

#### 610010-4: 100HP STROKE BALANCING UPGRADE INSTALLATION

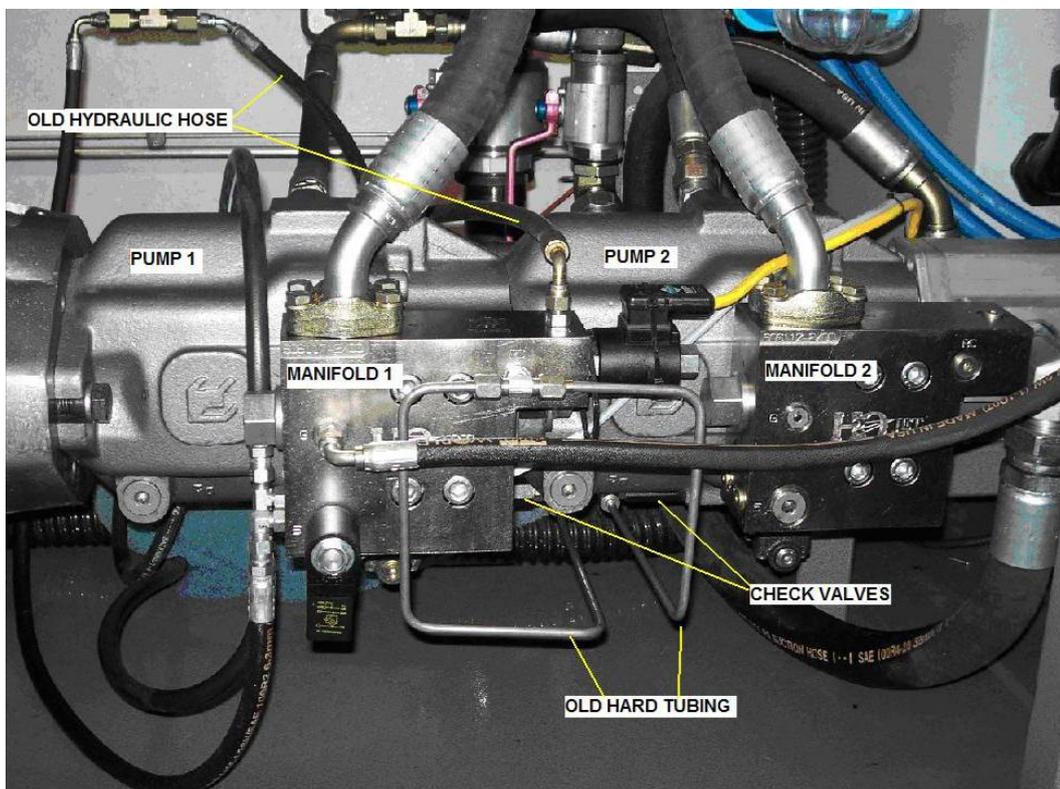
##### Installation:

1. Shut down the system. Press the E-Stop Button.



**WARNING**  
Place the main electrical disconnect in the OFF position and bleed down all high-pressure lines. Place an "Out of Service" tag on the main electrical disconnect and lock it out. Failure to do so may result in damage to equipment or injury to personnel.

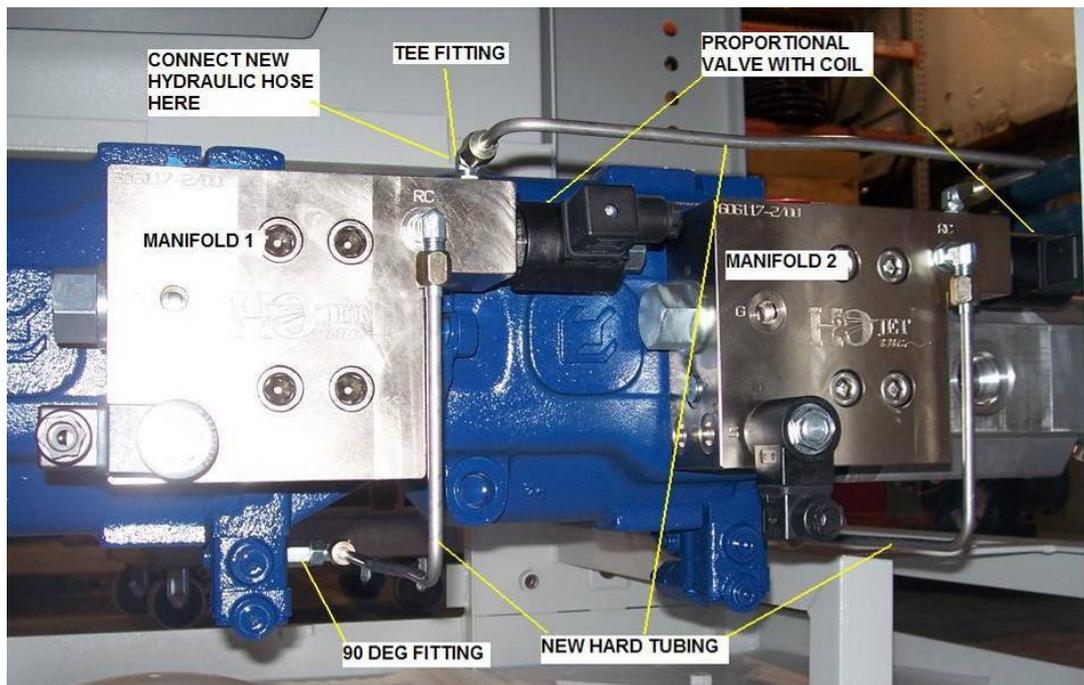
2. **Note:** Hydraulic Oil will leak from the lines. Place a catch pan underneath each part/fitting when disconnecting.
3. Remove old Hard Tubing from Compensators and Manifolds.
4. Remove Check Valves from Compensators, located on the bottom of each pump.
5. Remove 90° Hydraulic Fitting from the Check Valves and reinstall 90° Fitting directly to Compensators.
6. Remove Hydraulic Hose that connects to "DR" port on Manifold 1.
7. Remove Tee Fitting from "RC" port on Manifold 1. Reinstall in the "DR" port on Manifold 1.



