KIRBY MORGAN®

Operations & Maintenance Manual for the EXO Original, EXO Standard and EXO Balanced Regulator Full Face Mask.

DSI Part #: 100-030

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Definitions of Signal Words Used in this Manual

For your protection, pay particular attention to items identified by signal words in this manual. These terms are identified as, CAUTION, WARNING AND DANGER. It is especially important for you to read and understand these sections.

⚠ DANGER: This word indicates an imminently hazardous situation, which if not avoided, will result in death or serious injury.

⚠ WARNING: This word indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION: This word indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

If English is not your native language and you have any difficulty understanding the language of any warnings as they appear in the manual, please have them translated.

⚠ WARNING: Este é um aviso importante. Queira mandá-lo traduzir.

⚠ WARNING: Este es un aviso importante. Sirvase mandario traducir.

⚠ WARNING: Quest è un avviso importante. Tradurlo.

⚠ WARNING: Ceci est important. Veuillez traduire.

⚠ WARNING: Diese Mitteilung ist wichtig. Bitte übersetzen lassen.

If you have any questions regarding the information in this manual, or the operation of your mask, call Diving Systems International at (805) 965-8538.

IMPORTANT SAFETY INFORMATION

This EXO Full Face Mask is intended for use by trained divers who have successfully completed a recognized training course in the use of a full face mask, and if used in the surface supplied mode, an approved surface supplied diving course.

⚠ WARNING: Follow all the instructions in this manual carefully and heed all safety precautions. Improper use of this diving mask could result in serious injury or death.

⚠ DANGER: Diving Systems International (DSI) warns all divers who use the EXO Full Face Mask to use only DSI original spare parts from a DSI authorized dealer. Although other parts, O-rings and fittings may not to be manufactured to the same standards maintained by DSI. The use of any spares other than DSI original parts may lead to equipment failure and accidents.

⚠ DANGER: Diving in an environment that is chemically, biologically, or radiologically contaminated is extremely hazardous. Although the EXO Full Face Mask may be adapted for use in some contaminated environments, special training, equipment, and procedures are necessary. Do not dive in a contaminated environment unless you have been thoroughly trained and equipped for this type of diving.

Read this manual before using or maintaining the mask, even if you have experience with other diving masks. If you have purchased the mask new from a dealer, be sure to send in the warranty registration card so we may keep you informed regarding any safety notices that affect this product. If you resell or loan this mask to another diver, be sure this manual accompanies the mask and that the person reads and understands the manual.

⚠ DANGER: Diving is a life threatening occupation. Even if you do everything right you can still be killed or injured. None of the models of Kirby Morgan Band Mask can prevent accidents, injuries or death due to improper training, lack of health, improper supervision, improper job requirements, improper maintenance or acts of God.

⚠ WARNING: DO NOT dive this mask in water containing high concentrations of petroleum based chemicals. DO NOT use any chemical locking liquids anywhere on the mask. DO NOT use any type of aerosol sprays on the mask. These chemicals can attack, damage, and compromise the structural integrity of the plastic parts on the mask . Clean the mask using only mild soap and water.

⚠ WARNING: This mask was completely checked and should be ready to dive as it was shipped from the factory. However, it is always the diver's responsibility to check all the components of the mask prior to diving.

This manual is supplied to the original purchaser of this mask. If you have any questions about the use of the mask or you need another copy of this manual, Part Number 100-030, contact Diving Systems International. If you have any questions regarding the use, maintenance, or operation of this mask, contact Diving Systems International at (805) 965-8538.

⚠ DANGER: The EXO Full Face Mask is not equipped or lubricated for oxygen service. Using this mask with oxygen percentages above 23.5% by volume may lead to explosions that can result in serious injury or death.

Diving Systems International regards the use of any breathing gas mixture greater than 23.5% oxygen to be treated as oxygen. This belief is in keeping with the recommendations set forth by the National Fire Protection Association (NFPA), Compressed Gas Association (CGA), and the American Society for Testing and Materials (ASTM).
Any diving helmet, full face mask, regulator, control console or breathing life support item manufactured or sold by Diving Systems International must not be used with breathing gas mixtures in excess of 23.5% oxygen without first ensuring that all gas transporting components have been cleaned for oxygen service, have oxygen compatible soft goods lubricated with an approved oxygen compatible lubricant such as Krytox or Christo Lube grease.

Warranty Information

Diving Systems International warrants every new mask, helmet, or DCS (Dive Control System) to be free from defects in workmanship for a period of ninety (90) days from the date of purchase. This warranty does not cover rubber parts or communications components.

Should any part be defective, contact your nearest authorized DSI dealer. If there is no dealer in your area, contact DSI directly at (805) 965-8538 or FAX (805) 966-5761. You must have a return authorization from DSI. Upon approval from DSI, return the defective part, freight prepaid to the DSI plant. The part will be repaired or replaced at no charge as deemed necessary by DSI.

This warranty becomes null and void if:

1) Your completed warranty card is not received by DSI within ten (10) days of purchase date.

2) The Warranty Card is not completely filled our or information on the warranty card is falsified.

3) The product has not been properly serviced and maintained according to the appropriate DSI manual and the use of Kirby Morgan Genuine replacement parts.

4) Unauthorized modifications have been made to the product.

5) The product has been abused or subjected to conditions which are unusual or exceed the product's intended service.

Contents

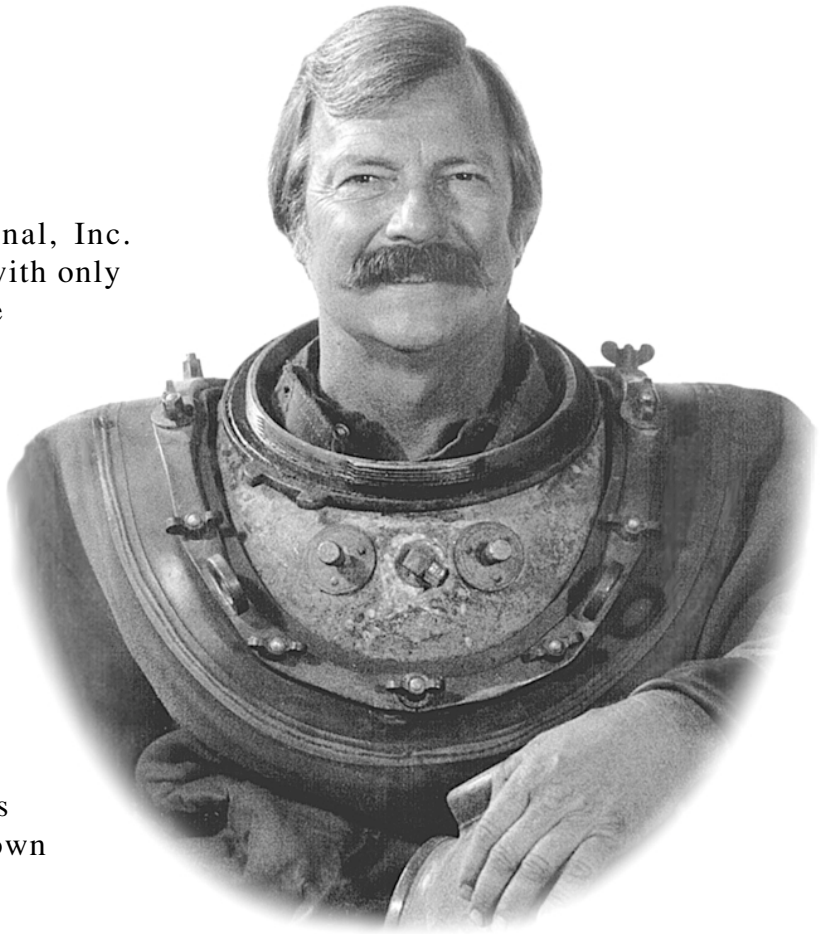
A BRIEF HISTORY

Diving Systems International, Inc. (DSI) is the same corporation (with only a name change) that started as the Kirby Morgan Corporation in 1965. Kirby Morgan is a registered trademark for our products.

Morgan started designing and making diving equipment shortly after becoming a breath-hold diver while working as a beach lifeguard in the late 1940s. There was very little equipment available in those early days so it was necessary to make much of his own gear.

During the early 1950's Bev originated the Los Angeles (California) Underwater Instructor Program for teaching scuba divers and instructors. A short time later he started Dive 'n Surf, one of the first diving equipment suppliers to integrate scuba diving instruction into the same operation as sales and service of equipment. Bev, along with his partners Bill and Bob Meistrell, designed and manufactured diving equipment whose basis remain as standards in the diving industry today.

In 1957 Morgan sold Dive 'N Surf to his partners and spent the next two years cruising the South Pacific aboard a 60 ft. ketch. After returning from the South Pacific, Morgan began diving commercially as well as designing and making diving equipment for the commercial market.



Bev Morgan, Chairman of the board, Diving Systems International

The Kirby Morgan Corporation was formed to manufacture commercial diving helmets. The copper and brass "heavy gear" or "Standard Dress" helmets were the first helmets manufactured by the company. Over the years Kirby Morgan designed, manufactured and sold more than thirty five diving helmets and thirty four diving masks for commercial and military divers. Many members of the DSI staff participate as members of the Kirby Morgan design team. It would not be possible for us to supply the commercial, military, scientific, and public service divers with our Kirby Morgan Diving Equipment without the team of people that make up Diving Systems International, Inc. (DSI).

To: Our Customers

We feel it is important for the reader to understand that we consider ourselves only a part of the process along the path in diving equipment design. We welcome all input from our customers. Many diving equipment engineers, diving medical specialists, diving organization administrators and their supporting personnel, along with thousands of divers have contributed to the current state of the art of diving. Each piece of gear we manufacture has in it some of the thinking of those who have gone before us. To all those people who give something of themselves and to the men and women who work underwater, we express a heartfelt thank you.

Providing the best diving equipment and service possible has always been and will always be the policy of Diving Systems International Inc./Kirby Morgan.

Steve Kushner
Preesident, Diving Systems

CHAPTER 1
GENERAL INFORMATION

1.1 INTRODUCTION

Diving Systems International has been designing and manufacturing SCUBA, commercial, scientific, search & rescue, and military diving equipment for over thirty years. Many of our products have become the standard of the industry due to their design, high quality, and outstanding service. The EXO-26 and the EXO-BR are part of this continuing tradition.

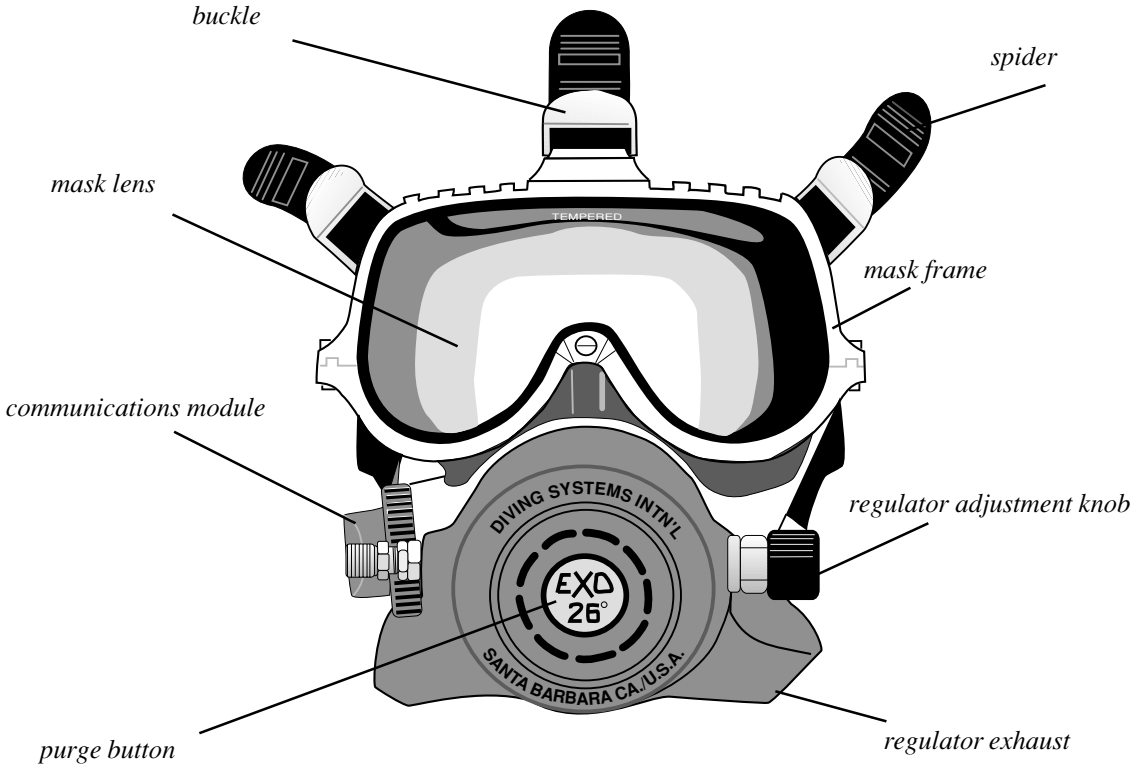
The following is a list of features to be found on the EXO-26 Original, EXO Standard and the EXO-BR Full Face Masks :

1) ***Fully adjustable Regulator:***
The regulator is fully adjustable over a wide range of operating pressures. By simply turning the Adjustment Knob while diving, you can "tune" your regulator for your type of diving.

2) ***EXOthermic™ Exhaust system:***
The regulator assembly in the EXO isolates the intake and exhaust chambers from one another. The diver's own breath assists in reducing thermal drain by warming certain areas of the regulator. This helps to eliminate freeze ups in cold water diving.

3) ***Earphone Pockets:***
The earphones are allowed to equalize because all interior parts of the mask share a common cavity. There is never a need to adjust their position and they are easily accessible.

4) ***EXOskeleton™:***
The outer frame, or EXOskeleton, serves several functions. It protects the face seal and is used to mount external components such as the regulator, lens, and communications.



Front view of the EXO Full Face Mask.

5) ***Suspension Face Seal:***
The suspension area of the face seal is attached to the EXOskeleton by five mounting legs, much like a trampoline. In this way, the face seals on a soft flexible area rather than a narrow and harder type of seal. This allows the EXO-26 to fit different sizes and shapes of faces. The extra area behind the face seal allows a foam pad to be inserted for extra small (narrow) faces.

6) ***Modular Communications:***
Microphone and earphones can be easily and quickly replaced. Simply remove the mounting nut and push the entire module to the inside of the mask. The earphones and microphone can then be removed. A spare comm set comes in handy for rapid replacement in the field if needed. If the mask is to be used without communications, an oral nasal plug, DSI part # 320-001, is available to seal the microphone cup in the oral nasal of the EXO Standard or BR.

7) ***Oral Nasal:***
The oral nasal on the EXO Standard and the EXO BR full face mask, helps improve breathing qualities of the demand regulator and also improves the speech intelligibility of certain communications devices available for the mask. It is shipped from the factory with the microphone hole punched. All no comm units are shipped with a plastic oral nasal microphone cup plug.This plug should be used when communications are not installed.

8) ***Equalizer:***
An ear equalizing device (nose block device) is a standard feature on both EXO Standard and BR masks and is used to equalize the divers ears. This device has adjustable heights, fitting a variety of noses and faces.

9) ***Balanced Regulator, EXO BR only***
The EXO is also available with a balanced regulator which has adjustment for a wide range of operating pressures. The EXO Balanced Regulator has been CE approved in Europe for scuba use in conjunction with the DSI First Stage Regulator and Overpressure Relief Valve.

10) ***Automatic Defogging, EXO Original only:***
As the diver inhales, incoming air goes up through the inlet tube and down across the lens, defogging and ventilating the mask with each breath.

11) ***Scuba style ear equalizing***
EXO Original only:
A large nose pocket in the mask, allows divers to equalize their ears by pushing back on the nose pocket and pinching. Extra room is provided in the pocket to allow a nose block kit to be fitted if needed.(see Section 1.4.9)

1.2 SPECIFICATIONS

Weight: 4.65 Pounds
Construction:
-Exoskeleton / Poly Carbonate, Lexan ®
-Face Seal / Neoprene Blend
-Regulator Body / Noryl®
-Hardware / Stainless Steel & Chromed Brass
-O-Rings / Neoprene
-Spider / Neoprene

Recommended Lubricant: Silicone Grease, Dow Corning 111

EXO Original & Standard Regulator Operating Pressures:
115psi-200 psi over ambient.

EXO-BR Regulator Operating Pressures:
100 psi-225 psi over ambient.

1.3 DESIGN PURPOSE

All the EXO Full Face masks have been designed to be used with either SCUBA gear or as part of a surface supplied diving system. All models work exceptionally well in subfreezing conditions and allow the use of a wide range of supply pressures, giving the user greater flexibility in adapting to various surface supported systems. These masks are compatible with most commercially available wire type and through water communications, making them ideal for commercial, scientific and search/rescue diving. The EXO line has become very popular with

many search and rescue teams diving in water requiring the added safety and protection of a full face mask.

EXO Original:
The original EXO Full Face Mask has been in production for many years. The simple, rugged design has proven very reliable with a minimum of maintenance. The Original EXO utilizes an inlet tube that directs the incoming gas across the lens, defogging and ventilating the mask with each breath. This full face mask best suits the daily working diver that routinely works at depths down to 130 FSW in extremely harsh environmental conditions with minimal pre and post dive maintenance.

EXO Standard:
The EXO Standard shares many of the features and components found in the Original EXO. The demand regulator body has been changed to allow the use of an oral nasal mask in place of the inlet tube. The oral nasal mask slightly improves the breathing performance and speech intelligibility of various communications systems. All internal regulator hardware and soft goods are interchangeable with the EXO Original. Like the Original EXO, this mask best suits the daily working diver that routinely works at depths down to 130 FSW in extremely harsh environmental conditions with minimal pre and post dive maintenance.

EXO Balanced Regulator:
The EXO Balanced Regulator is designed for deep air diving requiring the highest level of performance. Tested by the US Navy for scuba and surface supplied air diving to 190 FSW. Its low cracking pressure and high flow capability allow it to sustain a level of performance only previously achieved by sophisticated and expensive commercial helmets.

This full face mask is best suited for the technical/commercial diver that is capable of performing the required routine maintenance. Maintenance of this mask is required more frequently than with the other EXO models, but can be accomplished economically and in less than 15 minutes using standard EXO adjustment tools and procedures.

⚠ WARNING: Contaminated water diving operations are extremely hazardous. They should NOT be attempted unless all members of the dive team have been trained for this type of diving. You must check to ensure that every piece of the diver's equipment is compatible with the contamination to be encountered. If there is the slightest doubt regarding what contaminants are in the water, the diver must NOT dive.

⚠ WARNING: Do not dive this mask in water containing high concentrations of petroleum based chemicals. Clean the mask using only mild soap and water.

⚠ CAUTION: If the EXO is used in the surface supplied mode the diver must be equipped with a proper bailout system and one way valve. See Chapter 2 of this manual for a detailed list of the items to be included in the bailout system.

⚠ WARNING: All EXO Masks as supplied from the factory are not intended for oxygen service or with breathing gas mixtures with an oxygen content greater than 23.5%. If the user intends to use this mask for such service, all parts must be cleaned for oxygen service, and lubrication with an oxygen safe lubricant must be maintained. Only lubricants such as Krytox or Christo Lube are acceptable for oxygen service. Use of the mask with oxygen mixtures above 23.5% by volume without first preparing it for oxygen service may lead to fires or explosions that could result in serious injury or death.

