User Guide For

Balanced Scuba Regulator

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Kirby Morgan Dive Systems, Inc.
1430 Jason Way
Santa Maria, CA 93455, USA
Telephone (805) 928-7772
FAX (805) 928-0342
E-Mail: kmdsi@kirbymorgan.com
Web Site: www.kirbymorgan.com

WARRANTY

https://www.kirbymorgan.com/support/warranty

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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.

⚠ 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.

⚠ WARNING

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

REMARKS: Operating or descriptive information which will help you make the best use of your regulator.

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

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

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 training organization, confirming your ability to dive.

⚠ 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.

⚠ WARNING

The maximum approved depth for the use of this equipment is 50 meters (164 FSW) @ 62.5 RMV (heavy work load). Do not exceed this limit. The use of open circuit scuba at depths below 164 FSW poses extreme risks including out-of-air emergencies and decompression sickness, which can lead to serious personal injury or death.

⚠ WARNING

Never use solvents or aerosol sprays on our around the regulator assembly. Certain solvents and propulsion agents attack and damage rubber and certain plastics. This could lead to regulator failure. Drowning could result.

This user guide gives basic daily operational information for the Kirby Morgan Balanced Scuba Regulator assembly.

Before each use the regulator assembly should be carefully checked and submitted to the operational tests. Never dive with a regulator showing any signs of deterioration or a below normal performance.

⚠ CAUTION

Always allow pressure to build up slowly in the regulator by turning on the cylinder valve slowly.

Use only Christo-Lube® on the rubber components. Never grease the parts of your regulator with a lubricant containing hydrocarbons, household oil, or motor oil.

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), 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°C. Excess water vapor can freeze, causing a free flow, or blocking the air flow completely.

2nd Stage Regulator Serial Number Location

The serial number is printed on the top part, near the mouthpiece, on the 2nd stage regulator.

1st Stage Maximum Recommended Working Pressure
2nd Stage Optimal Working Pressure

REGULATORS	PSI	BAR
1st Stage	145	9.99
2nd Stage	150	10.34

Divers Work Rate Expressed as Respiratory Minute Volume (RMV)*

WORK LOAD	RMV	CUBIC FEET/ MINUTE (CFM)	EQUIVALENT LAND BASED EXERCISE
Rest	7–10 RMV	0.2 - 0.35 CFM	
Light Work	10–20 RMV	0.35 - 0.7 CFM	Walking 2 miles per hour
Moderate Work	20–37 RMV	0.7 - 1.3 CFM	Walking 4 miles per hour
Heavy Work	37–54 RMV	1.3 - 1.9 CFM	Running 8 miles per hour
Severe Work	55–100 RMV	1.94 - 3.5 CFM	

* source: U.S. Navy Diving Manual

Kirby Morgan Balanced Scuba Regulator Assembly

Thank you for choosing a Kirby Morgan regulator.

Your new regulator assembly has been designed and manufactured with pride, according to Kirby Morgan's world renowned exacting standards for quality and performance. The Kirby Morgan Balanced Scuba Regulator is a high performance regulator which was designed for the professional scuba diver. The second stage is a modified version of the same regulator used on the Kirby Morgan 97 helmet and stand alone 455 balanced regulator. Many of the parts used in this Balanced Scuba Regulator are identical to

those used on the KM 97 helmet and 455 balanced regulator. This is helpful to dealers in stocking parts for service and repair.

Provided it has been purchased new from an authorized KMDSI Dealer, your regulator assembly is covered by KMDSI's Limited Warranty. Be sure to read and fill out the warranty card completely and register your purchase online at www.kirbymorgan.com within ten (10) days of purchase. Also save your sales receipt. A copy of your receipt must be presented whenever obtaining warranty service.

Perhaps more than 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.

General Precautions and Warnings

Before using this regulator assembly, you must have successfully received training and certification in the technique of scuba diving from a recognized certification agency (or any Military or government operated diving school).

