GED Integrated Solutions	**GED Integrated Solutions** 9280 Dutton Drive Twinsburg, Oh 44087	Document No.: APN-0116 Revision: A	Date: 5/26/05

Description:	**Desiccant Head Rebuild Procedure for GED Smart i3 Extruders**		
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1. Purpose:

This procedure provides the step by step instructions for rebuilding the Desiccated Matrix Head Assembly for the GED Linear Smart i3 Extruders.

2. Scope:

This procedure applies to the following GED Extruders with Desiccant Stations:

MI3SMEXT41 Standard Smart Extruders*

MI3SMEXT42 Smart Co-Extruders*

*A rebuild kit K500-7621-SMART is required for each station being rebuilt; i.e. up to six kits may be required depending on Desiccated Matrix Head configuration.

3. Applicable Documents

GED Drawings 5-17614, 5-17613 & 3-17617

CAUTION:

Desiccated Matrix Head Assemblies and Hot Melt Desiccant are very hot and can cause severe burns! Wear appropriate safety equipment and exercise extreme caution when performing maintenance on the extruder. If hot melt desiccant gets in your eyes or on your skin, flush immediately with cold water!

4. Tools and Materials

Standard Hex Wrench set
9/16” combination wrench
Arbor press
Arbor press sleeve (3/4” OD x 1” L)
Arbor press sleeve (9/16” OD x 1” L)
GED spanner wrench T00023
Snap ring pliers
O-ring pick
Bench vise with soft jaws
1/4" Brass Drift Punch

Multi-Purpose Synthetic Lubricant (provided in K500-7621-Smart as part of 200-0121)
Solvent, mineral spirits (or equivalent)
Never-Seez® lubricant (GED P/N 150-3144)
Loctite® (blue, medium strength, removable)

5. GED Desiccant Head Rebuild Procedure

5.1 Disassembly Procedures

NOTE: *If hot melt desiccated matrix is being used, the Snuff Back Nozzle Assembly rebuild must be performed while the Desiccant Station is warm. Heat the Snuff Back Nozzle to operating temperature if applicable.*

5.1.1 Snuff Back Nozzle Disassembly Procedure

1. Turn off and lock out the main air supply to the Desiccated Matrix Material Pump.
2. Move the station to be rebuilt to the Purge Position using the Nozzle Position Screen in the WinExtrude i3 Software.
3. Raise the Matrix Head Assembly by Homing the motor for the Nozzle Height.
4. Using the Matrix Purge push button on the entry end of the conveyor, relieve the pressure from the system. View the Remake Screen to verify that the pressure has been relieved.
5. Turn off and lock out the main air supply to the Smart Extruder.
6. Turn off and lock out the main power disconnect on the Hot Melt Pump.
7. Turn off and lock out the main power disconnect on the Smart Extruder main electrical panel.
8. Remove the desiccant nozzle from the nozzle adapter (2-11572).
9. Remove the air lines and mufflers (200-0514) from the air cylinder assembly (3-11645). See Figure 1 below.

NOTE:

Mark the location of the air lines for reinstallation.

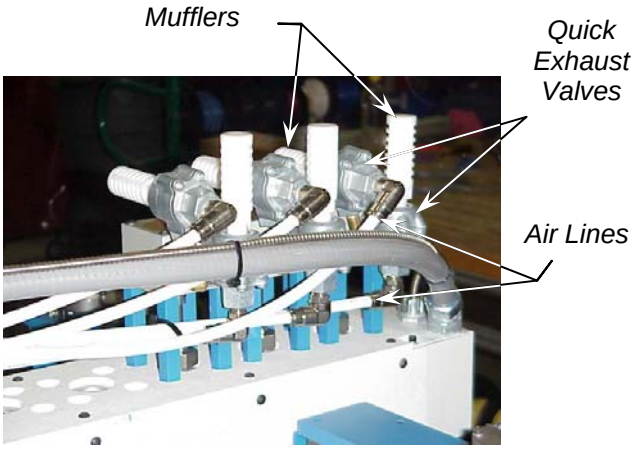


Figure 1

10. Loosen the 3/8-16 jam nut (705-0003) that secures the valve stem (3-15265) to the air cylinder piston rod.

    TECHNIQUE: Hold the lower 3/8-16 jam nut with an open end wrench (9/16") while loosening the upper 3/8-16 jam nut with another open end wrench.

