

OPERATIONAL & MAINTENANCE MANUAL



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WEIR CONCEPTS INC. WCM Electro Hydraulic Operator



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Version 4.0

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MADE IN ALBERTA, CANADA PRODUCTS

Manufactured and assembled at our Edmonton based facility

DETAILS ARE THE DIFFERENCE BETWEEN ORDINARY AND EXCELLENCE

1. Summary

This manual covers Operation, Maintenance and Troubleshooting and for WCM Electro- Hydraulic Operator.

2. Technical & Application Data

Temperature range: -40°C to +93°C.

Operating Media (YS Actuator): UNVIS HVI 13 or equivalent Hydraulic Fluid.

3. Handling and Lifting

NOTE: Only trained and experienced personnel should handle the pump. The use of PPE (protective clothing, gloves, and eyewear) should always be used when performing any installation or maintenance.

3.1 Lifting Recommendations

3.1.1 Use industry standard practices as it pertains to suitability rated lifting devices, slings and chains that are safe for use.

3.1.2 Do not lift the actuator and valve combination using the actuator lifting lugs only.

3.2 Lifting Instructions

3.2.1 Prior to lifting the actuator remove electrical power and hydraulic lines to ensure that the actuator is fully depressurized and powered down.

3.2.2 Use only main lifting lugs.

3.2.3 Actuator must remain horizontal with the load balanced.

4. Installation on the Valve

4.1 Actuator to be installed on valve directly using the actuator housing flange or more commonly using a mounting bracket and coupling with applicable fasteners.

4.2 Actuator is supplied in the fail position (for single-acting). Install the valve in the correct position per the actuator fail position. Check the position of the actuator using position indicator on actuator body or limit switch (if applicable).

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4.3 Ensure the mounting faces and all connection surfaces on the valve and actuator are clean and free of any debris.

4.4 Grease the coupling stem, bore and valve stem to facilitate assembly.

4.5 Lift the actuator according to handling and lifting instruction (Section 3).

4.6 Whenever possible, install with valve stem in a vertical position.

4.7 Do not exert additional force while installing the coupling or actuator onto the valve.

4.1 Wiring Connection

4.1.1. Connect power as indicated in drawings shown in Figure 1 and 2 (Page 6 & 7).

4.1.2. Connect wiring from Control wiring to PLC (if applicable) shown in Figure 1 and 2 (Page 6 & 7).

5. Electro-Hydraulic Unit Operation

5.1 Control Panel

5.1.1 For Auto operation, ensure the 3 Way switch on panel is set to “Auto”. When Pipeline pressure switch/transmitter is satisfied, the pump will turn on and run until limit switch position is satisfied. If there is leak down or temperature swings, the pump will turn on to maintain ESD open.

5.1.2 Actuator to Fail Close upon loss of power.

5.1.3 Local control can be completed using the ESD & 3-way switch on the actuator panel.

Example Actuator Panel



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5.2 Speed Control

Open/Close speed can be adjusted using the hydraulic speed control valve.

Example hydraulic speed control



5.3 Manual Override

Turn the 3 Way valve located next to the manual pump handle (opposite side of panel of electro-hydraulic unit) to manual position and use pump handle to pump actuator to open position.

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Manual Override Handle and Valve



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6. Actuator Operation and Maintenance

6.1 Stroke Adjustment

The stroke adjustment is available from 80° to 100° of travel by adjusting the open and close position bolts as per below:

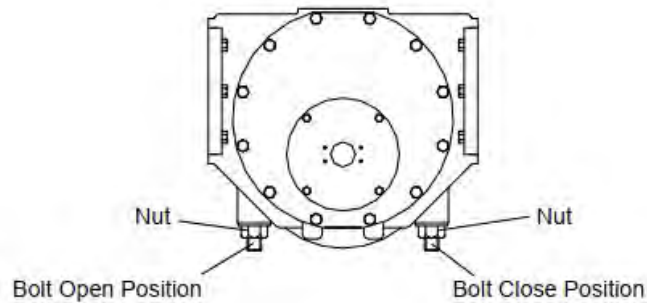
Loosen Nut on the open/close bolt

Adjust as needed:

Loosen = Increase travel

Tighten = Decrease Travel

Tighten Nut on the open/close bolt to set the position



6.2. Removal from Valve

6.2.2 Eliminate electrical power supply and Hydraulic supply.

6.2.3 Release all pressure from controls and remove supply piping/wiring.

6.2.4 Prepare actuator for lifting following guidelines in Section 3.

6.2.5 Remove all mounting fasteners.

6.2.6 Lift and remove actuator from valve.

NOTE: BEFORE DISASSEMBLING OR SERVICING ANY PUMP COMPONENTS ENSURE THE SYSTEM IS FULLY DEPRESSURIZED.

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6.3 Maintenance/Repair

Regular maintenance should be performed as typical maintenance intervals or as required. Autumn months are preferable as this will drain any condensation that may have accumulated in the reservoir.

