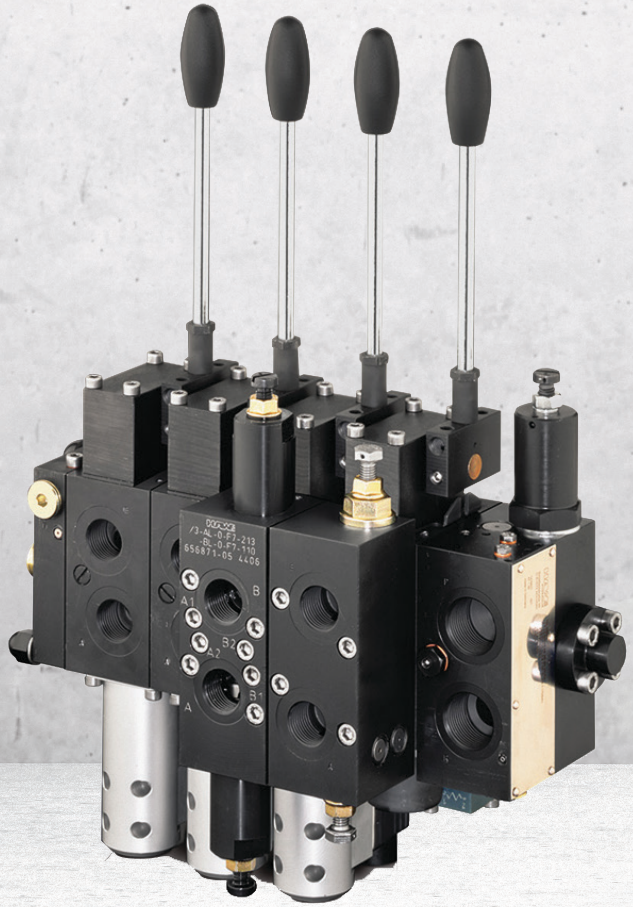
PSL Digital EBook

Solutions for a World under Pressure

HAWE HYDRAULIK



Proportional Directional Spool Valve

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Introduction to PSLs and their advantages

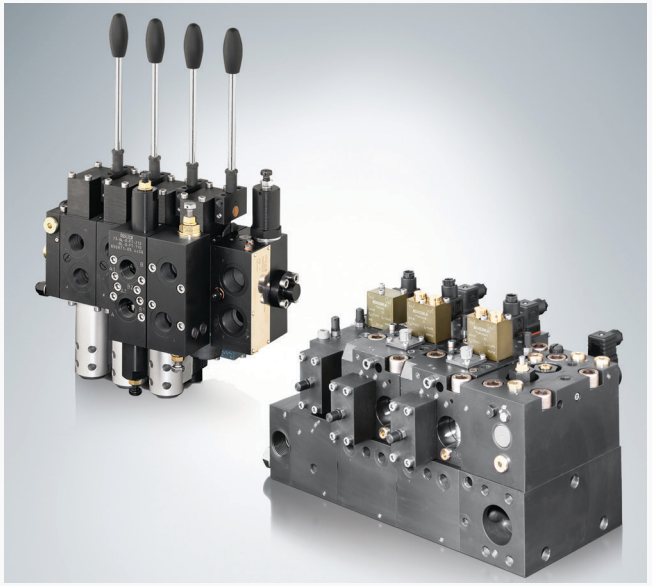
Proportional directional spool valves are a type of directional valve. They control the direction of movement and the velocity of individual or multiple hydraulic consumers actuated simultaneously. Control is independent of the load and continuous.

The proportional directional spool valve type PSL is suitable for constant pump systems and type PSV for variable pump systems with a pressure/flow controller. The volumetric flows and load pressures for the individual consumers can be individually adjusted. The proportional directional spool valve type PSL and PSV can be adapted to various control tasks, e.g. for safety functions. All sizes can be combined with each other.

The proportional directional spool valve type PSL and PSV is used in mobile hydraulics, in particular in crane and lifting equipment, construction and mining machinery, drilling equipment as well as in offshore and marine technology.

