

MAX-FLO MICRO

SMART PARTS



Operation and Adjustment Instructions

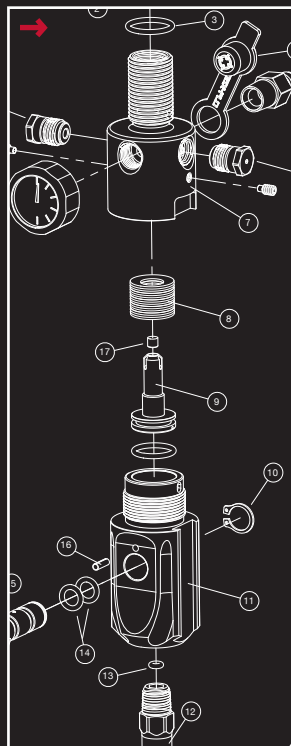
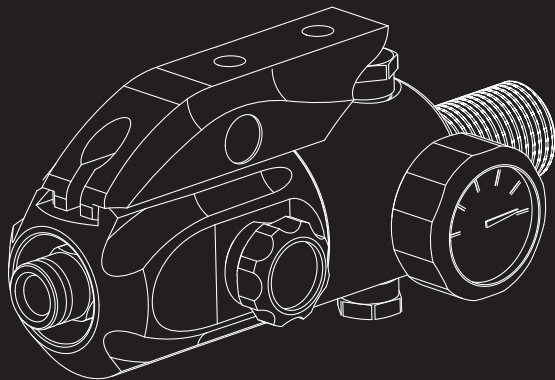


TABLE OF CONTENTS

//////▲WARNING

MAX-FLO MICRO WARNINGS	01-02
Getting Familiar	03
Depressuring the System	04
Max-Flo Exploded View	05
Disassembly	06-07
Reassembly	08
Troubleshooting	09

OBSERVE THESE WARNINGS AND ALL OTHERS THAT APPEAR THROUGHOUT ANY MANUAL PROVIDED BY SMART PARTS, INC.:

- The Max-Flo Micro is not a toy. Careless or improper use, including failure to follow instructions in the operator's manual, could cause death or serious injury.
- Read Operators Manual before use and comply with all safety instructions.
- Paintball industry standard head/face/throat/eye protection designed for paintball games must be worn by user and any person within 200 yards (183 meters) when used in conjunction with a paintball marker.
- A purchase age of at least 18 (eighteen) years is recommended for paintball equipment.
- Persons under 18 years of age must have adult supervision when using or handling the Max-Flo Micro.
- Observe all local laws, regulations, and guidelines concerning use.
- Use only on professional paintball fields where codes of safety are strictly enforced.
- Use compressed AIR or NITROGEN only. DO NOT USE CO₂.
- Use to power 0.68 caliber paintball markers only.

While every effort has been made to ensure that the information contained in this guide is accurate and complete, no liability can be accepted for errors or omissions. Smart Parts, Inc. reserves the right to change the specifications of the Max-Flo Micro at any time without prior notice. The latest version of this manual may be downloaded free of charge at www.SmartParts.com.

©2007 Smart parts, inc. Smart parts®, Crosshair® logo, Equipment Counts® and Max-Flo Micro™ are trademarks or registered trademarks owned by Smart Parts, Inc. Max-flo Micro is covered by patents: 5,755,213; 5,957,119. Additional patents pending.

Read all warnings, and this entire manual thoroughly. Failure to heed warnings may result in property damage, serious injury or death.

