Quantium 410

Maintenance Manual

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Great care has been taken in the preparation of this manual however Tokheim shall not be liable for any misunderstanding, errors and/or loss or defect arising from the use of this manual.

Tokheim shall not be liable for damage to the product, nor for personal or third party injury, caused by incorrect use of the product or by attempts to maintain or to repair the product by parties other than those fully trained by Tokheim or by its accredited third party representatives.

Please contact your nearest service department, at the relevant address printed on the back cover of this manual, should any aspect of this manual be unclear.

Tokheim reserves the right to apply changes to this document and the equipment without further notice.

REVISION RECORD

Date	Revision	Page	Reason
31/08/2006	1	All	Original Issue
29/05/2009	2	Front Cover	New photo
	2	3,4	Main Contents revised
	2	1-1	Section 1 Contents revised
	2	1-7	Certificate number updated
	2	1-8	New info added for Special Conditions & MID
	2	4-1	Section 4 Contents revised
	2	4-30	Changing the Spin on Filter
29/09/2009	3	Front Cover	New photo
	3	3-3, 3-4	Changes to hose retract photos and addition of hanging hose maintenance.
		3-9	New graphic for nozzle switch

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1 INTRODUCTION

1.1 How To Use This Manual

It is recommended that all relevant persons familiarise themselves with the contents of this manual prior to carrying out any operations or procedures.

This manual is divided into sections which are described as follows: -

Section 1 - Introduction

This section contains information on how to use the manual, the scope of equipment covered, recommendations on qualified technicians and contact information. It also includes relevant health and safety information required for the safe practice of common maintenance procedures.

Section 2 - Maintenance Procedures - General

This section describes the safety procedures to be followed during planned servicing of dispensers or emergency repair work. It also contains a description of the dispenser sides and how to access to the dispenser hydraulic and electronic areas.

Section 3 - Maintenance Procedures - Hose Mechanics

This section covers hose and nozzle replacement.

Section 4 - Maintenance Procedures - Hydraulics

In this section, the most common hydraulic maintenance procedures are explained, from a simple filter replacement through to changing the motors and meters.

Section 5 - Maintenance Procedures - Electronics

The basic electronic maintenance is covered in section 5 including changing fuses, batteries and pulsers.

Section 6 - Maintenance Procedures - Vapour Recovery

The maintenance procedures relating to the vapour recovery system is explained in this section which covers the replacement of the VR pump, motor and V-belt.

Section 7 - Drawings

All necessary drawings required for reference during maintenance procedures are listed and contained in this section.

1.2 Product Scope

The equipment and models covered by the contents of this manual are: -

The Quantium 410 range of fuel dispensers, with the exception of the LPG version. For information on Quantium LPG dispensers refer to the relevant LPG manual as provided by Tokheim.

All dispensers in the Quantium 410 range use the same standard sub-assemblies and offer a wide range of configurations and include provision for options such as integrated payment terminal, vapour recovery etc.

1.3 Authorised Technicians

Only qualified technicians familiar with the contents of this manual should carry out the procedures contained herein.

WARNING: ANY ATTEMPTS TO CARRY OUT THE PROCEDURES OF THIS MANUAL, BY UNQUALIFIED OR UNAUTHORISED PERSONS, MAY RESULT IN SERIOUS INJURY OR LOSS OF LIFE.

NOTE: THIS MANUAL IS NOT INTENDED TO REPLACE THE SERVICES OF A FULLY QUALIFIED TECHNICIAN.

1.4 Contact Information

For information relating to the contents of this manual please contact: -

Technical Author
Tokheim UK Ltd.
Dundee, Scotland

For technical assistance please contact the appropriate service division listed on the back cover of this manual.

1.5 Health & Safety

1.5.1 SAFETY CHECKLIST

- It is obligatory that this checklist be fully complied with during all work at the petrol station, particularly construction or repair work.
- It is the duty of the contractor to ensure that all workers employed by him obey each and all of the relevant laws, directives and other regulations.

Areas where special caution is required

- The insides of tanks, tubes, dome shafts, filling shafts, change over shafts, vessels and dispensers.
- All areas in which fuel vapour that is heavier than air can accumulate, e.g. fuel separator, draining shafts, low located rooms, cellars, excavations, pipe trenches etc.
- The areas around the outlets of tank ventilation pipes, especially during the filling phase.
- All areas near dispensers, tanker lorries and other vehicles while they are being tanked up, and particularly when there is a lack of wind.
- A radius of 1.0 metres around petrol carrying pipes, as well as pipes that are not vapour free.
- Silt traps.

1.5.2 DUTIES OF THE EMPLOYEES

- To ensure optimal accident prevention in our company, in addition to general rules applying to worker’s protection, it is necessary to take into account all the national protection of workers legislation and to actively support all measures which enhance safety standards.

- It is an employee's duty to follow all company directives regarding the prevention of accidents, unless such directives can be proved to be unfounded.
- Employees should not follow any instructions that go against safety standards.
- Employees are only permitted to use equipment for its original purpose, and this is defined by the company alone.
- If an employee detects equipment that is deficient in terms of safety, he shall eliminate this deficiency immediately. If such safety rectification is not part of his defined area of activities, or if his knowledge is insufficient to carry out such work he must immediately inform his superior about the detected safety deficiency.

This equally applies to:

1) **Work Materials** which have not been correctly packed or correctly marked in order to meet safety requirements.
2) **Work Methods** or work processes which have not been correctly coordinated or controlled in order to meet safety requirements.
3) **Where dangerous activities are carried out by several persons**, the need for a permanent faultless communication between them in order to avoid dangerous events shall require the appointing of one person in order to carry out overall supervision.

1.5.3 HAZARDS

Prior to starting work, the dispenser must be isolated (i.e. entirely disconnected from the mains supply) and the mains supply switch locked in the OFF position. The submerged pump (if applicable) and control signals from the dispenser must also be isolated. This is done to provide safety for the technician. As a further precaution, switch off the mains supply in the service station shop and place a clear notice on the switch to avoid it being turned on again inadvertently.

WARNING: THE CONNECTION AND DISCONNECTION OF ELECTRICAL CONNECTIONS MAY ONLY BE CARRIED OUT BY QUALIFIED PERSONNEL AUTHORISED FOR SUCH ACTIVITIES. WORK IN DANGEROUS AREAS MUST BE MADE SAFE BY OBSERVING ALL THE NATIONAL SAFETY REQUIREMENTS IN FORCE.

It is not permitted to put a fuel dispenser into operation before an authorised official has inspected it and released it. This depends upon the national regulations in force.

Components filled with fuel must be drained in such a way to conform to local and national environmental regulations.

Dismantled packaging and cladding must be stored in such a way as to avoid damage to components or injuries to persons. Covers that can be opened, such as the calculator housing, should be handled with care. Ensure that the retaining catch is placed in the correct position to prevent the cover falling onto the head of the service engineer or other persons in the area.

At unattended service stations, every end-user should be able to read the User Instructions. They should be visible on a notice board or integrated into the DIT and should be sufficiently well lit so that they can be read at night.

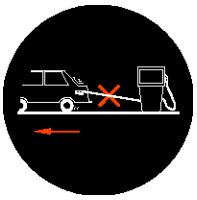
At unattended service stations break away couplings must always be used to reduce the danger caused by a motorist driving off with the nozzle still in the tank.

NOTE : A HIGHLY VISIBLE CORDON MUST BE PLACED AROUND THE DISPENSER THAT IS BEING SERVICED.

1.5.4 WARNING SIGNS

The following warning signs are fitted as standard, on the dispenser, however they may vary according to individual country requirements or customer specifications.

SIGN	MEANING	POSITION
	Do not use mobile phones	Visible from both sides of dispenser
	Naked flames and smoking forbidden	Visible from both sides of dispenser
	Do not spill fuel on the ground	Visible from both sides of dispenser
	Stop vehicle engine	Visible from both sides of dispenser
	Trucks only	At Diesel high speed dispensers near the nozzle boots



Do not drive away with nozzle in tank

Visible from both sides of dispenser

Next to User Instructions near the nozzle boot

1.5.5 PERSONAL PROTECTIVE EQUIPMENT (PPE)

PROTECTIVE CLOTHING

The following clothing should be worn **at all times** during installation and maintenance procedures:-

- Protective helmet.
- Protective shoes (conductive).
- Protective gloves and/or protective hand cream.
- Anti static clothing.
- Eye protection.

SAFETY EQUIPMENT FOR WORKING IN HAZARDOUS AREAS

The following safety equipment is required for working in hazardous areas:-

- Only spark free tools are permitted for work on dispensers.
- Work on bearings is only permitted using the standard workshop tools authorised for this kind of work.
- The use of all electrical tools is strictly prohibited.
- Only the use of explosion protected work lights is permitted.
- The use of telecommunications equipment in hazardous areas is strictly prohibited.

SAFETY INSTRUCTIONS

The following safety instructions must be adhered to during installation and maintenance procedures:-

- Inhalation of petrol vapour must be avoided. Suitable precautions must be taken and where necessary respirators used.
- Avoid direct contact of fuel with the skin.
- Use suitable protective clothing, protective gloves and/or protective hand cream.
- Avoid fuel spills.
- No smoking, no naked flames are permitted.
- Long hair and ties can get caught in moving parts. Hair must be suitably covered.

1.6 Standards & Certificates

This dispenser is constructed in conformity with the requirements of all the applicable European Directives (Machinery 98/98/37/EC; EMC 89/336/EEC; ATEX 94/9/EC).

The components used within the dispenser, including connection facilities, are selected in accordance with the European Standard EN BS 60079-0 (Electrical Apparatus for explosive gas atmospheres), and the supplementary Standards listed therein.

Diesel dispensers do not create an explosive hazard, but due to the probability of these being in close proximity to gasoline dispensers, the same construction rules are applicable.

The dispenser is certified by SIRA as suitable for use in Potentially Explosive Atmospheres Directive 94/9/EC, and marked to be in accordance with the European Dispenser Construction Standard EN 13617-1.

This dispenser is also certified to OIML International Recommendations R117 and R118. Certificate Numbers R117/1995-NL-01.04 & 08.

The production and end test is controlled through the Quality Assurance systems within the Tokheim Manufacturing Centres, and has received Quality Assurance Notification from a Notified Body.

No modification to the dispenser may be performed without express permission from Tokheim and must always use original components or Tokheim retrofit kits. Failure to comply with the above will invalidate product conformance with the relevant European Directives and Tokheim will no longer accept product liability.

1.6.1 DISPENSER MARKING FOR THE ATEX DIRECTIVE

The dispenser is labelled by Tokheim in accordance with the requirements of the ATEX Directive. This labelling includes:-

- The CE mark (CE conformity)
- The specific explosion protection mark, together with the mark indicating the equipment group and category; and, relating to equipment group II, the letter “G” (concerning explosive atmospheres caused by gases and vapours)
- The “Tokheim” name or logo and manufacturing location
- The dispenser type and serial number including the year of production

Labels can either be plastic stickers or metal plates and may vary according to national requirements. A typical example of a label follows:-

0518 SIRA
or
0081 LCIE

DUNDEE
or
GRENTHEVILLE

1.6.2 SPECIAL CONDITIONS FOR SAFE USE

Certain models include Special Conditions for Safe Use which must be observed prior to putting the dispensers into operation. Failure to do so will invalidate the ATEX certification of the dispenser. These models can be identified by an X at the end of the certificate number as shown on the dispenser typeplate.

The Special Conditions for Safe Use are identified in the ATEX EC Type-Examination Certificates and are repeated below:-

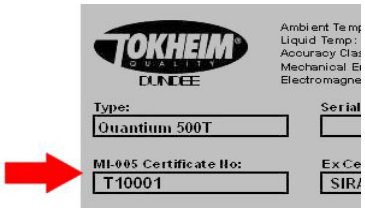
- Where a dispenser is supplied without hoses and/or nozzles, they shall be fitted in accordance with:
  - Hoses : EN1360 or EN13483
  - Nozzles: EN13012
- When used for ethanol (blend) dispensing, the fuel specification must be less than or equal to 85% ethanol, with minimum water content.
- The metering pumps and dispensers are designed for use in open air. Where a metering pump or dispenser is positioned within a building, incorporated into an enclosure, or integrated into a larger piece of equipment, additional measures shall be taken to ensure that the zoning diagrams illustrated in the schedule drawings are not compromised.

1.7 MID Dispensers

From mid 2007, Tokheim dispensers may be shipped from European factories in accordance with the Metrological Instruments Directive (MID). Such dispensers are calibrated and the relevant seals stamped in the factory so that the dispensers are fit for trade immediately upon installation without the need for a local Weights and Measures inspector to put them into use.

The dispenser is shipped with its own "MID datasheet" which documents the serial numbers of the prime components fitted in the dispenser. This datasheet must remain with the dispenser. Similarly dispensers are shipped with a Declaration of Conformance to the MID. This document must not be lost as it is an essential document to allow the continued use of the dispenser.

MID dispensers can be identified by the typeplate which contains a reference to the MID certificate number as shown:-



CHECKING THE SEALS

It is the responsibility of the Installer to check that all required seals are present and correct prior to putting the dispenser into use. This includes seals on the pumping unit, meter, pulser and calculator. **Under no circumstances must any seals be disturbed or broken during installation.**

METER CALIBRATION

A calibration check should be performed during Commissioning.

If a seal is damaged or missing, or if the calibration is outwith legal tolerances or in the unlikely event that any repair is required to a pumping unit, meter, pulser or calculator during installation, the factory MID verification is invalidated and a local National verification will need to be performed before the dispenser can be used.

CONTENTS

2 MAINTENANCE PROCEDURES - GENERAL

2.1 General

For part identification, please consult the Parts Manual.

Always follow the safety checklist as detailed in Section 1.5.

Before starting any maintenance procedure:-

- Ensure that all necessary tools and replacement parts are available.
- Ensure the dispenser is isolated and all power is turned off.
- When working on or near a dispenser, always act in accordance with general safety rules and regulations.
- Cordon off the dispenser under repair.
- Wear appropriate Personal Protective Clothing as recommended in Section 1.5.5.

2.2 Important Safety Information relating to IS Circuits

The Quantium T range of dispensers includes Intrinsically Safe (IS) circuits. The intrinsically safe cables are normally identified by blue coloured cables or cables marked at both ends with blue sleeving. IS circuits connect to nozzle switches, preset push buttons and to the Vapour Flow Meter (where fitted).

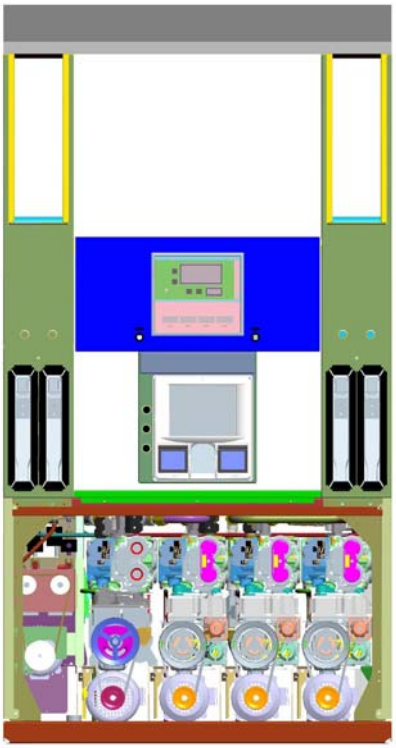
Cables for the IS circuits require careful routing and must remain segregated from all other cabling, both in the hydraulic and electronic areas of the dispenser. During maintenance or service procedures, ensure that the routing of the IS cables is unaltered and that the IS cables do not share cable glands and are not tied to any other non-IS cables.

In order for a circuit to remain intrinsically safe, there is a limit to the number of devices which can be simultaneously connected to it. For example, the nozzle bus also connects to preset button sensors and various hall effect sensors. The maximum number of devices is dependent upon both the electronic characteristics of the individual device and the length of cable used for the connection. No modifications should be made to the dispenser IS circuits unless under direct instruction or by the use of specific Tokheim retrofit kits.

2.3 Identification of Side A

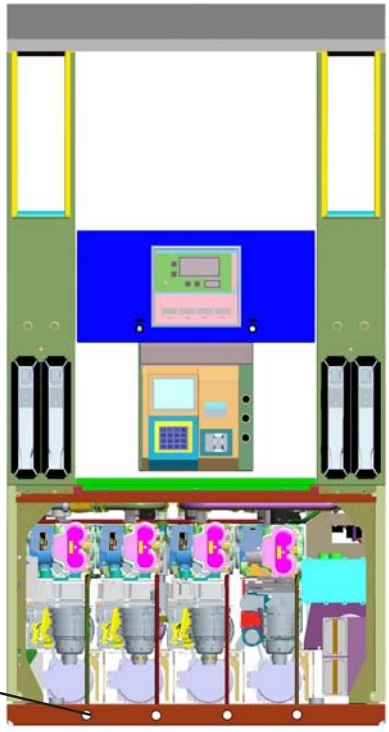
The different sides of the dispenser referred to in this manual are described as follows:-

- Side A of the dispenser has no air vent holes in the drip tray. With the calculator head opened, side A has the centre plate cover. With the Hydraulic door open, the motor and pump pulleys are visible.



Side A

- Side B of the dispenser has air vent holes in the drip tray at the base of the dispenser. Side B has the filter pots with inlet connections and electrical junction box, visible once the front panel is removed. With the calculator head opened, side B houses the battery and the programming of the calculator.



Side B

Air Vent holes
in drip tray

2.4 Access to the Hydraulic Area

The following instructions detail the procedure to be followed for the safe removal of the hydraulic door(s).

INSTRUCTIONS

1) Locate the keys for the hydraulic door.
2) Carefully lift the relevant nozzle out of the nozzle boot and place in a safe position on the ground.

WARNING : BEWARE OF FUEL SPILLAGE.

3) Simultaneously unlock both keylocks on the hydraulic door and carefully open the door at the top.

Note : The door is still attached by a retaining lanyard and earth cable.

4) Disconnect the retaining lanyard and earth cable from the inside of the hydraulic door.
5) Lift up the door to release from the slots in the driptray and remove the hydraulic door completely. Place the hydraulic door(s) in a safe position.

6) Repeat for opposite side of dispenser as required.
7) Place the hydraulic door (s) in a safe position.
8) To re-fit the hydraulic door (s), follow the instructions in reverse.

2.5 Access the Junction Box Connections

The following instructions detail the procedure to be followed to allow safe access to the junction box connections.

INSTRUCTIONS

1) Follow the instructions given in section 4.6 to remove the hydraulic door panel on side B of the dispenser.

2) Locate the junction box on side B of the dispenser.
3) Using a 6mm allen key, loosen and remove the ten bolts on the junction box cover on side B of the dispenser. Remove the junction box cover completely.

4) Refer to the wiring diagrams in section 5 of the 410 Installation Manual
5) To re-fit the junction box cover, follow the instructions in reverse.

2.6 Access to the Calculator Head

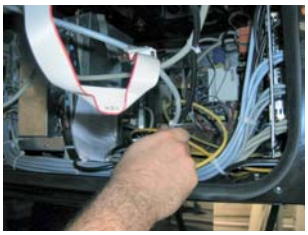
The following instructions detail the procedure to be followed for the safe access to the calculator head.

INSTRUCTIONS

1) Locate the keys for the calculator head door.
2) Simultaneously unlock both keylocks on the calculator head door on the relevant side of the dispenser

Note : Exact position of keylocks may vary according to the model ordered.

3) Carefully open the calculator head door.
4) Secure the head door in the open position by inserting the lever into the slot provided.
5) Repeat for opposite side of dispenser as required.



6) To close the calculator head door, ensure all cables remain inside, close and simultaneously lock both keylocks on the calculator head door and remove keys for safe keeping.
7) Close the dust caps to prevent water or dirt entering the keylock.

2.7 Access to the Cable Glands

The following instructions detail the procedure to be followed for the safe removal of the nozzle panel(s).

INSTRUCTIONS

1) Open the hydraulic door on the relevant side of the dispenser.
2) Carefully lift the relevant nozzle out of the nozzle boot and place in a safe position on the ground.

WARNING : BEWARE OF FUEL SPILLAGE.

3) Gently prise off the plastic cap cover located in the middle of the nozzle panel to access the fixing screw.
4) Using a 4mm allen key, loosen and remove the fixing screw in the middle of the nozzle panel and the two screws and plastic washers located at the bottom of the nozzle panel.

5) Carefully lift the nozzle panel upwards and away from the dispenser.

Note : The nozzle panel is still attached by the nozzle switch(es).

6) Using a 7mm spanner and 7mm nut runner, loosen and remove the nut, screw and two washers to disconnect the nozzle switch from the nozzle panel.

7) Remove the nozzle panel completely and place in a safe position.
8) To re-fit the nozzle panel, follow instructions in reverse.

2.8 Access to the DIT Spacebox

The following instructions detail the procedure to be followed to allow safe access to the DIT Spacebox/Motor Capacitor Box.

DISPENSERS WITH DIT ONLY

1) Open the keylock on the integrated DIT panel. Open the drawer and disconnect the two connectors. Remove the drawer completely and place in a safe position.

DISPENSERS WITHOUT DIT

Unlock the blind DIT door and disconnect the earth cable from the door. Remove the door completely and place in a safe position.

WARNING : DO NOT DROP - THE DIT DOOR IS <u>NOT</u> HINGED NOR SECURED BY A RETAINING ROPE.

2) Repeat for the opposite side of the dispenser as required.

3) To re-fit:-

DISPENSERS WITH DIT ONLY

Re-connect the two connectors. Position DIT drawer onto rails and lock. Remove key for safe keeping and close the dust cap.

DISPENSERS WITHOUT DIT

Position blind DIT door onto the dispenser, re-connect the earth cable and lock in position. Remove key for safe keeping and close the dust cap.

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3 MAINTENANCE PROCEDURES - HOSE MECHANICS

3.1 Changing a Nozzle

Before starting the maintenance procedure, please refer to section 2.

Identify the relevant nozzle to be replaced.

