

User Guide For
Switchover Open Circuit
Regulator Assembly
(Regulator P/N 805-050)



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Any defect of the product in workmanship or material covered by this warranty discovered within three hundred sixty five (365) days from the date of purchase must be promptly communicated in writing to the nearest authorized KMDSI dealer or (if no such dealer in the buyer's country) contact KMDSI directly at (805) 928-7772. No Product returns will be accepted by KMDSI without a returned merchandise authorization (RMA) number from KMDSI. Upon receipt of the RMA from KMDSI, the buyer should return the defective Product or part, freight prepaid, to an authorized KMDSI dealer or the KMDSI plant, as directed by the RMA department. KMDSI will repair or replace the Product at no charge, within a reasonable time, as it deems necessary.

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- 2) The Product has not been properly serviced and/or maintained by KMDSI factory trained/approved personnel, according to factory recommended procedures provided in the manual, along with the KMDSI Appendices Checklists, and/or Product updates have not been performed as recommended by KMDSI, or
- 3) Unauthorized attachments or modifications have been made to the Product, or
- 4) The Product has been used for purposes other than those for which it was designed, or otherwise has been abused, misused, or subjected to unusual conditions, or the Product's intended service has been exceeded.

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IMPORTANT: Please register your purchase online at www.kirbymorgan.com/support/product-registration-form. If you have a problem with the online registration, please contact your Kirby Morgan dealer, or Kirby Morgan directly by calling (805) 928-7772, or email sales@kirbymorgan.com.

Kirby Morgan® thanks you for your purchase.

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Definitions of Signal Words and Terms Used in this Guide

The original language of the Kirby Morgan Manuals is English. Translation into other languages will be provided upon request. KMDSI may charge a fee for these services.

Throughout this user guide we will use certain words to call your attention to conditions, practices or techniques that may directly affect your safety. Pay particular attention to information introduced by the following signal words:

DANGER

This word indicates an imminently hazardous situation, which if not avoided, could 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.

NOTICE

This word is used to address practices not related to personal injury.

This operation user guide contains important safety information and should always be available to those personnel operating this equipment. Read, understand, and retain all instructions before operating this equipment to prevent injury or equipment damage.

If you sell or loan this equipment to another person, be sure that this user guide accompanies the gear when you transfer possession to them.

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Product Changes

Following publication of this booklet, certain changes in standard equipment, options, prices and the like may have occurred which would not be included in these pages. Your Authorized KMDSI dealer is your best source for up-to-date information on any of these products. Kirby Morgan Dive Systems Inc. reserves the right to change product specifications at any time without incurring obligations.

In order to use this regulator assembly, it is essential to complete a training course and receive certification, issued by a recognized national SCUBA or dive training organization (or any military or government operated diving school) **and successful completion of formal training.**

CAUTION

By using this equipment the diver acknowledges that he has read and completely understands the instruction manual provided with it, and hereby agrees to hold harmless Kirby Morgan Dive Systems, Inc. from any accident, malfunction, or other event arising from the misuse of the equipment, or from any lack of, or incomplete understanding of its operation and function.

Terms used in this Guide

BOV: Bail Out Valve

CCR: Closed Circuit Rebreather

DSV: Dive Surface Valve

IAW: In Accordance With

NOTE: POD is not an acronym nor is it an abbreviation. It is only capitalized to emphasize the identification of the removable component of the two part M-48 modular full face masks.

DANGER

In order to use this regulator assembly, it is **ABSOLUTELY NECESSARY** to complete a training course and **RECEIVE CERTIFICATION**, issued by a recognized training organization (or any military or government operated diving school), confirming your ability to dive and successful completion of formal training.

Use of diving equipment by untrained and/or unqualified personnel is **DANGEROUS** and could lead to serious accidents, and/or death. Use of this equipment by a person who does not possess certification issued by an appropriate organization renders void any guarantee, express or implied, on this product.

This regulator, P/N 805-050, is unit specific and can be used **ONLY** when attached to the KMDSI Rebreather POD, purchased as an assembly P/N 805-082, or added later as an option to the KMDSI Rebreather POD no reg, P/N 805-080. This user guide should be considered a supplement to the KMDSI Rebreather User Guide and the M-48 Modular Full Face Mask User Guides.

WARNING

Never use solvents of aerosol sprays on or around the regulator assembly. Certain solvents and propulsion agents attack and damage rubber and certain plastics.

