Quantium 510

Maintenance Manual

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09/2007

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.

Issue A

REVISION RECORD

Date	Revision	Page	Issue	Reason
13/09/2007	1	All	A	Original Issue

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CONTENTS

(CONT.)

Issue A

(CONT.)

Issue A

Issue A

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CONTENTS

Issue A

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 gain 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, boards 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 510 range of fuel dispensers, with the exception of the LPG version. For information on Quantium 510 LPG dispensers refer to the relevant LPG manual as provided by Tokheim.

All dispensers in the Quantium 510 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.

Issue A

- 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.

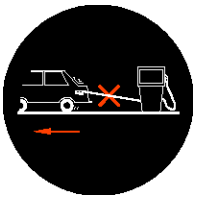
NOTE : A HIGHLY VISIBLE CORDON MUST BE PLACED AROUND THE DISPENSER THAT IS BEING SERVICED.

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

Issue A



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.

Issue A

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.

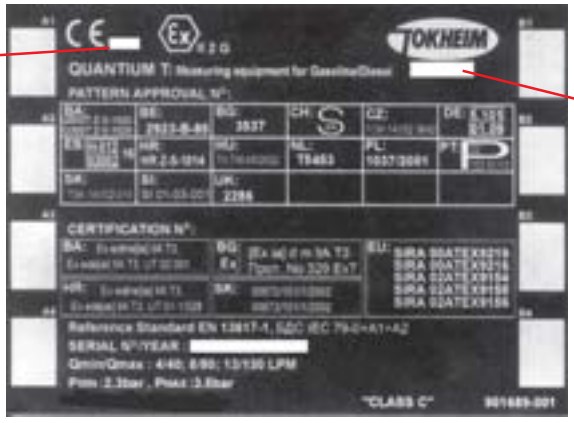
1.6.1 DISPENSER MARKING FOR THE ATEX DIRECTIVE

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

Issue A

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Issue A

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

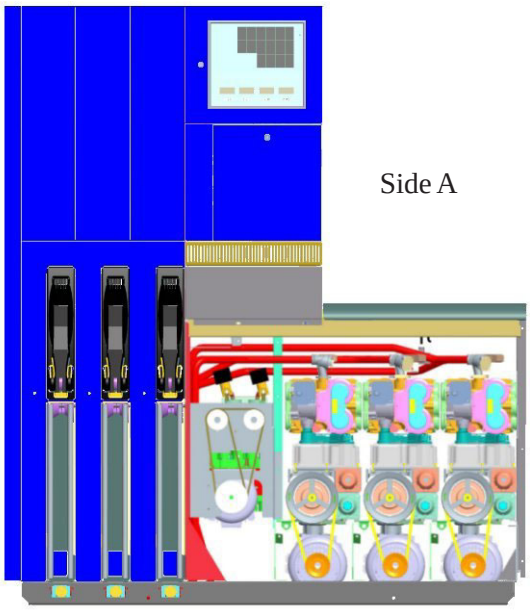
The Quantium T range of dispensers includes Intrinsically Safe (IS) circuits. The intrinsically safe cables are normally identified by blue coloured cables or cables marked at both ends with blue sleeving. IS circuits can be connected to the Vapour Flow Meter (where fitted).

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.

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

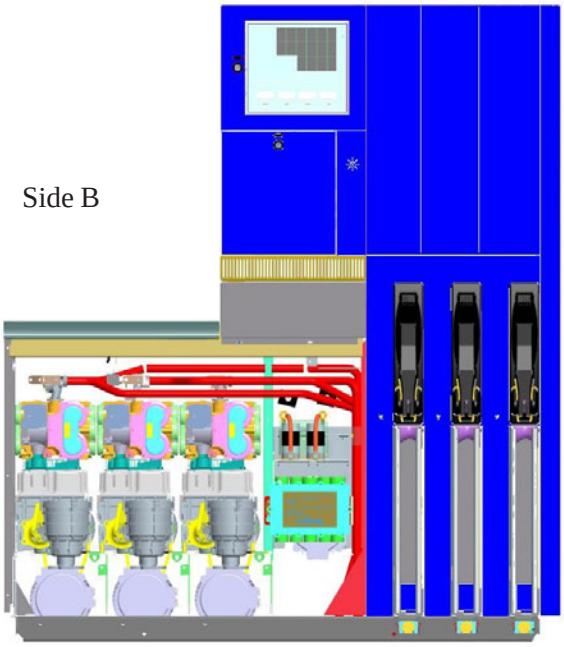
The different sides of the dispenser referred to in this manual are described as follows:-



Side A

- Side A of the dispenser forms an L shape. With the hydraulic door removed, side A has the pulleys.

