TORISHIMA is a leading pump manufacturer, founded in 1919 in Osaka, Japan. Our primary objective is to contribute to society as a quality provider of pumping equipment and services. We continue to strive to be the market leader in our field. Our on-going investment in research and development highlights our commitment to provide the best technology for our customers. Our mission is always to listen to our customers, understand their needs and meet their expectations.

**Main Pumps Selection Table**

General specification ranges for 50Hz and 60Hz types are shown below.

### Pumps for Fresh Water

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### Vertical Pumps for Chemical Industries

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**Content**

- Torishima Main Pumps Selection Table, .......... 2
- Chart for Selecting Pumps by Application
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  - Municipal Water Works, Industrial Water Works
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Energy Industry

Condensate pump for combined cycle power plant (MMTV)
Vaporizing pumps for LNG plant (SPV)
Barrel type super critical boiler feed pump for coal fired power plant (MHB)
Super critical pressure boiler circulating pump for thermal power plant (HLV)
Ring section boiler feed pump for combined cycle power plant (MHG)
Circulating water pump for coal fired thermal power plant (SPV)

Chart for Selecting Pumps by Application

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Sewerage
Agriculture
Irrigation
River Water

Chart for Selecting Pumps by Application

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### Chart for Selecting Pumps by Application

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### Chart for Selecting Pumps by Application

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### Chart for Selecting Pumps by Application

#### General Industry
- Water supply pumps for machinery plant (CAL)
- Process pumps for brewery plant (CAR)
- Furnace cooling water pump for steel plant (CDM)
- Cooling water pump in paper mill (CDM)
- Plating cooling water pumps for steel plant (CAL)

#### Chart Details
- **Applications**
  - Iron and Steel
  - Nonferrous Metal
  - New Materials
  - Water Supply
  - Waste Water
  - Process
  - Paper & Plywood
  - Food
  - Pressure
  - Incline
  - Dock Drainage
- **End-Suction Pumps**
  - CAL, CAR
  - GAM, CAS
  - CE
  - GE
  - CERG
  - GNA
  - CPN
  - CPC
  - OPW
  - DCM
  - MHG, MHE-A
  - MIO
  - MMK
  - MML
  - MMO
- **Multi-Stage Pumps**
  - HL, HLV
  - SPV
  - S/M
  - T/B, T/C, T/N
  - F/TB
  - IF, IFAE, IBO
  - N/SA
  - TE/PS
- **Submersible Pumps**
  - DDC
  - F/S
  - O/PS

#### Specifications
- **Size**: mm
- **Flow**: m³/h
- **P**: m
- **KPA**: kPa
- **Temp**: °C

#### Table Entries
- **Products**
  - CAL, CAR: 600, 150, 1, 60, 15
  - GAM, CAS: 970, 205, 1230, 150, 1, 80, 15
  - CE: 2160, 56, 1, 140, 16
  - GE: 106, 15, 1, 140, 17
  - CERG: 300, 56, 1, 140, 18
  - GNA: 106, 15, 1, 140, 17
  - CPN: 880, 180, 1, 210, 19
  - CPC: 2160, 56, 1, 140, 18
  - OPW: 1540, 250, 3, 240, 19
  - DCM: 1000, 56, 1, 140, 19
  - MHG, MHE-A: 1460, 228, 15, 260, 18
  - MIO: 1460, 228, 15, 260, 18
  - MMK: 1540, 128, 15, 260, 18
  - MML: 1540, 128, 15, 260, 18
  - MMO: 1460, 128, 15, 260, 18
  - HL, HLV: 600, 100, 1, 140, 19
  - SPV: 600, 100, 1, 140, 19
  - S/M: 1350, 230, 15, 260, 20
  - T/B, T/C, T/N: 1460, 45, 150, 25
  - F/TB: 400, 250, 15, 260, 25
  - IF, IFAE, IBO: 600, 15, 1, 140, 19
  - N/SA: 720, 160, 1, 140, 19
  - TE/PS: 106, 15, 1, 140, 19
  - O/PS: 700, 16, 1, 140, 19

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*Note: The table entries are placeholders and should be replaced with actual data.*
Main Pumps List

End-Suction Pumps P.15

Mixed-Flow Pumps P.23

Double-Suction Pumps P.19

Axial-Flow Pumps P.24

Multi-Stage Pumps P.20

Submersible Pumps P.25

Specialized Pumps P.22

Miscellaneous Pumps P.27

End-Suction Pumps

CAL (Cast Iron),
CAR (Stainless Steel)
10bar end-suction volute pump

We call CAL and CAR the Eco-Pumps which are eco-friendly semi-ordered standard pumps applying the state of the art technology of our large-sized high-efficiency engineered pumps.

