



Providing Pumping Solutions

Packaged Pump Station INSTALLATION MANUAL





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BEFORE YOU BEGIN

- Read this manual completely before starting your installation.
- Consult local officials for any applicable codes and regulations.
- Determine the best location for your tank and control panel.
- Minimize the use of elbows on the inlet line. If required only use 45° elbows.
- Plan your installation location carefully to insure a minimum 1:80 drop on the inlet line while staying within the allowable inlet zone.
- Determine where the incoming power will be supplied from and if it can handle the rated load for your pump station.
- Mount control panel in accordance with electrical codes and where alarm light can be easily seen.
(If applicable)
- Obtain all necessary permits. Call your local relevant authorities before digging to locate all underground lines and cables.
- Make sure you have the necessary equipment and supplies before starting your installation.
- Determine the ballast requirements for your particular tank size.
- Use the electrical requirements specified.

HEALTH & SAFETY

- Only qualified personal should, install, operate, and repair the pump and associated components.
- Safety and Protective clothing must be worn by service personal including overalls, protective footwear, and rubber gloves, and safety glasses.
- Do not touch or allow any sewage to come in contact with hands or mouth as sewage contains a multitude of germs, and infectious pathagens which could cause serious illnesses.
(We recommend all operators have a tetanus injection prior to working in these pump stations)
- Do not enter the tank under any circumstances as sewage contains toxic and explosive gases which could cause suffocation. (If the tank is to be entered by the contractor then standard confined space procedures must be followed).
- Do not smoke or light any matches in the vicinity of the pump station to avoid the risk of explosion.
- Always make sure that the power supply to the pump station is switched off and safely isolated, using standard isolation procedures to reduce the risk of electrical shock or hazards
- Keep hands and fingers away from pump suction and discharge openings and do not insert fingers in pump while power is connected as this could cause serious personal injury.
- Do not leave the pump cover/lid off the pump chamber except while servicing to prevent foreign materials entering, or the danger of children falling into tank. (We recommend that a cone is put near the tank, and the tank is fenced off with a safety netting around tank while being serviced).

NB: PUMP AND VALVE SPECIALTIES IS NOT RESPONSIBLE FOR LOSSES, INJURY OR DEATH RESULTING FROM A FAILURE TO OBSERVE THESE SAFETY PRECAUTIONS, MISUSE OF PUMPS OR EQUIPMENT.

PLUMBING INSTRUCTIONS & INSTALLATION PROCEDURES

IMPORTANT: Please read all instructions before commencing installation.

1. Excavate hole for tank. Excavation should be 100mm deeper than tank.
Approximate excavation hole size to allow:-

FASTFLO MINI	950mm deep x 1.0m diameter
FASTFLO 1000	1.8m deep x 1.5m diameter
FASTFLO 1500	2.2m deep x 1.5m diameter
FASTFLO 2000	2.7m deep x 1.5m diameter

2. Lay 100mm of sand, pea or drainage metal in base of excavation, in order for tank to be bedded on a flat base, and also shaped to suit tapered base of tank.
3. Lower pump station into excavated hole and check for level. Pump station lid should be flush with finished ground level.
4. Tank should be backfilled as soon as possible, as follows:

For low water table areas:-

Partially backfill with a cohesive backfill and compact in 300mm layers around tank (up to sewer inlet level only) using a mechanical plate compactor or vibrator. Ensure that tank is filled with water and kept same level while backfilling tank.

For high water table areas:-

If bottom of tank is below maximum ground water level, then tank should be bedded down in concrete whilst still fresh, and concrete continued up side of tank to just above second rib, or more for high water table areas. Ensure that the tank is filled with water ahead of pouring concrete balanced and kept at the same level while backfilling tank.

If the tank is in a trafficable area, then an additional concrete cover slab should be poured with heavy duty lid option. (See Note 16)

Alternatively, continue concrete up sides of tank to the underside of the cover slab (inlet and electrical outlet pipes to be done first – Refer No's 5 – 11).

5. Cut sewer inlet hole with hole saw, in the desired position (usually between 1st and 2nd rib from top) and insert large rubber inlet uniseal in hole from outside.

Hole sizes are as follows:- (Refer to separate instruction page)

For 110mm uPVC = 127mm hole saw size

For 160mm uPVC = 170mm hole saw size

Lubricate inlet uniseal with o'ring lubricant or similar, and insert PVC inlet pipe (gravity drain) into tank.

6. Install 90° ramp/inspection bend (large inspection type) or 90° M&F inspection junction (supplied by others) on inside of tank, so as to direct liquid flow downwards into the pump chamber. This also allows access for plugging and water testing gravity drain.

Sewer drain is now ready to be laid from pump station inspection bend or junction back up to dwelling/building.

7. Install vent from top of tank if required. Refer to separate page on Vent Requirements.
8. Cut discharge hole in tank wall with a hole saw, in desired position/direction (normally 75mm above top rib). Insert the small rubber discharge uniseal into discharge hole on inside of tank, and lubricate with o'ring lubricant or similar.

Hole sizes are as follows:-

For 50mm PVC pressure pipe	= 76mm hole saw size
For 80mm PVC pressure pipe	= 102mm hole saw size
For 100mm PVC pressure pipe	= 127mm hole saw size

9. Screw vertical discharge pipe into pump outlet (if not already installed).

Note: If overall discharge height out of tank is lower than standard height, then shorten vertical discharge pipe to suit.

Glue swept discharge bend (with valves attached) onto vertical pipe before installing pump(s), making sure bend is facing over top of pump(s).

Note: The non-return ball valve(s) "Y" leg must always be facing upwards, as per the prefabricated position. This must not be altered to any other position, as this will cause operational failure.

10. Install pump(s) in tank, as close to centre as possible. Pump(s) should sit on flat base of tank, so that when valves are installed later, they are easily accessible when lid is open. Allow enough room for gravity drain inlet bend/junction if directly opposite pump discharge position.
11. Install short PVC discharge pipe with coupling nut from inside tank. Push through the rubber uniseal the required distance, so as to match up to pump pipework, and tighten quick connect coupling. Extend discharge pipework beyond pump station to discharge point, in pipe material selected.
12. Hang rope(s) or chain(s) on hook(s) at top corner of tank. If hooks not mounted, position in corners adjacent to pumps. **KEEP CHAIN(S) WELL AWAY FROM PUMP FLOATS – ON OPPOSITE SIDE OF PUMP FLOATS, TO AVOID MALFUNCTION.**
13. Electrician to install 32mm/50mm PVC electrical conduit(s) and wiring between pump station and control box/panel (mounted on building adjacent to pump station). Refer to electrical installation diagram and instructions. Refer to Electrical Wiring Instructions for testing pump(s) and alarms.
14. Feed pump and alarm float cables through conduit(s) to control box/panel.

