

NINJA HIGH PRESSURE FILL STATION “STICK” OWNER’S MANUAL

SEPTEMBER 2017

Part Number: HPFSTICK

PROUDLY MADE IN THE USA!

Patent Pending

SPECIFICATIONS

MAX INPUT PRESSURE	6000 PSI
MAX RATED OUTPUT PRESSURE	5000 PSI
RANGE OF ADJUSTMENT	0 – 5000 PSI
GAS COMPATIBILITY	NITROGEN or HIGH PRESSURE AIR (HPA)
CGA FITTING	CGA 677 STD L.H. THREADS ¼ npt port (4501-6000 PSI Nitrogen)
STANDARD GAUGES	INPUT & OUTPUT 1/8 npt ports
FILL ADAPTOR	Stainless Steel 5000 PSI RATED “QD” TYPE

NOTE 1: The fill station is intended for use with Nitrogen, HPA (High Pressure Air), and any of the other commonly available inert gases. **UNDER NO CIRCUMSTANCES SHOULD THIS FILL STATION BE USED WITH OXYGEN!!!** This unit is also not certified for use with combustible, corrosive, or toxic gases.

NOTE 2: The Fill Station is delivered with a 5000 PSI stainless steel “QD” style fill adaptor to allow the attachment of the systems to be recharged. This is by far the most common adapter, and is in widespread service on most systems currently on the market. The user must be aware that this QD is rated for a 5000 PSI working pressure, and must only be replaced with a 5000 PSI rated QD! Call 815-477-0007 for replacement QDs.

Do not hook up your High Pressure Fill Station until you have read and understood the SETUP portion of this manual.

SETUP

The first step is to properly secure the supply cylinder to prevent tipping. This can be accomplished by chaining the cylinder to a wall or post or by securing the tank in a commercially available safety skid. Now attach the fill station to the bulk tank you are using for your gas supply. Before attempting to do this, verify that your fill station is equipped with the correct CGA fitting for the type of supply tank you plan on using. (If there is a question regarding the CGA type of a given cylinder, just look at the valve. The CGA number should be stamped into one of the wrenching flats on the valve.) Once you have confirmed that you have the correct fitting, you can now attach your fill station to the supply cylinder. (It should be noted that some of the CGA thread standards use left handed threads.) Before doing this, however, make sure that you have put on your safety goggles. **ALWAYS WEAR SAFETY GOGGLES WHEN WORKING WITH HIGH PRESSURE GAS!!**

Do not use excessive torque when tightening the CGA fitting. Tighten the fitting only enough to eliminate any leaks. Remember; most of the cylinder valves are brass, and can be damaged by excessive torque.

Once you have your Fill Station connected make sure the control knob is turned all the way up or counter clockwise and then test the connection by SLOWLY turning on the valve on the supply cylinder. You should hear no leaks or flow after the initial hiss. If gas starts to flow out of the fill connection, turn the control knob on the Fill Station counter-clockwise until the flow stops. This can occur if someone has turned the control knob too far clockwise prior to you connecting the Fill Station to a gas source.

KNOW THE BOTTLE YOU'RE FILLING!

In order to properly fill a high pressure bottle, you need some basic information, and virtually all of this information comes right off the label and the stamped markings on the bottle. Because there are Federal Standards involved, this information is found in the form of a standard data line. An example taken from an aluminum bottle is shown below.

DOT – 3AL 3000 M4625 10[^]17
 OR
 DOT – SP14387 3000PSI M4625 10C17
 OR
 DOT – SP14387 4500PSI M625 10C17

While this information line may look confusing at first, it is really quite simple. This line of data breaks down like this:

DOT	Department of Transportation (a Federal Agency).
3AL or SP14387 or E11194	The specification standard the bottle conforms to.
3000 or 3000psi or 4500psi	The working pressure rating of the bottle.
H5058 ACME, M4625	The model and or manufacturer of the bottle.
10 [^] 17 or 10C17	The production date of the bottle. MONTH & YEAR

SOME BOTTLE LABELS MAY HAVE A REFERENCE TO “TC” WHICH IS THE TRANSPORT CANADA SPECIFICATION. THE BOTTLES PRESSURE WILL BE EXPRESSED IN BAR.

The first bit of information you need is the production date on the bottle. In the United States, it is Federal Law that any gas storage vessel over two inches in diameter must be periodically re-tested. Depending on the type of bottle, and the manufacturer, the re-test period may be either three or five years. As a fill operator, the very first thing you should check is the date on the bottle. As you can see in our example, our aluminum bottle was born in October of 2017. This particular bottle has a five year re-test interval, so it would be illegal to refill this bottle after October of 2022. (At least until it had been re-tested and re-marked.) **NOTE: SOME OF THE FIBERGLASS AND CARBON FIBER BOTTLES REFERENCE WHEN THE BOTTLE IS TO BE RETESTED.**

The next piece of information you want is the Working Pressure Rating. As you can see, this information is also present in the data line on the bottle.

