

201 & 202	A	B	C	D	E	F	G	H	I
Series	Capacity	Pressure	Temp.	Material	Agitator	Power	Drive	Magnetic Drive	Control System
201	1. 100mL	1. 300psig	1. 100°C	1. 304SS	1. Tubine	1. 220/60/1	1. DC M.	1. MD	1. PID/Tach/PG
&	2. 300mL	2. 500psig	2. 200°C	2. 316SS	2. PBT	2. 220/60/3	2. AC M.	2. MS	2. PID/Tach/PI
202	3. 500mL	3. 1000psig	3. 300°C	3. Hast.C	3. Propel	3. 220/50/1	3. Air M.	3. Other	3. R&S /Tach/PIC
	4. 1L	4. 3000psig	4. 400°C	4. Titanium	4. Helical	4. Other	4. Other		4. R-SCS software
	5. 5L	5. 5000psig	5. 500°C	5. Monel	5. Anchor				5. Other
	6. 10L	6. 6000psig	6. 600°C	6. Other	6. Other				
	7. Other	7. Other	7. Other						

R-201 Series

Stirred Reactor System and Glass Vessel (R-211)



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### Heater Rating

- ▶ 0.5kW~1kW Band Heater to be used for 100mL~300mL Reactor.
- ▶ 1.2kW~1.5kW Band Heater to be used for 500mL~1L Reactor.
- ▶ 2kW~3.5kW Band Heater to be used for 2L~4L Reactor.
- ▶ 6kW~8kW Band Heater to be used for 8L~10L Reactor.
- ▶ Options: Reactor Vessel Jacket Type design also available for option.
- ▶ Oil circulator is also available for option.

### Cover Openings

- ▶ Two for Coolings Coil : 1/8" NPT and 1/4" NPT (F)
- ▶ Gas Inlet Nozzle and Valve : 1/8" ~ 1/4" NPT (F)
- ▶ Gas Vent Nozzle and Valve : 1/8" ~ 1/4" NPT (F)
- ▶ Sample Valve and Tube : 1/8" ~ 1/4" NPT (F)
- ▶ Pressure Gauge and Relief Valve : 1/8" ~ 1/4" NPT (F)
- ▶ Magnetic Drive : M-24 1.5 P
- ▶ Solid Charging Nozzle : 1/4" NPT

### Flush Bottom Valve

- ▶ Design Pressure : 1,000psig ~5,000 psig
- ▶ Material : 316SS, Hastelloy, C-276
- ▶ Design Temperature : 100°C ~ 400°C
- ▶ Size : 1/4" NPT, 1/2" NPT, 1" NPT, 2" NPT

### R-201 Series Reactor Specifications

Series	Volum	ID	LL	Conn.Size	Stand	Heafer	Max.Pressue
201-1	100mL	50mm	70mm	1/8"NPT	Bench	0.5Kw	5000psig
201-2	300mL	55mm	130mm	1/8"NPT	Bench	1.0Kw	5000psig
201-3	500mL	65mm	150mm	1/8"NPT	Bench	1.0Kw	5000psig
201-4	1L	94mm	150mm	1/4"NPT	Bench	1.5Kw	5000psig
201-5	2L	107mm	220mm	1/4"NPT	Bench	2.5Kw	5000psig
201-6	5L	145mm	280mm	3/8"NPT	Floor	3.5Kw	5000psig
201-7	10L	210mm	360mm	3/8"NPT	Floor	8.0Kw	5000psig

Series	Mag.Drive	Motor	Jacket Design	Utility
201-1	16in-lbs	60W	-	Gas Intet & Valve, Vent Valve
201-2	16in-lbs	1/12Hp	150psig	Sample tube & Valve
201-3	16in-lbs	1/8Hp	150psig	Process(MD), Drain
201-4	16in-lbs	1/4Hp	150psig	Cooling Inlet & Outlet
201-5	16in-lbs	1/4Hp	150psig	Thermowell & Thermocouple
201-6	32in-lbs	1/2Hp	150psig	Spare Nozzle
201-7	64in-lbs	3/4Hp	150psig	Jacket Design : 150psig

### R-201 Series Reactor Control System

This R-201 Series Reactor is designed for T-201, S-201 and P-201 to be used conveniently in the Control Box. Also is designed for the Cable between Reactor Control Box to be separated easily by using quick-connect couplings.

