BR6000

Pneumatically Driven Chemical Injection Pump

MAINTENANCE

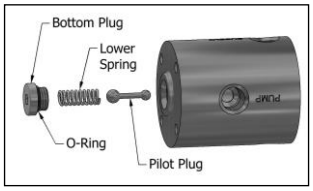
Disconnect power source and ensure pressure is removed from pump prior to performing any maintenance. Hazardous pressures can result in serious injury or property damage.

Bruin Controller Maintenance

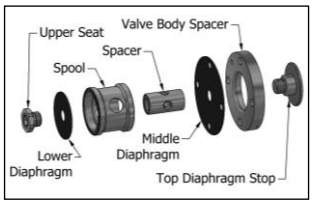
Bruin Controller Assembly

Step 1: Ensure all parts are clean and free from damage (see Inspection section). Lubricate all O-rings with petroleum based lubricant.

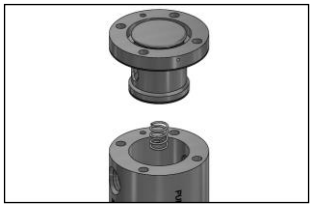
Step 2: Install the O-ring onto the lower seat. Install lower seat into controller body and tighten with 3/16" hex key.



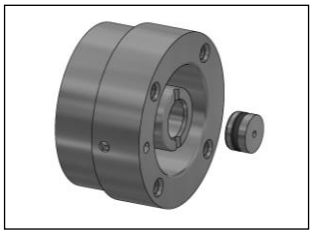
Step 3: Place the pilot plug into the bottom of the lower seat with the smaller ball going through and place the lower spring over it. Install bottom plug O-ring to the bottom plug and thread into the controller body. Tighten with 3/16" hex key.



Step 4: Place top diaphragm stop into larger bore of valve body spacer. Install middle diaphragm over threads on top diaphragm stop. Apply threadlocker onto the top diaphragm stop threads; thread into spacer and tighten to compress diaphragm. Install lower diaphragm over upper seat threads. Place spool over spacer with the thicker edge towards lower diaphragm and thread upper seat into the spacer. Tighten assembly.

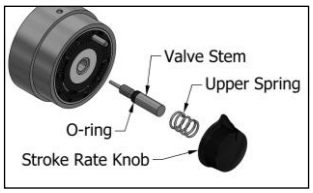


Step 5: Orientate pilot plug to point straight up. Place upper spring into controller body onto the lower seat and around the pilot plug. Place the spacer assembly into the controller body, making sure the valve body spacer's holes are aligned to the controller body's holes.

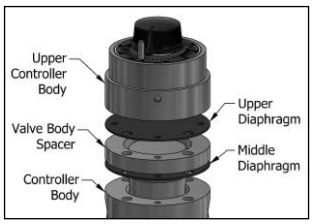


Step 6: Press knob limit pin into upper controller body and affix stroke rate label if necessary.

Step 7: Place O-ring onto valve seat. Apply general purpose grease (ie. Jet-Lube AP-1) onto valve seat and press into the upper controller body. *Note: Ensure the beveled edge of the valve seat is the side pressed into upper controller.*



Step 8: Install the O-ring onto the valve stem. Thread valve stem into the upper controller body until hand tight. Place upper spring over the valve stem and compress it with the stroke rate knob. Tighten set screw to hold stroke rate knob in place. *Note: Knob will have to be calibrated to set appropriate stroke rates.*



Step 9: Insert 4 screws with lockwashers through controller body, diaphragms, and valve body spacer. Align the screws with the screw holes of the upper controller body. *Note: Ensure the small hole on the top face of the controller body and valve body spacer line up with the small hole in the upper controller body.* Tighten all 4 screws, compressing the diaphragms and valve body spacer between the controller body and upper controller body.

Step 10: Install protective cap onto upper controller body.

Step 11: Thread Bruin Controller Assembly onto hex reducing nipple connected to pump.

Bruin Controller Disassembly

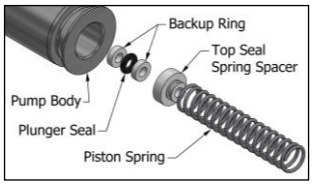
Step 1: Disconnect operating air supply and ensure all pressure is removed from pump assembly (ensure stroke rate knob is open) and isolate fluid discharge and suction lines. Open and remove bleeder plug. Disconnect fluid discharge and suction lines.
Step 2: Unscrew Bruin controller from hex reducing nipple connected to the pump. Remove 4 screws and lockwashers holding the controller body, valve body spacer, upper controller body and diaphragms together.
Step 3: Pull the valve body spacer, spool, spacer, top diaphragm stop and diaphragms out of the controller body. *Note: The upper spring will be loose resting on top of the lower seat.* Remove upper spring.
Step 4: Remove bottom plug retaining the lower spring and pilot plug. *Note: Lower spring and pilot plug are loose and can fall out after bottom plug is removed.* Remove O-ring from bottom plug.
Step 5: Unscrew top diaphragm stop and upper seat out of the spacer to remove the valve body spacer, spool and diaphragms.
Step 6: Unscrew lower seat out of the controller body. Remove O-ring from lower seat.
Step 7: Remove protective cap from upper controller body to reveal the stroke rate knob. Unscrew set screw in the stroke rate knob and pull the knob off to reveal the valve stem. Unscrew valve stem from the upper controller body. Remove O-ring from valve stem.

