

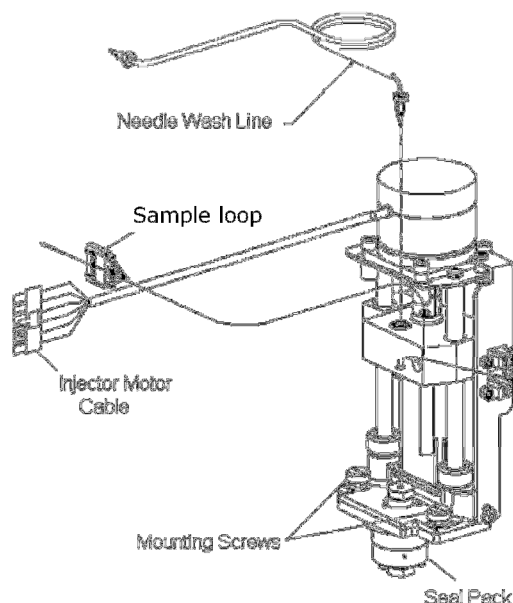


Injector Rebuild

- Tools required
 - 5/16-inch wrench, open end
 - Long bladed screwdriver or Phillips screwdriver for Phase II injector
 - Seal removal tool (WAT039803)
 - Seal insertion tool (WAT270969)
 - 715 valve repair tool kit (WAT045427)
 - Wash bottle with methanol or IPA
 - Waste container

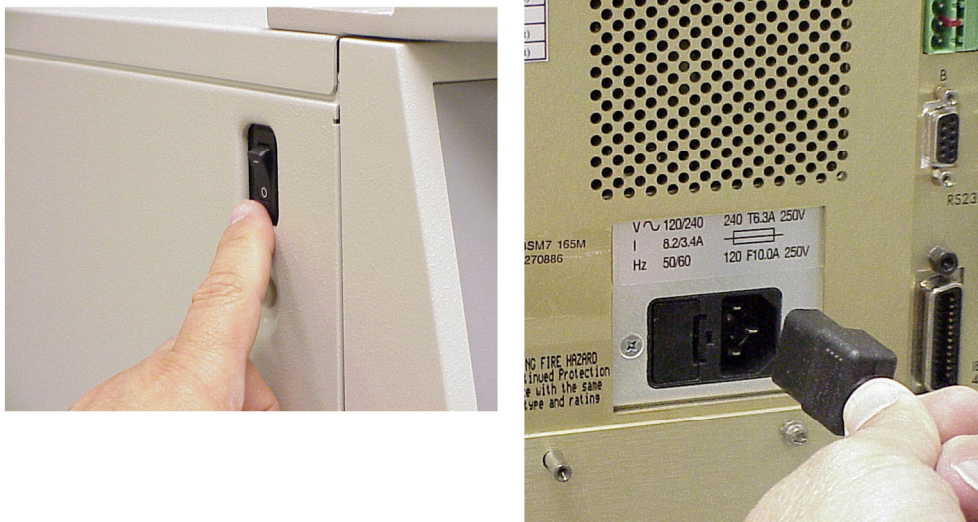
- This section covers removing the injector, rebuilding the Seal Pack, replacing the needle, and re-installing the injector into the Separations Module.

Injector Removal

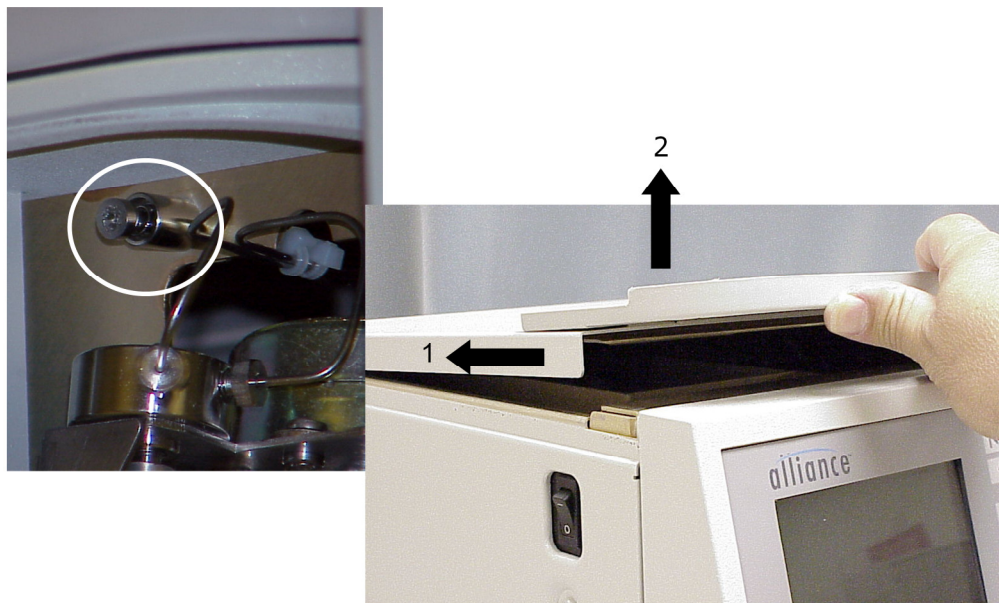


- Removing Seal Pack
- Power down the 2690/2695 Separations Module and disconnect external power.
- Remove the cover and right side panel to access the injector assembly.
- Disconnect the injector motor and sensor cables from the Fluidics Driver board.
- Disconnect the Green needle wash line from the upper seal wash body tube (runs to V4) and the CLEAR needle wash line from the lower seal wash body tube (runs to needle wash pump)
- Remove the column from the RED line
- Disconnect the yellow sample loop from the transducer.
- Using a long flat-blade screwdriver, loosen the two captive mounting screws securing the injector to the floor of the compartment.
- Lift injector up and tilt slightly back to remove it from the instrument.
- Disconnect stainless steel restrictor loop from the seal pack.
- Remove RED line from the seal pack.

Power Down the Unit



- Before removing the injector, power down the unit and remove the power cord from the back of the instrument. This will protect the PCB's.

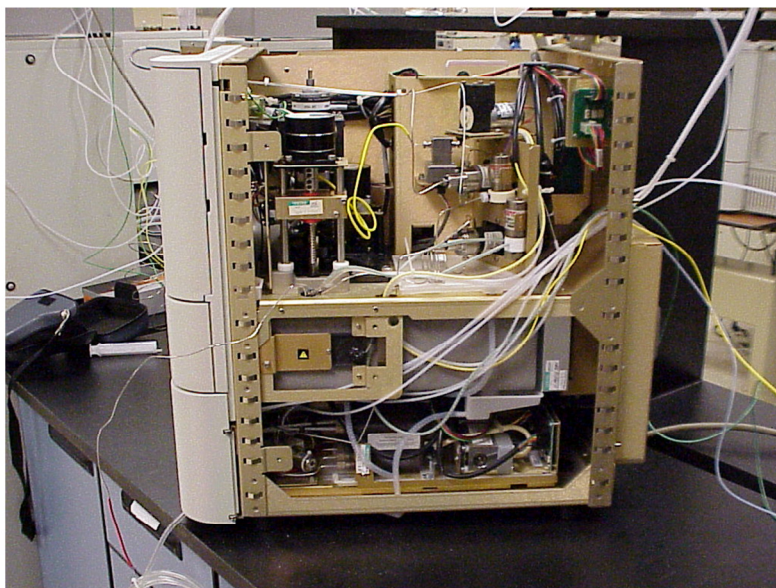
Remove the Cover

- Remove the cover by loosening the captive Phillips screw in the upper left corner of the syringe compartment. (left photo above)
- Slide the cover back and lift it off.

Remove the Right Side Panel

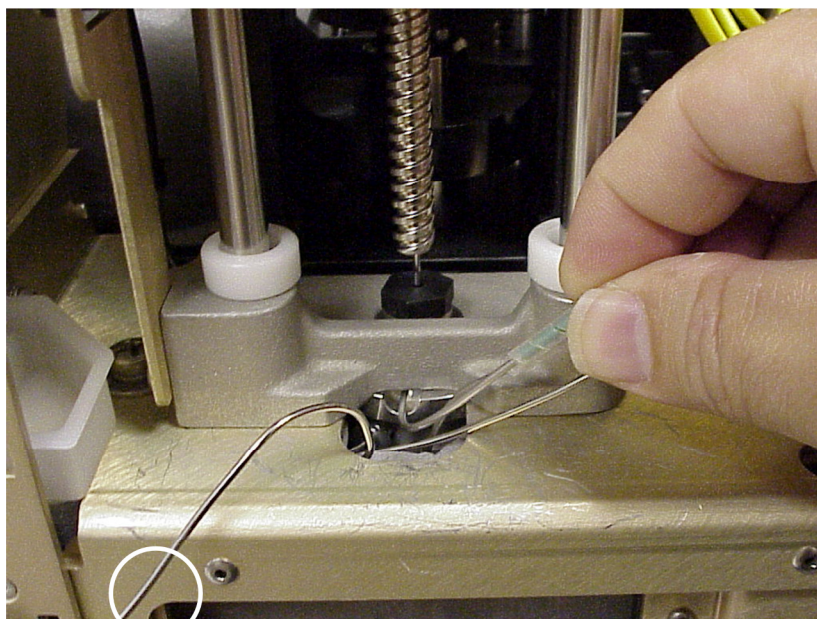
- Remove the right side panel by removing the two Phillips screws in the dimples near the front edge of the side panel.

