

# TEKNA

## Regulator Troubleshooting Guides

T-2100 · T-2100B · T-2100BX

### Notes:

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# Regulator Troubleshooting Guides

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## T-2100/T-2100B Regulator First Stage TROUBLESHOOTING

Preventive maintenance to be performed annually by dealer should include inspection of piston (P/N 12134), and replacement of high pressure seat (P/N 12131), piston stem o-ring (P/N 12162), piston head o-ring (P/N 12167), swivel o-ring (P/N 12164), filter (P/N 12142), and filter retaining ring (P/N 12161). These items are included in the First Stage Overhaul Kit (P/N 12215). Piston and swivel o-rings must be lubricated with a high-grade, non-toxic silicone grease. Upon disassembly, all other o-rings should be cleaned and lightly lubricated with silicone oil or grease.

### SUITABLE LUBRICANTS INCLUDE:

Oils: Spray-Mate Silicone Lubricant (3M)  
Aqua-Lube Silicone Lubricant (Aqua-Craft)

Greases: 111 Compound (Dow-Corning)  
Zip-Slip (Aqua-Craft)

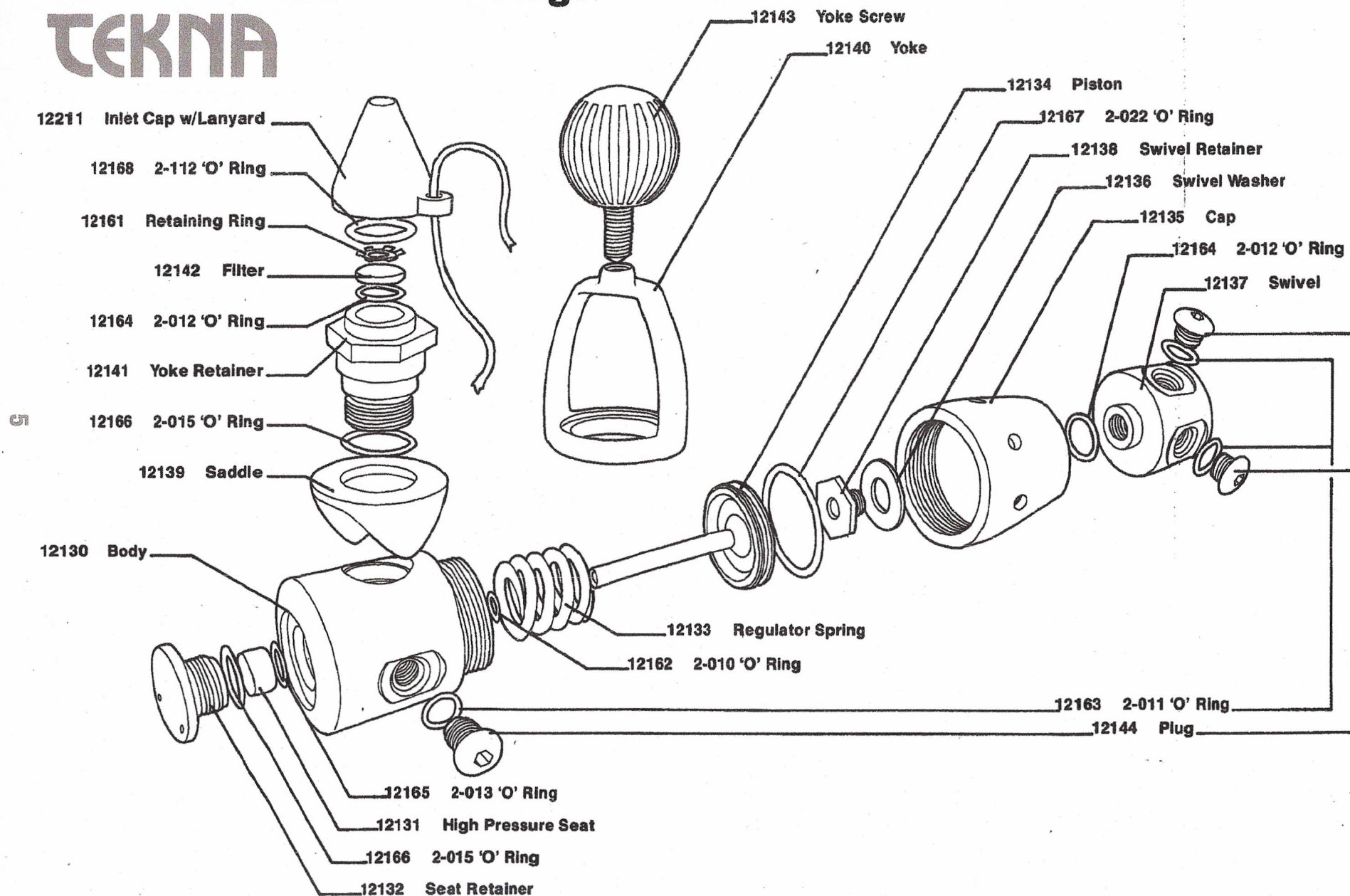
CAUTION: Some silicone sprays are harmful to plastics. Be sure to use a product recommended for use with plastics.

