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Centerflag Products

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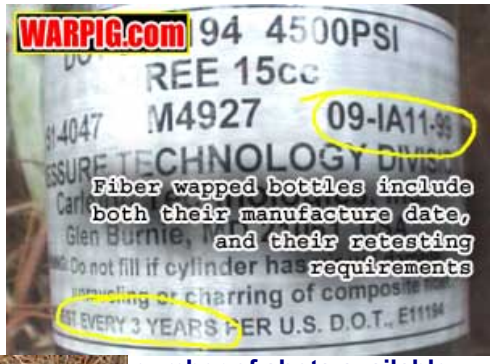
Centerflag Products' 420 and 201 Hyperflow Compressed Air Systems

by Bill Mills

Today, Centerflag Products is probably best known for their electronic trigger frames for the Spyder, Piranha, Automag and Autococker paintguns. Centerflag was alive and well before these products came along though, producing their Hyperflow line of compressed air regulators.

The 420 and 201 models are good representatives of their product line. Centerflag has a lot of variety in their regulator lineup, and sometimes the differences between two regulator models are only small internal components, or the addition or removal of a particular feature.

Both systems reviewed are 4500 psi models (as are most of the Hyperflow regs) and were mounted on Carleton fiber 68 cubic inch composite tanks, each rated for 4500 psi use. As with all compressed air tanks, the manufacturing date must be checked prior to filling. On the label, "09-IA11-99" indicates the tanks were made in September of 1999, and the bottom of the label indicates the tank must be hydrotested every three years, so the tanks may be used until August 30, 2002, when they will need to be retested. Some newer tanks can go 5 years between tests, and this will be indicated on their label.



While many fields still do not offer 4,500 psi air fills, the ability to get the added shots per fill that the higher pressure offers makes 4,500 psi systems quite attractive. When only 3,000 psi fills are available, they will still function properly, with a penalty in the number of shots available.

The 420 is a fixed output regulator, while the 201 is an adjustable model. Both have key features found in the entire Hyperflow line which set them apart from other regulators used in paintball. The Hyperflows have separate fill and exhaust gas paths. Some regulator designs route the gas past the regulator pin during filling. According to Centerflag's Dennis Ashley, this can cause problems both in high temperature gas affecting the regulator pin spring and the pressure of the gas blowing the regulator pin off-center. The Hyperflow design avoids this entirely by using a gas path from the fill nipple to the tank that is completely separated from the path from the tank to the regulator output. Additionally they feature a filter at the base of their neck. While there is no excuse for not keeping a regulator fill nipple protected from dust and debris with a nipple cap, some dust and debris will eventually find its way into the tank. The internal filter adds an extra layer of protection for the regulator.

The Hyperflow 420 is an ASA screw-in model. It output 750 psi, and makes switching from CO_2 to compressed air literally as easy as unscrewing the CO_2 tank, and screwing in the Hyperflow. Many players shy away from preset air systems, opting for the higher end adjustables. The preset actually has some major advantages. At 750 psi, it can adequately drive a paintgun that is set up for CO_2 (a blowback semi, like a Spyder or Piranha). Higher end paintguns are typically equipped with an adjustable regulator, this gives the user the ability to operate at lower pressures, and 750 psi is a good input pressure to feed a second regulator.

ASA connections are a standard in paintball, and there are a wide variety of bottom-lines, remotes, and other gas mounts which can be used with the 420.

With no adjustments to be set wrong, and the ease of simply unscrewing the tank

to fill it separate from the paintgun, or pack for travel, screw in presets like the 420 can be a great way to go. Three openings, placed radially around the neck allow for a tank pressure gauge, fill nipple, and the burst disk which protects the tank and regulator from overfilling. A brass pin valve opens when the 420 is screwed into an ASA.

So why not go with the 420? What else does the 201 offer?

The 420 is not built to be serviceable. Basically if anything goes wrong, Centerflag's answer is to send it back in for service. The 201, and other adjustable Hyperflow regulators are designed not only for reliability, but also for easy field service which can be important in a tournament environment.

Unlike the lower cost model 200, the 201 features an on/off valve. Switching off the gas supply not only allows for the gauges and hoses to be changed with air in the tank, but also for all of the main regulator components to be serviced as well. For an adjustable regulator, the on/off is a nice feature as it means the regulator doesn't need to be readjusted each time it is turned on or off.

The 201's cylindrical stainless steel construction gives it strength and radially symmetrical design, but is lacking a

component found on many adjustable regulators - a dovetail slot for mounting on a grip frame or bottom line. Instead the 201 requires a cradle. The mounting cradle fits like a sleeve over the regulator body, and has a dovetail slot on top to allow use with a variety of drop forwards. Laser engraving clearly labels all of the ports on the 201, like all of Centerflag's regulators. This provides important protection from accidentally mis-installing hoses or gauges.

