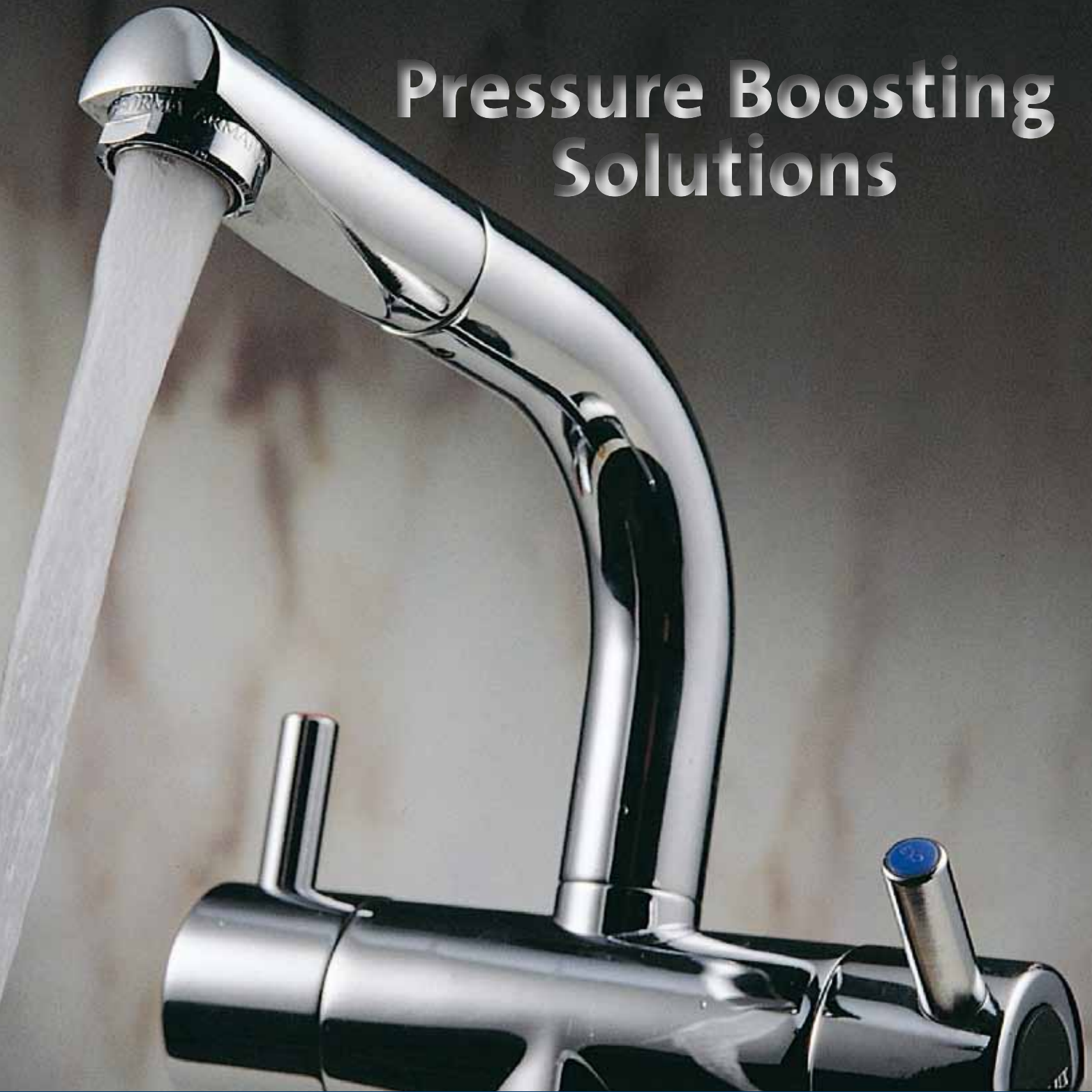


GRUNDFOS WATER PRESSURE BOOSTING

Pressure Boosting Solutions



BE > THINK > INNOVATE >

GRUNDFOS 

WHAT CAN CAUSE LOW WATER PRESSURE?

Poor mains pressure –

Generally due to water companies reducing the supply pressure.

Height of the property –

The taller the building and the more pressure outlets there are, the greater the pressure required to fill header tanks.

Times of peak demand during the day –

Mains water pressure reduces when the demand for water is high, for example in the morning when lots of people are getting up.