11. Remove the four 14-20 x 2 1/2 socket head cap screws (751-0043) which secure the air cylinder assembly to the spacers (3-11576).
12. Unscrew the air cylinder assembly from the valve stem.

    TECHNIQUE: Insert an 1/8" hex wrench or equivalent through the set screw holes on the side of the piston rod and turn the piston rod counterclockwise to unthread. See Figure 2.

13. Remove the quick exhausts and air fittings from the air cylinder and set aside. See Figure 1
14. Remove both 3/8-16 hex nuts from the valve stem.
15. Remove the stroke adjustment nut (3-15366) from the valve stem.
16. Remove the valve stem from the heater head block by pushing it down through the nozzle adapter.

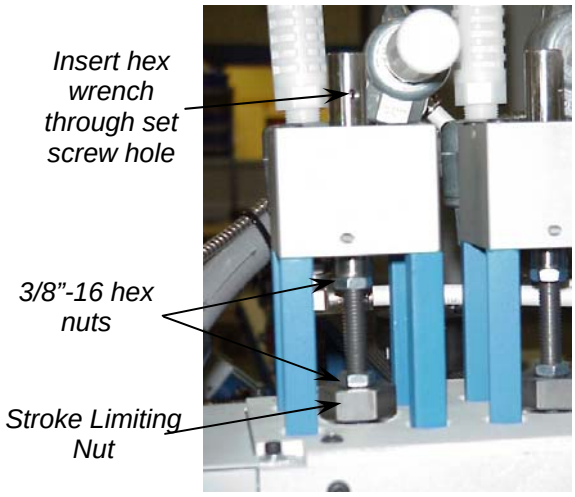


Figure 2

17. Remove the four 5/16 - 18 x 3/4 flat head machine screws (753-0034) which secure the nozzle adapter to the underside of the heater head block.
18. Remove the nozzle adapter from the heater head block.
19. Remove and discard O-rings (250-0773 & 250-0774) from the nozzle adapter.
20. Remove and discard the snap ring (150-6249) that secures the bushing (3-11644) in the nozzle adapter.
21. Remove and discard bushing from the nozzle adapter.

    TECHNIQUE: Use an arbor press and appropriate sized sleeve (9/16" OD x 1" L) to press out bushing from the top side (O-ring side).

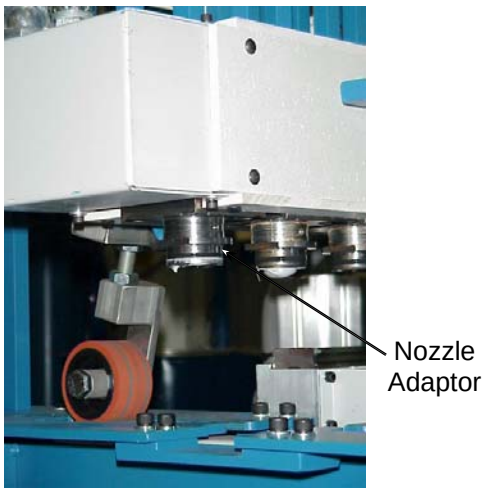


Figure 3

22. Remove the snap ring (150-5847) which secures the stem seal retaining spacer. (3-15367).
23. Remove the stem seal retaining spacer from the heater head block.

    TECHNIQUE: Thread a 5/8 -11 bolt into the retainer approximately 1/4" and pull the retainer from the top of the heater head block.

24. Remove seal (150-5843) from the heater head block using a 1/4" diameter brass drift from the underside of the heater head block.

