



# The high performance long distance runners

Hammelmann high pressure pumps, units and components

High pressure pump range

Pump technology

Pumps for special applications

High pressure units

High pressure application systems

Hammelmann worldwide

# The high performance long distance runners

Ten thousands of Hammelmann high pressure pumps are operating worldwide and in almost all industry sectors. Whether running around the clock or just intermittently what counts for our customers are energy efficiency, reliability, performance, service and innovative solutions. We see these challenges as our daily obligation.

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### High pressure units

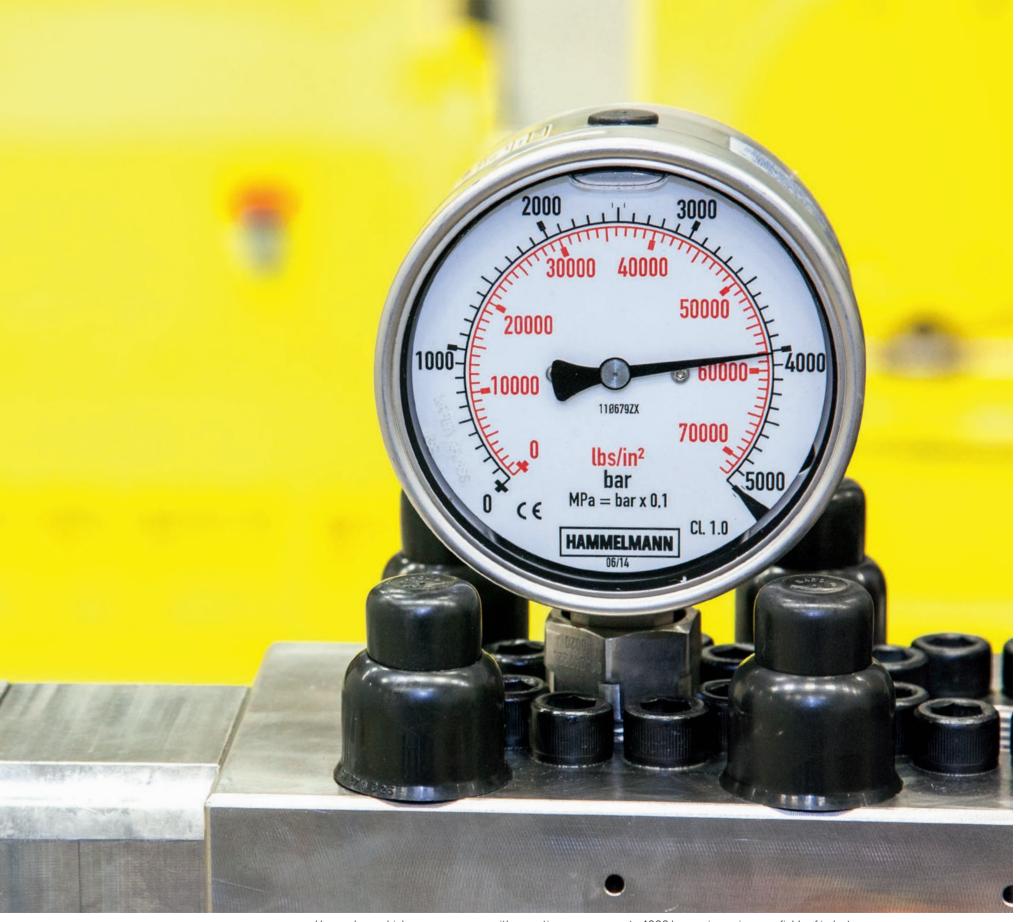
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### Catalogues

High pressure pumps and units High pressure application systems Efficient corrosion protection Process plunger pumps

### Online

hammelmann.com/hdp hammelmann.com/catalogue hammelmann.com/ship hammelmann.com/process



Hammelmann high pressure pumps with operating pressures up to 4000 bar are in use in many fields of industry.

Test stations for all pump models, collation, evaluation and documentation of all relevant operating data.

# High pressure pump range



### **HDP 20 V**

High pressure pump with variable stroke

up to 3300 bar 0 – 111 l/min up to 18,5 kW

3 cylinders 205 kg 788 x 323 x 707 mm



### HDP 30

up to 3800 bar 2,2 – 103 l/min up to 30 kW

3 cylinders 190 kg 523 x 303 x 780 mm



### HDP 40

up to 3800 bar 5,5 – 155 l/min up to 45 kW

3 cylinders 200 kg 523 x 303 x 779 mm



### **HDP 70**

up to 3800 bar 7,2 – 246 l/min up to 75 kW

3 cylinders 215 kg 495 x 303 x 813 mm



### HDP 70 V

up to 3800 bar 7,2 – 246 l/min up to 75 kW

3 cylinders 263 kg 850 x 303 x 813 mm



### HDP 80

for Aquajet 08 unit

up to 2500 bar 17,4 l/min up to 80 kW

3 cylinders 215 kg 495 x 303 x 813 mm

4 HIGH PRESSURE PUMP RANGE READ ONLINE: HAMMELMANN.COM/HDP HIGH PRESSURE PUMP RANGE 5



High pressure pumps in the aluminium industry. In operation since 2009 with an average of 5000 operating hours per year.

