DAYLIFF

DZ

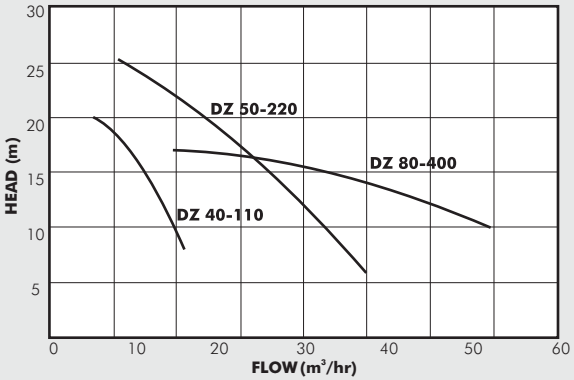
Drainage Pumps

Installation & Operating Manual

INDEX

Thank you for choosing Dayliff DZ pump. The pump has been manufactured to the highest standards and if operated correctly should give many years of efficient and trouble free service. Careful reading of this instruction manual is therefore extremely important and if you have any queries please refer them to your retailer.

1. PUMP SPECIFICATIONS



Pump

Dayliff DZ self-priming waste water pumps are of semi-open impeller axial flow type designed for pumping water containing high solid levels with particular application for site drainage, sewage and general effluent duties. They are of heavy duty construction and feature a non-return valve on the suction, easy opening cleaning ports and a mechanical seal. Materials are of cast iron throughout.

Motor

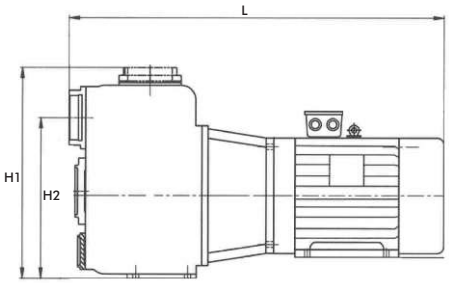
Pumps are close coupled to a non-overloading TEFC motor designed for continuous duty. A remote DOL starter with thermal overload is necessary for motor control.

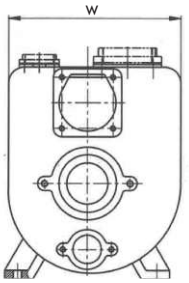
Enclosure Class: IP56 ***Insulation Class:*** F

OPERATING CONDITIONS

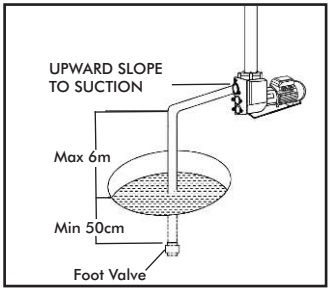
Pumped liquid: Thin, chemically non aggressive liquids with a viscosity of up to 50mm^2/s containing suspended solids and particles up to maximum 50mm diameter.
Maximum Suction Lift: 6m
Maximum Liquid Temperature: 80^{0}C
Max Ambient Temp: 40^{0}C
Maximum Working Pressure: 6 Bar

Model	Voltage (V)	Motor		Speed (rpm)	Max Current (A)	Dimensions (mm)					Weight (kgs)
		kW	Hp			Inlet/ Outlet	H1	H2	L	W	
DZ 40-110	1 X 240	1.1	1.5	2900	7.2	40	242	168	474	165	57
DZ 50-220	3 X 415	2.2	3.0	2900	4.9	50	321	201	609	210	75
DZ 80-400	3 X 415	4.0	5.4	1450	5.1	80	410	310	735	302	121





2. INSTALLATION



- Site in a dry, well ventilated and weather proof location with an ambient temperature less than 40^0 C. Ensure good ventilation for motor cooling.
- Locate on a solid flat surface ensuring the shaft is in a horizontal position.
- Ensure that the diameter of the suction pipe is at least the size of the pump suction inlet. If the suction depth exceeds 4 meters then a one size larger diameter pipe should be used, though for maximum pump performance suction height should be minimised.
- If there is negative suction (i.e. the pump is above the suction water level) the suction pipe must be slightly angled upwards towards the pump inlet to avoid the formation of air locks. It must also be immersed in water by at least 0.5m to avoid vortexes.
- Ensure that all suction pipe connections are completely airtight or else the pump will not operate.
- The diameter of the delivery pipe must be chosen to suit the flow rate and pressure required at the delivery point though must not be smaller than the pump outlet size. It is also advisable to fit an isolating valve on the delivery outlet. This measure is essential if the delivery pressure exceeds 10m.

- All piping must be supported with suitable brackets to avoid transmitting stress to the pump body. Care must also be taken not to cause damage by over tightening the pipes during fitting.
- Check alignment of the couplings of both pump and motor before use. Misalignment will damage flexible components and cause noisy vibrations.

