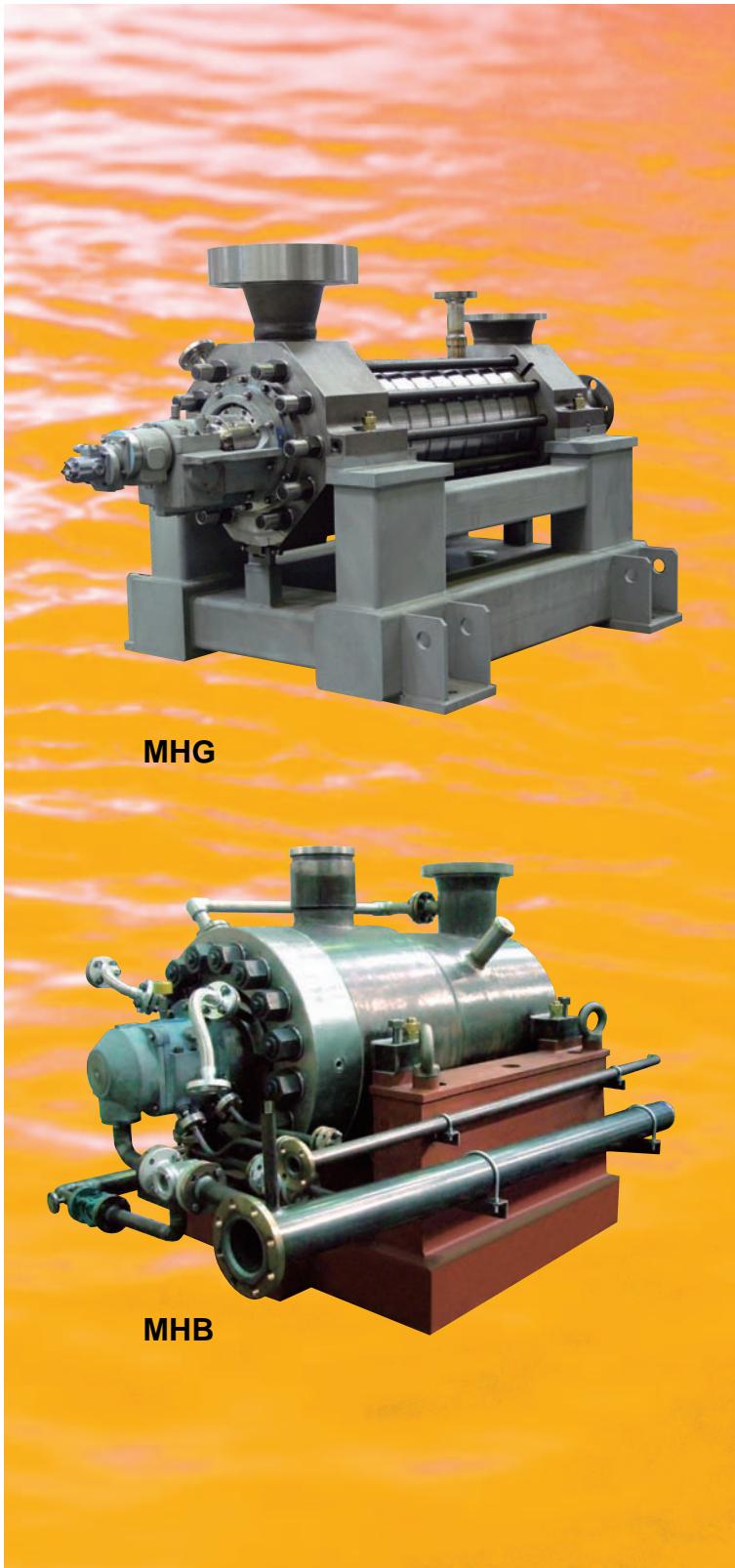


# MHG / MHB

High Pressure Multi-Stage Diffuser Pump



# High Pressure Multi-Stage Diffuser Pump

- Highly efficient hydraulic components
- Providing industries (such as power plant) with our reliable pump solutions, backed by our well-established manufacturing and quality management experience
- Providing a wide range of useful pump types, suitable for various applications from mid-range to high-end (for example, conventional, combined cycle and supercritical pressure power generation)
- Reduced cost and quick delivery achieved by part standardization and excellent stock management

## Applications

Boiler Feed Pumps (Conventional, Combined Cycle, Coal-Fired, etc.)

