



**ZX**

**SERVICE  
PROCEDURE**

**This ZX Service Procedure conveys a list of components and service procedures that reflect the ZX as it was configured at the time of this writing (2/19/05).**

**ZX SECOND STAGE****CONTENTS**

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**REGULATOR GENERAL PROCEDURES**

**REFER TO .....** **DOC. 12-2202**

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**SPECIFICATIONS****Torques**

P/N 4787.2	Screws	3 to 4 in-lbs
P/N 6332	Packing Nut	11 to 13 in-lbs
LP Hose		50 to 60 in-lbs

**Opening Effort (IP = 140 psi, Vane set negative)**

1. Leak with Adjustment Knob turned fully out (clockwise).
  2. No leak with Adjustment Knob turned in 1 turn (counter clockwise).
  3. Minimum Effort with no leak = 1.2 inches of H<sub>2</sub>O, or less.
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**TOOLS REQUIRED****Standard Tools**

Inch pounds Torque Wrench  
5/8" Open End Wrench  
11/16" Open End Wrench  
3/4" Open End Wrench  
3/32" Hex Key  
Standard Small Blade Screwdriver  
1" Deep Wall Socket  
Cotton Swab

**Specialty Tools**

P/N 40.2302	Christo-Lube MCG111 - 2 oz
P/N 40.3362	Poppet Tool
P/N 40.9315	Intermediate Pressure Gauge
P/N 40.9520	O-ring Tool Kit
P/N 40.9650	Universal Front Cover Tool

**ZX SECOND STAGE**

<b>TROUBLE SHOOTING</b>		
<b>SYMPTOM</b>	<b>POSSIBLE CAUSE</b>	<b>TREATMENT</b>
* <b>Free flow or leakage present, with ADJUSTMENT KNOB (11) turned in.</b>	<ol style="list-style-type: none"> <li>1. DEMAND LEVER (27) bent.</li> <li>2. Excessive intermediate pressure.</li> <li>3. Damaged or worn POPPET SEAT (25).</li> <li>4. Damaged ORIFICE (31).</li> <li>5. ORIFICE (31) incorrectly adjusted.</li> <li>6. LP HOSE ASSEMBLY (34) not sufficiently tightened onto VALVE HOUSING (26) Inlet Tube.</li> <li>7. Trapped debris.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace with new.</li> <li>2. Refer to First Stage Troubleshooting Chart.</li> <li>3. Replace with new.</li> <li>4. Replace with new.</li> <li>5. Turn in clockwise to adjust. (Refer to Tuning Section.)</li> <li>6. Follow correct procedure given in Reassembly Section to tighten.</li> <li>7. Remove and clean.</li> </ol>
* <b>Excessive inhalation resistance, with ADJUSTMENT KNOB (11) turned out.</b>	<ol style="list-style-type: none"> <li>1. DEMAND LEVER (27) bent.</li> <li>2. ORIFICE (31) incorrectly adjusted.</li> <li>3. Insufficient Intermediate Pressure from First Stage.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace with new.</li> <li>2. Adjust to correct contact. (Refer to Tuning Section.)</li> <li>3. Refer to First Stage Troubleshooting Chart.</li> </ol>
* <b>Rattle heard inside Second Stage.</b>	<ol style="list-style-type: none"> <li>1. Gravel or sand trapped inside HOUSING (4).</li> <li>2. DEMAND LEVER (27) slack present.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove and clean.</li> <li>2. POPPET (24) not inserted properly. Follow correct procedure given in Reassembly Section.</li> </ol>
* <b>Little or no airflow when Purge Button is depressed.</b>	<ol style="list-style-type: none"> <li>1. FRONT COVER (2) not sufficiently tightened into HOUSING (4).</li> <li>2. DEMAND LEVER (27) slack present.</li> <li>3. ORIFICE (31) incorrectly adjusted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten COVER RING (1) until secure.</li> <li>2. POPPET (24) not inserted properly. Follow correct procedure given in Reassembly Section.</li> <li>3. Adjust ORIFICE (31) to correct contact. (Refer to tuning section.)</li> </ol>
* <b>ADJUSTMENT KNOB (11) difficult to turn.</b>	<ol style="list-style-type: none"> <li>1. Debris or corrosion present on ADJUSTMENT SHAFT (15).</li> <li>2. Debris present inside ADJUSTMENT KNOB (11).</li> <li>3. Debris or corrosion present on or inside ADJUSTMENT SPRING (17).</li> </ol>	<ol style="list-style-type: none"> <li>1. Disassemble and clean.</li> <li>2. Flush out or disassemble if necessary to clean.</li> <li>3. Disassemble to clean or replace with new as needed.</li> </ol>
* <b>Water entering Second Stage.</b>	<ol style="list-style-type: none"> <li>1. Tear in MOUTHPIECE (8).</li> <li>2. EXHAUST VALVE (6) distorted or damaged.</li> <li>3. DIAPHRAGM (3) distorted or damaged.</li> <li>4. Debris trapped beneath EXHAUST VALVE (6).</li> <li>5. FRONT COVER (2) insufficiently tightened onto HOUSING (4).</li> <li>6. Cracked or damaged HOUSING (4).</li> <li>7. Mouthpiece TIE WRAP (35) too loose or missing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace with new.</li> <li>2. Replace with new.</li> <li>3. Replace with new.</li> <li>4. Remove and clean.</li> <li>5. Tighten until secure and properly aligned.</li> <li>6. Replace with new.</li> <li>7. Tighten or install.</li> </ol>