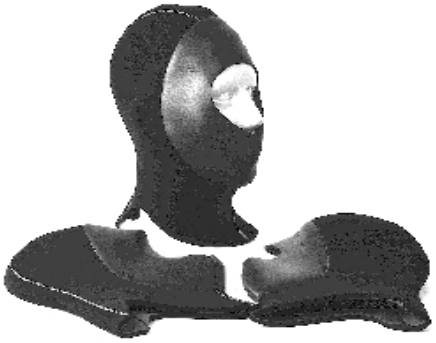
1.4 ACCESSORIES

There are a number of accessories for your EXO Full Face Mask designed to make your diving more enjoyable and easier. Contact your nearest Authorized Diving Systems International dealer to order any of the following items.

1.4.1 Hoods

Diving Systems International manufacturers a hood perfectly tailored to the EXO-26 masks. It has thinner face seal material on the front as opposed to the thicker material of normal types of hoods, for better comfort. Order DSI Part #: 310-030 Small, 310-031 Medium, 310-032 Large.

Cold Water (CW) versions are also available. These have a large "bib" that tucks into the divers wet suit. Order DSI Part #: 310-035 CW Small, 310-037 CW Medium, 310-039 CW Large



Three sizes of hoods are available

1.4.2 Mask Carrying Bag

To protect your mask during storage and transport, use our Mask Carrying Bag. The bag holds your mask as well as spares. The bag is not intended for shipping your mask as cargo. Order DSI Part #: 300-902, Mask Carrying Bag.

1.4.3 Communications

The mask may be used with wireless or hard wire communications. Several different types of communications modules can be ordered for the EXO. For the cleanest communications, we recommend you use only DSI replacement communications earphones and microphones.

EXO Original

DSI Part #:	***Description***
315-201	Asembly With Binding Posts
315-206	With 4 Pin Waterproof Connector

EXO Standard and BR

DSI Part #:	***Descript***
315-210	Assembly With Binding Posts
315-215	With 4 Pin Waterproof Connector

1.4.4 Low Pressure High Flow Hose

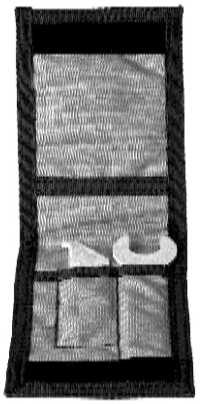
A low pressure high flow hose for the EXO-26 or EXO-BR is available. This hose will deliver the maximum amount of air to the regulator. Order DSI Part #: 255-050, LP High Flow Hose.

1.4.5 Manifold Block

If you use the EXO for surface supplied diving, a manifold block which has a one way valve and provides for correct attachment of the umbilical is essential. The emergency valve on the manifold block also controls the flow of the bailout supply.
Order DSI Part #:
300-145 9/16" SCUBA fitting on one way valve
300-150 9/16" oxygen fitting on one way valve
300-155 #6 JIC fitting on one way valve

1.4.6 Tool Kit & Pouch

A special tool kit and pouch are available to store the back up wrench and regulator adjustment tool. Order DSI Part #: 325-630, Tool Kit & Pouch

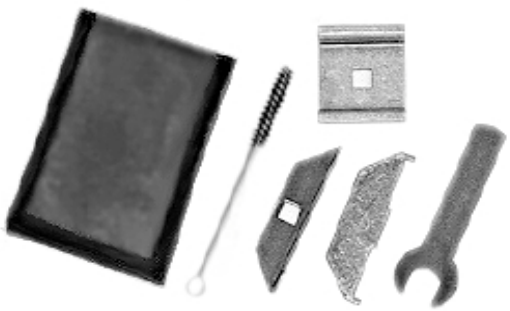


325-630
Tool Kit & Pouch

1.4.8 Face Cushion Kit

A face cushion kit for the EXO-26 and EXO-BR is available. While the majority of owners find the mask provides a watertight seal right out of the box, some divers with small or narrow faces may experience trouble getting a comfortable, tight seal. This optional cushion is designed to give divers with smaller faces a better seal. It is easily installed to the interior of the mask. Two velcro tabs secure the cushion inside the seal, with the ends of the cushion slipped into the earphone pockets.
Order DSI Part #: 325-025, Face Cushion Kit

The EXO Face Cushion Kit



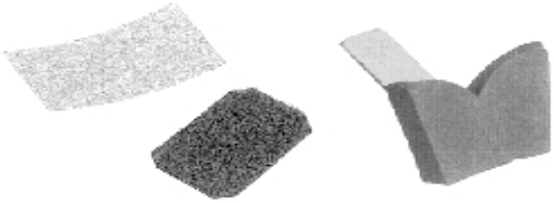
325-650 Deluxe Tool Kit

1.4.7 Regulator Mount Nut Tools

These tools are used for removing and replacing the regulator assembly. The mount nut tool works on the newer EXO-Standard and EXO-BR as well as the EXO-26's with the original style regulator mount nuts. These tools are required if an entire regulator rebuild or face seal replacement is to be attempted. **These two procedures, entire regulator rebuild and face seal replacement, can be difficult. DSI recommends that these two procedures be done by a factory trained DSI dealer. If you are unsure if your local dealer is qualified to do this repair, call DSI for the nearest qualified dealer in your area.**
Order DSI Part #: 325-650 Deluxe Tool Kit

1.4.9 Equalizing Device, EXO Original only

If you are using heavy mitts it may be difficult to grasp your nose for clearing on the EXO Original.
To help eliminate this difficulty, DSI offers a special nose clearing device DSI Part# 325-635.



1.4.10 EXO Hard Shell

This hhard shell, DSI Part # 300-010, mounts easily on all models of the EXO Mask. There are reinforced areas for mounting lights or small video cameras.

1.4.11 Air Inlet Swivel

DSI Part # 305-036, is supplied on all **Original** and **Standard** EXOs. It allows the regulator hose to move freely and align with the mask inlet without putting a stress on the hose coupling. It uses standard SCUBA threads for incoming breathing air. It may also be used on second stage scuba regulators and the EXO-BR.

1.4.12 Overpressure Relief Valve

The DSI Overpressure Relief Valve, DSI Part # 200-017 is factory adjusted to vent any time the pressure in the low pressure hose connecting the bailout bottle to your emergency valve exceeds 200 P.S.I. It is installed in any of the low pressure ports in the first stage regulator.

⚠ WARNING: Be sure the bailout regulator is fitted with a relief valve for over-pressurization of the supply hose. A leaky first stage can overpressure the hose, bursting it. This would cause a loss of the entire bailout supply and possible physical injury to the diver as the hose whips about. Do not use a high pressure hose, as the system on the mask is not designed for high pressure.

The DSI Overpressure relief valve has been manufactured in two different flow rates. The original valve had a lower flow rate that the current valve. The current valve has been marked in two ways, the first being a groove around the flats of the hex. Currently the valve is marked with a groove around the top of the body. These are the same valve, just different marking methods.

CHAPTER 2
OPERATING INSTRUCTIONS

2.1 INTRODUCTION

This section provides the manufacturer's recommendations on how to use the three EXO Full Face Masks. The use of these diving masks will vary with the type of diving and environmental conditions. A proper training program in the use of full faced masks must be undertaken prior to diving the mask. Practice using the mask in a calm, clear body of water (pool) before open water diving. There is a video available from Team Visions that goes over many of these basic procedures. The video, **Diving With The EXO-26 Full Face Mask** is available from Best Publishing PO Box 30100 Flagstaff Ariz. 86004 Ph 800 468-1055.

2.2 FIRST USE AND PRE-DIVE SET UP

When you first receive your EXO Full Face Mask, carefully unpack it and examine it for any damage that may have occurred during shipment. Use the inspection sheet provided to ensure that no damage has occurred! Read all warning labels & caution tags.

Be sure to complete the enclosed warranty card and return to DSI as soon as possible. Warranty claims require that a card be on file at DSI 10 days after purchase. Incomplete warranty cards are considered invalid.

2.3 PRE DRESS-IN PROCEDURE

Before dressing in for a dive, an inspection of the mask and all related gear should be made to insure everything is in proper working order. This should be done well in advance of the dive, so any problems or adjustments can be dealt with. ***Read and understand this manual before you dive.*** Chapter 2 tells you the basic operating procedures and how to perform the pre-dive mask inspections and pre-dive regulator function tests.

2.4 VISUAL INSPECTION

Visually inspect the entire exterior and interior of the mask.

- The face seal should be in good condition with no cracks, tears, or punctures.

- The spider (head harness) should be intact. Stretch the spider and inspect it carefully for signs of cracking or tearing.

- Inspect the face port. It should be clean and clear. Anti fog solutions should be applied prior to use.

-Check the wiring for the communications, if present. Make sure the communication module mount nut is screwed down tight.

-In the **EXO Original**, inspect the air inlet tube and make sure it is properly seated on the regulator.

-In the **EXO Standard or BR,** inspect the oral nasal and equalizer and make sure they are securely mounted. If the mask does not have communications installed, be sure to use a microphone hole plug (320-001) in the oral nasal.

-Check the regulator assembly to ensure that it is secured tightly on the mask frame.

-Check the regulator cover to ensure that it is tight on the regulator body.

-With no air to the mask, screw the regulator adjustment knob all the way out and back in to insure that it turns freely.

2.5 CLEAN FACE PORT

Remove any sand or debris from the interior of the mask and face port which may be inhaled or blown into the divers face, interfering with the divers vision.

Under certain conditions, depending upon water temperature, you may find it necessary to prep the mask lens to keep it from fogging while diving. There are a number of commercial defoggers available for scuba diving which work well. Follow the directions on the label for use. If no commercial preparation is available it is possible to use soap. Use a small amount of liquid soap on a rag and smear a thin film on the inside of the lens. Do not rinse this film off. Apply the soap just prior to entering the water.

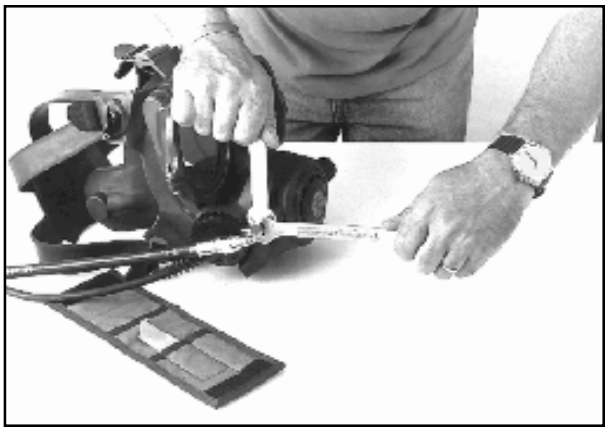
2.6 ADJUSTING THE EQUALIZER EXO STANDARD OR BR

There are three different height positions that the Equalizer can be adjusted to. Carefully peel the Equalizer out of the Wire Retainer and reposition it in another one of the molded grooves in the Equalizer. The Wire Retainer can also be slightly bent in one direction or another, up or down, to get the angle of the Equalizer just right. Insure that the corners of the Equalizer grooves are "snapped" into position on the Wire Retainer so that it does not come loose.

2.7 CHECKING REGULATOR FUNCTIONS AND PREPARING THE EXO FOR USE IN THE SCUBA MODE.

Attach the low pressure hose that is supplied with the mask to the low pressure (L.P.) port on your 1st stage regulator and then to the mask. Never connect the hose or mask to a high pressure (H.P.) port. When attaching the hose to the regulator ALWAYS USE A BACK UP WRENCH ON THE NIPPLE TUBE.

⚠ CAUTION: If you are not using the inlet angle fitting, a backup wrench must be used on the hex fitting of the regulator when tightening. Otherwise the regulator may come out of adjustment!



Always use a back-up wrench when attaching or removing a hose to the regulator.

Prior to attaching your first stage regulator to your tank be sure the regulator adjustment knob on the mask is screwed all the way in. This will prevent the regulator from free flowing when the air is turned on.

Your 1st stage regulator should be equipped with a submersible pressure gauge. Attach the first stage to your tank and turn the air on while holding the submersible pressure gauge away from you. Once the air is on, check the pressure gauge to ensure you have a full tank.

⚠ WARNING: A submersible pressure gauge is considered essential for full face mask scuba diving. The diver must plan his dive to avoid running out of air while wearing a full face mask. There is no way to safely buddy breathe underwater, use an octopus rig, or snorkel on the surface while wearing a full face mask. If the submersible pressure gauge should fail during the course of a dive, the dive should be terminated immediately.

Check the mask regulator for adjustment and function. EXO masks are preset at DSI with an intermediate pressure of 135-145 psi. Starting with the regulator adjustment knob screwed all the way in, back the regulator adjustment knob out 3 full turns. There should be no indication of

Always check the regulator adjustment for proper function before you enter the water.

air flow through the mask if the intermediate pressure on your first stage regulator is set at around 135-145 psi. Higher first stage regulator pressures may cause free flow, but turning the regulator adjustment knob in should stop the flow. In the unlikely event there is still flow, proceed to the regulator adjustment section in Chapter 5 to reset the regulator.

Loosen all the straps on the Spider and hold the mask on your face. Take a couple of good breaths, breathing slow and soft at first then hard and fast. The regulator should be operating with the minimal amount of breathing resistance and no free flowing. Any type of an air flow "hiss" should be able to be adjusted out by using the adjustment knob. If the adjustment knob is adjusted all the way in and the regulator still hisses, see the regulator adjustment section, chapter 5.

Pressing the purge button should cause a fairly strong air flow into the mask. If there is no flow when pressing the purge button, or if breathing is difficult, see the regulator adjustment section in chapter 5.

Once you enter the water, the regulator can be adjusted for a variety of diving conditions and positions just by turning the adjustment knob in or out.

2.8 WIRELESS COMMUNICATIONS

There are several manufacturers that produce a wireless communications unit that can be used with the EXO Mask. If you are using wireless communications read and follow all manufacturers instructions for your particular unit.

If you are using wireless communications you should test the communications by placing the transducers from both send and receive units in a bucket of water and speaking into the mask. Communications should always be tested prior to the diver entering the water.

⚠ WARNING: The waterproof case for your wireless communications unit should only be attached to your scuba backpack, NEVER to your weight belt. In the event your belt must be dropped the belt must have a clear drop path and must not be connected to any other piece of gear. If this procedure is not followed the weight belt and wireless electronics case will be attached to the mask by the connecting wire.

2.9 USING THE EXO IN THE SURFACE SUPPLIED MODE

If you have not been trained in the proper use of surface supplied diving equipment we strongly recommend that you complete a training course in the use of this equipment prior to diving surface supplied.

Read and understand the Checking Regulator Function and Preparing The EXO for use in scuba mode section of this chapter. The basic connecting instructions of the mask and regulator function tests are the same.

⚠ WARNING: The EXO Mask is not equipped with a one way valve (non-return valve) as supplied from the factory. For safe surface supplied diving, the diver must use a manifold block equipped with a one way valve. *DO NOT CONNECT THE DIVER'S UMBILICAL DIRECTLY TO THE EXO WITHOUT A ONE WAY VALVE.*

The one way valve is a very important component. It prevents the flow of air out of the mask in the event of a sudden lowering of pressure in the umbilical supply hose due to an accidental break in the hose or fitting. Not only would the emergency air be lost if the one way valve failed (concurrent with a hose or fitting break) but the diver could be "squeezed", a very serious accident. DO NOT DIVE SURFACE SUPPLIED WITHOUT A ONE WAY VALVE!

At a minimum, if the EXO is to be used for surface supplied diving the following systems and components must be in place and in proper working condition.

1) Air Supply: Either a low pressure compressor or high pressure air bottles.

2) Dive Control System: An air management box to control the flow of air delivered to the diver or divers (like the DCS 2A or DCS 3 offered by DSI).

3) Divers Umbilical: Hose bundle consisting of air supply hose, pneumofathometer hose (depth sensing), communications wire and rope as a strength member.

4) Divers Manifold Block: A metal block that has a one way valve that the umbilical attaches to, an emergency valve that the bail out system attaches to and L.P. ports for attaching the mask hose, dry suit inflators and other accessories.

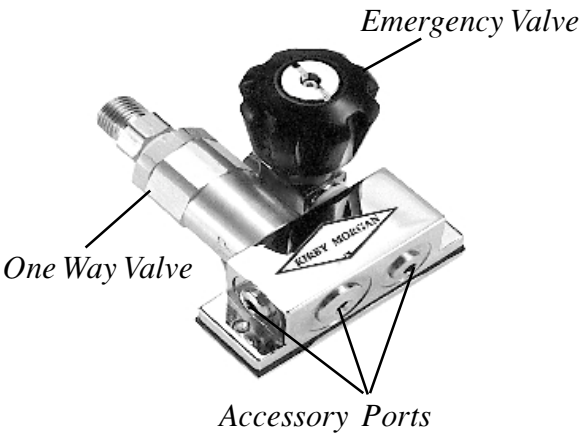
5) Bailout System: Consisting of a harness, bail out bottle, first stage regulator with over pressure relief valve. This system connects to the emergency valve on the divers manifold block assembly by a hose.

6) Communications System: Provides hard wire communication between diver and top side.

The EX0-26 is part of a complete surface supplied diving system.

2.10 TESTING THE MANIFOLD BLOCK

Prior to assembling a bailout system, the one way valve and emergency valve should be tested for proper function.
Equipment Needed:
-Manifold Block
-Bailout bottle
-1st Stage regulator w/octopus and scuba reg hose attached
-DCS system with an umbilical supply hose
-Bucket of water



DSI Manifold Block Assembly

Testing The One-Way Valve

1) With all the accessory holes plugged on the manifold block, attach the SCUBA type regulator hose from a first stage regulator that also has an octopus attached, to the emergency valve on the manifold block assembly. The octopus will be used for depressurization once the test is concluded.

2) Connect the first stage to the bailout bottle, open the emergency valve all the way, and pressurize the system.

3) Place the pressurized manifold block in a bucket of water and check the one way valve for leaks. NO air should leak through the one way valve or from anywhere else on the manifold block assembly. If there is a leak, the one way valve **MUST** be rebuilt or replaced.

4) As a secondary test, close the emergency valve trapping pressure inside the manifold block assembly and relieve the pressure on the first stage using the octopus. Disconnect the hose from the emergency valve.

5) Quickly open the emergency valve by turning the knob. You should hear the trapped air escaping through the emergency valve.

Testing The Emergency Valve

1) With all the accessory holes plugged on the manifold block, attach the umbilical hose to the one way valve.

2) Make sure that the emergency valve is closed all the way and pressurize the umbilical.

3) Place the pressurized manifold block in a bucket of water and check the emergency valve for leaks. NO air should leak through the emergency valve or from anywhere else on the emergency valve assembly or manifold block assembly. If there is a leak, the emergency valve **MUST** be rebuilt or replaced.

4) Turn umbilical off and open the emergency valve to depressurize the system and disconnect the hose.

2.11 DIVER'S HARNESS

The harness provides an attachment point for the manifold block, tools the diver may use while in the water, and the "D" ring where the umbilical shackle connects. The umbilical shackle must connect to the strength member of the umbilical.

A well designed diver's harness

The manifold block attaches to the harness and the harness is the primary attachment point for the diver's umbilical using a shackle. Arrange the umbilical so it attaches to the harness, then to the manifold block on the harness. This helps eliminate the possibility of a direct pull on the diver's mask by top-side. The harness may also be used to lift an unconscious diver from the water and should be of sturdy construction.

2.12 INSTALLING THE MANIFOLD BLOCK ON THE DIVER'S HARNESS

The manifold block assembly is designed to be worn on the diver's harness. Most divers prefer to attach the manifold block to the right side of the diver's harness. The shackle which attaches the umbilical to the harness "D" ring, is usually located on the left side. After attaching the umbilical to the "D" ring on the left side of the harness, the umbilical is normally routed behind the diver's back to the manifold block.

