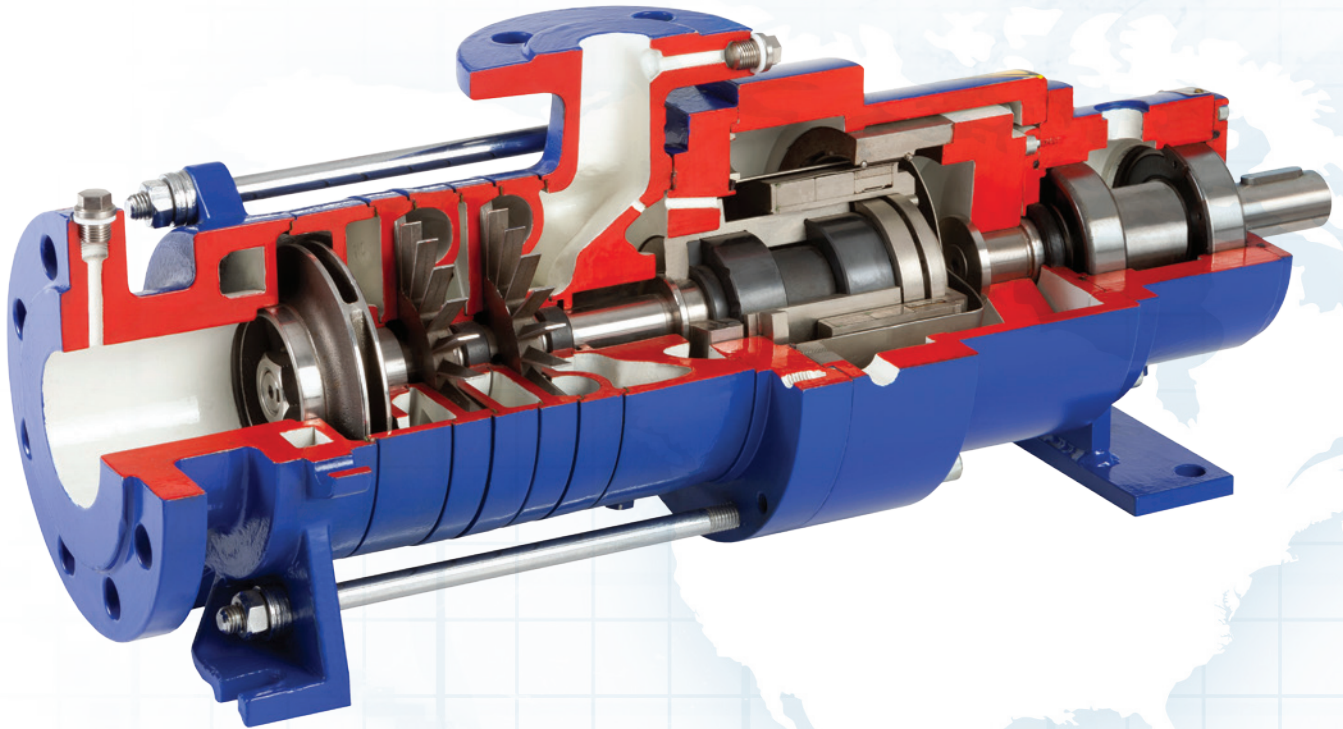


# SERO<sup>®</sup> PumpSystems

Inspiring technology. Meeting your needs.

Low NPSH  
Sealless Pump Solutions



*Sealless Side Channel Pumps  
Designed for Zero Emission Services*

# SEMA<sup>™</sup>



Engineered to meet demanding process conditions.

