

LOVR0211 EBox Flameproof Ex d Hydraulic Drill Rig Common Centre Manifold

The LOVR “E-Box” is a flameproof-protected enclosure combining both hydraulic and electronic components into a single, compact manifold for control and monitoring of a complete roof drilling rig. The manifold attaches directly to the hydraulic porting interface of the drill rig. This does away with up to thirty hydraulic hoses – normally required when an external control manifold must be connected to a drill. These drilling rigs are typically mounted on mobile underground mining equipment for drilling roof holes and for placing roof-supporting bolts.

Internally, the E-Box features a microprocessor-based circuit board to proportionally control a number of solenoid-actuated hydraulic valves (also mounted inside the E-Box manifold). The electronic module monitors spool position of key hydraulic valves and hydraulic pressure of secondary functions to establish if hydraulic outputs are responding to control inputs and to detect any unplanned operation. Real-time monitoring of hydraulic oil flow to the drilling feed function is used to establish drilling feed speed and depth.

A host control system controls and monitors the E-Box operation via an industry-standard CAN field bus connection.



Typical Applications

- Bolter Miners
- Road Headers
- Mobile Bolters
- Degasification Drilling

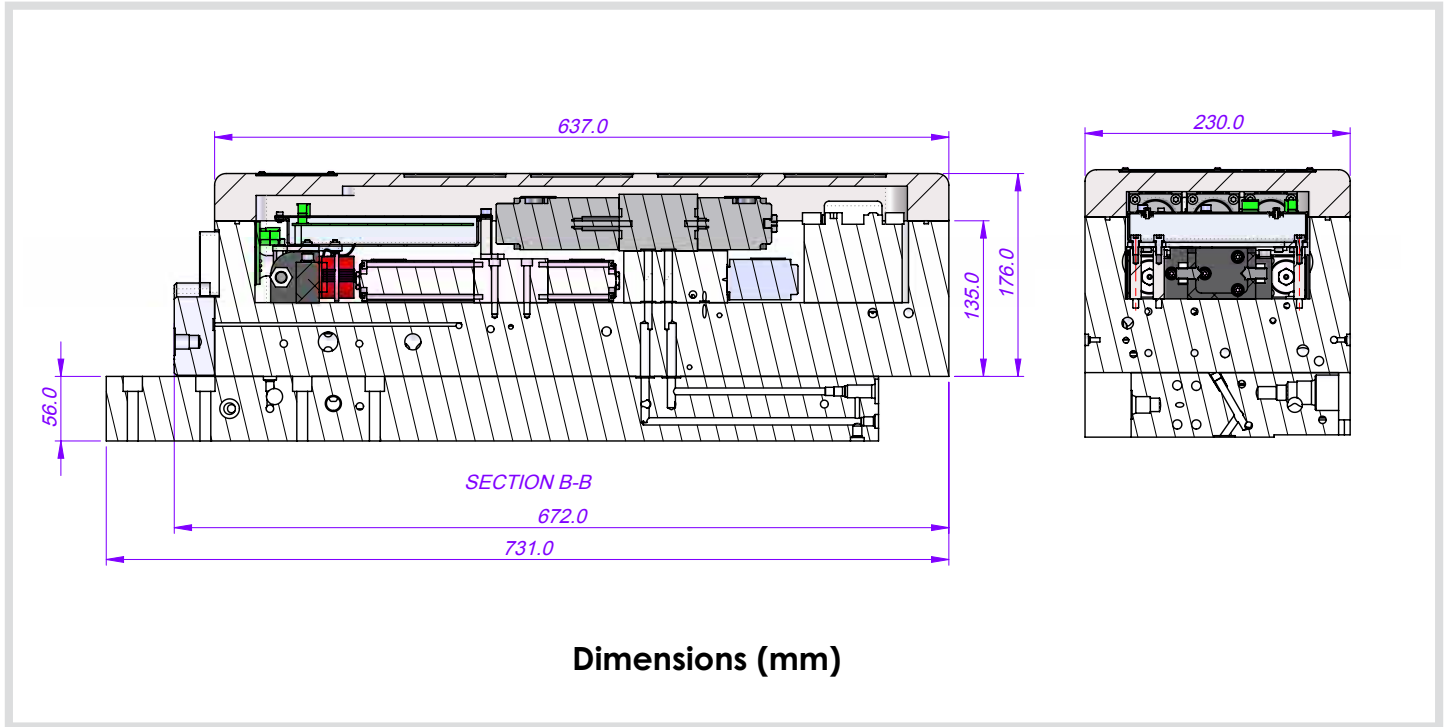
Standards Compliance

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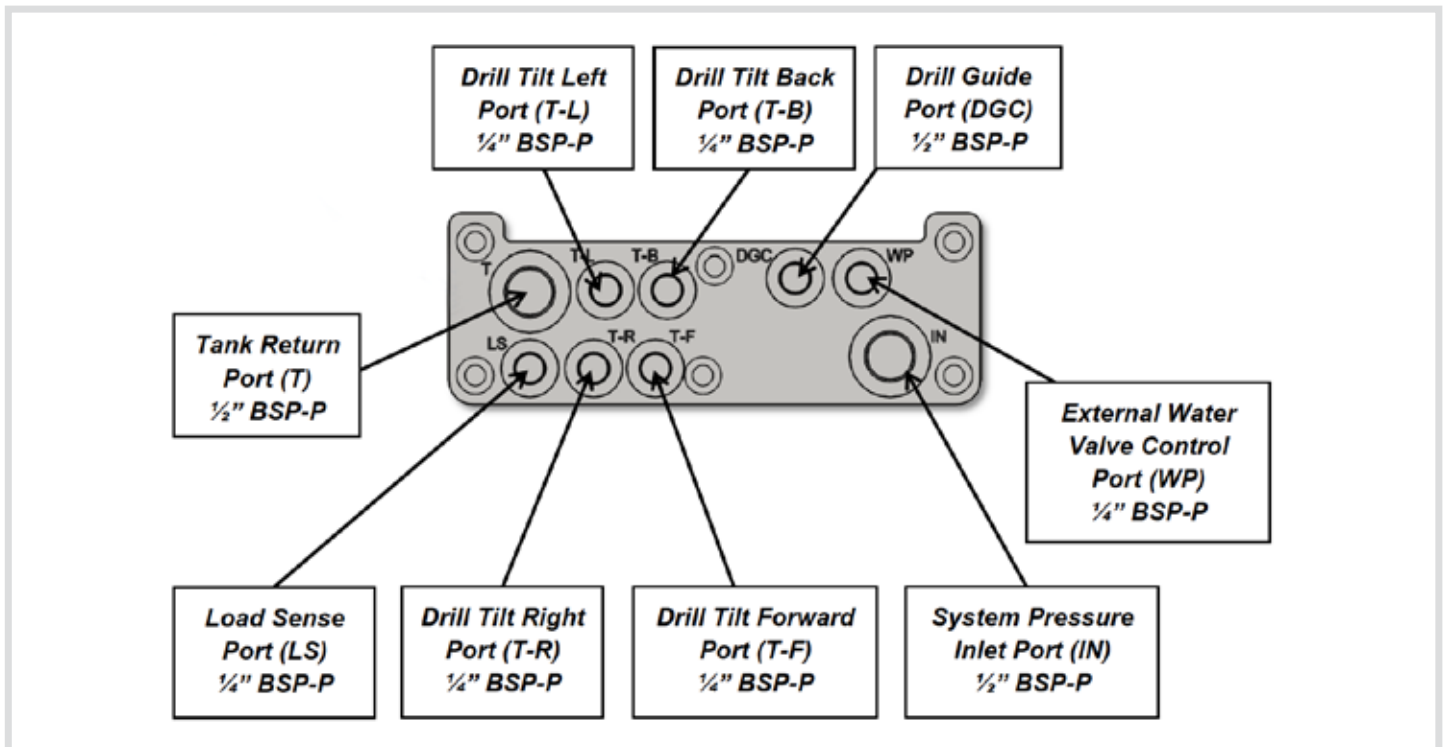
Options Available