HAWE products:
HAWE Hydraulik supplies compact, energy-saving and durable hydraulic components and systems. These are characterized, for example, by:

- Consistent steel structure (no pressurised cast or aluminium parts)
- Design of the components for high pressures
- Compact design (minimization of space requirements)
- Zero leakage or verified low leakage
- Approvals for special operating conditions (e.g. ATEX)



Nomenclature:	Prop. directional spool valves as per load-sensing principle
Version:	Valve bank in series connection
Actuation:	Electro-hydraulic Pressure-actuated ■ Hydraulic ■ Pneumatic Manual ■ Centered Spring ■ Detent
pmax:	400 bar
Qmax. consumer:	470 l/min
Qpu max:	approx. 1000 lpm

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HAWE Advantages - Why to buy the HAWE PSL

PSL features and benefits:

- One product for various control functions and different flow requirements
- Energy-saving Open and Closed-Center systems
- Compact and space saving design
- Modular system with wide range of options
- Load independent
- Load sensing
- Sensitive control

Intended applications:

- Construction/construction material machinery
- Mining machinery (including oil & gas applications)
- Cranes and lifting equipment
- Machines for forestry and agricultural purposes

The perfect solution to meet your hydraulic system requirements!

PSLF/PSVF and KFB

PSLF/PSVF:

Proportional directional spool valve for fixed (PSLF) and variable (PSVF) displacement systems are attached to adjoined manifold blocks. They control the direction and speed of the hydraulic consumers, which may operate simultaneously and independently of each other. These valve banks can be tailored to a specific application that require unequal maximum consumer flows at ports A and B, and can include additional functions such as functional cutoff.

Features and Benefits:

- Maximum flow of 125 gpm (470 lpm) at 6000 psi (420 bar)
- Easy accessibility to the valve due to rear-sided hydraulic ports
- Manifold mounted: various sizes can be combined, the design (via subplates) offers easy replacement and maintenance
- Simultaneous full-speed operation of several functions

Sizes:

- 3, 5 & 7

PSLF and PSVF

KFB, a perfect match for PSL/PSV valves:

The KFB proportional pressure reducing valve bank is used for a stepless remote control of a hydraulically actuated PSL/PSV section. Two directly actuated pressure reducing valves, one for each switching direction, are combined in one housing and supply control pressure at one of the two outlet ports. That port is then dependent on the movement direction and is proportional to the level of the hand lever, but is independent of the inlet pressure. While one of the outlet ports is pressurized, the other port is depressurized to the tank.

Features and Benefits:

- Available in a single or bankable design
- Many pressure ranges available
- Made of steel for durability

KFB

Numerous combination options

HAWE can customized hydraulic controls for every application

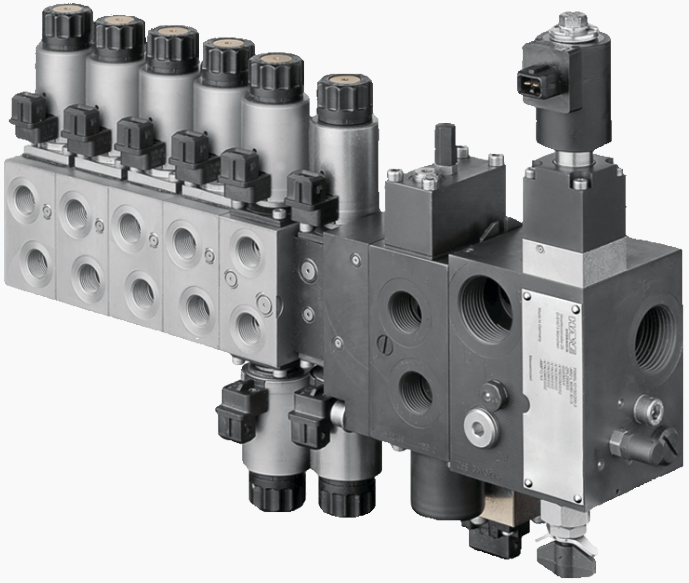
HAWE's directional valves are designed and manufactured with modularity in mind. With minimal installation, our product range couples space-saving directional valve banks with proportional controlled functions or zero leakage technology. There are literally millions of combination options to choose from. For you this means one thing: Partner with HAWE and always have the right solution!

Combine PSL with EDL

This combination allows flows for the individual consumers to be individually adjusted. By means of additional functions in the intermediate plates (longitudinal and sandwich valve combination) and with ancillary blocks the proportional directional spool valve can be flexibly adapted to different control tasks. The directional spool valve type EDL can be combined directly with the proportional directional spool valve type PSL and PSV in size 2. It is used in mobile hydraulics, in particular where less features are required and cost is a driving factor.