At the base of the 201 is it's on/off valve. The overfill burst disk is on the same level as the on/off. Further up on the regulator body are

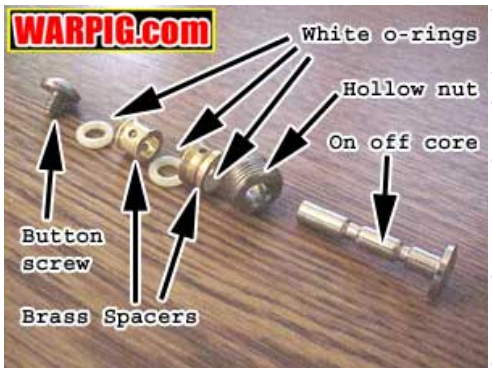
the tank gauge, low pressure output, low pressure gauge, and fill nipple. At the end of the regulator is the adjuster. It's knurled edges make hand adjustment possible, but tuning is most easily done with a 3/16" allen wrench.

Laser engraving on the regulator body shows which side to press to turn it on or off. In the off position, both sides of the valve are nearly flush to the body. In the on position, the "off" side of the button extends roughly 1/4 inch from the body. The valve takes a fair amount of force to operate, and makes a surprisingly loud popping sound when turning it off.

According to Centerflag, keeping the on/off lightly lubricated is important to keeping it usable.

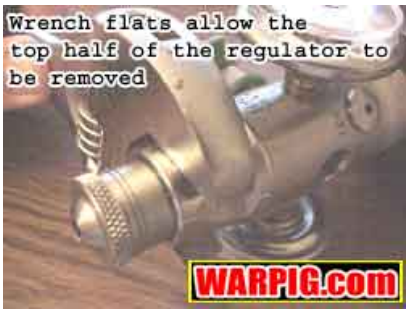
NOTE: Disassembly/Assembly information is provided to give the reader a better understanding of the function of this regulator. Air system service should only be performed by a qualified airsmith.

The on/off is designed with easy maintenance in mind. With the tank completely empty, a pair of 3/32 inch allen wrenches can be used to disassemble it - one on either side of the valve core can be used to unscrew its ends. With the button removed from the "on" end of the core, the on/off valve core can be slid out of the "off" side. Order of placement is important as the valve will not function properly if the valve core is reinserted from the wrong side.



With the valve core removed, a 3/16" allen wrench can be used to remove the hollow nut which holds all of the on/off seals in place. An o-ring pick can be used to remove each of the three white o-rings and two brass spacers which seal the valve. A fourth o-ring, of black material sits in an internal groove inside the regulator body. This o-ring is quite tricky to remove, and will likely be damaged in the process of removal. An on/off leak when the valve is off, is most likely due to damage on this o-ring. An on/off leak when the valve is on is usually from damage to one of the white o-rings. Reassembly is done in the reverse order of assembly.

It is important to note that the on/off cuts off not only the regulator, but the tank gauge as well. If the air system is turned off, the tank gauge will read 0 psi, despite the fact that the tank may be full. This means that in order to tell how full the tank is, the 201 must be hooked up to a paintgun and then turned on.



Adjustment of the 201 is very simple. The adjuster knob is turned in for higher output pressure, out for lower. The low pressure gauge indicates the output pressure within the regulator's range (0-1,000 psi) and a bit beyond (up to 1,500 psi). It is important to remember when adjusting regulator output pressure that the pressure between the regulator and the paintgun will not drop as the regulator setting is backed off. Instead, after each downward adjustment a couple of shots must be fired to relieve the stored pressure.

Maintenance of the upper end of the regulator is surprisingly easy. While the on/off depressurizes the top end for disassembly, it is ideal to completely depressurize the entire tank before taking any of the regulator components apart. Wrench flats in the sides of the regulator top half make its removal simple. Unscrewing the top half of the regulator provides direct access to it's two o-rings, and the Kevlar(TM) regulator pin. The Kevlar(TM) pin functions as most regulator pins do, but also acts as it's own seal against the regulator body. It's short length (compared to the regulator pin on other designs) and self centering shape means that bent regulator pins are not a problem in the Centerflag design.

Fully unscrewing the adjuster knob reveals the regulator's main spring and brass piston. Leaks through the adjuster knob are typically caused by damage to the piston's o-ring or to it's internal relief valve. Since the relief valve vents excess pressure between the regulator and the paintgun, the output pressure gauge can further diagnose air venting from the relief valve. If the pressure is normal, it would indicate a damaged relief valve. Unusually high output pressure indicates a dirty or damaged regulator pin.

If a bad relief valve seal is indicated, 1/8" allen key is needed to remove the hollow nut from the top of the regulator piston. Inside is a spring, metal disk, and black poly seal disk. Upon reassembly, the small dimple in the metal disk should be facing the spring.

Construction aside, performance in the field is the most important aspect of any paintball product. Both regulators were field tested on an E-Matrix, E-Mag, Minimag and Tippmann Model 98 at a variety of fields including Spacecoast Paintball, Command Post, and Paintball Long Island.

Both systems performed without problem. On the Model 98, the adjustability of the Hyperflow 201 meant that it could be dialed in to provide a minimum of gas pressure needed for reliable recocking, in order to achieve the best gas efficiency. For the other paintguns, the adjustability was not as important a factor, as

they each had their own second stage regulators (the 'mags in the AIR valve, the E-Matrix in the vertical regulator). Both systems performed with solid reliability, and without shoot-down problems. The 420 proved especially convenient for travel as teardown while packing was as easy as unscrewing it from the ASA.

The author would like to thank Dennis, Will, Josh, and other members of Centerflag's support staff for technical training and support during the research for this review.

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