Tools required

- Replacement nozzle
- Spanner for hose connection (36mm for 16mm hose, 41mm for 21mm hose, 46mm for 25mm hose)
- Spanner for nozzle (36mm, 41mm or 46mm)

INSTRUCTIONS

1) Using one spanner to hold the hose connection stationary, disconnect the nozzle from the end of the hose using the second spanner. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

2) Connect the replacement nozzle to the end of the new hose.
3) Ensure all tools and unused materials are removed.
4) Re-instate power to the dispenser.
5) Test operation of the new nozzle and test for any leakages.
6) Dispose of all waste accordingly.

3.2 Changing a Hose

3.2.1 HOSE RETRACT

Before starting the maintenance procedure, please refer to section 2.

Identify the relevant hose to be replaced.

Tools required

- Replacement hose (refer to the Parts Manual for exact part identification)
- 3mm and 4mm allen keys
- Spanner for hose connection (36mm for 16mm hose, 41mm for 21mm hose, 46mm for 25mm hose)
- Spanner for nozzle (36mm, 41mm or 46mm)
- Ladder or similar

⚠ CAUTION

Whilst working at height, ensure all relevant safety procedures are observed.

INSTRUCTIONS

1) Follow the instructions given in section 2.6 to remove the nozzle panels on both sides of the dispenser.

2) Using a 4mm allen key, loosen and remove the two screws and plastic washers on the top column end panel on the left and right side of the dispenser.

3) Use a 4mm allen key to loosen and remove the two screws on the top column end panel on top of the canopy of the dispenser.

4) Identify the relevant springdrum for the hose to be replaced.

5) Pull the hose downwards until the hose clamp is easily accessible then locate the wing screw into the hole in the springdrum to lock the springdrum in a fixed position.

WARNING : SPRINGDRUM UNDER HIGH TENSION.

6) Use a 3mm allen key to loosen and remove the four screws and washers on the hose clamp.

Note : It may not be necessary to remove all four screws and nuts.

7) Remove the hose clamp from the hose.

Note : the hose clamp remains attached by the springdrum rope.

8) Using an appropriate sized spanner, loosen and remove the nut on the relevant hose connection on the dispenser. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

9) Pull the hose out of the dispenser towards the nozzle end.

WARNING : BEWARE OF FUEL SPILLAGE.

10) Follow the instructions given in section 3.1 to remove the nozzle. Using a suitable container, collect as much fuel as possible from the hose.

WARNING : BEWARE OF FUEL SPILLAGE.

11) Re-connect the nozzle to the end of the new hose.

12) Feed the new hose through the dispenser nozzle panel and re-fit to the hose connection on the dispenser. Secure in position by tightening the hose nut.

13) Re-fit the hose clamp to the new hose at approximately 90cm from hose nut on dispenser.

14) Hold the hose firmly and gently release the wing screw on the springdrum. Allow the hose to retract upwards in a controlled manner.

WARNING : SPRINGDRUM UNDER HIGH TENSION.

15) Re-fit the two screws and plastic washers on the top column end panel on the left and right side of the dispenser.

16) Re-fit the nozzle panels to both sides of the dispenser as described in section 2.6.

17) Ensure all tools and unused materials are removed.

18) Re-instate power to the dispenser.

19) Test for any leakages.

20) Dispose of all waste accordingly.

Note : If for any reason the spring drum loses tension, replace it with a properly pre-tensioned unit..

3.2.2 HANGING HOSE

Before starting the maintenance procedure, please refer to section 2.

Identify the relevant hose to be replaced.

Tools required

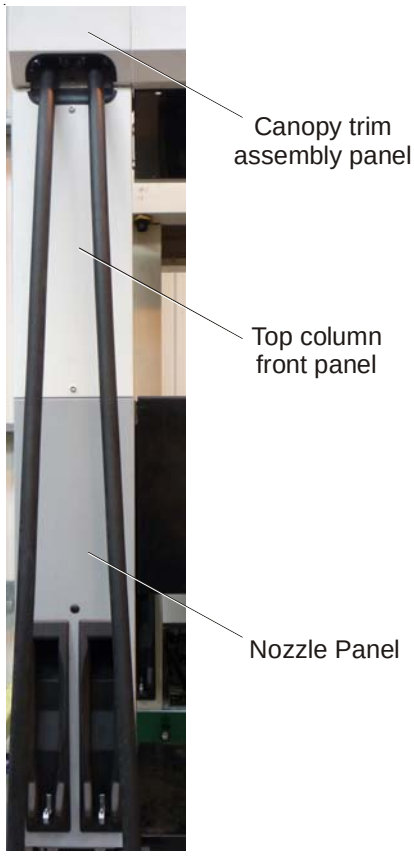
- Replacement hose (refer to the Parts Manual for exact part identification)
- Spanner for hose connection (36mm for 16mm hose, 41mm for 21mm hose, 46mm for 25mm hose)
- 4mm allen key
- 10mm spanner
- Ladder or similar

⚠ CAUTION

Whilst working at height, ensure all relevant safety procedures are observed.

INSTRUCTIONS

1) Follow the instructions given in section 2.6 to remove the nozzle panel. Next remove the top column front panel using a 4mm allen key.



2) Using a 4mm allen key, loosen and remove the 4 screws on the canopy trim assembly panel.

3) Use a 4mm allen key to loosen and remove the two screws on the top column end panel at the canopy of the dispenser and reveal the hose guide assembly.

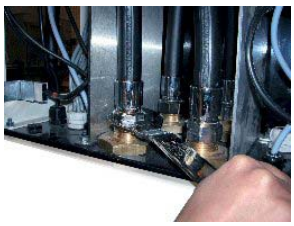
4) Identify the hose to be replaced and remove the 2 bolts from the relevant hose clamp.

5) Using an appropriate sized spanner, loosen and remove the nut on the relevant hose connection on the dispenser. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

6) Pull the hose out of the dispenser towards the nozzle end.

WARNING : BEWARE OF FUEL SPILLAGE.



7) Follow the instructions given in section 3.1 to remove the nozzle. Using a suitable container, collect as much fuel as possible from the hose.

WARNING : BEWARE OF FUEL SPILLAGE.

8) Re-connect the nozzle to the end of the new hose.

9) Feed the new hose over the hose guide and re-fit to the hose connection on the dispenser. Secure in position by tightening the hose nut.

10) Position the hose clamp over the hose and replace the 2 bolts securing it to the hose guide asembly.

Note : Do not overtighten the 2 bolts on the hose clamp as the hose will expand under pressure.

11) Re-fit the top column end panel and secure in position using the screws on the canopy and column.

12) Re-fit the nozzle panel as described in section 2.6.

13) Re-fit the canopy trim assembly panel and the top column front panel .

14) Ensure all tools and unused materials are removed.

15) Re-instate power to the dispenser.

16) Test for any leakages.

17) Dispose of all waste accordingly.

3.3 Changing an Elaflex Safety Break Coupling

Before starting the maintenance procedure, please refer to section 2.

To repair a separated Elaflex safety break coupling, refer to section 3.3.1.

Identify the relevant Elaflex safety break coupling to be replaced

Tools required

- Replacement Elaflex safety break coupling (refer to the Parts Manual for exact part identification).
- Spanner for hose connection (32mm for AdBlue ®, 36mm for 16mm hose, 41mm for 21mm hose, 46mm for 25mm hose)
- Spanner for nozzle (36mm, 41mm or 46mm) or large adjustable spanner

Description of Parts

INSTRUCTIONS

1) Locate the damaged safety break coupling on the nozzle.
2) Follow the instructions described in section 3.1 to remove the nozzle (and safety break coupling) from the end of the hose. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

3) Using one spanner to hold the nozzle stationary, disconnect the safety break from the end of the nozzle using the second spanner. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

4) Connect the new safety break coupling to the relevant nozzle and hose connections using the appropriate sized spanners.
5) Ensure all tools and unused materials are removed.
6) Re-instate power to the dispenser.
7) Test for any leakages.
8) Dispose of all waste accordingly.

3.3.1 RECONNECTING A SEPARATED SAFETY BREAK COUPLING (ELAFLEX RE-USABLE TYPES ONLY)

Before starting the maintenance procedure, please refer to section 2.

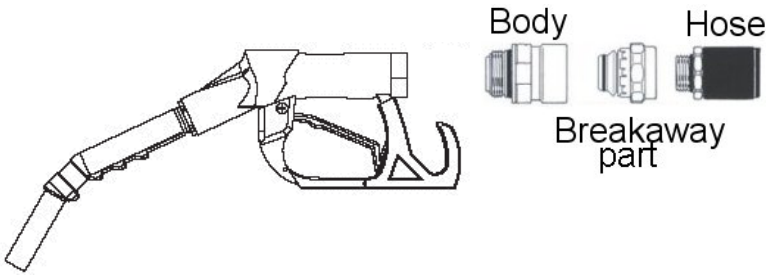
Note: If the nozzle safety break coupling is irreparable then the complete nozzle/safety break assembly must be replaced (refer to section 3.3).

Identify the relevant safety break coupling to be repaired.

Tools required

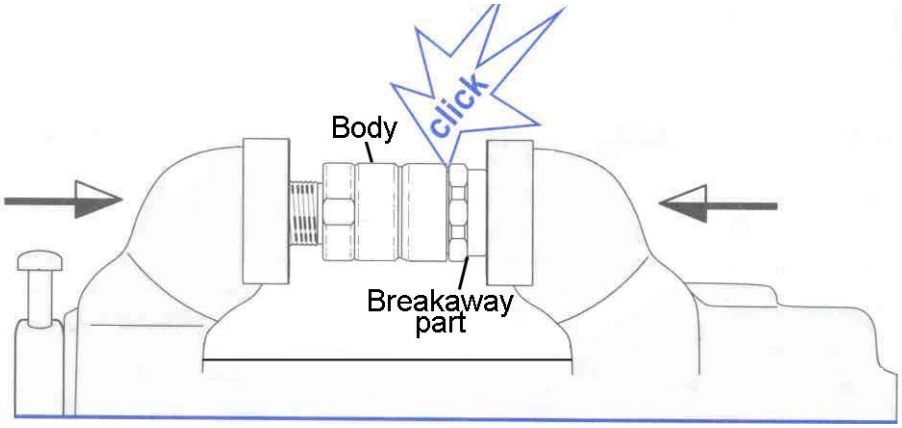
- Vice or clamping device

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 3.3 to remove BOTH PARTS of the separated safety break coupling.
2) Place both parts of the safety break coupling into a vice or similar clamping device and push together until an audible “click” is heard.
3) Re-fit the safety break coupling as described in section 3.3.
4) Ensure all tools and unused materials are removed.
5) Re-instate power to the dispenser.
6) Test for any leakages.
7) Dispose of all waste accordingly.



3.4 Changing a Nozzle Switch

Before starting the maintenance procedure, please refer to section 2.

Ensure the dispenser is isolated and all power is turned off.

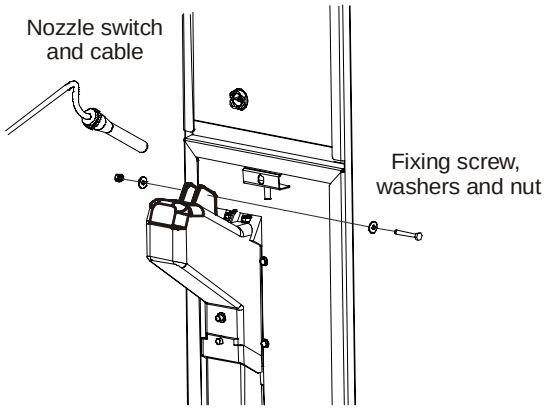
Identify the relevant side of the dispenser with the nozzle switch to be replaced (see section 2.3 for the identification of the dispenser sides). The nozzle connection is accessed from either side A or side B of the calculator head (model dependent).

Tools required

- Replacement nozzle switch (refer to the Parts Manual for exact part identification)
- Small flat head screwdriver
- 7mm, 24mm and adjustable spanners
- 5.5mm and 7mm nut runners
- 3mm allen key
- Wire cutters

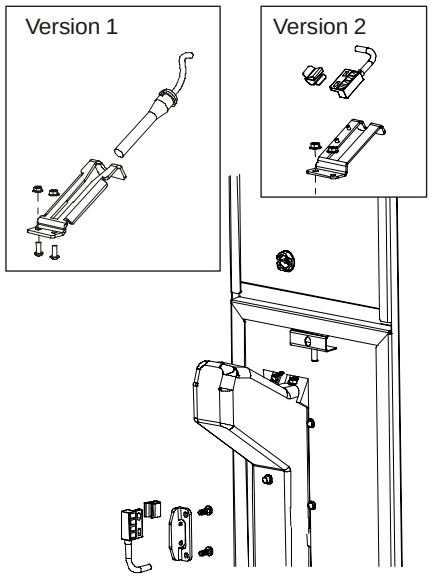
Description of Parts

ALUMINIUM BOOT



PLASTIC BOOT

To be used when no magnet in nozzle guard



With magnet in nozzle guard

INSTRUCTIONS

1) Follow the instructions given in sections 2.5 and 2.6 to access the calculator head and cable glands.

2) Locate the nozzle switch to be changed and carefully lift the relevant nozzle out of the nozzle boot and place in a safe position on the ground.

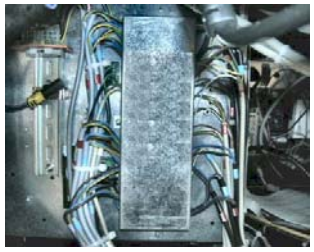
WARNING : BEWARE OF FUEL SPILLAGE.

3) Remove the relevant nozzle panel as described in section 2.6.

4) Locate the relevant nozzle switch on the back of the nozzle boot. Using a 7mm spanner and 7mm nut runner, loosen and remove the relevant nut, screw and washers to release the nozzle switch from the nozzle boot.

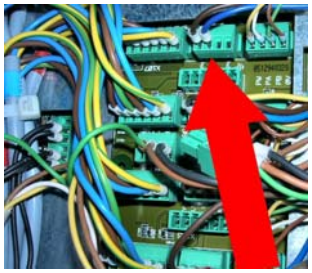
5) Trace the nozzle switch cable up through both glands into the calculator head.

   Note : the nozzle switch cable has identification tags at each end.



6) Locate the nozzle switch cable connection in the calculator head:-

   - **I/O Board connection** - break the W&M seals using wirecutters. Using a screwdriver, loosen and remove the screw on the I/O board cable security cover. Locate the nozzle switch cable connection on the I/O board.
   - **Mainboard connection** - locate the nozzle switch cable connection on the mainboard.



7) Disconnect the nozzle switch cable connection from the relevant board in the calculator.

   Note : take care to note the position of this connection on the relevant board.

8) Using a small screwdriver, remove the connector from the nozzle switch cable.

WARNING : NOTE THE ORDER OF THE COLOURED WIRES IN THE CONNECTOR.

9) Use a 24mm spanner to loosen the relevant glands securing the nozzle switch cable. Pull the entire cable down through the glands to the nozzle boot.
10) Remove the nozzle switch and cable completely.
11) Fit new nozzle switch to nozzle boot and secure in position by refitting the screw, two washers and nut.
12) Feed the nozzle switch cable up through the relevant glands into the calculator head. Secure the cable in position by tightening the relevant glands.
13) Use a small flat head screwdriver to connect the wires to the correct connector.
14) Plug connector into the relevant board in the calculator head.
15) Re-fit the nozzle panel(s) as described in section 2.6.
16) Replace the nozzle securely in the nozzle boot.
17) Close the hydraulic door and lock.
18) Close the calculator head door and lock.
19) Ensure all tools and unused materials are removed.
20) Re-instate power to the dispenser.
21) Test operation of the new nozzle switch.
22) Dispose of all waste accordingly.

3.5 Changing a 40/80 Push Button (on the nozzle panel)

Before starting the maintenance procedure, please refer to section 2.

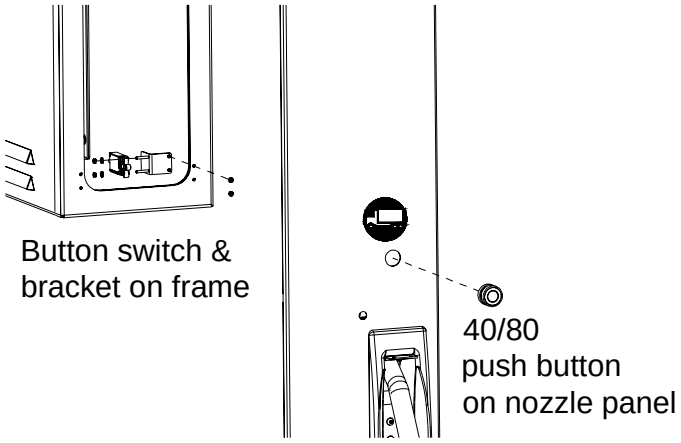
Ensure the dispenser is isolated and all power is turned off.

Identify the relevant side of the dispenser with the push button to be replaced (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement push button (refer to the Parts Manual for exact part identification)
- Small flat head screwdriver
- 5.5mm & 8mm nut runners/spanners
- Large adjustable spanner
- 4mm allen key

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.6 to remove the nozzle panel.

2) Locate the push button on the back of the nozzle panel.

3) Unscrew the button nut on the back of the nozzle panel and remove both parts of the button.

4) Fit new button and secure into position by tightening the button nut on the back of the nozzle panel.

TO REPLACE THE PUSH BUTTON SWITCH (WHERE REQUIRED):-

5) Follow the instructions given in sections 2.5 to gain access to the calculator head.

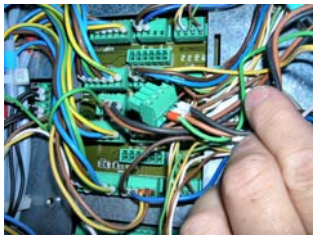
6) Locate the relevant button switch on the frame (behind the nozzle panel) and use a 5.5mm nut runner to loosen and remove the two nuts securing the button bracket to the frame.

7) Using a 5.5mm nut runner, loosen and remove the two nuts and washers on the button switch bracket to release the button switch and cable from the bracket.

8) Trace the button switch cable into the calculator head loosening the relevant gland using the adjustable spanner.

9) Locate the button switch cable connection in the calculator head:-

- **I/O Board connection** - break the W&M seals using wirecutters. Using a screwdriver, loosen and remove the screw on the I/O board cable security cover. Locate the button switch cable connection on the I/O board.
- **Mainboard connection** - locate the button switch cable connection on the mainboard.



10) Disconnect the button switch cable connection from the relevant board in the calculator.

Note : take care to note the position of this connection on the relevant board.

11) Using a small flat head screwdriver, remove the connector from the button switch cable.

WARNING : NOTE THE ORDER OF THE COLOURED WIRES IN THE CONNECTOR.

12) Pull the entire cable down through the unit, loosening glands as required, back to the button.

13) Fit button switch onto the push button bracket and secure in position using the two nuts and washers.

14) Re-fit the two nuts to secure the push button bracket to the frame.

15) Feed the button switch cable though the unit into the calculator head tightening the gland as required.
16) Use a small flat head screwdriver to connect the wires to the correct connector.
17) Plug connector into the relevant board in the calculator head.
18) Re-fit the nozzle panel(s) as described in section 2.6.
19) Replace the nozzle securely in the nozzle boot.
20) Close the hydraulic door and lock.
21) Close the calculator head door and lock.
22) Ensure all tools and unused materials are removed.
23) Re-instate power to the dispenser.
24) Test operation of the new button.
25) Dispose of all waste accordingly.

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CONTENTS

4 MAINTENANCE PROCEDURES - HYDRAULICS

4.1 Changing the external filter on pumps with filterbox

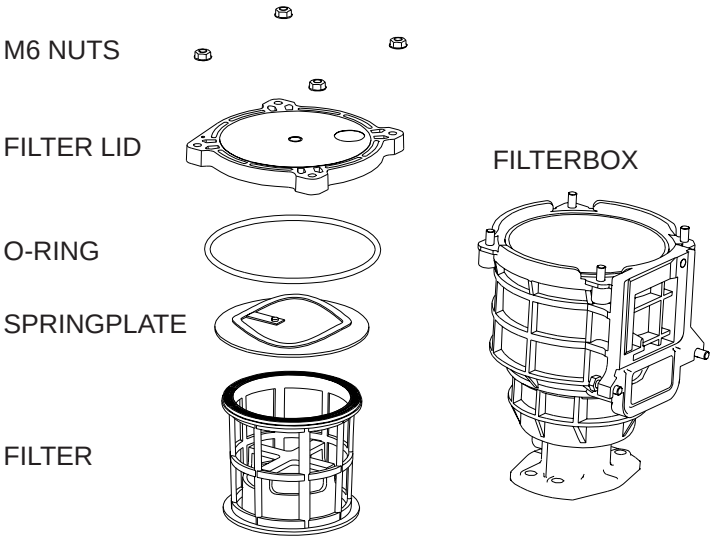
Before starting the maintenance procedure, please refer to section 2.

The filter is accessed from side B of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement filter (refer to the Parts Manual for exact part identification)
- Torque wrench
- Replacement O-ring

Description of Parts

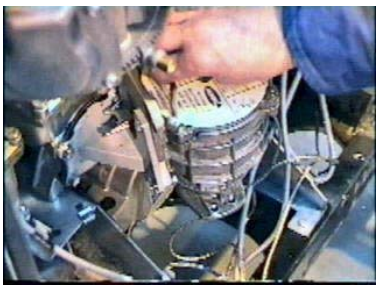


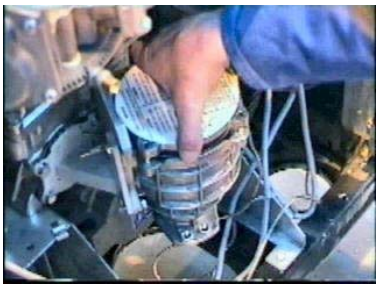
INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Locate the filter box to be replaced.

3) Using the torque wrench, loosen and remove the four nuts on the filter box lid.