Issue A



• Side B of the dispenser is the opposite side. With the hydraulic door removed, side B has the fuel inlet connections and access to the junction box.

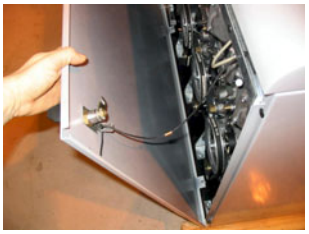
2.4 Access the Hydraulic Area

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

1) Locate the keys for the hydraulic door.

2) Simultaneously open both keylocks on the relevant hydraulic door.

3) Disconnect the earth cable from the hydraulic door.



4) Disconnect the retaining cords on the hydraulic door.

5) Lift up the hydraulic door to release the locating pins from the holes in the driptray.

6) Remove the door completely and place in a safe position.

7) Repeat for the opposite side of the dispenser if required.

8) To refit, insert the locating pins on the bottom of the hydraulic door into the designated holes in the driptray.

9) Simultaneously close both keylocks and remove keys for safe keeping.

10) Close the dust caps to prevent water or dirt entering the keylock.

Issue A

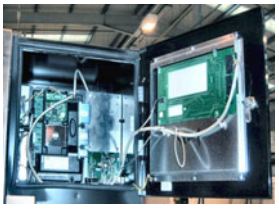
2.5 Access the Calculator Head

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

2.5.1 STANDARD HEAD

- Locate the key for the calculator head door.
- Unlock the calculator head door on the relevant side of the dispenser.

- Carefully open the calculator head door (side hinge).
- Repeat for the opposite side of the dispenser as required.

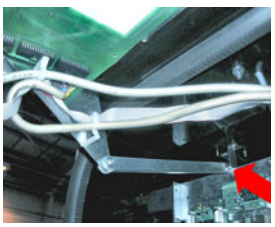


- To close the calculator head door, ensure all cables remain inside then close and lock the calculator head door. Remove key for safe keeping and close the dust caps.

2.5.2 MEDIA HEAD

- Locate the keys for the calculator head door.
- Simultaneously open both keylocks on the relevant calculator head door.
- Carefully open the calculator head door (top hinge).

- Secure the calculator head door in the open position by inserting the lever onto the catch provided inside the calculator head.
- Repeat for the opposite side of the dispenser as required.



- To close the calculator head door, ensure all cables remain inside and lift the lever up to release from the catch. Close and lock the calculator head door. Remove keys for safe keeping and close the dust caps.

Issue A

2.6 Access the Cable Glands

The following instructions detail the procedure to be followed to allow safe access to the cable glands. For both standard head and media heads, the DIT must be opened or DIT blind door removed in order to gain access to the cable glands.

STANDARD HEAD - CABLE GLANDS BEHIND VENTED PANEL

MEDIA HEAD - CABLE GLANDS BEHIND VENTED PANEL

2.6.1 REMOVE BLIND DIT DOOR OR OPEN DIT

NO DIT (BLIND DIT DOOR)

- Locate the key for the blind DIT door.
- Unlock the door and disconnect the earth cable.

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

- Remove the blind DIT door completely and place in a safe position.
- Repeat for the opposite side of the dispenser as required.
- To re-fit, follow the instructions in reverse.

IQ7000 DIT

The IQ7000 is locked with special tubular keys.

- Locate the tubular keys for the IQ7000 DIT.
- Unlock the IQ7000 DIT.
- Carefully slide the IQ7000 drawer open.

- Repeat for the opposite side of the dispenser as required.
- To re-fit, follow the instructions in reverse.

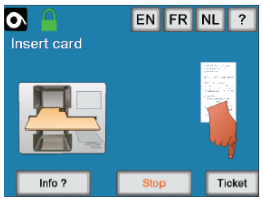
Issue A

IQ6000 DIT

The IQ6000 DIT is electronically locked and can only be released at the Fuel Point of Sale (POS) in the kiosk.

- Swipe the Maintenance/Service card at the POS or terminal and select the option Maintenance/Service.

Note : A spanner or paper roll on the display indicates the terminal is in Maintenance/Service mode.



- Press first the padlock and then 'Ticket' on the DIT screen to disarm the electronic lock.
- Slide the IQ6000 drawer open.

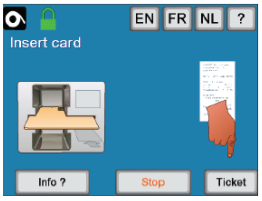
Note : The red open padlock on the Fuel POS display indicates the drawer is open and unalarmed.