15. Check that pump control and alarm floats are free and clear of any obstructions.

Check that high level alarm float is not below sewer inlet drain. If so, it must be shifted to one side, as this could cause malfunction of alarm.

Correct high level float operating position should be approx. 200mm below the invert level.

Some special electrical instructions may apply to 3-phase single or dual pump stations.

16. Complete backfilling as follows:-

OPTION 1: STANDARD PE PEDESTRIAN-RATED LID

Original Back-fill can be brought up to & flush with tank lid. Aim to slope ground away from lid (if possible) to stop any water ponding around lid area.

OPTION 2: CAST IRON TRAFFICABLE-RATED LID

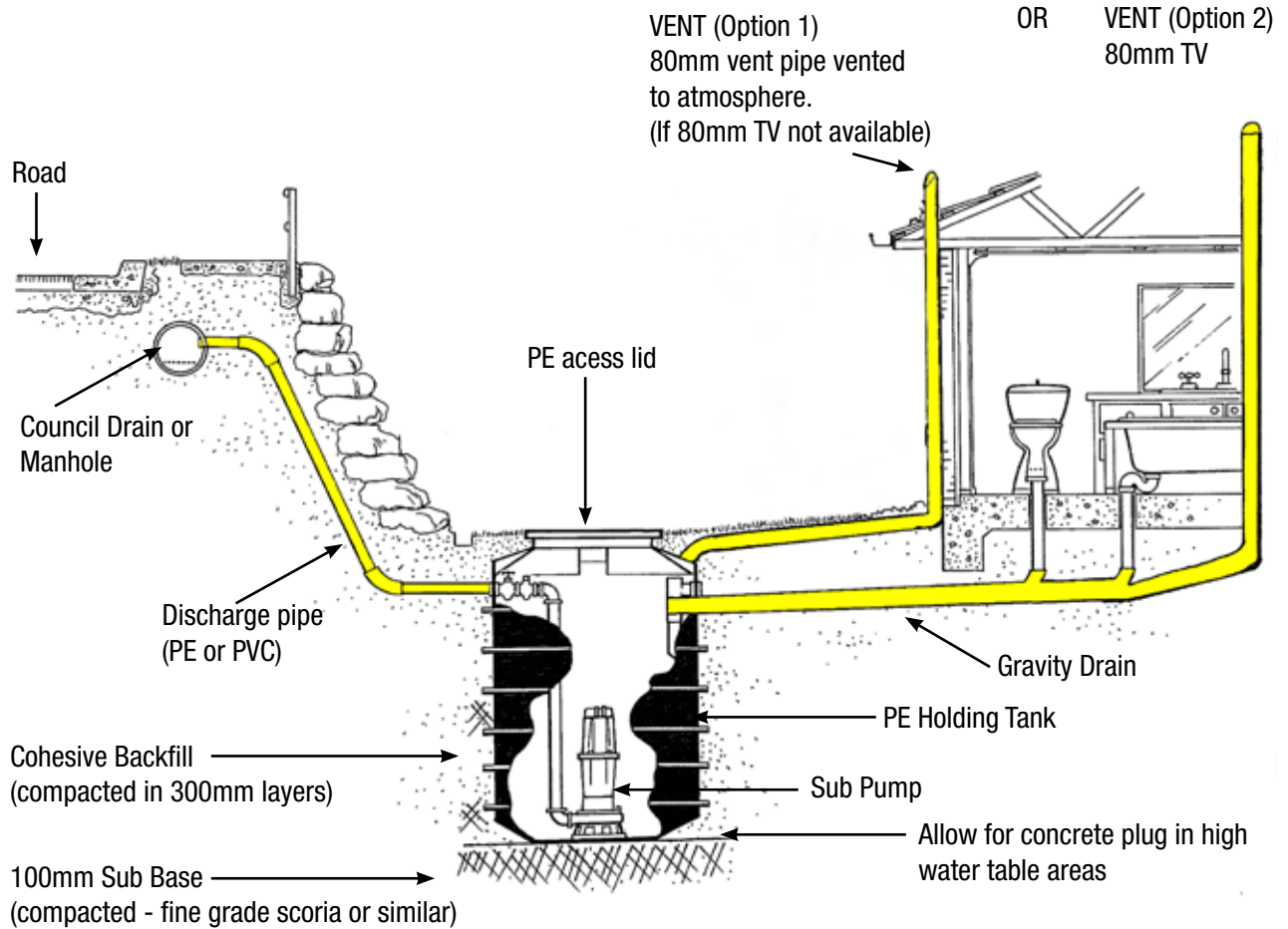
Cast Iron lid / frame needs to be set in a concrete apron (i.e. 100mm – 150mm cover slab x 300mm wide), which is poured above the top of the P.E tank opening.

Allow for a 20 – 25mm gap to separate the cast-iron lid from the PE pump station neck, to avoid direct traffic load bearing onto P.E tank. (Refer to drawing FFP40A).

17. Pump Station may now be commissioned as follows:-

- (a) Fill tank with water up to normal pump working float level and check pump operation.
- (b) Lift high level float and check audio-visual alarm operation.
- (c) Check that ball isolation valve in tank is turned on.
- (d) Bolt down lid with stainless steel bolts provided or padlock lids if provision available.