To attach the manifold to the diver's harness:

1) Remove one of the screws which holds the mounting plate on the manifold block body and loosen the other screw to provide enough clearance for a harness strap.

2) Swing the plate to one side and position the manifold block on the harness.

3) Swing the plate back into the correct mounting position and thread the screw through the plate and into the manifold body.

4) Tighten both screws until the harness is compressed between the manifold and mounting plate holding the manifold block assembly in place.

2.13 BAILOUT BOTTLE (EMERGENCY AIR SUPPLY)

The diver should always dive with a bailout bottle when diving surface supplied, no matter how experienced or what the water depth. Should the diver become unexpectedly entangled underwater, or if the top side air supply fails, the bailout bottle may provide the few extra minutes of air the diver needs to deal with the emergency and get to a safe place.

The size of the bailout bottle should be determined by the water depth, the penetration distance, or the probability of entanglement of the diver. Deeper dives, or distant penetrations will be made safer with larger bailout bottles. Dives which require the use of a larger bailout bottle include, but are not limited to, deep dives, penetration dives, and contaminated water dives.

2.14 FIRST STAGE REGULATOR

The first stage regulator used on the bailout bottle should be a high-flow unit such as the DSI SuperFlow regulator. A submersible pressure gauge should be connected to the regulator to enable the diver to monitor the status of his bailout supply. Order DSI Part # **305-161**, Super Flow 1st Stage Regulator

DSI SuperFlow Regulator

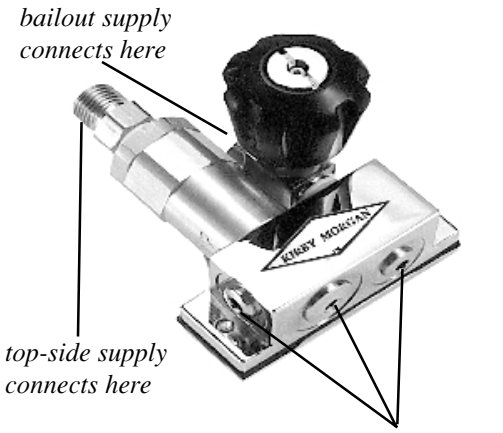
2.15 OVER PRESSURE RELIEF VALVE

When using the EXO, the first stage regulator should be fitted with an overpressure relief valve. This valve is included with the EXO-BR and must be installed in a low pressure port on the first stage regulator. It is also highly recommended that the valve be used with the EXO Original and EXO Standard anytime a bailout system is used.

⚠ CAUTION: The first stage regulator must be equipped with an overpressure relief valve when using the EXO-BR. In the event the first stage leaks there is no way for the pressure in the hose attached to the emergency valve on the manifold block assembly to relieve itself. The hose may rupture if this occurs leading to a loss of bailout supply and possible personal injury to the diver.

The purpose of this valve is to allow the regulator to bleed off excess pressure should the first stage develop an internal leak. If the first stage leaks and this valve is not present, the pressure between the regulator and the emergency valve on the manifold block could increase until the hose ruptures. This will cause a complete loss of the bailout supply. It could also lead to injury of the diver due to the whipping action of the hose. Order DSI Part # **200-017**, High Flow Overpressure Relief Valve

The DSI Overpressure relief valve has been manufactured in two different flow rates. The original valve had a lower flow rate than the current valve. The newer valve has been marked in two ways, the first being a groove around the flats of the hex. Currently the valve is marked with a groove around the top of the body. These are the same valve, just different markings.



Attachment points for the DSI Manifold Blocks

2.16 CONNECTING THE HOSES TO THE MANIFOLD BLOCK

After the manifold block has been installed on the diver's harness you will need to attach the hoses to route the air supply. Be sure to use the correct size open end wrenches, not adjustable wrenches, for connecting the hoses. Adjustable wrenches tend to slip and may damage the brass fittings used on the hoses.

The manifold block has three low pressure ports which will accept a standard U.S. regulator hose and one port in line with the one way valve, which will accept a low pressure high flow hose. A low pressure high flow hose attached to this port and then to the mask will assure the maximum flow of air to the mask regulator.

1) Attach the first stage regulator to the bailout bottle, but do not turn the air on.

2) Screw the hose from the 1st stage onto the emergency valve on the manifold block assembly. Tighten this fitting.

3) The diver's umbilical should already be connected to the top side dive control system at this time. Remove the protective cap from the diver's end of the umbilical. Turn the air that supplies the DCS (Dive Control System) on. While holding the open end of the diver's umbilical away from you, slowly turn on the air to the umbilical at the DCS. This action will blow out any water, dust, or other foreign debris which may have entered the dive hose. Allow the air to vent from the hose for at least 15 seconds.

4) Connect the diver's air supply hose on the umbilical to the one way valve on the diver's manifold block assembly. Use the correct size wrenches and always use a back up wrench. Tighten the fitting only until snug. Do not overtighten. If too much force is applied to the fitting it will cause the fittings to deform and leak.

5) Connect the hose that was supplied with the mask or the low pressure high flow hose to the appropriate low pressure port on the manifold block, then to the mask. Remember to always use a back up wrench on the nipple tube when attaching the hose to the regulator on the mask.

2.17 HARD WIRE COMMUNICATIONS

When surface supplied diving hard wire communications should always be used. There are several types that can be used with the EXO. DSI makes communications modules with bare wire binding posts and modules with waterproof connectors. The communications system should always be checked and in proper working order before the diver enters the water. See Chapter 6, the chapter on communications installation, testing, and maintenance.

2.18 RECOMMENDATIONS FOR DONNING AND REMOVING

A course in the procedures for safe diving with a full face mask should be taken and passed before any type of diving is performed. Practice using the mask in a calm, clear body of water (pool) before using for open water diving.

Become familiar with the way in which the mask attaches and properly fits your face. Because the face seal fits the face well when loosely fitted, it is easy to assume that this is how the mask should be worn. This assumption is incorrect and can cause negative results when diving. Wearing the mask with an incorrect adjustment will not allow the divers face to go far enough into the mask. The air space inside the mask will be excessive, causing a buoyancy and possible problems with the fit of the seal and oral nasal. The main portion of the face seal is designed to be very flexible and should be stretched to form a proper seal and be comfortable.

The spider (head harness) and buckles are also important for proper function of the face seal. The spider legs and rear head cup are all shaped to pull the mask to the face. The head cup should be placed as low as possible to reduce jaw fatigue. The buckles swivel (except the top) to allow the spider to find its natural correct position. Do not try to force the buckles to swivel completely around. They are allowed free but limited movement to keep the spider from becoming entangled while the mask is being handled.

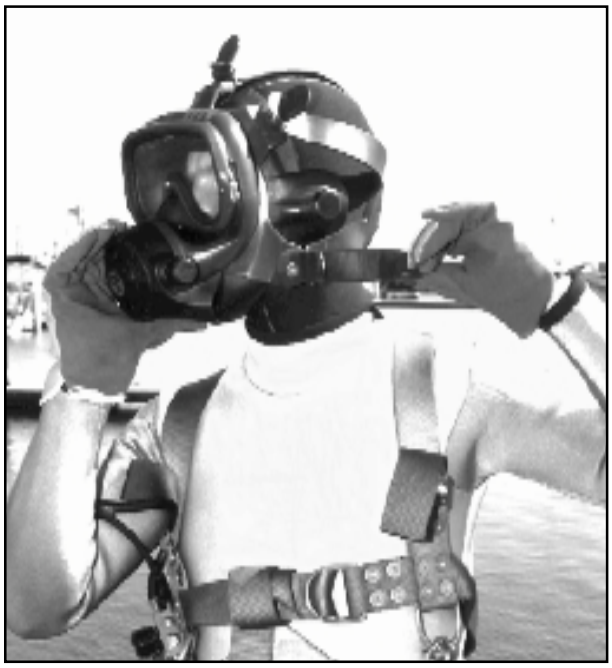
2.18.1 Donning

1) Make sure that all other gear is properly donned, the air is on, and regulator functions and communications tests have been done.

2) Make sure all 5 legs of the spider are loosened all the way.

3) While holding the mask in position by the chin cup, begin tightening the spider at the bottom straps, but not all the way.

4) Make sure the cup of the spider is positioned on the center of the back of your head. It should be low, but not as low as your neck.



Tighten the lower spider legs first

5) Next tighten the top two straps above the temples. Alternate between top and bottom straps until the face is positioned properly and snugly into the mask.

The mask is usually the most comfortable when your nose is partially into the nose pocket. The top center strap can be tightened slightly to give support to the mask while standing by for water entry. Once in the water this top strap may be loosened. Sometimes, if the top strap is too tight and the diver's hood fills with air while diving, the hood pushing against the top strap may cause the mask to lift up on the face. The spider may be readjusted during a dive.

Tighten the upper spider legs next.

2.18.2 Removal

Removal of the mask is quick and easy.

1) Grasp the bottom of the mask on each side where the buckles are attached.

2) With your thumbs, push the tabs on the buckles all the way forward. They will stop traveling once they hit the buckle caps. Hold the buckles forward.

3) At this point, push the bottom portion of the mask away from the face as if it were hinged to your forehead. This will release the bottom legs of the spider and allow quick and easy removal of the mask.

The EXO is easily removed by the diver when necessary.

2.19 PROPER HOOD FIT

The type of hood that a diver chooses may have direct bearing on the fit and comfort of the EXO. Excess material on the chin and or jaw will keep the mask from positioning properly and possibly cause jaw fatigue. This may also prevent the diver's face from getting far enough into the mask for equalizing by pinching the nose.

When using a dry suit with a latex hood, no adjustment should be needed. However, if the hood covers too much of your face, it may be necessary to trim a small amount of rubber off the chin on the hood. If using a neoprene wet suit hood, you may want to trim material from the cheek bone downward to under the front part of the chin.

To properly trim your hood, use the following procedure:

1) With the hood in position on your head, don the mask as outlined in this chapter.

2) Have someone bend the earphone pockets forward and start marking the hood at the edge of the face seal, starting at the cheek bone area, then go down under the chin and up the other side to the opposite cheek bone area.

3) Remove the mask and hood. Leave approximately 1/4" extra material from the line marked and trim the excess material away.

4) Your hood should now work very well with the mask. Because the face is in a dry air cavity being warmed by body heat, hood material on the face is not needed to keep the face warm.

Diving Systems makes a hood tailored to the EXO (see accessories p.6) It must be trimmed in the same fashion as above. The face seal area is a thinner two sided skin neoprene for a superior seal.

Note:
A small hole can be punched in the top of the hood to relieve any build up of air inside. Put the hole or holes so that they are to either side of the top spider strap.

CHAPTER 3
IN WATER OPERATIONS

3.1 INTRODUCTION

This section deals with the different functions and adjustments that are possible after entry into the water. Some divers may be satisfied with the fit and function of the mask as it is set up top side, or it may be easily adjusted in the water if necessary.

3.2 WATER ENTRY

Many methods of entry into the water are possible using the EXO-26 or EXO-BR , but a few important points should be noted. When using the stride entry, the bottom 7 holes in the exhaust whisker should be covered to prevent any turbulent water from flowing past the exhaust valve.

If you roll into the water backwards, turn your head to one side before entering to prevent water from washing past the face seal to the interior of the mask. In the event water does enter the mask, keep the regulator positioned low and simply press the purge button to remove the water.

3.3 REGULATOR ADJUSTMENT

The regulator adjustment knob should always be adjusted for minimum breathing resistance. Prior to entering the water, adjust the regulator adjustment knob out until a slight fee flow develops and then adjust it in until the free flow disappears. If diving with scuba gear no further adjustment should be needed. If diving surface supplied, the adjustment knob allows the diver to make adjustments for variations in supply pressures. During the course of the dive the diver should periodically turn the adjustment knob out (counter clockwise) until the regulator develops a slight free-flow, then turn the knob in (clockwise) until the regulator free-flow just stops. This will ensure the diver is always taking advantage of the best performance for the available delivery pressure. The regulator adjustment knob can also be used to compensate when working in various positions and diving in currents.

The most noticeable difference in breathing resistance can be found in a face up position. Resistance increases with the regulator diaphragm in this position.

If the regulator adjustment knob is adjusted all the way in and breathing resistance is high, it is sometimes possible for small amounts of water to get past some areas of the face seal when the mask is not fitted properly. Any leakage which does occur usually enters in the temple area. Backing out on the adjustment knob will decrease the spring bias tension on the roller lever, allowing the diaphram to move the roller lever with less inhalation effort. This will help prevent water from being drawn in around the face seal. If leakage still persists, a face cushion kit is recommended. Fine tuning the regulator should be common practice if you maintain a certain position for any length of time and then change positions. If you are working in a face down position and the regulator adjustment knob is adjusted too far out, the regulator may free flow. The adjustment knob should be turned in to stop any excess air flow.

The regulator may be adjusted in the water to suit the individual diver.

3.4 SPIDER ADJUSTMENT

The mask can be repositioned while in the water, by loosening, repositioning and retightening the spider legs. The large tabs on each buckle provide this easy adjustment. It should also be noted that the buckle travel is limited to allow easy release.

The top leg of the spider can be loosened once in water. It is possible for the top leg to be too tight which will cause the mask to be pulled up too far on the face. The main purpose for the top leg of the spider is to provide on deck support of the mask. Some divers may prefer the support of the top leg while in the water, too.

⚠ CAUTION: Proper hood fit and spider adjustments are needed for the mask to fit comfortably and function correctly.

The mask is easily adjusted underwater.

3.5 PURGING THE MASK

If the mask is removed and then replaced underwater, it must be cleared of water (purged). This is done by simply holding the mask firmly on the face, keeping the regulator in a low position, and depressing the purge button. A momentary slight overpressure will be felt, followed by complete removal of all water from the interior of the mask. A mask completely filled with water should take no more than 3 seconds to completely purge.

Using the purge button to clear a flooded mask.

⚠ WARNING: In the unlikely event the mask should fill with water, depressing the purge button should clear the mask. In the event of a continuing flood, the adjustment knob should be turned out to cause a regulator free flow. The diver should then immediately assume a face down position in the water to prevent the mask from flooding again. At this point the diver should exit the water immediately.

CHAPTER 4
POST DIVE PROCEDURES

4.1 POST DIVE RINSE

The mask should be rinsed thoroughly with fresh clean water and the post dive procedures followed after each day of diving.

1) If the mask is equipped with communications, remove and perform maintenance in accordance with Chapter 6 of this manual.

2) The EXO-BR should be rinsed with the regulator hooked up and pressurized. This will prevent water from entering the balance chamber during rinsing. The EXO-BR requires routine cleaning and lubrication prior to periods of inactivity. This is due to the exacting tolerances of the balanced inlet valve. If inactivity longer than one week is planned, the inlet valve should be removed, cleaned and relubricated prior to storage. If the mask is used daily, this maintenance should be performed monthly. Refer to Chap. 5, page 26.

3) Thoroughly rinse the entire interior and exterior of the mask with fresh clean water. Insure that all the sand and debris are removed from between the EXOskeleton and mask seal and all the salts are removed from the regulator.

4) Purge the regulator and try to get as much water out of it as you can, then blow dry the mask with compressed air or let air dry completely.

5) Disconnect the regulator and turn the adjustment knob all the way out.

6) Lay the mask face down so that no water will collect in the ear pockets. **DO NOT** dry the mask or let it sit in the direct sun light for long periods of time, as this will degrade the rubber.

4.2 REASSEMBLING THE MASK AFTER CLEANING

Insure that all the parts and assemblies are completely dry before assembling or storing.

1) Install the oral nasal and equalizer if they were removed.

2) If so equipped, install the communications in accordance with Chapter 6. If no communications are used, the hole in the microphone cup in the oral nasal must be plugged. Use DSI oral nasal microphone plug, part # 320-001.

3) When storing the mask, make sure the regulator adjustment knob is backed all the way out. This will prevent wear to the regulator seat and lengthen its useful life. Store the mask with the earphone pockets facing straight back or inward. This will help the rubber keep its shape better than stored with the earphone pockets facing outward.

The regulator adjustment knob should be backed all the way out for storage.

All the O-rings should be replaced at least once a year. The inlet valve on the EXO Standard and Original should also be replaced once a year. The EXO BR inlet valve will not require annual replacement as long as it is routinely cleaned and lubricated and there is no evidence of corrosuion or damage. All the EXO masks were designed for minimal maintenance. It is important to carefully inspect the mask after post dive maintenance to ensure it has been properly cleaned and dried prior to storage.

Your entire regulator should be rebuilt every year or 400 operating hours, whichever comes first. To perform an entire regulator rebuild (including the exhaust valve) or to replace the face seal, the regulator mounting tools must be purchased.

N O T E S

CHAPTER 5
REGULATOR MAINTENANCE

5.1 GENERAL INFORMATION

All EXO demand regulators are initially adjusted and preset at the D.S.I. factory using an intermediate pressure of 135-145 P.S.I. The EXO regulator is an adjustable second stage regulator. This allows the masks to work well over a wide range of pressures and diving conditions. When regulator parts need changing, cleaning, or the regulator has gone out of adjustment, **read all of the following and refer to the diagrams and blowaparts to become familiar with all parts and terms associated with the areas of the mask** prior to any disassembly of the regulator. There are two types of EXO regulator covered in this manual, the EXO original/standard and the balanced, with disassembly and rebuild sections for each.

Your entire regulator should be overhauled every year or 400 operating hours, whichever comes first. The inlet valve on the EXO Standard and Original should be replace at this time. The inlet valve on the EXO BR normally sees very little wear of the seat surface because of the balance configuration. If normal, periodic maintenance has been performed, and the balanced inlet valve is free of corrosion, it will not be required to replace the inlet valve. However, if the valve has been damaged by corrosion or the seat is damaged, the inlet valve must be replaced.

Normal annual overhauls of the EXO demand regulators **DO NOT** require you to completely remove the regulator can body from the mask. Removing and reinstalling the regulator is a difficult procedure, and will require the DSI regulator mount nut tool. Complete mask disassembly is possible provide the user has the proper DSI tools. However, it is recommended that this service be performed by a factory trained DSI Dealer. **Contact DSI at (805) 965-8538 for your nearest factory trained service center.**

Note: If you are doing a regulator rebuild and **are changing the exhaust valve**, it is possible to do a replacement without completely removing the regulator. Follow the directions for disassembly of the regulator. Then follow the directions for removing the regulator, but instead of taking the regulator mount nut completely off, only loosen it enough for the regulator to be pulled slightly forward, then pull the whisker off of the regulator body to access the exhaust valve. Replace the exhaust valve making sure that it is facing the right direction and seated correctly. Then put the exhaust whisker back on and follow the directions for installing the regulator. Following this procedure saves you from having to remount the regulator in the mask seal and frame and from possible cross threading of the regulator body while putting the regulator mount nut back on.

⚠ CAUTION: Use only DIVING SYSTEMS INTERNATIONAL original replacement parts when repairing your mask. The use of other manufacturer's parts will interfere with the performance characteristics of your equipment and may jeopardize your safety. Additionally, any substitutions will void any warranties offered by DSI. All of the spare parts listed on the blowapart drawings were specifically manufactured by DSI for use on the EXO. When ordering spares, always insist on DSI original parts.

