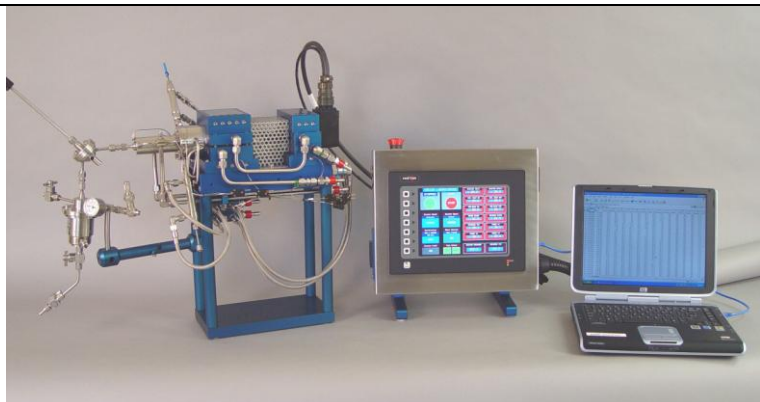




Magellan[®] Reactor

BENCHTOP QUICK SCREENING – EXTERNAL HEAT EXCHANGER



The STT[®] system is a combination of patented processes and equipment for the manufacture of specialty chemicals as well as generic and branded pharmaceuticals. The Magellan[®] Series of reactors is well suited for research and development labs.

The Magellan[®] type reactor is designed for early stage research where there is a need to quickly identify and confirm the validity of a reaction. The Magellan[®] series was developed to use small amounts of chemicals, so it is a good choice for applications where the reactants are expensive, such as pharmaceutical applications, or are hazardous (explosive or toxic). Experiments can be performed in a minimum amount of time and usually with only the simple support equipment typically found in most laboratories. Even though the reactor is small, it has been constructed using the same design principles as the Innovator[®] Series of pilot production reactors. Discoveries can be easily scaled to the larger equipment to supply larger amounts of product for testing or client evaluation.

On-line data logging is included in the system and can be connected to a company's internal customized software logging system. Customized connections can be provided to interface with real time analysis equipment such as HPLC or IR.

Dimensions	W x L x H
Foot Print:	10" x 22" x 8" 25.4 cm x 55.9 cm x 20.3 cm
Weight:	50 lb 22.7 Kg

Electrical Components Specifications	
Motor RPM and Power Requirements (208-230V preferred)	max. 12,000 RPM 208-230 V, 1 Phase, 20 A ----- max. 6,000 RPM 115V, 1 phase, 20 A
Motor Classification	DC Servo ^(a) Brushless
Control Panel	Intrinsically Safe ^(a)

Materials of Construction Options (for wetted surfaces)	
316L SS Titanium	Hastelloy [®] C Client's choice

Control Panel

The Magellan[®] system comes with an integrated electronic control panel and customizable software, data logging capability, and several external interfaces including RS-232, RS-422/485, USB and 10Base-T/100Base-TX Ethernet Port for LAN connection. A CompactFlash[®] socket is provided so that Flash cards can be used to collect trending and data logging information as well as to store larger configuration files.

Contact Four Rivers regarding Heating & Cooling Requirements and support equipment.

The STT[®] process and equipment are covered by several patents and patents pending worldwide. STT, Magellan, and Innovator are registered trademarks of Four Rivers BioEnergy Company, all rights reserved. Hastelloy is a registered trademark of Haynes International, Inc. CompactFlash is a registered trademark of SanDisk Corporation.