MAX-FLO MICRO WARNINGS



- Never use oil or hydrocarbon compounds on or in the Max-Flo Micro or its pressure cylinder. The only suitable lubricant is Dow 33 grease (SL33K or Shocker lube). The use of inappropriate lubricants may result in spontaneous ignition, explosion or oxidization.
- The Belleville washer spring packs and spacer used in the standard and low-output versions of the Max-Flo Micro look nearly identical and are not interchangeable. Take extreme care to never separate or mix spring/spacer sets as a mismatch can cause abnormally high output pressures.
- Do not expose cylinder or Max-Flo Micro to ambient temperatures above 110 degrees (F) or 43 degrees (C).
- Never purge or fill the Max-Flo Micro in confined spaces or near open flames. Air under pressure will aid in combustion. Nitrogen in high concentrations can cause asphyxiation; therefore, adequate ventilation is required.
- Vented gases at high pressure can emit high sound levels, which may cause hearing damage. Use appropriate hearing protection for all persons exposed to sound.
- Never use damaged hoses or fittings. Split, torn, crushed hoses may fail in a violent manner. Inspect all hoses and fittings at regular intervals.
- Never over-tighten any threads or fittings as excessive torque can cause damage which may lead to violent failure.
- Do not transport pressurized gas cylinders.
- Never direct pressurized gas toward your skin or any part of your body, as serious injury may result. In the case of hose, seal or burst disk failure, immediately get away from the venting gas to avoid direct exposure.
- Do not use the Max-Flo Micro to blow debris around or for any purpose other than powering a paintball marker as serious injury to yourself and others may result.
- Never pressurize the cylinder/system beyond its safe working pressure.
- Never use incorrect safety rupture devices. In the event of rupture of the captive burst disc, the burst disc should only be replaced by a trained, certified technician. The 3000psi Max-Flo Micro has a 5000psi high pressure burst disc; the 4500psi MaxFlo Micro has a 7500psi high pressure burst disc. Use of an incorrect burst disk assembly could contribute to the cylinder exploding, which may result in injury or death.



MAX-FLO MICRO WARNINGS



- Only use the Max-Flo Micro with a gas cylinder that has been tested and certified as compliant to DOT (US Department of Transportation,) HSE, PI (Europe) standards. Do not use the Max-Flo Micro with a gas cylinder for which the certification has expired – most DOT exemptions must be renewed by certified hydrotesting and inspection every 3 or 5 years.
- Only use suitable fill stations that are fitted with industry standard connectors. Inspect all connectors prior to filling for signs of wear, abuse, suitability, dirt or debris. Filling is only to be carried out by competent, trained personnel. All persons in the immediate fill area must wear suitable eye protection and remain clear of vented gasses. Do not fill the Max-Flo Micro system beyond the operational pressure rating of the cylinder to which it is attached. Never fill the Max-Flo Micro system to pressure above 4,500 psi.
- Fast filling of cylinders results in heating of the gas and cylinder. If filled too fast, this heat can become excessive which may cause damage to the cylinder. Such damage can lead to failure of the cylinder, causing potential property damage and personal injury. Care must be taken so that the cylinder temperature does not exceed 130 degrees F (55 degrees C).
- Prior to each filling, the cylinder must be examined for signs of damage, including heat/flame exposure. If any damage is observed, do not fill the cylinder. Take the suspect cylinder to a DOT or HSE authorized hydrostatic tester for inspection and pressure testing.
- The cylinder can fly off with enough force to injure or kill if the cylinder is unscrewed while pressurized. Improper use, filling, storage or disposal may result in property damage, serious injury, or death. The cylinder must only be filled by properly trained personnel. Do not expose to temperatures exceeding 130 degrees F (55degrees C), when pressurized. Do not modify the cylinder in any way, or place any stickers on the cylinder.
- In accordance with the United States Transportation Security Agency, the Max Flo Micro regulator must be removed from the cylinder prior to transport in checked luggage on commercial passenger aircraft.
- This precaution list and operator's manual must always accompany the product in the event of resale or new ownership. The latest version of this manual is available for free download at www.SmartParts.com.
- **SHOULD YOU BE UNSURE AT ANY STAGE, YOU MUST SEEK EXPERT ADVICE.**



GETTING FAMILIAR

The Max-Flo Micro preset compressed air system provides the stability and high flow rates that have made the Max-Flo line of regulators the choice of champions, combined with an easy to use pre-set configuration. A combination of increased air-flow rates, decreased weight and lower maintenance makes the Max-Flo Micro an ideal choice.

- Complies with airline travel regulations
- User-friendly, rebuildable, inline on/off
- Preset to 800 psi (standard) or 450 psi (low-output model) output pressure.
- Includes Smart Parts S-rail (compatible with industry standard 1/2" air system rails)

//////⚠WARNING

This manual is for a 3000psi or 4500psi system. Please refer to the sticker on the underside of the regulator. A 3000psi regulator should only be used with a 3000psi rated tank, and a 4500psi regulator should only be used with a 4500psi rated tank.