Ground level –

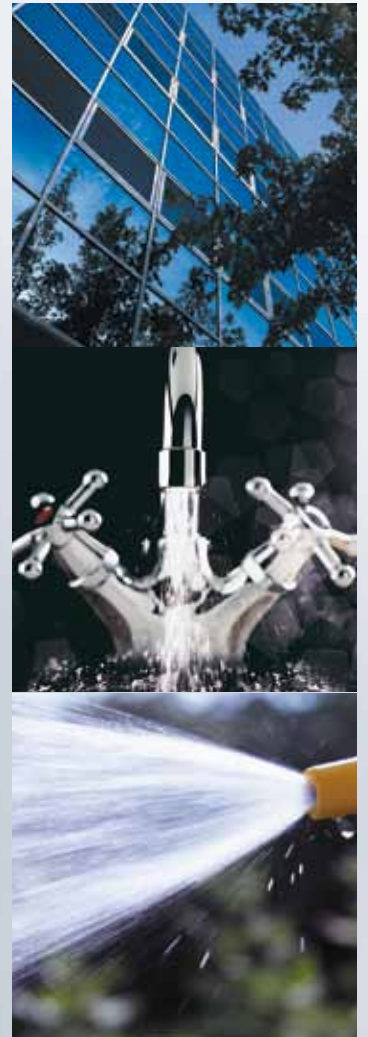
Pressure will be higher in low lying areas below the reservoir or pumping station and lower on the hills above.

Inadequate pumping facilities –

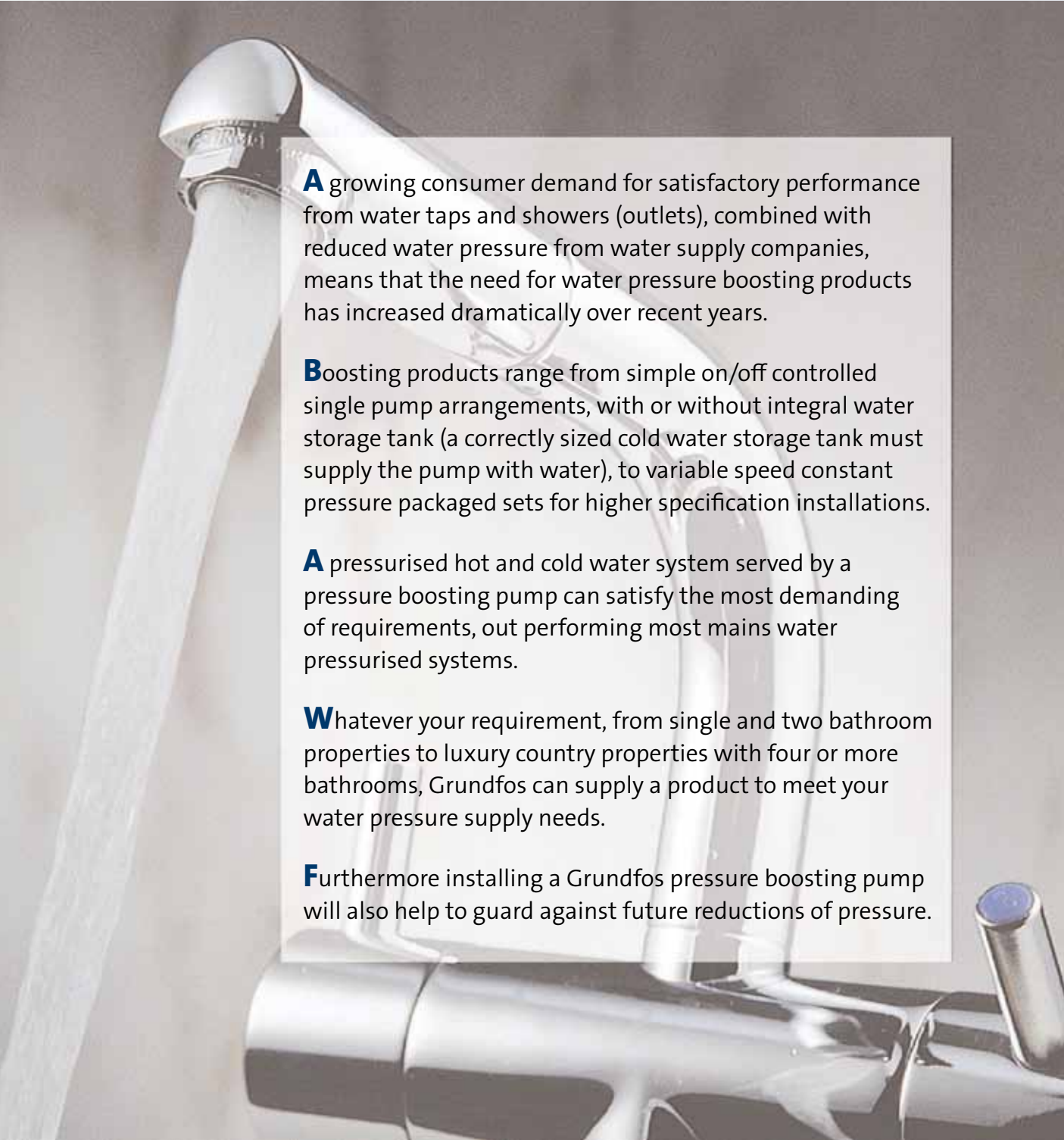
On boosted supplies where the installed pumps are too small.