The big features of CAL and CAR:
1) CFD (Computational Fluid Dynamics) optimized casing design ensures smooth fluid flow,
2) Three dimensional curved impeller optimizes smooth fluid flow,
3) Meeting customer’s specification by impeller cut,
4) Excellent parts interchangeability

Applications
Feed / Drainage water for general industries, Feed / Drainage water / Various processes for chemical / food industries, Water intake / Distribution / Supply for water works, Water pumping, Fire-fighting, Industrial water, etc.

End-Suction Pumps

CAM (Cast Iron),
CAS (Stainless Steel)
16bar end-suction volute pump

In common with CAL and CAR as CA series, CAM and CAS are totally optimized design pumps which adopt the efficient impeller design.

Applications
Feed / Drainage water for general industries, Feed / Drainage water / Various processes for chemical / food industries, Cold / Hot water circulation in district heating / cooling plants, Water intake / Distribution / Supply for water works, Water pumping, Fire-fighting, Industrial water, etc.

CBR
End-suction volute pump for ERD booster

Centerline pump foot mounted. Used as booster pump for SWRO desalination and energy recovery purpose.

Applications
ERD booster pumps for high pressure line in RO desalination plants

CE
End-suction volute pump

A single- or two-stage end-suction volute pump. Various materials and structural designs employed to meet specification requirements for a variety of applications from fresh water, chemicals and heat transfer.

Applications
Water intake / Distribution / Supply / Boosting / Clarification for water works, Various processes for chemical industries, Water pumping / Drainage for agriculture, Boiler feed pump, Heat medium circulation, Heater drain, etc.

CERS
End-suction volute pump for heat transfer oil

Specialized for heat transfer oil. Effective air-cooled design leads to no requirement for cooling at shaft sealing or bearing to 340°C heat transfer oil.

Applications
Dry / Agitator / Heating systems for chemical industries, Oven / Dry / Heating systems for food industries, Dry / Heating systems for general industries, etc.
End-Suction Pumps

CFV
Vertical mixed-flow volute pump
Applicable for wide range from low head to high head. Suitable for relay pumps in sewage treatment facilities.

Applications
- Sewage transfer, Rain water drainage,
- Water intake / Distribution / Boosting for water works,
- Water pumping / Drainage for agriculture, etc.

Capacity
- Flow: 0.12 to 72,000 m³/h / 790 to 317,000 USgpm
- Total Head: 5 to 120 m / 16 to 392 ft
- Size: 200 to 5,000 mm

CFV-SM
Vertical mixed-flow volute pump with motor
CFV-SM is a pump with a submersible motor, which prevents outage during floods. No intermediate shaft between a motor and a pump is needed. The equipment is consolidated in one pump room, which allows simple facility and reduces operation and maintenance costs.

Applications
- Sewage transfer, Rain water drainage,
- Water intake / Distribution / Boosting for water works,
- Water pumping / Drainage for agriculture, etc.

Capacity
- Flow: 160 to 5,000 m³/h / 740 to 13,200 USgpm
- Size: 200 to 400 mm

CNP
Non-clogging End-suction volute pump
Five kinds of standardized impellers available according to liquid. Applicable in various industries. The basic pull-out structure and high interchangeability of this pump providing ease of maintenance.

Applications
- Transfer of corrosive liquids / abrasive liquids / chemical drainage including rough mixtures for chemical industries,
- Transfer / Drainage of solid mixtures for food / general industries, etc.

Capacity
- Flow: up to 850 m³/h / 9,740 USgpm
- Total Head: up to 180 m / 592 ft
- Pressure: up to 250°C / 2.68 to 489°F

CPC
End-suction volute pump for process
Conforms to ISO2858. A wide range of structural designs of material and seals meet various specification requirements as process pump for chemical and general industries.

