



Flow Equipment

Heavy-duty slurry pumps type Ensival Moret EMW



Main industries and applications

The EMW pump range has been designed considering historic field experience, coupled with the latest in CFD (computational fluid dynamics) technologies and finite element analysis, to create the latest in slurry pumping technology. The pump range offers high hydraulic efficiencies for optimized wear life performance in difficult solids handling applications.

The EMW pump range has been designed to ensure trouble-free operation in the most difficult processes in the following industrial applications:

- Mining and mineral processing
- Aggregates (sand and gravel)
- Power (bottom ash, lime slurry for flue gas desulphurization (FGD))
- Food industry
- Wastewater
- Chemical slurries



Key customer benefits

Sulzer's EMW pumps offer high reliability and durability. The heavy-duty design combined with high performance make the pumps more reliable while significantly reducing the total cost of ownership.

High durability

- Wide range of high-quality materials (metallic as well as rubber) ensures exceptional endurance against wear in all pumping applications for abrasive and/or corrosive liquids
- High durability due to great thickness of casing and impeller extends the lifetime of the pump bringing savings in spare parts consumption and total cost of ownership (TCO)

Maximum efficiency

- Optimized hydraulics ensure high efficiency and minimized wear in the largest operating range
- Internal clearance adjustments are easily and quickly realizable, which allows to obtain the best efficiency throughout the lifetime of the pump
- Low NPSH over the entire operating range avoiding cavitation of pumps

High reliability

- Heavy-duty bearings offer LB10 bearing life of more than 50'000 hours
- Only one bearing bracket per pump type, impermeable to water flushing IP 56

Minimized total cost of ownership (TCO)

- Low energy consumption due to high efficiency
- Low operational cost due to high reliability
- Easy and quick installation and maintenance
- Low spare parts cost due to high standardization between EMW-M and EMW-R

Features and benefits

EMW-R and EMW-M

1 Paired single row tapered roller bearings

- Handle both high radial and axial loads

2 Standard bearing protection by labyrinth ring

- Impermeable to water-flushing

3 New impeller mounting system

- Easy installation and removal of the impeller while providing strong and reliable power transmission

4 Reliable heavy-duty bearing unit

- Grease lubrication as standard (oil lubrication optional)
- Heavy-duty bearings offer LB10 bearing life of more than 50'000 hours
- Common and available bearings used

5 Self-aligning roller bearing

- Handles high radial load, capable of both direct and belt drive configurations

6 Shaft sealing

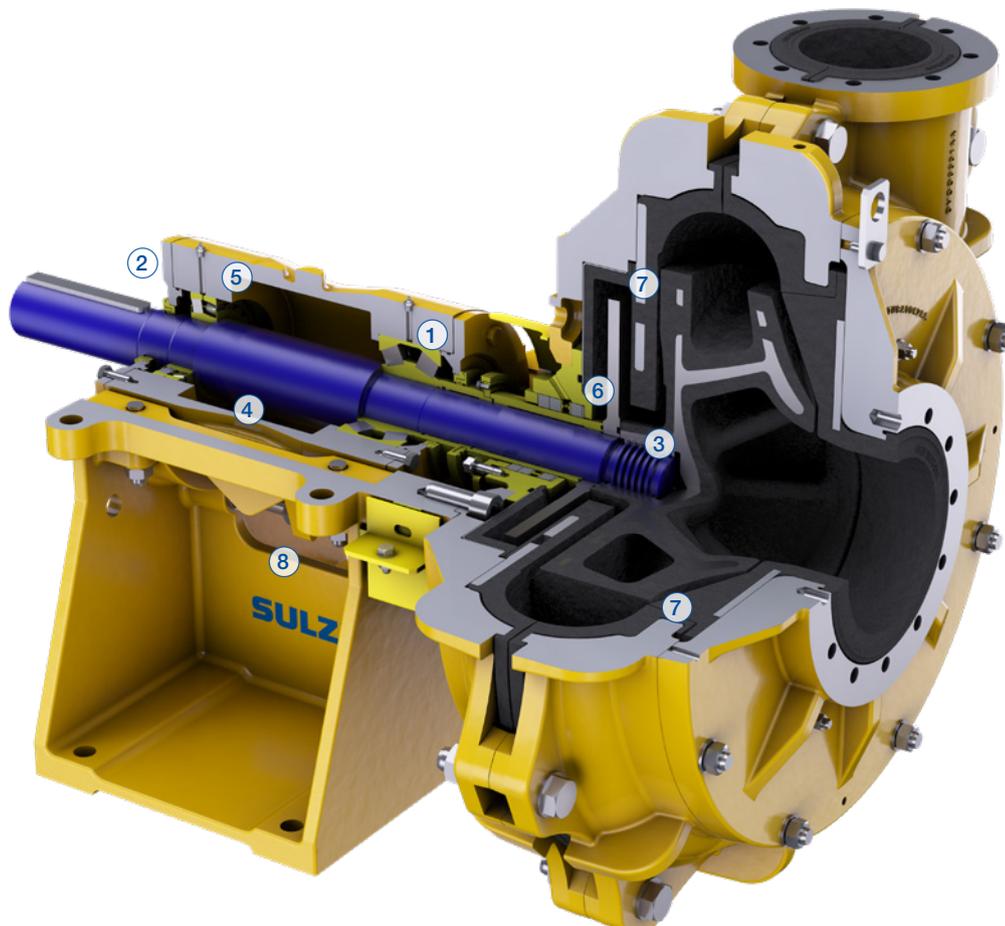
- Hydrodynamic expeller, mechanical seal and gland packing as an option