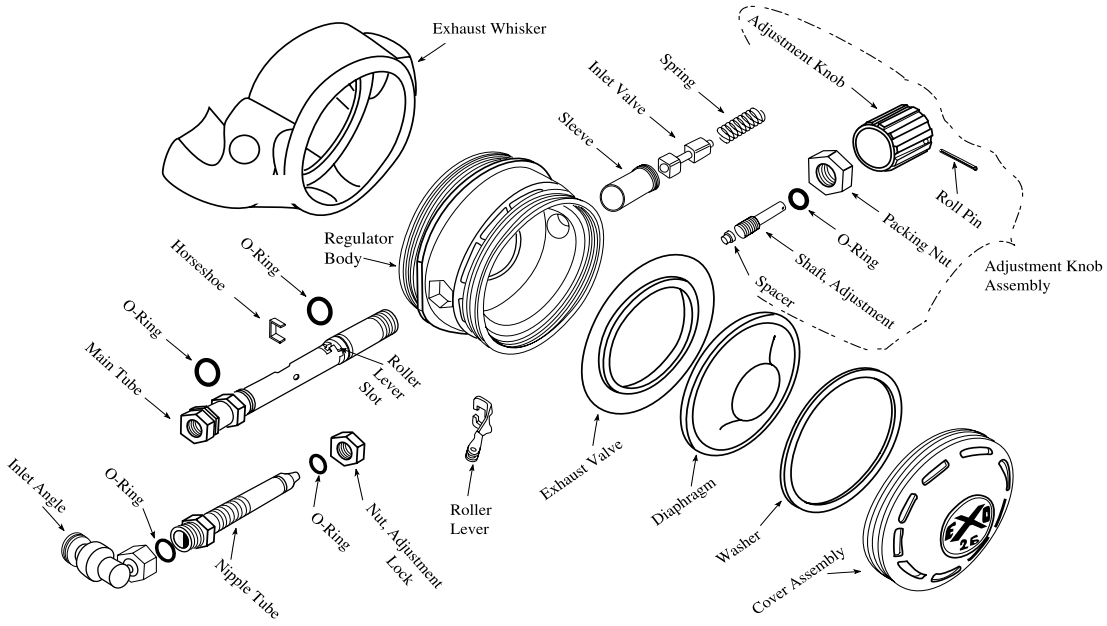
5.2 ORIGINAL AND STANDARD EXO REGULATOR DISASSEMBLY

Tools required:
13/16" open end wrench, 5/8" open end wrench

1) Unscrew the regulator cover assembly and remove the washer and diaphragm.

2) Back out the adjustment knob far enough to allow a 13/16" open end wrench to fit onto the

The EXO Original and Standard regulator



packing nut. Place a 5/8" open end wrench, or the wrench provided with the mask, on the opposite side of the main tube. This will be used as a back up wrench to keep the main tube from spinning when loosening the packing nut. Loosen the packing nut and unscrew the adjustment knob assembly from the regulator.

Always use a back up wrench on the main tube when loosening the packing nut to prevent possible damage to the regulator.

The adjustment assembly is removed after the packing nut is loosened.

Remove the spring and spacer.

Push the main tube out enough to allow the lever arm to be removed.

Remove the roller lever arm.

3) Position the mask so that the adjustment knob end is pointed down and shake out the spring and spacer.

4) Push the adjustment side of the main tube about 3/8" into the regulator body. This will be enough to allow the roller lever to be removed from its slot. Remove the roller lever.

5) Once again position the adjustment knob end of the main tube downward and gently shake the mask to dislodge the inlet valve. Remove the inlet valve.

6) Keep pushing the main tube through the regulator body until the horseshoe is centered in the regulator body. Remove the horseshoe from the main tube by sliding it off.

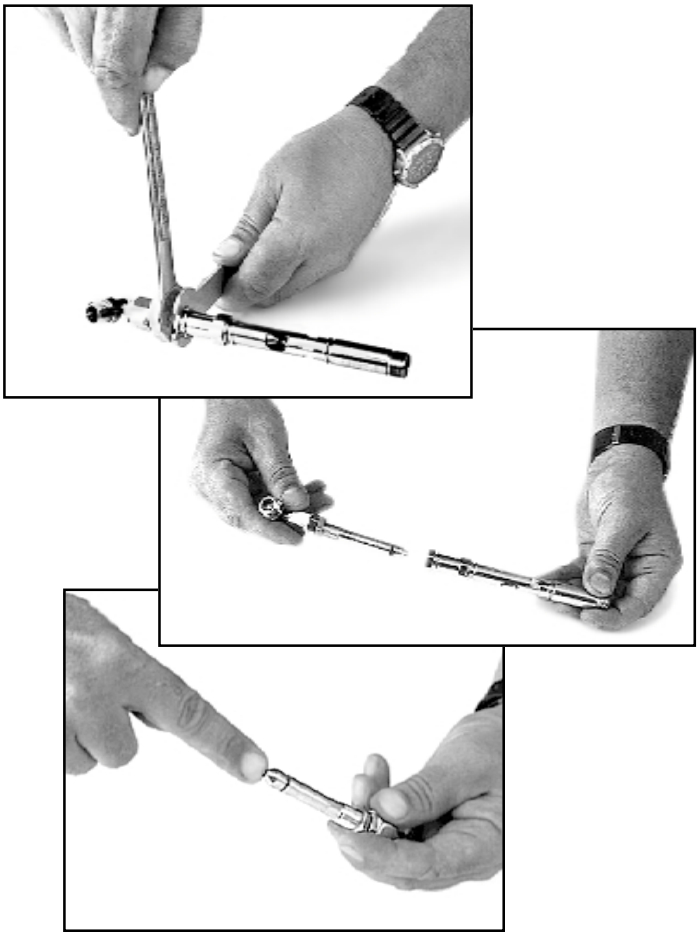
7) Remove the main tube by continuing to push it through the regulator body

8) Loosen the adjustment lock nut on the nipple tube and unscrew the nipple tube from the main tube.

Inspect the nipple tube seating surface for dings, nicks, and wear. You should be able to feel any irregularities with your fingernail. If the tube is damaged it must be replaced.

9) Inspect and clean all parts. All the O-rings should be replaced at least once a year. Lubricate all O-rings lightly with silicone grease. Inspect the seat on the inlet valve. There should be no cuts or nicks in the seat. Replace inlet valve if seat is damaged.

Gently shake out the inlet valve.



Loosen the adjustment lock nut on the nipple tube and unscrew the nipple tube from the main tube. Inspect the nipple tube seating surface for dings, nicks, and wear. You should be able to feel any irregularities with your fingernail.

5.3 ORIGINAL AND STANDARD EXO REGULATOR REBUILD

After all parts have been cleaned, inspected, and lubricated lightly with silicone grease as needed, make sure all O-rings are in their appropriate places.

1) Install the nipple tube into the main tube. Make sure the adjustment locknut is on the nipple tube before screwing it in. Screw the nipple tube all the way in then back it out about 1/8". Snug the lock nut up against the main tube.

2) Slide the main tube into the regulator body. The main tube should be oriented so that the air inlet hole (the big one in the middle) will be facing the inside of the mask. Keep sliding the tube in until the horseshoe area of the main tube is centered in the regulator body.

3) Slide the horseshoe into its place on the main tube from inside the mask.

4) Keep pushing the main tube in until it is about 3/4 of the way in.

5) Reinstall the inlet valve, rubber seat first, in the main tube. Tilt the mask and gently shake it until the skinny part of the inlet valve is aligned with the roller lever slot in the main tube.

6) Install the roller lever and push the main tube the rest of the way through. Make sure that the roller lever is caught in the skinny area of the inlet valve. Make sure that the exhaust whisker is properly seated on the main tube

Make sure that the exhaust whisker is properly seated on the main tube.

7) Reinstall the spring and spacer, spring first, into the main tube.

8) Reinstall the adjustment knob assembly and tighten the packing nut. Remember to use a back up wrench on the other end of the main tube when tightening the packing nut to prevent the main tube from spinning. Tighten packing nut to 40 inch pounds of torque.

Note: If the knob is out too far when tightening the packing nut, the nut will not seal or tighten completely.

9) Screw the adjustment knob in about half way. Place the diaphragm in the regulator then hold the mask so that it is facing up. Loosen the lock nut on the nipple tube and very slowly turn the nipple tube counter clockwise until you notice the roller lever hit the bottom of the diaphragm. Adjust it so that the roller lever is just barely below the diaphragm. Finger tighten the lock nut up against the main tube.

10) Replace the diaphragm washer and screw in the regulator cover assembly and follow the Regulator Adjustment procedures in section 5.7.

5.4 EXO BALANCED REGULATOR DISASSEMBLY

Tools required:
1 3/16" open end wrench
1/8" open end wrench
5/8" DSI back up wrench.
All plastic
or brass handled tube brush
Nylon tooth brush

The inlet valve of the EXO-BR requires frequent cleaning and lubrication due to the exacting tolerances of the inlet valve mechanism. Once familiar with this procedure the task can be accomplished in about 10-15 minutes. The following procedure is intended as a routine maintenance of the inlet valve mechanism. If a 400 hour or annual overhaul is being done, replacement of all O-rings is required.

A few words of CAUTION!
Use only mild detergents such as hand dish washing detergent. Use only a tube brush that does not have an exposed metal tip or an all plastic brush. A tube brush with hard metal components could scratch the chrome surface of the balance chamber. If O-rings are to be removed, use only a plastic pick. Use of a metal pick could scratch delicate surfaces.

Always use a back up wrench when loosening the Adjustment Knob Assembly

Unscrew the adjustment knob assembly from the regulator.

Remove the roller lever arm.

1. With mask disconnected from a pressure source, remove the hose from the nipple tube. If the nipple tube is equipped with the swivel remove the swivel from the nipple tube.

2. Unscrew and remove the regulator diaphragm cover, then remove the thrust washer and diaphragm.

3. Back out the regulator adjustment knob far enough to allow the 1 3/16" open end wrench to fit on to the packing nut. Place the 5/8" DSI wrench on the hex on the opposite end of the main tube, then loosen the packing nut and remove the regulator adjustment knob. Shake the mask, and allow the spring and two spring spacers to drop free.

4. Using the thin DSI wrench on the main tube body and a standard 5/8" wrench on the nipple tube jam nut, loosen the jam nut. Carefully

unscrew and remove the nipple tube from the main tube. Be careful not to drop or bump it as the seating surface is very delicate and can be easily damaged. Set it aside where it will not be damaged.

5. Carefully push the adjustment knob side of the inlet tube into the regulator body approximately 1/4" to 3/8". This will allow the horseshoe retainer to be removed. After removal of the horseshoe, the roller lever can be removed.

6. Shake out the inlet valve, it will drop through the inlet nipple side of the tube. At this point the cleaning and maintenance can be performed without further disassembly, However, should you desire, the tube can be taken out completely.

7. Mix a solution of mild hand dishwashing detergent and warm water. Using the tube brush, carefully clean the balance chamber located approximately 1 1/2" in from the center of the main tube in the direction of the regulator adjustment knob end. The balance chamber is machined to exacting tolerances and only requires a gentle brushing. **USE EXTREME CAUTION WHEN CLEANING THE BALANCE CHAMBER**. A brush with hard metal components could damage the balance chamber.

8. If the main tube was removed, clean the tube using the toothbrush. Gently clean the exterior surface, working the bristles in and around the O-ring grooves of the two static O-rings. Thoroughly rinse with fresh water and blow dry with compressed air. Inspect the exterior of the two O-rings for damage. Replace if any damage is found.

9. Using the toothbrush and soapy water, carefully scrub the inlet valve to remove all dirt, salts, and old lubricant. Normally, it is not necessary to remove the inlet valve O-ring in between annual overhauls, as long as the O-ring groove is not heavily corroded. If heavy corrosion is present, the O-ring should be removed using a plastic O-ring pick.

⚠ CAUTION: Use of a metal pick will scratch the anodized surface of the inlet valve allowing corrosion of the inlet valve body.

Using the nylon toothbrush, carefully clean the inlet valve by working the bristles carefully in and around the O-ring and O-ring groove. Rinse thoroughly with fresh water and blow dry with compressed air. Carefully inspect the O-ring groove by gently rocking the O-ring from side to side. The O-ring groove should be free of pitting and corrosion damage. Carefully inspect the soft seat surface for cuts, nicks and abrasions. Normally, the soft seating area will have a slight round depression where it lays against the metal seat. This is normal. Blow lightly through the 1/8" balance tube shaft with your lips to insure air passes freely through the inlet valve. Replace the inlet valve if no flow is detected, or if any corrosion or soft seat damage is apparent.

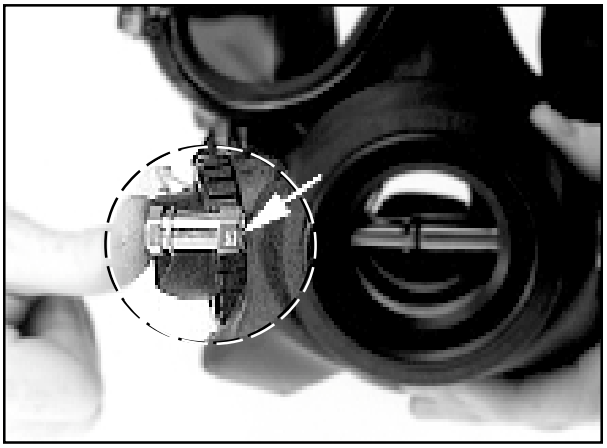
10. Clean the regulator adjustment knob shaft and O-ring using the soapy water and toothbrush. Rinse thoroughly and blow dry. Carefully inspect the O-ring for wear and damage replace if necessary.

11. Clean the inlet nipple tube using the toothbrush and soapy water. Gently work the bristles in and around the O-ring surfaces. Rinse thoroughly with fresh water and blow dry. Carefully inspect the O-rings for damage, replace if necessary. Carefully inspect the knife-edge of the nipple tube for nicks and dings. The knife-edge must be free of any damage. You should be able to feel any irregularities with your fingernail. If the tube is damaged it must be replaced. After all parts have been cleaned and inspected. Lightly lubricate all O-rings and O-ring surfaces with silicone grease. Work the grease into the O-ring grooves then rotate the O-rings to spread the lubricant and wipe off any excess.

5.5 EXO-BR REGULATOR REASSEMBLY

1) After all parts have been cleaned, inspected, and lubricated lightly with silicone grease as needed, make sure all O-rings are in their appropriate places.

2. If the main tube was completely removed from the regulator body, reinstall it by sliding it into the regulator body. The "B" that is machined into the main tube at the nipple end should be facing the front of the mask. Keep sliding the tube in until the horseshoe area of the main tube is centered in the regulator body. If the main tube was not removed it will already be positioned for acceptance of the horseshoe retainer.



The "B" on the tube should be facing the front of the mask.

3) Slide the horseshoe into place on the main tube from inside the mask.

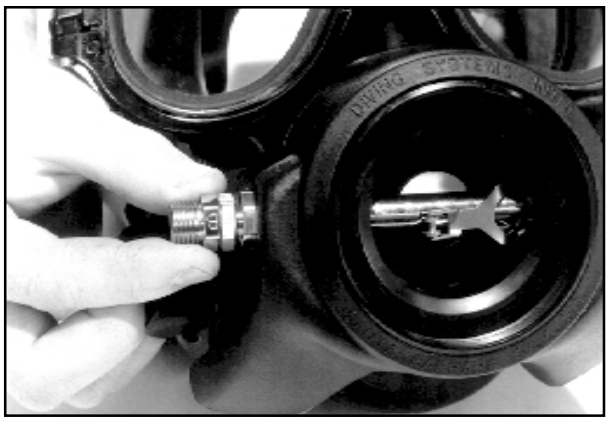
Slide the horseshoe into place on the main tube from inside the mask.

Install the inlet valve.

4) Slide the inlet valve into the main tube from the nipple tube side, sliding it in until the inlet valve is seated into the tube.

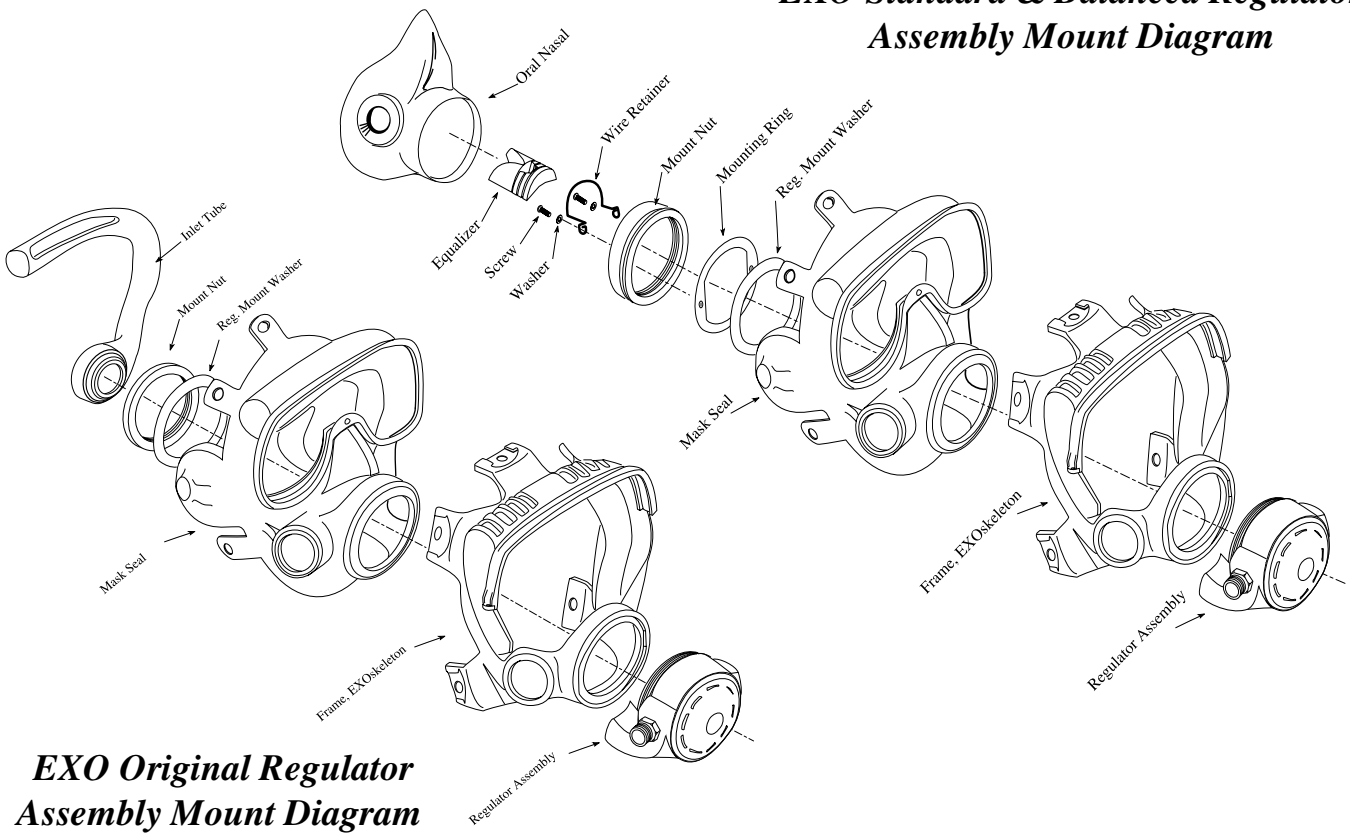
5) Slide the roller lever into the roller lever slot on the main tube. Make sure that the inlet valve is caught by the roller lever and push the main tube all the way into the regulator body. Make sure that the exhaust whisker is seated in the groove around the main tube at the nipple tube end.

6) Install the nipple tube into the main tube. Make sure the adjustment lock nut is on the nipple tube before screwing it in. Screw the nipple tube all the way in then back it out about 1/8".



Install the Nipple Tube.