PROBLEM	PROBABLE CAUSE	REMEDY	TOOLS NEEDED
<b>A) Little or no air</b>	1) Tank valve closed 2) Defective tank valve 3) Contaminated high pressure filter	Open tank valve. Repair valve or switch tanks. Pry off retaining ring (P/N 12161), remove filter (P/N 12142), <b>INSTALL NEW FILTER ONLY</b> , press retaining ring firmly against filter.	Small flat blade screwdriver
<b>B) Air leaking between regulator and valve</b>	1) Damaged or contaminated tank valve o-ring	<del>Remove regulator, inspect o-ring, clean or replace if damaged.</del>	
<b>C) Air leaking out of 1st stage water inlet holes in cap</b>	1) Piston head o-ring damaged or contaminated	Remove cap (P/N 12135) from body (P/N 12130). Remove piston (P/N 12134). Clean and inspect the o-ring (P/N 12167) on large end of piston—replace if damaged. Clean and inspect bore of cap for deep scratches that could cause leak. Replace if necessary.	3 in 1 spanner wrench Silicone grease
	2) Piston stem o-ring damaged or contaminated	Remove o-ring (P/N 12162) from body (P/N 12130) with sewing needle. <b>ALWAYS REPLACE.</b> Replace by removing seat retainer (P/N 12132) with spanner wrench and inserting the small end of black inserter stop into the bore, then set the body on the table—seat side down. The stop will be even with the bottom of the piston stem o-ring groove. Push the o-ring down the bore into the groove with the black o-ring inserter tool. Insert the black tapered piston insertion guide in the end of the piston and push the piston and spring downward until the piston insertion guide pops out the other end of the bore. Install cap and tighten with spanner wrench. Install seat retainer using spanner wrench.	3 in 1 spanner wrench Long sewing needle O-ring inserter tool O-ring inserter stop Piston insertion guide Silicone grease
<b>D) Air leaking around 1st stage high pressure seat retainer</b>	1) Damaged high pressure seat o-ring	Remove seat retainer (P/N 12132). Clean and inspect o-ring (P/N 12165). Replace if damaged.	3 in 1 spanner wrench Silicone oil or grease
	2) Damaged seat retainer o-ring	Remove seat retainer (P/N 12132). Clean and inspect o-ring (P/N 12166). Replace if damaged.	3 in 1 spanner wrench Bent tip tweezers Silicone oil or grease
<b>E) Air leaking around 1st stage low pressure swivel connection</b>	1) Damaged swivel o-ring	Remove cap (P/N 12136). Loosen swivel retainer (P/N 12138) counterclockwise with 11/16 socket, and remove. Pull swivel from cap and clean and inspect o-ring (P/N 12164). Replace if damaged. Reassemble in the reverse order. <b>BE SURE TO TIGHTEN RETAINER SECURELY.</b> Recommended torque: 75–100 in/lb.	3 in 1 spanner wrench 11/16 socket Silicone grease
<b>F) Air leaking around hose fitting</b>	1) Damaged hose fitting o-ring	Remove hose, inspect o-ring (P/N 12163). Replace if damaged.	Crescent wrench Bent tip tweezers Silicone oil or grease
	2) Damaged hose	Replace hose (P/N 12184—28" or (P/N 12185—32")	Crescent wrench
<b>G) Air leaking between yoke assembly and 1st stage body</b>	1) Damaged yoke retainer o-ring	Unscrew yoke retainer (P/N 12141) from body (P/N 12130) with yoke retainer wrench. Clean and inspect o-ring (P/N 12166). Replace if damaged. Reassemble in reverse order. <b>TIGHTEN SECURELY.</b>	Yoke retainer wrench Silicone oil or grease
<b>H) High intermediate pressure (May cause intermittent leak from 2nd stage)  Normal intermediate pressure 135±10 psi</b>	1) Damaged or contaminated high pressure seat	Remove seat retainer (P/N 12132) with 3 in 1 spanner wrench. Push out high pressure seat (P/N 12131) through hole in seat retainer with .028 hexsocket driver. Seat may be reversed or replaced as necessary.	3 in 1 spanner wrench .028 Hexsocket driver Silicone oil
	2) Damaged or contaminated piston	Remove cap (P/N 12135) from body (P/N 12130). Remove piston (P/N 12134). Inspect end of piston stem for knicks or debris. Clean or replace as necessary. Replace seat (P/N 12131) when piston is replaced. Install piston as described in C-2.	3 in 1 spanner wrench Piston insertion guide