7 Front / back impeller clearing vanes

- For maximized flow characteristics for high efficiency and long wear life

8 Internal clearance adjustments

- Easily accomplished via adjustment screw and locking nut



Features and benefits

EMW-R

(rubber lined construction)

10 Rubber parts

- Natural rubber as standard (other types of rubber upon request)
- Liners contain inserts for strength and durability
- Closed impeller with optimized hydraulics ensures high efficiency and maximized wear performance over a wide range of services

11 Metal-to-metal casing seal

- For positive compression and locking of the liners into position



EMW-M (metal construction)

12 Metal-to-metal alignment with O-rings

- Provides easy alignment and positive sealing

13 Impeller

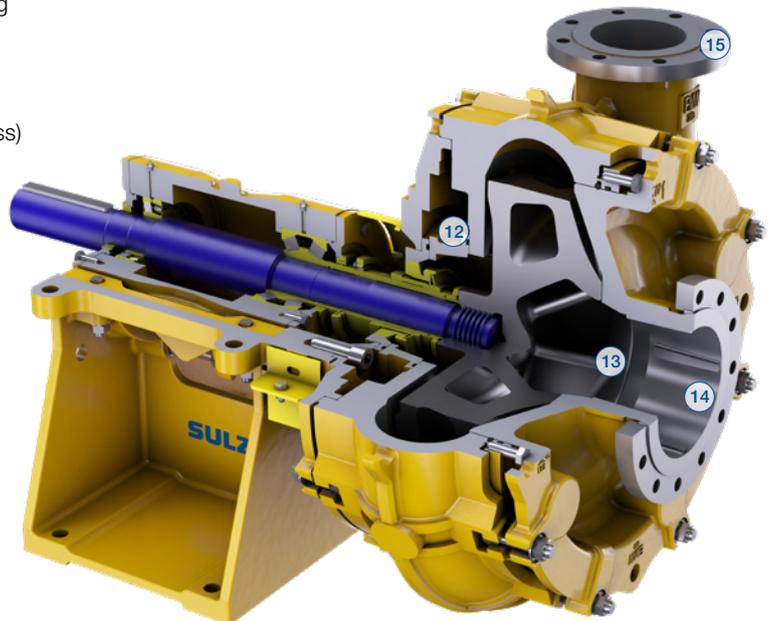
- Closed impeller provides high efficiency
- Long service life impeller (important thickness)
- Large flow passage

