

**Maintenance and Repair**  
**AirHawk® II Air Mask**  
**Second Stage Regulator**



Order No.: 10104241/02  
Prnt. Spec. 10000005389(I)



## **WARNING!**

Read this manual carefully before servicing the device. The device will perform as designed only if it is used and maintained in accordance with the manufacturer's instructions. Otherwise, it could fail to perform as designed and persons who rely on this device for their safety could sustain serious personal injury or death.

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Please read and observe the WARNINGS and CAUTIONS inside. For any additional information relative to use or repair, call 1-800-MSA-2222 during regular working hours.



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Fax 1-800-967-0398

For your local MSA contacts please go to our website [www.MSAafety.com](http://www.MSAafety.com)

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## 1 AirHawk II Second Stage Regulator

### 1.1 Second Stage Regulator Replacement Kits

Description	Item	Part Number
Valve Assembly	10087295	10087305
Housing Assembly	10087301	

### 1.2 FireHawk Air Mask Second Stage Regulator Overhaul Kits

Description	Item	Part Number
O-ring (2 required)	10023509	
O-ring (2 required)	10037951	
O-ring, Silicone, Red	697453	Non-CBRN
O-ring (2 required)	634669	10030663
O-ring	63198	
Screen	10020784	
O-ring (2 required)	10023509	
O-ring (2 required)	10037951	
O-ring, Silicone, Red	697453	
O-ring (2 required)	634669	CBRN
O-ring	63198	10048942
Screen	10020784	
Cap, Spring	10047528	
Shield, CBRN	10044026	

### 1.3 Second Stage Regulator Overhaul Kits

Description	Item	Part Number
Cap, string	10047528	10091435
Shield, CBRN	10044026	
Seal ring (pack of 10)	10031192	10091436
O-ring (pack of 10)	10023509	10091437
O-ring (pack of 10)	10037951	10091438
Spring, button (pack of 10)	10018965	10091439
O-ring, silicone, red (pack of 10)	697453	10091440
O-ring (pack of 10)	634669	10091461

### 1.4 Height Gauge Kit

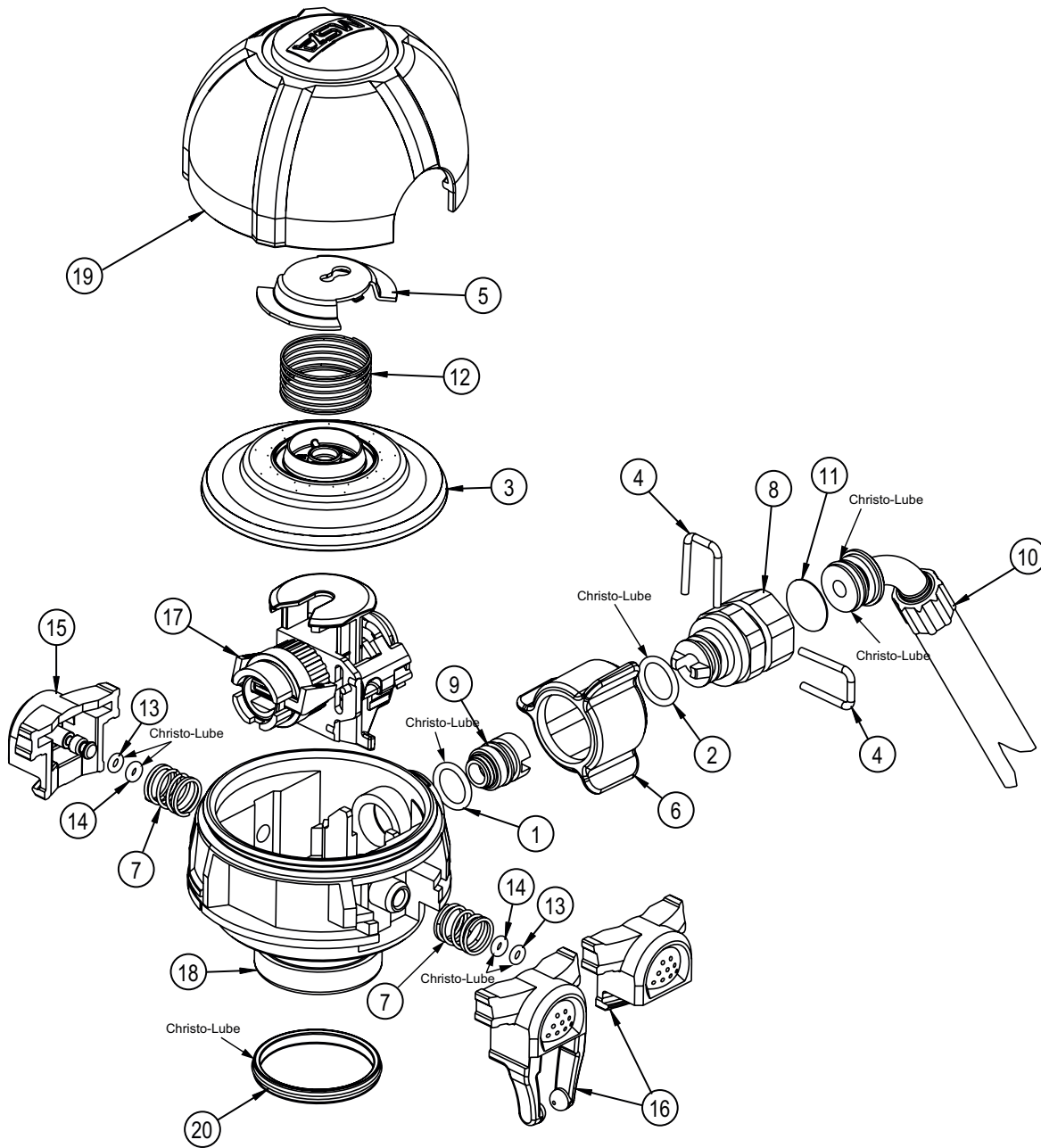
Description	Item	Part Number
Height gauge for P/N 10087295	10090457	10090458

\*(not required with Non-Purge Cover)