- Repeat for the opposite side of the dispenser as required.

Note : Closing the drawer will re-arm the electronic lock.

- To re-fit, follow the instructions in reverse.

CRYPTO VGA DIT



The Crypto VGA DIT is electronically locked and can only be released at the Fuel Point of Sale (POS) in the kiosk.

- Swipe the Maintenance/Service card at the POS or terminal and select the option Maintenance/Service.

Note : A spanner or paper roll on the display indicates the terminal is in Maintenance/Service mode.

- Press first the padlock and then 'Ticket' on the DIT screen to disarm the electronic lock.
- Carefully slide the Crypto VGA printer unit open.

Note : The red open padlock on the Fuel POS display indicates the drawer is open and unalarmed.

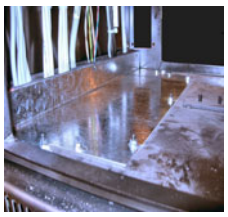
- Disconnect the cables and connectors as required.
- Remove the Crypto VGA printer unit completely and place in a safe position.
- Reach inside the unit and undo the wing nut on the Crypto VGA unit.

- Carefully slide the Crypto VGA unit open.
- Repeat for opposite side of dispenser as required.

Note : Closing the drawer will re-arm the electronic lock.

2.6.2 STANDARD HEAD

Follow instructions in 2.5.1 to access the calculator head and section 2.6.1 to open the DIT or remove the blind DIT door.



1) Use a 7mm nut runner to loosen and remove the small nuts securing the cable retaining plate to the inside of the DIT box.
2) Remove the cable retaining plate completely from the dispenser and place in safe position. The cable glands are now accessible.

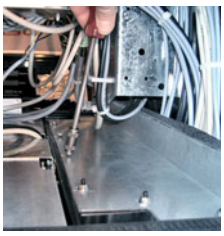
3) To re-fit, replace the cable retaining plate and secure to the inside of the DIT box by refitting the nuts.
4) Replace the DIT/blind DIT door according to the instructions in section 2.6.1.
5) Close the calculator head door and lock according to the instructions in section 2.5.1.

2.6.3 MEDIA HEAD

Follow instructions in 2.5.2 to access the calculator head and section 2.6.1 to open the DIT or remove the blind DIT door.

1) Use a 7mm nut runner to loosen and remove the nut securing the vented panel to the dispenser.
2) Pull out the vented panel at the top and lift up at the bottom to release it from the two locating studs at the bottom.
3) If push buttons are fitted, use a 5.5mm nut runner to loosen and remove the nuts and washers then remove the screws securing the switch(es) to the vented panel.

4) Remove the vented panel completely and place in a safe position.
5) In the calculator head, use a 7mm nut runner to loosen and remove the small nuts securing the cable retaining plate to the inside of the calc box.
6) Remove the cable retaining plate completely from the dispenser and place in safe position. The cable glands are now accessible.



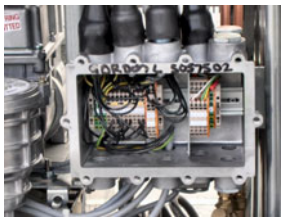
7) To re-fit, replace the cable retaining plate and secure to the inside of the calc box by refitting the nuts.
8) Where removed, re-fit the push button switch(es) to the vented panel. Position the vented panel onto the studs at the bottom and secure at the top by tightening the nut.
9) Replace the DIT/blind DIT door according to the instructions in section 2.6.1.
10) Close the calculator head door and lock according to the instructions in section 2.5.2.

Issue A

2.7 Access the Junction Box Connections

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

1) Follow the instructions given in section 4.6 to remove the hydraulic door 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. Remove the junction box cover completely and place in a safe position.
4) Refer to the wiring diagrams in section 7.
5) To re-fit the junction box cover, follow the instructions in reverse.

Issue A

CONTENTS

Issue A

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 for Elaflex)

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 for any leakages.
6) Dispose of all waste accordingly.

