

# 10 LITER MULTI-PURPOSE STIRRED REACTOR



*Non contractual photo*

**SERVICE : 230 V / 50 HZ / SINGLE PHASE: 1 KW. COLD WATER 20 ° C / 3 BAR: 1 M<sup>3</sup> / H. EMPTY 100 MBAR: 2 NM<sup>3</sup> / H STEAM 4 BAR: 5 KG / H. SEWER FOR HEATING CONDENSATES.**

**DIMENSIONS : 2, 10 M X 0, 83 M X 3, 05 M**

**WEIGHT : ~ 250 KG**

**REFERENCE : MP1071**

## Principle of operation

The reaction is a fundamental operation of the chemical industry, making it possible to produce, from simple molecules (reagents), more and more complex compounds intended for a growing number of industries (chemistry, pharmacy, etc. At the end of handling the products of the reaction are recovered after cooling. The reactor also makes it possible to make "batch" crystallizations.

## Educational Objectives :

- Study of simple reactions.
- Study of kinetics of reaction.
- Study of reversible or irreversible reactions.
- Study of evaporation.
- Crystallization by evaporation, chemical reaction or cooling.
- Total reflux reactions.
- Discontinuous distillation.
- Discontinuous heteroazeotrope distillation.
- Material balance.
- Conversion rate.
- Thermal balance.

## Technical specifications :

### Technical specifications

- Two recipes for storage of borosilicate glass reagents, graduated with "juice lift" systems for filling reagents.
- Cylindrical reactor type "GRIGNARD": with double steam heating jacket, flush drain valve and operator protection.
- 316L stainless steel variable speed stirring unit with inclined tri-blade impeller.
- Cooling coil of the 316L stainless steel reaction mass.
- Column in borosilicate glass, in one element with 316L stainless steel lining.
- Borosilicate glass column head, DN50, with temperature measurement, equipped with a timer flap to control the reflux ratio.
- Vertical 316L stainless steel condenser, borosilicate glass ferrule, single acting with baffles.
- 316L stainless steel distillate coolant.
- Decanter in borosilicate glass, cooled, with manual adjustment of the level of the interface; set of 316L stainless steel valves for the selection of recycling circuits (to the reactor with hydraulic guard) or sampling (to the distillate recipes) for the light phase and the heavy phase.
- Recipes of borosilicate glass distillate, graduated.
- Circuit for relaxing and adjusting the heating steam with operator protection panel.

- Heating hoses for insulated heating steam.
- 316L stainless steel connection pipes.
- Support frame in 304L stainless steel tubes and aluminum nuts.

### **Instrumentation**

- Condenser cooling water supply equipped with a float flowmeter with its control valve and a water circulation controller to stop heating due to lack of cooling.
- Measurements of supply pressure of heating steam by manometers.
- Control and control cabinet, IP55, equipped with emergency stop, operating buttons and the following interfaces:
- Electronic timer controlling the valve of the column head.
- Regulator of the temperature of the reactor.
- Variator of the stirring speed.
- Digital indicator of stirring speed.
- Two digital temperature indicators of five Pt100 ? probes.

### **OPTIONS :**

Option 1: Reduced pressure bag filter in 316L stainless steel; capacity 9 liters (cake) + 9 liters (filtrate)