Introduction

Thank you for choosing Kirby Morgan. This regulator has been designed and manufactured according to Kirby Morgan's world renowned exacting standards for quality and performance.

The Kirby Morgan Balanced Switchover Open Circuit is designed to provide very high levels of breathing performance. Its intended use is as a secondary breathing source, or backup in the event of rebreather system problems.

Provided that it has been purchased new from an Authorized Kirby Morgan Dealer, your regulator assembly is covered by Kirby Morgan's Limited Warranty. Be sure to read and fill out the warranty card completely and return the bottom portion within ten (10) days of purchase.

Also save your sales receipts. Copies of these receipts must be presented whenever obtaining warranty service.

Perhaps more so than with any other piece of diving equipment, your regulator's function and performance relies greatly on the care and maintenance it will receive, in addition to regularly scheduled dealer service. Before you dive with your new Kirby Morgan regulator, it is important to read this guide in its entirety; to become familiar with its features, as well as the correct procedures for setup, pre-dive inspection, and post-dive maintenance. The infrequency of use should by no means determine a lesser frequency of maintenance. Less use, under certain conditions, may actually require MORE attention to maintenance to ensure top, reliable, performance when called upon.

Before Going Further

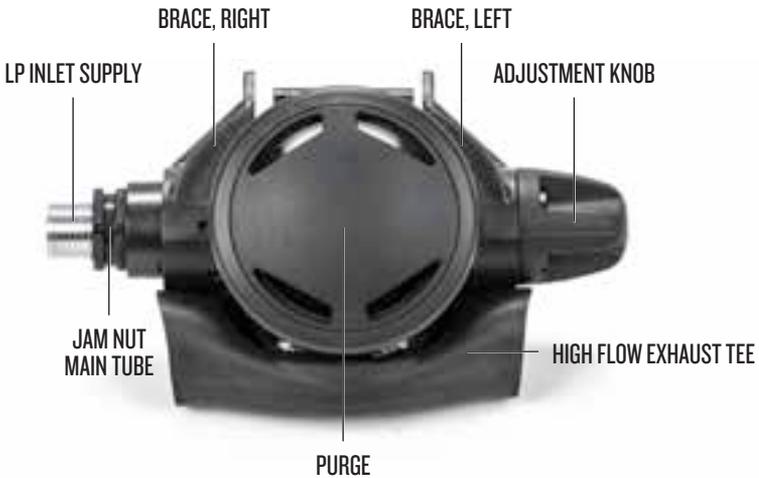
This User Guide explains the features and functions, as well as general care and maintenance of the Regulator. It includes an exploded view and parts list (also found in the back of this guide).

The Switchover Open Circuit Regulator parts has a "location number" in parenthesis when mentioned in this user guide. The location number is used to find the part on the exploded view. These are not part numbers. Always use part numbers when ordering spare parts.

The regulator serial number can be found on the regulator body when the Brace, Right (1) is removed.

NOTE: The exploded view for the 805-080 Rebreather POD No Regulator can be found in its separate user guide, P/N 100-813.

Components of the Regulator



Regulator Bias adjustment:

The regulator bias adjustment gives the diver the ability to fine tune the demand valve at any time prior to, or during the dive. The bias adjustment simply increases or decreases spring tension on the inlet valve assembly. The knob has approximately 4 ¼ turns from full in to full out position with a supply pressure of 135 PSIG. This bias device is not intended as a minimum or maximum device. The bias adjustment should be adjusted by the diver so that it is at the easiest breathing for existing conditions.

NOTE: Diving with a bias setting higher than necessary will result in increased inhalation effort and could cause the diver to become exhausted. Diving with the bias adjusted so the regulator freeflows greatly increases air usage.

Cold Water Diving

Before diving in cold water (water temperature below 10°C/50°F), the diver should be trained and have mastered the techniques of cold water diving, learning techniques and all precautions necessary to avoid freezing of the regulator. All of this is included in the training programs of organizations offering courses in diving in cold water or under ice. You should also use equipment intended for this purpose. In order to reduce the risks of regulator freezing when diving in cold water (below 10°C/50°F), consider doing the following:

1. Protect your regulators from any water entering the first or second stages.
2. Protect your equipment from cold before the dive. Keep your regulator and all its accessories in a warm dry place.
3. Carry out all pre-dive checks of your equipment in a warm dry place if necessary, before even going to the dive site.
4. Avoid breathing through the regulator or pressing the purge button in very cold air before entering the water.
5. Check that the air used to fill your cylinder is dry. The water vapor contained in this air should have a condensation point below $-54^{\circ}\text{C}/-65^{\circ}\text{F}$. Excess water vapor can freeze, causing a free flow, or blocking the air flow completely.

