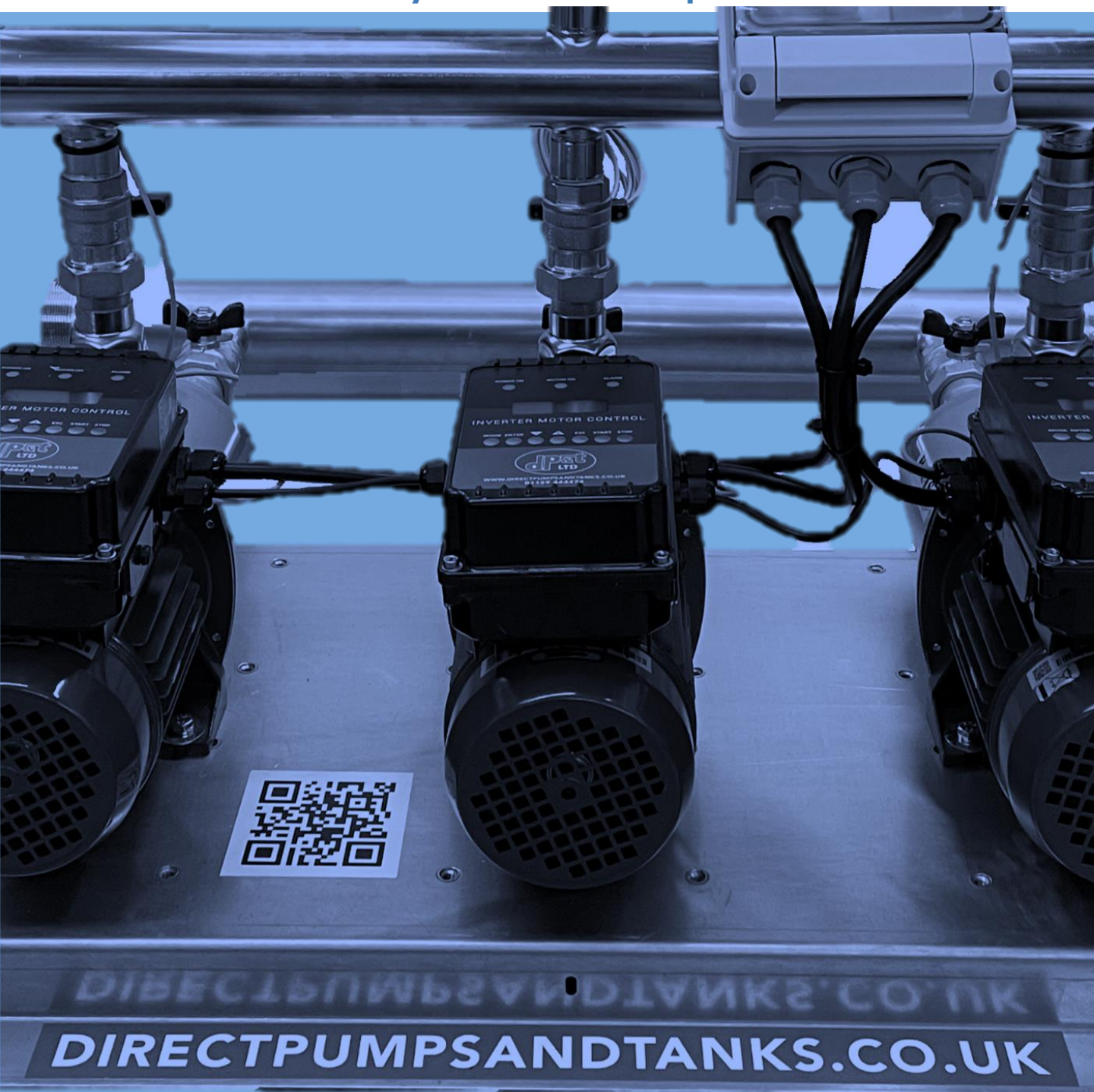




# Vari-RS Booster Set 1, 2 & 3 Pump Sets with Variable Speed Inverters

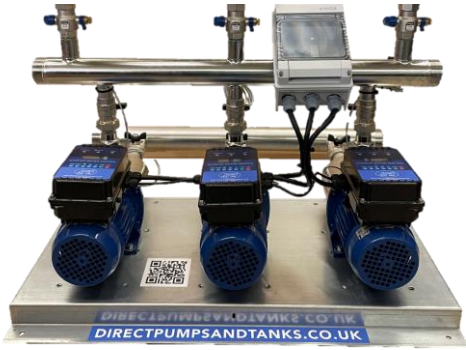
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# Vari-RS Booster Set

