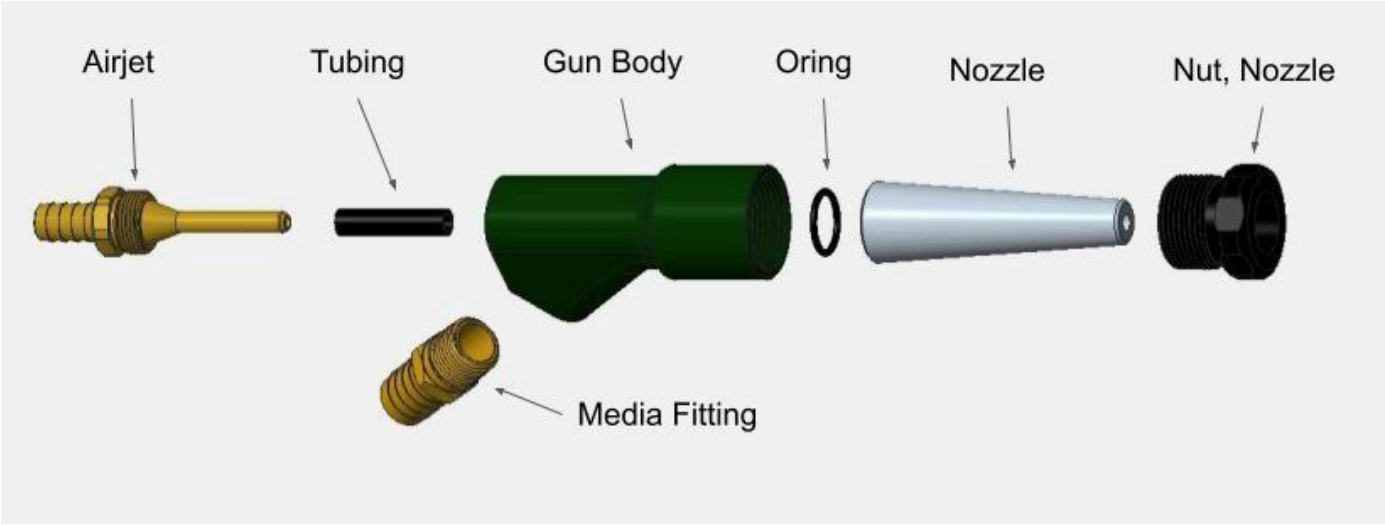
HTMR Blast Gun Instructions

Parts Diagram

Below is an exploded diagram of all the components and their nomenclature.



Assembly

The only thing I want to mention here is that the airjet, media fitting, and nozzle nut simply need to be “snug”. No reason to go super tight. The nozzle nut can be hand tight. The airjet and media fitting require a ⅞” wrench. The nozzle nut is 1.5” hex. The media fitting has NPT thread and it is perfectly normal for some threads to be exposed. The airjet should be seated all the way in.

