



Rodelta LSM

The LSM series of pumps are suitable for clean or slightly contaminated liquids. The compact construction and ability to position the suction and discharge connections in 45° steps from each other, offers flexible mounting when space is limited. The LSM is a close coupled version also offering top pull out and is suitable for temperatures up to 80°C.



Features:

- Vertical design, pump can be easily installed. No foundation baseplate required.
- Closed Impeller with diffuser casing, single or Multi stage
- Diffuser/impeller combination reduces radial loads; Easier to match to customer system; Optimizes efficiency
- Robust construction due to low pump rotor load, minimum shaft deflection, smooth running, high availability, reduced stock of spares
- Low noise emissions
- High hydraulic efficiency
- Hydraulic performance to DIN 24255
- Space saving construction
- No alignment required when installing the pump thereby reducing installation costs

Specifications:

- Delivery size up to 250mm
- Capacity up to 3500m³/hr
- Head up to 220m per stage
- Suitable for liquid Temperature: Up to 80°C
- Sealing Arrangement: Gland packing or with mechanical seals
- Flanges Drilling Standard: Flanges can be as per BS EN/ DIN/ANSI/ASA standard

Applications:

- Drinking Water
- Cooling Water
- Process Water
- Clean & lightly contaminated liquids
- (Drinking) Water Pumping stations
- On board ships (confined spaces)
- Chemical & Petrochemical plants
- Booster pumping stations

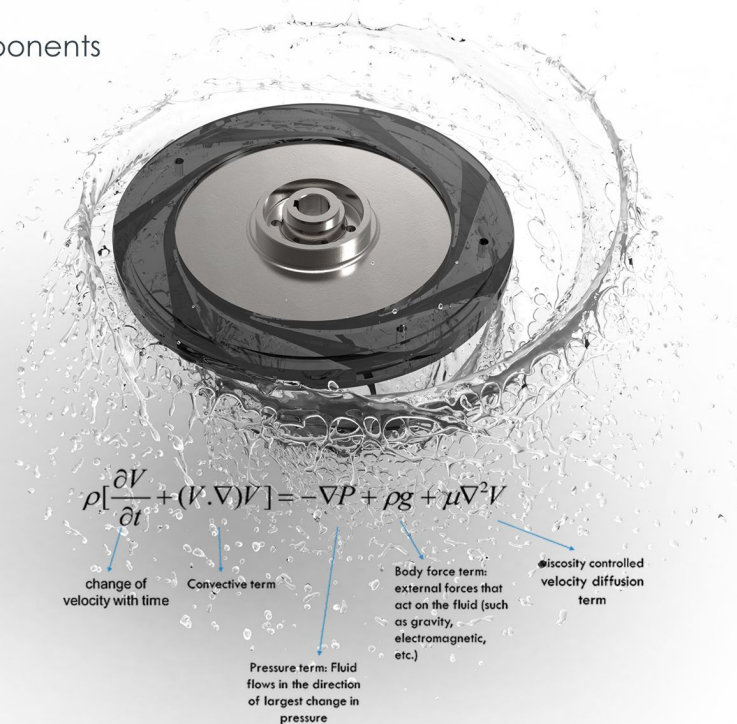




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Constructional features:

- Closed couple pump construction with impeller directly mounted on extended motorshaft.
- Low pump rotor load
 - Radially due to the diffuser design
 - Axially due to replaceable wear rings on the impeller and pump casing as well as balancing holes in the impeller
- Minimum shaft deflection
 - Stiff pump shaft, with grease lubricated ball bearings designed for minimum life time of 20000 hours
- Smooth running
 - The pump is supported by a stable foot
 - The sturdy shaft runs in well dimensioned bearings and the long throttling tracts between the wear rings also stabilized the running of the rotor
- High availability
 - Due to the long running life of the pump components
- Reduced stock of spares
 - Due to the modular pump design
- seal dimensions to DIN 24960
- Nozzle positioning in steps of 45°
- Bearings grease lubricated
- Top pull out for LS
- Renewable wear rings
- Compact build / Space saving design



Why using diffuser technology in LSM pumps?

The working principle of centrifugal pumps is based on adding energy to the working medium using a rotating impeller. This process, in addition to increasing the static pressure, also increases the velocity of the fluid. The added energy in the form of velocity (or dynamic pressure) can be partially converted into static pressure by properly slowing down the fluid. This is often done by using a volute (link to volute page), which is a spiral-formed casing around the impeller, collecting and guiding the fluid towards the discharge pipe while gradually decreasing its velocity.

