

Gather supplies complete solutions ready for operation

Magnetic Drive Gear Pumps

PULSATION-FREE



**GATHER**  
INDUSTRIE

05 / 2005

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INDUSTRIE



 **chemac** Inc.

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# Company Profile



## The Company

Since 1965, Gather Industrie GmbH has been known for the excellent quality of its products and its objective, competent customer and consulting service that assists clients in finding optimum solutions. Our flexible organization makes sure that offers are prepared and orders processed within the shortest possible time. All our customers' requests, be they technical or commercial, are promptly satisfied.



## International Applications

Gather pumps are used in the chemical and pharmaceutical industries as well as in medical engineering, food technology and plant construction. Since 2000, Gather gear pumps have been manufactured in Mettmann to the highest quality standards. They are sold in Europe, USA and Asia. We guarantee competent service by qualified engineers.

## Production and Quality Made in Germany

Our CNC machines have been modernized to the latest developments in technology so that we can meet modern requirements for high precision, short production times and great flexibility. All components are manufactured by our company. Thanks to the use of 3D measuring technology, we can guarantee 100% high-standard quality control of all components we manufacture (Total Quality Management, TQM).



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# Products

## Gear Pumps

Gather Industrie develops, manufactures and sells small gear pumps that are capable of pumping and metering hot caustic solutions, acids and solvents pulsating-free. The pumps are suitable for pumping applications at system pressures of up to 325 bar and temperatures of up to +350°C or for inline sterilization (SIP). Moreover, they are CIP-capable (CIP = Cleaning in Place) and are supplied complete with appropriate drive units to facilitate their integration into a process.

Contact: +49 (0) 21 04 / 77 07-23



## Dry Break Couplings

Dry Break couplings of near-hermetic construction meet the requirements of the most common applications and almost all liquids and gases including water vapor. Where no leakage is required to protect operating personnel and the environment or avoid product loss, the Gather DGB coupling series offers alternative designs that are free of spillage, sterilizable and capable of being released under pressure.

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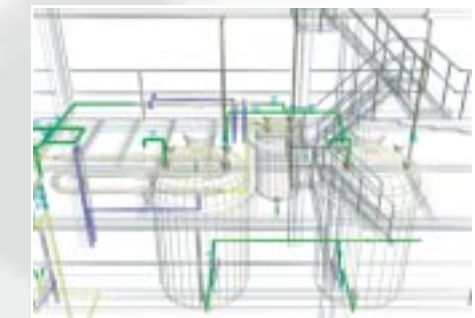
## Development Center and Measuring Technology

At our Development Center experienced Gather engineers develop overall concepts and plan and support their implementation, production and start-up.

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Gather 3D measuring technology – a practice-oriented approach to measuring problems: Our quality assurance engineers assist you in selecting the most suitable measuring machine for your needs and demonstrate the 3D measuring technology in practice.

Contact: +49 (0) 21 04 / 77 07-63



## Magnetic Drive

### PULSATION-FREE TRANSFER OF NON-LUBRICATING LIQUIDS

#### General

With its magnetic drive gear pump Gather offers an important product for transfer and metering applications. Utmost manufacturing precision, a variety of materials as well as non-pulsating gear pump operating characteristics are indispensable product design prerequisites. Variable-speed drives are available to satisfy all application needs.

#### Safety

The magnetic coupling of the gear pump enables a hermetically sealing of the pump. In combination with the appropriate materials maximum safety can be warranted when hazardous liquids are to be handled. In the event of overloads of the pump the magnetic coupling decouples. The drives conform to VDE specifications and are available with any protection system and with any explosion proof protection.



- **Liquid temperature**  
from -60°C to +350°C
- **Differential pressure**  
up to 15 bar
- **System pressure**  
from vacuum up to 325 bar
- **CIP & SIP capability**

## Gear Pumps

#### Design

The Gather magnetic drive gear pump offers capacities between 0.02 l/h and 2,000 l/h and is available in 2 series and 13 gear sizes. The pump can be tailored to customer requirements and thus enable the handling of nearly all media including non-lubricating liquids with temperatures from -60°C to +350°C. The pump is hermetically sealed and can also be operated under vacuum. Depending on the liquid handled the differential pressure is 15 bar maximum. For a viscosity between 0.1 and 2,000 mPa s the entire speed range is available: 10 - 6,000 rpm. A pumping test will be required for viscosities between 2,000 and 10,000 mPa s. Main advantage of the gear pump is the guaranteed pulsation-free media stream.