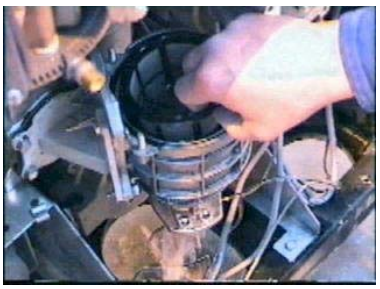




4) Carefully prise off the filter box lid and o-ring and remove completely.

   Note : there may be a release of pressure during this procedure.

5) Remove the filter spring plate below the filter box lid.



6) Remove the filter from inside the filter box. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

7) Fit the new filter.
8) Re-fit the filter spring plate.
9) Re-fit the filter box lid using a new o-ring. Use the torque wrench to tighten the four nuts to 5Nm.
10) Ensure that all tools and unused materials are removed.
11) Secure the hydraulic door to the dispenser and lock.
12) Re-instate power to the dispenser.
13) Dispose of all waste accordingly.

4.2 Changing the internal filter on the EPZ pump

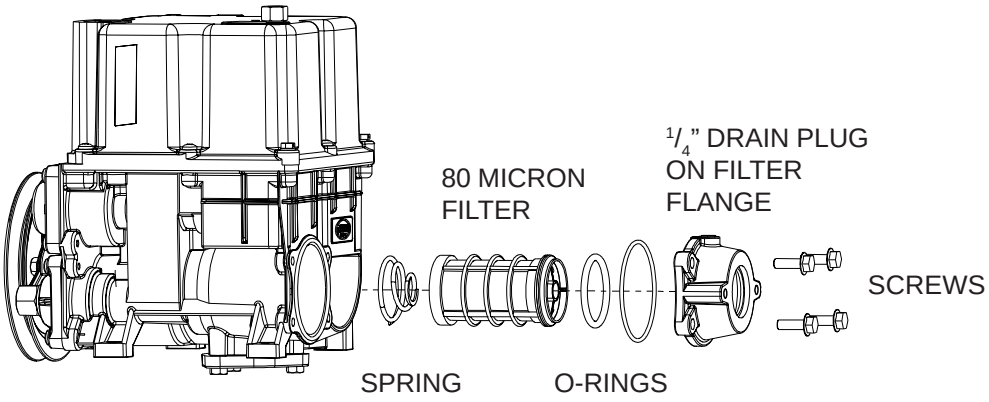
Before starting the maintenance procedure, please refer to section 2.

The filter is accessed from side B of the dispenser (see section 2.2 for the identification of the dispenser sides).

Tools required

- 80 micron replacement filter (refer to the Parts Manual for exact part identification)
- Replacement O-ring (if required) (refer to the Parts Manual for exact part identification)
- Replacement gasket for flexible connection (refer to the Parts Manual for exact part identification)
- 13mm spanner
- 7mm allen key
- Loctite 577 sealant
- Suitable high vacuum grease

Description of Parts

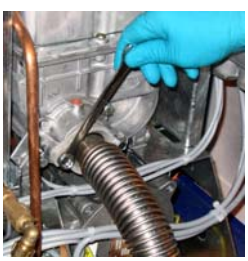


INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Locate the drain plug on top of the filter flange on the relevant EPZ pump.
3) Using a 7mm allen key, loosen and remove the drain plug. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.



4) Using a 13mm spanner, loosen the two bolts on the flange on the flexible connection at the back of the EPZ pump.

   Disconnect the flange and flexible connection from the EPZ pump.

WARNING : BEWARE OF FUEL SPILLAGE.

5) Using a 13mm spanner, loosen and remove the four bolts on the filter flange.

6) Carefully remove the filter flange and filter from the EPZ pump.

Note : there may be a release of pressure during this procedure.

Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

7) Remove the spring from inside the EPZ pump.

Note : the check valve assembly should remain inside the pump during the filter removal.

8) Remove the O-ring from inside the filter flange and fit to the new filter. Use a suitable high vacuum grease (e.g. NLG2) to lubricate both O-rings.

Note : use new O-rings where required.

9) Push the new filter into the flange until secure.

10) Grease the end of the filter and attach the spring.

11) Replace the filter assembly into the EPZ pump.

12) Re-fit the four bolts on the filter flange and tighten securely using the 13mm spanner.

13) Re-fit the drain plug using Loctite 577 and 7mm allen key.

14) Using a 13mm spanner, re-fit the flange and flexible connection to the pump using a new gasket.

15) Ensure that all tools and unused materials are removed.

16) Secure the hydraulic door to the dispenser and lock.

17) Re-instate power to the dispenser.

18) Dispose of all waste accordingly.

4.3 Changing the bypass valve on the PAS V3 pump

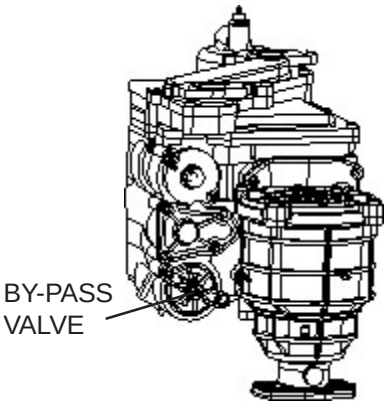
Before starting the maintenance procedure, please refer to section 2.

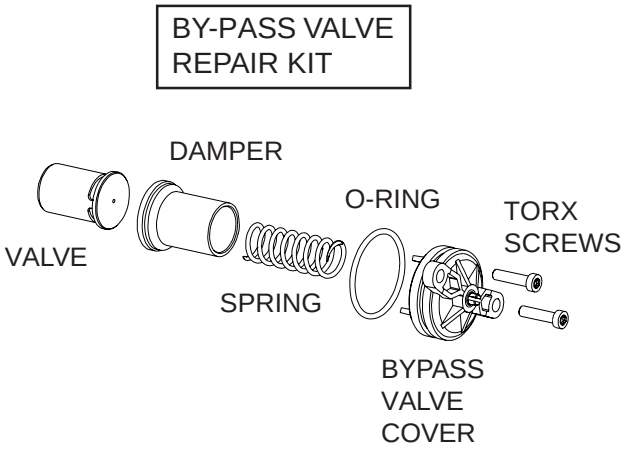
The bypass valve is accessed from side B of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Bypass Valve Repair Kit for PAS V3 Pump (refer to the Parts Manual for exact part identification)
- TX30 bit
- Flathead screwdriver

Description of Parts





INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Locate the bypass valve cover on the pump.

3) Using the TX30 bit, loosen and remove the two screws on the bypass valve cover. Remove the bypass valve cover and o-ring completely.

WARNING : SPRING UNDER TENSION.

4) Carefully remove the bypass valve assembly (spring, damper, valve) from the housing.

5) Fit new bypass valve assembly (spring, damper, valve) into the housing.

6) Re-fit the bypass valve cover using a new o-ring.

7) Re-instate power to the dispenser.

8) Using the flathead screwdriver, adjust the bypass valve as required. Recommended pressure 2 to 2.5 bar (80 litres/minute flow rate) or 2.4 to 3 bar (130 litres/minute flow rate).

9) Ensure that all tools and unused materials are removed.

10) Secure the hydraulic door to the dispenser and lock.

11) Dispose of all waste accordingly.

4.4 Changing the bypass valve on the EPZ pump

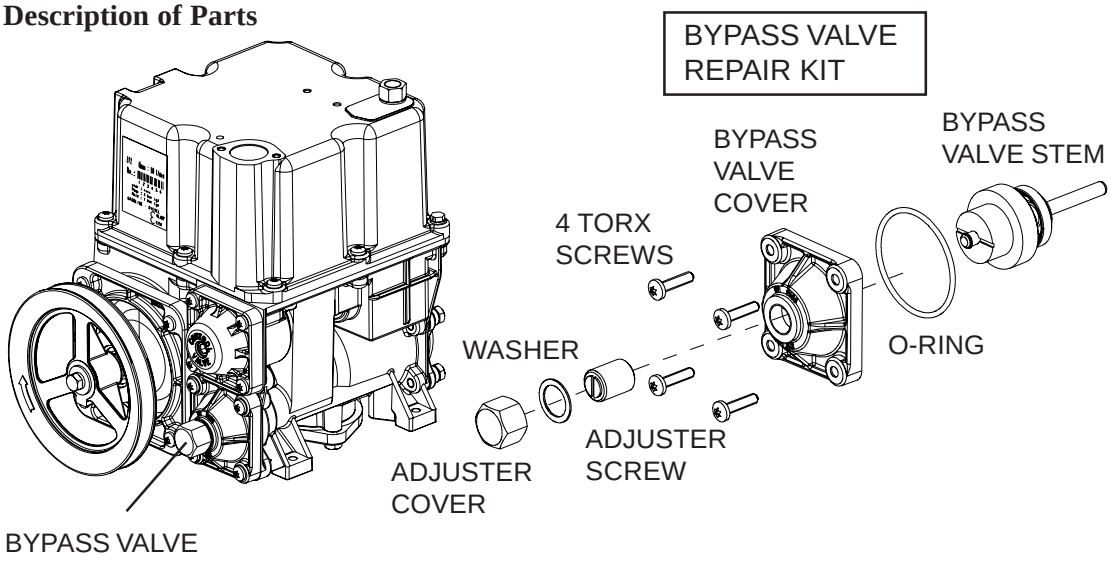
Before starting the maintenance procedure, please refer to section 2.

The bypass valve is accessed from side A of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Bypass Valve Repair Kit for EPZ Pump (refer to the Parts Manual for exact part identification)
- 24mm spanner
- TX30 bit
- Large flathead screwdriver

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Locate the bypass valve cover on the pump.

3) Using the TX30 bit, loosen and remove the four screws on the bypass valve cover. Remove the bypass valve cover completely.

4) Locate and remove the bypass valve stem from the housing.

5) Fit new bypass valve stem into the housing.

6) Re-fit the bypass valve cover.

7) Using the 24mm spanner, remove the adjuster cover.

8) Re-instate power to the dispenser.

9) Using the large flathead screwdriver, adjust the bypass valve as required. Recommended pressure 1.2 to 2.5 bar.

Note : each turn of the bypass adjuster screw is approximately 0.1 bar.

10) Re-fit the adjuster cover.

11) Ensure that all tools and unused materials are removed.

12) Secure the hydraulic door to the dispenser and lock.

13) Dispose of all waste accordingly.

4.5 Changing the V-belt on the motor

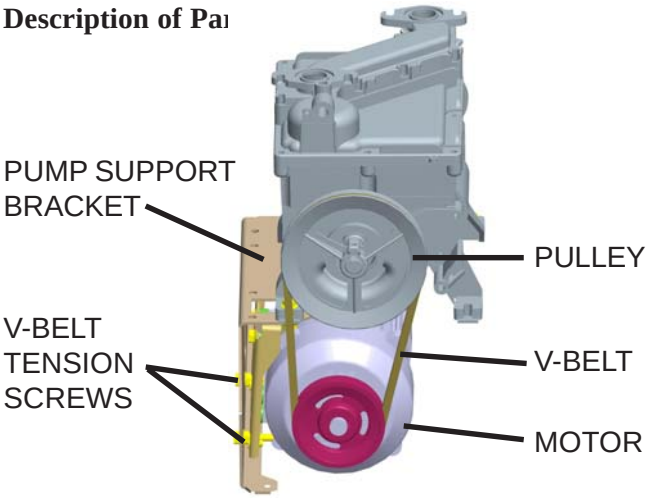
Before starting the maintenance procedure, please refer to section 2.

The motor v-belt is accessed from side A of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement motor v-belt (refer to the Parts Manual for exact part identification)
- 13mm spanner

Description of Pa



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Locate the motor v-belt. Using a 13mm spanner, loosen the two locking nuts on the motor bracket.

3) Using a 13mm spanner, loosen and remove the two motor V-belt tension screws.

4) Remove the motor v-belt completely.

5) Fit new motor v-belt.

6) Using the 13mm spanner, re-fit and tighten the motor v-belt tension screws until the correct tension is achieved.

7) Using the 13mm spanner, tighten the locking nuts against the pump support bracket.

8) Ensure that all tools and unused materials are removed.

9) Re-fit the hydraulic panel to the dispenser and lock.

10) Re-instate power to the dispenser.

11) Test operation of the new v-belt.

12) Dispose of all waste accordingly.

4.6 Changing the pulley on the PAS V3 pump

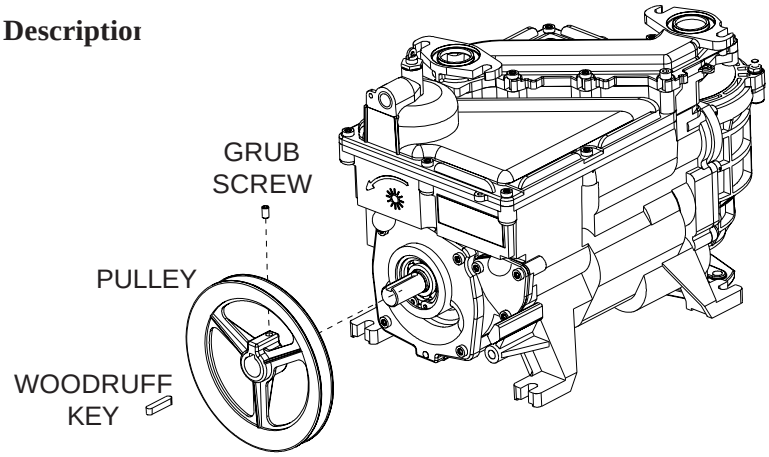
Before starting the maintenance procedure, please refer to section 2.

The pulley is accessed from side A of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement pulley (refer to the Parts Manual for exact part identification)
- Puller tool
- 3mm allen key
- 13mm spanner

Description



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Follow the instructions given in section 4.5 to remove the motor v-belt.

3) Use a 3mm allen key to remove the grub screw on the pulley shaft and place in a safe position.

4) If required, use the puller tool to remove the pulley (and woodruff key) from the PAS pump. Pull from the centre part of the pulley only - do NOT apply force with the puller fingers to the outer edges of the pulley.

Note: Do not lose the woodruff key.

5) Fit new pulley to the PAS pump and re-fit the woodruff key.

6) Re-fit the grub screw to secure the pulley in position.
7) Re-fit the v-belt and adjust as described in section 4.5.
8) Ensure that all tools and unused materials are removed.
9) Secure the hydraulic door to the dispenser and lock.
10) Re-instate power to the dispenser.
11) Dispose of all waste accordingly.

4.7 Changing the pulley on the EPZ pump

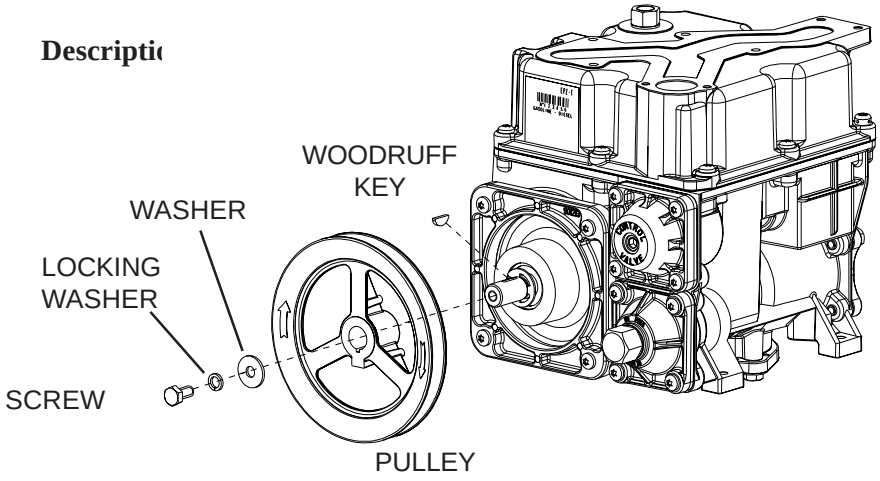
Before starting the maintenance procedure, please refer to section 2.

The pulley is accessed from side A of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement pulley (refer to the Parts Manual for exact part identification)
- Puller tool
- 13mm spanner

Descriptio



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Follow the instructions given in section 4.5 to remove the motor v-belt.

3) Use a 13mm spanner to remove the hex head screw and two washers on the pulley shaft and place in a safe position .

4) If required, use the puller tool to remove the pulley (and woodruff key) from the EPZ pump. Pull from the centre part of the pulley only - do NOT apply force with the puller fingers to the outer edges of the pulley.

   Note: Do not lose the woodruff key.

5) Fit new pulley to the EPZ pump and re-fit the woodruff key.
6) Re-fit the two washers and screw to secure the pulley in position.
7) Re-fit the v-belt and adjust as described in section 4.5.
8) Ensure that all tools and unused materials are removed.
9) Secure the hydraulic door to the dispenser and lock.
10) Re-instate power to the dispenser.
11) Dispose of all waste accordingly.

4.8 Changing the PAS V3 pump

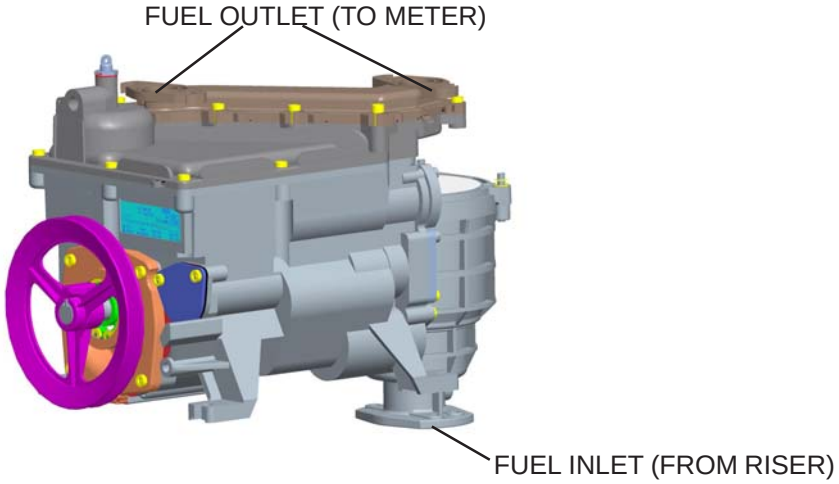
Before starting the maintenance procedure, please refer to section 2.

The pump is accessed from both sides of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement pumping unit (refer to the Parts Manual for exact part identification)
- 22mm, 15mm, 13mm and 10mm spanners
- Screwdriver

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Identify the pump to be replaced. Locate the associated filter box on side B of the dispenser.

3) Using a 15mm spanner, loosen and remove the two bolts on the flexible connection to the filter box. Remove the gasket. Move the flexible connection clear of the filter box.

WARNING : BEWARE OF FUEL SPILLAGE.

4) Lift the non-return valve on the filter box. Drain the fuel in the pumping unit into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

5) Follow the instructions given in section 4.5 to remove the v-belt.

6) Using a 13mm spanner, remove the two screws and nuts on the meter connection at the top of the pump to disconnect the fuel outlet pipe.

7) Using a 13mm spanner, loosen and remove the four screws on the motor support bracket at the bottom of the pump.

8) If vent pipes are fitted as an option, use a 22mm spanner to disconnect the bolts on the pump unit and driptray. Remove the vent pipe completely.

9) Pull the motor cabling clear of the filter box.

10) Carefully disconnect the meter(s).

WARNING : BEWARE OF FUEL SPILLAGE.

11) From side B of the dispenser, slide the pump and filter box out towards the filter box end.

Note : ensure the motor cabling is clear of the filter box.

WARNING : BEWARE OF FUEL SPILLAGE DURING THE REMOVAL.

12) Remove the plug/protective hygiene cover on the filter of the new pump.

13) Position the new pump by sliding it into the unit from side B of the dispenser.

Note : ensure the motor cabling is clear of the filter box.

14) Using a 13mm spanner, re-fit the four screws on the support bracket below the pump unit to secure the pump into position.

15) Using a 13mm spanner, re-fit the two screws and nuts on the fuel outlet pipe on top of the pump using new o-rings.

16) Follow the instructions given in section 4.5 to re-fit and adjust the motor v-belt.

17) If removed, re-fit the vent pipes.

18) Using a 15mm spanner, re-fit the flexible connection to the filter box.

19) Ensure that all tools and unused materials are removed.

20) Secure the hydraulic doors to both sides of the dispenser and lock.

21) Re-instate power to the dispenser.

22 Test operation of the new pump.

23) Dispose of all waste accordingly.

4.9 Changing the EPZ pump

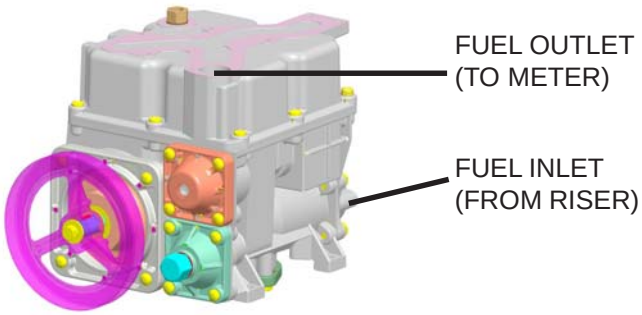
Before starting the maintenance procedure, please refer to section 2.

The pump is accessed from both sides of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement pumping unit (refer to the Parts Manual for exact part identification)
- 22mm, 15mm, 13mm and 10mm spanners
- 7mm allen key
- Screwdriver
- Loctite 577 sealant

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.
2) Identify the pump to be replaced.

3) **EPZ PUMPS WITH EXTERNAL FILTER BOX ONLY:-**
   - Locate the associated filter box on side B of the dispenser.
   - Using a 15mm spanner, loosen and remove the bolts on the flexible connection to the filter box. Remove the gasket. Move the flexible connection clear of the filter box.

WARNING : BEWARE OF FUEL SPILLAGE.

- Lift the non-return valve on the filter box. Drain the fuel in the pumping unit into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

4) **EPZ PUMPS WITH INTERNAL FILTER ONLY:-**
   - Locate the drain plug on top of the filter flange on the relevant EPZ pump.
   - Using a 7mm allen key, loosen and remove the drain plug. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

- Using a 13mm spanner, loosen the two screws on the flange on the flexible connection at the back of the EPZ pump.
- Disconnect the flange and flexible connection from the EPZ pump and move clear of the pump.

