
PRODUCT: TM-80 & TM-120, All Models

DATE: December 13, 2011

SUBJECT: Sealed Electric Operator for Horizontal Extend/Retract Valve

SERIAL NUMBERS: All

DISCUSSION: The hydraulic valves supplied with the wrench are equipped with manual handle lever boxes for manual actuation. With the manual actuators, there is a small gap in the wrist pin area between the lever box and valve body which can be infiltrated by contaminants. When this happens, contaminants or corrosion may cause the valve spool to stick, causing the wrench movement to be less than fluid and may result in a disparity between the actual wrench position and the wrench position perceived by the PLC based on feedback from the linear transducer. This is important in the horizontal positioning of the wrench, where spool sticking may cause the tong assembly to overshoot or undershoot its pre-programmed location when operating in Automatic mode. Removing the manual actuator and installing a sealed electric operator on the horizontal extend/retract valve will result in a consistently smooth motion regardless of the surface corrosion that may arise during service.

RECOMMENDATION: Follow the below procedures to remove the manual actuator and install a sealed electric operator. This procedure should only be performed by a trained technician as it requires recalibration of the PR card and service level access to the HMI.

Parts Required:
Electric Operator Kit: Canrig P/N AY50806

Tools Required:
4mm hex key wrench
Channel lock pliers
Flat-head screwdriver

1. Fully retract the wrench to the park position.
2. Disconnect power. Follow local tag out and lock out procedures.
3. Open the arm junction box (Figure 1) and locate the horizontal extend/retract valve coil wires.

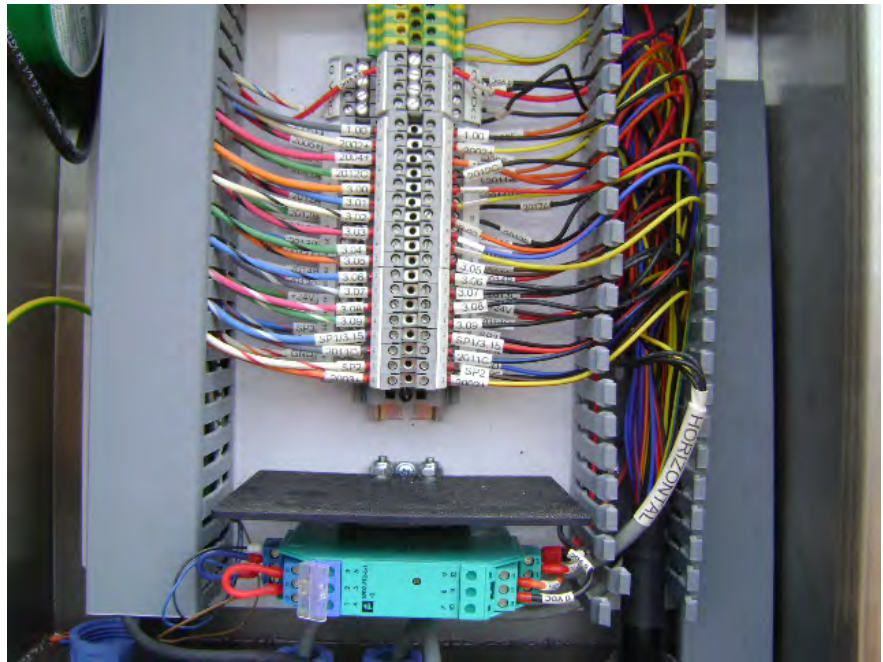


Figure 1

4. Disconnect the coil wires from the terminal block (Figure 2). Disconnect 2012A_3 from TB1-24, 2012C_1 (or 0V) from TB1-4, and 2012B_2 from TB1-25. Note: Wire numbers and terminal block assignments on other revisions of electrical schematic may vary. Some versions may require disconnect of ground (green/yellow) wires.

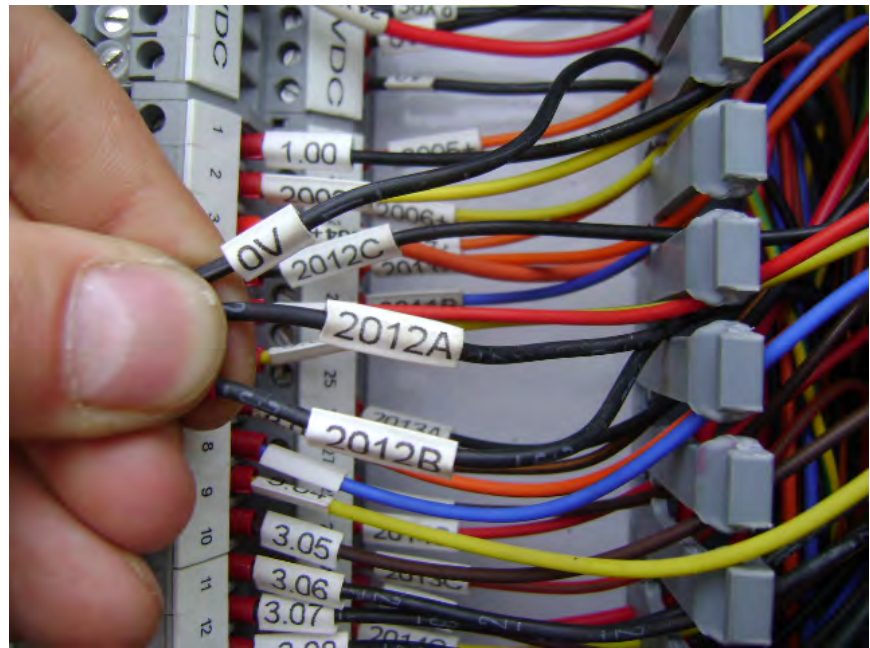


Figure 2

5. Take note of terminal locations for re-installation.

6. Remove the strain relief using channel lock pliers and remove the cable from the arm junction box. (Figure 3). Pull the cable back to the coil on the horizontal extend/retract valve.



Figure 3

7. Locate the horizontal extend/retract valve section on the arm valve bank (Figure 4). This will be the valve section on top for all models.

