

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.



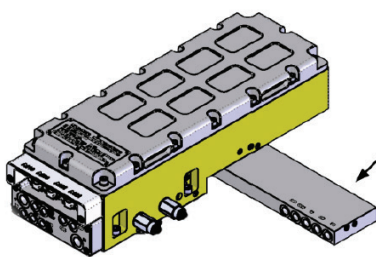
Typical Applications

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

Standards Compliance

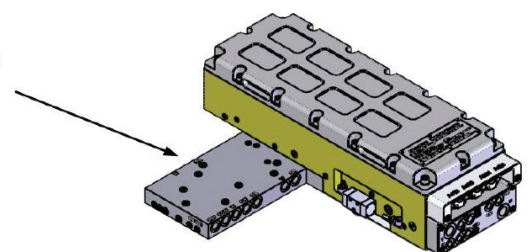
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Options Available

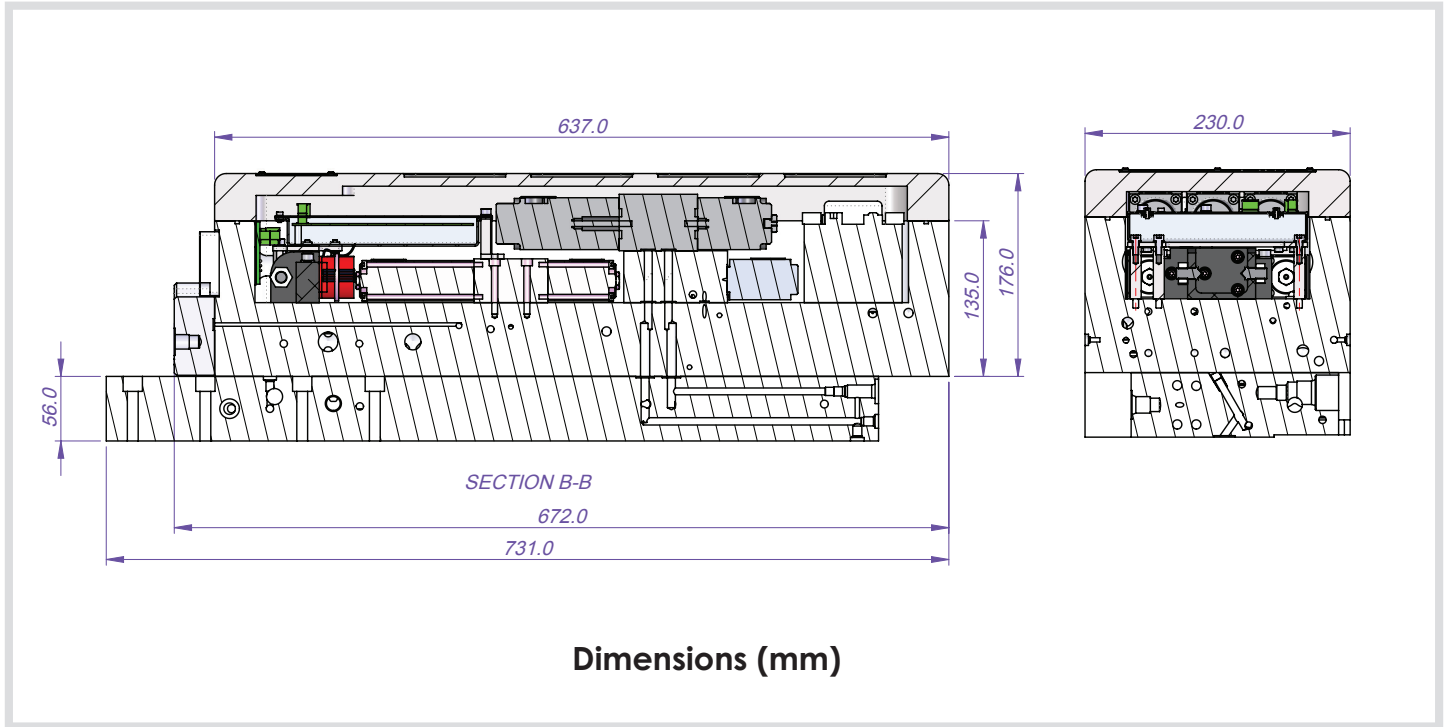


Right-side Hose Management Plate