Descaling Pumps

Oil Refinery, Chemical Plants

High Pressure Pumps for General Industry

Snowmakers

## MHG Ring-Section Type

Low-priced, space-saving and light-weight.

Reliable casing sealing is achieved using metal-to-metal contact or O-rings securely fastened using tie bolts.

No warming of casings is required (except for some applications), making the product suitable for rapid start-up.

## MHB Barrel Type

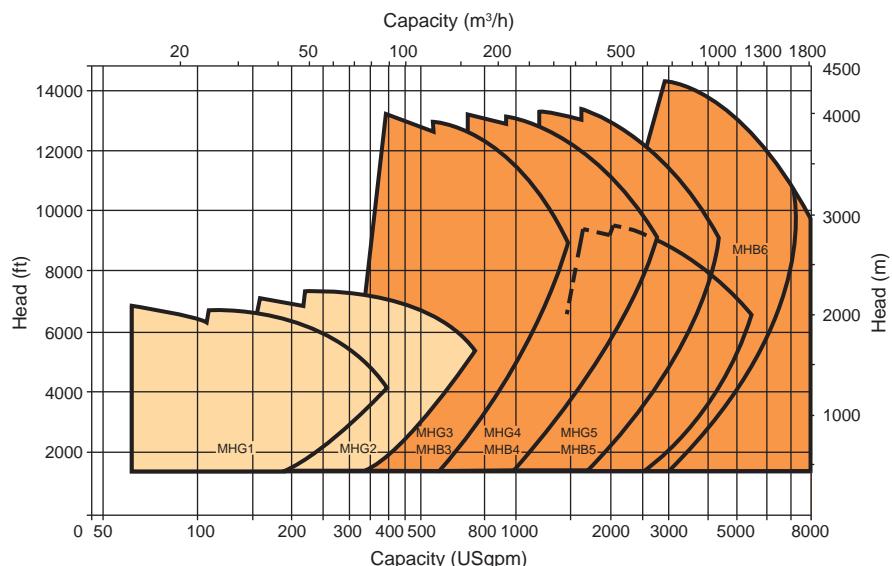
Highly-reliable double shell casings.

Maintenance time is shorter due to inner cartridges that are replaceable without dismantling the nozzle.

Customized designs are available with various nozzle orientations and high suction pressures.

Capacity	Standard : 1,440m <sup>3</sup> /h (6,340USgpm) Tailor made : up to 2,000m <sup>3</sup> /h (8,800USgpm)
Total Head	up to 4,200m (13,800ft)
Temperature	up to 200°C (392°F)
Suction Pressure	up to 3MPa (435psi)
Discharge Pressure	up to 42MPa (6,090psi)
Speed	up to 7,000min <sup>-1</sup>

## Performance Range



# Design Features

## MHB Barrel Type

### Radial Bearings and Housings

- Roller bearing or sleeve journal bearing (oil ring or forced lubrication) used depending on the size
- Various accessories including thermometer and vibration sensor available
- Robust shaft arrangement satisfying ISO 10816-7 vibration standard

### Flanges and Pipe Connections

- Twice the allowable nozzle forces and moments required by API 610
- Nozzle connections conforming to major international standards, such as ASME flanges, as well as direct butt welding to plant nozzles (also available: suction from bottom, etc.)
- Intermediate extraction nozzles available from any stage