Right Side Panel Removed



- With the right side panel removed, the injector and valves are visible.
- This photo shows a 2690 Separations Module with an early Degasser Module

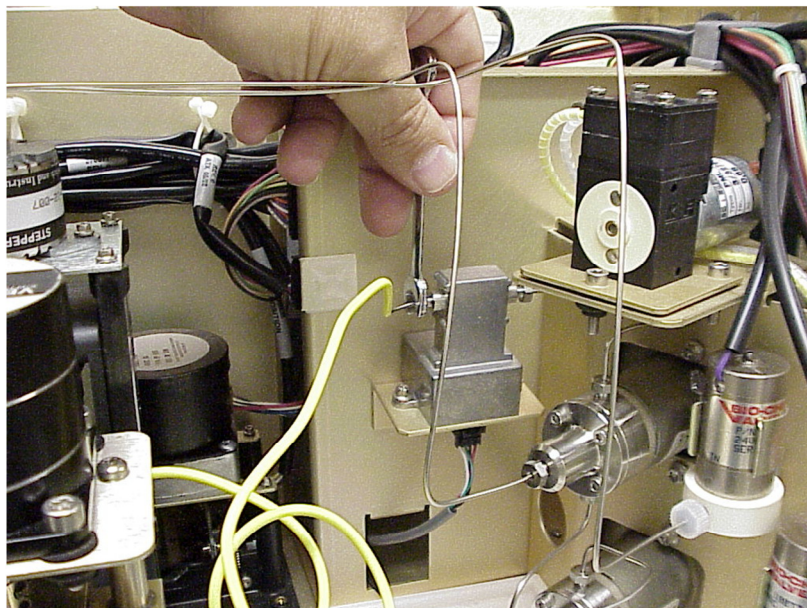
Remove Needle Wash Lines



- Remove the needle wash lines. They are press fit over the stainless steel tubes.

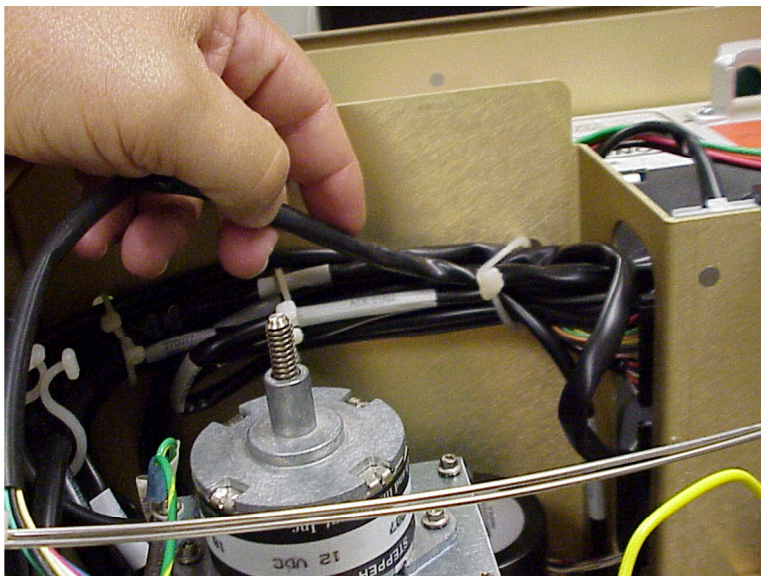
Note: The needle wash inlet line (green) is connected to the upper needle wash housing.

Disconnect Sample Loop



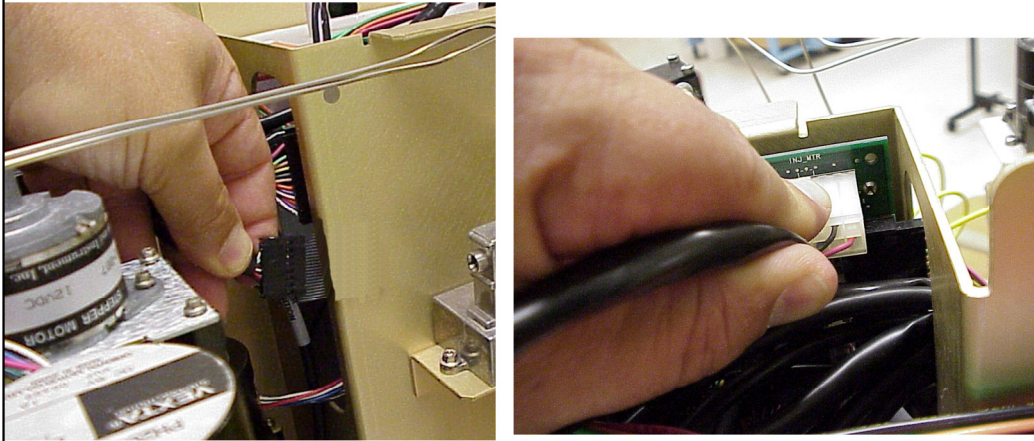
- Disconnect the sample loop (yellow) from the transducer.

"Undress" Cables



- The power and sensor cables for the injector are dressed along the 2695 chassis to prevent their interfering with moving parts. The cables are held in place with nylon clips.
- Start at the injector and follow the cables to their connectors on the driver PCB.

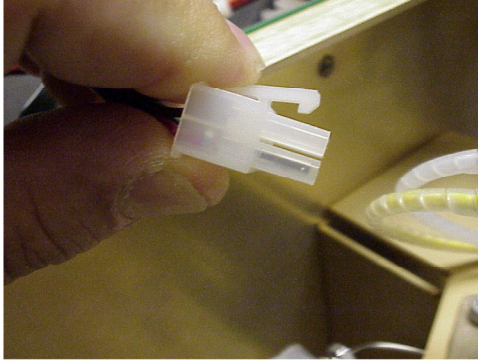
Disconnect Sensor and Motor Cables



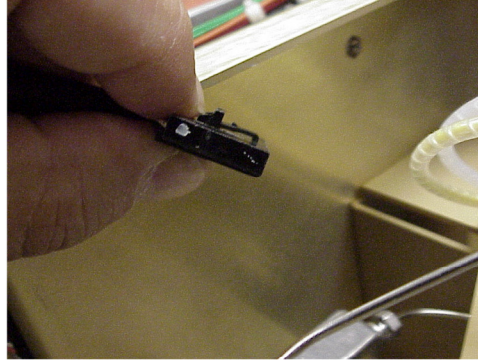
- Disconnect the sensor cable from the front edge of the PCB.
- Disconnect the motor cable from the top of the PCB.
- Both cables are keyed and have locking mechanisms holding them in their respective connectors.