WARNING : BEWARE OF FUEL SPILLAGE.

5) Using a 10mm spanner, loosen and remove the two screws on the meter connection at the top of the pump to disconnect the fuel outlet pipe.

WARNING : BEWARE OF FUEL SPILLAGE.

6) If vent pipes are fitted as an option, use a 22mm spanner to disconnect the bolts on the pump unit and driptray. Remove the vent pipe completely.

NOTE : Adjacent motor(s) will need to be lowered into the driptray in order to access the screws fixing the pump to pump support bracket.

7) Follow the instructions given in section 4.5 to remove the v-belt.

8) Carefully lift motor (and bracket) out of the slots in the pump support bracket and lower into driptray taking care not to damage the motor cables.

9) Using a 13mm spanner, loosen and remove the four screws on the pump support bracket below the pump. Carefully remove the four isolation pads and retain for re-fitting.

10) **EPZ PUMPS WITH EXTERNAL FILTER BOX ONLY**

- From side B of the dispenser, slide the pump and filter box out towards the filter box end.
- Remove the pump unit completely.

Note : Ensure the motor cabling is clear of the filter box.

WARNING : BEWARE OF FUEL SPILLAGE.

11) **EPZ PUMPS WITH INTERNAL FILTER ONLY**

- From side A of the dispenser, slide the pump out towards the pulley end.
- Remove the pump unit completely.

WARNING : BEWARE OF FUEL SPILLAGE.

12) Remove the plug/protective hygiene cover on the filter on the new pump.

13) Position the new pump by sliding it into the unit from the appropriate side of the dispenser (side A if internal filter or side B if external filter box). Ensure the isolation pads are re-fitted between the pump and bracket.

Note : where applicable, ensure the motor cabling is clear of the filter box.

14) Using a 13mm spanner, re-fit the four screws on the bracket below the pump unit to secure the pump into position.

15) Using a 10mm spanner, re-fit the two screws on the meter connection to the fuel outlet pipe on top of the pump using new o-rings.

16) If lowered, re-fit the motor(s) into the slots on the pump support bracket and tighten the tension screws and locking nuts.

17) Check the alignment of the pulley between the motor and the pump.

18) Follow the instructions given in section 4.5 to re-fit and adjust the motor v-belt.

19) If removed, re-fit the vent pipes.

20) **EPZ PUMPS WITH INTERNAL FILTER ONLY:-**

- Using a 7mm allen key, re-fit the drain plug using Loctite 577.
- Using a 13mm spanner, re-fit the screws to secure the flexible connection to the rear of the EPZ pump using a new gasket if required.

21) **EPZ PUMPS WITH EXTERNAL FILTER BOX ONLY:-**

- Using a 15mm spanner, re-fit the bolts to secure the flexible connection to the external filter box on new pump using a new gasket if required.

22) Ensure that all tools and unused materials are removed.

23) Secure the hydraulic doors to both sides of the dispenser and lock.

24) Re-instate power to the dispenser.

25) Test operation of the new pump.

26) Dispose of all waste accordingly.

4.10 Changing the motor

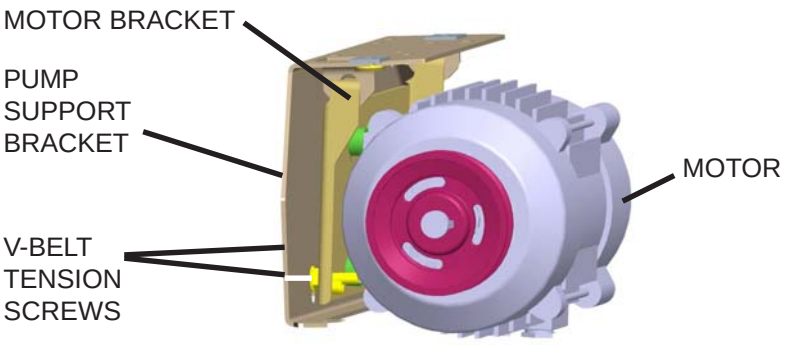
Before starting the maintenance procedure, please refer to section 2.

The motor is accessed from both sides of the dispenser (see section 2.3 for the identification of the dispenser sides) and the cabling requires access to the calculator head.

Tools required

- Replacement motor including cables and bracket (refer to the Parts Manual for exact part identification)
- 10mm, 13mm and 32mm spanners
- Small screwdriver
- 6mm allen key
- Wire cutters
- Replacement Weights & Measurements seals

Description of Parts

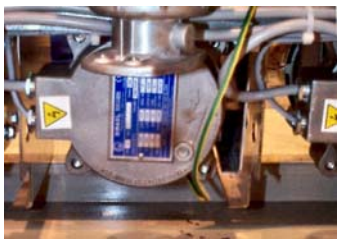


INSTRUCTIONS

1) Follow the instructions given in sections 2.4 and 2.6 to gain access to the hydraulic area and the cable glands.

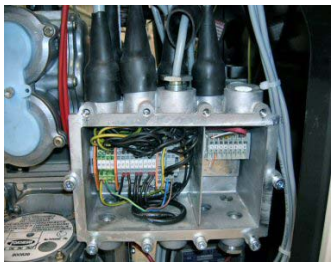
2) Using a 6mm allen key, loosen and remove the ten bolts on the junction box cover on side B of the dispenser. Remove the junction box cover completely.

3) Identify the motor to be replaced.



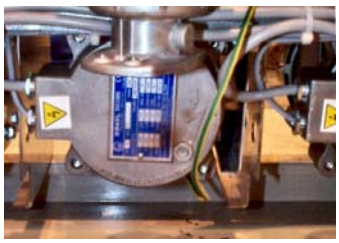
4) From side B of the dispenser, identify the motor power cable and trace to the junction box.

Note : the cable has an identification tag at each end.



5) Cut the cable ties as required using the wire cutters. Push up the sheath covering the relevant cable and gland and loosen the gland in the junction box using a 32mm spanner.

6) Using a small screwdriver, disconnect the motor power cable in the junction box.



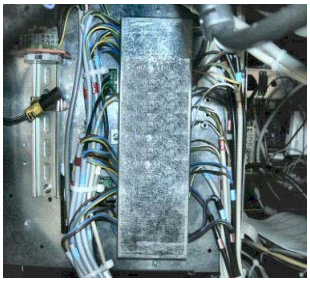
7) Remove the motor power cable from the junction box, remove the sheath completely and pull the cable through to the motor.

8) Follow the instructions given in section 2.5 to gain access to the calculator head.

9) From side B of the dispenser, identify the motor control cable and trace to the calculator head.

Note : the cable has an identification tag at each end.

10) Cut the cable ties as required using the wire cutters. Using a 32mm spanner, loosen the relevant glands inside the hose management system and inside the calculator head.



11) If a centre plate cover is fitted, break the W&M seal using the wire cutters.

12) Using a screwdriver, loosen and remove the screw on the centre plate cover. Remove the centre plate cover completely to gain access to the motor control connection.

13) Disconnect the motor control cable connection from the mainboard in the calculator head.

Note : remember the position of this connection.

14) Using a small screwdriver, remove the connector from the motor control cable.

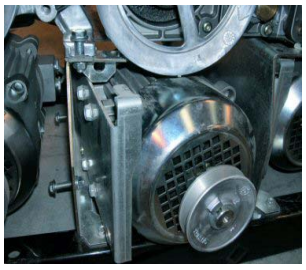
15) Pull the motor control cable down from the calculator head through the unit to the motor.

16) Using a 10mm spanner, disconnect the motor earth wire.

Note : ensure that the cables are only attached at the motor end.

17) Follow the instructions given in section 4.5 to remove the motor v-belt.

18) From side A of the dispenser, pull the motor forwards to release it from the slots in the pump support bracket.



19) From side A of the dispenser, lift the motor, cables and bracket out of the unit.

20) Using a 13mm spanner, loosen and remove the four screws on the motor bracket and remove the bracket completely. Re-fit the motor bracket to the new motor.

21) Using a crosshead screwdriver, disconnect the earth wire from the motor and fit to the new motor.

22) From side A of the dispenser, position the motor into the slots on the pump support bracket.

23) Check the alignment of the pulley between the motor and the pump.

24) Follow the instructions given in section 4.5 to re-fit and adjust the motor v-belt.

25) Feed the motor control cable up the unit through the glands and into the calculator head. Replace the cable ties and tighten the relevant glands using a 32mm spanner.

Note : ensure that the cable is routed correctly and contained accordingly.

26) Using a small screwdriver, re-fit the connector to the motor control cable.

Note : refer to the wiring diagram in section 7.

27) Re-connect the motor control cable connection to the mainboard in the calculator head.

Note : refer to the wiring diagram in section 7.

28) If removed, re-fit the centre plate cover and apply new Weights & Measurements seals.

Note : qualification for carrying out this task may vary by country.

29) Feed the motor power cable through the dispenser to the junction box.

30) Fit the sheath onto the motor power cable and feed the cable through the gland into the junction box. Replace the cable ties and tighten the relevant gland using a 32mm spanner.

Note : ensure that the cable is routed correctly and contained accordingly.

31) Using a small screwdriver, re-connect the motor power cable in the junction box.

Note : refer to the wiring diagrams in section 7.

32) Using a 6mm allen key, re-fit the junction box cover.

33) Ensure that all tools and unused materials are removed.

34) Close the calculator head access door and lock.

35) Re-fit the nozzle panel.

36) Re-fit the hydraulic doors to the dispenser and lock.

37) Re-instate power to the dispenser.

38) Test operation of the new motor and check the direction of the motor rotation is correct.

39) Dispose of all waste accordingly.

4.10.1 MOTOR RELAYS

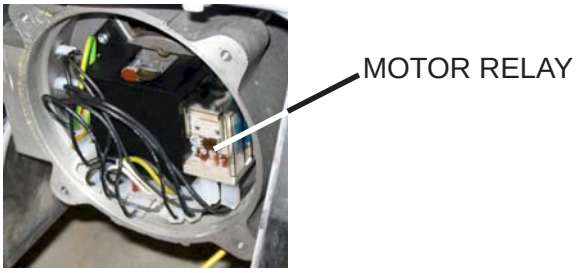
Before starting the maintenance procedure, please refer to section 2.

The motor relays are accessed from side B of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Various sized allen keys
- Small magnetic cross head screwdriver
- Cross head screwdriver

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) **EPZ PUMPS ONLY**

- Locate the drain plug on top of the filter flange on the relevant EPZ pump.
- Using a 7mm allen key, loosen and remove the drain plug. Drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

- Using a 13mm spanner, loosen the two bolts on the flange on the flexible connection at the back of the EPZ pump.
- Disconnect the flange and flexible connection from the EPZ pump.

WARNING : BEWARE OF FUEL SPILLAGE.

3) **PAS V3 PUMPS ONLY**

- Using a 17mm spanner, loosen and remove the bolts on the flexible connection to the filter box. Remove the gasket. Move the flexible connection clear of the filter box.

WARNING : BEWARE OF FUEL SPILLAGE.

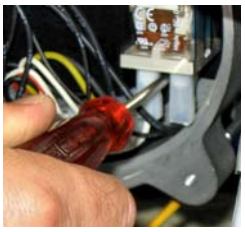
- Lift the non-return valve on the filter box. Drain the fuel in the pumping unit into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

4) Locate the rear cover of the motor. Use an allen key to loosen and remove the four hex head screws on the rear cover.

5) Remove the rear cover completely and place in a safe position.

6) Use a magnetic cross head screwdriver to loosen and remove the top mounting screw above the motor relay.



7) Use a cross head screwdriver to loosen the bottom mounting screw below the motor relay.

Note: Do not remove this screw.

8) Remove the connectors from the motor relay and re-fit to the new relay.

9) Position the new motor relay, re-fit the top mounting screw and tighten the bottom mounting screws to secure in position.

10) Re-fit the rear cover and use the allen key to tighten the four hex head screws to secure in position.

WARNING: ENSURE THE RELAY WIRES ARE CLEAR PRIOR TO RE-FITTING THE REAR COVER. IF REQUIRED, PUSH THE WIRES BACK INTO THE MOTOR.

11) Ensure that all tools and unused materials are removed.

12) Secure the hydraulic door to the dispenser and lock.

13) Re-instate power to the dispenser.

14) Dispose of all waste accordingly.

4.10.2 MOTOR CENTRIFUGAL SWITCH (SINGLE PHASE MOTORS ONLY)

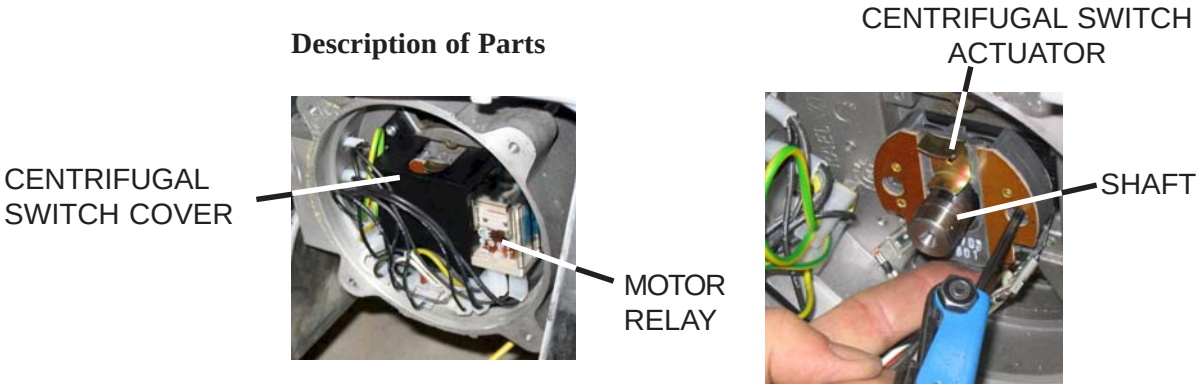
Before starting the maintenance procedure, please refer to section 2.

The centrifugal switch is accessed from side B of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Various sized allen keys
- Small magnetic cross head screwdriver
- Cross head screwdriver

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Follow instructions in section 4.10.1 to remove the motor relay from the centrifugal switch cover.

3) Disconnect the furthest left spade from the terminal rail.

4) Use a magnetic cross head screwdriver to loosen and remove the two screws on the terminal rail. Move the terminal rail clear of the centrifugal switch cover.

5) Use the magnetic cross head screwdriver to loosen and remove the remaining two screws on the black plastic centrifugal switch cover.

6) Carefully remove the switch cover completely and place in a safe position.

7) Use a small allen key to loosen the grub screw on the rotating section of the centrifugal switch. Remove the rotating section completely and place in a safe position.

8) Use an alley key to loosen the two screws on the centrifugal switch.

9) Remove the two screws, centrifugal switch and black plastic block.

10) Disconnect the terminals from the centrifugal switch and re-connect to the replacement centrifugal switch.

11) Re-fit the two screws and black plastic block to the new centrifugal switch and secure to the motor.

IMPORTANT : Position the centrifugal switch so that the inner actuator finger is as far away from the shaft as possible.

12) Re-fit the rotating section to the centrifugal switch and secure to the motor by tightening the grub screw.
13) Re-fit the centrifugal switch cover and secure in position by tightening the two short screws.

    Note: Use the shorter screws for the centrifugal switch cover and the longer screws for the terminal rail.

14) Re-fit the two screws onto the terminal rail and secure to the motor.
15) Re-connect the furthest left spade to the terminal rail.

    IMPORTANT: This connector must be re-connected.
16) Re-fit the motor relay and secure in position by tightening the top and bottom mounting screws.
17) Re-fit the rear cover and use the allen key to refit the four hex head screws to secure in position.

WARNING: ENSURE ALL RELAY WIRES ARE CLEAR PRIOR TO RE-FITTING THE REAR COVER. IF REQUIRED, PUSH THE WIRES BACK INTO THE MOTOR.

18) Ensure that all tools and unused materials are removed.
19) Secure the hydraulic door to the dispenser and lock.
20) Re-instate power to the dispenser.
21) Dispose of all waste accordingly.

4.11 Changing the SM80 Meter

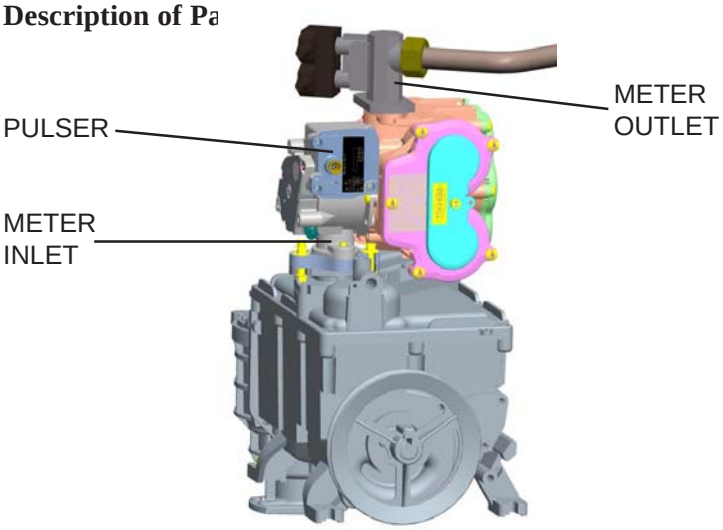
Before starting the maintenance procedure, please refer to section 2.

Identify the relevant side of the dispenser with the meter to be replaced (see section 2.2 for the identification of the dispenser sides).

Tools required

- Replacement meter excluding pulser (refer to the Parts Manual for exact part identification)
- Replacement Weights & Measurements seals
- 10mm and 13mm spanners
- 3mm allen key
- Flat head & cross head screwdriver
- Wire cutters

Description of Pa



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Where fitted, use a flat head screwdriver to loosen and remove the five screws on the type plate bracket.

3) Use a cross head screwdriver to loosen and remove the six screws and washers on the hydraulic top plate.

4) Using a 10mm spanner, loosen and remove the nut and serrated washer on the underside of the top plate to disconnect the earth cable.

5) Carefully lift the hydraulic top plate out and place in a safe position.

6) Use the wirecutters to remove the W&M seals from the meter and pulser.

7) Using a 3mm allen key, loosen and remove the four hex cap screws on the pulser casing. Disconnect the pulser and cable from the pulser casing and move clear of the meter.

8) **EPZ PUMPS ONLY**

- Using a 10mm spanner, loosen and remove the two screws on the pump connection at the bottom of the meter to disconnect the meter inlet pipe.
- Disconnect the inlet pipe completely.

WARNING : BEWARE OF FUEL SPILLAGE.

9) **PAS V3 PUMPS ONLY**

- Using a 13mm spanner, loosen and remove the two screws and nuts on the pump connection at the bottom of the meter to disconnect the meter inlet pipe.
- Disconnect the inlet pipe completely.

WARNING : BEWARE OF FUEL SPILLAGE.

10) Using a 13mm spanner, loosen and remove the two screws on the meter outlet pipe at the top of the meter.

11) Disconnect the meter outlet pipe and remove o-ring completely.

WARNING : BEWARE OF FUEL SPILLAGE.

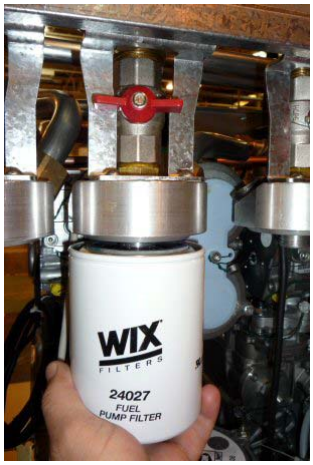
12) Carefully lift the meter out of the dispenser and place in a safe position.

WARNING : BEWARE OF FUEL SPILLAGE.

13) Position the new meter onto the pump and tighten the two screws on the pump connection to secure in position.
14) Re-fit the meter outlet pipe to the top of the meter using new o-rings and secure in position by tightening the two screws
15) Fit the new pulser into the pulser casing.
16) Using a 3mm allen key, re-fit and tighten the four screws on the pulser casing.
17) Apply new W&M seals to the pulser and meter.
18) Ensure that all tools and unused materials are removed.
19) Re-fit the hydraulic doors to the dispenser and lock.
20) Re-instate power to the dispenser.
21) Test operation of the new meter.
22) Dispose of all waste accordingly.

4.12 Changing the Spin on Filter (Option)

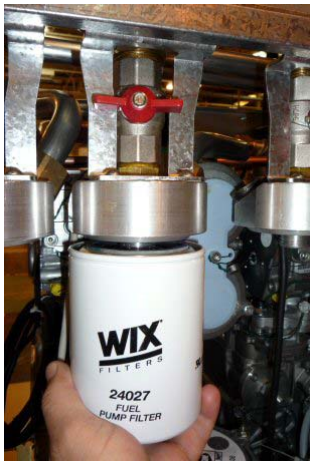
1) Within the hydraulics section, locate the spin on filter housing and ensure all valves are in the closed position. (Horizontal)



2) Unscrew the filter, remove it from the holder and store it in a safe place.

WARNING : BEWARE OF FUEL SPILLAGE.

3) Remove the replacement filter from its packaging and apply a film of oil around the gasket. Recommended filter Wix 24027.



4) Carefully place the filter in the housing and begin to tighten by hand until the gasket has made contact. Apply another 3/4 of a turn.

Note : Do not over tighten the filter.

5) When the filter is firmly in place, turn the ball valve to the open position. (Vertical)

The procedure is now complete.

Note : Ensure that the line is subsequently bled to release any air in the system.