3. ELECTRICAL CONNECTIONS

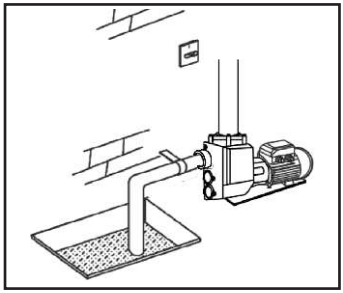
The installer is responsible for making electrical connections to the mains supply in compliance with relevant local regulations. Ensure that a professional electrician carries out the electrical connections and that the following guidelines are followed:-

- All installations must be provided with an isolator to cut off mains power supply and coarse current protection in the form of a fuse or MCB rated at 2-3 times the full load current as given on the pump plate.
- Ensure that the power supply rating complies with the specification on the pump rating plate.
- Electrical connections must be made according to details in the pump junction box cover and effective earthing must be provided according to local regulations.
- Single-phase motors are protected against overloads by a thermal overload fitted in the motor windings. Three phase motors must be fitted with remote starter.
- The direction of pump rotation should be clockwise viewed from drive end.

4. PRIMING

When first installed the pump must be filled with water at the priming port. Because this pump is self-priming, subsequent priming after installation is not necessary.

Serious damage will occur if a pump is not properly primed and runs without water.



5. OPERATION AND MAINTENANCE

Upon starting, carefully check the pump for normal operation including water flow, leakage, vibrations and noise. Abnormal situations should be rectified immediately. Pumps do not require routine maintenance provided the following precautions are taken:-

- Ensure regular flushing of the pump with clean water to prevent build up of waste.
- If the shaft does not run freely, release it using a screwdriver by inserting it in the special slot on the rear of the pump shaft. If this is not sufficient to solve the problem remove the pump body by unscrewing the relevant mounting bolts and clean it thoroughly to remove any encrustation.
- The pump is fitted with two ports in the pump body for cleaning the impeller and pump chamber in case impeller rotation is impeded by solids and waste. These should be opened and the waste removed if pump performance deteriorates.
- If the pump is to remain unused for long periods of time it is advisable to empty it completely, disassemble into spare parts, lubricate with Calcium Base grease or SAE 20W oil and store in a dry place.

Never carry out work on the pump without having first disconnected from the mains supply.

6. TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pump running but no water is pumped	Inlet and/or outlet valve not open, pipe or impeller channel clogged	Open valve, clean
	Wrong direction of motor rotation, motor phase deficiency, low speed	Change motor rotation, tighten motor connection
	Air leak in inlet pipe	Check connection, drain air
	Air inside pump chamber	Open air bleeding port to release air & repriming
	Not enough water from suction, suction lift too high	Check and adjust suction lift
	Pipe pressure too high, improper pump model	Put pipe straight, select new pump model
Pump running and there is noise and vibration	Support foot not stable	Fix support foot
	Shaft bent	Adjust or replace shaft
	Cavitation	Check suction
	Bearing worn out	Replace bearing
	Suction pipe clogged	Clean pipe
	Misalignment of pump and motor	Align accordingly
Not enough delivered water	Impeller channel and/or inlet pipe clogged, valve not open enough	Clean channel, adjust valve opening
	Impeller or wear plate worn out	Replace worn out parts
Shaft power overrating	Working flow too high	Adjust working flow, turn down outlet valve
	Suction lift too high	Reduce suction lift
	Pump shaft bent	Replace or adjust
	Diffuser channel clogged	Clean
Motor runs hot	Working flow too high	Adjust working flow, turn down outlet valve
	Mechanical resistance in bearings or impeller	Check pump and bearing
	Motor bearing damage	Replace bearing
	Voltage too low	Check and adjust
Water leakage in pump	Mechanical seal worn	Replace seal
	Crack or hole in casing	Replace casing
	Sealing surface not smooth	Reseal
	Fasteners loose	Tighten

PROBLEM	POSSIBLE CAUSE	SOLUTION
Does not pump adequate volume	Reverse rotation	Correct rotation
	Electrical fault	Check electrical connections
	Discharge head is high	Recalculate and adjust
	High frictional loss	Resize pipe
	Air suction	Raise water level or lower pump
	Leaking from discharge pipe	Inspect and repair
	Clogging of discharge pipe	Remove foreign matter
	Foreign matter in suction inlet	Remove foreign matter
	Foreign matter clogging pump	Remove foreign matter
	Worn out impeller	Replace impeller
Over current	Unbalanced current and voltage	Wait for supply to stabilise
	Significant voltage drop	
	Motor phase malfunction	Inspect connections
	Reverse rotation	Correct rotation
	Lower head. Excessive volume of water	Replace pump with low head pump
	Foreign matter clogging pump	Remove foreign matter
	Motor bearing worn or damaged	Replace bearing

7. TERMS OF WARRANTY

i) General Liability

- In lieu of any warranty, condition or liability implied by law, the liability of Davis & Shirtliff (hereafter called the Company) in respect of any defect or failure of equipment supplied **is limited to making good by replacement or repair** (at the Company's 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 Company 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 Company's 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 two years - The item will be replaced or repaired at no charge.**
- **Over two years, less than three 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**

for enquiries contact

Davis & Shirtliff, Ltd.

P.O. Box 41762 - 00100, Nairobi, Kenya

Tel: 6968000/ 0711 079 000

or visit

www.dayliff.com

for details of the nearest branch or stockist

INS216E-10/14