5.1.2 Matrix Head Parts Cleaning

1. Remove the majority of the hot melt desiccant while it is still warm.
2. Clean parts with solvent. An air agitator in the solvent tank works well for the parts that have been removed.
3. Dry parts and lay them out on a clean surface.

5.1.3 Air Cylinder Disassembly Procedure

1. Mount air cylinder in a soft jawed vise with the shaft pointing up and, at least 1/2" of the air cylinder on top of the vise.

CAUTION:

Do not over tighten the vise to prevent deformation of the air cylinder.

2. Use GED spanner wrench (T00023) to turn gold endcap clockwise. The keeper ring will start to come out of the small hole in the side of the air cylinder. Continue turning clockwise until the keeper ring is free from the gold endcap. See Figure 4.
3. Push the gold endcap inwards until it is possible to remove the keeper ring.
4. Remove the keeper ring by feeding the ring back through the hole counterclockwise.
5. Invert the air cylinder in the vise and repeat steps 2 through 4.
6. Remove the two gold endcaps, piston rod, and piston from the air cylinder.

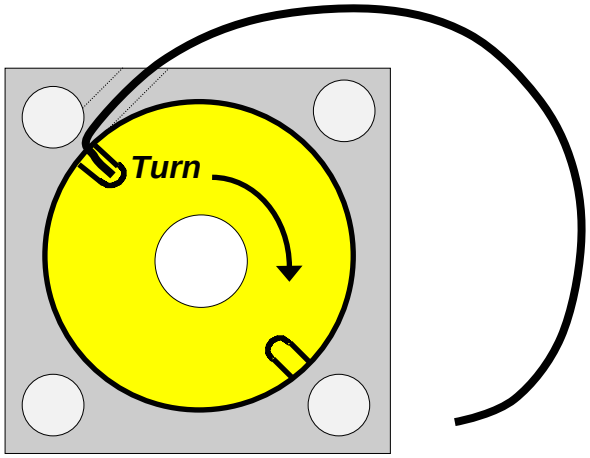


Figure 4

7. Remove the two gold endcaps from the piston rod.
8. Using snap ring pliers remove and discard the two snap rings that secure the piston to the piston rod.
9. Slide the piston off the piston rod.
10. Remove and discard all O-rings from the piston rod, piston, and gold endcaps.

5.1.4 Air Cylinder Parts Cleaning

1. Remove the majority of the butyl while it is still warm.
2. Clean parts in solvent. An agitator in the solvent tank expedites the process.
3. Dry parts and lay them out on a clean surface.

5.2 Assembly Procedure

5.2.1 Air Cylinder Assembly Procedure

Figure 5 can be used to help identify O-rings on the air cylinder.