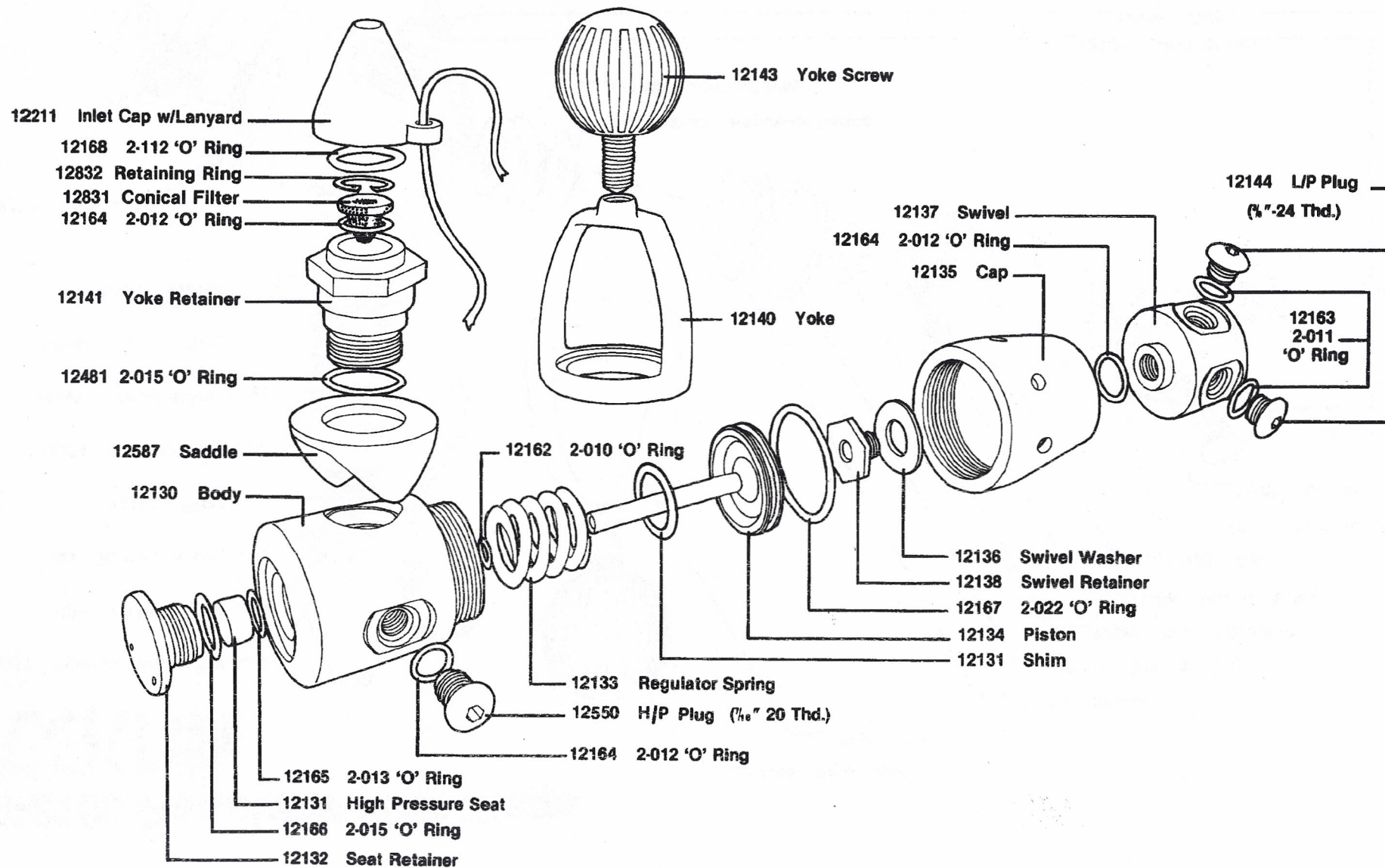
# T-2100 Regulator First Stage

## TEKNA



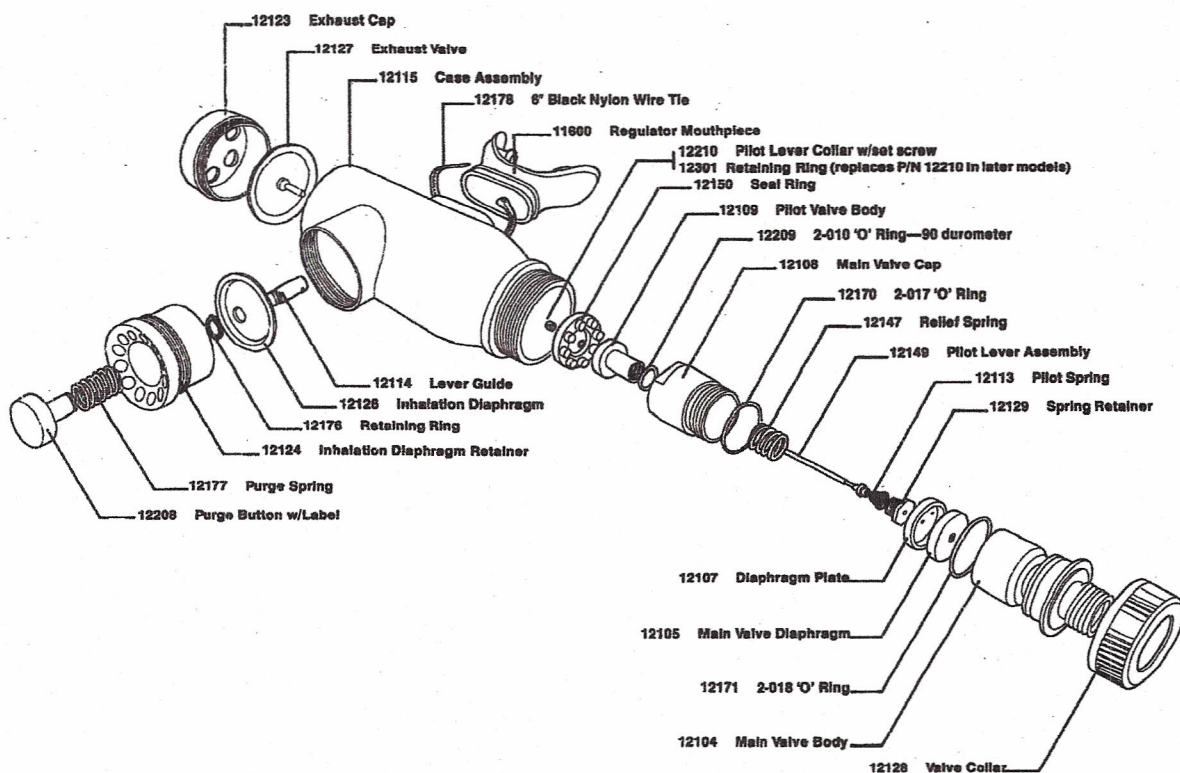
# TEKNA T-2100BX

## Regulator First Stage



# TEKNA

## Regulator Second Stages





# TEKNA T-2100/T-2100B Regulator Second Stage TROUBLESHOOTING

There are no parts within the 2nd stage which will deteriorate significantly with time or use, provided the regulator is rinsed thoroughly in fresh water after each dive, and the interior of the case is sprayed lightly with silicone oil. THEREFORE, NO PREVENTIVE MAINTENANCE IS REQUIRED, AND SERVICE SHOULD ONLY BE PERFORMED IF A PROBLEM ARISES OR IF REGULATOR PERFORMANCE HAS DETERIORATED.

When disassembly is required, o-rings and certain other rubber parts should be cleaned and lightly lubricated with silicone oil or grease as indicated in the instructions.

## SUITABLE LUBRICANTS INCLUDE:

Oils: Spray-Mate Silicone Lubricant (3M)  
Aqua-Lube Silicone Lubricant (Aqua-Craft)

Greases: 111 Compound (Dow-Corning)  
Zip-Slip (Aqua-Craft)

CAUTION: Some silicone sprays are harmful to plastics. Be sure to use a product recommended for use with plastics.