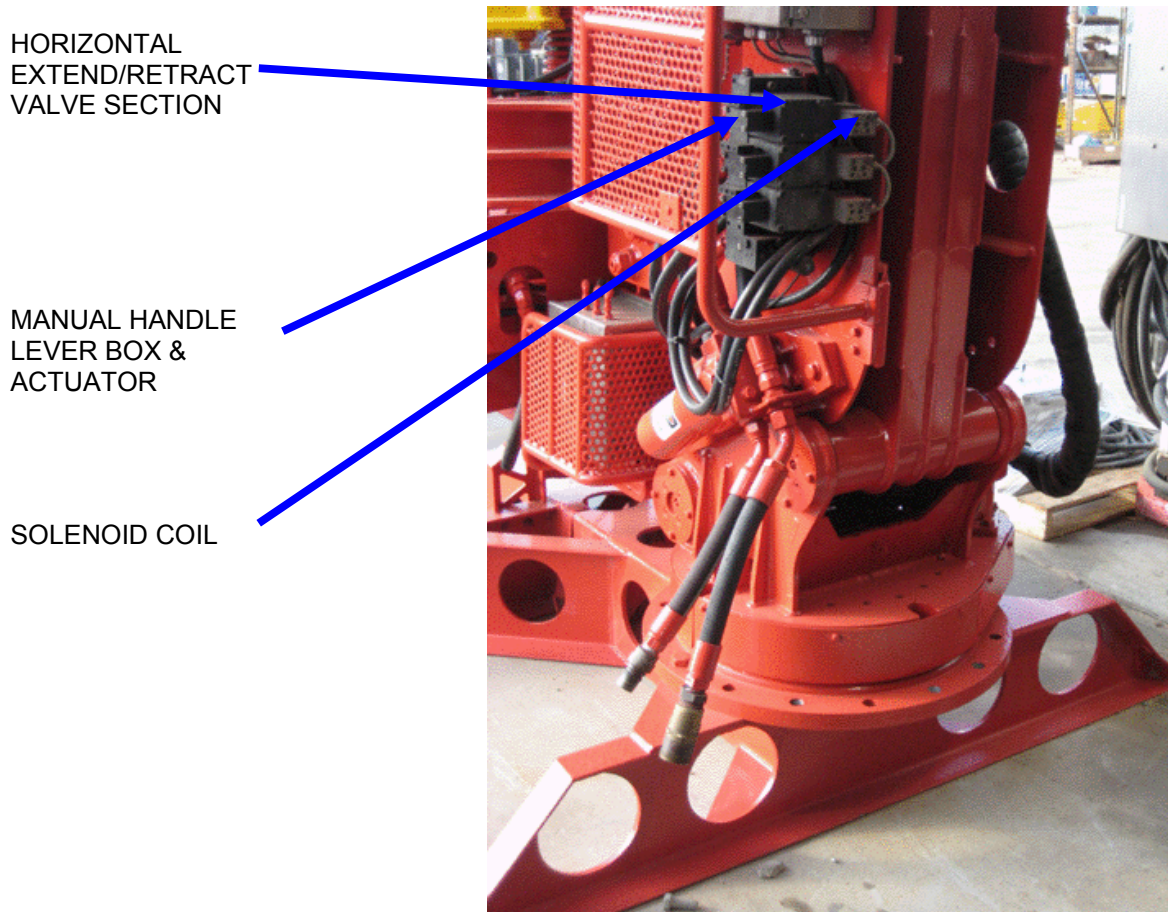


Figure 4

7. Remove the four 4mm x 40mm socket head screws securing the manual actuator to the valve body (Figure 5).

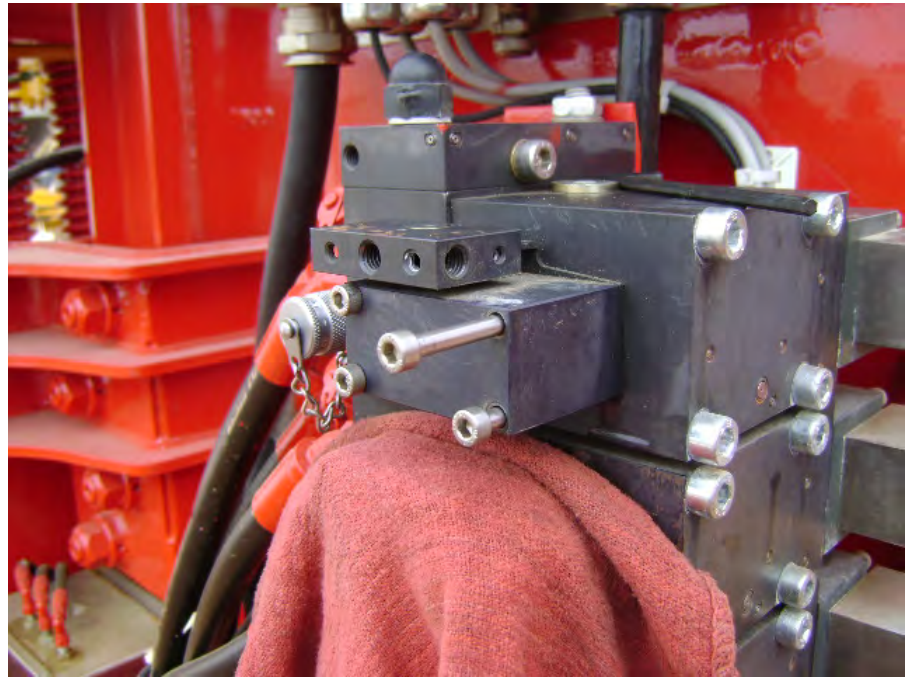


Figure 5

8. Pull the actuator away from the valve body until the e-clip and pin that are attached to the valve spool are exposed (Figure 6).