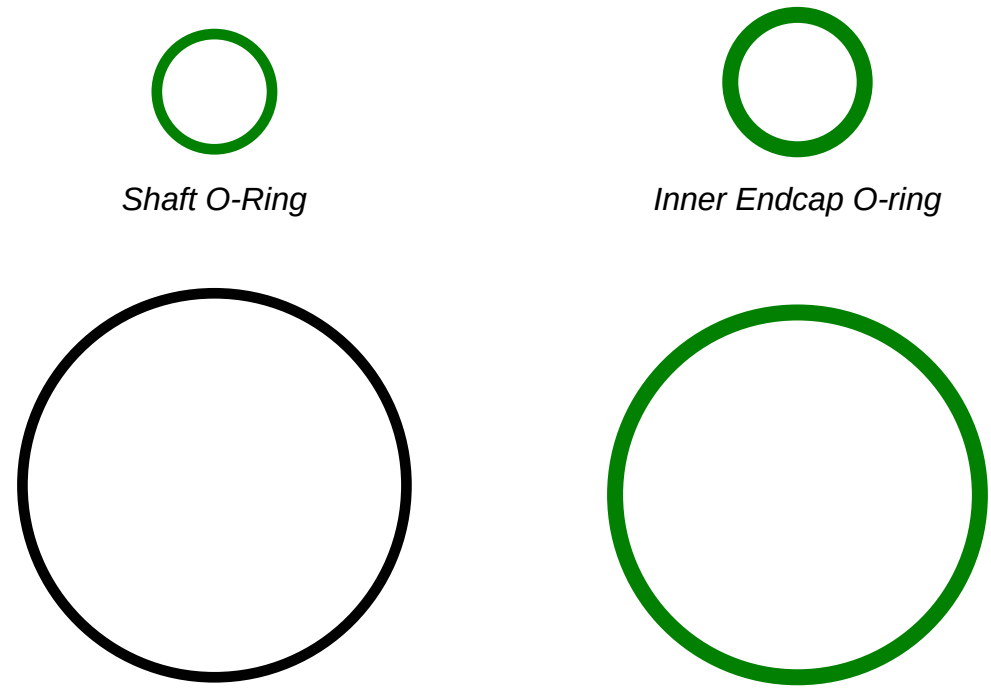


Figure 5

NOTE:

When grease is called for in the air cylinder assembly procedure, use the multi-purpose synthetic lubricant with Teflon (#82340) that is supplied in the air cylinder rebuild kit #200-0121 that is included in the K500-7621 rebuild kit.

1. Grease the shaft and the shaft O-ring.
2. Slide the shaft O-ring over the shaft until it seats into the deepest groove.
3. Work the O-ring with your thumb and forefinger to insure the O-ring is not twisted.
4. Slide the piston over the shaft until it comes in contact with the O-ring. Rock the piston back and forth and apply a little pressure until the piston is over the O-ring. Caution must be taken as not to cut the O-ring.
5. Fasten the piston in position with two new snap rings. The snap rings have a bevel on one side due to the way they were manufactured. Make sure the beveled side is facing the piston. See Figure 6.
6. Grease the piston O-ring.

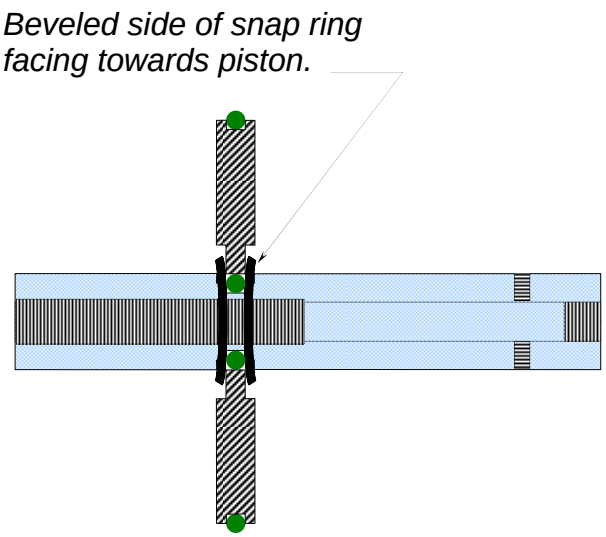


Figure 6

7. Install the piston O-ring over the piston.
8. Grease one inner endcap O-ring.
9. Install one inner endcap O-ring as shown in Figure 7.
10. Grease the outer endcap O-ring.
11. Install the outer endcap O-ring into the endcap O-ring groove.

    TECHNIQUE: Do not roll the O-ring over the endcap. Lay one side of the O-ring in the groove and stretch the O-ring into position by applying pressure with your thumb and forefinger. This will keep the O-ring from being twisted in the groove.

