

Klargester

Hillmaster Pump Station

DS1487P	Ø0.9 PE Single Effluent Pump Chamber
DS1488P	Ø0.9 PE Twin Effluent Pump Chamber
DS1489P	Ø0.9 PE Single Sewage Pump Chamber
DS1490P	Ø0.9 PE Twin Sewage Pump Chamber
DS1485P	Ø1.2 PE Single Sewage Pump Chamber
DS1486P	Ø1.2 PE Twin Sewage Pump Chamber
DS1483P	Ø1.2 PE Single Effluent Pump Chamber
DS1484P	Ø1.2 PE Twin Effluent Pump Chamber

Please request copy of specific sales drawing from our sales department



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1014410 – Operation & Installation Guidelines for Hillmaster Pump Stations

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Health and Safety

THESE WARNINGS ARE PROVIDED IN THE INTEREST OF SAFETY. YOU MUST READ THEM CAREFULLY BEFORE INSTALLING OR USING THE EQUIPMENT.

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can be acquainted with the functioning of the equipment and the relevant warnings.

INSTALLATION SHOULD ONLY BE CARRIED OUT BY A SUITABLY EXPERIENCED CONTRACTOR, FOLLOWING THESE GUIDELINES. ELECTRICAL WORK SHOULD BE CARRIED OUT BY A QUALIFIED ELECTRICIAN.

Sewage and sewage effluent can contain substances harmful to human health. Any person carrying out maintenance on the equipment should wear suitable protective clothing, including gloves. Good hygiene practice should also be observed.

When covers are removed precautions must be taken against personnel falling into the unit.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions, including those listed below, which apply to maintenance procedures.

Ensure that you are familiar with the safe working areas and accesses & that the working area is adequately lit.

Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Always keep proper footing and balance. Avoid any sharp edges.

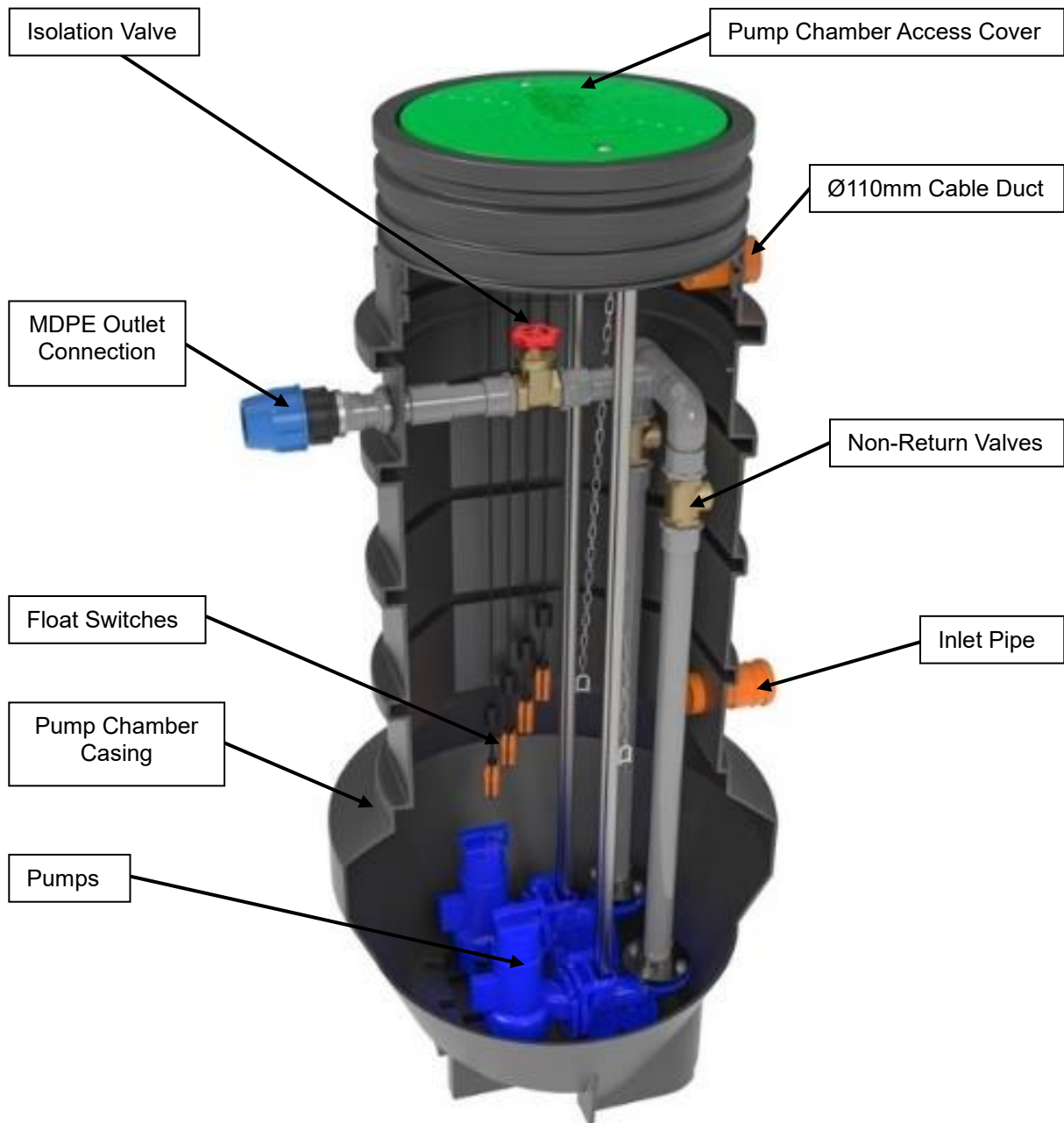
The removal of sediment should be carried out by a contractor holding the relevant permits to transport and dispose of such waste. The contractor must refer to the guidelines in this document.

