



TECHNICAL SPECIFICATION

AVF SERIES OF DUPLEX HEATER INDUSTRIAL VACUUM FORMING MACHINES

The RIDAT AVF series of duplex heater vacuum forming machines are renowned for reliable and consistent production of generally thick sheets of most common thermoformable material with user-friendly microprocessor controls that also provides energy saving features.

The machine is fully automatic apart from manual loading and unloading of the forming material. These too can be automated optionally. Cycle start is operator (pushbutton) controlled.

Each process stage has individual time and duration controls. Heaters are zoned and controlled by closed loop heat controllers. The machine is plc controlled and accommodates simple pre-set programming and recall for different products, precise and repeatable formings.

Forming capacities

Maximum sheet size 1050mm x 800mm to 2550mm x 1250mm
Maximum forming aperture 1000mm x 750mm to 2500mm x 1200mm
Maximum forming height 400mm (Optional deeper depths available)

Machine Consists of:

The machine frame is constructed from substantial fully welded mild steel sections designed to provide a solid and rigid chassis to avoid the need of special foundations or installation pits. The mould table and lower heater are housed in an airtight box with front access via easy open doors for tool changing and maintenance. The machine is fully guarded and conforms to current European machinery directive (including safety legislation)

Heating system comprises of horizontally moving twin heater boxes powered by a cushioned pneumatic cylinder with high temperature seals. Heaters are independently operated and timed.

Ceramic infrared heating elements are zoned in pairs. A closed loop digital heating control system provides for accurate zone temperature control. It is monitored by the micro-processor. Alternative quartz or halogen elements may be fitted as an option for additional cost.

Vertically moving clamp frame is operated by 2 pneumatic cylinders with uniform gripping of the sheet assured by 4 rack-and-pinion guides gripping of the sheet during the forming cycle.

Drape (mould) table is lifted by four air cylinders. It is stabilised and balanced by rack and pinion guides to assure accurate and balanced movement. Quick fit pipe connections are provided for connecting cooling water to a chilled bolster (bolster is optional). Pneumatic locking of mould.

Plug Assistance is available as an option. It is used to assist in the production and improve the quality of female and certain types of male forming by pre-stretching the thermoplastic material. The plug assist comprises of a pneumatically operated direct thrust cylinder (stabilized by twin guide rod) with stroke adjustment by electrically driven stops via the touch screen. The motorised stop removes the need for operators to climb onto the machine to adjust cylinder stroke.



Vacuum System comprises of electrically driven rotary vane vacuum pump fitted with a 3 phase motor is coupled to an integral vacuum reservoir in the machine base frame. A vacuum gauge and gate valve to control the rate of evacuation are fitted as standard. Twin port drape provides instant vacuum.

Automatic sheet Sag control system is fitted as standard. During the heating process, an infra-red photo-electric system scans the underside of the material with a view to maintaining the sheet position by venting using vacuum in small amounts of air into the sealed mould chamber. The time for the bursts of bubble is adjustable via the controller. The drape forming tank is air-tight

Product cooling is achieved by high Velocity turbo fans. Water mist is optionally available

Mould Changes can be carried out rapidly via the twin hinged for opening doors. Pneumatic clamping of mould is provided as standard.

Process Controller consists of a microprocessor PLC fitted with digital and analogue I/O, with sophisticated software developed by Ridat. The display gives the operator the ability to display and control each individual function of the machine. Full manual and automatic operation is possible allowing both Prototyping and full production work to be carried out. Once a tool set-up has been created it can be stored in the onboard memory. The set-up can also be printed using a standard serial printer (not included). The controller has a comprehensive fault diagnostic system to ease faultfinding and keep down time to the absolute minimum.

Pneumatic System incorporates proprietary brand control valves with ISO standard cylinders, serviced by a filter and Pressure regulator assembly. A pressure gauge is fitted at the front of the machine.

All movements have variable speed controls in both directions. The main solenoid and pilot operated spool valves are located together in a main housing to provide easy access for maintenance.

Guarding

A photo electric **safety light curtain** barrier front guard to prevent machine operation when the guard is broken is fitted as standard. The guard controls fail-safe safety circuits which 'freeze' or cancel dangerous functions if the guard is opened during the machine's operational cycle. This will comply with EN ISO 13849-1. Option: Sliding front doors can be fitted instead of light guard

Fixed side and rear guards complete the arrangement and the whole system conforms to Machinery Directive 06/42/EC, Low Voltage Directive 06/95/EC and Electromagnetic Compatibility Directive 04/108/EC to harmonized standards. The machine will be CE marked in accordance with current European legislation and a Certificate of Conformity will be provided as part of the standard documentation

Proprietary components are sourced from companies of global repute. These include Moeller and Siemens for *control switchgear*, *Mitsubishi for plc and HMI operator pad*, Festo and SMC for *pneumatics*; Becker and Busch for *vacuum pumps*;

Additional Optional features include

Plug assistance with motorised height adjustment

Servo Motor movement of Drape (Mould) Table & Servo Motor Control of Plug Table

Pyrometer control for Heater & Pyrometer Control for Cooling

Reel feed attachment with discharge chute

Automatic Sheet Load and forming removal facility



Brief Technical specifications*

Models	4030AVF	4040AVF	6040AVF	8040AVF	10048AVF
Forming Area (max) in mm	40 x 30 1000 x 750	40 x 40 1000 x 1000	60 x 40 1500 x 1000	80 x 40 2000 x 1000	100 x 48 2500 x 1250
Depth (Max) mm	400	400	400	400	400
Sheet Size (max) in mm	42 X 32 1050 x 800	42 X 32 1050 x 1050	62 X 42 1550 x 1050	82 X 42 2050 x 1050	102 X 50 2550 x 1250
Air Usage litres/cycle (excl plug)	453	642	1250	1550	4043
Power Usage kw	38	45	68	90	160
Cooling Fans	2	2	4	6	8
Vacuum Pump kw	1.2	1.2	3.7	3.7	7.5
Floor Area m	1.6 x 1.4	1.7 x 3.3	2.3 x 3.4	2.7 x 3.4	3.4 x 4.0
Height cm	276	276	326	376	441
Weight kg	120	2160	3120	4454	5530

*The above figures should be taken as typical example only; complete specifications will be supplied on request

The above figures should be taken as typical example only: layout drawings and complete specifications will be supplied for specific machines. Standard power supplies are 415 V 50 Hz phase 4 wire and clean, water-free air at 5.4 atm (80 lbf/in²)