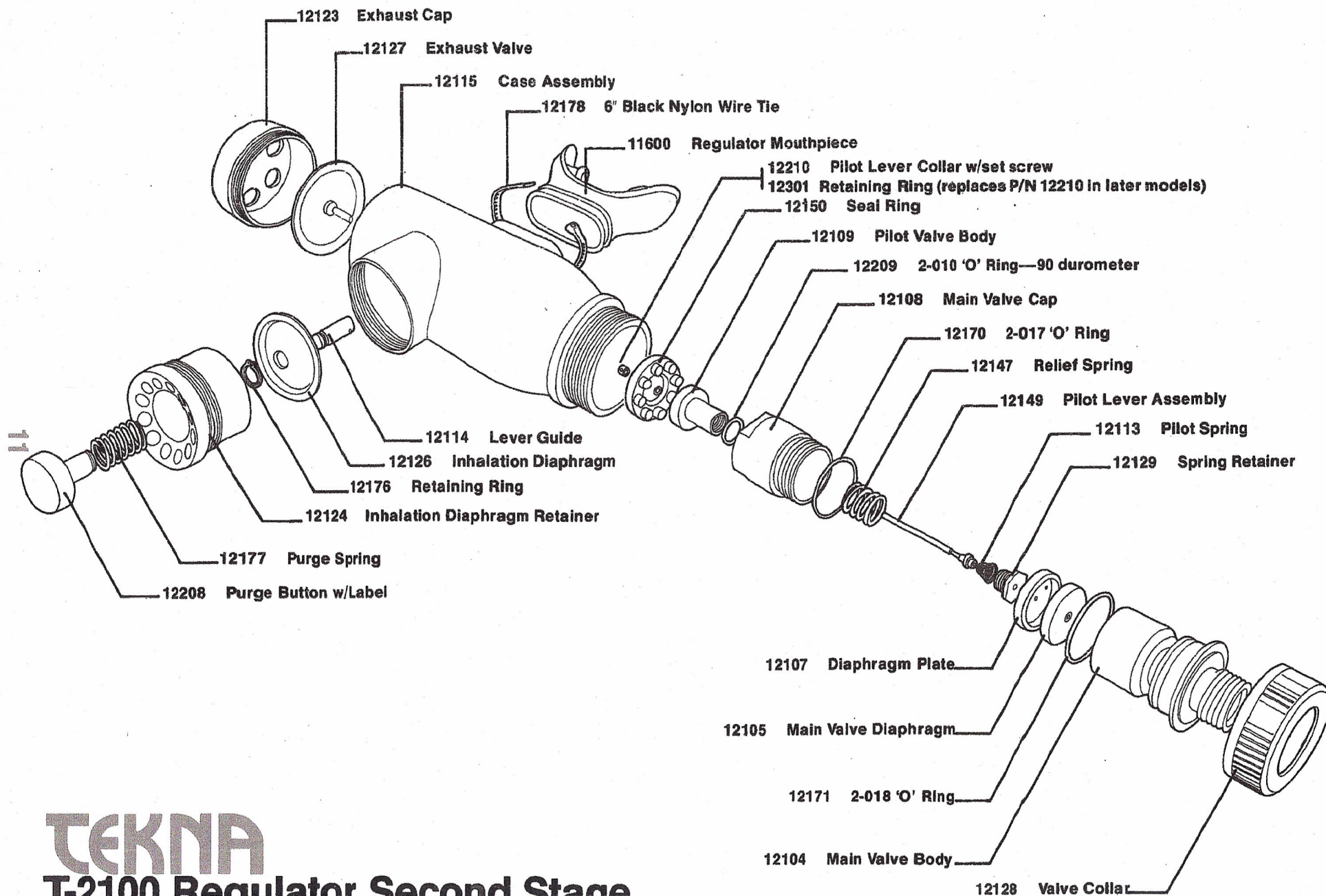
PROBLEM	PROBABLE CAUSE	REMEDY	TOOLS NEEDED
<b>A) Regulator flutters when user breathes</b>	1) User is probably having sensation when he is looking up or descending or ascending in shallow water. The regulator senses small hesitations in breathing caused by pressure differences in the depth of the regulator versus the lungs, such as when you are on your back, and these hesitations in breathing pattern appear as flutters. A conventional regulator would not have the sensitivity to pick up these hesitations in breathing, whereas it is characteristic of a sensitive "servo-assisted" regulator.	It disappears as soon as you get deeper or return to the normal diving position, as the pressure differential caused by body position is reduced.	
	2) User biting down too hard on mouthpiece causing a momentary backpressure in the regulator, shutting the pilot valve off by forcing the inhalation diaphragm outward.	User should bite down lightly so as not to restrict his breathing thus eliminating the shuddering. This will also decrease inhalation and exhalation resistance.	
	3) Seal ring distorted or twisted preventing a proper seal against the baffle inside the case. This allows air from the pilot valve and main valve to escape through the baffle center and causes backpressure as described in 1) above.	Unscrew the valve collar (P/N 12128) and pull the entire valve assembly and hose out of the case assembly (P/N 12115 or 12292).  Looking down through the breathing tube, reinsert valve assembly, guiding pilot lever through the lever guide (P/N 12114) TAKING CARE TO CENTER THE SEAL RING (P/N 12150) AGAINST THE BAFFLE WITHOUT DISTORTION. Hand tighten the valve collar securely.  You can be sure the seal ring is properly in place by unscrewing the exhaust cap (P/N 12123 or 12298) from the case, peeling back the exhaust valve (P/N 12127) and looking into the end of the case to see if the seal ring is well centered in the middle of the baffle.	
	4) Main valve cap is not screwed down all the way against the main valve body causing too much air flow, creating a backpressure pulsing as above.	Unscrew the valve collar (P/N 12128) and pull the valve assembly and hose out of the case assembly.  Using two wrenches, tighten the main valve cap (P/N 12108) clockwise against the main valve body (P/N 12104). TIGHTEN ONLY UNTIL YOU JUST FEEL METAL TO METAL CONTACT BETWEEN THE VALVE CAP AND VALVE BODY. Reinsert valve assembly into case as described in A-3.	2 Crescent wrenches or 1 3/4" Open End and 1 7/8" Open End wrench
	5) Inhalation diaphragm twisted or distorted.	Unscrew valve collar (P/N 12128) and remove valve module.  T-2100: Unscrew inhalation diaphragm retainer (P/N 12124) from the case. Pull out the inhalation diaphragm (P/N 12126), straighten it, lubricate both sides with silicone oil, and place it on top of the diaphragm retainer. Carefully reinsert the diaphragm retainer into the case and screw into place.  T-2100B: Unscrew inhalation diaphragm retainer (P/N 12297) from the case. Then unscrew diaphragm cap (P/N 12296) and remove inhalation diaphragm (P/N 12126). Straighten diaphragm, lubricate both sides with silicone oil, and place it on top of the diaphragm retainer. Carefully replace diaphragm cap, and reinsert assembly into case.	Lever guide alignment tool Silicone oil

