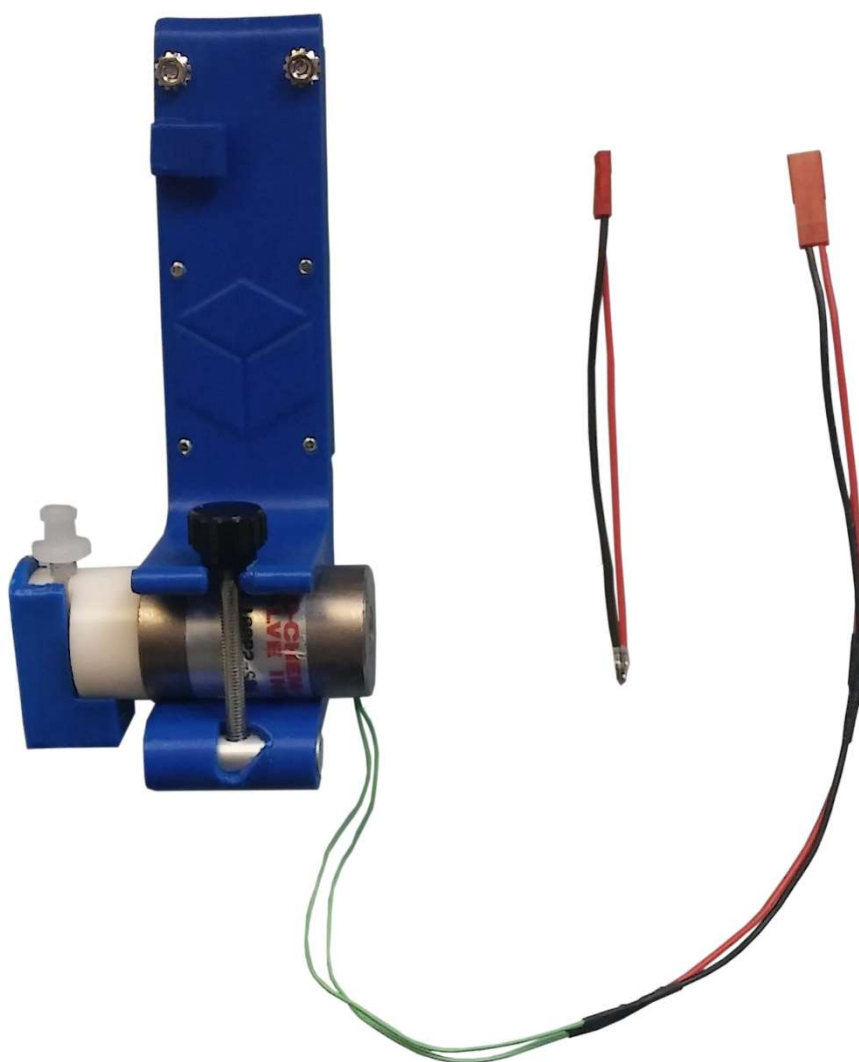


Clench Valve

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Clench Valve

Specifications:

Programmable start/stop dwell in milliseconds

Weight: 600 grams, plus payload

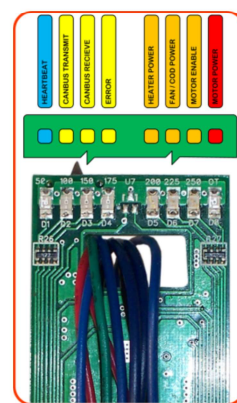
Power supply: 12v 1amp max

Interface: 2 pin 12vdc from mated SDS Head

Printed Solenoid
Holder

Solenoid Pinch Valve

Solenoid Cap





Clench Valve

Nozzles:

Make sure that when filling your syringe with material, you do not have any air inside. This will greatly affect the print quality.





Clinch Valve

Theory of Operation:

The SDS series of extruders is designed to allow emulsified, low viscosity materials to be dispensed (printed), in a controlled way. The number of actual possible materials is vast.

One of the biggest challenges when printing liquids or gels is the controll of the start / stop of the flow. Normally this is accomplished using the Prime and unprime commands, but in some cases the ooze is simply to much to get clean print features.

This problem is often solved by adding a clinch valve immediately after the SDS head. A clinch valve uses a flexible tubing that is Pinched in between actuator fingers, and can stop the flow of liquids and gels more precisely. When the print is finished, the flexible tubing is removed and thrown away, this solves the problem of valve based systems where the valve has direct contact with the liquid, which involves extensive and costly cleanup of the valve body.

