

GPC R20

Versatile reactor - 50 l

DESCRIPTION

- Runs under, either reduced pressure or atmospheric pressure.
- Designed for the study of various chemical reactions: Esterification, Saponification, Halogenation, Sulphonation, Crystallization, reaction in organic or aqueous medium...
- Designed for training on a production unit similar to that found in Industry.
- The following are provided with the unit: instrumentation, measurement tools, fluid supply and evacuation, and stainless steel frame.



SUGGESTED APPLICATIONS

- Organic synthesis
- Study of reaction kinetics.
- Study of a reaction medium:
 - Physical and chemical parameters
- Thermodynamics studies
- Matter balance
- Efficiency of the reactions
- Continuous distillation, decantation
- Industrial application

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COMPONENTS OF THE INSTALLATION

1. Truncated reactor 50 L

Stainless steel 316 – according to industrial standards
Double-walled – 6 bars (90 psi) in running (9 bars (130 psi) possible)

Bottom grid – stainless steel 316 L

Rounded cover with charging opening DN 100

2. Liquid supply and dosing tank

Borosilicate glass

Volume : 15 liters

3. Rupture disk

Carbon – calibrated at 0.5 bar

4. Agitation modulus single-velocity

ADF type

Agitation velocity 60 R.P.M.

Stainless steel agitator Ø20 mm with V-cramp for the agitation of the bottom tank with a low level (5 liters)

5. Couple limiting

Protects the agitation motor against the mass increase of the reaction medium

6. Light sight

Protection : IP65

7. Distilling column DN 100

Borosilicate glass – according to industrial standards
Height : 1000 mm (7 theoretical plates – mix of water/methanol)

Multiknit stainless steel padding 1600 m²/m³ – Ø100 mm

8. Condenser

Tubular exchanger : 1 m² (ϕ = 50 kW)

Calender and chicanes – stainless steel 316 L

Diameter : 100 mm

9. Exchanger for distillate

S = 0.2 m²

Tubular type

Glass

10. Azeotropic decanter

Borosilicate glass

Adjustment of the barometric leg with the sliding tube

Double-walled

11. Receiver of the heavy phase of the distillate

Polyethylene

Volume = 20 L

12. Receiver of the light phase of the distillate

Polyethylene

Volume = 20 L

P1 : Centrifugal pump of the hot loop

. stainless steel (316 L) body

. 0-3 m³/h to 3 bar (45 psi)

. P = 0.75 kW

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CHARACTERISTICS

→ EXPERIMENTAL MEASUREMENTS

⇒ **TEMPERATURE SENSORS PT 100 STAINLESS STEEL 316 I DIAMETER 6 mm (T1 to T7)**

⇒ **PRESSURE MEASUREMENT**

ΔPRC : Differential pressure sensor
P1 – P2 – P3

⇒ **FLOW RATE SENSORS**

- **ON THE DISTILLATE (FRC)** : Oval-wheel flow meter, pulsed outlet converted in 4-20 mA
- **ON THE ARRIVAL OF THE WATER FROM THE CONDENSER (FI 1)** : Rotameter 0-1500 L/h

⇒ **REGULATORS**

- **Heating regulator**

Runs with the electrovalves V22 and V24 in surface sharing

Connected with 3 parameters inter switchable (TRC1-TRC2-ΔPRC)

PID type with microprocessor : class 0.2

Configurable scale, Relay outlet, logic, continuous with proportional band of 0.5 to 1000 %, integral action time from 0.1 to 100 min, derived action time from 0.01 to 10 min or self-adaptive for a maximum regulation

- **Flow back regulator**

Regulation of the temperature TRC3 or the distillate flow rate from the electrovalves on the distillate and the flowback (V8 and V9) in a surface sharing working.

PID type with microprocessor : class 0.2

Configurable scale, Relay outlet, logic, continuous with proportional band of 0.5 to 1000 %, integral action time from 0.1 to 100 min, derived action time from 0.01 to 10 min or self-adapted for maximum regulation

→ VALVES

Spherical valves 1/4 - stainless steel

Exceptions :

- Vapor arrival valve : stainless steel nozzle valve V31
- Water arrival valve : polypropylene spherical valve
- Electrovalves V8 – V9 – V22 – V24 : ADF

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OPTIONS

-AGITATION MOTOVARIATOR : 60/300 min⁻¹

-HEATING METHOD BY THERMOREGULATOR

Pressurized water thermoregulator :

- Up to 160°C
- Heating power : 15 kW
- Cooling power : 44 kW

-INSTALLATION IN ADF

-COMPUTERIZATION

UTILITIES

Electricity : 220/380 VAC – 50/60 Hz

Network water

Evacuation

DIMENSIONS

Length : 2500 mm

Width : 800 mm

Height : 4500 mm