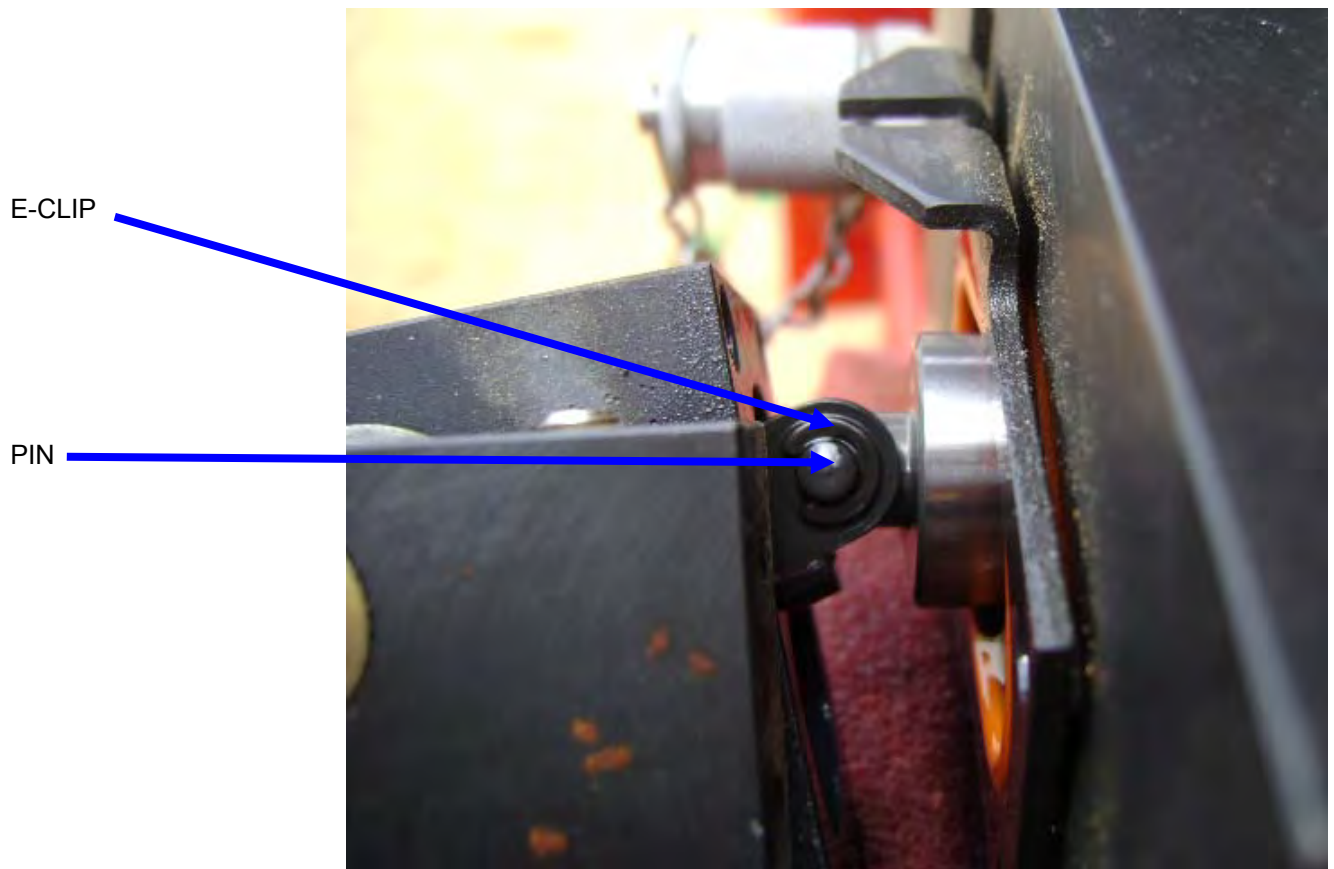


Figure 6

9. Remove the e-clip and pin to release the actuator from the spool (Figures 7 and 8).



Figure 7



Figure 8

10. Remove the three 4mm x 60mm socket head screws securing the coil to the valve body (Figure 9).

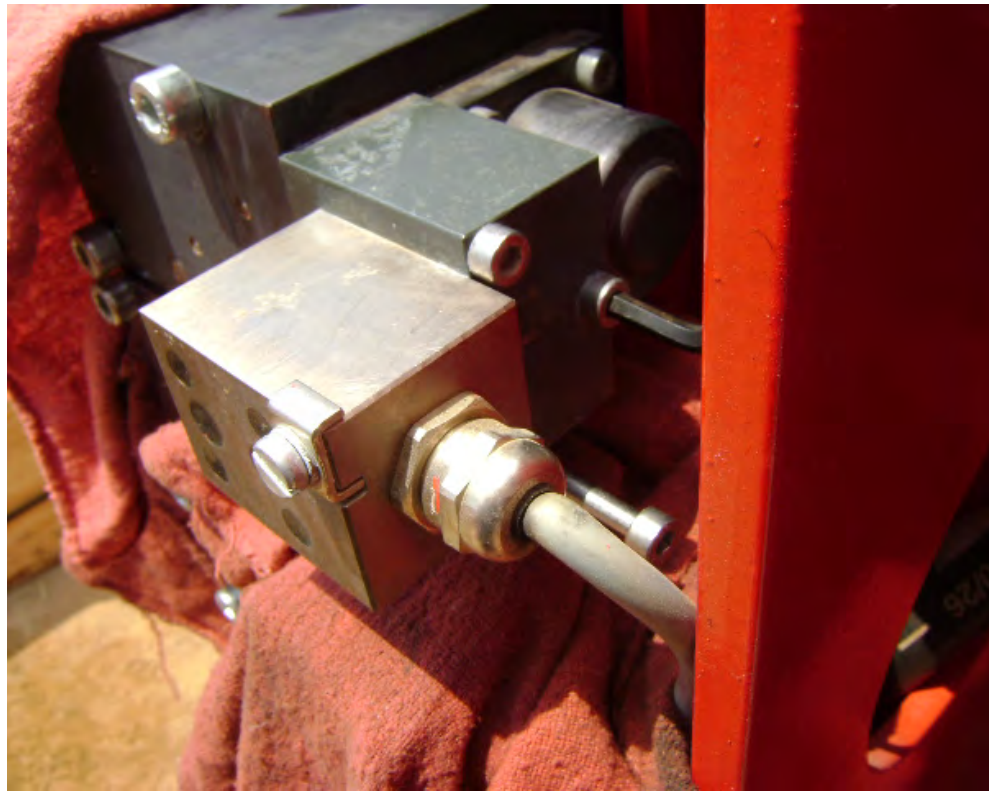


Figure 9

11. Remove the coil and cable. Make sure the o-rings and actuating spools remain inside the valve body (Figure 10).

O-RING

ACTUATING SPOOL

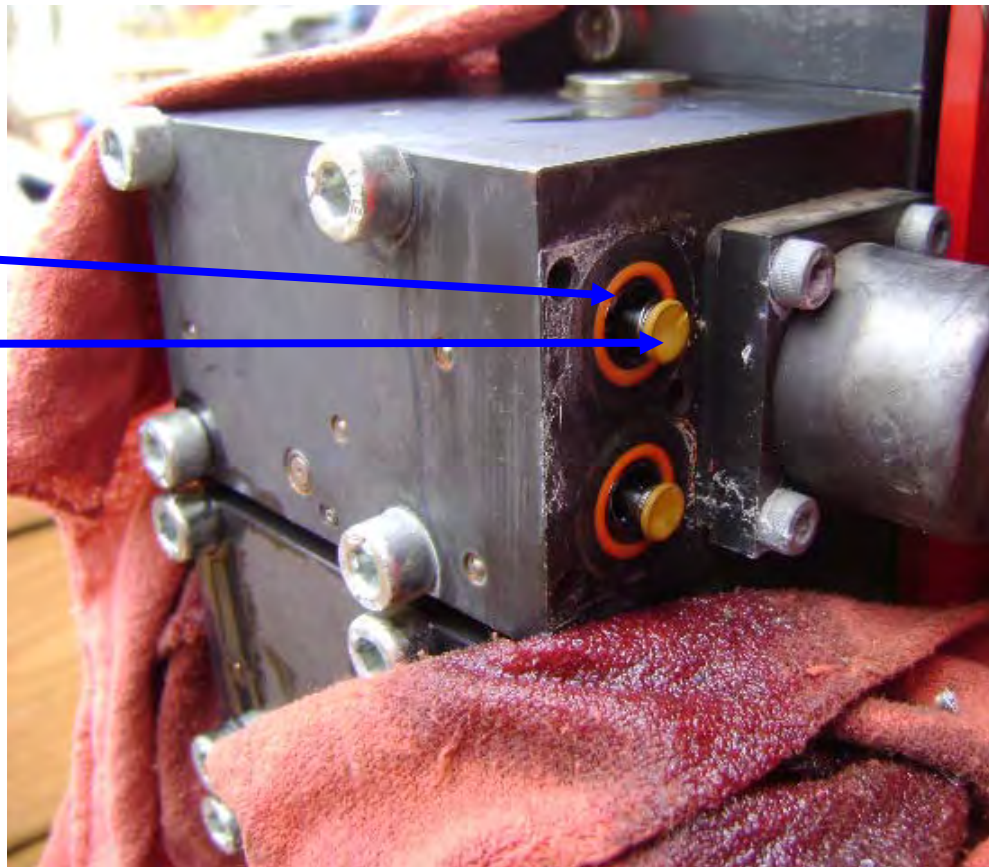


Figure 10

12. Locate the new electric operator and insert four 4mm x 60mm socket head screws through the coil body (Figures 11 and 12).