Extraordinary use –

For example during dry spells, when hosepipes and sprinklers are being used.



PRESSURE BOOSTING



A growing consumer demand for satisfactory performance from water taps and showers (outlets), combined with reduced water pressure from water supply companies, means that the need for water pressure boosting products has increased dramatically over recent years.

Boosting products range from simple on/off controlled single pump arrangements, with or without integral water storage tank (a correctly sized cold water storage tank must supply the pump with water), to variable speed constant pressure packaged sets for higher specification installations.

A pressurised hot and cold water system served by a pressure boosting pump can satisfy the most demanding of requirements, out performing most mains water pressurised systems.

Whatever your requirement, from single and two bathroom properties to luxury country properties with four or more bathrooms, Grundfos can supply a product to meet your water pressure supply needs.

Furthermore installing a Grundfos pressure boosting pump will also help to guard against future reductions of pressure.

BOOSTER PUMP APPLICATIONS



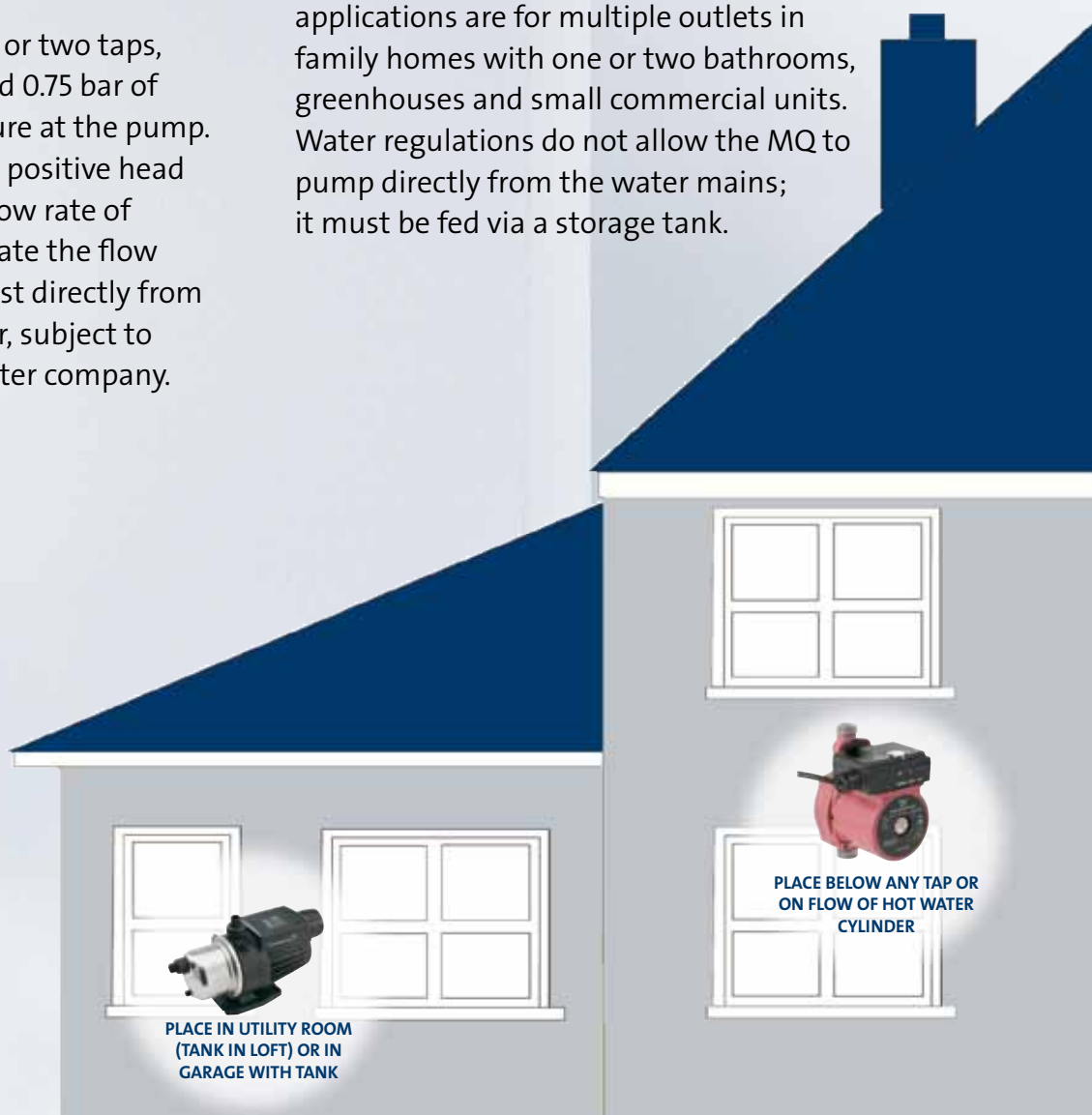
UPA 15-90N

Boosts the pressure to one or two taps, adding between 0.5 bar and 0.75 bar of pressure to the inlet pressure at the pump. Designed only for use with positive head applications, as a gravity flow rate of 120 l/hr is required to operate the flow switch. Can be used to boost directly from the mains to a combi boiler, subject to approval from the local water company.



MQ Range

Designed for cold water supply and pressure boosting to outlets no greater than 13m above the pump. Typical applications are for multiple outlets in family homes with one or two bathrooms, greenhouses and small commercial units. Water regulations do not allow the MQ to pump directly from the water mains; it must be fed via a storage tank.



PLACE IN UTILITY ROOM
