

## Davey® Repair or Replacement Guarantee

In the unlikely event in Australia or New Zealand that this Davey product develops any malfunction within two years of the date of original purchase due to faulty materials or manufacture, Davey will at our option repair or replace it for you free of charge, subject to the conditions below.

Should you experience any difficulties with your Davey product, we suggest in the first instance that you contact the Davey Dealer from which you purchased the Davey product. Alternatively you can phone our Customer Service line on 1300 367 866 in Australia, or 0800 654 333 in New Zealand, or send a written letter to Davey at the address listed below. On receipt of your claim, Davey will seek to resolve your difficulties or, if the product is faulty or defective, advise you on how to have your Davey product repaired, obtain a replacement or a refund.

Your Davey two Year Guarantee naturally does not cover normal wear or tear, replacement of product consumables (i.e. mechanical seals, bearings or capacitors), loss or damage resulting from misuse or negligent handling, improper use for which the product was not designed or advertised, failure to properly follow the provided installation and operating instructions, failure to carry out maintenance, corrosive or abrasive water or other liquid, lightning or high voltage spikes, or unauthorized persons attempting repairs. Where applicable, your Davey product must only be connected to the voltage shown on the nameplate.

Your Davey two Year Guarantee does not cover freight or any other costs incurred in making a claim. Please retain your receipt as proof of purchase; you **MUST** provide evidence of the date of original purchase when claiming under the Davey two Year Guarantee.

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 the Australian or New Zealand legislation and does not affect any rights or remedies that may be available to you under the Australian or New Zealand Consumer Legislation.

In Australia, you are entitled to a replacement or refund for a major failure and for 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.

Should your Davey product require repair or service after the guarantee period; contact your nearest Davey Dealer or phone the Davey Customer Service Centre on the number listed below.

For a complete list of Davey Dealers visit our website ([davey.com.au](http://davey.com.au)) or call:

DEPEND ON  
**DAVEY**

WATER PRODUCTS

Davey Water Products Pty Ltd  
Member of the GUD Group  
ABN 18 066 327 517

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### AUSTRALIA

**Customer Service Centre**  
6 Lakeview Drive,  
Scoresby, Australia 3179  
Ph: 1300 367 866  
Fax: 1300 369 119  
Website: [davey.com.au](http://davey.com.au)

### NEW ZEALAND

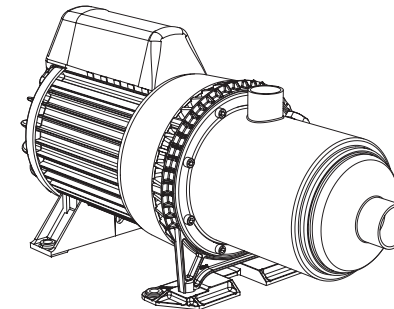
**Customer Service Centre**  
7 Rockridge Avenue,  
Penrose, Auckland 1061  
Ph: 0800 654 333  
Fax: 09 527 7654  
Website: [daveynz.co.nz](http://daveynz.co.nz)

P/N 400559-6 supersedes P/N 400559-5

\* Installation and operating instructions are included with the product when purchased new. They may also be found on our website.



# Installation and Operating Instructions for HM Series Electric Pumps



**NOTE:** Prior to installation remove the red transport plugs & associated seals from the suction and/or discharge ports.



**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.

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, Australian built Davey multistage pump. All components have been designed and manufactured to give trouble free, reliable operation.

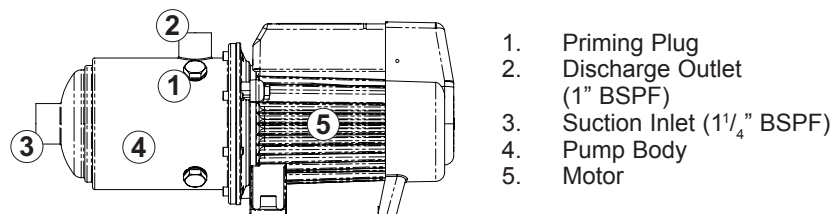
**Before installing your new pump, please read all instructions carefully as failures caused by incorrect installation or operation are not covered by the guarantee. Your HM Electric Pump is designed to handle clean water. The pump should not be used for any other purpose without specific referral to 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.