Cables Latches

Motor Cable Latch

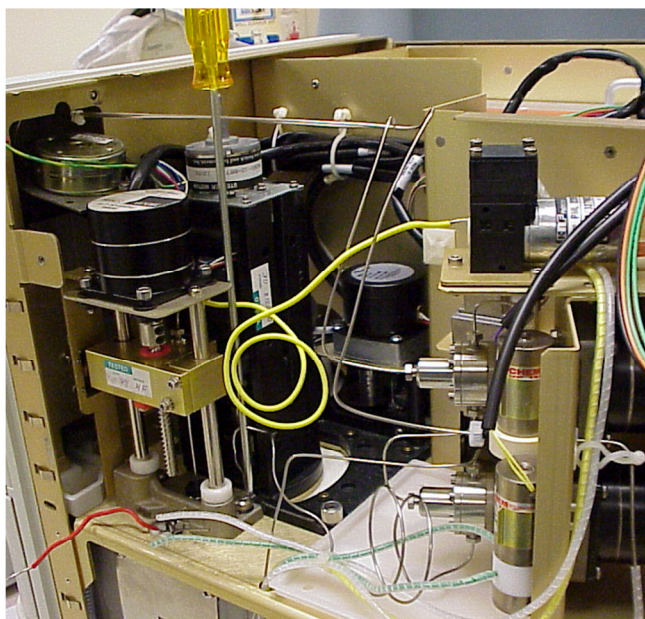


Sensor Cable Latch



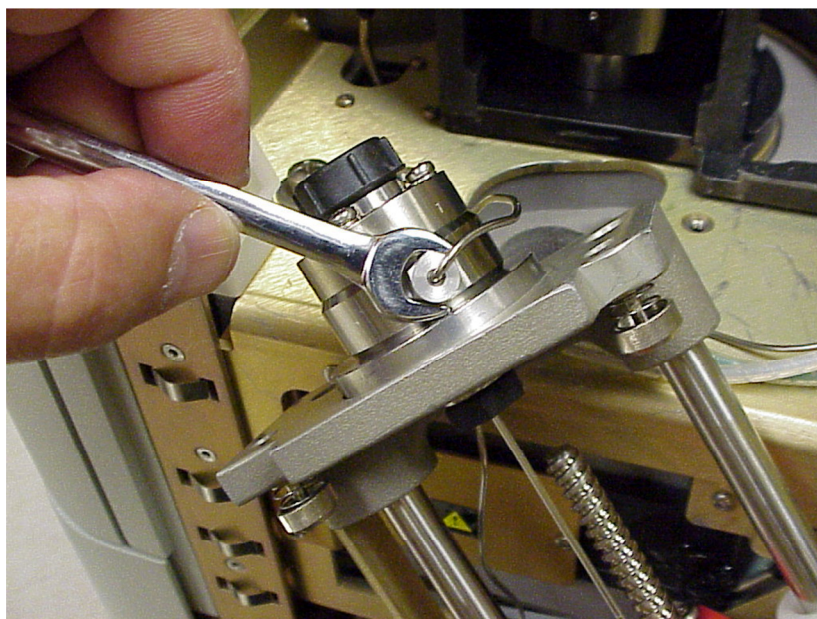
- The motor and sensor cables have latches on them to prevent the connector from coming loose due to vibration.
- The locking mechanism must be depressed to remove the connector from the circuit board.

Remove Injector



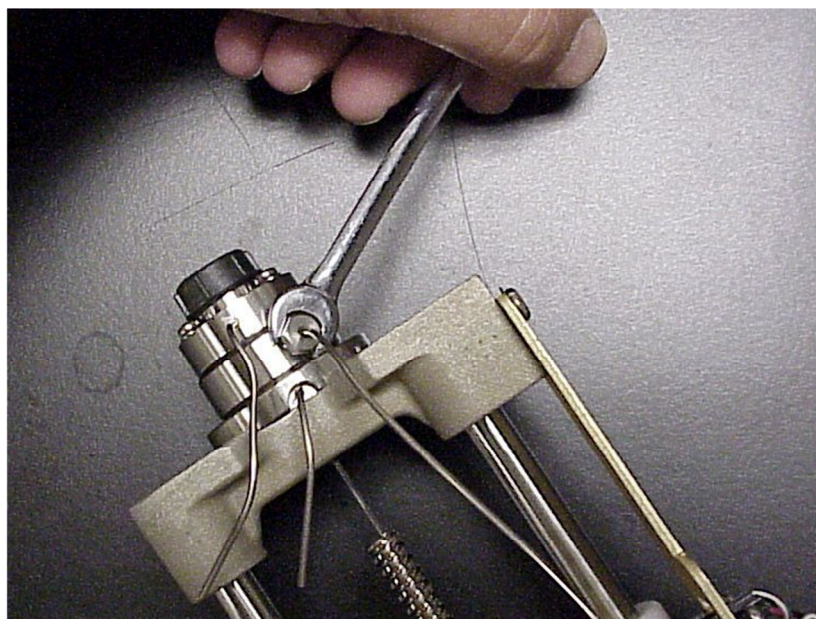
- Using a long flat-bladed screwdriver, loosen the two captive mounting screws on the base of the injector assembly. These screws hold the assembly to the compartment floor.
- Lift the injector up and slightly back to remove it from the instrument.

Note: Do not lift the assembly too high or the restrictor loop will bend out of shape. Although this will not effect the injector's functioning, the bent tubing may make re-installing the assembly into the instrument difficult.

Disconnect Restrictor Loop

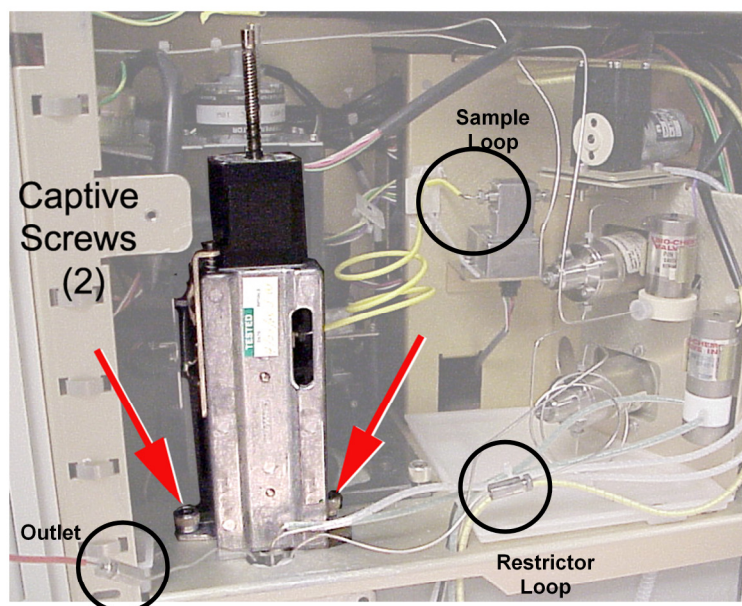
- Tip the injector assembly down as illustrated in the photo above. Disconnect the restrictor loop from the seal pack.

Disconnect Outlet (red) Line



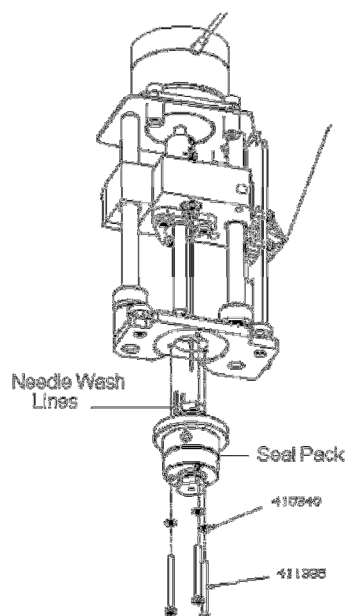
- Remove the outlet (red) line from the seal pack.

Phase II Injector Removal



- The Phase II injector restrictor loop and outlet line can be removed without removing the injector from the chassis.
- The Phase II injector is held in place by two captive Phillips head screws. The sample loop fitting must also be loosened.

Seal Pack Removal

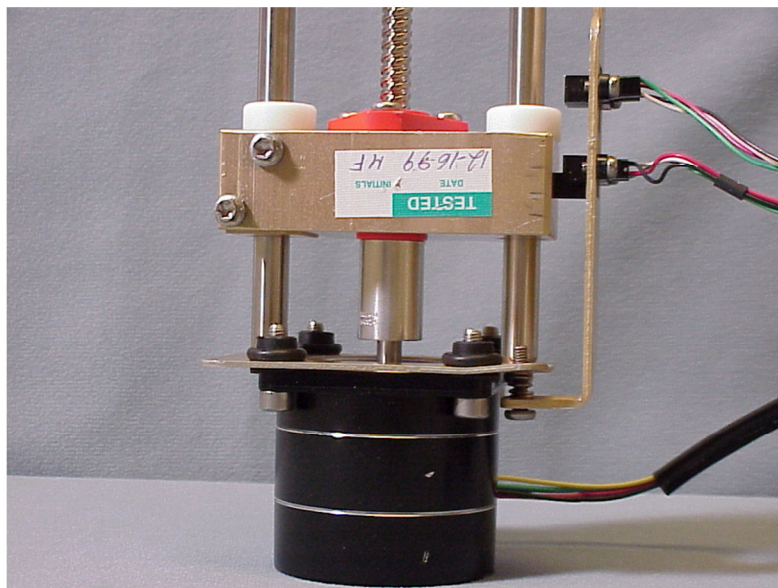


- Removing Seal Pack
- Remove the injector from the instrument following the procedure on previous page.
- Turn injector assembly over and place on its motor end to position seal pack up.
- Drive the needle to the lowest position (towards motor) by manually turning the worm gear.