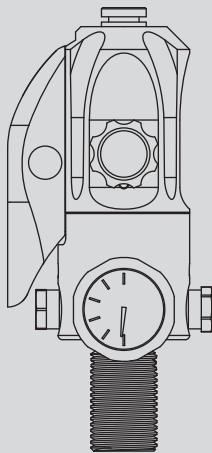
Always release all pressure from your air tank by disconnecting the macroline hose between the regulator and the gun, and turning the on/off valve to on to release the pressure before removing the cylinder.

Always wear correct eye protection when working on any high pressure system.

The cylinder can fly off with enough force to kill if the cylinder is unscrewed while pressurized. Improper use, filling, storage or disposal may result in property damage, serious injury, or death. The cylinder must only be filled by properly trained personnel. Do not expose to temperatures exceeding 130 degrees F (55 degrees C), when pressurized. Do not modify the cylinder in any way, or place any stickers on the cylinder.

IMPORTANT

FIG. 1 → MAX-FLO MICRO



DEPRESSURING THE SYSTEM

//////▲WARNING

01

While wearing paintball eye and face protection in a safe, well ventilated area, turn the on/off valve to the OFF position and unload the paintball marker to which the Max-Flo Micro is attached.

02

Secure a barrel blocking device on the marker and dry-fire the marker until any remaining pressure is relieved. If the marker is equipped with an anti-chop system it must be turned off to dry-fire.

03

Remove the macro-line hose from the macro-line fitting on the front of the regulator.

04

Direct the macroline fitting on the front of the regulator away from any persons, animals, loose debris or anything fragile, and slowly turn the on/off valve to the ON position to release any pressure from the cylinder.

05

Once gas can no longer be heard escaping from the Max-Flo Micro, the system should be depressurized. Verify that no pressure registers on the Max-Flo Micro pressure gauge.

06

The cylinder should only be removed if you are changing tanks or transporting by airplane.

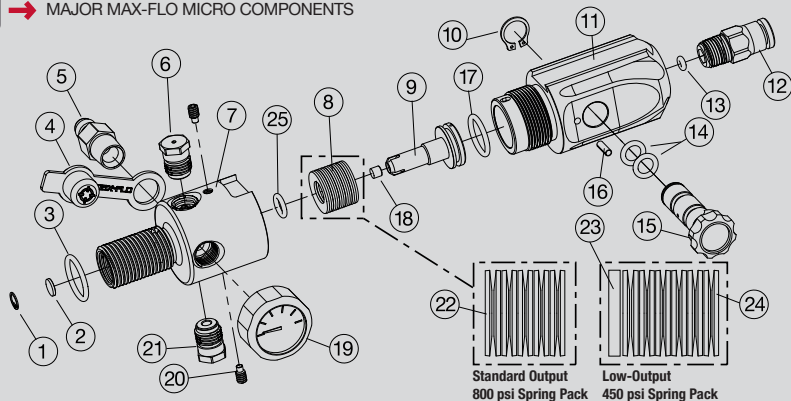
Once depressurized, the gauge on the Max-Flo Micro should read Zero (0) psi, and no sound of escaping gas should be heard when the on/off valve is turned to the on position (with no macroline connected.) If you can not completely depressurize your Max-Flo Micro system, contact Smart Parts technical support for assistance. NEVER remove the cylinder or disassemble the Max-Flo Micro with any pressure remaining in the system.



