BRAN+LUEBBE
AN SPX BRAND

B+L Electric Stroke Adjustment (RCS Electric Actuator Only) Operating Manual

Read and understand this manual prior to installing, operating or servicing this equipment

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The Electric Actuator Smart Controller (EASC) is provided to SPX Process Equipment by RCS/Dresser Corporation.

Portions of this manual are drawn directly from RCS/Dresser Corporation manuals covering this product.

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Section 1.0 Controller Information

1.1 General

The RCS Electric Actuator is used to control the stroke length and therefore the flow rate of the American Bran+Luebbe Metering Pumps by way of an electric motor and gearbox. It is to be used in conjunction with an RCS Smart Card controller, a Yokagawa UT450 Controller, a PLC or some other means of driving the stroke length between maximum and minimum. The actuator will work with the 20mm, 30mm and 60mm stroke length Metering pumps. The actuator uses two limit switches to indicate the maximum and minimum travel and a feed back potentiometer to indicate actual position.

WARNING: In explosive atmospheres, do not remove the actuator cover while circuits are live.

1.2 Electric Stroke Adjustment

A worm wheel and crank gear inside the pump gearbox move a plunger via a connecting rod and cross-head. The length of this movement is called the stroke length and it is adjustable (electrically in this case) between 0% and 100% of maximum stroke. The electric stroke length adjustment unit can be broken into two major components, the actuator and the controlling device.

The Actuator is available in either NEMA 4 (Watertight) or NEMA 7 (Explosion-proof, indoor duty) enclosures. The NEMA 4 actuators can be fitted with a local position indictor.

The RCS Smart Card can be mounted inside the actuator or remotely. The Yokagawa UT450-04 must be mounted remotely.

1.2.1 Actuator specifications

Model	RCS	RCS	RCS	RCS
Gearbox type	**P/H1**	**J/K/H2/H3**	**C/D/H4**	**CS/DS/H5/H6**
Output torque (lb./inch)	250	250	250	250
Seconds for 100% stroke travel	40	60	120	120
RPM	30	30	30	30
Turns	20	30	60	60
Volts/Hertz	115/60, 50	115/60, 50	115/60, 50	115/60, 50
2 cam-operated limit switches	5 amps @ 125VAC			
Permanently lubricated?	Yes	Yes	Yes	Yes
Current amps	2.0	2.0	2.0	2.0
Duty/cycle Max on/Min off (sec.)	120/460	120/460	120/460	120/460
Conduit connection	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT
Ambient temperature limits	-40°F to 150°F	-40°F to 150°F	-40°F to 150°F	-40°F to 150°F

Part number reference				
NEMA 4	008868B	008868B	008872B	008872B
NEMA 7	008870B	008870B	008874B	008874B
EASC Card installation kit	1441001-KIT			
UT450-04 Controller	008881B			

1.2.2 Adjusting the limit switches

- The limit switches are factory-set and should not be readjusted unless you are rebuilding the actuator.
- Limit switches should be adjusted only after the actuator is removed from the pump.
- Understroking or overstroking can severely damage your pump.

20-turn actuators: Cam E and limit switch E are minimum position. Cam D and limit switch D are maximum position. See pages 6 and 7 for location.

30- and 60-turn actuators: Cam D and limit switch E are minimum position. Cam E and limit switch E are maximum position.

1. Remove the actuator from the pump and take off the actuator cover.
2. Drive the actuator until the minimum cam contacts the minimum limit switch. The actuator will shut off. Make sure the clamping screw on the minimum cam is tight.
3. If applicable, set the position potentiometer at minimum position.
4. Increase the actuator the correct number of turns for your type of pump**,** as indicated in the table on page 4. Mark the output shaft to help you count revolutions. Loosen the clamping screw on the maximum cam until it is finger-tight. Move the maximum cam until it contacts the maximum limit switch. The actuator will shut off at this position. Retighten the screw.
5. Repeat steps 2 through 4 until the actuator moves the correct number of turns between limit switches.
6. The actuator should not turn under the minimum or over the maximum set points.

1.2.3 Reinstalling the actuator

1. Make sure the pump is mechanically zeroed. There should be no plunger movement when the drive motor is running.
2. Zero the actuator. The minimum cam should contact the minimum limit switch.
3. Mount the actuator to the pump. Tighten all bolts and nuts evenly, taking care to center the actuator on the adapter flange.
4. Remove the manual declutching knob by loosening the socket set screw.
5. Unscrew the socket head bolts on the cover and remove.
6. Wire per diagram on page 8.
7. Run the unit back and forth several times between minimum and maximum stroke to check for binding.