Note: Reposition the tab to between the sensors before re-installing and trying to initialize.

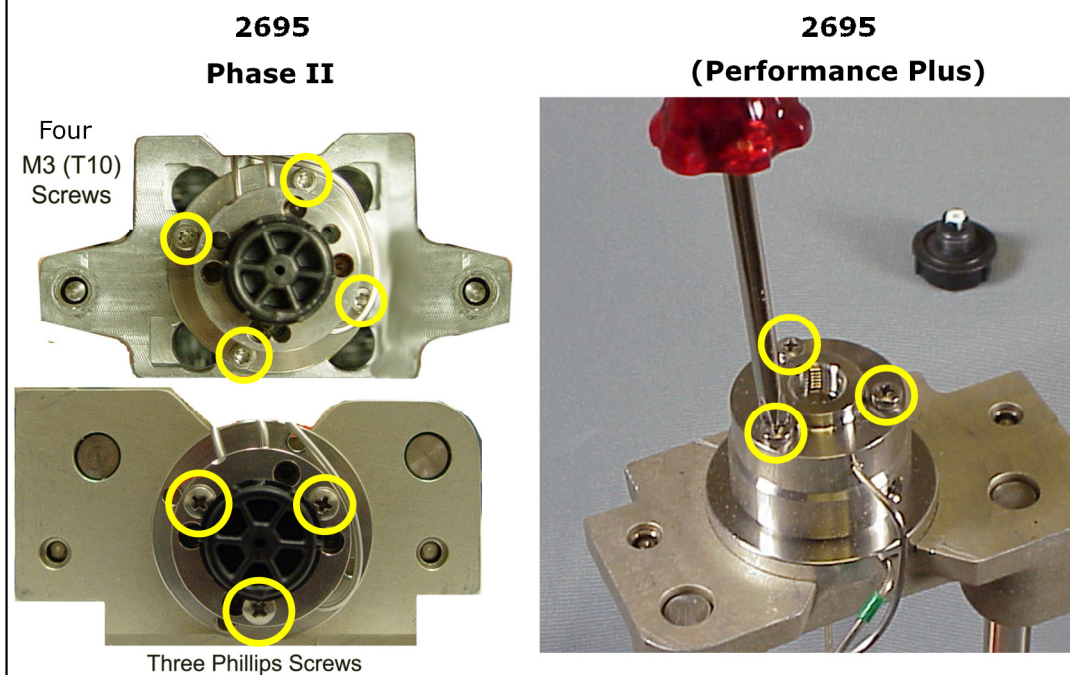
- On Performance PLUS seal wash housing, remove the frit retainer.
- Remove the three screws with washers that secure the seal pack to the injector baseplate.
- Manually turn the motor shaft to drive the needle up until seal pack assembly just lifts away from injector baseplate.
- Hold onto seal pack and turn needle down to free seal pack from injector needle.

Withdraw Needle

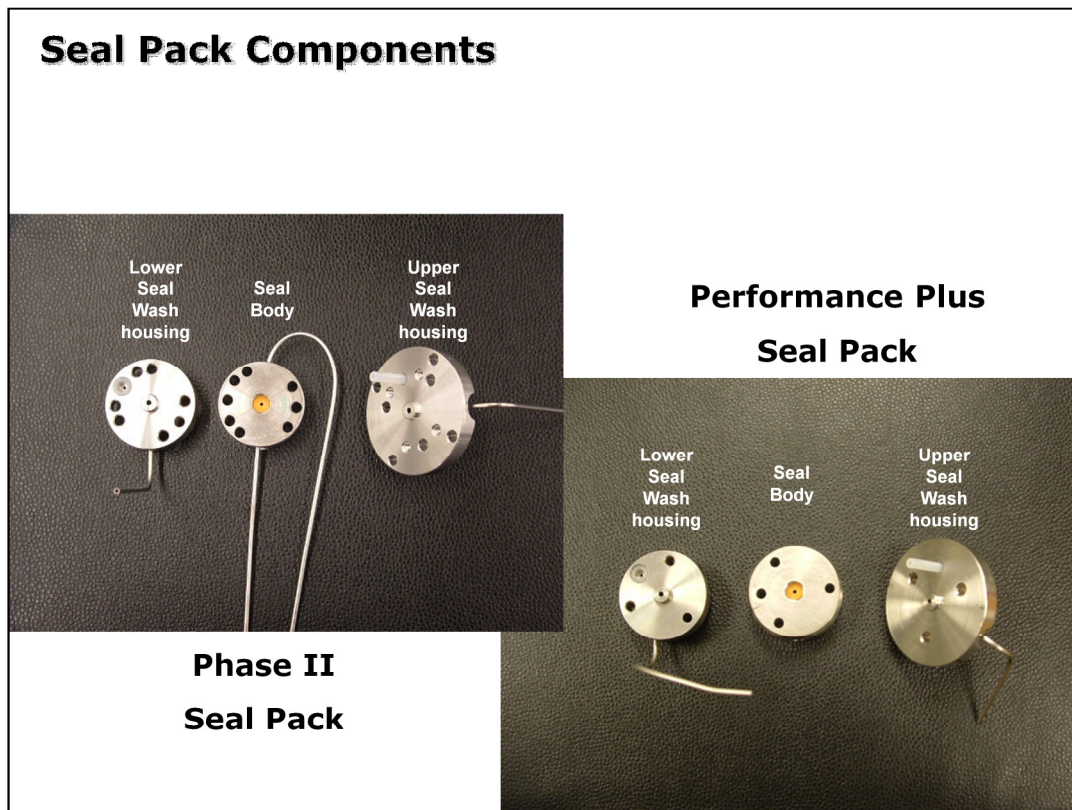


- Turn the injector assembly over and place it on its motor to position the seal pack up.
- Pull the needle back by turning the lead screw until the slide is touching the connector on the motor shaft.

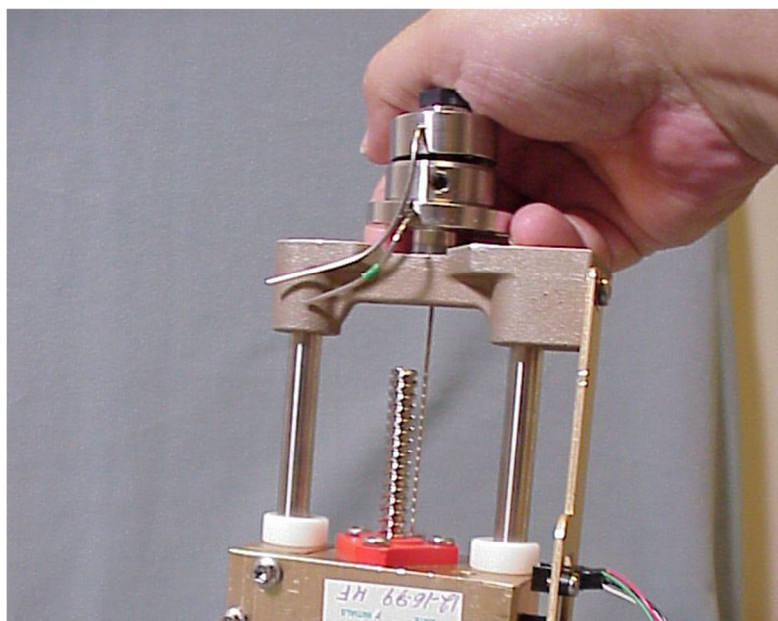
Remove Seal Pack Screws



- You must remove the frit retainer on the 2695 (Performance Plus or Phase II) needle wash housing before removing the mounting screws.
- With a Phillips screwdriver, remove the three screws with washers that secure the seal pack to the injector base plate.
- The Phase II Seal Pack can be mounted to the Phase I Injector mechanism with no modifications required.
- The Seal Pack is mounted to the Phase II Injector by four (4) M3 T10 TORX bolts.

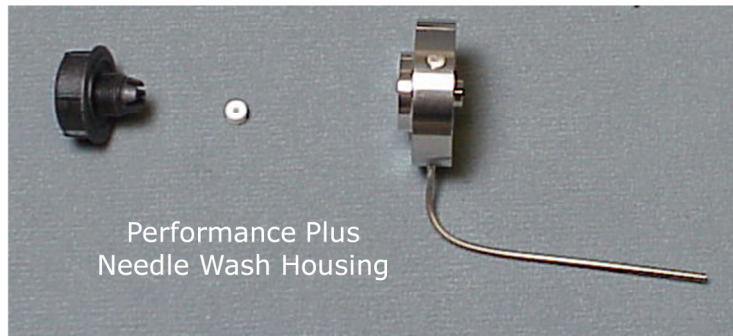


- This view shows the three assemblies which make up the seal pack.
- The Guide Tube is inserted through the center hole of three (3) on the Performance Plus seal body and the center hole of five (5) on the Phase II seal body.

