

RI-2 - For industrial RTM production



RI-2

Aplicator's RI-2 RTM production unit is a new type of RTM machine for the efficient and safe injection of precision mixed quantities of resin and catalyst into moulds. Equipped with a programmable logic control (PLC) and a colour display with large function keys, the

machine is easy to use. Up to thirty different injection programmes, which can be controlled by either flow or pressure, can be stored and parameters can be changed throughout the filling process.

Function

The RI-2 machine uses an air-driven dual-acting piston pump for both the resin and catalyst.

The stainless steel constructed catalyst pump is synchronised with the resin pump shaft for precise delivery of catalyst, regardless of variations in air supply or viscosity of material. The catalyst pump incorporates a pressure gauge and pressure relief valve.

The amount of catalyst is easily adjusted by means of a hand wheel that changes the stroke of the catalyst pump. The mixing ratio is continuously variable. The catalyst is pumped straight from the original container. The resin can be pumped through a suction hose from a 200-litre drum or through a fixed installation from a storage tank. Polyester and catalyst are mixed internally in a static mixer in the injection head. The machine is also equipped with a unique re-circulation system for both the resin & catalyst all the way up to the injection head.

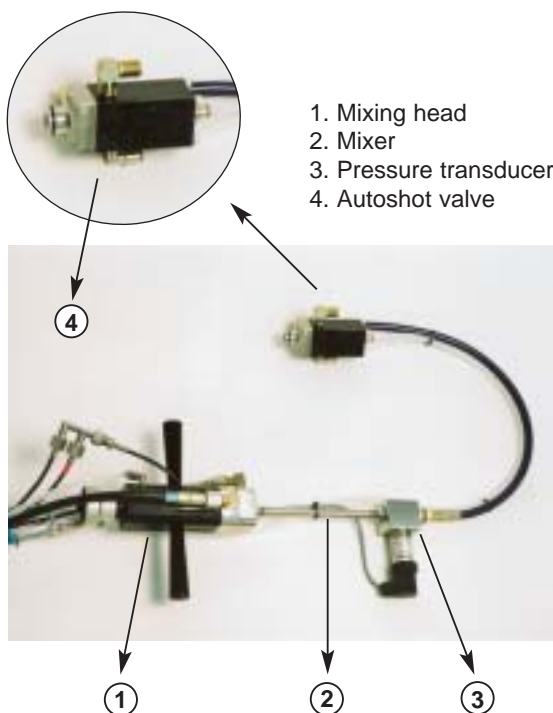
For de-gassing and function checks.

The machine can be operated in Manual or Automatic mode.

Automatic Injection head with Aplicator's Autoshot® valve

The automatic injection head enables injection and flushing to take place in a fully enclosed system. The head fits permanently into the mould cavity and the machines PLC control its operation. The injection valve is closed when injection is completed – which keeps the resin in the mould under pressure until cure. Direct after injection the mixer is flushed automatically with a mix of solvent and air via the same valve and is ready for the next injection cycle. It gives a clean production site with no spillage of resin and/or solvent.

The unit is small and easy to fit on any existing tool.



Variable Catalyst Ratio (option)

As an option the RI-2 can be fitted with Aplicator's VCR-system, which gives the possibility to vary the catalyst ratio during injection. When moulding large components, this function makes it possible to have uniform resin cure across the entire component.

PLC-control

The PLC-unit with its colour display and big function keys is easy to operate. The unit can store up to 30 different injection programs. The injection can be controlled either by flow or pressure. In both cases the parameters can be changed throughout the filling sequens.

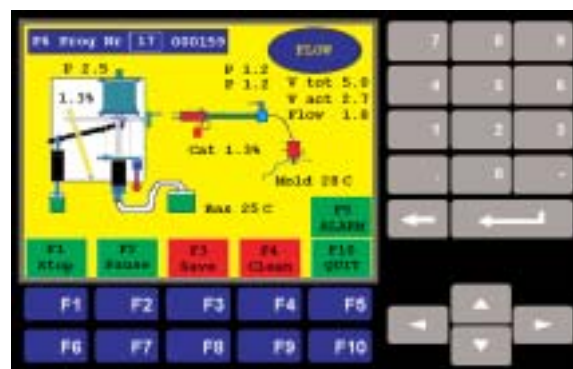
Injection by controlled flow gives a resin front that moves at a pre-set speed, independent of the backpressure in the tool. That gives a smooth filling of the tool without any risk of waviness.

Injection by controlled pressure is possible by the pressure transducer at the injection head or in the mould. Pressure controlled injection enables you to optimise the fastest filling of the tool with minimum risk of washing or overloading.

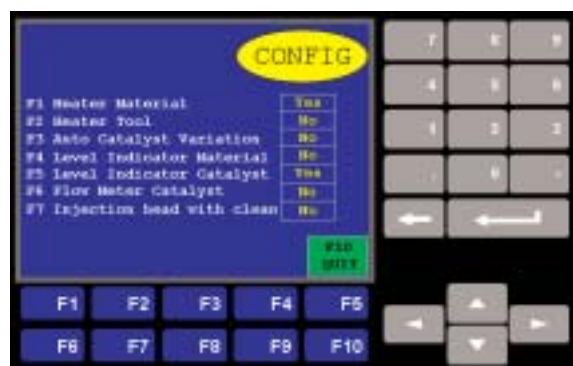
Due to the PLC-control the catalyst system can be optimised to give short cycle times.