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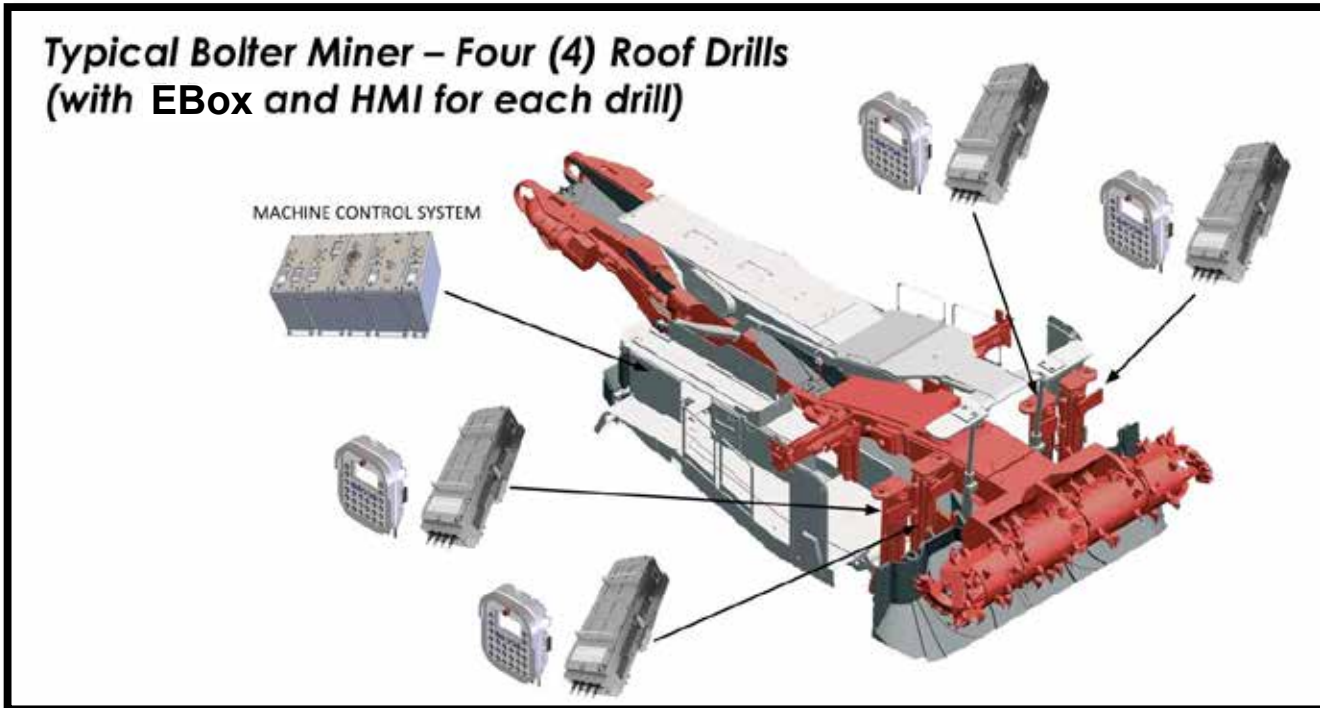
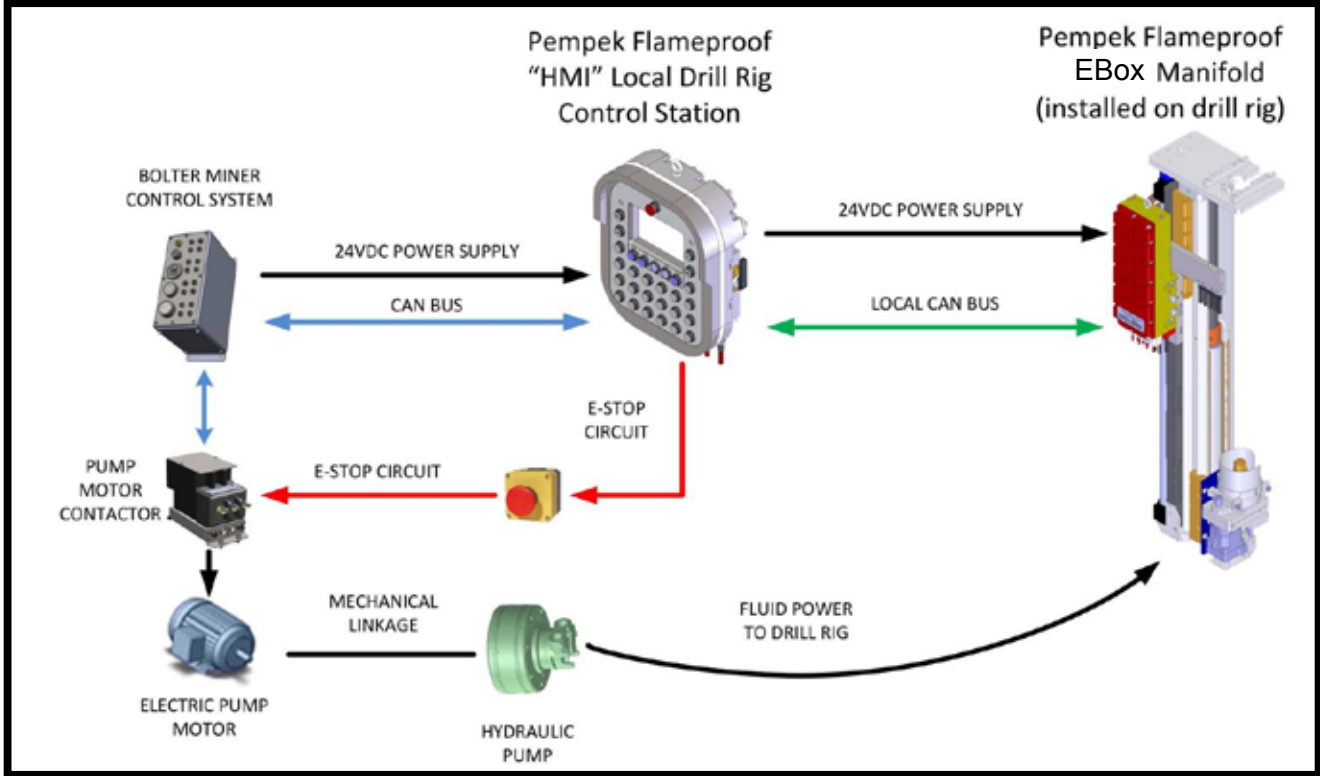


