procedure — Intermediate Pressure).

FIRST STAGE FOR 1073-00 DEEPSTAR II REGULATOR

Step No.	Key No.	Description	Procedure (Ref exploded view)
5.	8	Cap	Place cap (8) over yoke (9) and inlet nozzle (4). Insert inlet nozzle (4) into piston (14) body. Regulator body (19) should be placed in soft jaw vise. Depress yoke (9) by hand, and screw cap (8) into place.
6.	7	Yoke Handle	Install in yoke (9). Retie cap assembly (1).
7.	17	Plug	Replace O'ring (18) and screw into body.
8.		Hose	Screw into body (19).

ADJUSTMENT PROCEDURE

This unit has been designed for a breathing resistance which is agreeable to the majority of users. You may, however, wish to increase the intermediate pressure. To do this, add shim (11) between spring (12) and yoke (9).

Standard intermediate pressure is approximately 125 psig at 2000 psig supply. One shim will add approximately 10 psig. This pressure is checked by screwing test gauge (Ref 1116-00, TOOLS) in place of 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within specified range. If, however, it continues to climb, close supply; 1st stage might have high pressure leak (Ref Trouble Shooting).

Proper ease of breathing can be checked by placing 2nd stage (connected to 1st stage) in a pan of water so that rim of mouthpiece is facing up and slightly above the surface of the water. At this point, a small amount of air should pass through the 2nd stage.

TROUBLE SHOOTING CHART

NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak from 2 drain ports	O'Rings Back-up Rings	2, 5 6, 15	O'ring or back-up ring damage.	Replace as necessary.
High pressure air leak to 2nd stage	Seat	13	Deep embedding, nicks, cuts, etc.	Replace (see "Repair" Step No. 2).

NOTES:

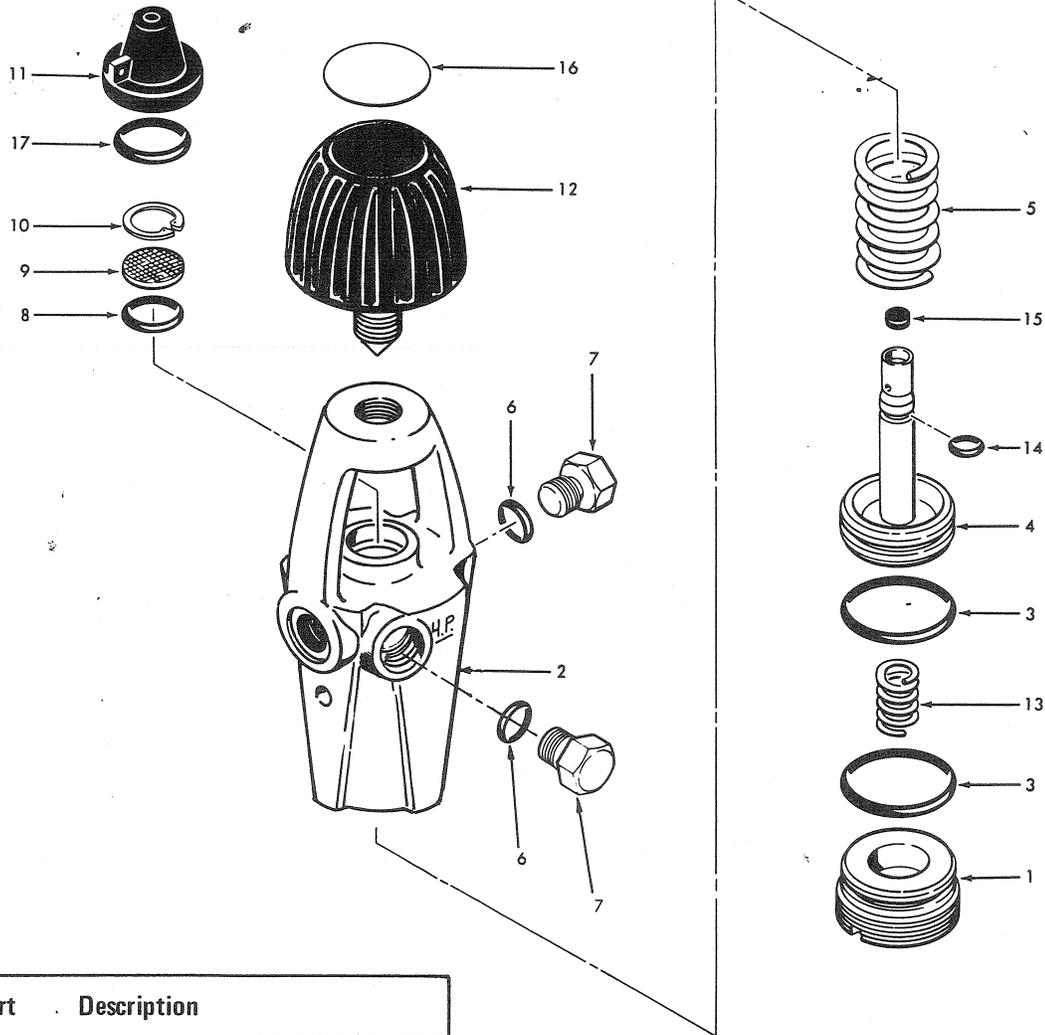
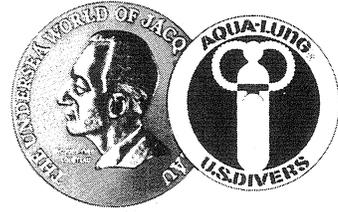
- *Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.
- See "Adjustment Procedure" in this and also 2nd stage (1048-00, 1050-00, 1052-00, 1056-00) for breathing characteristics.

PARTS LIST

FIRST STAGE FOR 1075-00 AQUARIUS REGULATOR

1075-08 AQUARIUS 1ST STAGE REGULATOR

(SECOND STAGE IS 1075-09)



Key Order Part	Description
1 - 1075-03	Cap
2 - 1075-01	Body
3 - 8201-13	O'Ring
4 - 1075-04	Piston
5 - 1075-07	Spring
6 - 8200-11	O'Ring
7 - 9109-12	Plug
8 - 8200-12	O'Ring
9 - 1051-06	Filter
10 - 1024-09	Retainer
11 - 1010-12	Protection Cap Assy
12 - 1075-06	Screw Cap
13 - 1075-02	Spring
14 - 8200-07	O'Ring
15 - 1055-08	Seat
16 - 1075-10	Decal
17 - 8201-12	O'Ring

A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.		Hose	Unscrew from body (2) with 9/16" wrench.
2.	11	Protection Cap	Remove screw cap (12).
3.	1	Cap	Unscrew and remove cap (1) with screwdriver. Also remove spring (13) and O'ring (3).
4.	10	Retainer	Remove press-fit retaining ring (10) with small hook tool. Also remove filter (9) and O'ring (8).
5.	4	Piston	Remove piston by inserting a .060" dia by 3" long hard plastic rod through the high pressure inlet and pushing on seat (15). Also remove spring (5), O'rings (3) & (14), and if necessary remove seat (16), push out with 1/16" dia by 3" long rod through back end of piston (4).

B. INSPECTION AND REPAIR PROCEDURE

1.		All O'rings, gaskets, etc.	Check for nicks, wear, deterioration, etc. Replace if necessary.
2.	15	Seat	This seat is reversible. Check both ends for deep embedding, nicks, wear, etc. If one end is good, place it on the outside at time of assembly. Replace if necessary.
3.	2	Body	Check seat for nicks, dents, etc. Replace if necessary.
4.	9	Filter	Check for excessive foreign matter, dirt or verdigris. Replace if necessary.

C. CLEANING PROCEDURE

1.		All plastic and rubber parts. (Note: Filter (9) and piston (4), if seat not taken apart, should be cleaned at this step and not in acid.)	Clean in warm, soapy water. Rinse thoroughly and dry with air hose or cloth. Apply very thin coat of silicone grease to all surfaces except filter. Wipe with clean cloth to remove excess silicone or loose dirt.
2.		All metal parts, except as previously noted. (Note: Remove all rubber and plastic parts first.)	Clean in mixture of 15-20% nitric acid solution and rinse thoroughly with fast running fresh water. Dry with air hose or cloth.

NOTE: Additional cleaning may be necessary due to extra thick foreign matter. Use extra fine wire brush or equivalent.

D. ASSEMBLY

1.	4	Piston	Place on piston (silicone lubricated) O'rings (14) & (3), seat (15) and spring (5). Place in piston assy into body (2).
2.	1	Cap	Place on cap spring (13) and O'ring (3) (lubricated lightly with silicone). Screw on cap (1) into body (2). Cap (1) should be flush with body (1).
3.	10	Retainer	Place in O'ring (8), filter (9) press on retainer (10) into body (2) with 15/32" dia rod.
4.	11	Protection Cap	Tie onto yoke on body (2).

ADJUSTMENT PROCEDURE

The intermediate pressure can be adjusted by turning cap (1). To increase pressure turn cap (1) counter clockwise. Intermediate pressure is 128-132 psig @ 2400 ±50 psig inlet pressure. This pressure can be checked by placing test gauge (Ref 1116-00, TOOLS) in place of 2nd stage. Note: Before supply pressure is turned on, first open bleed screw on test gauge. After flow begins, close bleed off slowly. Test gauge needle should stop within the specified range.

TROUBLE SHOOTING CHART

NOTE: Trouble shooting should be done as a complete unit (1st and 2nd stages together).

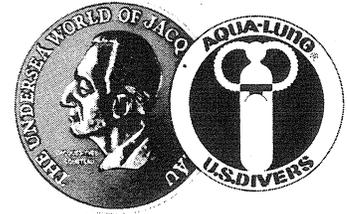
COMPLAINT	ORIGIN	KEY NO.	CAUSE*	REMEDY (Ref exploded view)
Air leak from 2 drain ports	O'Rings Body	3, 14 2	O'ring or body damage.	Replace as necessary
High pressure air leak to 2nd Stage	Seat	15	Deep embedding, nicks, cuts, etc.	Replace (see "Repair" Step No. 2).