## DISASSEMBLY PROCEDURE

**△ NOTE:** Be sure to perform the steps outlined in the Initial Inspection Procedures (Doc. 12-2202) prior to Disassembling the Regulator. Review the Troubleshooting Section to gain a better idea of which internal parts may be worn, and to better advise your customer of the service that is needed.

1. Snip the TIE WRAP (35) that holds the MOUTHPIECE (8), remove the MOUTHPIECE, and inspect the condition of it to ensure that it is supple and free of any tears or corrosion. Discard if found.
2. While holding the HOUSING (4) secure, remove the LP HOSE (34) using an 11/16" open end wrench (Fig. 1). Remove the LP HOSE SWIVEL PACKING WASHER (33) (Fig. 2).

**△ NOTE:** The Washer located inside the LP HOSE behind the Swivel Ball is not serviceable and is NOT to be removed.

3. Remove the COVER RING (1) and FRONT COVER (2) by turning the RING counter clockwise. Use a Front Cover Tool if necessary. Separate the FRONT COVER and COVER RING.
4. Grasp the DIAPHRAGM (3) by the Raised Edges of the center, and lift with a slight upward twist to remove it. Inspect it to ensure that it is supple and free of any tears or distortion. Discard if found.
5. Turn the ADJUSTMENT KNOB (11) out completely, counter clockwise. Remove the ADJUSTMENT KNOB SCREW (10) using a 3/32" hex key and slide the ADJUSTMENT KNOB off the ADJUSTMENT SHAFT (15).
6. Remove the PACKING NUT (12) by turning it counter clockwise using a 5/8" open end wrench.
7. Remove the THRUST WASHER (13) from the ADJUSTMENT SHAFT (15).
8. Grasp the ADJUSTMENT SHAFT (15) and pull it straight out of the ADJUSTMENT TUBE (20) (Fig. 3).
9. Remove the ADJUSTMENT SPRING (17) and BALANCE SHAFT (18). If the BALANCE SHAFT does not come out, gently tap the ADJUSTMENT TUBE (20) in your hand to remove it.

Examine the BALANCE SHAFT and compare it with a new one to ensure that it is not bent or distorted in any way. Discard it if distortion is found.

10. Remove the STEM-O-RING (14) from the ADJUSTMENT SHAFT (15) and inspect it for any signs of decay. Discard it if found.



Fig. 1



Fig. 2



Fig. 3

## ZX SECOND STAGE

**△ NOTE:** Removal of the **SPRING FOLLOWER (16)** from the **ADJUSTMENT SHAFT (15)** should not be necessary unless it is broken or needs to be replaced. In this case remove it by holding the **ADJUSTMENT SHAFT** in one hand and turning the **SPRING FOLLOWER** clockwise with your other hand. Note that the **Thread** is left handed.

