

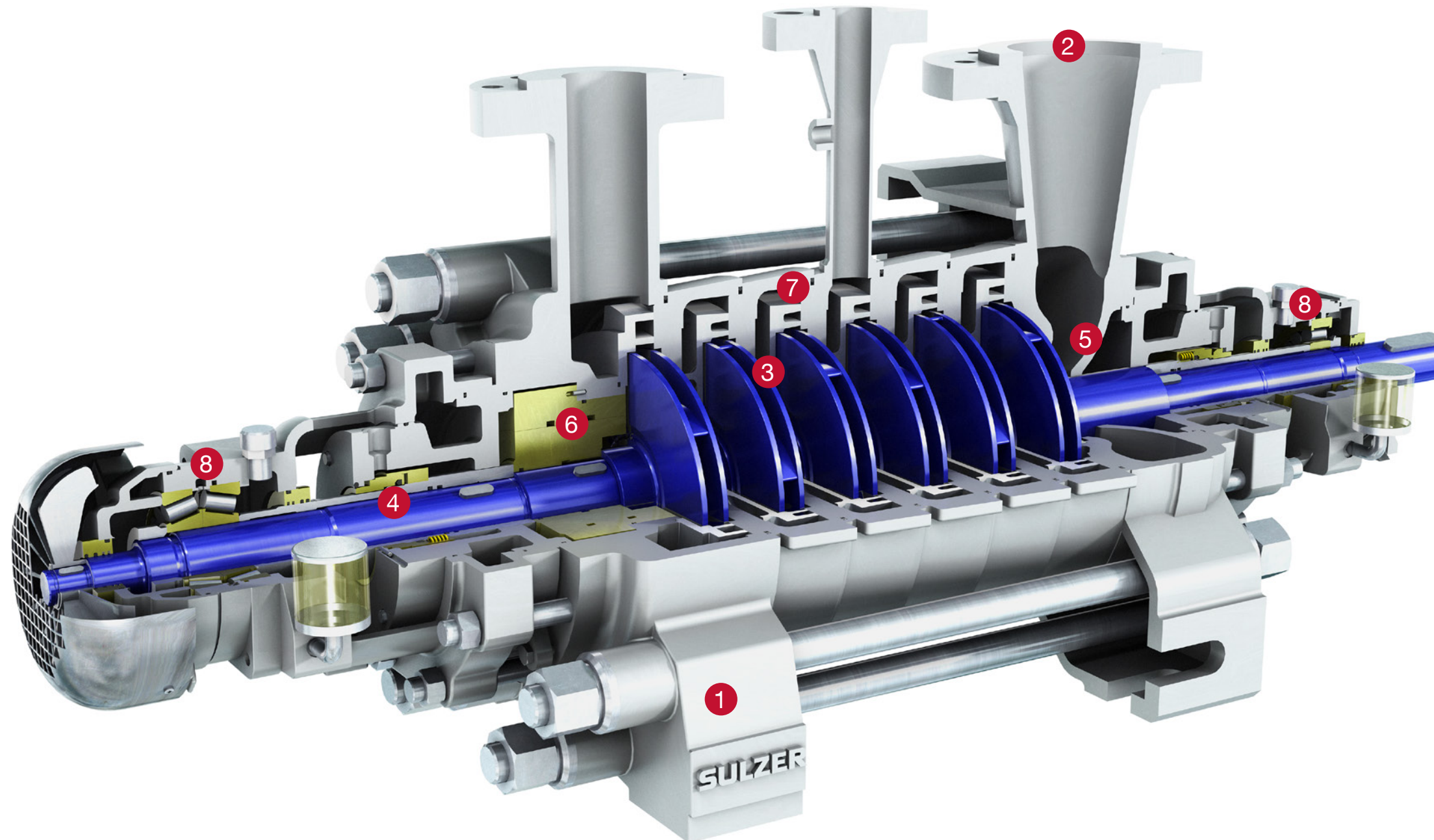
## **MC High Pressure Stage Casing Pump**



## Main Applications

The MC pump is primarily designed for power applications, such as auxiliary boiler feed, Nitrogen Oxides (NOx) abatement and fuel injection in combined cycle, boiler feed for biomass fired and industrial power plants and steam generator feed in concentrated solar. The design is ideal for:

- Boiler feed duties up to 180°C, pre-warming not required
- Condensate extraction service in power stations and industrial power plants (low pressure version with dedicated large sizes)
- Auxiliary services within combined-cycle and industrial power plants
- High pressure water in the general industry



## Features and Benefits

- 1 Casing support**
  - Foot or shaft centerline mounted for large sizes and high temperatures
- 2 Branches**
  - Large suction branches optimize inlet flow
  - Reduce noise levels through low branch velocities
  - Allow higher forces and moments
- 3 Impellers**
  - Modular hydraulics for high efficiency in a wide range of operating conditions
  - Low Net Positive Suction Head Required (NPSHR) first stage; double suction first stage can be provided for selected sizes
- 4 Shaft**
  - Stiff design resulting in critical speed higher than running speed and small shaft deflection
  - Areas subject to wear are protected
- 5 Wear rings**
  - Maintain high efficiency during pump life
  - Low maintenance cost, high availability and short downtimes
- 6 Hydraulic thrust balancing system**
  - Balance drum and axial thrust bearing designed for long life under extreme operating conditions
  - Optional balance disc and lift-off device available for frequent start-stop operation
- 7 O-rings**
  - Casing sealing by confined O-rings, therefore unaffected by rapid temperature variations and high pressures
- 8 Multiple bearing types**
  - Antifriction bearings for low cost and hydrodynamic bearings for higher energy services

