DAYLIFF

DSmart
Smart Water Boosting System

DSmart300/500

DSmart750

DSmart1500

Installation & Operating Manual

INDEX

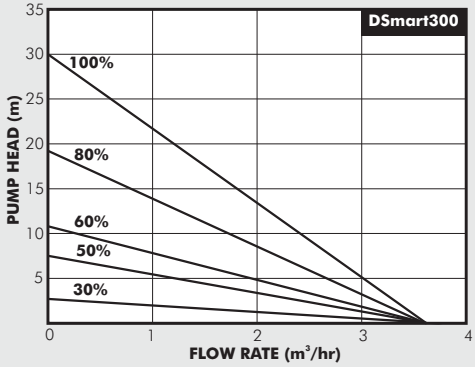
Congratulations on selecting a Dayliff DSmart Pump. They are manufactured to the highest standards and if installed and operated correctly will give many years of efficient and trouble free service. Careful reading of this Installation Manual is therefore important and any queries should be referred to the equipment supplier.

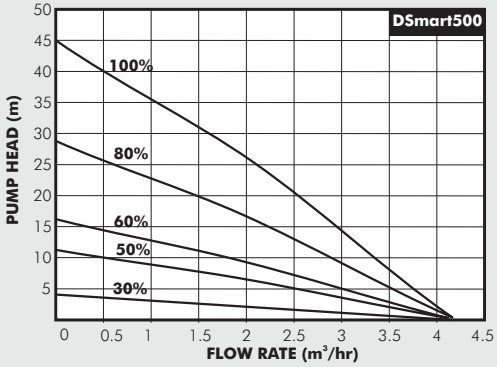
1. PUMP SPECIFICATIONS

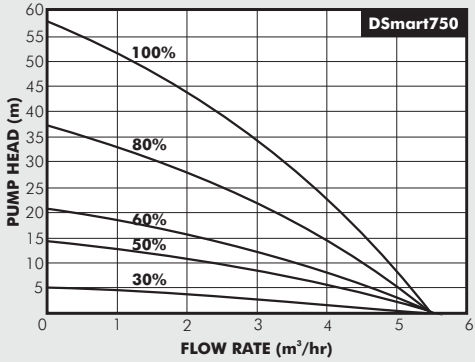
DSmart300/500

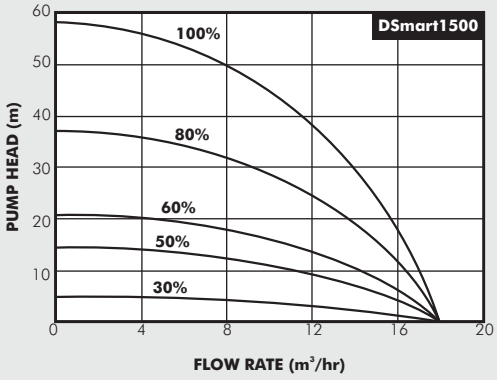
DSmart750

DSmart1500









PUMPS

DAYLIFF DSmart Pumps are innovative centrifugal self-priming variable speed automatic water boosting systems for pressurised water supply, variable speed technology providing constant pressure at varying water demand levels. Pump construction is engineering plastic throughout except DSmart750 which has stainless steel pump body with external casings made from UV proof components suitable for indoor and outdoor installations. Particular features include:-

- Innovative inverter controlled variable speed technology that minimises energy consumption.
- Quiet operation with max noise levels of 50dB.
- Fully automatic operation with adjustable constant pressure settings that matches flow with demand.
- Easy to use LED control panel with display for operating mode, operating pressure and various fault indicators.
- Convenience features including standard inlet and outlet connectors and inbuilt non-return valve.
- High/Low temperature protection and leakage warning.
- Integrated pressure tank for dry running and anti-cycling protection.
- Parallel connection for 2 pump operation available for Dsmart1500

DSmart are exceptionally advanced pumps that use state-of-the-art inverter technology to provide the perfect solution for a complete water supply system in domestic, residential and small commercial water supply applications.

MOTORS

Pumps are fitted with high efficiency IE5 Permanent Magnet variable frequency motor that incorporates thermal protection against motor overload and dry run protection with auto-restart. The motor can be directly connected to the mains power supply through an appropriately sized 13A fuse or MCB.