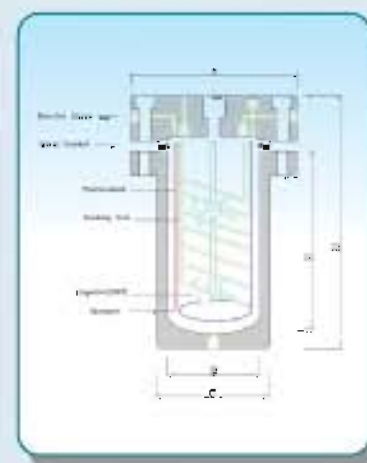
#### 1) Temperature Control (T-201)

- ▶ Size : 96mm × 96mm
- ▶ Calibration : Accuracy ±0.15% of reading
- ▶ Process : TC Inlet Type "K" (Chromel-Alumel) Standard
- ▶ Process : TC Range : 0~1200°C for Type "K" TC
- ▶ Indication : 16 Segment Green LFD, Digital-4 digits
- ▶ Cycle Time : 3 to 80 Seconds
- ▶ TC Break : Upscale Shutdown
- ▶ Output : 4-20mA & SCR
- ▶ Power : 220VAC, 60Hz, 1 Phase

#### 2) Speed Control (S-201)

- ▶ Power : 220VAC, 60Hz, 1 Phase
- ▶ Indicator Accuracy : ± 1 Count
- ▶ Indicator : 4-digits ▶ Resolution : 4 rpm
- ▶ Motor Control Speed Range : 50 : 1
- ▶ Max. Motor Size : 3/4 hp
- ▶ Motor Voltage : 0-180VDC (220VAC Input)
- ▶ Output : 0-12VDC
- ▶ Size : 48mm × 96mm

### Pressure Vessel Ordering Information



Series	Capacity	Max.Pressue	Dimensions(mm)				
			A	B	C	D	E
201-1	100mL	5000psig	120mm	50mm	70mm	130mm	70mm
201-2	300mL	5000psig	140mm	55mm	75mm	180mm	130mm
201-3	500mL	5000psig	140mm	65mm	85mm	210mm	150mm
201-4	1L	5000psig	170mm	94mm	115mm	210mm	150mm
201-5	2L	5000psig	170mm	107mm	132mm	280mm	220mm
201-6	5L	5000psig	220mm	145mm	175mm	350mm	280mm
201-7	10L	5000psig	280mm	210mm	240mm	430mm	360mm
201-8	Other	Other	Other	Other	Other	Other	Other



#### 3) Pressure Control (P-201)

- ▶ Transducer Excitation : 10VDC
- ▶ Type of Input Accepted : 1-5mV/L
- ▶ Transducer Current Drive : 120Ma
- ▶ Transducer Impedance : 120 Ω
- ▶ Analog Output : 5V, 10V, ±10V, 4-20Ma
- ▶ Temperature Drift : 0.02% F-S/°C
- ▶ Display Size : 16mm Large
- ▶ Resolution Maximum : ±19999
- ▶ Weight : 500g ▶ Size : 48mm × 96mm
- ▶ Power : 220VAC, 60Hz, 1 Phase



# R-201 Series Stirred Reactor System

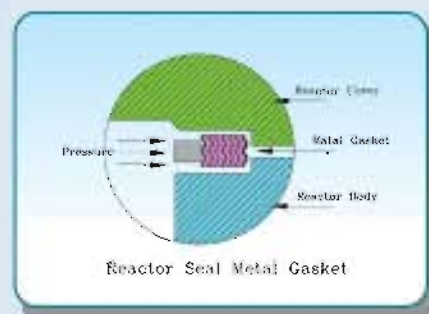


## FEATURES

- ▶ Capacity of this R-201 series Stirred Reactor is from 100mL up to 10L, and designed to using in 300~6,000psig at 500°C.
- ▶ This R-201 series Stirred Reactor is designed also to hand the choice of purchasing only Glass Vessel (R-211) for much more economic performances of the system.
- ▶ Glass vessel can be used in maximum Pressure of 200psig at 250°C.
- ▶ Bench and Floor Stand are designed for the most convenient way for working.
- ▶ This R-201 series Stirred Reactor is designed to use the Metal Seal Ring, When higher than 250°C, you can use O-ring as well.
- ▶ This R-201 series Stirred Reactor is designed to be compatible in its capacity; you can use 500mL and or 2L vessel for 1L Reactor.