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#### Standard materials available for the pumps

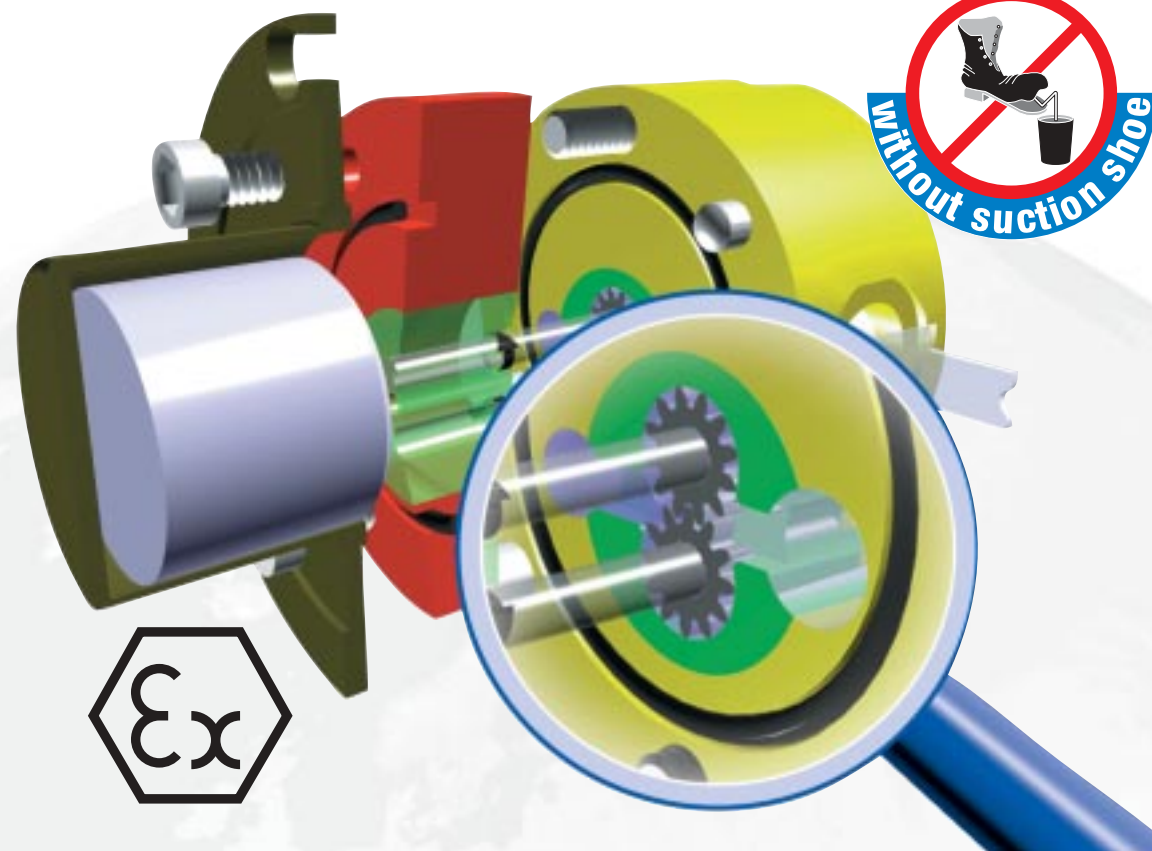
- Stainless steel
- Hastelloy
- Titanium
- Teflon
- Peek
- Carbon
- Nickel alloys
- Special materials available on request

#### Advantages

- Pulsation-free transfer of non-lubricating liquids (especially hot acids, caustic solutions and solvents)
- Magnetic drive, hermetically sealed
- No shaft seal, thus low maintenance requirements
- CIP-capable (for aqueous liquids)
- Can be easily integrated into processes