⚠ WARNING

Cold Water Diving (water Temperatures below $50^{\circ}\text{F}/10^{\circ}\text{C}$) requires specialized training and equipment. Do not attempt diving in cold water unless you are properly trained and equipped for this type of specialized diving. Attempting to dive cold waters without proper training & equipment can cause fatal accidents stemming from poor coordination, gear freeze-ups, hypothermia, etc. When diving in waters that are 50°F or colder, use of the KMDSI Cold Water Intermediate Gas Temperature Exchanger, part #200-205 is recommended to prevent the second stage regulator from freezing.

Pre-Dive

Completely inspect the Switchover Open Circuit Regulator, Rebreather POD and all related gear before every dive to ensure everything is in proper working order. This should be done well in advance of the dive. Read and completely understand all user guides and practice the procedures and understand the functions and features of the M-48 modular full face mask Rebreather POD and Switchover Open Circuit Regulator. It is also important to read and understand the rebreather manufacturer's information and successfully complete formal recognized training in the unit before you dive.

Before each use, the regulator assembly must be given a thorough visual inspection and function test. **NEVER** dive with a regulator that

shows signs of damage, or provides substandard performance until it has received complete inspection and service from a KMDSI Authorized Technician.

Mounting/Removing Switchover Open Circuit Regulator

The Switchover Open Circuit regulator is mounted to the Rebreather POD with two Stainless Steel Allen head cap screws and nylock nuts. There are two Braces right and left that secure the regulator in place to the POD and aid in the stability.



NOTE: The Auto Water Purge Valve Body **must be installed** if using the rebreather POD **without the regulator** (DSV) and it must be **removed** if mounting the regulator to the Rebreather POD (BOV).

Pre-Dive Inspection Switchover Open Circuit Regulator (Appendix 1)

Diver Name: _____		Date: _____
No.	Step	Init.
1.	Regulator Cover Ring: Make certain the ring is tightened completely.	
2.	Adjustment Knob: Check the knob travel. It should travel a total of 3 to 4 turns. Turn the knob all the way in, then back out 1 turn or less.	
3.	Exhaust Valve: Make certain the exhaust valve is seated properly by using a finger to feel through the Exhaust Tee and verify correct installation. Perform a negative pressure test by inhaling from the regulator mouthpiece. Resistance should be met when inhaling and no air should enter or be heard entering into the second stage regulator.	
4.	Regulator to POD: Check the mount screws and nuts. Inspect mating areas of the two assemblies for damage.	

Diver Name: _____		Date: _____	
No.	Step	Init.	
5.	L.P. Air Supply: Make sure the hose length is correct and the hose nut is tightened sufficiently. Turn the gas supply ON and listen to the regulator for any possible gas leakage. DO NOT change the adjustment knob setting. Depress the purge button to check for gas flow. Listen to the regulator again to check for gas leakage.		

DANGER

Before entering the water, complete all system checks on the Rebreather as prescribed by the manufacturer.

During the Dive

This demand regulator can be adjusted by the diver during the dive by simply rotating the adjustment knob OUT (counter clockwise) to make the demand valve more sensitive or IN (clockwise) to make the demand valve less sensitive. In normal operation the demand adjustment should be set at the easiest breathing setting by rotating the adjustment knob OUT (counterclockwise) until a slight free flow develops and then rotate it in until the free flow stops. At this point the diver will be taking full advantage of the demand valve's performance.

NOTE: Before entering the water, it is best to turn the adjustment knob in (clockwise) at least four full turns or until the adjustment knob stops. Doing this, as well as slightly covering the mouthpiece, should eliminate the possibility of free flow from sudden water force on the diaphragm. This regulator does NOT have a "Pre-Dive/Dive" mechanism/ vane. If the regulator does free flow, slight blockage of the mouthpiece opening will stop any flow.