Issue A

3.2 Changing a Hose

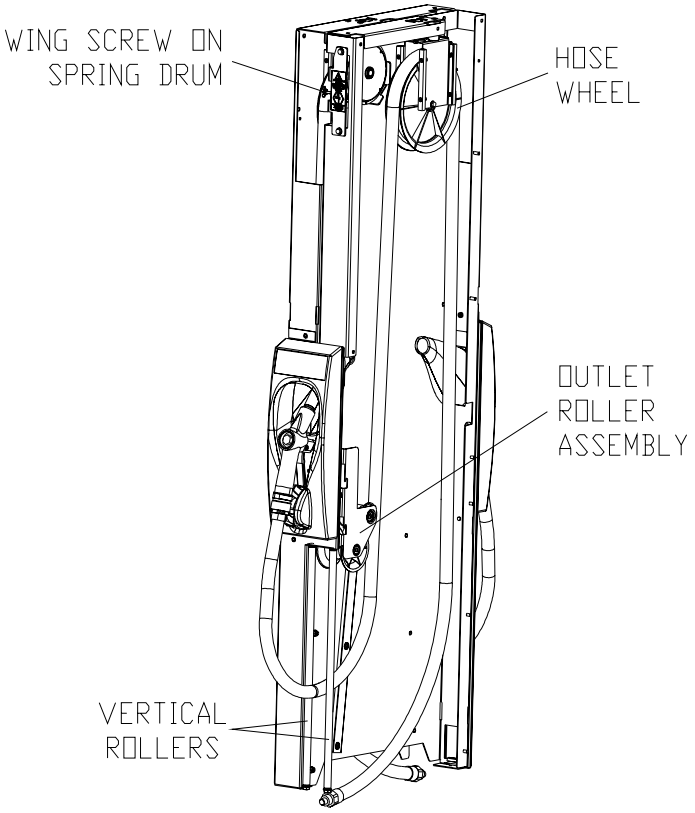
Before starting the maintenance procedure, please refer to section 2.

Identify the relevant hose to be replaced.

Tools required

- Replacement hose (refer to the Parts Manual for exact part identification)
- Screwdriver
- 4mm allen key
- Plumbers wrench or basin key
- 10mm spanner
- Step ladder or similar

Description of Parts



Issue A

INSTRUCTIONS

1) Locate the nozzle panel with the hose to be replaced.

2) Remove nozzles from nozzle boots on this side of the dispenser and place in a safe position on the ground.

3) Using the step ladder, locate the two plastic caps on the top of the dispenser above the upper nozzle panel. Carefully prise off the plastic caps using the screwdriver.

4) Use a 4mm allen key to loosen the two buttonhead screws.

Note : Do NOT remove the screws.

5) Carefully slid the upper nozzle panel out and up and place in a safe position.

6) **HOSE POSITION NEAREST HYDRAULICS ONLY**

Using a 10mm spanner, loosen and remove the five screws on the additional vapour control plate.

7) Using a 4mm allen key loosen and remove the buttonhead screw(s) and plastic washer(s), below the nozzle boot.

Note : Do NOT lose the washer.

8) Using the 4mm allen key, loosen and remove the buttonhead screw(s) and plastic washer(s), above the nozzle boot.

9) Carefully lift out the lower nozzle panel from the top.

WARNING : THE NOZZLE PANEL IS STILL CONNECTED BY THE NOZZLE SWITCH(S) AND EARTH CABLE.

10) Carefully disconnect the nozzle reed switch(s) from the lower nozzle panel.

11) Lift out the lower nozzle panel completely and place in a safe position.

Issue A

12) Pull the hose out of the column until the hose wheel is visible between the bottom rollers.

13) Lock the hose wheel in position by tightening the wing screw on the springdrum.

14) 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.

15) Use a basin key to unscrew the brass nut on the hose connection located at the bottom, inbetween the rollers. Disconnect the hose connection from the fuel inlet pipe.

16) Carefully pull the hose through the rollers. Remove the hose completely and drain excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

17) Use a 10mm spanner to loosen the four nuts securing the outlet roller assembly to the dispenser

Note : Do NOT remove the nuts.

Issue A

18) Carefully lift the outlet roller assembly up slightly to release the bottom vertical rollers.

19) Remove the bottom vertical rollers.

20) Feed the new hose between the rollers of the hose outlet and pass through the gap between the hose wheel and the hose wheel bracket.

21) Using the basin key, connect the new hose to the fuel inlet pipe and tighten to secure.

22) Re-fit the vertical rollers into the slots located at the bottom of the hose management. Secure the vertical rollers by gently pushing down the outlet roller assembly and slotting it onto the top of the vertical rollers.

23) Using the 10mm spanner, tighten the four nuts securing the outlet roller assembly to the dispenser.

24) Hold the hose firmly and gently release the wing screw on the springdrum.

25) Allow the hose to retract into the dispenser in a controlled manner.

Note : check that the new hose extends and retracts correctly.

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

27) Re-connect the nozzle reed switch(s) and earth cable to the bottom nozzle panel.

28) Re-fit the bottom nozzle panel.

29) **HOSE POSITION NEAREST HYDRAULICS ONLY**

Re-fit the additional vapour control plate.

Note : this is essential for the overall explosion safety of the dispenser.