PROBLEM	PROBABLE CAUSE	REMEDY	TOOLS NEEDED
A) Cont'd	5) Cont'd	<p>You should be able to see the black lever guide (P/N 12114) protruding into the case as you look into the breathing tube. Insert the wire lever guide alignment tool through the breathing tube and hook it into the hole in the lever guide. Twist the tool until the hole in the lever guide is aligned with valve end of the case. You should be able to see through the lever guide hole as you look into the valve end of the case.</p> <p>Reinsert the valve assembly into the case as outlined in A-3.</p>	
B) Rapid "free flow" of air out of mouthpiece	1) Caused by venturi effect on inhalation diaphragm. This is not a malfunction. The easier breathing a regulator is, the more susceptible it will be to "free flow."	Block mouthpiece opening with thumb, turn mouthpiece downward, or fill 2nd stage with water.	
C) Slow "leak" of air out of mouthpiece	<p>1) Sand or debris jamming lever guide or pilot lever.</p> <p>2) Sand or debris jamming purge button.</p> <p>3) Seal ring distorted causing pilot lever to be forced off center, creating a pilot leak.</p> <p>4) Debris caught between pilot valve seat and pilot body.</p> <p>5) Debris lodged under main valve diaphragm or in its orifice.</p>	<p>With air on, repeatedly purge with purge button and shake regulator under warm water in a sink or container.</p> <p>Attempt to flush out sand or debris with water. If unsuccessful, remove valve collar (P/N 12128) and remove valve module.</p> <p>T-2100: Unscrew inhalation diaphragm retainer (P/N 12124) from case.</p> <p>T-2100B: Unscrew inhalation diaphragm retainer (P/N 12297) from case. Then unscrew diaphragm cap (P/N 12296) and remove inhalation diaphragm (P/N 12126).</p> <p>Using snapping pliers, remove retaining ring (P/N 12176), purge button (P/N 12208 or 12299), and purge spring (P/N 12177). Clean parts and replace purge button. Reassemble regulator as described in A-5.</p> <p>See A-3</p> <p>Unscrew valve collar (P/N 12128) from the case (P/N 12115 or 12292) and pull out the valve module. With the air on, press the pilot lever (P/N 12149) inward towards the main valve cap (P/N 12108). If repeated several times, this should blow out any small debris that could cause a pilot leak.</p> <p>To be sure it is a pilot leak and not a main valve leak, submerge the entire valve assembly in water. If air is leaking from around the main valve body (P/N 12104) proceed to C-5.</p> <p>If leak is at joint between valve cap (P/N 12108) and valve body (P/N 12104) proceed to C-6.</p> <p>If the leak is from under the seal ring (P/N 12150), you must disassemble pilot valve. (<i>THIS IS EXTREMELY RARE</i>). Loosen the pilot lever collar (P/N 12210) set screw with the .028 Hex socket driver. Slide collar off pilot lever and slide off the seal ring. On later models, remove retaining ring (P/N 12301) and slide off the seal ring.</p> <p>Using 2 wrenches, unscrew the main valve cap from main valve body. Insert the two pins on the side of the 3 in 1 spanner wrench into the pin holes on the pilot body (the slot will clear the pilot lever). Now unscrew the spring retainer (P/N 12129 with the 3/8" nut driver.</p> <p>Carefully lift away spring retainer relief spring (P/N 12147) and gently push out the pilot lever so as not to lose the small pilot spring (P/N 12113).</p> <p>Clean pilot body and pilot lever assembly with air, lubricate and reassemble in the reverse order. When installing the main valve cap, TIGHTEN ONLY UNTIL YOU JUST FEEL METAL TO METAL CONTACT BETWEEN THE VALVE CAP AND VALVE BODY.</p> <p>When installing the seal ring, push it onto the lever with the pilot lever collar UNTIL THE EIGHT PROJECTIONS JUST CONTACT THE VALVE CAP, then carefully tighten the set screw. On later models, slide seal ring below groove and reinstall retaining ring. For added security, apply small amount of nail polish between collar or retaining ring and pilot lever after assembly.</p> <p>Reassemble as outlined in A-3.</p> <p>Unscrew valve collar (P/N 12128) from case assembly (P/N 12115 or 12292) and pull out valve module. Using two wrenches, unscrew the main valve cap (P/N 12108) from the main valve body (P/N 12104).</p> <p>Next, put your thumb over the open main valve body and momentarily turn on the air. This will blow the main valve diaphragm (P/N 12105) and diaphragm plate (P/N 12107) against the underside of your thumb, allowing you to easily remove them.</p>	<p>Snapring pliers Lever guide alignment tool</p> <p>3 in 1 spanner wrench 3/8" Nut Driver .028 Hex socket driver 1 3/4" open end wrench 1 1/2" open end wrench or 2 Crescent wrenches Silicone oil</p> <p>1 3/4" Open end wrench and 1 1/2" Open end wrench or 2 Crescent wrenches Silicone oil or grease</p>