Remove Seal Pack

- Manually turn the motor shaft to drive the needle forward until the seal pack just lifts away from the injector base plate.
- Hold onto the seal pack and turn the motor shaft to pull the needle out of the seal pack.

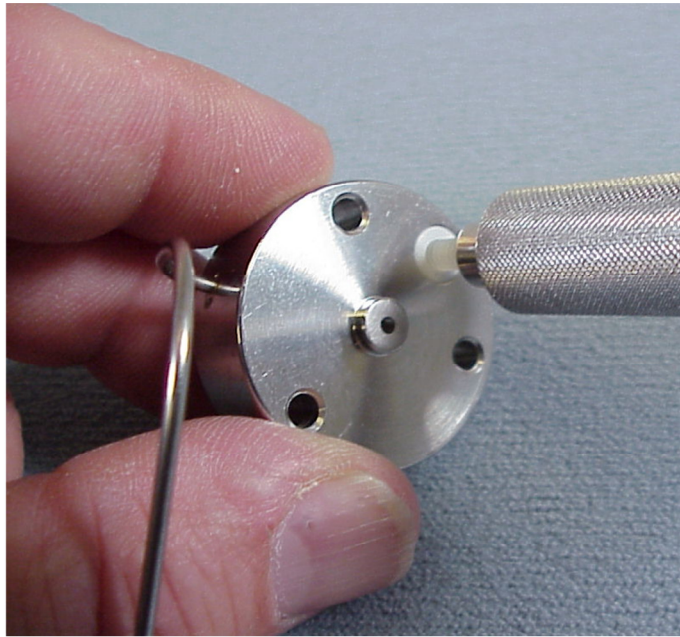
Performance Plus Needle Wash Housing



- All Alliance Separations Modules manufactured since January 2001 have the Performance Plus needle wash housing and have the following spare parts.
 - WAT271019, Seal Pack Rebuild Kit
 - WAT270942, Seal Pack Replacement Kit
 - WAT270944, Performance Maintenance kit

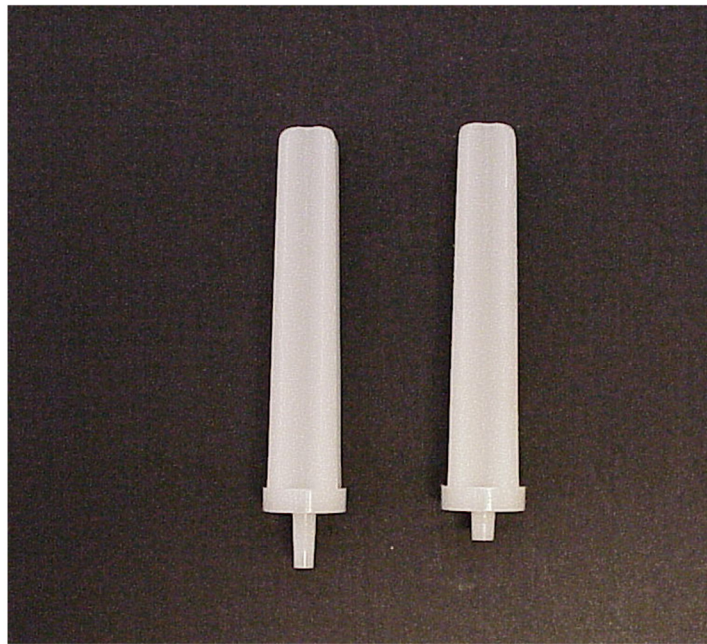
Performance Plus Frit and Retainer

- The new needle wash filter installed in the new frit retainer.
- Remove the frit retainer from the lower needle wash body and remove the needle wash filter.
- Insert a new needle wash filter (415000230) into the retainer.

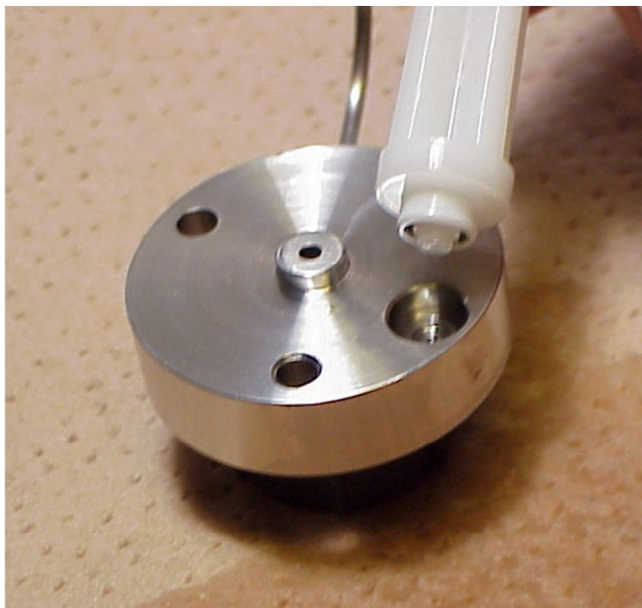
Remove Wash Tube Seal

- Place the lower seal wash body frit retainer side down and, using the plastic side of the seal removal tool (WAT039802) remove the seal.

Seal Insertion Tool



- The seal insertion tool is used to install the plunger seal.
- The tool on the left is as it comes from the molder. The tool on the right has been “field modified” so it can be used to install the plunger wash seals.

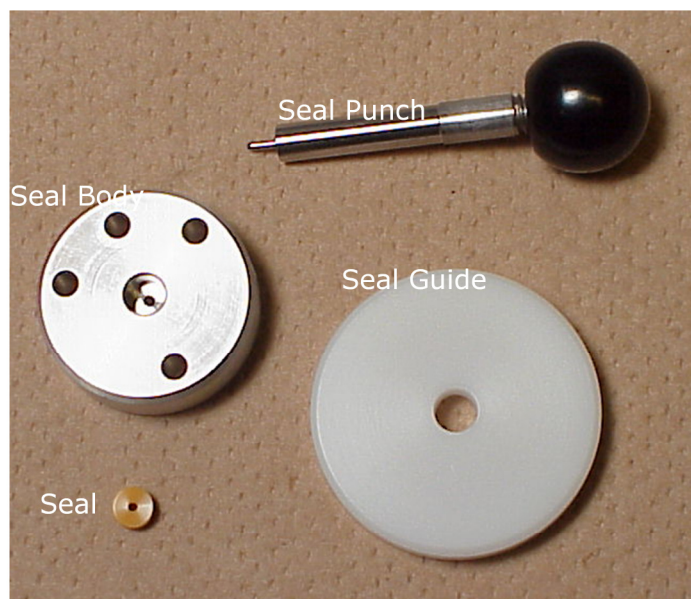
Install Wash Tube Seal

- Wet the new seal (WAT270668) and seal wash body thoroughly with methanol or IPA and insert seal into the lower seal wash body, spring side facing in using a modified seal insertion tool (WAT270969).

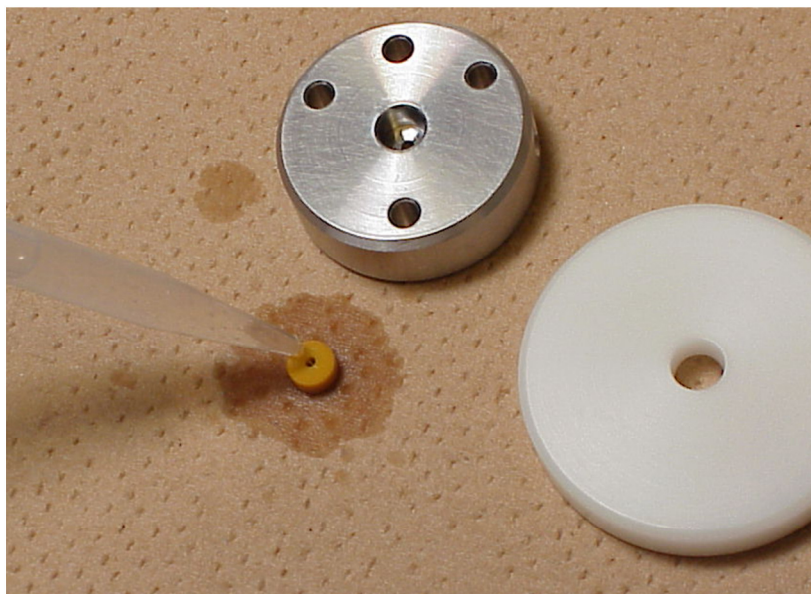
Remove Seal

- Using the metal end of the seal removal tool (WAT039802), remove the high pressure seals from the seal body.
- It will be necessary to insert the removal tool at least two full turns into the seal. These seals require a strong tug to remove them from the body.