# SEMA™

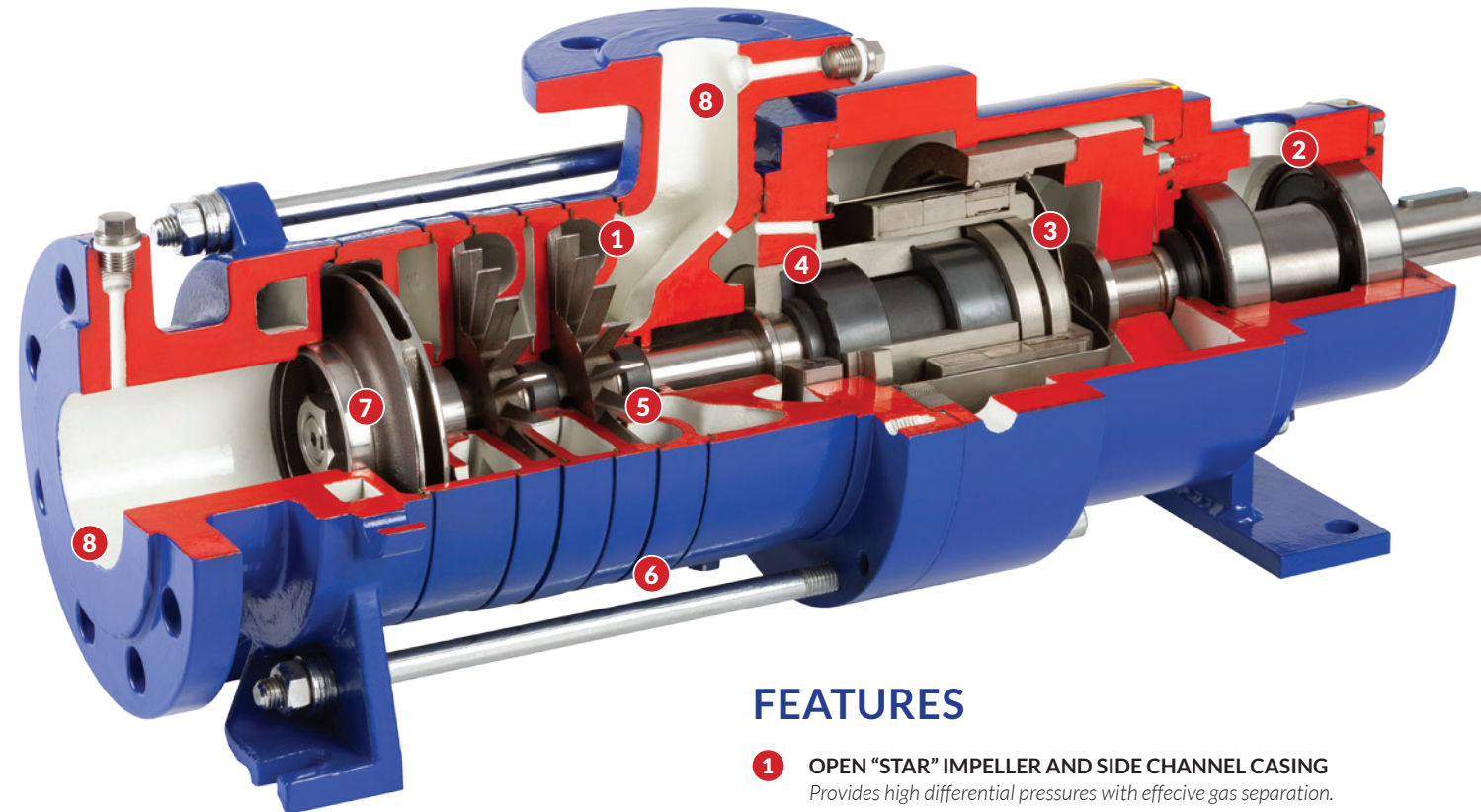
(Magnetically Driven Side Channel Pump)

## THE SERO ADVANTAGE

Headquartered in Germany, SERO PumpSystems is the world's only exclusive manufacturer of side channel pumps. Since the issuance of their first side channel pump patent in 1929, SERO has continued to revolutionize the industrial pump industry. Specializing in individually configured pumping systems, SERO has consistently been on the leading edge of side channel pump design and technology.

## SIDE CHANNEL PUMP TECHNOLOGY

Side channel pumps fill the hydraulic performance void between positive displacement pumps and centrifugal pumps. Fully open "star" impellers interact with the side channel casing creating an intense transfer of energy to the pumped liquid or liquid / gas mixture. The corresponding pressure increase (pump head) equals 5 to 10 times the amount generated by a similar size centrifugal pump at the same RPM. Additionally, the centrifugal effect of the impeller combined with the unique SERO internal flow patterns, allow our pumps to effectively handle fluids with gas entrainment of up to 50% and also allows them to be self-priming.



## SERO MODEL SEMA

### Sealless Pumps Engineered for a Wide Range of Industrial Services

Model SEMA is a proven state-of-the-art multi-stage, radially split segmented pump that combines the functionality of a low NPSH first stage impeller with the performance of a side channel design. The SEMA features include:

The SEMA features include:

- Hydraulic Flexibility - Low Flows with High Head
- Exceptional Differential Pressures Developed at 1750 RPM
- Steep Performance Curves for Precise System Control
- Ability to Pump Process Fluids with Entrained Gas
- Low NPSH Requirements to Prevent Cavitation
- Self-priming
- Sealless, Zero Emission Mag Drive Design
- Modular Construction with Standardized Parts
- "Crafted In Germany" for Increased Reliability and Lowest Cost of Ownership