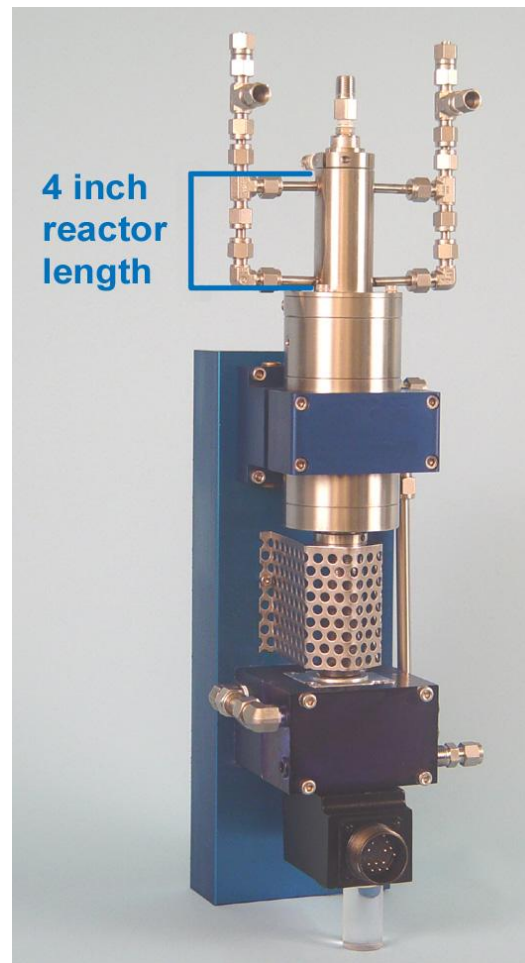
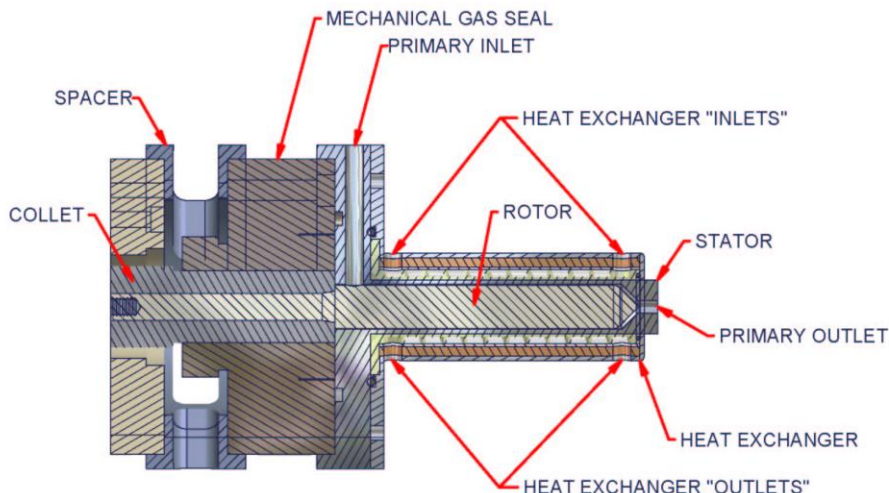
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Magellan® Series



Typical Seal Parameters (continuous maximums)

Standard Seal	
Gas Mechanical	<u>Note:</u> Higher maximum, temperature, pressure, and rotor RPM values are interdependent.
300 PSIG	
260°C	
12,000 RPM	

The specifications provided herein are general and Four Rivers should be contacted for application recommendations when desired values fall out of the recommended range.

Design Specifications			
Stator Inner Diameter (ID)	0.625", 15.9 mm		
Rotor Working Length	3.96", 10.1 cm		
Typical Rotor Outer Diameters (OD)	0.595" 15.1 mm	0.600" 15.2 mm	0.605" 15.4 mm
Gap	0.0150" 0.38 mm	0.0125" 0.32 mm	0.0100" 0.25 mm
Resulting Total Cavity Volume	2.06 ml	1.75 ml	1.43 ml
Resulting Working Volume ^(b)	1.85 ml	1.54 ml	1.22 ml
Entry Port Configuration	2 ports standard, positioned at 180° with respect to each other, located in front of seal face ^(c)		
Exit Port Placement	Standard, at tip of rotor, as illustrated		
NOTES:			
(a) Explosion Proof construction (with nitrogen purge) can be provided.			
(b) Working Volume is based on the Rotor Working Length, the Rotor OD and the Gap where Gap = 1/2(Stator ID – Rotor OD). Custom Gap configurations can be provided but not with Gaps less than 0.010" or 0.25 mm			
(c) More than two entry ports can be incorporated into the design (consult factory)			

Operation Specifications			
Rotation Rate	12,000 RPM maximum		
Heat Exchanger Required	4 – 5.25 GPM (15-20 LPM)		
Pumping Volume	@ 5 PSIG		
Example Shear Rates (sec ⁻¹) for Stator ID = 0.625" at selected Rotor OD & RPM			
Rotor OD	250 RPM	6,000 RPM	12,000 RPM
0.595" (15.1 mm)	519	12,462	24,923
0.600" (15.2 mm)	628	15,080	30,159
0.605" (15.4 mm)	792	19,007	38,013