Stainless Steel Side Block

Contents

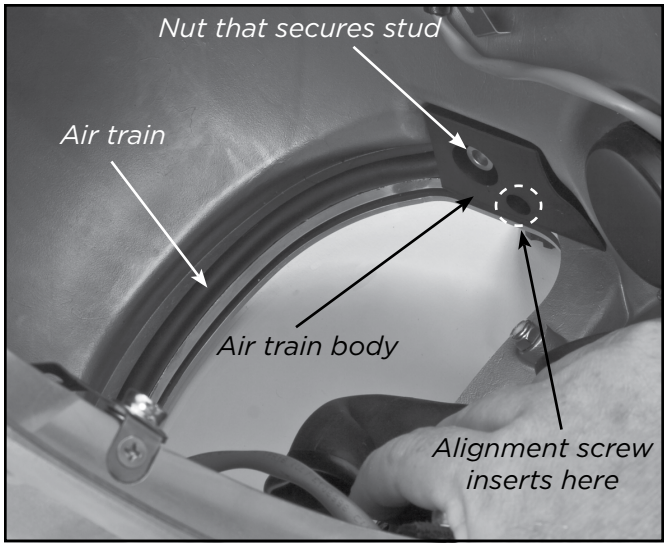
SSB-1 **1.1 Separating the Side Block Assembly from the Helmet Shell**
SSB-3 1.1.1 Stud Removal
SSB-4 1.1.2 Stud Installation
SSB-4 **1.2 Side Block Assembly Replacement**
SSB-6 **1.3 Steady Flow Valve**
SSB-6 1.3.1 Disassembly of the Steady Flow Valve
SSB-8 1.3.2 Cleaning and Lubricating
SSB-9 1.3.3 Reassembly of the Steady Flow Valve
SSB-11 **1.4 Emergency Gas System Valve Assembly**
SSB-11 1.4.1 Disassembly of the Emergency Valve (EGS Valve)
SSB-13 1.4.2 Cleaning and Lubricating
SSB-13 1.4.3 Reassembly of Emergency Valve (EGS Valve)

1.1 Separating the Side Block Assembly from the Helmet Shell

Tools required:

- Putty Knife
- 7⁄16 inch Socket with Driver
- 5⁄32 Hex Key (Ball End Hex Key Screwdriver is Helpful)

1. Removal of the side block assembly requires removing the air train.



The nut seen here secures both the air train and the side block.

2. Remove the nut and washer that help to secure the air train using the 7⁄16 inch socket.

3. Next, the alignment screw that also helps to secure the side block is removed from the recess in the air train body.



Remove the alignment stud from within the air train body.

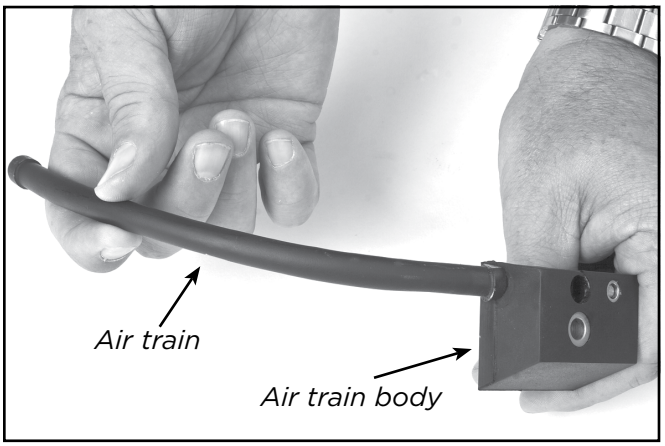
NOTE

The alignment screw is located in a recess below the stud.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008

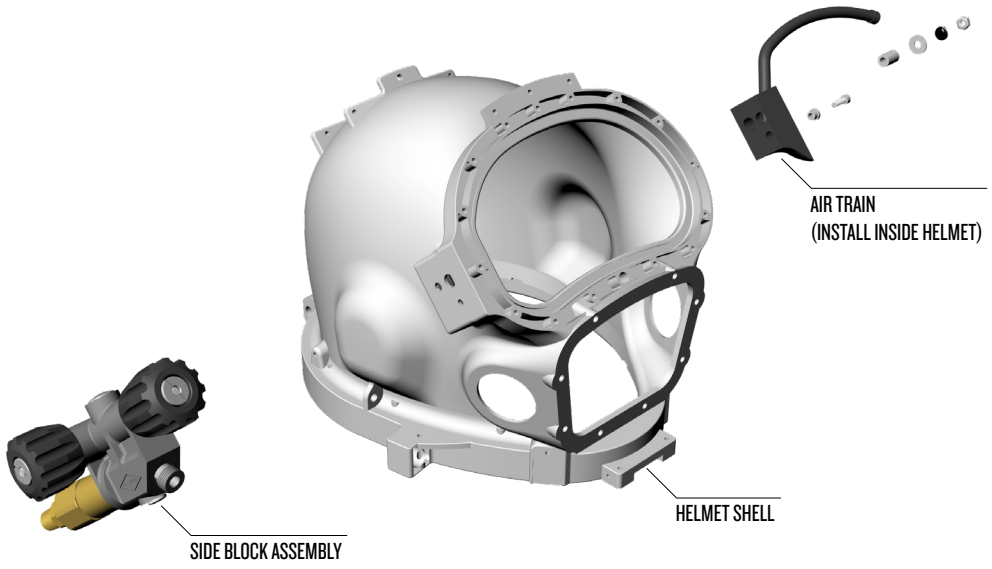


Remove the air train along with the air train body.



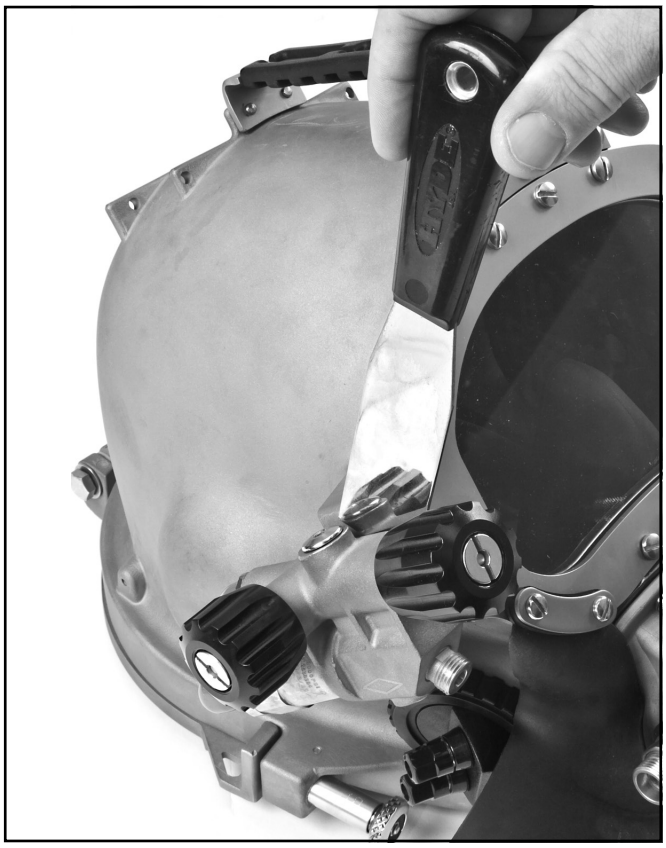
The air train and the air train body are shown above. The air train snaps into the body and is held in place by a small barb on the tube that fits into a matching groove in the rubber air train body. The outer curve of the air train tube must be positioned to sit in the area behind the port retainer with the holes in the tube positioned so that flowing gas from the tube will defog the port.