30) Re-fit the top nozzle panel, re-fit the buttonhead screws and caps on top of the dispenser.

31) Replace the nozzles securely in the nozzle boots.

32) Ensure all tools and unused materials are removed.

33) Re-instate power to the dispenser.

34) Purge the hose of air and test for any leakages.

35) Dispose of all waste accordingly.

Issue A

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 (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.

Issue A

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

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

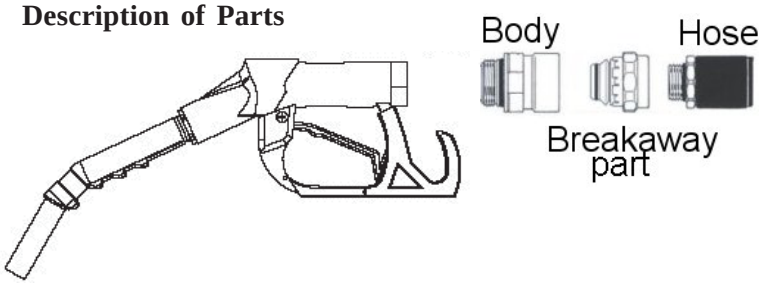
Note: If the nozzle safety break coupling is irreparable then the complete nozzle/safety break assembly must be replaced (refer to section 3.3).

Identify the relevant safety break coupling to be repaired.

Tools required

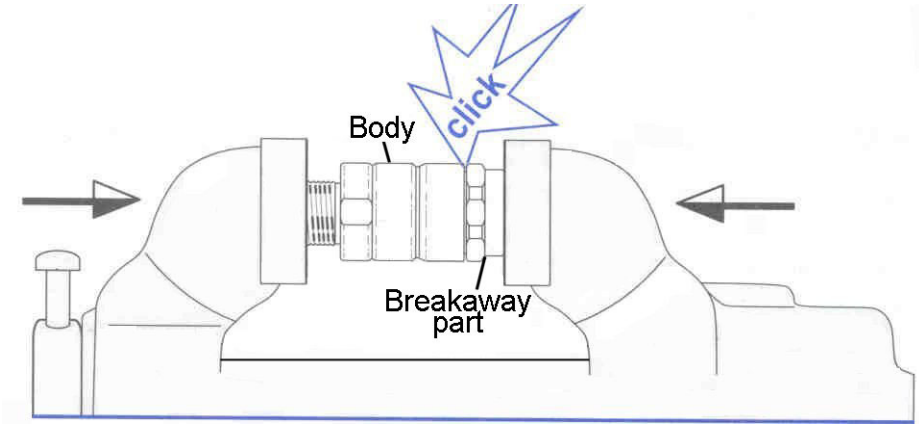
- Vice or clamping device

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.



Issue A

3.4 Changing a Nozzle Reed Switch

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

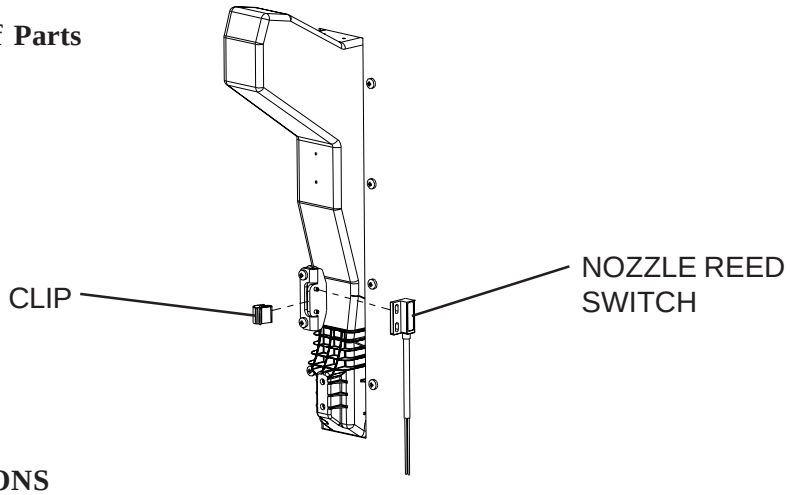
Ensure the dispenser is isolated and all power is turned off.

Identify the relevant side of the dispenser with the nozzle reed 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 reed switch (refer to the Parts Manual for exact part identification)
- Small screwdriver
- 24mm spanner
- Step ladder or similar
- Wire cutters

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to 2.6 for the removal of the hydraulic doors, access to the calculator head and cable glands.

2) Follow the instructions given in section 3.2 (from 1 to 11) to remove the nozzle cladding and gain access to the nozzle reed switch.