TYPICAL PLUMBING INSTALLATION

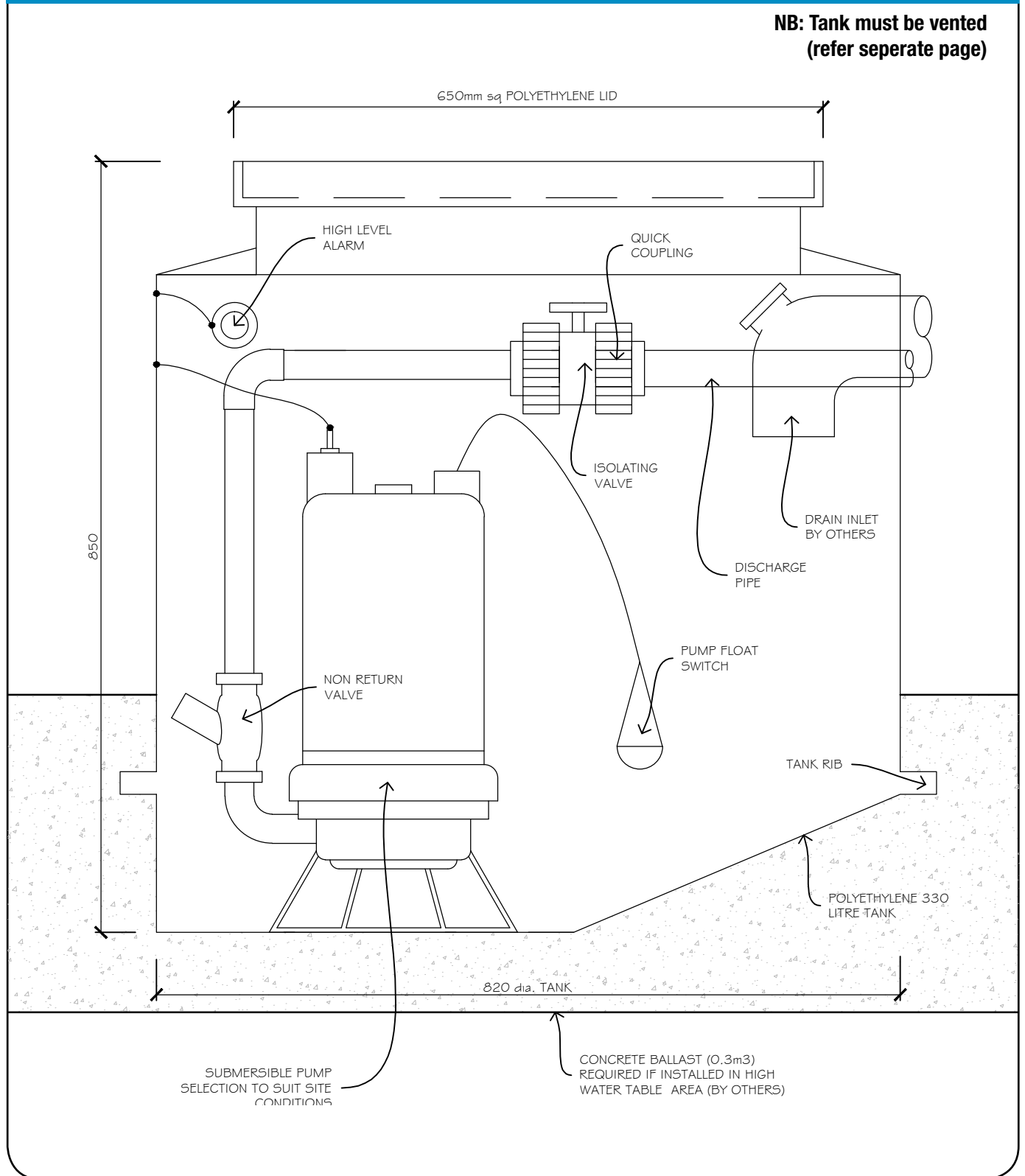


Installation Notes:

- Ground level should be sloping away from tank to avoid ponding and floatation of pump station
- Position tank at the lowest part of drainage system or in a position appropriate to drainage system.
- Drill gravity inlet and discharge pipe between ribs of pump chamber at a height to suit the on-site conditions.
- Control Panel to be mounted on wall in a position within close proximity to pump station
- Tank to be backfilled with compatible material in 300mm layers.
- Must have a concrete plug in high water table areas.