- Refer to the label on the bottle for pressure rating and test dates.
- UNDER NO CIRCUMSTANCES SHOULD YOU FILL AN OUT-OF-DATE BOTTLE!
- NEVER EXCEED THE PRESSURE RATING OF THE BOTTLE!!!
- Examine the bottle for dents, gouges or other significant damage. Do not fill a bottle that has been abused or damaged.

For more information, consult the Compressed Gas Association pamphlets C-6, C-6.1, & C-6.2. These are available online at WWW.CGANET.COM.

IF YOU FIND THAT THERE IS NO MARKING ON THE BOTTLE OR THE LABEL HAS BEEN OBSCURED, DO NOT FILL THE BOTTLE!!!!

THE OPERATING CONTROLS

A description of the operating controls follows. Do not hook up your High Pressure Fill Station until you have read and understood the SETUP portion of this manual.

There are two user controls on the fill station. They are the Output Pressure Adjustment and the Control Knob.

Your Fill Station is equipped with two gauges, which show you your delivery pressure (Labeled "OUTPUT" on the Fill Station body) and how much gas is left in your supply cylinder. (Labeled "BULK" on the Fill Station body.)

OUTPUT PRESSURE ADJUSTMENT:

The Output Pressure Adjustment allows the operator to set the pressure that will be dispensed. It is located on the top of the Fill Station, next to the control knob, and is set with a 3/16 inch Allen key.

THE CONTROL KNOB:

The Control Knob is a single control that manages both the gas delivery to the system to be filled, and the purging of the fill line to allow disconnection.

NOTE: DO NOT OVER-RANGE THE CONTROL KNOB! DAMAGE TO THE CONTROL VALVE CAN RESULT!

THE MAXIMUM PRESSURE DELIVERED BY THE FILL STATION IS ALWAYS DETERMINED BY THE PRESSURE IN THE BULK TANK. THE BULK TANK PRESSURE MUST BE GREATER THAN THE OUTPUT SETTING ON THE SYSTEM.

Once your Fill Station has been connected to the bulk tank and pressurized, in accordance with the procedures outline in the "SETUP" section of this manual, you can now set the delivery pressure.

Using a 3/16 Allen key, slowly turn the Delivery Pressure Adjustment clockwise until the output gauge shows the desired fill pressure. **DO NOT EXCEED THE PRESSURE RATING ON THE BOTTLE YOU ARE FILLING**

Do not over-adjust, as this will cause damage to internal regulator pin resulting in leaks. Remember: You cannot dispense more pressure than the "Bulk Tank" gauge indicates!

Once the pressure is set to the output pressure you desire activate the unit to release a small amount of air. This will cause the output pressure to move. Reset the output pressure and repeat the release of air unit the unit goes to the pressure set after the air is released. If the unit is to be used for long term regulation check the unit regularly as the pressure can creep up or change due to wear and contamination.

If you need to reduce the output pressure, turn the Delivery Pressure Adjustment counter-clockwise. When reducing pressure, the output gauge will not show the true lower pressure reading until you have allowed the gas from the previous setting to vent by using the Control Knob!

Prior to hooking up a system to be recharged, it is good policy to verify the rating on the burst disk, and to confirm that the vent hole is unobstructed.

Connect the system to be recharged to the QD, and make sure that the QD has properly locked on the fill nipple. Turn AND HOLD the Control Knob clockwise until you hear the flow of gas start. Turn AND HOLD the Control Knob approximately ¼ turn further, and wait for the sound of the gas flow to stop. Once you hear the flow cease, turn the Control Knob counter-clockwise until you hear the connection vent down. Once the venting has ceased, you will be able to disconnect the system from the fill station.

NOTE: If you are not able to easily unlock the QD, it is an indication that pressure may still be present. If this occurs, turn the Control Knob counter-clockwise all the way up to allow complete venting of the fill station.

The Fill Station's internal regulator controls the pressure being delivered to the system, so there is less of a possibility of an accidental overfills.

Even though the Control Knob controls the gas flow during fill operations, it is good practice to turn the cylinder valve off if the Fill Station is going to be left unattended, or if you have finished operations for the day.