11. Examine the **ADJUSTMENT SPRING (17)** with a magnifier and compare it with a new one to ensure correct tension and length. Discard it if found to be distorted, weakened, or corroded.
12. Remove the **ADJUSTMENT TUBE RETAINER (9)** by grasping the Top with your fingers and lifting it straight up and off the **ADJUSTMENT TUBE (Fig. 4)**
13. Remove the **ADJUSTMENT TUBE/SHAFT Assembly (20/15)** by grasping the Threaded portion with your fingers and pulling it straight out of the **VALVE HOUSING (26) (Fig. 5)**.

The **DEMAND LEVER (27)** will drop as the Assembly is withdrawn.

14. If the **POPPET (24)** does not come out, tip the **HOUSING** to one side and gently tap it in your hand to remove the **POPPET**.
15. Remove the **POPPET SEAT (25)** from the **POPPET (24)** with the use of a dental pick. Discard and **DO NOT** attempt to reuse it.
16. Remove the **POPPET O-RINGS (22/23)** by squeezing them with your fingers and working them over the End of the **POPPET (24)** (Fig. 6). **DO NOT** use tools to remove them. Discard the **O-RINGS** and **DO NOT** attempt to reuse them.
17. Remove the **ADJUSTMENT TUBE O-RING (19)** from the **ADJUSTMENT TUBE (20)** and inspect it for any signs of decay. Discard it if found.
18. Remove the **BALANCE SHAFT O-RING (21)** located inside the **ADJUSTMENT TUBE (20)** by pressing it out with a wooden dowel or dull punch (Fig. 7). Discard the **O-RING** and **DO NOT** attempt to reuse it.
19. Using a wooden dowel, press the **VALVE HOUSING (26)** straight through the **HOUSING (4)** and out through the Adjustment Assembly opening in the opposite side (Fig. 8).

20. Examine the **DEMAND LEVER (27)** to ensure that it is not bent or distorted in any way. If distortion is found and it is necessary to remove the **DEMAND LEVER**, proceed as follows:

Using your fingers, press outward on one Prong of the **DEMAND LEVER** to disengage it from the **VALVE HOUSING (26)**, repeat to disengage the other Prong, and lift the **DEMAND LEVER** up and off the **VALVE HOUSING**.



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8

## ZX SECOND STAGE

21. Remove the VALVE HOUSING O-RING (28) by squeezing it with your fingers and working it over the molded portion of the VALVE HOUSING, not over the Threads. Inspect the O-RING for signs of decay or distortion. Discard it if found.
22. Using a narrow slotted blade screwdriver, remove the ORIFICE (31) by turning it counter clockwise inside the VALVE HOUSING (26). When it has disengaged completely from the Threads, press it out with the use of a cotton swab (Fig. 9).
  - A. Use caution to avoid nicking or scratching the delicate Knife Edge of the ORIFICE as this is done.
  - B. Remove ORIFICE O-RING (32) and inspect it for signs of decay or distortion. Discard it if found..
  - C. Inspect the ORIFICE carefully with the use of a magnifier to ensure that it is perfectly free of any scoring or nicks. If found, discard and DO NOT attempt to reuse it.
23. Using a 3/32" hex key, remove the EXHAUST COVER SCREWS (7).
24. Once the EXHAUST COVER (5) is disengaged from the lower Alignment Tab, remove it from the HOUSING (4).
25. Inspect the overall condition of the HOUSING (4), and the EXHAUST COVER (5) to ensure they are free of any stress cracks or other distortions. Ensure that all Threading on the HOUSING is in good condition. Discard either if any distortion or damage is found.
26. Using a soft probe, inspect the condition of the EXHAUST VALVE (6) to ensure that it is supple and free of any tears or corrosion, and that it seals completely around the Seating Surface of the HOUSING (4).

**△ NOTE: If the EXHAUST VALVE is in good condition, it is not necessary to remove it. The HOUSING may be cleaned with the EXHAUST VALVE attached.**

27. If the EXHAUST VALVE (6) requires replacement, remove it by grasping it at the Flange and pulling it straight out, snipping the Retainer Stem if necessary. Discard it.
28. Inspect the VENTURI SWITCH (30) for smooth even operation, ensuring there is no resistance throughout its range of movement. Inspect for signs of trapped debris .

