TRICEL
ENVIRONMENTAL

# Single & Twin Package Pumping Solutions

## Installation Technical Details

*Engineering a green future*

1149558 Rev 2 April 2022

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# 1. Health & Safety Precautions

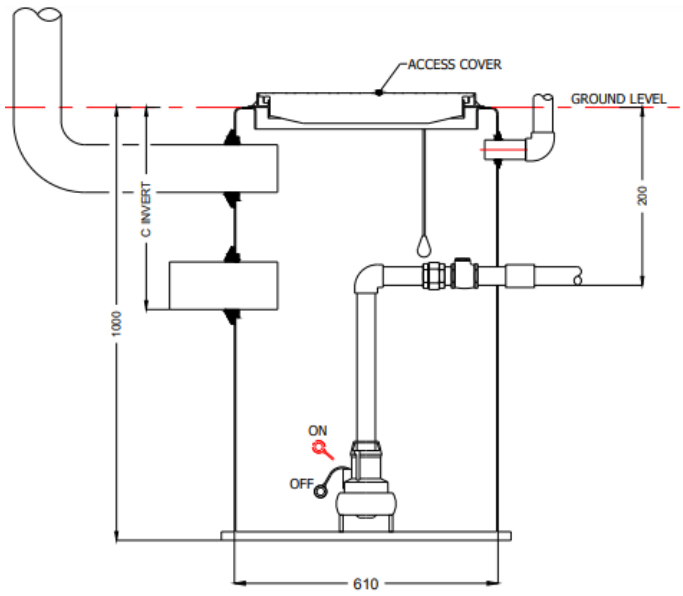
It is important to read the full technical manual prior to installation. This document should be retained for the lifetime of the product and in the event of change of ownership be transferred to the new owner. As safety and security are of vital importance, the following aspects are critical.

# 2. Introduction

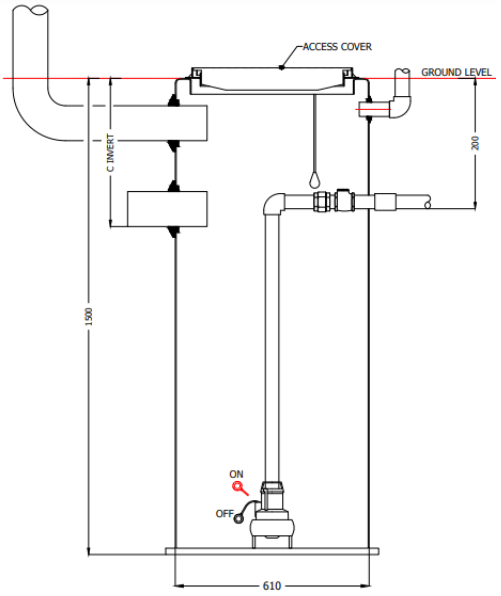
These Pump Stations are manufactured from high density polyethylene and are extremely robust. They're suitable for domestic and light commercial applications and used where gravity drainage is not possible. The 10VX pump is standard for treated effluent and a MC grinder for raw sewage.

