

Setup and Operation Instructions

GRAF Pump Stations



The points described in these instructions must be observed under all circumstances. All warranty rights are invalidated in the event of non-observance.

Separate installation instructions are enclosed in the transportation packaging for all additional articles purchased from GRAF Australia. Missing instructions must be requested immediately.

The tank must be checked for any damage prior to insertion into the trench under all circumstances.

Missing instructions can be downloaded on <https://www.graf.info/en-au/> or can be requested from GRAF Australia.

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1. Safety Notices

1. Safety Notices

The applicable accident prevention regulations in accordance with the Work Health and Safety Act 2020 (WHS Act) and its regulations (the WHS legislation) must be abide by, including all confined space regulations.

Furthermore, all relevant regulations and standards must be observed during assembly, installation, maintenance and repair. A second person should be present for safety reasons.

This Setup and Operation instruction, as well as the tank Installation Manual, should be fully comprehended. These installation instructions will help you to install the system properly, effectively and safely.

WARNING



- **Electrical hazard:** All electrical work must be carried out by a licensed electrician.
- **Airborne hazard:** Ensure proper ventilation of the pit with fresh air from the outside before start of work.

Proper ventilation must be ensured for both prior/during servicing and during operation.

The above requirements are minimum requirements. Observe local regulations.

2. Setup

2. Setup

2.1. Pump station tank chamber

The tank must be installed following the installation instructions manual for the specific tank chamber. The instructions are enclosed in the transportation packaging for tank installation and all additional articles purchased from GRAF Australia. Missing instructions can be downloaded on <https://www.graf.info/en-au/> or can be requested from GRAF Australia.

2.2. Ventilation

Pump stations require adequate ventilation, either from inlet, or from the lid, or a dedicated vent above water level during operation. The dedicated vent should be installed through the dome or riser of the GRAF pump station, always above inlet. Proper ventilation must be also assured prior/during servicing due to the risk of airborne hazard by allowing fresh air from the outside before start of work.

2.3. Pipework installation

A fully packaged pump station will be delivered with at least one pre-drilled DN100 connection for the vent pipe. If not drilled, the inlet pipe and tank penetrations to be made on site will require GRAF approved seals. The seal will require a circular hole to be cut in the tank using a 121-124mm hole saw in the correct position. Once the hole is cut, deburr the hole and insert the GRAF seal. Once the seal is inserted, insert the pipe through the wall seal.

2.4. Pump(s) Installation



WARNING! Electrical danger, only licensed electrician must carry out the work! Disconnect the power supply and secure it against being switched on again.

Most pumps are supplied with a level float switch and power cable as standard. The pump must not be lifted by the power or float switch cable. A clearly marked dedicated circuit of an adequate capacity must be used.

- Check information of the maximum number of starts in the pump manual and ensure the effective volume of the pit is large enough so that the number of starts does not exceed the maximum permissible number.
- Check that the pump's float switches are installed to operate without obstruction.
- Check that the tank and pipe work are cleaned on completion of construction work to ensure debris were removed.
- Check the pump for any loose connections as it might need tightening from vibrations during transport.
- Check the pump's rating plate and ensure that the proposed power supply is suitable.
- Check that the actual delivery head is within the performance capabilities of the pump.
- Check the correct direction of rotation before installation of a three-phase pump.
- Check the direction that the non-return valve is installed to prevent back flow.