4. The side block assembly is now unfastened, but held in place by the rubber sealing compound (silicone sealant) that acts as a glue. It may be necessary to rock just slightly, or pry the side block from the helmet shell. A thin putty knife can be pushed between the side block and the helmet shell to help free it.



The fasteners that secure the side block also hold the air train in place.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008



A thin putty knife can be pushed between the side block and the helmet shell to help remove the side block.

Do not use a screwdriver or chisel to remove the side block as scratches or gouges to the shell could result. Be sure to peel or scrape the old silicone sealant away from both sealing surfaces before reassembling.

5. If you plan to rebuild the side block assembly, it should be done at this time, while the side block is off the helmet. Overhaul the steady flow valve, easily removed at this time and emergency valve in accordance with "1.3 Steady Flow Valve" on page SSB-6. Overhaul the one-way valve in accordance with "1.1 One Way Valve" on page OWV-1.

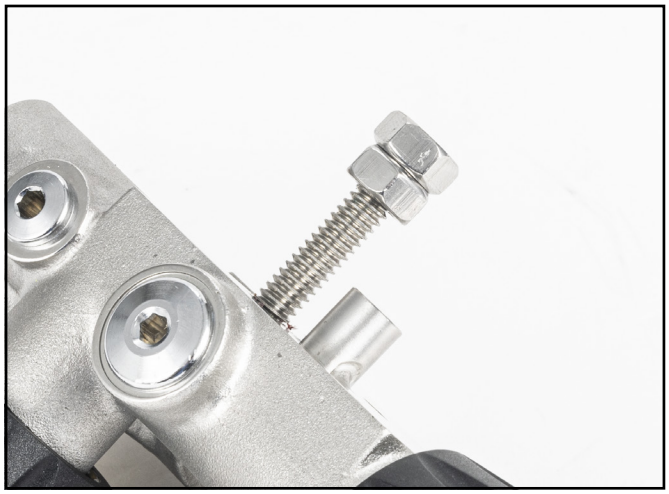
6. Be sure to remove all traces of old silicone sealant from the side block and helmet shell.

1.1.1 Stud Removal

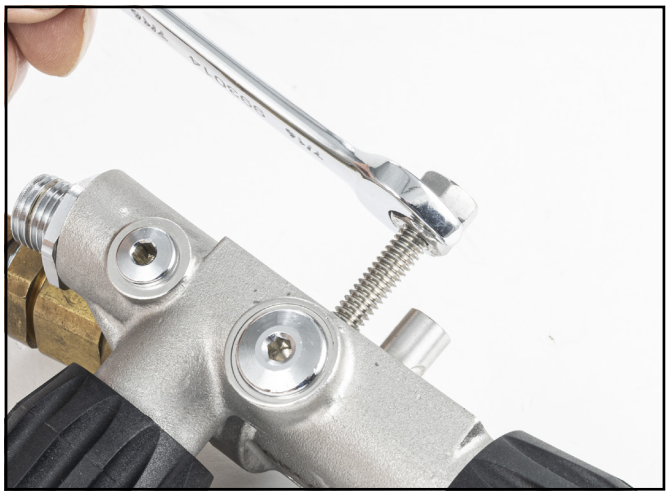
Tools required:

- Two 7⁄16" Open-Ended Wrenches
- Two ¼-20 UNC Nuts (KMDSI P/N 530-317)

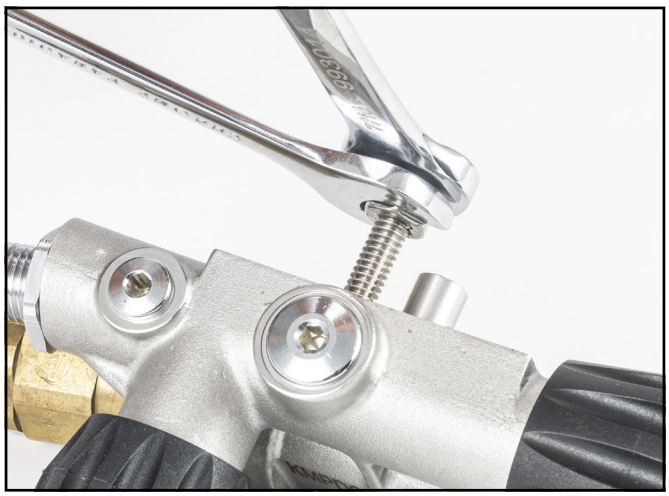
1. Install two ¼-20 UNC nuts on the side block stud and tighten them together.



2. Using the bottom nut, unscrew the stud.



3. Use a backup wrench to hold the bottom nut in place while using an additional 7⁄16" wrench to loosen the nuts away from each other.



© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008

1.1.2 Stud Installation

Tools required:

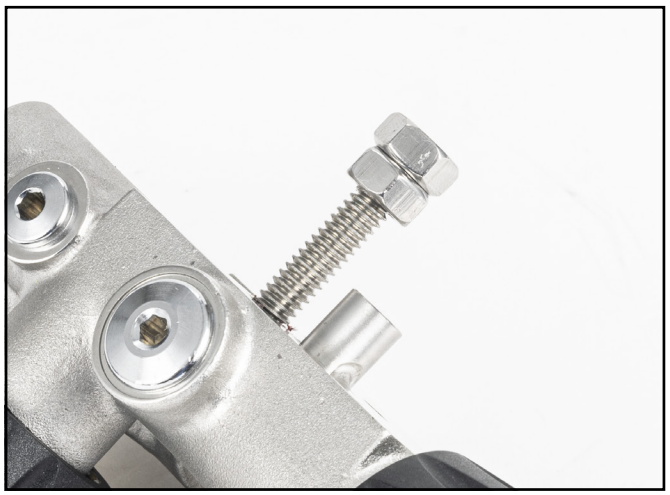
- Loctite® 248 or an equivalent medium-strength thread locker *(not required if installing a new stud with factory pre-applied thread locker)*
- Two 7⁄16" Open-Ended Wrenches
- Torque Wrench with 7⁄16" Attachment
- Two ¼-20 UNC Nuts (KMDSI P/N 530-317)

1. Remove old Loctite® and clean the stud threads.

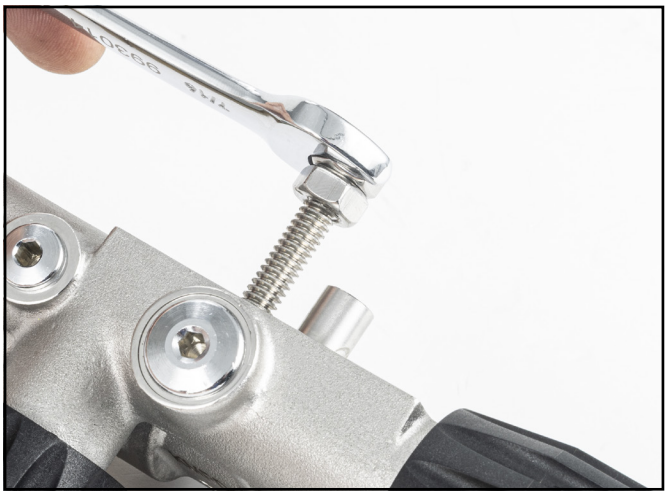
2. Install two ¼-20 UNC nuts on the stud and tighten them together.

3. Apply Loctite® 248 or an equivalent medium-strength thread locker to the opposite end of the stud, then hand-thread it into the side block *(not required when installing a new stud with factory-applied thread locker)*.