Use of this equipment by a person who is not certified by a recognized agency shall render all warranties, express or implied, null and void. Use of scuba equipment by uncertified, or untrained persons, is dangerous and can result in serious injury or death.

⚠ WARNING

Never lubricate any part of the regulator or cylinder valve with any lubricant. Lubrication must only be performed by a KMDSI factory trained technician. Improper lubrication can lead to regulator malfunction. Drowning can result.

⚠ CAUTION

Do not use the regulator first stage as a carrying handle when lifting or transporting the cylinder. Always lift the cylinder by the cylinder valve handle without the regulator attached. The regulator can be damaged if you use it to lift the cylinder.

⚠ CAUTION

Factory prescribed service for this regulator assembly must be performed at least once each year by a factory trained technician who is employed by an Authorized KMDSI Dealer. Repair, service, disassembly, or first stage adjustment must not be attempted by persons who are not factory trained and authorized by KMDSI.

Preparation and Setup

KMDSI recommends that you bring your regulator assembly to your Authorized KMDSI Dealer for the installation of any accessory items, including instrumentation, LP quick disconnect hoses, and alternate air sources. Your dealer can also answer any questions you may have pertaining to the information in this guide.

If the adjustment knob has been turned "out" (counter-clockwise), turn it "in" (clockwise) until a clicking noise can be heard. This indicates full spring pressure has been achieved.

Pre-Dive Checkout

Before each use, the regulator assembly must be given a thorough visual inspection and functional test. NEVER dive with a regulator that shows signs of damage or provides substandard performance until it has received complete inspection and service from an authorized KMDSI dealer.

Inspection Checklist

1. Prior to each use, the regulator assembly must be given a thorough visual inspection and functional test. Carefully inspect all hoses at their fittings to ensure they are securely connected into their respective ports on the first stage.

If hose protectors are present, slide the protectors back to expose the hose fittings, and inspect the fittings. Inspect the length of each hose to ensure that the hoses are not blistered, cut, or otherwise damaged.

2. Visually inspect both the first and second stage regulators for any signs of external damage.

3. Slowly back out on the demand regulator adjustment knob counter clockwise one full turn. Depress the front cover of the regulator while slightly blocking the mouthpiece to prevent freeflow of the regulator.

Test breathe by taking several shallow and deep breaths to ensure the regulator breathes properly.

Turn the adjustment knob in (clockwise). This will prevent the regulator from free flowing if you enter the water without the regulator in your mouth. Readjust the regulator when in the water.

During the Dive

1. This demand regulator can be adjusted by the diver during the dive by simply rotating the regulator adjustment knob OUT (counter clockwise) to make the demand valve more sensitive or IN (clockwise) to make the demand valve less sensitive.

Before entering the water, it is best to turn the adjustment knob in (clockwise) at least 3 full turns or until an audible "click" is heard. 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.

⚠ WARNING

Diving an adjustable demand regulator that is adjusted to breathe with heavy resistance could cause the diver to become exhausted. This could lead to drowning. Always adjust the demand regulator for the easiest breathing.

After the Dive

If fresh water is available, rinse your regulator completely while it is still connected to the tank before depressurizing it. This helps to prevent any contaminants from entering sealing surfaces inside the regulator.

Store dry, properly post-dived regulators in a cool, dry place away from direct light.

It is recommended that the temperature not exceed: 90 °F (32 °C) and not go below +14 °F (-10 °C) in storage.

Removal of the Regulator Assembly from the Cylinder Valve

1. Shut off the cylinder air supply by turning the cylinder valve hand wheel clockwise until it stops.

2. While observing the submersible pressure gauge, depress the purge button of the second-stage. When the gauge reads zero and airflow can no longer be heard from the second stage, release the purge button.

3. Turn the yoke screw counter-clockwise to loosen it and remove the first stage from the cylinder valve.

4. Dry the dust cap with a towel or other lint-free cloth. While you may use air from your tank valve to blow the water off the dust cap, you run the risk of blowing out the dust cap O-ring and losing it.

