

Actuators

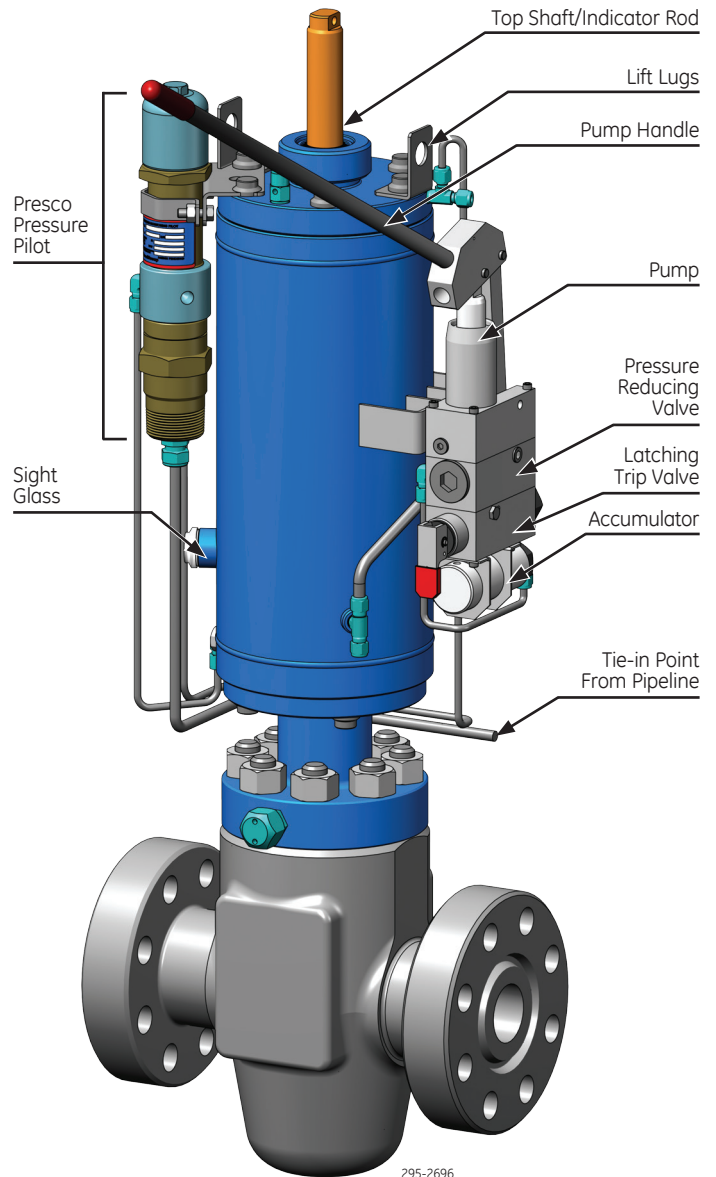
Pressure Control Model RA-ESD Self-Contained Actuator

The Model RA-ESD (Emergency Shutdown System) Self-Contained Actuator is a Model RA actuator fitted with the self-contained hydraulic control system. The ESD system provides immediate shutdown of a well or pipeline under any climatic conditions even in remote locations where no external power source is available.

The RA-ESD actuator consists of three basic components: the RA actuator, the hydraulic hand pump and the high-low pressure pilot. Hydraulic fluid is pumped into the actuator piston chamber to operate the valve. The high-low pressure pilot is a sensor, which can be adjusted to detect pressures in the well or pipeline that vary from the set values. The lower portion of the actuator housing acts as a convenient hydraulic fluid reservoir. This makes the system more compact and also lubricates the internals of the actuator to prolong service life.

Features —

- Fail-safe valve shutdown
- Totally self-contained
 - No flowline pressure required
 - No compressed gas required
 - No electricity required
 - No nitrogen required
 - Uses clean hydraulic fluid in a closed circuit
- Simple and safe
 - All components can be independently replaced (if necessary)
 - Spring housing is a welded construction that prevents release of preloaded spring
- High initial closing force
- Modular design
 - Easy to maintain
- Visual position indicator rod for positive valve status
- Horizontal or vertical actuator orientation