# DRIP-DosierIndustriePumpe

The smallest of series 1



## Performance

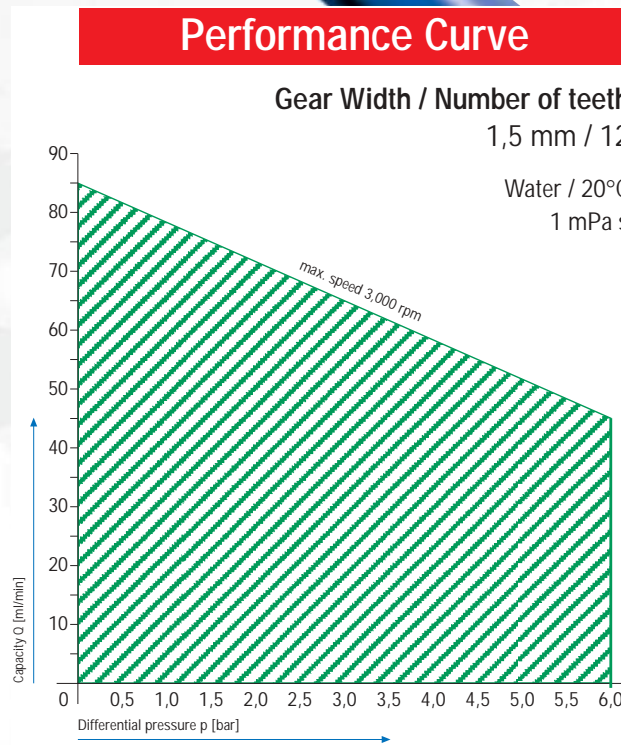
Capacity:  $Q = 0,02 - 5,00 \text{ l/h}$   
 $= 0,33 - 83,33 \text{ ml/min}$   
 Design temperature:  $T = -60 \text{ up to } +300^\circ\text{C}$   
 Differential pressure:  $\Delta p = \text{up to } 6,0 \text{ bar}$   
 Viscosity:  $\eta = 0,3 \text{ up to } 1.000 \text{ mPa s}$