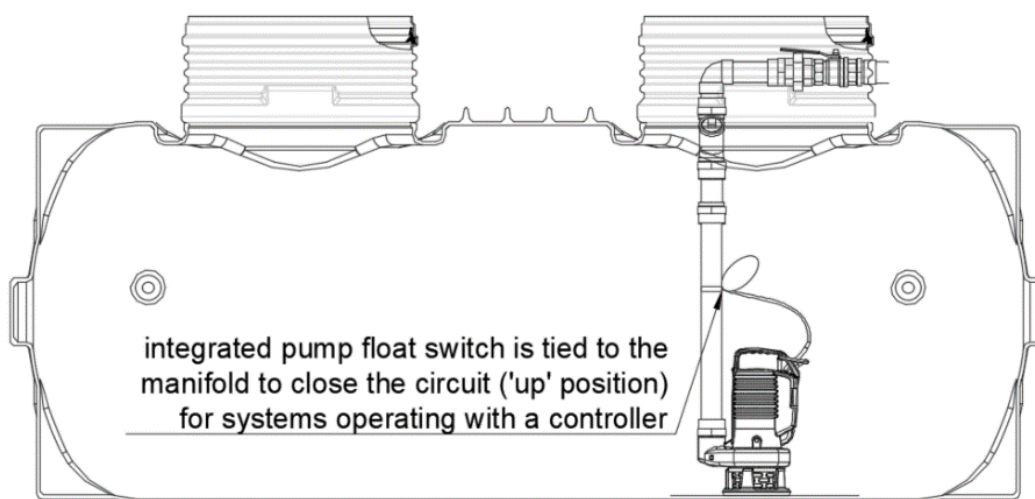
2. Setup

2.4.1. Controllers, Alarms, and float switches



The electric panel must match the ratings on the pump data plate. Improper combinations could damage the motor.

Check if the integrated pump float switch is tied to the manifold to close the circuit ('up' position) for systems operating with a controller.



For installations without controller, the integrated float switch should move freely to the start level and stop level positioning obeying the same following float switch requirements of the float switches signalling to a controller. The requirements are:

- Start level positioning:
 - In case of one-pump operation, the start level switch must be installed in such a way that the pump starts before the liquid level reaches the lower edge of the bottom inlet pipe.
 - In case of two-pump operation, the start level switches must start pump one earlier, and pump two must start before the liquid reaches the lower edge of the bottom inlet pipe.
- Stop level positioning:
 - the stop level switches must be positioned to stop the pump before the liquid level in the pit falls below the minimum level to prevent vibrations and the pump to suck air. In pumps without internal stator cooling, the stop level switch must be installed according to the specifications in the installation and operating instructions for the pump.
- High-level alarm: the high-level alarm must always be installed above the start level switch and be activated before the liquid level reaches the inlet pipe.

For further settings, please refer to the controller's installation and operating instructions.

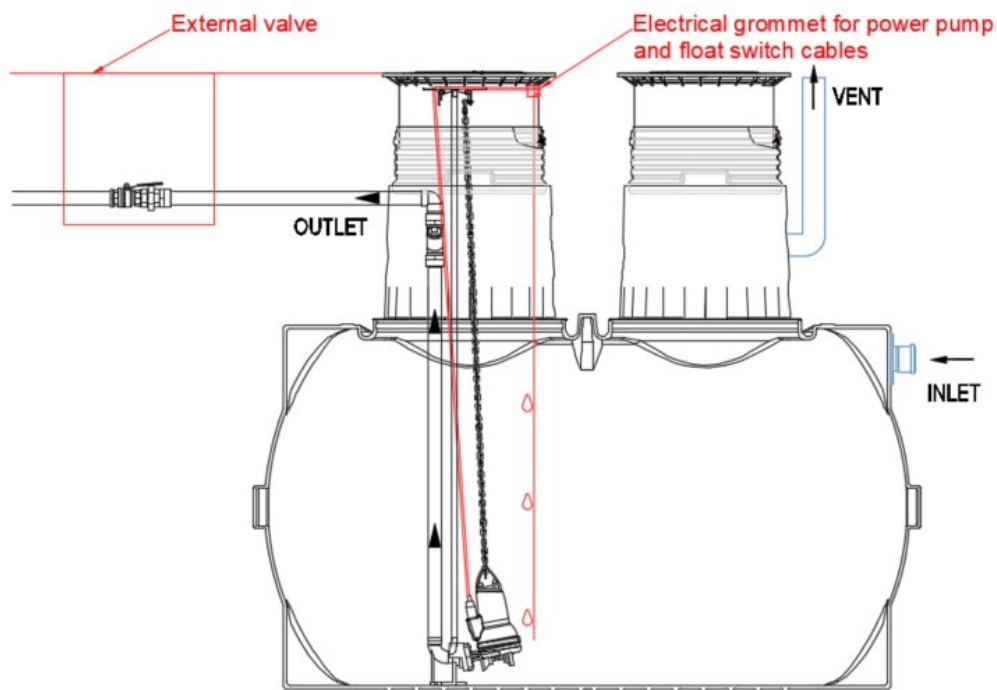
2.4.2. Setting up of chains and electrical cables

A L or T bracket must be installed on to the telescopic shaft under the lid using self-tapper screws. The chains may need to be extended based on the use or not of extension riser till reach the bracket. The floats also require to be fixed in a float tree bracket. Both the pumps and the floats cables are supplied with 10m and might be extended by electrician via junction box. An electrical grommet must be installed.