Applications
- Cooling systems / Water feed for deaerator / Condensible / Drain for energy industries,
- Processes for petrochemical / chemical industries,
- Water feed / Drainage for general industries,
- Distinct cooling and heating,
- Water pumping,
- Fire-fighting, etc.

Capacity
- Flow: up to 1,500 m³/h / 6,300 USgpm
- Total Head: up to 230 m / 752 ft
- Pressure: up to 325°C / 55°C to 600°F

CHR
End-suction volute pump for hot water circulation
Applicable mainly for hot water circulation of forced-circulation boilers. The forced cooling system is applied to the bearing bracket, stuffing box base plate.

Applications
- Hot water circulation for forced-circulation boilers in thermal power plants,
- Petrochemical industries,
- Coal gasification plants,
- Oil refinery, etc.

Capacity
- Flow: up to 1,500 m³/h / 6,300 USgpm
- Total Head: up to 125 m / 410 ft
- Pressure: up to 10.5 Mpa / 146 bar / 1,560 psi
- Size: 50 to 350 mm

CPW
End-suction volute pump for hot water circulation
Centerline pump foot mounted. Mainly used as feed pump or circulation pump of hot water in large-size heating systems.

Applications
- Feed water / Circulation of high pressure hot water generating plants

Capacity
- Flow: up to 1,640 m³/h / 6,300 USgpm
- Total Head: up to 280 m / 886 ft
- Pressure: up to 295°C / 55°F

CPR
End-suction volute pump for process
Simple and durable design providing high reliability. Widely used for oil refining, petrochemical, and general industries. Series with inducer for low NPSH req. also available.

Applications
- Processes for oil refinery / petrochemical / general industries

Capacity
- Flow: up to 1,600 m³/h / 10,500 USgpm
- Total Head: up to 275 m / 886 ft
- Pressure: up to 6.5 Mpa / 92 bar / 910 psi
- Size: 50 to 250 mm

CNA
Non-clogging end-suction volute pump
The discharge opening of the non-clogging impeller is produced especially wide to permit free passing of any solids measuring 50 to 70% of the pump nozzle size.

Applications
- Sewage transfer, Transfer / Drainage of liquids containing sludge for general industries,
- Transfer of grain and water mixtures,
- Transfer of cellulose pulp of less than 2.5% B.O. free from air, etc.

Capacity
- Flow: 9 to 100 m³/h / 33 to 338 USgpm
- Total Head: 15 to 200 m / 49 to 656 ft
- Size: 50 to 200 mm
Double-Suction Pumps

CDM, CDMV (Vertical)
Axially split double-suction pump

The world’s most advanced high-efficiency pump achieved by design to match the double suction and three-dimensional impeller with the latest hydraulics. Simple disassembly of upper half casing without disturbing pipe work enables ease of maintenance and inspection.

**Applications**
- Water intake / Distribution / Boosting / Circulation / Drainage / Firefighting in energy industries
- Cooling water circulation for district heating and cooling
- Water intake / Distribution / Boosting for general industries
- Water intake / Distribution / Water supply / Boosting for seawater desalination / water works / sewage
- Irrigation for agriculture, Drainage, Pipe-box boosting, etc.

**CDKY**
Horizontal radially split double-suction pump

The rotating parts can be taken out by removing the side cover in axial direction. Suitable for handling high temperature and pressure liquids in chemical plants and power plants. CDKY mainly used as booster pump for boiler feed pump and hot water circulation pump.

**Applications**
- Processes for power / chemical / pulp industries, etc.

**CDKTV**
Vertical double-suction pump with canister

The hydraulic design of the double-suction impeller offering low-shut-off head, low NPSH and high speed. Mainly applicable for brine recirculation in seawater desalination plants and condensate in geothermal power plants when severe suction condition with large capacity and high head required.

**Applications**
- Brine recirculation / Brine blow down for seawater desalination
- Hot well / Large volume condensate in geothermal power plants

Multi-Stage Pumps

**MHB**
Radially split barrel casing pump

The barrel casing is fully welded to the pipe work and supported at its centefoe on a fabricated steel base plate. The inner cartridge, which contains all pump components except the barrel and main stud bolts, is removable from the barrel as a complete unit for ease of maintenance.

