

Repair



HV-2000 Jet Maintenance and Repair

Diaphragm-Jet™ Technology

3A5909A

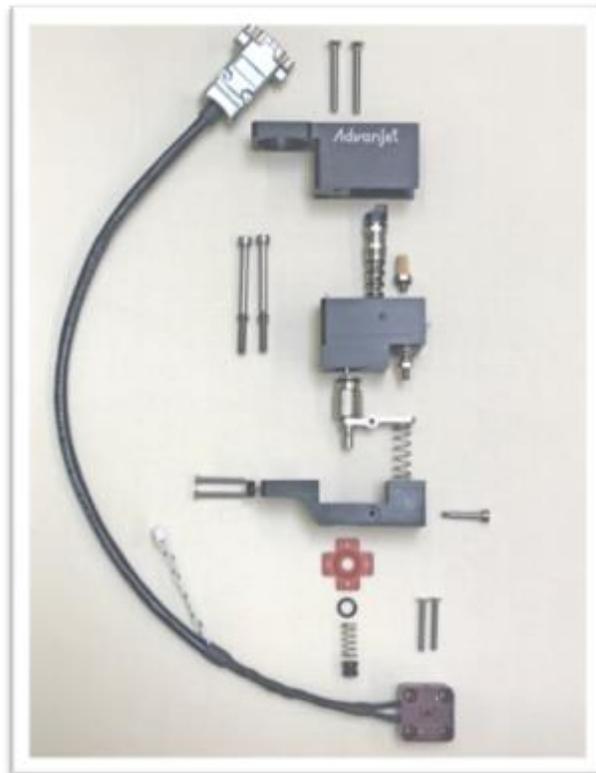
EN

For non-contact dispensing of viscous material in industrial environments.
For professional use only.



Important Safety Instructions

Read all warnings and instructions in this manual and all related manuals before using this equipment. Save these instructions.



PROVEN QUALITY. LEADING TECHNOLOGY.

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Related Manuals

Manuals are available at www.graco.com. Component manuals below are in English:

3A5855	HV-2000 Jet Setup and Operation
3A5856	HV-2000C Jet Controller Setup and Operation
3A5908	Advanjet Jet Maintenance Tool Kit (JKT-2000)

Technical Assistance

For technical assistance:

Phone: +1 760-294-3392

Web: www.advanjet.com

E-mail: info@advanjet.com

Safety Guidelines

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
 	<p>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power cord before servicing equipment. • Connect only to grounded electrical outlets. • Ensure ground prongs are intact on power and extension cords.
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using. • Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
	<p>BURN HAZARD</p> <p>Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none"> • Do not touch hot fluid or equipment.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear, and hearing protection. • Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

1. Required Tools and Parts

This document describes procedures for installing these HV-2000 jet maintenance kits:

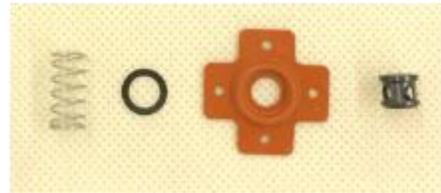
- BK-2001: Replaces the heater block bushing, and the jet spring, washer, and heater seal.
- HK-2001: Replaces just the heater block assembly (heater block with bushing and cable assembly). Also includes the jet spring, washer and heater seal.
- JK-2001: For optimal jet performance and to prevent damage to the jet, the jet hammer cylinder, lever, shoulder bolt, solenoid, muffler, and heater block assembly should be periodically replaced.

Whenever the jet hammer spring is removed, the jet hammer gap must be set before dispensing can proceed. The gap set fixture and specific tools required for this procedure are included in the Advanjet Jet Maintenance Kit (Part no. JKT-2000).

1.1 Repair Kits

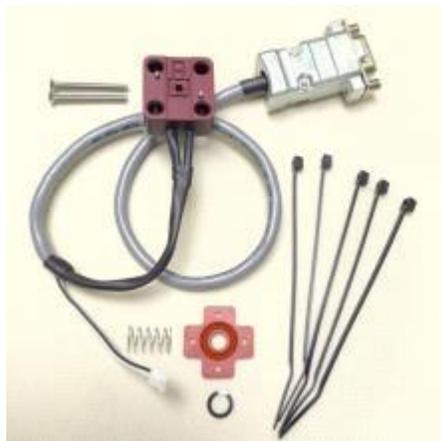
1.1.1 Bushing Repair Kit (BK-2001)

JET SPRING	P/N 60-2102
WASHER (10-PACK)	P/N 60-2116
HEATER SEAL	P/N 03-2261-00
BUSHING	P/N 03-2162-00



1.1.2 Heater Repair Kit (HK-2001)

HEATER BLOCK ASSEMBLY*	P/N 60-2090
HEATER BLOCK SCREWS (2)	P/N 130359
BUSHING (PRE-INSTALLED)	P/N 03-2162-00
JET SPRING	P/N 60-2102
HEATER SEAL	P/N 03-2261-00
WASHER (10-PACK)	P/N 60-2116
FOUR-INCH CABLE TIES (5)	

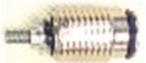


* Heater Repair Kit 4001209 uses P/N 60-2091 that has a different end.