MAX-FLO MICRO PARTS

EXPLODED DIAGRAM

FIG. 2 → MAJOR MAX-FLO MICRO COMPONENTS



- 1 CLP003 – FILTER, RETAINING CLIP
- 2 IMF110 – FILTER
- 3 ORN90790NT – NECK O-RING
- 4 MAXCOVBK – FILL NIPPLE COVER
- 5 FIT18MNPTXMQDCNPL – FILL NIPPLE ASSEMBLY,
- 6 HIGH PRESSURE RUPTURE DISK (See Page 09)
- 7 MFP102 – MAX-FLO MICRO REAR BODY
- 8 SPRING PACK
- 9 MFP105 – MAX-FLO MICRO PISTON
- 10 CLP002 – ON/OFF RETAINING CLIP
- 11 MFP101BLK – MAX-FLO MICRO FRONT BODY
- 12 FIT18MNPTX14PTC – STRAIGHT MACROLINE FITTING
- 13 ORN00490UR – OUTPUT O-RING

- 14 ORN01070UR – ON/OFF O-RING (2x)
- 15 VLVSM102BLK – BLACK ON/OFF VALVE
- 16 PIN001 – ON/OFF STOP PIN
- 17 ORN01470UR – PISTON O-RING
- 18 MFP103 – PISTON SEAL
- 19 GAG6000SHT – 0-6000 PSI MICRO GAUGE
- 20 SCRNO632X0250SDO – BODY LOCKING SCREW (2x)
- 21 RUP1800 – LOW PRESSURE BURST DISK (1,800 psi)
- 22 SPR026 – 800 PSI BELLEVILLE WASHER (x10)
- 23 MFP107 – 450 PSI SPRING SPACER
- 24 SPR026LO – 450 PSI BELLEVILLE WASHER (x12)
- 25 ORN01070UR – O-RING



DISASSEMBLY

If working with the Max-Flo Micro while it is attached to a marker, comply with marker manual warnings.

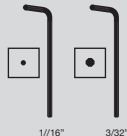
The Max-Flo Micro is a preset, closed system; it is very difficult for dirt and debris to enter and damage the system. Consistent use of the supplied fill nipple cover is your best protection against system contamination and damage. Should dirt enter your air cylinder, an internal filter protects the internals of the Max-Flo Micro from damage. The amount of regular maintenance and cleaning of your Max-Flo Micro system requires will depend on the amount of use and the cleanliness of your air source fillings.

As with any other disassembly, disassemble this regulator on a cloth, on a table, and not at the field.

//////▲WARNING

Please follow the guidelines for depressurizing your system before removing the cylinder from the Max-Flo Micro regulator. Your gauge should read zero (0) and your marker should not pressurize when the on/off valve is turned on. If your marker does pressurize, please repeat the steps for depressurizing your system.

→ REQUIRED ALLEN WRENCHES



→ ADDITIONAL REQUIRED ITEMS

- Smart Parts SL33K or Shocker Lubricant
- Lint-free cloth or paper towels
- Blue (#242) Loctite® or equivalent

01

Remove the Max-flo system from the mounting rail, using a 3/32" allen wrench. Unscrew the cylinder from the Max-flo regulator.

02

Remove the two body locking screws using a 1/16" allen wrench. These screws are secured at the factory with temporary thread locking compound. Slow and steady pressure will remove them.

03

Unscrew the Max-Flo Micro body front from the rear Max-Flo Micro body.



04

The Max-Flo Micro is available in standard (800 psi output) and low-output (450 psi) models. Low-output models are identified by laser engraving in their dovetail rail slot. The standard model utilizes a spring pack made of 10 belleville washers (a slightly cone shaped washer.) The low-output model has a spring pack consisting of 12 belleville washers and a spacer. Spring packs should only be changed or installed as complete sets, as they use different strength washers which look identical to the naked eye.

05

With the body separated, locate the Max-Flo Micro piston and spring pack. If the spring pack is exposed, remove it first. Be careful as the spring pack may fall into separate pieces. The belleville washers (and spacer in the 450 psi low-output model) may be wiped off if necessary. If the spring pack is not exposed, carefully remove the piston and then the spring pack. The Max-Flo Micro piston may be removed by gently pulling it away from the front regulator body.

06

Remove any Belleville washers which may remain in the rear regulator body. To do this, turn the Max-Flo Micro rear regulator body upside down and gently tap it on a hard surface.

07

Clean the Max-Flo Micro piston with a lint free cloth. Inspect both the regulator piston seal and o-ring for signs of wear or damage. If necessary replace worn or damaged seals. Clean and inspect all parts. Should the macroline fitting need to be removed, insert a 5/32" allen wrench into the fitting, or use a 7/16" deep well socket. Inspect all o-rings and seals for cuts, flat spots or other damage and replace as necessary.