# AirHawk II Second Stage Regulator

## 1.5 Parts List and Exploded View

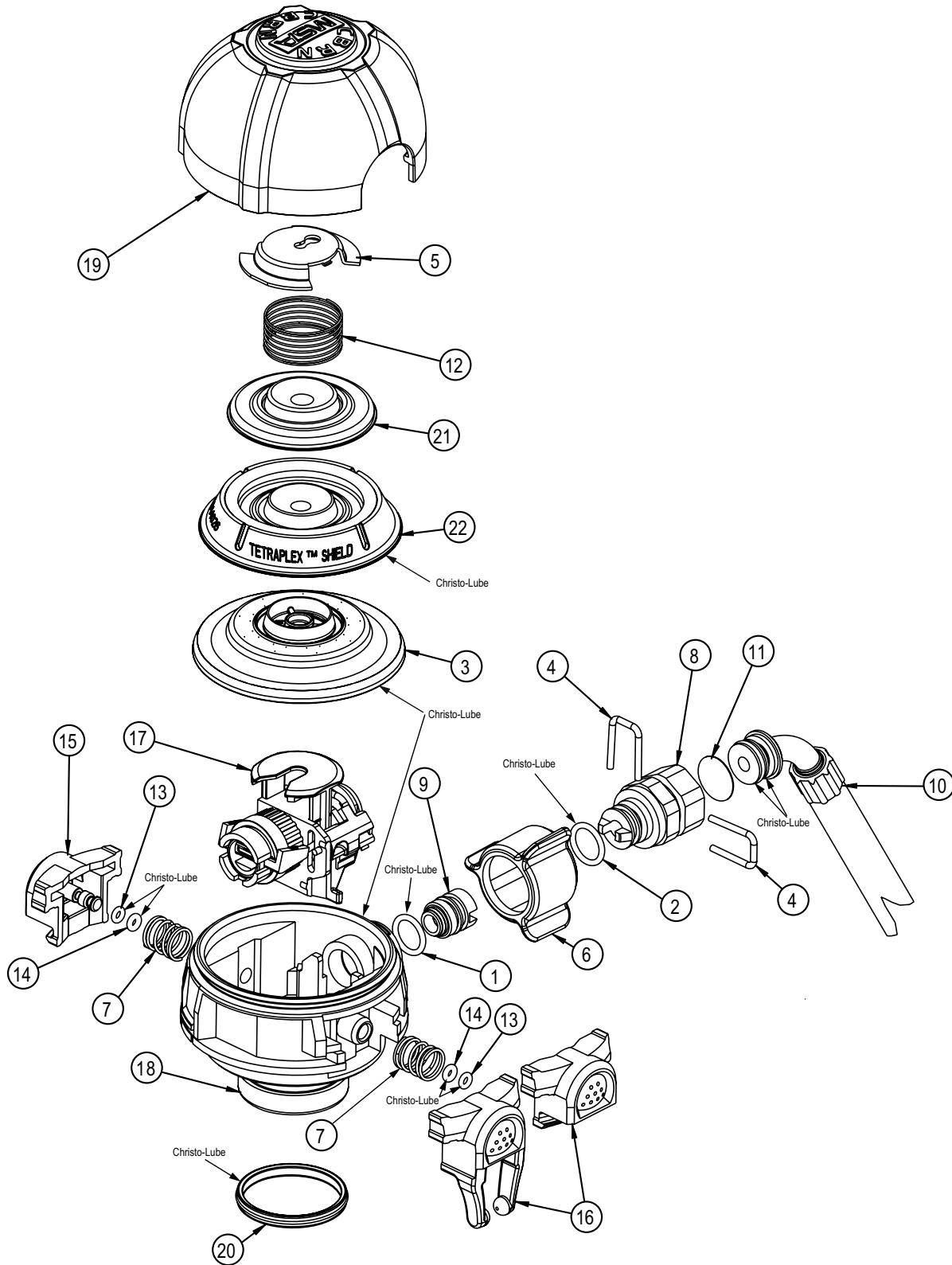
### 1.5.1 Non-CBRN Firehawk Second Stage Regulator



US

Item	Description	Part number
1	O-ring, Silicone, Red	697453
2	O-ring, Fluro, Blue	634669
3	Diphragm, Silicone	10018540
4	U-clip	10018547
5	Retainer, Spring, Purge Cover ONLY	10018622
6	Knob, Bypass	10018774
7	Spring, Button	10018965
8	Body, Bypass	10018966
9	Insert, Bypass	10018971
10	Hose, Threaded	10020782
	Hose, QC	10032940
11	Screen, Bypass	10020784
12	Spring, Diaphragm	10020931
13	O-ring, Viton, Black	10023509
14	O-ring, Buna-N, Black	10037951
15	Button, PTC	10024111
16	Button, STC	10024112
	Button, PTC	10024111
17	Valve Assembly	10087295
18	Housing, Regulator	10087302
19	Cover, Purge	10026139
	Cover, Non-Purge	10047406
20	Seal Ring	10031192
	Christo-Lube Lubricant	604070

1.5.2 CBRN Firehawk Second Stage Regulator



US



Item	Description	Part number
1	O-ring, Silicone, Red	697453
2	O-ring, Fluro, Blue	634669
3	Diphragm, CBRN	10039172
4	U-clip	10018547
5	Retainer Spring (purge cover only)	10018622
6	Knob, Bypass	10018774
7	Spring, Button	10018965
8	Body, Bypass	10018966
9	Insert, Bypass	10018971
10	Hose, Threaded	10036171
	Hose, QC	10046484
11	Screen, Bypass	10020784
12	Spring, Diaphragm	10020931
13	O-ring, Viton, Black	10023509
14	O-ring, Buna-N, Black	10037951
15	Button, PTC	10047238
16	Button, STC	10047331
	Button, PTC	10047238
17	Valve Assembly	10087295
18	Housing, Regulator	10087301
19	Cover, Non-Purge	10047664
20	Seal Ring	10031192
21	Cap, Spring	10047528
22	Shield, CBRN	10044026
	Christo-Lube Lubricant	604070

## 2 General Instructions

### **WARNING!**

- ▶ Only certified C.A.R.E. technicians are approved to do the procedures in this manual.
  - ▶ Before starting any repair or maintenance procedure, make sure all pressure has been released from the SCBA. Trying to disassemble a pressurized SCBA can cause parts to become airborne projectiles. Failure to follow these warnings can result in serious personal injury or death.
- 

### **CAUTION!**

To prevent damage to the CBRN shield, touch only the rim.

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### 2.1 Releasing Pressure from the SCBA

- (1) Turn the handwheel clockwise to close the cylinder valve.
- (2) Push the regulator release buttons.
- (3) Turn the regulator bypass knob counterclockwise to open the regulator bypass valve and release pressure from the SCBA.

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### 3 Maintenance and Repair Procedures

#### 3.1 Disassembly

##### 3.1.1 Removing the Regulator Cover and Spring



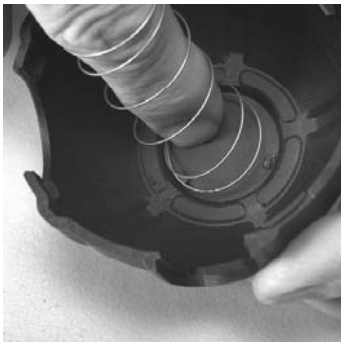
Remove the regulator cover.

- (1) Press and hold the release buttons while pressing the regulator housing retaining latches.

**NOTE:** Do not touch the cover while pressing the release buttons and retaining latches. Let the spring act on the cover.



- (2) Allow the cover to drop into your palm.



- (3) Remove the spring, and spring retainer from the regulator housing.

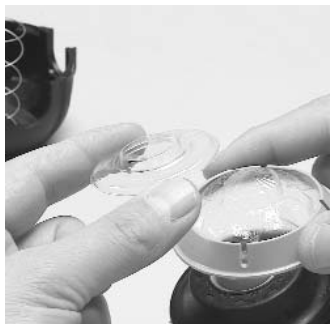
- (4) Turn the spring clockwise to remove it from the retainer.

**NOTE:** Do not stretch the spring.

##### 3.1.2 Removing the Diaphragm



- (1) CBRN only: Lift the CBRN shield off the diaphragm assembly.



- (2) CBRN only: Lift the spring cap off the CBRN Shield.



- (3) Roll the edge off the regulator housing.