# High pressure pump range



### HDP 140

up to 4000 bar 3 cylinders 13 – 343 l/min 380 kg

up to 140 kW 586 x 394 x 1031 mm



### **HDP 300**

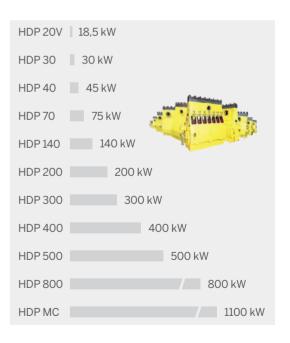
up to 3200 bar 5 cylinders 33 – 1069 l/min 1070 kg up to 300 kW 968 x 480 x 1120 mm



### HDP 200

up to 4000 bar 3 cylinders 20 – 489 l/min 525 kg

up to 200 kW 674 x 474 x 1091 mm



The matching pump performance for every task.

# High pressure pump range



### **HDP 400**

up to 3000 bar 3 cylinders 45 – 1289 l/min 1700 kg

up to 400 kW 914 x 634 x 1449 mm



### **HDP 800**

up to 3000 bar 5 cylinders 87 – 2133 l/min 3700 kg

up to 800 kW 1390 x 760 x 1592 mm



# HDP 500

up to 3000 bar 3 cylinders 52 – 1280 l/min 1960 kg

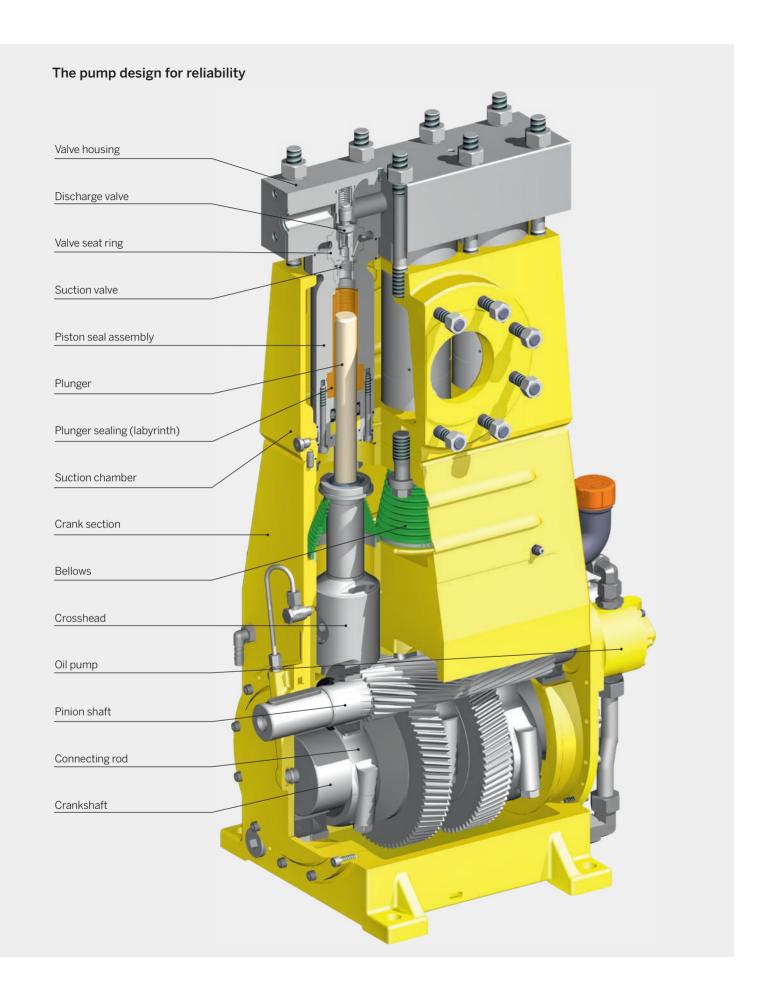
up to 500 kW 1053 x 630 x 1568 mm



# HDP MC

up to 3000 bar 7 cylinders 126 – 2987 l/min 5361 kg

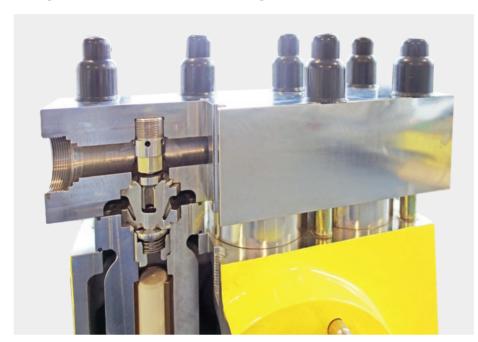
up to 1100 kW 1764 x 874 x 1699 mm



# High pressure pump technology

### Valve housing

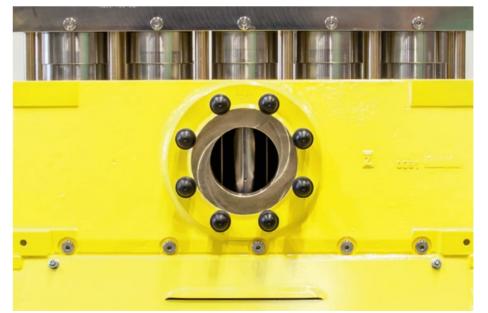
The valves are housed in the pump head. The stress reversal free valve housing delivers the water flow to a central discharge connection.



Standardized connection systems allow adaptations of a variety of regulating and safety devices. Customer specific special-purpose solutions are easily implemented.

### Suction chamber

The medium is fed to the pump via a central inlet in the suction chamber. The dynamic components of the sealing system are located inside the suction chamber. This closed system provides an optimal fluid feed to the high pressure pump and additionally increases safety.





### Valve technology

Suction and discharge valves are arranged coaxially. The compact design ensures a considerably higher efficiency than conventional high pressure pumps.

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# High pressure pump technology

### High pressure seals

The various plunger seal systems employed by Hammelmann enable safe and reliable, continuous duty at operating pressures up to 4000 bar.

The choice of seal system used is dependant upon the pump application.

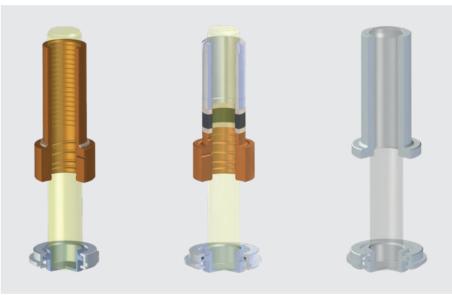




### Bellows system

Crank section

The bellows sealing system hermetically separates the fluid end from the power end thus preventing the ingress of liquids or gases.



