Pump Program

Developed and manufactured in Germany... since 1927

- fluids
- gases
- solids

edur.com
Clean water and energy efficiency – both demands are relevant for the future which cannot be managed without energy-efficient pumps.

EDUR does offer a comprehensive range of pumps to meet various system requirements:

- selfpriming and non-selfpriming centrifugal pumps for handling liquids
- multiphase pumps for liquids containing gas and for gas enrichment
- torque-flow pumps for liquids with solids
- special solutions

For example water and wastewater treatment plants are being optimized by EDUR multiphase pumps. They are operated for cleaning industrial and municipal wastewater using dissolved air flotation. Other examples include ozonation of drinking water or process water. The multiphase pumps operate as dynamic mixer and simplify the system design. Consequently this results in reduced investments as well as decreased operating costs.

Even in the case of pure liquid transport, high energy savings are useable. Circulation pumps with large flange diameters reduce the internal losses in the pump system and provide high efficiencies. Changing operating conditions are taken into account by supportive pump control modes.

Advantageous also is the use of EDUR pumps for liquefied gas transport. Energy savings up to 50 percent and low investment costs lead to a rapid amortization. Additionally, the pumps are more compact, in particular simplifying mobile systems.

Aside from cooling pumps also refrigerant pumps are well-engineered products for reliable operation. Hermetic sealing combined with good suction capability ensure process safety, even with critical media such as CO₂ or ammonia.

Contact us! We have energy-efficient and reliable pump solutions also for your requirements.
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An all-purpose, single stage, circulation pump in a compact design for use in cooling and refrigeration technology, air-conditioning, filtration, shipbuilding, mechanical engineering, energy technique, plastics processing, surface technology and general machine engineering.

There is a wide range of designs with various types, material modifications and shaft sealing systems for clean or slightly polluted liquids. The demand of special motor executions, inspection by all specification societies and company certificates are possible. As well as explosion-proof executions and customized special solutions. This is a well-established pump type for economical, reliable and long-lasting operation.

### Advantages

- **Technical Superiority**
  - open impellers without axial thrust or balanced closed impellers
  - compensation of radial forces by means of diffuser devices in the annular casing
  - optional: double-acting mechanical seals or hermetically sealed pump executions with magnetic coupling

- **Process Reliability**
  - partial gas supply
  - wide performance curve characteristics
  - flat or steep characteristic curves
  - excellent control mode

- **High Energy-Efficiency**
  - low velocity of flow
  - low velocity head differences

- **Easy Installation**
  - large flange inside diameters
  - optional mounting positions
  - compact pump design

- **Easy Maintenance**

- **Application**
  - operating pressure up to 16 bar
  - temperature -40° C to +140° C
  - viscosity up to 200 mm²/s
Advantages

- **Technical Superiority**
  - open impellers without axial thrust or balanced closed impellers
  - compensation of radial forces by means of diffuser devices in the annular casing
  - optional: double-acting mechanical seals or hermetically sealed pump executions with magnetic coupling

- **Process Reliability**
  - partial gas supply
  - wide performance curve characteristics
  - flat or steep characteristic curves
  - excellent control mode

- **High Energy-Efficiency**
  - low velocity of flow
  - low velocity head differences

- **Easy Installation**
  - large flange inside diameters
  - pull-back design
  - compact design

- **Application**
  - operating pressure up to 16 bar
  - temperature -40° C to +140° C
  - viscosity up to 200 mm²/s

An all-purpose, single-stage, process pump in inline-design for multipurpose use in cooling technology, air-conditioning, filtration, water supply, house and building technique, shipbuilding, mechanical engineering, energy technique, plastics processing, surface technology and general machine engineering.

This is a space-saving alternative to standard bloc-pumps. There is a wide range of designs with various types, material modifications and shaft sealing systems for clean or slightly polluted liquids. The demand of special motor executions, inspection by all specification societies and company certificates are possible. As well as explosion-proof executions and customized special solutions.

This is a well-established pump type for economical, reliable and long-lasting operation.
Stainless-Bloc
CB BC

An all-purpose, stainless pump in bloc-design for multipurpose usage in food industry, water supply, cooling technology, air-conditioning, filtration, shipbuilding, house and building technique, apparatus engineering, energy technique, process technology and general machine engineering.

