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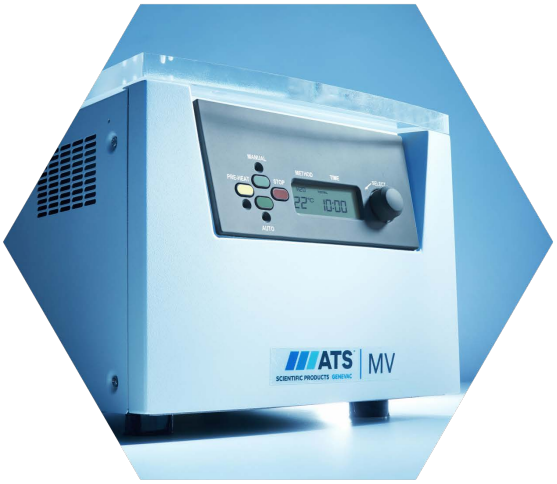
MV Modular Concentrator Range

The MV Range



The Genevac MV range is designed to be modular and capable of removing water and organic solvents from a variety of sample formats including tubes, microplates and vials.

Centrifugal evaporators remove solvent under vacuum. As the pressure in the system reduces, the boiling point of a solvent also reduces. When the pressure is low enough, the solvent will boil, enabling removal of solvents at very low temperatures. Solvent vapor boiling off the samples is either trapped in a condenser or pumped away through the pump. To prevent the evaporating sample boiling over or ejecting material in an uncontrolled way, samples are spun in a concentrator. The g-force generated is sufficient to keep each sample in its own tube.

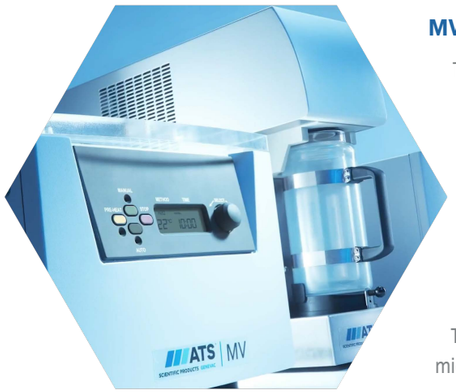
The MV range comprises two concentrators, three pumps and a novel refrigerated trap. The MV Pressure Controller helps to further optimize concentration and provides the user with full control of the concentration process.

MV systems are suitable for use with a wide range of solvents, from volatile organic solvents through to water and many medium boiling point solvents.

With a wide variety of easily interchangeable sample rotors, MV evaporators are suited to many different tasks and applications. These include drying or freeze drying in microcentrifuge tubes, conical centrifuge or other plastic tubes, glass vials, and shallow or deep well microplates. Applications range from DNA, RNA & peptides, oligosynthesis, clinical diagnostics testing to molecular biology.

With an electro-magnetic drive, for maintenance free operation, MV concentrators are extremely quiet when in use. Very high displacement pumps and built-in special methods for working with alcohols, water and water mixtures, improve performance and optimize concentration times. Typical results with water show that MV systems are faster than comparable machines.

The compact size of the MV concentrators saves valuable bench space. Their simple, robust design will ensure years of reliable service even when used intensively, such as in teaching or multi-user laboratories. Intuitive controls allow inexperienced users to get first-class results first time with most samples, while allowing more sophisticated programming for experienced workers.



MV DNA

The Genevac MV DNA integrated system is a centrifugal evaporator capable of removing water and organic solvents from a variety of sample formats. It is designed specifically for working with nucleic acids (RNA and DNA) and is supplied complete with everything the scientist requires: built in high performance vacuum pump, concentration chamber and a fixed angle aluminium rotor with 48 positions for 1.5 or 2 ml micro-centrifuge tubes. The MV DNA is suitable for simple organic solvents, e.g. methanol, ethanol, up to 100 °C boiling point, and water in low sample numbers and volumes.

There is a range of possible rotors including an option for microtitre plates.

Duo and Quattro Concentrators

There are two options available to accommodate various sample throughput requirements.

The Genevac MV Duo Concentrator has been designed to accept a two-swing position microplate rotor or Jet rotors for tubes.

The MV Quattro is a bigger system with a larger capacity chamber, enabling it to use a four-swing position microplate rotor and much higher capacity Jet rotors.