1.1 Repair Kits (Continued)

1.1.3 Jet Repair Kit (JK-2001)

The JK-2001 kit is for jets with the hardened tip hammer air cylinder, including jets upgraded with the UK-2000-HC, HT, CK, HS/CK, or HK/HS/CK kit. Before proceeding, examine your hammer air cylinder and confirm that the JK-2001 is the correct kit.

HARD TIP, NO WASHERS	HARD TIP, 2 WASHERS	STANDARD TIP, 1 WASHER
		
✓ This is the correct kit.	✓ This is the correct kit. Your new cylinder will have <u>no</u> washers, and <u>requires</u> the new lever and shoulder bolt.	✗ This is <u>not</u> the correct kit; please contact Advanjet.

MUFFLER	P/N 60-2107
SOLENOID VALVE	P/N 60-2030
LEVER	P/N 03-2281-00
MAIN AIR (HAMMER) CYLINDER	P/N 60-2266
PIVOT (SHOULDER) BOLT	P/N 60-2104
HAMMER SPRING	P/N 60-2102
WASHER (10-PACK)	P/N 60-2116
HEATER SEAL	P/N 03-2261-00
BUSHING	P/N 03-2162-00



1.2 Required Tools

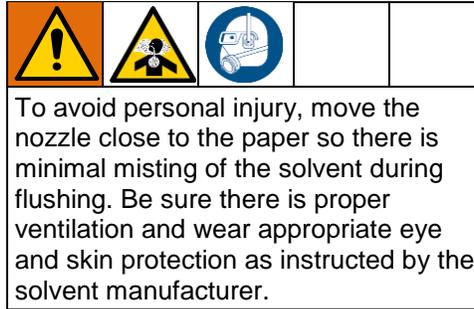
Jet Maintenance Tool Kit (JKT-2000)	
Loctite® 243 small screw threadlocker (P/N 60-2292)	
5/64-inch hex wrench (P/N 60-2293)	
0.050-inch hex wrench (P/N 60-2294)	
Solenoid torque tool (P/N 60-2302)	
Awl (P/N 60-2296)	
Actuator Position (AP) Micrometer (P/N 90-0010)	
Other Tools	
#1 Phillips screwdriver	
#2 Phillips screwdriver	
3-mm hex wrench	
150-mm adjustable wrench	
13-mm open end wrench	

Loctite® is a registered trademark of Henkel.

2. Jet Disassembly

2.1 Overview

Note: It is important to flush and clean the jet valve prior to making repairs. Follow the steps for cleaning the jet valve in the HV-2000 Jet Setup and Operation manual 3A5855.



Turn off the power switch and the air switch on the HV-2000C Jet Controller before beginning disassembly of the jet valve. Refer to the HV-2000C Jet Controller Setup and Operation manual 3A5856.

The extent of jet disassembly depends on which kits are being installed.

For all repair kits, remove and keep:

- Nozzle plate and 2 screws with 2 washers each
- Top cover and 2 screws
- Mounting plate and 2 screws

For the Bushing and Heater Kits (BK-2001 and HK-2001):

- Detach the Heater Block; keep for BK-2001, discard for HK-2001
- Remove and discard the heater seal, washer, and jet hammer spring