### Labyrinth sealing up to 2000 bar

The friction free sealing comprises a labyrinth seal and ceramic plunger system. The labyrinth sealing design stands out for its operational reliability, and the service intervals can be planned precisely.

### Packing seals up to 3000 bar

high pressure seal arrangement. The ceramic plunger is guided by a separate bushing. Packing seals can be used for various media.

The integral reduction gear with double helical gears ensures smooth running and even power distribution. The various gear ratios allow the optimal selection to suit the customers' requirements.



The compact design eliminates the need for

### Dynamic plunger sealing up to 4000 bar

Packing rings are used for this The dynamic plunger sealing system is used mainly for ultra high operating pressures. The design and material composition of this sealing system results in high efficiency, an extreme wear resistance and high reliability.

an external gear box or an oversized flywheel. The mechanical efficiency of the continuous duty crank section is in excess of 95 %.



# High pressure pump technology

### Compact vertical design

The vertical pump design has many advantages: minimum space required due to very small footprint, neutral weight loading is gentle on the components, the beneficial flow pattern of the medium and the low stress to the base frame eliminate unwanted lateral oscillations.



### Conversion kits

All Hammelmann pumps can be converted to other operational performances (flow rate and operating pressure).

If there is a regular need to change the performance, the required pump head and plunger seal sets can be pre-assembled as a compact unit for a quick change. This increases the reliability of the conversion and greatly reduces the time required.

### Training

Training by experts is particularly important for your operatives. Hands on, practice-oriented training ensures successful implementation on the job.



### Maintenance

Hammelmann high pressure pumps are very maintenance friendly. An examination of all wearing parts can be carried out with standard tools in easy steps. The well planned construction of the high pressure pump and the clearly arranged components simplify assembly.



The vertical configuration of the Hammelmann pumps allows maintenance at typical working heights.

### Service

The acknowledged Hammelmann Service is based on a close-knit worldwide service network, readily available spare parts and short reaction times.