Troubleshooting

Leaks from the female qd while filling – If the unit leaks at the female qd while attached to the male it is the o-ring inside the female qd. The oring is a O10 in size and is located behind the ball bearings in the female quick disconnect. Remove the old oring with a pick and then squeeze the new oring into the grove. Starting with one end of the oring in the groove and then using a blunt object to push the other side in will usually get it in place.

Leaks from the female qd all the time – If the unit leaks whenever the air is on from the female qd the valve seat # 8 needs to be changed. Follow the rebuild procedures and replace the valve seat #8.

Leaks from the Valve Actuator while filling – If the unit leaks from the Valve Actuator #1 while filling the 004 oring #23 will need to be changed. Follow the rebuild procedures and replace the 004 oring #23

Leaks from either brass plugs on the bottom- If the unit leaks from the 2 bottom plugs #9 replace the O11 oring #21. Follow the rebuild procedures and replace orings #21

Leaks from the small hole located on the left side of body #7 above the plug - if the unit leaks from the small hole the change the piston #6. Follow the rebuild procedures and replace piston #6.

Leaks from any of the taped fittings, Gauges, plugs, cga fitting, qd connector – if the unit leaks from the gauges #18 or the plugs #13 or the cga fitting #14 or the qd connector #16 the leaking item needs to be removed and re-taped and installed again.

Unit does not hold output pressure and creeps up – If the unit does not hold the set pressure the reg seat #8 needs to be replaced. Follow the rebuild procedures and replace the reg seat #8.

Unit does not vent when control knob is turned all the way up - If the unit does not vent when the control knob is all the way up and you are unable to release the female qd due to pressure left in the unit the control assembly needs to be reset and the 004 #23 replaced. Follow the rebuild procedures to reset the control assembly and change the valve oring #23. If the unit is holding the air the unit has to be removed from the bulk filling tank. Turn off the bulk tank and when the cga nut is broken loose from the bulk tank the unit will de- gas allowing you to remove the cylinder being filled and rebuild the unit.

Rebuilding

ONLY WORK ON A COMPLETELY EMPTY FILL STATION!

ALWAYS WEAR EYE PROTECTION, GLOVES AND POINT THE AIR SYSTEM IN A SAFE DIRECTION PRIOR TO DEGASSING THE SYSTEM!!!

Bottom Plugs- both bottom plugs are a 7/16 in size and use a box end wrench or socket to remove. When reinstall take care not to over torque and snug is fine as the oring is what seals in the unit. When reassembling the bottom plugs it is easier to put the spring and ball in the plug and then hold the fill station right side up and insert the plug into the body. then tighten by hand to hold in place and once started use a wrench to finish while holding the fill station right side up.

Valve Actuator – this is a complete assembly and should be replaced as a complete assembly from Ninja. Take care when reinstalling to not cross thread the assembly and do not force it into the body. Snug the assembly down and do not over tighten as this can impede the oring and cause issues.

Both Seats – to remove either seat from the unit the bottom plugs and all items in the bottom part of the reg need to be removed. In addition all upper assembly parts in the top half of both sides of the fill station need to be removed. This will allow you to push the seats out from the top using a long 5/64 “allen wrench and insert the allen wrench into the hole in the body from the top. The allen wrench will contact the seat and allow you to push the seat out through the stem. A .081 to .083 rod may also be used to remove the seat.

Once removed, clean the seat and oring and check for damage. The other side may be used but a new seat and oring is recommended.