In accordance with AS 3350.2.41 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.





## Specifications


Max. service pressure:	1000kPa
Max. inlet pressure:	600kPa
Liquid temperate range:	-15 to +105°C
Ambient temperature:	0 to 50°C
Suction head:	depends on NPSH of pump

 **\*NOTE "MOTOR PROTECTION DEVICE" :**  
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 (above 50°C) in pump enclosure.

 **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.

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

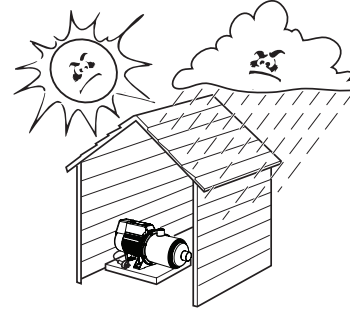
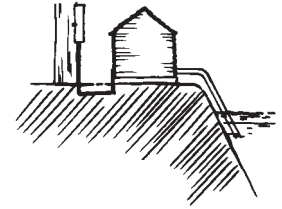
 Care should also be taken when servicing or disassembling pump to avoid possible injury from hot pressurised water. Unplug pump, relieve pressure by opening a tap on the discharge side of the pump and allow any hot water in the pump to cool before attempting to dismantle.

 **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.

## 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.


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## Single Phase

The single phase models which are supplied with a 10 amp plug may be plugged into a standard 10amp outlet. Model with the special 15 amp power plug may only be used with the appropriate 15 amp 220/250V power outlet (15 amp power outlets are usually specially provided by an electrician).

Always ensure that the earth conductor in the lead is connected to a good earth.

All single phase Models have automatic re-set thermal overload protection built in, i.e. should overload on motor cause thermal to open circuit and switch motor off, it will automatically re-set and switch motor on when motor has cooled down sufficiently, usually within a few minutes.

 **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. Minimum voltage at the electric motor must not fall below 216.
  3. 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 415volt 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.

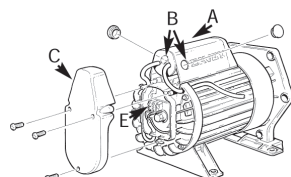


Figure One

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.

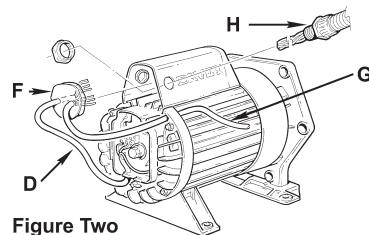


Figure Two

Access to the terminal block is achieved by removal of the fan cowl - see Figure A. Before prising the fan cowl ensure the retaining screw has been removed.

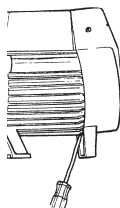


Figure A

The capacitor cover screw is then removed, allowing the cover to be lifted (Figure B). Once the wiring has been completed and checked, ensure the supply cable is run along the cable access, the capacitor cover will clamp the supply cable once it is re-installed. Replace the fan cowl and ensure the fan cowl retaining screw is re-installed correctly.

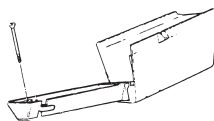


Figure B

 **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)

## 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.**

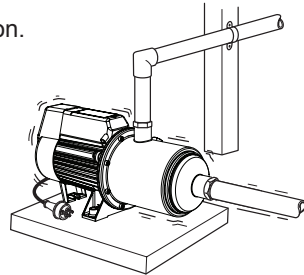
If pump runs but will not pump water, check for the following:

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")

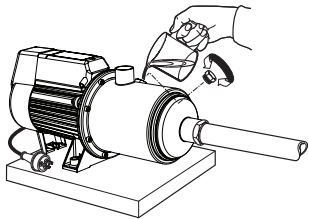
1. Ensure outlet nearest to pump is open.



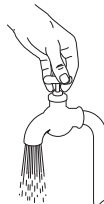
3. Switch on.



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.



