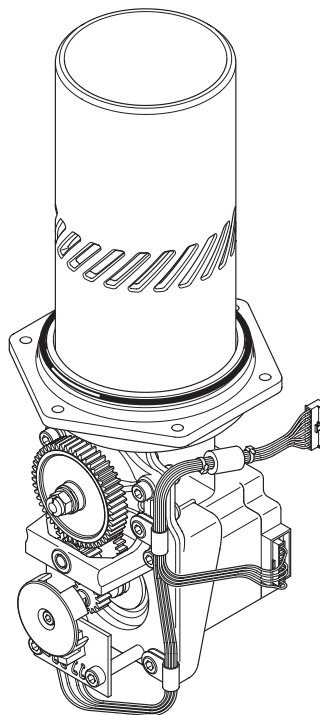




# The Brain<sup>®</sup> DRV80 Gen 1 UPGRADE KIT



**The installation and service must be performed by a qualified installer.  
For further information, please call our technical department Toll Free at 1-888-468-4673.**



Armstrong International  
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[armstronginternational.com/brain](http://armstronginternational.com/brain)

**Keep this manual with installation  
for future reference.**

# DRV80 Gen 1 Upgrade Kit

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# Introduction

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The **Brain® DRV80 Gen 1** is a registered trademark of Armstrong Hot Water Group, a division of Armstrong International.

DRV80 Gen 1 features Rada Technology, Rada is a registered trademark of Kohler Mira Limited of Cheltenham, England.

The DRV80 Gen 1 is a digital recirculating valve for use as part of a warm water recirculation system within a commercial installation.

A dedicated PC / Laptop with Microsoft Windows based control program can monitor and control temperature limits, disinfection and temperature warning alerts. This product can be linked to external control and monitoring devices such as a Building Management System. Data connections can be made via USB plug-in or Serial Port.

DRV80 Gen 1 Control Software and USB Drivers are available to download and update at [www.armstronginternational.com/brain](http://www.armstronginternational.com/brain)

# Safety

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## Icon Legend

If instructions are not followed:



- injury or death and property damage are **imminent**



- injury or death and property damage are **possible**



- potential property damage, expensive repairs, and / or voiding the warranty may result



- Applicable codes must be followed and supersede any other instructions. Generally applicable codes in the US include:
  - IPC (International Plumbing Code)
- Read this manual.
- Improper installation or operation may cause a flood resulting in property damage, personal injury, or death. Armstrong strongly recommends that a qualified installer be used.
- Service must be performed by a qualified person.
- Improper installation, start-up, operation, maintenance, or service may void the warranty.



Hot water or metal may cause scald burns. Skin exposure to 140°F water or metal for only five seconds may cause a second degree burn.



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# General Advisory

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The use of the word 'failsafe' to describe the function of any hot and cold water mixing valve is both incorrect and misleading. This DRV (*Digital Recirculation Valve*) incorporates additional shut-off devices to improve the level of safety however, in keeping with every other mechanism it cannot be considered as being functionally infallible.

Where chloramine/chlorine disinfection is practiced, **DO NOT** exceed a chloramine/chlorine concentration of **50 mg/l (ppm)** in water, per one hour dwell time. Such procedures must be conducted strictly in accordance with the information supplied with the disinfectant and with all relevant Guidelines/Approved Codes of Practice.

Water must have levels of chloramine / chlorine lower than or equal to 4mg/l (ppm) for continual usage.

## Data Storage

Armstrong International shall not accept liability in contract, tort (including negligence or otherwise) for any loss of profits, business or anticipated savings, or loss or corruption of data, or any indirect or consequential loss arising out of the customer's use of DRV80 Gen 1. The customer shall be solely responsible for the independent backup of all data/information stored on DRV80 Gen 1. Notwithstanding the foregoing, none of the exclusions and limitations stated above are intended to limit any rights the customer may have under local law or other statutory rights which may not be excluded.

## Patents

GB - 2 421 297 2 437 891  
US - 7669776 8043556  
PCT - PCT/GB2006/000159  
European - 06702758.1  
India - 1231/MUMNP/2007  
Australia - 2006207367  
Canada - 2595064  
China - ZL200680005853.8  
Japan - 4933451

## Standards and Codes

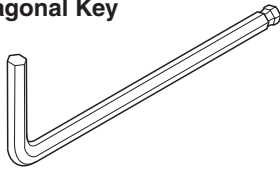
The Brain® DRV80 Gen 1 conforms to ASSE 1017 and CSA B125.3-11.