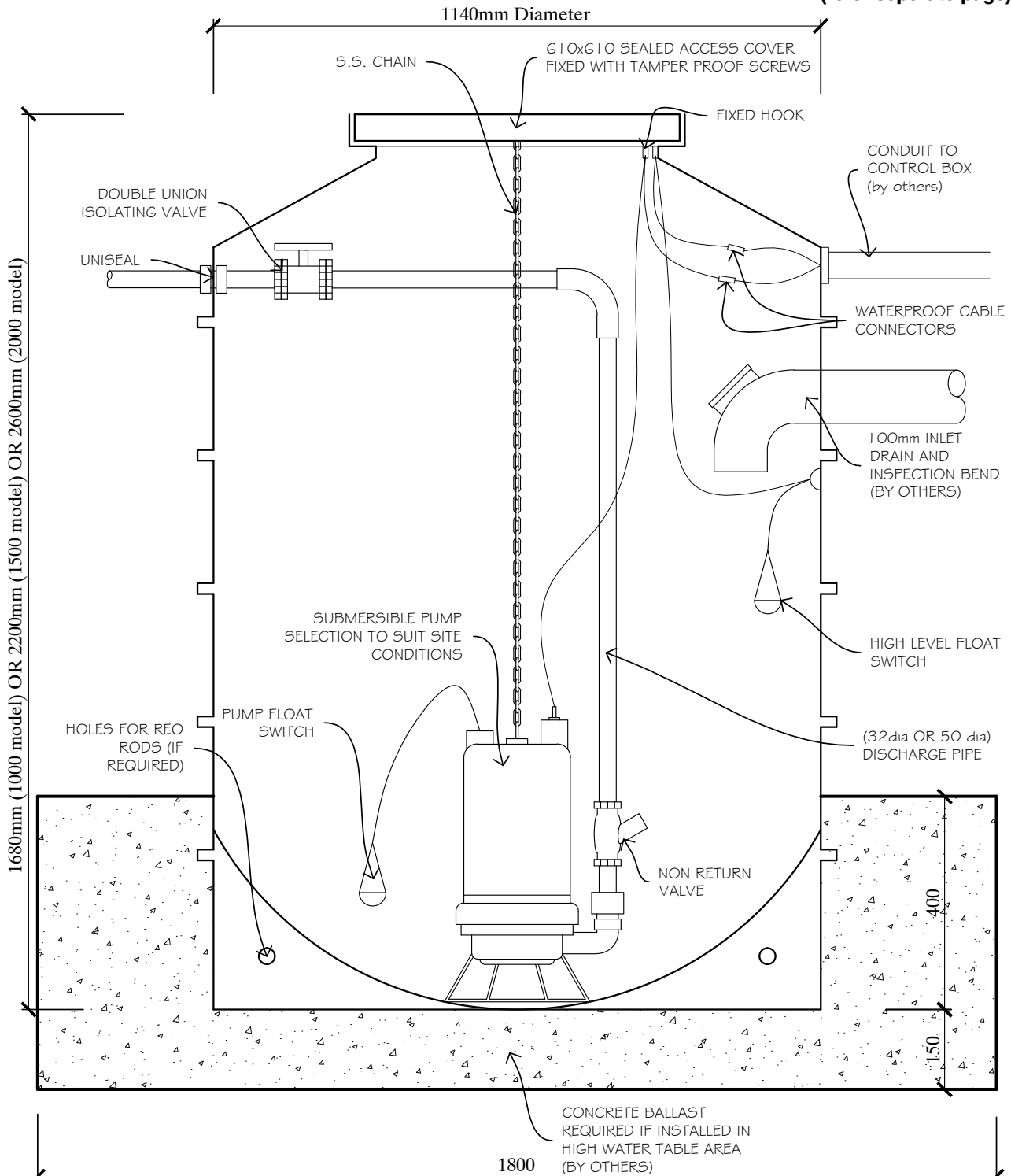
MINI 330 LTR TANK

**NB: Tank must be vented
(refer separate page)**



1000/1500/2000 LTR TANK

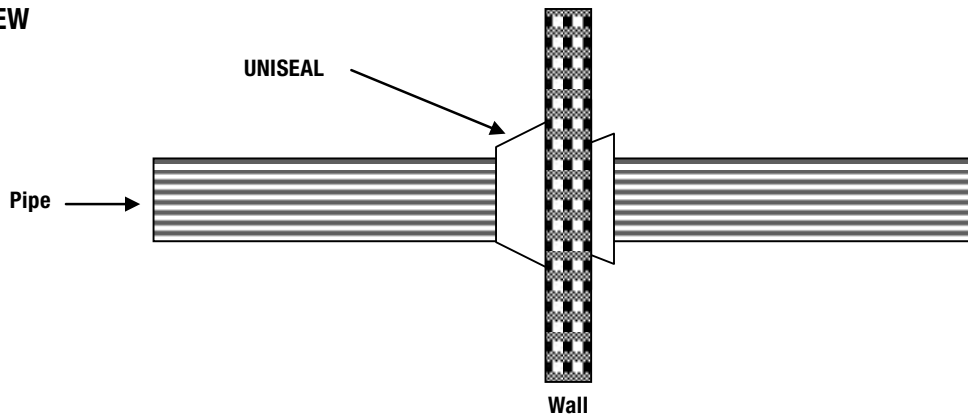
**NB: Tank must be vented
(refer separate page)**



UNISEAL INSTRUCTIONS

1. Cut hole to the Holesaw size indicated for the UNISEAL® you are using (see below).
Example: 3" UNISEAL® = 4" Hole (Holesaw).
2. Ensure that the hole is clean cut with sharp edges. Irregularities could cause poor seating and ultimate leakage.
3. Insert the UNISEAL® into the hole with the wide side facing the pipe to be inserted.
4. Make certain that the pipe end to be inserted is clean cut. File the edges so that there are no sharp points to cut UNISEAL®.
5. Using detergent, lubricate the outside of the pipe end to be inserted, then push the pipe through the UNISEAL® from the large flange side. The detergent will be squeezed off as the pipe passes through the UNISEAL®. The co-efficient of friction of the rubber holds the pipe tightly in place.

SIDE VIEW



SPECIFICATIONS

Wall Thickness – 1/8" X 1/2" 3mm – 12mm

Part #	DN#	Pipe ID	Pipe OD	Holesaw	
U018		3/16"	0.25"	6mm	0.375" 10mm
U025		1/4"	0.375"	10mm	0.5" 12.7mm
U038	10	3/8"	0.675"	17mm	1" 25.4mm
U050	15	1/2"	0.840"	21mm	1.25" 31.7mm
U075	20	3/4"	1.050"	27mm	1.25" 31.7mm
U100	25	1"	1.315"	33mm	1.75" 44.4mm
U125	32	1"	1.660"	42mm	2" 50.8mm
U150	40	1 1/2"	1.900"	48mm	2.50" 63.5mm
U200	50	2"	2.375"	60mm	3" 76.2mm
U300	80	3"	3.500"	89mm	4" 101.6mm
U400	100	4"	4.500"	114mm	5" 127mm
U600		6"	6.625"	168mm	7" 178mm
U400-35	4"		110mm		5" 127mm
U600-35	6"		160mm		7" 178mm

Metric Hole Tolerance +2mm.

IMPORTANT NOTES FOR ALL INSTALLATIONS

PLEASE READ CAREFULLY

ALL WORK MUST BE CARRIED OUT BY A REGISTERED DRAINLAYER AND MUST COMPLY WITH THE PLUMBING REGULATIONS AND CODES OF PRACTICE

1. Each FASTFLO Pump Station installation should be done in accordance with local Territorial Authority requirements.
2. All discharge pipework bends should be large radius type (formed swept bends).
3. Keep pipe runs to discharge as direct as possible and keep number of bends to a minimum for smooth liquid flow.
4. Minimum discharge pipe diameters as follows:
Vortex & Cutter pumps: 50mm I.D.
Grinder pumps: 40mm I.D.
For longer pipe runs, consult with Fastflo Pump Systems.
5. Check that all pump leads, chains, high level floats, etc, are free of obstructions, and that high level floats are not below sewer inlet drains.
6. PUMP STATION VENTING: Refer separate vent requirement details.
7. Once installed, tank must be left with enough water in it to avoid any risk of flotation caused by heavy rainfall or unpredicted water entry. This also applies if tank installation is left uncompleted temporarily, as well as when unit is fully installed.
8. Make sure there is no chance of any stormwater entry, e.g. entry from unfinished downpipes or any rainwater/drainway runoff.
9. Once unit is installed, never leave lid(s) unbolted or unpadlocked at any time, to avoid serious or fatal injury.

VENTILATION REQUIREMENTS

PLEASE READ CAREFULLY

ALL VENTING MUST COMPLY WITH THE PLUMBING REGULATIONS, CODES OF PRACTICE AND THE PLUMBING AND DRAINAGE STANDARD AS/NZS3500.2 : 2003.

FASTFLO Undersink Sullage Chamber

Must be vented at all times to atmosphere.

Minimum vent size should be 32mm

FASTFLO MINI / 1000 / 1500 / 2000 Models

Refer to Drg No's FFP.1 and FFP.2.

For Domestic Applications

Vent size required: 80mm either indirectly or directly.

If the pump station is within 40 mtrs of the 80/100mm house drain TV(Terminal Vent) and the dwelling has less than 3 WC pans - then no extra vent pipe is required.