CONTENTS

5 MAINTENANCE PROCEDURES - ELECTRONICS

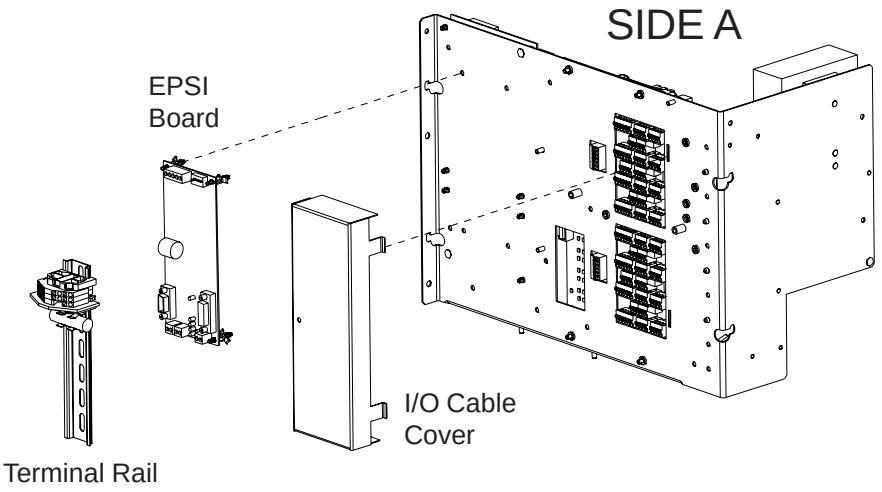
Each side of the dispenser house different electronics depending on the dispenser model and the options ordered.

The pictures and photographs in this section are for graphical representation only and may vary according to model ordered.

5.1 Calculator Head Components

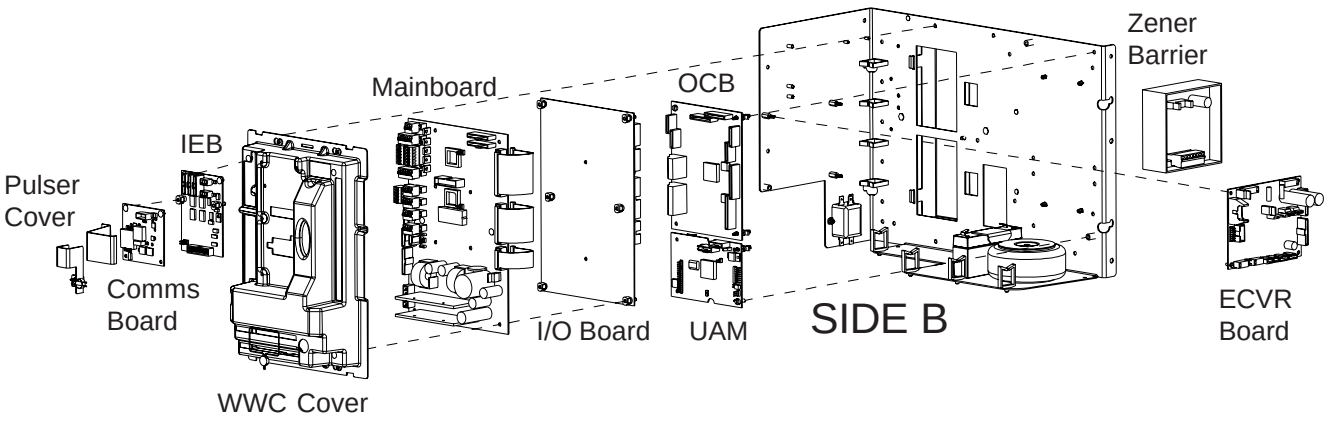
Side A of the dispenser typically houses the following:-

- I/O Board connections
- EPSI Board (optional)
- Terminal Rail e.g. for Tilt sensor (optional)



Side B of the dispenser typically houses the following:-

- Input/Output (I/O) Board
- Input/Output Extension Board (IEB)
- WWC Mainboard
- Comms Board
- Battery & Toroidal Power Transformer
- ECVR Board & Zener Barrier



5.2 Changing a fuse in the Calculator Head

Before starting the maintenance procedure, please refer to section 2.

Ensure the dispenser is isolated and all power is turned off.

The fuses are accessed from side B of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement fuse
- Flathead screwdriver

INSTRUCTIONS

1) Follow the instructions given in section 2.5 for gaining access to the calculator head.
2) Locate the fuse needing replaced (on DIN rail, centre plate cover or VRC board).

3) **FUSES ON WWC CALCULATOR COVER OR VRC BOARD ONLY:-**
   - Using the flathead screwdriver, make a $^1/_4$ turn anti-clockwise to open the relevant fuse casing to access the fuse.

4) **FUSES ON THE DIN RAIL ONLY:-**
   - Unclip the fuse holder to access fuse.

5) Remove the blown fuse.

6) Fit a new fuse into the casing.

7) **FUSES ON WWC CALCULATOR COVER OR VRC BOARD ONLY:-**
   - Using the flathead screwdriver, make a $^1/_4$ turn clockwise to close the relevant fuse casing.

8) **FUSES ON THE DIN RAIL ONLY:-**
   - Close the fuse holder until it clicks shut.

9) Ensure that all tools and unused materials are removed.
10) Close the calculator head door and lock.
11) Re-instate power to the dispenser.
12) Dispose of all waste accordingly.

5.3 Changing the battery pack

Before starting the maintenance procedure, please refer to section 2.

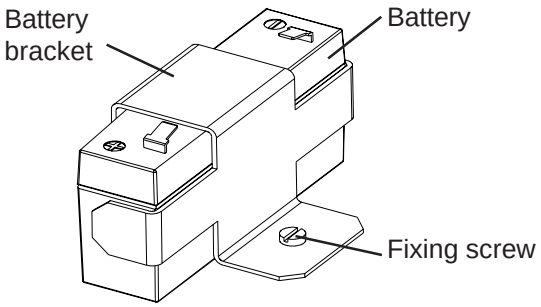
Ensure the dispenser is isolated and all power is turned off.

The battery is accessed from side B of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement battery
- 7mm spanner

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5 to gain access to the calculator head.

2) Locate the battery pack on the bottom of the head.

3) Unplug the two spades connected to the battery.

4) Using a 7mm spanner, loosen and remove the holding nut on the battery bracket.

5) Remove the battery from the bracket.

6) Fit the new battery into the bracket and re-fit the holding nut.

7) Re-connect the spades to the battery ensuring that the correct connection is made.

Note : connect the BROWN wire to + terminal on the battery.

8) Ensure that all tools and unused materials are removed.

9) Close the calculator head door and lock.

10) Re-instate power to the dispenser.

11) Dispose of all waste accordingly.

5.4 Changing the MP-T1 Pulser on the Meter

Before starting the maintenance procedure, please refer to section 2.

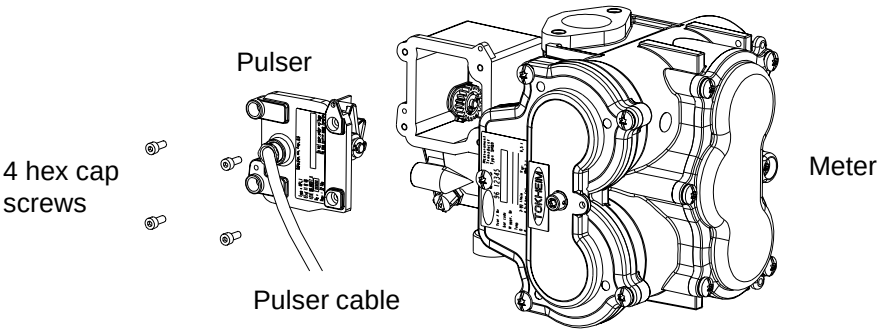
Ensure the dispenser is isolated and all power is turned off.

Identify the relevant side of the dispenser with the pulser to be replaced (see section 2.3 for the identification of the dispenser sides). The pulser connection is accessed from either side A or side B of the calculator head (model dependent).

Tools required

- Replacement pulser including cable (refer to the Parts Manual for exact part identification)
- Replacement Weights & Measurements seals
- Small screwdriver and flat head screwdriver
- 7mm spanner
- 3mm allen key
- Wire cutters

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to 2.6 to gain access to the hydraulic area, calculator head and cable glands.

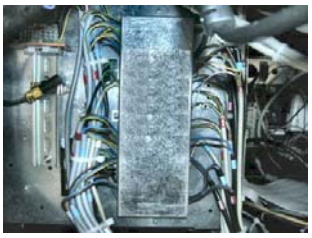
2) Locate the pulser to be replaced and break the W&M seal using the wire cutters. Trace the cable to the calculator head.

Note : the pulser cable has identification tags at each end.

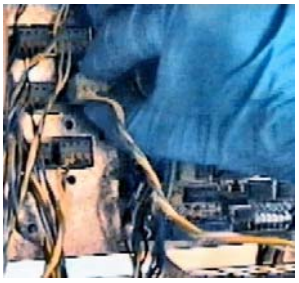
3) Cut the cable ties using the wire cutters and loosen the relevant gland using a 32mm spanner.

4) Disconnect the pulser cable connection in the head:-

- **HOM Board connection** - break the W&M seals using wirecutters. Loosen and remove screw on HOM board sealing bracket. Locate the pulser cable connection on the HOM board.

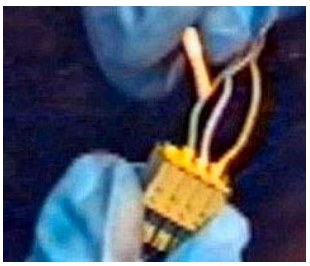


- **I/O Board connection** - break the W&M seals using wirecutters. Loosen and remove the screw on the I/O cable security cover. Locate the pulser cable connection on the I/O board.



- **Mainboard connection** - disconnect all connections on the Comms board and IEB (where fitted). Break the W&M seals on the pulser sealing bracket. Loosen and remove the two screws on the pulser sealing bracket and remove completely. Locate the pulser cable connection on the mainboard.

5) Disconnect the pulser connection from the relevant board in the calculator head.



Note : take care to note the position of this connection on the relevant board.

6) Using a small screwdriver, remove the connector from the pulser cable.

WARNING : NOTE THE ORDER OF THE COLOURED WIRES IN THE CONNECTOR.

7) Pull the pulser cable down from the calculator head, through the unit to the pulser.

8) Using a 3mm allen key, loosen and remove the four hex cap screws on the pulser casing.

9) Disconnect the pulser and cable from the pulser casing and move clear of the meter. Remove the pulser and cable from the pulser casing.

10) Fit the new pulser into the pulser casing.

11) Using a 3mm allen key, re-fit and tighten the four hex cap screws on the pulser casing.

12) Feed the pulser cable back up the unit through the gland and into the calculator head. Replace the cable ties and tighten the relevant gland.

Note : ensure that the cable is routed and contained accordingly.

13) Using a small screwdriver, re-fit the connector to the pulser cable.

Note : refer to the wiring diagram in section 7.

14) Re-connect the pulser cable connection to the relevant board in the calculator head.

Note : refer to the wiring diagram in section 7.

15) If removed, re-fit the pulser sealing bracket, HOM Board sealing bracket and/or I/O cable security cover and apply new Weights & Measurements seals where applicable.

Note: qualification for carrying out this task may vary by country.

16) Ensuring that the installation of the pulser is complete and correct, apply new Weights & Measurements seals to the pulser.

Note: qualification for carrying out this task may vary by country.

17) Ensure that all tools and unused materials are removed.

18) Follow the instructions given in sections 2.6 to re-fit the nozzle panel (s).

19) Close the calculator head door and lock.

20) Re-fit the hydraulic door and lock.

21) Re-instate power to the dispenser.

22) Test operation of the new pulser.

23) Dispose of all waste accordingly.

5.5 Changing the Display Lamp

Before starting the maintenance procedure, please refer to section 2.

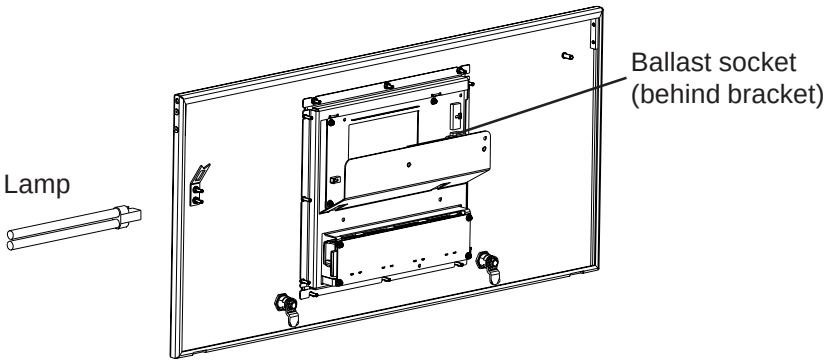
Ensure the dispenser is isolated and all power is turned off.

The lamps are accessed from either side of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement lamp (refer to the Parts Manual for exact part identification)
- Protective gloves

Description of Parts



INSTRUCTIONS

1) Switch off power to the dispenser and allow the lamp to cool.

2) Follow the instructions given in section 2.5 to gain access to the calculator head on the relevant side of the dispenser.

3) Locate the lamp to be replaced on the inside of the electronic door on the relevant side of the dispenser.

Note : Protective gloves must be worn during this procedure to protect against excess heat from lamp.

4) Ensuring the lamp is cool to touch, pull out the lamp to free from the ballast socket.

WARNING : LAMP MAY STILL BE HOT.

5) Fit new lamp into ballast socket.
6) Ensure that all tools and unused materials are removed.
7) Close the calculator head door and lock.
8) Re-instate power to the dispenser.
9) Test operation of the new lamp.
10) Dispose of all waste accordingly.

5.6 Changing the Preset keypad

Before starting the maintenance procedure, please refer to section 2.

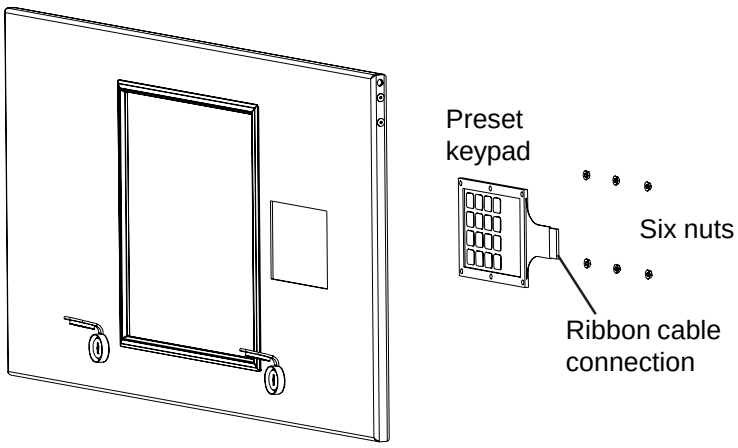
Ensure the dispenser is isolated and all power is turned off.

The preset keypads are accessed from either side of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement preset keypad (refer to the Parts Manual for exact part identification)
- 7mm spanner

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5 to gain access to the calculator head on the relevant side of the dispenser.
2) Locate the preset keypad on the back of the electronic door.
3) Use the 7mm spanner to loosen and remove the six nuts on the preset keypad. Remove the keypad completely and place in a safe position.
4) Disconnect the ribbon cable and re-fit to the new keypad.
5) Position new keypad onto back of the calculator head door and secure in position using the six nuts.
6) Ensure that all tools and unused materials are removed.
7) Close the calculator head door and lock.
8) Re-instate power to the dispenser.
9) Test operation of the new keypad.
10) Dispose of all waste accordingly.

5.7 Changing the Customer Sales Display Board (CSD) or Electro-Mechanical Totaliser Board (EMT)

Before starting the maintenance procedure, please refer to section 2.

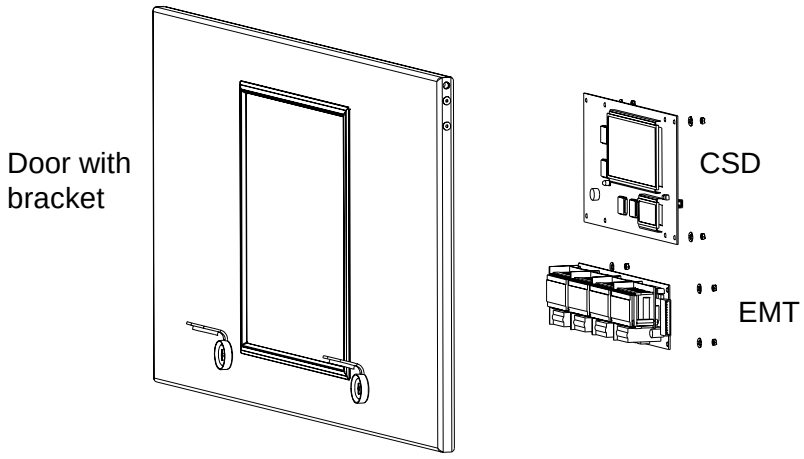
Ensure the dispenser is isolated and all power is turned off.

The Customer Sales Display boards (CSD) are accessed from either side of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

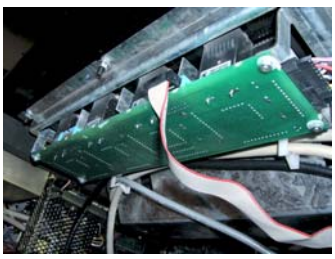
- Replacement CSD or EMT board (refer to the Parts Manual for exact part identification)
- 7mm & 5.5mm spanners
- Replacement W&M seals
- Wirecutters

Description of Parts



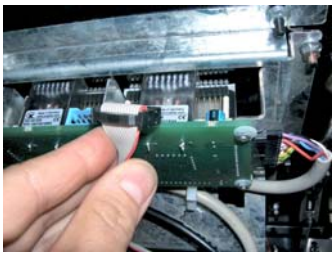
INSTRUCTIONS

1) Follow the instructions given in section 2.5 to gain access to the calculator head on the relevant side of the dispenser.



2) Where fitted, use wirecutters to cut the W&M seals on the EMT security bracket.
3) Where fitted, use a 7mm nut runner to remove the four sealing nuts and washers securing the EMT security bracket to the display bracket.
4) Where fitted, remove the EMT security bracket completely and place in a safe position.

EMT Board only:-



5) Disconnect the tote cable from the EMT board.
6) Where fitted, use wirecutters to cut the W&M seals on the EMT board.

7) Use a 5.5mm nut runner to remove the four M3 nuts and washers that secure the EMT board to the display bracket.

8) Remove the EMT board completely.

9) Fit the new EMT board to the display bracket.

10) Re-fit the four M3 nuts and washers to secure the new EMT board to the display bracket.

11) Where applicable, re-apply the W&M sealing to the new EMT board.

Note: qualification for carrying out this task may vary by country.

12) Re-connect the tote cable to the new EMT board.

CSD Board only:-

13) Disconnect the display cable from the CSD board.

14) Disconnect the infrared cable from the CSD board.

15) Use a 5.5mm spanner or nut runner to loosen and remove the four nuts and washers on the CSD board.

16) Remove the CSD board completely.

17) Fit the new CSD board to the display bracket and re-fit the four nuts and washers to secure in position.

18) Re-connect the display cable and the infrared cable to the CSD board.

19) Where applicable, re-fit the EMT security cover and secure in position.

20) Where applicable, re-apply W&M seals to the EMT security bracket.

Note: qualification for carrying out this task may vary by country.

21) Ensure that all tools and unused materials are removed.

22) Close the calculator head door and lock.

23) Re-instate power to the dispenser.

24) Test operation of the new board(s).

25) Dispose of all waste accordingly.

5.8 Replacing the Calculator Door Plexi Glass & Seal

Before starting the maintenance procedure, please refer to section 2.

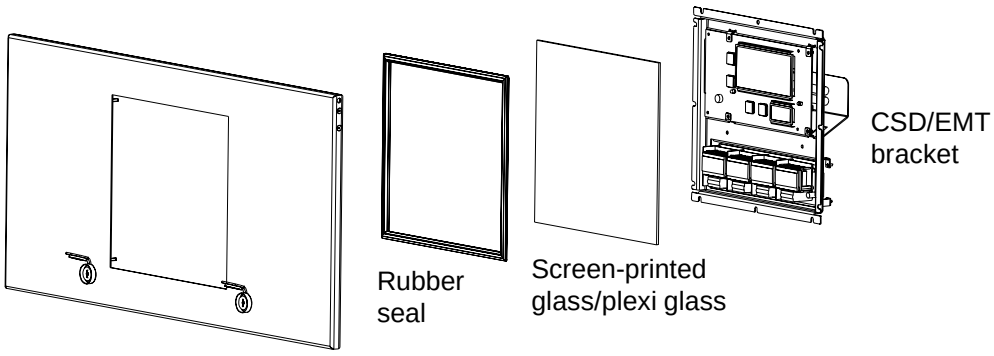
Ensure the dispenser is isolated and all power is turned off.

The calculator doors are accessed from either side of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement Plexi Glass or Seal (refer to the Parts Manual for exact part identification)
- 10mm and 7mm spanners
- Flat head screwdriver
- Replacement W&M seals
- Wirecutters

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5 to gain access to the calculator head on the relevant side of the dispenser.
2) Where fitted, use the wirecutters to cut the W&M seals on the EMT security bracket.
3) Where fitted, use a 7mm nut runner to loosen and remove the four sealing nuts and washers securing the EMT security bracket to the display bracket.
4) Where fitted, remove the EMT security bracket completely and place in a safe position.
5) Use a 7mm spanner to loosen and remove the twelve nuts on the display bracket to release it from the calculator door.

PLEXI GLASS ONLY:-

6) Carefully lift out plexi glass from the calculator door.
7) Position new plexi glass into the calculator door.

RUBBER SEAL ONLY:-

8) Carefully remove plexi glass as described.
9) Carefully remove the rubber seal from the calculator door.
10) Fit new rubber seal to the calculator door.
11) Re-fit plexi glass into the calculator door.

PLEXI GLASS AND/OR RUBBER SEAL:-

12) Re-fit the twelve nuts to secure the display bracket to the calculator door.
13) Where applicable, re-fit the four sealing nuts on the EMT security cover.
14) Where applicable, re-apply the W&M seals to the EMT security cover.
15) Ensure that all tools and unused materials are removed.
16) Close the calculator head door and lock.
17) Re-instate power to the dispenser.
18) Dispose of all waste accordingly.

5.9 Changing the Comms Board or I/O Extension Board

Before starting the maintenance procedure, please refer to section 2.