14 Suction nozzle design with anti-vortex ribs for improved wear

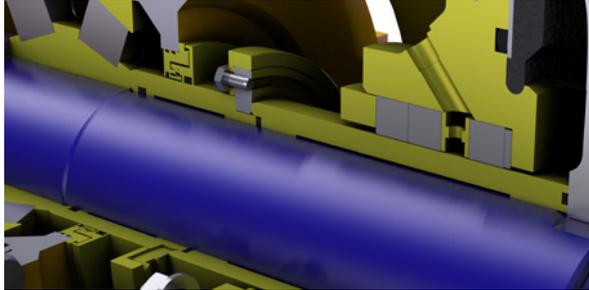
- For decreased wear to prevent rotation of the pumped liquid

15 Floating steel flange with patented locking system

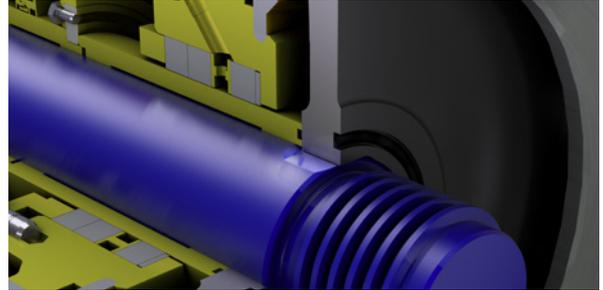
- For easy assembly and positive sealing



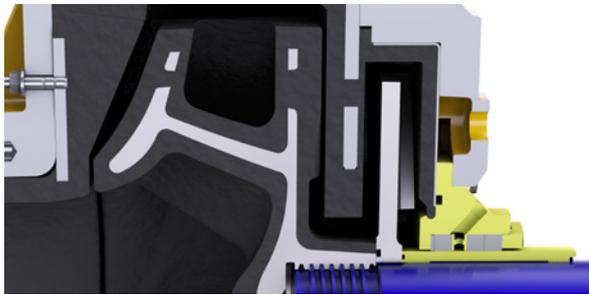
Construction details



Release collar allows quick and easy removal of the impeller (from size 200).



Engagement of expeller and shaft by means of machined surfaces – no key required (from size 100).



Separate and removable suction plate (from size 200).

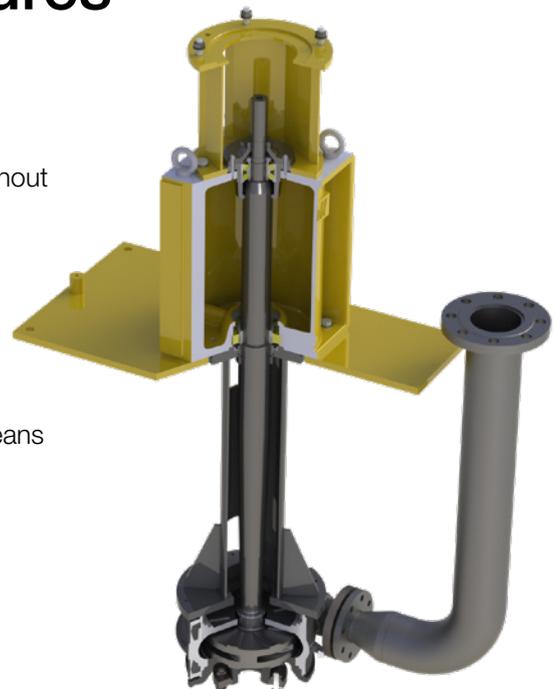


Clearance adjustment with the adjustable suction plate (from size 200).