If the 80mm house drain vent has been reduced in size then a seperate 80mm pump chamber vent should be provided. All vents to atmosphere shall terminate in accordance with AS/NZS3500.2 and vent shall be taken from the top of the pump chamber.

For Industrial / Commercial Applications

Vent size required:

80mm	Above ground level
100mm	From tank / below ground level

All vents to atmosphere shall terminate in accordance with AS/NZS3500.2 and vent shall be taken from the top of the pump chamber.

FASTFLO 3000 / 4000 / XL / FRP Models

Refer to Drg No's FFP.10 and FFP.11 (3000 & 4000)

Minimum vent size required:

80mm	Above ground level
100mm	From tank / below ground level

All vents shall terminate in accordance with AS/NZS3500.2 and the vent shall be taken from the top of the pump chamber.

IMPORTANT NOTE

AIR ADMITTANCE VALVES MUST NOT BE USED ON A FASTFLO PUMP STATION AT ANY TIME.

ALL VENTS MUST BE OPEN TO ATMOSPHERE.

IMPORTANT NOTICE FOR INSTALLER WHEN BACKFILLING HOLDING TANK

WARNING: Tank flotation may occur if not installed correctly.

Installation in LOW WATER TABLE AREAS

1. To avoid flotation, the tank must be backfilled with cohesive compactable backfill - AP40 Crush metal or similar and compacted in 300mm layers, keeping compactor approx. 150mm from side of tank.

DO NOT backfill with shingle or pea metal.
2. The tank must be gradually filled with water at the same time as the backfilling level, to $\frac{3}{4}$ of the way up the tank.

Installation in HIGH WATER TABLE AREAS:

1. The tank must be approximately half filled with water ahead of concrete being poured around tank.
2. The tank requires concrete to be placed around tank ribs, around sides of tank.

Minimum amount of concrete:

250 litre Valve Box	0.2m ³ concrete
330 litre Mini Tank	0.3m ³ concrete
500 litre Double Valve Box	0.3m ³ concrete
1000 litre Tank	0.5m ³ concrete
1500 litre Tank	0.75m ³ concrete
2000 litre Tank	1.0m ³ concrete

3. If further backfill is required, this should be compacted in 300mm layers (as above), BUT ONLY ONCE CONCRETE HAS SET.
4. Tank should continue to be filled with water as the backfilling is done.

ELECTRICAL WIRING INSTRUCTIONS

1-PHASE OR 3-PHASE PUMPS

ALL WORK MUST BE DONE BY A REGISTERED ELECTRICIAN AND MUST COMPLY WITH THE ELECTRICITY REGULATIONS AND CODES OF PRACTICE.

1. The pump station requires a dedicated 20 amp power supply from the nearest switchboard.
2. Supply and install the following rigid conduits between the control panel (or cubicle) and the pump chamber:-
 - 1 x 32mm for single pump
 - 2 x 32mm for dual pumps
 - Plus 1 x 32mm for float/sensor cables
 - Conduits are to be lock nutted into chamber wall and into the control panel.
 - Large radius or swept bends only to be used.
 - Ends of conduit to be sealed to prevent the transfer of sewer gas which is extremely corrosive to electrical components.
3. Run pump and float flexible cables directly into the control panel, via the conduits detailed above.

If the control panel distance exceeds the available cable length, an approved accessible joint must be made to extend the cables.

4. Some floats have 3 conductors for change-over switching, it is important to seal off the spare core, as under certain circumstances it could be alive.
5. Before lowering the pumps into the tank, check that the pump is operating. For 3-phase pumps, check directions of rotation, by observing the direction of the starting kick when power is momentarily applied. The starting kick should be anti-clockwise when looking down the pumps.

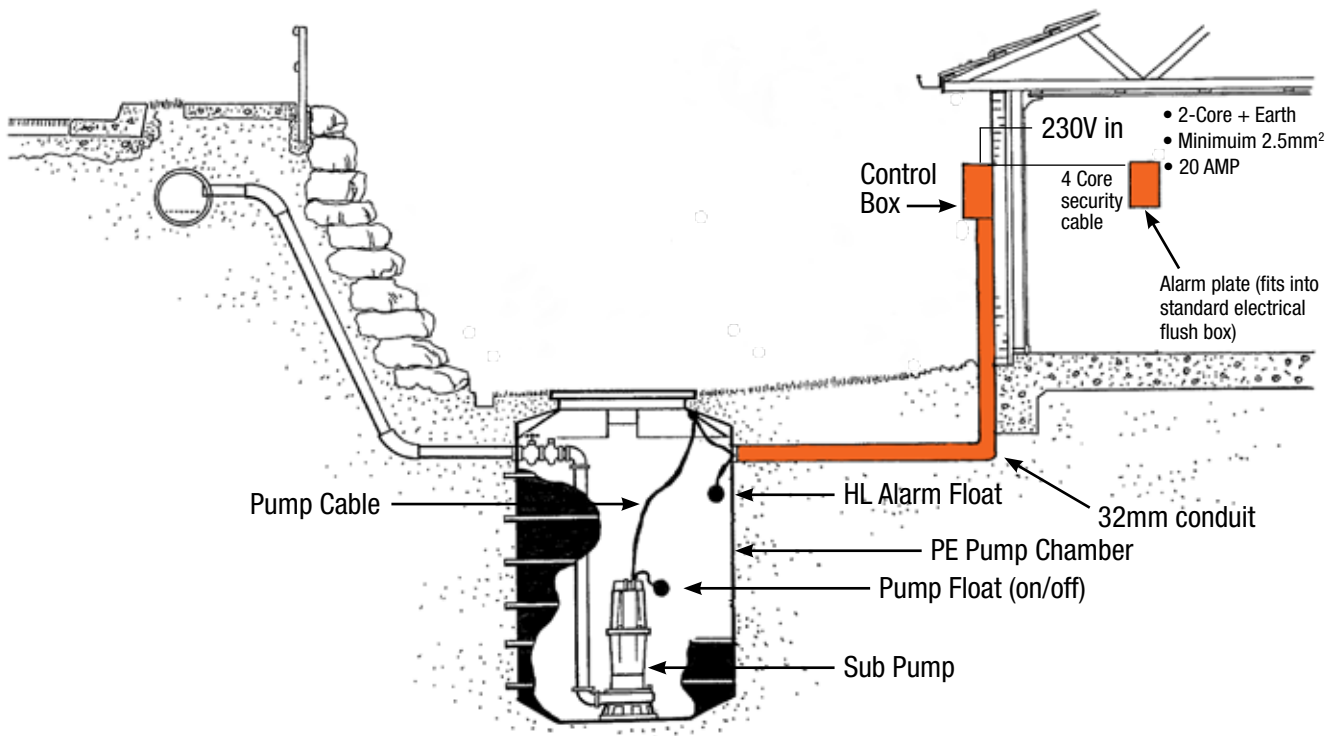
Check correct setting of overload to match the pump running current.

