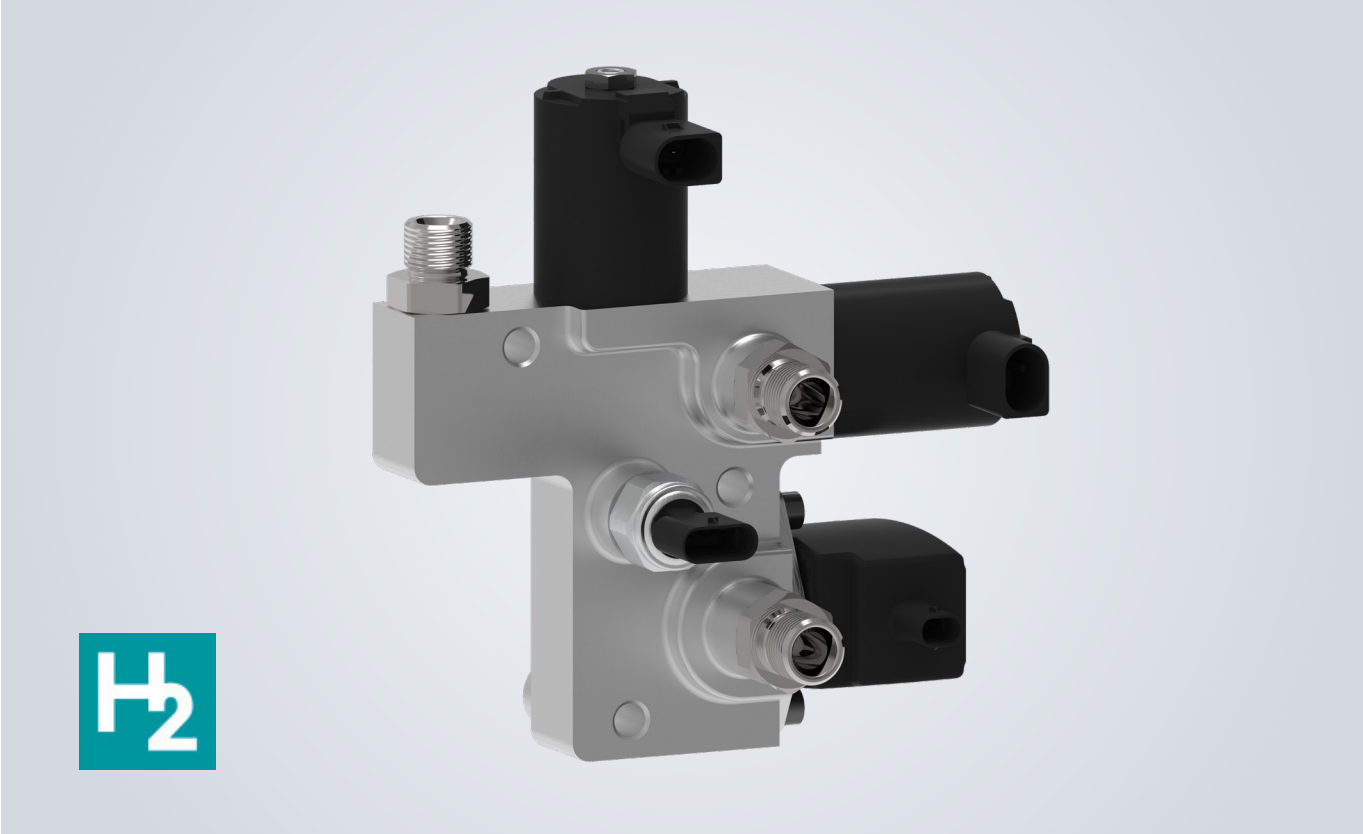
Short description

LRM Regulator module



The Liebherr regulator module LRM is one of the most important components of the hydrogen injection system, which is necessary for both port fuel injection and direct injection. It accurately controls the hydrogen rail pressure via an integrated flow control valve, which regulates the pressure provided by an external regulator in the machine compartment. This setup ensures that the pressure reaches the target value, guaranteeing reliable engine performance. The module also includes an electrically actuated shut-off valve and a vent valve that enable the safe discharge of residual hydrogen in the system whenever necessary. This concept allows for effective system control while guaranteeing the highest safety standards, especially when performing maintenance work in the engine compartment.

