

LOW PRESSURE AUTOCHOKE CONSOLE (LPAC)



Local hydraulic power unit (HPU) console

FEATURES

- Ability to operate two AUTOCHOKE drilling choke units simultaneously
- Hydraulic accumulator, air storage tank, and uninterruptible power supply for backup
- Small footprint remote human machine interface (HMI)
- Sunlight readable touch screen panel on both the local hydraulic power unit (HPU) and remote HMI
- Increased gauge resolution and digital readouts

BENEFITS

- Ability to seamlessly transition between AUTOCHOKE drilling chokes
- Both AUTOCHOKE drilling chokes can continue to maintain pressure for over two hours after loss of rig air and up to one hour after loss of rig power
- Remote HMI can be placed near the driller for better communication with the AUTOCHOKE operator
- Touch screen on both the local HPU console and remote HMI allows precise pressure inputs to the AUTOCHOKE drilling chokes

Accurate and economic choke control for managed pressure drilling (MPD) and underbalanced drilling (UBD) operations.

The M-I SWACO LOW PRESSURE AUTOCHOKE CONSOLE[†] (LPAC[†]) is precision-built to provide accurate and economical control of the AUTOCHOKE[†] drilling choke during MPD, UBD and other low-surface pressure operations. The LPAC allows the operator to directly set and maintain the desired backpressure on the well. Adjustments to the backpressure can be made on the local HPU console or on a remote HMI panel near the driller. The remote HMI is standard with the LPAC and allows the choke operator to work closely with the driller throughout the MPD or UBD section of the well. The LPAC works in combination with the industry-standard AUTOCHOKE drilling choke.

Together the LPAC and AUTOCHOKE drilling choke provide precise and accurate wellbore pressure control in an economical package.

How it Works

The LPAC system is comprised of two primary components: the local HPU and the remote HMI. The local HPU provides hydraulic power to drive two AUTOCHOKE drilling chokes simultaneously to the required set-point pressures that directly control the backpressure on the well. The local HPU console has two modes of operation: manual control or electronic control. During manual control, the operator can use the valves, regulators and analog gauges located on the front panel to monitor critical drill pipe and casing pressure and control the desired set-point pressure. On either the local HPU or remote HMI, the operator can control and adjust the set-point pressures on two AUTOCHOKE drilling chokes as well as display other operating parameters, including casing and drill pipe pressures, pump rates, strokes, and diagnostics.

M-I SWACO has designed the LPAC system with back-up power storage devices: an internal air tank, hydraulic accumulator and an uninterruptible power supply. Under normal operation, once the back-up devices are charged, the LPAC system can maintain backpressure for more than two hours after loss of rig air and up to one hour after loss of rig power. The back-up devices work seamlessly so the AUTOCHOKE operator can continue operation without any interruption in control.

The remote HMI mimics the functionality of the local HPU console, but in a much smaller package.



Remote HMI panel

How it Works (continued)

The LPAC has Modbus TCP capabilities to allow communications and/or control with third-party devices. The unit can send or receive hydraulic set-point, casing and drill pipe pressures, SPM and strokes. Choke position for both AUTOCHOKE drilling chokes can be output as a percentage of open. The hydraulic set-point can also be controlled by third-party software or devices.

Only one unit at a time can control the AUTOCHOKE drilling chokes, be it local HPU, remote HMI or a third party. For safety, the LPAC includes a built-in arbitration scheme that allows the logical transfer of control between the current controller and the device requesting control.

Specifications

Approvals: CSA, Class I, Division II Groups C, D

Temperature range: 20° to 200°F (-7° to 93°C)

Operating pressure range: 100 psi to 1,500 psi

Set-point pressure accuracy range: +/- 50 psi

Power supply: 110-240 VAC 50/60 Hz

Air supply range: 80 to 150 psi

Local HPU Console

Width in (mm)	Depth in (mm)	Height in (mm)	Weight lb (kg)
40 (1013)	36 (914)	65.5 (1663)	1100 (500)

Remote HMI Panel

Width in (mm)	Depth in (mm)	Height in (mm)	Weight lb (kg)
20.5 (521)	9 (222)	17 (433)	55 (25)

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