Airjet

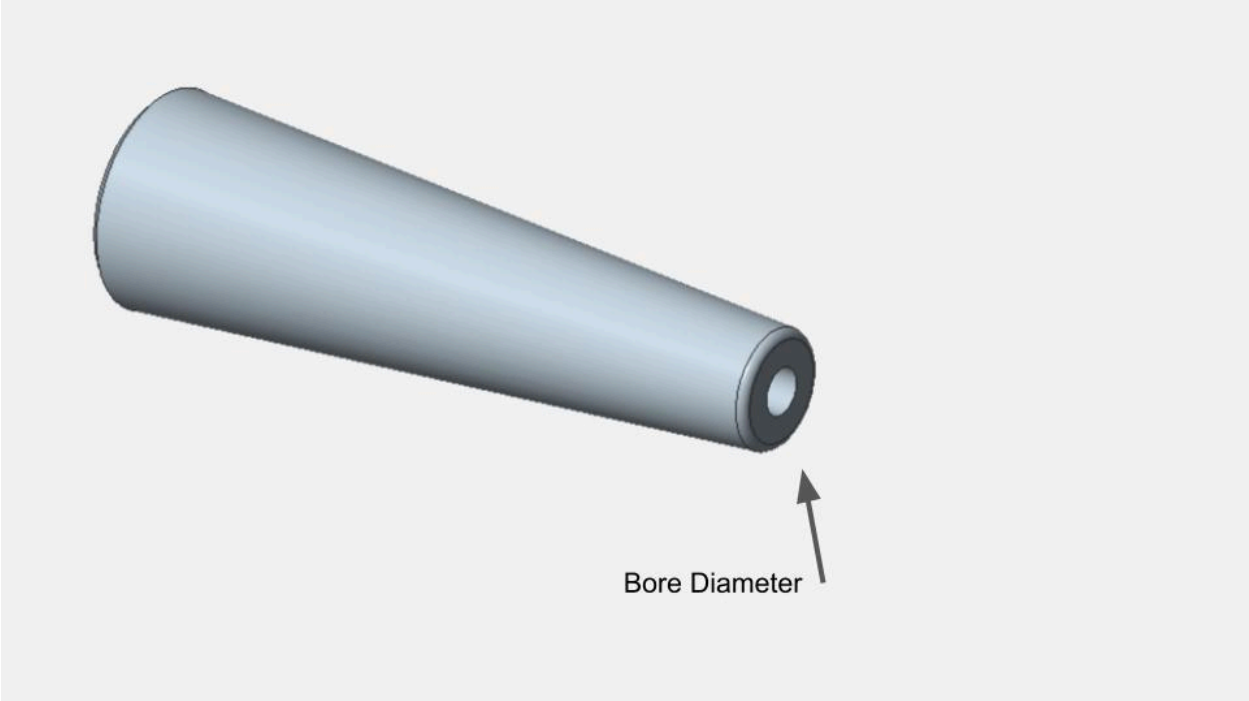
The first part of building a gun is picking how much CFM you want to consume. Generally speaking, you want an airjet that consumes a lower amount than the output of your compressor. It is OK to consume more, just keep in mind the compressor duty cycle, and you will be waiting for your compressor to catch up. The airjet can be identified by measuring the orifice diameter at the tip. Need a different size airjet? They are available separately here.

Airjet	Orifice Diameter	CFM consumption @ 60psi
3HP	.098” / 2.5mm	10
5HP	.125” / 3.2mm	16
7.5HP	.156” / 4mm	25
10HP	.188” / 4.8mm	37
15HP (Boron Carbide Guns only)	.209” / 5.3mm	45

Ceramic Nozzle

The blast gun comes standard with a ceramic nozzle. There are several sizes available, and can be identified by measuring the bore diameter. Replacement nozzles are available here. The correct nut to use with this nozzle is the ceramic nut.

Ceramic Nozzle	Bore Diameter
5HP	.250” / 6.4mm
7.5HP	.313” / 7.9mm
10HP	.375” / 9.5mm



Airjet/Nozzle Combinations

The blast gun comes standard with the airjet and nozzle “matched” (for example: 5HP airjet & 5HP nozzle). In this “cutting” configuration, the media velocity exiting the gun is the greatest. A high media velocity is required to remove paint, corrosion, rust, etc. This configuration can also “polish” by reducing pressure to say 40psi and increasing distance from part. The nozzle to airjet ratio is 2:1 in this configuration (5HP nozzle/5HP airjet = .250”/.125” = 2:1).

“Cutting” Configuration				
Airjet	**Nozzle**	**Nozzle/Airjet Ratio (Ø)**	**Media Volume**	**Media Speed**
3HP	5HP	2.5:1	High	Slow
5HP	5HP	2:1	Low	Fast
7.5HP	7.5HP	2:1	Low	Fast
10HP	10HP	2:1	Low	Fast

Another configuration that can be set up is “polishing”. All you have to do is install a nozzle one size larger than the air jet. This will slow down the media exit speed, while increasing media volume, to create a smoother and shinier finish in vapor blasting. This also allows you to keep your pressure higher (more CFM = more power) so you can complete the work faster. The 10HP nozzle is the largest available, so to polish with the 10HP gun in “cutting” config, simply reduce pressure to 40psi and increase distance. The nozzle to airjet ratio is 2.5:1 in this configuration (7.5HP nozzle/5HP airjet = .313”/.125” = 2.5:1)