**△ NOTE: If the VENTURI SWITCH is in good condition, it is not necessary to remove it. The HOUSING (4) may be cleaned with the VENTURI SWITCH attached.**

29. To remove the VENTURI SWITCH (30), grasp it by the Adjustment Tab and pull it straight out of the HOUSING (4) (Fig. 10).



Fig. 9



Fig. 10

## ZX SECOND STAGE

30. Remove the VENTURI SWITCH O-RING (29) and inspect it for signs of decay or distortion. Discard it if found.
31. Closely examine the VENTURI SWITCH (30) for signs of distortion, cracks, corrosion, or other damage. Discard it if found.

## REASSEMBLY PROCEDURE

**△ NOTE:** Prior to Reassembly, it is necessary to inspect all parts, both new and those that are being reused. Check to ensure that O-rings are clean and supple, and that every part and component has been thoroughly cleaned and dried.

**⚠ WARNING:** Use only genuine Oceanic parts, subassemblies, and components whenever assembling Oceanic products. **DO NOT** attempt to substitute an Oceanic part with another manufacturer's, regardless of any similarity in shape, size, or appearance. Doing so may render the product unsafe, and could result in serious injury or death of the user.

1. If removed, install a new EXHAUST VALVE (6) into the HOUSING (4) by gently pulling the Retainer Stem through the HOUSING until the Retaining Flange is inside the HOUSING and properly seated.
2. Replace the EXHAUST COVER (5) onto the Exhaust Tee portion of the HOUSING (4) by engaging the lower Alignment Tab (Fig. 11), then securing it to the HOUSING with the EXHAUST COVER SCREWS (7). Turn the SCREWS clockwise to a **torque of 5 to 6 in-lbs.**
3. To replace the VENTURI SWITCH (30), if removed:
  - A. Lightly lubricate and install the VENTURI SWITCH O-RING (29) onto the VENTURI SWITCH, ensuring that it is properly seated in the Groove.
  - B. Insert the VENTURI SWITCH straight into the HOUSING (4), aligned so that the Adjustment Stop Post will be seated in the Adjustment Groove located on the HOUSING and small round End will be guided into the hole on the opposite side of the Mouthpiece opening (Fig. 12).
  - C. Turn the VENTURI SWITCH back and forth through its complete range of motion ensuring smooth movement without any restriction.
4. To remove the VALVE HOUSING (26):
  - A. Lightly lubricate and install the VALVE HOUSING O-RING (28) into the Groove of the VALVE HOUSING. Work it over the molded Tube, **DO NOT** roll it over the Threads.



Fig. 11



Fig. 12



## ZX SECOND STAGE

B. While holding both ends of the VALVE HOUSING secure, press the Prongs of the DEMAND LEVER (27) down over the Tube of the VALVE HOUSING.

C. Using care not to bend the Prongs of the DEMAND LEVER press one of them outward and pull it up and into the opening on the side of the VALVE HOUSING. Repeat for the other Prong.

D. Insert the VALVE HOUSING, Threaded End first, through the Adjustment Assembly opening of the HOUSING (4).

E. Position the VALVE HOUSING with the Square hole in the molded Tube pointing toward the VENTURI SWITCH (30) and the squared Demand Lever Recess of the Tube facing up (Fig. 13).

F. Using a wooden dowel, press the Threaded end of the VALVE HOUSING completely into the octagonal opening of the HOUSING ensuring that the VALVE HOUSING O-RING (28) does not get pinched and enters the opening.

5. Lightly lubricate and install new POPPET O-RINGS (22/23) into the two inner Grooves of the Shaft of the POPPET (24).

6. Insert a new POPPET SEAT (25) into the POPPET (24) with the larger flat head end facing out. Ensure that it is completely seated, flush with the Rim of the POPPET. DO NOT use adhesive.

7. The components of the Adjustment Assembly (Fig. 14) are first assembled prior to installing them together into the VALVE HOUSING. Proceed closely as follows:

A. Lubricate and install the ADJUSTMENT TUBE O-RING (19) into the Groove toward the Threaded end of the ADJUSTMENT TUBE (20).