## 1, 2 & 3 Pump Sets with Variable Speed Inverters



### Technical Data

**Operating range:** 0.5 m<sup>3</sup>/hr – 45m<sup>3</sup>/hr

**Pumped Liquid:** The conveyed fluid must be: clean, potable, ground or mixed water, free of solid or fibrous suspensions and aggressive chemical substances. The units must be installed under cover, protected from the weather and freezing.

**Pumped Liquid Temperature Range:** 0 - 50°C

**Ambient Operating Temperature:** 0 - 40°C max 1km above sea-level

**Maximum Operating Pressure:** PN10 / 10 Bar

**Expansion Vessel:** All Vari-RS systems come with a Expansion vessel(s).

**1 Pump Set:** 1 x 8L.

**2 Pump Set:** 2 x 8L & AISI 304 Stainless suction and discharge Manifold.

**3 Pump Set:** 3 x 8L & AISI 304 Stainless suction and discharge Manifold.



### OPERATING CONDITIONS

Vari-RS pressurisation units can be used, in their standard versions, for civil, industrial and agricultural applications, as follows:

- Building services
- Water lifting and handling
- Air Conditioning
- Heating
- Irrigation
- Washing systems

The system available NPSH must be greater than the NPSH demanded from the pump.

For applications with different technical specifications, uses and climatic conditions (type of vector fluid, marine and aggressive industrial conditions), please contact our sales network.

### TESTS AND TRIALS

Before shipping, all pressurisation units are subject to hydraulic, mechanical and electrical testing.

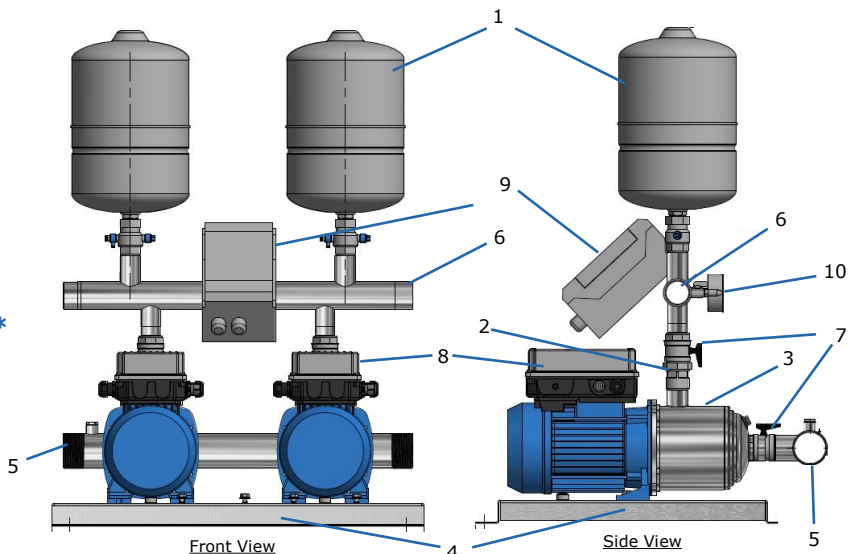
### MECHANICAL AND HYDRAULIC TESTS

- Pump optimisation & efficiency mid curve performance check
- Pump direction of rotation
- Mechanical testing of moving parts and running noise (on each pump)
- Tightness test with delivery port closed and nameplate rating tests
- MANUAL trials (using button on control panel) for each pump
- AUTOMATIC trials (using switch on control panel) for unit