Customer requirements have foremost priority whereby questions can often be solved by telephone. For this we offer a **24-hour service hotline.** Our specialists are glad to help you either with instant fault analysis, give you trouble shooting tips to point you in the right direction, or directly process spare parts orders.

Service hotline: +49 (0)171 4707265



Hammelmann high pressure pumps are designed for long-life operation. Maintenance intervals depend on the individual local conditions, e.g. continuous duty operation, performance parameters and circumstances on site. Flexible, competent and experienced employees are available for all maintenance and repair work.

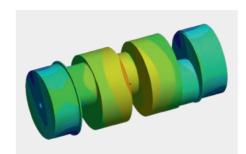
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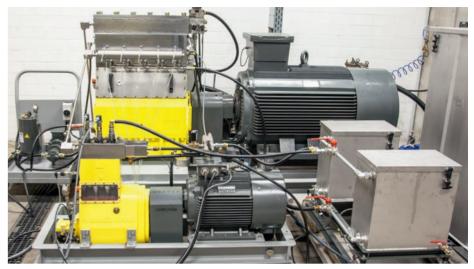


# Quality

### Development technology

The most modern design and simulation technologies provide for the optimal design of components.



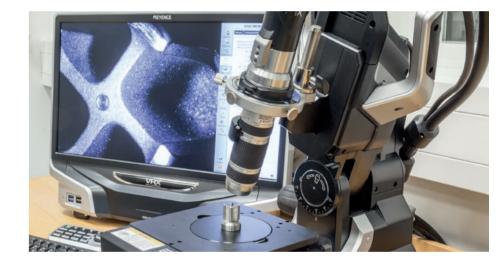


During new development work comprehensive stress and long term fatigue testing is carried out under true operating conditions. The resultant data is analyzed and optimizations implemented as required.

### Materials

All materials and bought-in parts are subjected to the strict control of our quality management system. The high quality materials come from reliable sources. The material and processing quality are checked and documented.

Hammelmann has extensive experience in the selection and processing of special materials.



### Quality control

Hammelmann products and supplies are subject to the strictest quality control. For this purpose, we have the latest measurement methods available.

Hammelmann relies on a continuous data flow from design to the machine programming, to the tool selection and to the processing machines.



### Acceptance test

All high pressure pumps are subjected to an extensive final quality assurance test in our modern test centre prior to delivery.

The test results are part of the machine documentation. On request special acceptance tests can additionally be carried out by external inspectors.

16 QUALITY READ ONLINE: HAMMELMANN.COM/HDP QUALITY 17



# **Controls**

### **ES3 Controls**

- · Intuitive remote control
- · Clear display of all operating conditions
- · Selectability of various operating modes
- Colour display with touch screen
- International character sets allow all languages to be shown
- Updates possible via USB
- Central monitoring and storage of motor and pump data
- The ES3 control can be supplemented by additional safety monitors
- Ready for Ethernet interface
- Direct pre-selection of the gear ratios possible with integral electric intermediate gear boxes
- The ES3ioBox offers additional freely definable inputs for the evaluation of further data and for communication with other controllers
- The ES3 display can be installed in various positions on the high pressure system
- Robust industrial model
- High computing capacity

### Basic functions

### Operation

Controller On/Off Engine Start/Stop Preheat On Set value +/-High pressure On/Off

## Stop Engine

Engine speed regulation
Engine speed control
Pressure regulation
Variable regulation
Customer specified regulation

Regulating

### Monitoring

Engine oil pressure Engine temperature Pump oil pressure Boost water pressure Water filter High pressure



### JetControl controller (PLC)

Controls and monitors constant speed, electrically powered pump units (star delta or soft start).

- Pump monitoring with analogue sensors
- Information menu with actual unit status (bar/°C)
- Fault announcements in clear text
- Special projects and control tasks are also viable with the JetControl PLC, for example, high pressure pumps for cutting systems, high pressure pumps with variable stroke, servomotor controls, etc.





