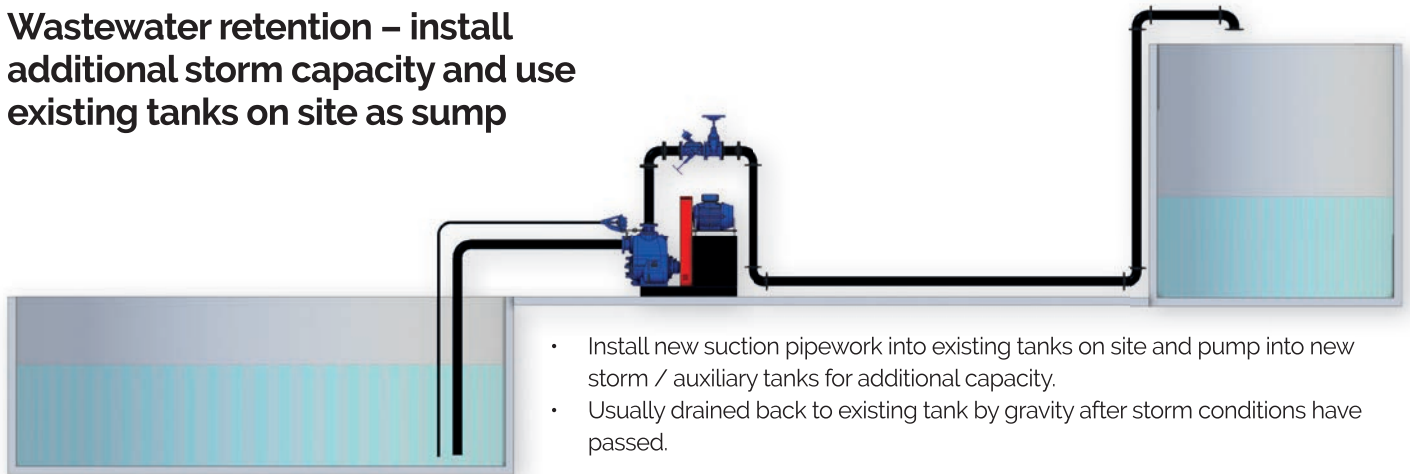


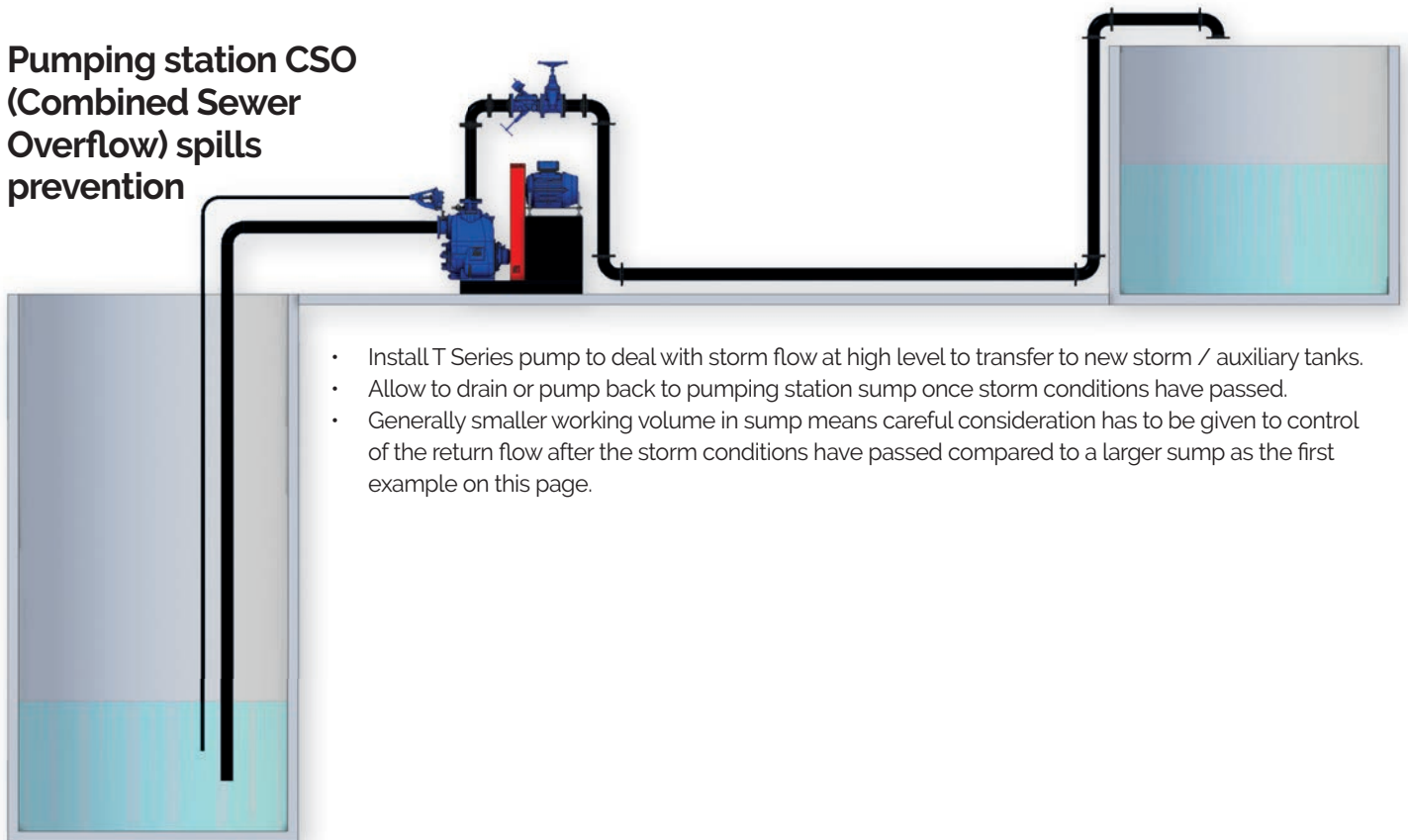
# Gorman-Rupp self-priming pump solutions for AMP 8 projects