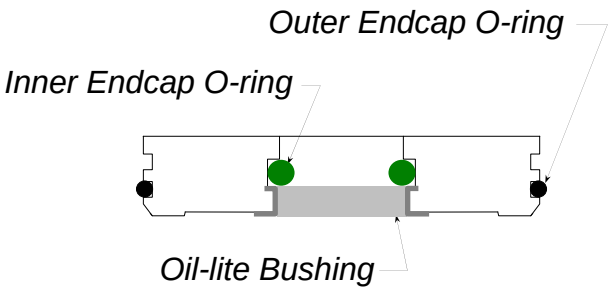


Figure 7

12. Repeat steps 8 thru 11 for the other endcap.
13. Grease the inner bore of the cylinder.
14. Mount the air cylinder in a soft jawed vise with the top pointing up. The Outside surface with the retaining ring groove closest to it is considered the top side. See Figure 8.

CAUTION:

Do not overtighten the vise to prevent deformation of the air cylinder.

15. Slide the piston assembly into the cylinder with the setscrew holes on the top side.
16. Slide one endcap over the shaft with the retaining ring notches on the top side.

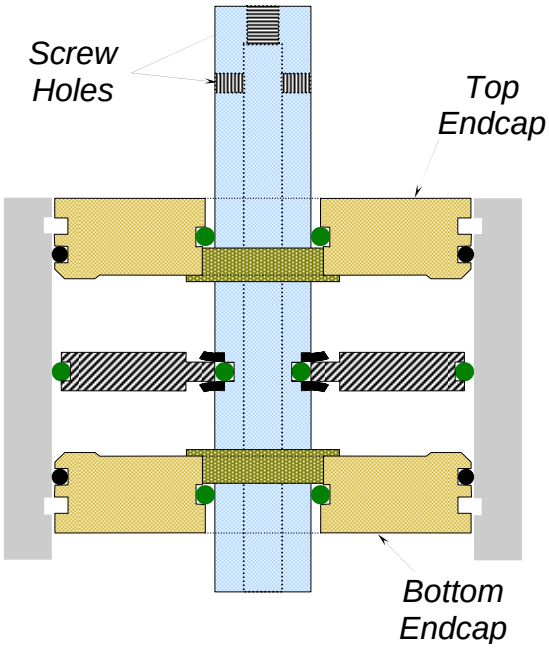


Figure 8

17. Align a retaining ring notch with the hole for the retaining ring in the air cylinder.

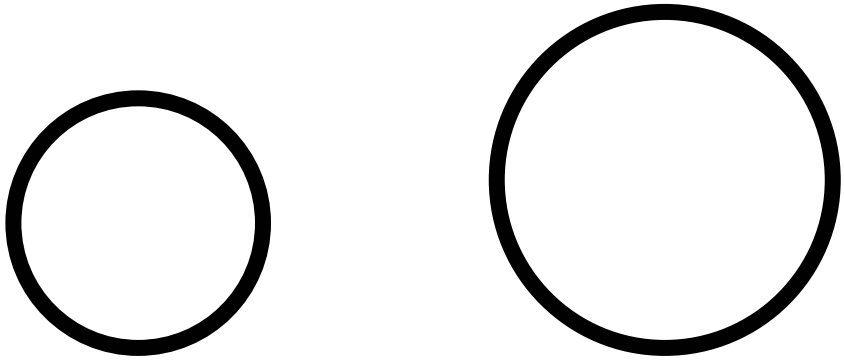
CAUTION:

Do not rotate the endcap to align it with the retaining ring hole, because the outer endcap O-ring will be damaged by the air inlet hole in the side of the cylinder body.

18. Push the endcap into the air cylinder just until there is room to slide the retaining ring into the hole.
19. Apply Never-Seez® lubricant (150-3144) to one retaining ring.
20. Slide a retaining ring into the hole until the hooked end falls into the notch.
21. Push on the shaft from the bottom until the endcap is flush with the top surface.
22. Using the spanner wrench (T00023), turn the endcap 360 deg. counterclockwise. It may be necessary to rotate the endcap back and forth a little to align the grooves.
23. Invert the air cylinder in the vise and repeat steps 16 thru 22.

5.2.2 Snuff Back Nozzle Rebuild Assembly Procedure

Figure 9 can be used to help identify O-rings in the Snuff Back Nozzle Head kit (K500-7621-SMART).