Seal Installation Tools

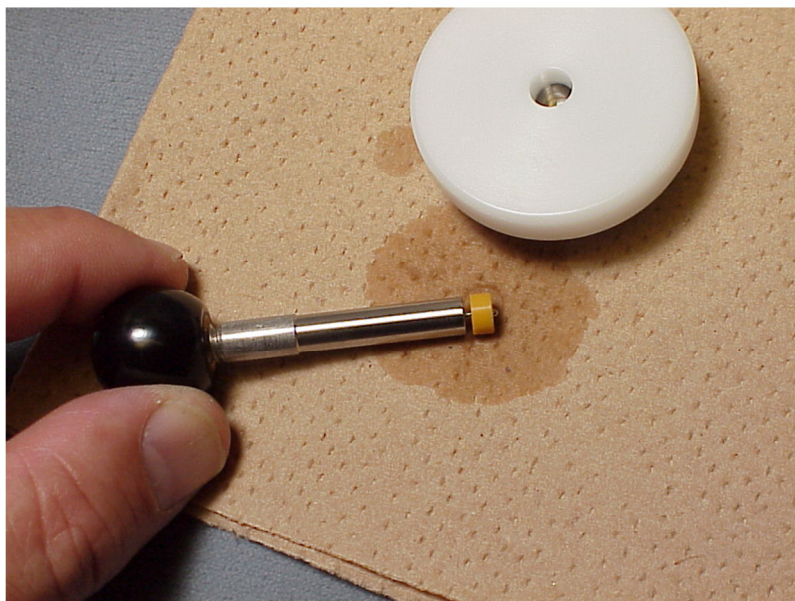


- Tools for installing the seals (WAT034497) are in the 715 valve rebuild kit (WAT045427)
 - Seal Punch - WAT045458
 - Seal Guide - WAT045459

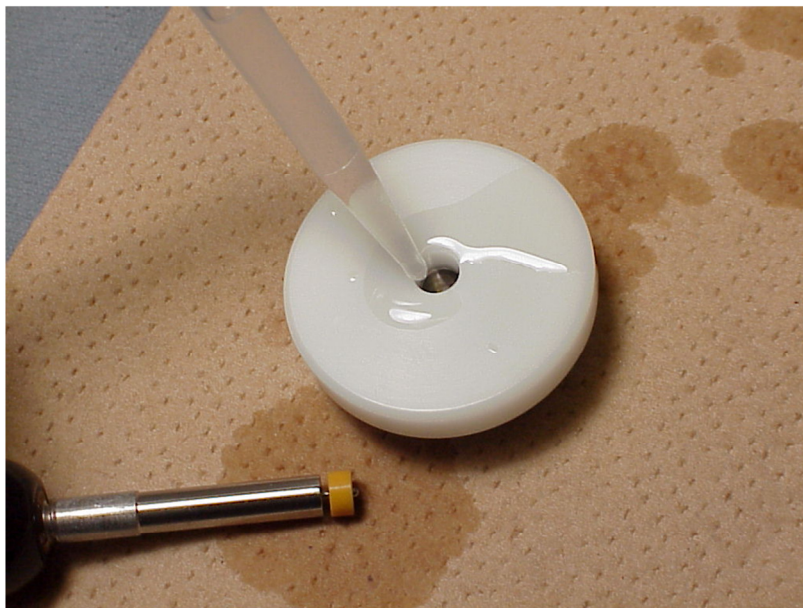
Wet Seal

- Wet the seal (WAT033276) with methanol or isopropyl alcohol (IPA).

Place Seal on Punch



- Place the seal on the Punch, spring side visible.

Wet Seal Guide

- Place the seal guide on the seal body and wet with methanol or IPA

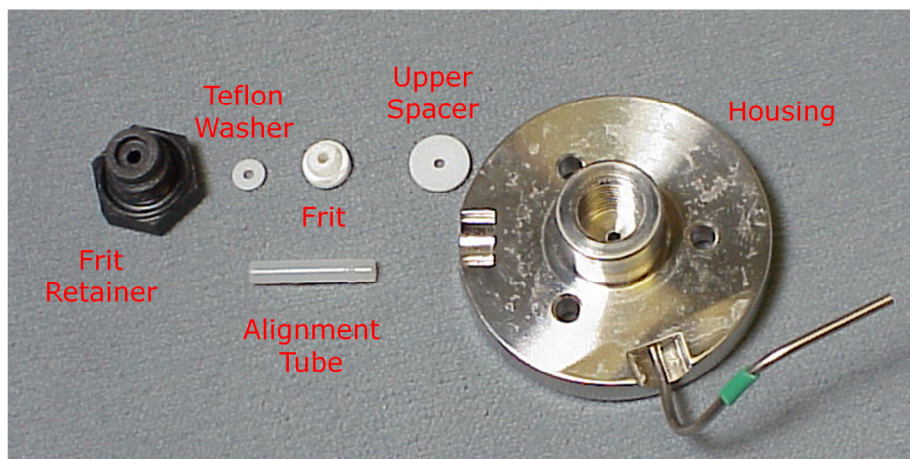
Seat Seal In Body

- Insert the seal into the seal guide and press down. It takes a considerable amount of force to seat the seal in the seal body.

Seal In Seal Body

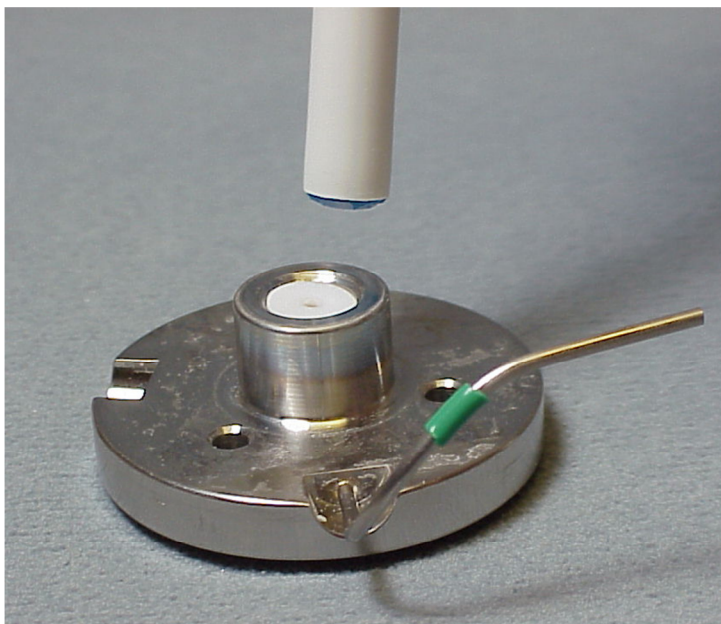
- Here the seal is fully seated in the seal body.
- Repeat the process for the other side.

Upper Seal Wash Assembly



- Remove the frit retainer from the upper seal wash body and remove the needle wash filter and TFE washer from the frit retainer.
- Using the metal end of the seal removal tool (WAT039802) remove the upper spacer from the upper seal wash body.

<u>Part</u>	<u>Part Number</u>
Alignment Tube	WAT031956
Teflon Washer	WAT077321
Frit	WAT072324
Upper Spacer	WAT031957
Frit Retainer	WAT212043 (not in PM Kit)

Install Upper Spacer

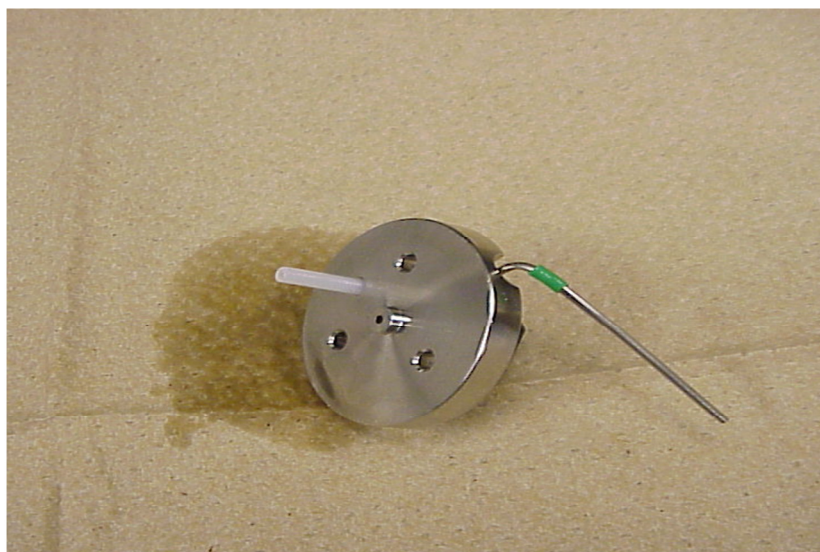
- Wet the new upper spacer (WAT031957) thoroughly with methanol or compatible solvent and press into place in the upper seal wash body using the flat end of a pen to seat the spacer.