Pump Material Data		
Key Components	Casing	EN 1.4301 (AISI 304)
	Impeller	
	Casing Cover	
	Shaft Seal	Ceramic / Carbon / EPDM
	Bracket	EN AB AISI11CU2(FE) Die Cast Aluminium
Pipe Connections	Suction	G1" G 1¼" G1½" G2" G2½"
		UNI ISO 228
	Discharge	G1" G 1¼" G1½" G2"
		UNI ISO 228

- 1 - Expansion Vessel\*
- 2 - Non-Return Valve
- 3 - Multi-Stage Pump\*
- 4 - Base Plate
- 5 - Suction Manifold
- 6 - Discharge Manifold
- 7 - Single Union Isolation Ball Valve
- 8 - Variable Speed Inverter\*
- 9 - Protection Control Device
- 10 - Pressure Gauge\*

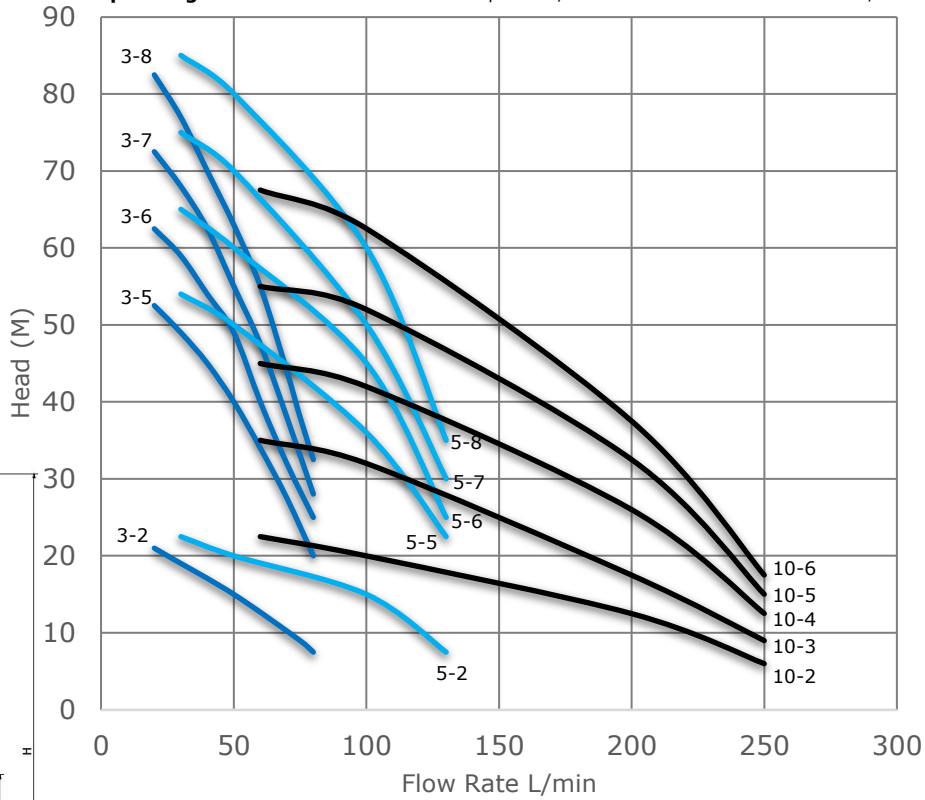
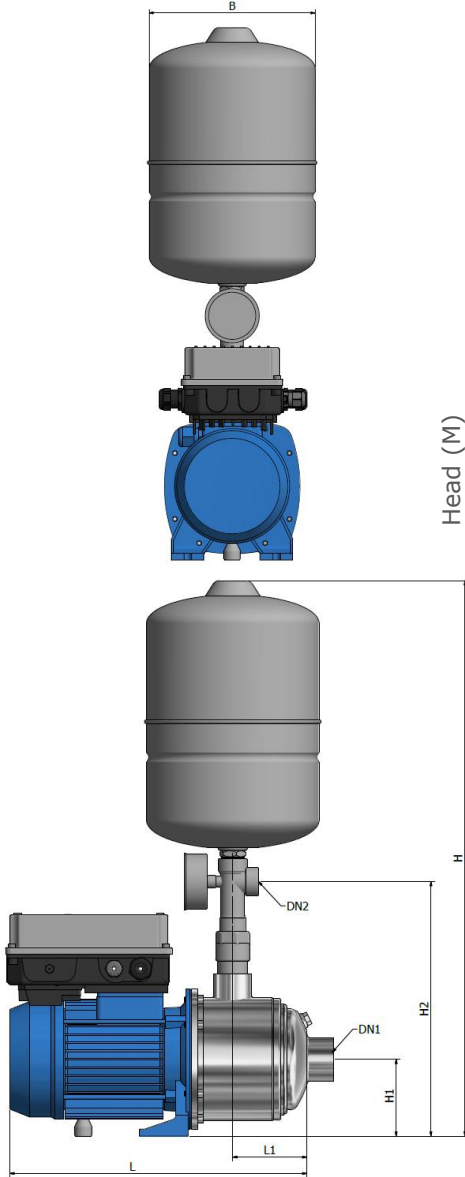
The 1 Pump sets only come with the items marked \* as standard design.