(TANK IN LOFT) OR IN
GARAGE WITH TANK

PLACE BELOW ANY TAP OR
ON FLOW OF HOT WATER
CYLINDER



Home Booster

A compact, all in one unit, with an integral 180 litre effective volume storage tank. Suitable for installations with one or two bathrooms and fits into the space of a fridge freezer. A slave tank is available for additional storage.



Max-E Boost

A cost effective packaged cold water booster set for pressure boosting in larger properties with two or more bathrooms. Requires a correctly sized cold water storage tank. Please see chart on page 10.



PLACE IN UTILITY ROOM OR GARAGE

PLACE IN GARAGE OR FROST PROTECTED OUT BUILDING

BOOSTER PUMP SOLUTIONS



UPA 15-90 N

BOOSTS PRESSURE TO ONE OR TWO OUTLETS

This is a small stainless steel booster pump operated by an integral flow switch requiring a minimum flow of 2 l/m (1 pint in 15 sec). The pump adds typically 0.5 bar to the incoming pressure at a flow of 0.2 l/s.

It can be used to increase the pressure to a combination boiler (subject to water company permission) where the mains supply pressure is marginal.

The UPA 15-90 N may also be used to increase gravity flow either from a cold water storage tank or on the flow of a HW cylinder after the open vent. It is suitable for boosting hot water up to 65C max.

Features and Benefits

- Easy to install.
- Automatic or manual operation.
- Suitable for water temperatures up to 70°C.
- Maintenance free.
- Low noise level.
- Incorporates flow switch which starts or stops pump when tap is switched on or off.

Call Domestic Building Services on 01525 775402



MQ 3-45

BOOSTS PRESSURE TO MULTIPLE OUTLETS

This is a cold water booster pump with integral controls. The pump maintains a system positively pressurised and can be used to boost to outlets up to 13m above the level of the pump. The pump operates whenever the pressure drops to 1.5 bar or if a flow is detected. The in built flow sensor maintains operation while there is a demand and will stop when the flow is stopped.

