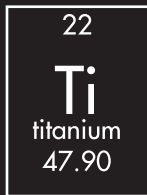


OWNERS MANUAL



ATOMIC
AQUATICS

Toll Free: (888) 270-8595
www.atomicaquatics.com

MADE IN THE U.S.A.



ATOMIC AQUATICS
TITANIUM REGULATORS

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INTRODUCTION

Thank you for choosing Atomic Aquatics. Our company is dedicated to creating and manufacturing only the finest diving products. Atomic Aquatics introduced the world's first line of titanium diving regulators in January of 1997. Titanium is lightweight, strong as steel and immune to seawater corrosion. It is the perfect material for use in the ocean environment. Our product features go beyond just the materials. We complement the use of titanium with new, innovative designs that enhance performance, reliability and ease of use. We feel these are the best regulators ever produced anywhere in the world. These regulators will give you a lifetime of reliable, easy breathing, trouble-free performance with minimal care.

This manual covers the Atomic Aquatics T2x, ST1, M1, B2 and Z2/Z2x regulator systems. All models are the same with regard to performance.

BEFORE USE - WARRANTY REGISTRATION

Please take a moment to locate, complete and return your warranty registration card to Atomic Aquatics. This card is very important. It will help you obtain warranty service and is the only way we have of contacting you in the event we need to notify you of safety notices, service updates, or changes regarding this product. You may also register your warranty online at www.atomicaquatics.com.

T2x

The ultimate. The first and second stage components are machined from solid titanium. Lightweight and corrosion free. The perfect travel regulator.



ST1

The only first stage machined from type 316 stainless steel able to withstand the severest conditions for a lifetime. Matched with light-weight titanium second stage and stainless steel comfort swivel.



M1

Whether recreational or technical, this regulator does it all. Extended features and performance for cave, deep, cold or enriched air diving.



B2

The world's most comfortable regulator. Features a brass first stage, titanium second stage, and stainless steel comfort swivel hose.



Z2/Z2x

More features for the price than any other regulator. The Z2 may be the least expensive of the Atomic line, but its combination of performance, ergonomics and materials are unmatched by our competitors at any price.

The Z2x adds the comfort swivel hose feature as found on the T2x, ST1 and B2.



COMPARISON CHART — ATOMIC AQUATICS REGULATOR SYSTEMS

FIRST STAGES	T2x	ST1	M1	B2	Z2	Z2x
Compact size	✓	✓	✓	✓	✓	✓
Balanced piston design	✓	✓	✓	✓	✓	✓
First stage materials	titanium/ monel	stainless/ stainless	brass/ monel	brass/ stainless	brass/ stainless	brass/ stainless
High pressure piston seal system	✓	✓	✓	✓	✓	✓
Optional freeze protection	standard	standard	standard	✓	✓	✓
Nitrox (EAN) ready	40%	40%	50/80%	40%	40%	40%
# HP ports	2	2	2	2	2	2
# LP ports	5	5	5	5	7 or 5	7 or 5
LP swivel	✓	✓	✓	✓	option	✓

SECOND STAGES	T2x	ST1	M1	B2	Z2	Z2x
Pressure balanced 2nd stg.	✓	✓	✓	✓	✓	✓
AFC automatic flow control	✓	✓	✓	✓	✓	✓
Titanium seat saving orifice	✓	✓	stainless	✓	✓	✓
Comfort swivel hose	✓	✓	—	✓	—	✓
Rapid adjustment knob	✓	✓	✓	✓	✓	✓
Titanium lever	✓	✓	✓	✓	✓	✓
Valve body material	titanium	titanium	zirconium over brass	titanium	zirconium over brass	zirconium over brass
Limited lifetime warranty	✓	✓	✓	✓	✓	✓
COMPLETE SYSTEMS	T2x	ST1	M1	B2	Z2	Z2x
Weight (yoke)	838g (1.8 lb.)	1059g (2.3 lb.)	1191g (2.6 lb.)	1143g (2.5 lb.)	1070g (2.3 lb.)	1116g (2.5 lb.)
Weight (DIN)	754g (1.7 lb.)	964g (2.1 lb.)	1030g (2.3 lb.)	996g (2.2 lb.)	844g (1.9 lb.)	894g (2.0 lb.)
Service interval	2 years or 300 dives	2 years or 300 dives	2 years or 300 dives	2 years or 300 dives	2 years or 300 dives	2 years or 300 dives