### Impeller and Diffuser

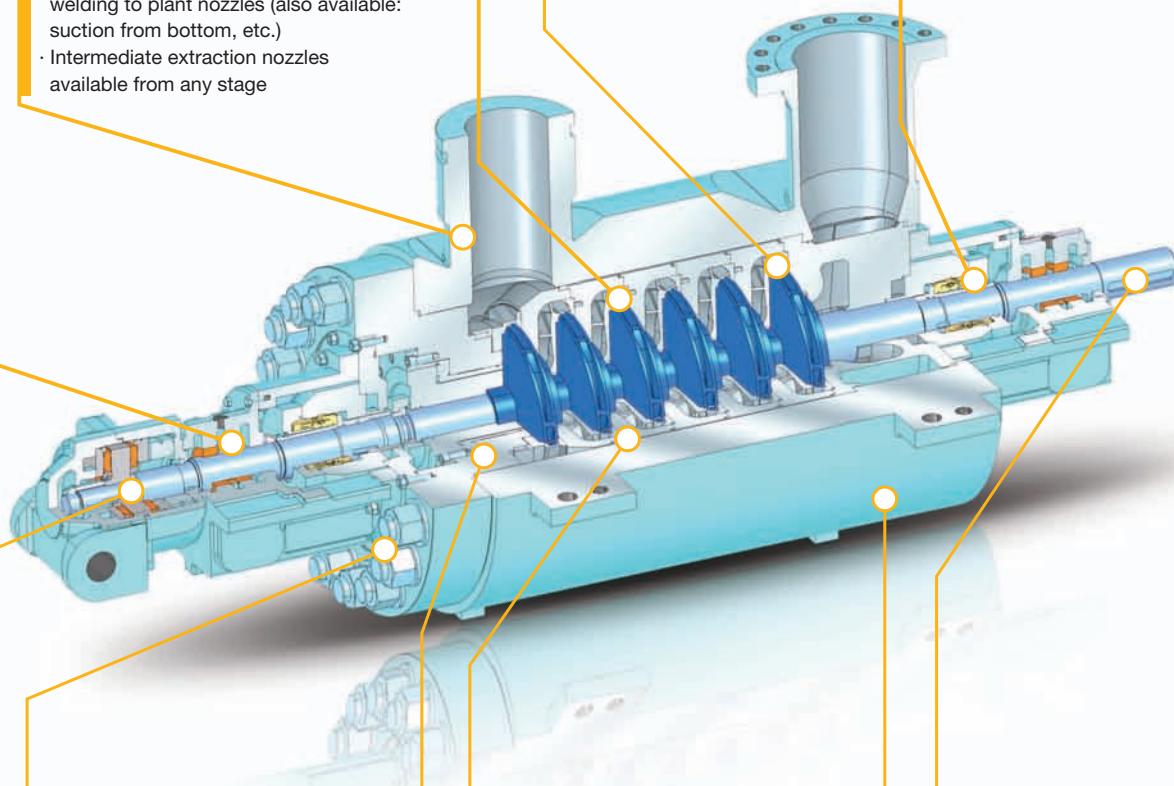
- Reduction in power consumption and CO<sub>2</sub> emission achieved by highly efficient hydraulic components
- Reliable performance and quality realized by precision-cast stainless steel impeller

### First-stage Impeller

- Specialized first-stage impeller available for accommodating severe suction conditions

### Shaft Sealing

- Minimized leakage and maintenance ensured by using reliable Torishima mechanical seals as standard equipment
- Cartridge mechanical seals, mechanical seals from other manufacturers, and gland packings optionally available



### Assembly and Disassembly

- Specialized jig for replacing inner cartridges is included as a standard accessory

### Thrust Bearing

- No need for thrust bearing for standard (balancing disc sheet type) products; lifting device also available
- Tilting pad thrust bearing available for balancing piston (balancing drum) type
- Oil pump also available on NDE

### Maintenance and Repair

- Wear rings, impellers, and guide vanes kept in stock to offer quick part delivery

### Balancing Devices

- Balancing devices reduce axial thrust; choice of balancing disc sheet type and balancing piston type depending on the start-up/shut-down frequency
- Bearings, shaft sealing and balancing devices can be replaced and inspected without dismantling inner cartridges

### Driver

- In addition to standard direct motor drive, variable speed operation driven by a turbine, an engine or by a motor via hydraulic coupling is also available

### Casings

- Double shell barrel casing for high reliability and easy maintenance (shortened overhaul time achieved by inner cartridge replacement)

# Design Features

## MHG Ring-Section Type

### Radial Bearings and Housings

- Roller bearing or sleeve journal bearing (oil ring or forced lubrication) used depending on the size
- Various accessories including thermometer and vibration sensor available
- Robust shaft arrangement satisfying ISO 10816-7 vibration standard

### Flanges and Pipe Connections

- Twice the allowable nozzle forces and moments required by API 610
- Flanges conforming to major international standards, such as ASME
- Intermediate extraction nozzle available from any stage