There is a wide range of applications with various modifications and sealing systems. The demand of special motor executions, inspection by all specification societies, explosion-proof executions and customized special solutions is possible. This is the stainless steel pump for economical, reliable and long-lasting operation.

Other types:

BC

Advantages

- easy maintenance by pull-back design
- closed impellers
- single- or double-acting mechanical seals
- stainless steel material
- operating pressure up to 10 bar
- temperature -25°C to +110°C
- viscosity up to 115 mm²/s
- special execution: stainless steel covering
- flange connections acc. to EN 733
Stainless-Bloc  
CB BC  
Characteristics

Rate of flow Q  
G/min [US]

Head H

m³/h  
50 Hz

m³/h  
60 Hz

m³/h

CP cleaning in place  
plant engineering  
demineralized water  
water treatment
Stainless-Vertical CV

A vertical, multistage, high pressure pump in compact design for use in booster systems, general process technology, water supply, cooling technology, air-conditioning, apparatus engineering, energy technique, plastics processing, filtration, shipbuilding and general machine engineering.

The CV does offer a wide range of applications for clean or slightly polluted liquids.

- **Technical Superiority**
  - compensation of radial forces by semi-closed impellers
  - various material combinations
  - various installation options (flange, clamp, etc.)

- **Process Reliability**
  - easy replacement due to standardization
  - drinking water approval on demand

- **Easy Maintenance**
  - mechanical seal replacement without motor lantern dismantling
  - optional: cartridge seals

- **Application**
  - operating pressure up to 30 bar
  - temperature -30° C to +140° C
  - from size 32: -15° C to +120° C
  - viscosity up to 115 mm²/s
A torque-flow pump in compact bloc-design for the transport of liquids contaminated with solids or suspensions. Typical liquids are: waste water, cooling agents contaminated with metal chips, abrasive oils and lyes, lime milk and products that have to be transported with care.

Main applications include: sewage water plants, treatment systems, recycling processes, washing plants, filters, environmental and operation technique. An all-purpose pump design insensitive to cavitation conditions.

**Other types:**

Other types: CBF

**Advantages**

- **Process Reliability**
  - transport of liquids with solids
  - single or double-acting mechanical seals
  - insensitive to cavitation conditions
  - products are transported with care
  - insensitive to plait and clot formation

- **Technical Superiority**
  - momentum transfer by means of recessed torque-flow-impeller
  - free passages up to 80 mm diameter
  - optional wear-resistant coating

- **Easy Installation**
  - optional positions of installation
  - compact design

- **Easy Maintenance**
  - pull-back design
  - sturdy execution

- **Application**
  - operating pressure up to 16 bar
  - temperature -40° C to +180° C
  - viscosity up to 60 mm²/s
  - solids contents up to 15 %
A multistage, horizontal and vertical, segmental type design high pressure pump with various options for clean and slightly polluted liquids.

The main applications are boiler feeding, condensate systems, booster, irrigation systems, washing plants, filter technique, water treatment, hardening systems, cooling technology, ship building and general machine engineering. By means of auxiliary NPSH-stages, NPSH-values down to 0,5 m are being achieved.

Other types:

- VBU
- NH
- Z

Advantages

- **High Energy-Efficiency**
  - low velocity of flow
  - low velocity head differences

- **Technical Superiority**
  - single- or double-acting mechanical seals or magnetic coupling optional
  - open impellers without axial thrust or balanced closed impellers
  - compensation of radial forces by means of diffuser devices in the annular casing

- **Process Reliability**
  - partial gas supply
  - wide performance curve characteristics
  - flat or steep characteristic curves
  - excellent control mode

- **Easy Installation**
  - large flange inside diameters

- **Easy Maintenance**

- **Application**
  - operating pressure up to 40 bar
  - temperature -40° C to +220° C
  - viscosity up to 115 mm²/s
Multistage LBU VBU NH Z

Characteristics

50 Hz

Rate of flow Q
G/min [US]

Head H

m/ft

5 10 20 40 60 100 200 300 400

5 10 20 40 60 100 200 300 400

5 10 20 40 60 100 200 300 400

5 10 20 40 60 100 200 300 400
Advantages

**High Energy-Efficiency**
- integrated jet pump or mixture formation
- low velocity of flow
- optimized impeller approach flow
- low internal friction losses

