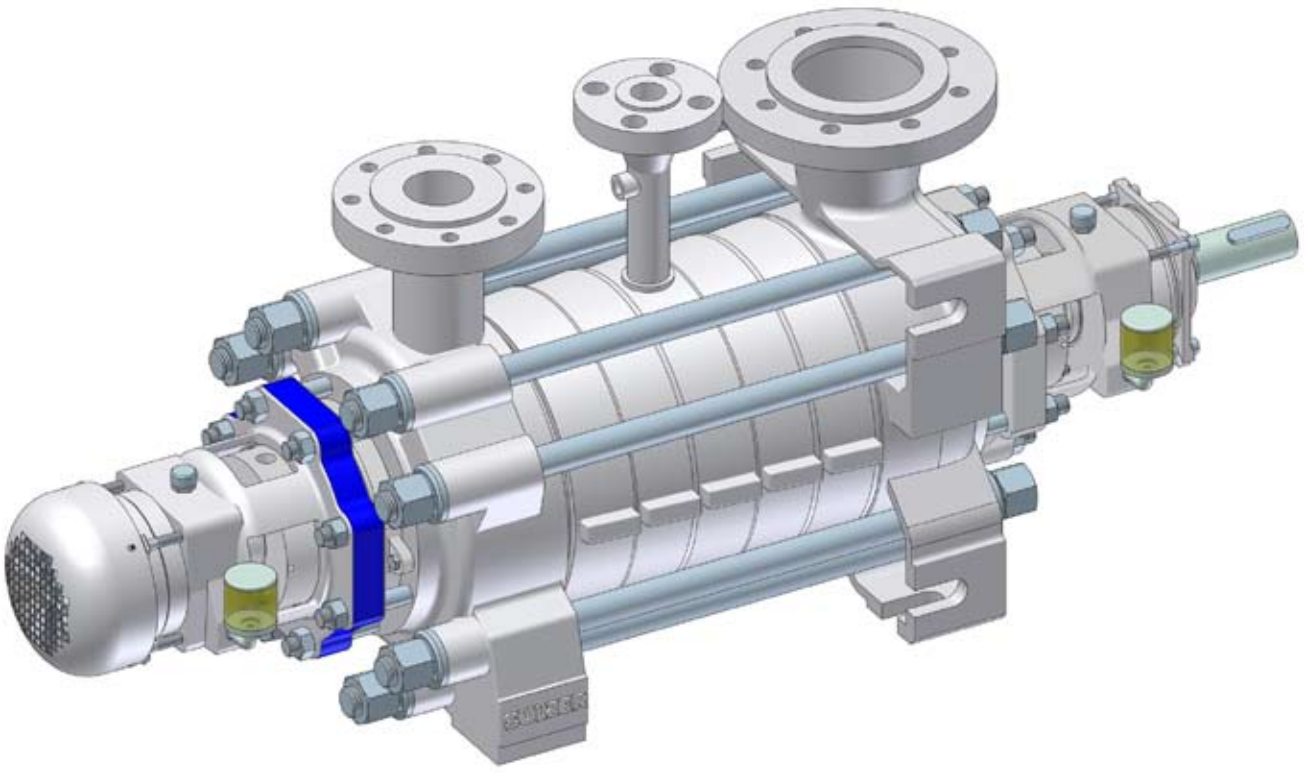
SULZER

MC High Pressure Stage Casing Pump



The Heart of Your Process

Sulzer Pumps

Sulzer Pumps is a leading global supplier of reliable products and innovative pumping solutions for end users. Our active research and development, detailed process and application knowledge together with a comprehensive understanding of market demands keeps us consistently at the leading edge of technical development. Our global network of modern manufacturing and packaging facilities together with sales offices, service centers and representatives located close to major markets provide fast responses to customer needs.