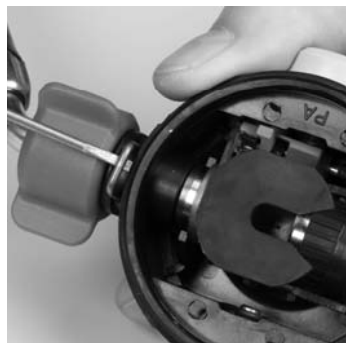


- (4) Slide the diaphragm away from the bypass handwheel off the valve fork.

### 3.1.3 Disassembling the Bypass and Hose with Swivel

- (1) Remove the regulator cover, spring, and spring retainer.

**NOTE:** It is not necessary to remove the diaphragm.



- (2) Use a small, flat-blade screwdriver to remove the U-clip.



- (3) Remove the bypass knob.



- (4) Remove the bypass body U-clip.

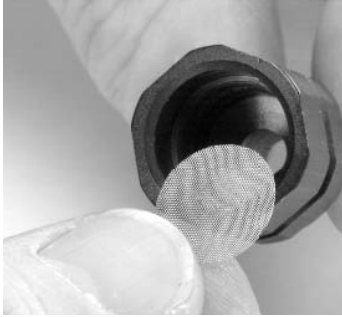


- (5) Remove the bypass and hose assembly by pulling the hose out of the bypass body.



- (6) Remove the hose assembly o-ring. Be careful not to scratch the o-ring groove.

- (7) Inspect the second groove of the hose swivel. Remove all dirt and foreign matter before reassembling the bypass body.



- (8) Use the plastic stick or small flat blade screwdriver to push the screen out of the bypass body.
- (9) Inspect the bypass screen.
  - a) Replace the screen if damaged.
- (10) Remove all dirt and foreign matter before reinstalling the screen.

### 3.1.4 Removing the Valve Assembly

- (1) Remove the regulator cover, spring, and spring retain- er. (Refer to Section 3.1.1 "Removing the Regu- lator Cover and Spring").
- (2) Remove the diaphragm. (Refer to Section 3.1.2 "Removing the Diaphragm").
- (3) Remove the U-clip from the regulator housing. (Refer to Section 3.1.3 "Disassembling the Bypass and Hose with Swivel").
- (4) Remove the bypass insert.



- (5) Use the bypass body as a tool to unscrew the bypass insert.



- (6) Use the o-ring removal tool to remove the bypass insert.



- (7) Lift the valve out of the regulator housing.

### 3.1.5 Disassembling the Regulator Housing Buttons



- (1) Remove the old O-rings. Be careful not to scratch the o-ring groove.
- (2) Discard the old O-ring.



- (3) The spring will push the button from the housing.  
*Be careful not to lose the spring*

### 3.1.6 Removing the Seal Ring

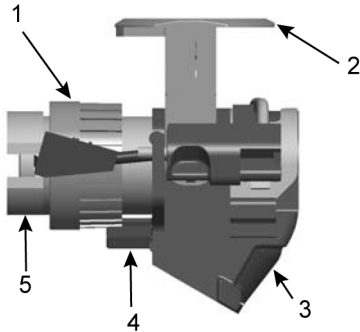


- (1) Use the o-ring removal tool to remove the seal ring.
- (2) Discard the old seal ring.

### 3.1.7 Valve Fork Height

#### 3.1.7.1 Inspection of the Valve Fork for Proper Height

Inspect and adjust valve fork height with the valve fork pointing toward you. The valve fork assembly must move up and down freely.

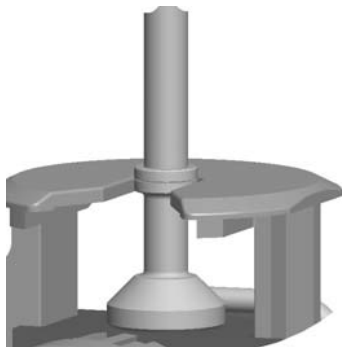


(1) Press the top of the valve fork to check movement.

- 1 Adjustment Wheel
- 2 Fork
- 3 Valve support
- 4 Valve locking tab
- 5 Valve housing

(2) Use the height gauge to verify the fork height setting.

(3) Center the gauge in the valve fork.



(4) Ensure that the valve assembly is vertical and can move freely.



The top of the valve fork must be within the acceptable range.

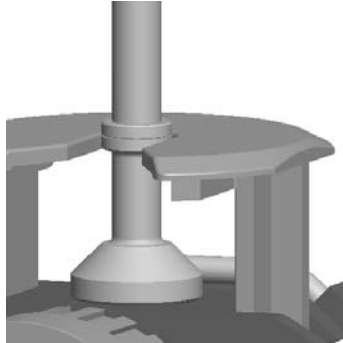
*Acceptable range*



### 3.1.7.2 Acceptable Valve Fork Heights

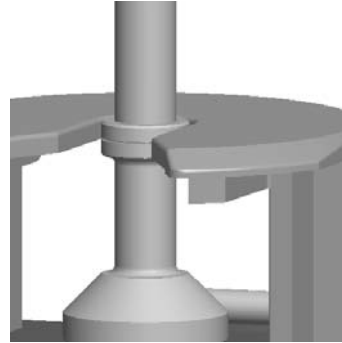
#### Nominal height

Top of fork level with center of acceptable range



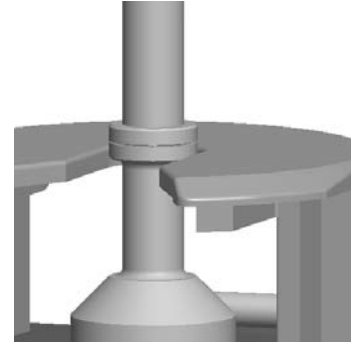
#### Maximum Height

Top of fork level with top of acceptable range



#### Minimum Height

Top of fork level with bottom of acceptable range



Normally the valve fork will not require adjustment.

Do not adjust the valve if the fork is within the acceptable range.

If the top of the valve fork is above or below the acceptable range, adjust the valve.

### 3.1.7.3 Adjusting Valve Fork Height

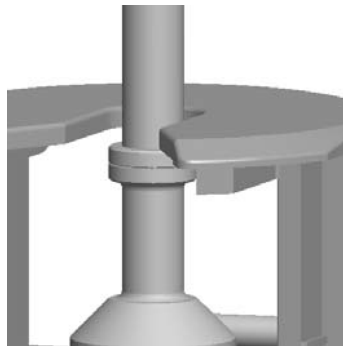
#### Adjustment of Valve Fork

Inspect and adjust valve fork height with the valve fork pointing toward you.

- Turn the Adjustment Wheel **clockwise** to **lower** the fork.
- Turn the adjustment wheel **counterclockwise** to **raise** the fork.

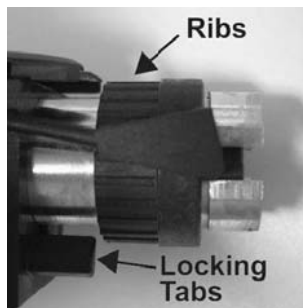
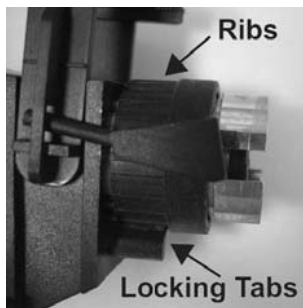
#### Valve Fork Above the Maximum

Above maximum height – Top of fork above top of acceptable range



- (1) Slide the adjustment wheel and valve housing slightly away from the valve support to allow the adjustment wheel to rotate.