**Technical Superiority**
- open impellers without axial thrust or balanced closed impellers
- compensation of radial forces by means of diffuser devices in the annular casing

**Process Reliability**
- selfpriming capability
- partial gas supply
- wide performance curve characteristics
- flat or steep characteristic curves

**Easy Installation**
- customized solutions
- horizontal design
- bloc- or bedplate design

**Application**
- operating pressure up to 16 bar
- temperature -40° C to +90° C
- viscosity up to 115 mm²/s

Selfpriming pumps are suitable for handling cooling water, river water, emulsions and fuels like kerosene, gasoline or diesel etc. Typical applications are in the range of industrial and municipal water supply, irrigation and booster systems, shipbuilding, fueling systems, process technology and general machine engineering.

Other types:

SUB

E

Compared to non-selfpriming pumps, selfpriming pumps are in a position to evacuate the suction pipe line and consequently prime deep level liquids. Defective foot valves and gas entrained liquids will be controlled reliably. Short evacuation times and high efficiencies show trouble-free operation and low life-cycle costs.
Multiphase PBU LBU

Horizontal centrifugal pumps for the transport of liquid-gas mixtures and for the enrichment of liquids with gases. A dispersion with very fine bubbles is being achieved. Therefore the multiphase pumps are also acting as dynamic mixer with high shearing forces.

Some main applications are water and wastewater treatment, dissolved air flotation, neutralization, biofuel plants, bio-reactors, ozonation, crude oil water separation on oil fields and oil rigs as well as general process technology.

Other types:

LBU

Advantages

- **High Energy-Efficiency**
  - optimal enrichment and mixing of liquids with gases
  - high degree of dispersion
  - low velocity of flow
  - optimized impeller approach flow
  - low internal friction losses

- **Technical Superiority**
  - open impellers without axial thrust
  - compensation of radial forces by means of diffuser
  - direct gas input acc. to VDMA 24430

- **Process Reliability**
  - gas contents up to 30 %
  - stable creation of micro bubbles

- **Easy Installation**
  - modular construction for customized solutions
  - bloc-design

- **Application**
  - operating pressure up to 40 bar
  - temperature -40° C to +140°C
  - viscosity up to 115 mm²/s
Multiphase PBU LBU

Characteristics

Duration: 3-4-5-6-7-8-9-10

Rate of flow Q: 50 Hz

Pressure: 50 Hz

Multiphase PBU LBU Characteristics

DAF dispersion flotation micro bubbles ozonation biological sewage works
Liquefied gas pumps are required for unloading, fuel transfer, filling and fueling processes. There are high requirements: low NPSH values, low level of pulsations transport, mixture transport, high pressure differences, low noise emissions and ATEX conformity.

The user, besides the reliable transport of liquid-gas mixtures, also expects the control of outgassing and variations of the steam pressure and more and more popular higher pump efficiencies.

The high pump efficiencies lead to low energy consumption, smaller drive assembly and to relatively compact pumps units.

**Advantages**

- **High Energy-Efficiency**
  - very high efficiencies
  - optimized impeller approach flow

- **Technical Superiority**
  - open impellers without axial thrust or balanced closed impellers
  - compensation of radial forces by means of diffuser devices in the annular casing
  - single- or double acting mechanical seals and magnetic coupling optional
  - NPSH inducer stages
  - ATEX conformity

- **Process Reliability**
  - partial gas supply
  - wide performance curve characteristics
  - low NPSH-values

- **Easy Installation**
  - modular construction for customized solutions
  - compact bloc- or bedplate design

- **Application**
  - operating pressure up to 40 bar
  - temperature -40° C to +110° C
  - viscosity up to 115 mm²/s
Advantages

- **High Process Reliability**
  - no shaft sealing
  - no leakage outwards
  - torque-flow impeller optional

- **Easy Installation**
  - space saving design
  - modular construction for customized solutions

- **Application**
  - operating pressure up to 16 bar
  - temperature -25 °C to +90 °C
  - viscosity up to 200 mm²/s
  - special executions for other operating conditions

Immersed pumps are all-purpose pumps. They are used at lack of space, poor inflow conditions, critical liquids and where dry installed pumps are disallowed. Immersed pumps have a modular design for different impeller types and pressure ranges.