Zero Leak
Directional Seated
Valve BVE

Uniquely Combined
Proportional Directional
Spool Valve PSM



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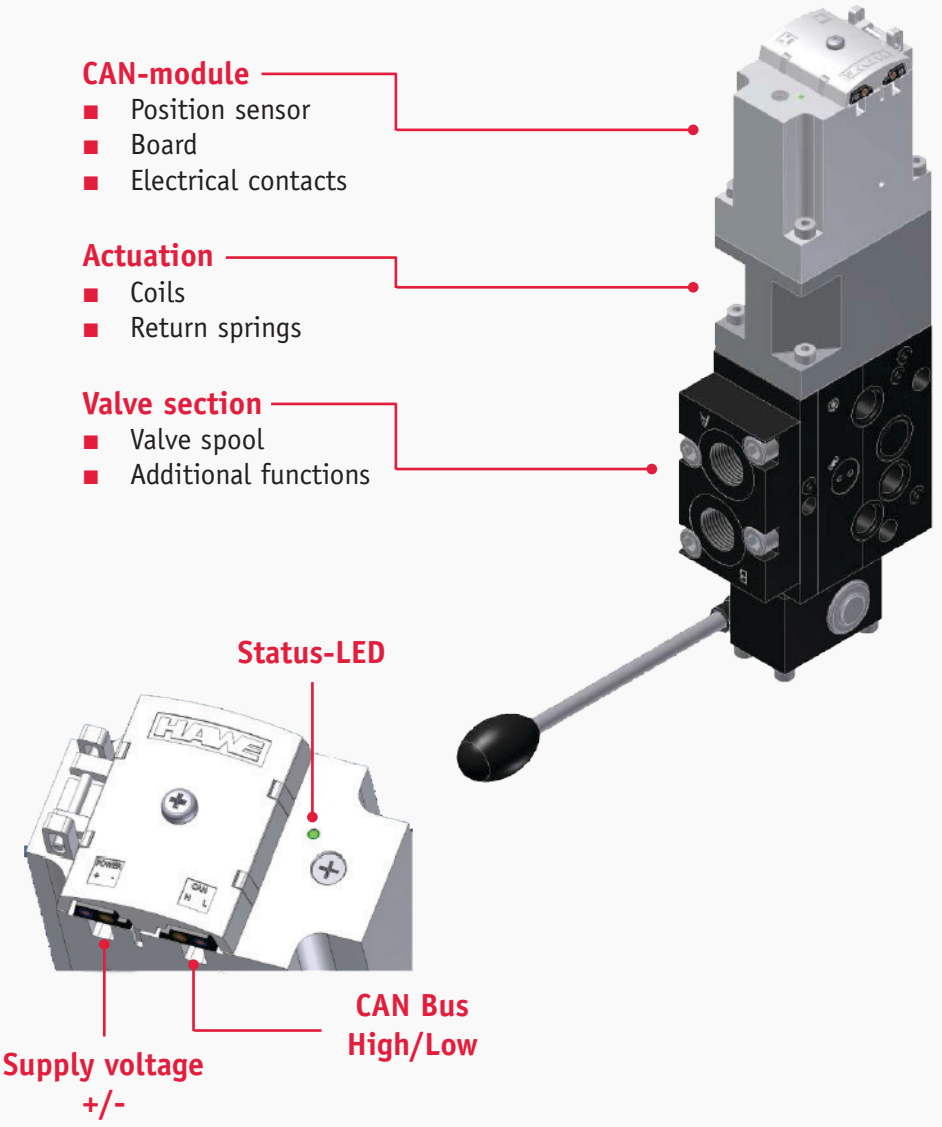
PSL-CAN electronic on board

The electrical connection between the directional spool valve sections is via internal cable connections (power supply and CAN bus).

Why use PSL with CAN?