IMPORTANT SAFETY INFORMATION PLEASE READ CAREFULLY

WARNING

This regulator is intended to be used only by those competent, trained and certified by a nationally recognized SCUBA training agency. This manual is not a substitute for such training. Diving without such training is extremely hazardous and could result in serious personal injury or death.

WARNING

NITROX (EAN) USE — ALL MODELS

IMPORTANT NOTICE - READ BEFORE YOU USE THIS REGULATOR

These regulators have been assembled, cleaned and made compatible for enriched air Nitrox (EAN) to a maximum 40% oxygen concentration at a maximum pressure of 3500 psi. They do not require additional cleaning or servicing.

IF THE REGULATOR BECOMES GROSSLY CONTAMINATED WITH DIRT, OILS, OR GREASES FROM ANY SOURCE, HAVE THE REGULATOR RE-CLEANED BEFORE USING IT AGAIN WITH EAN. DO NOT USE

SILICONE OR HYDROCARBON GREASES IN OR AROUND REGULATORS BEING USED FOR EAN NITROX OR OXYGEN MIXES. DO NOT UNDER ANY CIRCUMSTANCES USE THESE REGULATORS WITH PURE OXYGEN OR ANY GAS MIXTURE EXCEEDING 40% OXYGEN (EXCEPT THE M1). FAILURE TO COMPLY WITH THE ABOVE WARNINGS COULD CAUSE SERIOUS PERSONAL INJURY OR DEATH FROM FIRE OR EXPLOSION.

NITROX (EAN) USE

Our regulators have been independently lab tested to meet the stringent ASTM G-175 requirements for positive ignition testing. Each Atomic reg model has been tested and passed the ASTM G-175 requirement before we certify it as SAFE for EAN.

T2x, B2, ST1, Z2/Z2x

These regulators may be used interchangeably with air or EAN mixes of up to 40% oxygen concentration at 3500 psi maximum. They need not be dedicated for EAN use, provided that they are used with air or EAN mixtures that meet minimum dive industry purity standards.

WARNING

NITROX (EAN) USE — M1 ONLY

IMPORTANT NOTICE - READ BEFORE YOU USE THIS REGULATOR

The M1 has been specially designed to handle high EAN mixes. The M1 may be used interchangeably with air or EAN mixes of up to 50% oxygen concentration at 3500 psi maximum. It need not be dedicated for EAN use, provided that it is used with air or EAN mixtures that meet minimum dive industry purity standards.

The M1 may be used with up to 80% oxygen concentration at a maximum pressure of 3000 psi, **provided it is dedicated for this service and kept in an oxygen clean condition.** This is a special-use condition, intended only for those persons trained and certified in the safe handling of high pressure oxygen/oxygen mixtures. Oxygen cleaning requires a more stringent level of cleanliness and special care should be taken to keep the regulator in this condition.

WARNING **COLD WATER USE**

For diving in extreme cold waters below 50°F (10°C), we recommend having the first stage sealed with the installation of the optional anti-freeze kit (standard in T2x, ST1 & M1). This is a rubber sleeve that fits over the ambient chamber ports of the first stage to prevent icing of the first stage. This is a factory or dealer installed item, as it requires some special tools and disassembly of the first stage for filling of the chamber with a special low temperature lubricant.

DIN CONNECTIONS

For use with cylinders having DIN style valves (typically at pressures above 3000 psi), a 300 BAR DIN connection is available. It replaces the yoke connection and can be ordered as standard from the factory or as an option installed by the dealer.