Install Washer and Frit

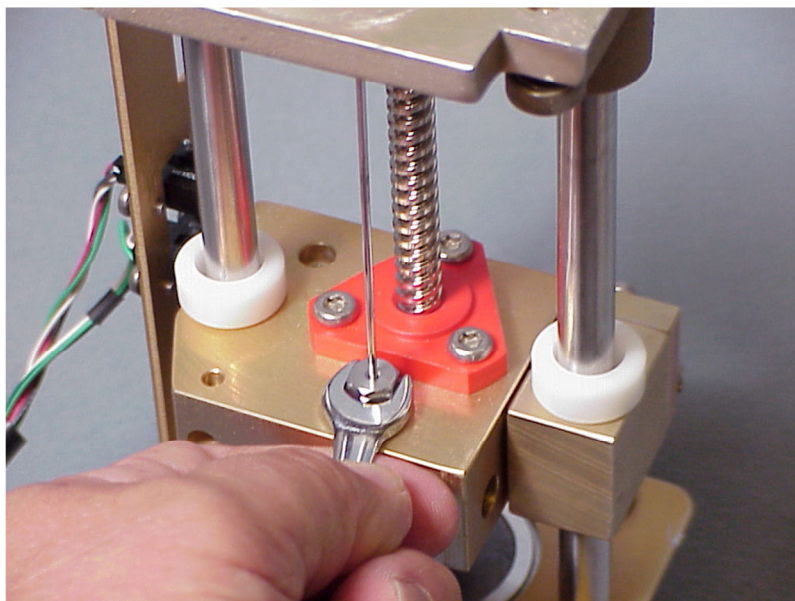
- Insert a new TFE washer (WAT077321) and needle wash filter frit (WAT072324) into the frit retainer.

Install Assembly Into Housing

- Turn the upper needle wash housing upside down and screw the assembled parts into the upper seal wash body finger tight.

Insert Guide Tube

- Insert the guide tube into the housing after wetting it with Mesh or IPA.

Remove Old Needle

- Use a 5/16" wrench to loosen the compression screw and remove the old needle.

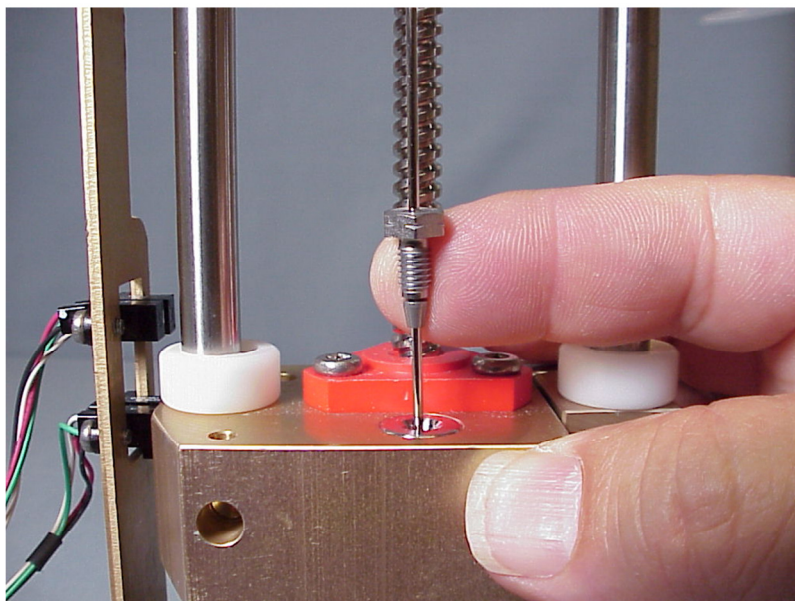
Injector Needle



- Use the old needle as a guide. Place the new compression screw (WAT025313) and ferrule (WAT022330) onto the pointed end of the old needle.

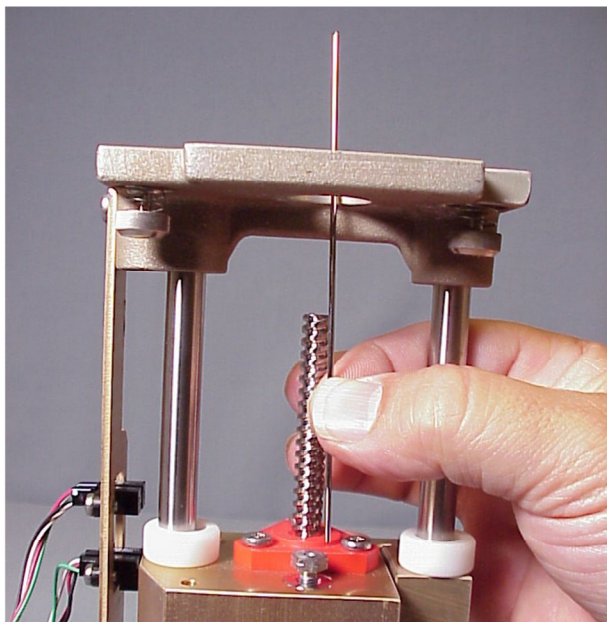
NOTE: Do not put the compression screw or ferrule over the pointed end of the new needle.

Install Ferrule and Compression Screw

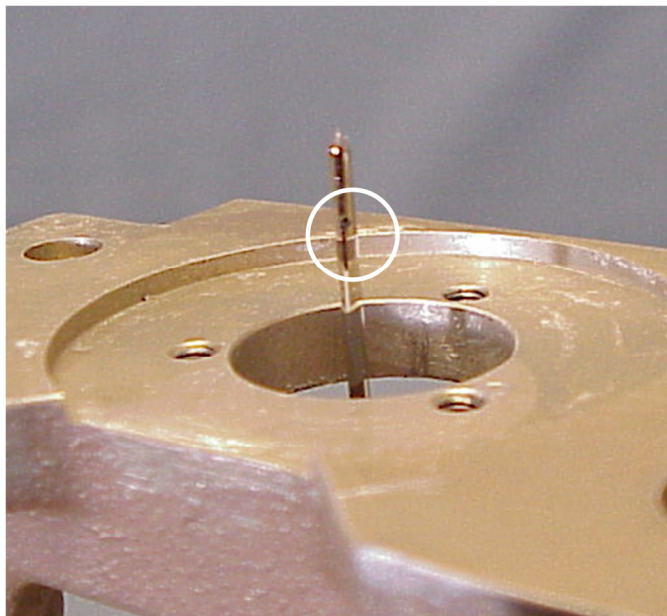


- Insert the pointed end of the old needle into the fitting in the injector slide and tighten finger tight. Remove the old needle.

Insert New Needle

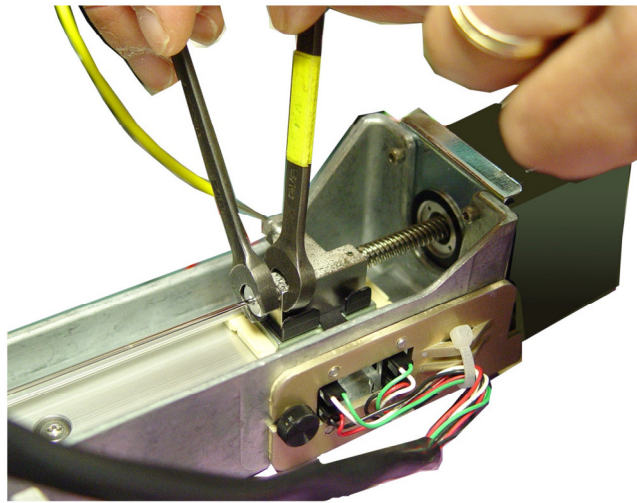


- Holding the new needle by the blunt end, insert the blunt end into the compression screw and ferrule which are aligned. Ensure the blunt end is bottomed out in the fitting.
- Tighten the compression screw one full turn to seat the ferrule onto the needle.
- Loosen the compression screw to align the needle.