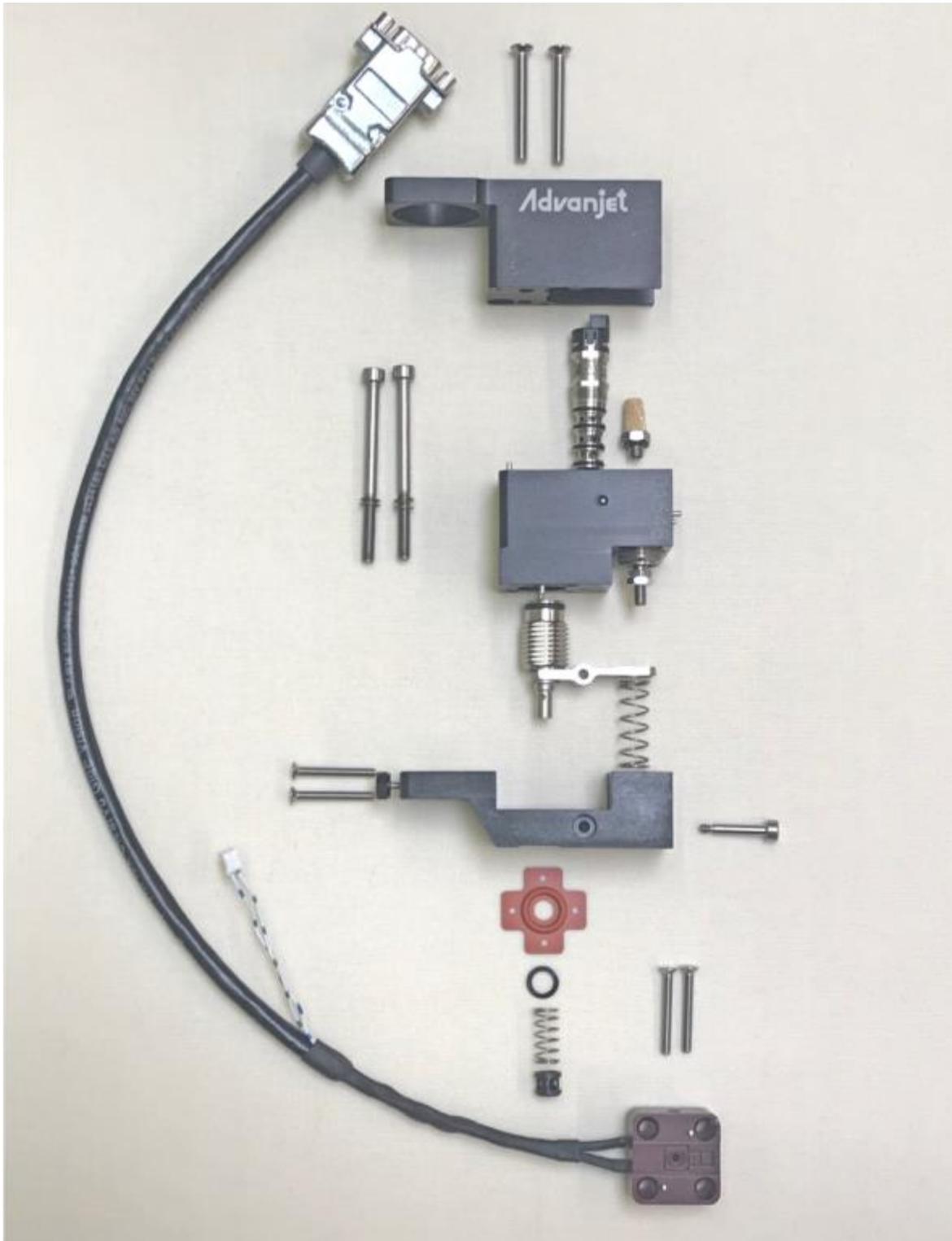
For the Jet Maintenance Kit (JK-2001), remove and discard jet parts in this order:

- Heater block and cable
- Heater seal, washer, and jet hammer spring
- Hammer air cylinder
- Pivot bolt
- Lever
- Bullet solenoid valve
- Muffler

When noted, use the tool specified.

Section 2.6.3 provides a checklist of parts and screws that should be set aside. Take care to set aside screws as they are removed so they can be easily located for installing the new parts.

2.2 Disassembled Jet



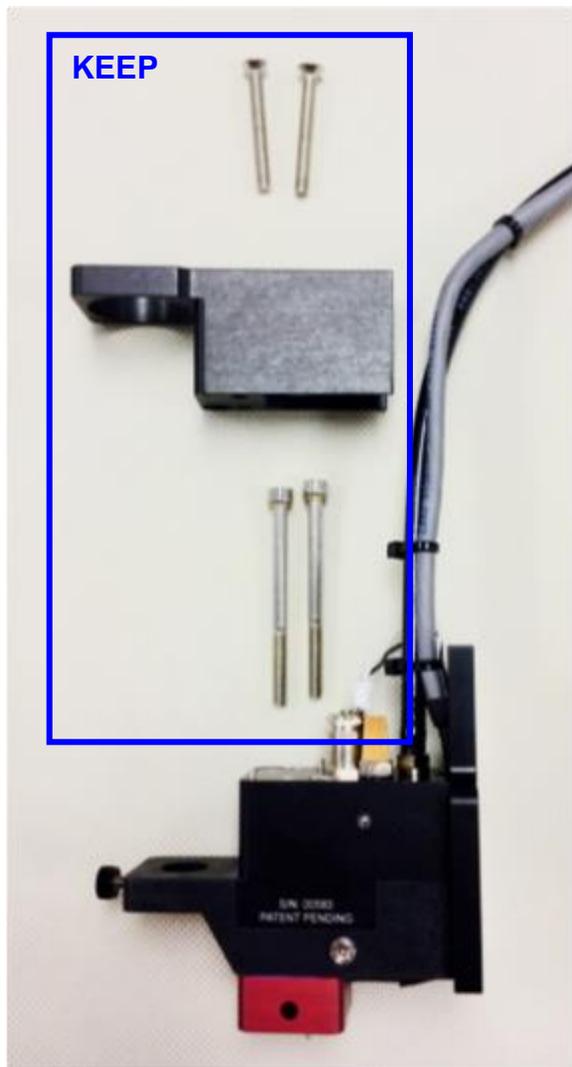
2.3 Remove Top Cover and Mounting Plate

KEEP these parts and screws to set aside and reinstall. A checklist is provided in section 2.6.3.

2.3.1 Remove the Top Cover and Nozzle Plate

Remove and set aside (using tool specified):

- The two screws securing the top cover (#2 PH) and the top cover
- The two screws securing the nozzle plate (3-mm hex; an optional torque wrench is available for this purpose: P/N NP09-2500).



2.3.2 Remove the Mounting plate

Remove and set aside the two screws securing the mounting plate (#2 PH) and the mounting plate.