INNOVATIVE PRODUCT FEATURES

FIRST STAGES - T2x, ST1, M1, B2, Z2/Z2x

Compact Size: *Small size, high performance, high flow first stage.*

Balanced, flow-through piston design: *Large piston for high air flow and stable intermediate pressures.*

Optional freeze protection kit (Standard on T2x, ST1 & M1): *Ambient chamber seal kit reduces the possibility of freezing at low temperatures and seals water and contaminants out of the first stage.*

Enriched air compatible: *The T2x, ST1, B2 and Z2/Z2x are nitrox ready from the factory to 40% maximum oxygen concentration at 3500 psi maximum pressure. The M1 may be used to oxygen concentrations up to 80% at 3000 psi maximum when special oxygen handling guidelines are practiced (see page 10).*

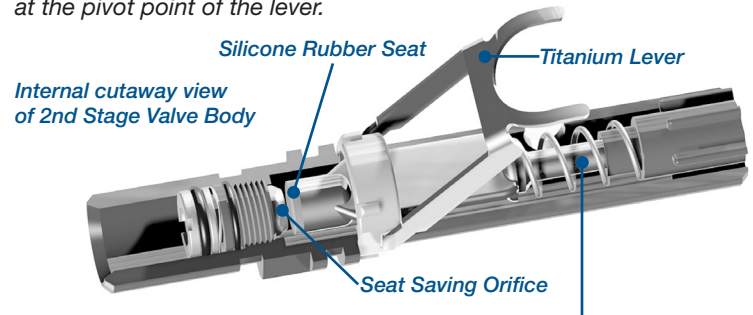
2 year or 300 dive service interval: *Unique self-lubricating piston seal system for low maintenance and corrosion resistant materials throughout.*

Two high pressure ports and five low pressure swivel ports (T2x, ST1, M1, B2) or ultra-compact 7 port fixed cap (Z2/Z2x): *Allows virtually any hose orientation.*

Limited Lifetime Warranty *(All first and second stage models).*

Innovative Product Features — All Second Stages

Low friction bearing surfaces: *provide smooth, silky inhalation, even after millions of cycles due to this proprietary Kevlar™ reinforced polymer insert at the pivot point of the lever.*



Balanced Poppet: *Aerodynamic, pneumatically balanced poppet provides enhanced airflow and easy breathing, regardless of tank pressures.*

Kevlar is a registered trademark of DuPont.

Titanium Valve Spring: *This special high-strength titanium alloy is 10 times the cost of stainless steel but allows us to make a spring with fewer coils for uninterrupted airflow.*

Titanium Valve Body (T2x, ST1, B2 only): *Performance is always at its peak because the vital internal sliding surfaces will never rust or corrode.*

Titanium Lever: *Absolute safety and reliability. This crucial part is the mechanical link to your air supply. Formed from a proprietary aerospace titanium alloy, this part is immune from stress induced fatigue or corrosion.*

Seat Saving Orifice: *This new orifice design dramatically prolongs the life of the rubber seat. Seat wear is the number one cause of regulator leaks and performance degradation over time. The first and only adjustable dynamic orifice (pat. #5,803,073) is pressure energized and only contacts the rubber seat when the regulator is being used. The orifice is constructed of corrosion-free titanium or in the case of the M1, stainless steel.*

Automatic Flow Control (AFC): *Just enjoy your diving. No dials to turn or buttons to push, this regulator automatically tunes itself as you dive. The first and only depth activated venturi control that automatically balances performance and stability (pat. #5,678,541). A computer designed airfoil inside of the mouthpiece changes position with response to depth to maintain consistent, natural feeling, effortless breathing at all depths.*

Rapid Adjustment Knob: *One-turn manual override adjustment allows quick de-tuning for surf entries, octopus use or other special situations.*

Elliptical Exhaust Valve: *Dramatically reduces exhalation effort at depth. Over-size, high flow valve and airfoil shaped support smooths out every exhalation.*