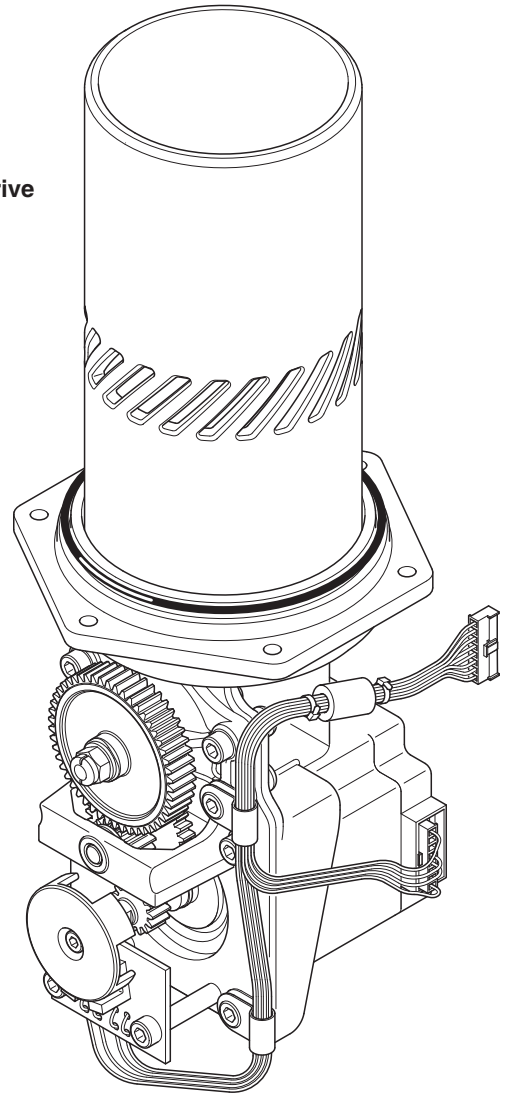
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# Pack Contents

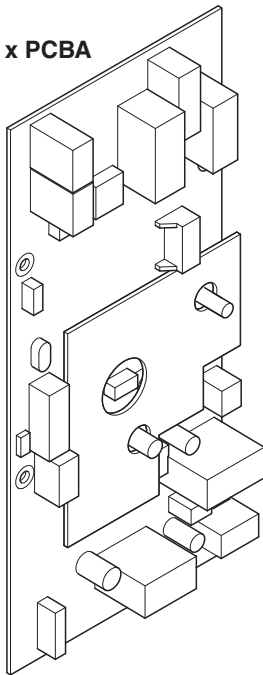
1 x Hexagonal Key



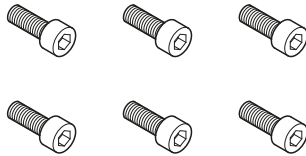
1 x New Drive Assembly



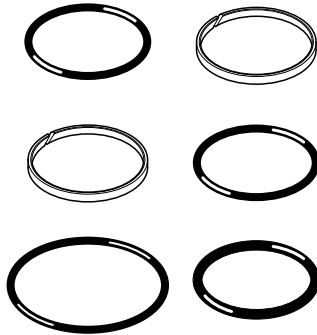
1 x PCBA



6 x Screws



1 x Seal Pack

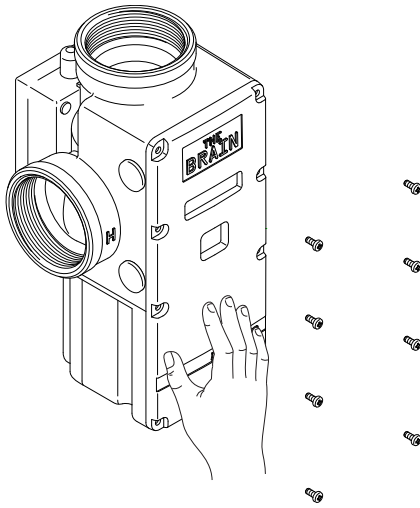


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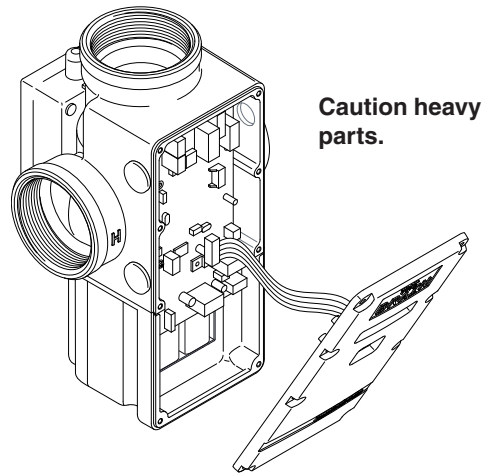
# DRV80 Gen 1 Upgrade Kit Installation

- Warning!** Before disassembly observe the following:
- Isolate the electrical supply to the DRV80 Gen 1.
  - Isolate the water supplies to the DRV80 Gen 1.
  - Allow the hot water inlet to cool sufficiently to reduce the risk of injury through contact with the hot pipe or DRV80 Gen 1.