3) Locate the nozzle reed switch to be changed and trace the cable to the calculator head.

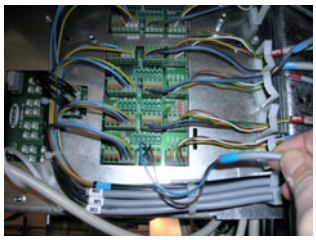
   Note : the nozzle reed switch cable has identification tags at each end.

4) Locate the nozzle reed 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 reed switch cable connection on the I/O board.
   - **Mainboard connection** - locate the nozzle reed switch cable connection on the mainboard.

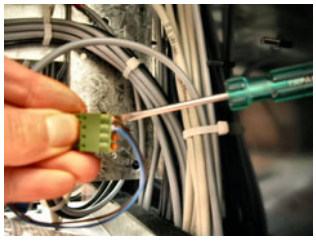
Issue A

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



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

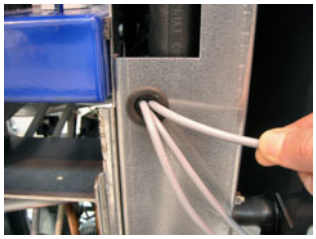
6) Using a small screwdriver, remove the connector from the nozzle reed switch.



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

7) Trace the cable down to the relevant gland. Remove any cable ties using wirecutters and loosen the relevant gland using a 24mm spanner.

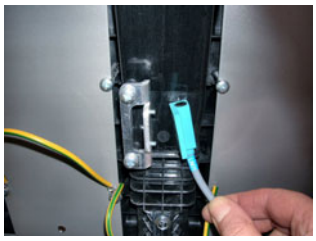
8) Pull the nozzle reed switch cable down through the unit to the nozzle switch bracket.



9) Locate the nozzle reed switch on the back of the nozzle boot. Remove the clip securing the nozzle reed switch to the nozzle reed switch bracket.

10) Remove the nozzle reed switch from the nozzle reed switch bracket.

11) Fit the new nozzle reed switch to the nozzle reed switch bracket and secure into position using the clip.



12) Route the nozzle reed switch 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.

Issue A

13) Using the small screwdriver, re-wire the cable to the relevant connector.

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 I/O cable security cover and apply new W&M sealing.

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

16) Follow the instructions given in section 2 to replace all removed access panels/doors.

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

18) Re-instate power to the dispenser.

19) Test the operation of the new nozzle reed switch.

20) Dispose of all waste accordingly.

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CONTENTS

Issue A

4 MAINTENANCE PROCEDURES - HYDRAULICS

4.1 Changing the external filter on pumps with filterbox

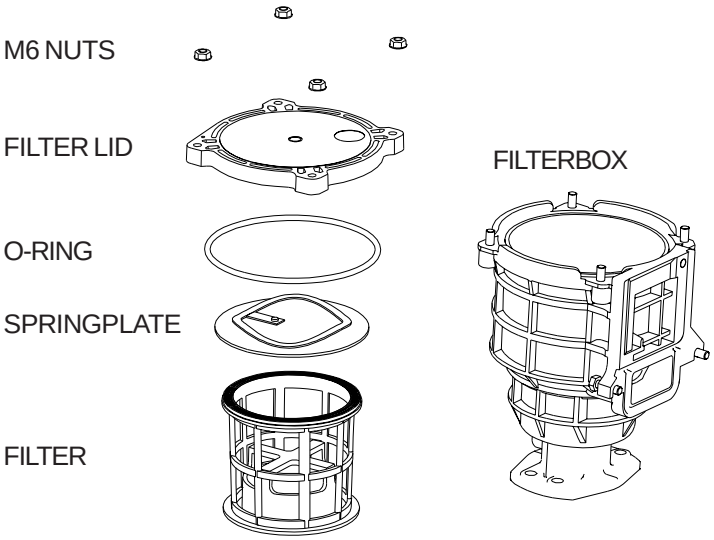
Before starting the maintenance procedure, please refer to section 2.

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



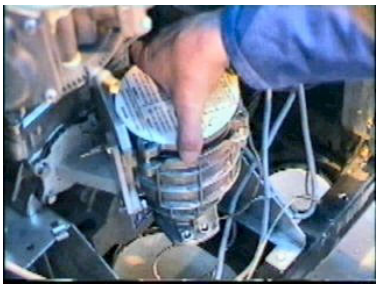
INSTRUCTIONS

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.

Issue A



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.