Extensive Knowledge in Products and Processes

Sulzer Pumps has a long history of providing innovative pumping solutions to business partners in the following industries:

- Oil & Gas
- Hydrocarbon Processing
- Pulp & Paper
- Power Generation
- Food, Metals & Fertilizers
- Water & Wastewater

Sulzer Pumps offers products for all types of power plants-nuclear reactor, fossil fired, geothermal, combined cycle, large and small industrial power plants.
We offer boiler feed pumps for subcritical and supercritical fossil fuel plants, cooling water pumps, condensate extraction pumps and pumps for auxiliary services.

Providing technical expertise in a broad spectrum of pumping applications benefits our customers. Engineering and implementing reliable, cost effective pumping solutions to meet the demands of a continually evolving power generation industry is our focus.

We have a successful track record of improving our customers' profitability by setting new standards in efficiency in reliability. Millions of people around the world are benefiting from a more reliable power supply as a result.

Design

MC pumps are horizontal, radially split ring section pumps of modular design. MC pumps are suitable for pumping clean or slightly polluted, hot or cold, chemically neutral or aggressive liquids.

The design is ideal for

- Boiler feed duties up to 180° C
- Condensate service in power stations and industrial plants
- Desalination (Reverse Osmosis)
- Auxiliary services within combined-cycle and industrial power plants

Proven Technology

The MC pump is part of the M-series of pumps including the MBN, MD and ME and is primarily designed for power applications, i. e. boiler feed and condensate services in power stations, industrial plants, desalination and combined-cycle power plants.

M-series pumps are of a modular design allowing Sulzer Pumps to work with the customer to find the most efficient solution. Investment cost as well as life cycle cost are taken into consideration when designing the best possible pump. An optimized hydraulic design guarantees best efficiency.

Ring Section Pumps

The M-series of pumps provides a modular and proven design for different pressure ranges:

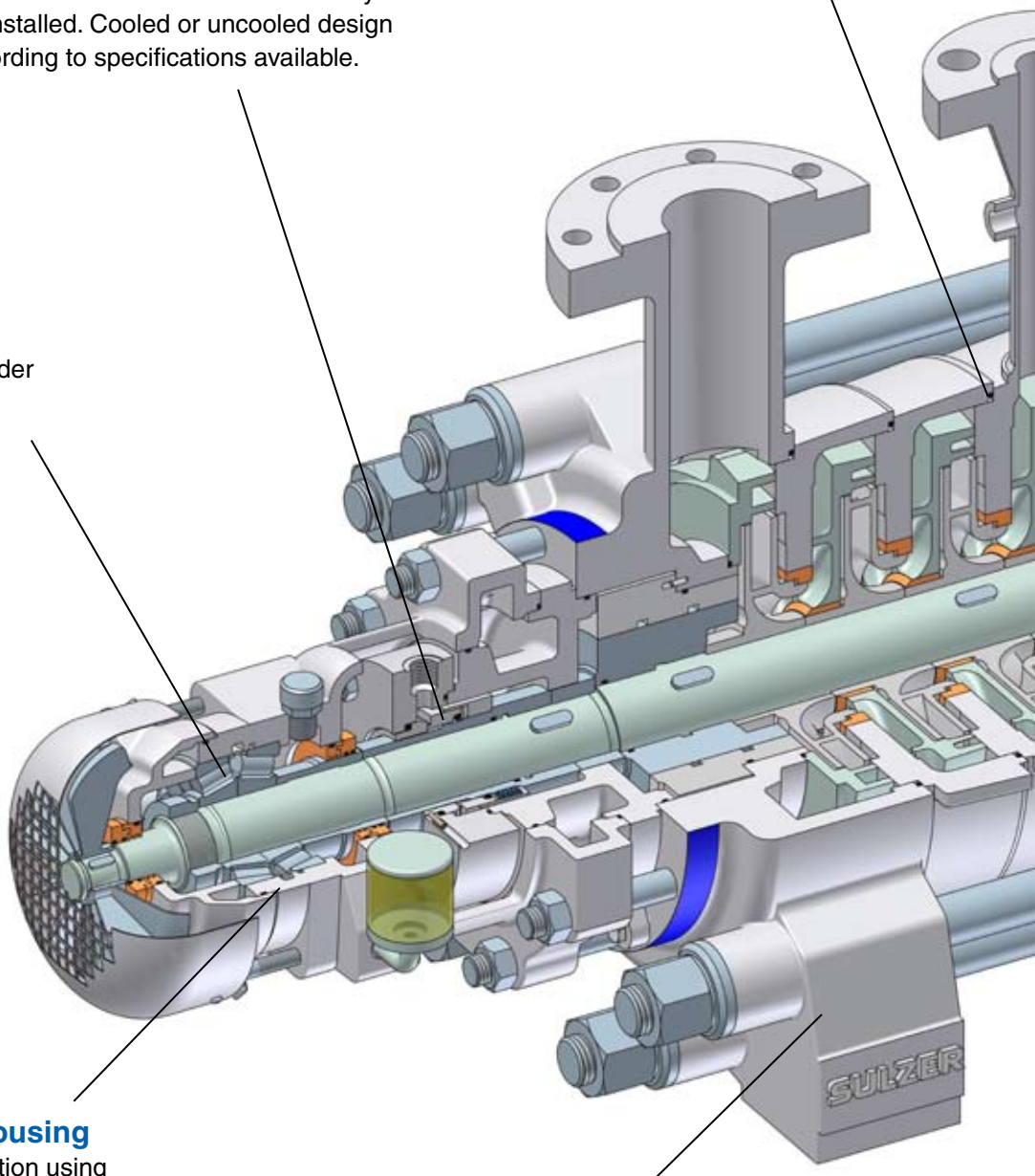
MBN	80 bar, 1,160 psi
MC	180 bar, 2,600 psi
MD	270 bar, 3,900 psi
ME	480 bar, 6,900 psi