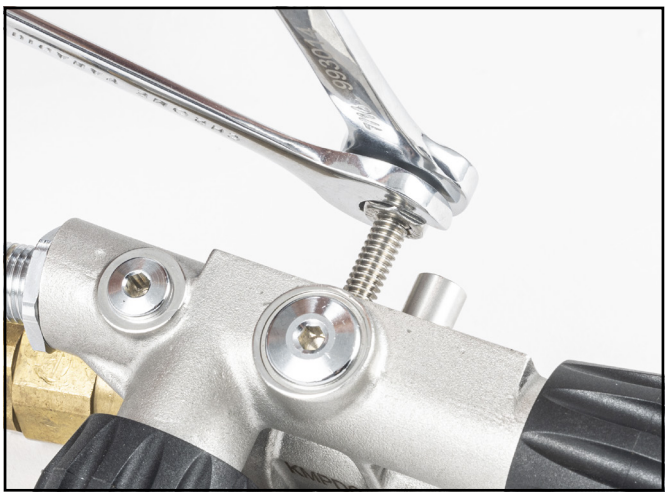




4. Using the top nut, torque to the specified value. See "Torque Specs" module.



5. Use a backup wrench to hold the bottom nut in place while using an additional 7⁄16" wrench to loosen the nuts away from each other and remove the nuts from the stud.



1.2 Side Block Assembly Replacement

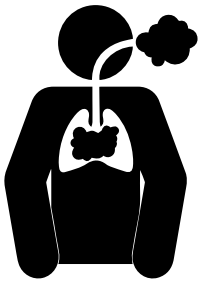
If a new side block is being installed, or if the side block has been removed and rebuilt, make sure it aligns correctly in the holes of the helmet shell before applying RTV silicone sealant.

1. Silicone sealant must be applied to the side

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008

block prior to installation on the helmet shell. Use only DOWSIL™ 732 or an equivalent RTV sealant

⚠ WARNING



Use silicone sealant in a well ventilated area. Do not breathe the fumes from uncured silicone sealant. These fumes are dangerous and can cause unconsciousness. They can also cause long term damage to body tissue. Read and follow all precautions listed on the silicone sealant tube and Material Safety Data Sheet.

Care must be taken to avoid sealant entering the air opening in the side block. Be sure to remove all excess silicone sealant before it sets up.

⚠ WARNING

If silicone sealant is blocking the air flow into the mask it must be cleaned out. If it is not cleaned out, the diver may not be able to properly defog the mask or clear a flooded mask quickly. In addition, if the demand regulator is not delivering air properly, the diver cannot use the free flow system as a source of breathing air. This could lead to suffocation.

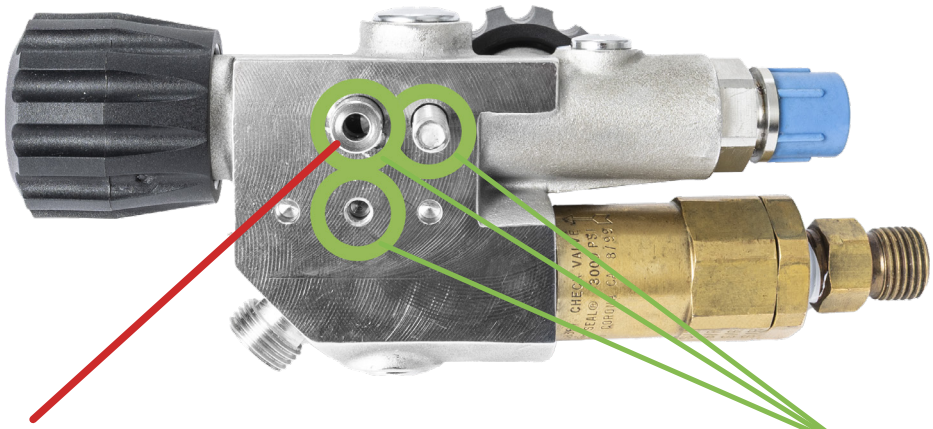
2. Before installing the air train into the helmet, make sure the screw spacer is properly and fully inserted. It is sometimes easier to install the large sleeve over the stud after the air train body is installed.

3. Install the air train body into its proper position inside the helmet shell. The stud on the side block penetrates the larger hole in the air train body.



Install the air train and air train body inside the helmet.

4. Thread the screw through the spacer and through the air train body and helmet shell and lightly tighten into the side block body.



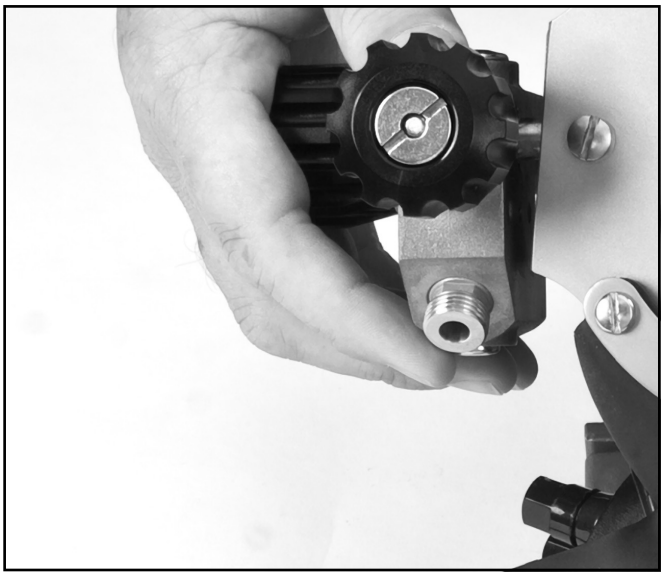
DO NOT BLOCK AIR OPENING!

Apply silicone sealant to these areas

A generous application of silicone sealant must be applied to the side block prior to installation on the helmet shell or mask frame. Use only DOWSIL™ 732 or an equivalent RTV sealant.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008

5. Install the large sleeve onto the stud. Slide the flat washer and the lock washer onto the stud. Run the stud nut down the stud and tighten. See "Torque Specs" module. **DO NOT OVERTIGHTEN.**



Install the side block on the helmet shell.

6. Tighten the screw to the correct torque. See "Torque Specs" module.

7. Clean off all excess silicone sealant.

8. Test the side block prior to diving to ensure that no silicone sealant is blocking the air flow to the helmet. If it is, it must be cleaned out prior to diving.

⚠ WARNING

Do not dive the helmet until the sealant has had time to cure. Check the directions on the tube of sealant for curing time. If the helmet goes into the water before the sealant has cured it could leak through the side block mounting stud hole, screw hole, or air flow hole. This could lead to drowning.

1.3 Steady Flow Valve

SPECIAL NOTE

To avoid confusion, be aware that the steady flow valve is also commonly referred to as the **defogger valve**, or **free-flow valve**, e.g. P/N 520-524 knob for the defogger is called the "steady-flow" knob on the exploded views.

1.3.1 Disassembly of the Steady Flow Valve

Tools required:

- Soft Jaw Vise
- ¼ inch Slotted Flat Blade Screwdriver
- Torque Wrench with 13⁄16 inch Open End Attachment

The steady flow valve (also referred to as free-flow or defogger) components are disassembled as follows:

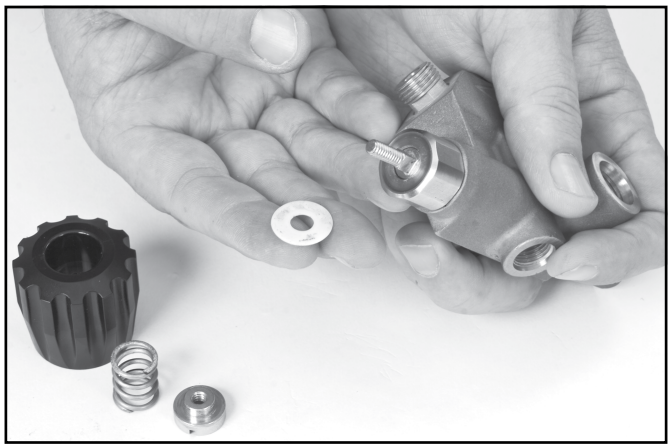
1. Back out the control knob all the way (valve in the fully open position).

