

# **HP Series High Pressure Pipeline Actuator**



**Coretech Flow America INC**

## Gas Over Oil



- Gas over Oil uses natural gas or nitrogen gas as the actuator power source and hydraulic oil as the medium to actuate a pipeline valve to the fully open or fully closed position
- The popular control functions include: local hydraulic operation, line break protection, remote control, and emergency shutdown
- With gas storage tank or spring return, emergency shutdown function can be achieved
- Fast stroke time for quick action in emergency

## Direct Gas



- Direct gas configuration utilizes high pressure natural gas in the pipeline or other source
- Simple design without hydraulic reservoirs
- Compact actuator with small foot print
- With gas store tank, emergency shutdown function can be achieved
- Fast stroke time for emergency situation
- Hydraulic manual pump for local operation
- Line Break Protection (LBP) and Partial Stroke Test (PST)



# Applications



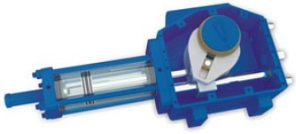
- Pipeline emergency shutdown valve
- Station blowdown valve
- River-crossing valve
- Station bypass valve
- Replacement of large torque pneumatic actuators
- Automatic pipeline line break projection
- Partial stroke testing to prevent stuck valves
- Pipeline high/low pressure automatic protection
- Station inlet/outlet
- Compressor loading/unloading protection

## Features (Direct Gas Actuator)



- Gas cylinder dedicated to generating torque and hydraulic cylinder dedicated to smooth speed control and manual override with hand pump
- Compact in footprint
- Best cost of ownership
- Scotch Yoke mechanism generates powerful opening and closing torque output
- Steel fabricated frame provides rugged foundation of modular assemblies
- Quarter turn stroke: -50 to 95 ° adjustable
- Both symmetric and canted yokes are available to satisfy various valves torques

# Actuator Design



## Scotch Yoke Actuator

HP series high pressure actuators utilize scotch yoke mechanism to deliver versatility and reliability for pipeline valve automation.

## HP Series Actuator Features

- Double acting as the standard, spring return optional
- Fabricated drive module housing for durability
- Torque range up to 450,000 Nm / 4,000,000 Lb-In
- Working pressure: up to 3,000 PSI
- Low temperature to  $-67$  F or  $-55$  C
- Set bolts to finely adjust its stroke in fully open/closed positions combined with valve stops for tight shutoff
- Open and close travel stops can be adjusted  $\pm 5$  degrees
- Oil cylinder tandem sealing structure achieves superior performance
- The output torque changes along a bell curve, matching the requirement of the ball valves
- Modular scotch-yoke design makes online maintenance easier
- High resolution valve position indicator on the limit switch box for local valve positions or remote electronic control and position feedback
- Scotch yoke design offers both symmetrical and eccentric structure to meet the requirements of various specifications



### **Control Block**

- The control block have bubble tight zero gas leakage over 24-hour in the pressure range of 70 to 2,175 psi (0.5-15 Mpa),
- Solenoid has explosion-proof/ protection level : Ex d IIC T6/IP65, Power: 2.64W, Voltage: 15-30 VDC, SIL certified.
- The exhaust port is equipped with a silencer to reduce the noise emitted

### **Programmable Line Break Protection (LBP)**

- Electric line break detection to protect pipelines from extreme high/low pipeline pressure
- LBP records online pipeline pressure profile and dynamics for pipeline diagnostics
- If pipeline breaks, LBP will automatically trigger a command to execute emergency shutdown function of the main line ESD valve closest to the line break point
- LBP has a static low power assumption of 0.18W, applicable for solar or 24VDC power supplies
- OLED display technology supports a low temperature display as low as -40 F
- Remote communication: RS485 with MODBUS-RTU





## **Partial Stroke Test (PST)**



The critical ESD valves equipped with HP high pressure actuator along with PST function, could close 10 to 15 degrees and then automatically return to the fully open position, without interrupting pipeline gas transmission to validate ESD integrity. This prevents potential risks of ESD malfunction and improves the safety of the pipeline. Programmable PST offers automatic online testing based on pre-setting, timer. PST can be local or remote initiated. Low power consumption and suitable for solar power for remote locations.