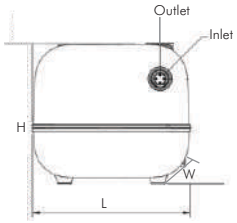
Enclosure Class: IPX5
Insulation Class: F
Max Speed: 5200rpm
Power Input: 165 - 260V / 1PH / 50 - 60Hz

OPERATING CONDITIONS

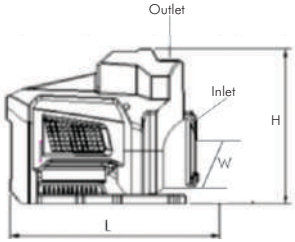
Pumped Liquid: Thin, clean, chemically non-aggressive liquids without fibres
Max. Ambient Temperature: $+40^{0}C$
Water Temperature: $+4^{0}C$ - $+75^{0}C$

PUMP DATA

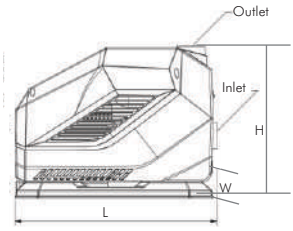
Model	Motor (kW)	P2 Current (A)	Max Inlet/Outlet Pressure (Bar)	Inlet/ Outlet (")	Dimensions (mm)			Weight (kg)
					L	W	H	
DSmart300	0.3	3	3	1	285	183	253	6
DSmart500	0.5	4	4.5		330	205	280	7
DSmart750	0.75	5.2	5.5		390	195	290	9
DSmart1500	1.5	13.1	7	2	511	215	382	24



DSmart300/500



Dsmart750



DSmart1500

2. SYMBOLS AND WARNINGS

Before commencing installation ensure equipment is well protected and the power supply has been switched off.

The power cable should be provided with short circuit protection (MCB) to guard against high frequency currents faults. Ensure that the earthing complies with the required local standards.

The power supply cable should never be used to carry or shift the pump. If damaged, it must be replaced with a cable of similar specification.

The pump is supplied with grounding wire. To reduce the risk of electric shock, ensure that the pump is properly grounded.

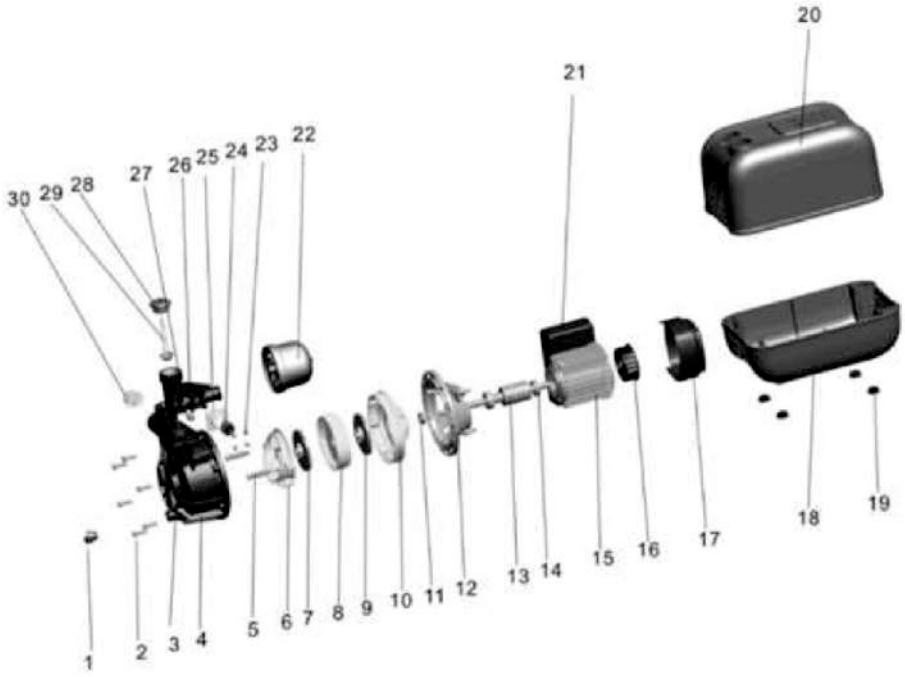
It is not recommended to use RCD (Residual Current Device) with variable speed drives/motors. However, if mandatory, use Type B because of the nature of the constant DC leakage current.