# Vari-RS Booster Set

## 1 Pump Set with Variable Speed Inverter

Operating Parameters: 0 - 50°C Max Temperature, Max Pressure: 8.5 Bar Max Flow 250l/min



All systems set at mid curve efficiency points during first activation on wet test using the RS variable speed inverter at closed valve up to max pressure.

The Performance curves are based on kinematic viscosity values = 1/mm<sup>2</sup>/s and density equivalent to 1000kg/m<sup>3</sup>.

Curve tolerance according to ISO9906, data extracted directly from Ebara data

Each pump operates within a 60-65dB noise rating at max speed, data recorded from 1m distance to a +-2.5dB

### Dimensions of Single Pump Unit

### Electrical Data

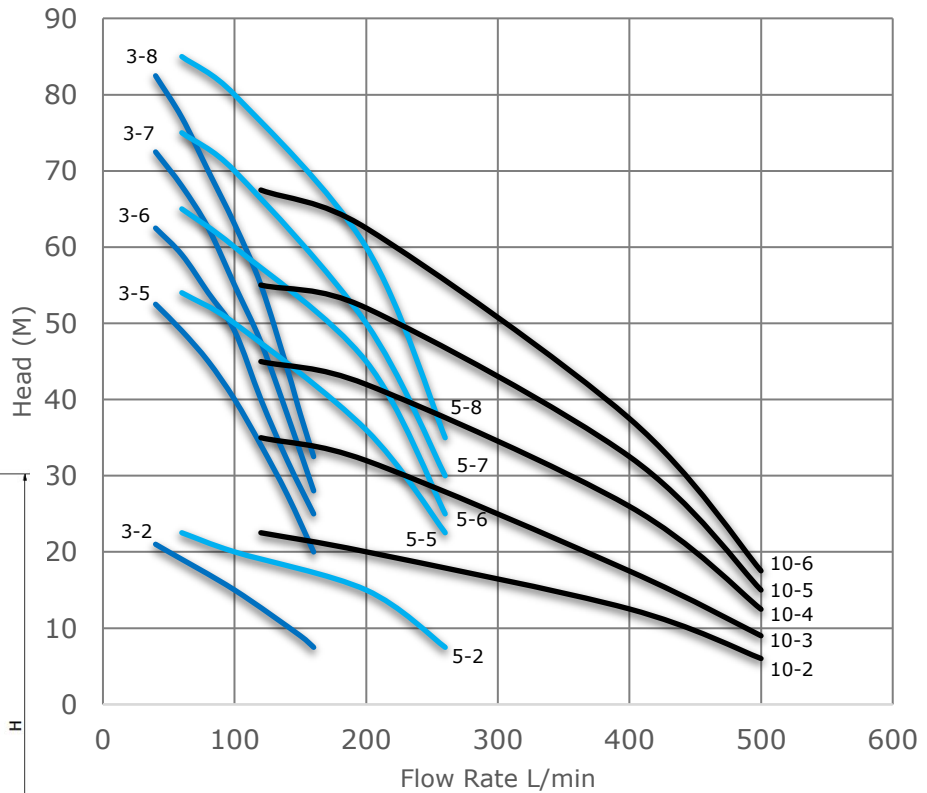
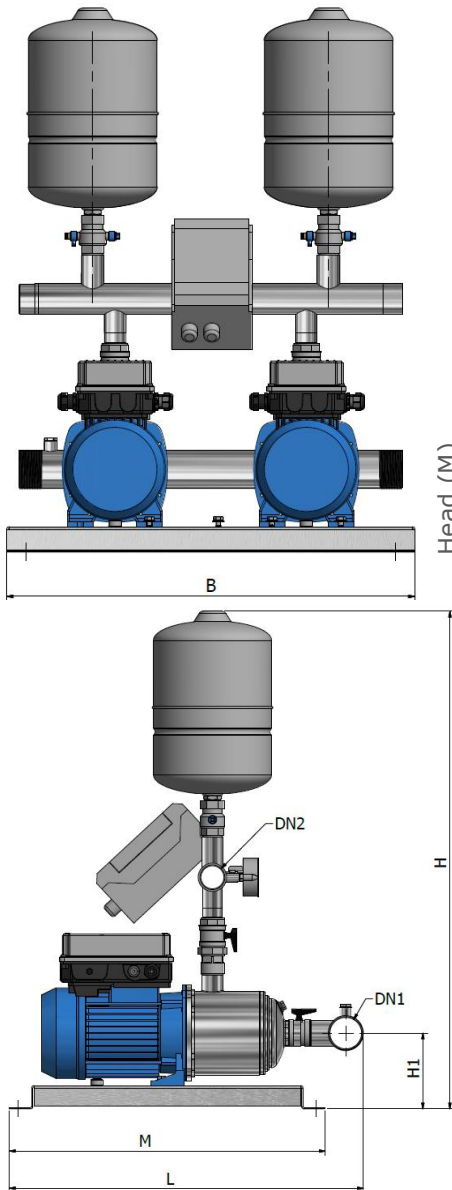
Model Ref	DN1	DN2	H	H1	H2	L	Power supply	P2 Nominal		FLC (amp)
								kW	HP	
1MX3-2RS	1"	1"	700	80	310	360	1x240v	0.45	0.6	2.3
1MX3-5RS	1"	1"	700	80	310	408	1x240v	0.75	1.0	3.0
1MX3-6RS	1"	1"	700	80	310	444	1x240v	0.9	1.2	4.3
1MX3-7RS	1"	1"	700	80	310	518	1x240v	1.3	1.8	5.6