EXO Standard & Balanced Regulator Assembly Mount Diagram



EXO Original Regulator Assembly Mount Diagram

7) Place the spacer, spring, and spacer together and slide this assembly into the main tube from the adjustment knob end. Make sure that the spacers go in straight and move freely.

Install the spacers and spring.

8) Reinstall the adjustment knob assembly and tighten the packing nut. Always use a back up wrench on the other end of the main tube when tightening the packing nut to help prevent the main tube from damaging the regulator body. Tighten the packing nut to 40 inch pounds.

Note: If the knob is out too far when tightening the packing nut, the nut will not seal or tighten completely.

9) Screw the adjustment knob in about 1/2 way. Place the diaphragm in the regulator then hold the mask so that it is facing up. Very slowly turn the nipple tube counter clockwise until you notice the roller lever hit the bottom of the diaphragm. Adjust it so that the roller lever is just barely below the diaphragm. Finger tighten the lock nut up against the main tube.

10) Install the diaphragm, washer and regulator cover assembly. Follow the Regulator Adjustment procedures, section 5.7.

5.6 REGULATOR ASSEMBLY REMOVAL AND INSTALLATION

Tools required:
3/8" ratchet with an extension.
EXO Tool Kit, Deluxe. DSI Part #325-650.

This can be a difficult procedure. It is recommended that this procedure be done by a factory trained DSI dealer. If you are going to attempt this procedure ***read and understand this entire section before you start any disassembly!***

Note: If you are doing a regulator rebuild and **plan to change the exhaust valve**, it is possible to replace the valve without complete removal of the regulator. Follow the directions for disassembly of the regulator. Then follow the directions for removing the regulator, but instead of taking the regulator mount nut completely off, only loosen it enough for the regulator to be pulled slightly forward, enough to pull the whisker off the regulator body to access the exhaust valve. Replace the exhaust valve making sure that it is facing in the right direction and seated correctly. Then put the exhaust whisker back on and follow the directions for installing the regulator. Following this procedure saves you from having to remount the regulator in the mask seal and frame and from possible cross threading of the regulator can while putting the regulator mount nut back on. If the threads on the regulator can are damaged the can **MUST** be replaced.

5.6.1 Regulator Assembly Removal

1. Remove spider and communications module. See chapter 6.

2. Remove the EXO Standard or BR oral nasal and equalizer or the inlet tube of the EXO original.

3. On the EXO Standard or BR, remove the screws and washers that hold the wire retainer on and remove the wire retainer.

4. Install the regulator mount nut tool on a 3/8" ratchet with an extension.

5. With the mask face down in your lap, place the regulator mount nut tool in the grooves of the regulator mount nut. Remove the regulator mount nut.

6. Remove the mount ring.

7. Gently pull straight out on the regulator assembly, removing it from the mask.

8. Remove the Regulator Mount Washer from the inside of the mask.

5.6.2 Regulator Assembly Installation

1) Inspect the Mask Seal in the regulator area for tears or holes and replace if damaged. Insure that the Mask Seal is properly mounted into the Frame. This is what seals the regulator to the mask. It is very important that the seal in this area remain correctly seated in the frame and does not get pushed through during all phases of installation.

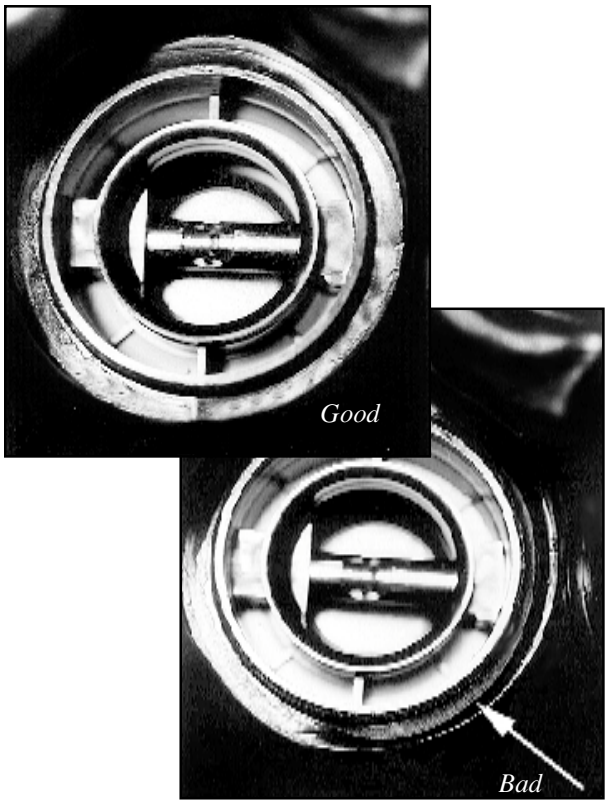
2) Once the seal is correctly in place, lightly lubricate the inside of the regulator mounting hole in the mask seal with silicone grease. Do not get grease between the mask seal and the frame. If the grease gets between the frame and the mask seal, the mask seal will become unmounted and push through more easily when installing the regulator. Lightly grease the threads on the regulator body.

3) Holding the mask in one hand and the regulator assembly in the other with the exhaust whisker openings pointed down to the bottom of the mask, insert the regulator assembly into the mask. Hold the regulator at a slight angle when you first start to push it through the opening then straighten it out as you go in. Start the threads of the regulator partially in on one side of the opening then work it into the hole. On the inside of

the mask use your finger tips to support the Mask Seal to keep it from being pushed to the inside of the Frame.

Once the regulator is in, visually inspect the Mask Seal on the inside of the mask and **make sure that the mask seal did not get pushed through and that it is still correctly seated on the frame.** If the seal has been pushed through, take the regulator out and try again.

Once the regulator is properly seated, inspect where the Exhaust Whisker meets the Frame and make sure that the Whisker is properly seated into the groove of the front of the regulator mount area on the frame.



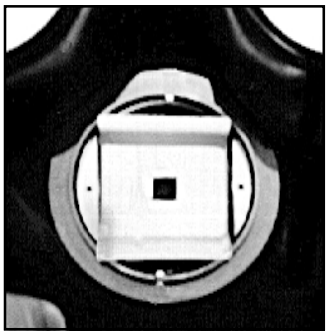
Make sure that the mask seal did not get pushed through

4) Lightly lubricate the regulator mount washer and install it on the regulator.

5) Place the mount ring inside of the mount nut. The pressed in insert on the mount ring should have the bumps facing the regulator.

Place the mount ring inside of the

6) Thread the Mount Nut onto the Regulator Assembly. **The mount nut must go on straight. *Do Not Cross Thread.*** It is easiest to start the mount nut by hand. Put the nut on the regulator, slowly turn counterclockwise until you feel the nut drop onto the threads, and then gently thread on by hand as far as possible to insure that it does not cross thread. Cross threading can damage the regulator can. ***If the threads are damaged in any way the can must be replaced.*** Once the mount nut is on correctly, start tightening. Once again, check and make sure that the exhaust whisker is properly seated in the frame before final tightening. Tighten the regulator mount nut to 100 Inch Pounds.



Turn the mount ring until it is horizontally aligned.

7) Put the Mount Ring Adjustment tool on the ratchet extension and mount the tool into the mount ring. Turn the mount ring until it is horizontally aligned

8) On a EXO Standard or BR, reinstall the wire retainer with the screws and washers.

9) Reinstall the Inlet Tube (EXO Original) or Oral Nasal & Equalizer (EXO Standard or BR).

10) Reinstall the communications in accordance with Chapter 6.

5.7 EXO REGULATOR ADJUSTMENT

NOTE: After any work is done on the EXO Regulator, it must be checked for proper adjustment before any diving is done! If a new Inlet Valve is installed, the adjustment knob should be turned in completely and allowed to sit for 24 hours before attempting any regulator adjustment. In the event you must dive immediately, you will have to readjust the mask after allowing the valve to seat properly over a 24 hour period.

1) Turn the adjustment knob all the way in then back it out 3 full turns

2) Make sure the cover assembly is properly tightened onto the regulator.

3) Hook up an air supply. The nominal supply pressure is 135 psi - 145 psi. Turn air supply on.

Use the spanner wrench to depress the purge button while turning the nipple to adjust the regulator.

4) Place the spanner wrench across the center of the purge button so that the bump in the middle of the wrench depresses the purge button.

5) Adjust the regulator by holding the spanner wrench against the purge button and turning the nipple tube. Counterclockwise for more air, clockwise for less air. Adjust the regulator so that a hiss is heard while holding the spanner wrench against the purge button, but the hissing stops when the spanner wrench is removed.

6) Tighten the adjustment lock nut on the nipple tube. Use a back up wrench on the main tube when tightening to prevent it from spinning.

7) Depress the purge button a couple of times. The mask should not free flow but it should have a good purge.

8) Loosen all the straps on the Spider and hold the mask on your face. Take a couple of good breaths. Breathing slow and soft at first then hard and fast. The regulator should be operating with the minimal amount of breathing resistance and no free flowing. Any type of an air flow "hiss" should be able to be adjusted out by using the adjustment knob. If the adjustment knob is adjusted all the way in and the regulator still hisses, readjust the regulator (step 5)

5.8 LENS REPLACEMENT

Tools required:
Dow DC-111 or similar silicone grease
7/64" Allen head wrench, flat blade screwdriver, torque screwdriver.

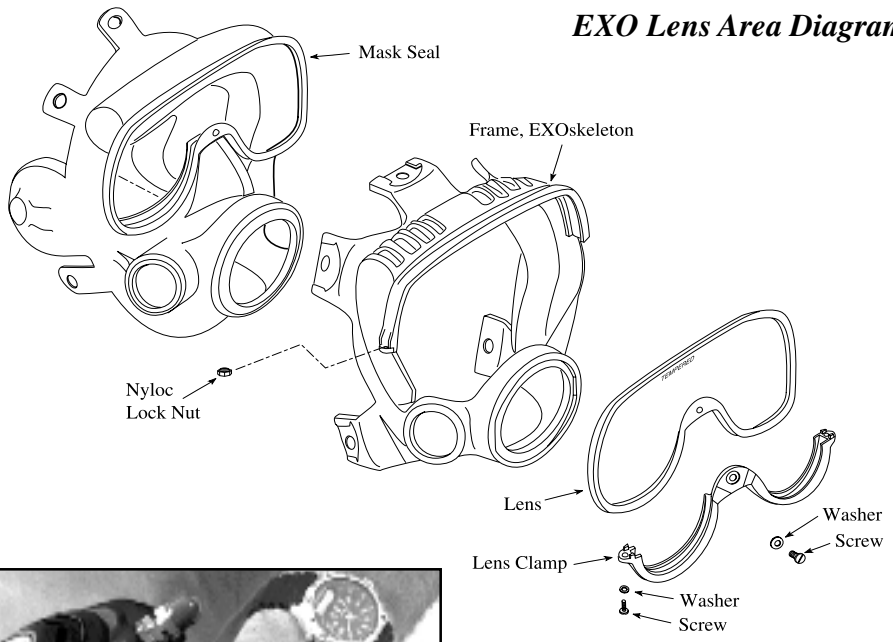
5.8.1 Lens Removal

1) Use a 7/64" Allen head wrench to remove the two screws and washers from the sides of the lens clamp. Remove the Nylon lock nuts if they are loose in the frame.

2) Remove the screw and washer from the front of the lens clamp in the nose area.

3) Separate the lens clamp from the mask frame and mask seal.

EXO Lens Area Diagram



Remove the screw at the nosepiece.

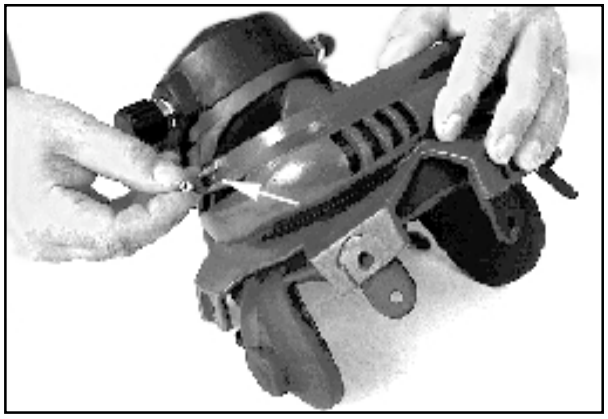
4) Carefully remove the old lens from the mask seal by sliding the lens down enough to clear the top of the lens clamp (which is part of the frame). Remove any silicone from the rubber channel in the mask seal.

5.8.2 Lens Installation

1) The top lens clamp (which is part of the frame) has flats that will hold the Nyloc lock nuts in place. If the locking feature of this nut is worn out or no longer works, **these nuts must be replaced.** ***DO NOT use any chemical locking liquids anywhere on the mask. These chemicals can attack and damage the mask frame material.***

Install the nuts in the upper lens clamp part of the frame, carefully using needle nose pliers if needed. Be sure they are positioned properly and securely. Do not squeeze them too tightly or you may damage the plastic shelf where they seat.

2) Place a bead (approximately 1/8 inch diameter) of Dow DC-111 Lubricant or similar **silicone** grease across the entire top lens groove of the main mask seal. It should start at approximately 3/4 inch below the top lens clamp corners and go to the same spot on the opposite side.



Install the nuts in the upper lens clamp.

Apply silicone grease to the mask seal.

3) With the word TEMPERED facing out, hold the lens up slightly at an angle and begin to install the right side of the lens rim into the channel of the rubber on the mask seal. Make sure that the mask seal is seated in the mask frame correctly. Start the lens slightly below the top lens clamp for clearance when installing. Push the lens to the side far enough to make the plastic clamp flex slightly outward allowing the lens to be fitted into place on the other side.

4) Lower the left side of the lens towards the opposite side of the mask rubber and clamp. Just before they meet, grab the edge of the rubber channel and pull it up slightly above the outer edge of the upper lens clamp and press the lens into the rubber channel and then into the upper lens clamp.

Install the right side of the lens rim into the channel of the rubber on the mask seal.

5) Push the lens up and into the rubber channel of the mask seal and top of the upper lens clamp. Hold the lens in position and fit the bottom channel of the rubber mask seal on the bottom edge of the lens.

6) Once the lens is properly seated in the mask seal and upper lens clamp, install the lower lens clamp. Place the two ends of the bottom of the clamp onto the outside of the rubber channel to hold the rubber in position. Work the clamp onto the mask starting at the nose. Make sure the rubber is seated evenly onto the lens rim and into the lens clamp.

Adjust the seal around the bottom of the lens.

7) Push up on the area under the nose screw to align the nose screw hole in the lens clamp with the hole in the rubber and the thread insert in the plastic rim on the lens. Insert the slotted screw and the washer here and tighten only about 3 or 4 turns. **Do not snug or finish tightening the screw at this time!**

8) Pull up on the lower lens clamp and install the Allen head screws through the clamp until they thread into the nuts in the upper lens clamp part of the frame. Lightly tighten these screws, alternately tightening from side to side so the clamp is drawn up evenly, but do not tighten all the way.

9) Finish tightening the nose screw using an inch pound torque screwdriver set at **6 inch pounds.**

10) Finish tightening the Allen head clamp screws. Use a flat blade screwdriver very gently if needed to keep the rubber from pinching between the two clamps. Tighten the clamps until they bottom against each other. **Do not over tighten.**

⚠ CAUTION: DO NOT OVER TIGHTEN THE LENS MOUNT SCREWS. Over tightening can cause damage to both the lower lens clamp and the upper clamp/ frame requiring replacement.

11) Check the inside top of the glass where it meets the rubber and make sure everything is properly seated. Check both sides of the lens and seal. If any excess silicon grease has squeezed out, remove it.

Use a flat blade screwdriver to keep the mask seal from pinching as the lens clamp is tightened.

Check the seating of the mask seal and lens clamps on the inside of the mask.

5.9 BUCKLE REPLACEMENT

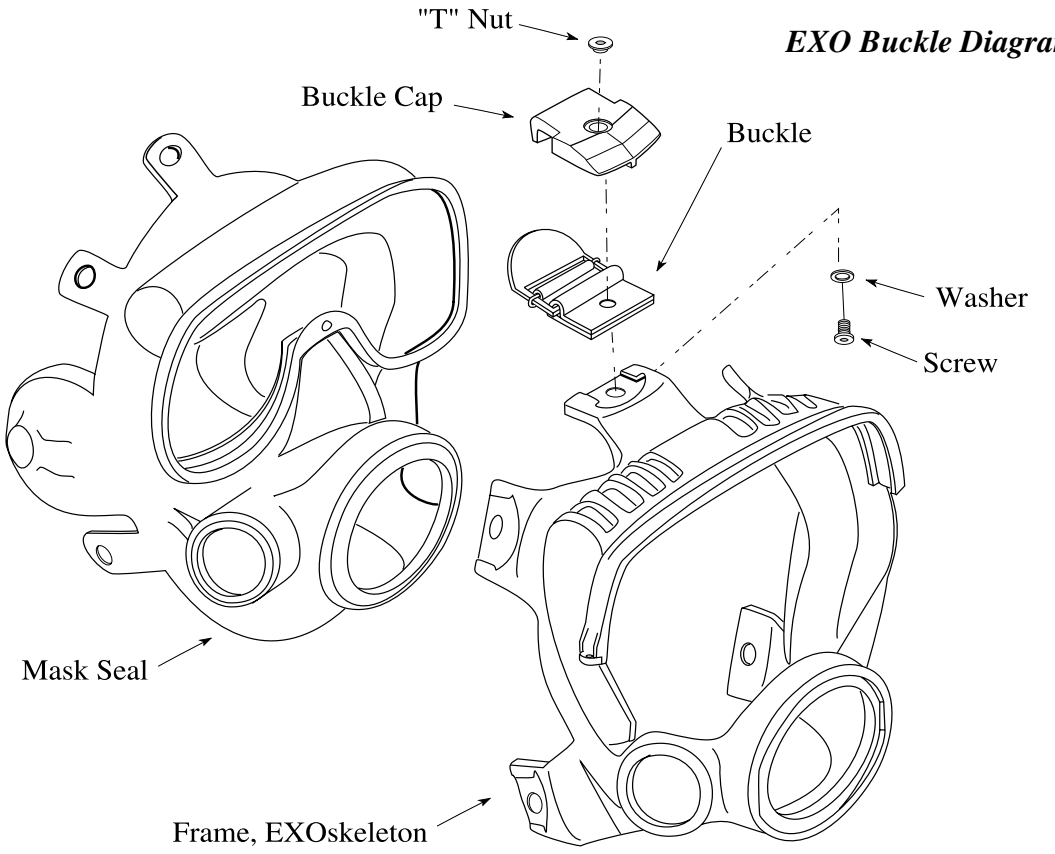
Note: The "T" Nuts are made with a special one time thread locking feature. If the buckles are to be removed the "T" Nuts must be replaced.

Note: By shortening the short leg of the 1/8" Allen wrench (see photo) this job is made much easier.

5.9.1 Buckle Removal

1) Remove the spider (Head harness)

2) Use a 3/16" Allen wrench to remove the "T" nuts and a 1/8" Allen wrench to remove the screws that hold the buckles and buckle caps on.



EXO Buckle Diagram.

5.9.2 Buckle Installation

⚠ CAUTION: If the "T" nuts are not properly installed there is the possibility the screw will become loose and fall out. This will result in the loss of an entire buckle assembly and could cause the mask to flood if enough buckles are lost. Become familiar with the way the washers should fit to the "T" nuts. When properly installed the washers will fit around the minor diameter of the "T" nut when properly in place. The washer MUST NOT be captured between the head of the Allen screw and the end of the "T" nut when tightened.