NOTES:

- *Cause could be due to dirt, sand, wear or verdigris in addition to items already listed.
- See "Adjustment Procedure" in this and also 2nd Stage (1048-00, 1050-00, 1052-00 and 1056-00) for breathing characteristics.

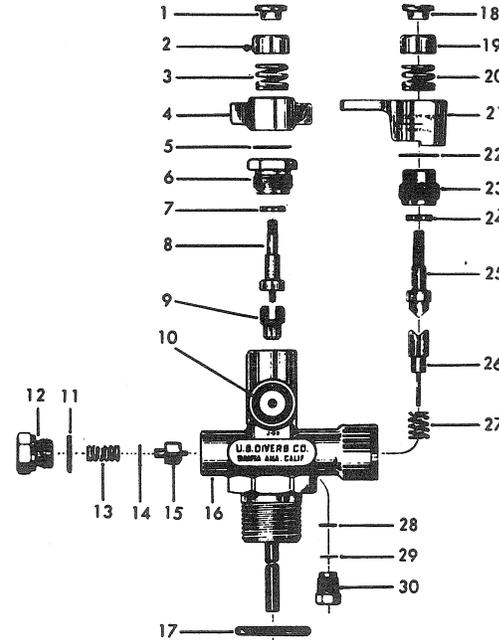
PARTS LIST

CONSTANT AIR RESERVE VALVES No. 0517-00 & 0518-00



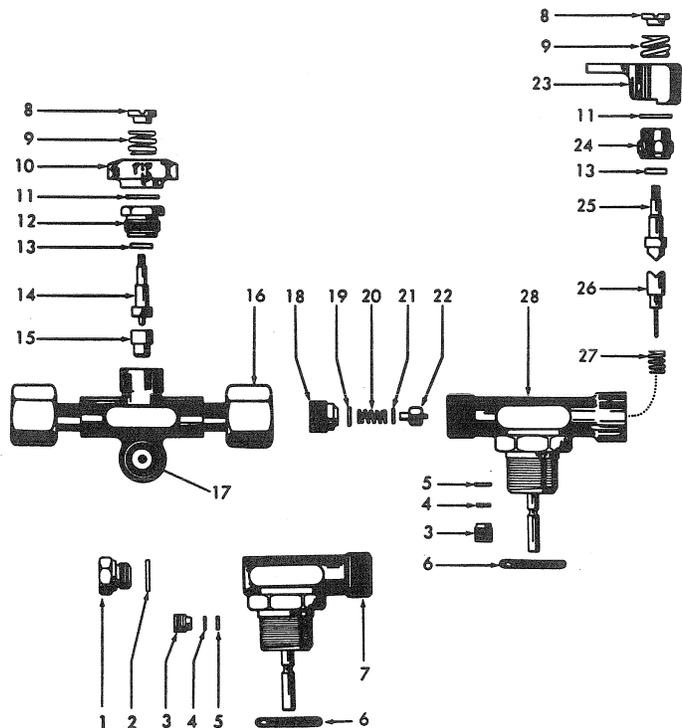
**CONSTANT AIR RESERVE VALVE 0517-00
(J VALVE)**

Key Order Part	Description
1 - 0525-05	Nut, Cap Handle
2 - 0501-04	Cap, Spring
3 - 0501-07	Spring, Valve Handle
4 - 0501-11	Handle, Valve
5 - 0501-05	Washer Bonnet
6 - 0502-16	Bonnet, Valve Stem
7 - 0502-08	Washer, Stem
8 - 0502-14	Stem, Main Supply
9 - 0501-09	Nipple & Disc
10 - 8201-12	O'Ring
11 - 8210-14	Washer
12 - 0502-21	Plug, Reserve
13 - 0501-10	Spring, 300 P.S.I.
14 - 0517-06	Washer
15 - 0502-29	Disc & Retainer Assembly
16 - 0517-03	Body & Tube Assembly
17 - 8202-14	O'Ring
18 - 0525-05	Nut, Cap Handle
19 - 0501-04	Cap Spring
20 - 0501-07	Spring, Valve Handle
21 - 0517-04	Lever, Valve Reserve
22 - 0501-05	Washer Bonnet
23 - 0517-05	Bonnet, Reserve Lever
24 - 0502-08	Washer, Stem
25 - 0502-24	Stem, Reserve Supply
26 - 0502-27	Plunger & Pin
27 - 0502-15	Spring, Complete Reserve
28 - 0502-50	Washer
29 - 0527-18	Disc, Safety
30 - 0527-25	Plug, Safety



**DOUBLE CONSTANT AIR RESERVE VALVE
0518-00**

Key Order Part	Description
1 - 0502-21	Plug
2 - 8210-11	Washer
3 - 0527-25	Plug
4 - 0527-18	Disc Safety for 2250 PSI TANK
5 - 0527-22	Disc, Safety for 1800 PSI TANK
6 - 8210-19	Washer
7 - 8202-14	O'Ring
8 - 0518-02	Elbow with Plug
9 - 0525-05	Nut
10 - 0501-07	Spring
11 - 0525-03	Handle
12 - 0501-05	Washer
13 - 0502-16	Bonnet
14 - 0502-08	Gasket
15 - 0525-21	Stem, Main
16 - 0502-19	Nipple & Disc
17 - 0502-02	Center Yoke Complete
18 - 8201-12	O'Ring
19 - 0518-05	Plug
20 - 0518-06	Washer
21 - 0502-20	Spring
22 - 0517-06	Washer
23 - 0502-29	Disc & Retainer
24 - 0517-04	Lever
25 - 0517-05	Bonnet Reserve
26 - 0502-24	Stem Reserve
27 - 0502-27	Pin & Plunger
28 - 0502-15	Spring
29 - 0502-01	Elbow Reserve Complete



A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	1	Nut	Unscrew from stem (8).
	2	Cap	Remove cap (2), spring (3), handle (4), and washer (5) from stem (8).
2.	6	Bonnet	Unscrew from body (16) with 3/4" box wrench.
3.	8	Stem	Lift out of body (16). Remove washer (7) from stem (8).
4.	9	Nipple and Disc	Unscrew from inside of body (16) with a screwdriver.
5.	18	Nut	Unscrew from reserve lever (21).
	19	Cap	Remove cap (19), spring (20), reserve lever (21), and washer (22) from body (16).
6.	23	Bonnet	Unscrew from body (16) with 1/2" box wrench.
7.	25	Stem	Lift out of body (16). Remove washer (24) from stem (25).
8.	26	Plunger and Pin	Remove plunger and pin (26) and spring (27) from body (16).
9.	12	Reserve Plug	Unscrew with a 5/8" box wrench. Remove washer (11) from cap (12).
	13	Spring	Remove spring (13), washer (14), and disc and retainer assembly (15) from body (16).
10.	10	O'Ring	Remove from body (16).
11.	30	Plug	Remove from body (16) with 3/8" box wrench.
	29	Safety Disc	Pull out of body (16) by using a small amount of grease at the end of a pencil eraser. Remove washer (28) from body (16).
NOTE: Step 11 is not necessary unless the body (16) or plug (30) has excessive verdigris or distortion. If the lead insert is protruding from the plug (30), the plug (30) and safety disc (29) must be removed.			
12.	17	O'Ring	Remove from bottom of body (16).

B. INSPECTION

1.	9	Nipple and Disc	Check for any deep grooves or foreign matter in seat.
2.			Check valve body (16), seat, and face for distortion.
3.	7, 24	Stem Washers	Check for distortion.
	10	O'Ring	Check for distortion.
	15	Disc & Retainer Assembly	Check for scratches or deep markings on nylon seat.
	11	Washer	Check for heavy wear.
4.	17	O'Ring	Check for wear.

C. CLEANING

1. All metal parts with the exception of safety plug (30), safety disc (29), and disc & retainer assembly (15), are given an acid bath of 15-20% nitric acid solution. Be sure that the acid does not eat into the metal.
2. Rinse metal parts thoroughly in fresh water immediately after the acid bath.
3. Extremely heavy verdigris must be removed with a soft wire wheel or wire brush.
4. All rubber O'rings should be thoroughly washed in warm, soapy water and rinsed in fresh water.
5. 17 O'Ring Lubricate lightly with silicone grease.
6. Automatic replacement of the following parts is suggested:
 - 9 Nipple and Disc
 - 7, 24 Stem Washers
 - 11 Washer

CONSTANT AIR RESERVE VALVES No. 0517-00 & 0518-00

Step No.	Key No.	Description	Procedure (Ref exploded view)
	10	O'Ring	
	17	O'Ring	
	28	Washer (if removed)	
	15	Disc & Retainer Assembly	

D. ASSEMBLY

1.	15	Disc & Retainer Assembly	Insert into body (16), making sure the disc seat is facing body (16).
	13	Spring	Install washer (14) and spring (13) in body (16) over disc & retainer assembly (15).
	12	Reserve Plug	Install washer (11) on reserve plug (12), and screw reserve plug (12) tightly into body (16).
2.	28	Washer	Insert into back of body (16).
	29	Safety Disc	Place over washer (28).
	30	Safety Plug	Screw snugly into body (16).
3.	9	Nipple and Disc	Place inside body (16) on top of 2nd set of threads.
	7	Stem Washer	Place over stem (8).
	8	Stem	Place on top of nipple and disc (9) so that the slots in the nipple and disc (9) engage with stem (8). Screw down nipple and disc (9) in body (16).
4.	6	Bonnet	Thread over stem (8), and screw snugly into body (16).
	5	Washer	Place on top of bonnet (6).
	4	Valve Handle	Put over stem (8), open side facing up.
	3	Spring	Put into valve handle (4).
	2	Cap	Place over spring (3).
	1	Nut	Screw down snugly on stem (8).
5.	27	Spring	Place into body (16) in reserve side.
	26	Plunger and Pin	Insert through spring (27) into body (16) so that the sides of the plunger are riding in the tracks of the body (16).
	24	Stem Washer	Place over stem (25).
	25	Stem	Insert into body (16), making sure that the stem (25) engages into one of the two sets of grooves of the plunger and pin (26).
6.	23	Bonnet	Screw snugly into body (16).
	22	Washer	Place over stem (25).
	21	Lever	Place over stem (25).

