



Bearing Washing Machine

Industrial Bearing Washing Machine for Heavy-Duty Rolling Mill Bearings

1. Product Positioning and Application

The **BDQX-500 Bearing Washing Machine** is a heavy-duty industrial cleaning solution specifically designed for the steel and metallurgical industry. It is mainly used for cleaning large rolling mill bearings contaminated with heavy oil, metal dust, and wear particles generated during long-term operation.

This equipment is developed to address the following practical challenges commonly encountered in bearing maintenance:

- Low efficiency and inconsistent cleaning quality with manual cleaning
- High labor intensity and safety risks associated with dismantling large bearings
- Difficulty in thoroughly cleaning raceways, rollers, and cage interiors

- Bearing cleanliness directly affecting service life and equipment reliability

By combining **high-pressure spray cleaning, workpiece rotation, and a circulating cleaning liquid system**, the BDQX-500 enables deep and effective cleaning of critical bearing friction surfaces, making it a professional alternative to traditional manual cleaning methods.

2. Applicable Bearings and Operating Range

2.1 Applicable Bearing Types

- Four-row cylindrical roller bearings
- Four-row tapered roller bearings
- Spherical roller bearings
- Bearings installed inside housings (bearing + housing cleaned as a complete assembly)

2.2 Size and Load Capacity

- Maximum cleaning outer diameter: **Ø500 mm**
- Minimum cleaning outer diameter: **Ø180 mm**
- Maximum workpiece weight: **400 kg**

By replacing dedicated cleaning fixtures and accessories, the machine can be adapted to various bearing sizes and bearing housing configurations.

3. Cleaning Principle and Working Method

The BDQX-500 adopts a **rotating, multi-directional spray cleaning principle**, with the following key features:

- Bearings rotate continuously during the cleaning process
- High-pressure, high-flow cleaning liquid is sprayed simultaneously from multiple directions
- The cleaning liquid effectively penetrates into:
 - Raceway contact surfaces
 - Gaps between rolling elements and cage
 - Hidden internal bearing areas

Through the combined effect of rotation and high-pressure spraying, oil contamination, metal chips, and wear debris are rapidly detached and flushed away. The cleaning efficiency and cleanliness level are significantly superior to static soaking or manual brushing.

4. System Configuration and Functions

4.1 Mechanical Drive System

- Main spindle drives the cleaning fixture to rotate
- Provides stable support and uniform rotation for heavy bearings
- Structural design suitable for long-term operation under heavy loads

4.2 Cleaning Liquid Circulation System

- Dual-circuit design for rough washing and fine washing

- Cleaning liquid returns to the corresponding tanks at different stages
- Electromagnetic diverter control prevents cross-contamination
- Cleaning liquid is recyclable, significantly reducing operating costs

4.3 Electrical and Control System

- PLC-based control architecture
- Human-Machine Interface (HMI) for operation and parameter setting
- Cleaning time, heating temperature, and operating modes are adjustable
- Simple logic, low failure rate, and easy maintenance

5. Cleaning Modes and Operating Logic

5.1 Operating Modes

The machine supports multiple operating modes to suit different working scenarios:

- Local control box – manual operation
- Local control box – automatic operation
- Touchscreen HMI – manual control
- Touchscreen HMI – fully automatic operation

5.2 Typical Automatic Cleaning Process

A standard automatic cleaning cycle includes:

1. Rough washing stage (high-pressure spray)
2. Air blow-off (removal of residual liquid)
3. Fine washing stage (high-cleanliness washing)
4. Secondary air blow-off
5. End of cycle, automatic stop

The duration of each stage can be freely adjusted according to the level of bearing contamination.

6. Heating and Temperature Control

- Cleaning liquid temperature range: **Ambient temperature to 60°C**
- Independent temperature control system
- Supports both manual heating and automatic constant-temperature control
- Real-time temperature display prevents overheating and protects the cleaning medium

Under low-temperature conditions, heating significantly improves oil dissolution and ensures consistent cleaning performance.

7. Main Technical Specifications (Summary)

- Power supply: **415V / 50Hz**
- Total installed power: **49.3 kW** (including heating system)
- Cleaning pressure: **0.6 – 1.0 MPa**

- Cleaning flow rate: **80 L/min**
- Cleaning medium: **Diesel**
- Cleaning tank capacity: **0.6 m³**
- Main spindle speed: **27 rpm**
- Overall dimensions (L × W × H): **2300 × 1100 × 1400 mm**
- Net weight: **approx. 1750 kg**

8. Key Advantages

- **Thorough cleaning** – Multi-directional spray covers all critical bearing areas
- **High efficiency** – Shortens maintenance cycles and reduces downtime
- **High level of automation** – Minimizes manual intervention and ensures consistency
- **Recyclable cleaning liquid** – Low operating cost and environmentally friendly
- **Strong adaptability** – Suitable for different bearing sizes by changing fixtures

9. Typical Applications

- Bearing maintenance in steel rolling mills
- High-speed wire rod and bar mill bearing servicing
- Metallurgical equipment maintenance centers

- Heavy machinery manufacturing and remanufacturing facilities



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