# 3. Tricel Pumping Chamber Range

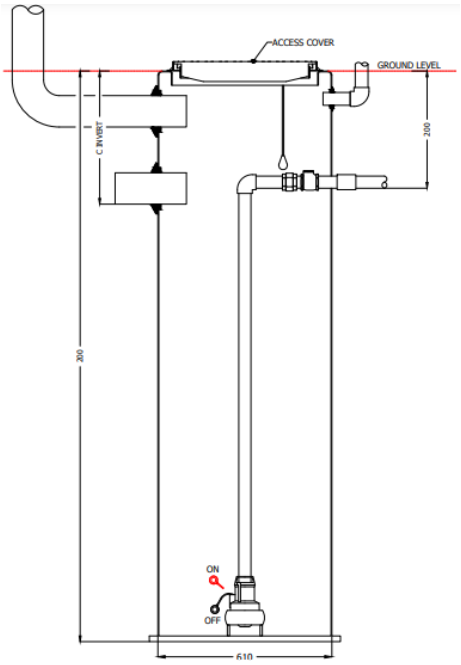
## 3.1. Tank Drawings



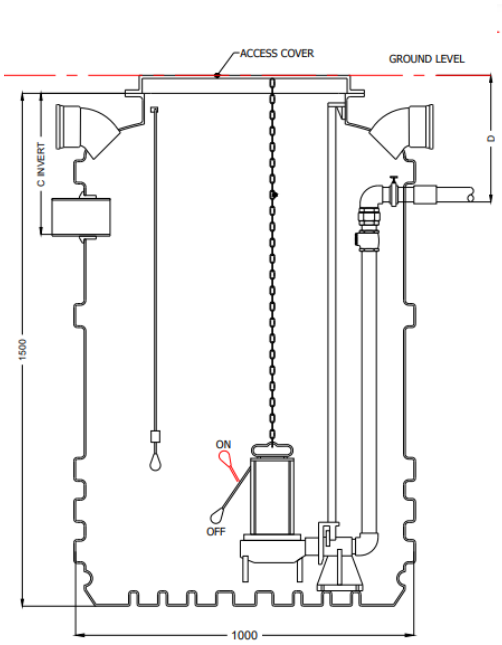

300L Pump Chamber



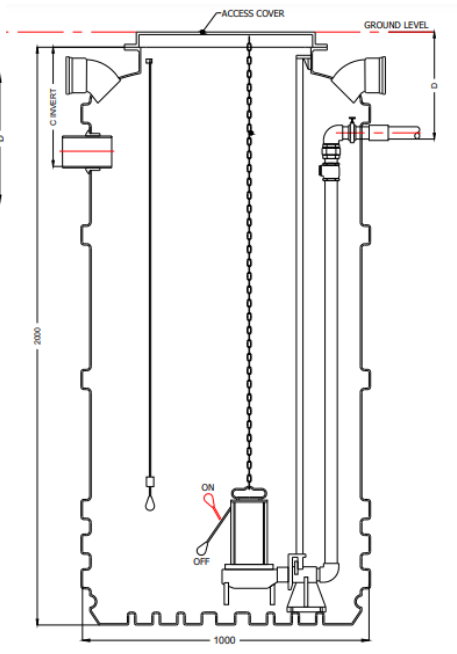

450L Pump Chamber




600L Pump Chamber




1200L Pump Chamber




1700L Pump Chamber

## 3.2. Dual Pump Systems

Tricel Pumping chambers may be supplied with a backup pump in case of pump failure. In this case the two pumps would alternate by means of a flip flop rely to prolong the lifespan of the pumps. These systems are fitted with non-return valves. Also available on request.

## 4. Discharge Pipe Work

All pump stations have been designed to accept 2" standard solvent weld discharge pipe. The tank is terminated in a 2" BSP male thread. For all pipe work and glue please see accessories page.

## 5. Inlet

Each and every one is provided with a 110mm inlet seal, this is supplied loose.

A 140mm hole-saw will be needed to fit the seal. The 110mm inlet seal can be drilled anywhere on the chamber, but no lower than 200mm from the bottom of the chamber; this is to ensure that the pumps can operate correctly. (This applies to the 610 x 635 only, all others are no lower than 500mm).

## 6. Cable Duct Pipe Work

The Micro and Mini have been designed to accept 40mm standard low pressure push fit pipe.

## 7. Electrical Connections

The pump and high-level alarm are to be electrically connected to a non-switch fused spur (total of two). These spurs should have their own dedicated supply from the main fuse board. It is advisable to leave 500mm of the pump electrical cable in the sump to allow for servicing of the pump outside of the sump.

## 8. Pump Float

Ensure the float does not foul the chamber sides. It may be necessary to rotate pipe work on pump to achieve this as there may have been some movement during transit.

## 9. Installation Instructions

| **Important** |
| --- |
| The plumbing to and from the plant should be completed by a competent person in accordance with national regulations and best practices. |

It is important to read these instructions which are for guidance only as it is the contractor's responsibility to satisfy himself that the installation procedure is in accordance with the prevailing ground conditions and good building practice, to eliminate any potential damage to the pump station either during or after installation.

Pump Stations are manufactured from high density polyethylene and are extremely robust. However as with any pre formed chamber they are susceptible to floatation and hydrostatic pressure exerted in high water table conditions.

1. Select a suitable location for the pump station.
2. Check that no other structure — or special access — is required over the selected spot. Provision can always be made, if necessary, to place the tank on a roadway, provided that protective backfill is placed around it and a suitable duty manhole cover & frame is used over the opening.
3. Check that no underground cables, pipes or service ducts lie beneath.
4. Excavate the minimum opening in the ground to receive the tank and pipework to be used. If a machine is used to remove the spoil, the sides of the excavation should be battened for stability and a sump left in the one corner for dewatering purposes.
5. The depth of excavation needs to be at most 500mm deeper than the overall tank (plus extra roof slab — if applicable) depth. This extra depth is required to allow for the construction of a hardcore/concrete base. If the excavation is dug by hand, the sides will require shoring up for safety, to prevent earth slippage.
6. A dewatering pump may be required to control any ground water present.
7. Some clean hardcore should be placed and consolidated in the base of excavation. Usually, this will need to be about 200mm thick.
8. Lay concrete (minimum grade 25) to a minimum thickness of 150mm on top of hardcore. Compact well down.
9. Lower the tank onto the damp concrete base, allowing the base feet/mouldings (if fitted/feet not fitted on tanks smaller than 1m diameter), to settle in. Ensure correct orientation of the inlet/outlet pipes and other connections.
10. If the inlet socket(s) is positioned less than 500mm up from the base of the tank, make this connection at this point.
11. **FILL THE TANK WITH APPROXIMATELY 700MM DEPTH OF WATER**

    Pour concrete surround in situ to a thickness of approx. 100mm and to a height of 600mm from concrete base using minimum grade 25 concrete. The concrete must be evenly poured around the tank periphery, and must not exceed the depth of water in the tank. The concrete should be vibrated to leave no voids. Care must be taken to ensure that any pipes (or other connections) made are not damaged. Concrete will secure into position any pipes that have been connected. During concrete pour, ensure that the tank is vertical (by use of a spirit level across the tank's opening). Additionally, ensure that the tank is at the correct depth level. Allow this concrete "anchor" to set.