- (2) Turn the adjustment wheel clockwise to lower the fork.



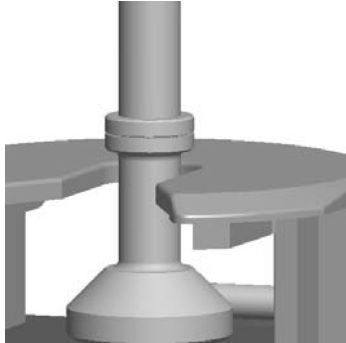
The adjustment wheel cannot turn unless the ribs are free from the locking tab.

## Maintenance and Repair Procedures

- (3) Slide the adjustment wheel and valve housing back into place.
- (4) Ensure that the valve lever and fork do not bind. The fork should move up and down easily.

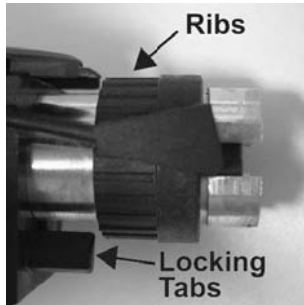
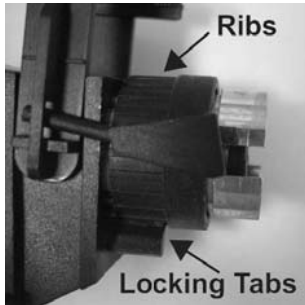
### Valve Fork Below the Minimum

Below minimum height – Top of fork is below acceptable range.



- (1) Slide the adjustment wheel and valve housing slightly away from the valve support to allow the adjustment wheel to rotate.

- (2) Turn the adjustment wheel counterclockwise to raise the fork.



The adjustment wheel cannot turn unless the ribs are free from the locking tab.

- (3) Slide the valve housing back into place.
- (4) Ensure that the valve lever and fork do not bind. The fork should move up and down easily.

## 3.2 Reassembly

### 3.2.1 Installing the Regulator Seal Ring

- (1) Apply a thin film of Christo-Lube lubricant to the new seal ring.



- (2) Roll the new seal ring onto the regulator outlet and seat it into the O-ring groove.

### **WARNING!**

An unseated seal can cause an air leak.

Failure to follow this warning can result in serious injury or death.

### 3.2.2 Installing the Regulator Housing and Buttons



(1) Apply a thin film of Christo-Lube lubricant ) to the new O-rings.

(2) Install new o-rings on the button posts.

(3) Install the springs.

(4) Align the buttons.

**NOTE:** With the bypass at 9:00 o'clock, the slide button is at 12:00 o'clock and the housing button is at 6:00 o'clock.

(5) Push firmly on the buttons.

(6) Double check proper engagement by pulling on the buttons.

(7) Reinstall the diaphragm.

(8) Reinstall the spring and regulator cover.

(9) Connect the second stage hose to the first stage intermediate pressure hose.

a) Use the foot-pound torque wrench and 3/4" crowfoot to tighten to 125 ±5 in lbs.

(10) Check Valve Fork Height. (Refer to Section 3.1.7.3 "Adjusting Valve Fork Height").

(11) Flow Test the Air Mask. (Refer to **Introduction: AirHawk® II Air Mask Maintenance and Repair, P/N 10104216 for Flow Test and Overhaul Requirements**)

### 3.2.3 Installing the Valve Assembly



(1) Insert the valve into the regulator housing with the valve fork up and facing away from the bypass port.

(2) Push the valve into the regulator housing.



- (3) Install a new o-ring.
  - a) Protect the o-ring with tape or a thin piece of paper.
  - b) Apply a small amount of Christo-Lube lubricant to the o-ring.
  - c) Slip the o-ring over the thread.
  - d) Remove the protective tape or paper.

- (4) Reinstall the bypass insert into the bypass port with the slot facing out.

- (5) Use the bypass body to screw the bypass insert into the valve. Hand tighten.
- (6) Hand tighten.

**NOTE:** If the bypass insert does not screw into the valve assembly easily, the valve assembly may not be properly aligned. Ensure that the valve assembly is seated fully in the regulator housing.

### 3.2.4 Installing the Bypass and Hose Assembly



- (1) Install the bypass screen.  
*Be careful not to damage the screen.*

**NOTE:** Make sure that the screen lays flat inside the body.



(2) Apply a thin film of Christo-Lube lubricant to a new O-ring.

(3) Install the new O-ring into the first groove of the hose swivel.



(4) Apply a thin film of Christo-Lube lubricant into the second groove of the hose swivel.

(5) Insert the swivel into the bypass body.



(6) Slide the U-clip through the bypass body.

**NOTE:** The U-clip should slide through the bypass body freely.



(7) Slide the bypass knob onto the bypass body.



- (8) Insert the bypass body and hose assembly into the regulator housing so that the bypass body tabs line up with the slots in the bypass insert.



- (9) Ensure that the hose with swivel moves freely.
- (10) Slide the U-clip through the regulator housing.  
**NOTE:** The U-clip should slide through the regulator housing freely.

### 3.2.5 Installing the Diaphragm



- (1) Apply a thin coat of Christo-Lube to the top rim of the regulator housing and the bottom rim of the diaphragm.

- (2) Slide the diaphragm knob into the valve fork slot.



- (3) Slide the diaphragm toward the bypass handwheel.
- (4) Roll the diaphragm over the regulator- housing rim.

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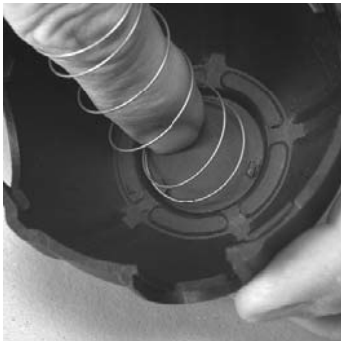
- (5) CBRN only: Place the CBRN Shield over the diaphragm assembly.
- (6) CBRN only: Replace the spring cap.
- (7) CBRN only: Tap lightly on the top of the spring cap to remove trapped air.

### 3.2.6 Installing the Regulator Cover and Spring

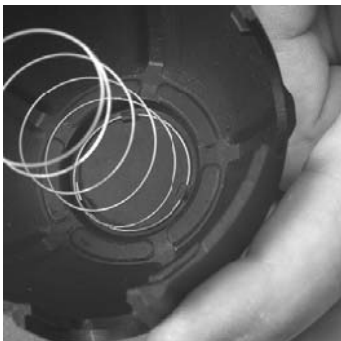
**NOTE:** The solid regulator cover does not use a spring retainer.



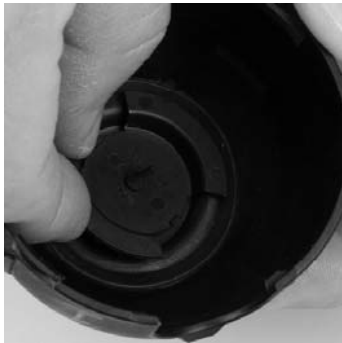
- (1) Insert the spring into solid cover.
  - a) Slide the spring onto a finger.
  - b) Insert spring and finger into the solid cover.
  - c) Attach last coil of spring to cover hooks.



- (2) Hold the spring in the center of the cover.