*FIGURE 1: Old Configuration*

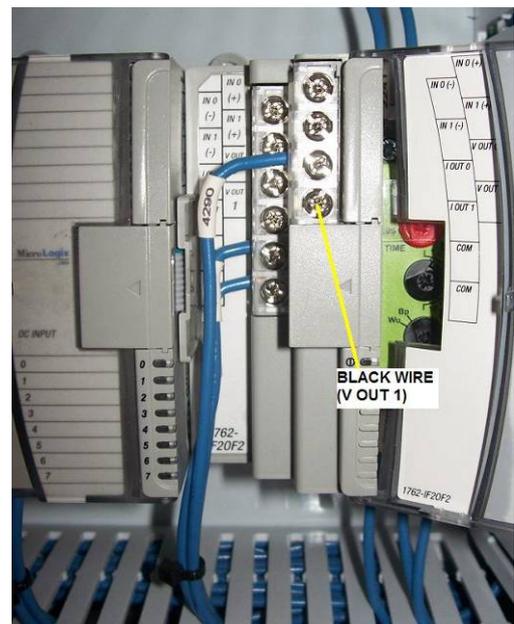
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8. Install New Hydraulic Hose onto Tee and connect other end to Tank.
9. Install a 90° Hydraulic Fitting in "RC" port on both Manifolds.
10. Install 90° Hydraulic Fitting in the "DR" port on Manifold 2.
11. Install new Hard Tubing as shown in **Figure 2**.
12. Remove Plug on Manifold 2 and install the Proportional Valve and Coil. Attach Proportional Controller.



**FIGURE 2: New Configuration**

13. Make sure the Electrical Disconnect Switch is in the OFF position. Open the Electrical Enclosure.
14. Route Proportional Valve Coil wires into the Electrical Enclosure.
15. Connect the Controller Wires to the following locations:
  - a. BLACK Wire – "V OUT 1" terminal. See **Figure 3**.
  - b. BLUE Wire – 4300 on Terminal Strip (Put in same block as BLUE wire from Proportional Card #1).
  - c. BROWN Wire – 2140 on Terminal Strip.



**FIGURE 3: BLACK Wire Location**

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16. Locate the MicroLogix 1200 PLC inside the Electrical Enclosure. **See Figure 4.**
17. Remove the Cover with the Allen Bradley logo on it, exposing the Memory Module slot. **See Figure 4.**
18. Fully insert the Memory Module into the exposed slot. **See Figure 5.**
19. Close and latch the Electrical Enclosure door. Turn the electrical disconnect switch to the ON position. Place the Main Electrical Disconnect in the ON position.
20. The Memory Module requires one minute to fully load into the PLC. After one minute, place the Main Electrical Disconnect in the OFF position and lock it out. Open the Electrical Enclosure door.
21. Remove the Memory Module from the PLC and reinstall original Cover.
22. Close and latch the Electrical Enclosure Door. Turn the Electrical Disconnect Switch to the ON position. Place the Main Electrical Disconnect in the ON position.