2. Remove the lock nut and the spring, control knob, and washer. Sometimes the washer will stick to the inside of the knob.



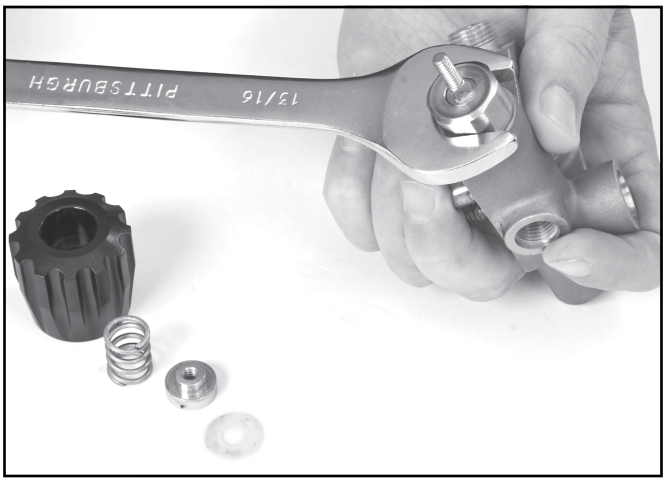
Remove the nut from the steady flow valve knob.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008



Do not lose the washer that sits between the steady flow valve knob and the bonnet.

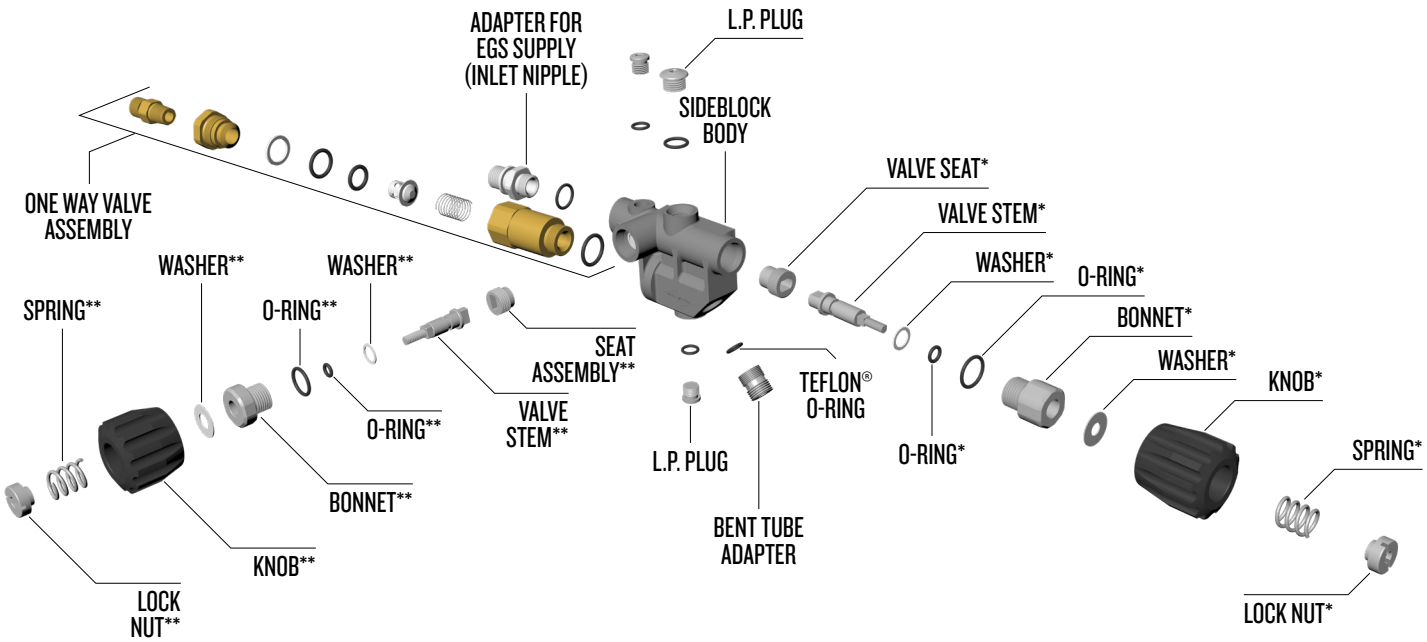
3. Unscrew the bonnet. Its O-ring will come off with it. The valve stem, O-ring, and washer usually come out with the bonnet and can be pushed out of the bonnet once removed from the side block.



Loosen the bonnet to remove the valve stem.

4. If the stem remains in the side block body it can be lifted out after the bonnet is removed.

5. The seat assembly can be unscrewed from the side block body with the stem or a screwdriver.

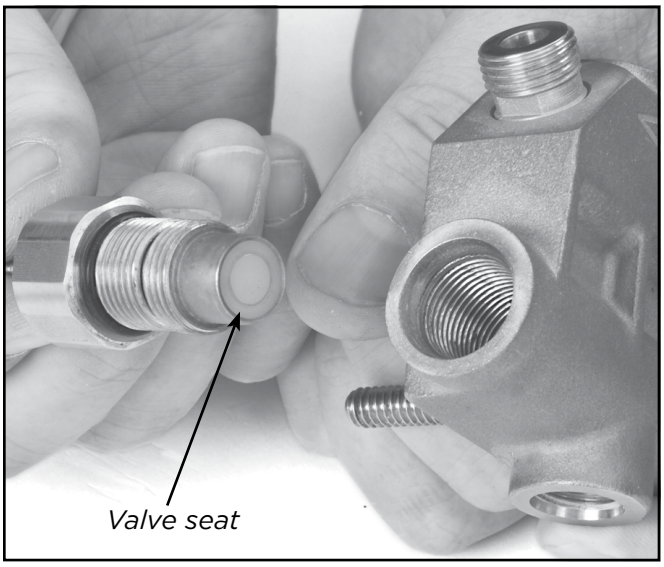


**** Components Of Emergency Valve (EGS Valve)**

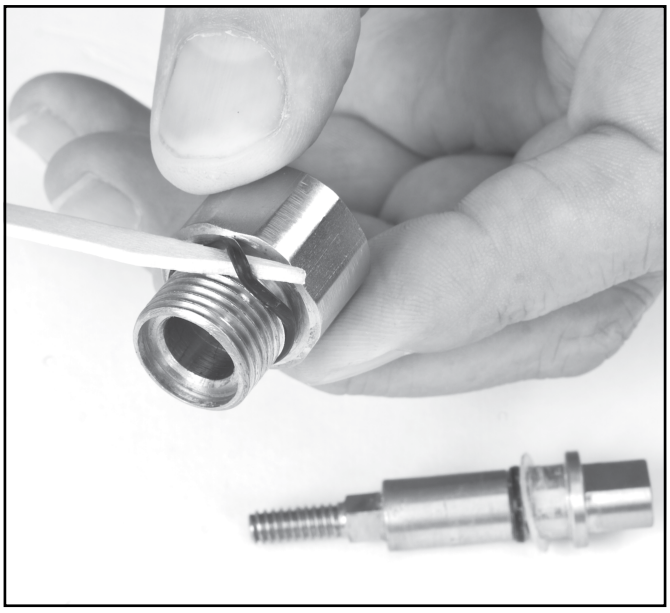
*** Components Of Steady Flow Valve**

Components of the Side Block, including the One Way Valve, EGS and Steady Flow Valve.