In Water Adjustment

If starting the dive using open circuit, turn the adjustment knob out, counterclockwise, until the regulator breathes easily. When the pod is switched over to the rebreather mode, turn the regulator adjustment knob IN, clockwise all the way then back out, no more than one turn. This will apply enough pressure to the inlet valve, to prevent loss of secondary supply gas. If starting the dive in rebreather mode, make certain the regulator adjustment knob is turned in as previously described. If the need arises to switch over to the open circuit regulator, the diver will notice some breathing resistance. The adjustment knob can now be turned out (counter clockwise) to obtain the desired performance level. Whenever the regulator is switched "OUT" or bypassed and the diver

is on the closed circuit breathing loop, the adjustment knob should be turned in (clockwise), as previously described, to prevent gas loss during the dive.

⚠ DANGER

When in the water and removing the Rebreather POD, the barrel valve must be in the vertical position. Failure to do so will flood the breathing loop, leading to a complete system failure, loss of buoyancy, and the formation of a caustic cocktail. Any one of these could lead to serious injury or death.

Post Dive

With clean fresh water rinse your regulator completely while it is still connected to the supply gas before depressurizing it. Or, install the blue sealing cap to the hose end threads of the regulator. It has an internal O-ring seal. Either method can be used to help to prevent any contaminants from entering sealing surfaces inside the regulator. When Post-dive procedures are completed, store dry in a cool, dry place away from direct light.

Post-Dive Cleaning and Inspection Checklist (Appendix 2)

Diver Name: _____		Date: _____
No.	Step	Init.
1.	Soapy Solution Wash: Prepare solution of warm water (80-100 °F) and mild hand type dishwashing soap. Agitate components in solution for 2-3 minutes; use soft bristle brush or lint free cleaning cloth. Allow POD assembly to soak for 10 minutes then rinse thoroughly with fresh water.	
2.	Ensure all debris such as sand and dirt is removed from regulator mouthpiece and rebreather POD inhalation and exhalation ports. Clean the regulator IAW manufacture's instructions. Thoroughly rinse the tilt-to-purge valve. Activate stem to allow water to drain from valve body.	
3.	Rotate Regulator Adjustment Knob fully out (counter clockwise).	

Diver Name: _____		Date: _____
No.	Step	Init.
4.	Inspect for any signs of wear, damage or missing parts POD Cover <input type="checkbox"/> Frame <input type="checkbox"/> Frame Retainer <input type="checkbox"/> Catch Release <input type="checkbox"/> Hook <input type="checkbox"/> Mouthpiece <input type="checkbox"/> Ratchet Mechanism <input type="checkbox"/> Hose Adapters <input type="checkbox"/> Tilt to Purge <input type="checkbox"/> Tie Wraps <input type="checkbox"/> O-rings <input type="checkbox"/> Regulator or Exhaust Valve Mount Screws and Nuts <input type="checkbox"/>	
5.	Allow to dry completely before storage. Store POD out of sunlight and fluorescent light, preferably in protective bag or pouch	

CAUTION

During rinsing or soaking, do not depress the Purge Button on the Second Stage. Pressing the Purge Button can allow water to enter the Inlet Valve and balance chamber.

Scheduled Maintenance

Do not assume that a regulator assembly is in good working order because it has been used only slightly. Prolonged or improper storage can still result in O-ring deterioration or internal corrosion.

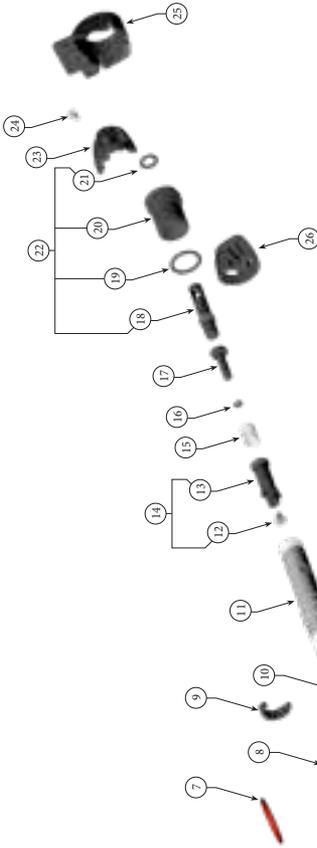
The minimum maintenance suggested for all regulators is an annual inspection and service. However, regulators which are used frequently, or in severe environments should be serviced more often. For example, a regulator used heavily in a salt water environment may require service twice a year or more. Regulators used for training purposes, in polluted water or swimming pools may require service every three months or less. Whenever a regulator has been inactive for longer than three months, it should be carefully inspected and surface function checked prior to use.