The electrical connections should be carried out in accordance with local regulations. Ensure that the values indicated on the nameplate match with the supply voltage and frequency.

3. INSTALLATION

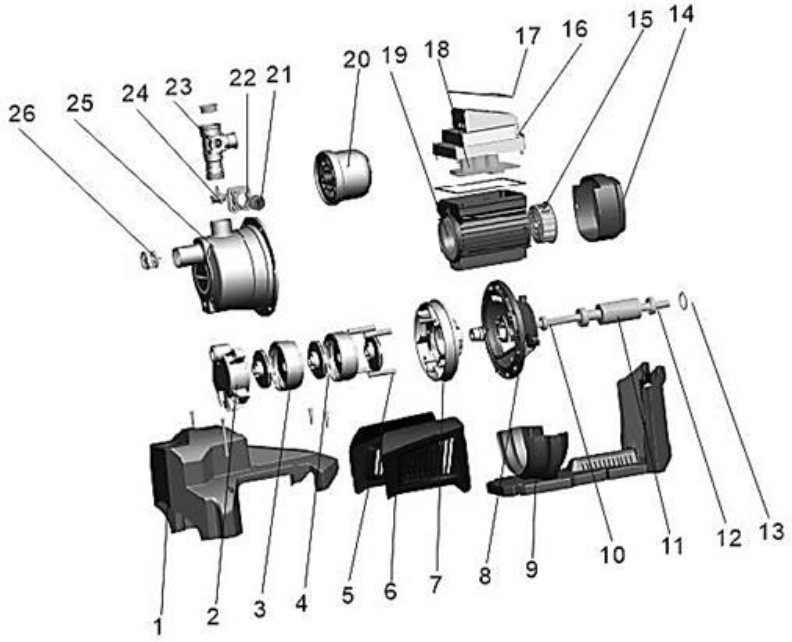
Inspecting the product

- Check pump's voltage and frequency of the product match the voltage and frequency of the installation site.



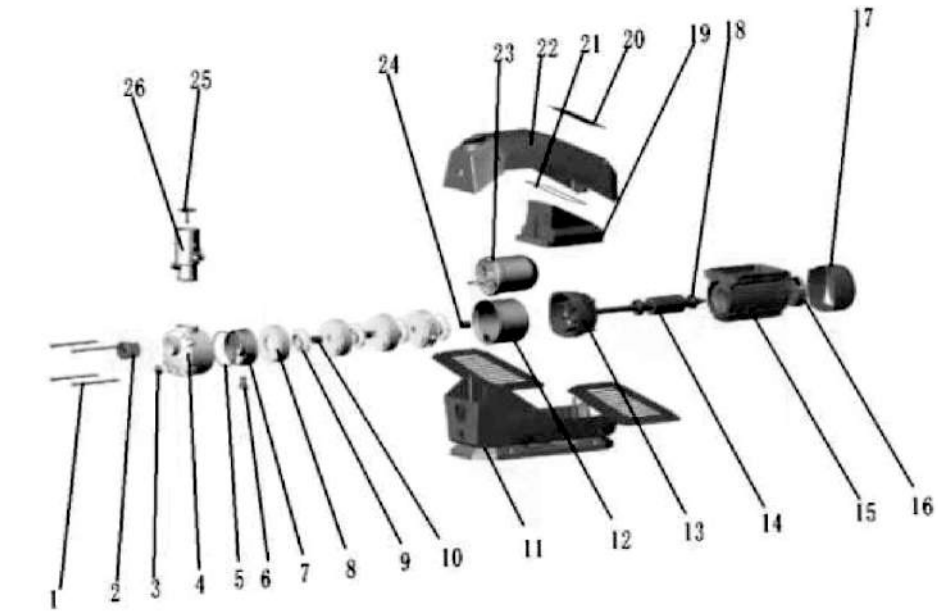
DSmart 300/500

No	Part Name	Material	No	Part Name	Material
1	Waterproof Screw	Nylon 66	16	Fan	PPO
2	Screw	304	17	Fan Cover	PP
3	Check Valve	Nylon	18	Hull	Plastic
4	Pump Body	Nylon 66	19	Crash Pad	Rubber
5	Prop	PPO	20	Hull	Plastic
6	Water Inlet Guide Glade	PPO	21	Controller	-
7	Impeller	PPO	22	Overhead Tank	Carbon Stall
8	Guide Glade	PPO	23	Screw	304
9	Impeller	PPO	24	Pressure Sensor	-
10	Seal Holder	Aluminium	25	Sensor Bracket	PPO
11	Waterproof Gland	EPDM	26	Temperature Sensor	-
12	Pump Support	Aluminium	27	5-Way Valve	Nylon 66
13	Rotor	304	28	Water Injection Screw	Nylon 66
14	Bearing	CR15	29	Strainer	-
15	Motor	-	30	Check Valve	Nylon 66