POSITIONING OF LEVER

Blow through stem (25) of valve.

- a. If you cannot blow air through valve, lever (21) should be in the up position.
- b. If air passes through valve, lever (21) should be in the down position.

7.	20	Spring	Place inside lever (21).
	19	Cap	Place over spring (20).
	18	Nut	Screw snugly onto stem (25).
8.	10	O'Ring	Place into face of body (16).
9.	17	O'Ring	Replace on bottom of body (16) over threads.

TROUBLE SHOOTING CHART

COMPLAINT	ORIGIN	KEY NO.	CAUSE	REMEDY (Ref exploded view)
Air leak	Bonnet	6	Loose or damaged.	Tighten or replace.
	Bonnet	23	Loose or damaged.	Tighten or replace.
	Stem	8	Washer (7) not tight around stem (8).	Tighten bonnet (6) or replace washer (7).
	Stem	25	Washer (24) not tight around stem (25).	Tighten bonnet (23) or replace washer (24).
	Reserve Plug	12	Loose or bad washer (11).	Tighten or replace washer (11).
	Safety Plug	30	Loose or bad washer (28).	Tighten plug (30) or replace washer (28).
Reserve fails to operate	Stem	25	Improperly positioned.	Disassemble reserve side of valve, and place lever (21) in proper position. (Ref ASSEMBLY.)
	Disc & Retainer Assembly	15	Damaged seat.	Replace disc & retainer assembly (15).
Valve handle fails to operate.	Stem	8	Key on stem (8) sheared off.	Replace stem (8).

PARTS LIST

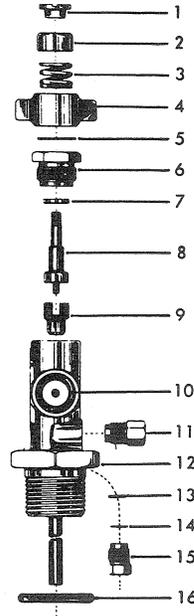
FILLER VALVE No. 0519-00

SOLID BAR YOKE No. 0513-00



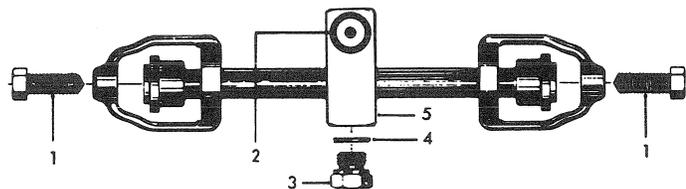
FILLER VALVE 0519-00

Key Order Part	Description
1 – 0525-05	Nut, Cap Handle
2 – 0501-04	Cap Spring
3 – 0501-07	Spring, Valve Handle
4 – 0501-11	Handle, Valve
5 – 0501-05	Washer, Bonnet
6 – 0502-16	Bonnet, Valve Stem
7 – 0502-08	Washer, Stem
8 – 0502-14	Stem, Main Supply
9 – 0501-09	Nipple & Disc
10 – 8201-12	O'Ring
11 – 0519-01	Plug
12 – 0519-02	Body & Tube Assembly
13 – 0502-50	Washer
14 – 0527-18	Disc, Safety (2250 PSI)
15 – 0527-25	Plug
16 – 8202-14	O'Ring



SOLID BAR YOKE 0513-00

Key Order Part	Description
1 – 1000-18	Screw, Yoke, Hex. (2)
2 – 8201-12	O'Ring
3 – 0502-36	Plug, Reserve
4 – 8210-11	Washer
5 – 0513-01	Yoke, Solid Bar



A. DISASSEMBLY

Step No.	Key No.	Description	Procedure (Ref exploded view)
1.	1	Nut	Unscrew from stem (8).
	2	Cap	Remove from handle (4).
	3	Spring	Remove from handle (4).
	4	Valve Handle	Remove from stem (8).
	5	Washer	Remove from stem (8).
2.	6	Bonnet	Unscrew from body (12) with 3/4" box wrench.
	8	Stem	Lift out of body (12). Remove washer (7).
	9	Nipple & Disc	Unscrew from inside of body (12) with a screwdriver.
3.	15	Safety Plug	Unscrew from body (12) with a 3/8" box wrench.
	14	Safety Disc	Pull out of body (12) by using a small amount of grease at the end of a pencil.
	13	Washer	Remove from body (12).
<p>CAUTION: Step 3 is not necessary unless the body (12) or plug (15) has excessive sedimentation or distortion. If the lead insert is protruding from the safety plug (15) the plug (15) and safety disc (14) must be removed.</p>			
4.	16	O'Ring	Remove from threads of body (12).
<p>NOTE: On the right hand side of the valve there is located a plug (11) which is removed only for special gauge attachments. Do not remove this unless absolutely necessary.</p>			

B. INSPECTION

1.	9	Nipple & Disc	Check for any deep grooves or foreign matter in the seat.
2.	12	Body	Check seat and face for distortion.
3.	7	Washer	Check for any distortion.
4.	16	O'Ring	Check for wear.

C. CLEANING

- All metal parts with the exception of the safety plug (15) and the safety disc (14) are given an acid bath of 15-20% nitric acid solution. Be sure that the acid does not eat into the metal.
- Rinse metal parts thoroughly in fresh water.
- Extremely heavy verdigris may be removed with a soft wire wheel or wire brush.
- All rubber O'rings (10, 16) should be thoroughly washed in warm, soapy water and rinsed in fresh water.
- 16 O'Ring Lubricate lightly with silicone grease.
- Automatic replacements of the following parts is suggested:
 - 9 Nipple & Disc
 - 16 O'Ring
 - 7 Stem Washer
 - 13 Washer (if removed)

D. ASSEMBLY

- 13 Washer Insert into back of body (12).
 - 14 Safety Disc Place on top of washer (13).
 - 15 Safety Plug Screw into body (12).
- 9 Nipple & Disc Place inside body (12) on top of 2nd set of threads.

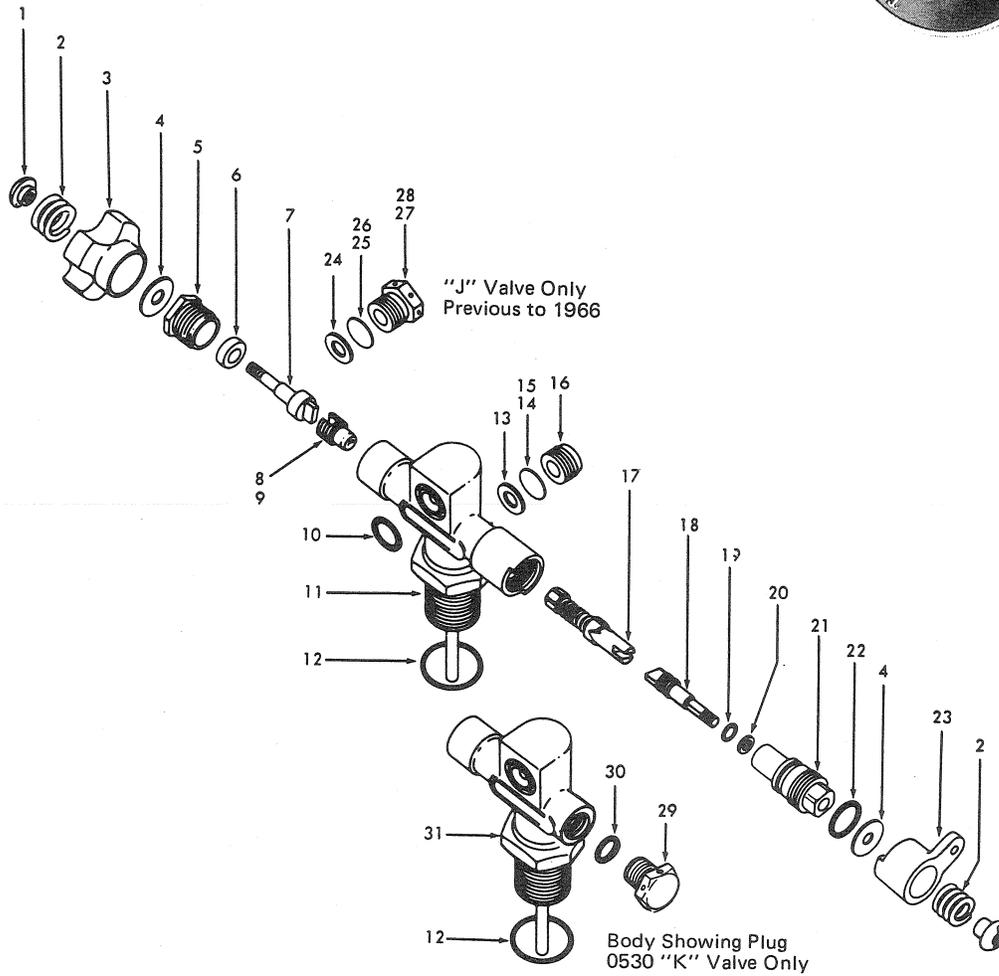
FILLER VALVE No. 0519-00

Step No.	Key No.	Description	Procedure (Ref exploded view)
3.	7	Washer	Place over stem (8).
	8	Stem	Place on top of nipple and disc (9) so that the slots engage with stem (8). Screw down nipple & disc (9).
4.	6	Bonnet	Thread over stem (8), and screw snugly into body (12).
	5	Washer	Place on top of bonnet (6).
	4	Valve Handle	Put over stem (8), open side facing up.
	3	Spring	Put into valve handle (4).
	2	Cap	Place over spring (3).
	1	Nut	Screw down snugly on stem (8).
5.	16	O'Ring	Place over threads at the bottom of body (12).
	10	O'Ring	Place into face of body (12).