## Materials

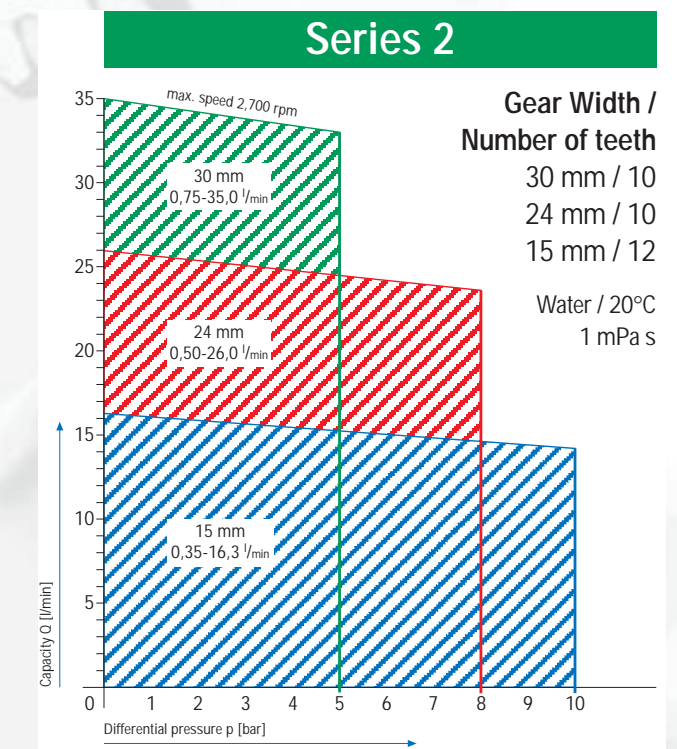
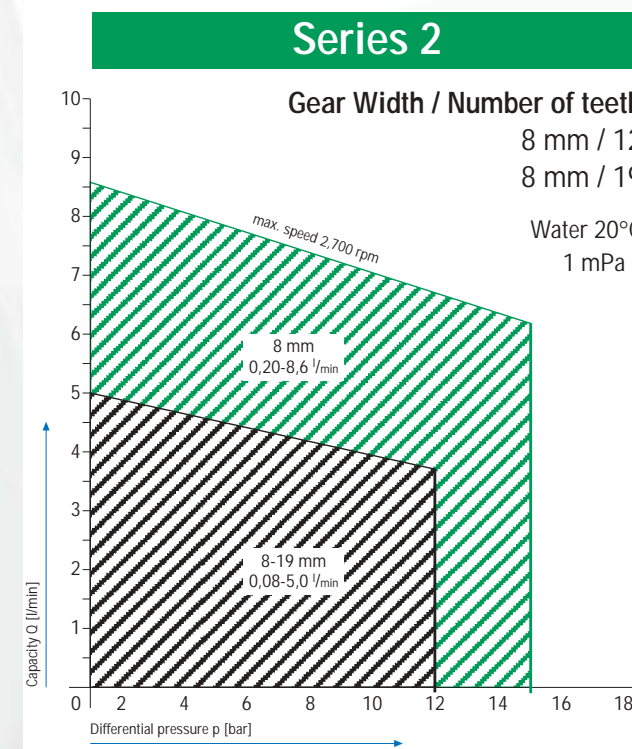
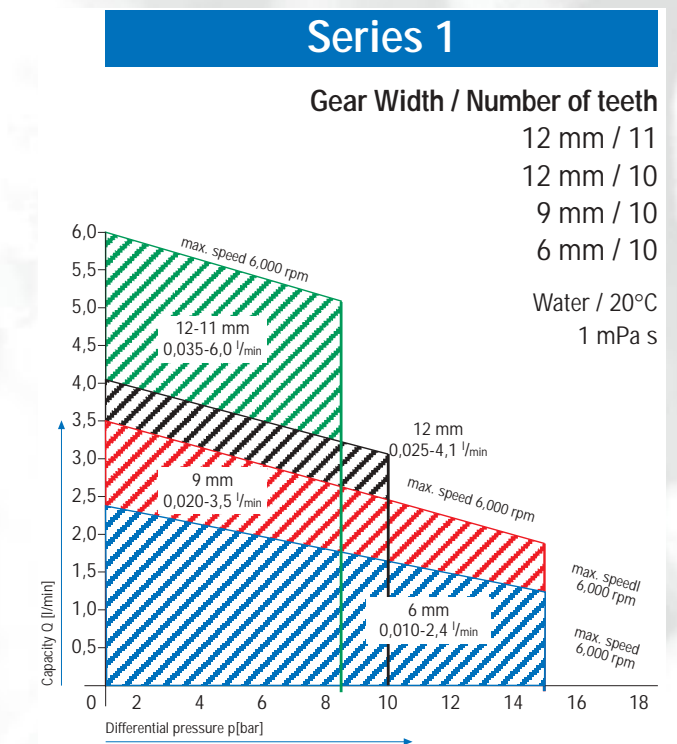
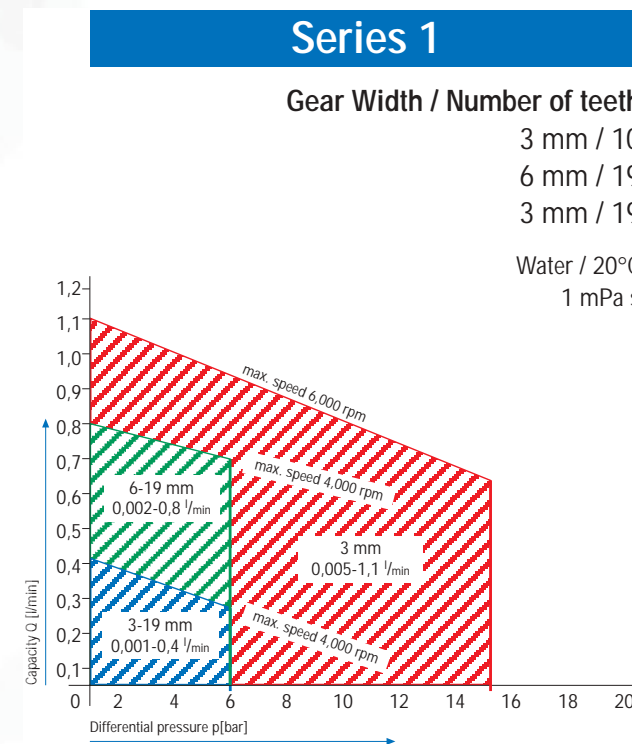
Housing: Stainless steel  
 (1.4404, 1.4571)  
 Hastelloy (2.4819 / C-276)  
 Titanium (3.7035 / Grade 2)