A volute pump casing combines two functions: providing the hydraulic flow path and the pressure casing for the fluid. In diffuser pumps, these functions are split into two separate parts. A casing (or collector) is used for creating the pressure boundary, while the velocity-pressure conversion is done by employing a diffuser, which is a ring with multiple diverging channels, placed around the impeller. This provides more guidance for the decelerating flow which can be beneficial from several points of view.

Especially for pumps made for operation at relatively low flow rates, diffuser pumps outperform volute pumps efficiency wise. In addition to the higher maximum efficiency, the efficiency does not collapse as fast when operating in part load conditions (See figure 1)

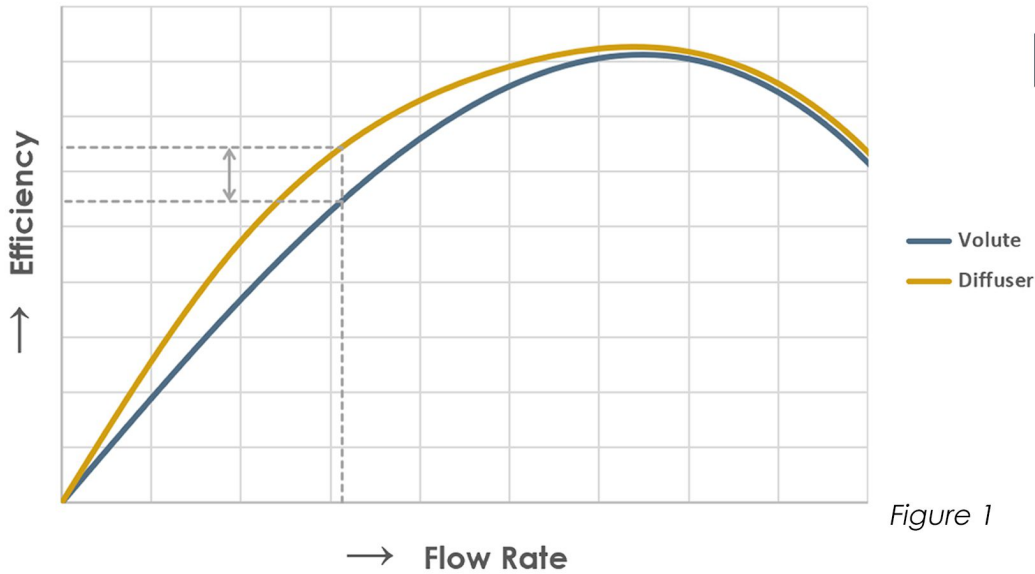


Figure 1

Furthermore, diffuser pumps mostly have higher head rise to shut-off (HRTSO) and greater steepness and stability of the head curve, which is especially required for pumps operating in the API market and for parallel operation (see figure 2).

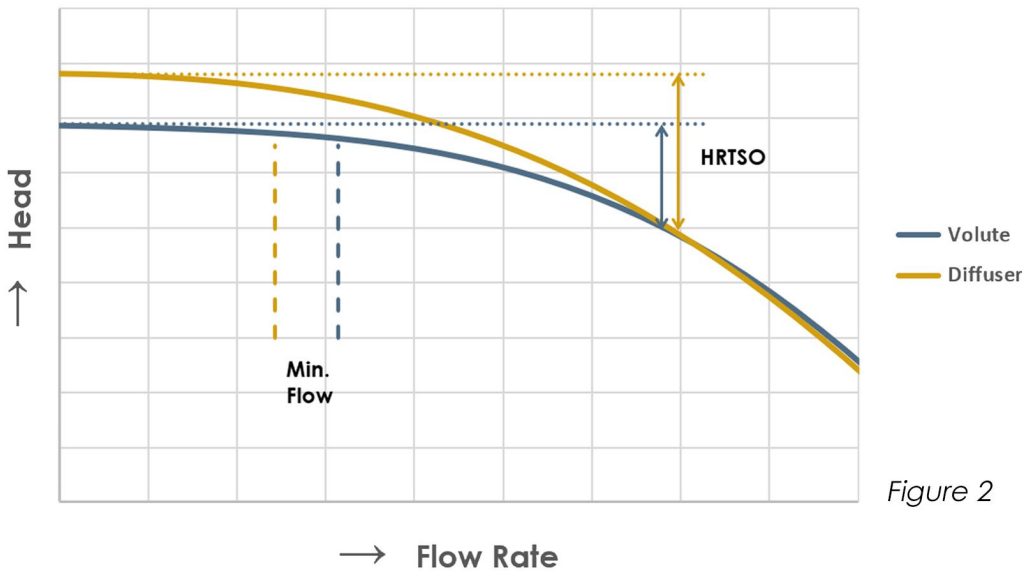


Figure 2

Diffuser pumps are not just advantageous from an efficiency standpoint. The multi-channel diffuser geometries show more axial symmetry than the asymmetric volute shapes. As this axial symmetry is also present in the pressure distribution of the flow field, most of the radial loads are cancelled out (see figure 3)

