

## **CENTURA™ CPL Series**

### **Installation Instructions**

#### **Introduction**

The Centura CPL Series electric actuator is a rotary valve actuator with output torques of 100 and 225 in-lbs. It has been designed for NEMA 4, 4X and can come with an externally mounted 20mA card for modulating service.

#### **Storage**

1. Keep conduit entries plugged.
2. Store in a dry environment.
3. Periodically cycle the actuator if possible.

#### **Maintenance**

Centura Series actuators contain a permanently lubricated, precision cut, heat treated gear train for long, reliable cycle life. There is no need to change gear train grease.

Permanent split capacitor gearmotors have been equipped with thermal protectors. After many operations especially in warm environments the motor will heat up. To guard the motor against overheating the thermal protector opens the circuit to the motor and maintains this state until the temperature of the motor drops to a satisfactory level. This thermal protection means that the actuator will not move when overheated. Consideration must be given to the duty cycle requirements of the actuator.

#### **Installation**

1. This section of the instruction sheet applies to the on-off units. For instructions on modulating units, please see the ESP3 Electronic Servo Positioner Instructions.
2. Manually open and close valve to ensure freeness of operation.

*Caution:* To prevent electrical shock keep unit tight while circuits are alive. Disconnect supply circuit before opening.

3. Be sure valve and Automax actuator rotate in the same direction and are in the same position (i.e., valve closed, actuator closed). If not sure, electrically operate the actuator to determine its operating range. The electric actuators are factory set for 90 degree operation.
4. Mount Automax actuator to valve with Automax provided mounting hardware to assure proper alignment. (*NOTE:* Some valves have manual stops; remove if appropriate or set actuator to operate within those travel stops.)

5. Care should be taken to properly align valve stem and Automax actuator output shaft (misalignment will cause premature failure of assembly).
6. To connect power to terminal strip of actuator it is necessary to remove the cover.
7. After cover has been removed, locate the terminal wiring schematic inside the cover.
8. Connect power to terminal strip according to schematic diagram (power should be fused with a 5 amp slow-blow fuse). The actuator should be wired and grounded in accordance with Local and National Electrical Codes.

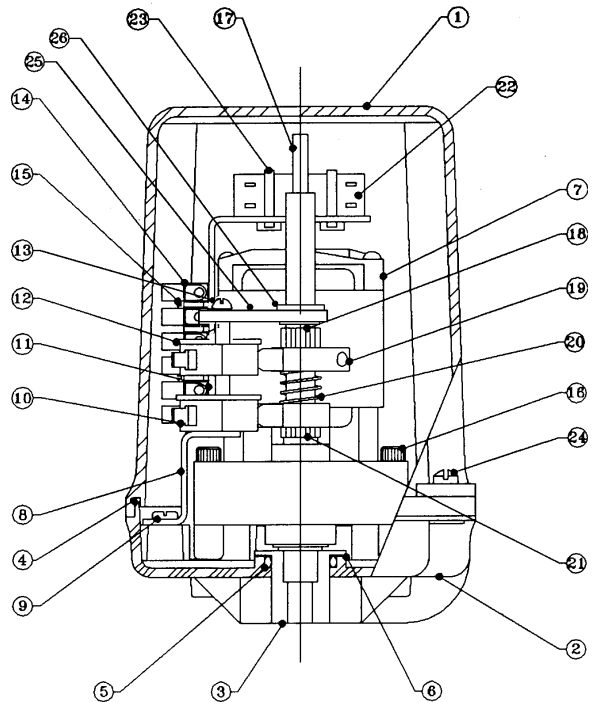
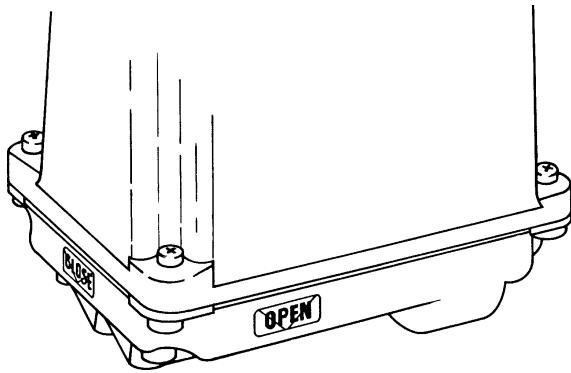
*Caution:* Consult factory when wiring multiple actuators in series or parallel, serious damage may result. User must isolate unused winding.