B. Lubricate and install a new BALANCE SHAFT O-RING (21) into the small opening End of the ADJUSTMENT TUBE (20).

C. Lubricate and install the STEM O-RING (14) into the Groove of the ADJUSTMENT SHAFT (15).

D. If removed, install the SPRING FOLLOWER (16) onto the ADJUSTMENT SHAFT (15). Screw it on counter clockwise, flat side first. DO NOT tighten with a wrench.

E. Holding the ADJUSTMENT TUBE with the larger Threaded end facing up, insert the BALANCE SHAFT (18) Shaft end first down into the TUBE.

F. Very lightly lubricate both ends of the ADJUSTMENT SPRING (17) and insert it down into the TUBE.



Fig. 13



Fig. 14



## ZX SECOND STAGE

G. Place the ADJUSTMENT SHAFT (15) with SPRING FOLLLOWER (16) down over the ADJUSTMENT SPRING (17) (Fig. 15).

H. Install the THRUST WASHER (13) onto the ADJUSTMENT SHAFT (15), then slide the PACKING NUT (12) over the SHAFT and thread it clockwise onto the ADJUSTMENT TUBE (20) a few turns. DO NOT tighten the PACKING NUT at this time.

I. Insert the O-ring end of the POPPET (24) into the Small opening end of the ADJUSTMENT TUBE (20).



Fig. 15

**⚠ NOTE:** When the Adjustment Assembly is installed into the VALVE HOUSING, it must be oriented with the Tabs of the ADJUSTMENT TUBE at the 3 and 9 o'clock positions and the side of the POPPET having 4 Tabs facing down and the side with 2 Tabs facing up (Fig. 16).

**⚠ CAUTION:** Failure to align the components as described will prevent the POPPET from engaging with the Prongs of the DEMAND LEVER rendering the unit inoperable.

8. Insert the Adjustment Assembly, POPPET End first, straight through side opening of the HOUSING (4) and into the VALVE HOUSING (26). The DEMAND LEVER (27) will pop upright.



Fig. 16

9. While exerting slight inward pressure on the Adjustment Assembly, insert the ADJUSTMENT TUBE RETAINER (9) down into the Groove of the ADJUSTMENT TUBE (20) (Fig. 17).

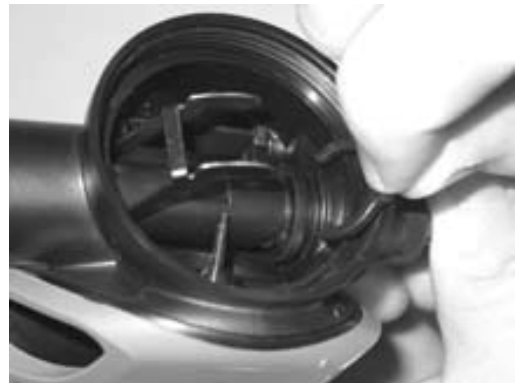


Fig. 17

10. Release inward pressure on the Adjustment Assembly and tighten the PACKING NUT (12) by turning it clockwise until secure. Check that the DEMAND LEVER (27) is in the up position and operates without restriction and that the ADJUSTMENT KNOB RETAINER (9) is properly oriented and secure.

11. Tighten the PACKING NUT (12) by turning it clockwise with a 5/8" open end wrench to a torque of 11 to 13 in/lbs.

**⚠ CAUTION:** DO NOT over tighten! Doing so will damage the HOUSING or other parts, requiring their replacement.

12. Install the ADJUSTMENT KNOB (11) over the ADJUSTMENT SHAFT (15) and PACKING NUT (12). Insert the ADJUSTMENT KNOB SCREW (10) and tighten with a 3/32" hex key to a torque of 3 to 4 in/lbs.

13. Lightly lubricate and install a new ORIFICE O-RING (32) into the Groove of the ORIFICE (31). Lubricate the Threads of the ORIFICE with a very thin film of lubricant and insert the ORIFICE into the Inlet of the VALVE HOUSING (26) with the Knife Edge facing in (Fig. 18).



Fig. 18

**⚠ CAUTION:** Use care to protect the delicate Knife Edge of the ORIFICE as this is done.

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- Using a narrow shafted, slotted blade screwdriver, slowly turn the ORIFICE (31) clockwise into the VALVE HOUSING (26) until the Knife Edge is barely contacting the POPPET SEAT (25). This is indicated by the DEMAND LEVER (27) beginning to drop. As soon as it does, stop turning the ORIFICE and turn it slightly counter clockwise to bring it upright.