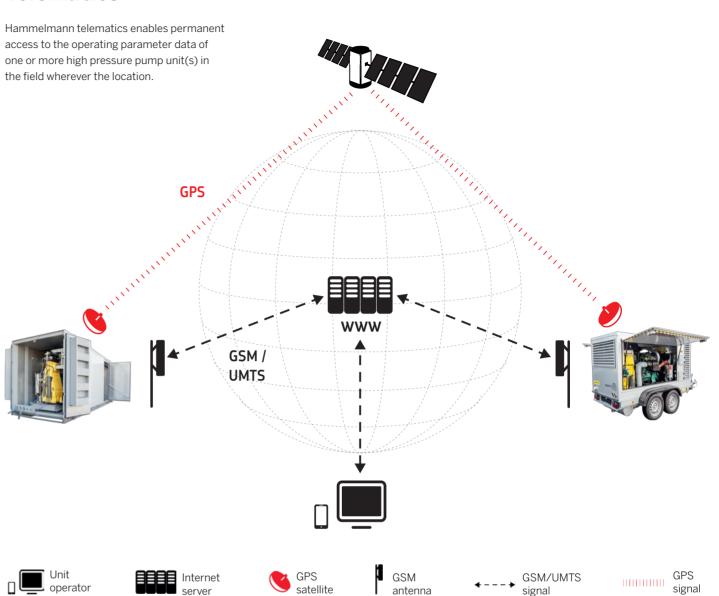




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# **Telematics**



### Locating

The telematics modules receive positional data from the GPS\*. These are transmitted at regular intervals to an internet server and saved. The pump owner/operator can constantly track the position(s) of the unit(s).

### Operational data transmittal

The operational data is permanently transmitted by GPRS\* via local radio masts to an internet server and saved.

### Operational data display

The data on the server is displayed on a website accessed by user name and password. The following data is available through the web page

- High pressure
- Engine RPM
- Unit operating hours
- Pump operating hours
- Fuel tank content
- Fuel consumption
- Fault memory
- Other values if required

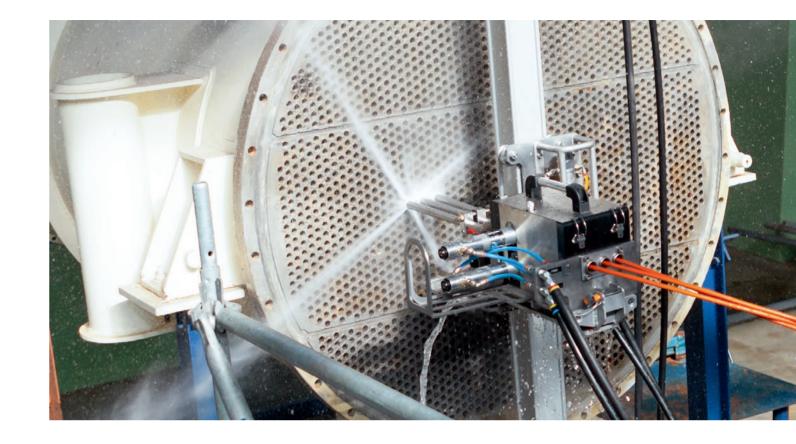
### Hammelmann Service

If requested Hammelmann can make a live connection to the pump unit ES2 / ES3 controls via the server enabling the following servicing functions:

- Operational data diagnosis
- Fault protocol read out
- Set/adjust operating parameters
- Remote maintenance
- \* GPS = Global Positioning System
- \* GPRS = General Packet Radio Service

# High pressure pumps for industrial cleaning





High pressure pumps in every design size for manual and automated industrial cleaning.

Examples for the use of high pressure water for industrial cleaning:

- Cleaning heat exchangers, condensers, coolers, valves
- Cleaning vessels, reactors, autoclaves, tanks
- Cleaning production and transportation equipment, machine parks, storage areas, contaminated flooring, furnaces
- Cleaning machinery, structural steelwork
- Decontamination, disinfection
- Cleaning scaffolding, shuttering machinery etc.



Electric motor powered high pressure pumps in every design size with frequency inverters and other system components



Sound damping hoods for stationary and mobile high pressure units



Units with gear box

22 HIGH PRESSURE PUMPS FOR INDUSTRIAL CLEANING READ ONLINE: HAMMELMANN.COM/HDP HIGH PRESSURE PUMPS FOR INDUSTRIAL CLEANING 23

# High pressure pumps for corrosion protection



From bridge railings to supertanker the Hammelmann range includes the right high pressure pumps for all manner of preparation work for corrosion protection.

Use of high pressure water for

- Paint removal
- De-coating
- De-rusting

Online catalogue: hammelmann.com/ship





Modern diesel engines meet the requirements of local exhaust gas legislation.

# High pressure pumps for concrete rehabilitaion



Hammelmann high pressure units offer a wide performance range, for hand-lancing operation and up to heavy concrete removal with robots.