    **DO NOT REMOVE THE WATER FROM THE TANK**

    We recommend that the tank is fully enclosed in concrete to provide extra support.

    **THE CONCRETE MUST BE EVENLY POURED AROUND THE TANK PERIPHERY AND MUST NOT EXCEED THE DEPTH OF WATER IN THE TANK – THE WATER LEVEL SHOULD BE GRADUALLY RAISED (CONSISTENT WITH THE INCREASING LEVEL OF CONCRETE POURED) AND SHOULD REMAIN IOOMM HIGHER THAN THE CONCRETE BACKFILL. LEAVE THE WATER IN THE TANK UNTIL THE CONCRETE HAS SET FULLY.**
12. Make connections of site pipework, cable duct @ 3" MIN DIA and vent (if applicable).
13. (If required) construct concrete cover slab (with access opening) of maximum 200mm thickness, ensuring that the slab is supported by consolidated backfill. Or utilise engineering-brick courses to the sides of the GRP opening/manway, again these must be supported by consolidated backfill/concrete.

14. The access cover/frame would have been supplied unattached from the tank. Set frame into concrete cover slab or onto brick courses.
15. Construct concrete plinth for control panel kiosk (where applicable).
16. Empty the tank of water, ensuring that any debris is removed at the same time. Partly refill the tank with clean water for testing the system upon commissioning, and to facilitate a flush-through of the discharge pipe prior to sewage/drainage pumping.
17. Install the pumps and float switches (and interconnecting cables — where extensions are required), drawing these electrical cables through the cable duct to the proposed position of the control panel.
18. Position the control panel (and kiosk — if applicable).
19. Provide a suitable electrical supply — this to be isolated and adjacent to the new positioned control panel.
20. Make the final electrical connections (as per the "field connections" instruction provided with the control panel).
21. Commission the packaged pumping station.
22. Pump(s) should not be left in the pump chamber after installation if the pump station is to remain unused for any length of time. Moisture ingress may occur causing motor burn out on start up.

# 10. High Level Alarm

The float for the High-Level Alarm should be attached to the pump, see picture below.

The High-Level Alarm is designed for systems where the alarm is placed in a different location to the control box, or in a situation where there is the need to monitor the level, pressure, or any other eventuality with an audible and visual alarm.

Every time the alarm command (Cl I - C12) closes, the audible alert will be activated and a red signal light will display. At the same time the contacts 14-15 and 17-18 on the alarm module will be armed.

By pressing the reset key (RST) both alarm outputs (14-15) and the audible alarm will be turned OFF, being necessary to momentarily cut the power supply to the control box. and the opening and consequent closing of the alarm command (Cl I -C 12) so that the output and the audible alarm may be turned ON again. After fixing the cause of the alarm (by opening the alarm command (Cl I-Cl 2) all of the relays and signals will turn OFE.

By pressing the "TEST" key, the outputs (14-15 and 17-18) will be tested, and also the acoustic and luminous signalling's.

Sewage Pump systems are designed to handle foul water, natural human waste and biodegradable products. Other household waste and non-biodegradable products should never be disposed of through the drainage system regardless of whether your property has its own pump system or not. Disposal of non-biodegradable products will affect the reliability of all pumping stations, causing pumps to block and storage chambers to become congested with waste that cannot be pumped.