6. Check starting and stopping of each pump, and the auto-alternating feature of the dual pumps.
7. Check operation of the alarm by lifting up the alarm float.
8. Float operating levels may be adjusted by changing the length of the cable drop.

PUMP TECHNICAL DATA

MODEL	PUMP	kW Rating	Amps	Phase	Type
VX	F-21U(F)	0.75 kW	5.3 Amps	1-phase	Vortex
CR	F-21P(F)	0.75 kW	5.3 Amps	1-phase	Cutter
GR	32GF21.0(F)	1.0kW	6.4 Amps	1-phase	Grinder
GR PLUS	32GF21.5(F)	1.5 kW	10.2 Amps	1-phase	Grinder

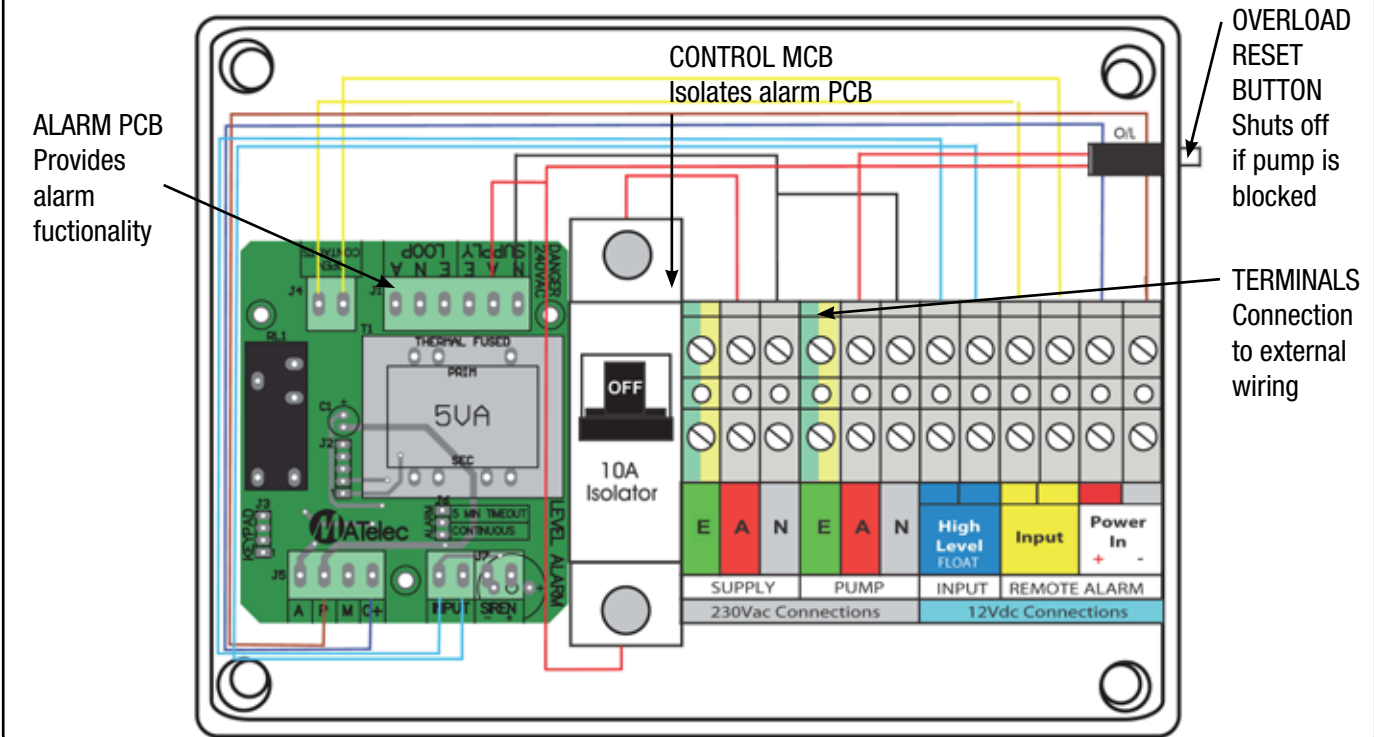
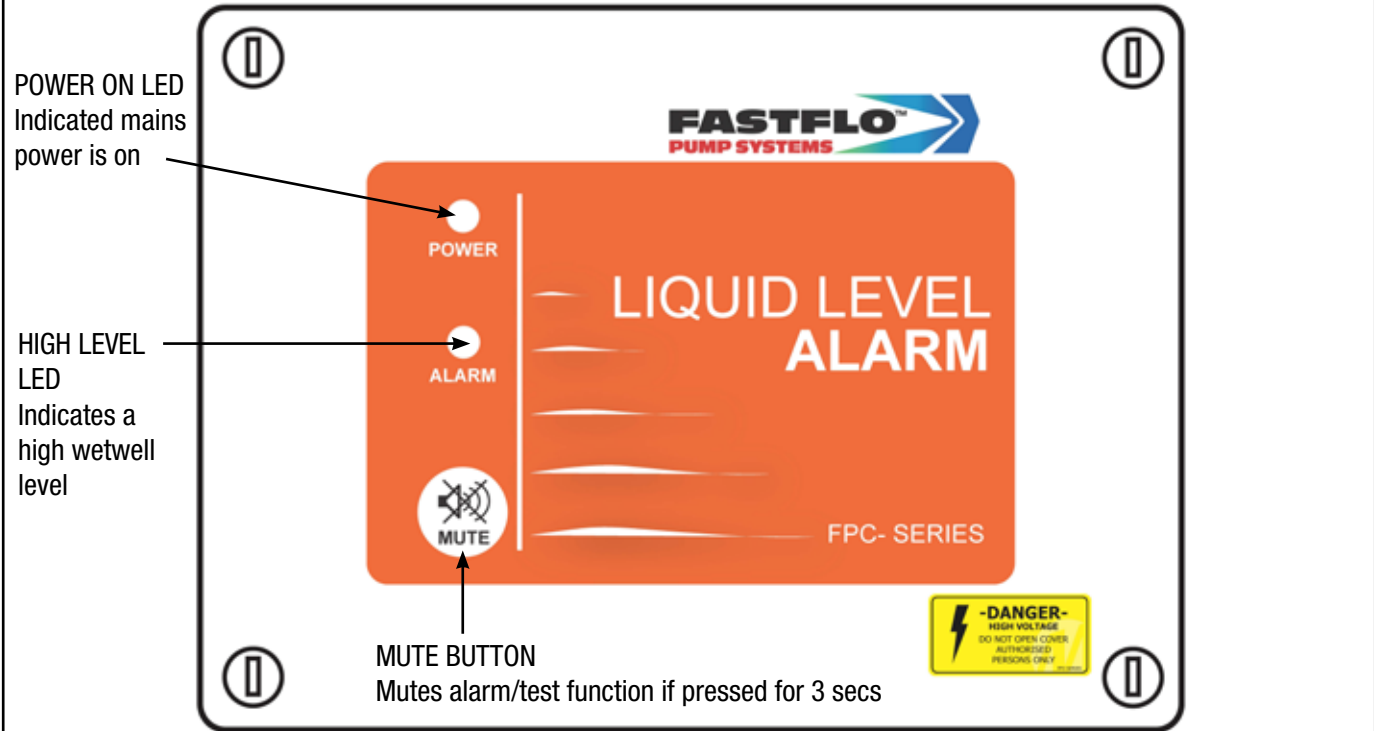
TYPICAL ELECTRICAL INSTALLATION SCHEMATIC