MC Design Features and Benefits

O-rings
Casing sealing by confined o-rings therefore unaffected by rapid temperature variations and high pressures.

Shaft Seal
Single or double mechanical seal may be installed. Cooled or uncooled design according to specifications available.

Axial Thrust Bearing
Designed for long life even under extreme operating conditions. Paired, fan-cooled taper roller bearings are standard. Sleeve bearing is available.

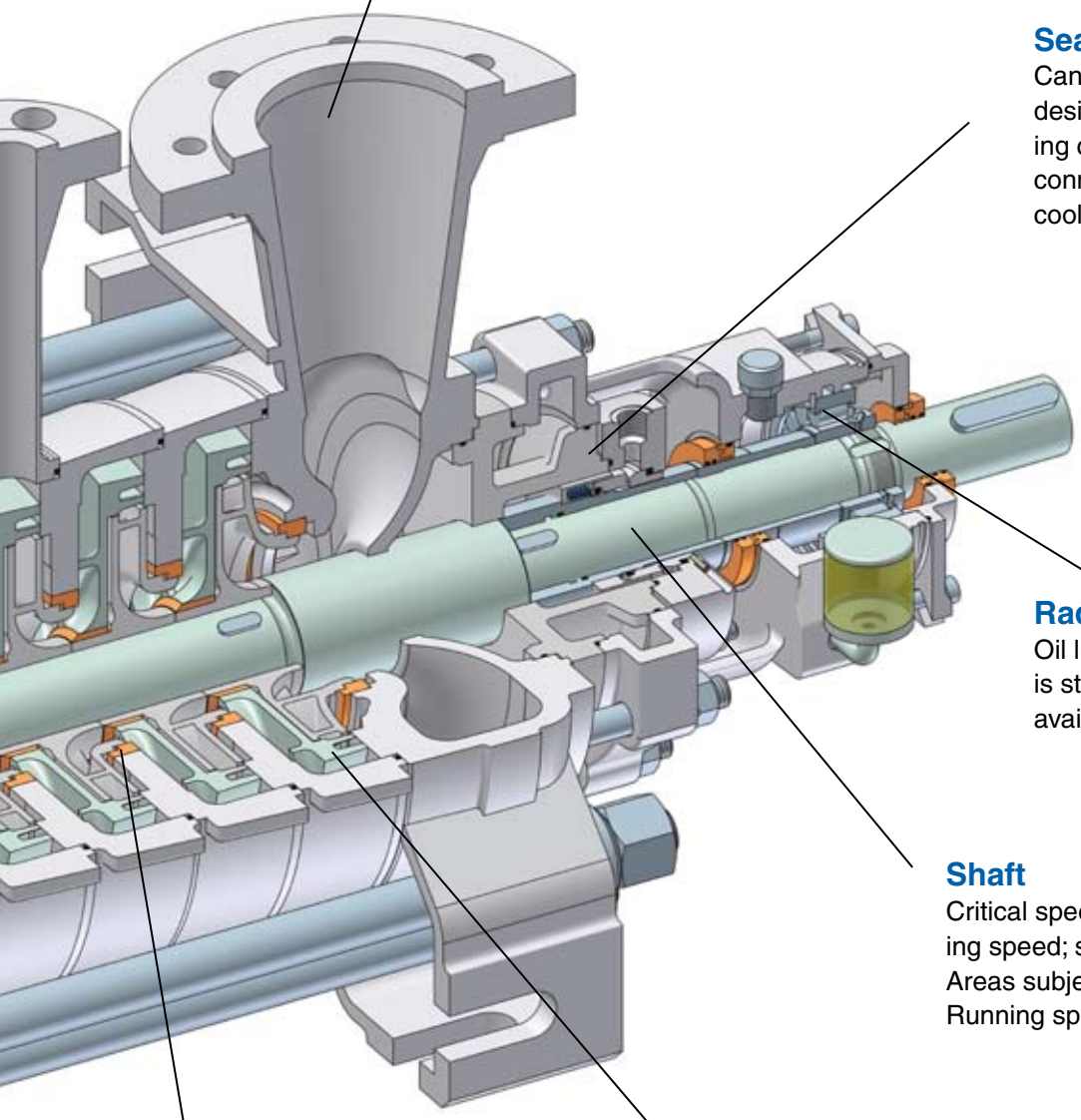


Heavy Bearing Housing
With automatic lubrication using constant level oiler. Fan cooling available.

Casing Support
Foot mounted is standard. Centerline mounted is available for large sizes or high temperatures.

Branch Size