1) Install all the washers onto the screws with the sharp side of the washer towards the head of the screw.

2) Fit the buckles up into the bottom side of the buckle caps. Insure that the buckles are facing the right way. The folded piece of the buckle assembly with the mounting hole through it has a loop in it. This loop should fit into the space on the bottom side of the buckle caps.

3) Fit the "T" nuts through the top sides of the buckle cap and through the mounting hole in the buckle.

4) Apply a small amount of silicone grease to the hole on the tab of the mask seal.

Lightly lubricate the screw hope on the spider tab.

5) Place an Allen screw with a washer on it onto the shortened leg of the 1/8" Allen wrench.

6) Take one entire assembly of “T” nut, buckle cap, and buckle and press the end of the “T” nut through the hole on the back side of one of the tabs on the mask seal, then through the mask frame. Insert the 3/16" Allen wrench in the “T” nut and hold the assembly in place on the frame.

7) Take the Allen screw with a washer on it on the 1/8" Allen wrench and hold it up against the back side of the “T” nut. Turning the 3/16" Allen wrench and the “T” nut, thread the screw into the "T" nut. Tighten the screw and "T" nut. Once again make sure that the washer is correctly positioned on the "T" nut and that it is not captured.

Insert the screw through the mask frame.

8) Repeat steps 3 thru 7 for all the buckle assemblies.

Use a 3/16" allen wrench to tighten the "T" nuts.

5.10 REPLACING THE FACE SEAL OR FRAME

The Face seal should be inspected prior to every dive to check for punctures, tears or signs of cracking. A torn or cracked face seal may cause the mask to free flow and/or flood. If the face seal is damaged, it must be replaced. This can be a difficult procedure. It is recommended that this procedure be done by a factory trained DSI dealer. If you are going to attempt this procedure, **read and understand all previous sections of this chapter before you start**. The EXO Tool Kit, Deluxe DSI Part #325-650 is required to do this procedure.

Tools Required:
3/16 inch Allen wrench, 1/8 inch Allen wrench, EXO Tool Kit, Deluxe

5.10.1 Face Seal Removal

1) If you are using communications, remove the communications module, microphone and earphones. See chapter 6.

2) Release the spider from the buckles and remove.

3) Remove the regulator assembly.
See section 5.6.1

3) Remove the lens. See section 5.8.1.

4) Remove the buckles and buckle caps.
See section 5.9.1.

5) Separate the mask seal from the mask frame.

5.10.2 Face Seal Installation

1) Put the mask seal into the frame. Seat the lens seal area of the mask seal into the upper lens clamp part of the frame. Seat the regulator and comm module areas of the mask seal in the correct spots on the frame.

2) Install the regulator assembly.
See section 5.6.2.

3) Install the lens. See section 5.8.2.

4) Install the buckles and spider.
See section 5.2.

5) Install the communications module.
See chapter 6.

5.11. MANIFOLD BLOCK MAINTENANCE

5.11.1 Daily- A daily pre-dive inspection should be done prior to using the Manifold Block. Carefully inspect the assembly for any sign of damage or worn components.

Tools: open end wrenches, 1", 11/16", 9/16", 5/8" and a 5/16 Allen wrench.

1) Check to insure all the port plugs are installed and are tight.

DSI Manifold Block

2) Check to insure the emergency gas supply whip is installed and tight, on the emergency valve

3) Using a 5/8" open-end wrench, check to ensure the packing nut (4) on the emergency valve (9) is snug. Note: do not over tighten. The valve handle should turn freely. Check to ensure the packing nut does not turn -when a light force is applied with the wrench.

4) Insure the non-return valve (I4) and umbilical adapter are securely in place.

5) Test the one way valve (14) by sucking on the inlet fitting (I 2) with your lips. If any air is drawn through the valves the valve must be rebuilt or replaced.

5.11.2 Post Dive Procedures.

Daily post dive Maintenance of the manifold block requires a brushing with a solution of mild soapy water and a thorough rinsing with fresh water. If hoses have been removed, insure port plugs have been installed and the umbilical connection has been capped or bagged.

5.11.3 Annual Overhaul of the Manifold Block Assembly.

The DSI manifold block should be rebuilt on an annual basis, or when damage or corrosion is suspected or found.

Tools required: Table vise, 1 "open end wrench (2ea), 11/16", 5/8", and 9/16" open end wrenches, large flat blade screwdriver, 5/16 Allen wrench, 0-300 in Ibs. Torque wrench, Soft nylon tooth brush, brass O-ring pick and a solution of 50/ 5O white vinegar and water.

Parts required:
Manifold Repair Kit DSI PN 325-095

5.11.3.1 Disassembly of manifold block

1) Remove the two flat head screws from the manifold backing plate, and remove the plate.

2) Remove all hoses and port plugs. Remove the O-ring from each plug and place the plugs in a solution of 50/5O white vinegar and water.

3) Using a soft jaw vise or a rag wrapped around the manifold block to keep from marring the finish, remove the one way valve from the manifold block using the 1" wrench.
NOTE: The one way valve must be removed from the manifold block **before** the emergency valve.

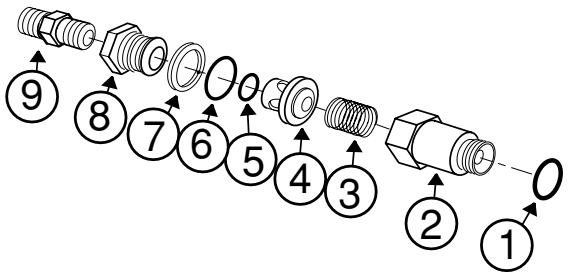
4) Using the 9/16 open-end wrench, loosen and remove the emergency valve from the manifold block.

5) Place the manifold block body in a solution of vinegar and water, and allow to soak while the other components are being disassembled. Using the I " wrench and the 9/16 wrench, loosen and remove the umbilical adapter fitting. Place it in the vinegar solution.

6) Carefully clean the manifold block body with a nylon toothbrush and vinegar solution. Remove all traces of old lubricants, dirt and corrosion, rinse with fresh water and blow dry with compressed air or allow to air dry. Using the nylon brush, clean the manifold plate and umbilical adapter. Take special care to remove all the old Teflon tape from the threads of the umbilical adapter. Air or blow dry. Inspect all threaded ports for any damage.

5.11.3.2 Disassembly and cleaning of the one way valve.

Tools Required:
Soft Jaw Vice
1 inch Open End Wrench Attachment
on Torque Wrench
(If no vise is available use a backup 1 inch open end wrench)

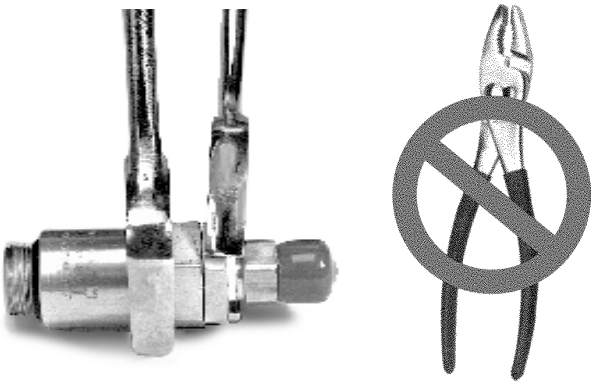


The correct assembly order for the one way valve

1	O-Ring	5	O-Ring
2	Body	6	O-Ring
3	Spring	7	Wiper
4	Poppet	8	Seat
		9	Adapter

To disassemble and inspect the one way valve assembly:

1) Use two wrenches or hold the hex part of the body (2) in a soft jaw vise while removing the seat (8) with a wrench.



⚠ CAUTION: Do not use pliers on the main body of the one way valve. You may damage the valve if pliers are used.

As the seat is removed, the wiper (7) and the O-ring (6) slide out in place in a groove on the seat. The poppet (4) and the poppet O-ring (5) usually come out in the seat being followed by the spring (3). The only functional part remaining in the valve body is a non-moving, pressed-in cage. The function of the cage is to prevent the poppet O-ring from blowing out of place during high flows.

2) Inspect the body interior for foreign matter of any type and clean, if necessary.

3) Inspect the seat, wiper, O-ring, poppet O-ring and poppet for wear, replace if necessary. Be sure each part is clean. A repair kit is available for replacement parts. (DSI Part #525-330)

4) Place silicone lubricant on the components, then wipe clean with a non-lint producing cloth. Be careful to wipe the poppet and poppet O-ring thoroughly, removing nearly all silicone to prevent foreign materials from sticking to these components.

5) Inspect the spring and clean or replace if necessary.

5.11.3.3 Reassembly of the One Way Valve

1) Slide the new O-ring (5) over the poppet (4).

2) Insert the new spring (3) into the valve body (2), followed by the poppet.

3) Next, install the new O-ring (6) and new wiper (7) on the seat (8). Thread the seat into the valve body .

4) Tighten the seat to 240 inch lbs. with a torque wrench while holding the body in a soft jaw vice or with another wrench.

5) Re-tape the pipe threads on the umbilical adapter fitting with Teflon tape, starting two threads back. One and one half wraps is all that is required. Reinstall the umbilical adapter and securely tighten.

NOTE: The one way valve must be installed in the manifold block **after** the emergency valve.

6. Lightly lubricate a new O-ring (1), and install onto the one way valve body. Reinstall the one way valve into the manifold block only after the emergency valve has been installed. Torque to 240 inch Ibs.

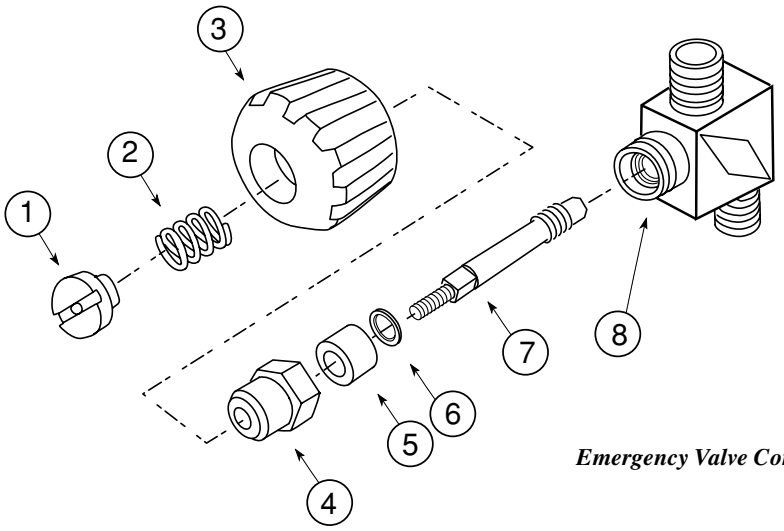
5.11.3.4 Disassembly of the Emergency Valve.

Tools Required:
11/16 inch Open End Attachment on Torque Wrench
1 inch Open End Attachment on Torque Wrench
3/8 inch Slotted Flat Blade Screwdriver
8 inch Adjustable Wrench

1) To remove the emergency valve body from the manifold block the one way valve assembly must first be removed.

NOTE: If only the emergency valve is being serviced, it does not have to be removed from the manifold block to be rebuilt.

2) Remove the lock nut (1), spring (2), and knob (3).



Emergency Valve Components

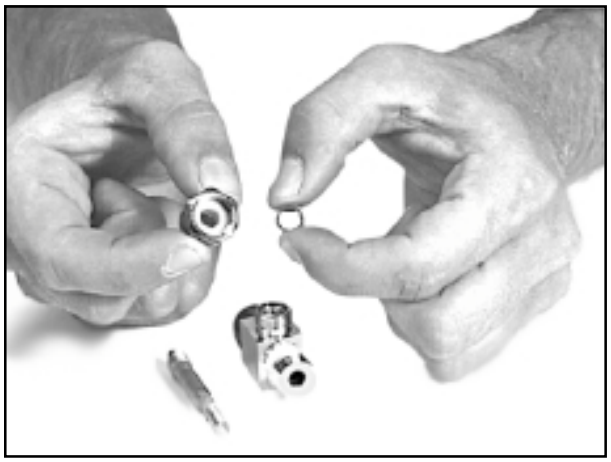
3) Undo the packing nut (4). When the packing nut is free of the threads of the emergency valve body (8), back out the stem (7) until it is free of the emergency valve body.

4) Remove the packing nut, packing (5), and washer (6) from the stem (7).

5.11.3.5 Cleaning and Lubricating the Emergency Valve.

1) Clean all the metal parts in a 50/50 dilute solution of white vinegar/water. Rinse with fresh water.

2) Inspect the packing and washer for wear and replace if necessary.



Inspect the packing and washer

3) Inspect the stem seat for unevenness or wear and replace if necessary. It must also be replaced if the stem is bent.

4) Check the seat in the emergency valve body for wear or unevenness. Replace the body if necessary.

5.11.3.6 Reassembly of Emergency Valve

Tools Required:
11/16 inch Open End &1 inch Open End Attachments on Torque Wrench
3/8 inch Slotted Flat Blade Screwdriver
Soft jaw vice, Teflon tape

1) With the exception of the tapered pipe thread end of the emergency valve body (19), lubricate all components with a light coating of silicone grease.

2) Place the new Teflon washer (6) and new packing (5) on the stem. ***NOTE: There are two different packings and washers supplied in the kit, for rebuilding both the older style and the newer high flow emergency valve. Match the removed packing and washer to the new ones supplied and discard the others.***

3) Holding these components in place on the stem, screw the stem into the emergency valve body.

4) Rotate the stem until it is seated all the way in.

5) Thread the packing nut onto the body. Run the nut in and tighten slightly with a wrench.

6) Place the knob onto the stem and rotate the stem all the way out, then back again. The rotation must be smooth. If "hard spots" or unevenness are felt during the rotation, the stem may be bent and could need replacement.

7) Tighten the packing nut with a wrench until moderate resistance is felt when turning the knob.

8) Place the spring and locknut onto the stem, securing the knob.

9) Tighten the locknut until the screwdriver makes contact with the stem. The assembly is now complete and ready for testing.

10) Test the valve by attaching it to an emergency air supply source. There must be no leakage of gas past the stem or through the packing nut. Turn on the bailout bottle and leave the supply on for several hours. There must be no drop in pressure in the system if the valve is operating properly.

11) Apply Teflon tape to the pipe threads starting two threads back. Only one and one half wraps is all that is necessary.

⚠ DANGER: Take care not to allow any pieces of Teflon tape to enter the side block. If these pieces of tape enter the demand regulator assembly and/or defogger valve they may block the flow of air to the diver. This could lead to death from suffocation.

12) Reinstall the emergency valve into the manifold block and tighten. Insure the valve body is oriented in the proper position so that the one way valve can be reinstalled.

5.11.3.7 Reassembly of the Manifold Block Assembly.

1) Lightly lubricate new O-rings and install on all port plugs.

2) Ensure that all supply hoses have been checked for damage and corrosion and that all hose's have new O-rings which have been lightly lubricated

3) Reinstall the backing plate. Install the screws and washers.

4) Reinstall all hoses and perform a test of the system. Test the emergency valve by attaching it to a bail out cylinder and first stage regulator with an intermediate air source no greater than 240 psi. There should be no leakage of air when the assembly is immersed in a tub of water. The one way valve can also be tested at the same time. After the water test for leaks, while the system is still under pressure, blow dry the inlet to the one way valve and then depressurize the system.

N O T E S

CHAPTER 6
Communications

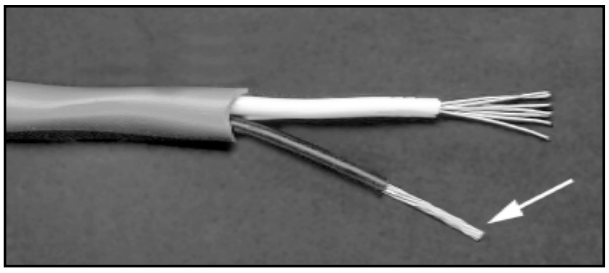
The EXO may be ordered either with no comms or with one of three different communications modules. They are: **Binding Posts** for bare wire connection, **Waterproof Connectors** for hard wire communications, and **Wireless** communications.

In surface supplied diving the most commonly used types of connectors are the binding posts and the waterproof connectors. Waterproof connectors provide better communications. In addition, if you are diving in salt water, waterproof connectors will extend the life of the communications wire in your umbilical.

6.1 BARE WIRE BINDING POSTS

To connect bare wires to binding posts, be sure you have a sufficient length of clean, bare wire exposed. If the wire is covered with corrosion clean it until the shiny wire is exposed or cut it back and expose new wire.

1) Twist the wire strands in each individual wire until they are wound tightly together. Coat these with a thin coat of solder to prevent fraying.



Coat with a thin coat of solder to prevent fraying.

2) Unscrew each of the binding post nuts until the hole in the shaft of the post is exposed.

3) Insert one soldered wire into each of the holes in the binding posts. The wires should stick out of the hole of each post, but should not touch each other. If the wires touch, you will create a "short" and there will be no communications between the diver's mask and the top side communication box.

4) Tighten each of the binding post nuts until snug. Do not overtighten.

5) Test the communications system and insure that it is in proper working order.

6.2 WATERPROOF CONNECTOR (WPC)

Waterproof connectors are a little more expensive than bare wire posts, but they provide better communications, the possibility of a 4 wire system, and will extend the life of the diver's umbilical communications wire. Salt water entering the bare wire system will lead to corrosion of the wires and possible failure of the system.

Waterproof connectors are rugged but require a bit more care in handling than binding post connectors. If you are careless in handling a waterproof connector you may cause it to fail and they can not be repaired. Most waterproof connector manufacturers recommend that you lubricate the connections using silicone grease.

EXO STANDARD or BR Module Assembly With Waterproof Connector

1) To connect the male and female portions of the waterproof connectors, align the key on the male connector with the yellow mark on the female connector.

Align the key on the male connector with the yellow mark on the female connector.

2) Press the two connectors together until you hear a distinct “pop”, which is the air escaping from between the two connectors, creating a seal.

3) Tape the two connectors with a bit of electrical tape to prevent them from pulling apart.

4) Test the communications system and insure that it is in proper working order.

6.3 WIRELESS COMMUNICATIONS

The EXO mask may also be used with wireless communications. There are several manufactures of these units, OTS (Ocean Technology Systems) andDiveComm, just to name a few. Read and follow the manufacturers instructions for these units.

Wireless systems are usually only employed by free swimming SCUBA divers. Wireless systems allow the diver to swim unrestricted by any lines or tethers. However, if you are using the EXO in the surface supplied mode it is usually more effective and reliable to use a hard wire system.

Wireless systems are used in many different types of diving. Some examples include search and rescue, research diving, and SCUBA instruction. With a wireless system it is possible to communicate both diver-to-diver and/or diver-to-surface.

The EXO mask with wireless communications.

The communications system should always be tested and any problems solved or adjustments made prior to the diver entering the water. Procedures may vary between the makers of the top side communication boxes. Follow the manufacturers instructions on how to test these units.

The communications system should always be tested prior to the diver entering the water.

⚠ WARNING: The waterproof case for your wireless communications unit should only be attached to your scuba backpack, never to your weight belt. In the event your belt must be dropped the belt must have a clear drop path and must not be connected to any other piece of gear. If this procedure is not followed the weight belt and wireless electronics case will be attached to the mask by the connecting wire.

6.4 REMOVING THE COMMUNICATIONS MODULE

After each days diving, the entire mask communications system should be removed, cleaned, and allowed to dry.

1) First remove the communications mounting ring by unscrewing it.

⚠ CAUTION: Do not apply any pressure to either the penetrator, or the communications posts, for removal. This could possibly damage the unit.

2) Reach inside each earphone pocket, grasp the earphone and remove it.