Pump Maintenance

Pump Assembly

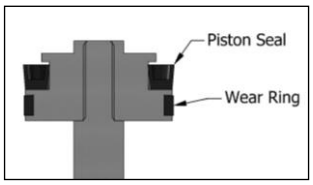
Step 1: Ensure all parts are clean and free from damage (see Inspection section). Lubricate all O-rings with petroleum based lubricant; lubricate plunger seals and plunger.

Step 2: Install fluid cylinder seal over threads. Insert plunger seal into the top of the fluid cylinder with the spring side inserted first towards the pressure. *Note: If using o-ring setup for plunger seal, insert 2 plunger seal backups with the plunger seal o-ring separating them.* Thread fluid cylinder onto pump body until tight.

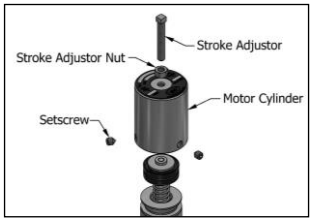


Step 3: Insert 2 plunger seal backups with a plunger seal separating them into pump body for the body seal.

Step 4: Insert top seal spring spacer into the pump body with the smaller diameter facing up. Insert the piston spring into the pump body.

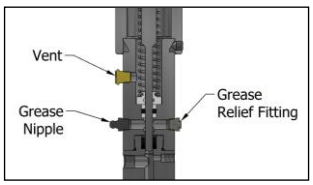


Step 5: Install wear ring and piston seal onto piston. Insert plunger assembly into pump body. *Note: Lubrication of plunger is recommended.*



Step 6: Install stroke adjustor nut onto stroke adjustor. Thread stroke adjustor into motor cylinder. Set stroke adjustor for desired stroke and tighten stroke adjustor nut to lock stroke adjustor.

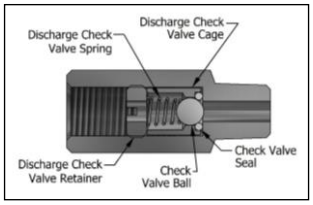
Step 7: Place motor cylinder over the plunger assembly and press it down. Tighten 3 setscrews into the motor cylinder holding it onto the pump body with a 5/32" hex key.



Step 8: Thread the grease nipple and grease relief fitting into the pump body. Thread the vent into the pump body.

Step 9: Thread the bleeder plug into the fluid cylinder.

To Assemble Discharge Check Valve Assembly



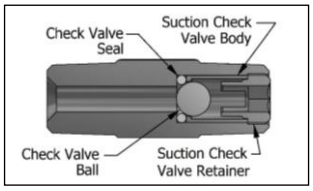
Step 10: Insert check valve seal into the discharge check valve cage and place the discharge check valve cage and seal into discharge check valve body.

Step 11: Insert check valve ball into the check valve cage. Place discharge check valve spring onto the check valve ball with the smaller side on the ball.

Step 12: Thread discharge check valve retainer into the discharge check valve body until hand tight.

Step 13: Thread discharge check valve assembly into side of the fluid cylinder. *Note: Use of a thread sealing compound is recommended on NPT threads.*

To Assemble Suction Check Valve Assembly



Step 14: Insert check valve seal into the suction check valve body. Place check valve ball onto seal.

Step 15: Insert suction check valve cage into suction check valve body.

Step 16: Thread the suction check valve retainer into the suction check valve body until it is flush with the suction check valve body. *Note: Use of a thread sealing compound is recommended on NPT threads.*

Step 17: Thread suction check valve assembly into the bottom of the fluid cylinder in correct orientation. *Note: Use of a thread sealing compound is recommended on NPT threads.*

Pump Disassembly

Step 1: Disconnect operating air supply and ensure all pressure is removed from pump head assembly and isolate fluid discharge and suction lines. Open and remove bleeder plug. Disconnect fluid discharge and suction lines.
Step 2: Unscrew pump from hex reducing nipple connected to the Bruin controller.
Step 3: Remove stroke adjustor and stroke adjustor lock nut. Unscrew 3 set screws holding motor cylinder onto the pump body. *Note: There will be a small spring load that will be released when setscrews are loosened. Retain this spring load while loosening and removing setscrews.*
Step 4: Remove piston spring and plunger from the pump body. *Note: Top seal spring spacer will be loose.* Remove top seal spacer. Remove the plunger seal and 2 plunger seal backups.
Step 5: Unscrew vent, grease nipple, and grease relief fitting from the pump body.
Step 6: Unscrew fluid cylinder from the pump body. Remove the spring energized housing seal (or o-ring setup) from fluid cylinder.

To Disassemble Discharge Check Valve Assembly
Step 7: Unscrew discharge check valve body from the fluid cylinder.
Step 8: Unscrew discharge check valve retainer. *Note: Discharge check valve spring will be loose.* Remove discharge check valve spring, cage, ball and check valve seal.

To Disassemble Suction Check Valve Assembly
Step 9: Unscrew suction check valve body from the fluid cylinder.
Step 10: Unscrew suction check valve retainer. Remove suction check valve cage, ball and check valve seal.

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INSPECTION

Inspect all components for damage. Replace or repair parts as necessary. The following is a guideline of what to inspect:

- Inspect all threads for damage.
- Inspect all seals and diaphragms for damage.
- Inspect body seal areas for corrosion, pitting or damage. Seal areas include locations with O-rings or seals.
- Inspect balls, pilot plug, upper seat and lower seat and springs for corrosion or damage.
- Inspect plunger for wear, scarring or damage.
- Inspect check valves for wear, scarring or damage.