Camtorc
Self-contained Electro-Hydraulic Failsafe Actuator

Overview

Camtorc Electro-Hydraulic (E-H) Actuator Systems are a means of providing fail-safe actuation where only Electrical Power is available. Increasingly, E-H Systems are being preferred to Pneumatic and Hydraulic options as they place no demand on often over-stretched compressor and HPU infrastructure.

Many E-H systems, however, can be complicated, expensive and prone to problems that can compromise plant safety. The Camtorc Electro-Hydraulic System is specifically designed to offer simple and reliable control of process valves with a reduced number of components to improve reliability and performance

Product Description

Camtorc Self-contained Electro-Hydraulic Failsafe Actuator has 3 functional elements which are:

- Camtorc Hydraulic Actuator
- VSD Electronic Controller
- Electro-Hydraulic Power Pack

Camtorc Hydraulic Actuator

The Camtorc Hydraulic Actuator has been in production for over 30 years during which time it has gained an unprecedented reputation for reliability and functionality. Using the Cam Yoke system at its core, the Camtorc Actuator is highly efficient and compact whilst offering reduced wear and servicing requirements. With the added benefit of using only Carbon Steel or Stainless Steel in its design and having a construction that does not use any tie rods, the Camtorc Hydraulic Actuator is the perfect work horse for automated valves in the most demanding applications.

VSD Electronic Controller

The Electronic Controller incorporates an electronic logic solver and valve position monitor into a single Ex d mechanical enclosure that mounts directly to the Camtorc Actuator. With 6 electrical conduit entries available, the unit acts as the hub for the various control inputs, sensors and control outputs required to control Hydraulic Actuator and Hydraulic Power Pack. The Controller controls the Motor of the Power Pack by monitoring the current condition of the solenoid signal to the valve and the measured position of the system. In addition, it can offer various options within the standard package that allows both local and remote control along with system safety features that will prevent damage to any element in the Actuator System in the event of a problem occurring. Because the system is electronically executed, it is not prone to the problems often associated with mechanical systems and requires little maintenance. Finally, the Controller is also equipped with the facility to run partial stroke testing should it be necessary.

Electro-Hydraulic Power Pack

The Electro-Hydraulic Power Pack combines Hydraulic Pump, Hydraulic Reservoir and Solenoid Valve into a single entity that bolts to the side of the Camtorc Hydraulic Actuator. Available in 316 Stainless Steel construction, the Power Pack is suitable for both non-hazardous and Zone 1 applications and can deliver up to 250 Bar of hydraulic pressure to the Hydraulic Actuator. In addition, the integrated Solenoid Valve is a balanced design, enabling it to operate at a much lower power demand than comparable valves, as well as offering very low leakage rates. This has the benefit of reducing the potential number of starts the Hydraulic Pump needs to perform, increasing the systems service life.

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Core Principle of Operation

A 24VDC Control Signal is sent from the plant control system to the Electronic Controller mounted on the Actuator and passed on to allow the control solenoid to energise. At the same time as the Control Signal is received, the Controller determines if the actuator is in the energised position. If not, the Controller starts the Motor in the Hydraulic Pump to allow Hydraulic Fluid to be pushed at pressure into the Actuator. This pressure drives the piston in the actuator to operate the valve. Once the fully energised position is achieved, the Controller stops the pump and the pressure is held on the actuator by the solenoid.

When the 24VDC Control Signal is de-energised (e.g. in response to a Shut Down requirement) the solenoid de-energises allowing the actuator to de-pressurise and the Fail Safe Spring in the Actuator to drive the valve to the Fail Safe position.

Basic Specification

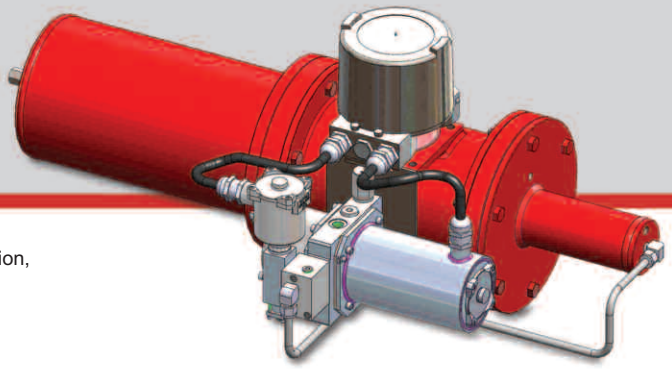
Camtorc Hydraulic Actuator	
Medium	Mineral Oil or Biodegradable Fluid
Supply Pressure	50 to 210 Barg
Construction	EHS – Carbon Steel / EHSX – 316 Stainless Steel
Torque Output Range	20 Nm to 25,000 Nm Standard *(up to 40,000 Nm Available)*
Mode of Operation	Fail-close or Fail-open
VSD Electronic Controller	
Construction	316L Stainless Steel
Solenoid Connections	Up to 2
Digital Inputs	3 + 1 for External Solenoid Control
Digital Outputs	2 + 1 for Solenoid Control
Analogue Inputs	2 Active / 1 Passive
Analogue Outputs	1 Passive
Independent Position Feedback	Up to 3 Switch / Sensor or 1 x Position Transmitter
Conduit Entries	4 (3 x M25 / M20 + 1 x M20)
Configuration	Via Valvescan Software Supplied with Unit
Communication Options	HART, Wireless HART, Modbus
Electro-Hydraulic Power Pack	
Construction	316 Stainless Steel
Reservoir Volume	0.4 to 2.6 Litres
Pump Rating	Pressure - up to 210 Barg *(Peak)* Flow Rate - 0.3 LPM / 207 Barg, 0.7 LPM / 100 Barg
Motor Power	40 - 100 Watts (24 VDC Version)
Directional Solenoid	1 or 2 x 3/2-way Direct Acting, 0.7 W *(Holding Power)*
Electrical Power Supply	
Solenoid	24 VDC Standard *(other voltage options on application)*
Controller	20.4 – 27.6 VDC Standard Parasite Powered from Solenoid Line or Separate Power *(other voltage options on application)*
Pump Motor	24 VDC Standard Via VSD Controller or Separate Power *(other voltage options on application)*
Hazardous Approval	
Camtorc Hydraulic Actuator	ATEX II 2 G IIC c T3/T4/T6
Electrical Certification	ATEX / IECEx Ex d

Options

Depending on the system requirements and set-up, the following options are also available:

- **Pressure Monitoring** – VSD Electronic Controller can accept a signal from a 4-20mA Pressure Transmitter or a Pressure Switch to enable over/under pressure protection of the system.
- **Local Control Station** – A Local Control Station (LCS) can be connected to VSD Electronic Controller to permit the valve to be Open/Closed Manually if required. The LCS can be equipped Display Lamps to confirm the current status of the valve.
- **Valve Testing** – VSD Electronic Controller can offer Partial Stroke Test (PST), Full Stroke Test (FST) and Solenoid Test (SOT) functionality to run alongside the E-H functionality.
- **Manual Override** - Hydraulic hand pump override.
- **Solar Power** - Solar powered systems for remote locations.

NOTE: Above options may only be available in some applications – please consult Camtorc.



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