

# LEDEEN Self-Contained Control Systems

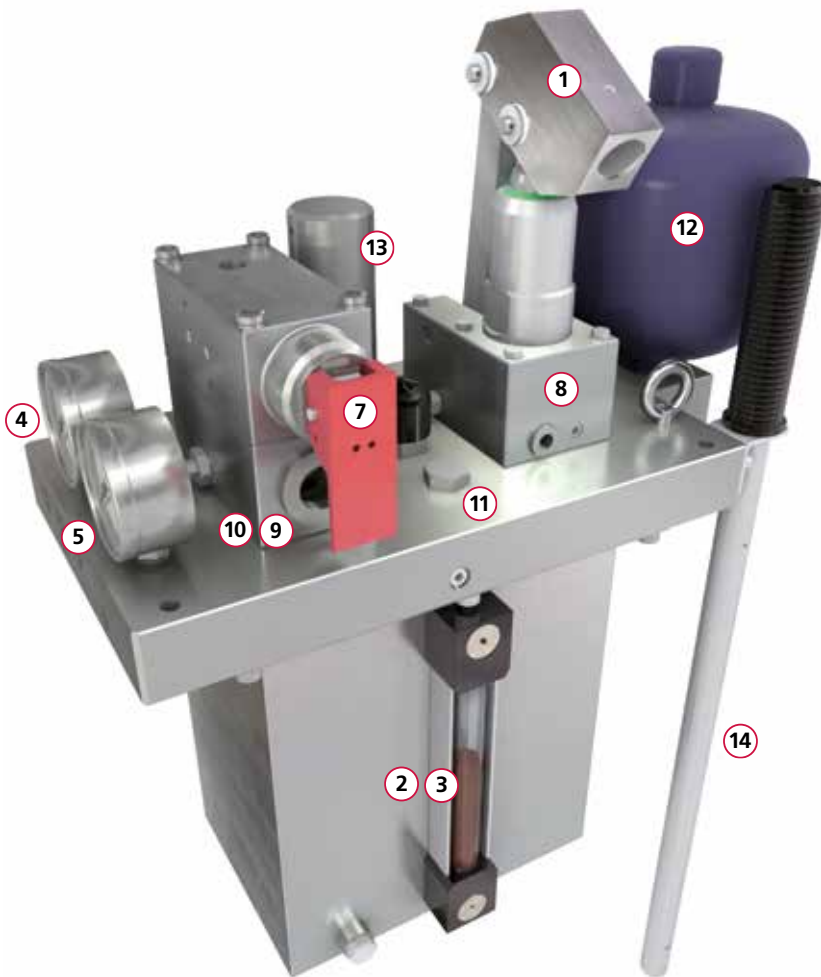
Providing reliable shutdown capability

TECHNOLOGY



Cameron's LEDEEN® self-contained control systems are designed to provide reliable valve shutdown capability in the absence of a reliable external power source. The complete system consists of a linear or quarter-turn hydraulic spring return actuator with the self-contained control.

## The complete solution to controls operation:



- 1 Hand Pump
- 2 Oil Filter (not visible)
- 3 Oil Tank with Level Gauge
- 4 Pressure Gauge (high pressure)
- 5 Pressure Gauge (low pressure)
- 6 Pilot Valve (not visible)
- 7 Manual Arming Valve
- 8 Check Valve (not visible)
- 9 Pressure Regulator
- 10 Safety Valve (not visible)
- 11 Filling Cap
- 12 Accumulator (high pressure)
- 13 Accumulator (low pressure)
- 14 Pump Handle