**Applications**
- Boiler feed in thermal power plants
- High pressure feed water for various industries, etc.

**MHG, MHG-A**
Horizontal multistage ring section pump

Radially split ring section high-pressure multistage diffuser type pump. No warming through required enabling rapid start-up.

**Applications**
- Boiler feed in power plants
- High pressure feed water for various industries, etc.

**MHD**
Horizontal multistage ring section pump

Radially split ring section high-pressure multistage diffuser type pump achieving high efficiency and low NPSH. No warming through required enabling rapid start-up.

**Applications**
- Boiler feed in power plants
- High pressure feed water for RO desalination / various industries, etc.
**MSH, MSH-T (Twin-Suction)**

**Horizontal axially split multistage volute pump**

The axially split design offers ease of maintenance of rotating equipment without removing the lower casing. MSH-T covering high head range is twin-suction structure to satisfy high suction capability.

- **Applications**
  - High pressure seawater feed for RO desalination, Distribution for water works, Water pumping for agriculture, etc.

**MHH**

**Axially split multistage pump**

The axially split design offers ease of maintenance of rotating equipment without removing the lower casing. Applicable for high low head duty by changing the number of stages.

- **Applications**
  - High pressure seawater feed for RO desalination, Distribution for water works, etc.

**MHA**

**Horizontal end-suction multistage ring section pump**

Submerged bearing, radially split and compact design. The diffuser does not discharge to next impeller suction eye. The axial forces are compensated by a hydraulic balancing device. The integrated design accommodated by high pressure and high speed pumps results in excellent cost performance and high-efficiency.

- **Applications**
  - High pressure seawater feed for RO desalination

**MMK, MML**

**Horizontal multistage ring section pump**

Axial thrust of MMK is balanced by the impeller balance holes, and by way of MML, the balance disc, so that MMK and MML can operate with high reliability at high speed.

- **Applications**
  - Boilers feed in power plants, High pressure feed water for various industries, Condensate for seawater desalination, Distribution / Boosting for water works, Irrigation for agriculture, etc.

**MMO**

**Multistage ring section pump**

Compact and light-weight. Pump feed integral cast into bearing housings, allowing free orientation of both suction and discharge nozzles. No cooling of shaft seals required up to 140°C liquid.

- **Applications**
  - Boiler feed / Condensate / Distribution for general industries, Water intake / Distribution / Water supply / Boosting for water works, Feed water / Drainage in building facilities, Cooling water / Hot and Cold water circulation, Water pumping / Drainage for agriculture

**MMTV**

**Vertical multistage pump with canister**

The high pressure vertical canister pump offers significant advantage in those cases where limited suction head is available. Applicable especially for condensers in power plants, desalination plants and other pipeline pumping applications.

- **Applications**
  - Hot water / Condensate / High and low pressure drain in thermal power plants

**Specialized Pumps**

**HLV, HLV**

**Glandless (sealless) pump motor unit (Boiler circulation pump)**

Pump and motor are integrated in a pressure-tight casing. The glandless design (no shaft seal) makes this pump best suited for pumping of high temperature and high pressure liquids without any leakage. Vital, smaller or spherical casing designs optionally available.

- **Applications**
  - Boiler circulation in super / sub critical power plants
Mixed-Flow Pumps

**SP**
Horizontal mixed-flow pump

Offering the highest efficiency in low head and large capacity range, the axially split design offering ease of maintenance of rotating equipment without removing the lower casing.

**Applications**
- Water pumping / Drainage for agriculture
- Sewage transfer
- Rainwater drainage
- Storm surge drainage, etc.

**SPV, SPTV (Canister)**
Vertical mixed-flow pump

Diffuser type, single or multistage design, mixed-flow impeller suspended within wet pit. Offering various hydraulic models, materials, and installation arrangements above or below floor discharge to suit the plant specific design.

**Applications**
- Rainwater drainage / Water intake for water works / sewage, Circulation / Cooling water / Condensate in power plants / Seawater intake / Brine recirculation for seawater desalination
- Water intake / Cooling water for petro-chemical industries / Cooling water / Water intakes / Discharge for general industries

**SPS, SPSY**
Mixed-flow volute pump

Suitable for fresh water and waste water pumping. Both open and closed type impeller available.