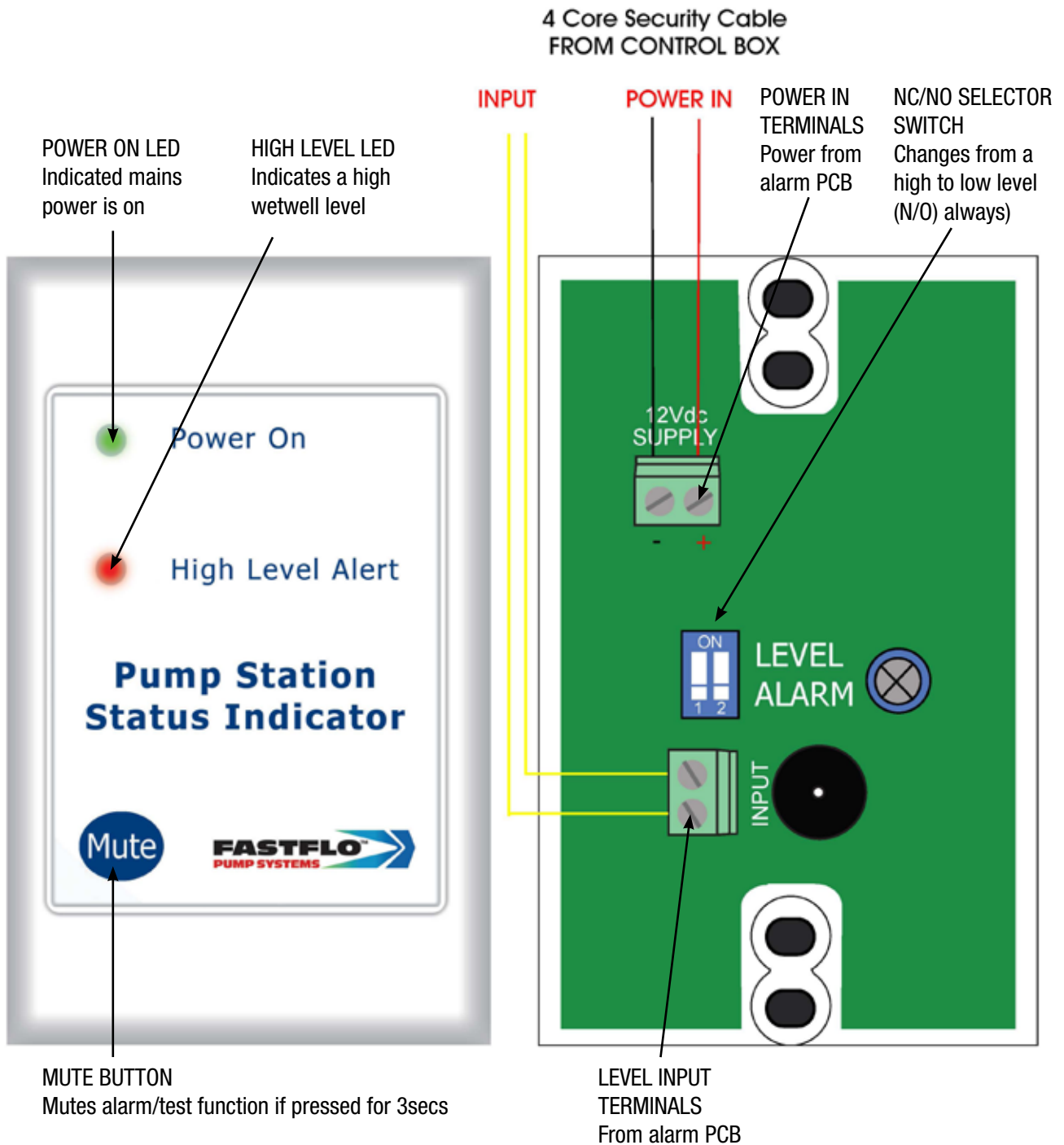
Notes:

- 32mm conduit (to be sealed at both ends to prevent gas entry)
- 1x2 core + E pump cable 2.5mm² circular
- 1x3 core alarm cable 0.75mm² circular
- 1x 4 core security cable from Controller to Alarm Plate inside
- Max length of pump cable = 8m
- Max length of alarm cable = 8m
- If pump station is to be further than 6m from house, pump and control cables will need to be extended - ensure joint is waterproof.
- No cable joints are permitted in conduit.