Large branch optimizes inlet flow is enabled by external positioning of the tie bolts. Reduced noise levels through low branch velocities. Higher forces and moments allowed.



Seal Housing

Can be cooled or uncooled design; easy access to cooling chamber; clearly arranged connections; intensive, uniform cooling.

Radial Bearing

Oil lubricated antifriction bearing is standard; sleeve bearing also available.

Shaft

Critical speed is higher than operating speed; small shaft deflection. Areas subject to wear are protected. Running speeds up to 4,000 rpm.

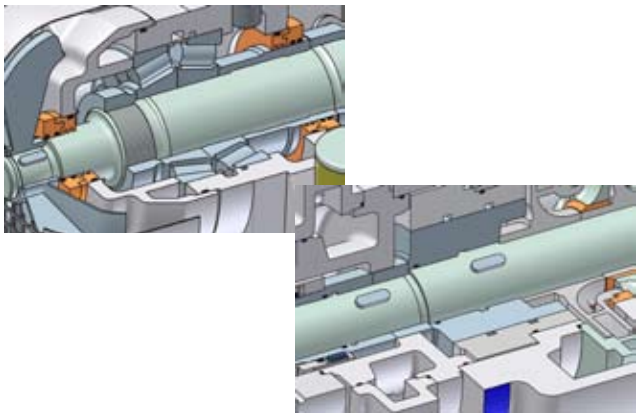
Impeller

In case of low NPSH available, first stage double suction impeller can be provided for selected pump sizes.