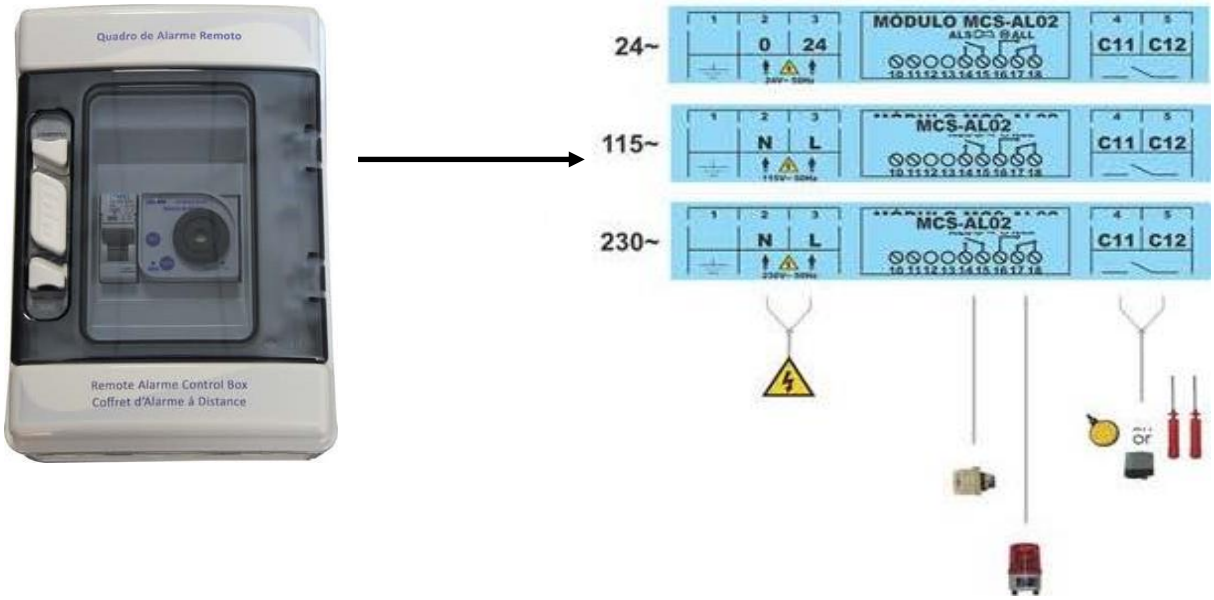
Such waste entering Local Authority Pumping Stations or Sewage works creates major problems and maintenance costs., your pump station will be similarly affected. No two pump stations are alike and only site experience will determine the frequency required, so the second annual cost is indicative of the future cost. We do provide general housekeeping in our scheduled service visit, which will hopefully eliminate your involvement in maintenance. Occasionally the station will need emptying completely with a vacuum tanker if the solids and / or grease build up becomes too much for the pumps to deal with. Again, this varies from site to site on some, it never occurs.

We can only repeat:

Never dispose of non-biodegradable material or waste oil down outlets (i.e., Sinks or toilets) that will eventually end up in your pump station, the pumps are designed to transfer bodily waste, toilet paper and household wash waters only. Care should be taken to avoid the disposal of non-biodegradable and synthetic materials in the waste system, which is unacceptable at sewage treatment plants and also risks clogging the pumps.

## 10.1. Single Pump control panel

The High-Level Alarm is mounted adjacent to the pump station. An audible signal will be heard in the case of pump failure.




## 10.2. Twin Pump Control Panel

The control panel is mounted adjacent to the pump station, an audible alarm will be heard in the case of pump failure.

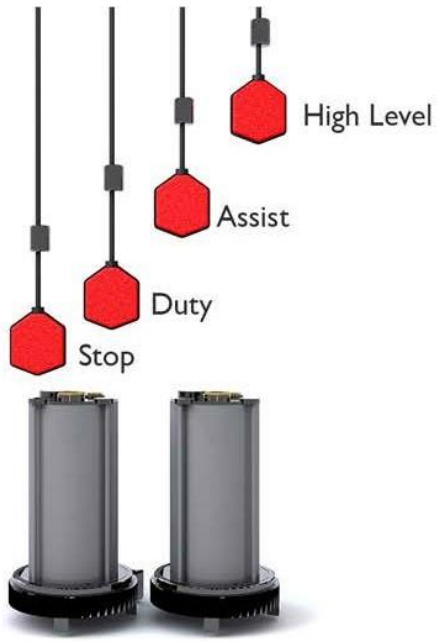

*Picture is example only and may be subject to change

**Specifications**

Door interlocked isolator
Motor fuse and thermal protection
Alternate pump duty
Pump Klixon connections
24V AC central circuit
Duty standby or assist operation
Pump running indication X2
Pump tripped indication X2
Hand-off-auto sector switch X2
Pump tripped X2 H/C/A

**Dimensions**

**Width:** 300
**Depth:** 180
**Height:** 300




Floats should be attached to the float bracket provided at the top of the tank.

The first float (stop) should be located 100mm above the pumps or at the lowest invert.

Once the float is fitted in this capacity the float should then rise 100mm in a vertical motion.

