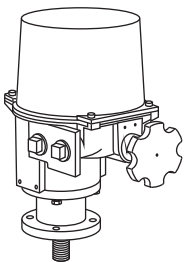## Final Control Elements

SERVO-TOP VALVE ACTUATOR TYPE C
(linear type)

Functions & Features
•Actuator for a control valve •Lightweight, compact design •Simple field adjustments •Torque limiters •Electronic limiters for the full-open and -closed positions are easy to adjust. •ISO standard flange

MODEL: CSP-[1]71-[2][3]

ORDERING INFORMATION

• Code number: CSP-[1]71-[2][3]
Specify a code from below for each [1] through [3].
 (e.g. CSP-471-AK4)

[1] MAXIMUM STROKE
4: 40 mm (1.57")
7: 75 mm (2.95")

OPERATION TIME, MAXIMUM THRUST
7: 34 seconds / 20 mm, 12000 N

OUTPUT STEM TYPE
1: M22 male screw, pitch 1.5

[2] INPUT
Current
A: 4 – 20 mA DC (Input resistance 250 Ω)
Voltage
6: 1 – 5 V DC (Input resistance 1 MΩ min.)

[3] POWER INPUT
AC Power
K4: 100 V AC, 50/60 Hz or 110 V AC, 60 Hz
L4: 200 V AC, 50/60 Hz or 220 V AC, 60 Hz

GENERAL SPECIFICATIONS

Environmental protection: IP 56
Action: Direct or reverse; field selectable with DIP switches (factory set to "reverse")
(In "reverse" action with upright mount, the output stem goes up with an input signal increase.)
Operation at abnormally low input: Extend, Retract or Stop; field selectable with DIP switches; default set to Stop.
Detectable input drop level: 0.37 ±0.1 V DC; converted into voltage
Wiring conduits: G 1 female thread (two)
Material
  Body: Aluminum alloy
  Cover: Steel
  Terminal screws: Nickel-plated steel (torque 0.8 N·m)
Paint color: Munsell N6 (handle: red)
Drive: AC motor (15-minute rating)
  Startup current: 3.2A (power input code K4)
  1.6A (power input code L4)
  Insulation class: B
  (thermal protector incorporated; 120 ±5°C)
Power control element: Semiconductor switch
Position detection: Potentiometer
Deadband adjustment: 0.2 – 3.0 % (default set to approx. 1.5 %)
Restart limiting timer adjustment: 0 – 30 sec. (default set to approx. 4 sec.)
Isolation: Signals to power to sequential signals to metallic housing
Zero adjustment: 0 – 25 %
Span adjustment: 50 - 100 %
Torque limiting mechanism: Incorporated
Space heater: Incorporated
Manual operation: Available

INPUT SPECIFICATIONS
■ **DC Current**: Input resistor incorporated

OUTPUT SPECIFICATIONS
■ **Speed & Thrust** (at rated power input voltage)
Operation time (thrust 10000 N): 34 sec./20 mm (50 Hz), 29 sec./20 mm (60 Hz)
Maximum thrust: 12000 N
■ **Position Signal**: 4 – 20 mA DC
Load resistance: 300 Ω maximum
(The output signal increases when the stem retracts.)

■ **Sequential Control Signal**: "Full-open", "full-closed" and "Alarm"

NPN open collector: 30 V DC @ 100 mA max.

Saturation voltage: 1 V DC

INSTALLATION

Supply voltage

Operational voltage range:

  Code K4: 100V AC ±10% at 50 Hz, 90 – 121V AC at 60 Hz

  Code L4: 200V AC ±10% at 50 Hz, 180 – 242V AC at 60 Hz

Power consumtpion:

  Code K4: 200 VA at rated current

  Code L4: 240 VA at rated current

Operating temperature: -10 to +60°C (14 to 140°F)

Operating humidity: 30 to 85 %RH (non-condensing)

Vibration: ≤ 19.6 m/s^2 (2G) at 50 Hz

Mounting position: Standing to horizontal

Weight: 15 kg (33.1 lb)

PERFORMANCE

Hysteresis: 1 mm or less

Insulation resistance: ≥ 100 MΩ with 500 V DC

Dielectric strength: 2000 V AC @ 1 minute
(signal to power to sequential signals)
2000 V AC @ 1 minute
(sequential signals to metallic housing)
1500 V AC @ 1 minute
(power to metallic housing)
1000 V AC @ 1 minute
(signal to metallic housing)