Here is a link showing how to install the clinch valve and syringe

<https://www.youtube.com/watch?v=Mz5J8jsb6D4&t=19s>



Clench Valve

Using the Clench Valve:

It is good to use RTV, (from your local hardware store), to learn with. Vaseline is also easy to use, but it will not get firm after printing.

Basically:

1. Load your material into the syringes
2. Mount the SDS head on your printer yoke,
3. Check the Z at the end of the needle on the syringe.
4. Load your G-Code file.
Edit your gcode so that you have assigned the clinch valve to the SDS head that you are using,
M106 T11 P100; set head 1 to turn on clench valve when dispensing.
This should be located just before you start your printing moves.
Anytime there is a G1 with a E argument, the valve will be activated, the valve will be OFF (Closed) during Non Printing moves.

5. Print

You can use the M0 code to insert cylinder change stops (pauses) in your program.

Example:

```
G0 X0 Y200 ; move to material change location  
M0 ; Install new material then press continue
```

Additional Help:



Clench Valve

Check our YouTube channel and look for key words “Hyrel”, “3DS”, “Syringe”, and “Silicone”, for helpful videos.





Clench Valve

Tips:

Use fresh syringes and tips to avoid contamination.

NO AIR should be inside the SDS Print Head. Pack your syringes carefully; it will make the material delivery spongy, and a crisp start and stop will be impossible.

NEVER put flammable material, such as gasoline, in your syringes.

ALWAYS USE good ventilation when using the syringes. Many of the more interesting materials will emit toxic fumes.

Maintenance:

Keep your SDS head clean. Do not allow material to get on the linear bearing or drive screw.

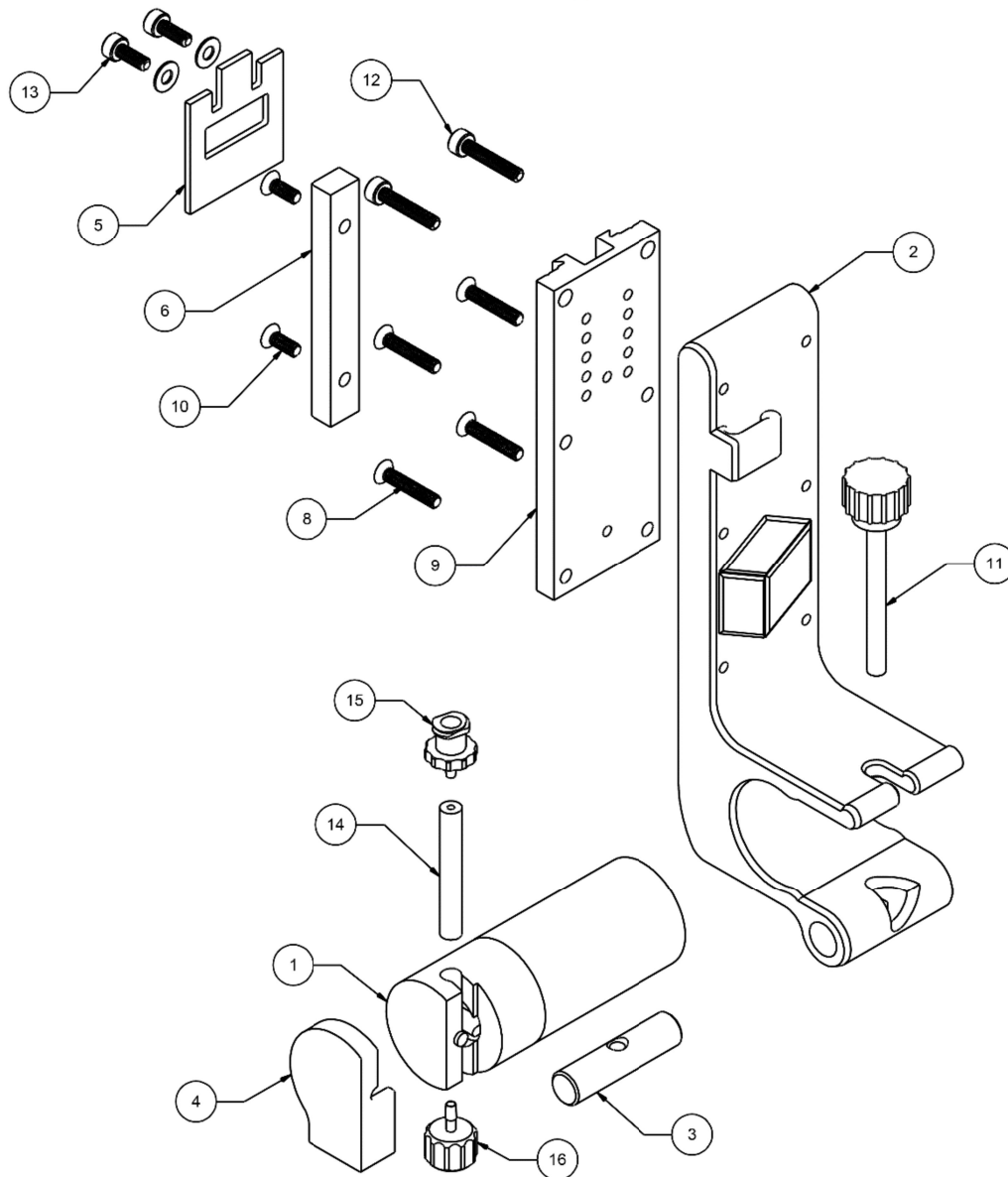
Use care when Installing the head into the yoke. Due to its long format, it is possible to mis-align the connection point.