DSmart 750

No	Part Name	Material	No	Part Name	Material
1	Hull	PC+PBT	14	Fan Cover	PC+PBT
2	Water Inlet Guide Glade	PPO-GF30	15	Fan	PP-GF10
3	Guide Glade	PPO-GF30	16	Capacitor Box	ABS (VO)
4	Impeller	PPO-GF30	17	Gland	NBR
5	Prop	PA6-GF30	18	Controller	P.C Board
6	Radiation Fin	ABS	19	Stator	Copper Coil
7	Seal Holder	PPO-GF30	20	Overhead Tank	-
8	Pump Support	ZI102	21	Transducer	-
9	Motherboard	PC+PBT	22	Sensor Bracket	PP-GF10
10	Water Proof Gland	NBR	23	Bottom Bracket	HPb59-1
11	Rotor	304+45#SI Steel	24	Check Valve	-
12	Bearing	RS Bearing	25	Pump Body	06Cr19Ni10
13	Spring Washer	65Mn Steel	26	Check Valve	-



DSmart 1500

No	Part Name	Material	No	Part Name	Material
1	Bolt	45#Nickel plating	14	Rotor	06Cr19Ni10+45#
2	Check Valve	HPb59-1	15	Motor	50WW600
3	Drain Plug	HPb59-1	16	Fan	PP
4	Pump Body	06Cr19Ni10	17	Fan Cover	PP
5	Gland	NBR	18	Bearing	/
6	Return Valve	HPb59-1	19	Controller	/
7	Water Inlet Guide Glade	06Cr19Ni10	20	Panel	/
8	Guide Glade	06Cr19Ni10	21	Gland	Silica
9	Impeller	06Cr19Ni10	22	Hull	ABS
10	Gearing	/	23	Overhead Tank	Q235/IIR
11	Hull	ABS	24	Mechanical Seal	06Cr19Ni10/EPDM
12	Seal Holder	06Cr19Ni10	25	Check Valve	HPb59-1
13	Pump Support	ZL102	26	Bottom Bracket	HPb59-1

WARNING

The pump can be installed indoors or outdoors.

WARNING

For emergencies and maintenance, the pump must be easily accessible.

WARNING

The pumps must be installed in a dry position and protected from the elements by means of a suitable cover.

NOTE

As advised on dimensions table, enough space for service and maintenance access should be considered.

WARNING

During both the first installation and maintenance the POWER in the supply line should be switched off.

- Ensure that the pump is mounted in a level position on the base plate, with an inclination angle not exceeding ± 5°.
- Attach the pump securely to a stable, level base by utilizing screws inserted through the openings in the base plate.

Fig 1

Fig 2

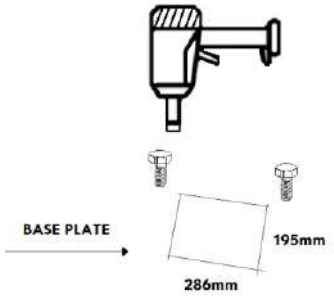
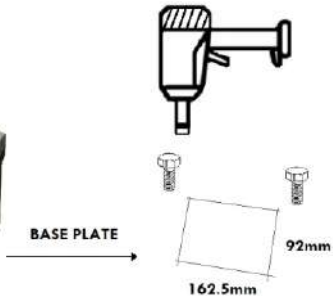