- Real proportional behavior
- Volume limitation via electronics
- Fine control range via electronics
- Minimized wiring effort
- One controller output controls more than 32 PSL valve sections
- Excellent diagnostic possibility (Feedback of coil position etc.)
- Plug & Play for serial production - Initial parameter setting superfluous (already saved in CAN-modules)
- Valves working independently
- Ideally suited for extremely dynamic controls (e.g. steering systems)
- Ideally suited for flow sensitive applications (e.g. flow metering for synchronized cylinder movement)



PSL valves ensure functional safety

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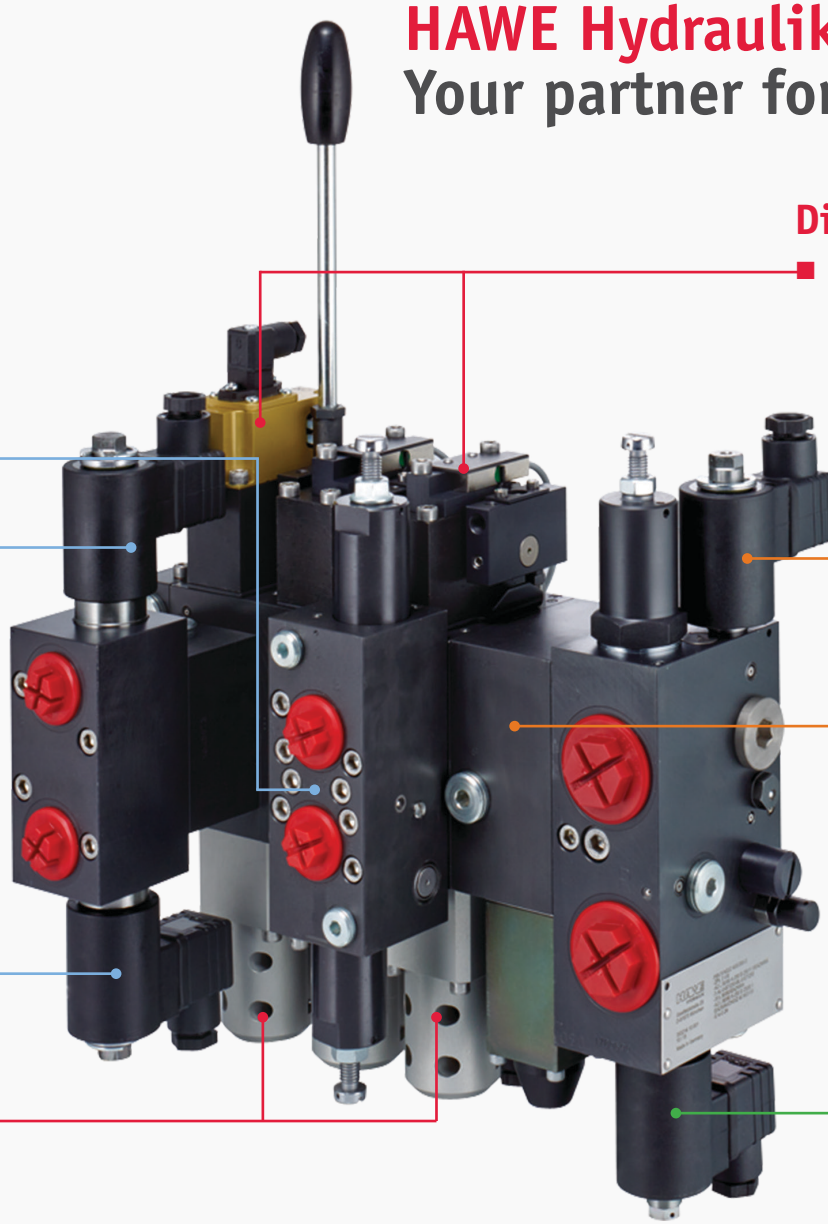
Your partner for minimizing risks