A pressure reducing valve should be used to regulate the outlet pressure as the maximum pump pressure can be up to 4.5 bar.

Typical performance for the MQ3-45 is 0.7 l/s at 3 bar and 1 l/s at 2 bar.

MQ 3-35 also available

Features and Benefits

- Complete system - no additional control required.
- Easy to install, maintenance free.
- Compact design.
- Built in dry running protection.
- Automatic reset.

Call Domestic Building Services on 01525 775402



HOME BOOSTER

ALL IN ONE WHOLE HOUSE BOOSTER UNIT

A cold water booster set with integrated pump, 200 ltr storage tank and pressure manager PM2 controller.

Boost mains water supply, to satisfy the demand requirements of a combi boiler, unvented hot water cylinder, and any outlets that require a minimum operating pressure.

Suitable for most domestic properties with a standard bathroom, en-suite, cloakroom and normal household appliances.

Features and Benefits

- Fully packaged unit - including tank.
- WRAS approved.
- Nominal outlet pressure = 3bar @ 0.5 l/s.
- Adjustable settings via pressure manager PM2 controller.
- In built dry running protection.
- For properties with 4 to 5 occupants, or where the storage tank refills very slowly, an additional 180 litre water storage unit is available.

Call Domestic Building Services on 01525 775402



MAX-E BOOST

WHOLE HOUSE PACKAGED BOOSTER SET

The Max-E Boost uses the latest variable speed pump motor technology, to maintain a constant discharge pressure up to a maximum setting of 4.5bar.

The WRAS approved CRIE5-8 stainless steel vertical multistage pump is factory commissioned to deliver a constant 3 bar pressure at flow rates up to a maximum of 1.9 l/s.

The speed controlled operation of the Max-E Boost pump helps eliminate pipe work noise caused by water hammer, normally associated with standard on/off controlled pumps. The Max-E boost must be used in conjunction with a cold water storage tank (not supplied).

Features and Benefits

- Packaged set with integral controls.
- Variable speed operation for constant pressure.
- Factory commissioned to 3 bar, capacity 1.9 l/s.
- WRAS approved pump and pressure vessel.
- Control panel with indicator lights.
- Single phase supply.
- Low level float included.

Call Domestic Building Services on 01525 775402



SHOWER PUMPS

WATERMILL SHOWER BOOSTING PUMPS

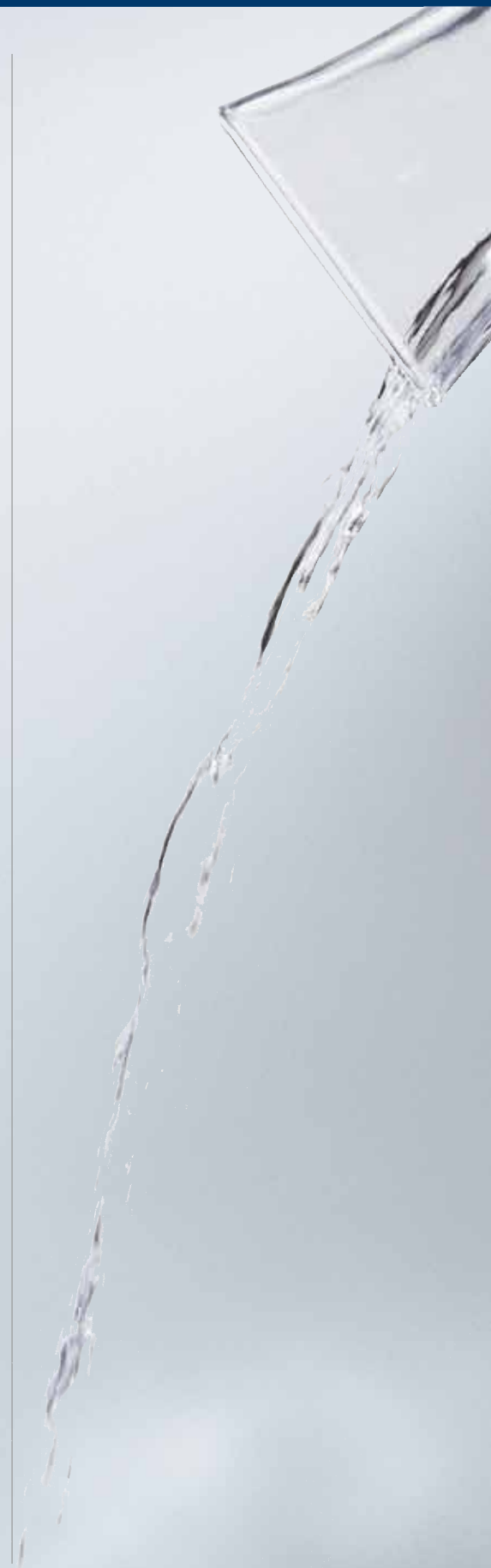
Grundfos Watermill offer a wide selection of pumps designed to boost the water pressure to a shower or bathroom fittings by 1 bar up to 4 bar.