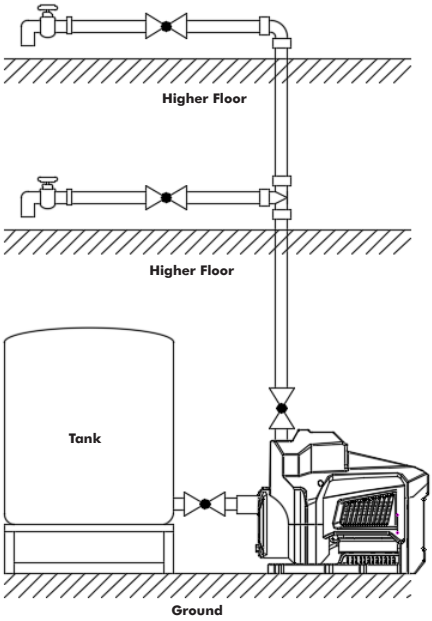
Fig 3

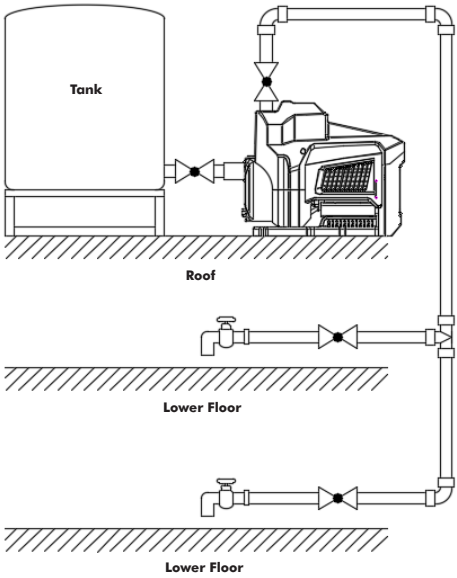


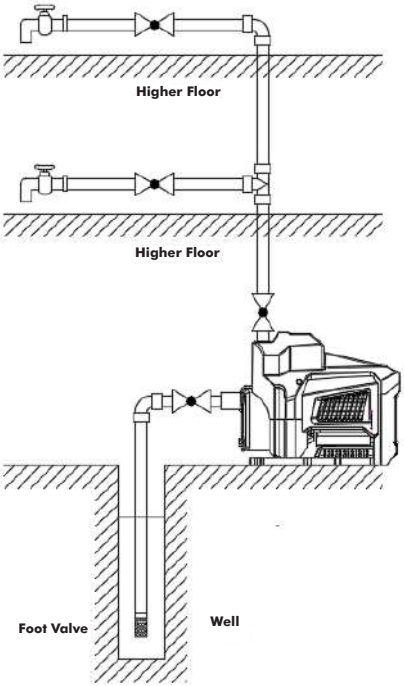
Pipe Connection

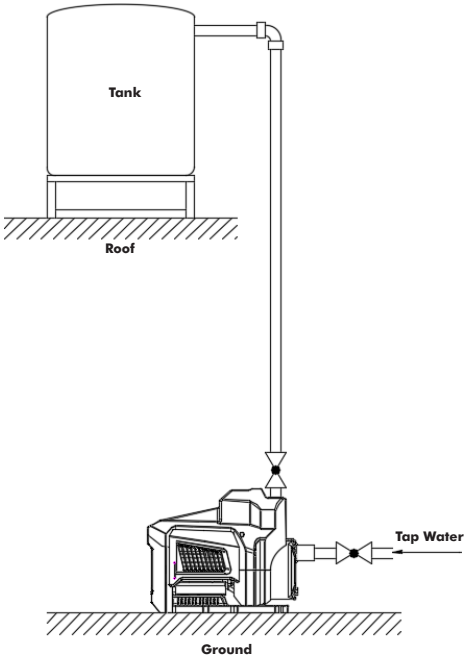
- To prime pump, add water to the priming plug until it overflows.
- When installing the water pump, avoid use of soft rubber pipe, due to risk of collapsing.
- The foot valve shall be vertical and installed 30cm away from the bottom of the water to avoid drawing in of sediments.
- All connections of the inlet pipeline must be sealed to minimize elbows, otherwise suction may not be effected.
- The diameter of the water inlet pipe shall be at least the same as that of the pump inlet to prevent hydraulic loss from affecting the water outlet performance.
- When using the pump pay attention to the water level drop and ensure the foot valve is not exposed above the water surface.
- When the length of the water inlet pipe is more than 10m or the lifting height of the water is more than 4m, the diameter of the water inlet pipe must be greater than the diameter of the pump inlet.
- When installing the pipeline, make sure that the pump is not under pipeline pressure.
- It is advisable to install a strainer when source water is suspected to be dirty.
- The outlet pipe diameter shall be at least the same as the outlet diameter to minimize the pressure drop, high flow rate and noise.
- When the water pump is installed in a place that may be flooded ensure to install a raised platform to prevent the ventilation holes from being flooded.
- When installing the pump, ensure to eliminate any air locked within the pipeline.