2. Setup

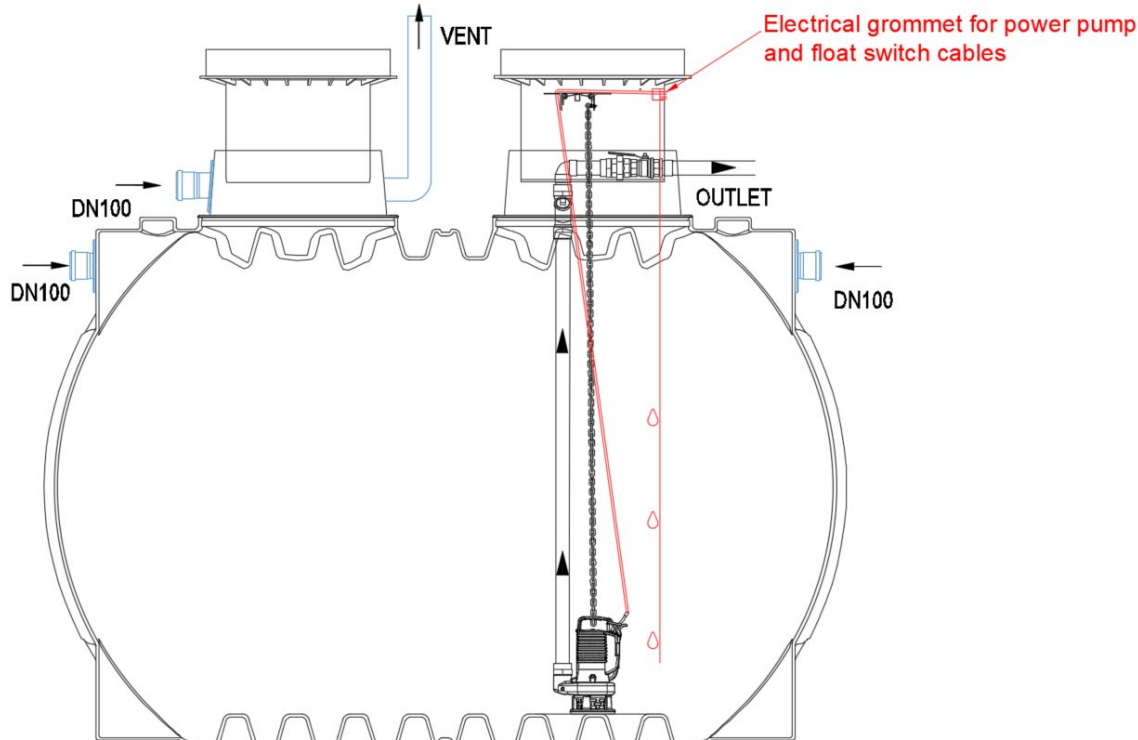
2.4.3. Example of Guide Rails set up

In this example, it is shown a SuperCompact 5000 as a chamber, with maxi dome, extension riser, and pedestrian lids (class A loading). Due to the size of the pump, the bull valve was installed outside the tank, in an external valve box.



2.4.4. Example of Free Standing set up

In this example, it is shown a SuperCompact 10000 as a chamber, with mini dome, no extension risers, and car lids (class B loading). Due to the size of the pump, the bull valve was installed inside the tank, without the need for an external valve box.



3. Commissioning

3. Commissioning

This section is designed to give the recommended procedures – and checklists – to start-up and commission the pumping station following completion of installation. These procedures will normally be carried out by Accredited Electrician but are included anyway - to provide a record and assist others should the need to recommission the system arise later – e.g.: after a prolonged shut-down.

3.1. Pump Station Information

Customer Name &/or Pump Station Name:	
Installation Address:	
Commissioning Date:	

Qty Pumps:	
Pump Model:	
Serial Number pump 1:	
Serial Number pump 2:	
Controller Model:	
Controller Serial Number:	
Qty Float Switches:	

3. Commissioning

3.2. General Commissioning Procedure

PROCEDURE	CHECK
Double-check all aspects and details covered by this booklet.	
Check all electrical connections are complete and correct.	
Electrical conduits are installed and sealed at all entry points.	
Vent is clear and connected.	
Check adequacy of power supply. Switch on all isolating switches.	
Double-check pump rotation (only applicable for three-phase).	
Check amp draw of motors. Compare to pump nameplate details.	
Ensure pit is clear of silt, mud, building debris and other foreign objects.	
Double-check thermal overload setting.	
Duty Operation – Start Level	
Dual Operation	
High level alarm test	
Low level pump stop test	
Duty changeover test	
Duty test with Pump One isolated	
Duty test with Pump Two isolated (if applicable)	
All indicator lights and alarms on controller operational	
Return all selector switches to Auto position	

4. Operation and Maintenance

When a pump station is initially commissioned it should be checked daily for the first week to check that all the systems are working correctly. Particular care should be taken with a new installation that foreign matter such as concrete, silt, gravel, timber or tools do not foul the pump.