**Notes*

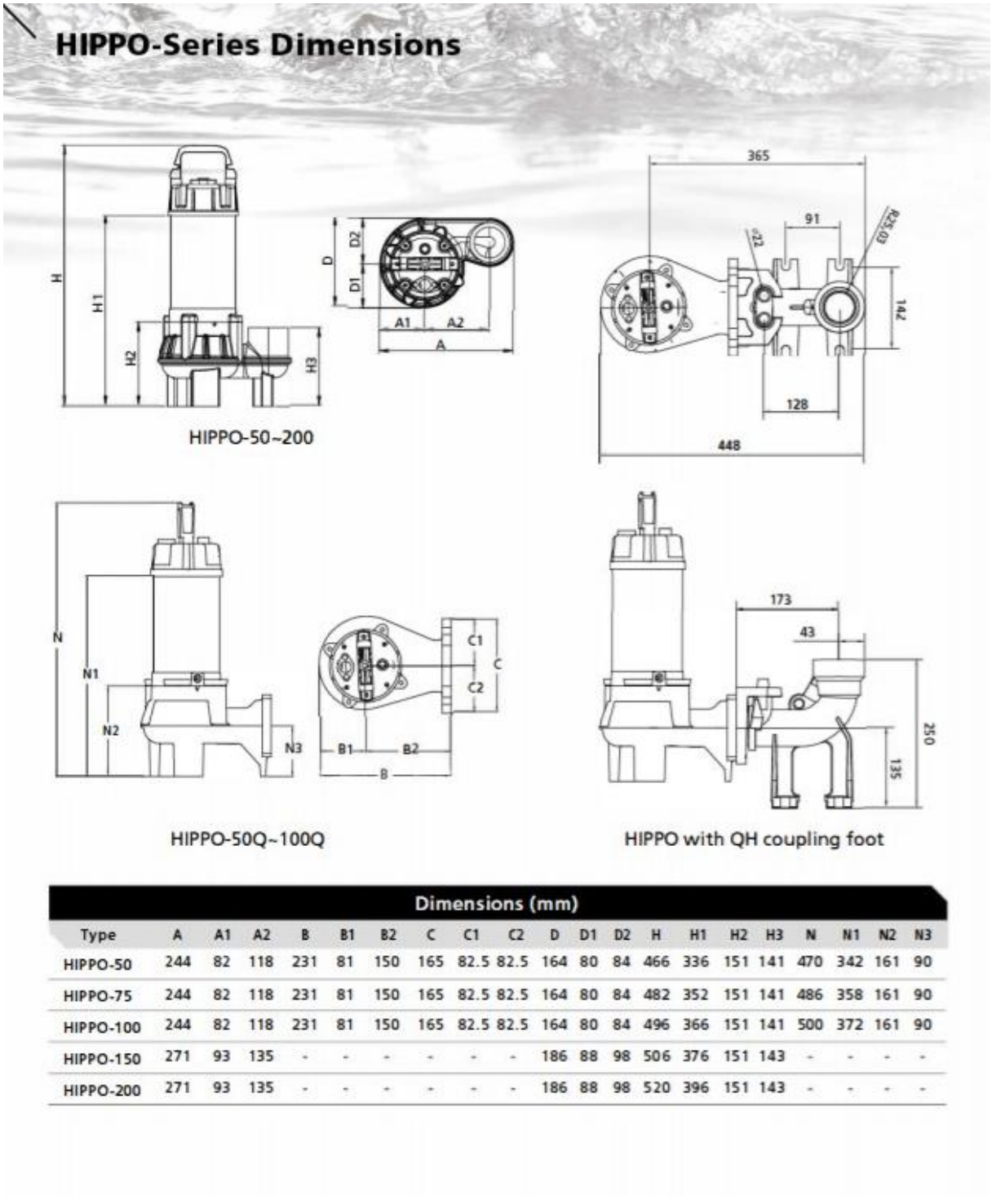
*Make sure that the weight is fitted 150mm from the float device.*

*When connecting the floats the blue wire is not required.*

# 11. Pump Specifications

There are two different type pumps used in our pumping chambers which are as follows:

## 11.1. HIPPO 100VX




| Dimensions (mm) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | A | A1 | A2 | B | B1 | B2 | C | C1 | C2 | D | D1 | D2 | H | H1 | H2 | H3 | N | N1 | N2 | N3 |
| HIPPO-50 | 244 | 82 | 118 | 231 | 81 | 150 | 165 | 82.5 | 82.5 | 164 | 80 | 84 | 466 | 336 | 151 | 141 | 470 | 342 | 161 | 90 |
| HIPPO-75 | 244 | 82 | 118 | 231 | 81 | 150 | 165 | 82.5 | 82.5 | 164 | 80 | 84 | 482 | 352 | 151 | 141 | 486 | 358 | 161 | 90 |
| HIPPO-100 | 244 | 82 | 118 | 231 | 81 | 150 | 165 | 82.5 | 82.5 | 164 | 80 | 84 | 496 | 366 | 151 | 141 | 500 | 372 | 161 | 90 |
| HIPPO-150 | 271 | 93 | 135 | - | - | - | - | - | - | 186 | 88 | 98 | 506 | 376 | 151 | 143 | - | - | - | - |
| HIPPO-200 | 271 | 93 | 135 | - | - | - | - | - | - | 186 | 88 | 98 | 520 | 396 | 151 | 143 | - | - | - | - |

# HIPPO
## SERIES 50HZ
2" Full Free Passage Submersible Pump

HIPPO-50Q HIPPO-50

### Feature
- / Recessed vortex impeller
- / 2" gas discharge
- / 2"(50mm) solid free-passage
- / EKK Eagle Burgmann double mechanical seal in Si.Ca
- / Stainless steel motor housing

### Application
- / For heavy-duty applications with soiled biological wastewaters, sewage, rainwater
- / For both domestic and professional use

### Operating Limits
- / Viscosity of treated fluid : 1mm2/s
- / Density of treated fluid : 1kg/dm³
- / Max starts per hour : 20