Issue A

4.2 Changing the internal filter on the TQP-RS pump

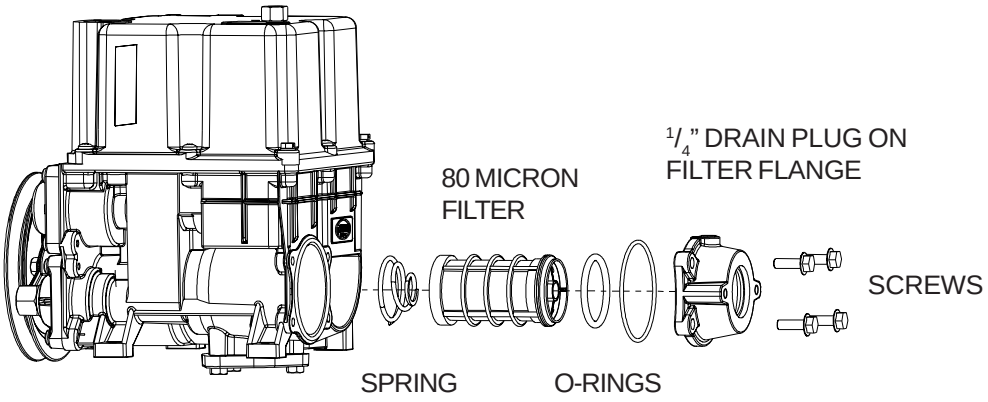
Before starting the maintenance procedure, please refer to section 2.

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



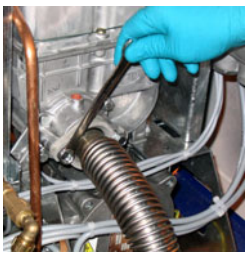
INSTRUCTIONS

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 TQP-RS 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 TQP-RS pump.

Disconnect the flange and flexible connection from the TQP-RS pump.

WARNING : BEWARE OF FUEL SPILLAGE.

Issue A

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 TQP-RS 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 TQP-RS 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 TQP-RS 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.

Issue A

4.3 Changing the bypass valve on the TQP-HS pump

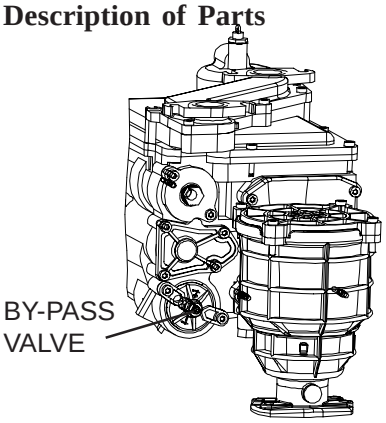
Before starting the maintenance procedure, please refer to section 2.

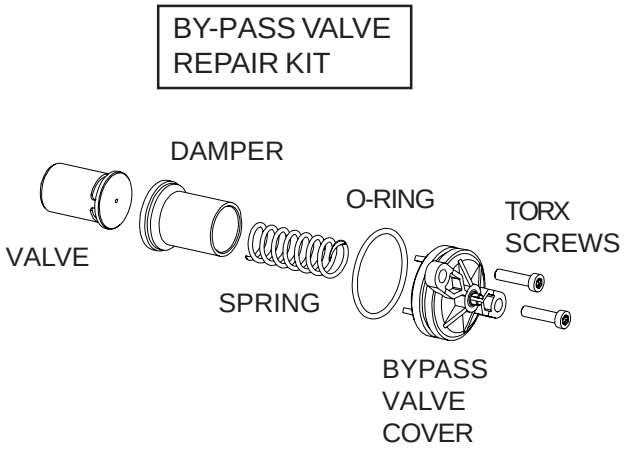
The bypass valve is accessed from side B of the dispenser (see section 2.3 for the identification of the dispenser sides).

Tools required

- Bypass Valve Repair Kit for TQP-HS 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.

Issue A

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.