AS WITH ALL SITE WORK, THE DANGERS OF WORKING WITH WATER AND ELECTRICITY POSE SEVERE THREATS TO HEALTH, IF OBVIOUS AND FUNDAMENTAL PRECAUTIONS ARE NOT TAKEN. THEREFORE, IF YOU ARE IN ANY DOUBT REGARDING ANY OF THE FOLLOWING, PLEASE DO NOT HESITATE TO CONTACT US.

1. System Overview

Pictorial representation below indicates basic requirements for a standard system, please note not all the items required are supplied from us a standard.

Ø1.2 MDPE Chamber (Twin Pump Unit Shown)



1.1 Site Delivery Checklist

The delivery paperwork will have 2 no. items listed that will need to be checked against items delivered. Each item will be clearly identified as per list below:

Example:

Top Level Product Code - (code)

Item 1 - (code) - (Pump Chamber Code)

Item 2 - (code) - (Control Panel and Floats Code)

Pump Chamber Assembly

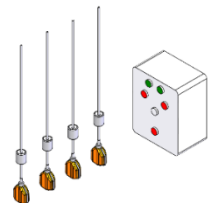
The unit will be fitted complete with internal pipework and pumps.

1. Lifting chain will be secured to the pumps and Unistrut assembly.
2. Inlet pipework will be fitted.
3. Cable duct pipework will be fitted.
4. Inlet pipework will be fitted.
5. The unit is supplied strapped to a standard pallet.



Twin Pump Chamber

Twin pump chambers will be supplied with a control panel and floats supplied in boxes wrapped in polythylene bags and secured to the pump chamber pallet using strapping.



Single Pump Chamber

Single pump chambers will be supplied with a switch box & High Level Alarm wrapped in polythylene bags and secured to the pump chamber pallet using strapping



2. Operating Guidelines

2.1 Introduction

2.1.1 These Guidelines represent Best Practice for the installation of the above packaged pump stations (wastewater application). It must be noted, however, that these Guidelines are of a general nature. It is the responsibility of others to verify that they are appropriate for the specific ground conditions and in-service loads of each installation. Similarly, any information or advice given by employees or agents of the company regarding the design of an installation must be verified by a qualified specialist (e.g. Civil engineering consultant).

2.2 Handling and Storage

2.2.1 Care must be taken to ensure that units are not damaged during delivery and handling on site. When handling, moving and storing units make sure there are no stones or other sharp objects that can be pressed against the unit and cause damage. Please take care and place unit so that it cannot fall and become damaged. The unit must not be thrown or rolled.