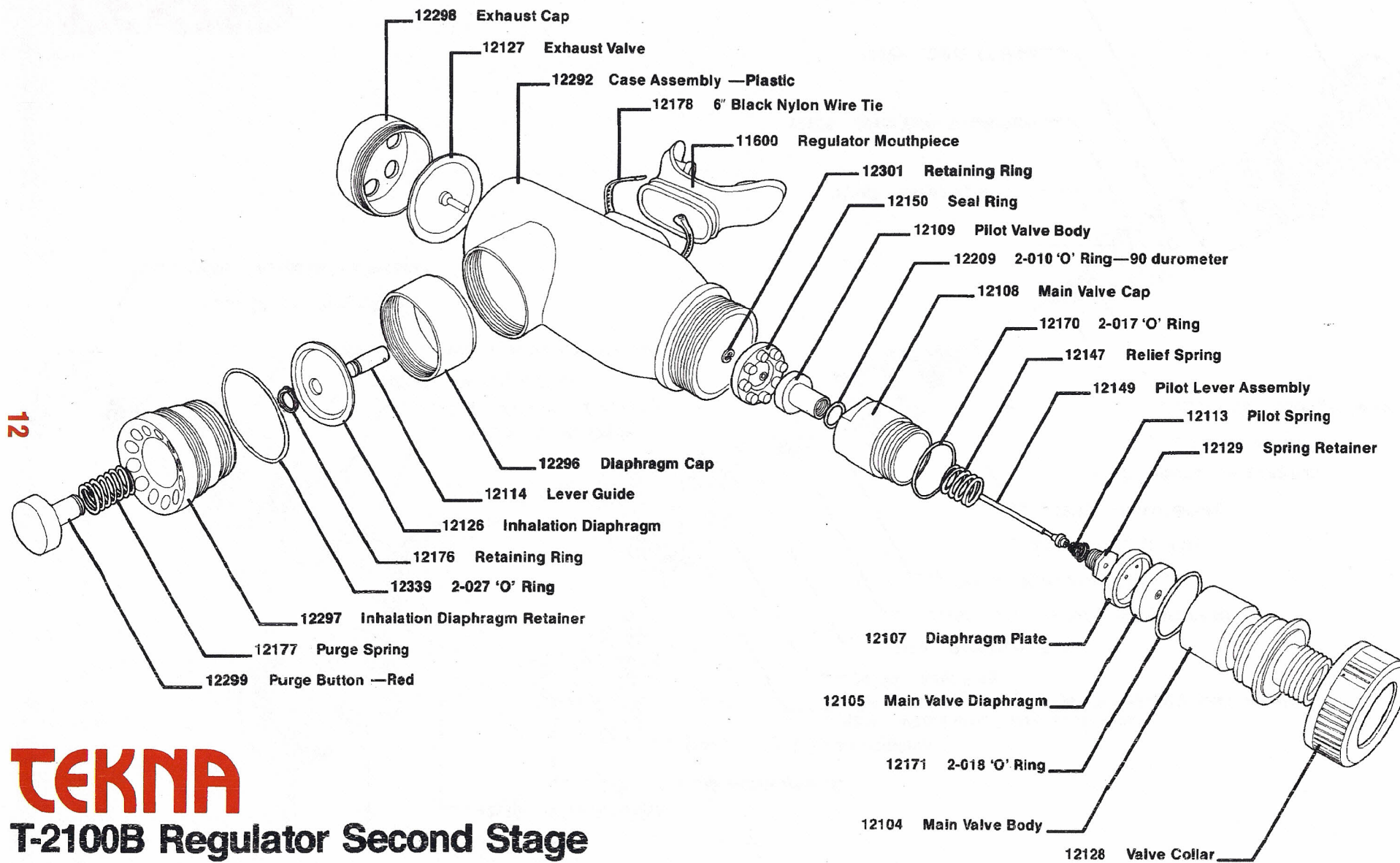
PROBLEM	PROBABLE CAUSE	REMEDY	TOOLS NEEDED
<b>C) Cont'd</b>	5) Cont'd	Inspect for debris on underside of main valve diaphragm and on seat (area with all the tiny holes). Clean and spray with silicone. Be sure to blow air against the orifice in the center of the diaphragm to make sure it is not clogged. You should be able to see clearly through the orifice.  Reassemble valve in the reverse order. When installing the main valve cap, TIGHTEN ONLY UNTIL YOU JUST FEEL METAL TO METAL CONTACT BETWEEN THE VALVE CAP AND VALVE BODY.  Reassemble as outlined in A-3.	
	6) Contaminated or damaged main valve cap o-ring	Unscrew valve collar (P/N 12120) and remove valve module from the case (P/N 12115 or 12292). Using two wrenches, remove the main valve cap (P/N 12108) from main valve body (P/N 12104). Remove o-ring (P/N 12170) from valve cap, clean and inspect, and replace if damaged. Lubricate and reassemble valve in reverse order. When installing the main valve cap, TIGHTEN ONLY UNTIL YOU JUST FEEL METAL TO METAL CONTACT BETWEEN THE VALVE CAP AND VALVE BODY.  Reassemble as described in A-3.	1 3/4" Open end wrench and 1 7/8" Open end wrench or 2 Crescent wrenches Silicone oil or grease
<b>D) Intermittent leak of air (often popping sound) out mouthpiece</b>	1) 1st stage high pressure seat is contaminated with debris, causing the intermediate pressure to rise above the pressure relief spring setting in the 2nd stage. This causes the pilot valve body to pop forward and relieve the excess pressure.	Refer to first stage troubleshooting H-1 and H-2.	3 in 1 spanner wrench .028 Hex socket driver Piston insertion guide Silicone oil or grease
<b>E) Regulator breathes hard (high inhalation resistance)</b>	1) Sand, debris or build-up of salt crystals interfering with free travel of pilot lever or lever guide.	With air on, purge and/or shake regulator in container of warm water. If necessary, remove valve module and more thoroughly flush case and valve module.	
	2) Build-up of sand or debris on top of the inhalation diaphragm or damaged inhalation diaphragm.	Unscrew valve collar (P/N 12128) and remove valve module from the case (P/N 12115 or 12292). Remove inhalation diaphragm as described in A-5. Clean and inspect inhalation diaphragm for tears and replace as necessary.  Reassemble as outlined in A-5.	Wire lever guide alignment tool Silicone oil
	3) High pressure filter in 1st stage clogged	Refer to first stage troubleshooting A-3.	Small flat blade screwdriver
<b>F) Water leaking into 2nd stage</b>	1) Sand or debris under the exhaust valve	Unscrew exhaust cap (P/N 12123 or 12298) and lift exhaust valve (P/N 12127) and clean it and its seat. Lubricate with silicone and replace exhaust cap.	Silicone oil
	2) Damaged exhaust valve	Unscrew exhaust cap (P/N 12123 or 12298) and inspect exhaust valve (P/N 12127). If damaged, remove by pulling outward.  Lubricate stem of new valve, insert in exhaust seat hole and pull it through until secure with the bent tip tweezers. Screw exhaust cap back in place.	Bent tip tweezers Silicone oil
	3) Tear in mouthpiece and/or tie wrap missing	Inspect and replace as necessary.	
	4) Improperly installed or damaged inhalation diaphragm	See A-5	Lever guide alignment tool Silicone oil
	5) Contaminated or damaged valve module o-ring	Unscrew valve collar (P/N 12128) and remove valve module from case (P/N 12115 or 12292). Remove o-ring (P/N 12171), clean and inspect and replace if damaged. Lubricate and reassemble as outlined in A-3.	Silicone oil or grease
	6) Contaminated or damaged diaphragm retainer o-ring (T-2100B ONLY)	Unscrew valve collar (P/N 12128) and remove valve module from case (P/N 12292). Unscrew inhalation diaphragm retainer (P/N 12297) from case. Remove o-ring (P/N 12339), clean and inspect and replace if damaged. Lubricate and reassemble as in A-5.	Wire lever guide alignment tool Silicone oil