- Selective removal of surfaces, e.g. spalled concrete, plaster, rendering, asphalt
- Cutting doorways, access ways in tunnels and concrete structures
- Roughening and preparing concrete and stone surfaces
- · Reinforcing bar exposure

- Cleaning natural stone walling
- Expansion joint removal
- Laitance removal
- Cold cutting metal structures

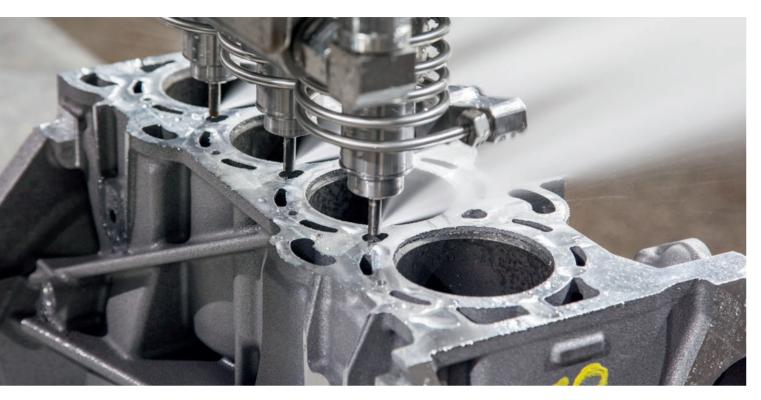


Sound damping hoods for stationary and mobile high pressure units



Super-Silent Container, with greatly reduced sound emission due to special speed-reduced motors and super-sound insulation

# High pressure pumps for the automotive industry



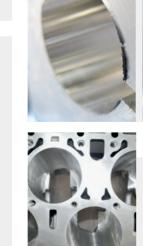




Compact high pressure units in various sizes for use in the automotive industry, for example for engine component deburring, swarf removal and roughening of cylinder surfaces.







# High pressure plunger pumps for cutting applications



Hammelmann pumps make especially economic use of the energy utilized. Intelligent design, the use of high strength materials and precise manufacturing of components ensure long service life at pressures up to 4000 bar.

Hammelmann pumps for cutting applications can be combined with any cutting table.

With Hammelmann high pressure equipment it is possible to use only the exact motor power necessary for the actual cutting task in progress. This results in significant energy savings.

The high pressure pump together with its direct drive allows an increase in efficiency of up to 30 percent compared to pressure intensifier systems.

HDP Typ	max. bar	max. I/min	kW
34	3800	4,3	15 22 30
44	3800	6,4	30 37 45
74	3800	10,4	55 75
144	4000	14	110
204	4000	18	132







26 HIGH PRESSURE PUMPS FOR THE AUTOMOTIVE INDUSTRY HIGH PRESSURE PLUNGER PUMPS FOR CUTTING APPLICATIONS 27

# Hot water high pressure pump units

### Hot water unit with Thermojet technology









The heater module and the HDP 32 combined can produce an operating pressure of up to 500 bar reaching up to 95 °C of water temperature.

Model	Plunger Ø	Operating pressure	Flow rate	Engine power	Pump power
THERMOJET	26 mm	500 bar	28 I/min	37 kW	26 kW

### High pressure unit with separate water heating module

The fluid end components of Hammelmann high pressure pumps have been designed specially for hot water operation by selecting heatresistant materials and sealing systems.

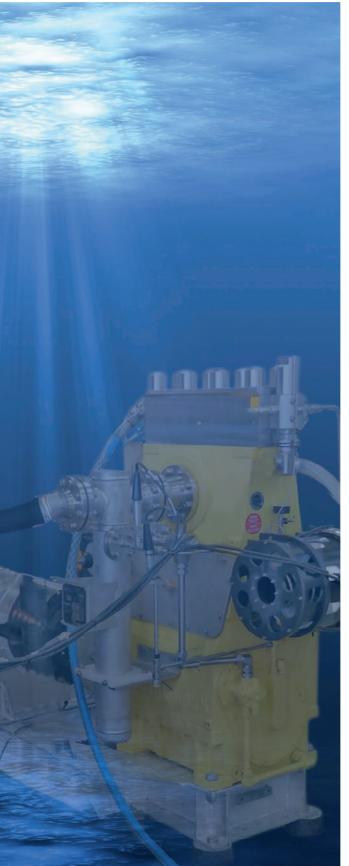
The high water temperatures allow, for example, the cleaning of tanks, heat exchangers and other surfaces contaminated with oils, greases, bitumen and resins. The fields of application are predominantly in the oil and gas and chemical industries.

Up to **95° C** high pressure pump models HDP 400, 500, 800 Up to **110° C** high pressure pump models HDP 40, 70, 140, 200, 300



A separate water heating unit supplies hot water at boost pressure. High pressure is generated by the high pressure pump.

# High pressure pumps for underwater applications





Proven Onshore technologies are also increasingly being used subsea.

Application examples:

- Pipeline inspection and cleaning work
- Demolishing concrete foundations
- High pressure cutting
- Water-assisted dredging
- Coating removal

Hammelmann high pressure pumps are advancing this forward-looking trend and have already proven their worth under the water surface. The seawater can be used as the pumped medium.