1



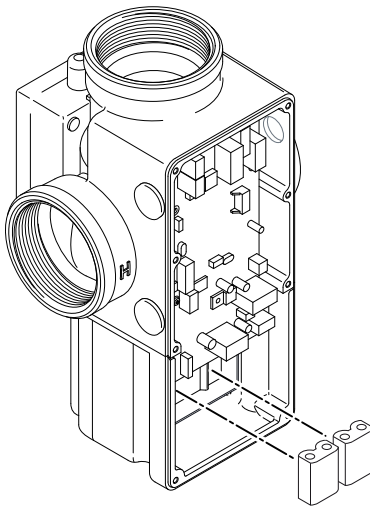
2



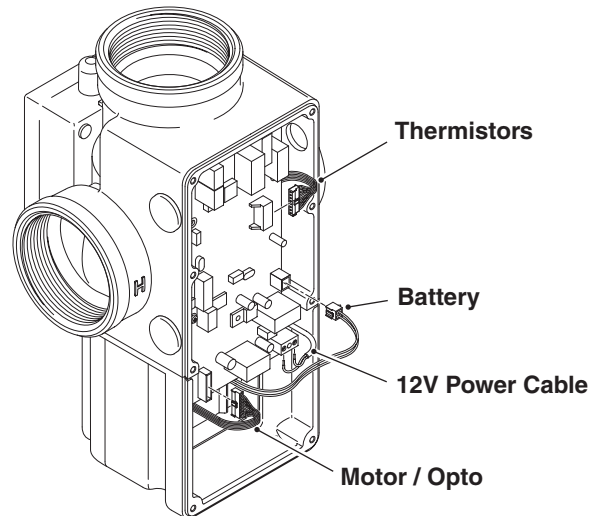
Remove all 8 cover screws, make sure cover is constantly supported.

Carefully remove cover and disconnect display cable.

3



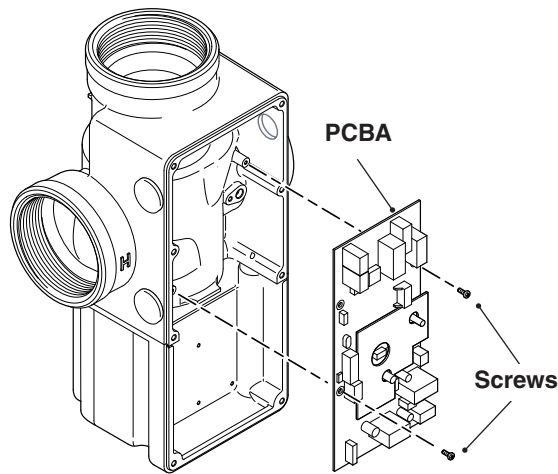
4



Remove the batteries from housing.

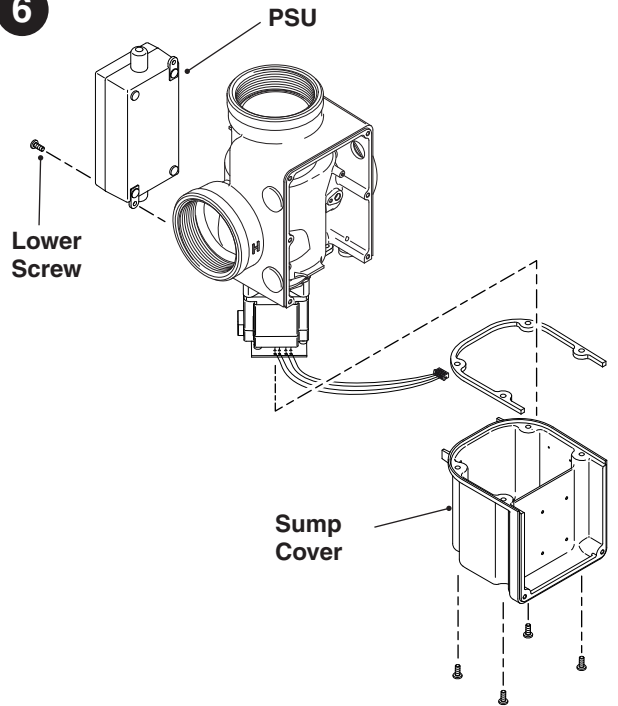
Disconnect the 12V Power cable then remove PCB connectors for the Battery, Thermistors and Motor / Opto.