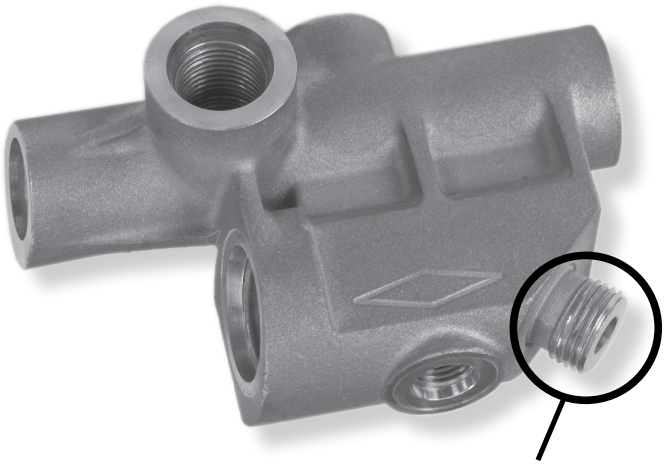
© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008



As you unscrew the bonnet, the valve stem and seat will usually come out of the side block together. Note the condition of the seat as shown here. The seat in the steady flow valve is a different size than the EGS valve seat. Since the parts have a similar appearance, it is a good idea to keep the parts for the steady flow and EGS valve separate. To help prevent incorrect installation and or confusion.



Use a toothpick, credit card, or other non-metal objects to remove the O-rings for cleaning and replacement. Note that the bonnet on the steady flow valve is longer than the bonnet on the EGS valve.



The bare side block is shown here. It is machined from a single block of stainless steel. Note that the bent tube adapter is removed for service and can be replaced if damaged, but this requires the P/N 540-552 Side Block Wrench. Check with your authorized repair center for tool availability.

1.3.2 Cleaning and Lubricating

1. Clean all the metal first in the soapy water solution and then in a 5% dilute solution of white vinegar/water. Rinse in fresh water.

2. Check the nylon seat for wear and/or contamination, and replace if necessary. Damage such as a rough face or cuts to the seat indicate it must be replaced. It is also a good indicator of possible line containments.

3. The nylon washer and O-ring must be replaced if worn.

4. Be sure to place a light coating of lubricant on all internal moving parts, O-rings, and washers. However, **DO NOT** lubricate the nylon seat, as this will attract dust and debris.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008



Be sure to lubricate all parts, with the exception of the valve seat, prior to reassembly.

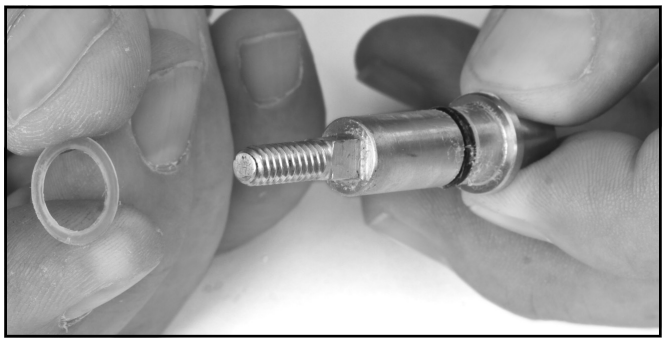
1.3.3 Reassembly of the Steady Flow Valve

Tools required:

- ⅜ inch Slotted Flat Blade Screwdriver
- 13⁄16 inch Open End Attachment on Torque Wrench
- Minimum mandatory replacement parts during overhaul:

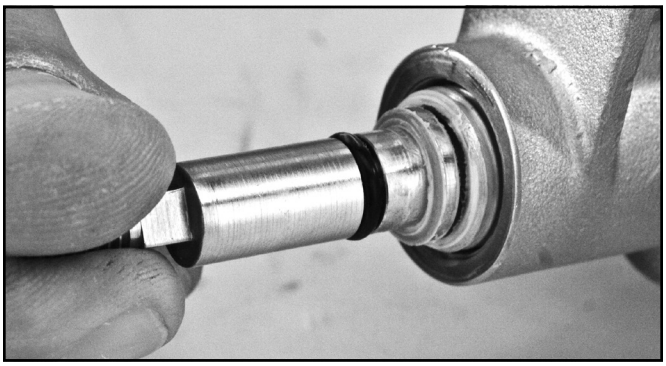
  Washers, O-rings

1. Install the new nylon washer and new O-ring onto the stem.



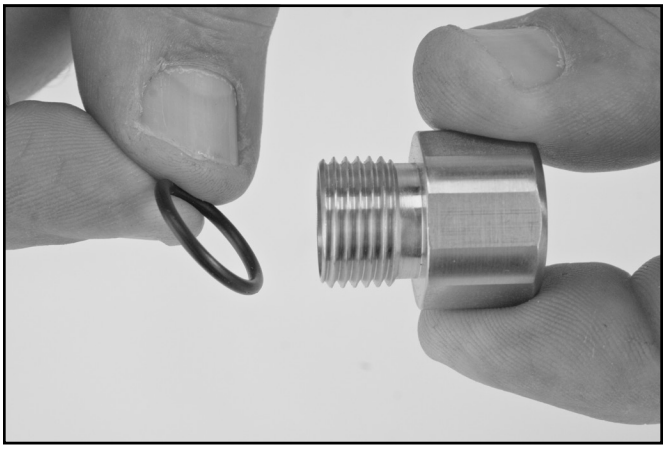
Install the washer on the steady flow valve stem.

2. Screw in the new seat assembly using the stem. Turn the stem clockwise until the seat lightly bottoms out. Leave the stem in place.



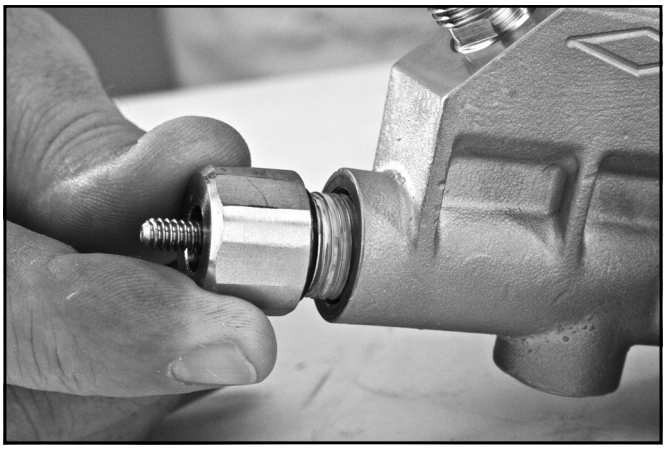
Install the new seat assembly using the stem.

3. Lubricate the new O-ring and install on the bonnet.



Install the O-ring on the free-flow bonnet.

4. Slide the bonnet over the stem and thread the bonnet into the side block.

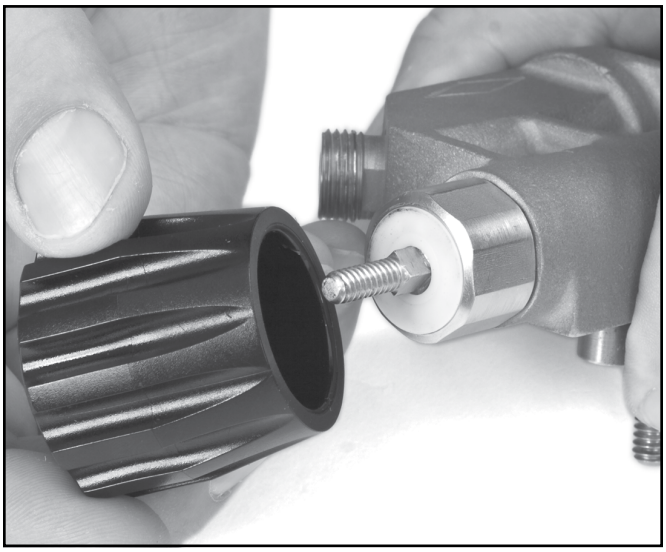


Install the bonnet onto the stem. Make sure the O-ring and washer are in place.