Installation Examples







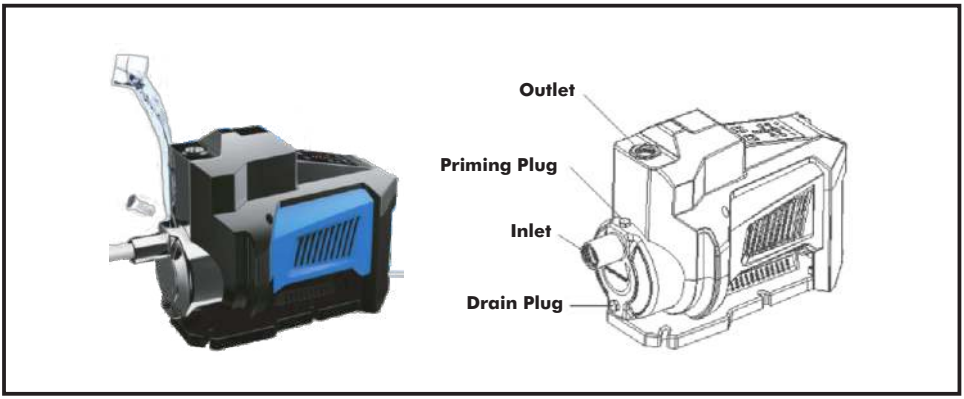


4. OPERATION

Priming the pump

To start the pump, it is necessary to prime it by filling with water. Do not start the pump until it has been filled with water.

- Unscrew the priming plug and allow an even flow of water.
- Screw the plug on again. The pump is now ready to start.



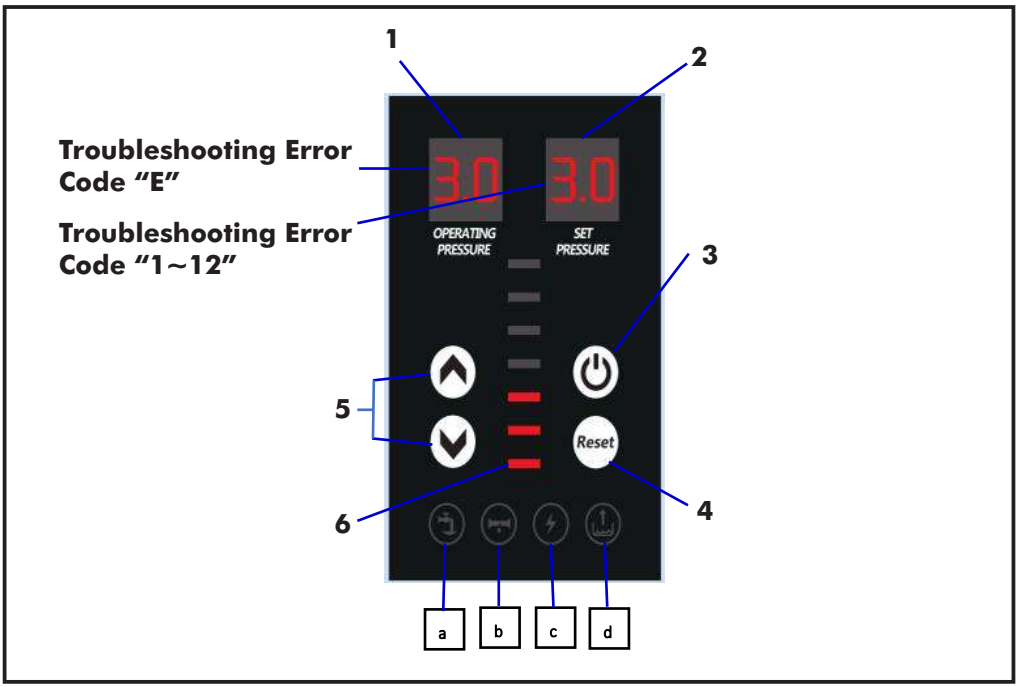
Starting the pump with control panel

- To prepare the pump for venting, open a tap.
- Insert the power plug into the socket and turn on the power supply. The pump will power after 3 seconds after main power is introduced.
- Close the tap once water flows.
- Open the highest tap point in the installation, such as a shower.
- Use the buttons to adjust the pressure set point to the required pressure.
- Once done, close the tap.