TROUBLE SHOOTING CHART

COMPLAINT	ORIGIN	KEY NO.	CAUSE	REMEDY (Ref exploded view)
Air leak	Bonnet	6	Loose or damaged.	Tighten or replace.
	Stem	8	Washer (7) not tight around stem (8).	Tighten bonnet (6) or replace washer (7).

PARTS LIST
CYLINDER VALVES 0525 "J" & 0530 "K"



Key Order Part	0525 "J"	0530 "K"	Description	Key Order Part	0525 "J"	0530 "K"	Description
1 - 0525-18	X	X	Locknut	19 - 8200-10	X		O'Ring
2 - 0501-07	X	X	Spring	20 - 8210-14	X		Washer
3 - 0525-22	X	X	Handwheel	21 - 0525-15	X		Bonnet
* 4 - 0527-12	X	X	Washer	22 - 8200-15	X		O'Ring
5 - 0502-16	X	X	Bonnet	23 - 0525-16	X		Lever
6 - 0502-08	X	X	Washer	* 24 - 8210-19	X		Washer
7 - 0525-21	X	X	Stem	* 25 - 9201-14	X		Safety Disc for 2250 PSI Tank
8 - 0525-19	X		Seat Assembly	26 - 0525-35	X		Safety Disc for 1800 PSI Tank
9 - 0501-09		X	Seat Assembly	27 - 0535-37	X		Safety Plug for 2250 PSI Tank
10 - 8201-12	X	X	O'Ring	28 - 0525-34	X		Safety Plug for 1800 PSI Tank
11 - 0525-00	X		"J" Valve Complete	29 - 9109-12		X	Plug
12 - 8202-14	X	X	O'Ring	30 - 8200-11		X	O'Ring
13 - 8210-19	X	X	Washer	31 - 0530-00		X	"K" Valve Complete
14 - 0527-18	X	X	Safety Disc for 2250 PSI Tank				
15 - 0527-22	X	X	Safety Disc for 1800 PSI Tank				
16 - 0527-17	X	X	Safety Plug				
17 - 0525-08	X		Reserve Assembly				
18 - 0525-14	X		Stem				

*Denotes Parts for Valves Prior to 1966.

CYLINDER VALVES 0525 "J" & 0530 "K"

Step No.	Key No.	Description	Procedure (Ref exploded view)
POSITIONING OF LEVER			
Blow through stem of valve.			
a. If you cannot blow air through valve, lever (23) should be in the up position.			
b. If air passes through valve, lever (23) should be in the down position.			
	2	Spring	Place in recess of lever (23).
	1	Locknut	Screw snugly onto stem (18).
5.	10	O'Ring	Place into face of valve (11 or 31).
6.	12	O'Ring	Replace on bottom of valve (11 or 31), over threads.

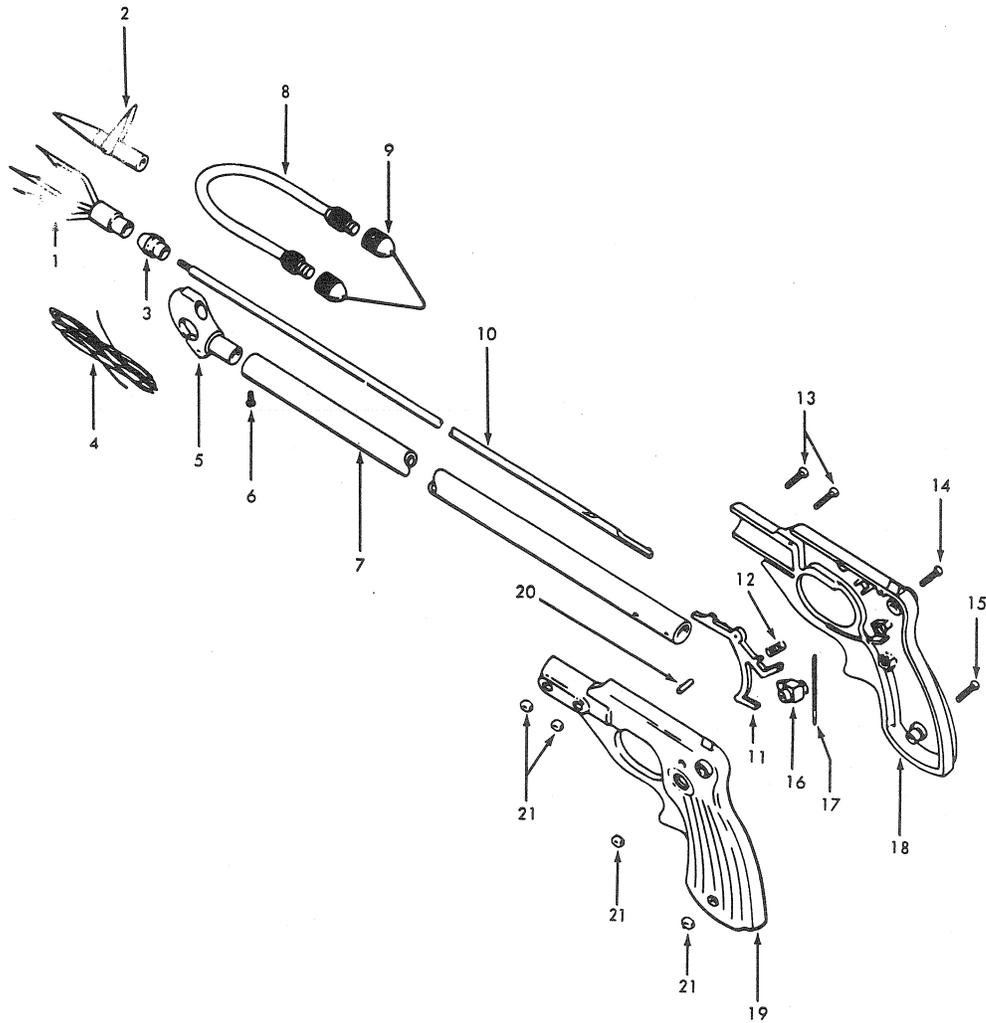
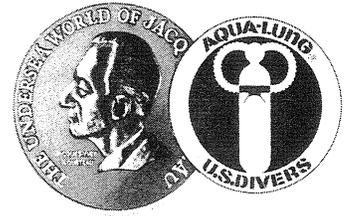
TROUBLE SHOOTING CHART

COMPLAINT	ORIGIN	KEY NO.	CAUSE	REMEDY (Ref exploded view)
Air leak	Bonnet	5	Loose or damaged.	Tighten or replace.
	Stem	7	Washer (6) not tight around stem.	Replace washer (6) or tighten bonnet (7).
	Stem	18	Damaged O'ring (19).	Replace O'ring (19).
	Bonnet	21	Damaged O'ring (22).	Replace O'ring (22).
Chatter (more noticeable at low bottle pressures on units built prior to 1966 when reserve lever is in the up position)	Reserve Assembly	17	Damaged.	Replace with new reserve assembly (17).

PARTS LIST

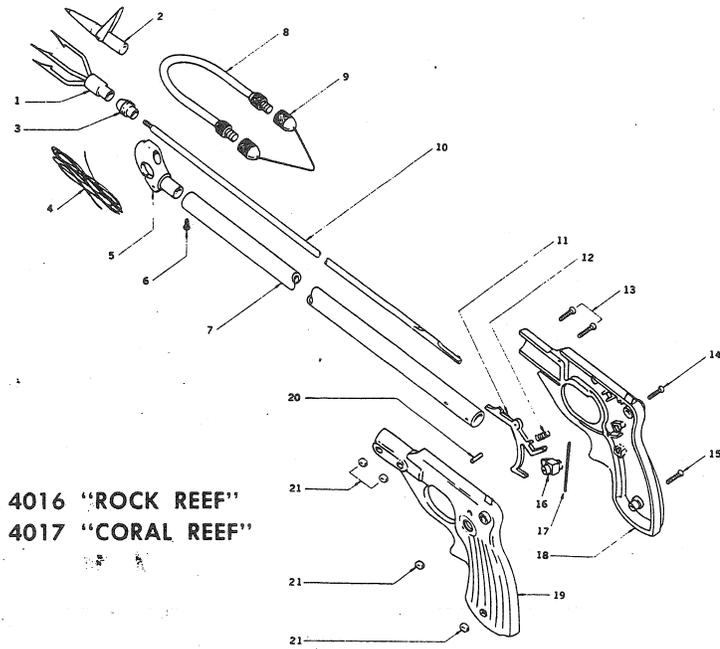
"ROCK REEF" SPEARGUN NO. 4016-50

"CORAL REEF" SPEARGUN NO. 4017-60



Key Order Part	Description	Key Order Part	Description
1 - 4005-24	Trident for 4016	11 - 4016-22	Trigger
2 - 4012-08	1 Barb Point for 4017	12 - 4016-14	Spring
3 - 4005-03	Ring Slide	13 - 4016-03	Screw
4 - 4016-06	Line Nylon	14 - 4016-04	Screw
- 4017-06	Line Nylon	15 - 4016-05	Screw
5 - 4016-09	Muzzle	16 - 4016-23	Safety, Pushbutton
6 - 8330-04	Screw	17 - 4016-24	Spring, Pushbutton
7 - 4016-01	Rock Reef Tube	18 - 4016-26	Grip, Right
- 4017-01	Coral Reef Tube	19 - 4016-25	Grip, Left
8 - 4005-01	Rock Reef Elastic	20 - 4001-62	Pin
- 4017-02	Coral Reef Elastic	21 - 4016-02	Nut
9 - 4018-16	Wishbone	22 - 4001-10	Body Safety
10 - 4005-18	Rock Reef Spear Shaft	23 - 4001-09	Lever Safety
- 4012-03	Coral Reef Spear Shaft		