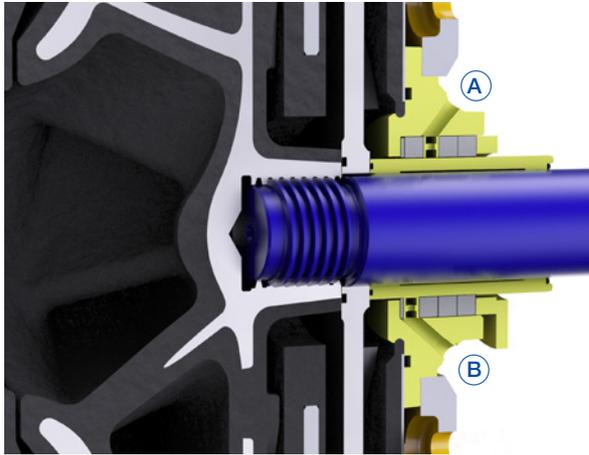
Additional design features

VA-EMW: Heavy-duty cantilever pumps

- Simple and robust design with ease of maintenance
- Cantilever design without submerged bearings and without shaft seal
- Shaft guided by grease-lubricated roller bearings located above the base plate and sealed off against contamination by a labyrinth ring
- Construction with the bearing assembly under the base plate is possible
- Discharge separate from the shaft line
- Length up to 1.8 m / 70.87 in. Can be extended by means of a suction pipe allowing the pump to operate with a liquid level under the impeller level
- Bearing assembly is sealed off to prevent bearing contamination by liquids or gases/vapors
- Can run dry without risk of damage
- Can be supplied with a V-belt drive
- Available in rubber and metallic versions

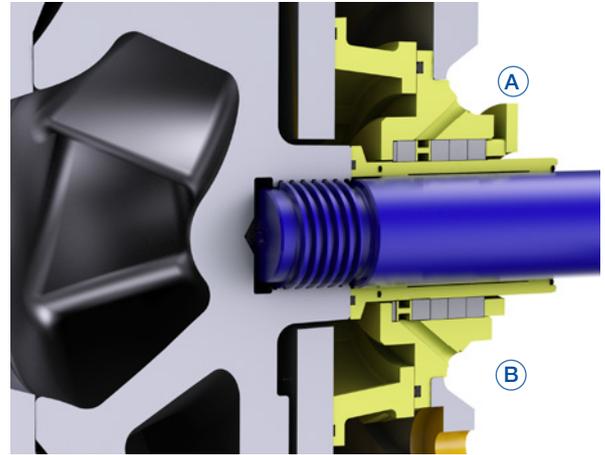


Shaft seals



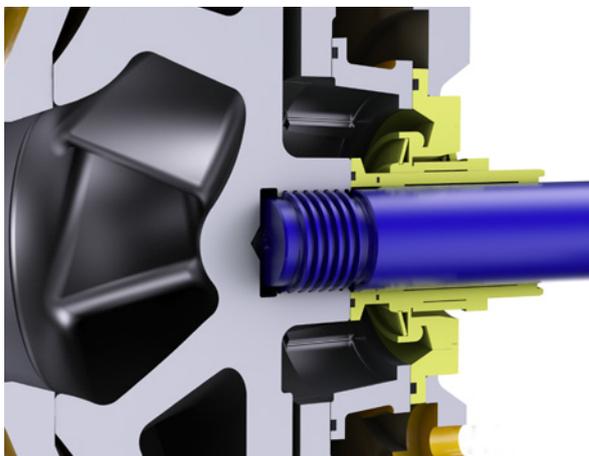
EMW-R hydrodynamic seal system and gland packing

- With low flushing flow rate (plan A)
- With high flushing flow rate (plan B)



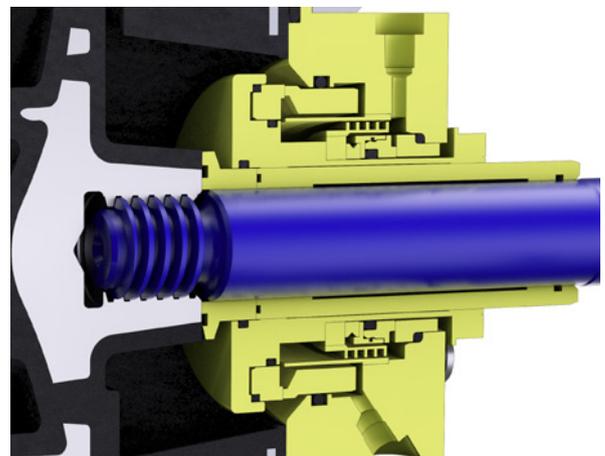
EMW-M seal by gland packing

- With low flushing flow rate (plan A)
- With high flushing flow rate (plan B)



Single mechanical seal by cartridge

- The seal faces are lubricated by the pumped liquid
- The extension seal chamber is equipped with antivortex bars to avoid the rotation of the pumped liquid and to reduce wear



Double cartridge mechanical seal by cartridge

- The seals faces are lubricated by an external source to provide a clean pressurized barrier fluid to a dual pressurized seal
- The extension seal chamber is equipped with antivortex bars to avoid the rotation of the pumped liquid and to reduce wear