1MX3-8RS	1"	1"	700	80	310	542	1x240v	1.3	1.8	5.6
1MX5-2RS	1¼"	1"	700	80	310	360	1x240v	0.45	0.6	2.3
1MX5-5RS	1¼"	1"	700	80	310	470	1x240v	1.3	1.8	5.6
1MX5-6RS	1¼"	1"	700	80	310	498	1x240v	1.3	1.8	5.6
1MX5-7RS	1¼"	1"	700	80	310	519	1x240v	1.5	2.0	6.3
1MX5-8RS	1¼"	1"	700	80	310	543	1x240v	2.2	3.0	8.2
1MX10-2RS	1½"	1¼"	700	80	310	379	1x240v	0.75	1.0	3.0
1MX10-3RS	1½"	1¼"	700	80	310	441	1x240v	1.3	1.8	5.6
1MX10-4RS	1½"	1¼"	700	80	310	472	1x240v	1.5	2.0	6.3
1MX10-5RS	1½"	1¼"	700	80	310	502	1x240v	2.2	3.0	8.2
1MX10-6RS	1½"	1¼"	700	80	310	532	1x240v	2.2	3.0	8.2



# Vari-RS Booster Set

## 2 Pump Set with Variable Speed Inverters

Operating Parameters: 0 - 50°C Max Temperature, Max Pressure: 8.5 Bar Max Flow 500l/min



All systems set at mid curve efficiency points during first activation on wet test using the RS variable speed inverter at closed valve up to max pressure.

The Performance curves are based on kinematic viscosity values = 1/mm<sup>2</sup>/s and density equivalent to 1000kg/m<sup>3</sup>.