PARTS PRICE LIST

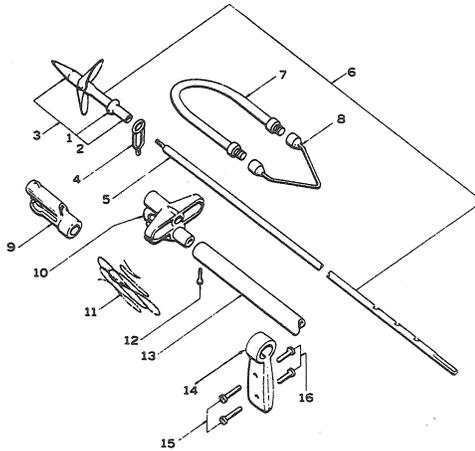


4016 "ROCK REEF"
4017 "CORAL REEF"

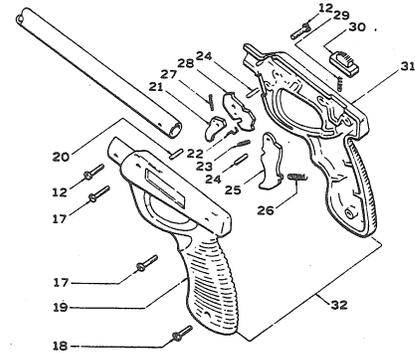
Key Order Part	Description	Retail
1	- 4005-24 Trident for 4016	1.95
2	- 4012-08 1 Barb Point for 4017	.98
3	- 4005-03 Ring Slide	.75
4	- 4016-06 Line Nylon	1.00
	- 4017-06 Line Nylon	1.00
5	- 4016-09 Muzzle	2.35
6	- 8330-04 Screw	.30
7	- 4016-01 Rock Reef Tube	2.10
	- 4017-01 Coral Reef Tube	2.10
8	- 4005-01 Rock Reef Elastic	2.45
	- 4017-02 Coral Reef Elastic	2.70
9	- 4018-16 Wishbone	1.00
10	- 4005-18 Rock Reef Spear Shaft	2.10
	- 4012-03 Coral Reef Spear Shaft	2.45
11	- 4016-22 Trigger	1.75
12	- 4016-14 Spring	.40
13	- 4016-03 Screw	.30
14	- 4016-04 Screw	.30
15	- 4016-05 Screw	.30
16	- 4016-23 Safety, Pushbutton	.40
17	- 4016-24 Spring Pushbutton	.40
18	- 4016-26 Grip, Right	2.70
19	- 4016-25 Grip, Left	2.70
20	- 4001-62 Pin	.30
21	- 4016-02 Nut	.30
22	- 4001-10 Body Safety	.35
23	- 4001-09 Lever Safety	.30



INTERNATIONAL SCUBA CENTERS
3574 WEST 95th STREET
EVERGREEN PARK, ILLINOIS 60642
636-3010



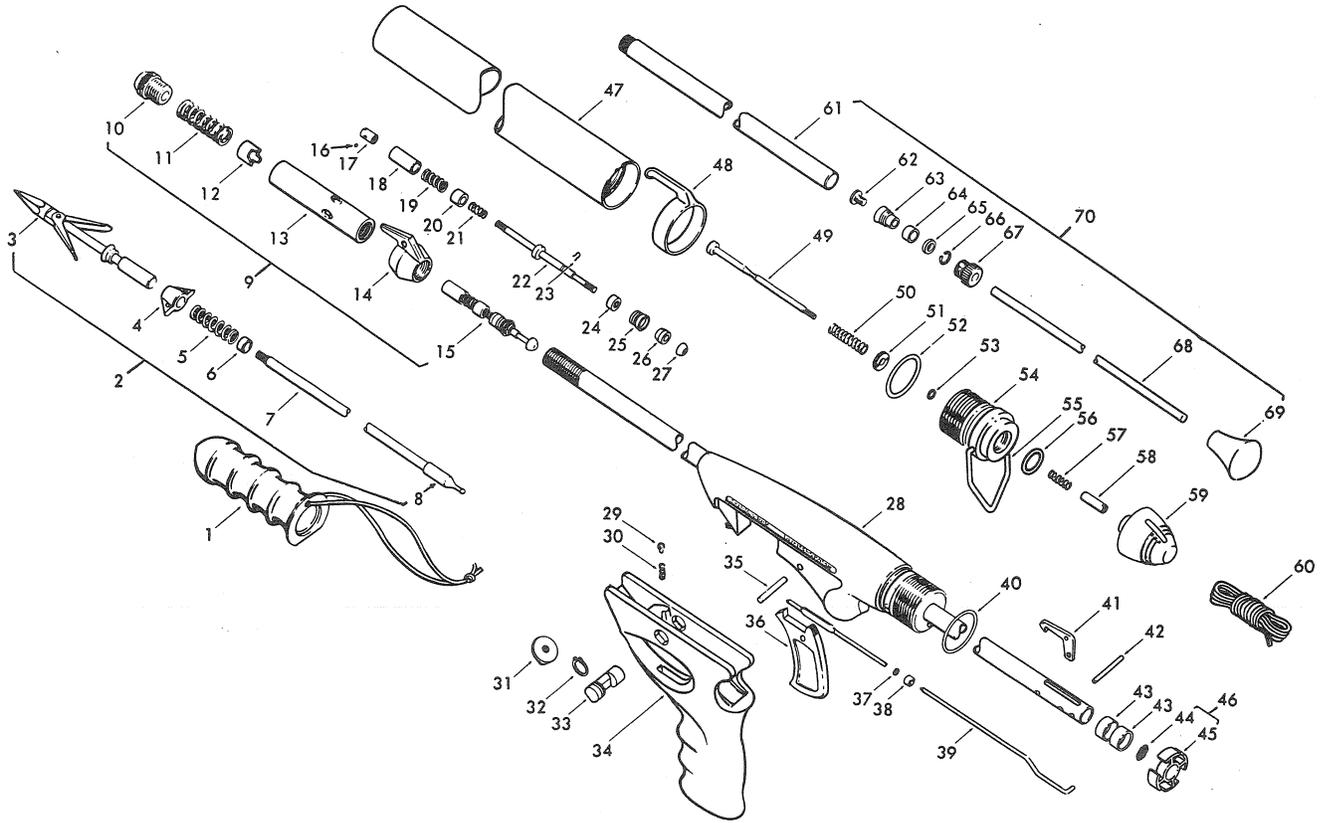
ARBALETE SPEAR GUN
4023-4024-4025



PARTS PRICE LIST ARBALETE SPEAR GUNS 4023-4024-4025					
Key Order Part	Description	Retail	Key Order Part	Description	Retail
1	- 4001-07 Ring, Barb	.30	10	- 4023-17 Muzzle (For 4023, 4024 guns)	3.80
2	- 4001-06 Bushing, Tip	.35	11	- 4018-19 Line, 14 feet	1.35
3	- 4001-33 Spearhead, Deluxe & Standard	2.50	12	- 8330-04 Screw	.30
	- 4001-32 Spearhead, Junior	1.50	13	- 4018-10 Tube, Deluxe	6.70
	- 4001-54 Spearhead, Stainless Steel	4.95		- 4018-09 Tube, Standard	6.10
4	- 4001-05 Ring, Slide	.65		- 4018-08 Tube, Junior	5.45
	- 4001-52 Ring, Slide, Stainless Steel	1.30	14	- 4001-25 Grip, Center Complete	3.00
5	- 4018-12 Shaft, Deluxe	3.00	15	- 8310-03 Screw, Center Grip	.40
	- 4018-11 Shaft, Standard	2.95	16	- 4001-24 Screw, Counter	.35
	- 4002-01 Shaft, Junior	2.45	17	- 8310-06 Screw	.25
	- 4023-01 Shaft, Deluxe, Stainless Steel	7.95	18	- 8310-07 Screw	.25
	- 4024-01 Shaft, Standard Stainless Steel	7.95	19	- 4023-04 Grip, Left	3.80
	- 4025-01 Shaft, Junior, Stainless Steel	5.95	20	- 4023-16 Pin, Hook	.30
6	- 4018-18 Spear, Complete, Deluxe	7.10	21	- 4023-10 Hook, Line Drop	.30
	- 4019-18 Spear, Complete, Standard	5.60	22	- 4023-09 Lock	.30
	- 4020-18 Spear, Complete, Junior	4.95	23	- 4023-13 Spring, Sear	.30
7	- 4018-15 Elastic, Deluxe	2.15	24	- 4023-08 Pin, Trigger	.30
	- 4018-14 Elastic, Standard	2.10	25	- 4023-07 Trigger	1.25
	- 4018-13 Elastic, Junior	2.10	26	- 4023-12 Spring Trigger	.30
	- 4000-03 Elastic for 4000 for old style gun	1.95	27	- 4023-11 Spring, Hook	.30
	- 4001-27 Elastic for 4001 for old style gun	1.95	28	- 4023-06 Sear	1.60
	- 4002-02 Elastic for 4002 for old style gun	1.85	29	- 4023-14 Spring, Safety	.30
8	- 4018-16 Wishbone	1.00	30	- 4023-15 Safety	.50
	- 4001-26 Wishbone (for 4000, 4001, 4002 guns)	1.75	31	- 4023-05 Grip, Right	3.80
9	- 4018-06 Muzzle (For 4018, 4019, 4020, 4025 guns)	2.00	32	- 4023-03 Grip, Complete	12.95