Both concentrators control the pump, heat and run time, and have specialized programs for water, alcohols and other solvents. The intuitive controls and a large display make MV very easy to use. Setting up is simple, with just one 'set and select' control knob and a minimum of keys. All status and program information is displayed alphanumerically on the large LCD display, giving every user confidence in their run conditions and results.

Vacuum Pumps

There is a choice of three oil-free pumps to complement the MV concentrators.

For most applications, the high displacement MV Duo Pump gives excellent results with either the MV Duo or Quattro Concentrator. This quiet and compact two-head diaphragm pump is housed in a smart case to match the other MV components and is suitable for removing solvents that boil below 160 °C, including water, methanol, ethanol and their mixtures.

For more demanding applications, the MV Quattro Pump is a diaphragm pump which can reach pressures of 3 mbar and is required for successful drying of medium boiling point solvents.

Exceptionally demanding uses and freeze-drying will require a scroll-type Super Vacuum Pump. This pump is capable of routinely removing higher-boiling solvents at pressures down to 0.15 mbar.

All pumps are controlled automatically by the MV Concentrator. However, when using solvent mixtures, a wide range of solvents, or a high vacuum pump, (such as the Quattro or Super Vacuum Pump) the MV Pressure Controller is recommended.

Modular Systems

For a wider range of solvents and/ or a larger range of sample formats, select an Genevac MV Duo or Quattro Concentrator with MV SpeedTrap, pump and optional Pressure Controller. Pre-configured system packages, include a connection kit (but no rotor}, provide a simple solution.

SpeedTrap

The MV SpeedTrap is a uniquely designed high power cold trap used to condense solvent vapors. The ergonomic redesign of the SpeedTrap jar ensures safe removal and replacement. When a cold trap condenses vapors back to liquid there is a corresponding massive volume reduction, helping to maintain a vacuum and speeding up the concentration process considerably.

The MV SpeedTrap is very small in size and requires little bench space. The cold condenser coils are suspended in the vapor path; solvent vapors condense directly onto the coils and run off into the collection vessel below. This method is highly efficient, the user can quickly see the solvents in the trap, and emptying the trap is easy.

SpeedTrap has Three Settings:

1. Automatic Defrost

In automatic mode, the system periodically defrosts for a few minutes without interrupting the concentration process, preventing build up of ice on the condenser coils. At the end of the process, the system requires no further defrosting. This mode is ideal for solvents liable to freeze.

2. Continuous Chilling

Select this mode for most organic solvents to ensure the highest recovery of solvents. There is no need to defrost at the end of the process. Ideal for solvents that do not freeze above -50 °C.

3. Manual Defrost

When continuous chilling is used with solvents which freeze above -50 °C, for example when freeze-drying, ice will accumulate on the coils and they must be defrosted afterwards by switching the SpeedTrap into manual defrost mode.

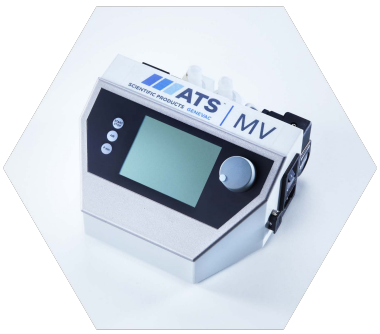
Pressure Controller

Pressure control enables the user to set the optimum boiling temperature for the solvent which is being evaporated so that the cold trap can condense it most efficiently. Correct use of pressure control eliminates the requirement for a very low temperature cold trap when removing very volatile solvents. Used in conjunction with the MV SpeedTrap, evaporation is faster and more solvent can be recovered, reducing volatile solvent emissions.

The MV Pressure Controller can be added to any modular MV system (except for the DNA) and allows the user full control over the running pressure in the system. A vacuum ramping mode enables concentration to be commenced gently and is used to help prevent bumping or spitting.

For users who are uncertain of the appropriate pressures to choose, an automatic mode can be used. The large, clear screen provides graphical display of current pressure and allows for easy programming.

A pressure controller is ideal for systems which are to be used for many different applications, e.g. concentration, solvent mixtures and freeze-drying.