Align Needle Port

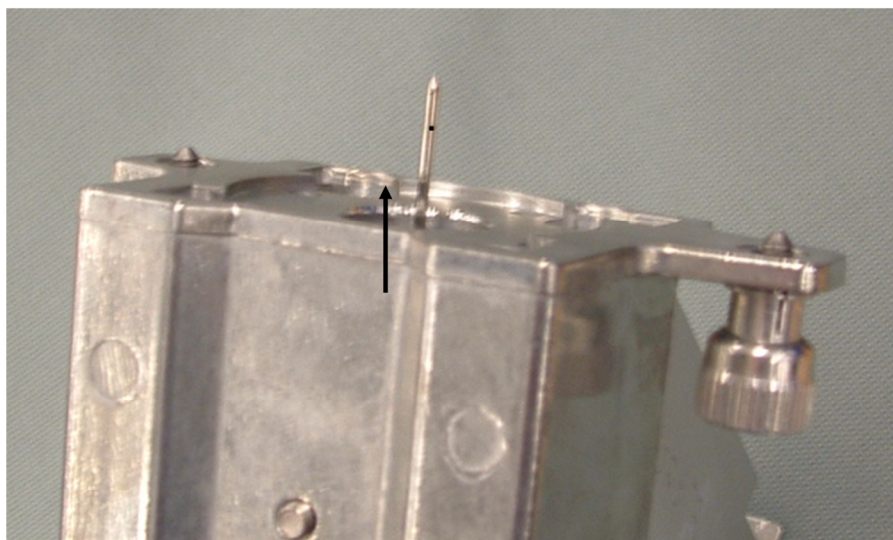
- Align the needle by rotating the needle so the port in the needle is aimed at the edge of the notch in the injector base plate for the seal pack/injector.
- This will ensure the port in the needle is aligned with the outlet port of the seal pack to minimize band spreading.

Phase II Injector Needle

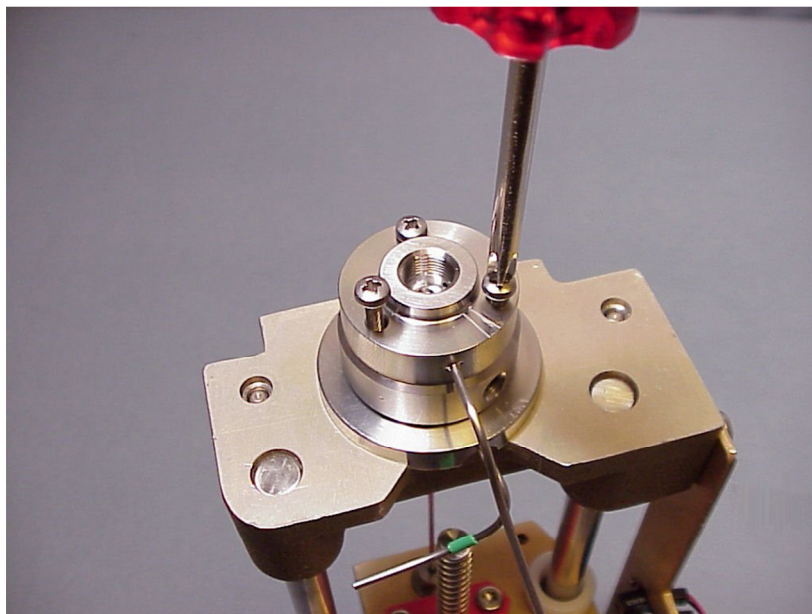


- Use two 5/16 inch wrenches to loosen or tighten the needle fitting on the Phase II injector assembly.
- Insert the new needle in the Phase II injector the same way as in the standard injector (pages 40-43)

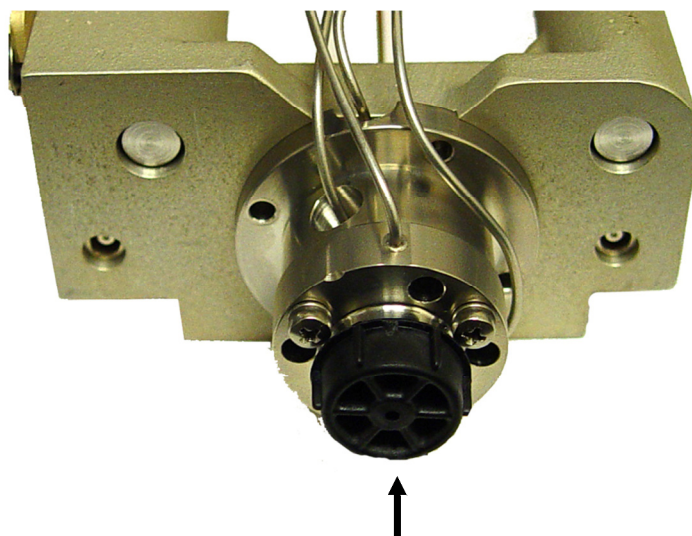
Align Needle on Phase II Injector



- Align the needle by rotating the needle so the port in the needle is aimed at the edge of the notch in the injector base plate for the Phase II seal pack/injector.
- This will ensure the port in the needle is aligned with the outlet port of the seal pack to minimize band spreading.

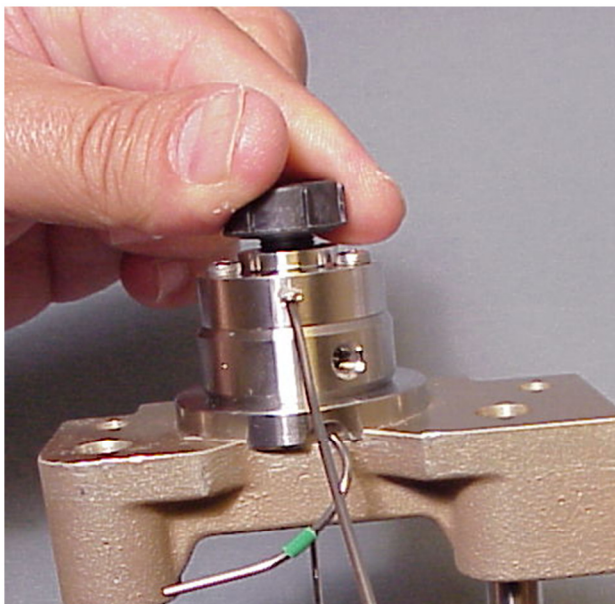
Install Seal Pack

- Wet the seal pack with methanol or IPA and slide it over the needle. Install the three screws holding the seal pack to the injector base plate.

Phase II Fluid Pack on Old Injector Assembly

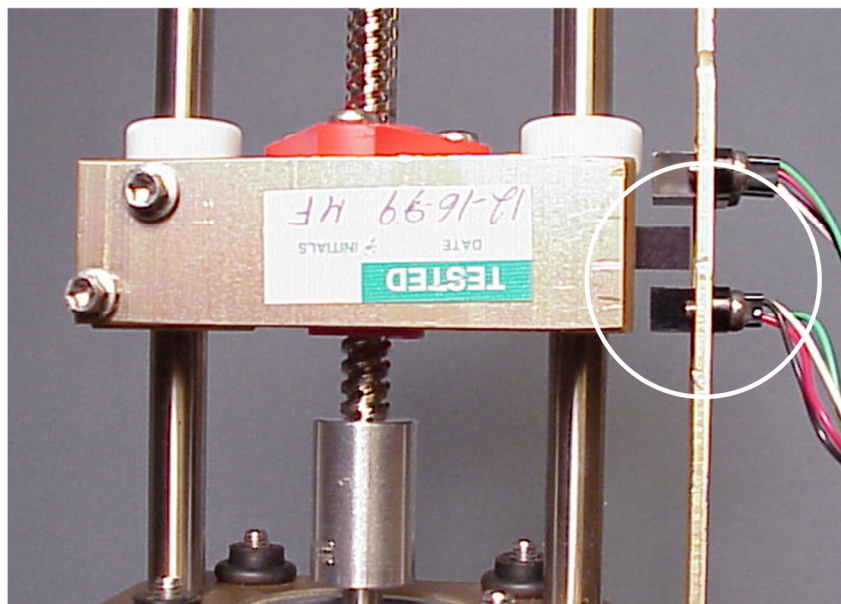
- The new Phase II seal pack can be mounted to the old style injector assembly using the three Phillips head screws that held the old seal pack in place.

Install Lower Retainer and Frit



- Screw the frit retainer, with the new filter frit, into the lower seal wash housing finger tight.

Re-adjust Sensor Flag



- Turn the lead screw to re-set the sensor flag between the upper and lower sensors.
- Reinstall the injector into the 2690/2695. Follow pages 5:16 to 5:8 (reverse of removing)

Helpful hint: Leave the cover and side panel off until all testing has been successfully completed.