

DAVEY

HM Series Electric Pumps

Installation and Operating Instructions



WARNING: The pump and associated pipework operate under pressure. Under no circumstances should the pump or associated pipework be disassembled unless the internal pressure of the unit has been relieved. Failure to observe this warning will expose persons to the possibility of personal injury and may also result in damage to the pump, pipework or other property.



WARNING: Failure to follow these instructions and comply with all applicable codes may cause serious bodily injury and/or property damage.

Please pass these instructions on to the operator of this equipment.



IMPORTANT - outside Australia & New Zealand

Only a locally acceptable plug can be used for this product (Please use certified plugs only in compliance with your local regulations).

The installation can be only performed by a licensed/ registered electrical installer.

Please connect certified plug onto power cable in compliance with local regulations: Active (Brown) Neutral (Blue) and Earth (Green/yellow)

Prior to using this pump you must ensure that:

- The pump is installed in a safe and dry environment
- The pump enclosure has adequate drainage in the event of leakage
- Any transport plugs are removed
- The pipe-work is correctly sealed and supported
- The pump is primed correctly
- The power supply is correctly connected
- All steps have been taken for safe operation

Appropriate details for all of these items are contained in the following Installation and Operating Instructions. Read these in their entirety before switching on this pump. If you are uncertain as to any of these Installation and Operating Instructions please contact your Davey dealer or the appropriate Davey office as listed on the back of this document.

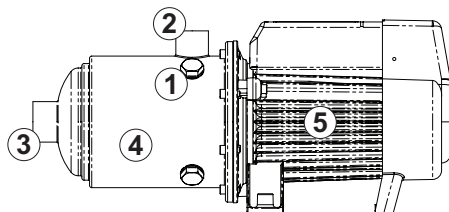
Congratulations on your purchase of a high quality, Davey multistage pump. All components have been designed and manufactured to give trouble free, reliable operation.

Before installing your new pump, please read all instructions carefully as failures caused by incorrect installation or operation are not covered by the guarantee. Your HM Electric Pump is designed to handle clean water. The pump should not be used for any other purpose without specific referral to Davey. The use of the pump to pump flammable, corrosive and other materials of a hazardous nature is specifically excluded.

General

Applications

Pumps for clear liquids, free of abrasives in residential, agricultural, industrial, and other applications.



1. Priming Plug
2. Discharge Outlet
3. Suction Inlet
4. Pump Body
5. Motor

Specifications

Liquid temperate range:

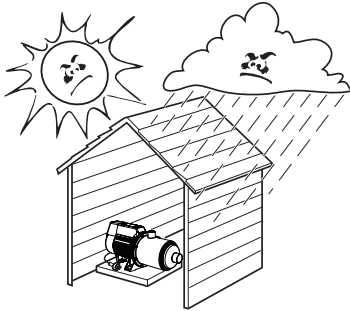
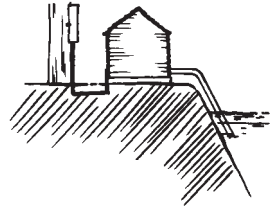
-15 to +80°C

Suction head:

depends on NPSH of pump

Choosing a Site

Choose a site with a firm base as close to the water source as possible with correct power supply. Make sure your pump is always connected to an adequate, reliable source of clean water.



Housing your Davey Pump

To protect your pump from the weather, make sure the pump house is both water proof, frost free and has adequate ventilation.

The pump should be mounted on a firm base allowing for drainage, to avoid damage to flooring etc., that over time may occur from leaking pipe joints or pump seals. Do not mount the pump vertically. Never place flammable materials on or near your pump.

Power Connection



Connect lead to power supply designated on pump label, do not use long extension leads as they cause substantial voltage drop, poor pump performance and may cause motor overload.



The electrical connections and checks must be made by a qualified electrician and comply with applicable local standards. Poor installation or poor power supply may even result in electrical fires!



NOTE:

1. Ensure motor is connected to power supply specified on nameplate.
2. Avoid long extension leads as they can cause substantial voltage drop and operating problems.
3. Although the Davey electric motor is specifically engineered to perform on a range of power supply voltages, malfunctions or failure caused by adverse voltage supply conditions are not covered under guarantee.