Curve tolerance according to ISO9906, data extracted directly from Ebara data

Each pump operates within a 60-65dB noise rating at max speed, data recorded from 1m distance to a +/-2.5dB

### Dimensions of Twin Pump Unit

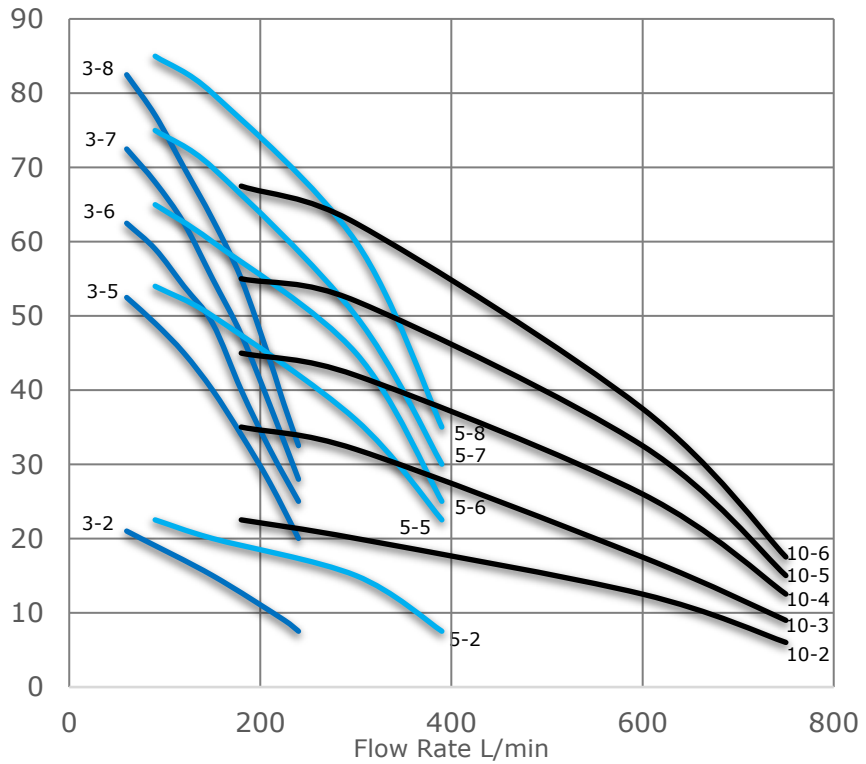
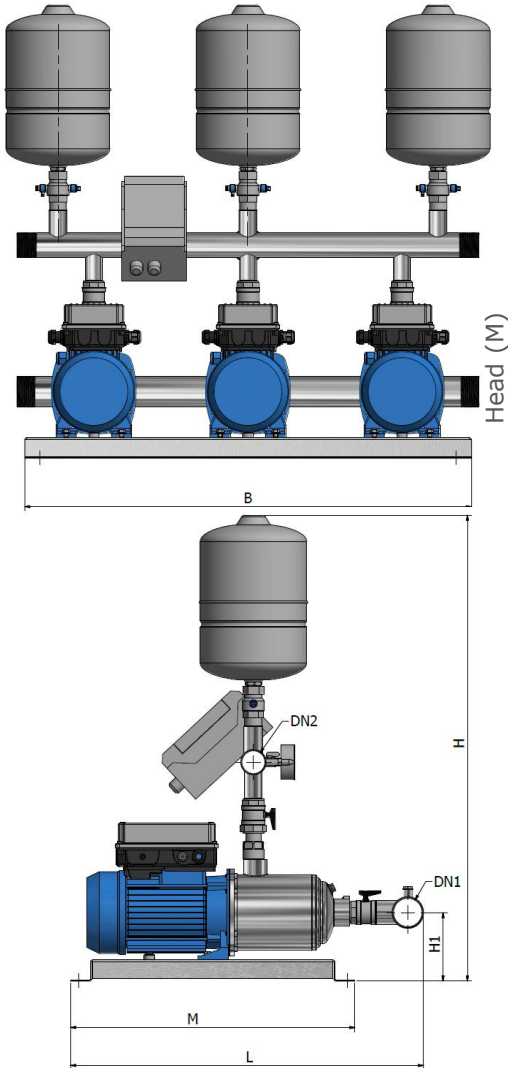
### Electrical Data