## **Quality Control**

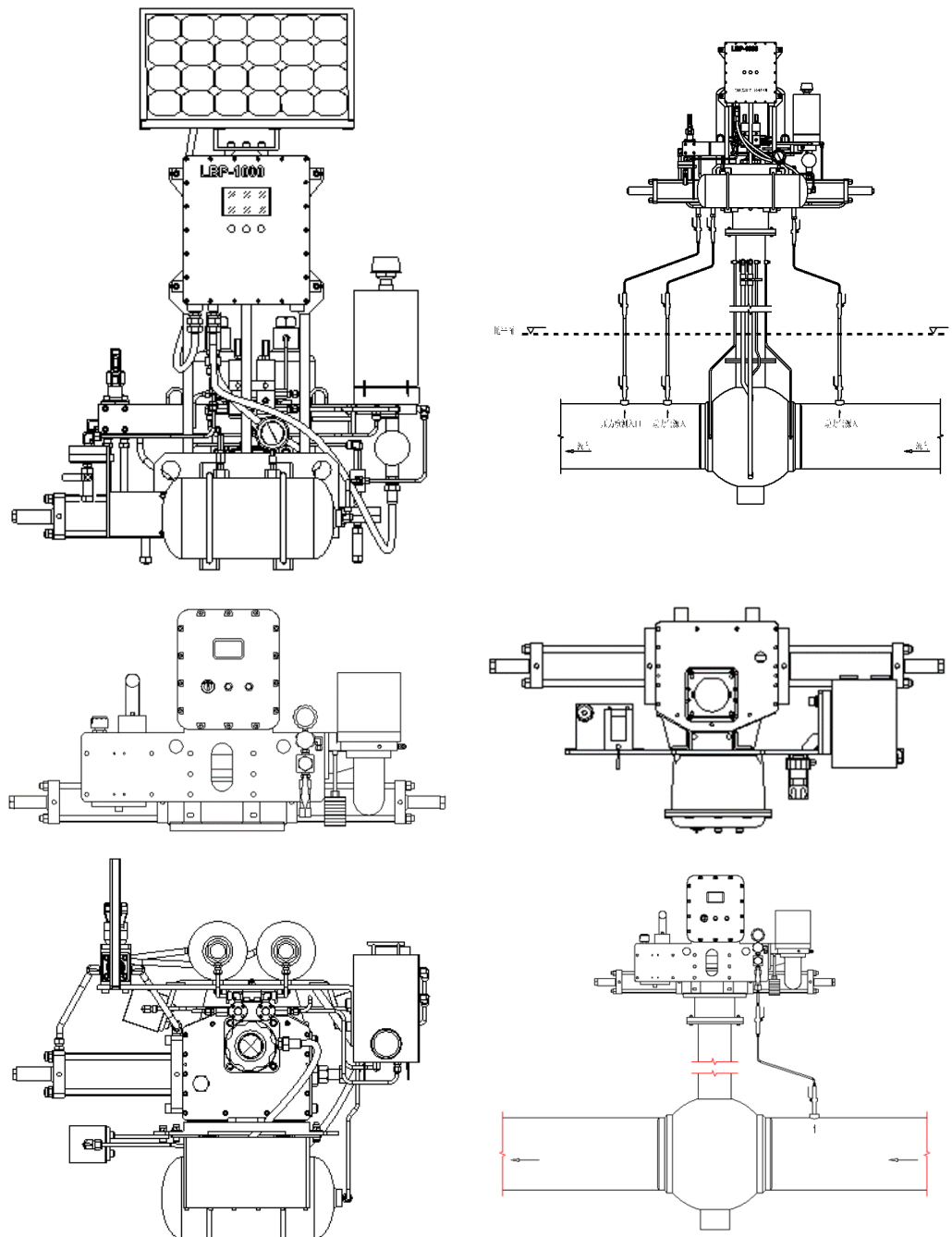
- All manufacturing is conducted under ISO 9001/API Q1 certified quality management system
- Each actuator is torque tested before shipment to validate the committed torques
- Products are stringently manufactured in accordance with applicable industry standards and to specific customers' design specifications.
- Material Test Reports per EN 10204-1991 3.1.B & EN10204 3.1 available
- Full pressure torque and hydro test for the automated valve packages could be conducted at factory