In accordance with AS/NZ 60335.2.41 we are obliged to inform you that this pump is not to be used by children or infirm persons and must not be used as a toy by children.



WARNING: Automatic reset thermal overloads will allow the pump to restart without warning. **ALWAYS** disconnect the pump motor from the electrical supply before maintenance or repairs.

- Note:
1. Long extension leads should be avoided as they often have insufficient current carrying capacity to run electric motors, hence they can cause substantial voltage drop and operating problems.
 2. If the electrical fittings in your country make it necessary to remove the plug from the lead fixed to the motor care should be taken to ensure that the earth conductor green/yellow in the lead is properly connected to a good earth. This work must only be undertaken by an authorised electrician.

Three Phase

Some HM models are also available as 3 phase model for 50Hz, nominal 380-415V power supply.

A recommended wiring diagram can be found inside the capacitor cover (see figure one below). Three phase units must be wired in by an authorised electrician in conjunction with a contactor which has “quicktrip” (M10) overloads set at nameplate current.

Davey recommend the use of overloads which also have the ability to detect “single phasing” or “dropped phase” conditions in the power supply.

Three phase models with output power of below 1.4kW have been designed to provide cable entry on the right hand side when viewed from the non-drive or fan end of the motor.

A terminal block is provided under the capacitor cover. Note: Three phase motors do not have capacitors fitted in the capacitor cover.

Depending on the motor, access to the terminal block is achieved by either removal of the fan cowl, or removal of the terminal cover. Before prising the fan cowl ensure the retaining screw has been removed.

IMPORTANT NOTE: THREE PHASE MODELS ONLY



Before finalising wiring connections, check that motor rotates in direction of arrow (clockwise when shaft is viewed from wiring connection end except HM270 models which rotate anti-clockwise). To alter rotation, change any two power leads at motor terminals.

When the unit is connected and operating the phase balance should be checked. This should be within 5% variation. “Rolling” the leads may help to improve a small unbalance, but major phase unbalance will usually be attributed to an input power unbalance. This must be addressed before the pump is used.



Power connections and wiring must be carried out by an Authorised Electrician. Means of disconnection must be incorporated in the fixed wiring, in accordance with local wiring rules.



WARNING: Some insects, such as small ants, find electrical devices attractive for various reasons. If your pump enclosure is susceptible to insect infestation you should implement a suitable pest control plan.

Pipe Connections

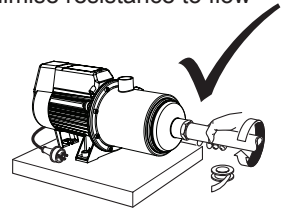
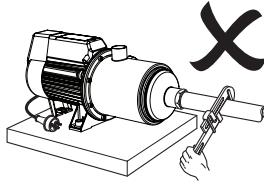


DO NOT USE THREAD SEALING COMPOUNDS, HEMP OR PIPE DOPE!

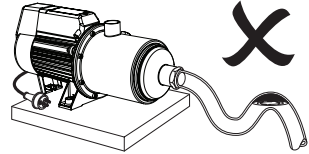
For best performance use PVC or polythene pipe at least the same diameter as the pump's inlet. Larger diameter pipe may be used to minimise resistance to flow when pumping longer distances.

Use unions at pipe connections to enable easy removal and servicing. Use sufficient tape to ensure airtight seal and hand

tighten only, do not screw connections all the way into suction port. To prevent strain on pump thread always support heavy inlet and outlet pipes. Lay suction pipe at a constant gradient to avoid air pockets which may reduce pump efficiency.



NOTE: Suction leaks are the largest cause of poor pump performance and are difficult to detect. Ensure all connections are completely sealed using thread tape only. DO NOT USE SEALING COMPOUNDS OR PIPE DOPE.



NEW Improved HM with self-priming and air handling capability

Your new HM pump or pressure system has the benefit of a new upgraded self-priming and air handling capability.

While Davey must stress the overall requirement for all suction lines to be air tight, we also are aware that sometimes removing air from suction lines or stopping minor leaks can be difficult. For this reason Davey have incorporated special features into your new pump or pressure system to make operation easier and more dependable.

To help you get the most from this new capability please read this addendum in conjunction with the full Installation and Operating Manual included with your pump.