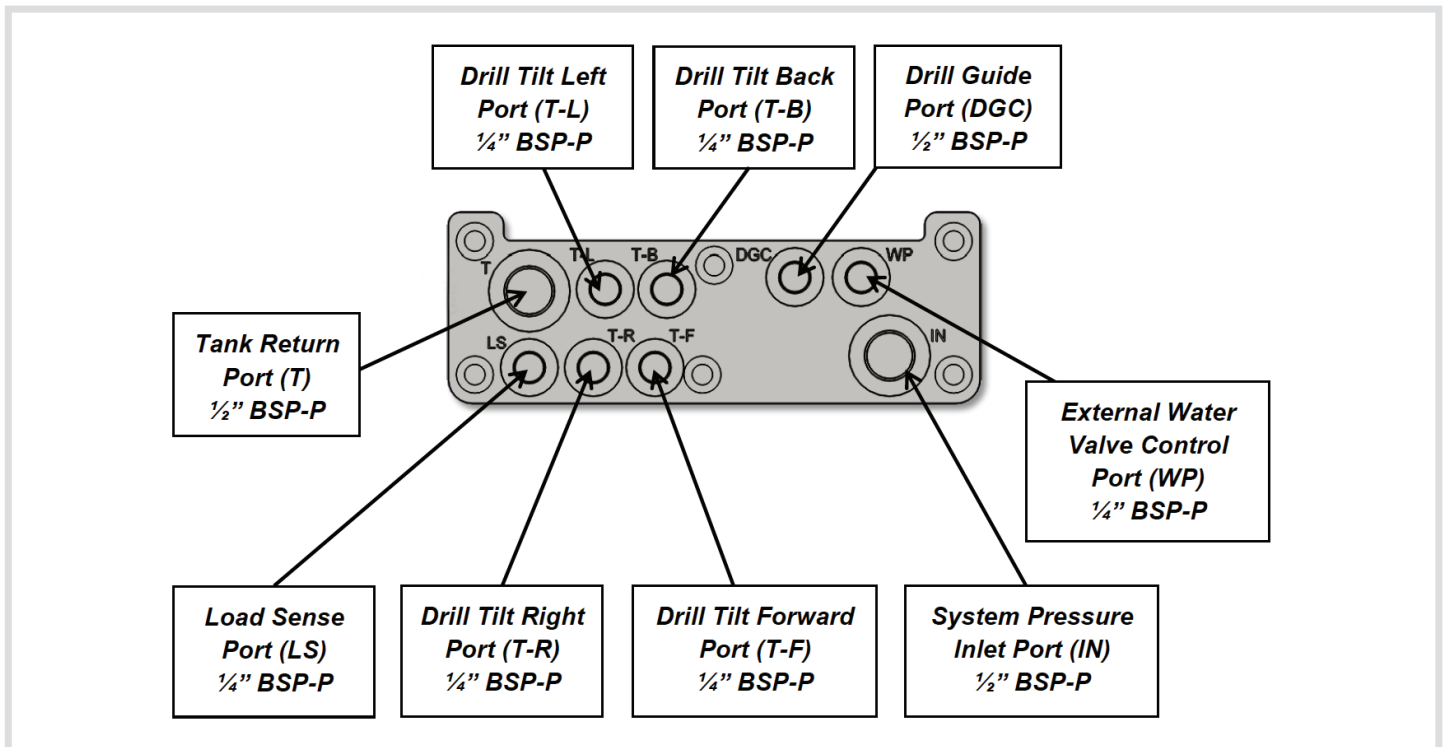
Left-side Hose Management Plate



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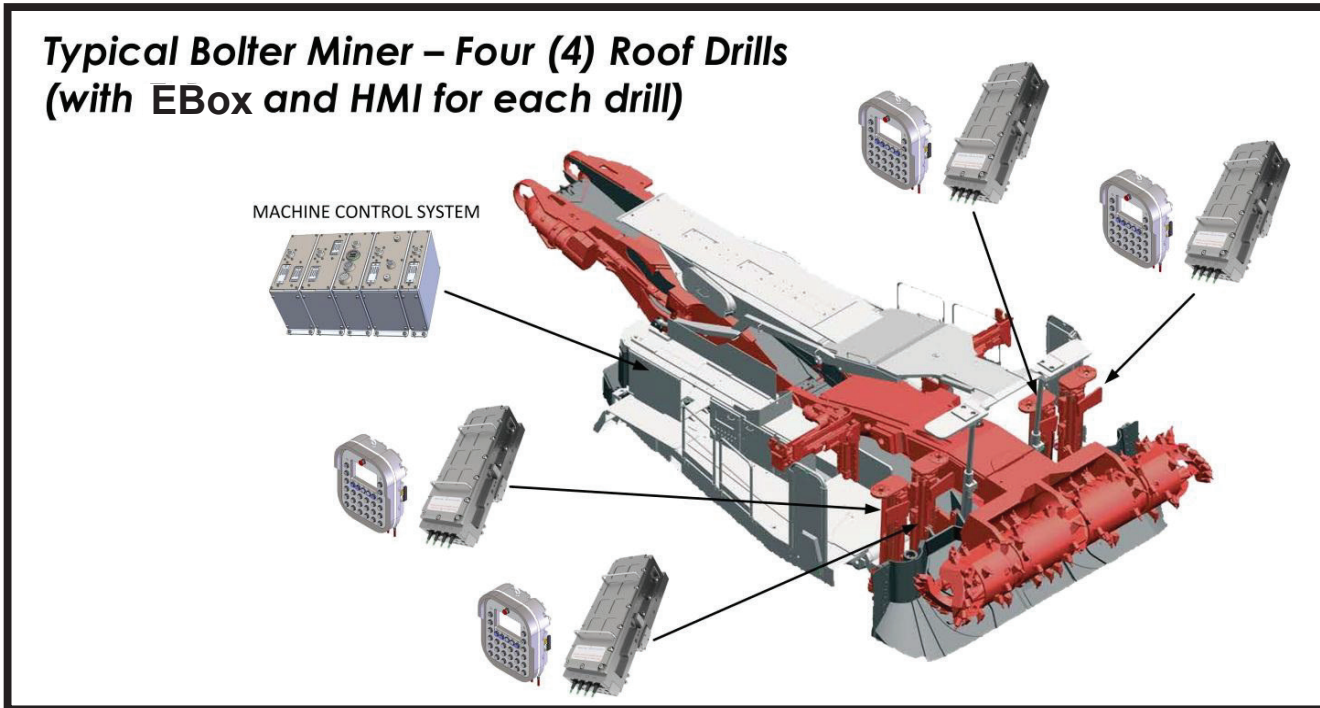
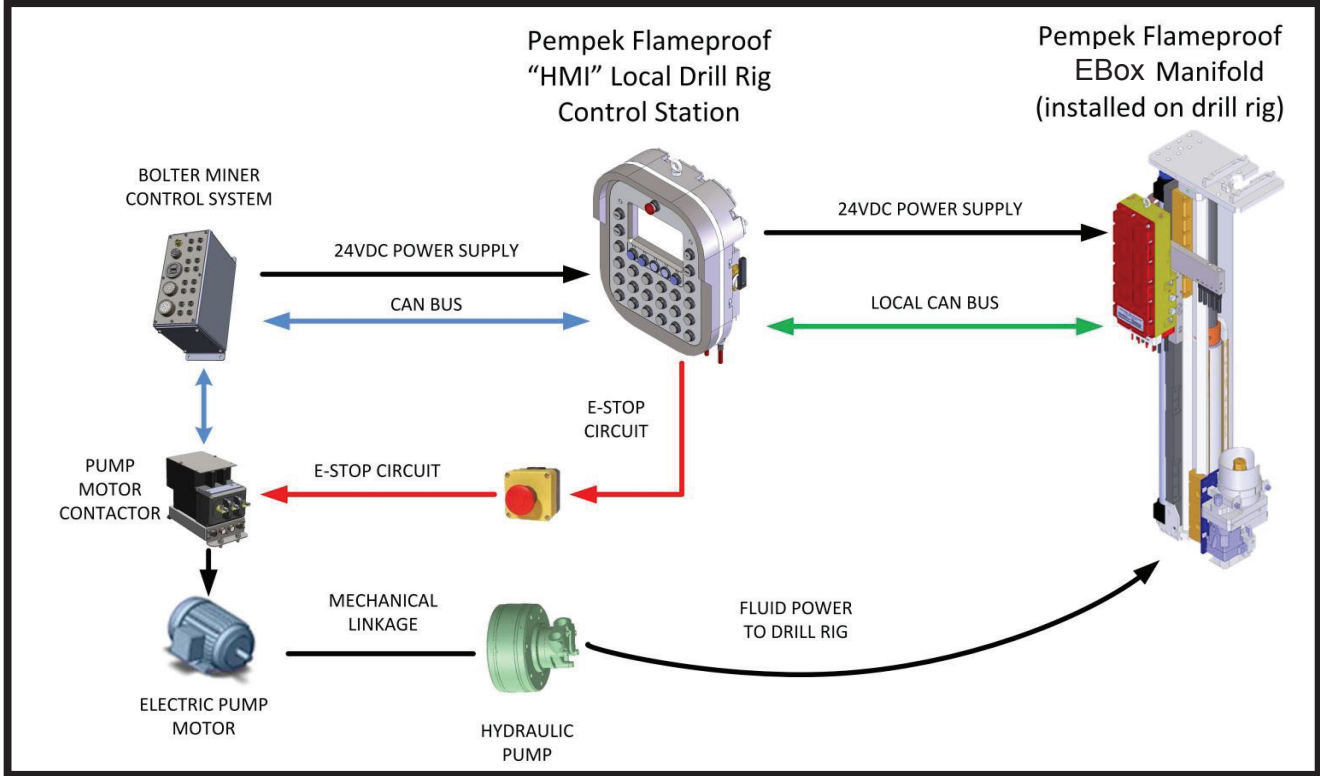