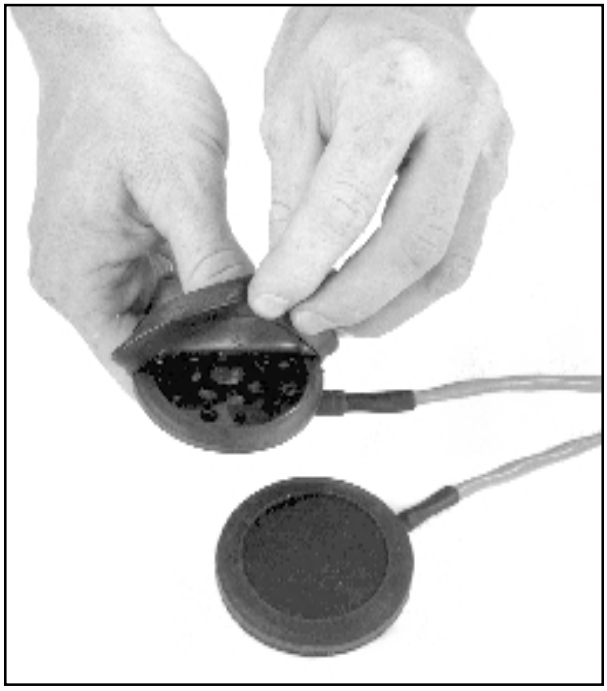
⚠ CAUTION: Do not remove the earphones by pulling on the wires. This may damage their interior connections.

Remove the earphone assembly.

3) In the EXO Standard or Balanced remove the microphone from the oral nasal. Once again do not pull on the wire as this can damage the connection.

4) The entire communications assembly can now be separated from the mask. The module should be pushed to the inside of the mask by applying pressure to the flat angle area on the exterior of the comm module.

5) Remove the outer earphone covers, and on the EXO Original the microphone cup, and allow all the parts to dry.



Remove the outer earphone covers and allow all the parts to dry.

6.5 INSTALLING THE COMMUNICATIONS MODULE

If you are installing communications into a mask that did not originally come with communications, the back side of the microphone cup on the oral nasal may need to be trimmed out. If it is the newer version, simply remove the plastic plug.

1) Insure that the mask seal is correctly seated in the frame. This is very important as the mask seal also acts as the seal for the communications module.

2) Reassemble the earphone covers and the microphone cup (EXO Original).

3) If the comm module is equipped with a waterproof connector, insert the waterproof connector back through the mask seal and frame from the inside of the mask

4) Work the comm module into the mask seal from the inside until it is properly positioned and seated. On the EXO original, make sure the microphone cup is positioned correctly.

Make sure the microphone cup in the EXO Original is positioned correctly.

5) Screw the comm module mount nut back onto the comm module and tighten.

6) Insert the earphones in their pockets. Using a pump spray type of silicone, a light coat on the outside of the earphone covers helps the earphone assembly to slide into the pocket easier.

⚠ CAUTION: Avoid spraying canned silicone spray on any of the plastic parts of the mask. Certain chemicals used to propel silicone spray from the can may damage the plastic components of the mask. Use silicone in a bottle with a manual pump or a very light application of silicone grease.

7) Tuck any excess wires behind the edge of the mask seal.

8) Mount the microphone back into the oral nasal (EXO Standard or BR).

9) Test to insure that the communications module is in proper working order.

10) Masks not using communications systems should be fitted with an oral nasal microphone cup plug. DSI oral nasal plug, part # 320-001 is available for this purpose.

6.6 EARPHONE AND/OR MICROPHONE REMOVAL

1) Remove the communications assembly from the mask.

2) Remove the comm module cover (EXO Standard or EXO BR).

3) Using a small flat blade screwdriver, carefully scrape out the waterproof coating in the slots of the screws in the comm module and remove the screws and washers. **Take note of where all the wires are connected, it will help when reassembling the unit.**

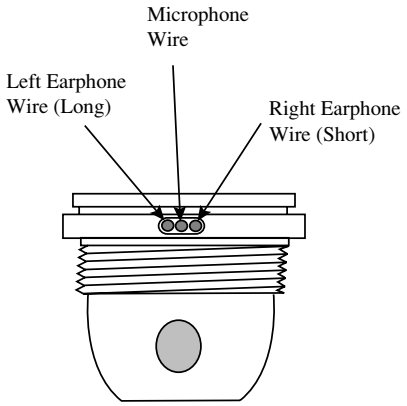
4) Carefully remove the wires from the module.

6.7 EARPHONE AND/OR MICROPHONE INSTALLATION

1) Test the assembly, earphone or microphone, to insure that your components are functioning properly before installation into the comm module.

2) Insert the wires into the comm module one at a time in the correct order (see above).

3) Use the correct wiring diagram at the end of this chapter for your communications set up to reconnect the wires into the comm module using the screws and washers.



Insert the wires into the comm module one at a time in the correct order

4) Test the communication assembly.

5) Once the comm assembly has been tested and is in working order, paint a light coat of RTV silicone sealant onto the screws, washers, and terminals to waterproof them.

6) Reinstall the comm module cover (EXO Standard or EXO BR).

6.8 REMOVING THE WATERPROOF CONNECTOR (WPC)

1) Remove the communications assembly from the mask.

2) Remove the comm module cover (EXO Standard or EXO BR).

3) Remove the earphones and microphone connections from the comm module.

4) The WPC mount nut on the inside of the comm module should be held so that it won't turn. Use a 3/4" open end wrench on the exterior WPC packing and unscrew the WPC assembly from the comm module.

5) Remove the WPC mount nut from inside the comm module.

6.9 INSTALLING THE WATERPROOF CONNECTOR (WPC)

1) Put a small bead of RTV silicone sealant around the top part of the threads on the WPC packing where it rests against the comm module to form a seal between the WPC and the comm module.

2) Put the WPC mount nut in the comm module and hold it up against the hole in the comm module.

3) Feed the wires from the WPC through the hole in the module and through WPC mount nut. Screw the WPC assembly into the comm module and tighten. Clean any excess RTV from around the WPC packing.

4) Feed the earphone and microphone wires into the comm module. Make sure they are in the right order. (Fig. 6.)

5) Follow the appropriate wiring diagram and reconnect the wires.

6) Test the communication assembly.

7) Once the comm assembly has been tested and is in working order, paint a light coat of RTV silicone sealant onto the screws, washers, and terminals to waterproof them.

8) Reinstall the comm module cover (EXO Standard or EXO BR).

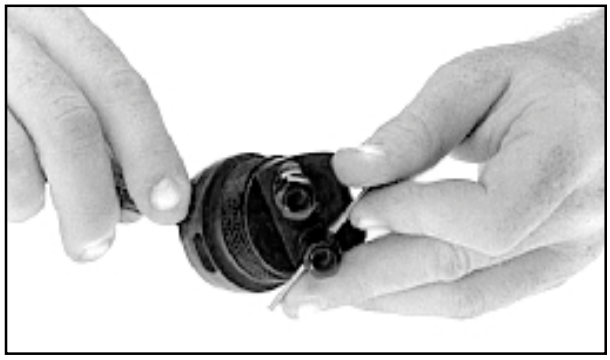
6.10 REMOVING THE BINDING POSTS

1) Remove the communications assembly from the mask.

2) Remove the comm module cover.

3) Remove the earphones and microphone from the comm module. **Take note of where all the wires are connected. This will help when reassembling the unit.**

4) Use a metal pick or a small stiff piece of wire and insert it through the wire connection hole in the binding post. This will help you hold on the post and either spin it or keep it from spinning. Also, use a 3/8" open end wrench on the binding post mounting nuts on the inside of the module and unscrew the binding posts.



Use a metal pick or a small stiff piece of wire inserted in the binding post to keep it from spinning.

5) Remove the nuts, washers, and wire harnesses from the inside of the comm module. **Take note of where all the wires are connected, it will help when reassembling the unit.**

6.11 INSTALLING THE BINDING POSTS

1) Put a bead of RTV silicone sealant around the bottom of the threads and on the bottom of the binding post body.

2) Insert the binding post into one of the holes in the comm module.

3) Put one end of the wire harness on the end of the post, followed by the washer, and nut. Tighten the binding post into the comm module. Repeat for the other post.

4) Feed the earphone and microphone wires into the comm module. Make sure they are in the right order. Refer to the Installing the Earphone and Microphone section of this chapter.

5) Follow the appropriate wiring diagram to reconnect the wires.

6) Test the communication assembly.

7) Once the comm assembly has been tested and is in working order, paint a light coat of RTV silicone sealant onto the screws, washers, and terminals to waterproof them.

8) Reinstall the comm module cover (EXO Standard or EXO BR).

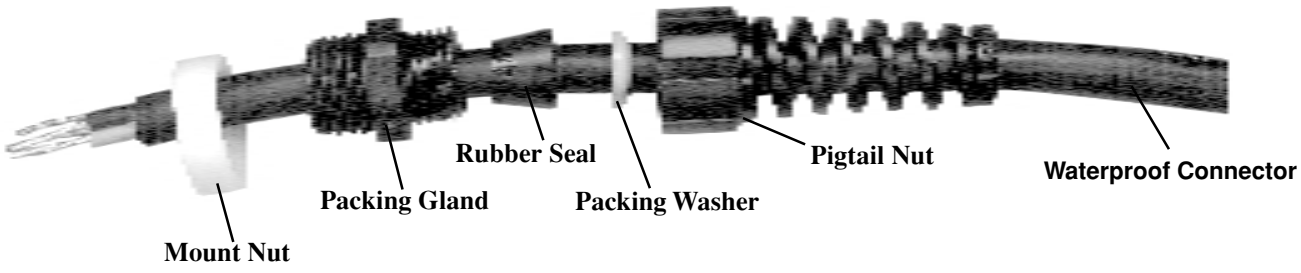
4) Discard the old WPC.

5) On new WPC's the black casing may need to be stripped back 1 1/4" from the end of the wires. The tips of the wires usually come already stripped and dipped in solder. If not, strip the end of the wires 1/4" and solder the ends to prevent fraying.

6) Lightly grease 2 " of the black casing with silicone grease to help slide the pigtail nut on. Slide the pigtail nut on, making sure it faces in the correct direction.

7) Position the packing washer 2 1/4" from the end of the wires and facing in the correct direction. Put the rubber seal on also facing in the correct direction and slide it up against the packing washer.

Waterproof Connector Assembly



6.12 WATERPROOF CONNECTOR (WPC) ASSEMBLY REBUILD

1) Remove the waterproof connector (WPC) assembly from the comm module.

2) Cut off the terminals or "sweat " them off with a soldering iron if you are going to reuse them.

3) Unscrew the packing gland from the pigtail nut. Take off the packing gland, rubber seal, packing washer and pigtail nut. Note the position of the rubber seal and the packing washer and the directions that they face.

8) Slide the packing gland on up against the rubber seal, making sure it is facing in the correct direction. Try not to move the position of the packing washer.

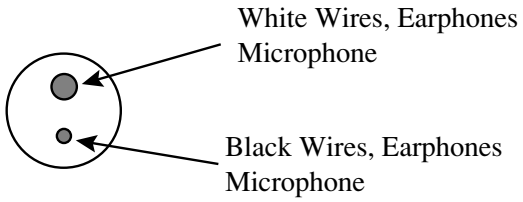
9) Screw the packing glands and pigtail nut together and tighten.

10) Solder terminals on to the end of the wires.

11) Test WPC assembly with a multimeter if possible to insure that all connections are good. Reinstall WPC assembly in comm module. See 6.8

6.13 WATERPROOF CONNECTOR (WPC) PIN DIAGRAMS

The view in these diagrams is looking straight at the pins on the WPC. The large pin is at the top.



2 Pin Waterproof Connector

6.14 POST DIVE MAINTENANCE

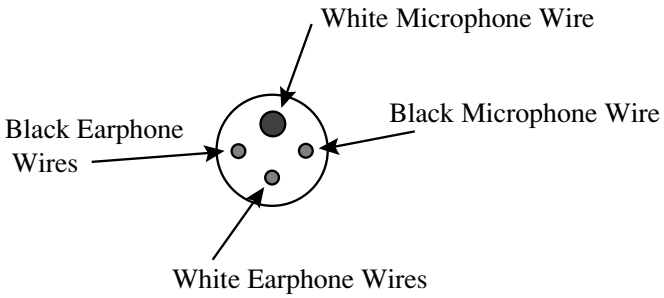
If your mask is equipped with any type of communications, post dive maintenance on the mask and communications module must be done after each days dive. The post dive procedures may vary between manufacturers, depending on which communication module you are using. Follow the manufacturers instructions on post dive maintenance. The following is the recommended post dive maintenance procedures for the DSI communications modules.

1) Remove the communications from the mask.

2) Lightly rinse the assembly with fresh clean water. Do not immerse the entire assembly under water and try to keep the water out of the earphone covers and from under the module cover. The microphone can get wet.

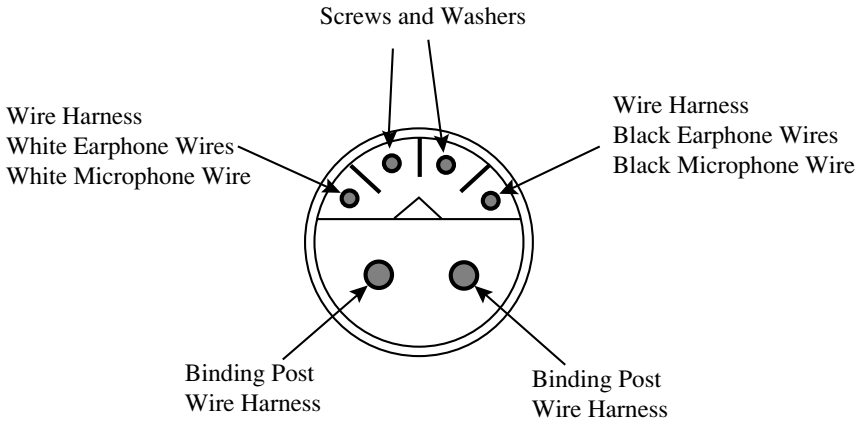
3) Dry the assembly off. Open the earphone covers and take the module cover off and let everything dry on the inside.

4) Once everything is dry, reassemble the earphone covers and reinstall the module cover.

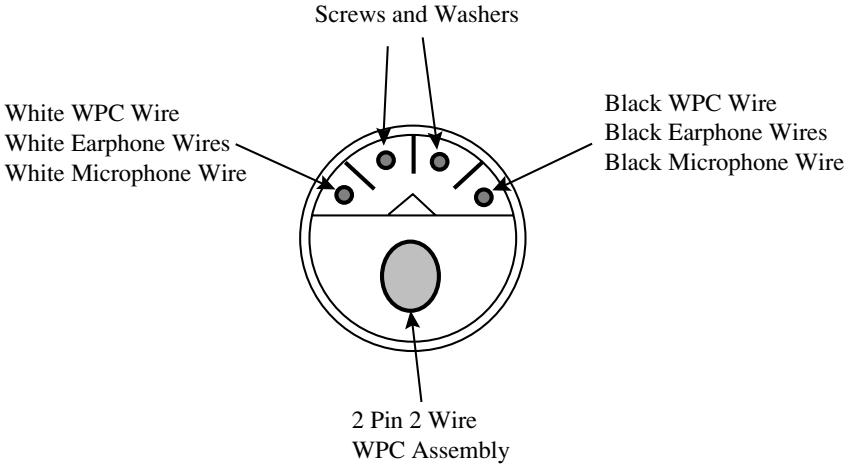


4 Pin Waterproof Connector

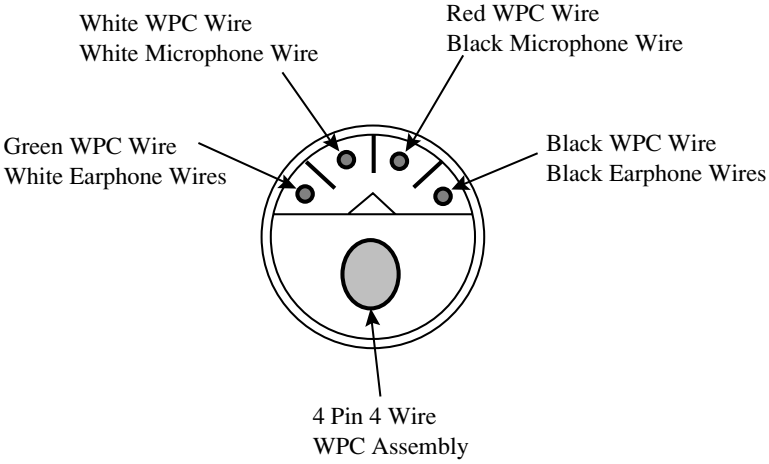
Communications Module Assembly Wiring Diagrams



Binding Posts

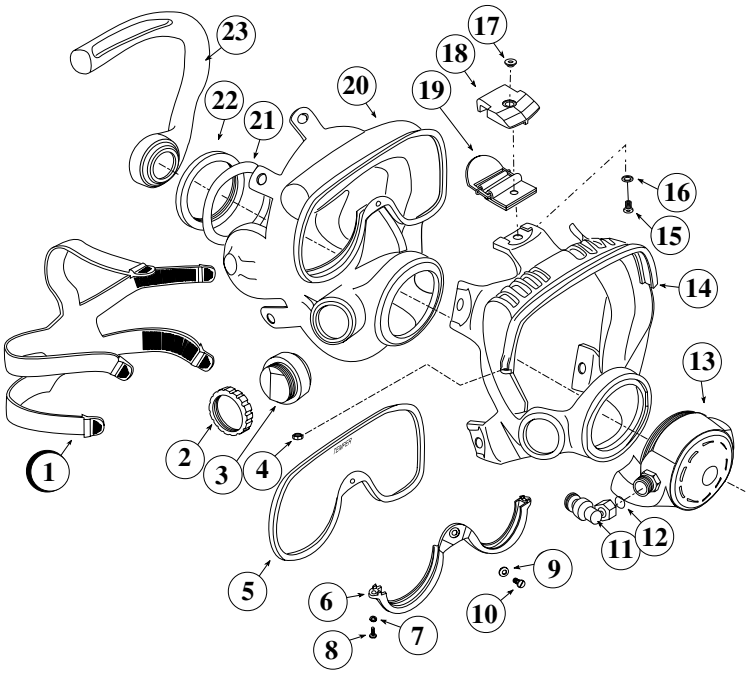


2 Pin 2 Wire, Waterproof Connector (WPC)



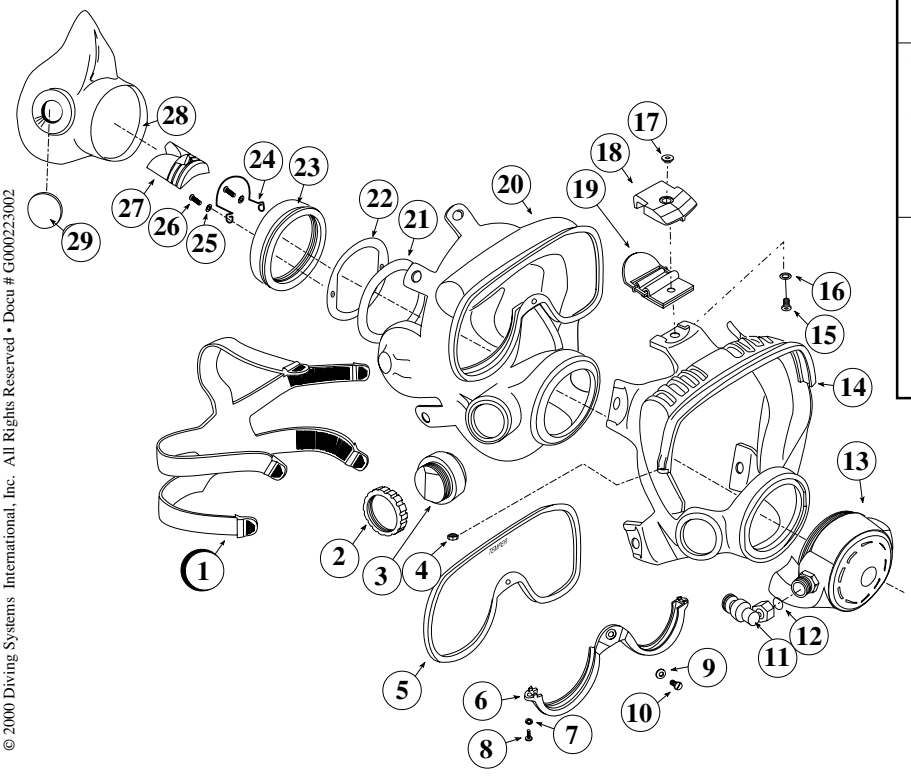
4 Pin 4 Wire, Waterproof Connector (WPC)