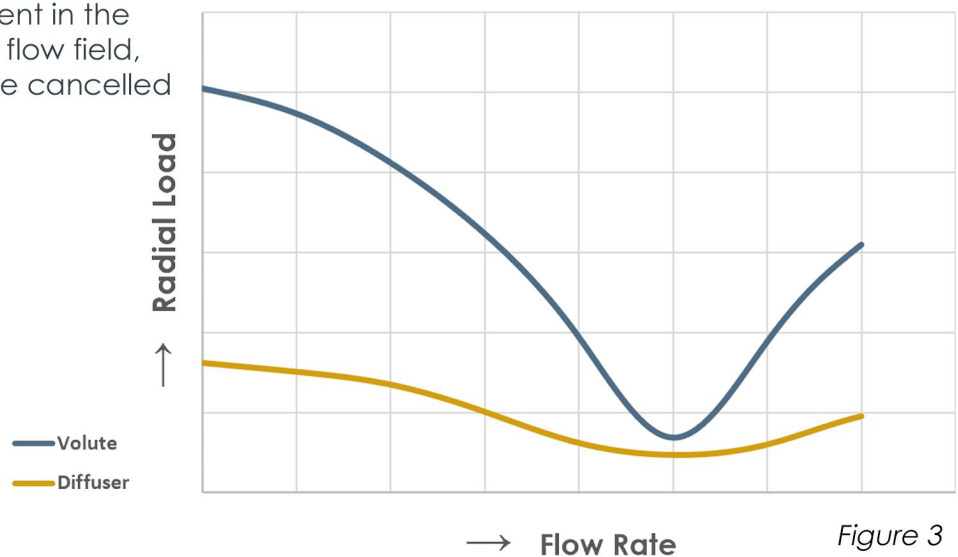


Figure 3

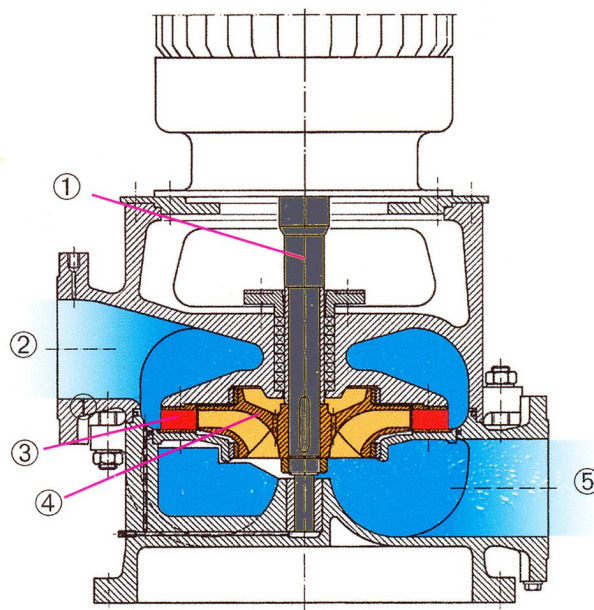
Also, due to a series of diffuser vanes as opposed to a single volute tongue, pulsations from the passing impeller blades and other unsteady flow phenomena are greatly reduced. Lower unsteady behavior means lower vibration and noise levels, which is especially noticeable at off-design operating conditions. The reduced loading and vibrations in turn lead to longer mean time between maintenance, mean time between failure and lower minimum continuous safe flow rates. Although diffuser pumps are generally more expensive than their volute counterparts, the higher investment can be easily returned by the longer life-cycle of the pump, lower spare part cost and the significant reduction in down-time of the entire process.

Another advantage arises from the fact that the diffuser is a separate part from the pump (pressure) casing. A lot of design flexibility is introduced because a single casing can fit a wide range of diffuser geometries. As the diffuser channels are machined, they do not suffer from the limitations of a casting process, which is the case for volute casings. This also provides the opportunity to make custom diffusers for every order, which can be done very rapidly. Doing this for a volute would be an almost impossible task, as designing a volute is more complex and casting patterns would have to be made and stored for every single volute. This means that volute pumps will mostly be a compromise: due to the limited number of volute pumps in a range, the customer duty point will deviate from the best efficiency point of the pump. This problem can be circumvented using diffusers. By trimming the impeller diameter and creating a custom diffuser geometry, the required pump performance can be achieved where the best efficiency point is located exactly where the customer needs it. This even provides possibilities for retrofitting existing diffuser pumps with a new impeller and/or diffuser, in order to completely change the duty point of the pump, increasing the life cycle of the pump even further.