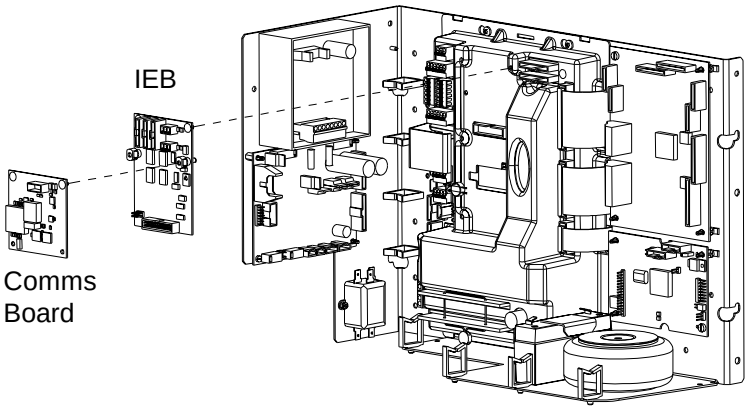
Ensure the dispenser is isolated and all power is turned off.

The Comms Board and I/O Extension Board (IEB) are accessed from side B of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement Comms Board or IEB (refer to the Parts Manual for exact part identification)
- Long nose pliers
- Flat head screwdriver

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5 to gain access to the calculator head on side B of the dispenser.

COMMS BOARD REMOVAL:-

2) Locate the Comms Board on the WWC Centre plate cover (or IEB where fitted) on side A of the dispenser.
3) Locate the connectors on the Comms Board. Disconnect ALL connectors on the board by squeezing the clips and carefully pulling the connector to release.

Note: Take care to note the position of the connector(s) on the Comms Board.

4) Use the long nose pliers to carefully squeeze the plastic pillars to release the Comms Board.
5) Carefully remove the Comms Board.

IEB REMOVAL:-

6) Remove the Comms Board as described.
7) Locate the IEB on the WWC Centre plate on side A of the dispenser.
8) Locate the connectors on the IEB. Disconnect ALL connectors on the board by squeezing the clips and carefully pulling the connector to release.

Note: Take care to note the position of the connector(s) on the IEB.

9) Use the screwdriver to carefully prise the two plastic rivets off the IEB.
10) Carefully remove the IEB.
11) Position new IEB onto the WWC Centre plate and use the long nose pliers to re-fit the two plastic rivets to secure.

COMMS BOARD AND/OR IEB:-

12) Position (new) Comms Board onto the plastic pillars on the WWC Centre plate cover (or IEB where fitted) using the long nose pliers.
13) Ensure that all tools and unused materials are removed.
14) Close the calculator head door and lock.
15) Re-instate power to the dispenser.
16) Test operation of the new board(s).
17) Dispose of all waste accordingly.

5.10 Replacing the I/O Board or Mainboard

Before starting the maintenance procedure, please refer to section 2.

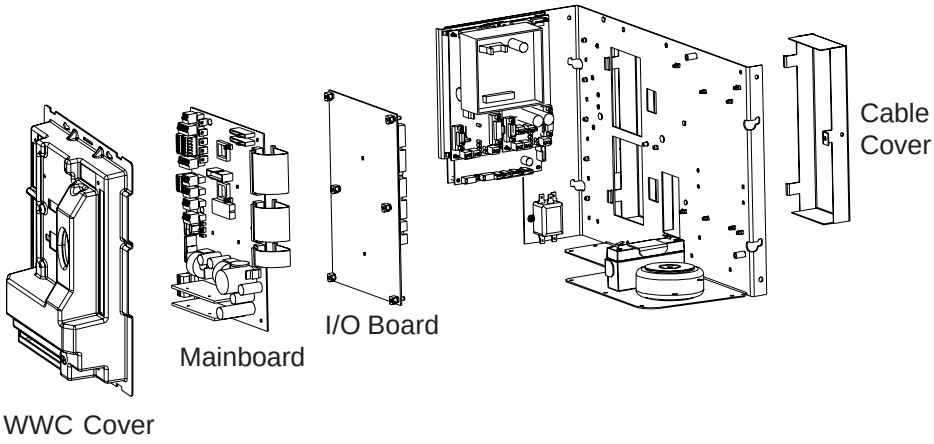
Ensure the dispenser is isolated and all power is turned off.

The I/O Board and Mainboard are accessed from both sides of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement I/O Board or Mainboard (refer to the Parts Manual for exact part identification)
- Flat head screwdriver
- Cross head screwdriver
- Replacement W&M seals
- Wirecutters
- Long nose pliers

Description of Parts

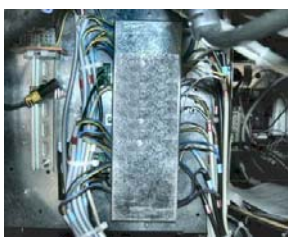


INSTRUCTIONS

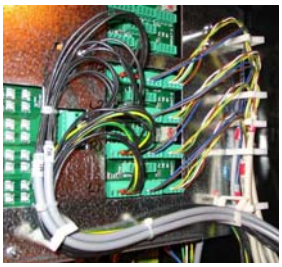
1) Follow the instructions given in section 2.5 to gain access to the calculator head.
2) Follow the instructions in section 5.9 to remove the Comms Board and IEB (where fitted).

DISCONNECTION OF I/O BOARD CONNECTIONS (WHERE FITTED):-

3) Locate the I/O cable security cover on side A of the calculator head - refer to section 5.1.
4) Break the W&M seal on the I/O cable security cover using the wire cutters.
5) Use the flathead screwdriver to loosen and remove the single screw on the I/O cable security cover. Remove the cover completely and store in a safe position.



6) Locate the connectors and cables on the back of the I/O Board. Disconnect ALL connectors and cables from the board.



Note: Take care to note the position of the connector(s) on the I/O Board.

REMOVAL OF WWC COVER ASSEMBLY:-

7) Locate the WWC cover assembly (including Mainboard and I/O Board where fitted) on the WWC Centre plate on side A of the dispenser.

8) Use the wirecutters to cut the W&M seals on the heat sinks on the bottom of the WWC cover.

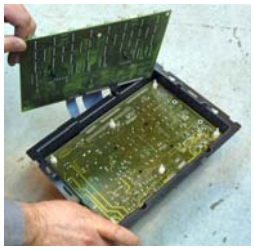
9) Locate the connectors and cables on the WWC cover. Disconnect ALL connectors and cables from the WWC cover.

Note: Take care to note the position of the connector(s) on the WWC Cover.

10) Use the cross head screwdriver to loosen the four screws on the WWC cover key slots.

11) Carefully remove the WWC cover assembly from the WWC Centre plate.

REMOVAL OF I/O BOARD (WHERE FITTED):-



12) Locate the I/O Board on the WWC cover assembly.

13) Use the long nose pliers to squeeze the plastic pillars to release the I/O Board.

14) Carefully remove the I/O Board from the WWC Mainboard.

REMOVAL OF MAINBOARD:-

15) Remove I/O Board as described (where fitted).

16) Use the flat head screwdriver to loosen and remove the four plastic rivets on the WWC cover to release the mainboard.

17) Carefully remove the mainboard from the WWC Centre plate cover.

18) Position the new mainboard and re-fit the four plastic rivets to secure to the WWC cover.
19) If removed, fit the (new) I/O Board onto the plastic pillars on the WWC cover using the long nose pliers.
20) Re-fit the WWC cover assembly (including Mainboard and I/O Board where fitted) to the WWC and secure using the four screws.
21) Re-connect ALL cable and connectors to the WWC Mainboard.
22) Re-fit Comms Board and IEB (where fitted) to the WWC cover assembly as described in section 5.9.
23) Re-apply W&M seals to the heat sinks on the bottom of the WWC cover.
24) On side A of the calculator head, re-connect ALL cable and connectors to the I/O board (where applicable).
25) If removed, re-fit I/O cable security cover and secure using the sealing screw.
26) Re-apply W&M seals to the I/O cable security cover (where applicable).
27) Ensure that all tools and unused materials are removed.
28) Close the calculator head doors on both sides of the dispenser and lock.
29) Re-instate power to the dispenser.
30) Test operation of the new board(s).
31) Dispose of all waste accordingly.

5.11 Replacing a Preset Button/Preset Switch

Before starting the maintenance procedure, please refer to section 2.

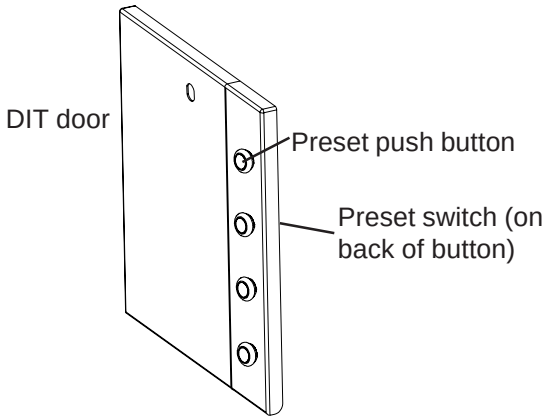
Ensure the dispenser is isolated and all power is turned off.

The preset buttons are accessed from either side of the DIT spacebox (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement Button/Preset Switch (refer to the Parts Manual for exact part identification)
- Small flat head screwdriver
- Long nose pliers
- Wire cutters

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in sections 2.5 and 2.7 to gain access to the calculator head and DIT spacebox on the relevant side of the dispenser.

2) Locate relevant button to be changed. Locate the preset switch on the back of the button inside the DIT spacebox.

3) Use the long nose pliers to squeeze the metal clip on the preset switch to release it from the button.

To change a preset button :-

4) Unscrew the nut on the back of the button from inside the DIT spacebox.

5) Remove the button completely and replace with a new button.

6) Tighten the nut on the back of the button to secure in position.

To change a preset switch :-

7) Using a small flat head screwdriver, remove the relevant wires from the connectors on the preset switch.

8) Remove the preset switch completely and replace with a new switch.

9) Use the small screwdriver to re-connect the wires to the new switch.

10) Using the long nose pliers, squeeze the metal clip on the preset switch and fit to back of button.

11) Ensure that all tools and unused materials are removed.

12) Re-fit the DIT/blind DIT door.

13) Close the calculator head door and lock.

14) Re-instate power to the dispenser.

15) Test the operation of the new preset switch and/or button.

16) Dispose of all waste accordingly.

CONTENTS

6 MAINTENANCE PROCEDURES - VAPOUR RECOVERY

6.1 Replacing the v-belt on the ECVR Unit

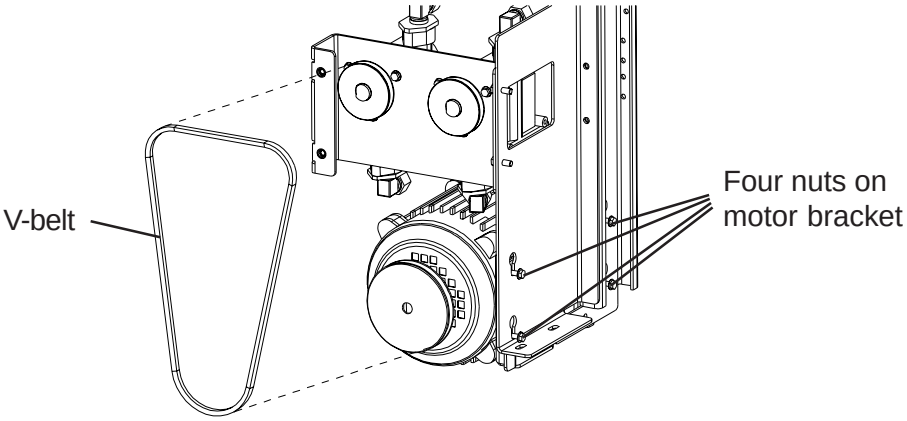
Before starting the maintenance procedure, please refer to section 2.

The v-belt is accessed side A of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement v-belt (refer to the Parts Manual for exact part identification)
- 10mm spanner

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) From side A of the dispenser, use a 10mm spanner to loosen the four screws securing the motor and motor bracket to the ECVR support bracket.

3) Lift up the motor to release the tension on the v-belt and remove the v-belt completely.

4) Carefully allow the motor to drop back down into the slots.

Note : support the motor during this procedure.

5) Lift up the motor into the raised position and fit the new v-belt.
6) Using a spanner for leverage, position the motor to give the correct tension on the v-belt.
7) When the tension on the v-belt is correct, use a 10mm spanner to tighten the four screws securing the motor and motor bracket to the support bracket.
8) Re-fit the hydraulic door and lock.
9) Re-instate power to the dispenser.
10) Test operation of the new v-belt.
11) Dispose of all waste accordingly.

6.2 Replacing the pump on the ECVR Unit

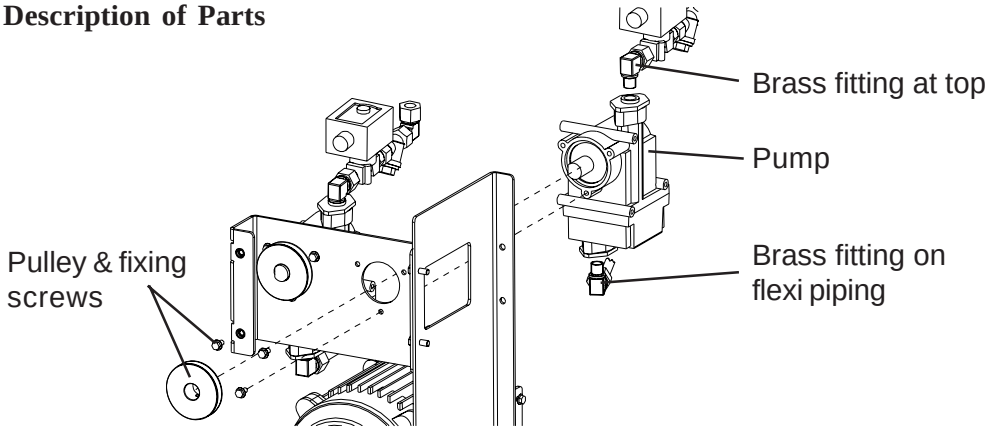
Before starting the maintenance procedure, please refer to section 2.

The pump is accessed from both sides of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement pump (refer to the Parts Manual for exact part identification)
- 8mm, 10mm and 22mm spanners
- 3mm allen key

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to gain access to the hydraulic area.

2) Follow the instructions given in section 6.1 for the removal of the vapour recovery v-belt.

3) Identify the pump to be replaced. Using a 3mm allen key, loosen and remove the relevant pump pulley.

4) From side A of the dispenser, use a 22mm spanner to loosen the brass nut on the elbow at the top of the pump.

5) Detach the solenoid valve assembly from the elbow at the top of the pump and move clear of the pump.

6) From side B of the dispenser, use a 22mm spanner to loosen the brass nut on the flexible piping at the bottom of the pump.

7) Detach the flexible piping from the elbow on the bottom of the pump and move clear of the pump.

8) From side A of the dispenser, use an 8mm spanner to remove the three screws securing the pump to the pump bracket.

9) Lift out the pump completely through the top opening.

10) Using a 22mm spanner, disconnect the brass elbows from the top and bottom of the old pump and re-fit to the new pump.

11) Position the new pump into the unit.

12) Using an 8mm spanner, re-fit the three screws to secure the new pump to the pump bracket.

13) From side B of the dispenser, re-connect the flexible piping to the brass elbow at the bottom of the new pump and tighten using a 22mm spanner.

14) From side A of the dispenser, reconnect the solenoid valve assembly to the brass elbow at the top of the new pump and tighten using a 22mm spanner.

15) Using a 3mm allen key, re-fit the pump pulley to the new pump.

16) Follow the instructions given in section 6.1 to re-fit and adjust the vapour recovery v-belt.

17) Ensure that all tools and unused materials are removed.

18) Re-fit the hydraulic doors and lock.

19) Re-instate power to the dispenser.

20) Test operation of the new pump.

21) Dispose of all waste accordingly.

6.3 Replacing the motor on the ECVR Unit

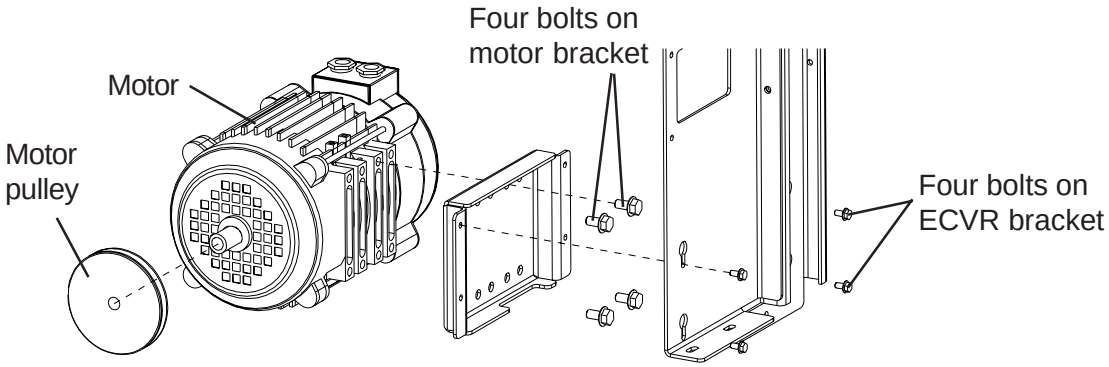
Before starting the maintenance procedure, please refer to section 2.

The motor is accessed from both sides of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement motor (refer to the Parts Manual for exact part identification)
- 10mm, 13mm and 32mm spanners
- 2mm and 6mm allen keys
- Screwdriver
- Wire cutters

Description of Parts



INSTRUCTIONS

1) Follow instructions given in sections 2.4, 2.5 and 2.6 to gain access to the hydraulic area, the calculator head and the cable glands.

2) Using a 6mm allen key, loosen and remove the ten bolts on the junction box cover on side B of the dispenser. Remove the junction box cover completely.

3) From side B of the dispenser, identify the motor power cable and trace to the junction box.

Note : the cable has an identification tag at each end.

4) Cut the cable ties using wire cutters, pull up the relevant sheath and loosen the gland.
5) Using a small screwdriver, disconnect the motor power cable in the junction box.
6) Pull the motor cable through from the junction box to the motor.

7) From side B of the dispenser, identify the motor communication cable and trace to the calculator head.

Note : the cable has an identification tag at each end.

8) Cut the cable ties with wire cutters and loosen the relevant glands using a 32mm spanner.

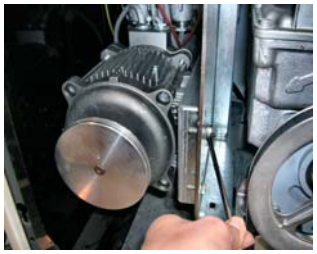
9) Using a small screwdriver, disconnect the motor communication cables (positive and negative) from the ECVR circuit board in the calculator head.

10) Pull the motor communication cable down from the calculator head, through the unit to the motor.

Note : ensure that both cables are only attached at the motor end.

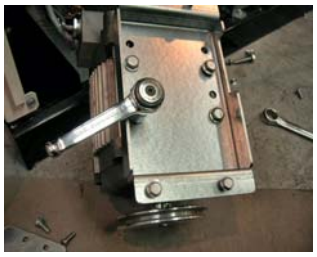
11) Follow the instructions given in section 6.1 to remove the vapour recovery v-belt.

12) Using a 10mm spanner, loosen the four screws securing the motor and motor bracket to the ECVR support bracket.



13) Lift the motor and motor bracket from the slots in the ECVR support bracket.

14) Using a 13mm spanner, loosen and remove the four bolts on the motor bracket. Remove the bracket completely.



15) Using a 2mm allen key, loosen and remove the motor pulley and re-fit to the new motor.

16) Using a 13mm spanner, fit the motor bracket to the new motor.

17) Position the new motor into the unit, placing the four screws into the slots of the support bracket.

18) Follow the instructions given in section 6.1 to re-fit and adjust the vapour recovery v-belt.

19) Feed the motor communication cable up the unit, through the glands and into the calculator head. Replace cable ties and tighten the relevant glands.

Note : ensure that the cable is routed and contained accordingly.

20) Using a small screwdriver, re-connect the motor communication cable to the ECVR circuit board.

Note : refer to the wiring diagrams in section 7.

21) Feed the motor power cable up the unit, through the sheath and gland and into the junction box. Replace the cable ties, tighten the relevant gland and cover with the sheath.

Note : ensure that the cable is routed and contained accordingly.

22) Using a small screwdriver, re-connect the motor power cable in the junction box.

Note : refer to the wiring diagram in section 7.

23) Using a 6mm allen key, re-fit the junction box cover.

24) Ensure that all tools and unused materials are removed.

25) Follow the instructions given in sections 2.6 to re-fit the nozzle panel.

26) Close the hydraulic door and lock.

27) Close the calculator head door and lock.

28) Re-instate power to the dispenser.

29) Test operation of the new motor.

30) Dispose of all waste accordingly.

6.4 Replacing the solenoid valve on the ECVR Unit

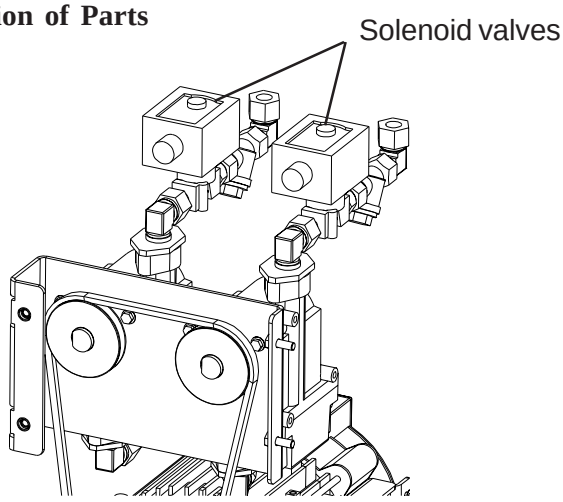
Before starting the maintenance procedure, please refer to section 2.