Typical applications are pretreatment plants for surface treatment in which hot aggressive liquids are circulating.
Shaft Sealing Systems

Advantages

- **High Process Reliability**
  - maintenance free
  - use of quality brands exclusively

- **Energy-Efficiency**
  - low power losses

Approx. 95% of all pump failures are caused by an incorrect or defective shaft seal. In order to avoid premature failures and to increase the service life, a careful selection of sealings based on customer requirements is essential. For standard applications various types of mechanical seals are used, meeting the operating conditions.

For executions free from leakage, on demand magnetic couplings are available with low eddy current losses. For early malfunction detection suitable sensors optionally can be used.

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**Single-acting mechanical seals**
- unbalanced
  - max. 25 bar, 120°C
- balanced
  - max. 40 bar, 160°C

**Double-acting mechanical seals**
- Tandem arrangement
  - max. 16 bar, 120°C
- Back-to-back arrangement
  - max. 16 bar, 120°C

**Magnetic coupling**
- max. 40 bar, 220°C
### Materials

#### Casings

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<th>Material Code</th>
<th>Material Grade</th>
<th>Material Type</th>
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<td>EN-GJL-250</td>
<td>grey cast iron</td>
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<tr>
<td>0.7040</td>
<td>EN-GJS-400-15</td>
<td>nodular cast iron</td>
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<tr>
<td>2.1050.01</td>
<td>G-CUSn 10</td>
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<tr>
<td>1.4301</td>
<td>X 5 CrNi18 10</td>
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<td>1.4581</td>
<td>G X 5 CrNiMoNb 19 11 2</td>
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<tr>
<td>1.4517.01</td>
<td>G X 3 CrNiMoN 25 6 3</td>
<td>super duplex</td>
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#### Impellers

<table>
<thead>
<tr>
<th>Material Code</th>
<th>Material Grade</th>
<th>Material Type</th>
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<tbody>
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<td>0.6025</td>
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<td>grey cast iron</td>
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<tr>
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<td>X 5 CrNi18 10</td>
<td>stainless steel</td>
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<tr>
<td>1.4517.01</td>
<td>G X 3 CrNiMoN 25 6 3</td>
<td>super duplex</td>
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#### Shafts

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<td>1.4460</td>
<td>X 4 CrNiMoN 27 5 2</td>
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<tr>
<td>1.4462</td>
<td>X 2 CrNiMoN 22 5 3</td>
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</tr>
<tr>
<td>1.4501</td>
<td>X 2 CrNiMoCuWN 25 7 4</td>
<td>super duplex</td>
</tr>
</tbody>
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#### Certificates

- Certification reports according to
  - EN 10204 - 2.2
  - EN 10204 - 3.1
- Test certificates according to
  - EN 9906 II
- Inspection and approval acc. to classification society specifications
- Special tests according to customer requirements

Additional material executions and coatings on request.
A precondition for high energy-efficiency is the analysis of the entire pump system and the pump periphery as well. Usually highly energy-efficient pumps, drives and control conceptions are the only focus for optimizing.

In this process substantial savings already occur during the revision of the pump environment. At the same time, the process reliability must not be neglected for all system optimization measures.
Pump Audit

- System analysis
- Selection of suitable pump type
- Pump system to be reengineered? (yes/no)
- Selection of an energy efficient pump
- Selection of an energy efficient drive
- Determined point of operation? (yes/no)
- Adjusted but determined point of operation? (yes/no)
- Self-controlled pump with frequency converter or flat curve
- Uncontrolled pump
- Use of suitable monitoring devices
Each pump is carefully selected for its application

Since 1927 the most modern pumps are produced in the highly specialized EDUR-Pumpenfabrik. With high demand on quality and latest technology, EDUR centrifugal pumps are setting standards.

Apart from process-attendant quality assurance proceedings every EDUR pump is subjected to a computer controlled final inspection. During this pressure, tightness, true characteristic curves and power input are tested and documented. Made by EDUR - 100% tested according to EN 9906.

The success in the world market is the result of excellent engineering, innovative production technology and a forward-looking company philosophy, where owner, management and employees feel obliged to. As a partner we are available to our customers, to realize the promise to work for them at the highest quality level, with the best production tools and latest information.

That's EDUR