A-LINE
Horizontal Heavy Duty Barrel Pumps

INNOVATION
EFFICIENCY
QUALITY

RUHRPUMPEN
Specialist for Pumping Technology
Ruhrpumpen is an innovative and efficient centrifugal pump technology company that offers a wide range of quality products to our clients. Ruhrpumpen is committed to global excellence with a complete range of Pumps, Fire Pump Packages and related products, such as Decoking Systems and Tools to support the core markets, namely Oil & Gas, Petrochemical, Power, Heavy Industry Applications, Mining and Water Services.

The broad product line complies with the most demanding quality specifications and goes beyond stringent industry standards such as API, ANSI, Hydraulic Institute, Underwriter’s Laboratories, Factory Mutual and ISO 9001.

Ruhrpumpen is a vertically integrated company with its own foundry, machine shop, pump manufacturing plants and service centers. With strategically located manufacturing plants, operating offices and service centers in many parts of the world, Ruhrpumpen is truly a global pump company which also has the strength to focus on the local necessities of each client.

**A Line Pumps**

Our A-Line pumps are horizontal, radially split, multistage diffuser type pumps (BBS configuration) engineered and manufactured to the latest edition of the ISO 13709 (API 610). The A-Line Pumps are available with either Inline or Back-to-Back Impeller arrangement. For ease of assembly and high overhaul times the cartridge element can be supplied as full-pull-out design.

A-Line pumps are generally in compliance with ATEX and the CE Machinery Directive and are designed for heavy duty applications, such as:

- Water Injection
- Hydraulic Decoking
- High-Pressure Applications
- Refinery / Boiler Feed
- Cogeneration
- Pipeline
- Amine / Ethylene Feed
- Hydrocarbon Charge

### PERFORMANCE DATA

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>up to 1,400 m³/h</td>
<td>6,160 gpm</td>
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<tr>
<td><strong>Head</strong></td>
<td>up to 4,200* m</td>
<td>13,776 ft*</td>
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<tr>
<td><strong>Pressure</strong></td>
<td>up to 450 bar</td>
<td>7,830 psi</td>
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<tr>
<td><strong>Temperature</strong></td>
<td>up to 450 °C</td>
<td>840 °F</td>
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<tr>
<td><strong>Dis. Flange Size</strong></td>
<td>50mm to 250mm</td>
<td>2” to 10”</td>
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For pump operations outside this range, please contact a Ruhrpumpen representative.

A-Line Barrel Pumps are suitable for almost every Oil & Gas application, including high-temperature and high-pressure services.
Performance Range

**SELECTION CHART A-LINE**

Material combinations per API 610 as standard. Other materials on special request.
Characteristics

1. Rigid 360° bearing bracket support. No bearing housing end cover.

2. Lubrication sleeve can be used for bearing pull-off.

3. Clamped bearing cover without screws in direction of mechanical seal.

4. *Option for superbolt*

5. Stage casing - interstage plate with guide vanes and diffuser.

6. Impeller and casing wear ring secured by tack welding (set screws optional).

7. Investment cast, closed impellers with transition fit and keyway, secured with split ring.

8. Close clearance throttling sleeve and bush.

9. Impeller and casing wear ring secured by tack welding (set screws optional).

Images for illustration purposes not actual construction.
**Description**

**PRODUCT DESCRIPTION**

Horizontal Heavy Duty Barrel Pumps.
- Horizontal multi-stage arrangement.
- Opposed Impeller Design
- Double-casing.
- Radially split.
- Barrel-type.
- Between bearings.
- Centerline mounted.
- Axial thrust compensation by opposed impeller design.
- Top-top or top-side suction and discharge nozzles.

**BENEFITS**

- Material combinations per API 610 as standard. Other materials on special request.
- Modular design for small and large number of stages.
- "Blind"-stages for future upgrades available
- Cast and forged barrel available
- Standard or Full-Pull-Out cartridge available
- Stiff shaft design
- Thrust balancing by opposed impellers

**TYPICAL APPLICATIONS**

The Ruhrpumpen back to back AB Model is designed for heavy-duty applications, such as:

- Water Injection
- High Pressure Applications
- Boiler Feed
- Cogeneration
- Pipeline
- Reverse Osmosis
- Amine / Ethylene Feed
- Hydrocarbon Charge
Characteristics

1. Replaceable casing wear rings shrink fitted and secured by tack welding.

2. Investment cast, closed impeller with transition fit and keyway, secured with split ring.

3. Rigid, 360° bearing bracket support for heavy-duty service and low vibration levels.

4. Bearing housing equipped with INPRO bearing isolators.

5. Rigid rotor design. Shaft end tapered with key as standard. Hydraulic fit optional.

6. Mechanical seal chamber sized according to API 610 and API 682.


8. Balance drum designed to compensate axial thrust.

9. One-piece inter stage plate with guide vanes and integrated diffuser.
Horizontal Heavy Duty Barrel Pumps

**DESCRIPTION**

Optimized outlet for low noise level.

Radially split casing, full design pressure, centerline mounted. Forged and welded as well as cast version available.

Shaft driven lube oil pump available if required, for hydrodynamic bearings.

Force Fed Lubrication. Radial sleeve bearings and tilting pad thrust bearing available if required.

**PRODUCT DESCRIPTION**

Horizontal Heavy Duty Barrel Pumps.
- Horizontal multi-stage with in-line impeller arrangement.
- Single suction impeller. Double suction on special request.
- Double-casing.
- Radially split.
- Barrel type.
- Between bearings.
- Centerline mounted.
- Centrifugal pump with axial thrust compensation by balancing drum.
- Top-top suction and discharge nozzles.