Comfort Swivel: *A standard feature on the B2, ST1 (stainless), Z2x (chrome plated brass) and the T2x (titanium). The Atomic Comfort Swivel can also be added to any Atomic second stage to provide an effortless 30 degree range of motion without pulling or binding. (Patent # 7,188,869).*

Comfort Mouthpiece: *Specifically formulated dual hardness silicone mouthpiece is comfortable and soft, yet extremely durable.*

Special Features —M1 Second Stage

Anti-Surge Front Cover: *This newly designed front cover eliminates the free flow that might occur if in a strong current, such as might be encountered in caves or open water. The ambient water ports of the second stage are directed to the sides, where a frontal current will not upset the regulator diaphragm.*

Extended Exhaust Tee: *Soft extensions on the exhaust tee help divert the bubbles to the sides of the mask and away from your face. (Available as an accessory to any Atomic Aquatics second stage.)*

Cold Water Thermal Sink: *High thermal conductivity sink helps transfer cold out of the second stage to reduce freezing effect in cold water.*

SYSTEM SET-UP

Hoses

Your regulator was function tested and is ready for use from the factory. You will need to install your high pressure gauge, instruments and low pressure accessories such as inflators. If you are in doubt on how to do this, see your Atomic Aquatics professional retailer for assistance.

Low Pressure Hoses (LP thread size 3/8"-24)

Your regulator has either 5 low-pressure (LP) ports on the swivel end of the first stage (T2x, ST1, M1, B2) or 7 low pressure ports (Z2/Z2x) in a fixed orientation. Choose the ports that give you the best orientation for your particular set-up. The LP port plugs can be removed by unscrewing with a 5/32" (4mm) hex wrench. Install the LP hoses into the port and snug up with a wrench. Do not overtighten as this will not improve the seal and may damage the threads.

High Pressure Hoses (HP thread size 7/16"-20)

Your regulator has 2 high pressure ports (marked HP) on either side of the body. The HP ports and plugs are larger in size than the LP plugs. Remove the plugs with the same hex wrench and install the high pressure gauge hose into the high pressure port and snug it with a wrench.

! CAUTION

Do not assemble any low pressure hoses to the HP port of the first stage. The hose could rupture and could cause serious personal injury. Do not assemble the high pressure gauge to the low pressure port or the gauge will not indicate tank pressure.



OPERATION



These regulators operate similarly to others of this type. There are some unique features of the Atomic Aquatics second stages you should be familiar with.

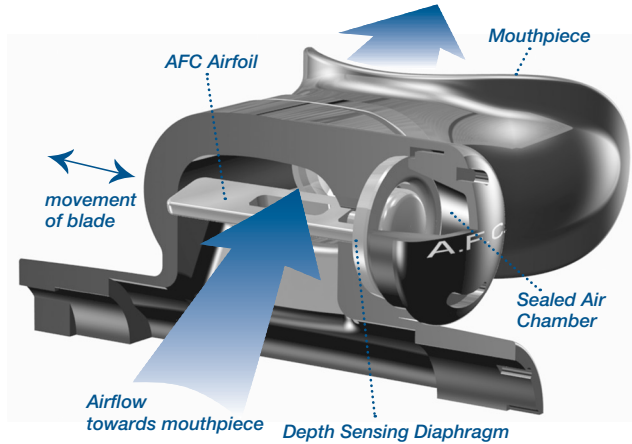
RAPID ADJUSTMENT KNOB

There is only one diver adjustable control on the second stage. It is the rapid adjustment knob on the side of the regulator that can be used to “detune” or increase inhalation effort. Under normal use, the knob should always be turned all the way out (counterclockwise) for the lowest breathing effort. During entries through the surf, jumping off of a boat, or situations where the regulator is not in your mouth, you may want to turn the knob all the way in (clockwise) to desensitize it. Do not leave the knob in the detune position while diving. The common misconception that this will conserve air is not true and will only make breathing slightly harder. Never force the knob past its stops in either direction.