2.2.2 The design requirements of the product will frequently mean that the centre of gravity of the unit is “offset”. Care must therefore be taken to ensure that the unit is stable when lifting and that loads are evenly distributed during lifting.

2.2.3 Lifting equipment should be selected by taking into account the unit weight, length and the distance of lift required on site. Pump station must not be lifted with any liquid in it.

2.2.4 We accept no responsibility for the selection of lifting equipment.

2.2.5 Appropriate lifting D Shackles / Strapping can be fitted to the lifting points provided on the chamber for offloading and installation.

3. Chamber Installation

- 3.1 Select a suitable location for the chamber. This will normally be at the lowest ground level on the site so that the facilities can be drained into the chamber.
- 3.2 Check that no other structure - or special access - is required over the selected position. Provision can be made, if necessary, to place the chamber in a roadway, provided that the backfill, cover slab and access cover are designed in accordance with the anticipated loads.
- 3.3 Check that no underground cable, pipe or service duct lies beneath the selected position.
- 3.4 Excavate the minimum opening in the ground to receive the pump chamber and pipework to be used. This opening must allow for a minimum of 160mm of concrete around the chamber.
- 3.5 The depth of the excavation needs to be at least 150mm deeper than the overall tank depth.
- 3.6 If a machine is used to remove the soil, then the sides of the excavation should be battered for stability and a sump left should it be necessary to dewater.
- 3.7 If it is dug by hand, the sides will need shoring up for safety, to prevent earth slippage.
- 3.8 A de-watering pump may be required to control any ground water present.
- 3.9 Place in position the concrete base, minimum thickness 150mm of concrete and allow to set.
- 3.10 Lower the pump chamber onto the dried concrete, ensuring that the inlet and outlet pipes are correctly aligned.
- 3.11 The unit then should be backfilled with either mass concrete, or a lean mix in areas where ground conditions are wet or unstable. The minimum surround thickness for this backfill should be 250mm.
- 3.12 In all instances the pump chamber must be filled with clean water to keep pace with the backfilling process, this is to equalize the pressures exerted onto the unit and prevent the possibility of chamber deformation or flotation during installation.
- 3.13 Connect the site pipework (supplied by others) to the inlet and outlet connections of the pump chamber.
- 3.14 Finish off the surface of the excavation to the required level, depending on the final surface finish required.
- 3.15 The Concrete Specification is not a site-specific installation design.

GENERAL CONCRETE SPECIFICATION IN ACCORDANCE WITH BS EN 206-1 (BS 8500-1)	
TYPE OF MIX	(DC) DESIGN
PERMITTED TYPE OF CEMENT	BS 12 (OPC); BS 12 (RHPC); BS 4027 (SRPC)
PERMITTED TYPE OF AGGREGATE (coarse & fine)	BS 882
NOMINAL MAXIMUM SIZE OF AGGREGATE	20 mm
GRADES: C25 /30 C25 /30 C16 /20	REINFORCED & ABOVE GROUND WITH HOLDING DOWN BOLTS REINFORCED (EG. FOR HIGH WATER TABLE) UNREINFORCED (NORMAL CONDITIONS)
MINIMUM CEMENT CONTENT	C30 C20
	270 - 280 Kg/M ³ 220 - 230 Kg/M ³
SLUMP CLASS	S1 (25mm)
RATE OF SAMPLING	READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS EN 12350-1
NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER	

4. Important Notes

- 4.1 Our pump chambers are structurally tested in accordance with EN 12566-3, which specifies structural stability testing for both wet and dry sites using granular backfill 3-8mm. However, in GB & IRE it would be typical for tanks to be installed in concrete due to rising water table, and it can generally be assumed that buoyancy prevention of concrete backfill is more advantageous than the granular backfill materials used in testing.
- 4.2 When positioning the chamber please check that your electrician has provided sufficient cable to allow the control panel to be placed in the required position.
- 4.3 It is most important that once the chamber is in position, with all the inlet connections made and before starting the pumps, that the drainage system is flushed through and all sand, debris etc. is removed from the chamber.
- 4.4 FAILURE TO DO THIS MAY INVALIDATE THE WARRANTY ON THE PUMPSETS
- 4.5 A cable duct is required, free from sharp bends, minimum diameter 75mm.
- 4.6 Ensure the cable is pulled through the duct in the side of the pump chamber.
- 4.7 Additional Notes
- 4.8 If the chamber is going to be subjected to traffic & or vehicle loads, it is essential that a cover slab is constructed so there is no direct load onto the chamber. Also, a suitably rated access frame and cover must be obtained and installed in such a manner that no loads bear directly onto the neck of the chamber.
- 4.9 When using a concrete backfill it is important to ensure that the mix is not too wet as this may exert floatation pressure on the pump chamber.
- 4.10 In all instances the pump chamber must be filled with clean water to keep pace with the backfilling process, this is in order to equalize the pressures exerted onto the unit and prevent the possibility of chamber deformation or flotation during installation.