The minimum maintenance suggested for all regulators is an annual inspection / soft goods overhaul by a qualified KMDSI technician. However, regulators that are used more than 20 times a month or under severely harsh environmental conditions should be serviced more often.

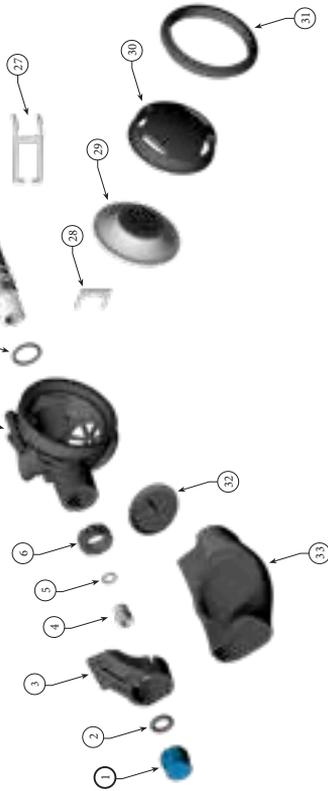
Exploded View 805-050 Regulator Assembly, Rebreather POD

P/N 805-050 Regulator Assembly

Location #	Part #	Description
1	220-078	Cup, Threaded, Hose Inlet
2	410-151	O-ring
3	220-067	Brace, Right
4	250-060	Nipple
5	210-050	O-ring, Adj. Nipple
6	250-057	Jam Nut, Main Tube
7	810-124	O-ring
8	205-026	Reg. Body Assembly, Switchover
9	220-055	Bearing Clip
10	510-015	O-ring
11	250-050	Main Tube, Balanced, Finished
12	210-045	Seat
13	220-0508SS	Inlet Valve
14	205-015SS	Inlet Valve Assembly
15	233-015	Spring
16	210-055	O-ring, Balanced
17	220-030	Spacer, Balance



Location #	Part #	Description
18	250-028	Slot Shaft, Balanced
19	510-016	O-ring
20	250-061	Packing Nut, Balanced Reg.
21	510-011	O-ring
22	205-012	Adj./Packing Nut Assy.
23	220-013	Knob, (Female)
24	830-004	Screw
25	220-066	Brace, Left
26	220-014	Knob, (Male)
27	240-003	Lever Arm
28	240-005	Lock Clip
29	205-010	Diaphragm Assembly
30	210-043	Diaphragm Cover
31	250-038	Cover Ring
32	810-136	Exhaust Valve
33	810-139	Hi Flow Exhaust Tee



Appendices

Pre-Dive Inspection Switchover Open Circuit Regulator (Appendix 1)

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3.	Exhaust Valve: Make certain the exhaust valve is seated properly by using a finger to feel through the Exhaust Tee and verify correct installation.	
4.	Regulator to POD: Check the mount screws and nuts. Inspect mating areas of the two assemblies for damage.	
5.	L.P. Air Supply: Make sure the hose length is correct and the hose nut is tightened sufficiently. Turn the gas supply ON and listen to the regulator for any possible gas leakage. DO NOT change the adjustment knob setting. Depress the purge button to check for gas flow. Listen to the regulator again to check for gas leakage.	

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2.	Ensure all debris such as sand and dirt is removed from regulator mouthpiece and rebreather POD inhalation and exhalation ports. Clean the regulator IAW manufacture's instructions. Thoroughly rinse the tilt-to-purge valve. Activate stem to allow water to drain from valve body.	
3.	Rotate Regulator Adjustment Knob fully out (counter clockwise).	
4.	Inspect for any signs of wear, damage or missing parts POD Cover <input type="checkbox"/> Frame <input type="checkbox"/> Frame Retainer <input type="checkbox"/> Catch Release <input type="checkbox"/> Hook <input type="checkbox"/> Mouthpiece <input type="checkbox"/> Ratchet Mechanism <input type="checkbox"/> Hose Adapters <input type="checkbox"/> Tilt to Purge <input type="checkbox"/> Tie Wraps <input type="checkbox"/> O-rings <input type="checkbox"/> Regulator or Exhaust Valve Mount Screws and Nuts <input type="checkbox"/>	
5.	Allow to dry completely before storage. Store POD out of sunlight and fluorescent light, preferably in protective bag or pouch	

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