2.4 Remove Heater Block Assembly

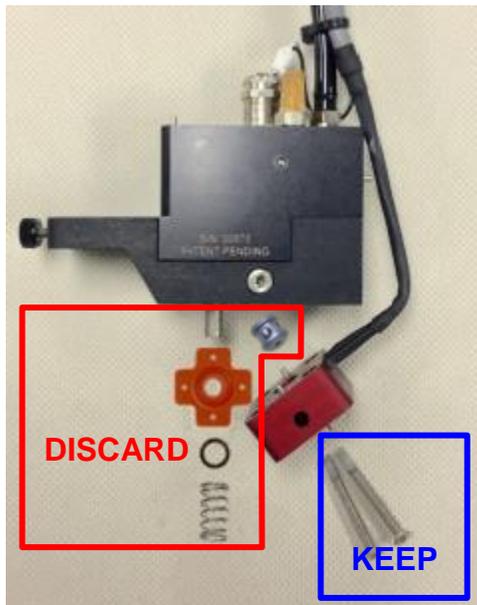
KEEP these parts and screws to set aside and reinstall. A checklist is provided in section 2.6.3.

BK-2001 or HK-2001 kit replaces these parts. Do not discard screws.

Use the #1 PH to remove the two screws securing the heater block; set the screws aside. Remove the hammer spring, the heater block bushing, and the heater seal and washer.

2.4.1 Disconnect the Heater Block (BK & HK)

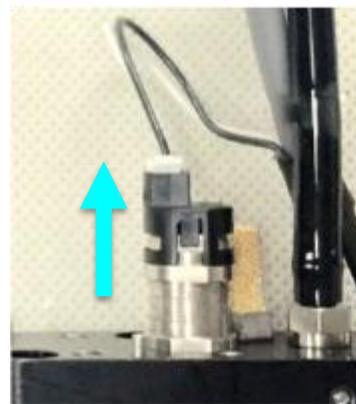
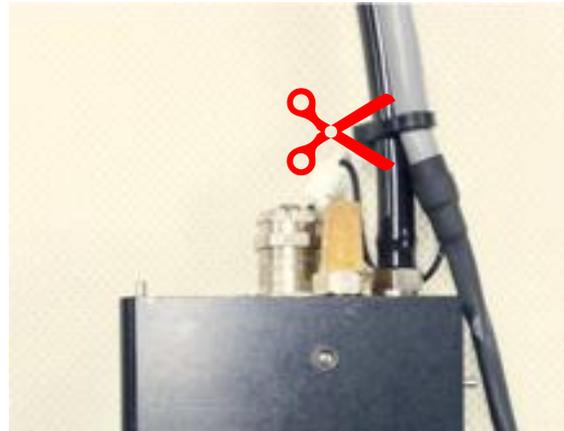
Use the #1 PH to remove the two screws securing the heater block; set the screws aside. Remove and discard the heater seal and washer, heater block bearing, and the jet compression spring.



If you are only installing the BK-2001, do not remove the heater block. Skip to section 3.4

2.4.2 Remove the Heater Block (HK only)

Cut the cable ties bundling the heater cable assembly to the jet cable. Disconnect the heater cable assembly from the jet cable (loosen the pins) and from the solenoid (pull the white connector up and out). Discard the heater block.



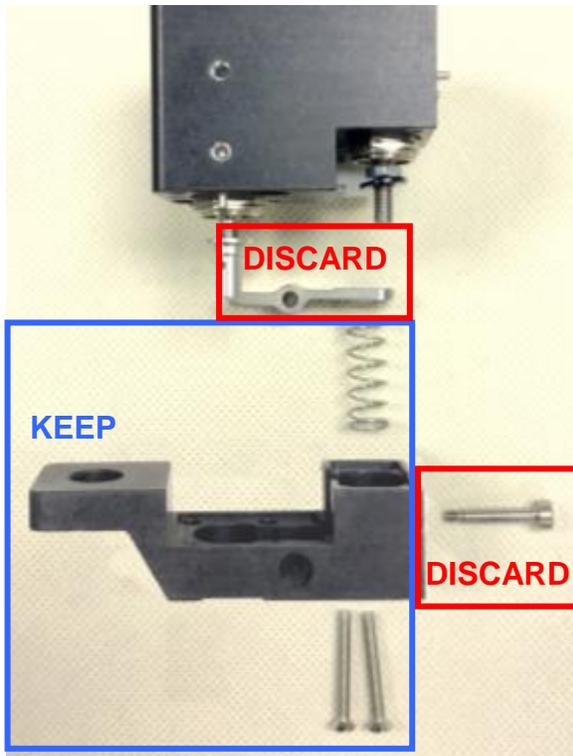
2.5 Remove Spacer Assembly

KEEP these parts and screws to set aside and reinstall. A checklist is provided in section 2.6.3.

JK-2001 kit replaces these parts. If you are not replacing the jet hammer air cylinder and related cylinder parts as part of the JK-2001 kit, skip to section 3.4.

2.5.1 Remove the Spacer

Remove and set aside the spacer screws (#1 PH), the nylon spacer, and the automatic shutoff spring. Remove and discard the shoulder bolt (5/64" hex) and the lever.