ATEX certificate available

Pumphead is compatible to all drive units of series 1 with X magnet system



# Performance Curves



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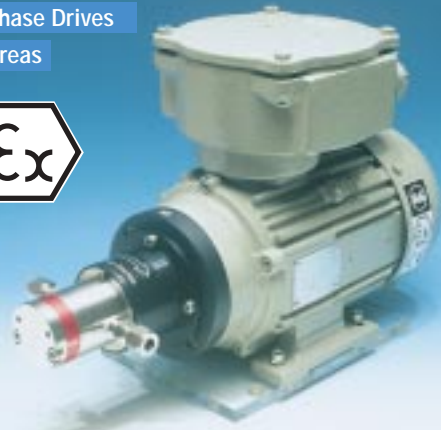
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# Drives and Speed Controls

## Examples Series 1

Three-phase Drives  
for Ex-Areas



Three-phase motor (IP 55, flame-proof enclosure) for Ex-areas, degree of protection EEx de IIC T4, controlled via frequency converter, n = 200 - 6,000 rpm, external control capability, 1 x 230 V, 50/60 Hz

## Examples Series 2

Three-phase Drives  
for Ex-Areas



Constant-speed three-phase motor (IP 55, increased safety) for Ex-Areas, degree of protection EEx e II T3, constant speed rates available on request, n = 2,750 rpm, n = 1,350 rpm, n = 900 rpm, 3 x 230/400 V, 50 Hz

Laboratory Drives



Speed control unit for laboratory applications, n = 200 - 5,000 rpm, 4-digit display, controllable (RS232), (for details see page 11)

Three-phase Servo-Drive  
for Industrial Applications  
and Laboratory Service



Three-phase motor (IP 55) for industrial applications and laboratory service, controlled via frequency converter, n = 10 - 3,000 rpm, external control capability, 1 x 230 V, 50 Hz

DC Drives



Brushless DC motor (IP 00) of compact design, ideal for integration into miniature units, n = 350 - 3,500 rpm, external control capability, 0 - 10 V, supply voltage 24 V, favorable price/performance ratio

Aside from the above described drives we offer mechanical positioning gears, helical geared motors, servomotors and other special-design motors tailored to individual pump application needs.

**ATEX, explosion-proof areas 1, 2, 22  
Ex II 2G C (T1...T6)**

# Special Designs

## Heating jacket for GATHER pumphead series 1&2

The heating jacket guarantees that the pump-head is heated uniformly by a forced internal flow. The heating jacket can be easily mounted onto the pumphead.

### Technical Data

- Heating connections IG 1/4"
- Stainless steel casing 1.4571
- Pressure in heating shell up to 20 bar
- Heating/cooling fluid:  
Brine, steam, thermal oil etc.
- Heating temperature up to +400°C

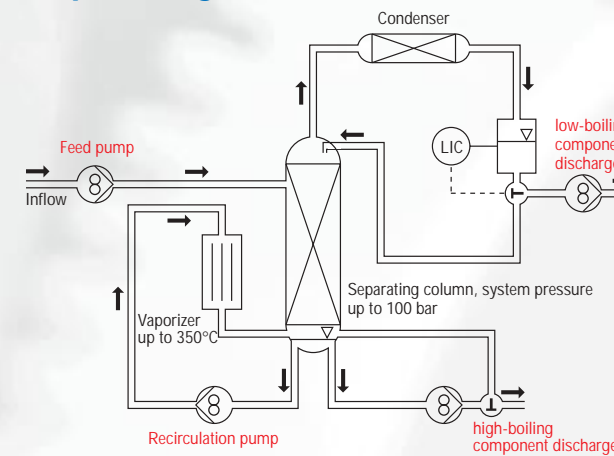
## High-temperature gear pump and SIP gear pump

The design and materials used for this pump type, particular in the magnet enclosure and seals area, enables the stainless steel pump to operate at system pressures of up to 300 bar at +300°C. Heat transfer to the drive unit is inhibited through the use of special connecting elements. GATHER gear pumps can be cleaned in place (CIP). Supplementing the unit by a steam bypass (see photo) enables the pump to be sterilized in place (SIP capability).