## Wastewater retention – install additional storm capacity and use existing tanks on site as sump



## Pumping station CSO (Combined Sewer Overflow) spills prevention



## Accelerate AMP 8 Projects with Minimal-Dig Solutions from Hydromarque

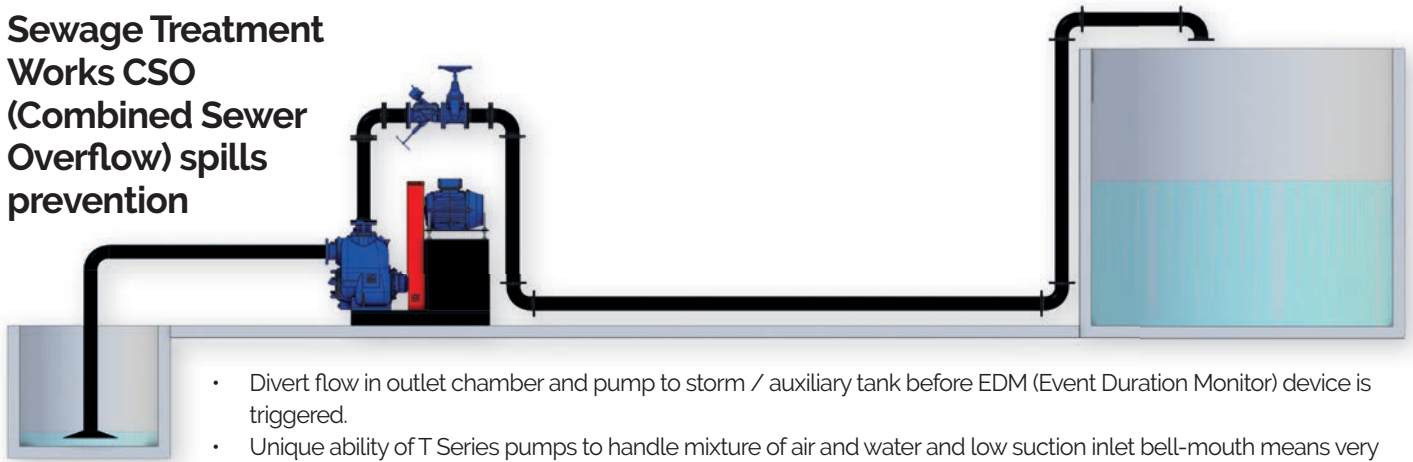
Submersible pumps have dominated the wastewater industry for many years, however self-priming centrifugal pumps can play their part in helping you achieve your AMP 8 targets.