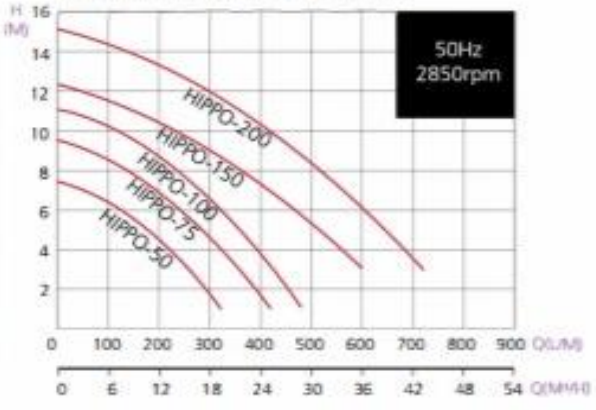
Vortex Impeller

HIPPO-50Q+QH coupling foot

### Specifications

| | | |
|---|---|---|
| Liquid Temperature | | 0~40°C (32~104°F) |
| Submersible depth | | 10M |
| Motor Part | Frequency | 50Hz |
| | Pole | 2 Pole |
| | Type | Dry Type |
| | Insulation | Class B |
| | Protection | IP 68 |
| Pump Part | Protector | Auto-cut |
| | Bearing | Ball Type |
| | Mechanical seal | Double Mechanical Seal |
| | Impeller | Semi-Open |

### Performance Curve



## Parts and Material List

| No | Part | Material |
|---|---|---|
| 1 | Cable | H07RN-F/SJTW/STOW/SJTOW |
| 2 | Handle | Nylon66+30GF |
| 3 | Motor Cover | Nylon 66 (0.5~1HP)<br>FC 200 (1.5~2HP) |
| 4 | Bracket | FC 200 |
| 5 | Motor Housing | SUS 304 |
| 6 | Shaft with Rotor | SUS 410 |
| 7 | Oil Chamber | FC 200 |
| 8 | Double Mech. Seal | Upper : CA / CE<br>Lower : SIC / SIC |
| 9 | Seal Housing | FC 200 |
| 10 | Oil Seal | NBR |
| 11 | Impeller | FC 200 |
| 12 | Pump Casing | FC 200 |
| 15-1 | Upper Bearing | NTN |
| 15-1 | Lower Bearing | NTN |



## Data Chart

| Type | Output | | Discharge | F.L.A. | | Rated | | Maximum | | Cable | Free Passage | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | HP | KW | Inch | 1ø 230V | 3ø 400V | Head m | Cap. LPM | Head m | Cap. LPM | M | mm | kg |
| HIPPO-50(Q) | 0.5 | 0.37 | 2" | 3.8 | 1.5 | 4.5 | 200 | 7.6 | 320 | 10 | 50 | 14(15.5) |
| HIPPO-75(Q) | 0.75 | 0.55 | 2" | 5.4 | 1.7 | 6.4 | 220 | 9.7 | 420 | 10 | 50 | 15(16.5) |
| HIPPO-100(Q) | 1 | 0.75 | 2" | 6.7 | 2.4 | 7.7 | 250 | 11.3 | 480 | 10 | 50 | 16.5(18) |
| HIPPO-150(Q) | 1.5 | 1.1 | 2" | 9 | 2.8 | 8 | 360 | 12.5 | 600 | 10 | 50 | 25(26.5) |
| HIPPO-200(Q) | 2 | 1.5 | 2" | 12 | 3.9 | 10.3 | 400 | 15.5 | 720 | 10 | 50 | 26(27.5) |

» HIPPO series standard version features a vertical, threaded outlet pump body.
» (Q) in the name-coding identifies the pump with horizontal flanged outlet.
» QH identifies the suitable coupling foot for all HIPPO models.
» All single-phase pumps can be equipped with float switch upon request.

## 11.2. SEMISON GR

# Electric submersible pumps SEMISOM GR

for sewage water with grinder

### APPLICATION

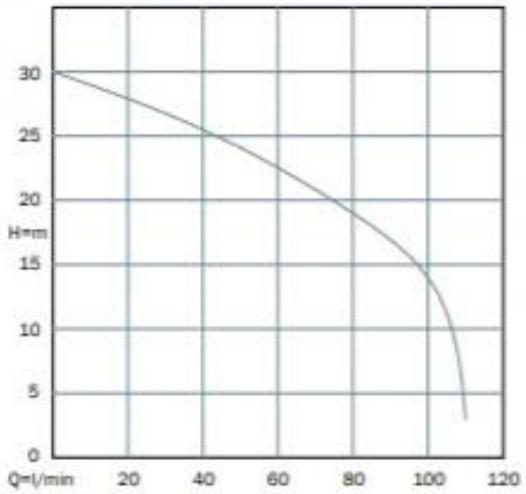
To convey waste and sewage water from septic tanks

To pump liquids containing solids and filaments, even through relative small bore pipework

### CHARACTERISTICS

| | |
|---|---|
| IP rating | IP68 |
| Duty (versions 1~230V - 3~400V) | Continuous S1 |
| Maximum immersion depth (m) | 20 |
| Maximum number of starts per hour | 20 |
| Maximum temperature of the liquid pumped versions 1~230V - 3~400V (°C) | 50 |
| PH of the liquid pumped | 6 - 10 |
| Density of the liquid pumped (kg/dm³) | <1,1 |
| Suitable for inverter drive | Three-phase versions only |

### APPLICATION RANGE




### CONSTRUCTION

Coolant filled, asynchronous, rewindable electric AC motor with short circuit rotor. Insulation Class F. Windings with phase insulators to protect the motor from power peaks, as a guarantee of a highly-trustworthy product.