To set pressure

- The pump's water pressure can be adjusted to any value between 1.5 to 6.0 bar and 7 bar for DSmart 1500.
- The default pressure, as indicated is 2 bar which for most applications is sufficient. The difference between inlet pressure and outlet pressure must not exceed 3.5 bar. For example, if the inlet pressure is 0.5 bar, the maximum outlet pressure should be 4 bar.

Control Panel



Notes:

Pressure mode:

The indicator displays the operating pressure and set pressure. To adjust the pump's pressure, press the button. The pressure can be set within a range of 1.5 to 7.0 bar.

Speed mode:

The indicator displays the running speed (r.p.m). In this mode, the pump does not stop automatically. To adjust the pump's speed, press the or button. The speed can be set within a range of 2,500 to 5,200 r.p.m.

1. In pressure mode, this indicator displays the pump's operating pressure. In speed mode, this indicator displays digits of thousands and hundreds for the current running speed.
2. In pressure mode, this indicator displays the pump's set pressure. In speed mode, this indicator displays digits of tens and ones for the current running speed.

Operation

- Press power button to start the pump (may take 3 seconds), switch light on.
  Press the power button to stop the pump, switch light off.
- Press and hold power button for 10 seconds to switch between pressure mode and speed mode.

Note

- Pressure mode is set as default.
- Speed mode be activated only when pressure sensor fails. Speed mode ensures that the pump operates temporarily for water usage

In speed mode, the water pump does not stop automatically.

- Press reset button for 3 seconds to reset all parameters back to the default.
- Increase set pressure or running speed by pressing ▲.
  Decrease set pressure or running speed by pressing ▼.

The fewer the lights are on, the more energy is saved.

Indicator buttons:

- Pump is 'ON'.
- Leakage detected in pipeline: Check where the leakage could occur or contact nearest Dayliff retailer.
- Voltage protection: Input voltage has fallen out of specification for pump. Contact nearest Dayliff retailer.
- Dry run detected: Refer to section 6: common fault codes and troubleshooting list "error codes E10.

Dry Run Protection

This pump is provided with dry run protection, which includes a safety control circuit that can detect when the pump experiences water storage. If the pump runs out of water, it will stop as part of a protective logic sequence. Before restarting the pump, ensure there is enough water supply and all terminal fitting outlets are closed.

In case of water shortage and uninterrupted power supply, the pump controller will initiate a protective logic sequence.

The pump will stop operation when it detects water shortage and will remain off for 5 minutes. The pump will then run two times the same sequence. If the water shortage still remains, it will stop operation for 6 hours before attempting to start again.

5. MAINTENANCE

Maintenance in Operation

- The inlet pipe must be full of water. The pump should not be operated without water.
- Regularly check the motor current, which shall not exceed the rated current of the motor.
- After long term operation of the pump, due to mechanical wear, the noise and vibration of the unit may increase, leakage may also occur and the performance compromised. At this point, the pump should be shut down for inspection.

Mechanical Seal Maintenance

- The mechanical seal lubrication shall be clean and free of particles.
- Before starting, turn the motor severally to prevent the graphite ring from breaking and damage due to sudden starting.
- The seal leakage tolerance is 3 drops/min, otherwise, it should be repaired.
- When repairing and assembling the mechanical seal, avoid contact with oily substances and use soapy water instead to lubricate and reduce resistance.