Plumbing:

Pay special attention to ensuring the suction pipe and associated fittings are airtight. The absence of a water leak on the suction line may not confirm that the pipe or fittings are airtight.

In the event that the suction line contains air pockets it can aid the priming process greatly if you have the ability to temporarily isolate the discharge line from the pump and instead use an adjacent tap to allow the pump to discharge water until full prime is established. Such a facility is also useful for future servicing and troubleshooting should it be required.

Priming:

Filling the pump and suction line with water is made much easier by filling from the outlet side and allowing any trapped air in the pump to evacuate via one of the plugged holes on the pump casing.

- To do this with Torrium2 equipped models, temporarily remove the inbuilt check valve poppet from the Torrium2 and unscrew the SS plug from the casing besides the outlet.
- For pressure switch controlled models simply prime through the outlet tee with the plug removed. Remember that pressure switch controlled units require an inlet checkvalve or footvalve to be used.
- For manual pumps the provision of a priming tee on the outlet can make this task much easier. For temporary or permanent installation of manual pumps we strongly recommend the addition of an inlet checkvalve or footvalve as well.

Replace all plugs and the inbuilt check valve poppet in the Torrium2 prior to connecting power and switching on the pump.

Open the adjacent tap part way and isolate the downstream pipework until a good strong flow is established. This would indicate you have successfully “primed” the pump.

Close the adjacent tap and open the valve to the downstream pipelines.

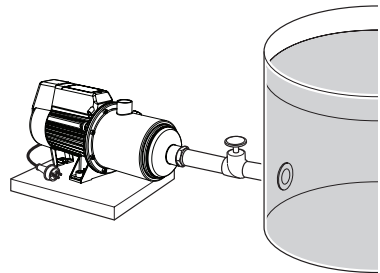
Your pump is now ready for normal operation.

Connection to your Water Source

ABOVE GROUND WATER SOURCES

Installations with flooded suction require a gate valve so water supply can be turned off for pump removal and servicing.

Install a one-way check valve in the suction pipeline to avoid water draining back past the pump while not in operation and causing possible pump damage.



BELOW GROUND WATER SOURCES



NOTE: HM models require a foot valve or check valve to be installed in the suction pipework in suction lift applications as appropriate.

Whenever the installation position of the pump is higher than the lowest water level, a foot valve fitted to the end of the suction pipe as illustrated in (A) below is required. Ensure that the foot valve is at least 1/2 metre below minimum water level.

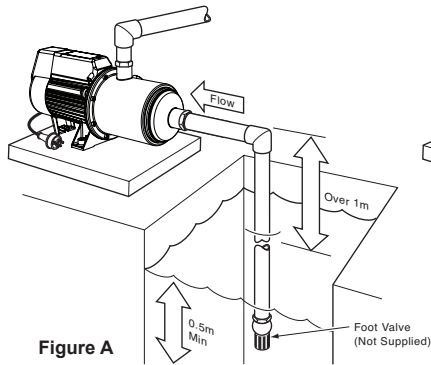


Figure A

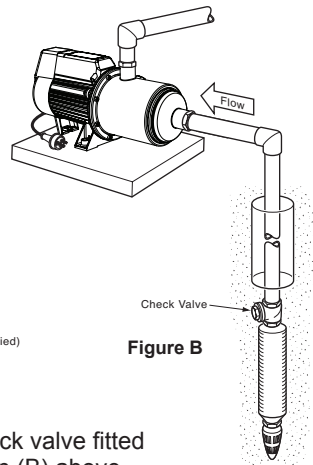


Figure B

SPEAR POINT INSTALLATIONS

When an HM is installed on a spear or well point a check valve fitted immediately on top of the spear point itself, as shown in (B) above.



NOTE: DO NOT install the check valve at the pump or at the top of the well. **DO NOT** run the pump without water.



NOTE: Be certain to select the spear point to suit the well conditions and regulate the flow rate from the pump accordingly.