O-Ring 250-0774 Seal 250-0773

Figure 9

NOTE:

NOTE: Lubricate all O-rings with multi purpose lube and all threads with never-seize (150-3144) prior to installation/assembly.

1. Inspect all components for wear or damage; replace any component that is worn, damaged, or questionable.
2. Install bushing (3-11644) into the nozzle adapter (2-11572). The bushing must be pressed into the nozzle adapter with the rounded edge of the bushing facing in.

NOTE:

When the nozzle adapter is installed on the heater head block (1-15264), the sharp non-rounded edge of the bushing seat must face down.

TECHNIQUE: Use an arbor press and appropriate sized sleeve (3/4" OD x 1" L) to press the bushing into the nozzle adapter.

3. Install the snap ring (150-6249) that secures the bushing in the nozzle adapter.
4. Lubricate and install O-ring (250-0774) on the nozzle adapter.
5. Lubricate and install O-ring (250-0773) in the O-ring groove on top of the flange of the nozzle adapter.
6. Apply Never-Seez® lubricant to the four 5/16 - 18 x 3/4 flat head machine screws (753-0034) and mount the nozzle adapter to the heater head block. Make sure that the nozzle adapter is correctly positioned with the nozzle pin locating hole facing the entry end of the extruder. See Figure 10.

7. Carefully slide the stem seal (150-5843) into the bore of the heater head block with the open edge of the seal facing inward (toward the matrix).
8. Insert the stem seal retainer (3-15367) and the snap ring (150-5847) as shown in drawing 2-15266.
9. Install the valve stem (3-15265) from the underside of the Heater Head Block.

   TECHNIQUE: Wrap the threaded portion of the valve stem with electrical tape to keep the matrix out of the threads.
10. Install the stroke adjusting nut (3-15366) and one of the 3/8-16 jam nuts on to the valve stem.
11. Hold the valve stem in a seated position against the bushing (3-11644) and thread the stroke limiting nut down until there is approximately 9/32" between the top of the heater head block and the underside of the stroke limiting nut.

    TECHNIQUE: Gauge across the points of a 1/4" hex key wrench as it measures 9/32".

NOTE:

This initial adjustment insures that the piston does not slam into the endcaps and that material will be able to flow from the desiccated matrix nozzle. See Figure 10.

12. Install the second 3/8-16 jam nut onto the valve stem.
13. Install the air fittings and quick exhaust valves on the air cylinder assembly.
14. Position the air cylinder so the air inlet/exhaust holes are located on the exit end of the extruder.
15. Use a hex wrench through the set screw holes in the piston rod to thread the air cylinder assembly (3-11645) onto the valve stem until the air cylinder housing seats on the four spacers (3-11576). Reference 5.1.1 step 12
16. Apply Never-Seize lubricant to the threads and install the four 14-20 x 2 1/2 socket head cap screws (751-0043); tighten to secure the air cylinder assembly to the spacers.
17. Push up on the valve stem so that the valve stem is fully seated against the bushing.
18. The distance from the top of the piston rod to the top surface of the air cylinder should measure 1 1/2" +1/8". See Figure 10.

NOTE:

If necessary, turn the piston rod to thread or un-thread the piston rod from the valve stem to achieve the correct height. Verify the stem is seated against the bushing.

19. Tighten the second 3/8-16 jam nut to secure the air cylinder piston shaft to the valve stem.
20. Install the mufflers and air lines.
21. Turn ON the power for the Desiccated Matrix Material Pump and Smart i3 Extruder and heat to operating temperature.

22. Turn ON the air supplies for the Desiccated Matrix Material Pump and Smart i3 Extruder.
23. Install a desiccant nozzle on the nozzle adapter.
24. Using the Matrix Purge button, purge material from the rebuilt nozzle/snuff back station a number of times to seat all the components and get desiccant flow.
25. Check to insure that desiccant is not leaking from the stem seal.