6. TROUBLE SHOOTING

Before troubleshooting it is necessary to switch off the power supply and ensure it cannot be accidentally switched on

ERROR CODE	CORRESPONDING FAULT	TROUBLE SHOOTING
E1	Panel and motherboard communication failure	Check whether the panel cable is well connected, and try plugging and unplugging again. If it cannot be resolved. The panel or motherboard has failed and will need replacement.
E2	Stall	Try to turn the fan blade to see if the impeller is stuck.
E3	Voltage failure, icon lights up	Check voltage.
E4	Outlet pressure sensor failure	Check whether the lower pressure sensor interface is in poor contact and re-plug. If still unresolved, replace the pressure sensor.
E5	Controller failure	• Power off, wait for the panel light to go out, then power on again. • If still unrecovered, the motor or driver board is damaged and may need to be replaced.
E6	Loss of phase	Check whether the motor cable is connected measure the resistance of the motor wire and check if there is any discontinuity.
E7	Overcurrent	• Check if there is a short circuit in the motor. • Check the voltage resistance of the motor to see if the voltage resistance is enough. • Re-power and test if the motor is ok, the starter may be damaged due to accidental impact.
E9	Water temperature protection	Check whether the water temperature is abnormal.
E10	Lack of water, icon lights up	Check whether the water is available.Enter the factory menu to adjust the water shortage pressure and adjust it to the current pressure.
E11	Leakage, icon lights up	Check whether the pipeline is leaking, or whether the check valve is leaking, it does not affect the water use, it only serves as a reminder.
E12	Driver board overheating fault	Wait for the temperature of the pump to drop, and automatically resume operation, or move the pump to a cool and ventilated place.

PROBLEM	POSSIBLE CAUSE	SOLUTION
The pump does not start	No electric power	Check power supply
		Check wiring connections
		Check power supply within the voltage range prescribed on the pump nameplate
	Pump is blocked	Rotate the rotor shaft at the blade end or dismantle the pump and remove particles from pump cover
	Static inlet/outlet pressure exceeded	Reposition pump
	Controller damaged	Replace the controller
Pump runs with no water being discharged	Suction is blocked	Clear blockage
	Pump is not primed	Remove the drain plug and ensure pump is filled with water
	Pump drawing in air	Check inlet pipes if there is a leakage
Insufficient water pressure	Pump inlet pressure is too low	Check the inlet pressure or inlet pipe diameter
	Blockage in inlet pipe	Clean the inlet pipe or the pump
	Leakage in inlet pipe	Repair the inlet pipe
	The outlet pressure is too low	Increase the pressure setting
Pump does not stop	Leak in the pipe line	Check the pipe line and eliminate the leak
	Impeller blocked	Dismantle the pump and remove the particles
	Faulty pressure sensor	Replace the sensor

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump is noisy	Bearing damaged	Repair or replace else contact Dayliff retailer
	Impeller damaged	
	Inlet pipe is too small	Check inlet pipe size
Pump leaks	Mechanical seal worn out	Replace mechanical seal
	Pipes fitted correctly	Check and repair pipes

7. TERMS OF WARRANTY

i) General Liability

- In lieu of any warranty, condition or liability implied by law, the liability of Dayliff (hereafter called the Distributor) in respect of any defect or failure of equipment supplied **is limited to making good by replacement or repair** (at the Distributor discretion) defects which under proper use appear therein and arise solely from faulty design, materials or workmanship within a specified period. This period commences **immediately after the equipment has been delivered to the customer** and at its termination all liability ceases. Also the warranty period will be assessed **on the basis of the date that the Distributor is informed of the failure.**

- This warranty applies solely to equipment supplied and **no claim for consequential damages,** however arising, will be entertained. Also the warranty specifically excludes defects caused by fair wear and tear, the effects of careless handling, lack of maintenance, faulty installation, incompetence on the part of the equipment user, Acts of God or any other cause beyond the Distributors reasonable control. Also, any repair or attempt at repair carried out by any other party **invalidates all warranties.**

ii) Standard Warranty

General Terms

If equipment failure occurs in the normal course of service having been competently installed and when operating within its specified duty limits warranty will be provided as follows:-

- **Up to one year - The item will be replaced or repaired at no charge.**
- **Over one year, less than two years - The item will be replaced or repaired at a cost to the customer of 50% of the Davis & Shirtliff market price.**

The warranty on equipment supplied or installed by others is conditional upon the defective unit **being promptly returned free to a Davis & Shirtliff office** and collected thereafter when repaired. No element of site repair is included in the warranty and any site attendance costs will be payable in full at standard chargeout rates.

Also proof of purchase including the purchase invoice must be provided for a warranty claim to be considered

DAYLIFF is a brand of **Davis & Shirtliff**

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www.dayliff.com

for details of the nearest branch or stockist

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