The solenoid valves are accessed from both sides of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement solenoid valve (refer to the Parts Manual for exact part identification)
- 32mm spanner
- Small flathead screwdriver
- Wire cutters

Description of Parts



INSTRUCTIONS

1) Follow instructions given in sections 2.4, 2.5 and 2.6 to gain access to the hydraulic area, calculator head and cable glands.

2) Locate the solenoid valve to be replaced.

3) Trace the solenoid cable up through the glands, to the ECVR Board on side B of the calculator head.

Note : the cable has an identification tag at each end.

4) Remove the relevant connector from the ECVR Board.

5) Using a small flathead screwdriver, disconnect the solenoid cable from the connector.

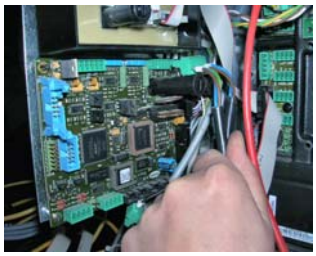
6) Trace the solenoid cable back to the relevant gland(s) using the wire cutters to remove any cable ties securing the solenoid cable.

7) Using a 32mm spanner, loosen the relevant gland(s).

8) Pull the solenoid cable down through the glands to the ECVR unit.
9) Remove the nut securing the solenoid to the plunger.
10) Lift the solenoid off the plunger and completely remove from the unit.
11) Place the new solenoid valve on to the plunger and secure in position using the nut.
12) Feed the solenoid cable up through the relevant gland(s) and into the calculator head. Replace the cable ties and tighten the glands securely.

Note : ensure that the cable is routed and contained accordingly..

13) Route the solenoid cable to the ECVR Board.
14) Using the small flathead screwdriver, re-fit the connector to the solenoid cable.



Note : refer to the wiring diagrams in section 7.

15) Re-connect the connector to the ECVR Board.
16) Ensure that all tools and unused materials are removed.
17) Follow the instructions given in sections 2.6 to re-fit the nozzle panel.
18) Close the hydraulic door and lock.
19) Close the calculator head door and lock.
20) Re-instate power to the dispenser.
21) Test operation of the new solenoid valve.
22) Dispose of all waste accordingly.

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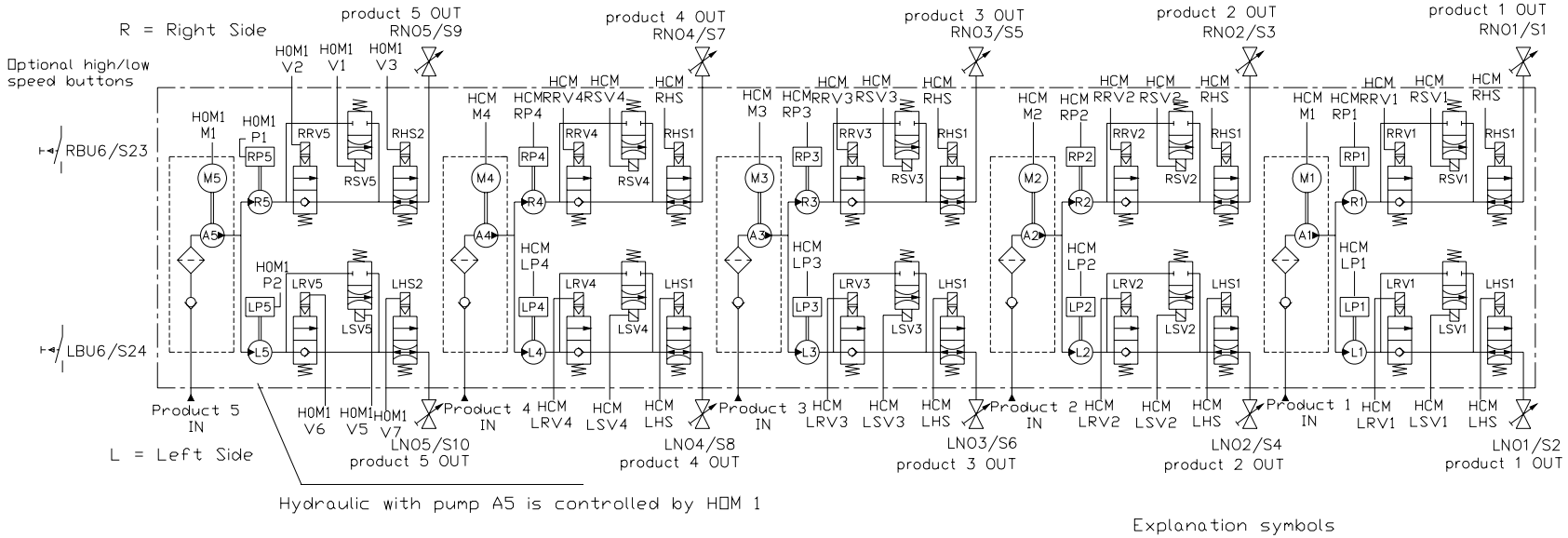
CONTENTS

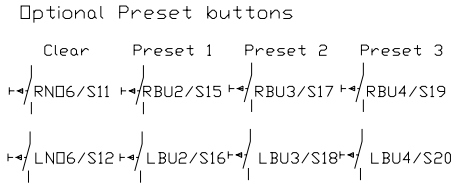
7 DRAWINGS

7.1 Hydraulic Set Up 50

7.1.1 MODELS 1-2, 2-2, 2-4, 3-3, 3-6, 4-4, 4-8, HS 1-1, HS 1-2, HS 2-2, HS 2-4, HS 3-3, HS 3-6, HS 4-4, HS 4-8



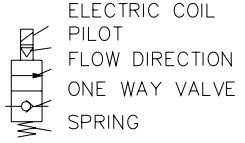
Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x



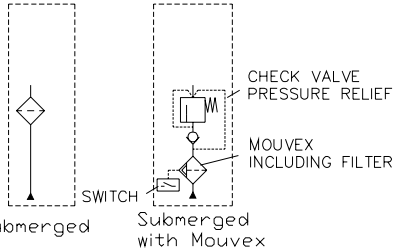
Remarks:
On HOM one extra HS valve per side
Standard One HS valve per side

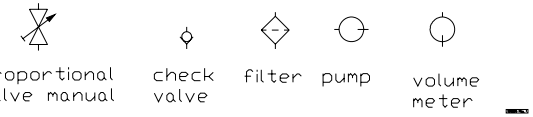
Possible flow rate through nozzle (manual valve)
0, 40, 80 and 40/80 litres/minute

Explanation symbols



hydraulic valve electric/pilot controlled

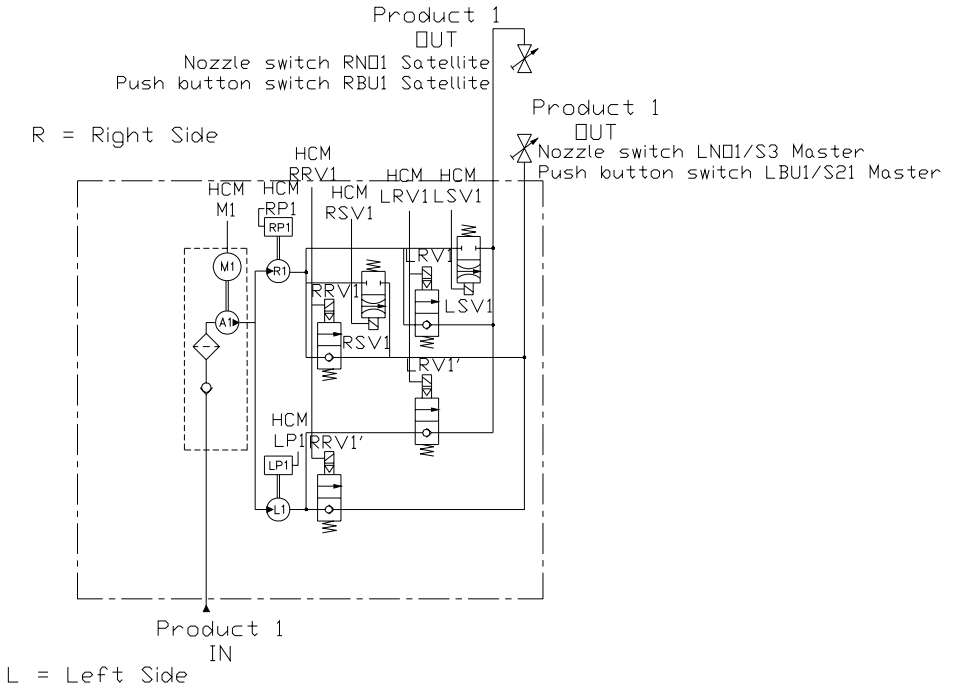




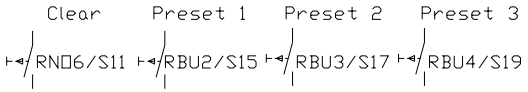
7.2 Hydraulic Set Up 51

7.2.1 MODELS VHS 1-1, VHSM 1-1

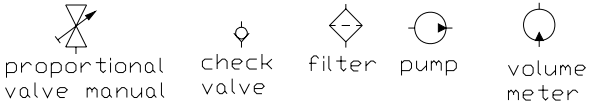
Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton



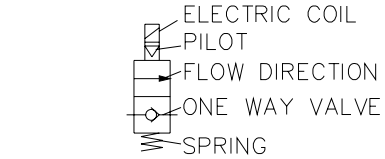
Optional Preset buttons

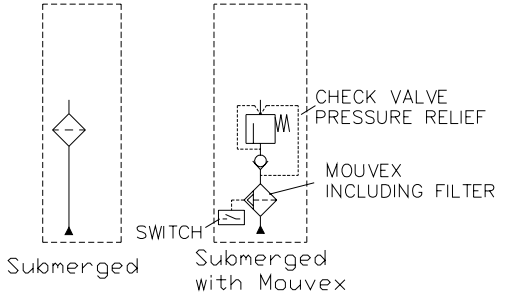


Possible flow rate through nozzle (manual valve) maximum 130 litres/minute



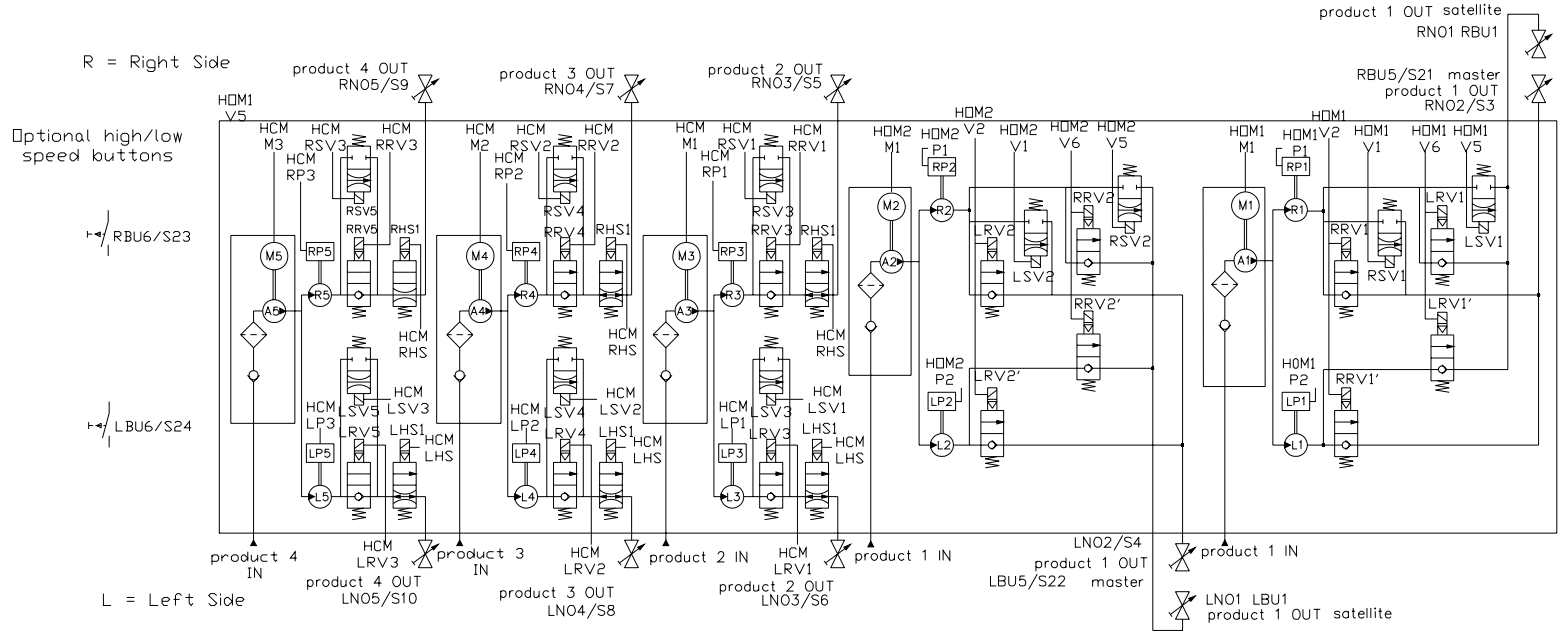
Explanation symbols





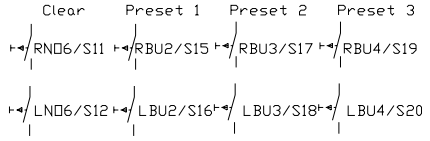
7.3 Hydraulic Set Up 52

7.3.1 MODELS VHS 1-2, VHSM 1-2



Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

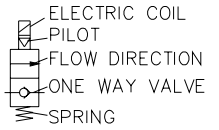
Optional Preset buttons



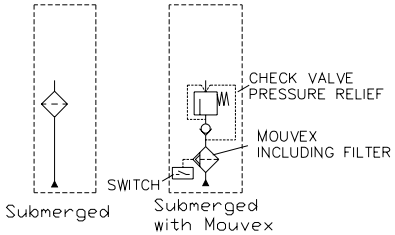
Remarks:
On HOM one extra HS valve per side
Standard One HS valve per side

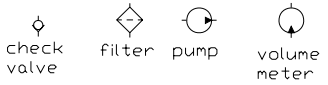
Possible flow rate through nozzle (manual valve)
0, 40 and 130 litres/minute

Explanation symbols



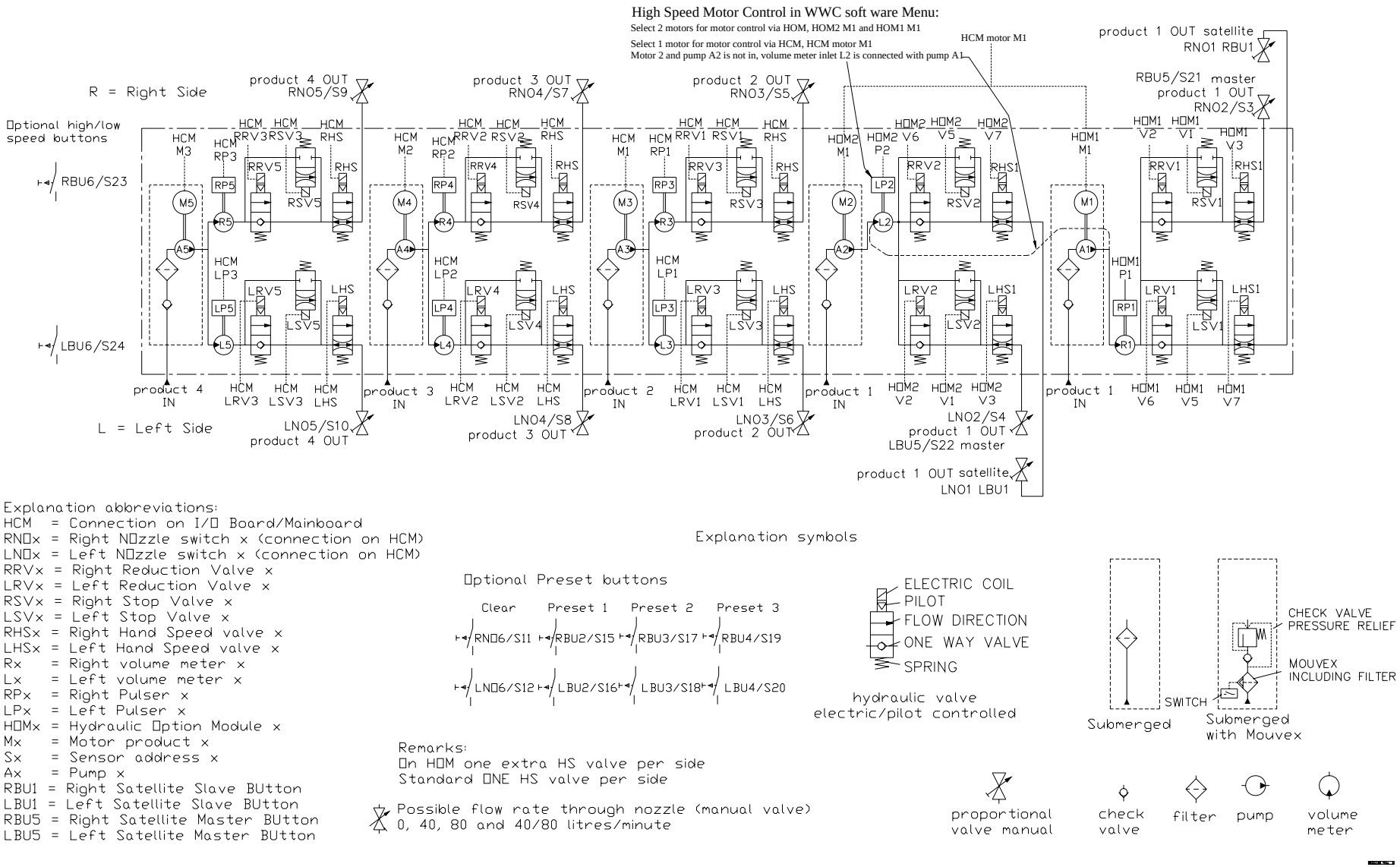
hydraulic valve electric/pilot controlled





7.4 Hydraulic Set Up 53

7.4.1 MODELS HSM 1-1, THSM 1-2



Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

Explanation symbols

Optional Preset buttons

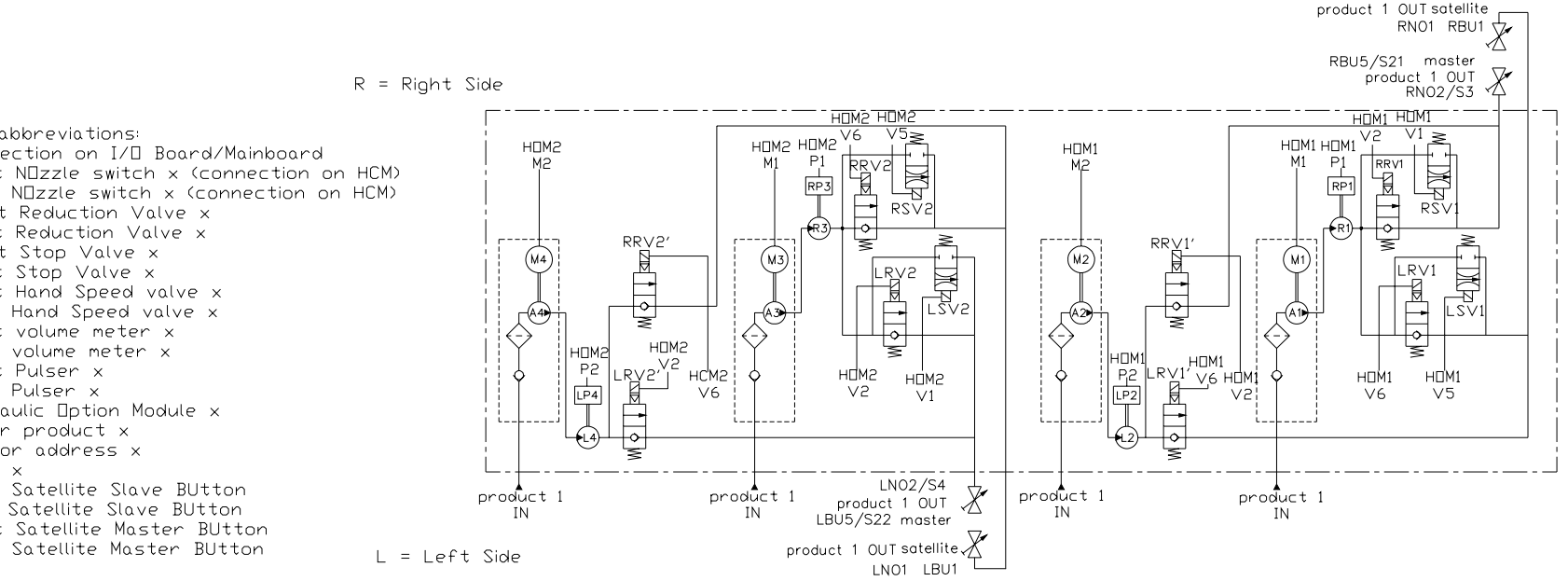
hydraulic valve electric/pilot controlled

Remarks:
On HOM one extra HS valve per side
Standard ONE HS valve per side

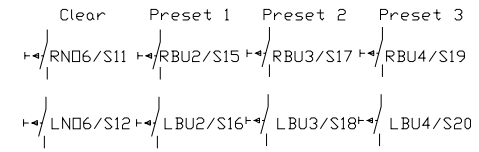
Possible flow rate through nozzle (manual valve)
0, 40, 80 and 40/80 litres/minute

7.5 Hydraulic Set Up 54

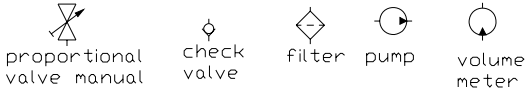
Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