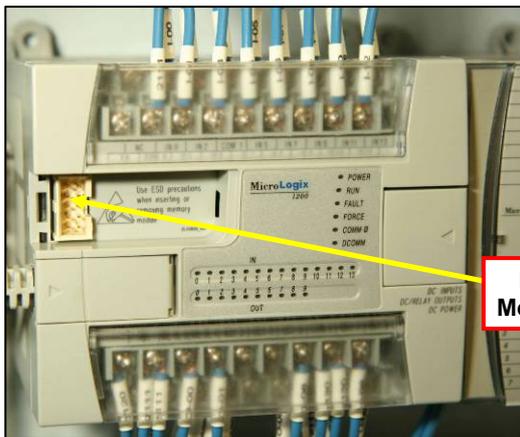


FIGURE 4: Memory Module Slot

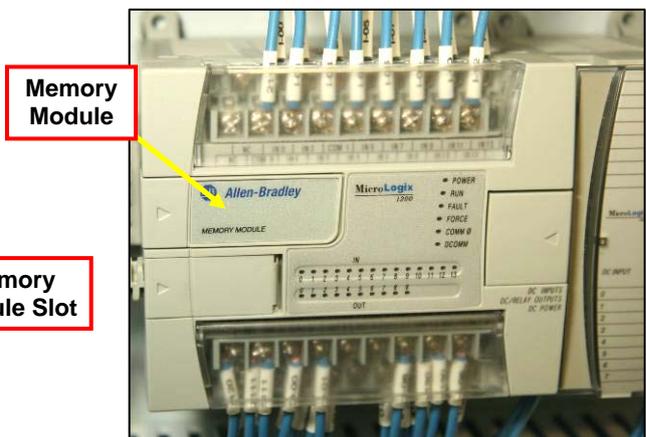


FIGURE 5: Memory Module Installed

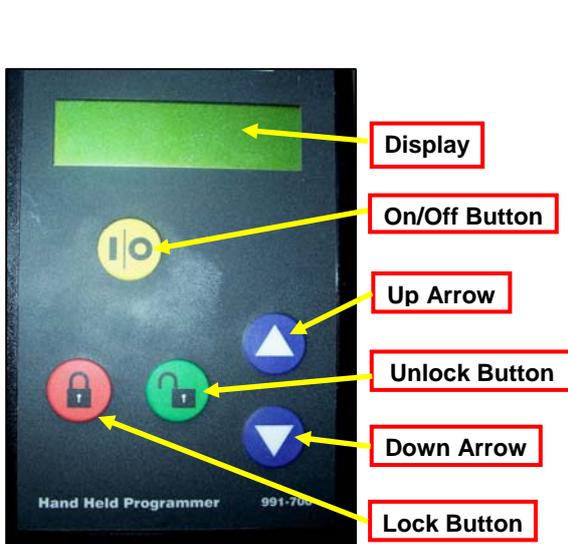


FIGURE 6: Programmer

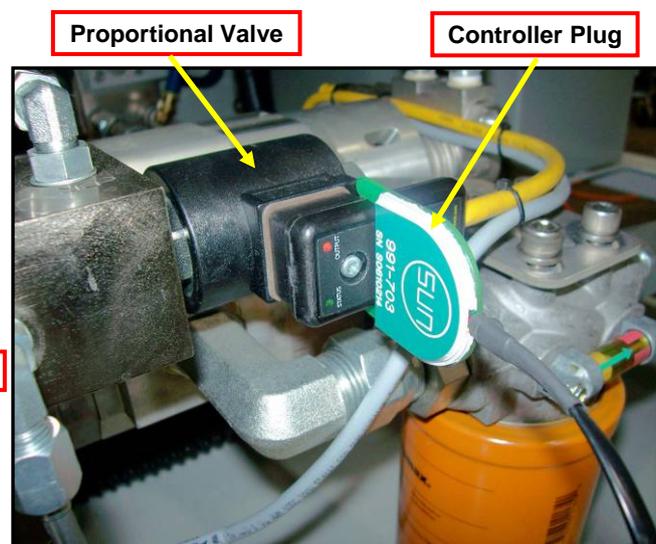


FIGURE 7: Controller Plug

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23. On the side of Manifold 1 is the proportional valve. Plug the controller into the proportional valve as shown. **See Figure 7.**
24. Turn the controller on by pressing the I/O button. **See Figure 6.**

Note: Power must be turned on to the pump in order for the control to respond.

25. Press the red lock button.
26. Press the blue down arrow until you get to "MINIMUM INPUT." This setting should be 0.00 volts. Write this setting down. **See Figure 8.**



**FIGURE 8:** Minimum Input

27. Press the down arrow once to get to "MAXIMUM INPUT." This setting should be 10.0 Volts. Write this setting down.
28. Continue to cycle through each of the remaining parameters and write down their value. The remaining parameters are *Minimum Output*, *Maximum Output*, *Dither Freq*, *Ramp Up Time*, and *Ramp Down Time*.
29. Remove the controller from the pump and install on the second proportional valve located on Manifold 2.
30. Press the down arrow until you get to "MINIMUM INPUT." This setting should already be at 0.00 volts. If not, press the green unlock button and use the blue up/down arrows until 0.00 volts is obtained. Once this setting is reached, press the red lock button. This will lock the setting at 0.00 volts. **See Figure 8.**
31. Continue to set the remaining parameters to match the parameters of the 1<sup>st</sup> proportional valve. Be sure to press the red lock button after each setting change.
32. Remove the controller from the pump.
33. The pump can now be returned to normal operation.