# Engineering & Consulting

## Project Engineering Support

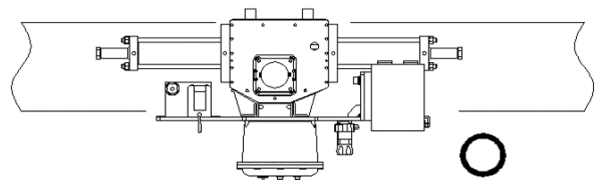
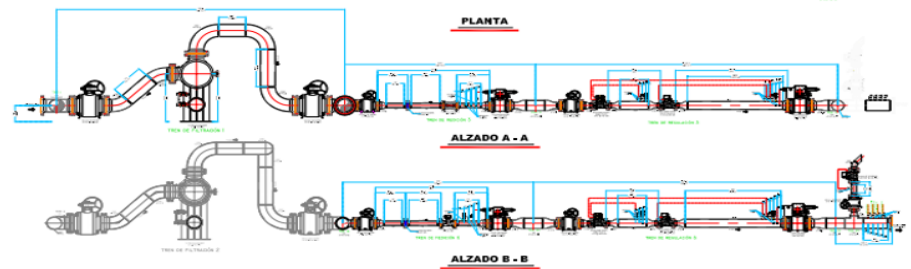
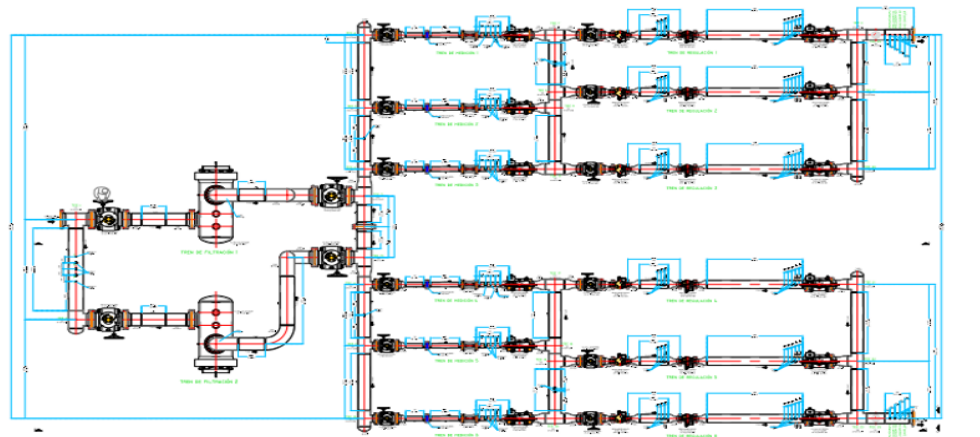
- Actuator technology selection based on pipeline pressure range for best cost and technology fit for the application
- 3D drawing and dimension data provided in FEED stage for best space utilization



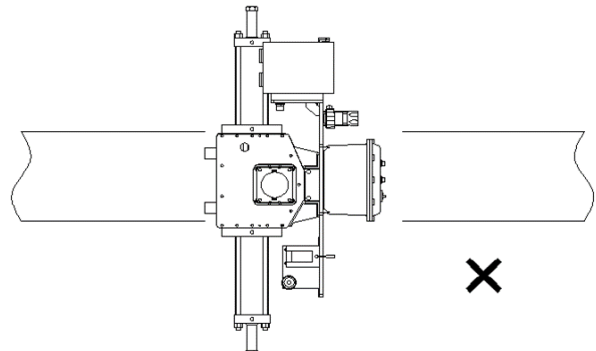
# Engineering & Consulting

## Project Engineering Support

- Actuator orientation to the pipeline
- Valve + actuator GA drawing
- Control selection for partial stroke test, fail safe mode, line break protection based on applications' criticality and customer budgets
- Draft actuation datasheets for engineering support