Features

Precise regulation of the rail pressure using an integrated hydrogen gas volume control valve
Gas-tight valve for stable idling and foot off operation
Safe maintenance thanks to electronically controlled venting valve with integrated pressure relief valve
Separate shut-off valve for safely interrupting the hydrogen supply
Integrated last chance filter

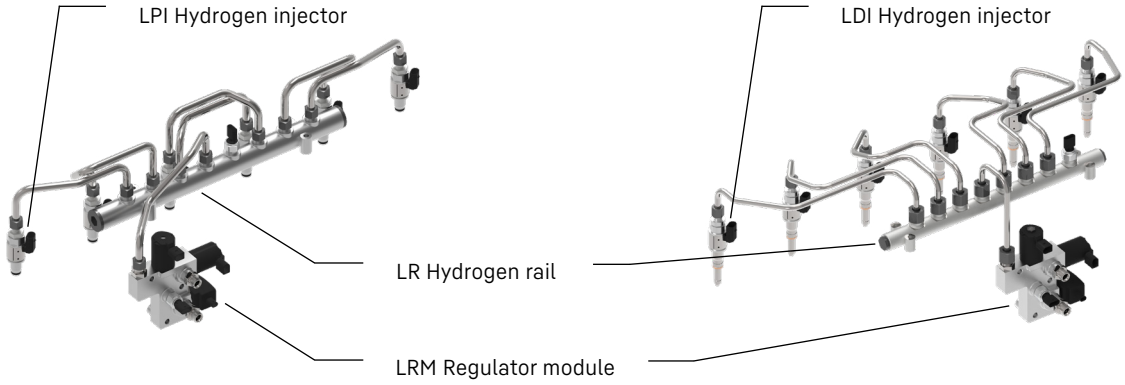
Injection systems
LiGO

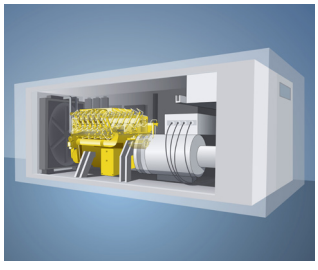
LIEBHERR

LRM Regulator module

Technical information	PFI	DI
Inlet pressure	22 – 25 bar (g)	45 – 55 bar (g)
Outlet pressure	0 – 15 bar (g)	0 – 40 bar (g)
Flow rate	> 30 kg/h @ 25/15 bar (g)	> 30 kg/h @ 45/30 bar (g)
Nominal voltage/current	24 V/0 – 2 A	24 V/0 – 2 A
Valve current control	Flow control & system venting via PWM, system shut-off function via peak & hold	Flow control & system venting via PWM, system shut-off function via peak & hold
Weight	~ 4.5 kg	~ 4.5 kg
Dimensions	181 x 177 x 103 mm	181 x 177 x 103 mm
Leakage rate	Internal: < 1 x 10^{-4} / external: < 1 x 10^{-5} (mbar l/s)	Internal: < 1 x 10^{-4} / external: < 1 x 10^{-5} (mbar l/s)
Inlet/outlet fitting	Customizable (60° cone/Swagelok/VOSS)	Customizable (60° cone/Swagelok/VOSS)
Electrical connectors	Automotive standard, protection types according to ISO 20653 : IP6K9K	Automotive standard, protection types according to ISO 20653 : IP6K9K
Sensors	Pressure & temperature sensing at module inlet	Pressure & temperature sensing at module inlet
Operating temperature	-40 °C to +125 °C	-40 °C to +125 °C
Engine safety	Shut-off & venting function	Shut-off & venting function
Engine maintenance	Active maintenance by venting injection system through venting valve	Active maintenance by venting injection system through venting valve
Injection system pressure relief	Pressure relief function embedded into venting valve, adjustable from 16 – 24 bar (g), capable of > 30 kg/h H_2 over 14 DP	Pressure relief function embedded into venting valve, adjustable from 30 – 40 bar (g), capable of > 30 kg/h H_2 over 29 DP

Hydrogen systems solutions for different applications:



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