IF IN DOUBT PLEASE CONTACT US FOR ADVICE.

IT SHOULD BE NOTED THAT THIS INFORMATION IS FOR GUIDANCE PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT THE INSTALLATION IS CARRIED OUT TO THE SATISFACTION OF YOUR REGULATING LOCAL WATER AUTHORITY, IN ACCORDANCE WITH THE PREVAILING GROUND CONDITIONS.

5. Wiring of Control Panel

5.1 Single Pump

5.1.1 Refer to drawing if required. The isolator isolates the main power supply to the pump. The pump is not operational when the isolator is off. The pump operates automatically when the isolator is on.

5.2 Twin Pumps

5.2.1 Refer to the drawing supplied inside the panel.

5.2.2 Replace the drawing and the cover of the control panel.

5.2.3 For Float heights refer to drawing DS1491P (Page 13).

5.3 High Level Alarm

5.3.1 For the single pump system, a stand-alone high-level alarm can be installed. The additional float needs to be wired to the High-level Alarm Box delivered with the high-level alarm float.

To order kit refer to “DPSHLA1”.

5.3.2 For the twin pump system an additional float can be wired into the existing control panel already delivered with the twin pump system. Refer to wiring diagram (supplied inside the panel) for details.

To order the additional float refer to “DPSHLA2”.

5.4 Operational Check

5.4.1 Fill the chamber with water and verify correct operation of pumps. Refer to section 6 for Operational Description

6. Operational Description

6.1 Pump Control Panels

- 6.1.1 Twin Pump Panels are designed to operate from 4 float switches i.e. stop / start / high-level alarm & duty – standby (assist). Single Pump Panel installations are designed to operate on 3 float switches start / stop & high-level alarm.
- 6.1.2 Each pump may be run on its own by operating the respective “manual” switch mounted on the door.
- 6.1.3 In “auto” the pumps will run under float switch control.
- 6.1.4 As the level rises the stop float contacts will close. When the start floats switch contact closes, the duty pump will start. This pump will continue to run until the level falls below the stop float switch.
- 6.1.5 After each pump cycle the duty pump is alternate so that the other pump becomes the duty pump the next time the level reaches the duty pump start float.
- 6.1.6 If the level continues to rise to the high-level float, the high-level alarm light will illuminate. This alarm may be reset once the level is below the high-level float switch. Under high level conditions this lamp will be illuminated to indicate that there is either a pump failure or that the volume of influent is exceeding the discharge capability of the pump. The high-level alarm / beacon will need to be manually reset by the site operator once the cause of the high-level condition has been identified and resolved.
- 6.1.7 Should the duty pump have failed or is running, and the level continues to rise to the duty/standby pump start float, the second standby pump will start and continue to run until the level falls below the stop float switch.
- 6.1.8 Cable access is available from both the top & bottom end of the panel. Additional access can be gain from the sides but must be suitably glanded. The control panel has an IP54 rating. The cabling work and glanding to the panel needs to meet the same standard to maintain this rating.
- 6.1.9 Please ensure that the overload(s) within the panel are adjusted to match the Full Load Current of the pump(s) to ensure nuisance tripping is not encountered. Please contact our technical office for further advice if required.

7. General Maintenance

The best way to achieve this is to arrange a contract with an approved Service provider. Please contact us on the phone number given for service contact details.

There will always be situations when a little self-help may be sufficient to avoid call out and we describe here some basic checks which may prove useful: Before opening the unit, please see Health and Safety Notes.