The unique characteristics of Gorman-Rupp surface mounted pumps means 'bolt on' solutions can be quickly installed without the need for extensive civil engineering work. For example, if there is a requirement to divert high level flow from a pumping station well to a new storm tank, the only space required in the pump sump is for a suction line, which can be installed without wet well entry. Another advantage is that

suction pipework can be installed successfully within small, shallow sumps to pick up existing treatment streams without the requirement for additional wet wells to be constructed. Surface mounted equipment allows convenient performance monitoring to effectively manage predictive maintenance (which can be linked into digital solutions for data capture). We hope you find this document useful in exploring our fast install, minimal dig solutions for your AMP 8 projects to proactively prevent CSO spills in these challenging climate conditions and to make the most of nature-based solutions for water treatment.

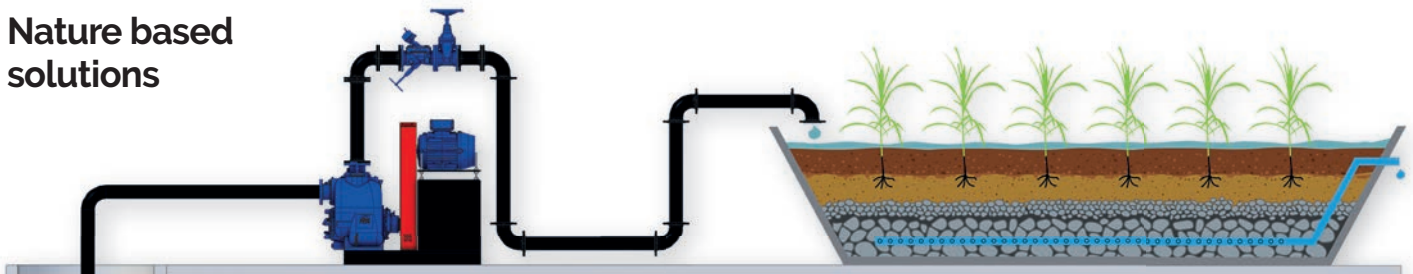


## Sewage Treatment Works CSO (Combined Sewer Overflow) spills prevention



- Divert flow in outlet chamber and pump to storm / auxiliary tank before EDM (Event Duration Monitor) device is triggered.
- Unique ability of T Series pumps to handle mixture of air and water and low suction inlet bell-mouth means very small and shallow sumps can be used.
- Run-on timers can be used to cope with flows from 0 L/s without exceeding maximum motor starts per hour. Pumps are comfortable operating under 'snore' conditions due their unique design.