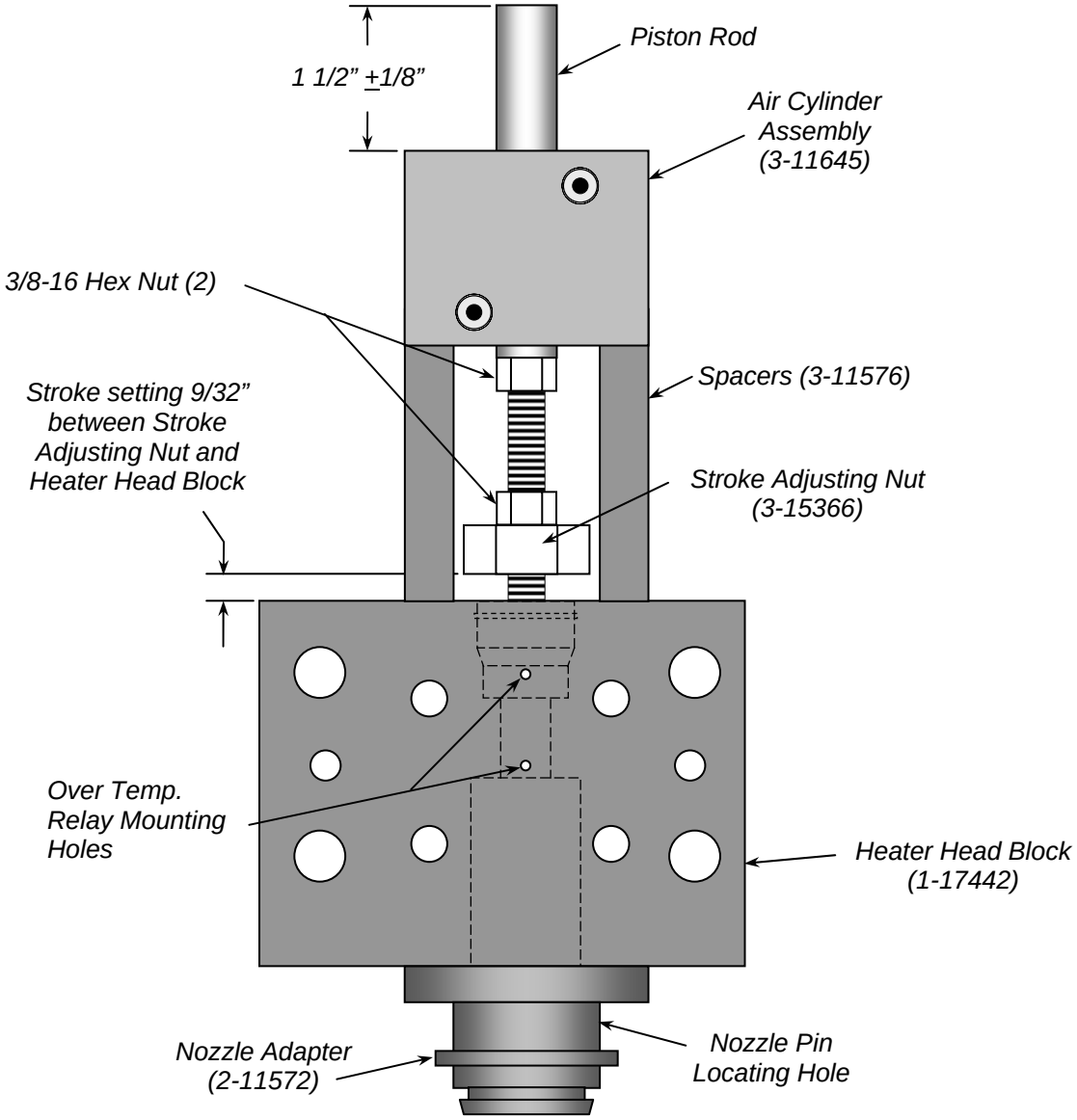


Figure 10

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