5. Tighten the bonnet with a torque wrench. See “Torque Specs” module.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008

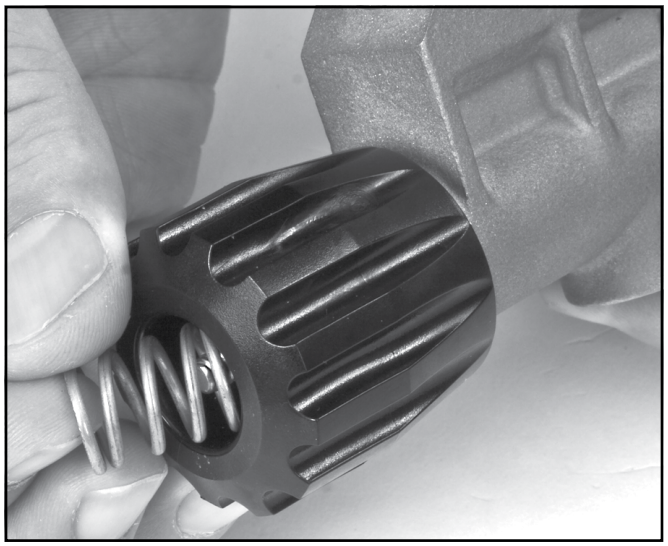
6. Place the new Teflon® washer and the control knob on the stem and rotate the stem counter-clockwise until the seat assembly tops out fully open. The control knob must turn smoothly without any binding.

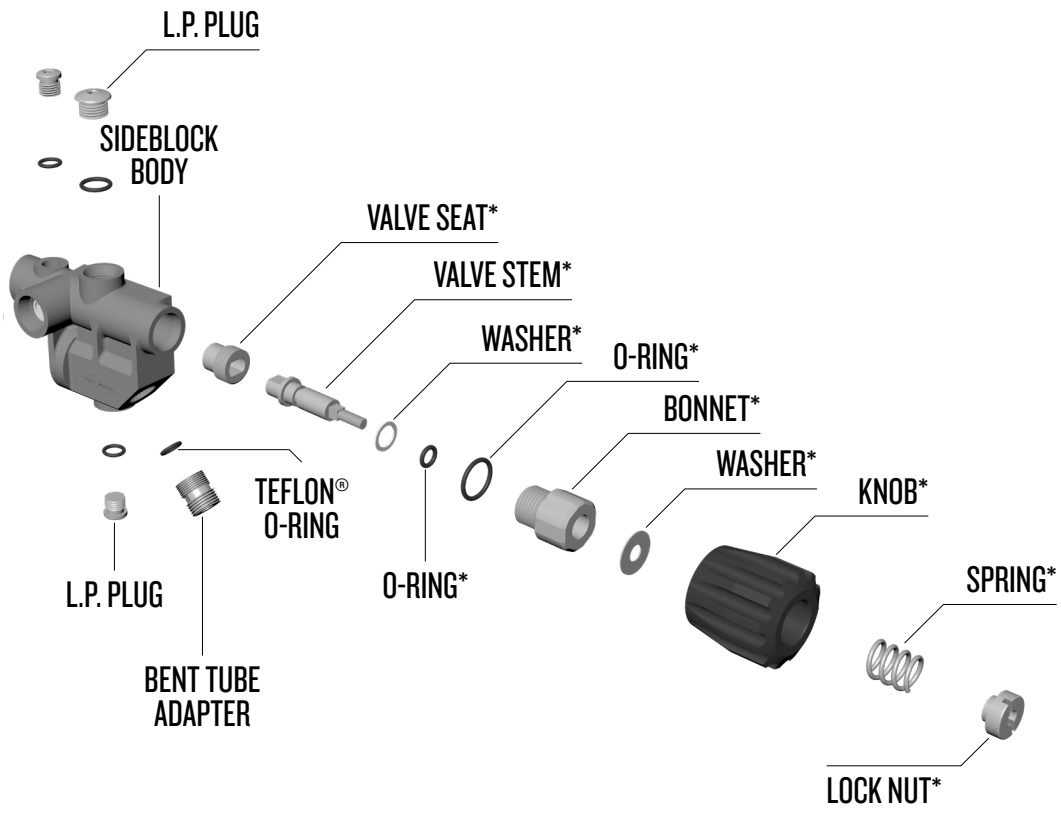


Be sure to install the washer that rests underneath the valve control knob.

Binding (or "hard spots") in the rotation could be an indication of a bent stem that must be replaced. Replace the knob and/or stem if the valve rotates loosely more than ⅛ of a turn.

7. Install the spring and locknut. Tighten the locknut until it is flush with the knob.





*** Components Of Steady Flow Valve**

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008

1.4 Emergency Gas System Valve Assembly

Unlike previous models of Kirby Morgan helmets and band masks, the emergency valve body is built into the side block. The design of the valve is very similar to the steady flow valve in appearance and function, but the parts are **not** interchangeable. However, disassembly and reassembly are nearly identical.

1.4.1 Disassembly of the Emergency Valve (EGS Valve)

Tools required:

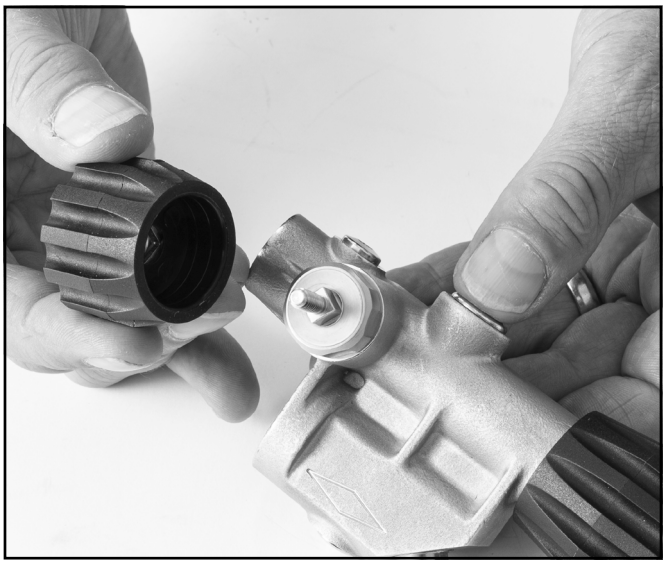
- 13⁄16 inch Open End Wrench
- Torque Wrench Attachments & Torque Wrench
- 3⁄8 inch Slotted Flat Blade Screwdriver
- Soft Jaw Vise
- Lubricant

1. Back out the control knob all the way (valve in the fully open position).

2. Remove the lock nut and the spring, control knob, and washer. Sometimes the washer will stick to the inside of the knob.

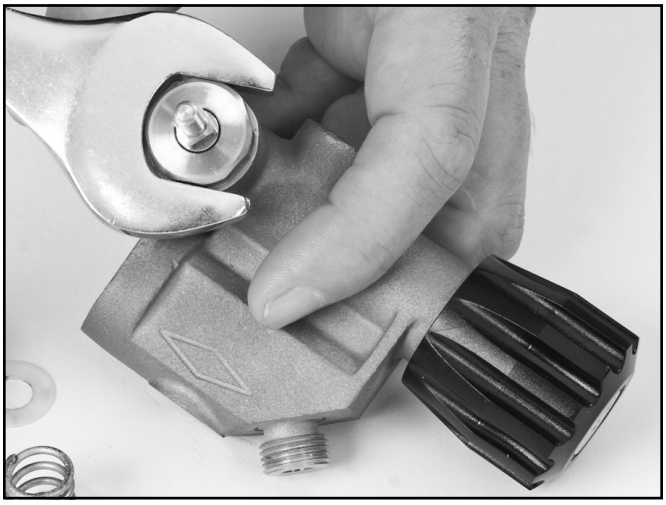


Remove the lock nut and spring



Remove the knob from the valve.