1.2.4 RCS actuator, NEMA 4 enclosure

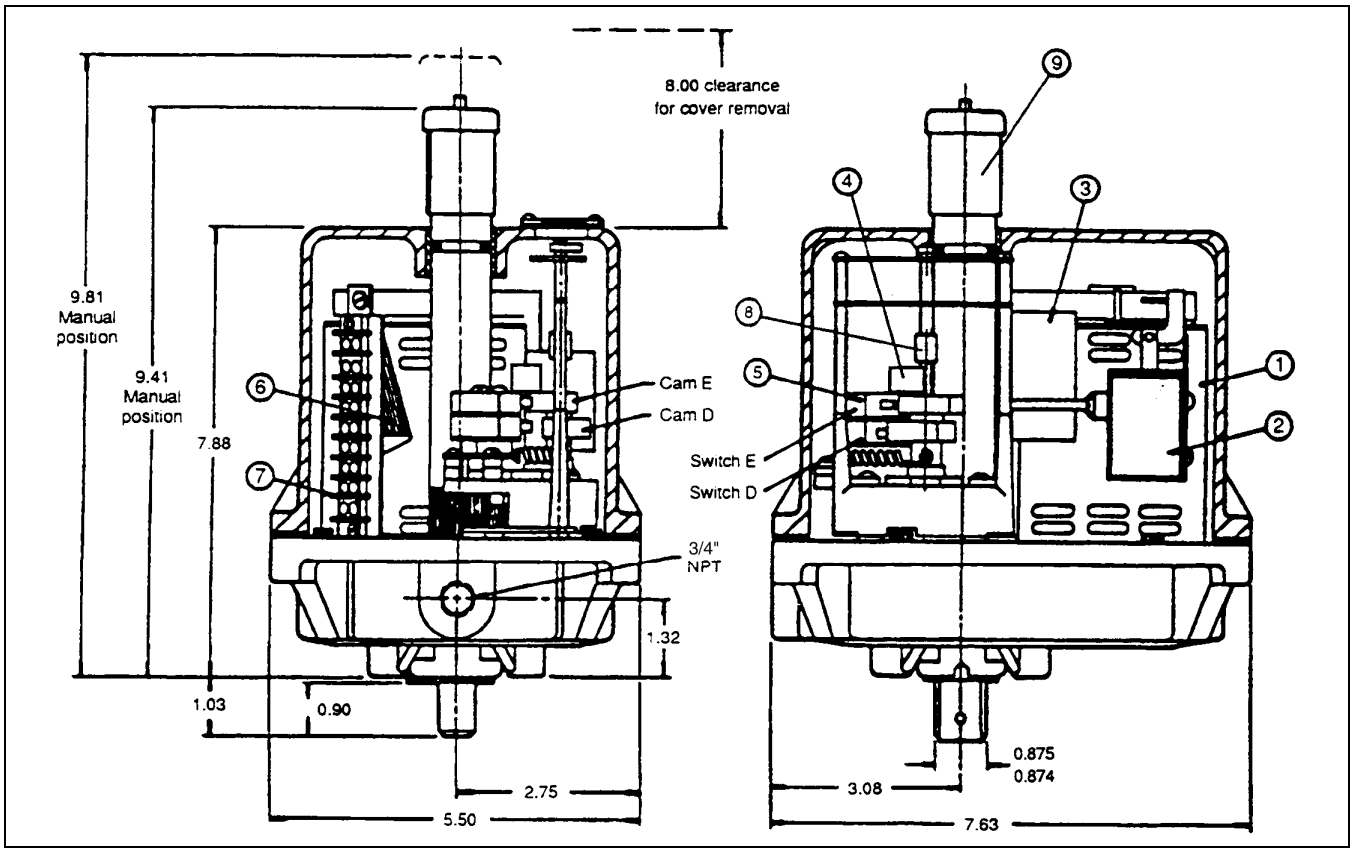


Figure 1 - NEMA 4 Enclosure

Technical Data, NEMA 7 and NEMA 7 actuators	
1	Voltage: 120VAC, 60/50Hz, single phase
2	4:1 duty cycle (2 minutes max. run time)
3	Limit switches: 5A, 120 VAC “L” (amp load)
4	Ambient temperature: -40°F to 150°F
5	Lubrication: High-temperature grease for gears, self-lubricating bearings