5



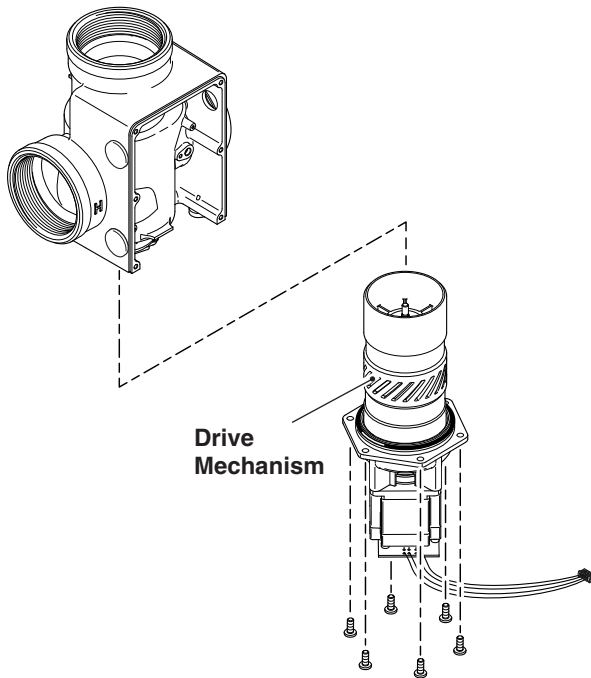
Remove the 2x retaining screws, then remove and return the original PCBA to Armstrong Hot Water Group.

6



Remove the lower screw from the PSU, then remove the 4x screws from the Sump Cover. Remove the sump cover and gasket from the DRV.

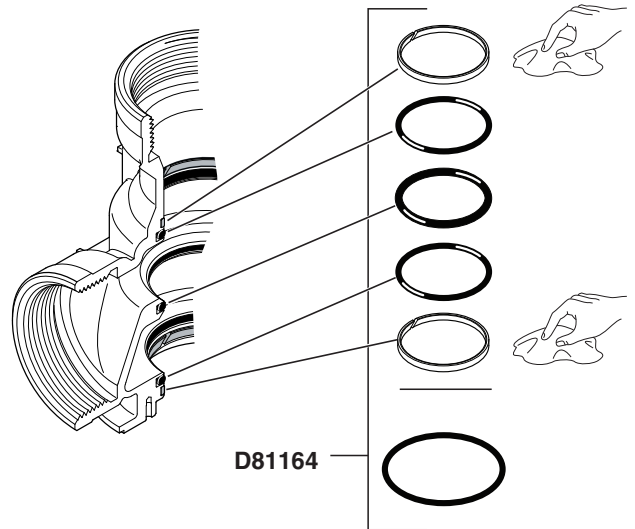
7



Remove the 6x screws, then withdraw the drive mechanism from the DRV80 Gen 1.