There are 4 ranges and within each range there are a number of variations. So whether you require twin or single impeller, brass or composite, negative head or positive head operation – Grundfos have the ideal pump for you.

Features and Benefits

- Compact design.
- Easy to install.
- Integral controls.
- Anti vibration feet.
- Supplied with stainless steel flexible hoses.
- Suitable for use with 15mm or 22mm pipework.
- Fitted with high density, long life, carbon graphite seals.
- Many other features, specific to each model.
- Surrey & York flanges available - designed to provide an independent hot water supply, reduce air surging, noise and temperature variations.

For Shower Pumps call Grundfos Watermill on 01732 869700



PUMP ARRANGEMENT AND TANK SELECTION

DUTY

In order to be able to select the most appropriate pump arrangement, the highest likely flow rate and the minimum required pressure must first be established. The combination of flow and pressure is known as the 'Duty'.

FLOW

The booster pump is not normally needed to supply all installed outlets simultaneously, it is therefore necessary to determine the highest likely flow. The more outlets installed and the greater the number of people using the outlets the higher the highest flow rate is likely to be. For small systems the installer can make a judgement about the number of outlets that are likely to be in use at the same time. Alternatively the guide toward the end of this leaflet can be used.

PRESSURE

It is a relatively simple matter to determine the minimum pressure requirement. There are three parts that make up the total pressure required at the pump. The 'static pressure' is the height from the water level in the storage tank to the highest outlet. The height in metres divided by 10.2 gives the static pressure in bar. Secondly, to achieve a satisfactory performance, outlet fittings require a minimum working pressure; this must be added to the static pressure requirement. Please note the highest fittings may not necessarily lead to the highest pump pressure requirement. Thirdly is the pressure loss in the distribution pipe work (for pipe work sized for 1.5 m/s flow velocity a pressure loss of 4m/100m can be used).

For example, an unvented hot water cylinder requires a minimum cold water pressure of 3 bar. The HW cylinder is mounted 5m above the storage tank. In this case the pressure at the outlets is determined by the HW cylinder pressure reducing valve i.e. 3 bar. The total pipe run from the storage tank to the cylinder is 20m. Therefore the total required pump pressure is:

Static height 5m = 0.5 bar

Outlet pressure requirement = 3 bar

Pipe friction loss = $4\text{m}/100\text{m} \times 20 \div 10.2 = 0.1 \text{ bar}$

Total required pump pressure = 3.6 bar.

PUMP ARRANGEMENT

Grundfos provide a number of cost effective booster pump options, from a simple single pump and pressure switch arrangement to a comprehensive package multiple pump set with customised features. When specifying a booster set consideration must be given as to whether a multiple pump arrangement is required. This is recommended for high specification developments or for vital services where loss of water pressure is unacceptable in the event of pump maintenance or failure.

DIRECT MAINS COLD WATER BOOSTING

In most cases the water bye laws do not allow a pump to be fitted directly to the incoming mains supply, unless permission has been obtained from the water company.

BREAK STORAGE TANK SUPPLY

The break storage tank is sized according to the amount of water used by the potential number of occupants. The capacity of the mains supply to fill the tank may also be taken into consideration where space is restricted. The tank should have sufficient capacity to meet the water demand requirements over the demand period. The tank capacity is not related to the instantaneous highest flow, but to the volume used over the demand period. A rule of thumb for water storage for small installations is 110 litres per person. The normal domestic water usage is approximately 150 litres per person per day. Water consumption figures differ according to the specification of the fittings and water usage pattern of the users. Where space is limited, it may not be possible to provide 24 hours of storage. Usually for residential water supply, the water usage occurs over two demand periods, as a minimum there should be sufficient storage to satisfy one demand period, which will be approximately half the 150 litre 24 hour storage capacity.