3. Unscrew the bonnet. Its O-ring will come off with it. The valve stem, O-ring, and washer usually come out with the bonnet and can be pushed out of the bonnet once removed from the side block.

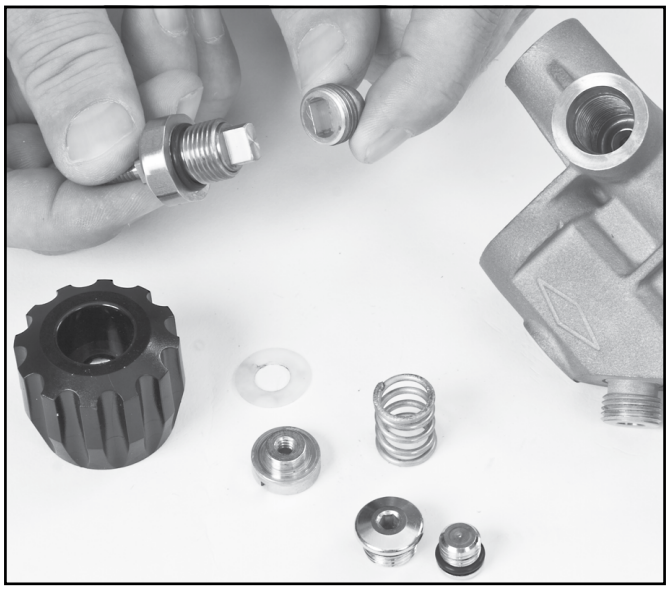


Loosen the bonnet on the EGS valve.

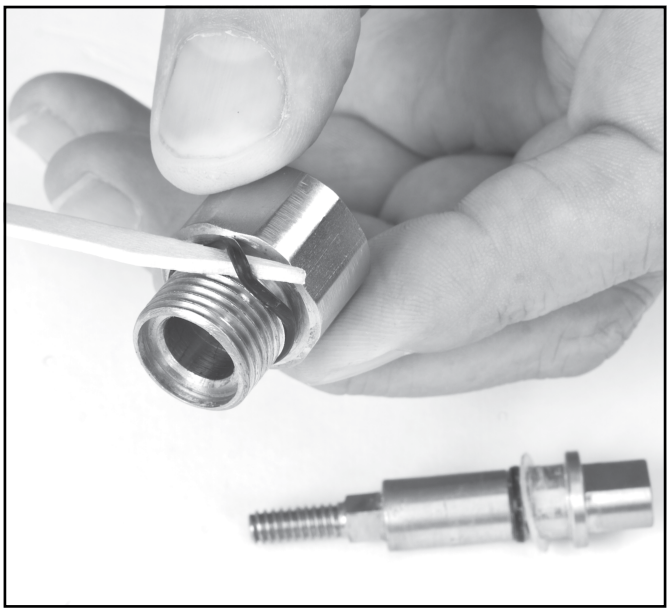
4. If the stem remains in the side block body it can be lifted out after the bonnet is removed.

5. The seat assembly can be unscrewed from the side block body using the stem or a screwdriver.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008

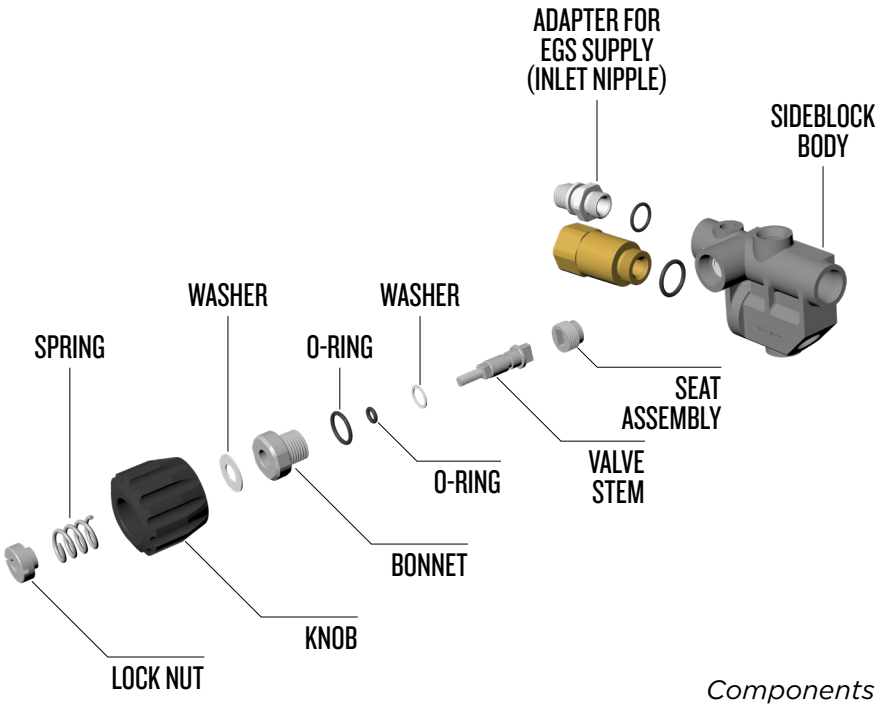


Removal of the bonnet, valve stem, and seat.



Use a toothpick, credit card, or other non-metal objects to remove the O-rings for cleaning and replacement. Note that the bonnet on the EGS valve is shorter than the bonnet on the steady flow valve.

6. The adapter that provides the breathing gas to the EGS valve should be periodically removed so the O-ring can be inspected and lubricated, or replaced if needed.



Components of the emergency valve (EGS valve)

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008



The adapter or inlet nipple for the EGS valve should be removed periodically to inspect the O-ring and to make cleaning of the side block interior easier. Note that the stud which is used to mount the side block is fastened with Loctite® 248.

1.4.2 Cleaning and Lubricating

1. Clean all the metal first in the soapy water solution and then in a 5% dilute solution of white vinegar/water. Rinse in fresh water.

2. Check the seat assembly for wear and/or contamination, and replace if necessary. Damage such as a rough face or cuts to the seat indicate it must be replaced.

3. The nylon washer and O-ring must be replaced if worn.

4. Be sure to place a light coating of lubricant on all internal moving parts, O-rings, and washers. **DO NOT** lubricate the valve seat. Do not lubricate the sealing surface on the seat assembly because this will attract dust and debris.

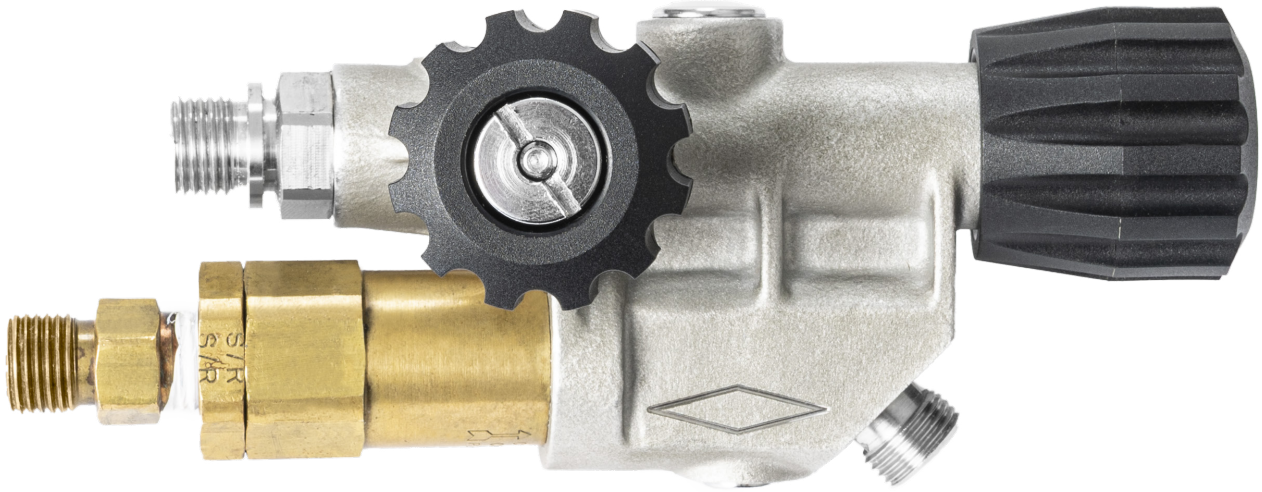


All internal moving parts (with the exception of the valve seat) and O-rings should be regularly lubricated.