Model Ref	DN1	DN2	B	H	H1	L	M	Power supply	P2 Nominal		FLC (amp)
									kW	HP	
2MX3-2RS	2"	1¼"	640	900	135	608	540	1x240v	2x0.45	2x0.6	2x2.3
2MX3-5RS	2"	1¼"	640	900	135	656	540	1x240v	2x0.75	2x1.0	2x3.0
2MX3-6RS	2"	1¼"	640	900	135	680	540	1x240v	2x0.9	2x1.2	2x4.3
2MX3-7RS	2"	1¼"	640	900	135	704	540	1x240v	2x1.3	2x1.8	2x5.6
2MX3-8RS	2"	1¼"	640	900	135	728	540	1x240v	2x1.3	2x1.8	2x5.6
2MX5-2RS	2"	1¼"	640	900	135	608	540	1x240v	2x0.45	2x0.6	2x2.3
2MX5-5RS	2"	1¼"	640	900	135	656	540	1x240v	2x1.3	2x1.8	2x5.6
2MX5-6RS	2"	1¼"	640	900	135	680	540	1x240v	2x1.3	2x1.8	2x5.6
2MX5-7RS	2"	1¼"	640	900	135	704	540	1x240v	2x1.5	2x2.0	2x6.3
2MX5-8RS	2"	1¼"	640	900	135	728	540	1x240v	2x2.2	2x3.0	2x8.2
2MX10-2RS	2½"	2"	640	950	135	627	540	1x240v	2x0.75	2x1.0	2x3.0
2MX10-3RS	2½"	2"	640	950	135	689	540	1x240v	2x1.3	2x1.8	2x5.6
2MX10-4RS	2½"	2"	640	950	135	708	540	1x240v	2x1.5	2x2.0	2x6.3
2MX10-5RS	2½"	2"	640	950	135	722	540	1x240v	2x2.2	2x3.0	2x8.2
2MX10-6RS	2½"	2"	640	950	135	739	540	1x240v	2x2.2	2x3.0	2x8.2

# Vari-RS Booster Set

## 3 Pump Set with Variable Speed Inverters

Operating Parameters: 0 - 50°C Max Temperature, Max Pressure: 8.5 Bar Max Flow 750l/min



All systems set at mid curve efficiency points during first activation on wet test using the RS variable speed inverter at closed valve up to max pressure.

The Performance curves are based on kinematic viscosity values = 1/mm<sup>2</sup>/s and density equivalent to 1000kg/m<sup>3</sup>.

Curve tolerance according to ISO9906, data extracted directly from Ebara data

Each pump operates within a 60-65dB noise rating at max speed, data recorded from 1m distance to a +/-2.5dB

Dimensions of Twin Pump Unit								Electrical Data			
Model Ref	DN1	DN2	B	H	H1	L	M	Power supply	P2 Nominal		FLC (amp)
									kW	HP	
3MX3-2RS	2½"	2"	900	920	130	608	540	1x240v	3x0.45	3x0.6	3x2.3
3MX3-5RS	2½"	2"	900	920	130	656	540	1x240v	3x0.75	3x1.0	3x3.0
3MX3-6RS	2½"	2"	900	920	130	680	540	1x240v	3x0.9	3x1.2	3x4.3
3MX3-7RS	2½"	2"	900	920	130	704	540	1x240v	3x1.3	3x1.8	3x5.6
3MX3-8RS	2½"	2"	900	920	130	728	540	1x240v	3x1.3	3x1.8	3x5.6
3MX5-2RS	2½"	2"	900	920	130	627	540	1x240v	3x0.45	3x0.6	3x2.3
3MX5-5RS	2½"	2"	900	920	130	689	540	1x240v	3x1.3	3x1.8	3x5.6
3MX5-6RS	2½"	2"	900	920	130	708	540	1x240v	3x1.3	3x1.8	3x5.6
3MX5-7RS	2½"	2"	900	920	130	722	540	1x240v	3x1.5	3x2.0	3x6.3
3MX5-8RS	2½"	2"	900	920	130	739	540	1x240v	3x2.2	3x3.0	3x8.2
3MX10-2RS	2½"	2"	900	920	130	676	540	1x240v	3x0.75	3x1.0	3x3.0
3MX10-3RS	2½"	2"	900	920	130	725	540	1x240v	3x1.3	3x1.8	3x5.6
3MX10-4RS	2½"	2"	900	920	130	760	540	1x240v	3x1.5	3x2.0	3x6.3
3MX10-5RS	2½"	2"	900	920	130	834	540	1x240v	3x2.2	3x3.0	3x8.2
3MX10-6RS	2½"	2"	900	920	130	858	540	1x240v	3x2.2	3x3.0	3x8.2