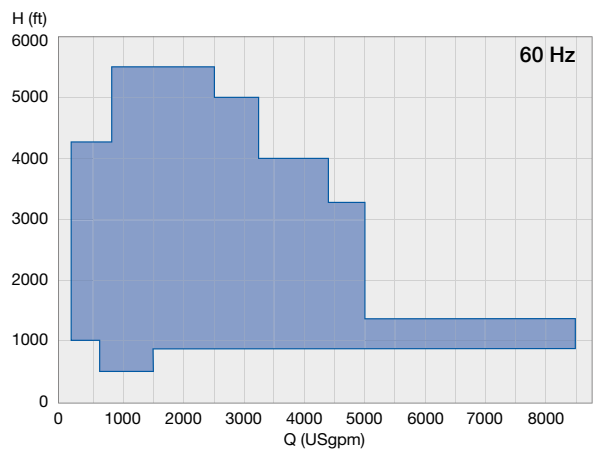
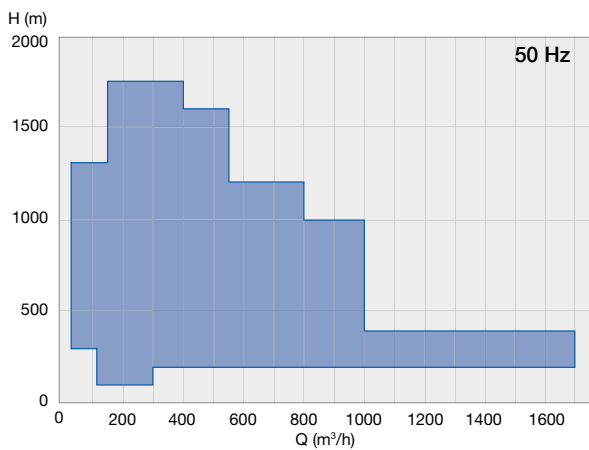
# MC High Pressure Stage Casing Pump



## Operating data

50 Hz		60 Hz
up to 350 mm	<b>Pump sizes</b>	up to 14 in
up to 1 700 m <sup>3</sup> /h	<b>Capacities</b>	up to 8 500 USgpm
up to 1 750 m	<b>Heads</b>	up to 5 500 ft
up to 180 bar	<b>Pressures</b>	up to 2 610 psi
up to 180°C	<b>Temperatures</b>	up to 355°F

## Performance ranges



## Materials

Pump part	Material
Suction casing, discharge casing	Carbon steel, chrome steel, duplex steel
Impellers	Carbon steel, chrome steel, duplex steel
Shaft	Chrome steel, duplex steel
Balancing system	Chrome steel, duplex steel

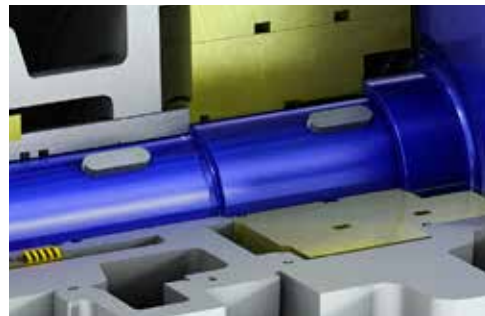


## NDE Bearing Arrangement with Balance Drum

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 the normal operating point are carried by the thrust bearing, typically a taper roller bearing.

The balance drum is suitable for:

- Pumps operating at the end of the curve, up to 130% of the best efficiency point
- Frequent stop start applications thanks to nearly wear-free device



## NDE Bearing Arrangement with Balance Disc

With the balance disc the axial force is completely compensated, therefore no axial thrust bearing is required. The disc designs are optimized for each hydraulic and size.

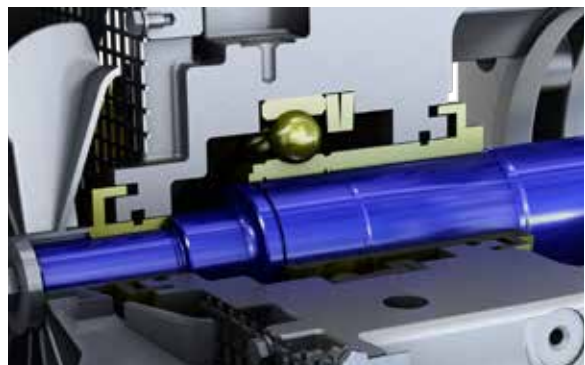
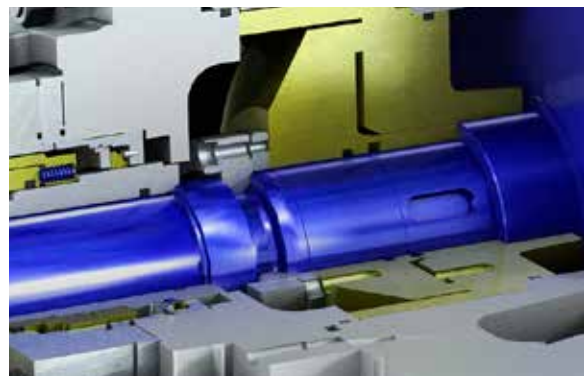
The balance disc is suitable for operation up to 120% of the best efficiency point (up to 130% for selected sizes).

For operation with frequent start and stops, the installation of a lift-off device is available as an option (either mechanical or magnetic).

### Mechanical lift-off device

Advantages:

- Prevents touching and wearing of the disc/ counter disc during operation at low speed, such as start up and shut down
- Self-controlling passive system
- Reduces load on balance disc under normal operation
- Integrated into the radial bearing housing; no additional power consuming bearings required





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