Wear Rings

Maintain high efficiency during pump life. Low maintenance cost, high availability and short down times. Impeller wear rings are optional.

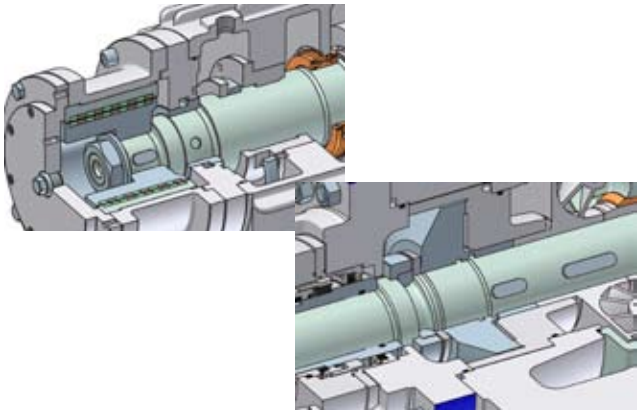
NDE Bearing Arrangement with Balance Drum



The balance drum device carries the major proportion of the hydraulic thrust. The drum diameters are chosen to minimize the thrust at normal operating point. The residual and additional thrust loads occurring above/below at the normal operating point are carried by the thrust bearing, typically a taper roller bearing.

The balance drum design is suitable for pumps that operate at the end of the curve, up to 130 % of the best efficiency point. The device nearly wear free and therefore suitable for frequent stop start applications.

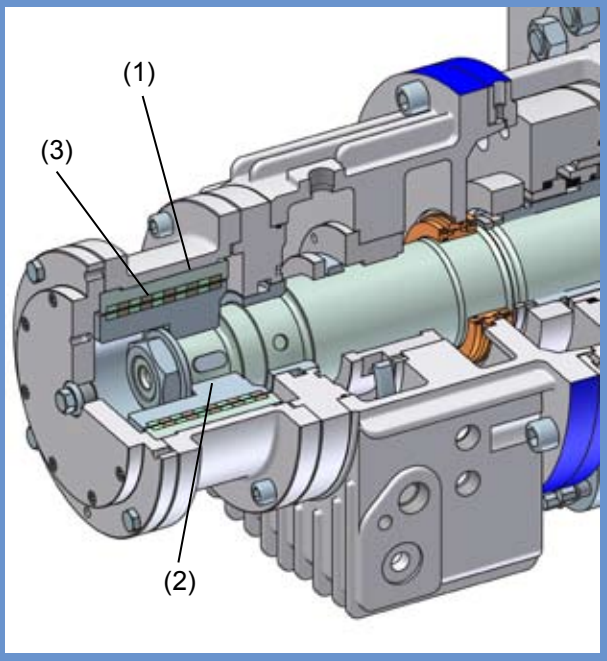
NDE Bearing Arrangement with Balance Disk



With a balance disk the axial force is completely compensated, no axial thrust bearing is required. Due to the smaller balancing leakage flow, total efficiency of the pump is higher compared to the balance drum design.

For pumps with frequent start-stop operation, the installation of a Permavor® lift-off device is recommended.