Spear Size	Mesh	Approx. Max. Capacity of Spear Point	
1 1/4" (32mm)	60	15 - 23 l/min	or 200 - 300 gal/hr
1 1/2" (38mm)	60	23 - 38 l/min	or 300 - 500 gal/hr
2" (50mm)	60	38 - 75 l/min	or 500 - 1000 gal/hr

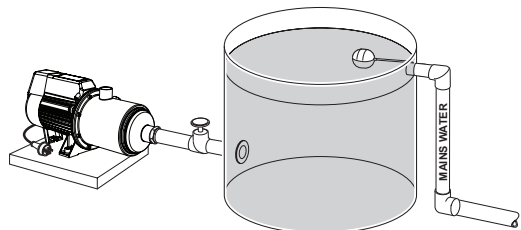
Dry-running protection

To avoid accidental loss of prime of the pump, we recommend protecting it with a suitable device. Note: damage from dry-running is not covered by guarantee.

Connection of Mains Scheme or Town Water Supply to either Suction or Discharge of Pumps

Most Water Supply Authorities have strict regulations regarding direct connection of pumps to mains water supplies. In most cases an isolating tank is required between mains supply and pump. Davey also recommend this method. Directly applied mains pressure can exceed pump operating pressure and damage pump.

Davey Water Products Pty Ltd can not accept responsibility for loss or damage resulting from incorrect or unauthorised installations.



Priming and Operation

The pump body and suction line should be filled by pouring water into the priming plug hole adjacent to the outlet. Screw on the priming plug, close the discharge valve two thirds and switch pump on. Gradually open the discharge valve and the pipeline fills.

In high suction lift conditions, the pump may make a noise similar to it pumping sand or gravel; this will usually be cavitation occurring. Reduce flow until the cavitation noise stops. Once the discharge pipeline fills you can open the valve. If the cavitation noise returns, close the discharge valve slightly until it stops.

In the case of installations where there is a positive suction pressure (flooded suction) remove the pump's priming plug and slowly open the gate valve in the suction piping to allow water to enter the pump from the suction line until all air is expelled. Replace the priming plug and fully open the gate valve in the suction line and switch the pump on.

Prime should be established almost immediately, however, it may be necessary to re-prime several times on some installations before fully established optimum pump performance is obtained.



Do not run pump dry or allow to run continuously in a loss of prime condition. If this pump is allowed to pump water containing sand or other abrasive material, the effective life of the pump will be shortened.

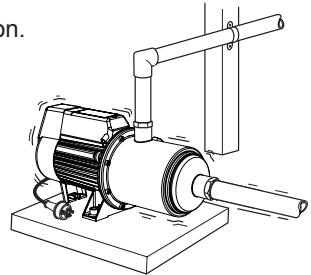
If pump runs but will not pump water, check for the following:

1. Suction line and pump body not filled with water.
2. Leaking foot valve.
3. Air leaks in suction lines.
4. Air trapped in suction line (even on flooded suction) possibly when there is an uneven rise in the piping from water to pump (eliminate "humps and hollows")

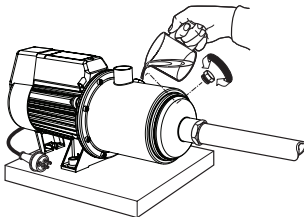
1. Ensure outlet nearest to pump is open.



3. Switch on.



2. Fill pump body and suction line through priming plug hole located above suction inlet and replace plug.



4. Prime should establish almost immediately with a strong flow of water, however, in some installations it may be necessary to repeat the above operation to remove all air from the system.





WARNING:
DO NOT RUN DRY.
DO NOT RUN WITH LOSS OF PRIME.
DO NOT PUMP WATER CONTAINING ABRASIVE MATERIALS.

Trouble Shooting Check List

MOTOR OPERATING BUT NOT PUMPING

1. Suction line and pump body not filled with water.
2. Leaking foot valve.
3. Air leaks in suction lines or suction pipe not under water.
4. Air trapped in suction lines (also possible with flooded suction) due to uneven rise in piping (eliminate humps and hollows).
5. No water at source or water level too low.
6. Valve on suction or delivery lines closed.

MOTOR NOT RUNNING

1. Power not connected.
2. Supply voltage too low.
3. Overload tripped.
4. Motor not free to turn e.g. a blocked impeller.
5. Internal motor fault.