Hydraulic Connections



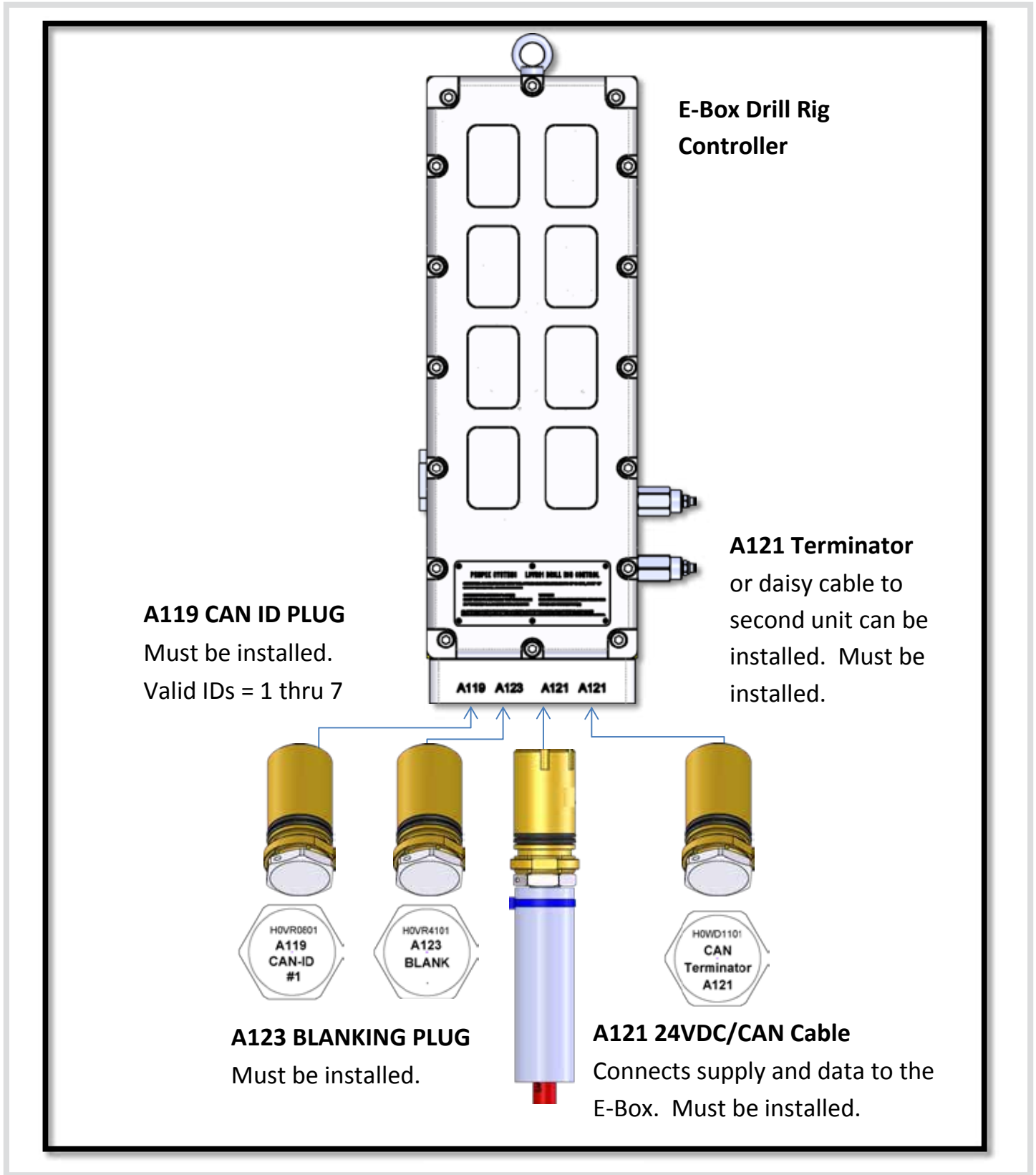
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Example Application



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Electrical Interfaces



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Specifications

General

| Parameter | Value |
|--------------------------|--|
| Type | Flameproof-protected drill rig control hydraulic manifold with integrated electronic control |
| Explosion-protection | IEC60079-1 – Flameproof – Ex d Group I |
| Functional Safety | IEC61508-compliant SIL2 Safety Functions Spool valves continuously monitored for stuck spool conditions |
| Operating Temperature | -10°C to +50°C |
| Environmental Protection | IP66/67 |
| Mass | 164 kg (common core) / 193 kg (Left-hand Version) / 183 kg (Right-hand Version) |

Electrical

| Parameter | Value |
|----------------|---|
| Supply | 24-volts D.C. +/- 10% (125 Watts maximum) |
| Communications | CAN 2.0B – Copper Twisted Pair (500 kbps) |

Hydraulic

| Parameter | Value |
|--------------------------------|---|
| Spool Functions (Proportional) | Drill Motor Rotation – 35 litres / min Drill Feed Up/Down – 32 litres / min Timberjack Up/Down – 32 litres / min Head Gripper Open/Close – 8 litres / min Drill Tilt Left/Right – 8 litres / min Drill Tilt Forward/Reverse – 8 litres / min |
| Pilot Functions | Drill Motor 2nd Speed Select External Water Valve Control Drill Guide Control |
| Working Pressure | 200 BAR nominal / 250 BAR maximum |
| Oil Temperature | -10°C to +70°C |
| Hydraulic Fluid | Mineral Oil |
| Filtration Requirements | ISO 4406:1999, class 18/16/13 Recommended Filtration Grade: $\beta_{6..10} \geq 75$ |