Sample Rotors

The SP Genevac MV evaporators are the only ones in their class to be supplied with rotors made from solid aluminium. The JetRotors range provides very high performance concentration compared to rotors made from plastic, or of an open construction. Speed increases compared with polypropylene types range between 40% and 200%, depending on sample format, providing a significant advantage when working with stubborn solvents such as water. The precision solid aluminium rotors efficiently conduct the heat energy needed for concentration to the samples, whereas in an open or plastic rotor the samples are effectively insulated by the plastic and/or the vacuum in the chamber.

Rotors are available for all common tubes, vials, centrifuge tubes and microcentrifuge tubes.

For microtitre plates, two and four place swing rotors will accept multiple plates through the use of stackers. A MV Duo can hold six shallow plates and the larger MV Quattro up to twenty shallow-well microplates or eight deep-well plates.

Freeze-Drying

The MV SpeedTrap in conjunction with a Super Vacuum Pump may be used to freeze-dry up to 250 ml of water or other suitable solvents. Samples may be placed in a rotor in the MV concentrator and freeze-dried at full vacuum. The low vacuum level boils the samples at a temperature below their freezing point; once frozen the ice sublimes away, leaving a dry powder.

Alternatively, the MV SpeedTrap and Super Vacuum Pump may be used as a stand-alone freeze dryer. A range of accessories has been designed to allow the SpeedTrap to directly accept pre-frozen samples in either flasks or vials. Simply attach the freeze-drying accessory jar in place of the regular SpeedTrap collection vessel. Flasks can be attached to the valves, or vials may be placed directly in the accessory jar, using the holders provided.

Please note: *The MV Duo Pump and Quattro Pump are not suitable for freeze-drying*

Freeze-Drying Accessory Kit

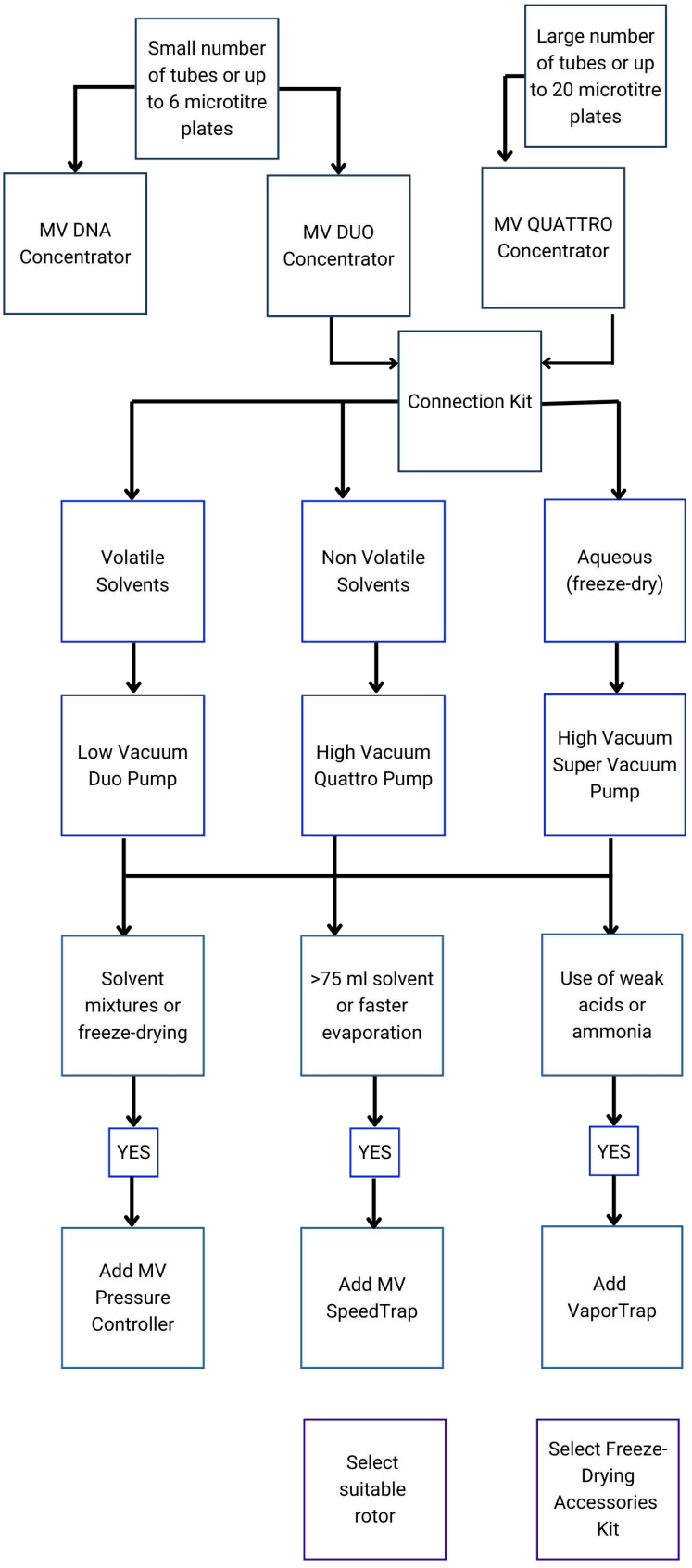
The freeze-drying accessory kit comprises: freeze-drying jar, three freeze-drying valves, two vial holders with four options and handle, and a vacuum isolation valve. The vacuum valve can be used to seal off the SpeedTrap from the concentrator should you wish to configure your system as a freeze dryer and a concentrator. In such situations we recommend using the MV Pressure Controller to allow selection of optimal vacuum levels for each process.