PARTS LIST

"JAGUAR" SPEARGUN No. 4021, 4022

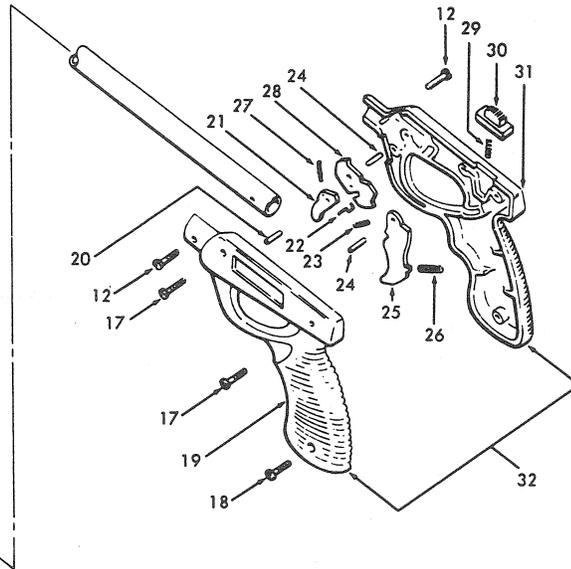
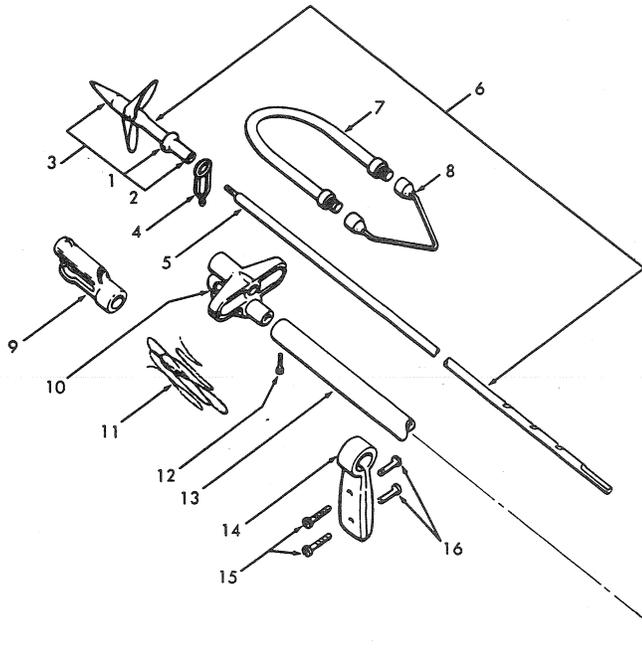


Key Order Part	Description	Key Order Part	Description
1 - 4021-68	Hand Loader	36 - 4021-26	Trigger
2 - 4021-76	Shaft Assy	37 - 4021-28	O'Ring
* - 4022-76	Shaft Assy	38 - 4021-29	Holder
3 - 4001-33	Spearpoint	39 - 4021-31	Rod
4 - 4021-56	Slide Ring	* - 4022-31	Rod
5 - 4021-55	Damping Spring	40 - 4021-30	O'Ring
6 - 4021-54	Slide Ring	41 - 4021-32	Catch
7 - 4021-77	Shaft	42 - 4021-33	Catch Pin
* - 4022-77	Shaft	43 - 4021-34	Band
8 - 4021-78	Shaft retainer	44 - 4021-87	Filter Screen
9 - 4021-70	Muzzle Assy	45 - 4021-88	Filter Support
10 - 4021-73	Muzzle Cap	46 - 4021-37	Oil Filter
11 - 4021-74	Damping Spring	47 - 4021-36	Tube
12 - 4021-75	Damping Bushing	* - 4022-36	Tube
13 - 4021-72	Muzzle	48 - 4021-67	Hook, Rear Line
14 - 4021-21	Line Drop Front	49 - 4021-39	Pin
15 - 4021-80	Piston Assy	50 - 4021-42	Gauge Spring
16 - 4021-85	Ball Retainer	51 - 4021-47	Washer
17 - 4021-86	Retainer	52 - 4021-30	O'Ring
18 - 4021-84	Bushing Retainer	53 - 4021-46	O'Ring
19 - 4021-04	Spring Damping	54 - 4021-43	Reservoir Plug
20 - 4021-82	Damping Bushing	55 - 4021-49	Butt Ring
21 - 4021-83	Retainer Spring	56 - 4021-45	O'Ring, Pump
22 - 4021-81	Body Piston	57 - 4021-41	Return Spring
23 - 4021-11	Circlip	58 - 4021-40	Tube Nut
24 - 4021-07	Butt Ring	59 - 4021-48	Butt Cap
25 - 4021-09	Air Seal	60 - 4021-71	Line
26 - 4021-10	Damping Washer	61 - 4021-66	Pump Barrel
27 - 4021-12	Knocking Head	62 - 4021-62	Screw
28 - 4021-22	Barrel Sleeve & Screw	63 - 4021-09	Air Seal
* - 4022-22	Barrel Sleeve & Screw	64 - 4021-07	Butt Ring
29 - 4021-16	Safety Detent	65 - 4021-65	Washer
30 - 4021-17	Detent Spring	66 - 4021-90	Lock Washer
31 - 4021-25	Nut	67 - 4021-61	Cap
32 - 4021-15	Retaining Ring	68 - 4021-59	Plunger
33 - 4021-14	Safety	69 - 4021-60	Handle
34 - 4021-13	Grip	70 - 4021-58	Pump Assy
35 - 4021-27	Pin, Trigger		

*Parts Exclusive to No. 4022-00 Jaguar Cub.

PARTS LIST

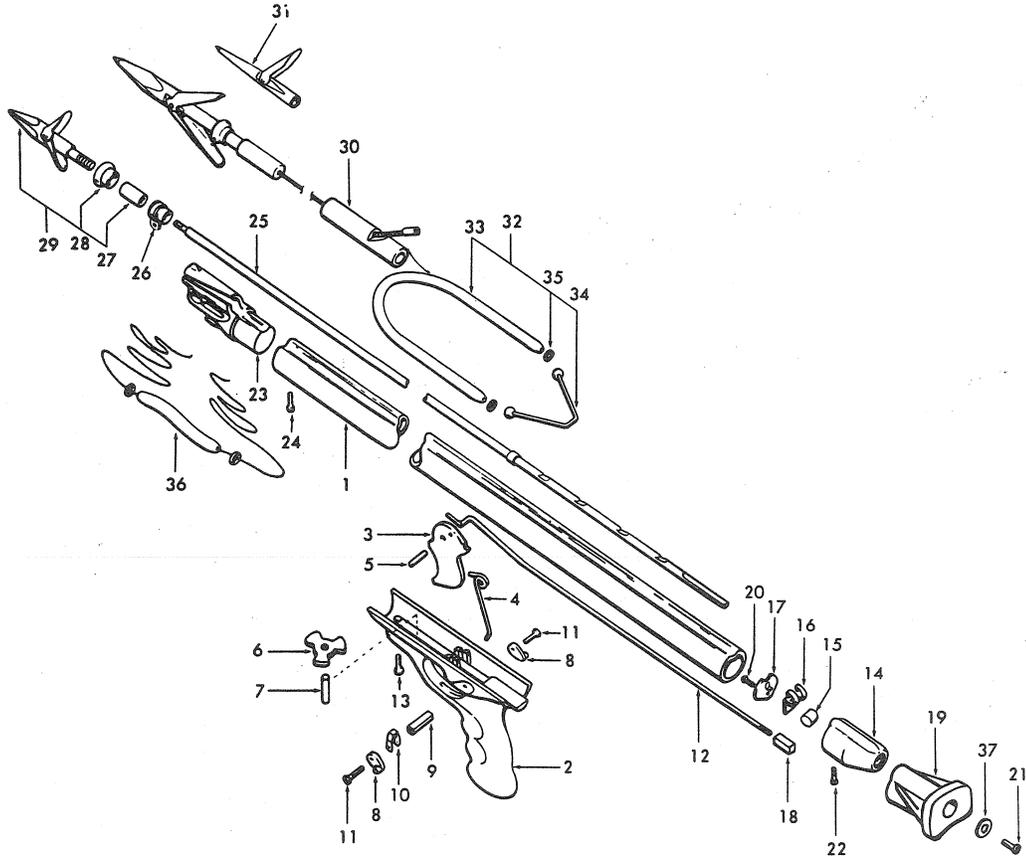
"ARBALETE" SPEARGUN No. 4023, 4024, 4025



Key Order Part	Description	Key Order Part	Description
1 - 4001-07	Ring, Barb	9 - 4018-06	Muzzle (for 4018, 4019, 4020, 4025 guns)
2 - 4001-06	Bushing, Tip	10 - 4023-17	Muzzle (for 4023, 4024 guns)
3 - 4001-33	Spearhead, Deluxe & Standard	11 - 4018-19	Line, 14 feet
- 4001-32	Spearhead, Junior	12 - 8330-04	Screw, Muzzle
- 4001-54	Spearhead, Stainless Steel	13 - 4018-10	Tube, Deluxe
- 4001-53	Spearhead, One Barb, Stainless Steel	- 4018-09	Tube, Standard
4 - 4001-05	Ring, Slide	- 4018-08	Tube, Junior
- 4001-52	Ring, Slide, Stainless Steel	14 - 4001-25	Grip, Center Complete
5 - 4018-12	Shaft, Deluxe	15 - 8310-03	Screw, Center Grip
- 4018-11	Shaft, Standard	16 - 4001-24	Screw, Counter
- 4002-01	Shaft, Junior	17 - 8310-06	Screw
- 4023-01	Shaft, Deluxe, Stainless Steel	18 - 8310-07	Screw
- 4024-01	Shaft, Standard, Stainless Steel	19 - 4023-04	Grip, Left
- 4025-01	Shaft, Junior, Stainless Steel	20 - 4023-16	Pin, Hook
6 - 4018-18	Spear, Complete, Deluxe	21 - 4023-10	Hook, Line Drop
- 4019-18	Spear, Complete, Standard	22 - 4023-09	Lock
- 4020-18	Spear, Complete, Junior	23 - 4023-13	Spring, Sear
7 - 4018-15	Elastic, Deluxe	24 - 4023-08	Pin, Trigger
- 4018-14	Elastic, Standard	25 - 4023-07	Trigger
- 4018-13	Elastic, Junior	26 - 4023-12	Spring Trigger
- 4000-03	Elastic for 4000 for old style gun	27 - 4023-11	Spring, Hook
- 4001-27	Elastic for 4001 for old style gun	28 - 4023-06	Sear
- 4002-02	Elastic for 4002 for old style gun	29 - 4023-14	Spring, Safety
8 - 4018-16	Wishbone	30 - 4023-15	Safety
- 4001-26	Wishbone (for 4000, 4001, 4002 guns)	31 - 4023-05	Grip, Right
		32 - 4023-03	Grip, Complete