- (3) Engage the last coil of the spring to each of the three molded hooks
- (4) Ensure that the last coil of the spring is engaged to each of the three (3) molded hooks.
- (5) Purge models only: Attach spring and spring retainer by attaching last coil to retainer hooks.



- (6) Install the spring retainer.
  - a) Pull the stem through the retainer.
- (7) Double check proper engagement by lifting spring retainer.
- (8) Push regulator cover, spring, and spring retainer onto regulator housing.
- (9) Visually inspect the tabs. Make sure both are properly engaged.

 **WARNING!**

Double check proper engagement of both retaining latches by visual inspection to ensure that the regulator cover is securely attached to the regulator housing. If the regulator cover is not securely attached, the regulator could malfunction.

Failure to follow this warning can result in serious injury or death.

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## 4 G1 AirHawk II Regulator

### 4.1 Required Tools and Equipment

Description	Part Number
O-ring removal tool	636060
Christo-Lube lubricant	604070
Loctite 243	10110981
Torque wrench, 60 - 300 in·lbf	10148007
Flat-blade screwdriver	
3/4 in. crow foot wrench	

### 4.2 Replacement Kits

#### 4.2.1 Non-CBRN, Model Number 7-2991-1

Description	Part Number
Continuous Hose, Purge Cover	10190526
Continuous Hose, Solid Cover	10190529
Threaded Hose, Purge Cover, Regulator and Upper Hose Only	10190528
Threaded Hose, Solid Cover, Regulator and Upper Hose Only	10190531
Universal Quick Connect Hose, Purge Cover, Regulator and Upper Hose Only	10190527
Universal Quick Connect Hose, Solid Cover, Regulator and Upper Hose Only	10190530

#### 4.2.2 CBRN, Model Number 7-2979-1

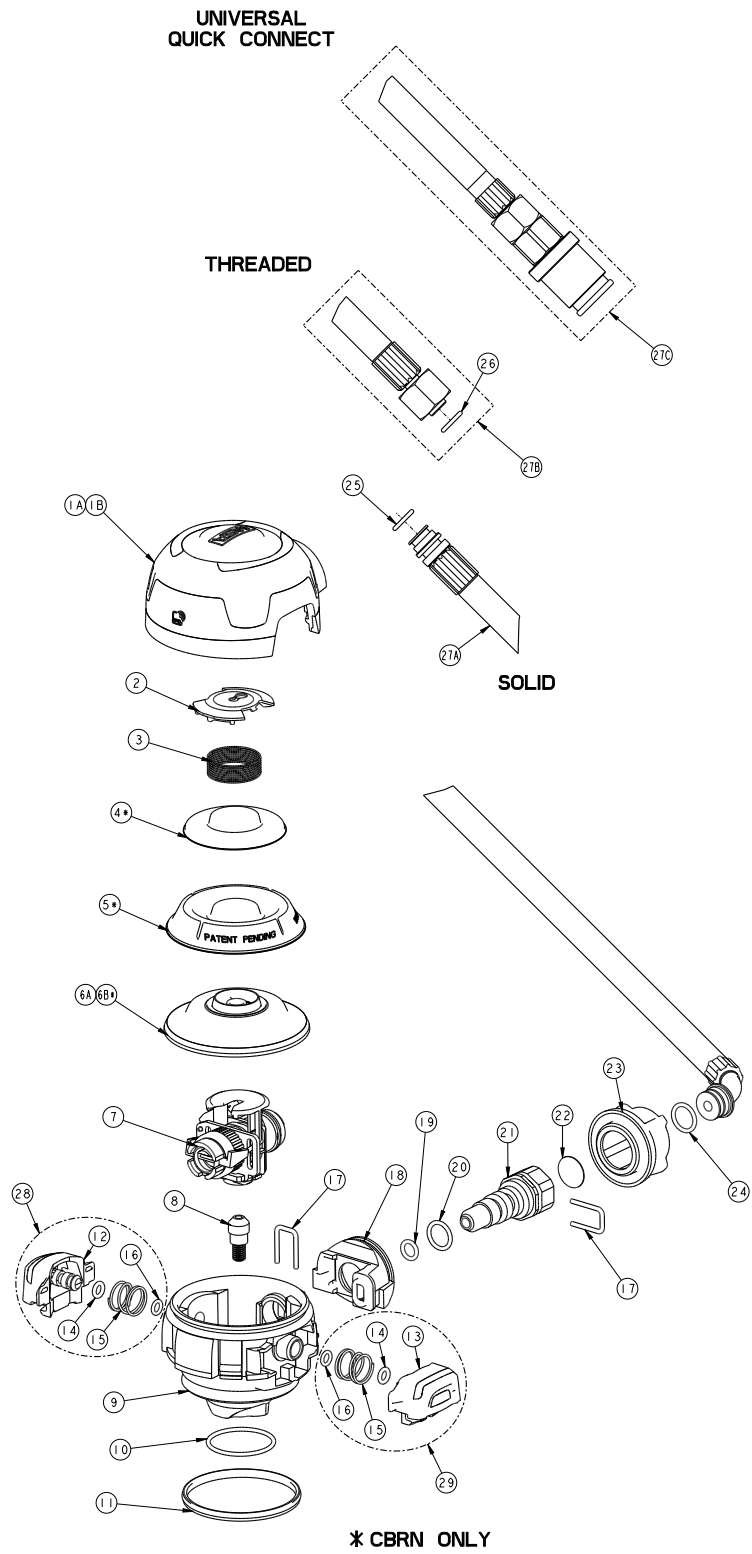
Description	Part Number
Continuous Hose, Purge Cover	10190520
Continuous Hose, Solid Cover	10190523
Threaded Hose, Purge Cover, Regulator and Upper Hose Only	10190522
Threaded Hose, Solid Cover, Regulator and Upper Hose Only	10190525
Universal Quick Connect Hose, Purge Cover, Regulator and Upper Hose Only	10190521
Universal Quick Connect Hose, Solid Cover, Regulator and Upper Hose Only	10190524

### 4.3 Overhaul Kits

Description	Part Number
Regulator Overhaul Kit	10188463
Regulator Overhaul Kit, CBRN	10188464