**Applications**
- Water pumping / Drainage for water works / sewage, Water pumping for agriculture, Cooling water in power plants, Seawater recirculation for seawater desalination, etc.

**SPSX**
Mixed-flow volute pump

Mainly used for water pumping and drainage for agriculture, simplex back pullout structure allowing ease of overhaul.

**Applications**
- Water pumping / Drainage for agriculture
- Drainage for civil engineering work, Flood control, etc.

**Axial-Flow Pumps**

**IS**
Axial-flow propeller pump

Diffuser type, axial flow propeller suspended within wet pit. Suitable for large capacity / low head of water. Axially split design offering easy maintenance without removing the lower casing.

**Applications**
- Water pumping / Drainage for agriculture, Sewage transfer, Rainwater drainage, Storm surge drainage, etc.

**ISV**
Vertical axial-flow propeller pump

Diffuser type, axial flow propeller suspended within wet pit. Especially used for large capacity with low head of water. The various hydraulic models applied to the change of the capacity and head.

**Applications**
- Water pumping / Drainage for agriculture, River water drainage, Cooling water in power plants
Submersible Pumps

SMI (Axial-Flow), SMS (Mixed-Flow)
Tubular pump

Horizontal tubular pump—units combining an axial-flow or mixed-flow pump and a dry-type electric motor in a single tube. Little noise and compact owing to the small water level loss and the combined motor. Either connected directly to an electric motor or used with a reduction gear for slower rotation.

Applications
Water intake / Distribution / Drainage for water works, Water pumping / Drainage for agriculture, Industrial water / Cooling water / drainage, Drainage for civil engineering work, etc.

SMIV (Axial-Flow), SMSV (Mixed-Flow)
Dry-type submersible pump

Large capacity submersible propeller pumps with low head capabilities. Offering high efficiency and superior performance with compact design and easy operation. Designed to meet the requirements for efficient handling of large capacity of water. In particular, for installation, maintenance and inspection in pits. Auto-wake-up Column: Installation type adopted because of the high reliability and rapid discharge connections.

Applications
Water pumping for agriculture, River drainage, Rain water drainage, Water intake / Drainage for sewage, etc.

SMV, SMRV
Large-size submersible motor pump

SMV is vertical tubular casing pump with submersible motor. Water-filled or oil-filled type motor is provided. SMRV uses an oil-filled type submersible motor whose suction entry is located between motor and pump.

Applications
Water intake / Distribution / Drainage for water works, Water pumping / Drainage for agriculture, Industrial water / Cooling water / drainage, Drainage for civil engineering work, etc.

S/M
Dry-type submersible motor pump

Small lightweight and easy to handle. Best suited for discharging waste water at construction sites and draining water in buildings and factories. The motor is equipped with an auto-cut device, submersion detection device and protection device. The impeller is made of wear resistant materials.

Applications
Waste water / Sludge drainage for civil engineering works, Drainage in factories, etc.

T/B, T/C, T/N
Submersible motor pump

Wide ranges of impellers suited for all types of sewage and effluent, especially untreated sewage containing fibers, solid admixtures, sewage sludge, circulating sludge. Removable device for ease of maintenance and inspection also available.

Applications
Waste water / material drainage for sewage, Waste water / material drainage for construction facilities, Rain water drainage, etc.

F/TB
Submersible pump for deep well

Vertical or horizontal submersible motor pumps with radial or mixed flow impellers, multi-stage. Water sealed three-phase induction motor is highly reliable electrically and mechanically as submersible motor, and enables less trouble and safe operation.

Applications
Water intake / Distribution / Water supply for water works, Water feed / Distribution for general industries, Water pumping for agriculture

F/VC, F/VD, F/UW, F/SP
Submersible motor pump for shallow well

Water sealed three-phase induction motor is adapted for submersible motor. Suction entry of F/VC and F/UW is located at the bottom and that of FVD and F/SP is between pump and motor.

Applications
Water intake / Distribution / Water supply for water works, Water feed / Distribution for general industries, Water pumping for agriculture
**Miscellaneous Pumps**

### K/LP, K/SLP2 (Stainless Steel)
**Line pump**
- Pump and 2-pole motor close coupled with common shaft. Line construction of suction entry and discharge fits in any position in a pipeline.