## GENERAL

- ▶ Power : 220 VAC and 220VAC/3-Phase.
- ▶ DC Motor : 60W, 90W, 1/8Hp, 1/4Hp, 1/2Hp, 1Hp, 2Hp.
- ▶ Magnetic Drive : 16in-lbs, 32in-lbs, 64in-lbs, 120in-lbs.
- ▶ RPM : 0~1750rpm.
- ▶ Heater : 500W~10kW.
- ▶ Stand : Bench and Floor Stand.
- ▶ Gas Inlet & Vent & Sample Nozzle and Valve.
- ▶ Thermowell and "K" type thermocouple.
- ▶ Cooling Coil Inlet and Outlet Nozzle.
- ▶ Pressure Gas and Pressure Transmitter.
- ▶ Relief Valve.
- ▶ Capacity : 100ml~10L(Options:20L~1000L).
- ▶ Design Pressure : 300psig(Options:6,000psig).
- ▶ Design Temperature : -30°C~600°C(40°C~800°C).
- ▶ Materials:316SS, 304SS, Hastelloy C-276, Monel, Inconel, Titanium and Zirconium.



## DC Motor

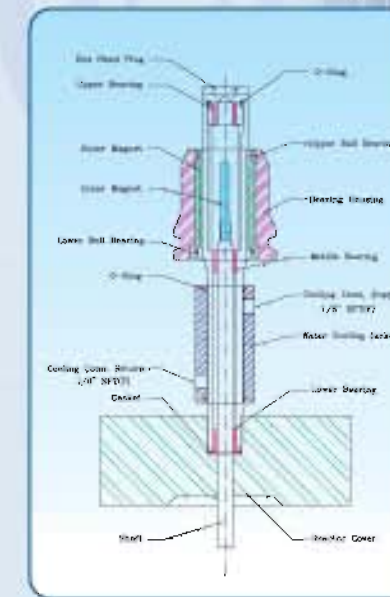
- ▶ 60W Motor to be used for 100mL~300mL R-201 Series Reactor and 90W Motor to be used for 500mL Reactor.
- ▶ 1/8Hp and 1/4Hp Motor to be used for 1L~ 10L Reactor.
- ▶ 1/2Hp and 1Hp Motor to be used for 4L~10L Reactor.

## Stand

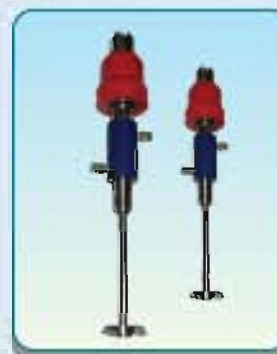
Either Bench stand or Floor Stand will be used for R-201 Series Reactor.

## Magnetic Drive

- ▶ The pressure and temperature of our M-series magnetic Drive is designed to be used 5000psig at up to 500°C.
- ▶ You have many choices to use of our Magnetic Drive as the torque varies 16, 32, 64, and 120 in-lbs according to the different capacity of Reactor.
- ▶ The rpm of our Magnetic Drive is designed for using from 10up to 3,500rpm.
- ▶ The Agitator for our Magnetic Drive should be selected based on the viscosity of reactant.
- ▶ The Material used for building our Magnetic Drive is Samarium Cobalt.