PARTS LIST

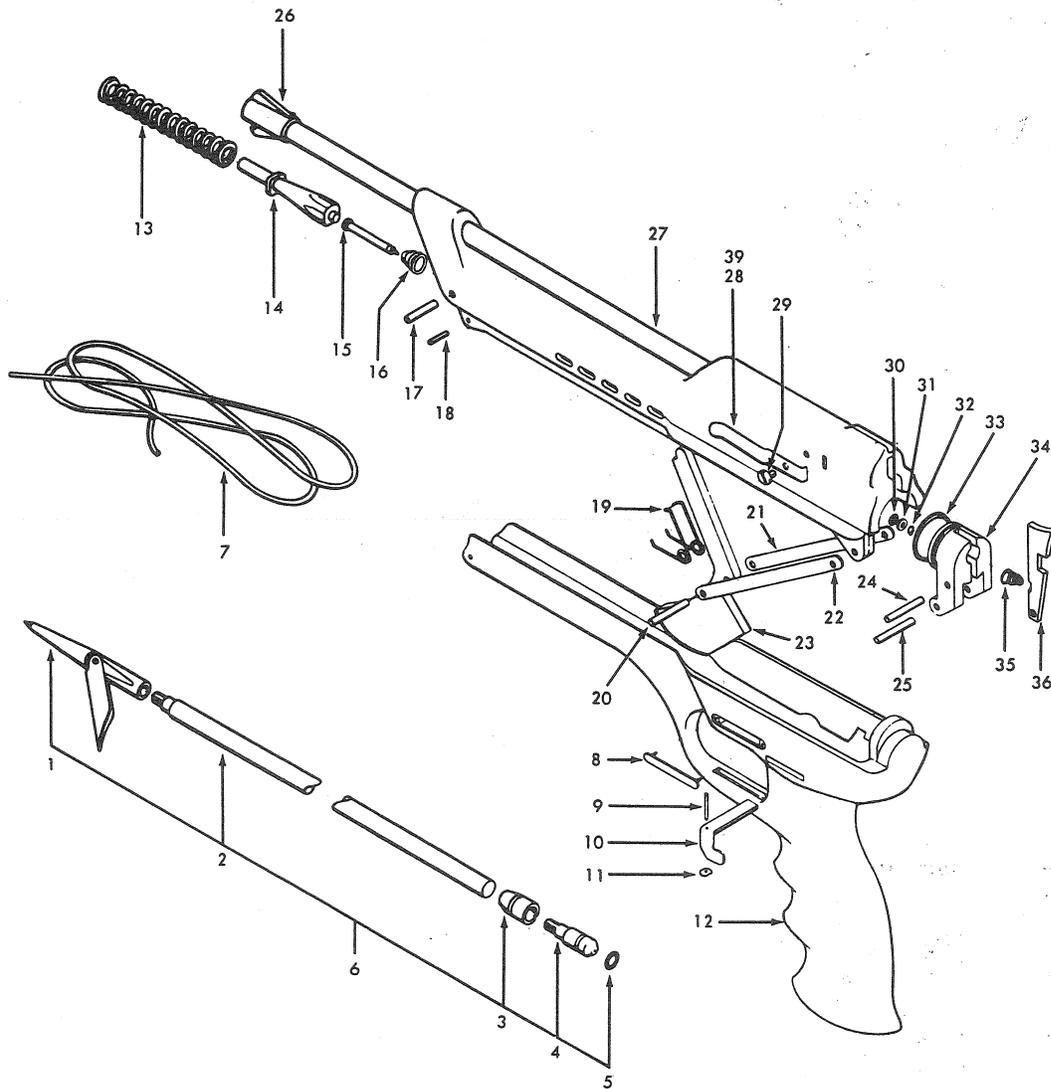
SEA HUNTER SPEARGUNS NO. 4026-00, 4027-00, 4028-00, 4029-00 & 4033-00



Key Order Part	Description	Key Order Part	Description
1 - 4026-01	Custom Barrel Assy	- 4027-27	I Shaft
- 4027-01	I Barrel Assy	- 4028-27	II Shaft
- 4028-01	II Barrel Assy	- 4029-27	III Shaft
- 4029-01	III Barrel Assy	- 4033-09	IV Shaft
- 4033-01	IV Barrel Assy	26 - 4027-48	Slide Ring (Custom, I, II, & III)
2 - 4027-06	Handle	- 4033-08	Slide Ring (IV)
3 - 4027-63	Trigger	27 - 4001-30	Connector Bushing
4 - 4027-08	Spring, Trigger	28 - 4001-07	Barb Ring
5 - 8760-12	Pin, Trigger Support	29 - 4001-54	Spearhead (II & III)
6 - 4027-31	Line Drop	30 - 4001-44	Detachable Spearhead (Custom & I)
7 - 8760-11	Pin, Line Drop	31 - 4001-32	Spearhead (IV)
8 - 4027-14	Safety Lever	32 - 4026-32	Custom Elastic Assy
9 - 4027-15	Safety Arm	- 4027-32	I Elastic Assy
10 - 4027-16	Safety Bale	- 4028-32	II Elastic Assy
11 - 8320-08	Screw	- 4029-32	III Elastic Assy
12 - 4027-64	Pull Rod, Sear (Custom, I, II, & III)	- 4033-05	IV Elastic Assy
- 4033-04	Pull Rod, Sear (IV)	33 - 4026-33	Custom Elastic
13 - 8390-14	Screw	- 4026-37	I Elastic
14 - 4027-19	Sear Body	- 4028-33	II Elastic
15 - 4027-59	Roller	- 4029-33	III Elastic
16 - 4027-60	Sear Spring	- 4033-06	IV Elastic
17 - 4027-22	Sear Plate	34 - 4027-35	Wishbone Assy
18 - 4027-61	Sear	35 - 4027-66	Ring, Wishbone
19 - 4027-47	Butt Pad	36 - 4026-39	Custom Line Assy
20 - 8390-13	Screw	- 4027-39	I Line Assy
21 - 8390-13	Screw	- 4028-41	II Line Assy
22 - 8390-14	Screw	- 4029-06	III Line Assy
23 - 4027-25	Muzzle	- 4029-06	IV Line Assy
24 - 8390-12	Screw	37 - 8450-35	Washer
25 - 4026-27	Custom Shaft		