- **Applications**
  - Water and hot water circulation in building facilities,
  - Processes for various industries,
  - General water feed,
  - Boosting for water works, etc.

### N/WR
**Wesco pump**
- Specially-shaped impeller revolves at high speed in casing, makes the flow and absorbs up.
- Extremely small impeller clearance due to the use of a special method of fitting and special materials to assure high stability. Best suited for applications with small capacity and high head.

- **Applications**
  - Water feed / pumping for general industries,
  - Chemical liquid transfer,
  - Various fuel oil transfer,
  - High pressure boiler feed,
  - High pressure washing, etc.

### O/PS
**Pulp pump**
- Suitable for pumping slurry and pulp stocks up to 5% consistency.
- The impeller is mixed flow type allowing the pump to be used for a wide range of applications.

- **Applications**
  - Pulp liquid transfer for paper / pulp industries,
  - Solid transfer / drainage for general industries,
  - Fruit or cereals and water mixture transfer for food industries, etc.

### SNK
**Screw Pump**
- Suitable for pumping liquids containing small stones, other suspended solids or rags, pieces of wood or ropes, digested or activated sludge etc.
- The simple, rugged construction and the open screw thorough facilitate maintenance and inspection.

- **Applications**
  - Water pumping for treatment plants,
  - Water pumping / Drainage for agriculture,
  - Return sludge for sewage treatment plants,
  - Waste water transfer, etc.

### NVS, NVD
**Vacuum pump**
- The rotating, water-sealed pump sucks and exhausts gas using the centrifugal force of the liquid. Continuous gas exhaustion is made without vibration and in complete safety even when water enters in the pump interior during operation.

- **Applications**
  - Pump water, gas, exhaust gas / Vacuum generation / Pressure-feeding for chemical industries

### TE/O, TE/CO (Stainless Steel)
**Self priming pump**
- No need for priming. Offering outstanding self priming performance and durability.
- Direct-connected motor is standard.

- **Applications**
  - For industrial facilities, construction facilities,
  - Agriculture, waste water treatment, etc.

### S/T
**Vertical Volute Pump**
- Easy installation, close-coupled construction. Size 40 to 100mm back pull-out structure facilitates ease of maintenance.

- **Applications**
  - Boosting / Water feed / Water pumping for general industries, etc.
Established in 1919 as a pump manufacturer, Torishima was able to draw on our expertise in pumping technology to pioneer the research and development of mechanical seals in Japan in 1948. In our long history we have had vast experience within many main industries and applications such as Power Generation and Desalination to name only a few. Besides proven seal designs to suit our own pump range, we are also capable of offering seal retro-fits and upgrades for other brands and manufacture for various types of equipment OEM’s. As an integrated pump and seal manufacturer, we understand the relationship between both and the important role the seal plays. Our constantly developing sealing technology is a testament to our commitment to providing reliability focused products and solutions to our valued customers globally.

### Mechanical Seal Applications

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**Installation & Field Test**

Torishima provides field engineering service wherever needed to supervise pump installation work and equipment commissioning, ensuring the pumping equipment can meet customer expectations.

**Maintenance, Overhaul, Operator Training**

Torishima offers targeted advice after performing a full maintenance inspection of the entire pump installation, performing necessary maintenance, and diagnosing whether the facility is being operated under the optimal conditions. When pumping equipment breaks down, our experienced engineers determine the basic cause through a full analysis and replace broken parts to ensure rapid restoration. In addition, we provide hands-on guidance and training to plant operators.

**Solution Provider**

To improve your plant’s productivity, Torishima offers longer reliable and high-efficiency pumps. In addition to servicing our own units, we restore, repair, improve and upgrade even for pumps of other manufacturers. Using the most advanced technologies, we offer products that provide you with the highest efficiency and highest possible performance.

**Energy Saving**

Operating cost and CO₂ emissions are reduced by upgrading to a more reliable and high-efficiency pump.

**REDU**

*REDU is a registration trademark of TORISHIMA*

Torishima has the ability to combine field service engineering and product design technology. This results in our engineers being able to provide advice on improved design and the upgrade of in-site pumping equipment and other rotating equipment.

*Before upgrading*  |  *After upgrading*