Disclaimer:

!!! Use at your own risk. !!!

No warranty or guarantee is offered for the application of this product. The user agrees to be ENTIRELY responsible for the safe operation of this product.

Clench Valve Exploded View





Clench Valve

Clench Valve BOM

| Item | Qty | Part # | Part Name |
|------|-----|-------------|--|
| 1 | 1 | 102248-1 | 102248-1 Solenoid Pinch Valve |
| 2 | 1 | 102271 | 102271 Printed Solenoid Support |
| 3 | 1 | 102272 | 102272 Solenoid Support Clamping Shaft |
| 4 | 1 | 102273 | 102273 Solenoid Cap |
| 5 | 1 | 102508 | 102508.PCBSpacerStop.H3D |
| 6 | 1 | 104016 | 104016 Rail Substitute |
| 7 | 2 | 200045 | 200045.M3.FlatWasher.93475A210 |
| 8 | 4 | 200086-16 | 200086-16.M3x16FlatHead.92010A126 |
| 9 | 1 | 200086-8 | 104001-2 Krakatoa Gib Plate v2 |
| 10 | 2 | 200086-8 | 200086-8.Screw,M3x8mm.FlatPhil |
| 11 | 1 | 200204-40 | 200204-40.M4x40.ThumbScrew |
| 12 | 2 | 200303-16 | 200303-16.M3x16.SocketCap.92290A120 |
| 13 | 2 | 200303-8 | 200303-8.Screw,M3x8mm,SocketCap |
| 14 | 1 | 201021-0625 | 201021-0625 TYGON TUBING .0625IN |
| 15 | 1 | 201022-0625 | 201022-0625 Luer Barb Male 51525K319 |
| 16 | 1 | 201023-0625 | 201023-0625 Luer Barb Female 51525K326 |

Syringe Suppliers

HYREL www.hyrel3d.com

McMaster Carr

Use the following syringes from BD Inc. for SDS, CSD, HSD, and CMS heads:

5cc 309646

10cc 309604

30cc 302832

60cc 309653



Clench Valve

Photo-initiated Cross-linking: the SDS (Syringe Dispensing System) becomes the CSD (Cross-linking Syringe Dispenser).

The M106 command, used to control the fan which cools deposited material on the MK-series heads, controls the UV LED array on crosslinking heads. This functionality is the same on all CSD heads, as well as the COD, VCD, and KCD heads.

M106 T# S0 ; sets the COD LEDs (or fan) to 0% (off)

M106 T# S25 ; sets the COD LEDs (or fan) to 25%

M106 T# S100 ; sets the COD LEDs (or fan) to 100%

Note: T#, where # can be any of the following:

10 for yoke 1, ALL heads; or

11 for yoke 1, head 1; or

12 for yoke 1, head 2; or

13 for yoke 1, head 3; or

14 for yoke 1, head 4; or

15 for yoke 1, head 5; or

Left blank, to address the “currently active” head.



Clench Valve