Model RA-ESD Self-Contained Actuator

Accessories —

- Manual accessories
 - Hold open devices available in both manual and positive configurations with non-fusible, fusible and high thrust fusible options
 - Hydraulic override
 - Clear polymer stem protector
 - Desert service manual self-contained hydraulic ESD control package
- Electric accessories
 - Electric limit switches
 - Electric-hydraulic powered ESD control system
 - Solar powered ESD control system
 - Solenoid for remote closing
- Overpressure protection
- Remote Presco-Tee with high-low pilot for monitoring pressure in the well or pipeline
- Telemetry application systems
- Dump valve for quick closing
- Pressure pilots

Specifications —

Model RA-ESD	
Models	RA-3, RA-4, RA-6, RA-8, RA-12
Applicable Valve Sizing	1-13/16" thru 7-1/16"
API Specification	API 6A
Hydraulic Actuator	Standard Service
PR2	Annex F
Temperature*	-50°F to +150°F (-46°C to +66°C)
Maximum Working Pressure**	3,500 psi (241 bars)
Maximum Test Pressure	5,250 psi (362 bars)

* Temperature: -75°F (-59°C) upon request

** Maximum Working Pressure: Higher pressures available upon request

Hydraulic Actuator Sizing Chart —

Valve		Actuator		
Bore	psi	Model	Operating Pressure	Volume Displacement
1-13/16"	10,000	RA-3-11	.147 x WP + 183 psi (1,653 psi/115 bars)	29.77 in ³
	15,000	RA-3-11	.147 x WP + 189 psi (2,394 psi/165 bars)	29.77 in ³
2-1/16"	3,000	RA-3-11	.159 x WP + 172 psi (649 psi/45 bars)	29.77 in ³
	5,000	RA-3-11	.159 x WP + 176 psi (971 psi/67 bars)	29.77 in ³
	10,000	RA-3-11	.159 x WP + 183 psi (1,773 psi/122 bars)	31.20 in ³
	15,000	RA-3-11	.159 x WP + 189 psi (2,574 psi/177 bars)	32.61 in ³
2-9/16"	3,000	RA-3-11	.186 x WP + 172 psi (730 psi/50 bars)	35.44 in ³
	5,000	RA-3-11	.186 x WP + 176 psi (1,106 psi/76 bars)	35.44 in ³
	10,000	RA-3-11	.186 x WP + 183 psi (2,043 psi/141 bars)	36.86 in ³
3-1/8"	15,000	RA-4-18	.130 x WP + 177 psi (2,127 psi/147 bars)	64.44 in ³
	3,000	RA-3-11	.276 x WP + 188 psi (1,016 psi/70 bars)	42.53 in ³
3-1/8"	5,000	RA-3-11	.276 x WP + 193 psi (1,573 psi/108 bars)	42.53 in ³
	10,000	RA-4-18	.182 x WP + 185 psi (2,005 psi/138 bars)	71.34 in ³
3-1/16"	15,000	RA-6-29	.134 x WP + 167 psi (2,177 psi/150 bars)	115.64 in ³
	3,000	RA-4-18	.347 x WP + 190 psi (1,231 psi/85 bars)	89.75 in ³
4-1/16"	5,000	RA-4-18	.347 x WP + 193 psi (1,928 psi/133 bars)	89.75 in ³
	10,000	RA-4-18	.302 x WP + 201 psi (3,221 psi/222 bars)	89.75 in ³
	15,000	RA-6-29	.185 x WP + 171 psi (2,946 psi/203 bars)	148.17 in ³
	3,000	RA-4-18	.457 x WP + 202 psi (1,573 psi/108 bars)	104.94 in ³
5-1/8"	5,000	RA-4-18	.457 x WP + 207 psi (2,492 psi/172 bars)	104.94 in ³
	10,000	RA-6-29	.291 x WP + 177 psi (3,087 psi/213 bars)	259.77 in ³
	15,000	Consult Engineering		
6-3/8"	3,000	RA-6-22	.608 x WP + 234 psi (2,058 psi/142 bars)	156.68 in ³
	5,000	RA-6-29	.463 x WP + 181 psi (2,496 psi/172 bars)	205.77 in ³
	10,000	Consult Engineering		
	15,000	Consult Engineering		
7-1/16"	3,000	RA-6-22	.735 x WP + 239 psi (2,444 psi/169 bars)	173.18 in ³
	5,000	RA-6-29	.559 x WP + 186 psi (2,981 psi/206 bars)	227.67 in ³
	10,000	Consult Engineering		
	15,000	Consult Engineering		



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