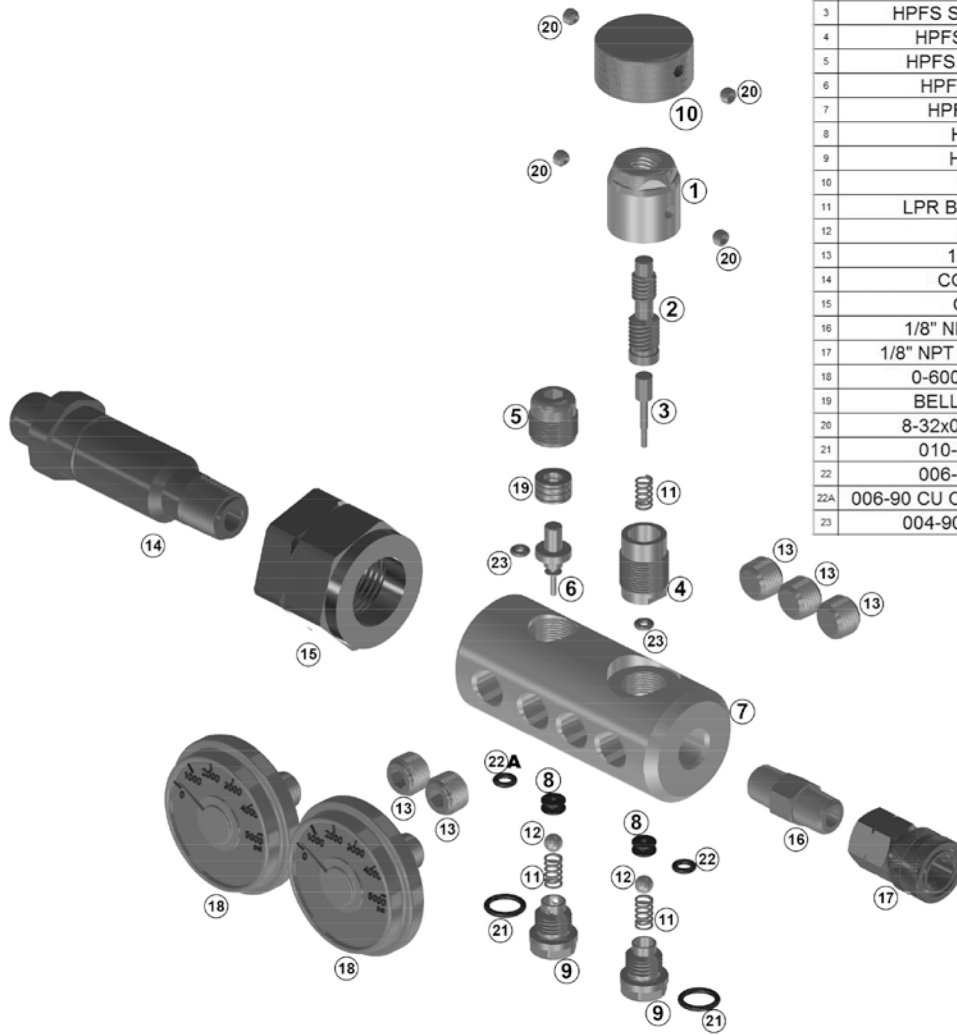
Clean the inside of the stem with compressed air and a cotton swab paying close attention to clean where the seat and oring are located in the stem. Make sure the entire stem internal area is completely clean and blowing it out with air once swabbed is recommended.

To reassemble make sure the seat oring is lubed with silicone lube – use no oil.

Using a larger allen wrench or a blunt object push the seat onto the stem. Make sure the seat is flat and is fully seated into the stem. When pushing on the seat you should feel a slight resistance and then the seat popping into the correct location. If you look through the stem you should see light through the center hole.

Piston assembly - to change the piston oring you will have to change the entire piston as this oring is difficult to install. The piston is available from ninja in the rebuild kit. Remove the adjustor by unscrewing complete from the unit. Take care to not drop and lose the Bellville springs when removing the adjustor.

Pull the piston out of the unit from the top and place the Bellville spring on the piston in the correct order – bottom of piston)) () () (top of piston facing up. 9 total spring. Insert assembled piston into the unit and push gently until in place. Install adjustor onto piston and screw down at least 5 full turns.



1	HPFS STICK VALVE CAP	1	HPFS-200RED
2	HPFS STICK VALVE S. ACTUATOR	1	HPFS-300BLK
3	HPFS STICK VALVE SHAFT	1	HPFS-700
4	HPFS STICK JAM NUT	1	HPFS-400BLUE
5	HPFS STICK ADJUSTER	1	HPFS-500
6	HPFS STICK PISTON	1	HPFS-600
7	HPFS STICK BODY	1	HPFS-100BLK
8	HP SEAT MINI	2	MINISEAT
9	HP PLUG MINI	2	FILLPLUG
10	UFA KNOB	1	H300-120
11	LPR BLOW OFF SPRING	3	LPRSPRING
12	0.188" BALL	2	9528K13
13	1/8" NPT PLUG	5	5406-FLP-2EF
14	CGA 677 NIPPLE	1	NP-247
15	CGA 677 NUT	1	N-80BRASS
16	1/8" NPT MALE TO MALE	1	5404-2
17	1/8" NPT QUICK DISCONNECT	1	12FSSHP
18	0-6000PSI GAUGE 1.5"	1	HPFGAUGEPSIBAR
19	BELLEVILLE WASHER	8	AI371930
20	8-32x0.125" SET SCREW	4	8-32x1/8BLK
21	010-70 BUNA O-RING	2	010-70B
22	006-70 BUNA O-RING	1	006-70B
22A	006-90 CU ORING BULK TANK PORT	1	006-90CU
23	004-90 CAST URETHANE	2	004-90CU