## Self-Contained Control

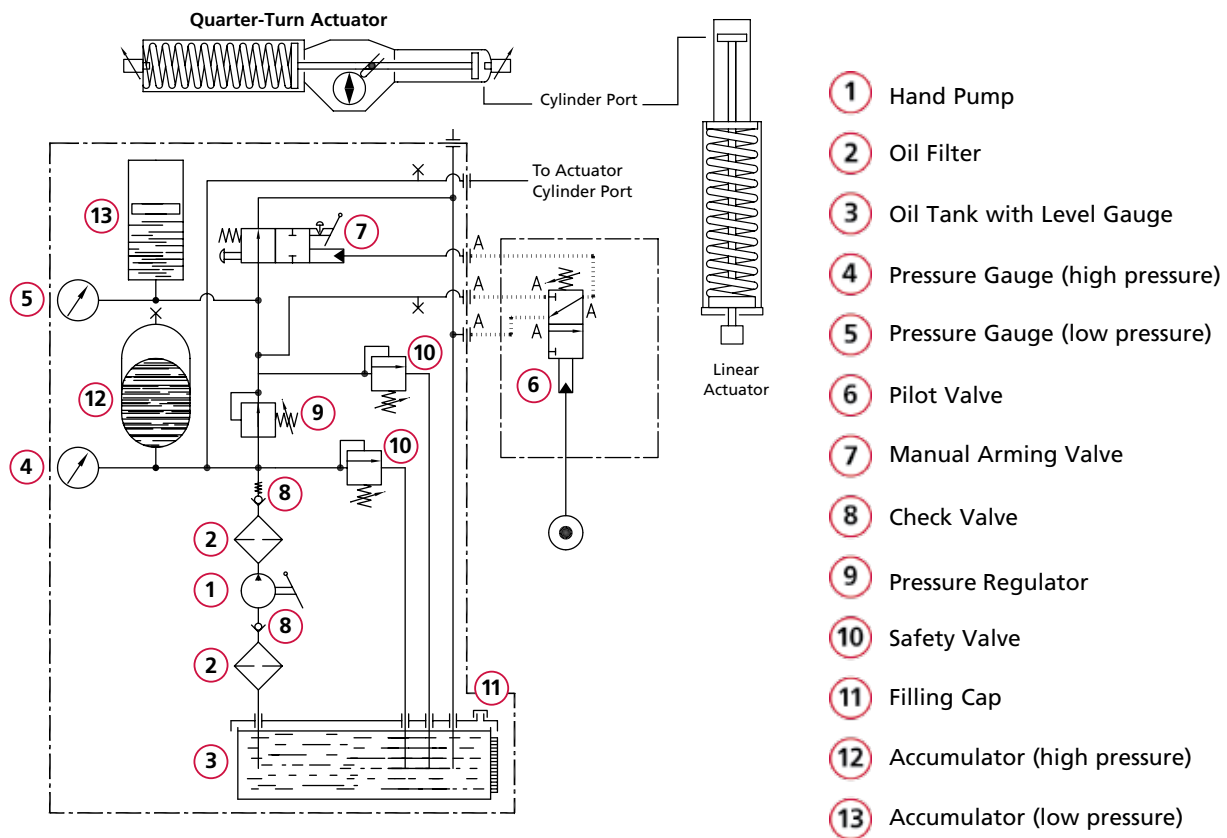
When utilizing a hand pump with various control components, a zero-leakage circuit is maintained to ensure valve movement does not inadvertently occur until a fail-safe signal is received. Controls are typically pilot tripped, but solenoids also can be utilized for remote control where electricity is available. The control must be manually reset after a fail-safe operation has occurred.

## Easy Operation

**To Open** – Set arming valve to ready position and operate hand pump until actuator has reached full open position. For remote option, solenoid valve also must be energized prior to hand pumping. For automatic option, a normal sensing pressure also must be available to pilot valve prior to hand pumping.

**To Close** – For local operation, manually trip arming valve to fail position. For remote option, de-energizing solenoid valve will trip arming valve to fail position. For automatic option, any abnormal increase or decrease of pilot sensing pressure will trip arming valve to fail position.

reliable, rugged, dependable and easy to operate.



### CONNECTIONS

— Hydraulic

..... Connections at customer's care

The schematic diagram is shown with the valve in closed position and without hydraulic power.

## STANDARD FEATURES

- Manifold-design subplate provides a robust foundation for integration of all standard and optional control system components
- Subplate and control components are constructed of corrosion-resistant anodized aluminum with stainless steel internals
- Oil reservoir is a rugged fabrication of stainless steel, made to withstand harsh working environments and provide a corrosion-free environment for the fluid
- Hand pump available in 3000 psig or 5000 psig (206 barg or 345 barg) output pressure models to reduce actuator sizing and the necessary fluid capacities



- Manual arming valve utilized to arm the system and provide quick fail-safe manual response in the event of an emergency
- Bright red-colored handle on manual arming valve provides highly visible local verification of system status being armed or tripped
- Dual filtration within hydraulic circuit ensures only contaminant-free hydraulic fluid is moving within the system to extend zero-leakage performance
- Reduced pressure control system provides access to a broad range of low-pressure, zero-leakage control options (pilot valves, low-wattage solenoids, fusible plugs and more)
- Temperature compensation of high-pressure actuator circuit and low-pressure control circuit is accomplished with two separate accumulators. Assures system stability by minimizing relief valve operation and eliminating valve drift due to large temperature changes
- Overpressure protection of high-pressure actuator circuit and low-pressure control circuit is provided with two separately designated relief valves. Isolates relief valve operation to abnormally excessive pressure to minimize potential leak points that result in valve drift
- Seal material selected to exceed ambient conditions of end destination to assure zero-leakage integrity throughout a range of -50° F to 212° F (-46° C to 100° C)
- Stainless steel pressure gauges with dual scale indication assures easy verification of high- and low-pressure circuit operating pressure
- Oil reservoir provided with liquid level gauge to easily confirm proper operating level of hydraulic fluid
- Manifold porting provides spring return actuators with closed loop exhaust circuit to eliminate detrimental effects of airborne contaminants entering the actuator cylinder