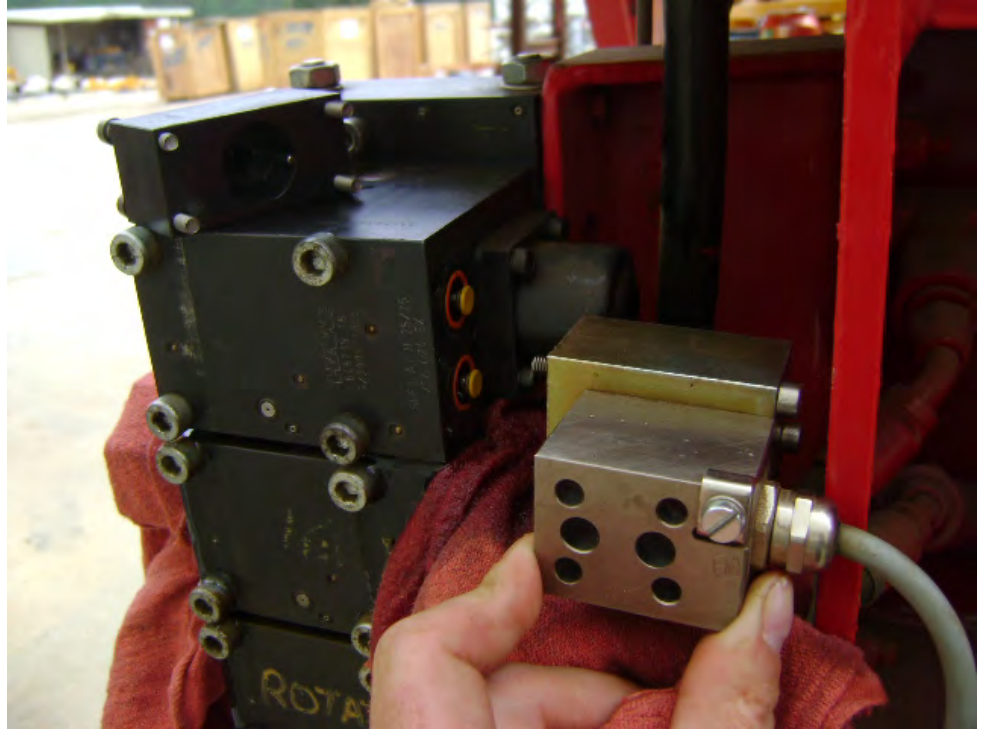


Figure 11

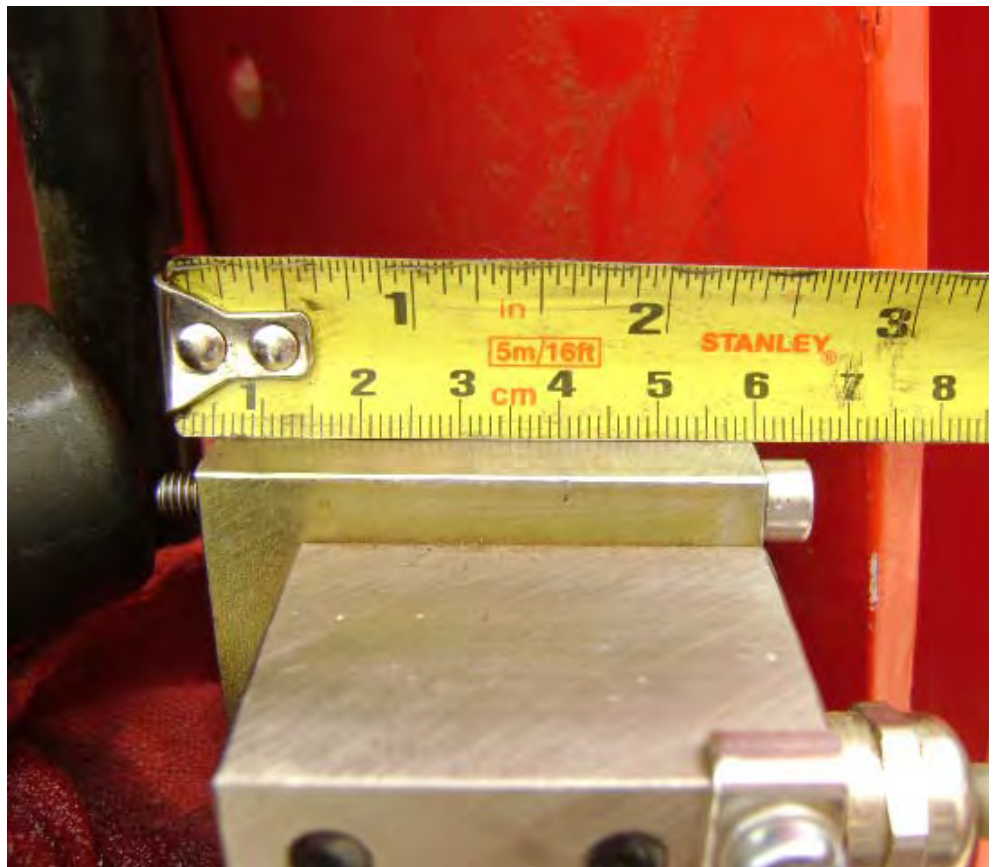


Figure 12

13. Install the new electric operator onto the valve body (Figure 13).

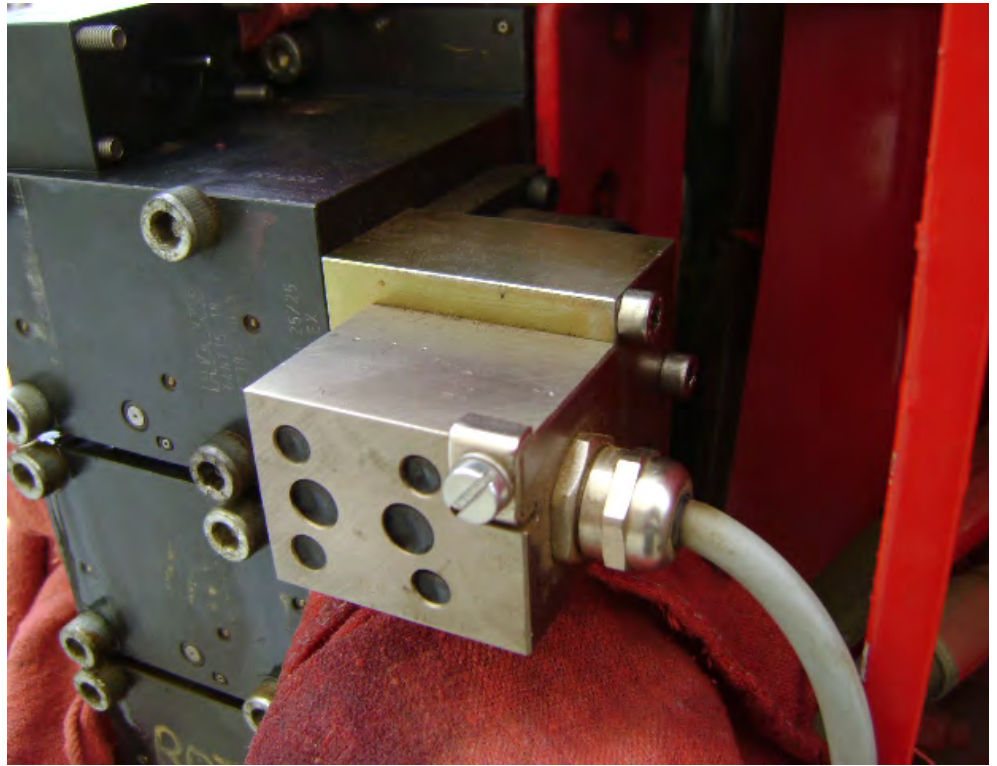


Figure 13

14. Place the 4mm x 40mm socket head screws in the spool cover (Figure 14).



Figure 14

15. Orient the spool to line up the pin hole with the pin inside the spool cover that is replacing the manual actuator (Figures 15 and 16).