FLEXIBLE PURGE COVER

The entire front cover of the second stage is flexible and can be depressed to purge the regulator.

AUTOMATIC FLOW CONTROL (AFC) *pat. #5,678,541*

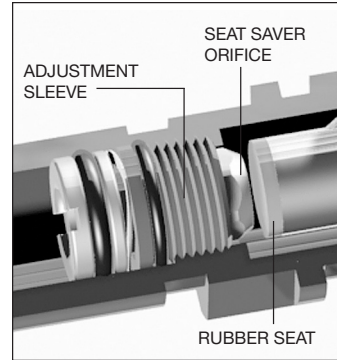


Atomic Aquatics has developed the first and only automatic flow control that automatically changes the breathing characteristics with depth. At depth, the air density increases (gets thicker) and it becomes harder to move through the regulator. The result is increased breathing effort at depth. Many regulators have different types of devices to increase flow (venturi) but these are either fixed in place or manually set and either overcompensate at the surface or do

not provide adequate venturi at depth. The AFC is a small blade (airfoil) inside the mouthpiece that changes position with response to depth to maintain consistent, natural, effortless breathing at all depths. The blade is attached to a depth sensing diaphragm that retracts it to gradually boost the venturi the deeper you go. No dials to turn or buttons to push, the regulator “tunes itself as you dive”.

SEAT SAVER ORIFICE

pat. #5,803,073



The Achilles Heel of all second stages is a small rubber valve seat. In standard designs, this seat is pushed tight against a sharp edged orifice from the day it leaves the factory, eventually making a deep impression in the seat resulting in poor performance and annoying leaks, not unlike that of an old leaky faucet. That’s why sometimes your regulator is fine when you put it away and it leaks the next time you use it. Our orifice only contacts the seat when pressurized. When not being

used, the orifice automatically retracts away from the seat just enough to prevent damage during storage. This dramatically increases the service life and maintains “like new” performance. (See additional post-dive care note pgs. 22-23.)



CAUTION

DO'S AND DON'TS

Do set up your equipment carefully before each dive and check your entire system for signs of damage, loose hose fittings, and air leaks. Make sure the yoke knob or DIN connection is hand tight before turning on your air supply. Purge the regulator and take a test breath before entering the water.

Do not use your regulator if you notice any problems or malfunctions. Return it to the factory or authorized dealer to have it checked or repaired.

Do not pick up your tank by the hoses. You may damage them or work loose a connection that could lead to loss of air.

POST DIVE CARE

A simple fresh water rinse after every dive to clean the regulator of salt, sand or dirt is all that is required. **Do not rinse or soak the regulator in solutions containing bleach as this can permanently damage the silicone rubber components.** Dry or blow off any water in the first stage dust cap and fit it in place. Rinse through the ambient ports of the first stage (unless fitted with an

anti-freeze kit) and through the mouthpiece of the second stage. Rinsing is particularly important with the chrome plated brass first stages (M1, B2, Z2/Z2x) to maintain it in top condition and keep the chrome looking attractive. **Avoid soaking the regulator unpressurized, as water may enter the second stage and first stage mechanism.** If the second stage is purged when it is rinsed or soaked, it is a good idea to re-connect the regulator to a tank and blow out any water that may have entered the first or second stage.

Store the regulator away from direct sunlight to prevent fading and deterioration of the rubber and plastic parts. Keep away from excessive heat, humidity or insects.

REQUIRED MAINTENANCE

The major service interval for the Atomic Aquatics regulators is once every 2 years or 300 dives. We recommend that you take your regulator to an authorized Atomic Aquatics dealer **annually** for a safety inspection. At this time, they will inspect and check for proper operation, and advise if a major service is required. The major service will include replacement of all seals, seats and o-rings. The labor charges for this service will vary with the individual dealer. Parts replacement will be in accordance to the terms of the limited lifetime warranty in this manual.