Specifications

Materials

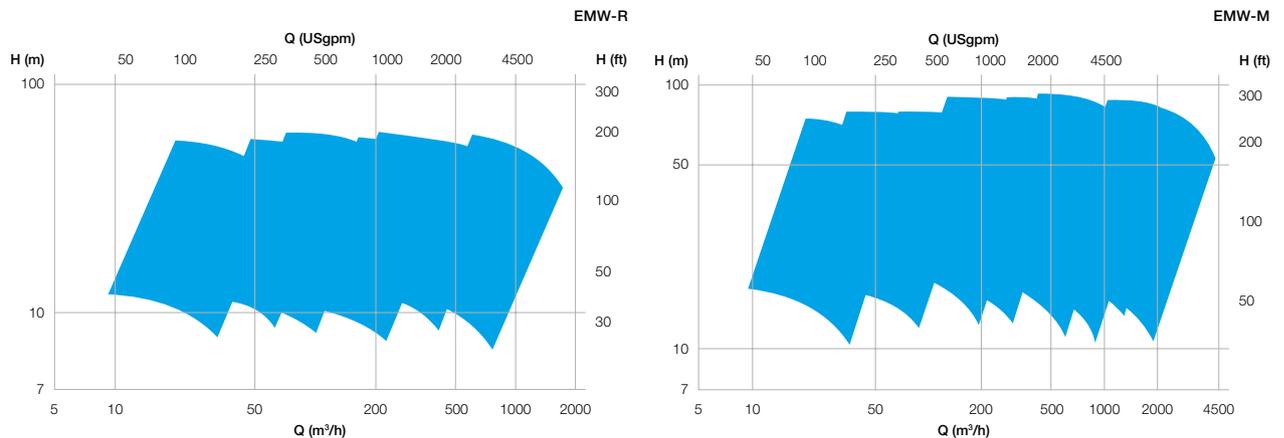
| Material alternatives for pump main parts | | | Nominal chemical composition % | | | | | |
|---|------------------|---------------|--------------------------------|-----------|----------|----------|----------|----------|
| Description | Code | Internal code | C | Cr | Ni | Mo | Cu | Si |
| Cast iron ¹⁾ | ASTM A48 CL 35 B | | - | - | - | - | - | - |
| Chromium iron ²⁾ | ASTM A532 IIIA | EXR | 2.0-3.3 | 23.0-30.0 | 2.5 max. | 3.0 max. | 1.2 max. | 1.5 max. |
| Chromium iron ²⁾ | Gx100CrMo30-2 | CRM | 0.9-1.1 | 29.0-31.0 | 0.4 max. | 1.9-2.2 | - | 2.0 max. |

| Material alternatives for other parts | | | | |
|---------------------------------------|-------------------------------|-----|--|--|
| Lining of EMW-R | Natural rubber | NR | Used at temperature of max +60°C / +140°F | |
| | Chlorosulfonated polyethylene | CSM | Used at temperature of max +100°C / +212°F | |
| | Polychloroprene | CR | Used at temperature of max +100°C / +212°F | |
| | Butyl | IIR | Used at temperature of max +100°C / +212°F | |
| Gasket and o-ring material | EPDM | | Ethylene propylene | |
| | VITON | | VITON | |

Operating data

| | EMW-R 50 Hz | EMW-R 60 Hz | EMW-M 50 Hz | EMW-M 60 Hz |
|----------------------------------|-------------------------------|-------------------|-------------------------------|--------------------|
| Capacities | up to 1'450 m ³ /h | up to 6'385 USgpm | up to 4'000 m ³ /h | up to 17'600 USgpm |
| Heads | up to 55 m | up to 180 ft. | up to 95 m | up to 312 ft. |
| Pressures | up to 14 bar | up to 203 psi | up to 16 bar | up to 232 psi |
| Temperatures | up to 110°C | up to 230°F | up to 110°C | up to 230°F |
| Maximum speed of rotation | up to 2'600 rpm | up to 2'600 rpm | up to 3'000 rpm | up to 3'000 rpm |

Performance range



CELEBRATING

50

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