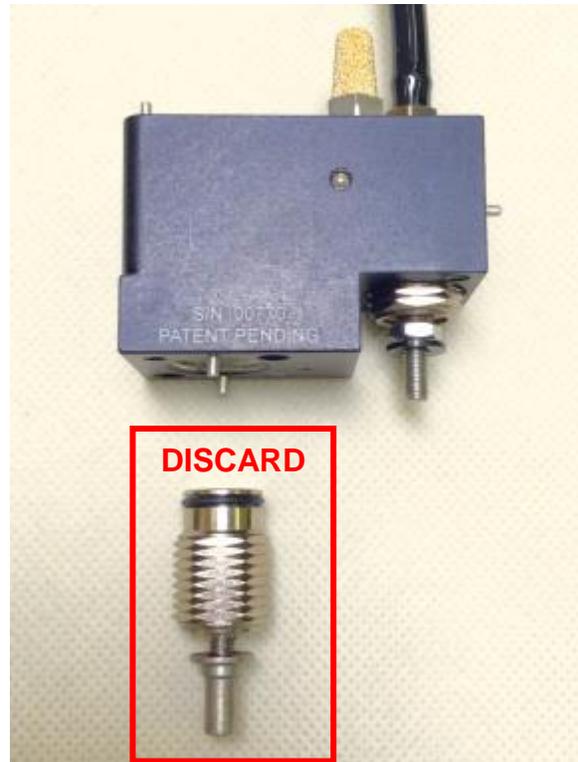
2.5.2 Loosen the Air Cylinder Locking Screw

Use the 5/64" hex driver to loosen the setscrew that locks the jet hammer air cylinder in place.



2.5.3 Remove the Jet Hammer Cylinder

Use the 13-mm wrench to remove the air cylinder; discard.



2.6 Remove Solenoid

JK-2001 kit replaces these parts. If you are not replacing the solenoid and muffler as part of the JK-2001 kit, skip to section 3.4.

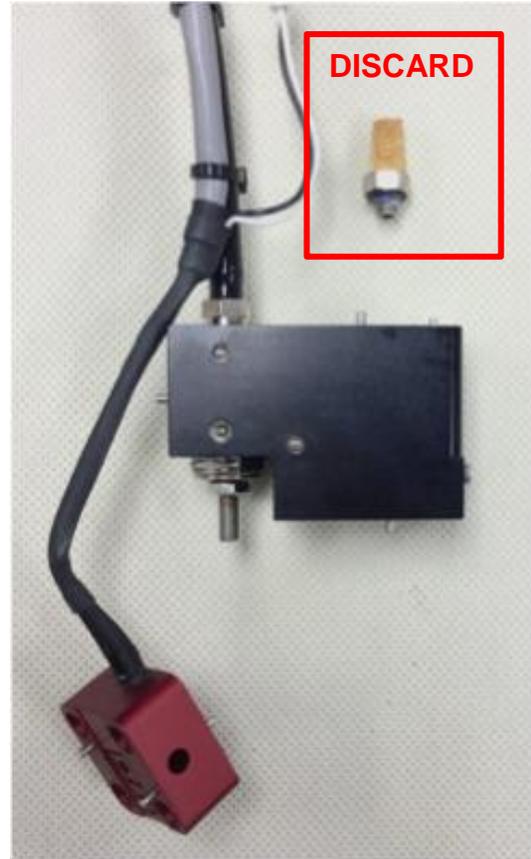
2.6.1 Remove the Solenoid

Use the torque tool with adapter tip to remove the solenoid; discard the solenoid.



2.6.2 Remove the Silencer

Use an adjustable wrench to remove the silencer; discard the silencer.



2.6.3 Check for Screws Set Aside



L-R: top cover (2), nozzle plate (2), mounting plate (2), heater block (2), spacer (2)

3. Install New Parts and Reassemble the Jet

3.1 Overview

In general, parts are reinstalled in the reverse order that they were removed.

Gather the screws set aside as shown in Section 2.6.3.

Install the Solenoid

- Attach the solenoid
- Attach the muffler

Assemble the Cylinder

- Install the hammer air cylinder.
- Assemble the lever and lever spring
- Attach the spacer
- Align the lever
- Install the pivot (shoulder) bolt

Assemble the Heater

- Install the heater seal, washer, and hammer spring
- Install the bushing
- Connect heater cable (HK-2001)
- Align and attach heater block

Reassemble the Jet

- Insert nozzle plate screws
- Attach top cover
- Fasten cable ties
- Attach the mounting plate
- Attach solenoid connector

NOTICE

Use Loctite 243 threadlocker as indicated. To avoid damage to the jet, do not substitute with other products.

3.2 Install the Solenoid

3.2.1 Install the Silencer

- Apply a small amount of Loctite 243 to the silencer and install into the jet body.
- Install finger tight into the valve mount.
- The fit should be snug, but not so tight that it crushes the rubber washer.