9. Before replacing cover, actuate valve and check to see if it opens and closes to preferred positions. If valve does not perform correctly, adjust cams to properly set actuator travel.
10. Drive actuator to desired open position. The cams are adjusted in two ways. Simply depress the splined "Quick-Set" cam against the spring and rotate to desired location.
11. To adjust closed position, repeat step 10 with actuator in desired closed position.
12. Operate the unit several times and recheck position. If unit is still out of adjustment, reset the cams by following steps 10 and 11.
13. 60Hz actuator motors may be run on 50Hz supply, however, the cycle time increases by 1.2 times and the duty cycle decreases by a factor approx. 25%. The rated torque does not change.

#### **Position Indication Stickers:**

Attached to the inside of the cover is a set of stickers with the words "CLOSED" and "OPEN." These stickers are to be attached to the outside of the actuator base. The stickers have an orange triangle on them, such that when properly attached, the actuator will line up with the triangle on the output shaft. A sticker can be placed on either side of the unit to produce a visual indication of the opened and closed position of the actuator.

### Parts & Materials CENTURA CPL Series



#### COMMON PARTS RELATED TO ALL ACTUATORS

NO.	ITEM	MATERIAL	P/N	QTY
1	Cover	Zytel	106451	1
2	Base	Zytel	106452	1
3	Output Adapter	Steel/Plated	106453	1
4	'O'-ring Cover	N674-70 Nitrile	106751	1
5	'O'-ring Base	N674-70 Nitrile	102262	1
6	Shim Bearing	Steel	106759	1
8	Switch Mounting Bracket	Steel/Plated	107139	1
9	8-32UNCx3/8" Pan Head	Steel/Plated	106755	3
10	Micro Switch with Leaf	Plastic/Steel	105720	2
11	3/16" High Spacer	Nylon	105679	6
12	Switch Insulator Gasket	Vulcanized Fiber	103675	3
13	4-40UNCx1-1/2" Phillips Hd.	Steel/Plated	108349	2
14	6 Position Terminal Strip	Plastic/Steel	103997	1
	2 Screw Marker Strip	Plastic	103996	1
15	3-48UNCx1/2" Pan Head	Steel/Plated	104837	2
17	Camshaft	Steel/Plated	107005	1
18	Large 4-Deg. Spline Shaft	Plastic	103571	1
	1/16" Dia. Roll Pin	Spring Steel	103621	1
19	4-Deg. Quick Set Cam	Plastic	105655	2
20	Switch Spring	Spring Steel	103714	1
21	Small 4-Deg. Spline Shaft	Plastic	103572	1
	1/16" Dia. Roll Pin	Spring Steel	103621	1
23	Ty-Rap Cable Tie	Plastic	106574	2
24	10-24x5/8" Captive Screw	Stainless Steel	X00360	4
25	Switch Support Bracket	Aluminum	108997	1
26	3/8" Pop in Bearing	Plastic	108998	1

#### ADDITIONAL PARTS SPECIFIC TO 115VAC 100IN-LBS.

NO.	ITEM	MATERIAL	P/N	QTY
7	115VAC PSC Gear Motor	Steel/Copper	106617	1
16	6-32UNCx1/16" Pan Head	Steel/Plated	106753	2
22	Capacitor	Film Wrapped	107128	1

#### ADDITIONAL PARTS SPECIFIC TO 115VAC 225IN-LBS.

NO.	ITEM	MATERIAL	P/N	QTY
7	115VAC PSC Gear Motor	Steel/Copper	106616	1
16	10-24UNCx1-5/8" Soc. Hd.	Steel/Plated	106754	4
22	Capacitor	Film Wrapped	107120	1