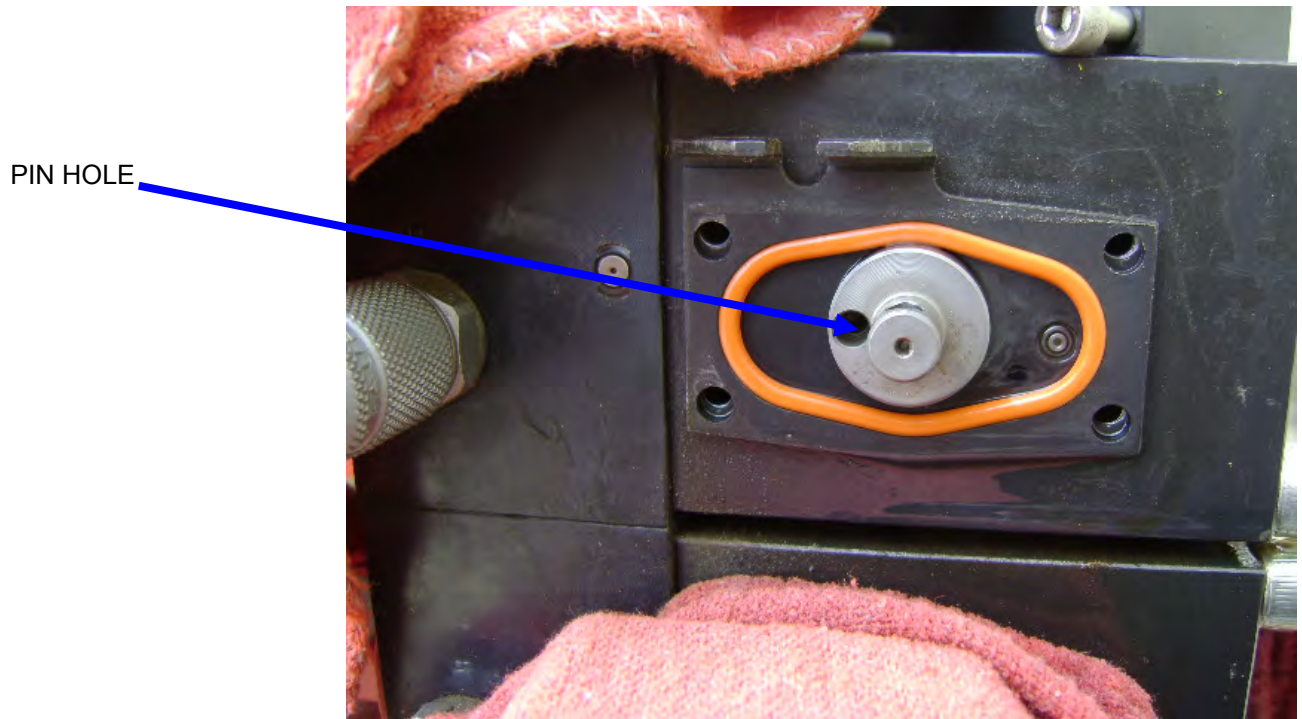


Figure 15

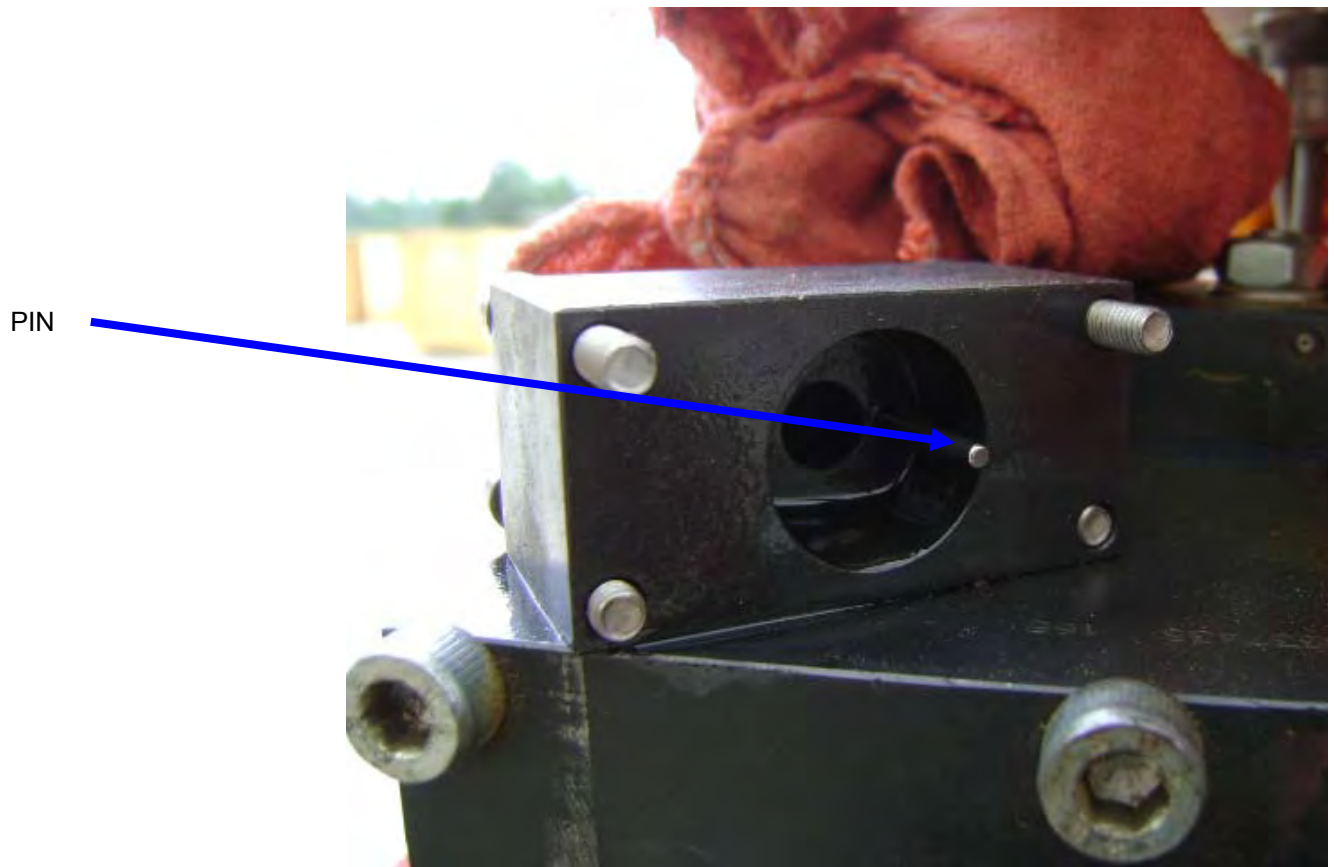


Figure 16

16. Install the spool cover onto the valve (Figure 17). Ensure the o-ring stays in place while installing the cover so that it does not get pinched during tightening.

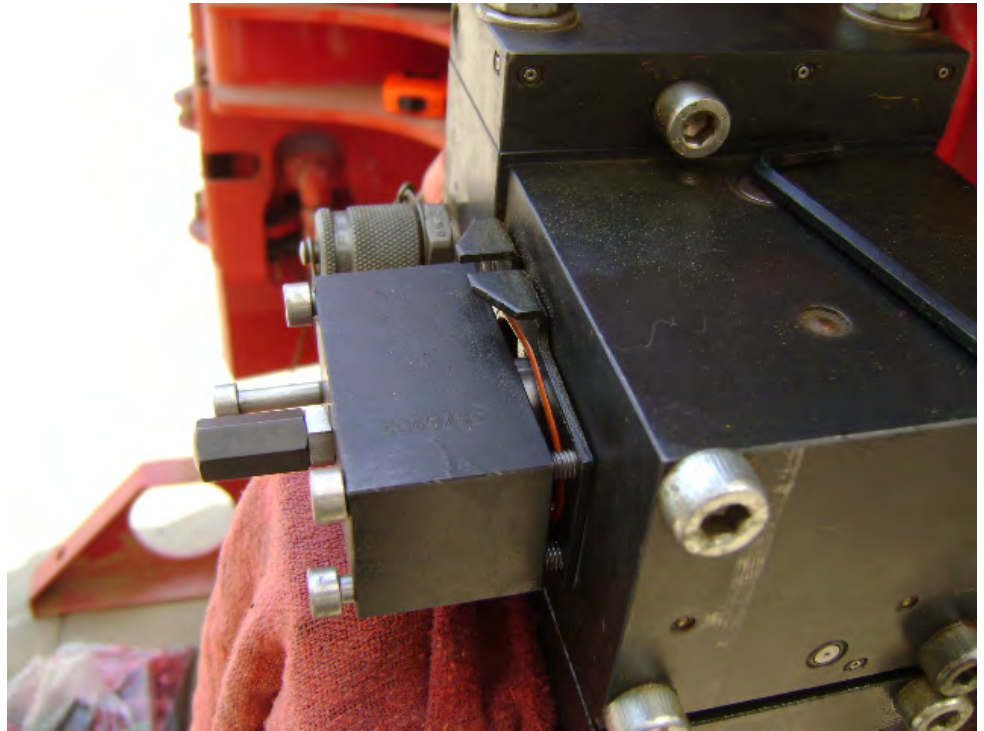


Figure 17

17. Once the spool cover has been installed, verify that it is sitting flush and that the o-ring is not sticking out.

18. Remove the adjustment screw cover and verify the adjustment screw is all of the way out. If not, unscrew it CCW until it is all of the way out (Figure 18).

ADJUSTMENT SCREW
COVER



Figure 18

19. Route the new coil cable back through the strain relief and into the arm junction box. Tighten the strain relief once the cable has been passed through, leaving some slack behind to avoid having the cable stretched out from the coil to the junction box (Figure 19).