**⚠ CAUTION: Continuing to turn the ORIFICE in any further will cause damage to the POPPET SEAT, requiring its replacement.**

- Place the DIAPHRAGM (3) inside the HOUSING (4) with the raised Center facing up, and ensure that it seats flush at the Base of the inner Threads of the HOUSING.
- Place the COVER RING (1) on the FRONT COVER (2) and thread it clockwise into the HOUSING (4), taking care to ensure that it is correctly seated in the Threads. Hand tighten until secure and ensure the FRONT COVER is properly aligned, with the logo right side up (Fig. 19). Use the Front Cover Tool, if necessary. DO NOT over tighten.
- Secure the MOUTHPIECE (8) onto the HOUSING (4) with a new TIE WRAP (35), positioning the Locking Tab of the TIE WRAP towards the LP Hose.

**⚠ NOTE: Oceanic's patented Orthodontic Mouthpieces are designed to accommodate the natural overbite of the human jaw. Ensure that it is properly positioned.**

- Lubricate the LP HOSE SWIVEL PACKING WASHER (33) and insert it in the Inlet Coupling.
- Install the LP HOSE ASSEMBLY (34) on to the Inlet of the VALVE HOUSING (26), and tighten **to a torque of 50 to 60 in/lbs** with an 11/16" open end wrench, while holding the Second Stage secure.



Fig. 19

## TUNING AND TESTING

### FIRST STAGE TESTING


- Perform the Leak Detection Test specified in the Initial Inspection Procedure (Doc. No. 12-2202).

**⚠ NOTE: Refer to the Trouble Shooting Section for the specific First Stage to determine the possible cause and treatment of any air leaks that may be found.**

- Connect the Second Stage LP Hose to a Low Pressure Port of the First Stage. Ensure that all other Ports are sealed with Port Plugs, with the exception of an additional Low Pressure Quick Disconnect Hose.


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3. Connect a recently calibrated Low Pressure Test Gauge to the additional Low Pressure Hose, and connect the First Stage to a pure air source of 3,000 PSI (20 BAR).
4. Slowly open the valve to pressurize the Regulator Assembly and check the Test Gauge to ensure that the Intermediate Pressure is set as recommended in the Specifications for the First Stage being used.

 **NOTE: If the Intermediate Pressure is found to be other than recommended, refer to that specific Regulator First Stage's Trouble Shooting Section to determine possible cause and treatment.**

## TUNING

1. Prior to Tuning the Second Stage, check the following items:
  - A. The FRONT COVER (2) is secure and properly aligned.
  - B. The ADJUSTMENT KNOB (11) is turned counter clockwise 1 turn from fully open (or out, counter clockwise).
  - C. The MOUTHPIECE (8) has been cleaned and disinfected with warm, soapy water.
2. Pressurize the Regulator Assembly with a pure air source of 3,000 PSI (20 BAR) and listen to determine that no air flow is present.
3. If air flow is present, purge the Regulator Assembly of air and remove the LP HOSE from the Inlet Coupling of the Second Stage.
4. Using a narrow shafted, slotted blade screwdriver, turn the ORIFICE (31) clockwise into the VALVE HOUSING (26) a small fraction of a turn.

 **NOTE: Turning the ORIFICE (32) in further than necessary to stop air flow will result in DEMAND LEVER slack and excessive Spring load tension, prohibiting peak performance.**

 **CAUTION: To avoid cutting the POPPET SEAT (25) with the Knife Edge of the ORIFICE (32), depress the Purge Button while turning the ORIFICE in or out.**

5. Install the LP HOSE ASSEMBLY (34) on to the Inlet of the VALVE HOUSING (26), and tighten **to a torque of 50 to 60 in/lbs** with an 11/16" open end wrench, while holding the Second Stage secure.
6. Pressurize the Regulator Assembly again with a pure air source of 3,000 PSI (20 BAR) and listen to determine that no air flow is present.