## AVAILABLE OPTIONS

### Control Enclosure

Lockable, stainless steel fabrication allows unrestricted access for local emergency trip function, while ensuring only authorized personnel have access to the entire control system

### Transparent Reservoir

Made of UV and impact-resistant material, suitable for a broad temperature range of -50° F to 140° F (-46° C to 60° C) to provide full visual verification of available oil

### Pilot Valve

Customer-preferred models can readily be connected into the circuit onboard the manifold or pipeline to provide automatic operation of the shutdown system

### Solenoid Valve

Subplate or in-line mounted for easy field retrofit with low power consumption coils to provide efficient remote control of the shutdown system

### Fusible Plug

Quickly trips circuit to shutdown position when exposed to the rising temperature of a fire

### Instrumentation Kit

All tube fittings, tubing and fasteners required to easily mount and connect any pilot or solenoid valve into the shutdown system (*shipped loose*)

### Instrumentation Manifold

Provides a rugged transition from the pipeline when direct mounting of pilot valve(s) to the pipeline is desired (*shipped loose*)

SIDE VIEW

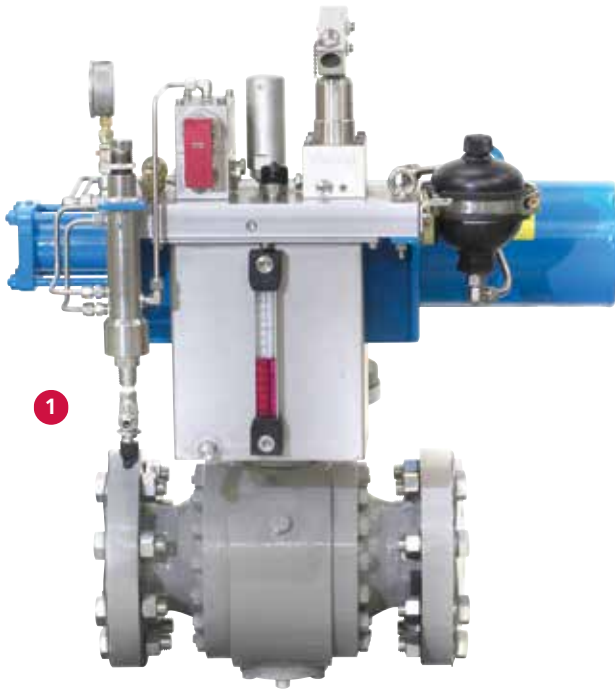


FRONT VIEW





## TYPICAL APPLICATIONS



1



2



3

- 1 Self-contained control system shown on a quarter-turn actuator to operate an API 6D ball valve. Control shown with optional pilot valve installed on the control manifold. Requires a single-customer tubing connection to be made between pilot valve and pipeline.
- 2 Self-contained control system shown on a linear actuator to operate an API 6A gate valve. Control shown as if optional pilot valve (not shown) was installed on the pipeline. Requires customer tubing connections to be made between control and pilot valve.
- 3 Self-contained control system shown pedestal-mounted for installations where off-mounting control from actuator provides operational convenience. Requires customer tubing connections to be made between control and actuator for manual or remote trip and between control and pipeline for pilot trip.

## Services for Actuation and Valves

WE BUILD IT. WE BACK IT.

### Startup and Commissioning

Our experts understand that each project is unique. That's why Cameron's service teams help facilitate commissioning and startup activities.

- Integrated solutions, onsite or at our global service centers
- Increased equipment and product performance
- The shortest possible trouble-free startup for your critical assets

### Spare Parts and Asset Management

Cameron offers the assets and expertise to cover all aspects of valve management.

- Full inventory of quality exact OEM parts and spares
- Complete asset risk and criticality assessments
- Comprehensive inventory of your assets, including a complete recommended spare valves and parts list

### Operational Support

Cameron's ability to address valve requirements in the field is a reflection of our commitment to life-of-asset support.

- Innovative asset management solutions
- Trouble-free installation, startup and operations
- Support from commission to operation – extending through all phases of a valve's life cycle
- Extensive inventory of spare valves and parts

Cameron's site management programs help mitigate the risk of project delays by identifying issues in the construction process prior to valve installation to ensure valve integrity.



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Learn more about LEDEEN control systems:

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#### **HSE Policy Statement**

At Cameron, we are committed ethically, financially and personally to a working environment where no one gets hurt and nothing gets harmed.