MOTOR RUNS FOR SOME TIME THEN STOPS - RESTARTS AUTOMATICALLY AFTER SHORT TIME

Overload tripping in motor

- low voltage at motor terminals
- motor in direct sunshine or in "hot box"
- motor not free to turn (eg: blocked)



***NOTE:**

“MOTOR PROTECTION DEVICE” (EXCLUDING THREE PHASE PUMP):
For protection, the Davey pump motor is fitted with an automatic reset thermal overload, constant tripping of this overload indicates a problem e.g. low voltage at pump, excessive temperature in pump enclosure.



WARNING: When servicing or attending pump, always ensure power is switched off and lead unplugged. Electrical connections should be serviced only by qualified persons.



Care should also be taken when servicing or disassembling pump to avoid possible injury from hot pressurised water. Unplug pump, relieve pressure by opening a tap on the discharge side of the pump and allow any hot water in the pump to cool before attempting to dismantle.



IMPORTANT:

DO NOT USE petroleum based fluids or solvents (e.g. Oils, Kerosene, Turpentine, Thinners, etc) on the plastic pump components or seal components.



WARNING: Do not use hydrocarbon based or hydrocarbon propelled sprays around the electrical components of this pump.

Davey Warranty

Davey Water Products Pty Ltd (Davey) warrants all products sold will be (under normal use and service) free of defects in material and workmanship for a minimum period of one (1) year from the date of original purchase by the customer as marked on the invoice, for specific warranty periods for all Davey products visit daveywater.com.

This warranty does not cover normal wear and tear or apply to a product that has:

- been subject to misuse, neglect, negligence, damage or accident
- been used, operated or maintained other than in accordance with Davey's instructions
- not been installed in accordance with the Installation Instructions or by suitably qualified personnel
- been modified or altered from original specifications or in any way not approved by Davey
- had repairs attempted or made by other than Davey or its authorised dealers
- been subject to abnormal conditions such as incorrect voltage supply, lightning or high voltage spikes, or damages from electrolytic action, cavitation, sand, corrosive, saline or abrasive liquids,

The Davey warranty does not cover replacement of any product consumables or defects in products and components that have been supplied to Davey by third parties (however Davey will provide reasonable assistance to obtain the benefit of any third-party warranty).

To make a warranty claim:

- If the product is suspected of being defective, stop using it and contact the original place of purchase. Alternatively, phone Davey Customer Service or send a letter to Davey as per the contact details below
- Provide evidence or proof of date of original purchase
- If requested, return the product and/or provide further information with respect to the claim. Returning the product to the place of purchase is at your cost and is your responsibility.
- The warranty claim will be assessed by Davey on the basis of their product knowledge and reasonable judgement and will be accepted if:
 - a relevant defect is found
 - the warranty claim is made during the relevant warranty period; and
 - none of the excluded conditions listed above apply
- The customer will be notified of the warranty decision in writing and if found to be invalid the customer must organise collection of the product at their expense or authorise its disposal.

If the claim is found to be valid Davey will, at its option, repair or replace the product free of charge.

The Davey warranty is in addition to rights provided by local consumer law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

For any internet connected products the consumer is responsible for ensuring a stable internet connection. In the event of a network failure the consumer will need to address the concern with the service provider. Use of an App is not a substitute for the User's own vigilance in ensuring the product is working to expectation. Use of a Smart Product App is at the User's own risk. To the fullest extent permitted by law Davey disclaims any warranties regarding the accuracy, completeness or reliability of App data. Davey is not responsible for any direct or indirect loss, damage or costs to the User arising from its reliance on internet connectivity. The User indemnifies Davey against any claims or legal actions from them or others relying on internet connectivity or App data may bring in this regard.

Products presented for repair may be replaced by refurbished products of the same type rather than being repaired. Refurbished parts may be used to repair the products. The repair of your products may result in the loss of any user-generated data. Please ensure that you have made a copy of any data saved on your products.

To the fullest extent permitted by law or statute, Davey shall not be liable for any loss of profits or any consequential, indirect or special loss, damage or injury of any kind whatsoever arising directly or indirectly from Davey products. This limitation does not apply to any liability of Davey for failure to comply with a consumer guarantee applicable to your Davey product under local laws and does not affect any rights or remedies that may be available to you under local laws.

For a complete list of Davey Dealers visit our website (daveywater.com) or call:

DAVEY

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