## ESD Orientation





# Field Installation & Commission



- On site survey before valve and actuation installation
- On site commissioning support
- Field installation issue diagnostic and solutions
- Retrofit/upgrade manual valves
- Service oriented support team for your projects
- Be your project execution partner from the beginning to the end
- One stop service for both valve, actuation and controls



# How to Order Pipeline Acuator Model

Rev2- 2019/12

**Example:** EH-EDO-H-S-06Y-90-S1/7721P FO

<b>Product Series</b>	HP- High Pressure Gas EH- High Pressure ElectroHydraulic
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<b>Product Line</b>	
GDO	Gas over oil actuator
GDO-H	Direct gas actuator
EDO	ElectroHydraulic Actuator

<b>Acuator Configuration</b>	
S	Spring return Double acting
Acuator Drive Module	03Y
	06Y
	09Y
	15Y
	30Y
	60Y
	100Y
Cylinder Diameter	200Y
	70
	90
	100
	140
	180
	220
240	
280	



<b>Spring Module</b>
S1
S2
S3

<b>Control Systems</b>			
Gas over oil/ Direct gas	<u>Gas actuator</u>		<u>EH Acuator</u>
ZH6615/6815	<u>Local pneumatic</u>	ZH7715	<u>Local control</u>
ZH6616/6816	<u>Line break protection</u>	ZH7716	<u>Line break protection</u>
ZH6617/6817	<u>LBP+ remote open/close</u>	ZH7717	<u>LBP+ remote control</u>
ZH6618/6818	<u>LBP+ESD</u>	ZH7718	<u>LBP+ESD</u>
ZH6619/6819	<u>LBP+ remote open/close+ESD</u>	ZH7719	<u>LBP+ remote control+ESD</u>
ZH6620/6820	<u>Remote open/close+ESD</u>	ZH7720	<u>Local/Remote+ESD</u>
ZH6621/6821	<u>Remote open/close</u>	ZH7721	<u>Local/Remote</u>
ZH6622/6822	<u>ESD</u>	ZH7722	<u>Local+ESD</u>

<b>Partial Stroke Test</b>	
P	<u>Partial Stroke Test</u>

<b>Fail Safe Configuration</b>	
FC	Fail Close
FO	Fail Open
FL	Fail Last

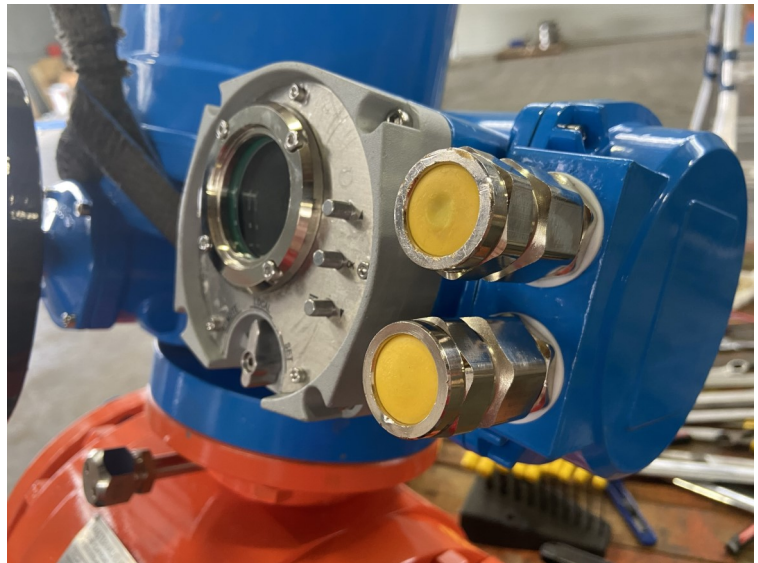


# Other Actuator Products

**EH Series Electrohydraulic Actuator**



**EL Series Electric Actuator**



**SP Series Pneumatic Scotch Yoke Actuator**





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