

# CHURCH UPSTREAM TECHNOLOGIES

## TYPE LCV CHOKE

The Type LCV Choke is the latest in choke innovation and technology. Designed for extreme service conditions for use in drilling, production, workover, and fracking operations. It is ideally suited for all upstream oil and gas activities. This flow control choke valve provides precise flow metering and positive closure for operation up to 20,000 psi (138 MPa) working pressure. The LCV Choke is available in hydraulic gear or hydraulic actuator operation. Manual operation is also available on the gear operated choke.

This patent pending design offers improved flow coefficient (Cv) response, making it the first extreme service choke with improved flow control from initial opening to full flow operation. Innovative control surfaces on the gate and seat provide a linear Cv curve during flow control operations. Flow adjustment is important during initial opening of a choke. The Type LCV Choke makes this possible over existing choke designs on the market today. Existing designs, using cylindrical gate and seat trim, have a flat Cv during the initial 25-30% of opening. Tungsten Carbide gate and seat components provide superior wear and erosion protection for extended operations. The gate and seat are reversible, providing extended operational life of the choke. The Type LCV Choke is available in a 1.5", 2", and 3" (38.1mm, 50.8mm, and 76.2mm) maximum orifice design.

The choke operator body exposed to the fluid cavity is wear resistant coated and is retained to the body by an acme threaded nut. The operator body can be rotated to distribute flow wear on entry to the body cavity. This can be done without changing the position of the choke actuator. The body to operator nut is designed to relieve internal pressure prior to removal from the choke body. An external relief valve also ensures any internal pressure is released prior to actuator removal or from installation.

The gear operated choke utilizes a hydraulic motor to provide precise movement of the flow controlling gate and remains in a locked position when hydraulic fluid is not applied. The choke can be manually operated when the hydraulic motor is bypassed from the supply circuit.

The choke has an electronic position indicator for remote readout. Control panels, provided for remote operation, can operate multiple chokes with mud pump flow rate, choke position and pressure readings from remote pressure transmitters.

Downstream tungsten carbide wear sleeves, provides protection from erosion and wear on fluids exiting the choke. Inlet and outlet spools can be provided to facilitate accepting dimensions from existing manifold installation requirements. Type LCV chokes can be furnished in API flanged or studded end connections.

A gantry operator support device is used to facilitate operator removal from the choke body for gate and seat replacement and internal choke maintenance. A single service technician can perform most maintenance or service operations.

An all forged construction provides uniform and defect free materials for stringent quality requirements as required by API Specification 6A and ISO 10423.

Church Upstream Technologies uses materials of the finest quality in the manufacture of the LCV Choke.

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### Choke Design features:

- Designed and manufactured to API Specification 6A (ISO 10423)
- Designed to API Specification 16C: Specification for Choke and Kill Equipment
- Working pressures up to 20,000 psi (138 MPa)
- Manual or hydraulic operation less than 1500 psi (10.35 MPa)
- Remote control panels provide trim position, flow, and remote pressure readings
- Inlet and outlet flange sizes from 1.81" to 4.06" (46-103 mm)
- 1.5", 2", and 3" (38.1mm, 50.8mm, and 76.2mm) maximum orifice designs
- Tungsten carbide gate and seat trim provide precise flow control
- Downstream wear sleeves for wear and erosion protection
- Inlet and outlet spools adapt to installation requirements
- Electronic position indicator for remote readout
- External relief valve vents internal pressure during actuator removal or from installation
- API Flanged or studded end connections
- All API 6A PSL, PR, material, and temperature classes available
- Forged construction for H<sub>2</sub>S service per NACE MR-0175 (ISO 15156-1)

### Control Panel design features:

- Pneumatic operated hydraulic pump
- Manually operated hand pump back up operation
- Gauges for drill pipe and casing pressures
- Choke position indicator gauge
- Battery powered digital pump stroke counter
- Hydraulic pump pressure gauge
- Rig air supply pressure gauge
- Hydraulic fluid reservoir
- Connecting hoses and electrical cables for pump stroke counter switches
- Enclosed control panel
- Protective panel face cover
- Remote pressure transmitters

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