8

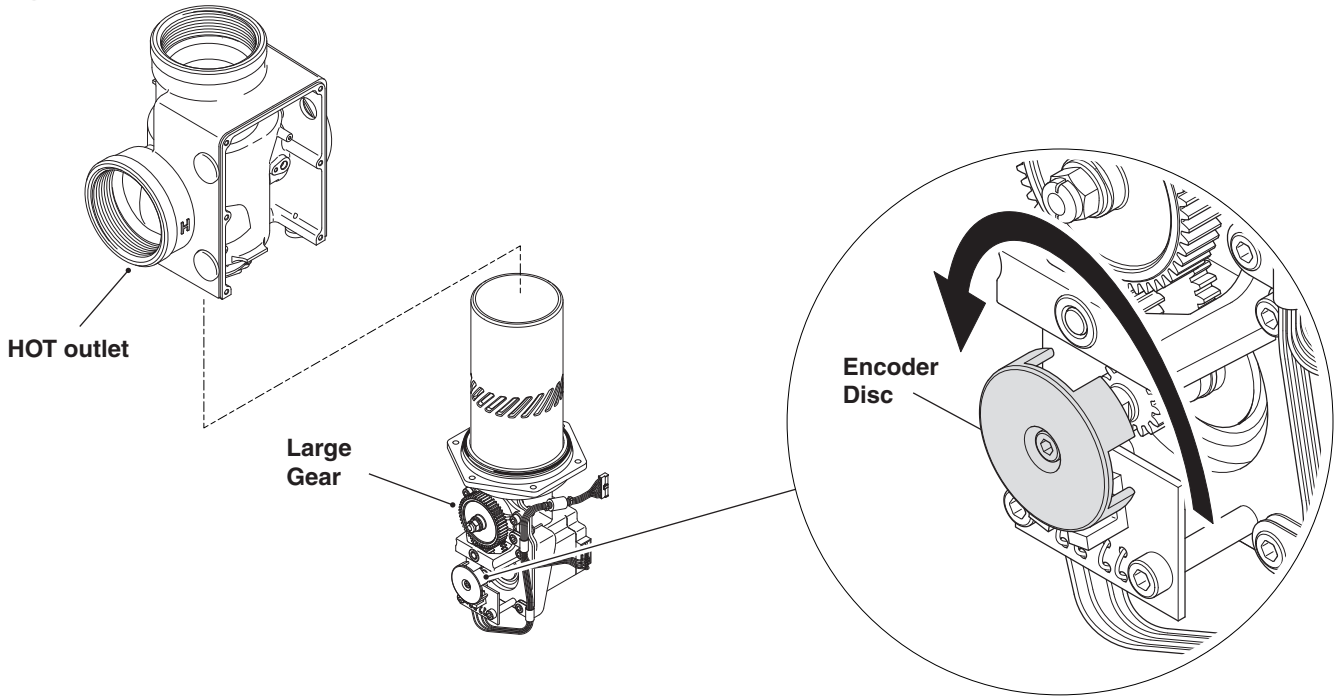
**Important! The seals must be replaced, failure to do so will invalidate the warranty.**



**Only use silicone based lubricants on rubber seals.**

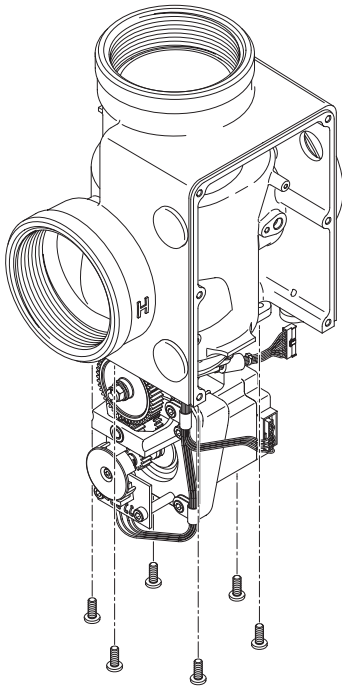
Fit the new seals (supplied) to the DRV80 Gen 1. **Note!** Remove seals using non metallic tools to prevent seal groove damage. Clean all grooves before reassembly then apply silicone based grease to all seals.

9

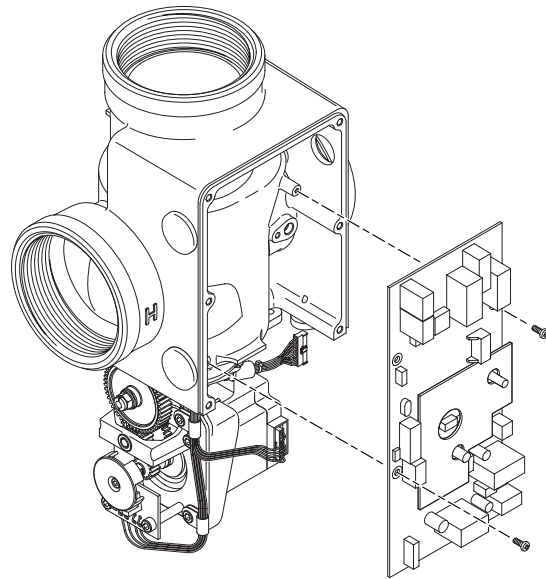


Turn the Encoder Disc fully anti-clockwise then fit the replacement Drive Assembly to the DRV80 Gen 1.  
**Important !** The large gear must be in line with the HOT outlet of the DRV80 Gen 1.