The basis for reliable functioning is specially selected and approved materials. The pressure control valves are actuated hydraulically. The pumps are driven by an electric underwater motor. With the hermetically sealed intermediate chamber Hammelmann high pressure pumps offer a "clean" technology.

For subsea applications at great depths of up to 3000 m special solutions are offered. All Hammelmann pump models are convertible for underwater applications.

28 HOT WATER HIGH PRESSURE PUMP UNITS READ ONLINE: HAMMELMANN.COM/HDP HIGH PRESSURE PUMP FOR UNDERWATER APPLICATIONS 29

# **Process pump HAMPRO series**









Pumps in the HAMPRO series satisfy the highest demands of safety and reliability. A wide range of suitable materials

Oil & Gas Industry	Chemical Industry	
and designs are available for pum	ping diverse media.	
of safety and reliability. A wide range of saftable materia		

Media pumped / Process: Media pumped: Condensates Methyl ester Meth acrylic acid Diesel Waste water Glycol Hot water Solvents Inhibitors Boiler feed water Methanol Liquid ammonia Carbon dioxide Produced water Hydraulic fluids Scale squeeze Steel Industry

Sea water Flowline service Mill scale removal

Leak tests High pressure bearing lubrication

**HAMPRO** Series performance data

Туре	max. bar	max. m³/h	kW
10	2300	6,2	11
20	3800	6,2	18,5
20 V	3270	6,7	18,5
40	3400	9,3	37
70	3500	12,1	70
70 V	3000	12,5	70
140	3600	20,6	140
200	3200	29,3	200
300	3200	64	300
400	3200	77	400
500	3000	77	500
800	3000	128	800
MC	3000	180	1100

Fluid temperatures: -40 up to +200 °C Viscosities: up to 2000 mPa s

30 PROCESS PUMP HAMPRO SERIES READ ONLINE: HAMMELMANN.COM/HDP PROCESS PUMP HAMPRO SERIES 31

# **Sewer cleaning pumps**



High pressure pumps with high flow rates suitable for use in recycling systems. The plungers are made of ceramic. A hermetic piston rod seal using bellows prevents oil leakage.







### HDP 146

Op. pressure 160
Flow rate 270
Power rating max
Sealing system Paci

160 – 230 bar 270 – 462 l/min max. 135 kW Packing horizontal, vertical



### HDP 196

Op. pressure Flow rate Power rating Sealing system Design

386 – 605 I/min max. 180 kW Packing horizontal, vertical

160 – 210 bar

# **Mining pumps**



Special Hammelmann high pressure pump units for use underground have a base frame with high torsional rigidity. The filters and control elements have firedamp protection. The valve technology is designed for use in mining applications.



Application examples:

- Underground high pressure stations for controlling the roof supports in longwall mining
- · Spray systems for dust suppression