#### ADDITIONAL COMMON PARTS \*\* NOT SHOWN \*\*

NO.	ITEM	MATERIAL	P/N	QTY
	8-32UNC Ground screw	Steel/Plated Green	103627	1
	#8 Cup Washer	Brass	105626	1
	3/4" NPT Conduit Plug	Plastic	103685	1
	115VAC Wiring Harness	Copper/Plastic	106749	1
	Nameplate	Mylar	106613	1
	Flowserve Logo Sticker	Mylar	106612	1
	Cam Adjustment Sticker	Mylar	105757	1
	Switch I.D. Sticker	Mylar	107135	1
	Open/Close Stickers	Mylar	106186	1
	Position Indication Sticker	Mylar	106187	1
	115VAC Schematic Sticker	Mylar	106758	1

### Troubleshooting

**Problem:**

There is power to the unit, but it does not respond.

**Solution:**

Check the nameplate to see that the correct voltage has been applied.

Check the wiring to see that it is per the wiring schematic.

Check the limit switches to see if they are in the normal operating range.

**Problem:**

Power is getting to the motor, but it merely hums.

**Solution:**

Check to see that the proper voltage is applied.

Make sure all the connections are tight.

Check to see that CW and CCW power connections are not powered at the same time.

**Problem:**

The actuator performs erratically.

**Solution:**

Check to see that the actuator is not stalling.

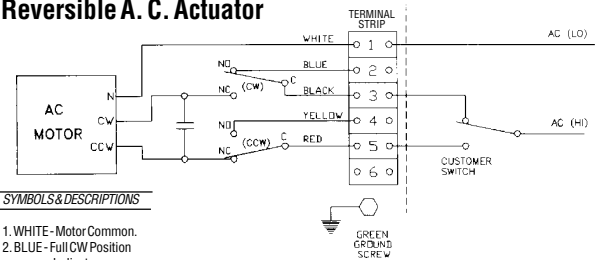
Check the ambient temperature rating. The permanent split capacitor units are equipped with thermal cut-outs. Excessive temperatures and cycle frequencies may heat the motor up and the thermal cut-out turns it off.

### Wiring Diagrams

**Notes:**

1. Consult factory when wiring multiple actuators in series or parallel, serious damage may result.
2. Wiring diagrams show internal wire connections and suggested customer connection for proper use. Switches shown in "customer wiring" are for illustration only and are not supplied with the actuator.

#### Reversible A. C. Actuator

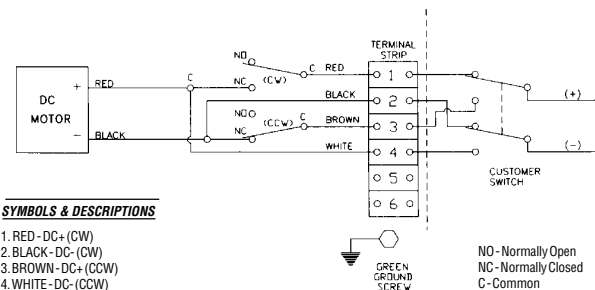


**SYMBOLS & DESCRIPTIONS**

1. WHITE - Motor Common.
2. BLUE - Full CW Position Indicator.
3. BLACK - AC Hi will Turn Actuator CW.
4. YELLOW - Full CCW Position Indicator.
5. RED - AC Hi will Turn Actuator CCW.