# Vari-RS Booster Set

## The RS Variable Speed Inverter



### Technical Data

- Maximum Motor Power:** 2.2kW
- Power Supply Voltage:** 1x 220-244v
- Inverter Frequency Output:** 110%
- Pressure Range:** 0 – 30Bar
- Mounting Type:** On Board Motor
- User Interface:** CD Display 2x16 with directional menus
- Communication:** Up to 8 Inverts in a set via RS485
- Output:** Motor on alarm relay
- Cooling Method:** Motor Forced Ventilation
- Protection Grade:** IP55

### Applications

The RS variable speed inverters were designed with the needs for modern plumbing in mind and the constant pressure requirements which comes with them, items such as hot water cylinders and high pressure showers require consistent pressure and often leaves the rest of the system void of pressure. The RS inverter driven systems are applicable to Hotels, housing construction, apartment facilities, restaurants and water supply for irrigation.

### Advantages

Constant Pressure – Quiet Operation – Electrically efficient / economical operation – No contact with water – Dry Run Protection – Gradual Pressure Increase Facility, to prevent system shock.

### Operation

The Vari-RS cold water booster set uses the RS variable speed inverter and is installed onto the Motor Connection Box of each pump in the set. The inverter regulates the rotational speed of the pump using the electrical frequency and that it operates at a minimum value that meets the users request, often referred to as the demand of the plumbing system.

The RS inverter determines the pump's master duty via the electrical frequency. When installed on a twin or triple system, the MASTER runs for 60 minute long cycles before the MASTER duty is allocated to the second or third pump, before reverting back to the first pump. This operational design allows for evenly spread wear on each pump so during peak hours it will not always be the same pump coming on. Ideal for prolonged efficiency and lifespan, which is especially desirable on commercial or hospitality applications.

The RS inverter orders the pump to start once it senses the request of water, it is identified by a pressure differential recorded via the transducer underneath the expansion vessel. The faster the pressure drop, the faster the inverter needs to adjust the pump speed to meet the demand. During periods of high demand, when the inverter recognises a significant pressure drop and the MASTER pump is already at max speed, identified by 50.0Hz to the lower left of the inverter screen (inset right), the slave pump(s) will activate in order to reattain target pressure, meeting the user's water demand.

Once the target delivery pressure has been reached, the current delivery pressure is identified by the readout on the bottom middle of the above image. The RS inverters will begin to slow down each pump before switching each pump off.



### Cold Water Storage Tanks

Direct Pumps and Tanks also supply a huge range of a WRAS approved cold water storage tanks, brass equilibrium ball valves, GRP enclosures for external housing of the booster system. These systems come fully insulated with encapsulated base boards for added thickness and stability and even drip trays, complete with overflow bylaws and CAT 4 (AG) or 5 (AB) air gap water protection.

### AquaPOD – Below Ground, Cold Water Storage & Booster Plant Room System

When there's no available space to install a break tank and booster system, especially when the application's demand requires a few thousand Litres of storage, the only choice is go below ground, the AquaPOD has been designed for just that. With a wet side storage of 2000L, 3000L, 4000L and 6500L and a dry side plant room with enough available space to house the booster and all the required ancillary equipment to make it a safe place for servicing, complete with a thermostatic heater, ventilation and lighting. Please contact our sales office for more information.



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