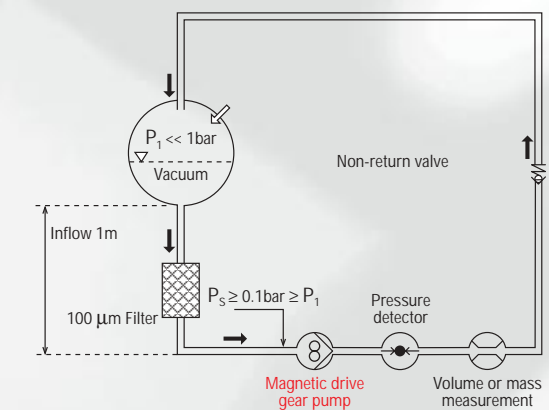


## Examples of Recommended Applications

### Separating Column



### Recirculation under vacuum



# Metering Technology

**D410** To achieve maximum metering accuracy we recommend the pump to be integrated into a control loop. The actuator of the metering gear pump can be a flow measuring system or, for example, a temperature, pressure, pH value signal or other process variables. The metering accuracy of the system is greatly influenced by measuring system precision, overall system dynamics and matching of individual system components.

## Examples of Measuring Systems

- Active gearwheel meter
- Coriolis
- Scale
- Magnetically inductive (MID)
- Gearwheel meter
- pH - measuring system
- Pressure measurement
- Temperature measurement and many more

We supply complete control loops with functional guarantee to customer specifications.



## Liquids from A-Z

Acetic acid  
Acetone  
Ammonia  
Caustic potash solution  
Caustic solution  
Cell cultures  
Chlorobenzene  
Chloroform  
Chloromethane  
Chromic acid  
Citric acid  
Color jet ink  
Distilled water  
Diesel fuel  
Ethanol  
Ethylbenzene  
Fatty acid  
Formaldehyde  
Formic acid

Gasoline  
Glue  
Hexane  
Hydrazine  
Hydrochloric acid  
Hydrogen carbons  
Hydrogen cyanide  
Hydrogen fluoride  
Hydrogen peroxide  
Iron (II, III) chloride solution  
Isocyanate  
Kerosene  
Mercury  
Methanol  
Nitric acid  
Nutrient solution  
Oleum  
Paint materia  
Paraffin

Phosgene  
Phosphoric acid  
Propanol  
Protein solution  
Refrigerants  
Resins  
Saline solution  
Silicone oil  
Sodium sulfate  
Solvents  
Stearic acid  
Sulfuric acid  
Tetrahydrofuran  
Toluene  
Trichloroethylene  
Varnish  
Water  
Xylene

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# ALLROUND Metering Pump

## Motor Control Unit LAB22-ST

Speed control unit installed in a grounded IP 20 enclosure with a 4-digit speed display. Motor protection against overheating (with control light) by means of PTC thermistor control.

## Speed variation

- Manual: On the control unit via potentiometer with a 3-digit display (graduation: in thousandths of the maximum speed of the drive unit)
- Inputs: 0-10 V; 0-20 mA; 4-20 mA; RS 232; START/STOP contact
- Outputs: 0-10 V; 0-20 mA; 4-20 mA; RS 232



## Additional functions

- Fault (motor overheating) and status control
- Presetting options: unit restarts automatically when power supply is switched on or has to be started locally by the operator
- Semi-automatic tank filling
- The unit automatically identifies the number of poles of the drive

All interfaces are designed in conformity with the "Safe Separation" directives of VDE 0106 + 0551. The control unit is suitable for drive systems (Type LAB22) up to 0.75 kW. The system can be operated with an earth leakage circuit breaker (rated leakage current  $\geq 30\text{mA}$ ).

## Speeds (depending on drive unit)

- N = 200-5,000 rpm-Pump series 1
- N = 150-2,750 rpm-Pump series 1&2