# G1 AirHawk II Regulator

## 4.4 Parts List

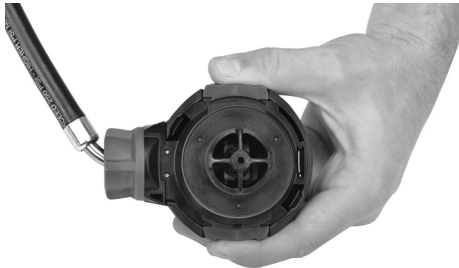


Item	Qty	Description	Part Number	
1A	1	COVER, G1 REGULATOR NON-PURGE	10146190-SP	
1B	1	COVER, G1 REGULATOR PURGE	10146212-SP	
2	1	RETAINER, SPRING	10146229-SP	
3	1	SPRING, PD	10180070	
4	1	CAP, SPRING	10047528	
5	1	SHIELD ASSEMBLY, FIREHAWK CBRN	10044026	
6A	1	DIAPHRAGM ASSEMBLY, NON-CBRN	10188499	
6B	1	DIAPHRAGM ASSEMBLY, CBRN	10039172	
7	1	VALVE ASSEMBLY	10180107	
8	1	CONE, ADJUSTER	10146240-SP	
9	1	G1 REG HOUSING ASSEMBLY, NON-ELEK	10164892	
10	1	O-RING, SILICONE, 70D, SIZE 024, ORANGE	10153639-SP	
11	1	GASKET SEAL, RING	10146238-SP	
12	1	BUTTON, BUDDY LIGHT, G1	10146218-SP	
13	1	BUTTON, ACTUATOR, GREY	10146220-SP	
14	2	O-RING, SILICONE, 70D SIZE 008, ORANGE	10082499-SP	
15	1	SPRING, BUTTON	10146237-SP	
16	2	O-RING, EPDM, 80D, SIZE 007, BLACK	10153637-SP	
17	1	U-CLIP, RETAINER	10159816-SP	
18	1	PLUG, G1 REGULATOR, INDUSTRIAL	10188450	
19	1	O-RING, URETHANE, 010	10188502	
20	1	O-RING, SILICONE, 70D, SIZE 013, ORANGE	10153638-SP	
21	1	BYPASS ASSEMBLY, G1 INDUSTRIAL	10188501	
22	1	SCREEN, BYPASS	10188503	
23	1	KNOB, G1 REGULATOR, INDUSTRIAL	10188449	
24	1	O-RING, FLUORSILICONE, 013, BLUE	10188504	
25	1	O-RING, SILICONE, SIZE 2-011	10191404	
26	1	O-RING, SILICONE, SIZE 010, RED	63198	
27A	1	HOSE ASSEMBLY, G1 IND, CONT	10190533	
27B	1	HOSE ASSEMBLY, G1 IND, THREADED	10190534	
27C	1	HOSE ASSEMBLY, G1 IND, QC, UNIVERSAL	10190532	
28	CONTAINS	1	BUTTON, BUDDY LIGHT, G1 REGULATOR	10160363-SP
			BUTTON, BUDDY LIGHT, G1	10146218-SP
			O-RING, SILICONE, 70D SIZE 008, ORANGE	10082499-SP
			O-RING, EPDM, 80D, SIZE 007, BLACK	10153637-SP
29	CONTAINS	1	BUTTON ASSEMBLY, ACTUATOR, GREY	10160350-SP
			BUTTON, ACTUATOR, GREY	10146220-SP
			O-RING, SILICONE, 70D SIZE 008, ORANGE	10082499-SP
			O-RING, EPDM, 80D, SIZE 007, BLACK	10153637-SP
			CHRISTO-LUBE	604070
		LOCTITE 243	10110981	

## 5 Maintenance and Repair Procedures

### 5.1 Regulator Cover

#### 5.1.1 Removing the Regulator Cover



- (1) Release all pressure from the system. Refer to Section 2.1 "Releasing Pressure from the SCBA" for instructions.
- (2) Put the regulator on a flat surface with the port side up.
- (3) Press and hold the release buttons.
- (4) Use a flat-blade screwdriver to release the retaining tabs on the regulator housing.
- (5) Let the cover and attached spring, spring cap, and CBRN shield (if applicable) fall into your hand.
- (6) Examine the regulator cover and attached spring, spring cap, and CBRN shield (if applicable).
  - a) If the regulator cover has cracks, burns, or other damage, replace it.
  - b) If the static pressure for the spring is too high or too low, replace the spring. Note that this is not a part that is usually replaced.
  - c) If the spring cap has tears, cracks, or other damage, replace it.
  - d) If the CBRN shield (if applicable) has tears, cracks, or other damage, replace it.

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### 5.1.2 Installing the Regulator Cover



#### WARNING!

- ▶ Make sure the U-clip in the regulator housing is in position before you attach the regulator cover.
- ▶ Make sure both retaining tabs are engaged correctly and the regulator cover is attached tightly to the regulator housing.

Failure to follow these warnings can result in serious injury or death.

- (1) Push the regulator release buttons to make sure the valve fork is in the lifted position.

**NOTE:** Make sure the diaphragm is engaged tightly over the regulator housing. Refer to Installing the Diaphragm for instructions.

- (2) Apply a thin layer of Christo-Lube lubricant to the edge rim of the diaphragm.



- (3) For CBRN model regulators, put the CBRN shield over the diaphragm assembly.



- (4) For CBRN model regulators, tap lightly on the top of the CBRN shield to remove trapped air.



- (5) Install the spring cap.
- (6) For CBRN model regulators, put the end of the spring over the protrusion of the CBRN shield.
- (7) Make sure the regulator cover is in position over the release buttons.
- (8) Push and hold the release buttons to make sure they operate correctly.

US



- (9) Push the regulator cover and attached spring and the spring retainer onto the regulator housing. Listen for a click when the retaining tabs engage correctly.



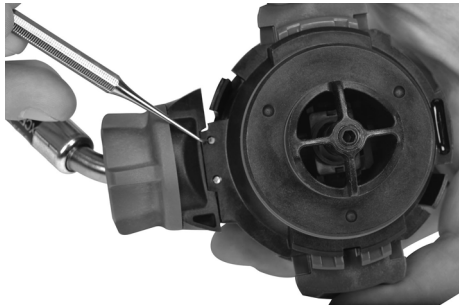
- (10) Make sure both retaining tabs are engaged correctly.

## 5.2 Regulator Bypass and Hose Assembly

### 5.2.1 Removing the Regulator Bypass and Hose Assembly

- (1) Remove the regulator cover. Refer to Removing the Regulator Cover for instructions.

**NOTE:** It is not necessary to remove the diaphragm.



- (2) Use an O-ring removal tool to push on the U-clip posts and disengage the U-clip from the regulator housing.

**NOTE:** Be careful not to cause damage to the diaphragm. Replace the diaphragm if damaged.



- (3) Remove the U-clip.

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- (4) Turn the bypass knob counterclockwise until it disengages from the regulator housing.



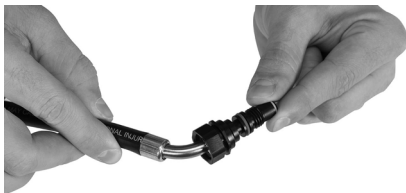
- (5) Remove the bypass assembly, bypass knob, and plug from the regulator.

**NOTE:** The bypass stem holds the plug in position. When the bypass stem is disengaged, the bypass knob is free.



- (6) Use an O-ring removal tool to disengage and remove the U-clip from the bypass stem.

- (7) Remove the U-clip.



- (8) Remove the bypass stem from the hose assembly.



- (9) Use an O-ring removal tool to remove the O-rings from the bypass stem.

- (10) Discard the O-rings.



- (11) Use an O-ring removal tool to make a hole in the center of the bypass screen, then disengage and remove the screen.

- (12) Discard the screen.



- (13) Use an O-ring removal tool to remove the O-ring from the end of the hose assembly that connects to the bypass stem.
- (14) Discard the O-ring.
- (15) Disconnect the hose assembly from the pressure reducer.

### 5.2.2 Installing the Regulator Bypass



- (1) Wind protective tape or a thin piece of paper around the threads of the bypass stem.



- (2) Apply a thin layer of Christo-Lube lubricant to a new O-ring (PN 10153638-SP).

- (3) Install the new O-ring on the bypass stem.



- (4) Apply a thin layer of Christo-Lube lubricant to a new O-ring (PN 10188502).