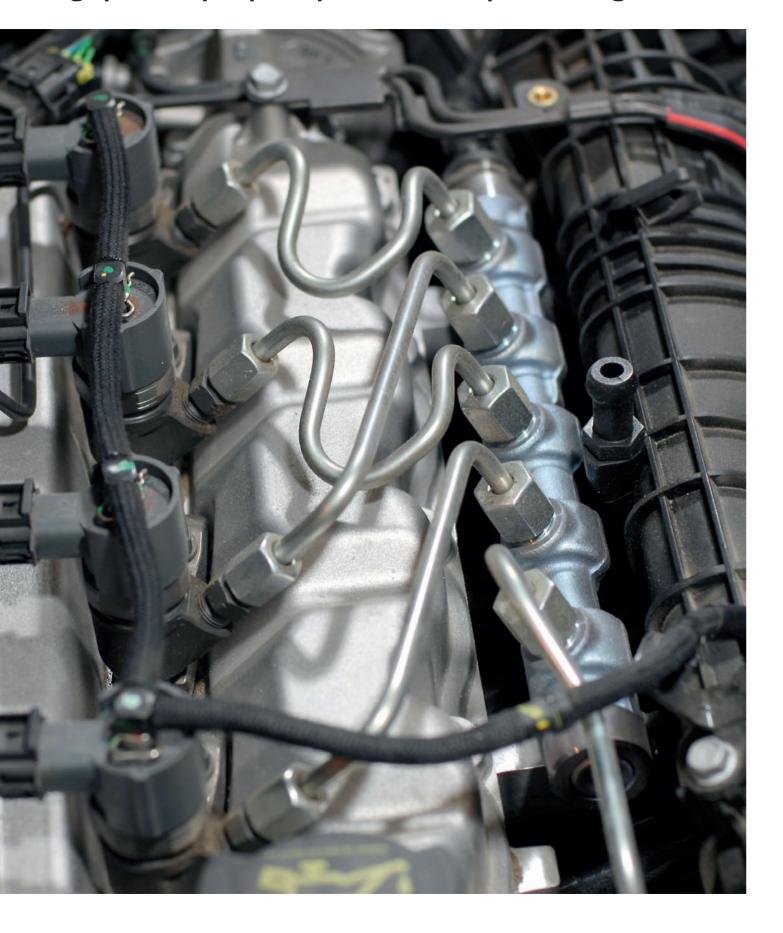


Example pressure station
Op. pressure 340 bar
Flow rate 400 l/min
Power rating 250 kW

Viscosities: 0,5 up to 100 cSt Fluid temperatures: 0 up to 70° C Media: water, emulsion, HFA (High water fluid additive)

32 SEWER CLEANING PUMPS READ ONLINE: HAMMELMANN.COM/HDP MINING PUMPS 33

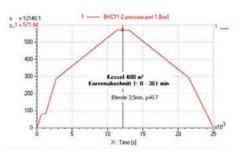
# High pressure pumps for pressure and impulse testing



### Pressure testing of boilers

State-of-the-art system solutions using high pressure pumps with appropriate valve and control technology enable pressure and impulse tests for a wide range of applications.

Hammelmann offers special solutions according to individual work definition. Together with the measurement data logging and documentation we create complete testing systems.







### Impulse testing

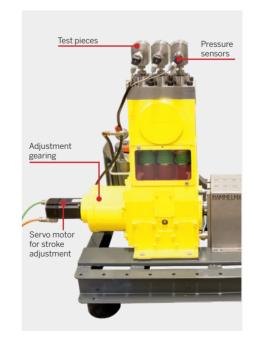
For the strength testing of components Hammelmann offers variable stroke high pressure pumps in energy efficient design.

With the stroke adjustment, the pulsator can be precisely adjusted to the test pressure. The test frequency is adjustable between 2.5 and 20 Hz. The pulsator features an extremely low energy consumption at all test frequencies.

Application examples:

- Pressure fatigue tests
- Dynamic testing
- Determination of component strength
- Determination of material characteristics
- Internal pressure tests
- Dynamic leakage tests
- Component strength analysis
- Fatigue testing of common-rail components





Speed	Test frequency	Test pressure	Power rating
[1/min]	[Hz]	[bar]	[kW]
300	5		0,8
600	10	1000	2,0
1200	20		5,8
300	5		0,6
600	10	2000	1,6
1200	20		4,7
300	5		0,9
600	10	2900	2,2
1200	20		6,2

# **Diesel units**





Stationary units



Road trailer, sound damped units



Stationary unit with exhaust treatment system



Unit with gear box



Installations in 10, 20 or 25 foot containers



Special and truck installations

36 DIESEL UNITS DIESEL UNITS 37

# **Electric units**





Extra narrow units for on-board applications



3-module unit for transporting in elevators



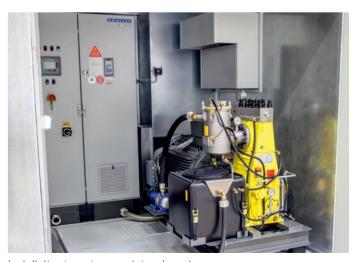
Compact units with control panel and jetting tools



Mobile units with control panel



Stationary units



Installation in various container layouts

38 ELECTRIC UNITS ELECTRIC UNITS 39

# **Industrial high pressure application systems**







Nozzles for pipe cleaning



Aquarex - Tank cleaning devices



Nozzles for heat exchanger cleaning



Guide skids for rotor jets



High pressure spray guns



Custom-made cleaning devices



Rotor jets



Jetmate - reaction force free jetting tool



Jetboy - mechanical support for manual work

40 INDUSTRIAL HIGH PRESSURE APPLICATION SYSTEMS INDUSTRIAL HIGH PRESSURE APPLICATION SYSTEMS 41

### Online catalogue "High Pressure Application Systems": hammelmann.com/catalogue

# **Industrial high pressure application systems**



Dockmate - ship cleaning system



Aquablast Line - Cleaning of specific small areas



Spiderjet M - magnetically adhering surface cleaning device



Dockboy - surface preparation on ship hull bottoms



Aquablast - manual surface cleaning equipment



Handheld Aquablast - manual surface cleaning equipment



Aquablast Drive - Cleaning of large industrial sites surfaces



Water jet cutting with high pressure water



Mobile abrasive cutting injectors and handling equipment

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# The factory - Oelde















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