STD CONTROL BOX & LEVEL ALARM TECHNICAL



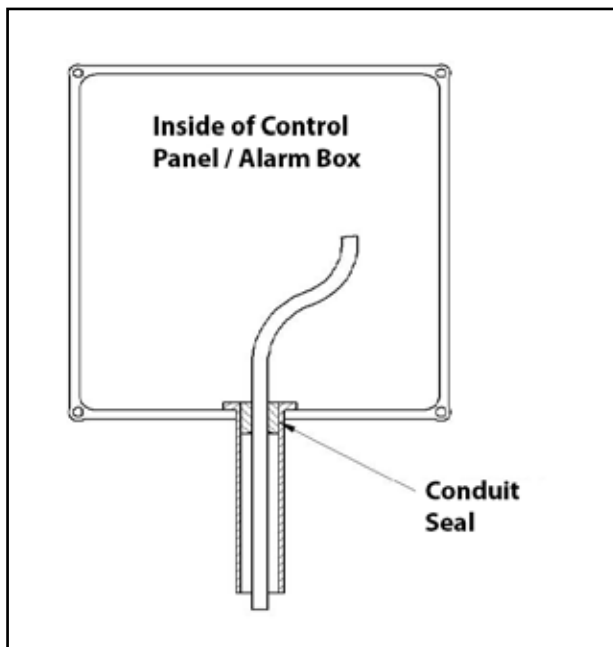
REMOTE ALARM PLATE TECHNICAL



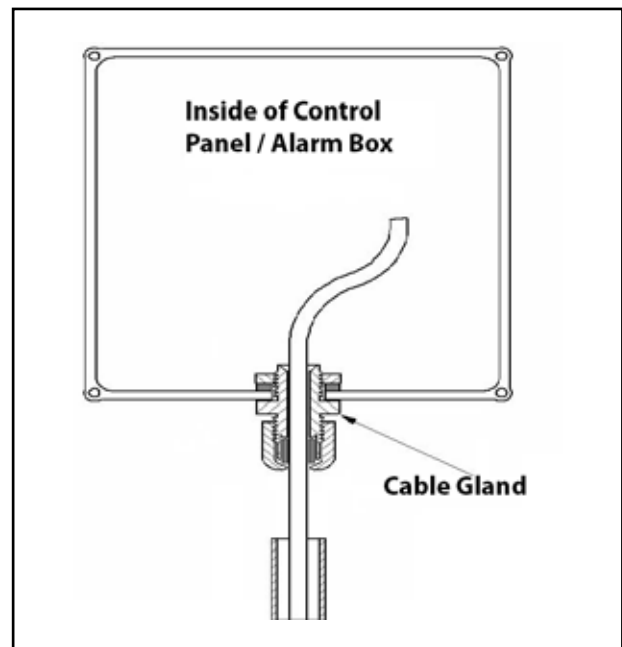
SEALING OF CONTROL PANEL CONDUIT

STEPS & TIPS:

- Conduit entering controller should be sealed to prevent water/fumes infiltration.
- Or cable/s should be glanded correctly in open conduit installs
- Before installing the cover make certain that all cords are cable-tied up and clear of the pump level control.



SEALING WHERE CONDUIT ENTERS
ELECTRICAL ENCLOSURE
(IF SEALED SEPARATE VENT MUST BE USED)

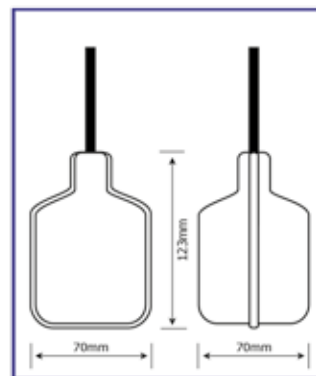
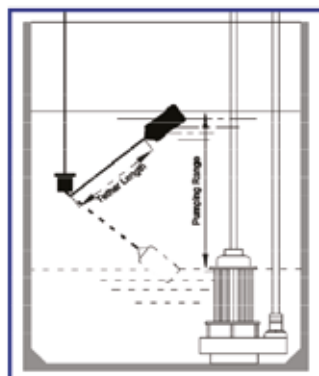
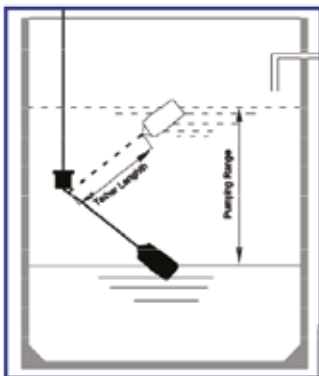


SEALING WITH CABLE GLAND
(WHEN SEALED CABLE GLAND OPTION
SHOULD BE USED)

FLOAT SWITCHES TECHNICAL

The proven 9000 Series Matelec Float Switch, which utilises an innovative, yet simple, fool proof switching concept, has greatly enhanced Float Switch reliability. The positive microswitching, eliminates the possibility of more than one circuit being in operation at any one time. The design innovation of the Switch is the 'sliding detent action' which obviates wave induced oscillation (common in mercury type switches) while maintaining consistency in switching level accuracy. The smooth robust ABS switch housing on the 9006, 9008 and the 9010 models prevents adhesion of foreign materials.

Liquid Temperature	Min 0°C (32°F) Max 60°C (140°F)
Protection	IP68 @ 9m (30ft) corrosion resistant
Contact Type	Mechanically activated, snap action contacts
Pumping Range	20 - 90cm (8 - 36inches)
Max Voltage	240Vac 50/60Hz
Max Run Current	10amp (COS 0)
Cable Material	Chlorinated Polyethylene
Cable Size	ø8mm / 2 x .75mm ²
Housing Material	Polypropylene



PRE START UP CHECKLIST

BEFORE STARTING YOUR UNIT, CHECK THE FOLLOWING ITEMS:

INSTALLATION QUESTIONS:

- Was a proper bedding material used
- Is chamber installed level
- Was the proper amount and type of ballast used
- Was proper backfill and compaction done to support piping
- Does the inlet location provide clear removal of the pump
- Are all penetrations through the pump chamber wall sealed water-tight
- Are all piping connections tight and required valves installed properly
- Has minimum of 300mm of water been put into the tank and still clean
- Are all control float/s clear of inlet flow
- Has the vent been installed (if required)
- Verify all valves are open
- Will stop float cut out before pump/s lose prime
- Lid is closed and bolted



Never start pump without making sure air lock is removed from pump pipe work. To do this see step 3.

ELECTRICAL QUESTIONS:

Before checking the following electrical questions, ensure that the electrical installation has been carried out by a qualified electrician to the necessary electrical codes.

- Are all of the cable glands tight
- Are all wiring connections secured
- Are all cables secured and clear of the pump
- Is the control panel securely mounted
- Is the control panel dry
- Is the conduit entering the control panel sealed
- Are all the wiring connections secured
- Turn the circuit breaker in control panel to “OFF” position
- Turn the circuit breaker in the household breaker panel to the “ON” position

A large rectangular area with rounded corners containing horizontal lines for writing notes.

A large rectangular area with rounded corners containing 25 horizontal lines for writing.