## Nature based solutions

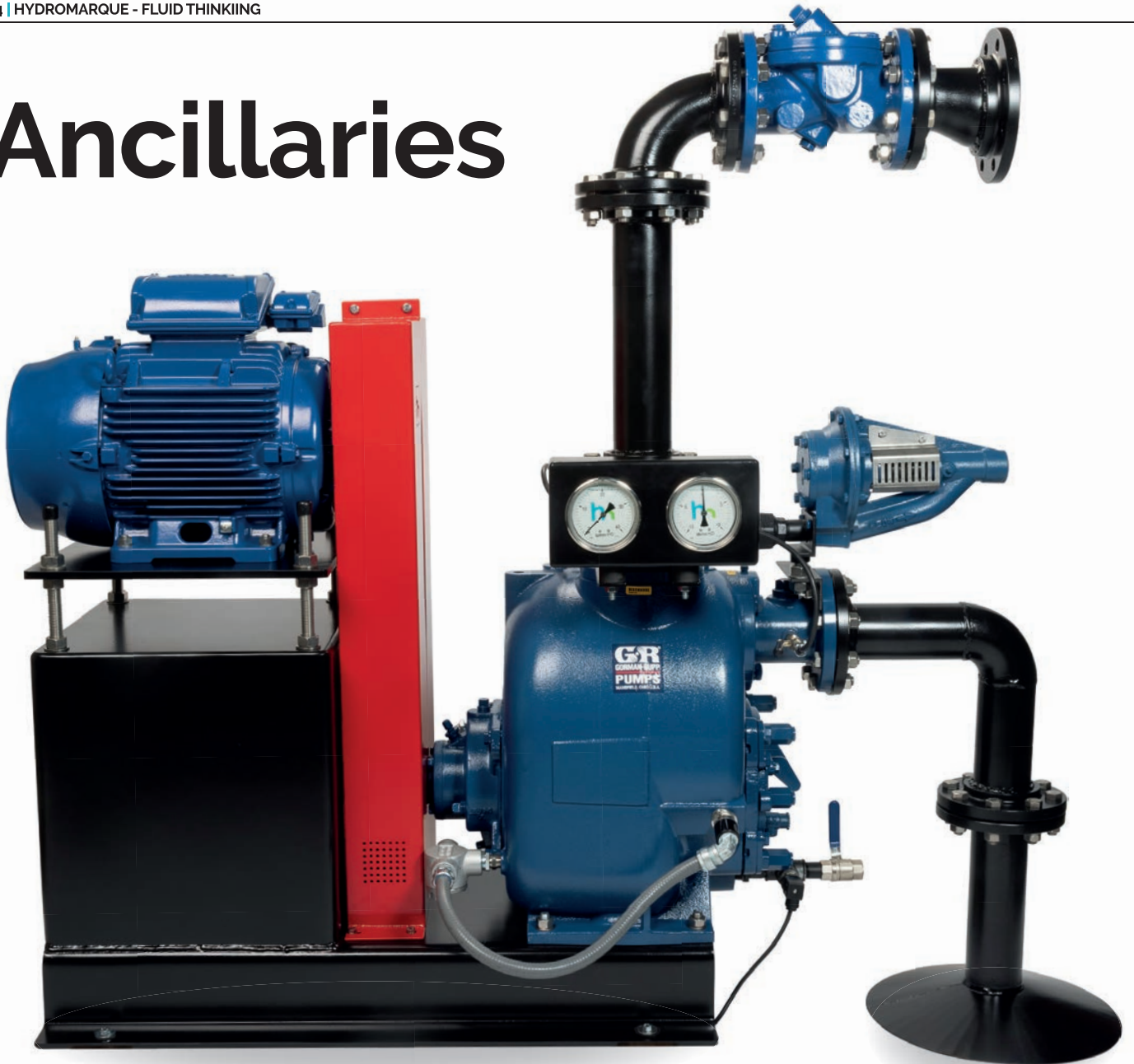


- Excellent for feeding reed bed solutions (vertical, horizontal and forced bed aeration) or any other high-capacity solution where a constant, steady flow is required.
- Low suction inlet bell-mouth means very small and shallow sumps can be used.
- Suitable for use with Copa Sacs. In this case very small flows (min 2 L/s) can be accommodated with a suction bell-mouth fitted.
- Usually very flat system head curves associated on these types of installations and therefore VSD (Variable Speed Drive) interfacing with a flow meter is recommended to ensure accurate and consistent process flow.

## Keypoints

- 1 Minimal civils work required (can often be a 'bolt-on' solution to an existing treatment stream with very little additional work required).
- 2 Fast installations to achieve results in good time. Minimal disruption to process flow, since usually just a simple suction line needs to be installed into the sump.
- 3 Surface mounted equipment for ease of maintenance and performance monitoring.
- 4 If solutions are temporary, then equipment is very flexible and can easily be re-purposed elsewhere.
- 5 Heavy duty, robust equipment means longevity in terms of asset life helping towards minimising carbon footprint to achieve net zero goals.

# Ancillaries



## Frost protection

- Essential for pumps installed outside if there is a risk of liquid freezing inside the pump potentially causing the casing to crack.
- Any heater option requires a constant electrical supply independent of the motor.
- All heater options have low temperature setting to activate the heater device and a higher temperature setting to turn the device off.
- At 110V supply for example, the heater device requires a range of 180W to 840W (depending on the size of pump from 2" to 10").



Frost protection – available as;

- **Pump casing heaters** (in either 110V or 230V options), controlled by switch mounted on the pump casing.
- **Heated insulated jackets** with trace heating cable sewn into the inside of the jacket with a thermostat switch mounted on the outside of the jacket to detect ambient temperature and allow easy testing.
- **Unheated insulation jackets** for use just to lag pump or to be used in conjunction with a pump casing heater.