NO - Normally Open  
NC - Normally Closed  
C - Common

#### Reversible D. C. Actuator

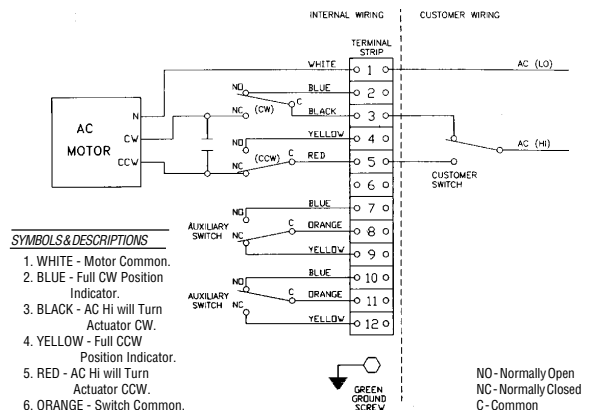


**SYMBOLS & DESCRIPTIONS**

1. RED - DC+ (CW)
2. BLACK - DC- (CW)
3. BROWN - DC+ (CCW)
4. WHITE - DC- (CCW)

NO - Normally Open  
NC - Normally Closed  
C - Common

#### Reversible A. C. Actuator with 2 extra switches

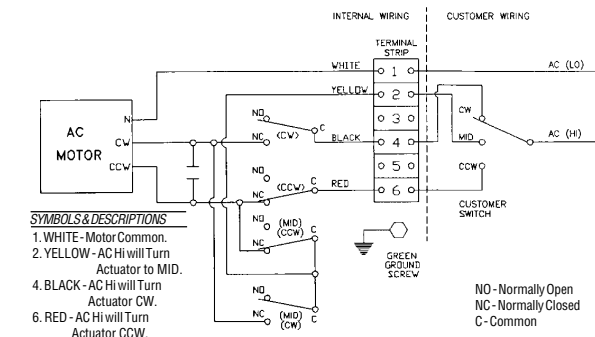


**SYMBOLS & DESCRIPTIONS**

1. WHITE - Motor Common.
2. BLUE - Full CW Position Indicator.
3. BLACK - AC Hi will Turn Actuator CW.
4. YELLOW - Full CCW Position Indicator.
5. RED - AC Hi will Turn Actuator CCW.
6. ORANGE - Switch Common.

NO - Normally Open  
NC - Normally Closed  
C - Common

#### Reversible A. C. Actuator wired for 3 position



**SYMBOLS & DESCRIPTIONS**

1. WHITE - Motor Common.
2. YELLOW - AC Hi will Turn Actuator to MID.
4. BLACK - AC Hi will Turn Actuator CW.
6. RED - AC Hi will Turn Actuator CCW.

NO - Normally Open  
NC - Normally Closed  
C - Common



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Typical Actuator Specifications		
Action		Reversible
Supply Voltages	AC: +/-	115VAC (1 Ph)
	10%	230VAC (1 Ph)
	50/60Hz	24VAC (1 Ph)
	DC:	12VDC
		24VDC
Temperature Rating		-20°F (-28°C) to 160°F (70°C)
Enclosure Ratings / Device Testing		CSA Enclosure 4
		NEMA 4, 4X
		89/336/EEC Directive for CE Marking
Range of Operation		0° to 180°
AC Motor Thermal Protection		Automatically resetting
Motor Types	AC:	Permanent Split Capacitor
	DC:	Brush
Travel and Aux. Switches		SPDT, Form C 15 amp 125 1/2 HP 10 amp 250VAC, 1/2 amp 125 VDC
Conduit Connections		(1) 3/4-14 NPT
Corrosion Protection		Enclosure: Zytel engineered resin Cover Screws: Stainless Steel Output Shaft: Dacromet Coating
Terminal Strip Hookup		300V, 30A, 12-26 AWG
Lubrication		Permanently lubricated
Gear Train		Heat treated alloy steel, rated to stall torque

Note: The above ratings may change depending on model configurations and options provided.  
Products may differ as the result of the Company policy of continuous product improvement.

Actuator Model		Opt. Motor Desig.	Motor Voltage	Duty Cycle (%)	Run Current (amp)		Locked Rotor (amp)	
CPL1	CPL2				CPL1	CPL2	CPL1	CPL2
Cycle Times Sec/90°								
5	6	Std	115	50	0.3	0.5	.04	0.5
3	4	B	12	100	1	1.6	*	*
3	4	C	24	100	0.5	0.8	*	*
8	7	D	230	50	0.11	0.18	0.12	0.2
100	225	Torque (in-lbs)						
11	25	Torque (Nm)						
4	5	Weights Lbs (kg.)						

1. Cycle times are approximate under no load conditions and may vary slightly under actual operating conditions.
2. Duty cycles are rated at 70°F. The duty rates may be less under loaded conditions.
3. Do not lock up DC motors.