PARTS LIST

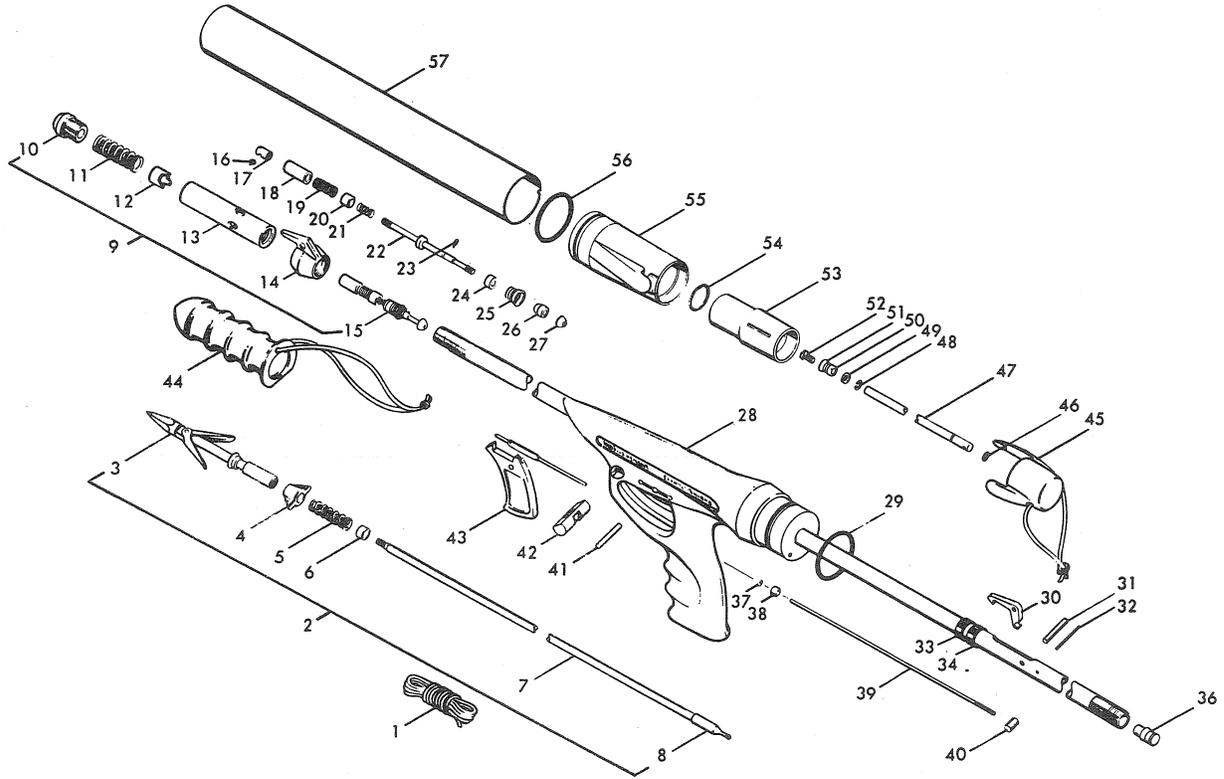
SEA HUNTER PISTOL NO. 4030-00



Key Order Part	Description	Key Order Part	Description
1 - 4001-32	Spearpoint	21 - 4030-06	Connecting Arm
2 - 4030-27	Shaft	22 - 4030-06	Connecting Arm
3 - 4030-29	Slide Ring	23 - 4030-07	Trigger
4 - 4030-28	Seal Stop	24 - 8760-03	Spring Pin
5 - 8200-11	O'Ring	25 - 8760-04	Spring Pin
6 - 4030-30	Shaft Assy	26 - 4030-05	Muzzle
7 - 4030-19	Line	27 - 4030-01	Body & Barrel Assy
8 - 4030-04	Name plate	28 - 4030-11	Line Drop Clip
9 - 8760-06	Spring pin	29 - 8390-07	Screw
10 - 4030-08	Safety Lever	30 - 8200-04	O'Ring
11 - 4030-21	Spring Washer	31 - 8450-34	Washer
12 - 4030-02	Lower Body	32 - 8650-01	Retaining Ring
13 - 4030-12	Power Spring	33 - 8201-14	O'Ring
14 - 4030-09	Anvil	34 - 4030-03	Chamber Plug
15 - 4030-13	Firing Pin	35 - 4030-17	Locking Spring
16 - 4030-14	Firing Pin Spring	36 - 4030-16	Locking Arm
17 - 8760-02	Spring Pin	39 - 4030-41	Tubing, Rubber
18 - 8760-07	Spring Pin	NOT SHOWN	
19 - 4030-18	Trigger Spring	37 - 4030-35	Holster Assy
20 - 8760-05	Spring Pin	38 - 4030-31	Holster Strap

PARTS LIST

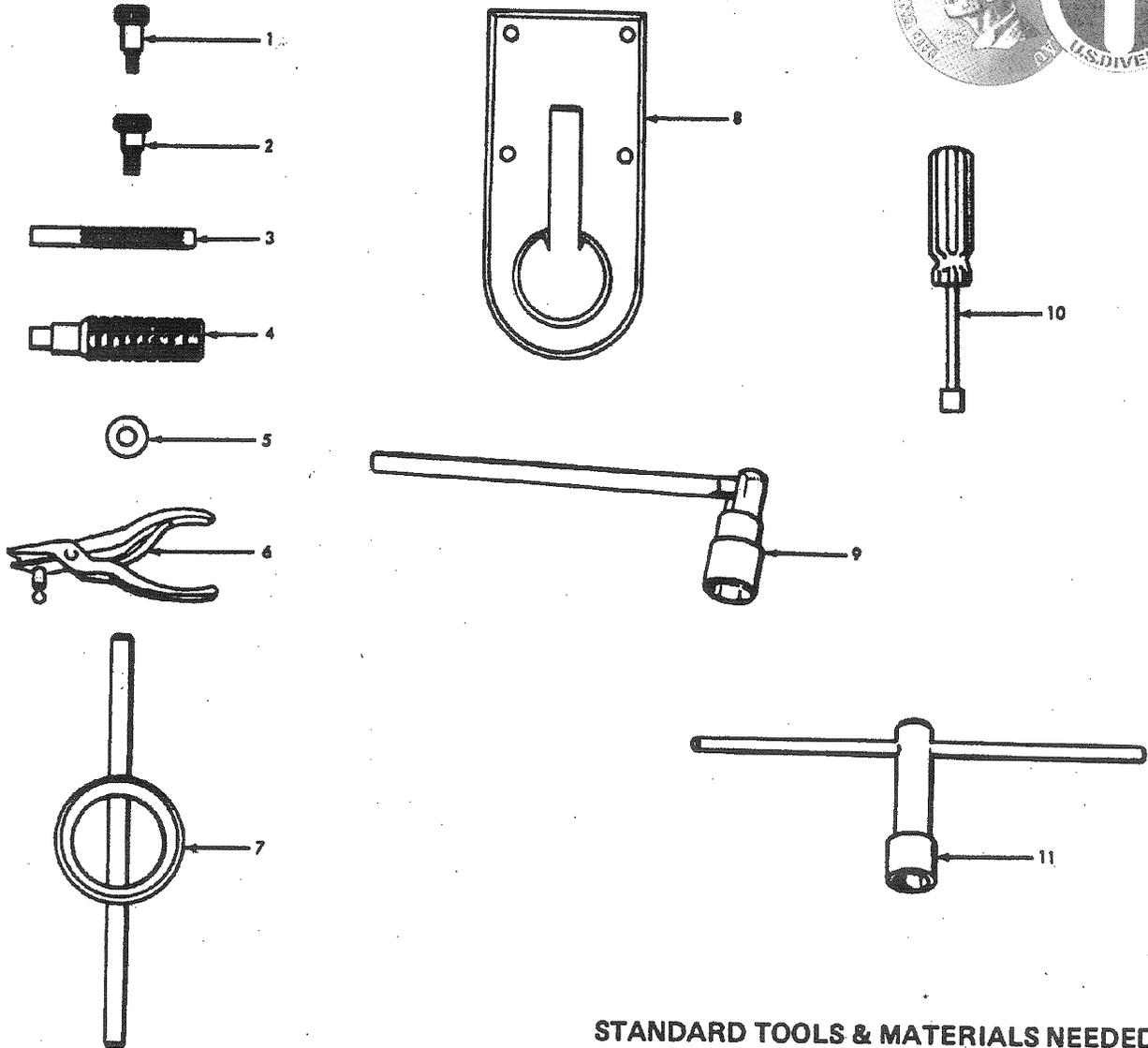
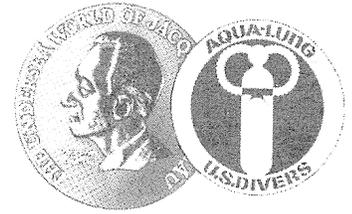
PUMA SPEARGUN NO. 4031-00



Key Order Part	Description	Key Order Part	Description
1 - 4031-14	Line	29 - 4021-30	O'Ring
2 - 4021-76	Shaft Assy	30 - 4032-01	Catch
3 - 4001-33	Spear Point	31 - 4021-33	Catch Pin
4 - 4021-56	Slide Ring	32 - 4031-01	Pump Pin
5 - 4021-55	Damping Spring	33 - 4021-34	Band
6 - 4021-54	Slide Ring	34 - 4021-34	Band
7 - 4021-77	Shaft	36 - 4031-11	Pump Valve
8 - 4021-78	Shaft Retainer	37 - 4021-28	O'Ring
9 - 4021-70	Muzzle Cap	38 - 4021-29	Holder
11 - 4021-74	Damping Spring	39 - 4032-02	Rod
12 - 4021-75	Damping Bushing	40 - 4032-03	Adjusting Pin
13 - 4021-72	Muzzle	41 - 4021-27	Trigger Pin
14 - 4021-21	Line Drop	42 - 4031-02	Safety
15 - 4021-80	Piston Assy	43 - 4021-26	Trigger
16 - 4021-85	Ball Retainer	44 - 4021-68	Hand Loader
17 - 4021-86	Retainer	45 - 4031-08	Butt Cap
18 - 4021-84	Bushing Retainer	46 - 4031-07	O'Ring
19 - 4021-04	Spring Damping	47 - 4031-06	Pump Plunger
20 - 4021-82	Damping Bushing	48 - 4021-90	Lock Washer
21 - 4021-83	Retainer Spring	49 - 4021-65	Washer
22 - 4021-81	Body, Piston	50 - 4021-07	Butt Ring
23 - 4021-11	Circlip	51 - 4031-09	Air Seal
24 - 4021-07	Butt Ring	52 - 4021-62	Screw
25 - 4021-09	Air Seal	53 - 4032-04	Reservoir Plug
26 - 4021-10	Damping Washer	54 - 4032-05	O'Ring
27 - 4021-12	Knocking Head	55 - 4032-07	Butt
28 -	Barrel & Grip Assy	56 - 4021-30	O'Ring
		57 - 4032-06	Tube

PARTS LIST

"AQUA-LUNG" REPAIR TOOLS



Key Order Part	Description
- 0500-01	Pipette Stick
- 0501-16	Silicone Lubricant
- 0517-01	Valve Wrench 3/4"
1 - 1100-01	Adapter, Test Gauge, "Calypso"
2 - 1100-03	Adapter, Test Gauge, "Aqua-Dive"
3 - 1100-05	Wrench, Retainer, "Hydro-Lung"
4 - 1100-06	Wrench, 1st Stage Retainer, "Calypso"
5 - 1110-00	High Pressure Block Assy Guide
6 - 1111-00	Circlip (Retainer Ring) Pliers
7 - 1112-00	Wrench (for tightening dented ring)
8 - 1113-00	Wrench, Body
9 - 1114-00	Wrench, Socket, Diaphragm Bonnet
- 1115-00	Wrench, Allen
10 - 1117-00	Wrench, Hex 5/16"
- 1118-00	Screw Driver
- 1119-00	Clip & Clamp Claw Pliers
- 1125-01	Test Gauge Adapter
11 - 1127-00	Wrench, Reserve Bonnet
- 3034-30	Cement, Black Neoprene

**STANDARD TOOLS & MATERIALS NEEDED
for
"AQUA-LUNG" REPAIR**

- Wrench, Adjustable 15"
- Wheel, Soft Wire
- Nitric Acid, Dilute
- Soap
- Solvent, Rubber
- Chlorothane
- Vise
- Wrench Set
- Center Punch
- Drift Pin, 1/16"
- Crocus Cloth, Fine
- Pliers, Needle Nose
- Pliers, Diagonal
- Hammer, Small Ball Peen
- "Q" Tips, Cotton
- Loc-tite, Red
- Allen Wrenches
- Magnifying Glass
- Inspection Light (internal) for Cylinders
- Cement, Weatherstripping