- (5) Install the new O-ring on the bypass stem.



- (6) Apply a thin layer of Christo-Lube lubricant to a new O-ring (PN 10188504).

- (7) Install the new O-ring on the end of the hose assembly that connects to the bypass stem.



- (8) Install a new bypass screen in the bypass stem.

- (9) Use an O-ring removal tool to push the screen into the bypass stem until the screen is fully engaged.

**NOTE:** Be careful not to cause damage to the screen.

Replace the screen if damaged.

- (10) Use the O-ring tool to push gently on the outer edge of the screen to engage the screen with the undercut of the bypass stem.





(11) Install the bypass stem on the hose assembly.



(12) Install the U-clip that holds the bypass stem on the hose assembly.



(13) Remove the protective tape or paper from the bypass threads.

(14) Apply a thin layer of Christo-Lube lubricant to the threads of the bypass stem.

(15) Install the bypass knob and plug on the bypass stem.

(16) Turn the bypass knob clockwise to hand-tighten it. To prevent damage to the seal, do not tighten the bypass knob too much.



(17) Install the bypass assembly in the port of the valve assembly.

**NOTE:** If you cannot install the bypass assembly into the valve assembly easily, make sure the valve assembly is aligned correctly and engaged tightly in the regulator housing.



(18) Install the U-clip in the regulator housing.

**NOTE:** If you cannot install the bypass assembly into the valve assembly easily, make sure the valve assembly is aligned correctly and engaged tightly in the regulator housing.

(19) Install the regulator cover. Refer to Section 5.1.2 "Installing the Regulator Cover" for instructions.

(20) Connect the hose assembly to the pressure reducer.

### 5.3 Regulator Spring and Spring Retainer

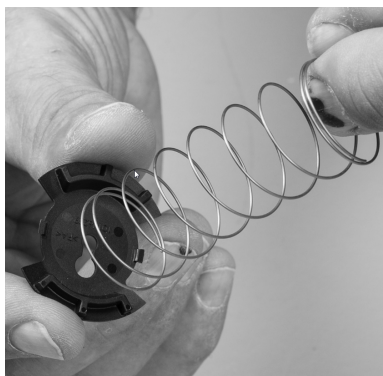
These procedures apply to purge and non-purge regulator covers.

#### 5.3.1 Removing the Regulator Spring and Spring Retainer

- (1) Remove the regulator cover. Refer to Section 5.1.1 "Removing the Regulator Cover" for instructions.



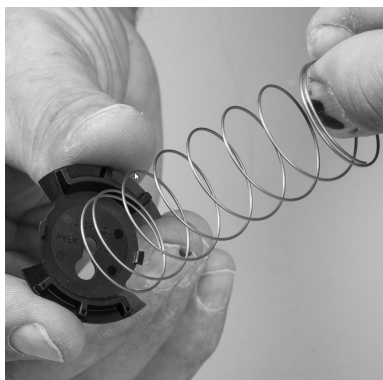
- (2) Slide the spring retainer out of its position on the regulator.



- (3) Turn the spring counterclockwise to remove it from the retainer.

**NOTE:** Do not stretch the spring.

#### 5.3.2 Installing the Regulator Spring and Spring Retainer



- (1) To attach the spring to the retainer, turn the last coil of the spring clockwise onto the retainer hooks.

**NOTE:** Do not stretch the spring.



- (2) Slide the spring retainer into position on the regulator cover.
- (3) Install the regulator cover. Refer to Section 5.1.2 "Installing the Regulator Cover" for instructions.

## 5.4 Diaphragm

### 5.4.1 Removing the Diaphragm

- (1) Remove the regulator cover. Refer to Section 5.1.1 "Removing the Regulator Cover" for instructions.
- (2) Remove the regulator spring and spring retainer. Refer to Section 5.3.1 "Removing the Regulator Spring and Spring Retainer" for instructions.



- (3) For CBRN model regulators, remove the CBRN shield assembly and spring cap.



- (4) Lift the edge of the diaphragm away from the regulator housing.



- (5) Slide the diaphragm away from the bypass knob to disengage the diaphragm tab from the valve fork.

### 5.4.2 Installing the Diaphragm



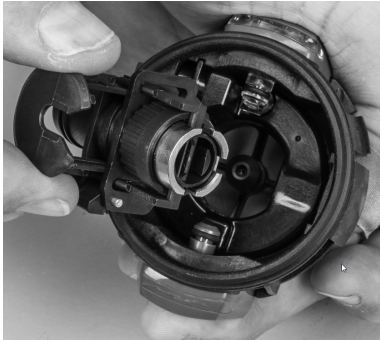
- (1) Apply a thin layer of Christo-Lube lubricant to the top rim of the regulator housing.
- (2) Fold the edges of the diaphragm up so you can see the diaphragm tab.
- (3) Push the regulator release buttons to make sure the valve fork is in the lifted position.
- (4) Install the diaphragm tab in the slot in the valve fork and slide the diaphragm toward the bypass knob.



- (5) Install the diaphragm over the rim of the regulator housing.
- (6) Install the regulator spring and spring retainer. Refer to Section 5.3.2 "Installing the Regulator Spring and Spring Retainer" for instructions.
- (7) Install the regulator cover. (See Section 5.1.2 "Installing the Regulator Cover" for instructions.)

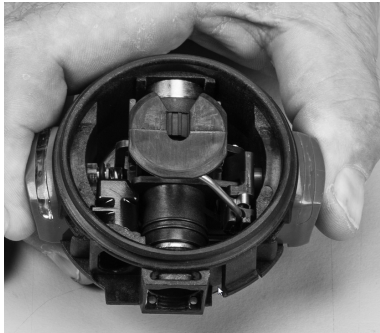
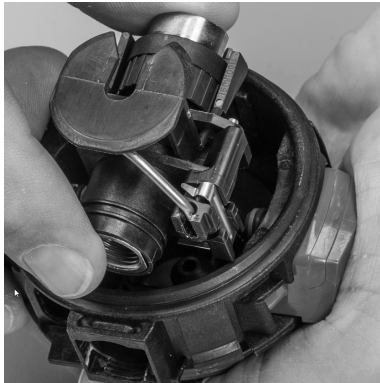
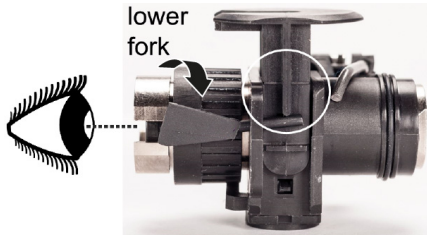
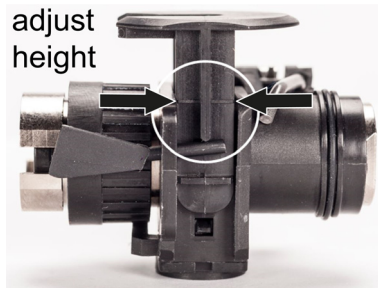
## 5.5 Valve Assembly

### 5.5.1 Removing the Valve Assembly



- (1) Remove the regulator cover. Refer to Section 5.1.1 "Removing the Regulator Cover" for instructions.
- (2) Remove the diaphragm. Refer to Section 5.4.1 "Removing the Diaphragm" for instructions.
- (3) Push the regulator release buttons to make sure the valve fork is in the lifted position.
- (4) Carefully lift the valve assembly out of the regulator housing.

