

KM Diamond Water Purge Assembly Maintenance and Testing

⚠ WARNING

This module is our effort to explain the maintenance and testing of the KM Diamond sub-assemblies and the helmet as a complete unit. WE DO NOT HEREIN MAKE ANY EFFORT TO TEACH or REPLACE the recommended KMDSI/Dive Lab, Inc. Technician training for the KM Diamond Deep Sea Diving Helmet. We assume the reader has the experience and is familiar with the operation, inspection, and repair process of Kirby Morgan Diving Systems. We highly recommend that all divers should receive proper training, under controlled conditions, in the use of any model of commercial diving helmet that they have not previously used or trained in before use on the job.

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NOTE

KM Diamond helmets manufactured before April 2022 do not have the main body's spring adjuster insert or recessed O-ring groove found on the main body. These new adjustable components are recommended.

Tools Required

- Metal Pick
- $\frac{3}{8}$ " Hex Wrench
- Christo-Lube® or Equivalent

1.1 Disassembly

1) Remove O-ring.



2) Use pick to remove Retaining Ring.



5) Remove the Valve Cap.



3) Remove the Retaining Cap.



6) Using Thumb, press inward on the Valve Seat Insert.

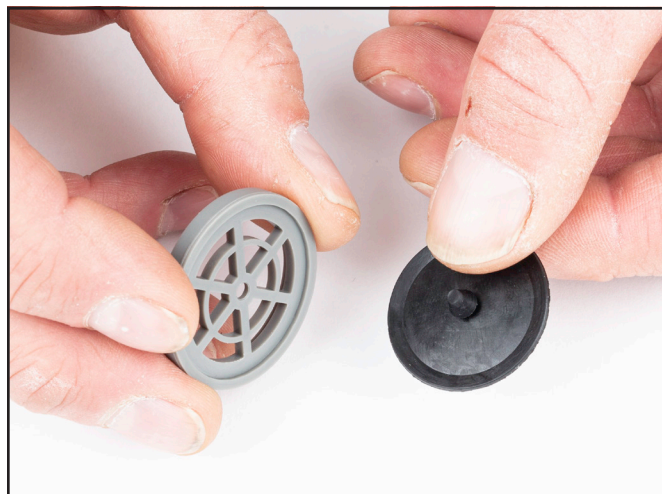


4) Remove the spring.



Compression Sleeve keeps water dump valve seat insert in place.

7) Valve assembly and Compression Sleeve should slide out of main body.



9) Remove O-rings from grooves found inside the main body.

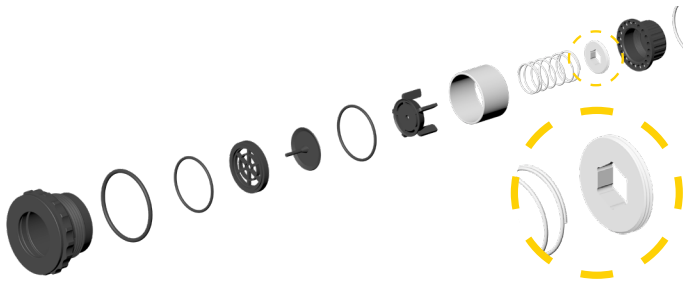


8) Remove old valve from Valve Seat Insert.



O-rings are set in grooves found closest to the knurled end on the main body.





1.2 Reassembly

Tools Required

- 3/8" Hex Wrench
- Christo-Lube® or Equivalent



NOTE

It is not recommended to remove the Spring Adjustment Insert. If the insert was removed, install the insert into the Retaining Cap and screw it into the cap until flush. Set aside.



NOTE

Raised edge goes into the Retaining Cap.

1) Install O-ring onto main body (NO LUBE).



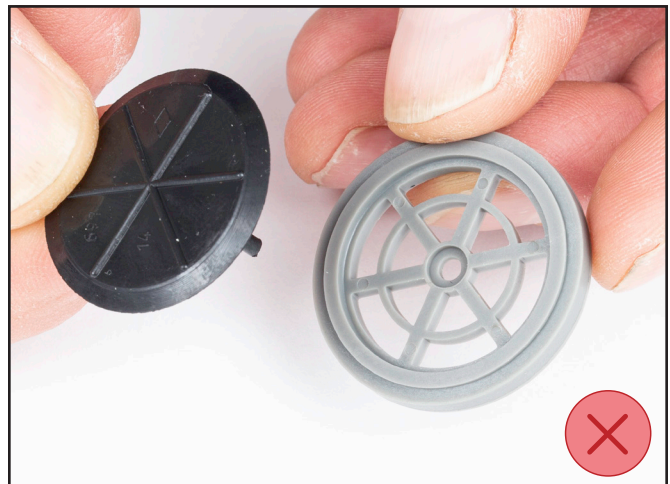
2) Lightly lubricate two internal O-rings with Christo-lube.

3) Install O-rings into grooves found inside the main body.