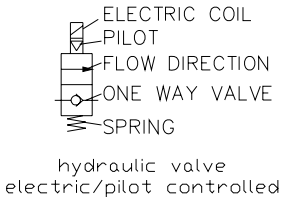


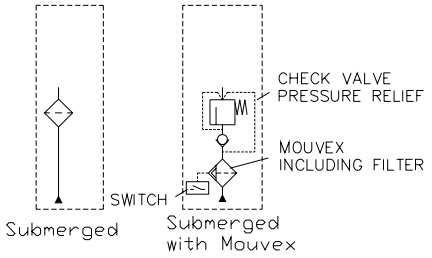
Optional Preset buttons



Explanation symbols



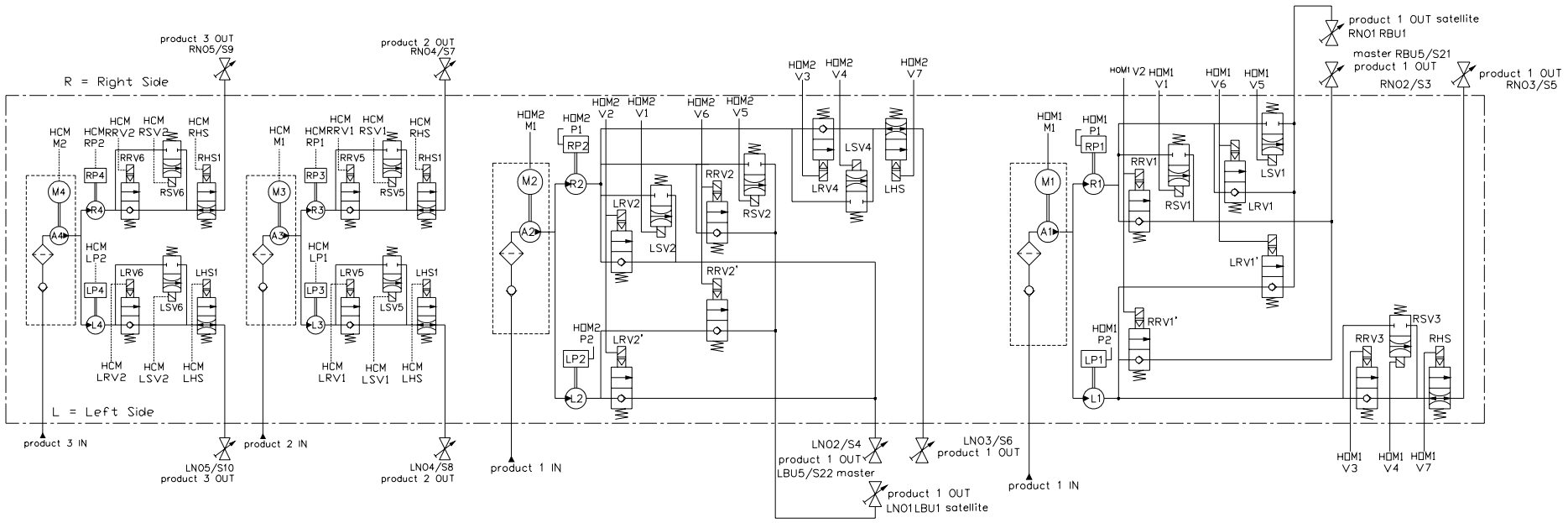




Possible flow rate through nozzle (manual valve)
0 and 160 litres/minute

7.6 Hydraulic Set Up 55

7.6.1 MODELS HS 1-4, VHS 1-4



Optional high/low speed buttons

RBU6/S23

LBU6/S24

Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

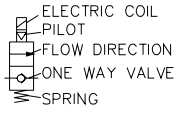
Optional Preset buttons

Clear	Preset 1	Preset 2	Preset 3
RNO6/S11	RBU2/S15	RBU3/S17	RBU4/S19
LNO6/S12	LBU2/S16	LBU3/S18	LBU4/S20

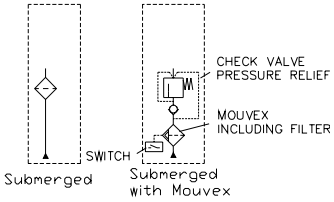
Remarks:
On HOM one extra HS valve per side
Standard ONE HS valve per side

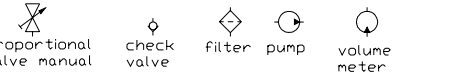
Possible flow rate through nozzle (manual valve)
0, 40, 40/80 and 130 litres/minute

Explanation symbols

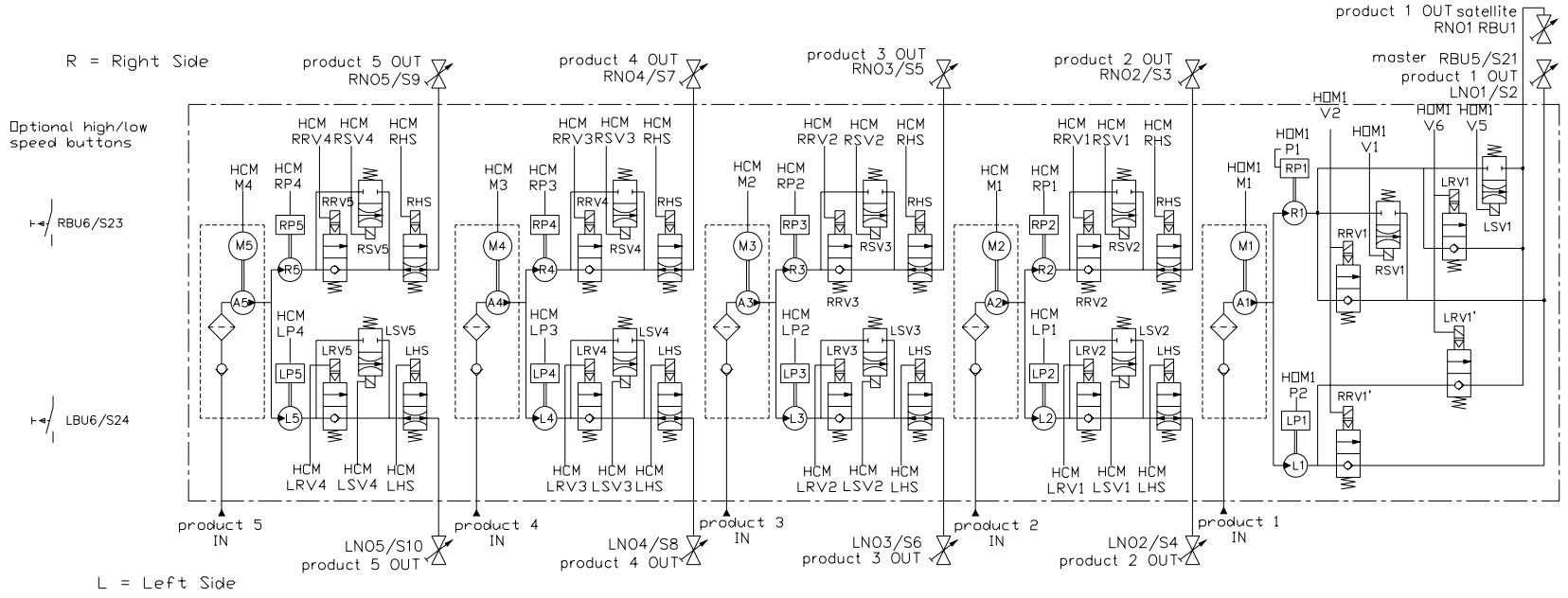


hydraulic valve electric/pilot controlled





7.7 Hydraulic Set Up 56



Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
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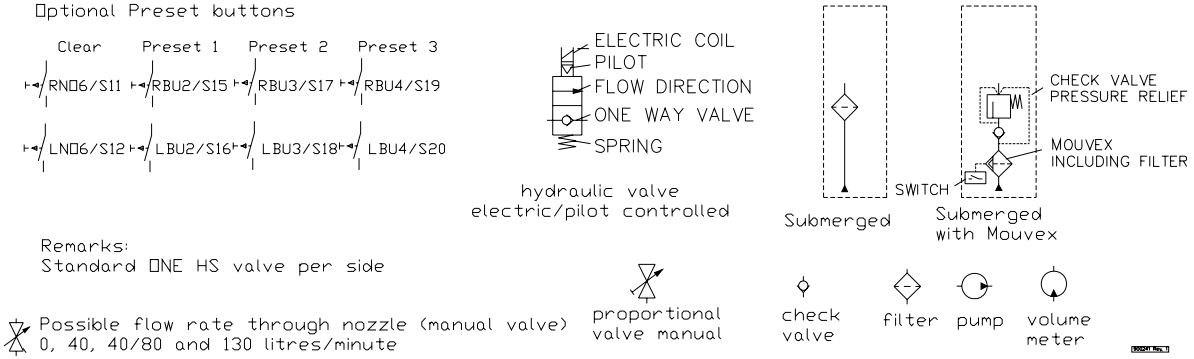
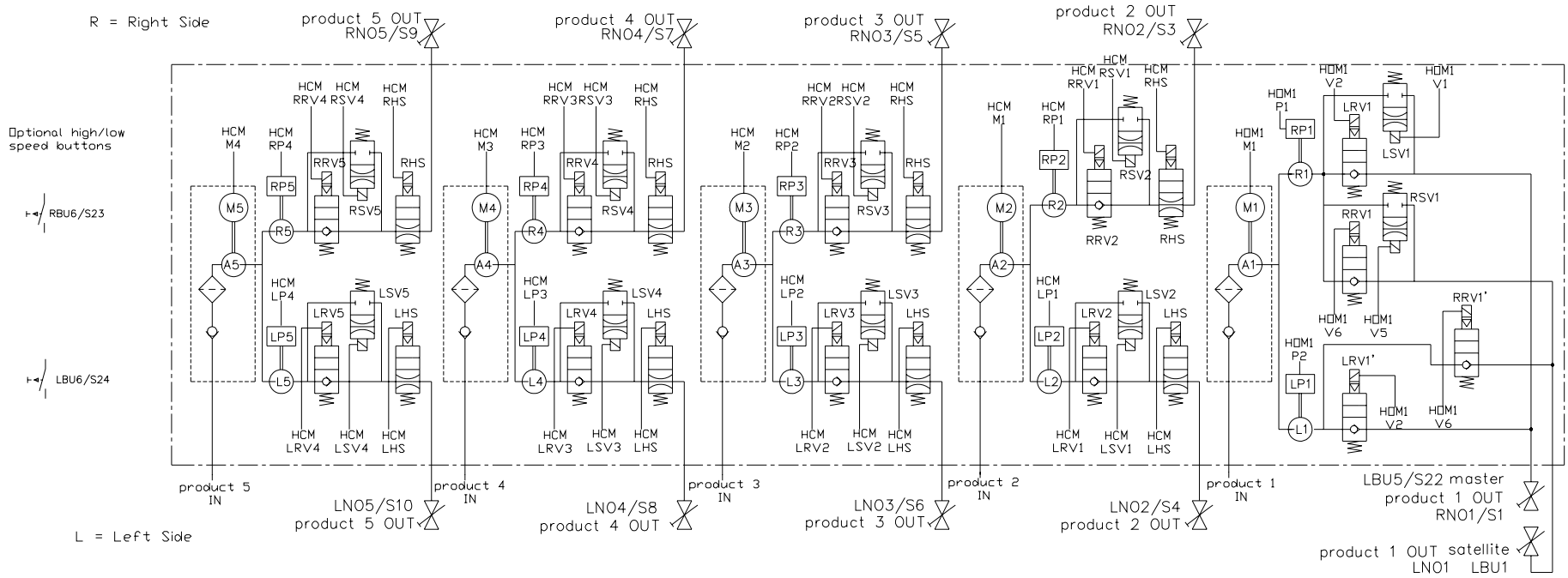
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

Explanation symbols



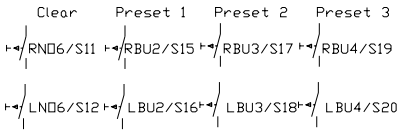
7.8 Hydraulic Set Up 57



Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

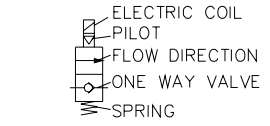
Explanation symbols

Optional Preset buttons

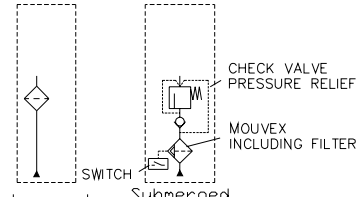


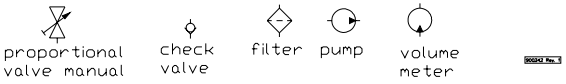
Remarks:
Standard ONE HS valve per side

Possible flow rate through nozzle (manual valve)
0, 40, 40/80 and 130 litres/minute



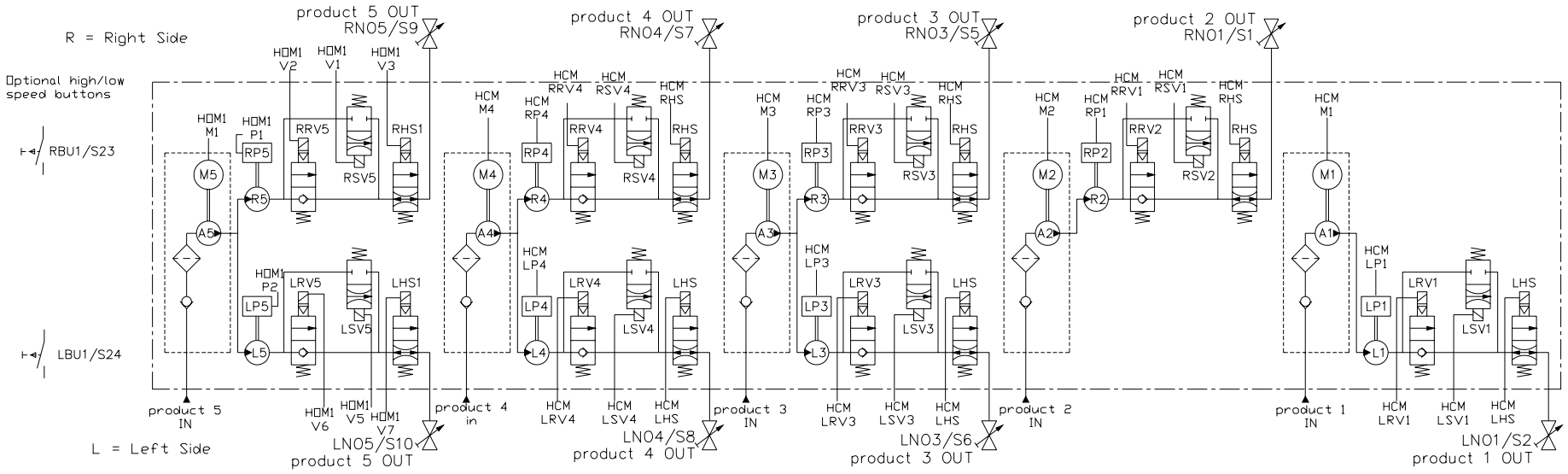
hydraulic valve
electric/pilot controlled





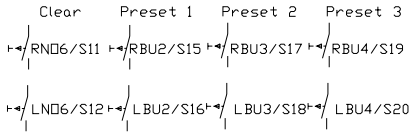
7.9 Hydraulic Set Up 58

7.9.1 MODEL THS 1-2



Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x

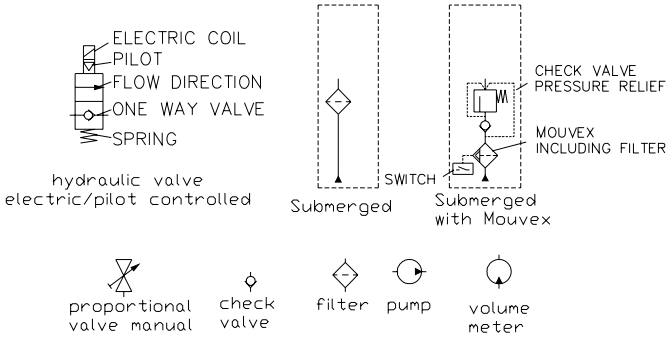
Optional Preset buttons



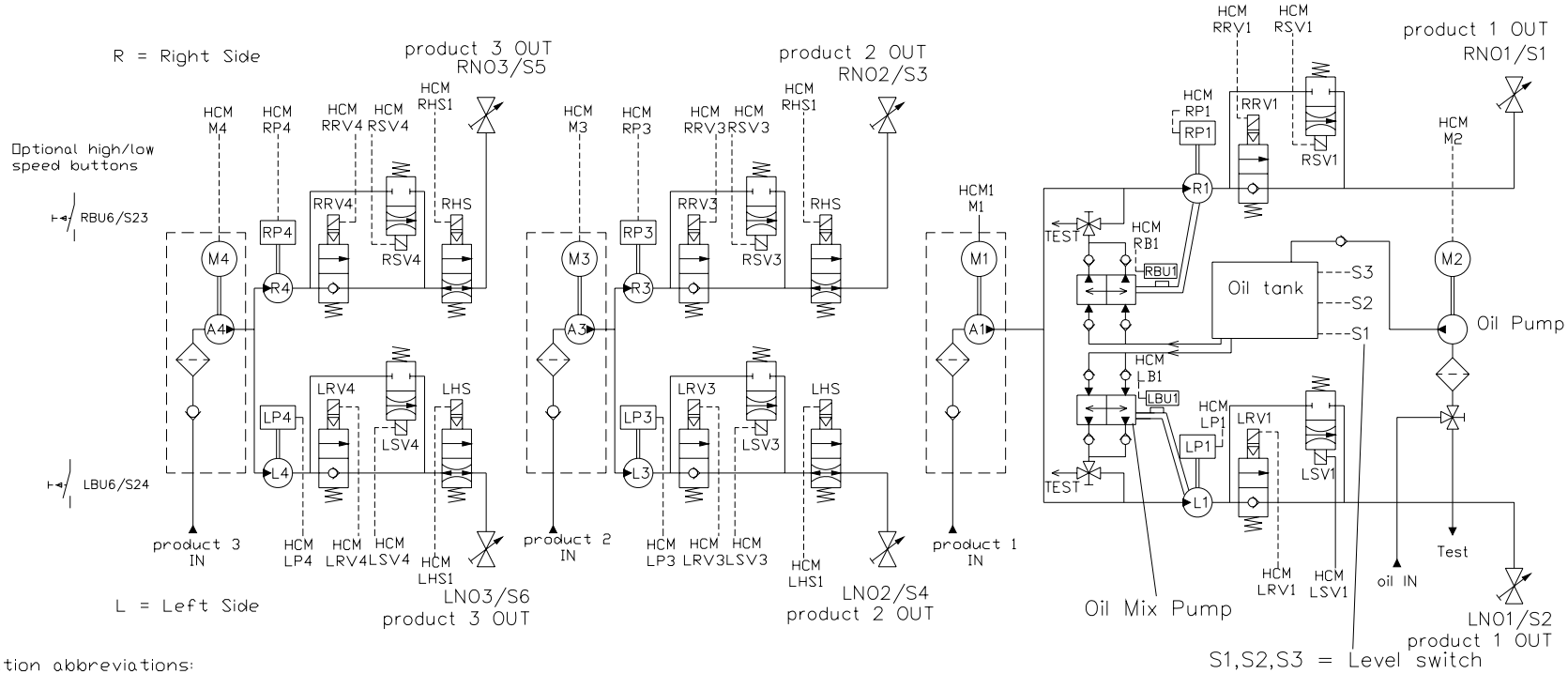
Remarks:
On HOM one extra HS valve per side
Standard ONE HS valve per side

Possible flow rate through nozzle (manual valve)
0, 40, 80 and 40/80 litres/minute

Explanation symbols

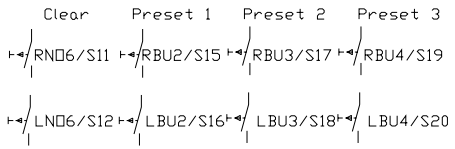


7.10 Hydraulic Set Up 80



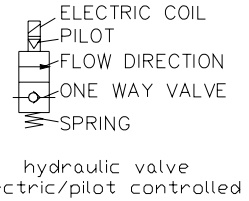
Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
LBUx = Left BUtton oil dozer x
RBUx = Right BUtton oil dozer x

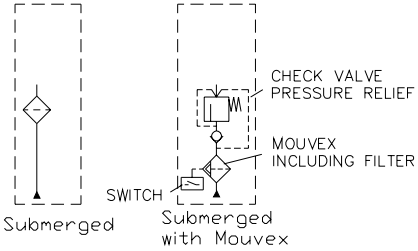
Optional Preset buttons



Remarks:
Standard ONE HS valve per side

Explanation symbols





Possible flow rate through nozzle (manual valve)
0, 40, 80 and 40/80 litres/minute

proportional valve manual

check valve

filter

pump

volume meter

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GLOSSARY OF TERMS USED IN THIS MANUAL

CP : COMBO PREPARED
VHS : VERY HIGH SPEED
T : TANK
MCP : MINI COMBO PREPARED
DIT : DISPENSER INTEGRATED TERMINALS
OPT : OUTDOOR PAYMENT TERMINALS
POS : POINT OF SALE
MICC : MINERAL INSULATED COPPER CLAD CABLE
RCD : RESIDUAL CURRENT DEVICE
HMS : HOSE MANAGEMENT SYSTEM
UAK : USER ACCESS KEYPAD
HS / LS : HIGH SPEED / LOW SPEED
WWC : WORLD WIDE CALCULATOR
W&M : WEIGHTS AND MEASURES
MPE-EC : ENHANCED PULSER METER, ELECTRONIC CALIBRATION
MPE-TC : ENHANCED PULSER METER, TEMPERATURE CALIBRATION
TM80 : TOKHEIM METER
SM80 : SATAM METER
HSM : HIGH SPEED MASTER
VHSM : VERY HIGH SPEED MASTER
HBEF : HIGH BLEND ETHANOL FUELS
VR : VAPOUR RETURNS
TQP-RS : TOKHEIM QUALITY PUMP - REGULAR SPEED
HH : HANGING HOSE
HR : HOSE RETRACT
CSD : CUSTOMER SALES DISPLAY
EMT : ELECTRO-MECHANICAL TOTALISER BOARD

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