### Impeller and Diffuser

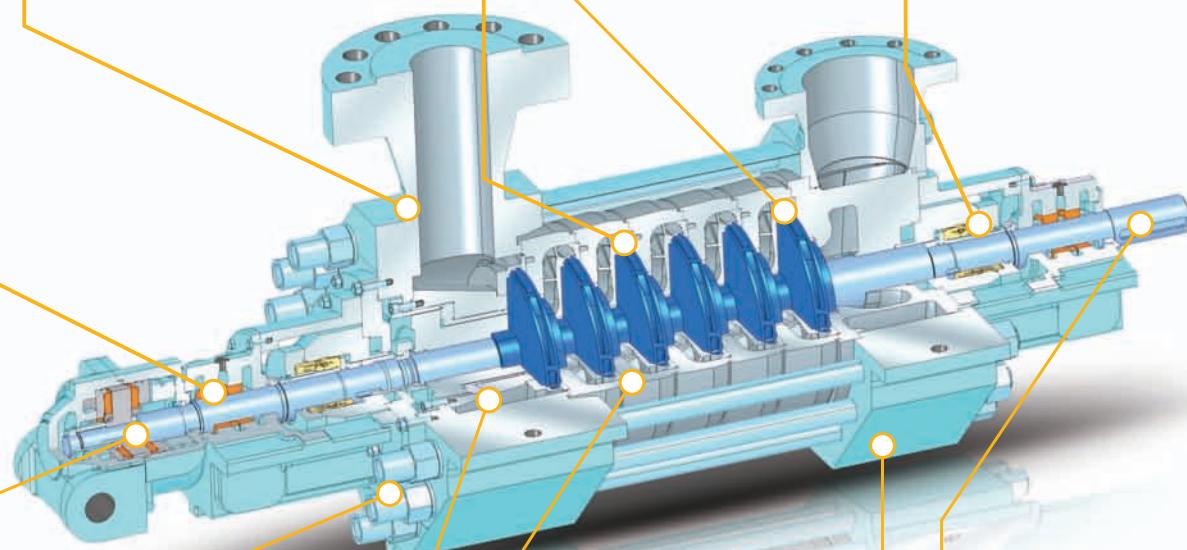
- Reduction in power consumption and CO<sub>2</sub> emission achieved by highly efficient hydraulic components
- Reliable performance and quality realized by precision-cast stainless steel impeller

### First-stage Impeller

- Specialized first-stage impeller available for accommodating severe suction conditions

### Shaft Sealing

- Minimized leakage and maintenance ensured by using reliable Torishima mechanical seals as standard equipment
- Cartridge mechanical seals, mechanical seals from other manufacturers, and gland packings optionally available



### Assembly and Disassembly

- Bolt tensioner-compatible tie bolts for easy assembly and disassembly

### Thrust Bearing

- No need for thrust bearing for standard (balancing disc sheet type) products; lifting device also available
- Tilting pad thrust bearing available for balancing piston (balancing drum) type
- Oil pump also available on NDE

### Maintenance and Repair

- Various gaskets as well as wear rings, impellers, diffusers and stage casings kept in stock to offer quick part delivery

### Balancing Devices

- Balancing devices reduce axial thrust; choice of balancing disc sheet type and balancing piston (balancing drum) type depending on the start-up/shut-down frequency
- Bearings, shaft sealing and balancing devices can be replaced and inspected without removing the tie bolts

### Driver

- In addition to standard direct motor drive, variable speed operation driven by a turbine, an engine or by a motor via hydraulic coupling is also available

### Casings

- Standard forged casings ensuring high reliability
- Optional stainless cast steel casings also available
- No warming required in principle, providing rapid start-up and shut-down capabilities

# References



Qurayyah Combined Cycle Power Plant  
Saudi Arabia  
MHG, Boiler feed pump



Staythorpe C Combined Cycle Power Plant  
UK  
MHG, Boiler feed pump



Emal Aluminum Smelter Complex  
UAE  
MHG, HP Feedwater pump



Elbistan Thermal Power Plant  
Turkey  
MHB, Boiler feed pump



Saudi Kayan Petrochemical Complex  
Saudi Arabia  
MHB, Boiler feed water pump



Pacifico Coal Fired Power Plant  
Mexico  
MHB, Boiler feed pump

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