10



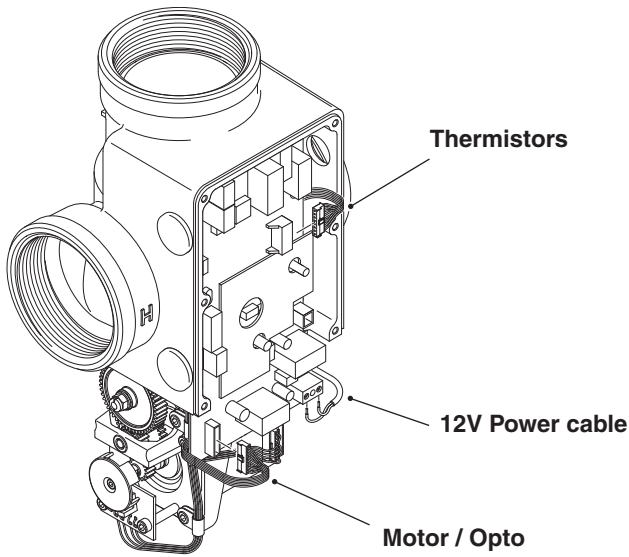
11



Using the new screws and the hexagon key (supplied), secure the new drive assembly into the DRV80 Gen 1. Fit the replacement PCBA with the 2x retaining screws.

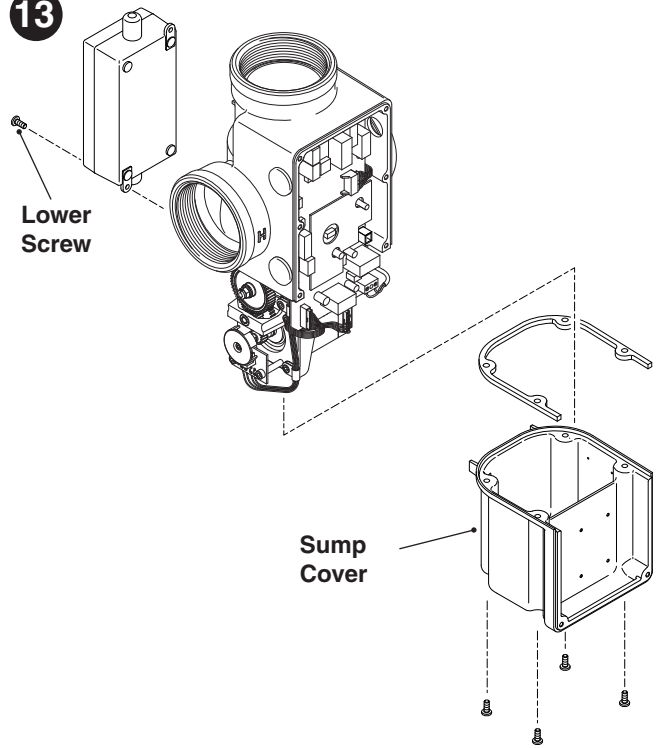


12



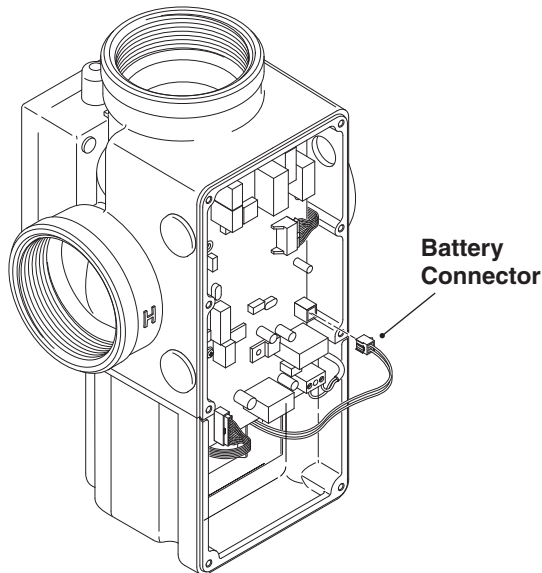
Reconnect the 12V Power cable and the PCB connectors for the Thermistors and Motor / Opto.

13



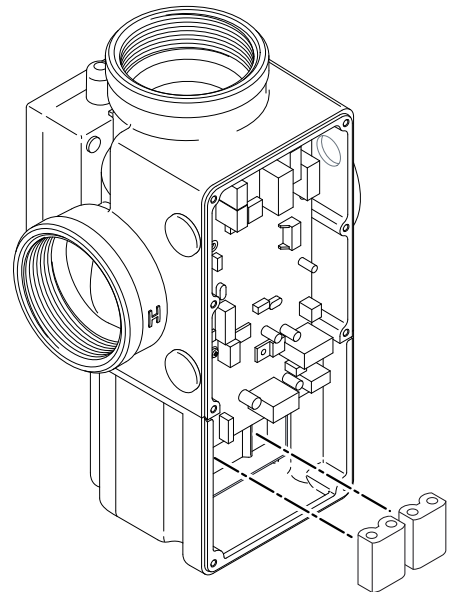
Fit the gasket to the Sump Cover then refit the Sump Cover to the DRV80 Gen 1 with the 4 screws. Refit the lower screw to the PSU.