HIGH-STANDBY

For specification buildings there may be a requirement is for multiple pumps. For a two pump set, the pumps can be sized for Duty-Assist or Duty-Standby operation. In a Duty-Standby arrangement, each pump is sized to meet the full duty requirement. There is no loss of pressure should a pump be unavailable for operation. In a Duty-Assist arrangement, each pump is sized for half the required flow, both pumps are required to run in order to satisfy the full duty requirement, should one pump be unavailable the water supply will continue, but with some loss in pressure. The cost of a Duty-Standby arrangement will usually be slightly higher than a Duty-Assist arrangement, but this must be weighed against the importance of maintaining the normal water supply pressure. Where a greater security is needed the set operation can be extended to Duty-Assist -Standby, so preventing a loss in pressure in case of pump maintenance.

OPERATING EFFICIENCY

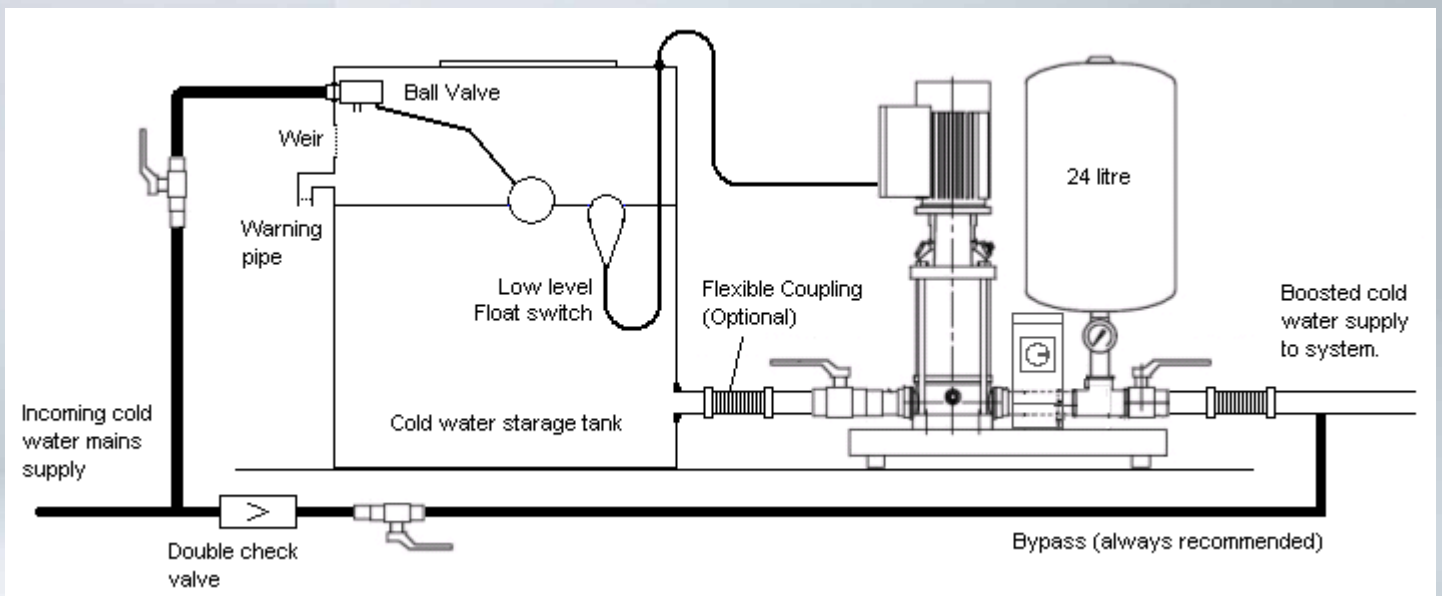
Today it is important to consider operating efficiency, pump efficiency reduces at low flows, therefore operating two pumps as duty assist will be more efficient than operating one larger pump, but operating costs must be evaluated against the duty profile.

Matching pump performance to the actual duty required saves energy. This can be achieved by using a variable speed drive (VSD). However, consideration should still be given to correct pump selection and efficiency, as the VSD cannot improve pump efficiency. The Grundfos range includes a large number of variable speed options for pressure boosting.