**TEKNA**

**T-2100 Regulator Second Stage**



# TEKNA

## T-2100B Regulator Second Stage

# TEKNA

## T-2100BX

### Regulator Second Stage

#### TROUBLESHOOTING GUIDE

There are no parts within the 2nd stage which will deteriorate significantly with time or use, provided the regulator is rinsed thoroughly in fresh water after each dive. **THEREFORE, NO PREVENTIVE MAINTENANCE IS REQUIRED, AND SERVICE SHOULD ONLY BE PERFORMED IF A PROBLEM ARISES OR IF REGULATOR PERFORMANCE HAS DETERIORATED.**

When disassembly is required, o-rings and certain other rubber parts should be cleaned and lightly lubricated with silicone oil or grease as indicated in the instructions.

#### **2100BX Hose Assembly Procedures**

A lock ring has been added to eliminate the need for tools when attaching or detaching the hose assembly to the second stage. Should it become necessary to disassemble the hose, unscrew the valve collar (P/N 12588) and pull entire valve module assembly (P/N 12606) out of the case assembly (P/N 12292). Slide the lock ring (P/N 12627) back until it is free from the valve module assembly. By hand, unscrew and remove the hose assembly (P/N 12183 or 12180) from the valve module assembly. To reassemble, screw valve module assembly to hose assembly. Hose nut should only be hand tightened against main valve body (P/N 12596). Slide lock ring over hose fitting and engage with raised 12 pointed section on the valve module base. It may be necessary to slightly loosen hose nut to align lock ring with points. This will prevent hose assembly from accidentally loosening. Insert valve module assembly into 2nd stage case making sure the pilot lever passes through hole in lever guide. Secure with valve collar.

#### **SUITABLE LUBRICANTS INCLUDE:**

**Oils:** Spray-Mate Silicone Lubricant (3M)  
Aqua-Lube Silicone Lubricant (Aqua-Craft)

**Greases:** 111 Compound (Dow-Corning)  
Zip-Slip (Aqua-Craft)

#### **CAUTION: PLEASE READ THE FOLLOWING:**

Modern thermoplastic materials offer high strength, durability, and excellent appearance. However, most plastics are susceptible to some cracking or crazing when subjected to certain chemicals, particularly hydrocarbons.

Exposure to gasoline, oils, petroleum greases (including Vaseline), alcohols, toluene, methyl-ethyl-ketone, acetone, and strong detergents should be avoided.

Lubricate rubber items only with pure silicone greases or oils. Use only silicone sprays specifically recommended for use with plastics.