3.2.2 Install the Solenoid

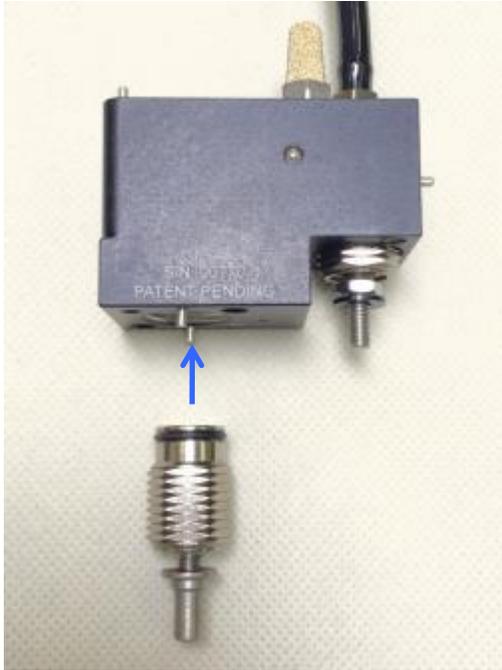
- Inspect the cylinder bore for the solenoid. Clean if necessary.
- Install the new solenoid using the solenoid torque tool.



3.3 Assemble the Cylinder

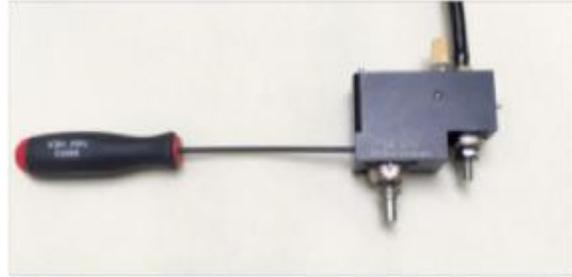
3.3.1 Install the Air Cylinder

Use the 13-mm wrench to tighten to a hard stop.



3.3.2 Tighten the Setscrew

Apply a small amount of Loctite 243 to the air cylinder setscrew and tighten with the 5/64" hex driver until the setscrew is tight against the air cylinder.



3.3.3 Assemble the Spacer Parts

Locate the new lever, and the nylon spacer and spacer screws, shoulder bolt, and automatic shutoff spring that were set aside.



VERIFY THAT THE BORE IN THE LEVER FACES THE SPRING.

3.3.4 Check the Lever Assembly

Install the lever, observing the orientation of the lever and washers as shown below:

- The shutoff spring rests in the bore in the lever.
- There is one washer on the shutoff cylinder below the lever.

Proper positioning is critical.



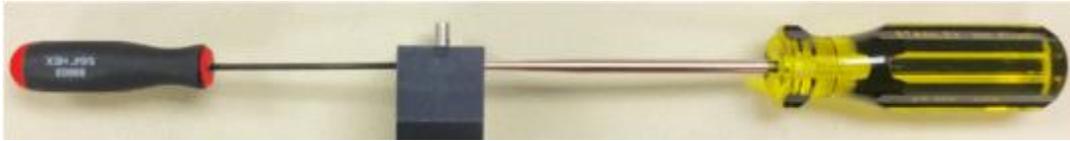
3.3.5 Attach the Spacer

Install spacer with spacer screws (#1PH).

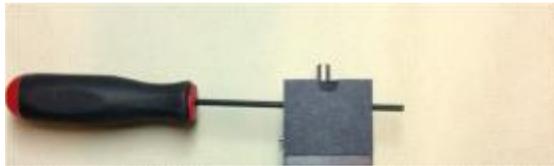
3.3 Assemble the Cylinder (Continued)

3.3.6 Align the Lever with the Shoulder Bolt

- Use an awl to line up the hole for the pivot (shoulder) bolt with the hole in the lever.
- Insert the 5/64" driver from the opposite side and line it up with the awl.



- Push out the awl with the driver.

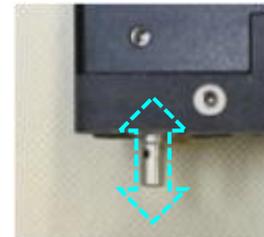
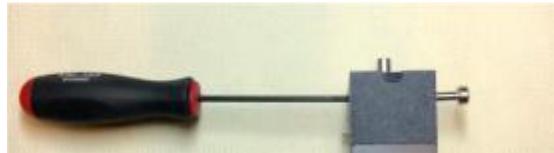


3.3.7 Install the Shoulder Bolt

NOTICE

To prevent damage to the machine, do not allow Loctite from the shoulder bolt tip to transfer to the lever. Do not over-tighten the shoulder bolt.

- Apply a light coating of Loctite 243 to the threads of the pivot bolt and wipe off any excess.
- Push out the driver with the pivot bolt.
- Screw in the pivot bolt with the driver until it is barely snug. Verify that the lever is not binding—the hammer cylinder hat should move up and down freely.

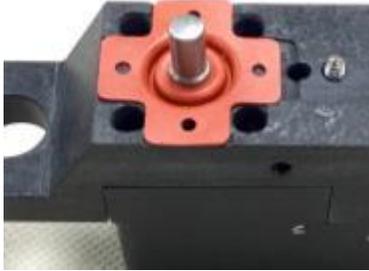


HAT MOVES
UP & DOWN

3.4 Assemble the Heater Block

3.4.1 Install New Heater Seal

Position the Heater Seal on the tip of the air cylinder with the indent positioned as shown.



3.4.2 Install New Washer

Position the washer over the air cylinder tip.