Diagnostic Functions
- Off center switch

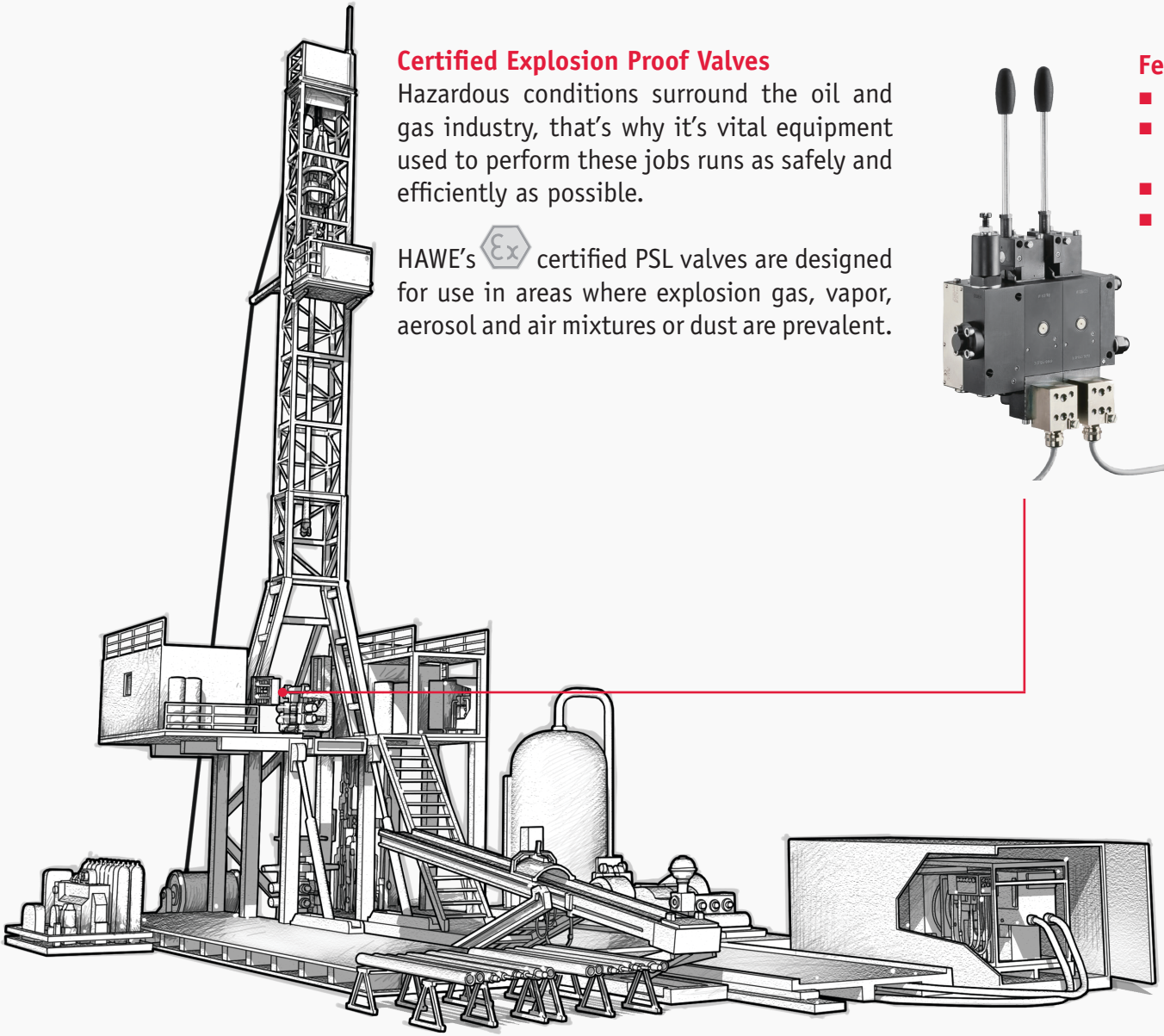
Safe Stop Functions
- Load-holding valves (Counter balance)
- Zero leak valves

Safe Shut-off Functions
- Positive P Galley Shut Off (Integrated shut-off)

Safe Limit Functions
- Idle circulation Valve (Switch off load pressure)

Diagnostic Functions
- Infinite spool position monitor

Safety In Explosive Environments



Certified Explosion Proof Valves

Hazardous conditions surround the oil and gas industry, that's why it's vital equipment used to perform these jobs runs as safely and efficiently as possible.

HAWE's Ex certified PSL valves are designed for use in areas where explosion gas, vapor, aerosol and air mixtures or dust are prevalent.

Features and Benefits

- Various control functions and flow demands
- Energy-saving Open and Closed-Center systems
- Compact and lightweight design
- Modular system with wide range of design variants

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Safety options and certifications

Meeting global requirements:

In order to fulfil the increasing requirements, also in an international context, the updated Directive 2014/34/EU will be effective as of 20 April 2016.

