

Dual-Jacketed ASME 300L Reactor

316L-Grade Stainless Steel | Model USALAB-SR300 | ASME Section VIII, Div. 1 (U-Stamp)



The USA Lab Dual-Jacketed ASME 300L 316L-Grade Stainless Steel Reactor is built for demanding laboratory, pilot-scale, and industrial processing applications. Constructed from corrosion-resistant 316L stainless steel, this reactor is designed for durability, sanitary performance, and long-term reliability.

Its dual-jacketed design allows for efficient heating and cooling control, making it ideal for mixing, reaction, crystallization, extraction, and temperature-sensitive processing workflows. With ASME-rated construction, this 300L reactor provides a dependable solution for facilities that require higher safety standards, pressure-rated performance, and professional-grade stainless steel equipment.

The system includes top and bottom Tri-Clamp connections, integrated sight glass options, tube-in-shell condensing sections, and collection assemblies for advanced process control and customization.

SHELL VOLUME 300 L Full Volume	SHELL WORKING PRESSURE ≤ 250 PSI	MATERIAL 316L Stainless Steel	WORKING TEMPERATURE ≤ 200°C
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Technical Specifications

Parameter	Shell	Inner Jacket	Outer Jacket
Working Pressure	≤250 PSI	≤87 PSI	≥-14.7 PSI
Design Pressure	260 PSI	88 PSI	FV
Working Temperature	≤200°C	≤200°C	≤200°C
Design Temperature	200°C	200°C	200°C
MAWP at Design Temp	250 PSI	87 PSI	FV
MDMT at Design Pressure	-40°C	-40°C	-40°C
Full Volume	0.3 m³ 300 L	0.089 m³ 89 L	0.041 m³ 41 L

Connections & Process Detail	Specification
Top Connections	4 x 1.5" Tri-Clamp 2 x 3" Tri-Clamp 2 x 6" Tri-Clamp
Bottom Connections	6" Tri-Clamp
Inner Jacket Connection	1.5" Tri-Clamp
Outer Jacket Connection (Vacuum Only)	1/2" Compression
Tube-in-Shell Material	316L Grade Stainless Steel
Tube-in-Shell Tubes / Area	91 Tubes 0.9 m² Condensing Area
Tube-in-Shell Connections	2 x 1.5" Tri-Clamp 1 x 3" Tri-Clamp 1 x 2" Sight Glass
Collection Specifications	316L Grade Stainless Steel 50L Volume 1 Collection 6" Tri-Clamp 2 x 1.5" Tri-Clamps

USA-SR300 Mixer Specifications

Standard vs. Explosion-Proof Configuration

Spec	Standard TCM033VDD-41658	Explosion-Proof TCM033XDD-41662
MOTOR		
Motor Type	TEFC, IP55	XPFC inverter duty
Horsepower	1 HP	1 HP
Voltage	208–230/460V, 3Ph	208–230/460V, 3Ph
Motor RPM	1765	1760
Turndown Ratio	5:1	20:1
XP Class Rating	—	C1D1 Gr C&D; / C2D1 Gr F&G; · T4
CONTROL		
Controller	1 HP VFD, digital RPM readout	1 HP VFD, digital RPM readout
Enclosure	NEMA 4X outdoor rated	NEMA 4X outdoor rated
VFD Placement	Wired & mounted to motor	Mounted outside XP area
Local XP Control Pkg.	—	Yes
Control Input	120V / 1Ph	120V / 1Ph
Shaft RPM Range	353–1765	88–1760
No-Run Zone (RPM)	746–1119	746–1119
Cord & Plug	Included	Included
SHAFT & IMPELLER		
Shaft Diameter	0.625"	0.625"
Shaft Length	28" exposed	28" exposed
Shaft Material	17-4 H900 hardened SS, no polish	17-4 H900 hardened SS, no polish
Impeller Type	5.5" high efficiency impeller (HEI)	5.5" high efficiency impeller (HEI)
Impeller Blades	3-blade, low shear, 316SS, welded blades, deburred, mill finish, set screw	3-blade, low shear, 316SS, welded blades, deburred, mill finish, set screw
MOUNT, SEAL & FINISH		
Mount	3" sanitary tri-clamp, tapered CIP recess	3" sanitary tri-clamp, tapered CIP recess
Wetted Material	316SS wetted / aluminum externals / carbon steel hardware	316SS wetted / aluminum externals / carbon steel hardware
Bearing	SS bearing; carbon steel coupler	SS bearing; carbon steel coupler
Seal	Dual food grade PTFE blend double lip seals w/ silicone anti-rotation O-rings	Dual food grade PTFE blend double lip seals w/ silicone anti-rotation O-rings
Pressure/Vacuum Rated	Yes	Yes
Wetted Surface Finish	Mill	Mill

Verify pressure, temperature, gasket, clamp, and process compatibility before operation. Professional installation and operation by trained personnel is recommended.

Ready to spec a reactor for your process? Our engineers can help size jacket volumes, mixer torque, and condensing capacity to your workflow.

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