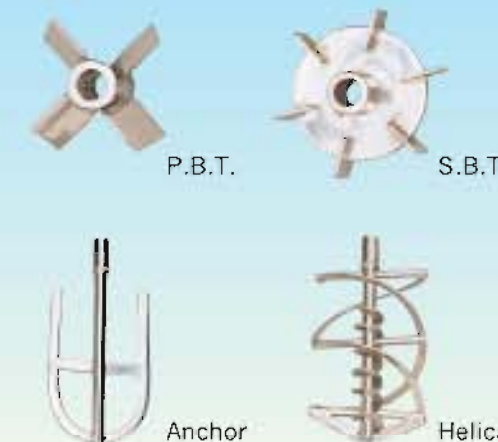
## Magnetic Drive Ordering Information



Series	Mag.Drive	Drive Shaft	Nozzle	RPM	Pressure	Temp.
M-	1. 16in-lbs	1. 10mm	1. M24-1.5P	1. 1,000rpm	1. 500psig	1. 100°C
	2. 32in-lbs	2. 15mm	2. M24-1.5P(D)	2. 1,500rpm	2. 1,000psig	2. 300°C
	3. 64in-lbs	3. 20mm	3. M28-1.5P	3. 1,750rpm	3. 3,000psig	3. 500°C
	4. 120in-lbs	4. 25mm	4. M28-1.5P(D)	4. 2,500rpm	4. 5,000psig	4. 600°C
	5. Other	5. Other	5. M40-1.5P	5. Other	5. 10,000psig	5. Other
	6. Other	6. Other	6. Other	6. Other	6. Other	6. Other

## Agitators

- ▶ Standard Impeller of R-201 series Reactor is Pitched Blade Turbine which is able to use up to 2,500rpm.
- ▶ Anchor Impeller is able to use when the viscosity comes up more than 10,000psig to 50,000cp.
- ▶ With Helical impeller as in the case of high Polymerization, you can use at high viscosity such as more than 50,000cp.
- ▶ Propeller or Impeller is used for the same application as of Pitched Blade Turbine.





### Pressure Transducer

- Features**
- ▶ Range : 0~4000kgf/cm<sup>2</sup>
  - ▶ Accuracy : ±0.5%FS
  - ▶ Output & Input Signal : 0~5VDC/1~5VDC/0~10VDC (3.4 Wire) / 4~20mA (2,3 Wire)

- Applications**
- ▶ Process Control
  - ▶ Hydraulics&Pneumatic
  - ▶ Compressor control
  - ▶ Chillers
  - ▶ Refrigeration Equipment



### Accessories

You can expand the versatility of any 201 series reactor further, through the addition of options and accessories :

- ▶ Catalyst baskets
- ▶ Baffles
- ▶ Glass Liners
- ▶ R-211 Glass Vessel
- ▶ Flush Bottom Valve
- ▶ Teflon Liners
- ▶ Flexible Hose
- ▶ Reflux Condensers
- ▶ Sight Glass (Borosilicate)
- ▶ Feed Tanks
- ▶ Solid Charging System
- ▶ Heat Transfer Package

### Application

- Applications of our R-201 series Reactor System are for ;
- Stirred Reactor System (R-201 series & R-211 series)
  - Catalyst Reactor System (R-301 series)
  - SFE or SCWO System (R-401 series)
  - The Automation Chemical Reactor System(pH) (R-501 series)
  - Multi-Purpose Pilot Plant System
  - Polymerization
  - Hydrogenation
  - Oxidation
  - Amination
  - Distillation System
  - Organic Synthesis
  - Catalytic Reaction
  - Isomerization
  - Dehydrogenation

### Pressure Bomb Ordering Information

: Application for Pressure Bombs extend into all types of laboratory work whenever a chemical reaction or physical test must be performed under pressure at elevated temperature.

Model No.	Capacity	Pressure	Temp.	Material	Connection
Series PB-	1. 50mL	1. 300psig	1. 100° C	1. 304SS	1. Gas Inlet & Valve
	2. 100mL	2. 500psig	2. 300° C	2. 316SS	2. Gas Vent & Valve
	3. 500mL	3. 1000psig	3. 500° C	3. Hast.C	3. Pressure Gauge
	4. 1L	4. 3000psig	4. 600° C	4. Titanium	4. Relief Valve
	5. 2L	5. 6000psig	5. Other	5. Monel	5. Other
	6. Other	6. Other		6. Other	



### R-201 Series Software Control System