Since the same explosion-proof device must meet different standards in different countries – depending on the underlying safety policy – sometimes a national certificate alone is insufficient. The device may need to be certified several times depending on the country in which the device will be used. Standards such as NEC 500, ANZEx, MA etc. must be observed.

HAWE Hydraulik is aware of the importance of functioning explosion protection and provides products that are in accordance with common global standards. HAWE Hydraulik constantly endeavours to adapt existing unit approval tests to meet global requirements and also to provide international approvals.

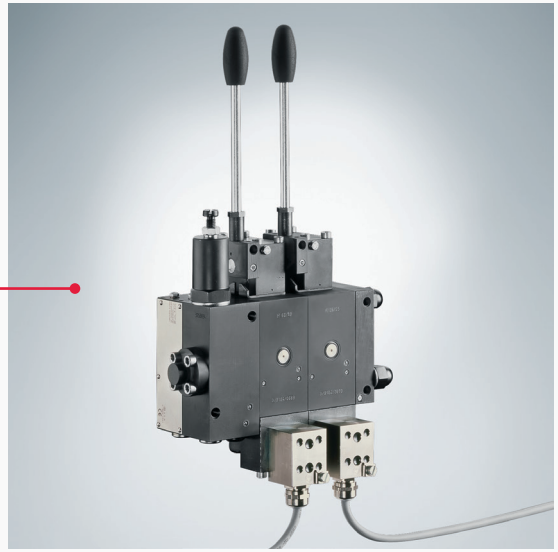
Certifications:

Further certifications according to IECEx (international), MSHA & NEC (USA), CEC (Canada), MA (China), ANZEx (Australia) and TR (Russia).

Precise control with certifications:

Proportional directional spool valves according to the Load-Sensing principle for bankable or manifold mounting. They are intended for sensitive motion control via hand lever, joystick or remote control. Even the variant with integrated displacement transducer can be shipped in compliance with the ATEX Directive.

- Operating pressure (pmax): 420 bar
- Flow rate (Qmax): 470 l/min per section



Directional spool valve type D7700-3

HAWE - The Company

HAWE Hydraulik is a mid-sized, internationally active family business headquartered in Munich/Germany. Fourteen subsidiary companies in Europe, North America and Asia offer a global sales, service and engineering network. The production plants in Germany supply customers all around the world. Great value-added depth, efficient processes and rigorous attention to quality ensure the reliability, ruggedness and long service life of HAWE products. HAWE Hydraulik aspires to combine over 65 years of experience in hydraulics with the integration of new technologies to provide innovative solutions - “Solutions for a World under Pressure”!

In 1997, North America was introduced to HAWE Hydraulik through its American subsidiary, HAWE Hydraulics. Today, many of America‘s most rugged industries rely on 65 years of HAWE‘s dependable German engineering and experience to help them build equipment with extremely robust hydraulic systems.

We offer sales and application engineering services for the custom design of modular, hydraulic solutions. Extensive local inventory and after sales support, including product training, troubleshooting, and on-site services are also available.

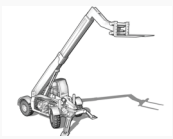
Key Markets

Resources



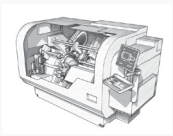

Infrastructure



Manufacturing Efficiency



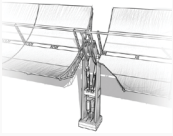



Nutrition & Health




Energy



HAWE - Sales and Service Network

Customer service - from concept to completion and beyond:
Our HAWE Service Solutions team is available for direct on-site assistance.

Capabilities include the maintenance, reconditioning, and repair of individual components as well as entire hydraulic systems made up of pumps, valves, sensors, and electronic controls. We also follow-up with after-sales support, including product training, troubleshooting and field services, all of which are conducted by our team of professional hydraulic technicians. At all phases of your hydraulic operations, the HAWE service team follows through with quick responses from concept to completion, and beyond.

For further information please contact HAWE North America.

Field service
- On-site assistance
- Start-up
- Maintenance and training

Component repairs
- Troubleshooting
- Repairs
- Oil analysis
- Refitting

Spare parts & special service
- Identification of the spare part
- Customized offer
- Demand-adjusted delivery times
- Installation on request

Applications engineering
- Support on-site
- Development of customized and economical solutions
- Error analysis reports

Solutions for a World under Pressure

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Still searching for the right partner for safety and efficiency issues?

We are Partners.

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