Kirby Morgan EXO Original Full Face Mask



1	310-025	Spider
2	320-026	Comm Mount Nut
3	305-020	Comm Plug, w/ screws & Washers
4	330-105	Nut
5	365-002	Lens
6	320-017	Clamp, black
7	330-205	Washer
8	330-005	Screw
9	330-506	Washer
10	330-010	Screw
11	305-036	Inlet Angle Assem. (includes #12)
12	510-010	O-Ring
13	305-010	Regulator Assem. (includes #11)
14	320-015	Frame Exoskeleton, black
15	330-020	Screw
16	330-210	Washer
17	350-040	Nut
18	320-019	Buckle Cap, black
19	345-010	Buckle
20	310-001	Mask Seal
21	320-040	Reg. Mount Washer
22	350-005	Mount Nut
23	310-015	Inlet Tube

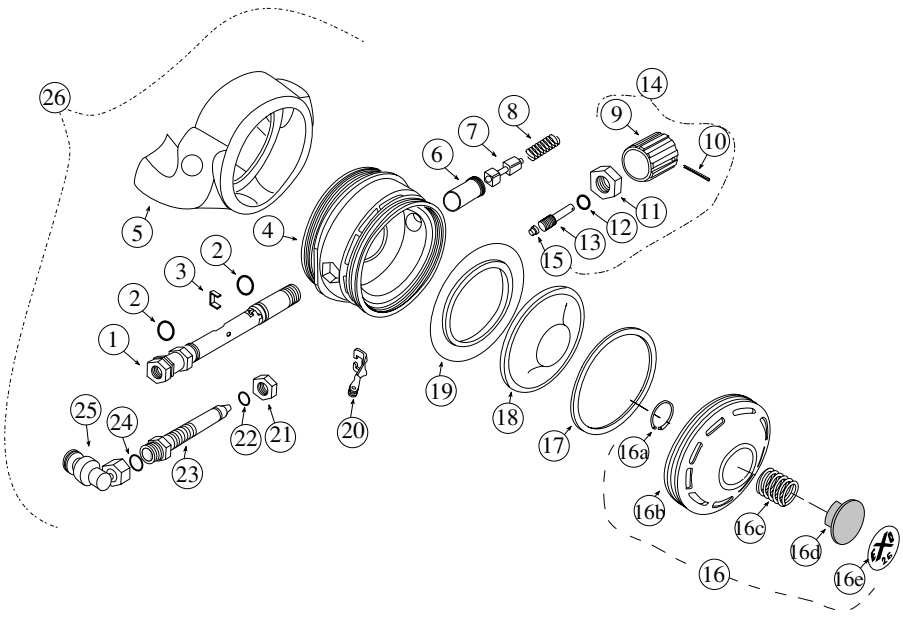
Kirby Morgan EXO Standard Full Face Mask



1	310-025	Spider
2	320-026	Comm Mount Nut
3	305-020	Comm Plug, w/ screws & Washers
4	330-105	Nut
5	365-002	Lens
6	320-017	Clamp, black
7	330-205	Washer
8	330-005	Screw
9	330-506	Washer
10	330-010	Screw
11	305-036	Inlet Angle Assem. (includes #12)
12	510-010	O-Ring
13	305-055	Regulator Assem. (includes #11)
14	320-015	Frame Exoskeleton
15	330-020	Screw
16	330-210	Washer
17	350-040	Nut
18	320-019	Buckle Cap.
19	345-010	Buckle
20	310-001	Mask Seal
21	320-040	Reg. Mount Washer
22	340-015	Mount Ring
23	350-047	Mount Nut
24	330-900	Wire Retainer
25	330-515	Washer
26	330-040	Screw
27	310-357	Equalizer
28	310-055	Oral Nasal
29	320-001	Plug

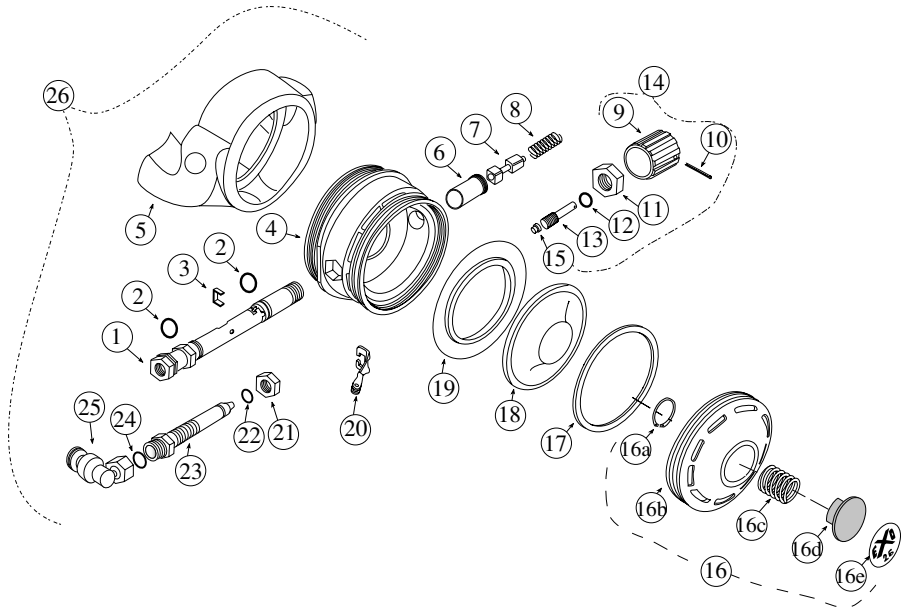
1	350-010	Main Tube
2	310-013	O-Ring
3	340-004	Horseshoe
4	320-005	Regulator Body
5	310-020	Exhaust Whisker
6	350-035	Sleeve
7	305-030	Inlet Valve
8	335-005	Spring
9	320-035	Knob, Adjustment
10	530-601	Roll Pin
11	350-025	Packing Nut
12	510-011	O-Ring
13	350-045	Shaft, Adjustment
14	305-015	Reg Adjustment Assembly
15	350-065	Spacer
16	305-005	Cover Assembly
16a	535-905	Retaining Clip
16b	350-075	Cover
16c	535-810	Spring, Purge Button
16d	520-017	Purge Button
16e	320-070	Purge Button Sticker
17	320-030	Washer
18	510-553	Diaphragm
19	310-065	Exhaust Valve
20	545-038	Roller Lever Assembly
21	350-020	Nut, Adjustment Lock
22	510-010	O-Ring
23	350-015	Nipple Tube
24	510-010	O-Ring
25	305-036	Inlet Angle Assem. **(w/ 24)**
26	305-010	Regulator Assembly

Kirby Morgan EXO Original Regulator
DSI # 305-010

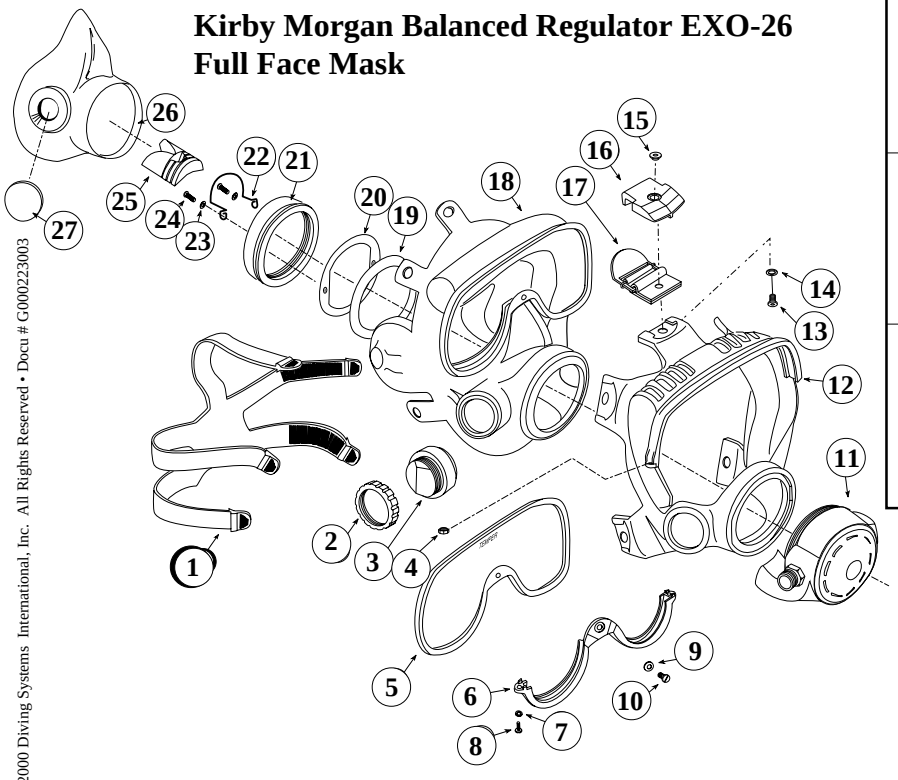


1	350-010	Main Tube
2	310-013	O-Ring
3	340-004	Horseshoe
4	320-084	Regulator Body
5	310-020	Exhaust Whisker
6	350-035	Sleeve
7	305-030	Inlet Valve
8	335-005	Spring
9	320-035	Knob, Adjustment
10	530-601	Roll Pin
11	350-025	Packing Nut
12	510-011	O-Ring
13	350-045	Shaft, Adjustment
14	305-015	Reg Adjustment Assembly
15	350-065	Spacer
16	305-005	Cover Assembly
16a	535-905	Retaining Clip
16b	350-075	Cover
16c	535-810	Spring, Purge Button
16d	520-017	Purge Button
16e	320-070	Purge Button Sticker
17	320-030	Washer
18	510-553	Diaphragm
19	310-065	Exhaust Valve
20	545-038	Roller Lever Assembly
21	350-020	Nut, Adjustment Lock
22	510-010	O-Ring
23	350-015	Nipple Tube
24	510-010	O-Ring
25	305-036	Inlet Angle Assem. **(w/ 24)**
26	305-055	Regulator Assembly

Kirby Morgan EXO Standard Regulator
DSI # 305-055

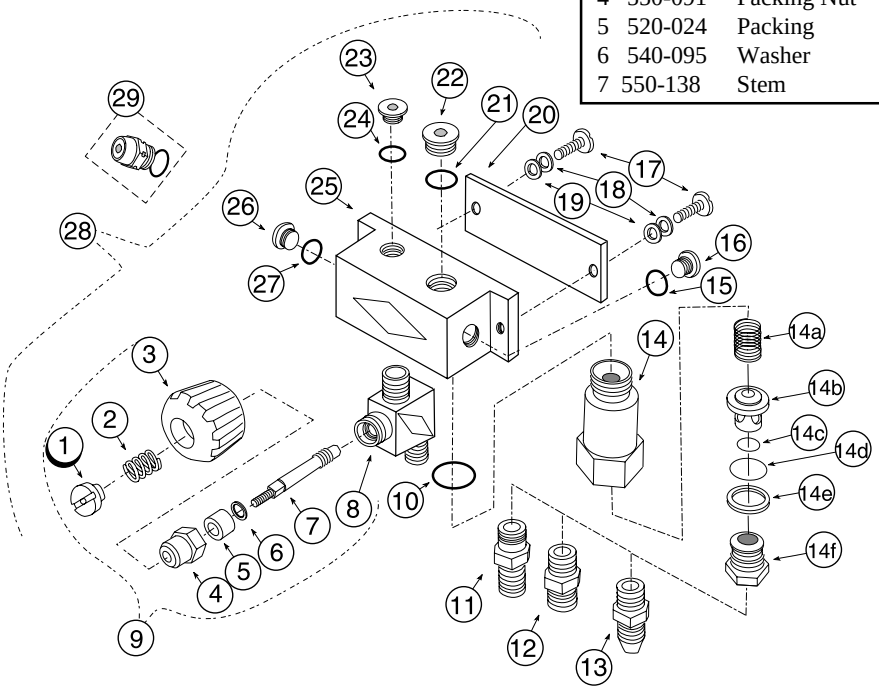


Kirby Morgan Balanced Regulator EXO-26 Full Face Mask



1	310-025	Spider
2	320-026	Comm Mount Nut
3	305-020	Comm Plug, w/ screws & Washers
4	330-105	Nut
5	365-002	Lens
6	320-028	Clamp, yellow
7	330-205	Washer
8	330-005	Screw
9	330-506	Washer
10	330-010	Screw
11	305-040	Regulator Assembly
12	320-016	Frame Exoskeleton, yellow
13	330-020	Screw
14	330-210	Washer
15	350-040	Nut
16	320-021	Buckle Cap, yellow
17	345-010	Buckle
18	310-001	Mask Seal
19	320-040	Reg. Mount Washer
20	340-015	Mount Ring
21	350-047	Mount Nut
22	330-900	Wire Retainer
23	330-515	Washer
24	330-040	Screw
25	310-357	Equalizer
26	310-055	Oral Nasal
27	320-001	Plug

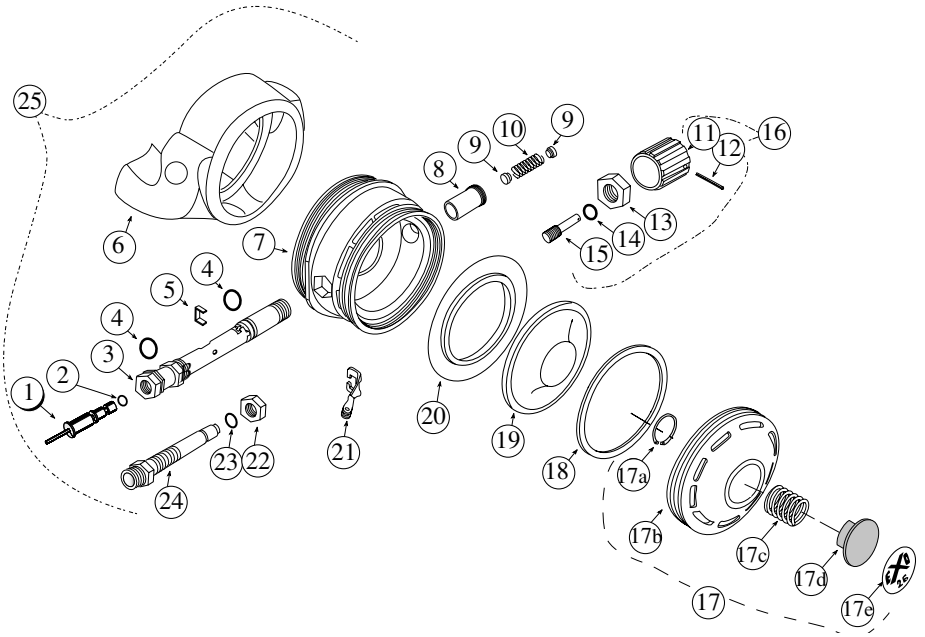
Optional Manifold Block Assembly



1	550-019	Locknut
2	535-802	Spring
3	520-025	Knob
4	550-091	Packing Nut
5	520-024	Packing
6	540-095	Washer
7	550-138	Stem
8	550-140	Valve Body
9	505-070	Emergency Valve Assem.
10	510-483	O-Ring
11	355-205	Scuba Adapter
12	555-117	Adapter, Brass O_2
13	355-225	Adapter, Brass #6 JIC
14	555-195	One Way Valve High Flow
14a	Spring	Order Complete see Loc. # 14 — For Replacement Parts Order Kit #525-330
14b	Poppet	
14c	O-Ring	
14d	O-Ring	
14e	Wiper	
14f	Seat	
15	310-003	O-Ring
16	550-095	Plug, small w/O-ring
17	530-070	Screw
18	330-405	Lock washer
19	530-527	Washer
20	340-011	Backing Plate
21	510-013	O-Ring
22	350-060	Plug, Large w/O-ring
23	550-095	Plug, Small w/O-ring
24	310-003	O-Ring
25	350-050	Manifold Block
26	550-095	Plug, Small w/O-ring
27	310-003	O-Ring
28	300-150	Manifold Assem. complete (O_2)
	300-155	Manifold Assem. complete (#6 JIC)
	300-145	Manifold Assem. complete (scuba)
29	200-017	Over Pressure Relief Valve

Kirby Morgan EXO-26 Balanced Regulator
DSI # 305-040

1	305-057	Inlet Valve
2	310-006	O-Ring
3	350-032	Main Tube
4	310-013	O-Ring
5	340-004	Horseshoe
6	310-020	Exhaust Whisker
7	320-041	Regulator Body
8	350-035	Sleeve
9	350-065	Spacer
10	535-910	Spring
11	320-035	Knob, Adjustment
12	530-601	Roll Pin
13	350-025	Packing Nut
14	510-011	O-Ring
15	350-052	Shaft, Adjustment
16	305-045	Reg Adjustment Assem.
17	305-060	Cover Assembly
17a	535-905	Retaining Clip
17b	350-075	Cover
17c	535-810	Spring, Purge Button
17d	520-017	Purge Button
17e	320-080	Purge Button Sticker
18	320-030	Washer
19	510-553	Diaphragm
20	310-065	Exhaust Valve
21	545-038	Roller Lever
22	350-020	Nut, Adjustment Lock
23	310-007	O-Ring
24	350-042	Nipple Tube
25	305-040	Regulator Assembly



1	320-026	Comm Mount Nut
2	305-020	Comm Module w/5 & 6
	320-023	Comm Module, drilled for posts
	320-024	Comm Module, drilled for W.P.C.
	315-210	Comm Module complete ass'y. w/comms & posts, (Std & BR)
	315-215	Comm Module complete ass'y. w/comms & Male W.P.Connector (Std & BR)
	315-201	Comm Module complete ass'y. w/comms & posts, (Original)
	315-206	Comm Module complete ass'y. w/comms & Male W.P.Connector (Original)
3	330-035	Washer
4	330-030	Screw
5	510-630	Rubber Cover (Std & BR)
6	515-020	Shure Mic. Assembly (Std & BR)
7	515-055	Wiring Harness
8	315-017	Shure Mic. Assembly (Original)
9	310-060	Microphone cup (Original)
10	315-016	Earphone Assembly, Left
11	315-015	Earphone Assembly, Right
12	515-045	Male W.P. Connector
13	315-005	Pigtail
14	350-070	Mount Nut, Pigtail
15	515-049	Terminal
16	315-020	Comm Posts, EXO
17	530-525	Washer
18	530-308	Hex Nut

Optional Communications Assemblies