Choose Your Concentrator

Choose Your Pump

Choose Your Options

Choose Your Rotor & Accessories



MV Series

Modular Concentrator

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Specifications

DNA Concentrator	
Max. rotor speed	1465 rpm
Nominal sample load g force	up to 250 g
Temperature control range	30°C to 80°C
Dimensions (W x D x H)	360 x 602 x 300 mm
With catchpot	501 x 602 x 300 mm
Weight (Approx)	41.5 kg

Duo Concentrator	
Max. rotor speed	1465 rpm
Nominal sample load g force	up to 250 g
Temperature control range	30°C to 80°C
Dimensions (W x D x H)	360 x 424 x 300 mm
Weight (Approx)	21 kg

Quattro Concentrator	
Max. rotor speed	1130 rpm
Nominal sample load g force	up to 250 g
Temperature control range	30°C to 80°C
Dimensions (W x D x H)	480 x 594 x 300 mm
Weight (Approx)	35 kg

Duo Pump	
Ultimate vacuum§	<10.0 mbar (7.5 torr)
Peak performance	1.0 / 1.1 m^3/h
Dimensions (W x D x H)	215 x 389 x 300 mm
Weight	19 kg

Quattro Pump	
Ultimate vacuum§	<3.0 mbar (1.5 torr)
Peak performance	2.0 / 2.2 m^3/h
Dimensions (W x D x H)	215 x 389 x 300 mm
Weight	18 kg

Super Vacuum Pump	
Ultimate vacuum §	<0.05 mbar (7.5 torr)
Peak performance	6.2 m^3/h
Dimensions (W x D x H)	282 x 432 x 302 mm
Weight	26.6 kg

SpeedTrap	
Type	Single-stage vapour compression
Refrigerant gas	R1270
Refrigerant charge	28 g
CO_2E	<0.001 tonnes
Ultimate low temperature†	-50 °C
Max. pressure (PS)	30 bar
Refrigeration ACC range	110 °C
Condenser jar capacity	1 litre (maximum usable volume: 800ml)
Dimensions (W x D x H)	185 x 595 x 507 mm
Weight	34 kg

Pressure Controller	
Vacuum range	1-1100 mbar
Dimensions (W x D x H)	195 x 178 x 105 mm
Weight (Approx)	1.5 kg

Emissions	
Noise (@ 1 meter)	74 dBA

Actual dBA value may vary depending on equipment setup / composition

Electrical Supply	
100 V	50 Hz
100 V	60 Hz
120 V	60 Hz
220 V	60 Hz
230 V	50 Hz
Max. supply input	1500 A

Storage/ Transportation Environment*	
Ambient Temperature‡	0°C to 40°C
Relative humidity	10-80% non-condensing

*Store upright at all times.

Operational Environment*	
Ambient temperature	150°C to 30°C
Relative humidity	10-80% non-condensing
Altitude	Sea-level to 1600 m
Min. ventilation air-gap	50 mm
Installation environment	Indoor only

*Static- dissipative laboratory or similar

§ Ultimate low temperature; operational values may vary
† Ultimate vacuum; operational values may vary
‡ -10°C permissible during transport (only)

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