### 5.5.2 Installing the Valve Assembly



- (1) Look at the side of the valve housing. Make sure the height line on the valve fork aligns with the top of the valve housing.
- (2) If necessary, adjust the height of the valve fork.
  - To lower the fork, turn the adjustment wheel clockwise.
  - To lift the fork, turn the adjustment wheel counterclockwise.
- (3) Push down on the top of the valve fork to make sure the valve fork assembly can move up and down freely.

- (4) Install the valve assembly into the regulator housing. Make sure the valve fork is in the lifted position and points away from the bypass port.
- (5) Make sure the valve assembly is engaged tightly in the regulator housing.
- (6) Push the regulator release buttons to make sure the valve fork is in the lifted position.
- (7) Install the diaphragm. Refer to Section 5.4.2 "Installing the Diaphragm" for instructions.
- (8) Install the regulator cover. Refer to Section 5.1.2 "Installing the Regulator Cover" for instructions.

**NOTE:** If you cannot install the bypass into the valve assembly easily, make sure the valve assembly is aligned correctly and engaged tightly in the regulator housing.

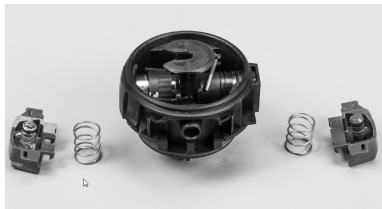
### 5.6 Regulator Buttons

#### 5.6.1 Removing the Regulator Buttons

- (1) Remove the regulator cover. Refer to Section 5.1.1 "Removing the Regulator Cover" for instructions.
- (2) Remove the valve assembly. Refer to Section 5.5.1 "Removing the Valve Assembly" for instructions.



- (3) Remove and discard the retaining O-rings on the button posts.



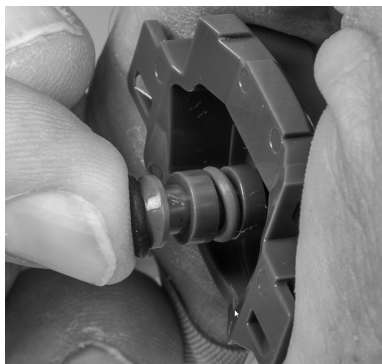
The springs will push the buttons from the regulator housing. Be careful not to lose the springs.



- (4) Use an O-ring removal tool to remove the sealing O-rings from the button posts.
- (5) Discard the O-rings.

**NOTE:** Do NOT make scratches on the O-ring grooves.

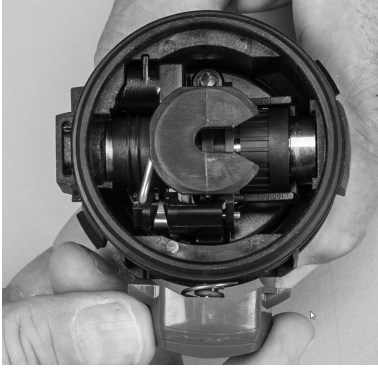
#### 5.6.2 Installing the Regulator Buttons



- (1) Wind protective tape or a thin piece of paper around the button posts.
- (2) Apply a thin layer of Christo-Lube lubricant to two new sealing O-rings (PN 10082499-SP).
- (3) Install a new sealing O-ring on each button post.
- (4) Remove the protective tape or paper.

**NOTE:** Do NOT apply Christo-Lube lubricant to the new retaining O-rings (PN 10153637-SP).

- (5) Install a new retaining O-ring (PN 10153637-SP) on each button post.
- (6) Install the springs on the buttons.



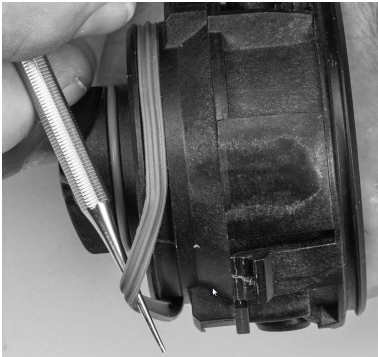
- (7) Make sure the buttons are in the following orientation:
- Bypass in the 9:00 o'clock position
  - Clear button in the 12:00 o'clock position
  - Gray button in the 6:00 o'clock position



- (8) Push each button in completely to make sure all operate correctly.
- (9) Pull on each button to make sure all are engaged tightly.
- (10) Install the valve assembly. Refer to Section 5.5.2 "Installing the Valve Assembly" for instructions.
- (11) Install the regulator cover. Refer to Section 5.1.2 "Installing the Regulator Cover" for instructions.

## 5.7 Regulator Seal Ring

### 5.7.1 Removing the Regulator Seal Ring

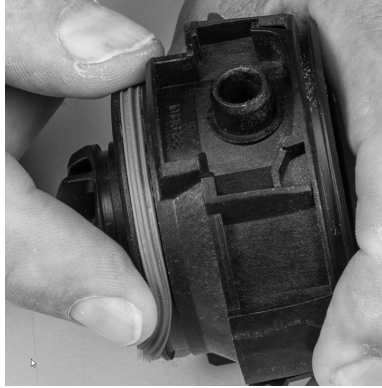


- (1) Remove the regulator seal ring and discard it.
- (2) Use an O-ring removal tool to remove the O-ring.
- (3) Discard the O-ring.

### 5.7.2 Installing the Regulator Seal Ring

#### **WARNING!**

A regulator seal that is not engaged correctly can cause an air leak.  
Failure to follow this warning can result in serious injury or death.



**NOTE:** Do NOT apply Christo-Lube lubricant to the regulator seal ring or O-ring.

- (1) Install a new seal ring above the regulator outlet. Make sure the seal ring is engaged in the groove.



- (2) Install a new O-ring (PN 10153639-SP) on the regulator outlet. Make sure the O-ring is engaged in the groove.

## 5.8 Regulator Housing

### 5.8.1 Removing the Regulator Housing



- (1) Remove the regulator cover. Refer to Section 5.1.1 "Removing the Regulator Cover" for instructions.
- (2) Remove the regulator bypass and hose assembly. Refer to Section 5.2.1 "Removing the Regulator Bypass and Hose Assembly" for instructions.
- (3) Remove the valve assembly. Refer to Section 5.5.1 "Removing the Valve Assembly" for instructions.
- (4) Remove the regulator buttons. Refer to Section 5.6.1 "Removing the Regulator Buttons" for instructions.
- (5) Remove the regulator seal ring. Refer to Section 5.7.1 "Removing the Regulator Seal Ring" for instructions.
- (6) Examine the regulator housing for wear or damage. If the housing has damage, discard it.



### 5.8.2 Installing the Regulator Housing

- (1) Install the regulator seal ring. Refer to 5.7.2 "Installing the Regulator Seal Ring" for instructions.
- (2) Install the regulator buttons. Refer to 5.6.2 "Installing the Regulator Buttons" for instructions.
- (3) Install the valve assembly. Refer to 5.5.2 "Installing the Valve Assembly" for instructions.
- (4) Install the regulator bypass and hose assembly. Refer to 5.2.2 "Installing the Regulator Bypass" for instructions.
- (5) Install the regulator cover. Refer to 5.1.2 "Installing the Regulator Cover" for instructions.

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