A Typical Application

The schematic below shows a typical system served by a pressure boosting pump arrangement. A cold water storage tanks is required by the Water Byelaws to provide isolation between water mains and the pressurised system in order to prevent back contamination of the water main. The pump draws water from the water storage tank and pressurises the hot and cold water system. For on/off controlled pumps a pressure reducing valve stabilises the pump pressure to the system avoiding pressure fluctuations.

SCHEMATIC LAYOUT MAX-E BOOST



DOMESTIC BOOSTER PRODUCT SELECTION GUIDE

Number of taps	Number of bathrooms	Number of occupants	Highest likely flow rate (l/s)	Type of property	Pump Performance					See WebCaps	Product Type
					Max	Pressure (bar)		Flow (l/s)			
						2.0	2.0	0.9	0.9		
					Mid	Pressure (bar)		Flow (l/s)			
0.2	2.6	0.5	0.7								
					UPA15-90	MQ3-45	Home Booster, 180 l	Home Booster + Slave Tank	Max-E Boost	Hydro Multi-E	
					•	•					Pump with controls
							•	•			Integral storage tank
									•	•	Packaged booster set
1-2	-	-	0.2	Flat	•						
	1	2	0.38	Flat		•	•				
	1	2	0.40	Semi-Detached (SD)		•	•				
	1	3	0.55	Semi-Detached (SD)		•	•				
	1	4	0.55	Semi-Detached (SD)		•	•				
	2	3	0.68	SD or Detached		•	•				
	2	4	0.80	SD or Detached		•		•			
	2	5	0.85	SD or Detached		•		•			
	3	4	1.10	SD or Detached					•		
	3	5	1.20	SD or Detached					•		
	3	6	1.30	Detached					•		
	4	5	1.45	Detached					•		
	4	6	1.55	Detached					•	•	
	4+	6+	1 to 6+	Detached						•	

Cold Water Storage Tank Sizing

No. of People	Recommended 24 hr Storage Requirement 1)		Minimum Storage for restricted spaces 2), 3)	
	Litre	Gallons	Litre	Gallons
2	226	50	150	33
3	339	75	225	49
4	452	100	300	66
5	565	125	375	82
6	678	150	450	99

- 1) The 24 hour storage is based on 25 gallon per person, and takes into consideration some filling by the mains supply.
- 2) The minimum storage is based on half the daily consumption of 150 l per person being used AM or PM.
- 3) The Home Booster selections are based on the minimum storage requirement.

All storage volumes are for standard domestic fittings, greater storage may be required for high volume fittings.

The above is a guide only and it is the responsibility of the Specifier or Installer to ensure correct product selection.

Too many jobs, too little time

As well as doing the "day job", you also need to stay informed about technological developments that enable you to supply a better service to your customers. Manufacturers are always producing new or improved products, especially now energy saving has become a global issue.

For you as a professional, it becomes hard to see the forest for the trees. You cannot attend training classes every night and there is no guarantee that the knowledge you acquired is still up to date when you actually need to use it.

Enter the Grundfos GPlus Academy

Grundfos helps you to stay abreast with the developments in pump technology. Your customers could save dozens or indeed hundreds of pounds per year, depending on your recommendations and installations. That is why Grundfos offers you the opportunity to enroll in

the Grundfos GPlus Academy, no strings attached. The Grundfos GPlus Academy training program is Internet based, so you can attend at your own convenience, the whole year round.



The more you learn, the more you earn

You are also rewarded for your efforts. After each training module, which takes between 3 to 5 minutes, you can test your knowledge and earn points.

These points can be redeemed immediately on-line in the Grundfos Prize Shop. After taking the first modules your points will already enable you to claim your first gifts or save them up for later.

And furthermore...

The Members Page is updated regularly with privileged information and offers for members of the Grundfos GPlus Academy.

How to enroll

Visit www.grundfos.co.uk/gplus, where you can read all about the program and enroll. You have to be an installer or a professional connected to the building and construction industry in the United Kingdom, in order to qualify.

Learning has never been more convenient



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BE > THINK > INNOVATE >

Being responsible is our foundation
Thinking ahead makes it possible
Innovation is the essence

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GB/WATERPRESSUREBOOSTING/0110

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