Routine maintenance and servicing are essential to maintain the plant in a serviceable condition.

The station should be visited on a 6-12month basis to check the pumps operation, record the above data and hose off any build-up of fats or foreign material in the wet well.

The main factors in determining if a major overhaul is required is a falling off in the pump discharge pressure to an unsatisfactory level or a significant increase in power consumption or pump running time.

4.1. Grey water/ Sullage /Drainage Pump

- Grey water pits
- Wastewater treatment systems NO Debris!
- Sullage pumping
- Clean storm water No solids!
- Pool & tank emptying

4.2. Vortex Sump Pump

- Grey water pits (Soft Solids up to 50mm)
- Wastewater treatment systems
- Sullage pumping, storm water
- Pool & tank emptying

4.3. Grinder Pump

- Sewage applications
- Childcare centres and schools
- Recreational facilities
- Waste treatment facilities
- Industrial plants

4.4. Cutter Pump

- Trade waste
- Waste treatment facilities
- Farm waste
- Sewage



GRAF do not endorse Cutter Pumps for public facilities & rental applications due to the common incidence of non-sewage articles being placed in the sewer.

5. Troubleshooting

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The following is a guide to diagnose and rectify the most common problems that may arise. This guide should only be used by qualified maintenance personnel. As with any troubleshooting procedure, start with the simplest solution first:

- Always make the above ground checks before removing the pump from the tank.
- Before embarking on any trouble shooting action ensure you read all the warnings at the beginning of this manual.
- Check Power Supply
- Adjust & check floats are clean and unobstructed
- Check if check valve is working and not blocked.

PROBLEM	POSSIBLE CAUSES	ACTIONS
Pump does not start	Power supply cut off	Restore the power supply
	Float low	Adjust the float
	Fuses blown	Replace fuses
	The thermal overload protection of the motor has been triggered	• Reset the thermal overload protection on the control panel, and/or • Check the liquid level, and/or • Disconnect the electric power supply and wait 2 minutes before reconnecting it.
	Supply cord is damaged	Replacement required
	Control panel faulty	Check and repair or replace the control panel
	Float switches obstructed or not functioning	Check if pump will operate manually where possible
The thermal overload protection triggers	High liquid temperature	Contact the pump manufacturer or the Authorised Distributor
	Presence of solid or fibrous substances in the liquid (unit overload)	Remove the substances
	It is calibrated at a value too low in relation to the rated current of the motor	Recalibrate
	Input voltage outside the rated limits	Make sure the voltage values are correct
	Unbalanced input voltage	Make sure the voltage of the three phases is balanced
	Wrong working curve (flow rate below or above the permitted limits)	Bring the flow rate back within the permitted limits or upgrade pump to correct duty
	Impeller seized	Contact the pump manufacturer or the Authorised Distributor

5. Troubleshooting

	Motor turns in the wrong direction	Check the direction of rotation and change it if necessary
	Motor or cable short circuit	Contact the pump manufacturer or the Authorised Distributor
Pump starts but cuts out almost immediately	Overload settings on power supply incorrect	Check and rectify
	Incorrect voltage	Check and rectify
	Pump is blocked	Isolate power, then check
Pump is running but there is little or no flow rate	Gate valve is closed	Open valve
	Check valve is blocked	Unblock valve
	Tank liquid level too low	Adjust the float
	Pump inlet is blocked	Hose and clean out tank
	Pump is air locked	Adjust the float so pump does not suck air before switching off.
	Undersized unit	Order correct sized unit – Contact GRAF Technical
	The impeller rotates in the wrong direction.	Check the direction of rotation and change it if necessary
	There are signs of wear on the impeller, pump, and casing.	Replace the worn parts.
Pump will not switch off	Motor turns in the wrong direction	Check the direction of rotation and change if necessary
	Float not adjusted correctly	Adjust the float
	The float cannot move freely	Release the float & reposition
	Float faulty	Replace or repair
	Undersized unit	Order correct sized pump – Contact GRAF Technical
	Impeller worn	Contact the pump manufacturer or the Authorised Distributor