Resin-insulated cable kit to prevent penetration of water inside the motor

Shafts machined on ball bearings and mechanical seals location

Double mechanical seal with oil-chamber in-between

Grinder in forged and tempered stainless steel as a guarantee of high resistance

### MATERIALS

| | |
|---|---|
| Tie rods, handle, motor casing, bolts and nuts | Stainless Steel AISI304 |
| Shaft | Stainless Steel AISI420B |
| Cover and volute | Mechanical cast iron EN GJL-250 |
| Impeller | Tecnopolymer reinforced with fibre-glass |
| Grinder | Forged and tempered Stainless steel AISI440C |
| Mechanical seal | Silicon carbide and alumina |
| Seal ring | NBR rubber |
| Elastomers | NBR rubber |
| Cable | Neoprene H07RN8-F |

# Electric submersible pumps SEMISOM GR

for sewage water with grinder

## PERFORMANCE DATA 2 poles 50 Hz

| Grinder | Code | Version | | P2 | | Max | µF | DNM | Q | Flow | | | | | | | Dimensions (mm) | | | | Weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | hp | kW | A | | | m³/h | 0 | 1,2 | 2,4 | 3,6 | 4,8 | 6 | 6,6 | A | B | C | D | kg |
| | | | | | | | | | l/min | 0 | 20 | 40 | 60 | 80 | 100 | 110 | | | | | |
| SEMISOM 125 GR (no stands) | SM125 | 230 V | 1-phase | 1,6 | 1,18 | 9,2 | 35 | 1"½ | H (m) | 30 | 27,5 | 25,5 | 22,5 | 19 | 14 | 3 | 416 | 29 | 240 | 190 | 22 |
| | SM125+G | 230 V | 1-phase+float | | | | | | | | | | | | | | | | | | 22,2 |
| | ST125 | 400 V | 3-phase | | | 2,9 | | | | | | | | | | | 396 | | | | 21,2 |
| SEMISOM 125 GR (with stands) | SM125P | 230 V | 1-phase | 1,6 | 1,18 | 9,2 | 35 | 1"½ | H (m) | 30 | 27,5 | 25,5 | 22,5 | 19 | 14 | 3 | 441 | 54 | 240 | 190 | 22,1 |
| | SM125+GP | 230 V | 1-phase+float | | | | | | | | | | | | | | | | | | 22,3 |
| | ST125P | 400 V | 3-phase | | | 2,9 | | | | | | | | | | | 421 | | | | 21,3 |

**SUPPLIED WITH**

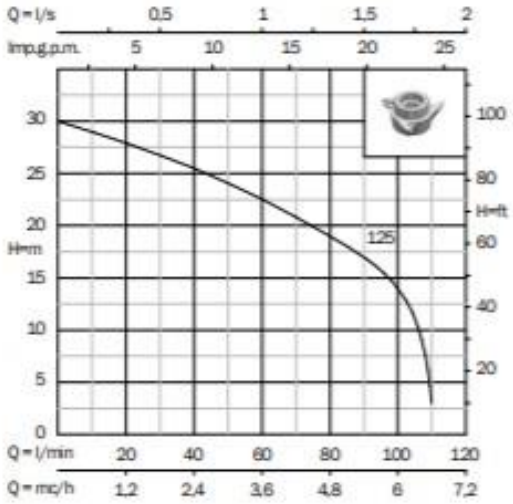
10 meters power cable

Junction box containing starting capacitor, unipolar thermal protector switch and facility to connect an extra 50 µF start-run capacitor (single-phase versions)

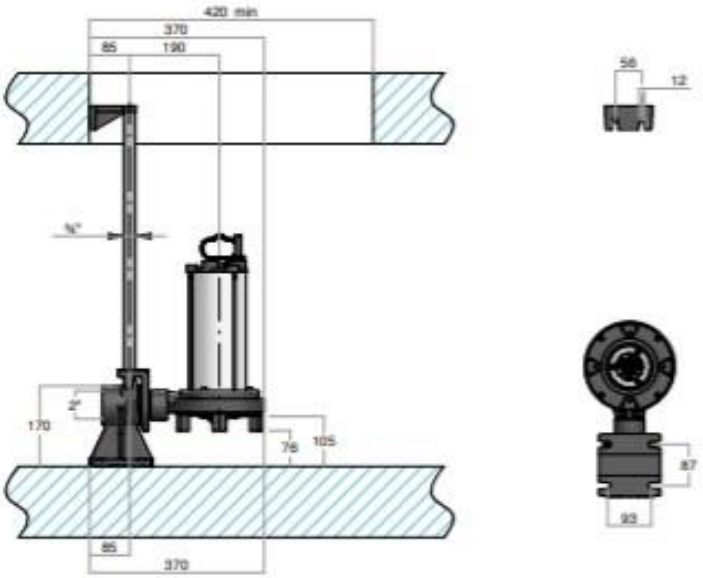

## ACCESSORIES

| Code | Description | |
|---|---|---|
| 02410016 | 90° zinc-plated elbow 1"½ M/F (to connect to the lifting station Semibox) |  |
| 02008200 | Start-run capacitor 50 µF |  |
| 04105042 | Guide rail kit DNM 1"½ (⅝" guide poles not included) |  |