14



Reconnect the Battery Connector.

15

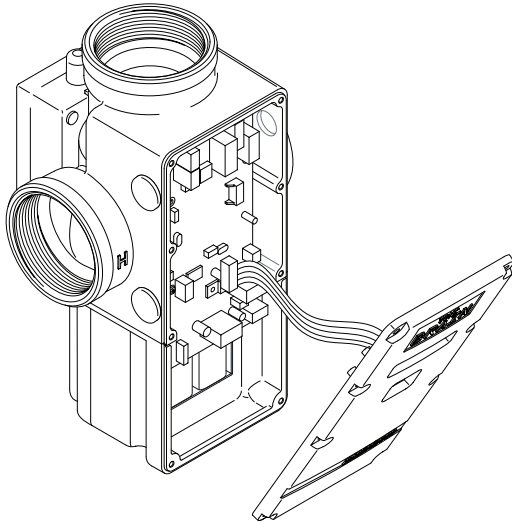


Refit the batteries.



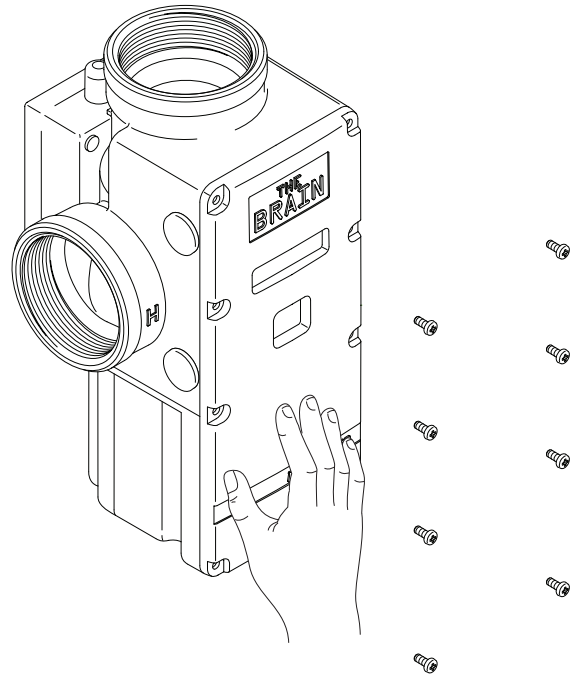
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16



Reconnect the display cable, then refit the cover.

17



Refit all 8 cover screws, make sure cover is constantly supported.

## Re-Commissioning

Commissioning must be carried out in accordance with these instructions by designated, qualified and competent personnel.