Machined diffuser

- ① Shaft
- ② Discharge casing
- ③ Diffuser
- ④ Impeller
- ⑤ Suction casing



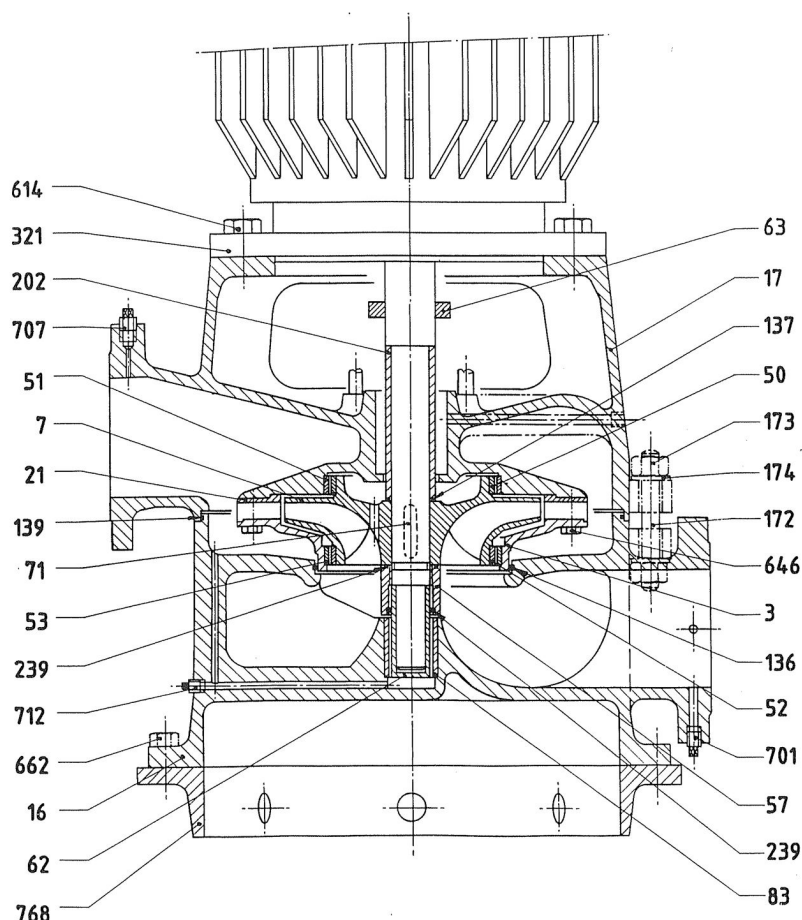


Type LSM						
	L-4	L-5	L-6	L-8	L-10	L-12
DN	100	125	150	200	250	300
D ₁	500	540	640	740	880	1020
H ₁	175	175	170	275	275	300
H ₂	175	175	210	355	415	500
H ₃	124	124	168	242	332	-
H ₄	1525	1525	1970	2230	2355	2410
K	330	330	370	425	485	600
H ₄ = Depending on motor frame size (indication)						
* In- and Outlet flange equal diameter						



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Cross section LSM:



3	Intermediate cover
7	Impeller
16	Suction casing
17	Discharge casing
21	Diffuser
50 / 52	Wearing
51 / 53	Wearing
57	Impellernut
62	Shaft sleeve rad. bearing
63	Thrower
71	Key
83	Bearing bush
136	O-Ring
137	O-Ring
139	O-Ring
172	Tie bolt
173	Nut
174	Disk
202	Shaft sleeve
239	O-Ring
293	O-Ring
321	Motor
614	Screw
646	Screw
662	Screw
701	Plug
707	Plug
712	Plug
768	Foundation ring

Features

Single or multi stage, enclosed impeller, closed coupled version of LS

Capacity @ BEP

Upto 3500 m³/hr

Head

Upto 220 m

Temperature range

-20 to 80 °C

Discharge pressure

PN 16 / PN 20

Material (Casing/Impeller)

Cast Iron, Bronze, SS, Duplex, Super Duplex

Nozzle Orientation (suc/dis)

Vertical execution - 45° or 90° discharge mounting options

Standard Motor Sync. Speed

750 / 1000 / 1500 rpm

Options

Gland packing / Mechanical Seal

Flange drilling standard

BS EN/DIN/ANSI /ASA