1.4.3 Reassembly of Emergency Valve (EGS Valve)

Tools required:

- ⅜ inch Slotted Flat Blade Screwdriver



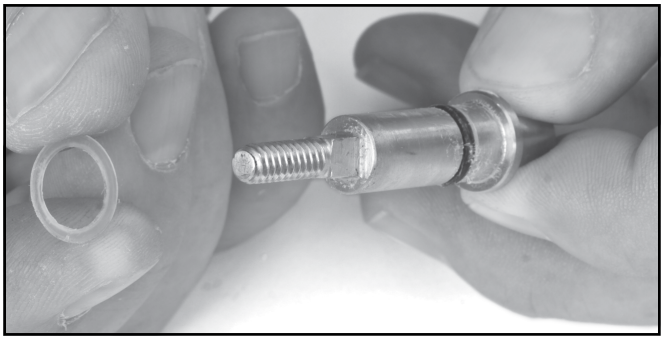
The properly assembled side block with the one way valve and EGS adapter (inlet nipple) in position.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008

- 13⁄16 inch Open End Attachment on Torque Wrench
- Minimum mandatory replacement parts during overhaul:

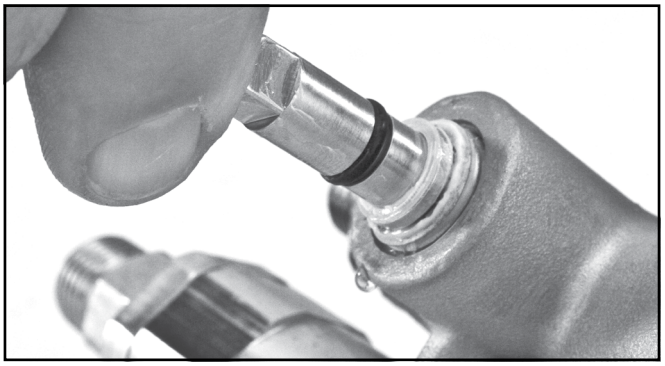
  Washers, O-rings

1. Install the new nylon washer and new O-ring onto the stem.



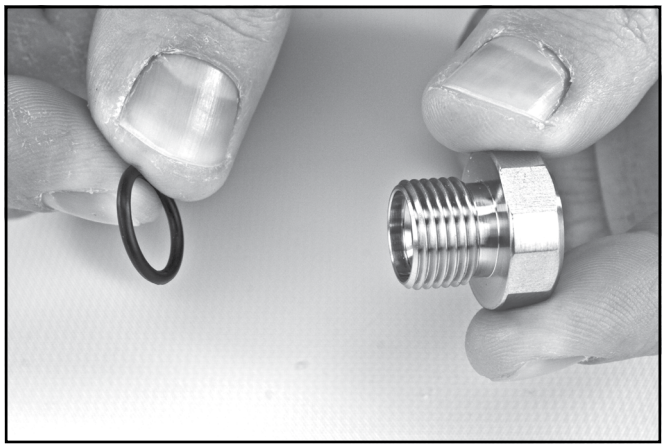
Install the washer onto the EGS valve stem.

2. Screw in the new seat assembly using the stem, turning clockwise until the seat lightly bottoms out. Leave the stem in place.



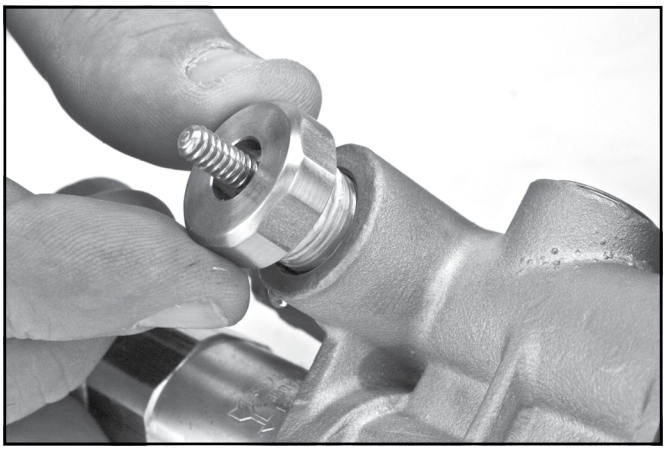
Install the new seat assembly using the stem.

3. Lubricate the new O-ring and install on the bonnet.



Install the O-ring on the EGS bonnet.

4. Slide the bonnet over the stem and thread the bonnet into the side block.



Install the bonnet onto the stem. Make sure the O-ring and washer are in place.

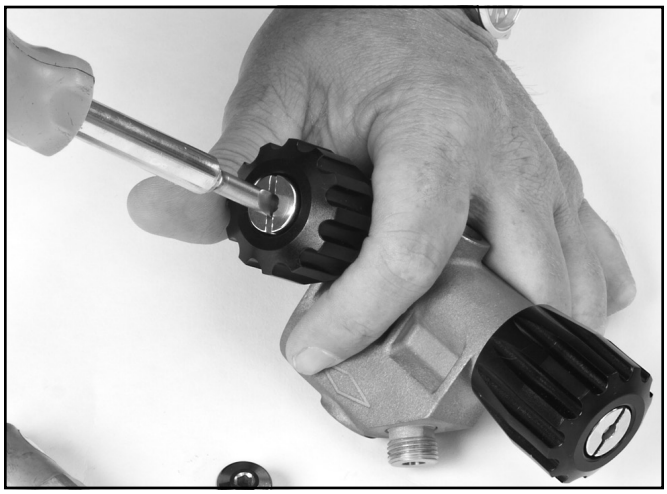
5. Tighten the bonnet with a torque wrench. See “Torque Specs” module.

6. Place the new nylon washer and the control knob on the stem and rotate the stem counter-clockwise until the seat assembly tops out fully open. Remember to install the washer before you replace the control knob. The control knob must turn smoothly without any binding.

Binding (or “hard spots”) in the rotation could be an indication of a bent stem that must be re-placed. Replace the knob and or stem if the valve rotates loosely more than ⅛ of a turn.

7. Install the spring and locknut. Tighten the lock-nut until it is flush with the knob.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008



Tighten the nut that holds the knob in place.

8. To test the valve, attach the supply whip from the EGS first stage to the helmet EGS valve.

9. Ensure the steady flow valve knob is open and the EGS Valve is shut.

10. Using the EGS cylinder as supply, pressurize EGS Valve to a minimum of 135 p.s.i.g. (9.3 bar). Allow the system pressure to stabilize, and then close the EGS supply cylinder valve. Note the time and final stabilized system pressure.

11. Perform the leak check for a minimum of five minutes, using a mild soap solution. Ensure there is no gas flowing or pressure drop in the system. There should be no visible signs of external leakage if the valve is operating properly.

© MMXXVI Kirby Morgan Dive Systems, Inc. All rights reserved. Document # 261113008