LIMITED LIFETIME WARRANTY (U.S.A.)

Atomic Aquatics warrants this regulator against defects in materials and workmanship for the lifetime of the original owner with the exception of mouthpieces, hoses, o-rings, filters, or valve seats, which are warranted for 2 years. Atomic Aquatics will at its option repair or replace any components it finds defective.

This warranty covers regulators only purchased from **authorized Atomic Aquatics dealers**. To activate this warranty you must complete and return the warranty registration card within 30 days of purchase.

All titanium components are warranted for the lifetime of the original owner against the effects of corrosion. Chromed or plated brass components are subject to corrosion and require as a minimum reasonable maintenance fresh water rinsing after use in salt water and proper storage as described in this manual.

This warranty is not contingent upon proof of service and will maintain in effect for the lifetime of the original owner. It is recommended however that maintenance include an annual safety inspection to be performed by an authorized Atomic Aquatics dealer or by the factory. **Factory or authorized dealer servicing is required at intervals of 300 dive hours or 2 years,**

whichever occurs first. This service will include disassembly, cleaning, replacement and lubrication of all o-rings and seals, and safety check.

To obtain warranty service, you must deliver the regulator to Atomic Aquatics or one of its authorized repair facilities. If you send the regulator to the factory, you must pay the shipping charges to the factory. If the regulator is returned to the factory and it is determined that the problem is due to material or manufacturing defect, there will be no charge for parts, labor or return shipping.

This warranty does not cover damage or defects due to neglect, misuse, alteration, or attempted repairs by someone other than an authorized dealer.

This warranty applies only to regulators purchased through authorized Atomic Aquatics Dealers.

Atomic Aquatics shall not be liable for loss of use of this product or incidental or consequential costs or damages incurred with the use of this regulator. Some states do not allow this exclusion so the above may not apply to you.

This warranty gives you specific legal rights and you may have other rights which vary from state to state.

SPECIFICATIONS

Weights	T2x	ST1	M1	B2	Z2	Z2x
First and Second Stage (Yoke)	838g (1.8 lb)	1059g (2.3 lb)	1191g (2.6 lb)	1143g (2.5 lb)	1070g (2.3 lb)	1116g (2.5 lb)
First Stage only (Yoke)	433g (.95 lb)	686g (1.5 lb)	797g (1.7 lb)	783g (1.7 lb)	721g (1.6 lb)	721g (1.6 lb)
Second Stage w/hose w/hose	380g (.84 lb)	373g (.82 lb)	391g (.86 lb)	373g (.82 lb)	349g (.77 lb)	395g (.87 lb)

First Stage

Type (all)	Balanced, flow-through piston					
Intermediate pressure (all)	125-145 psi (8.6-10 bar)					
Materials						
Body	Titanium	Stainless	Brass	Brass	Brass	Brass
Piston	Monel	Stainless	Monel	Stainless	Stainless	Stainless
O-rings (all)	flouorocarbon/nitrile					
Max pressure rating	3500 psi (241 bar) with yoke connection 4350 psi (300 bar) with DIN connection					

Second Stage	T2x	ST1	M1	B2	Z2/Z2x
Type (all)	Balanced, linear flow				
Materials					
Demand Valve Body	Titanium	Titanium	Brass/ Zirconium	Titanium	Brass/ Zirconium
Lever	Titanium	Titanium	Titanium	Titanium	Titanium
Orifice	Titanium	Titanium	Stainless	Titanium	Titanium
Diaphragm	Silicone rubber	Silicone rubber	Silicone rubber	Silicone rubber	Silicone rubber
Hose Length					
(standard)	32"	32"	32"	32"	32"
(octopus w/o comfort swivel)	36"	36"	36"	36"	36"

Performance

Exceeds requirement for European CEN250 (1.5 joules/liter @ 50 meters) and USN group A (.14 kg.m/liter @ 200 feet at 62.5 RMV)