1. Empty the fluid reservoir of any accumulated moisture.
2. Check filter element(s). Clean and/or replace as necessary.
3. Check set points on pressure relief valve(s). Reset valves if required.
4. Check the operation and calibration of the pressure pilot or optional solenoid.
5. Top up with UNVIS HVI 13 or equivalent hydraulic fluid.

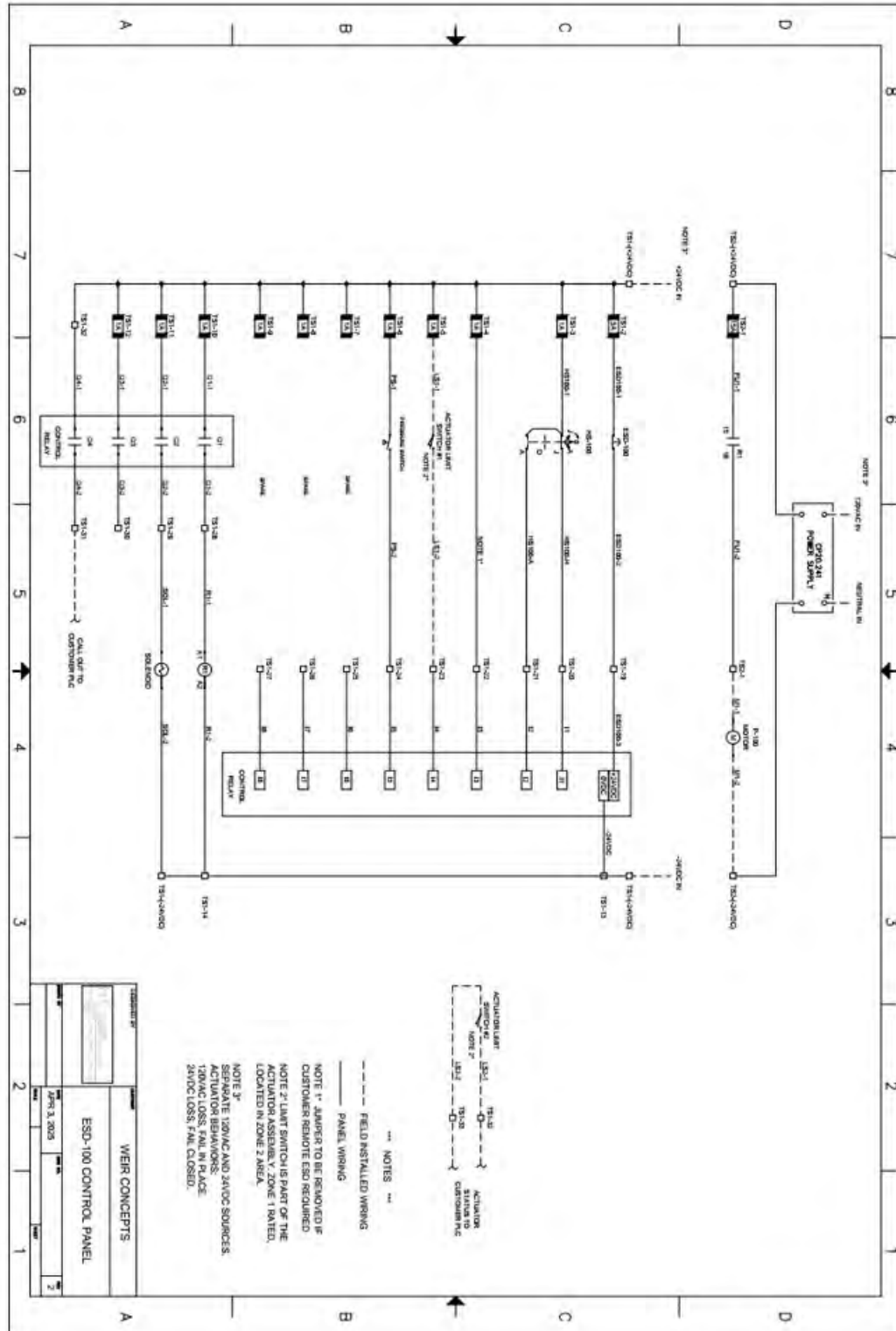
Please contact Weir Concepts' tech support if you have any questions or concerns.