Figure 19

20. Terminate the coil wires back to their proper locations (as removed) (Figure 20).

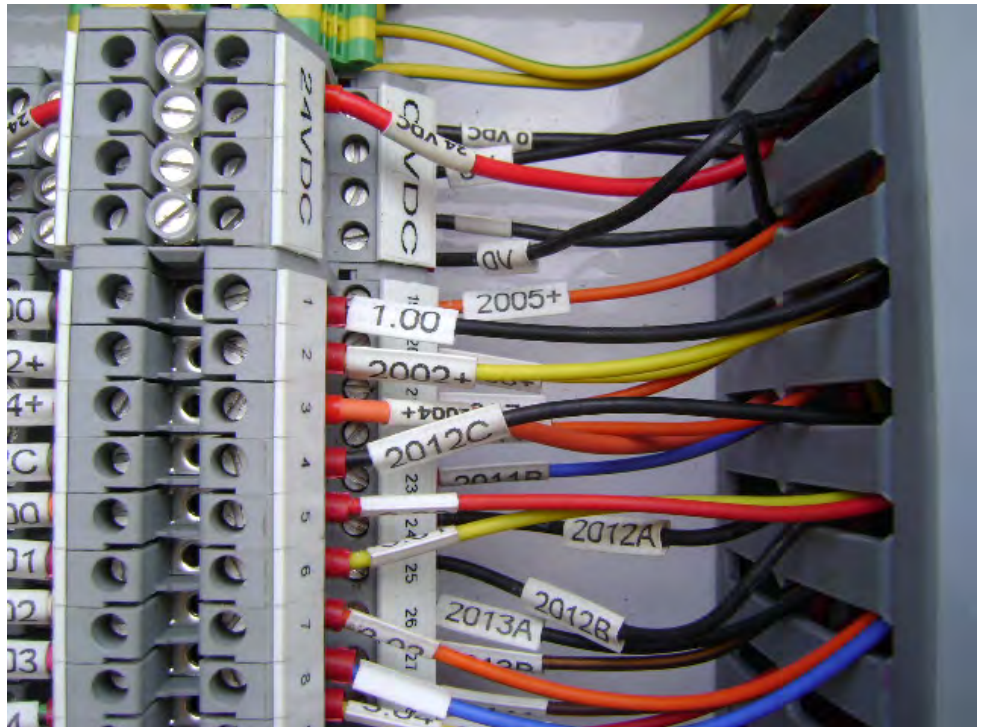


Figure 20

21. Reinstall the wire cover and close the arm junction box (Figure 21).

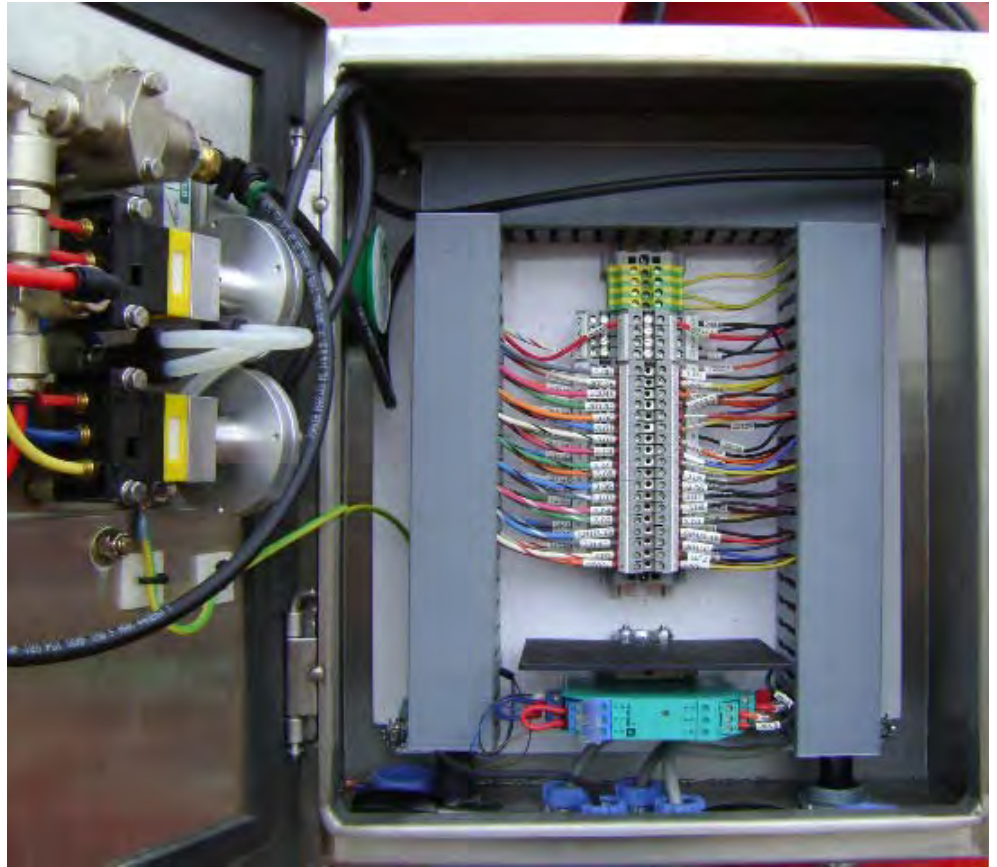


Figure 21

22. Reconnect power.

The remaining procedures can only be performed by trained service technicians.

23. Recalibrate the 2012 PR card
- a. Change LOA setting from 20 to 25.
 - b. Change IA2 setting from 57 down to 52.
 - c. Change LOB setting from 20 to 25.
 - d. Change IB2 setting from 57 down to 52.

24. Test the functionality of the new horizontal valve operator and adjust the speed set points, as necessary, located in the Advance Settings under the Arm/Carriage page on the HMI (Figure 22). Perform this operation for both the Extend and Retract function until the proper speed has been accomplished.