“Polishing” Configuration				
Airjet	**Nozzle**	**Nozzle/Airjet Ratio (Ø)**	**Media Volume**	**Media Speed**
3HP	5HP	2.5:1	High	Slow
5HP	7.5HP	2.5:1	High	Slow
7.5HP	10HP	2.5:1	High	Slow
10HP	N/A	N/A	N/A	N/A

3HP Gun

The 3hp gun is unique, since it uses a 3hp airjet and 5hp nozzle. During testing a 3hp nozzle caused a lot of backpressure, and did not perform well. I listed the 3hp gun configurations in both the “cutting” and “polishing” tables above to avoid confusion. Do not use any other size nozzle in the 3hp gun other than the 5hp nozzle. If you need more “cutting” action, simply increase air pressure.

Boron Carbide

Boron carbide nozzles sizes are listed below. They run a bit smaller than advertised table dimension.

Boron Carbide Nozzles

Boron Carbide Nozzle Nut

Boron Carbide Nozzle	Bore Diameter
5HP	.250” / 6.4mm
7.5HP	.313” / 7.9mm
10HP	.375” / 9.5mm
15HP	.500” / 12.7mm

Media Fitting

The gun body has standard ½” NPT threads for the media port. Blast gun comes standard with a ½” NPT x ¾”(19mm) barbed end. For vapor blasting, I recommend running a ¾” hose and ¾” fittings in the entire machine. This will give you the best flow to the gun.

Below are link to fittings for ⅝” & ½” hose if you are using this blast gun in a dry blast cabinet.

½” NPT X ⅝” Barb - Grainger PN 6AFL4

½” NPT X ½” Barb - Grainger PN 6AFN9

O-ring

Replacement o-rings are available here.

Tubing (Airjet sleeve)

A small piece of tubing is installed over the airjet to prevent media from deteriorating the brass. This is especially true when dry blasting with aggressive media. The gun was designed such that there is adequate flow with this tubing installed (the limiting factor will always be the nozzle). Make sure to periodically check the condition of the tubing as it is a wear item.

Replacement airjet sleeves can be purchased here.

When dry blasting with coarse media, inspect the airjet sleeve often. If the sleeve wears out, the media will destroy the brass airjet.

The sleeve will last a long time if vapor blasting with fine media.

Hoses

The air fitting accepts a ½" hose. The media hose, ¾". I really like the Flexzilla brand hoses, since they are lightweight and flexible, even in cold weather. I sell these on my website, links below:

½" Flexzilla

¾" Flexzilla

Troubleshooting

Pulsating/sputtering/vibrating (vapor blasting)
If these symptoms occur, then it is a sign of too much backpressure and the solution is to install a larger nozzle size.

Measuring slurry ratio

1. Allow machine to run and mix slurry for a minute.
2. With air pressure at 0psi, fill a beaker or measuring cup with slurry.
3. Set beaker aside and let media settle.
4. Measure water to media ratio. Should be 10-15% minimum, 30% maximum. (for example, 100ml water level should have 10-15ml of media settled to bottom.

Media stops flowing (vapor blasting)
This is often due to insufficient pump power, or inadequate agitation to get media suspended in water. With all the DIY info out there, I've seen people skimp on pump cost and lack of agitators. This is an area worth spending money on and setting up properly.

DIY Vapor Blaster Plans
If your setup is causing you performance issues, I recommend buying my DIY plans for proper pump and agitation setup. This is really the heart of the system and needs to be setup properly for best results.

Dry blast siphon tube/metering valve
Please note that most cabinets come with a poorly designed siphon tube, and it has no way to "adjust" media flow. If your siphon tube that pokes into the media is a "single" metal tube, then it is worthwhile to modify or buy a new one.

Here is a video on how I modified the siphon tube on my HF cabinet.

An even better option is to convert to a metering valve. A metering valve has several advantages:

- Ability to adjust "lean" or "rich" media flow via the air bleed
- The hopper needs less media to run smoothly, sometimes only a cup or 2 of media
- Fine tune flow for different media (some are heavier/larger than others)

To lean out the media flow, open the air bleed. To richen the media flow, close the air bleed.

Here is a metering valve to convert HF cabinets or others with trap door design.
(pn 1300-002-HF)

I use pn 1300-002 for my wood cabinet that I can convert from wet to dry in a matter of minutes.