## FEATURES

- 1 OPEN "STAR" IMPELLER AND SIDE CHANNEL CASING**  
*Provides high differential pressures with effective gas separation.*
- 2 OUTBOARD RADIAL BEARINGS**  
*Support drive magnet system and absorbs radial forces*
- 3 SEALED MAGNETS IN THE INNER ROTOR**  
*Complete protection from chemical attack*
- 4 LARGE CIRCULATION PORTS**  
*Increased product circulation offers efficient heat removal*
- 5 IMPELLER BALANCE HOLES**  
*Axial thrust forces are effectively balanced.*
- 6 MULTI-STAGE MODULAR DESIGN**  
*Allows for easy maintenance and standardized spare parts inventory.*
- 7 RADIAL VANE IMPELLER**  
*First stage suction impeller provides low NPSH requirements.*
- 8 PRESSURE CASING**  
*Pressure containing components rated at 580 psi (40 bar).*

## SERVICES

- Low NPSH Charge Pump
- Reflux & Off-spec recycle pumps
- Refrigerant Supply / Distribution
- LPG Bottle Filling
- Scrubber Bottoms Pumps
- SCR Ammonia Injection Pumps



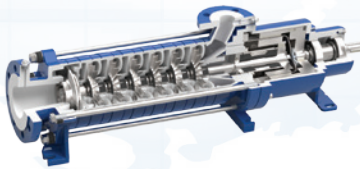
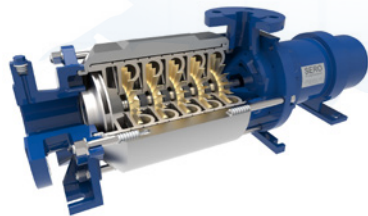
## TYPICAL PROCESS LIQUIDS

- **Volatile, high vapor pressure fluids**
- **LPG:** Propane, Butane, Isobutane
- **Refrigerants & Propellants:** Propane, Hydro-fluorocarbon refrigerants, CO2
- Light crude oil and other light hydrocarbon process fluids
- **Specialty chemicals:** Butadiene, styrene, caustic, light acids
- **Ammonia:** Anhydrous and Aqueous
- Amine

Inspiring technology. Meeting your needs.  
Engineering Expertise | German Quality | Reliability

**SERO**<sup>®</sup>  
PumpSystems

## SEMA Design Options

SEMA "TT" Low Temperature Design	SEMA "SB" Close coupled / Block Design	SEMA "BC" Barrel Design
Allows for temperatures down to -75 deg F (-60 degC).	Utilizes a C-face NEMA motor. Eliminates alignment issues. Smaller dimensional footprint.	"Barrel" totally encapsulates liquid end of the pump providing dual containment.
		

## SEMA Engineering Details

SIZE	110	220	330	440	550	660
NUMBER OF STAGES	1 TO 8	1 TO 8	1 TO 8	1 TO 8	1 TO 8	4
SUCTION FLANGE INCHES (MM)	1 1/2 (40)	2 1/2 (65)	2 1/2 (65)	3 (80)	4 (100)	4 (100)
DISCHARGE FLANGE INCHES (MM)	3/4 (20)	1 1/4 (32)	1 1/4 (32)	1 1/2 (40)	2 (50)	2 1/2 (50)
MAX RPM (60HZ)	1750					
MAXIMUM WORKING PRESSURE PSI (BAR)	580 (40)					
CAPACITY RANGE, GPM (M3/H)	6 - 12 (1.4-2.9)	13 - 24 (2.9-5.4)	26 - 40 (5.8-9)	47 - 64 (10.6-14.5)	76 - 106 (17.3-24.1)	130 - 186 (29-42.2)
HEAD RANGE @ MIN FLOW, FT (M)	100-740 (30-225)	140-1080 (40-330)	110-790 (35-240)	105-800 (32-250)	130-1000 (40-300)	160-600 (40-183)
TEMPERATURE RANGE OF (OC)	-75° - 410° (-60° - 210°)					
MAXIMUM ALLOWABLE ENTRAINED VAPOR	50%					

## Material Options

Casings:	Impellers:	Mag Drive Containment Shell:
<ul style="list-style-type: none"> <li>• Ductile Iron</li> <li>• Duplex Stainless Steel</li> </ul>	<ul style="list-style-type: none"> <li>• Martensitic Steel</li> <li>• Stainless Steel</li> <li>• Bronze</li> </ul>	<ul style="list-style-type: none"> <li>• Stainless Steel</li> <li>• Hastelloy</li> <li>• CFK</li> </ul>

**SERO**<sup>®</sup>  
PumpSystems

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