**BENEFITS**

- Material combinations per API 610 as standard. Other materials on special request.
- Modular design for small and large number of stages.
- "Blind"-stages for future upgrades available
- Cast and forged barrel available
- Standard or Full-Pull-Out cartridge available
- Stiff shaft design
- Stepped shaft and transition fit for easy maintenance
- Thrust balancing by balance drum

**BROAD APPLICATION RANGE**

The Ruhrpumpen In Line A Model is designed for heavy-duty application, such as:

- Special Design for Hydraulic Decoking Applications Available
- Water Injection
- High Pressure Applications
- Boiler Feed
- Cogeneration
- Pipeline
- Reverse Osmosis
- Amine / Ethylene Feed
- Hydrocarbon Charge
A-Line General Features and Options

A Line, In Line Model

Images for illustration purposes not actual construction.
Features

A LINE MODEL

1. **HEAVY DUTY PUMP CASING**
   - All flanges designed and rated for full maximum allowable working pressure and 2 x API 610 nozzle loads
   - Center-line mounted

2. **HIGH ROTOR STABILITY**
   - Optimized
   - Dynamically-stiff design
   - High reliability for higher speed, low static deflection

3. **EASE OF MAINTENANCE**
   - Cartridge can be removed from barrel casing as a complete unit

4. **PUMP MONITORING**
   - Temperature and vibration monitoring of critical components as standard
   - Wired to skid edge junction box or control panel

5. **PRECISION CAST IMPELLERS**
   - Statically and dynamically balanced
   - Shrink-fitted to shaft and individually axially located

6. **BEARING HOUSING**
   - Easy access to mechanical seals and bearing
   - 360° mounting for optimum rotor support and low vibration levels

7. **ADVANCED MECHANICAL SEALING (TO API 682)**
   - Cartridge style (single or dual) mechanical seals as standard
   - API 682 seal chamber ensures maximum seal life and full seal interchangeability

8. **SPECIAL OPTIONS**
   - Super Duplex alloys and HVOF overlays
   - NACE and NORSOK design

9. **HYDRAULIC BALANCING DEVICE**
   - Drum to balance hydraulic thrust loads
   - Back to Back impeller design

10. **BEARINGS**
    - Ball or Sleeve / Ball bearing option available with ring-oil lubrication
    - Hydrodynamic double acting tilting pad (thrust) bearing
    - Hydrodynamic sleeve (journal) bearings
    - Force fed lubrication

11. **BALANCE LINE**
    - Suction pressure in suction and discharge seal chamber
Main Features and Options

**A MODEL - INLINE DESIGN**
- Forged or cast barrel available
- Balancing drum takes axial thrust load
- Short builds and small number of stages possible
- Hydrodynamic bearings with force fed lubrication available
- Antifriction bearings with ring oil lubrication available
- Optimal selection for direct drive applications

**AB MODEL - BACK TO BACK DESIGN**
- Forged or cast barrel available
- Balancing of axial thrust load by opposed impeller arrangement
- Up to 16 stages available
- Antifriction bearings with ring oil lubrication
- Fan cooling available
- Hydrodynamic bearings with force fed lubrication available
- Optimal selection for direct drive applications
- Higher drive speeds available with gear or VFD

**ADC MODEL - DESIGN FOR DECOCKING SYSTEMS**
- Special design for the highly demanding operating conditions of Decoking System Jet Pumps.
- Forged and cast barrel available
- Inline and Back-to-Back arrangement available

**A LINE GENERAL FEATURES AND OPTIONS**
- Double suction first stage available
- Standard balancing to grade G2.5 - G1.0 on special request
- Drivers can be electric Motors, Turbines or Combustion Engines
- Speed regulation by API compliant gear boxes, Variable Frequency Drives and variable speed fluid couplings
- API 682 latest edition single, tandem or double seal arrangements. Pressurized or unpressurized seal supply systems.
- Lubrications systems per API 610 and API 614 chapter 2 or 3.
- Heavy duty flexible disc coupling - also acc. to API 671. Straight bore, keyed tapered bore or hydraulic fitted tapered bore available
- Heavy duty baseplate design per API 610. Special designs e.g. for offshore applications with 3 or 4 feet mounting with AVL’s or Gimbals available.
- Wide range of conditions monitoring instruments available

**Full Pull Out Version**

**AB / ADC Models**
The assembled cartridge can be quickly removed as one piece and reinstalled just as fast.
**Horizontal Process Pump Single Stage with Permanent Magnetic Drive**

Heavy duty centrifugal process pump with permanent magnetic drive, API 685 pump standards, horizontal overhung, single stage, radially split, end suction.

Petroleum Refining, Production and Distribution, Petrochemical, Refineries, Heavy-duty Chemical, Gas Industry Services, Power Plants and Utilities.

**Multi Stage Axially Split Casing Pump**

Near-centerline mounted, Double volute casing, single or double suction, radial, closed impeller. Heavy duty process design according to API 610 latest edition (type BB3).

Fluid Injection, Oil Fields & Terminals, Water, Crude Oil & Oil Product Pipelines and Power Plants.

**End Suction Fire Pump**

Single-stage, radially split casing with flanged connections, enclosed impeller, foot mounted.


**Vertical Barrel Pump**

Low NPSH “Shockless Entry” first stage impeller (single or double suction), Single or multi-stage. Standard construction materials according to API 610 latest edition (type VS6).

Condensate, Power Plants, Municipal, Hydrocarbons, Pipeline and Refineries.
RUHRPUMPEN PLANTS

USA, Tulsa & Orland
MEXICO, Monterrey
BRAZIL, Rio De Janeiro
ARGENTINA, Buenos Aires
GERMANY, Witten
EGYPT, Suez
INDIA, Chennai
CHINA, Changzhou