We recommend the unit is checked every 6 months to ensure there are no blockages or obstructions in the inlet and outlet pipes, also check that there is not excessive sludge build up in the bottom of the tank.

If in any doubt whatsoever, please contact your service provider.

8. How to keep your Pump Station Running Sweetly

If a Pump Station serves your property, the likelihood is that the property is not connected directly to the mains sewer system.

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.

Disposal of non-bio-degradable products will affect the reliability of all pumping stations, causing pumps to block and storage chambers to become congested with non-pumpable waste.

Bear in mind too that it isn't only the toilet that is connected to the station; anything that goes down the sink, bath.

THE FOLLOWING MUST NOT BE DISCHARGED INTO THE DRAINS

- Cleaning Rags
- Cloths
- Syringes & Hypodermic Needles
- Medicines & Medical Equipment. Take unused medicines to a pharmacist for safe disposal.
- Grease & Fat. These products tend to cool down, separate from the water and coagulate within the pump chamber. Fat & grease encase the pump and floats, causing blockages and failure of pumps.
- Nappies, sanitary towels, incontinence materials, soft toys, tennis balls etc. It may seem a bit obvious to say this, but it is amazing what gets flushed down the loo from time to time. Causing blockages of the drains and pumps.
- Even so-called disposable nappies and sanitary towels often do not degrade fully and can lead to malfunction, so it is best to dispose of them by other means. Fabric cleansing wipes & nappy liners can block pipework. They should not be flushed into the drainage system.

Routine De-sludging and Servicing

Pump Stations over time accumulate settled solids. It is good practice to check and if necessary, empty/desludge these at the same time as any treatment unit.

It is vital to the systems ongoing operation and should be carried out regularly.

Mechanical and electrical servicing, particularly, must be performed by properly trained personnel suitably qualified and experienced in this type of work.

WARRANTY

The company will replace or, at its option, properly repair without charge any goods which are found to be defective and which cause failure in normal circumstances of use **within a period of twelve months from the date of delivery.**

This warranty is conditional upon:

- (a) The Buyer notifying the Company of any claim within Seven days of the failure becoming discernible.
- (b) The Company being allowed a reasonable opportunity to inspect the goods so as to confirm that they are defective.
- (c) The goods not having been modified, mishandled or misused and being used strictly in accordance with any relevant instructions issued by the Company.

The Company's liability under this Clause is limited to the repair or replacement of the defective goods, and does not cover costs of transport, installation or associated site costs, if applicable.

The Company's liability to replace or repair the goods is in lieu of and excludes all other warranties and conditions, and in particular (but without limitation) the Company shall have no liability of any kind for consequential loss or damage.

Please register your unit for warranty following the QR Code or website below. Please complete ALL sections of the form and submit. ***Terms & Conditions Apply, To avail of your extended warranty, you must register within 3 months of purchase.**



https://kingspanwaterandenergy.formstack.com/forms/klargester_warranty_form_en_gb

Also within this manual is a **Notice**, describing the necessary maintenance for the plant. This should be fixed within the building.

For any further advice, please contact our Service & Warranty department on +44 (0) 844 225 2785. It would be helpful if you provide your equipment serial number.

9. Float Information Sales Drawing

Please check with Kingspan Water & Energy for the latest issue of the drawing

Issue	Date	Drawn By	Approved By	Description
02	18/10/2024	D.MAYRQBUN	D.M.	ECN 2128
01	22/08/2024	D.MAYRQBUN	D.M.	ECN 2097 - Initial Issue

All Dimensions in mm Scale: Do Not Scale

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TYPICAL FOUL PUMP SUMP FLOAT ARRANGEMENT

		PX09			
Unit Height	Inlet Invert	'A'	'B'	'C'	'D'
1080mm	500	600	650	750	800
1685mm	1100	1200	1250	1350	1400
1988mm	1400	1500	1550	1650	1700

		PX12			
Unit Height	Inlet Invert	'A'	'B'	'C'	'D'
1725mm	700	1000	1050	1150	1200
2045mm	1000	1300	1350	1450	1500
2645mm	1600	1900	1950	2050	2100

UN Number:	Tolerance (unless noted):
Finish:	Thickness:
Weight:	Surface Area: m ²
Modeled By:	Material:

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Drawing : DS1491P

PX Pump Chamber Float Information

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