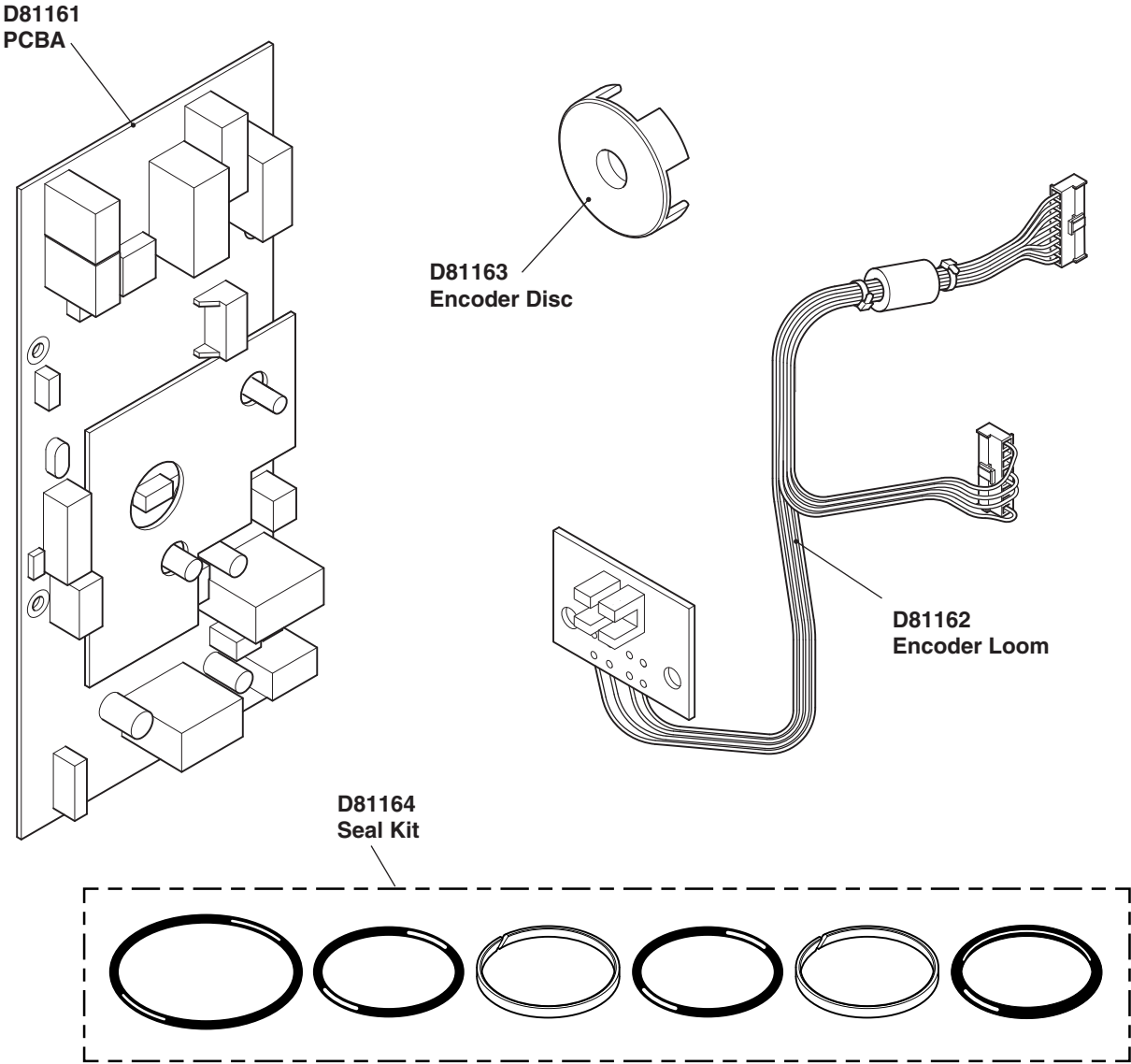
- 1 Turn the water on (slowly).
- 2 Power the system on.
- 3 Use DRV programming software\* to reconfigure settings as required.  
DO NOT CHANGE THE CALIBRATION # OF THE REPLACED PCB.

\*Brain® DRV80 Gen 1 Programming Software and USB drivers are available at [www.armstronginternational.com/brain](http://www.armstronginternational.com/brain)



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# Spare Parts



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# Limited Warranty and Remedy

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Armstrong Hot Water, Inc. (“Armstrong”) warrants to the original user of those products supplied by it and used in the service and in the manner for which they are intended, that such products shall be free from defects in material and workmanship for a period of one (1) year from the date of installation, but not longer than 15 months from the date of shipment from the factory [unless a Special Warranty Period applies, as listed below]. This warranty does not extend to any product that has been subject to misuse, neglect, or alteration after shipment from the Armstrong factory. Except as may be expressly provided in a written agreement between Armstrong and the user, which is signed by both parties, Armstrong **DOES NOT MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

The sole and exclusive remedy with respect to the above limited warranty or with respect to any other claim relating to the products or to defects or any condition or use of the products supplied by Armstrong, however caused, and whether such claim is based upon warranty, contract, negligence, strict liability, or any other basis or theory, is limited to Armstrong’s repair or replacement of the part or product, excluding any labor or any other cost to remove or install said part or product, or, at Armstrong’s option, to repayment of the purchase price. As a condition of enforcing any rights or remedies relating to Armstrong products, notice of any warranty or other claim relating to the products must be given in writing to Armstrong: (i) within 30 days of last day of the applicable warranty period, or (ii) within 30 days of the date of the manifestation of the condition or occurrence giving rise to the claim, whichever is earlier. **IN NO EVENT SHALL ARMSTRONG BE LIABLE FOR SPECIAL, DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, LOSS OF USE OR PROFITS OR INTERRUPTION OF BUSINESS.** The Limited Warranty and Remedy terms herein apply notwithstanding any contrary terms in any purchase order or form submitted or issued by any user, purchaser, or third party and all such contrary terms shall be deemed rejected by Armstrong.

Special Warranty Periods are as follows:

The Brain - Model DRV80 Gen 1 shall have a 5-year parts warranty on all components other than preventative maintenance service items which include batteries and all ‘wetted’ O-rings / Seals. Replacement parts carry a 1 year warranty once the product is outside the original 5 year warranty.

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Designs, materials, weights, performance ratings and prices are subject to change without notice.



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