ARM / CARRIAGE SETTINGS: Max CPU Cycle Time **999.99ms** Instantaneous CPU Cycle

HORIZONTAL POSITION SETTINGS			PRESSURE & MAIN FLOW SETTINGS	
RETRACTED POSITION	0,000.0	000 %	RETRACT FLOW RATE	HS EXTEND PUMP SET PRESSURE
TRIP POSITION	0,000.0	00.0	TRIP POSITION OFFSET	HS EXTEND MAN VALVE OUTPUT
HOLE CENTER POSITION	0,000.0	00.0	HOLE CENTER OFFSET	HS RETRACT PUMP SET PRESSURE
MOUSE HOLE POSITION	0,000.0	00.0	MOUSE HOLE OFFSET	HS RETRACT MAN VALVE OUTPUT

EXTEND RAMP SETTINGS			ANALOG'S	
HS EXTEND ACCEL MIN VALVE OUTPUT	000 %		HS VALVE FLOW REQUEST	
HS EXTEND ACCEL DISTANCE	000.0		HS VALVE ANALOG OUT RAW	
HS EXTEND MAX VALVE OUTPUT	000 %		HS POSITION RAW	
HS EXTEND DECEL DISTANCE	000.0		HS POSITION	
HS EXTEND DECEL MIN VALVE OUTPUT	000 %			

RETRACT RAMP SETTINGS			HORIZONTAL RAMP SETTINGS	
HS RETRACT ACCEL MIN VALVE OUTPUT	000 %			
HS RETRACT ACCEL DISTANCE	000.0			
HS RETRACT MAX VALVE OUTPUT	000 %			
HS RETRACT DECEL DISTANCE	000.0			
HS RETRACT DECEL MIN VALVE OUTPUT	000 %			

VERTICAL SLIDE SETTINGS		
MIN HORIZONTAL POSITION FOR VERTICAL SLIDE ENABLE	0,000.0	
VERTICAL LOWERING STOP DELAY	0,000 MS	
VERTICAL UP PRESSURE	0,000	
VERTICAL DOWN PRESSURE	0,000	

GENERAL SETTINGS | **ARM / CARRIAGE** | WRENCH FUNCTION | HORIZONTAL SCALING | METRIC

Figure 22

25. Once the automatic speed settings have been properly adjusted, manually extend and retract the tong assembly in the horizontal direction by pushing the top button on the electric operator to extend and the bottom button to retract (Figures 23 and 24).

PRESS TO EXTEND
MANUALLY

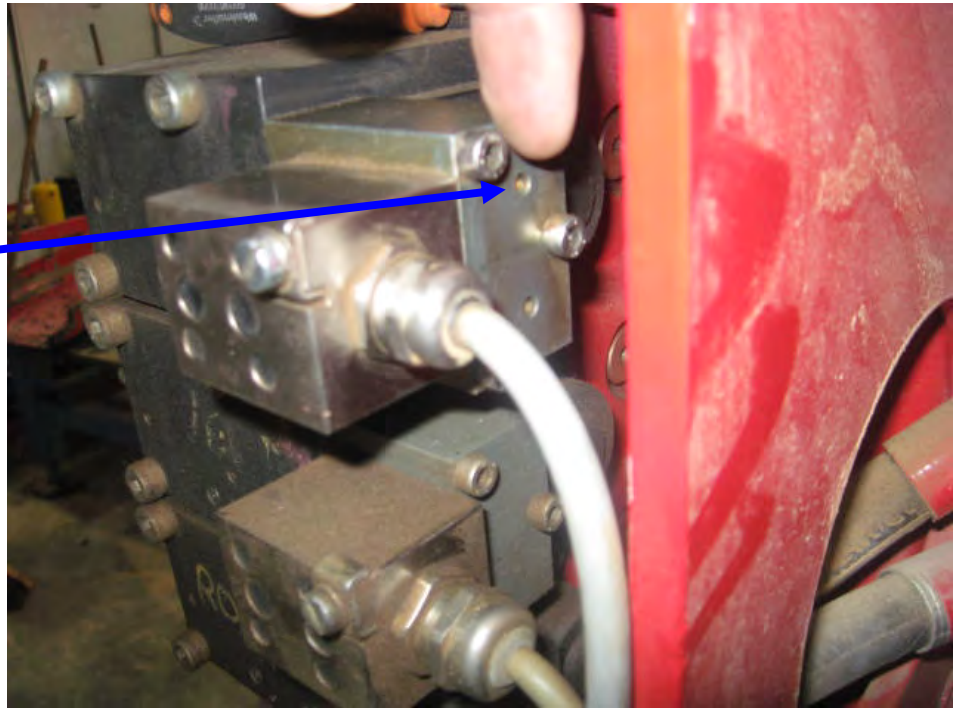


Figure 23

PRESS TO RETRACT
MANUALLY

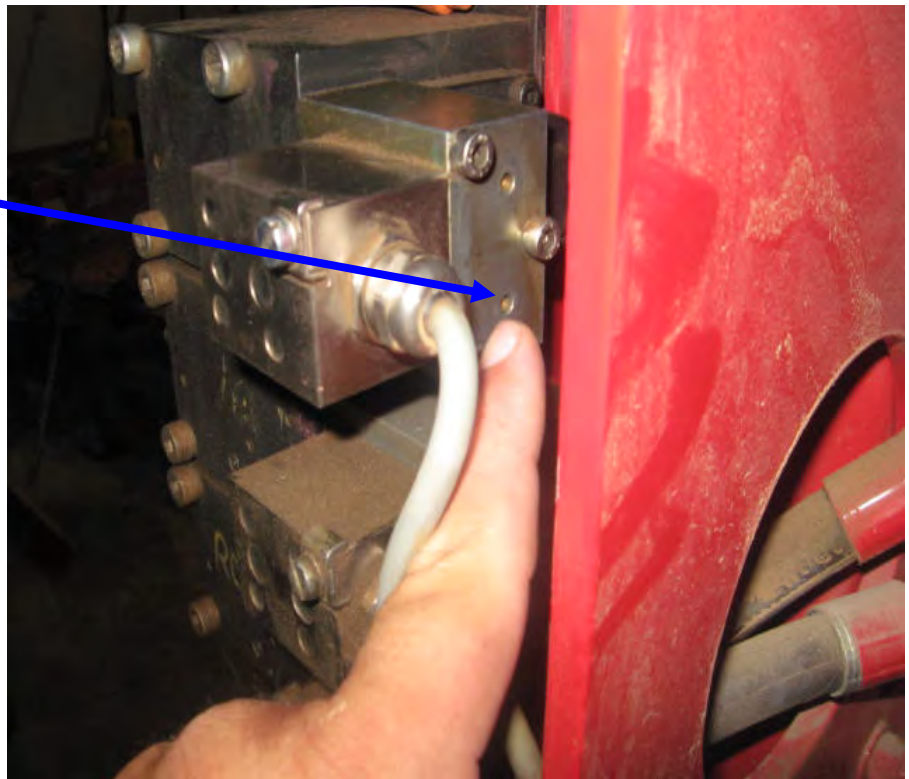


Figure 24

INFORMATION:

For further information contact:

For a complete list of all bulletins go to www.canrig.com

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