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7. If air flow is present, repeat steps 3 through 6.
8. Hold the Second Stage with the MOUTHPIECE (8) facing directly down, and gently shake it up and down. Listen carefully for any rattle that may be present, indicating DEMAND LEVER (27) slack.
9. If a rattle is heard in the Second Stage, proceed as follows:
  - A. Remove the COVER RING (1), FRONT COVER (2), and DIAPHRAGM (3) to gain access to the Valve Assembly.
  - B. Purge the Regulator Assembly of air.
  - C. If the DEMAND LEVER (27) has dropped, it will be necessary to remove and properly install the Adjustment Assembly into the VALVE HOUSING following the associated steps of the Disassembly and Reassembly Procedures.
10. Replace the DIAPHRAGM (3), FRONT COVER (2), and COVER RING (1), if removed, and pressurize the Regulator again with a pure air source of 3,000 PSI (20 BAR). Determine the range of adjustment by performing the following procedure:
  - A. Turn the ADJUSTMENT KNOB (11) completely out (counter clockwise). A slight to moderate air flow should be present.
  - B. Turn the ADJUSTMENT KNOB completely in (clockwise) and fully depress the Purge Button. This should initiate a slight air flow.

**△ NOTE: If air flow is greater or less than specified for each adjustment, refer to the Trouble Shooting Section on page 3 to determine the possible cause and treatment.**

11. Purge the Regulator of air, remove the In-Line Adjustment Tool and connect the LP Hose directly onto the Inlet Coupling of the VALVE HOUSING (26), using a wrench as prescribed in step 20 of the Reassembly Procedure.
12. Pressurize the Regulator Assembly again with a pure air source of 3,000 PSI (20 BAR). Return the ADJUSTMENT KNOB (11) to its mid range position. Inhale lightly through the MOUTHPIECE (8) to determine that air flows easily and smoothly without any hesitation or lag.

**△ NOTE: If hesitation or lag is detected, refer to the Trouble Shooting Section on page 3 to determine the possible cause and treatment.**

13. Clean and disinfect the MOUTHPIECE (8) in warm, soapy water before returning the Second Stage to the customer.

# REGULATORS

## ZX SECOND STAGE

Dia. No.	Part #	Description
1c	6981.23	RING, FRONT COVER
2c	6980.07	COVER, FRONT (BK)
3b	6979	DIAPHRAGM
4c	6975.07	HOUSING (BK/GY)
5c	6977.07	COVER, EXHAUST (BK)
6b	6326	VALVE, EXHAUST (BK)
7c	4787.2	SCREW, EXHAUST COVER (2)
8b	4485.07	MOUTHPIECE (BK)
9c	5466	RETAINER, ADJUSTMENT TUBE
10c	4787.2	SCREW, ADJUSTMENT KNOB (BK)
11c	6971	KNOB, ADJUSTMENT
12c	6332	NUT, PACKING
13b	5054	WASHER, THRUST
14b	2.107	O-RING, STEM
15c	6685	SHAFT, ADJUSTMENT
16c	5475	FOLLOWER, SPRING
17c	5467	SPRING, ADJUSTMENT
18c	5468	SHAFT, BALANCE
19b	2.016	O-RING, ADJUSTMENT TUBE
20c	5455	TUBE, ADJUSTMENT

Dia. No.	Part #	Description
<b>21a</b>	<b>5473</b>	<b>O-RING, BALANCE SHAFT</b>
<b>22a</b>	<b>5474</b>	<b>O-RING, POPPET OUTER</b>
<b>23a</b>	<b>5474</b>	<b>O-RING, POPPET INNER</b>
24c	6982	POPPET
<b>25a</b>	<b>5465</b>	<b>SEAT, POPPET</b>
26c	6983	HOUSING, VALVE
27c	5463	LEVER, DEMAND
28b	2.016	O-RING, VALVE HOUSING
29b	2.008	O-RING, VENTURI SWITCH
30c	6989	SWITCH, VENTURI
31c	6621	ORIFICE
32b	2.010	O-RING, ORIFICE
33c	6959	WASHER, LP HOSE SWIVEL PACKING
34c	40.2120.030	ASSEMBLY, LP HOSE (30") (BK)
<b>35a</b>	<b>1978.07</b>	<b>WRAP, TIE (BK)</b>
N/S	40.6161	KIT, SERVICE PARTS (includes all <b>Bold</b> items)