5. Place the dust cap over the first stage inlet fitting and seal it securely in place by tightening down the yoke screw. Do not overtighten the cap.

Safety Precautions

⚠ WARNING

Use only genuine Kirby Morgan replacement parts.

NOTE

The second stage regulator can be used with 40% oxygen, provided it's kept clean.

To ensure the best possible regulator performance and to avoid damage to regulator components, use only KMDSI original factory replacement parts.

To avoid damage to regulator components, only the correct size and type of tools should be used. The use of adjustable wrenches should be avoided whenever possible to avoid damage to soft brass parts.

Should you encounter technical difficulties in servicing a Kirby Morgan regulator, please contact Kirby Morgan or Dive Lab directly for assistance.

Specifications

Second Stage Type: Downstream, balanced bias adjustable.

Second Stage Body: Glass fiber reinforced thermoplastic

Work of Breathing: 0.87/0.90 (AU) joules/liter at 62.5 RMV at 132 FSW

Work of Breathing: 1.0/1.1 (AU) joules/liter at 62.5 RMV at 165 FSW

Routine Maintenance

Routine maintenance is the best way to ensure long regulator assembly life and optimum performance. All end users should be instructed in the proper procedures for regulator care.

Daily Pre-Dive Maintenance

1. Check the maintenance log to ensure the regulator has been overhauled during the past 12 months.
2. Visually inspect the first and second stage to ensure all ports are plugged and the regulator shroud/exhaust cover is secure.
3. Visually inspect all hoses for signs of damage such as cracking, fitting slippage, cuts or abrasions.
4. Visually inspect all regulator components including submersible pressure gage, inflator hose and other components.
5. Rotate the adjustment knob in clockwise, then attach the regulator to a fully charged scuba cylinder and slowly open the cylinder valve.
6. Check for proper demand function and purge operation. Listen for the sounds of air leaks. Perform accessory checks as necessary for the equipment in use.

Post Dive Maintenance

1. Secure the cylinder valve, depressurize the regulator assembly and remove it from the cylinder.
2. At a minimum, the entire regulator should be thoroughly rinsed with fresh clean water after every dive. Mild hand washing type dish soap can be used to remove grime.

⚠ CAUTION

During rinsing, 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.

3. If possible, the entire regulator should be soaked in fresh warm water, between 70–120 °F, for 15 minutes or longer. Soaking in warm water will remove salt and mineral deposits more effectively than a fresh water rinse alone.

⚠ CAUTION

During soaking do not depress the Purge Button on the Second Stage.

4. Allow the regulator to dry completely before storage. Remove the exhaust cover, diaphragm retaining ring and diaphragm, and allow to dry then reassemble the regulator. Do not leave the regulator sitting in direct sunlight. Shake the second stage to help remove water trapped inside. This is helpful if the regulator is to be packed for travel.

5. Screw the second stage regulator adjustment knob all the way out, away from the second stage body. This will lengthen the life of the regulator seat considerably.

6. Ensure the regulator is completely dry before storing. Store only in a clean, cool, dry place, away from direct light.

⚠ CAUTION

Never store the Regulator while still connected to a scuba tank.

⚠ WARNING

DO NOT carry a Scuba Cylinder by the Regulator or Hose. This abuse will lead to damage of the Regulator or Hose failure. Hose failure can result in personal injury.

⚠ WARNING

DO NOT use cleaning solvents on any parts or components of this Regulator. The use of solvents may lead to failure of the Regulator parts.

Scheduled Maintenance

Do not assume that a Regulator is in good working order because of infrequent use. Prolonged or improper storage can result in O-ring deterioration or internal corrosion that may result in poor performance.

1. 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 of-

ten. For example, a regulator used as a rental or for training purposes may require service every two to three months or more. Whenever a regulator has been inactive for longer than three months, it should be carefully inspected and surface function checked prior to use.

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