Item number	Description
1	Motor
2	Brake solenoid
3	Capacitor
4	Position potentiometer
5	Limit switch
6	Resistor
7	Terminal block
8	Adjustment sleeve
9	Declutching knob

1.2.5 RCS actuator, NEMA 7 enclosure

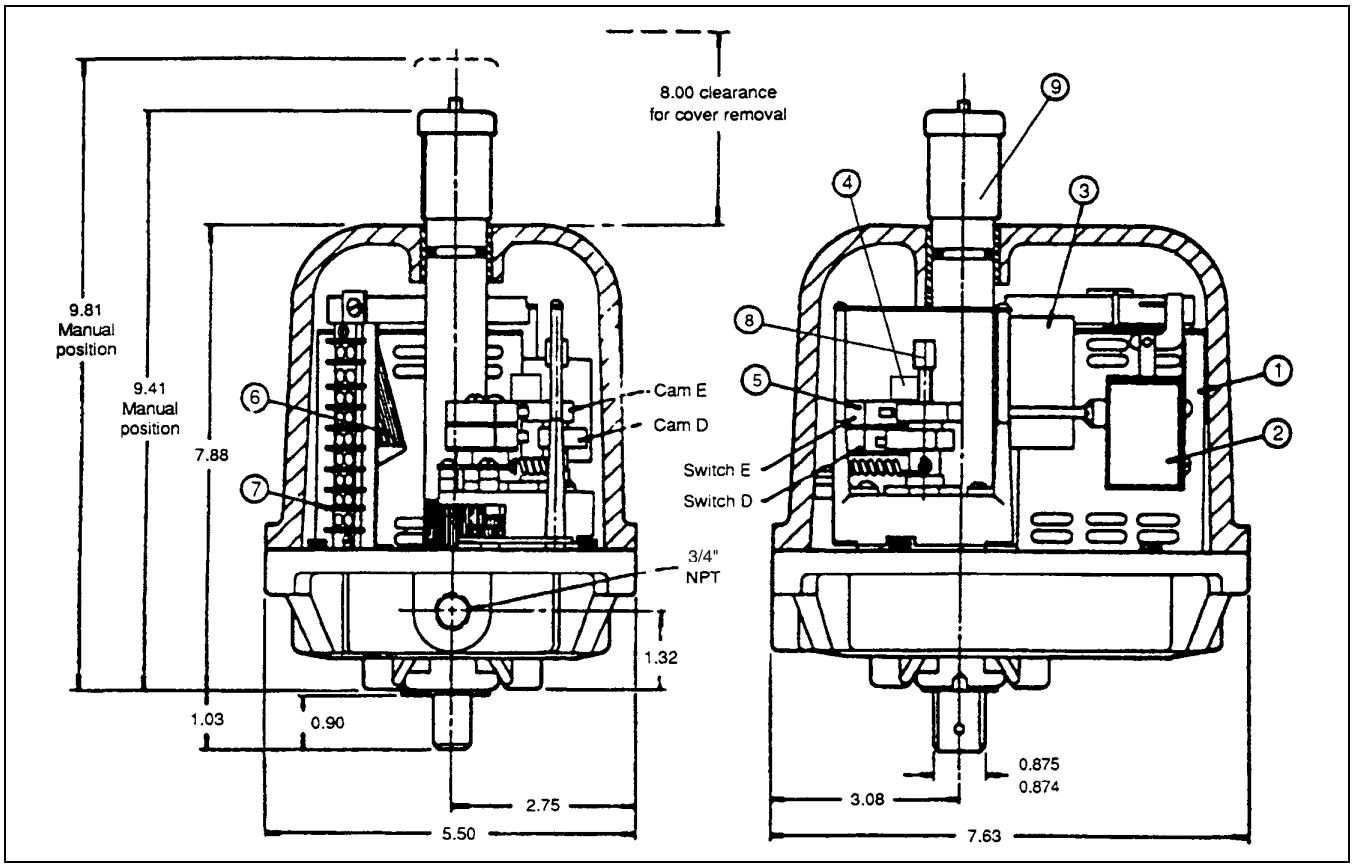


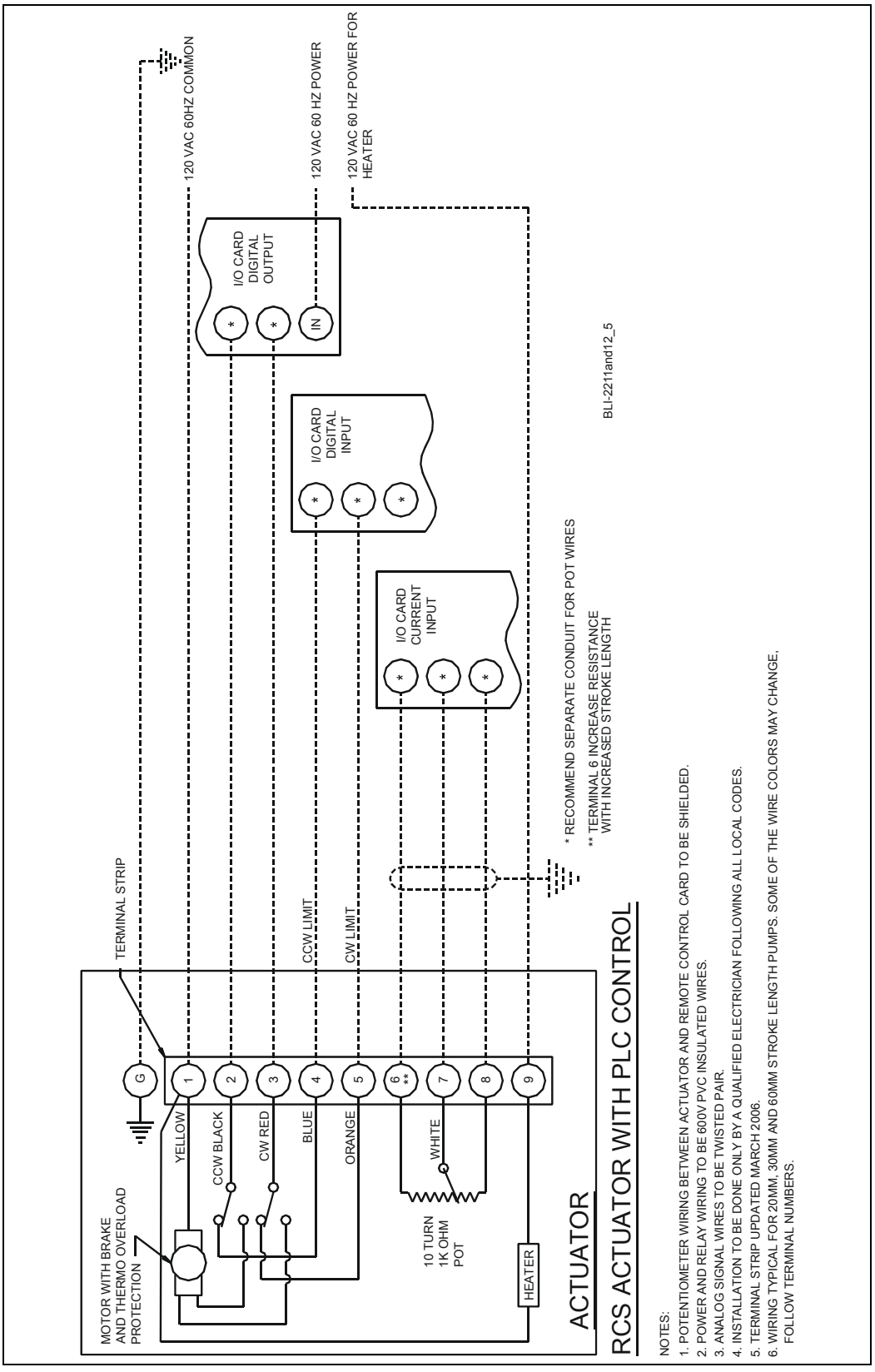
Figure 2 - NEMA 7 Enclosure

Item number	Description
1	Motor
2	Brake Solenoid
3	Capacitor
4	Position potentiometer
5	Limit switch
6	Resistor
7	Terminal block
8	Adjustment sleeve
9	Declutching knob

Manual operation, NEMA 4 and NEMA 7 actuators
1. Pull the declutching knob up and hold.
2. Put a wrench on the flats.
3. Twist the shaft back and forth to disengage.
4. Rotate to the desired position
5. Actuator will reengage when the knob is released and power is applied.
6. Do not turn beyond normal travel.

Section 2.0 Reference Diagram

Figure 3 – RCS Actuator with PLC Control



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