## Minimal submergence suction inlets

- Wide entry bell-mouths can be used to minimise suction inlet velocity to allow very shallow sumps (with minimal suction inlet submergence) to be used.
- The Gorman-Rupp self priming pumps can handle a mixture of air and water with no issues (as they are designed to do during a normal priming cycle).
- With these devices, ROT (Run On Timers) can be used to ensure the maximum recommended number of motor starts per hour is not exceeded.
- These special wide entry bell-mouths are available with or without strainers depending on whether or not it is an advantage to pass any solids onto the downstream system.



## Air release

- On self-priming centrifugal pumps, air needs to be evacuated out of the suction system on initial priming. The pump can do this quickly provided the back pressure is minimal.



## Performance monitoring

- One of the benefits of surface mounted pumps is that performance monitoring using suction and discharge gauges is very easy.
- We can provide a gauge kit to be mounted on the pumps.



## Discharge non-return valves

- Essential to use if a Gorman-Rupp GRP33-07 air release valve is fitted.
- For optimum solids handling, use an angled flap type and install in the horizontal position.
- Essential to use if more than 1 pump uses a common rising main.
- Protects the pump from pressure surges exerted by water hammer.



That's where the automatic air release valve used in conjunction with a discharge non-return valve comes in.

- The Gorman-Rupp GRP33-07 can handle solids up to 1", requires a 1" diameter outlet and is available at 15 different settings (5 settings from each of the light, medium and heavy springs).
- Air release line outlets can be either be submerged or open to atmosphere over a drain. Submerging them (provided depth of submergence does not exceed 2m) can be very beneficial to retain the system prime.

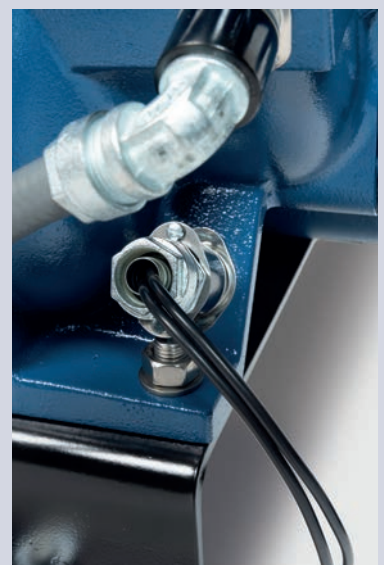


## Thermal protection

- Essential to protect pump under a no-flow condition when a pump could continue to run for a long period. The device avoids damage to the pump caused by overheating the liquid inside and eventually running dry if no intervention device is fitted.