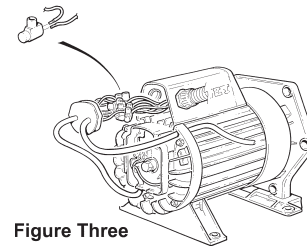
Three phase models with output power of 1.4kW and over have been designed to allow for connection either side of the Capacitor Cover (marked "A" in figure one) on the motor. (NOTE: Three phase motors do not have capacitors fitted in the Capacitor Cover).

This is achieved by way of either of the two 19mm access holes (marked "B" in figure one). The access holes are designed to accept most standard cable grommets. The unused hole can be sealed by inserting the plug enclosed with the pump. To connect a three phase Pressure Pump start by removing the Terminal Cover ("C")

In accordance with AS 3350.2.41 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.

A short four core flex ("D") is fitted from the motor terminals ("E"). This lead is inserted through the blanking grommet ("F").

Pressure switch or other control leads ("G") can be fitted as well. Incoming power ("H") can be fitted through the preferred access hole, and terminated as shown in Figure Three. A termination kit is available if required.



Insert the blanking grommet ("F") into the capacitor cover ("A"). Fix the short lead ("D") into the path provided in the non-drive endshield and replace the terminal cover ("C").

Figure Three

### 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.**

**Note: Minimum three phase voltage supply at the motor must not fall below 374 volts, otherwise motor damage may result which is not claimable under Guarantee.**

**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.**

### IP55 Compliant Connection

For some installations, such as wet areas in dairies, the pump is required to be IP55 compliant. The HM pump is IP55 compliant (models over 1.05kW are IP56).

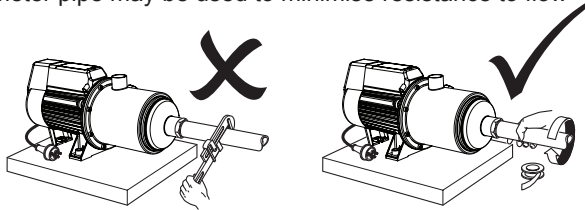
## Pipe Connections



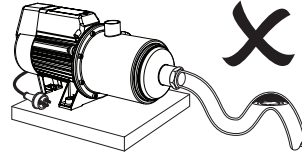
**DO NOT USE THREAD SEALING COMPOUNDS, HEMP OR PIPE DOPE!**

For best performance use P.V.C. 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.



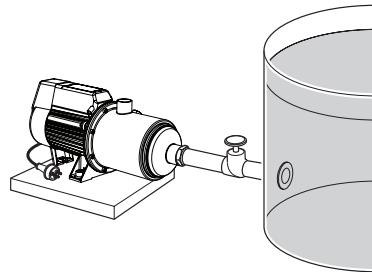
**NOTE: Suction leaks are the largest cause of poor pump performance and are difficult to detect. Ensure all connections are completely sealed using thread tape only. DO NOT USE SEALING COMPOUNDS OR PIPE DOPE.**



## 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.

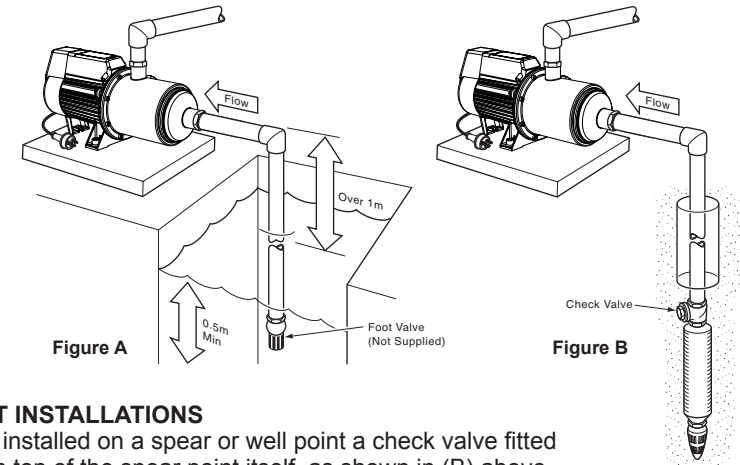


Figure A

Figure B

## SPEAR POINT INSTALLATIONS

When a 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.**