# TEKNA

Redwood City, CA 94065



# TEKNA

## Regulator Second Stage

11600S Regulator Mouthpiece

12178 6" Black Nylon Wire Tie

12292 Case Assembly

12298 Exhaust Cap

12127 Exhaust Valve

12296 Diaphragm Cap

12114 Lever Guide

12126 Inhalation Diaphragm

12176 Retaining Ring

12301 Retaining Ring

12150 Seal Ring

12109 Pilot Valve Body

12209 2-010 'O' Ring—90 durometer

12597 BX Main Valve Cap—Blk.

12639 BX 'O' Ring

12147 Relief Spring

12149 Pilot Lever Assembly

12113 Pilot Spring

12129 Spring Retainer

12339 2-027 'O' Ring

12297 Inhalation Diaphragm Retainer

12177 Purge Spring

12299 Purge Button—Red

12625 BX Diaphragm Plate—Blk.

12105 Main Valve Diaphragm

12171 2-018 'O' Ring

12596 BX Main Valve Body —Blk.

12998 2nd Stage Filter

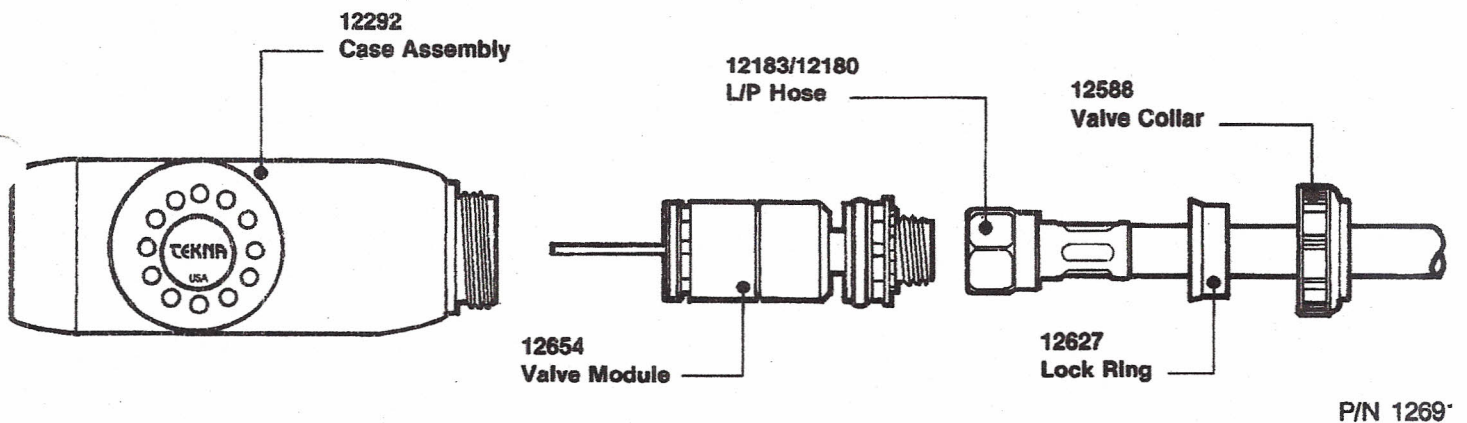
12627 BX Lock Ring—Blk.

12588 BX Valve Collar—Blk.

# Assembly Procedures

## 12654 Second Stage BX Conversion Module

1. Unscrew the valve collar (P/N 12128) and pull the entire valve module assembly out of the case assembly (P/N 12292).
2. Using two open-end wrenches unscrew valve module from hose fitting.
3. Remove valve collar.
4. Slide new valve collar (P/N 12588) and lock ring (P/N 12627) over hose as shown in diagram below.
5. By hand, attach hose assembly (P/N 12183 or 12180) to valve module assembly (P/N 12654) until snug.
6. Slide lock ring over hose fitting and engage with raised 12 pointed section on valve module base. (It may be necessary to slightly loosen hose nut to align lock ring with points.) Proper alignment will prevent hose assembly from ever accidentally loosening.
7. Insert valve module assembly into 2nd stage case assembly making sure pilot lever passes through the hole in lever guide.
8. Secure with collar.
9. Test inhalation effort for optimum performance and if necessary follow procedures outlined in the Troubleshooting Guide E-4.



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# Intermediate Pressure Testing Gauge

## Parts List

- 1/4 Pipe low pressure gauge
- 1/4 Pipe female/female coupler
- 1/4 Pipe BCD quick disconnect fitting
- Teflon Tape

### Assembly and use:

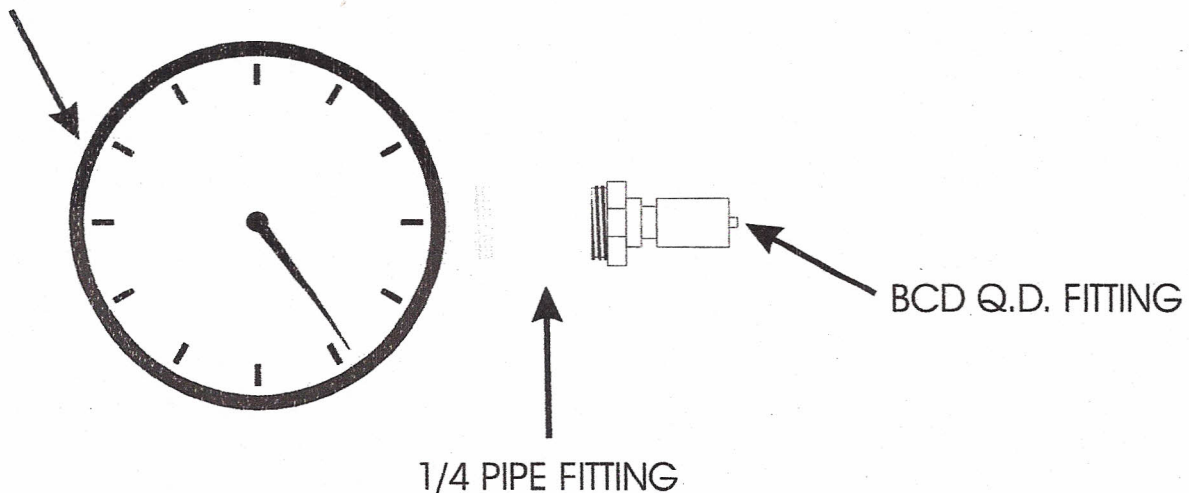
Simply assemble the parts using teflon tape to seal the threads. Since you're working on your own regulator, you know how!

Hook this gauge up to the BCD low pressure inflation hose. Use the purge button on the regulator to purge the lines and test the regulator. Obviously do not over-adjust the second stage so that the purge does not work, or you can't purge the lines while adjusting the first stage.

Like with all regulators, start with the 1st stage at it's lowest possible pressure setting, and work your way up. Remember to test the regulator at low pressure (under 500 psi) and high pressure (over 2500 psi.)

### 200 PSI GAUGE

*(This gauge should ideally be 50 PSI over your I.P. range. Don't go much greater, or you'll lose accuracy.)*



Use teflon tape to seal all threads.

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T-2100 · T-2100B · T-2100BX