//////////⚠WARNING

Any further disassembly should be performed by a Smart Parts technician.



01

Using SL33K or Shocker Lubricant, grease the piston o-ring and apply a small amount of lubricant to the shaft of the piston. Following the diagram for the correct Max-Flo Micro model (standard or 450 psi output) stack the Belleville washers (and spacer for 450 psi model) onto the piston shaft prior to installing the assembly.

//////////⚠WARNING

Make sure to align the washers as shown in the exploded parts diagram. Incorrect stacking or use of wrong washer type will result in unpredictable pressure level output.

02

Once the spring pack is assembled on the piston, slide the entire assembly into the shaft in the front of the regulator body. Remove any excess grease from the white regulator piston seal.

03

Screw the two halves of the regulator body together. You may use a small amount of blue Loctite® #242 on the threads of the front regulator body. DO NOT use thread sealant tape. Use the S-Rail to aid assembly of the two regulator halves. This will help line up the two halves correctly. Replace the two set screws in front of the two burst (rupture) discs, using blue Loctite® #242.

//////////⚠WARNING

Do not over tighten screws. Hand torque is sufficient. The screws must sit flush with the regulator body. The screws will sit flush when the regulator body is aligned. If the screws do not sit flush, then the body halves are not aligned.

04

Slide the Max-Flo Micro onto your mounting rail. Screw the cylinder back onto the Max-Flo Micro regulator. Ensure the cylinder screws freely onto the regulator body.

//////////⚠WARNING

Ensure that no space exists between the cylinder and Max-Flo Micro regulator body. The cylinder must fit tightly on the regulator. Please return your regulator to Smart Parts for repair if any noticeable wear exists on the threads.



TROUBLESHOOTING

AIR LEAKS FROM THE FILL NIPPLE.

- Debris is in the fill nipple. De-gas system, clean out fill nipple. Use fill nipple cover to prevent from recurring.
- Fill nipple assembly is damaged – replace.

REGULATOR IS UNDER/OVER PRESSURIZING.

- System reassembled with Belleville Spring pack in wrong configuration. Reassemble properly (refer to diagram).
- Debris has clogged the filter. Clean or replace it.

REGULATOR IS SPIKING OR CREEPING IN PRESSURE.

- Clean or replace regulator piston o-ring.
- Clean or replace piston.

ON/OFF VALVE IS LEAKING AND WILL NOT SHUT OFF.

- Replace On/Off o-ring.

BURST DISK RUPTURES.

- Rupture of the high-pressure burst disk indicates that the Max-Flo Micro system was filled beyond its pressure rating. Do not overfill! Have the burst disk replaced by a trained, certified technician – 5,000 psi burst disk (#RUP5000) for 3,000 psi systems, 7,500 psi burst disk (#RUP7500) for 4,500 psi systems.
- If the 1800 psi burst disk ruptures, have it replaced and replace the regulator piston assembly (available in the MFP201 rebuild kit.)
- If the 1800 psi burst disk ruptures again shortly after repair, the system should be returned to Smart Parts, Inc. for service.

WARNING

DO NOT ATTEMPT TO REPLACE BURST DISCS YOURSELF.

Never use incorrect safety rupture devices. The 3000psi Max-Flo Micro has a 5000psi burst disc; the 4500psi Max-Flo Micro has a 7500psi burst disc. The one-piece burst disc/nut assembly used on the Max-Flo Micro incorporates a captive burst disc in its burst nut. The one-piece burst disc/nut assembly supplied is only for use with the Max-Flo Micro and no other applications. In the event of rupture of the captive burst disc, the burst disc should only be replaced by a trained, certified technician. The one piece burst disc/nut assembly should only be replaced with another one-piece burst disc/nut assembly, and not with a separate copper burst disc. The fitting of a separate burst disc with the one-piece burst disc/nut assembly can result in the pressure relief safety device on the regulator failing to operate correctly. This could lead to the cylinder exploding which may result in serious injury or death.





SMART PARTS

800.922.2147 100 Station St. Loyahanna, PA 15661 www.smartparts.com manual version 2.1