Permanent Magnetic lift-off Device Permavor®

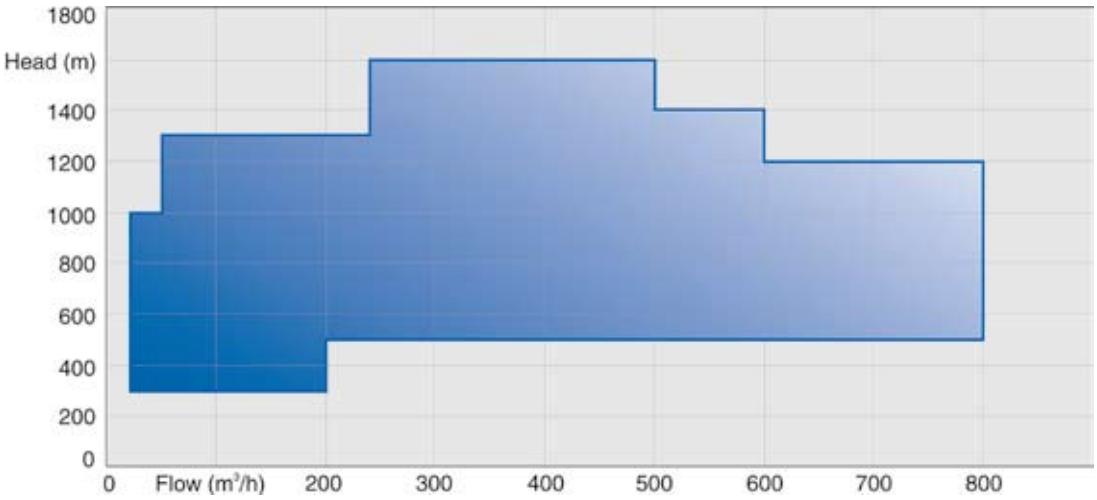


The exclusive Permavor® lift-off device prevents touching and wear of the disk/counter disk during operation at low speed, such as start up and shut down.

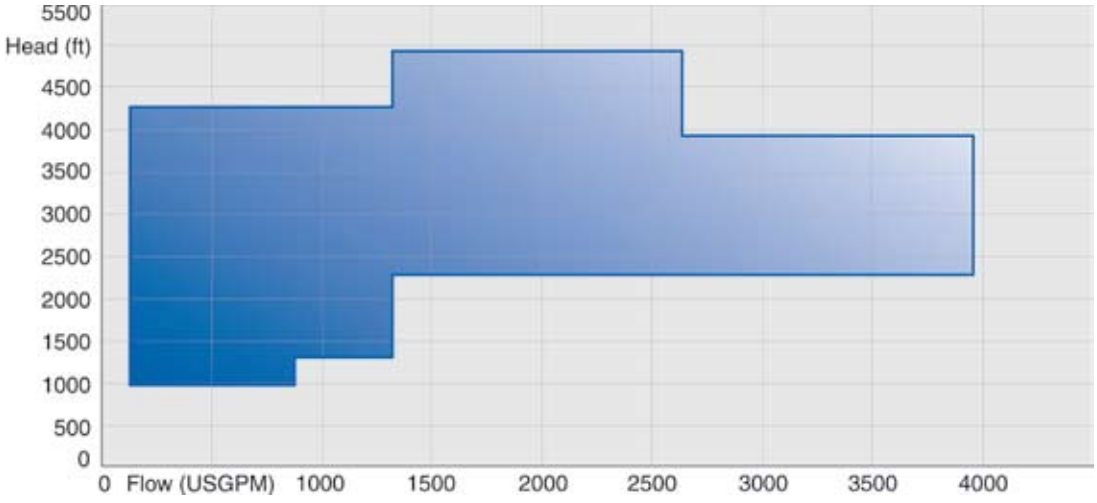
No eddy currents, no heat generation and mechanical contact during operation will occur. Permavor® provides an extra thrust bearing for operation at low speed without the requirement for extra lubrication or cooling normally associated with mechanical lift-off designs. Due to the contact-free operation, the service life is virtually unlimited.

The Permavor® device is located at the non-driven end of the bearing housing and shaft. The inner magnet carrier (2) and outer magnet carrier (1) are equipped with permanent magnet rings (3). The magnetic rings generate the axial lift-off force.

MC Performance Ranges



MC 50 Hz



MC 60 Hz

Operating Data

	MC 50 Hz	MC 60 Hz
Pump sizes	40 to 200 mm	1.5 to 8 inches
Capacities	20 to 800 m³/h	80 to 4,000 USgpm
Heads	up to 1,600 m	up to 5,500 feet
Pressures	up to 180 bar	up to 2,600 psi
Temperatures	up to 180° C	up to 355° F

SULZER

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