10. Troubleshooting

| Issue | Possible Cause(s) | Corrective Action |
|-----------------------------------|--|---|
| Actuator not functioning | Insufficient supply pressure | Ensure supply pressure is sufficient as per catalog to cycle actuator. |
| | Loss of power | Ensure power is live at source and at solenoid/positioner. |
| | Mechanical function of valve or actuator | If both supply pressure and control power are <u>sufficient</u> consult <u>valve</u> manufacturer and Weir Concepts service to perform further troubleshooting. |
| Valve not fully stroking | Stops incorrectly set | Re-adjust stops as outlined in Section 8 |
| | Lack of supply pressure | Ensure supply pressure is sufficient as per catalog to cycle actuator. |
| | Valve blocked or unable to fully stroke | Consult valve manufacturer |
| Valve Leakage | Stops incorrectly set | Re-adjust stops as outlined in Section 8 |
| | Valve seat or seal issues | Consult valve manufacturer |
| Actuator Leakage | Worn Seals | Contact Weir Concepts |
| | <u>Loose</u> or improper connections | Ensure all supply fitting connections are sufficiently tight and correctly sealed |
| Actuator Cycle Time too fast/slow | Incorrect supply pressure | Ensure supply pressure is correct for application as per catalog info. |
| | Controls adjustment required | Ensure any regulators, speed controls, etc. are adjusted correctly to achieve desired open/closing times. |

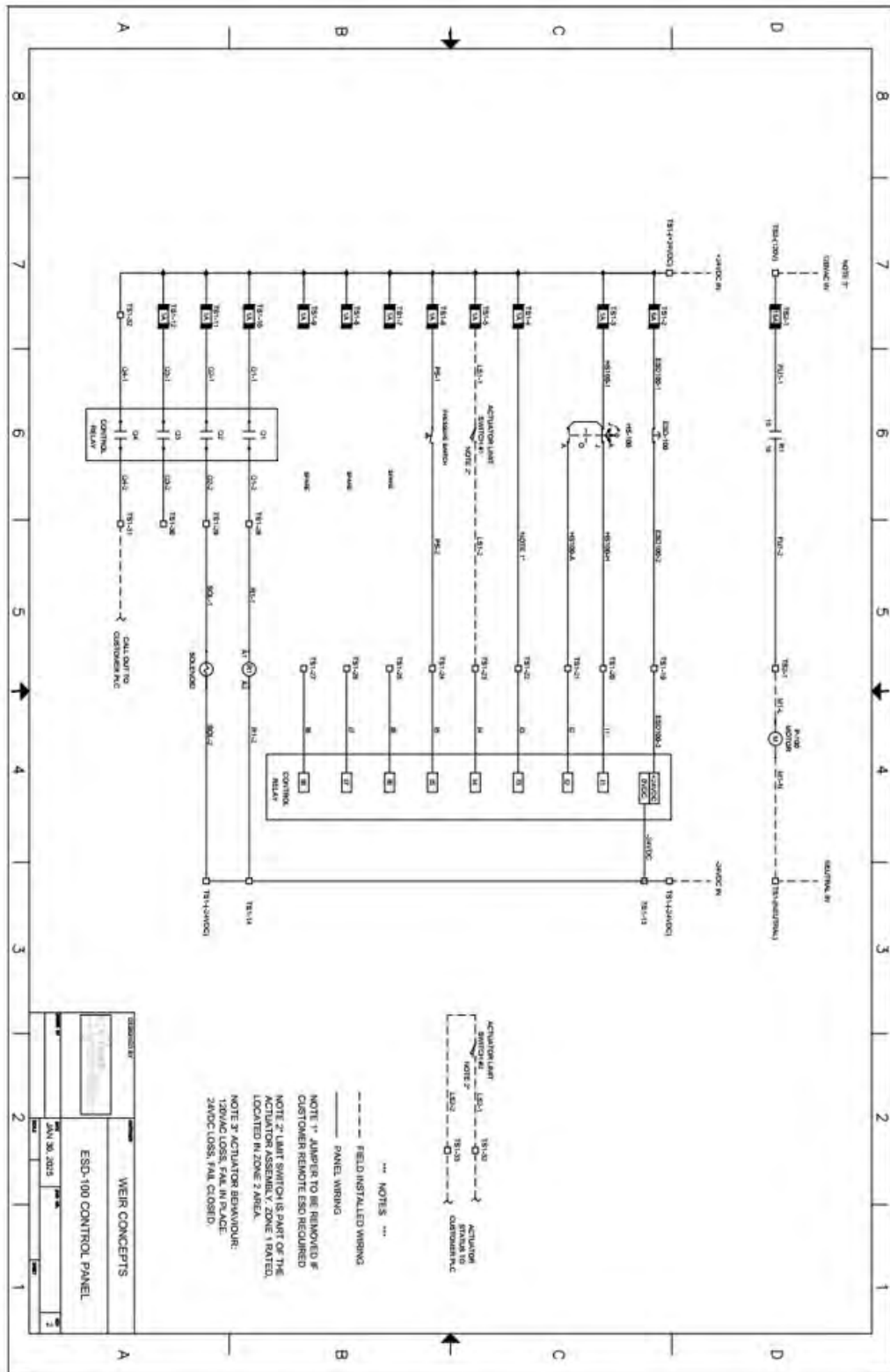
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Figure 1



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Figure 2



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SOLUTIONS FOR YOUR COMPANY NEEDS



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