3.4.3 Install the New Jet Spring.

Place the new jet compression spring on top of the washer.



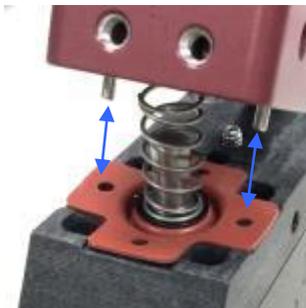
3.4.4 Install the New Heater Block Bearing

Install the new heater block bearing. If necessary, grease with a lubricant such as Rheolube®.



3.4.5 Position Heater Block

Align the pins in the heater block with the heater seal as shown below.



3.4.6 Attach Heater Block

The cylinder tip should be visible through the weep holes. Use a #1PH to install the heater block screws.



3.4.7 Connect Heater Cable (HK only)

Attach the heater cable assembly to the solenoid. Bundle jet cable and heater cable with cable ties.



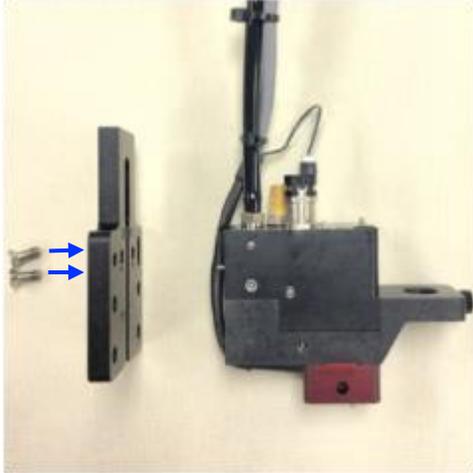
Connect heater cable assembly to the jet cable.

Rheolube® is a registered trademark of Nye Lubricants, Inc.

3.5 Reassemble the Jet

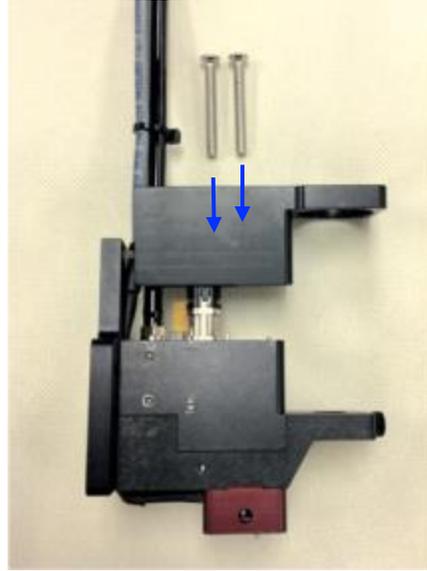
3.5.1 Attach the Mounting Plate

Locate the screws and mounting plate that were set aside. Apply Loctite 243 to the tips of the screws and assemble as shown. Take care that the cable is not pinched between the mounting plate and manifold. Tighten screws (#2PH).



3.5.2 Replace the Cover

Locate the top cover and top cover screws. Apply Loctite 243 to the tips of the screws that secure the top cover. Install as shown (#2PH).



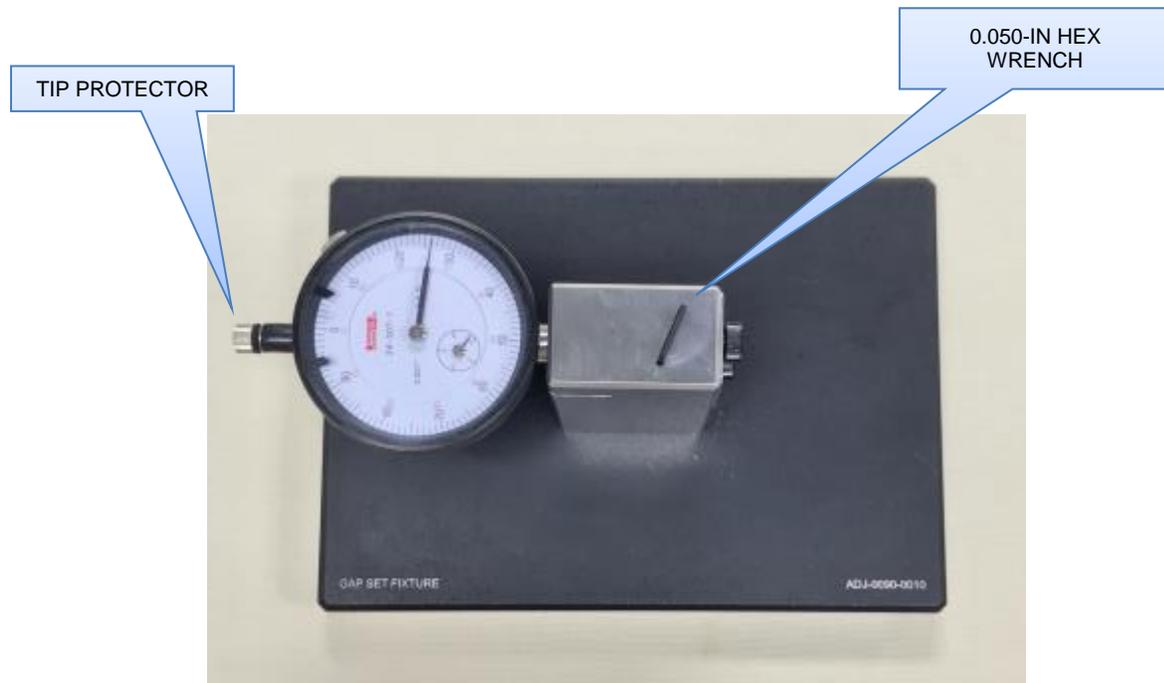
Continue to the next section—Set the Jet Hammer Gap.