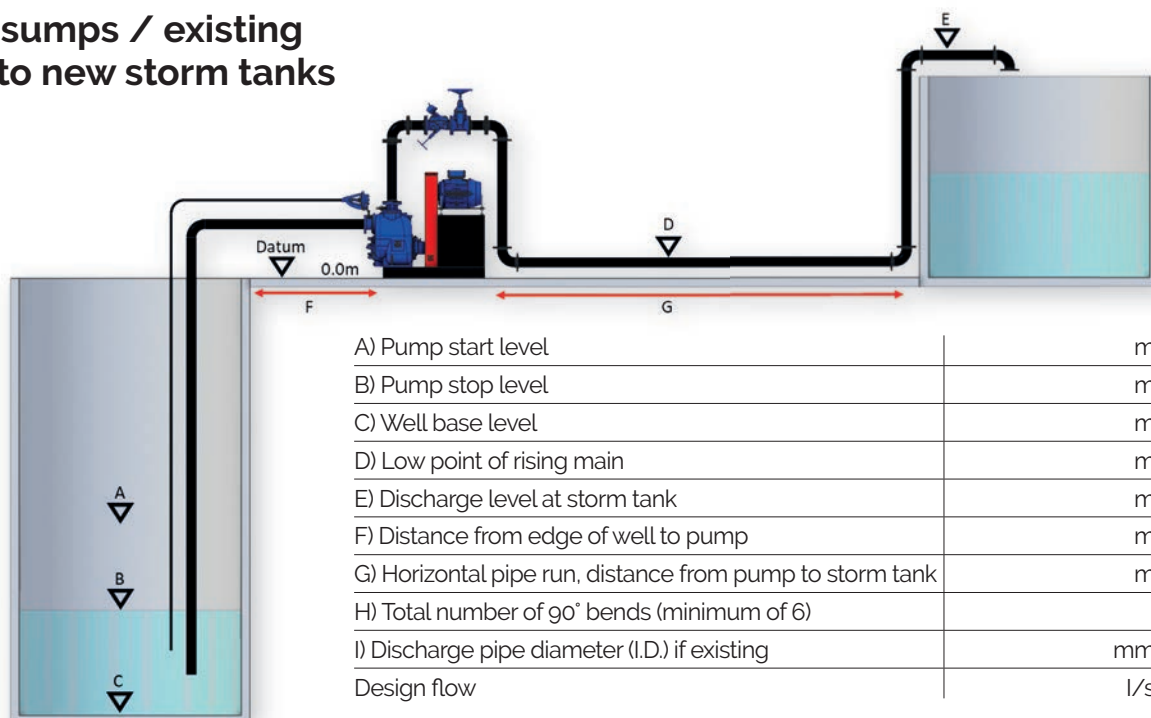
Available as

- TFS35 – a device connected via the drain valve port of the pump to detect liquid temperature of 50 degrees. Supplied with Normally closed (N/C) contacts which open at overtemperature.
- 47812-172 – a device which mounts onto the pump foot or casing which detects surface temperature of 72 degrees C. This is supplied as a normally open (N/O) device.
- Once the device has been triggered, which usually stops the pump motor, it is normal to have manual intervention (to resolve the system issue which caused the problem) before the system can be re-set.