Hydraulic Connections



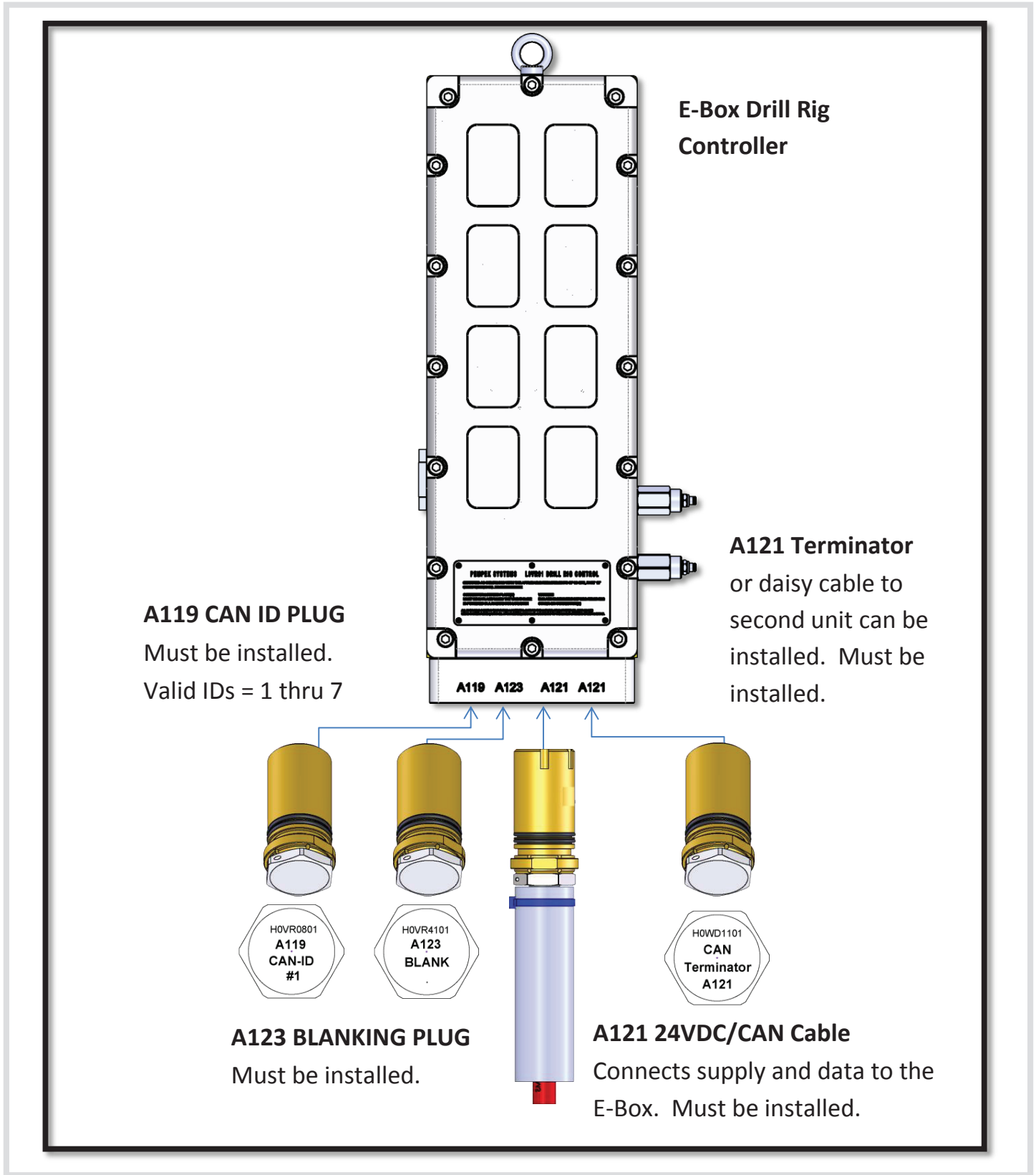
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Example Application



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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: $\beta_{6..10} \geq 75$