Our STOP/SAVE function key is a unique and easy way of finding the proper injection volume in new tools. When the desired volume is achieved, press the "Stop/Save" function key, and the exact injection volume is automatically stored in the memory.

Automatic mode Screen



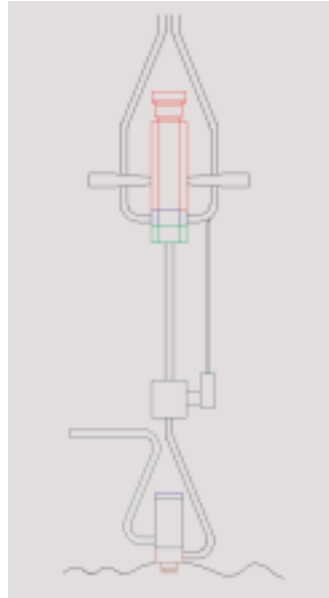
Configuration Screen



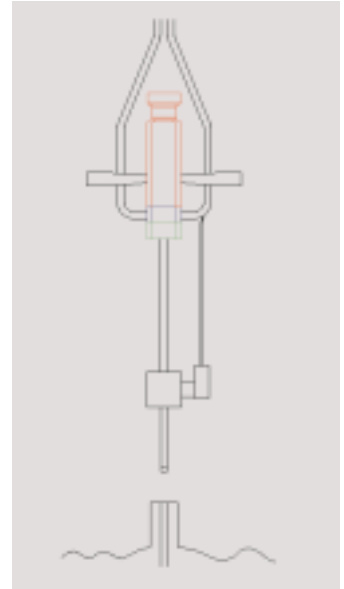
RI-2 panel with 10 Function keys for easy operation



Injection head with Aplicator's Autoshot®



Standard Injection head



Advantages of the RI-2 for the user:

- Precision control with Aplicator's easy to use Programmable Logic Control System (PLC)
- Up to thirty programmes stored
- Unique Stop/Save function key for simple and automatic storing of new injection volumes
- Injection can be controlled by flow or pressure
- Parameters can be changed during the filling sequence
- Pressure transducer at the injection head controls pressure resulting in optimum tool filling with minimum risk of washing and/or over loading
- Controlled flow injection provides smooth filling of the mould without surface distortion of the finished component
- Automatic injection head enables injection and flushing to take place in a fully enclosed system
- Polyester and catalyst mixed internally in a static mixer at the injection head
- An environmentally friendly blend of solvent and air, automatically flushes the mixer via the same valve ready for the next injection cycle
- Very clean in use. No spillage or leakage of solvent or resin. Material wastage and emissions significantly reduced and better for production personnel
- A stainless steel, air driven, dual acting piston pump is used for both resin and catalyst and is synchronised to deliver precise volumes of materials regardless of variations in air supply or material viscosity
- Catalyst amounts, which can be continuously variable, easily changed by unique Aplicator stepless, adjustable slave pump
- VCR system which varies catalyst ratios during injection can be installed as an option and controls resin cure when moulding large components
- Machine easily moved to wherever needed for efficient production
- Unique re-circulation of resin and catalyst up to the injection head permits de-gassing and function check.
- Unique system accurately couples resin and catalyst pumping pressures and flow resulting in a pulse free, continuous and even flow of material motion, mixing and application
- Simple and efficient to operate
- Catalyst dispensed directly from original container. The resin can be pumped through a suction hose from a 200 litre drum or from a bulk storage tank

Standard equipment on RI-2

- Mould Pressure transducer
- Automatic injection head
- Aplicator Autoshot valve
- Re-circulation of resin & catalyst to head
- PLC controlled Solvent pump
- Catalyst slave pump
- Alarm menu
- Emergency stop
- Stop/Save function key
- Catalyst pressure gauge
- Colour display with 10 Function keys for easy operation.
- Catalyst overpressure valve
- Trolley mounted
- 4 metre hose set between machine and injection head.
- Mixing in the injection head

Options on RI-2

- Catalyst flow alarm
- Catalyst level alarm
- Resin level alarm
- PID controlled resin/mould heater
- PLC controlled vacuum pump
- VCR (Variable Catalyst Ratio)
- Boom for injection head

Data Acquisition System (Option)

The system will allow collection/logging of the following data/information:

- Possibility to download and send recipes between machines.
- Total quantity polyester/machine used.
- Total quantity catalyst/machine used.
 - Quantity polyester/injection
 - Quantity catalyst/injection
 - Deviation of preset mixing ratio
 - Production date
 - Order number
 - Number of injections

In general you can download all possible data that is stored in a recipe.

It is possible to connect several RI-2 units to Aplicators D.A.S.

Technical data RI-2

Connection air:	6 bar (90 PSI)
Air consumption:	200 litre/minute
Pump Capacity:	0,3 – 6,0 kg/minute
Max working pressure:	30 bar (450 PSI)
Pressure ratio:	9:1
Mixing ratio:	continuously variable between 0,8-4,0 %
Ex. classification:	Solvent pump and mixing head in accordance with Ex. classification zone 1
Hose length:	standard length 4 metre. Other length's on request
Weight of injection head:	2,4 kg
Total weight: app.	170 kg

Special features

- Catalyst slave pump for exact catalyst: resin ratio
- Continuously adjustable catalyst ratio. Can be changed during operation
- Recirculation of catalyst and resin for function test
- Automatic injection head
- Automatic solvent flush after injection
- Flushing with a mix of solvent & Air. (less than 0,1 litre of solvent)
- Even flow of catalysed material
- Easy to operate
- Mounted on 4-wheel cart