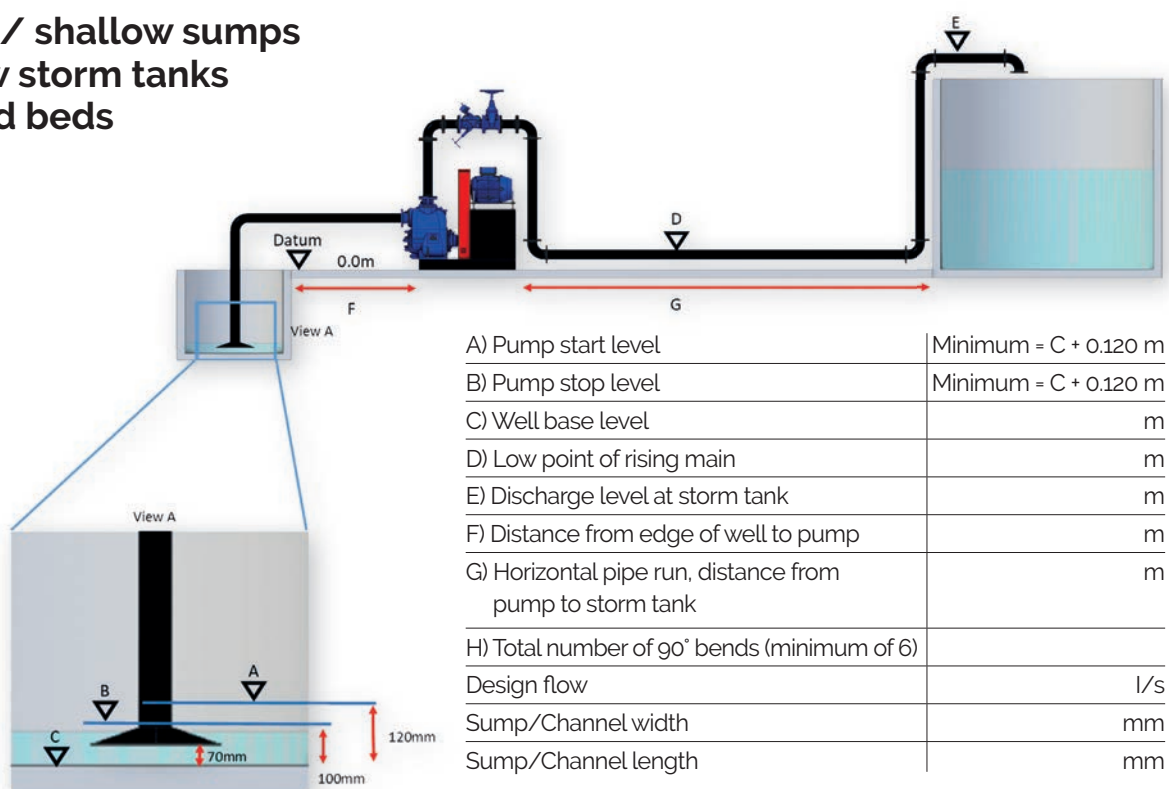




## Large sumps / existing tanks to new storm tanks



## Small / shallow sumps to new storm tanks or reed beds



## Information requirements



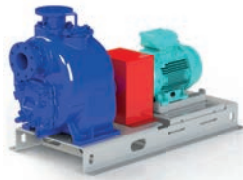
What we need to know and why

- Our Gorman-Rupp pumps require a slightly different approach to conventional submersible pump selections. As well as the duty, we need to know the details of the
  - suction lift requirements (to ensure the pump shaft speed is sufficient to give fully automatic re-prime capability)
  - proposed suction pipework configuration (to ensure NPSH nett is OK. The NPSH calculation needs careful consideration on suction lift pumps)
- the profile of the rising main (to determine if a fully automatic air release system is required, by means of a Gorman-Rupp air release valve fitted to the pump).
- the entire system details to determine the operating range of the pump as the head changes due to fluctuations in levels in the sump (we want to ensure the pump is always operating within its recommended range and maximum flow to the receiving vessel /system if applicable).

Typical applications AMP 8	Pump (vee belt driven at a wide range at various speeds unless otherwise stated below)	Flow range (L/s)	Head range (m)	Motor sizes (kW)	Spherical solids handling capability (mm)	Re-prime lift capability (m)*	Fitted with Gorman-Rupp Eradicator self-cleaning system for enhanced solids handling
CSO's interception from Sewage Treatment Works from small/shallow sumps to storm tanks or reed beds. High level storm pumps at small capacity pumping stations to deliver to additional storm storage on site, reducing overflow spills to watercourses.	T2C60SC-B /FM	2-10	3-32	1.1 – 7.5	38	7.3	Yes
CSO's interception from Sewage Treatment Works from small/shallow sumps to storm tanks. High level storm pumps at medium capacity pumping stations to deliver to additional storm storage on site, reducing overflow spills to watercourses.	T3C60SC-B /FM	0**-23	2-31	2.2 - 15	63	7.6	Yes
High level storm pumps at medium capacity pumping stations to deliver to additional storm storage on site, reducing overflow spills to watercourses.	T4C60SC-B /FM	0**-40	2-33	2.2 - 22	80	7.6	Yes
High level storm pumps at large capacity pumping stations to deliver to additional storm storage on site, reducing overflow spills to watercourses.	T6C60SC-B /FM	10-80	3-32	3 - 30	80	7.6	Yes
High level storm pumps at large capacity pumping stations to deliver to additional storm storage on site, reducing overflow spills to watercourses.	T8C60SC-B /FM	20-150	3-31	7.5 - 55	80	7.0	Yes
High level storm pumps at large capacity pumping stations to deliver to additional storm storage on site, reducing overflow spills to watercourses.	T10C60SC-B /FM	40-200	3-37	7.5 - 75	80	6.7	Yes

\* Subject to running at shaft speeds defining re-prime lift capability and Nett Positive Suction Head being positive

\*\* Used in 'snore' mode in conjunction with wide entry bell-mouth controlled by run-on timer

	Overhead vee belt	Side / side vee belt	Direct long coupled
			
Allows rotating assembly removal without disturbing motor or pipework	✓	✓	✗
Allows pulley change to fine tune pump performance if required	✓	✓	✗
Requires drive belts	✓	✓	✗
Motor high and dry away from potentially wet area	✓	✗	✗
VSD (Variable Speed Drive) control essential	✗	✗	✓

## About Hydromarque

Established in 1987, Hydromarque (formerly Self Priming Pumps Ltd) provides the UK and Ireland with the best and most innovative pumping solutions within the wastewater industry, delivered by a technical team with extensive experience.

We are the exclusive UK and Ireland Distributors of Gorman-Rupp pumps. At Hydromarque, we continue to invest in our infrastructure and staff training so that we can remain the UK's number 1 supplier of self priming centrifugal pump solutions.

As an ISO 9001-2015 quality assured company we take pride in ensuring our customers receive the best possible service.

We view each enquiry as a project and offer support throughout the lifecycle of the pump.

Holding a very large stock inventory of pumps and spare parts enables us to deliver most items next day and minimise our customers production downtime.

Not only can we provide a first-class service we have over 100 years combined experience in applications, pump selection, commissioning, in-house repairs and troubleshooting. We also provide in-house and onsite training to ensure our Customer's Engineers are equipped with the know how to maintain the pumps on a day-to-day basis.