TERMINOLOGY

•**Torque Limiting Mechanism**

Torque switches are equipped to protect the motor from overload caused by foreign objects stuck in the valve. The switches can be activated within 2 to 98 % range to stop the motor and to output an alarm signal, with the RUN LED flashes in 0.5 sec. intervals.
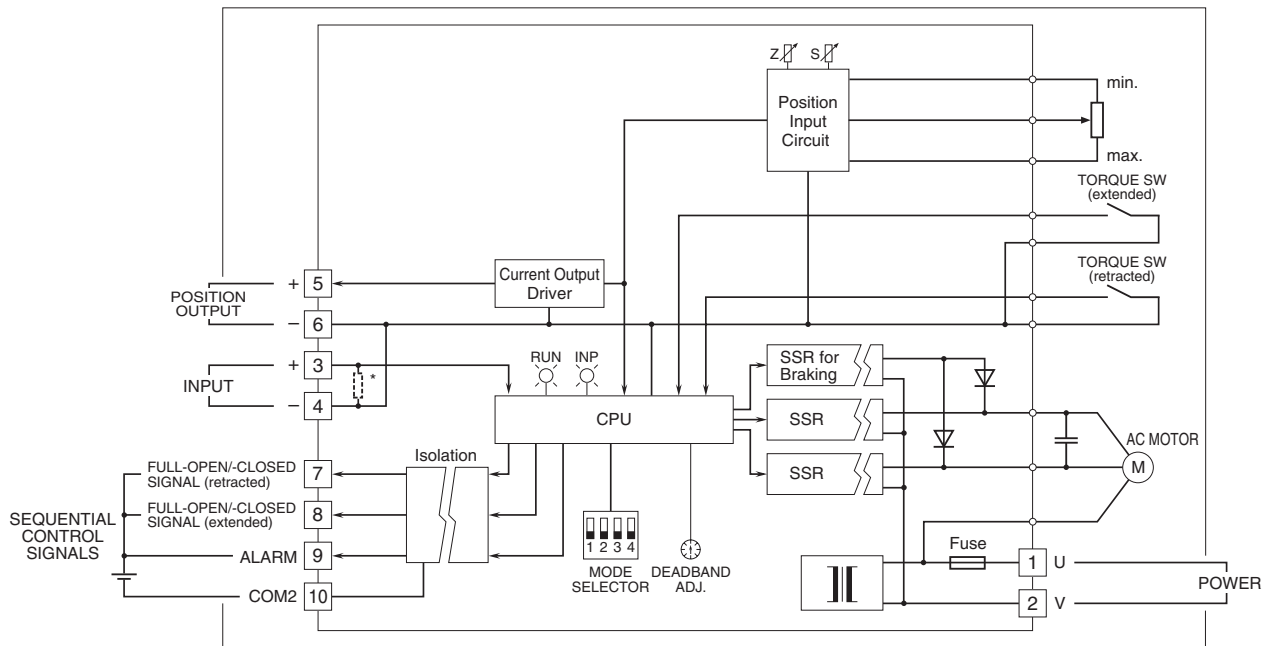
•**Restart Limiting Timer**

A timer is incorporated to protect the motor and other incorporated components from overheating. The timer prevents the motor from restarting for a certain interval (0 to 30 sec. selectable) once the motor has been stopped within deadband.

• **Electronic Limiter**

This model is equipped with electronic limiters in order to prevent mechanical locks when the input goes below 0 % or above 100 %.

Limiters are set at approx. -1.5 % for the full-closed side, approx. 101.5 % for the full-open side.

MODEL: CSP

EXTERNAL DIMENSIONS unit: mm (inch)

150 (5.91)
81 (3.19)
10 (.39)
30 (1.18)
40 (1.57)
60 (2.36)
2x2–M8x16
130 (5.12)
Space required to remove cover
2–G1 WIRING CONDUIT

ø216 (8.50)
103 (4.06)
280 (11.02)
177 (6.97)
79 (3.11)
40 (1.57)
12 (.47)
Handle knob position at use

4–ø11
ø102 (4.02)
ø125 (2.92)
Yoke Mounting Requirements

196 (7.72)
336 (13.23)
71 (2.80)
69 (2.72)
140 (5.51)
11 (.43)
2.5 (.10)
30 (1.18)
35 (1.38)
M22, 1.5 pitch
65 (2.56)
65 (2.56)
YOKE SURFACE
max. 121 (4.76)
[max. 86 (3.39)]
ø70 $^{-0.030\,(2.755)}_{-0.076\,(2.753)}$
[   ] for CSP-4

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

* Input shunt resistor incorporated for current input.

⚠ Specifications are subject to change without notice.