4. Set the Jet Hammer Gap

4.1 Using the Gap Set Fixture

The following equipment is required:

- Gap Set Fixture
- 0.050-inch hex wrench (stored in tool)
- 3mm hex driver
- Jet controller



Note: The Gap Set Fixture is a sensitive calibration tool for maintaining the jet. The spacer protecting the tip should remain in place at all times except for calibrating the tool to zero and taking the measurement.

4.2 Prepare the Gap Set Fixture

4.2.1 Check the Zeroing Plate

Make sure the zeroing plate is in place and both screws are secured tight.



4.2.2 Zero the Micrometer

With the zeroing plate tightly secured, remove the tip protector.

- The large dial should read 0.000
- The small dial should read 0.300

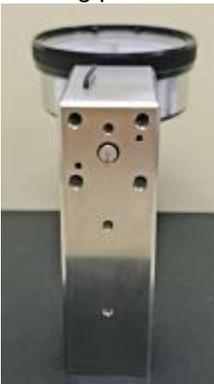


If large hand does not read zero:

- Loosen the bezel lock.
- Rotate the outside bezel until the large hand needle is aligned with zero.
- Tighten the bezel lock.
- Replace the tip protector.

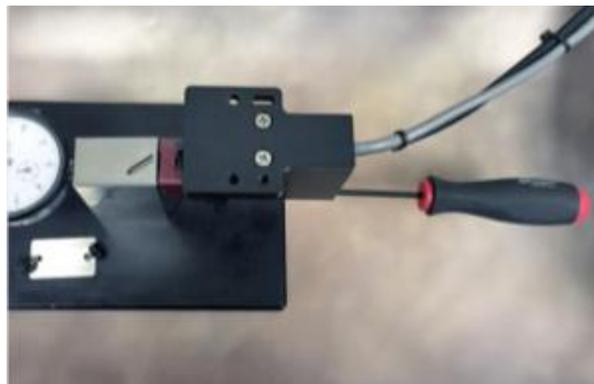
4.2.3 Remove the Zeroing Plate

Loosen the two thumbscrews securing the zeroing plate.



4.2.4 Attach the Jet

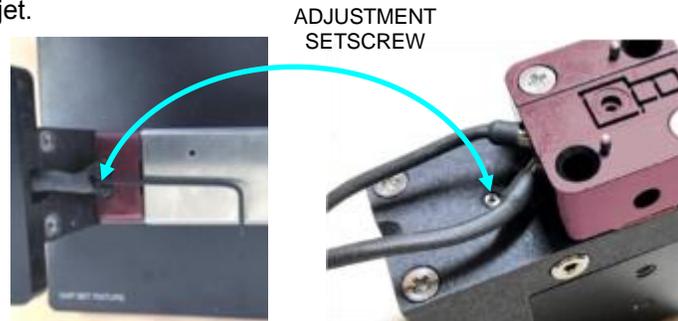
With the mounting plate facing up, use the nozzle plate screws to secure the jet body to the fixture.



4.3 Measure the Gap

4.3.1 Connect the Jet

- Connect the jet to a controller.
- Turn on the controller and “OPEN” the jet.
- Remove the tip protector and observe the needle position.
- Insert the hex wrench into the adjustment setscrew.



4.3.2 Reading the Dial

One unit on the small hand is 0.100”
One unit on the large hand is 0.010”

On the dial below:

The small hand is between 0.100” and 0.200”
The large hand is at 0.042”
The reading would be 0.142”

On the dial below:

The small hand is between 0.100” and 0.200”
The large hand is at 0.036”
The reading would be 0.136”



4.4 Adjust the Gap

The recommended hammer gap for the jet is 0.1450 in.

- If an adjustment is necessary, turn the adjustment setscrew with the hex wrench until the preferred value is displayed on the dial.
- Cycle the jet several times (OPEN-CLOSE) and validate that the gap is stable.
- Replace the tip protector and the zeroing plate on the Gap Set Fixture.
- “CLOSE” the jet and remove.

The jet is ready to use.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

Sealant and Adhesive Dispensing Equipment

For the latest information about Graco products, visit www.graco.com.

For patent information, see www.graco.com/patents.

For customer service and technical assistance, e-mail info@advanjet.com

TO PLACE AN ORDER, contact your Graco distributor, go to www.graco.com and select "Where to Buy" in the top blue bar, or call to find the nearest distributor.

If calling from the US: 800-333-4877

If calling from outside the US: +1-760-294-3392

All written and visual data contained in this document reflects the latest product information available at the time of publication. Graco reserves the right to make changes at any time without notice.

Original instructions. This manual contains English. MM 3A5909

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