## PERFORMANCE CURVES - 2 poles 50 Hz




## ILLUSTRATION OF AN INSTALLATION WITH GUIDE RAIL KIT



# 12. Operating Conditions

| Warning |
| --- |
| Tricel shall not be liable for any damage or loss, including consequential loss, caused by the failure of any plumbing equipment or failure caused by the inclusion of prohibited material, in the pumping chamber |

The manufacturer's installation, operation and maintenance instructions outlined in this manual must be followed at all times to ensure the pumping chamber operates as designed. Any variations to these conditions could result in the unit not performing to its full potential and the discharge may not meet the required standards. The property owner has a legal responsibility to ensure that the pumping chamber does not cause pollution, a health hazard or nuisance.

## 12.1. Conditions

- An electrical connection to the Operating Conditions must be maintained for it to function correctly. This ensures that the discharge pump will operate.
- The Operating Conditions includes many components (plumbing, ventilation, pump and alarm/control box. Each component has to function correctly for the overall system to work which is the responsibility of the homeowner.
- If the Operating Conditions is not installed correctly, flooding, overloading, electrical shock or floatation may occur. Tricel are not responsible for incorrectly installed pumping chambers.
- Damage to the installation due to the influx of surface water or the backing up of soak ways or drains is not covered by the Tricel.
- To ensure the continuance of the Tricel Pumping Chamber's performance, the user has to take certain precautions:
    - The design loading of the Tricel Pumping Chamber should not be exceeded.
    - High volume discharges such, as those from swimming pools and Jacuzzi's must never enter the Pumping station.
    - Surface water must not enter the Pumping station.
    - Do not allow the following to enter the Pumping station:


Service personnel must be provided with clear access to the Pumping station.

If others size the Pumping station, Tricel will supply to these specifications. In this case, the responsibility lies with others in relation to the maximum flow/litres per day, the Pumping station capacity and retention times. Similarly, if Tricel size the Pumping station and a greater load is placed on the Pumping station by the addition of extra houses, bedrooms, schools, crèche's etc. or by other means Tricel are not responsible for the Pumping station in terms of overloading or time to pump empty the chamber may be compromised.

Should the Pumping station be used intermittently or if extended periods of non-use are expected, it is recommended that the Pumping station remain on and in operation. The contents of the pump chamber should not be allowed to go septic due to non-use. Water should be pumped into it twice a year to prevent to pump from seizing up.

# 13. Maintenance

| Warning |
| --- |
| Any maintenance carried out inside the tank represents a confined space. Therefore, the maintenance person must be suitably trained to work in confined spaces. Sewage and sewage effluent can carry micro-organisms and gases harmful to human health. Any person carrying out maintenance on the plant must be appropriately trained. Suitable protection equipment including gloves, goggles etc. should be worn at all times. Always remove contaminated clothing and protective equipment after completion of work. Wash hands and face prior to eating, drinking or smoking. |

A certain amount of maintenance is required on an on-going basis to ensure that the pumping chamber is working correctly. This is the responsibility of the customer.

## 13.1. Regular Maintenance

- All vents should be checked to make sure they are not blocked or obscured.
- The non-return valve must be checked for blockages.
- The inlet and outlet should be inspected and rodded to remove any blockages if necessary.

## 13.2. Annual Maintenance

- Service personnel must be accommodated with clear access to the tank.

## 13.3. Annual Service (available from your supplier)

During routine servicing, the service technician will perform a series of checks and procedures:

**Checks**

- The covers and locks are in place and in good condition.
- General appearance and condition of the pumping chamber is good.

**Procedures**

- The high-level alarm is tested.
- The non-return valve is tested.
- The pump and float-switch are tested.
- The vents are cleared of any blockages.

The tank is not suitable for vehicular traffic. Tricel also recommend fencing off the area to prevent livestock herds from accessing the Tricel Pumping Chamber.

The benefits of regular servicing have been proven to extend the life and efficiency of pumping equipment as can be seen in the below before and after pictures.

# 14. Terms & Conditions

**Subject to our standard terms and conditions, which are available on request.**

In accordance with our normal policy of product development, this specification is subject to change without notice.

| Identification | This Tricel Pump Station is: |
|---|---|
| | Single package pump station 300L |
| | Single package pump station 450L |
| | Single package pump station 600L |
| | Single package pump station 1200L |
| | Single package pump station 1700L |
| | Twin package pump station 1200L |
| | Twin package pump station 1700L |

TRICEL
GENERATIONS OF INNOVATION

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