O-rings set in O-rings grooves found closest to knurled end of main body.

4) Install valve onto Valve Seat Insert. Leading edge of exhaust valve sits inside of the outer edge of the Valve Insert.



5) Insert Valve Insert with valve installed into main body.



The valve will open into the main body.



Extended rubber valve stem will face out from the main body. Ensure valve insert is pushed into main body past the two O-rings



A click may indicate insert is correctly in place.

NOTE

6) Trim excess material from valve stem.



7) Lightly lubricate Compression Sleeve and insert into main body.



8) Place Retaining Cap into main body and push

down to ensure sleeve is bottomed out into main body.



9) Ensure O-rings are not damaged during installation.

10) Slide Valve Cap into Compression Sleeve.



Valve Cap legs point towards the open end of the main body.

11) Insert Spring into groove of Valve Cap.





Spring must stay inside groove of Valve Cap

NOTE

12) Press Retaining Cap down into body until groove for Retaining Ring is visible.



13) Insert Retaining Ring to complete installation.



1.3 Isolating the Water Purge Assembly for Lift Off Parameters

The Water Purge Assembly must be installed into the helmet with pick up tubes attached.

The KM Diamond helmet will need to have the blanking plate installed and manometer connected. Both are part of the Diamond Set Up & Test Kit Part Number: DL-D00 (contact Dive Lab, Inc for specifics)

For complete test fixture installation and operation reference KM Diamond Final Test module.

1) To isolate the Water Purge assembly, for testing the OPRV must be rotated closed (clockwise).



2) Place Water Purge Assembly exit port in a small cup of water.



3) While maintaining a steady flow of gas through helmet, press and hold stem on exhaust assembly.



When bubbles appear that is the indication the water dump valve is opening.

Observe manometer, ensure reading is within specified limits.



1.4 Spring Adjustment Water Purge Valve

Adjustments are needed if the air bubble level in the manometer is outside specified limits during test.



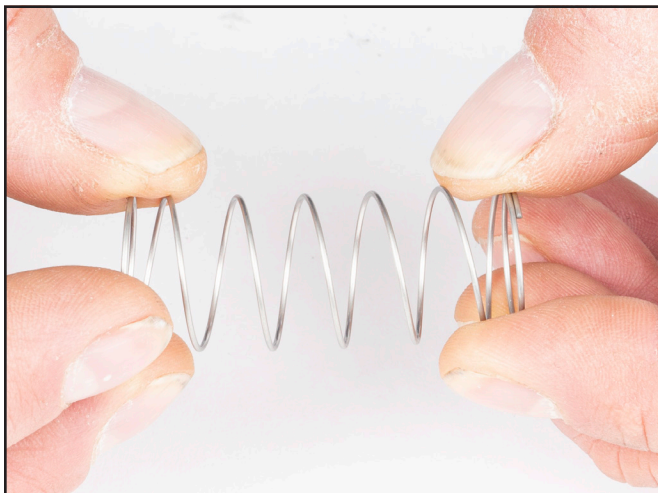
NOTE

KM Diamond helmets manufactured before April 2022 do not have the main body's spring adjuster insert or recessed O-ring groove found on the main body. These new adjustable components are recommended.

The spring must be removed from the water purge assembly and either stretched or compressed in order to make adjustment.

1) Stretch spring to increase back-pressure. **DO**

NOT stretch beyond one inch of spring's free length.



2) Compress spring to decrease back-pressure



1.4.1 Helmets Equipped with Spring Adjuster Insert

Tools Required

- $\frac{3}{8}$ " Hex Wrench

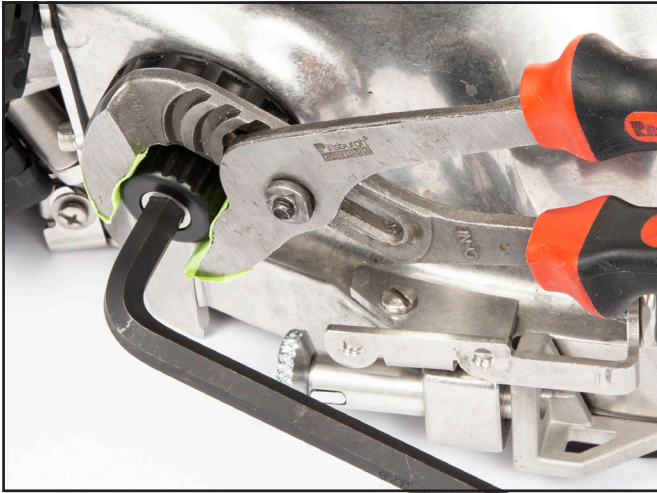


NOTE

To increase back pressure turn insert clockwise. To decrease back pressure turn insert counter clockwise.

1) To increase the back pressure (move the bub-

ble down the manometer) turn insert in one full turn and retest.



2) Continue to make adjustments until the correct back pressure is achieved.

**NOTE**

Full range is about six full turns.