Issue A

4.4 Changing the bypass valve on the TQP-RS pump

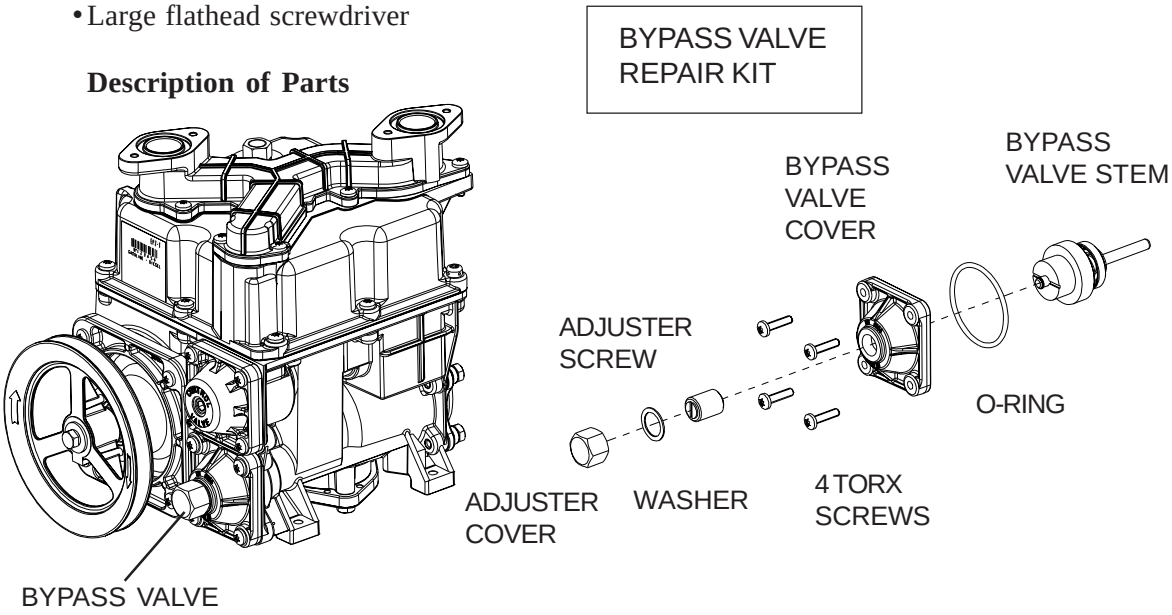
Before starting the maintenance procedure, please refer to section 2.

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

Tools required

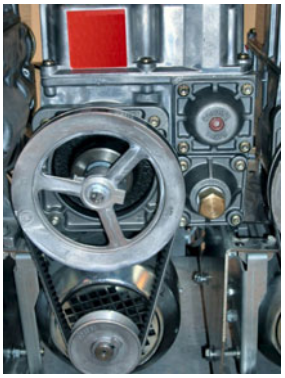
- Bypass Valve Repair Kit for TQP-RS Pump (refer to the Parts Manual for exact part identification)
- 24mm spanner
- TX30 bit
- Large flathead screwdriver

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.

Issue A

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.

Issue A

4.5 Changing the V-belt on the motor

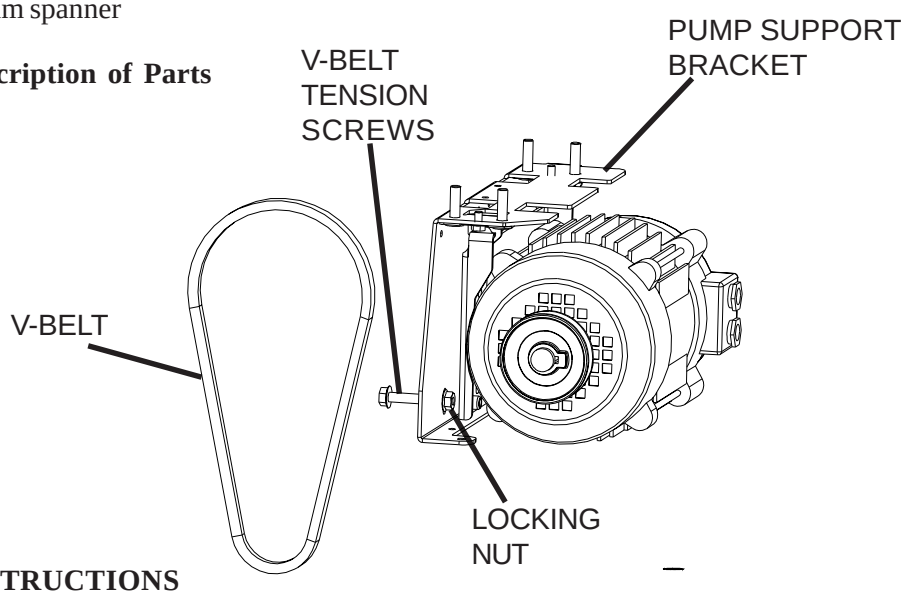
Before starting the maintenance procedure, please refer to section 2.

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 Parts

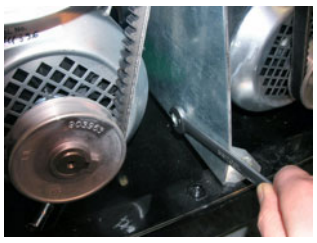


INSTRUCTIONS

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 the 13mm spanner, loosen 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.

Issue A

4.6 Changing the pulley on the TQP-HS pump

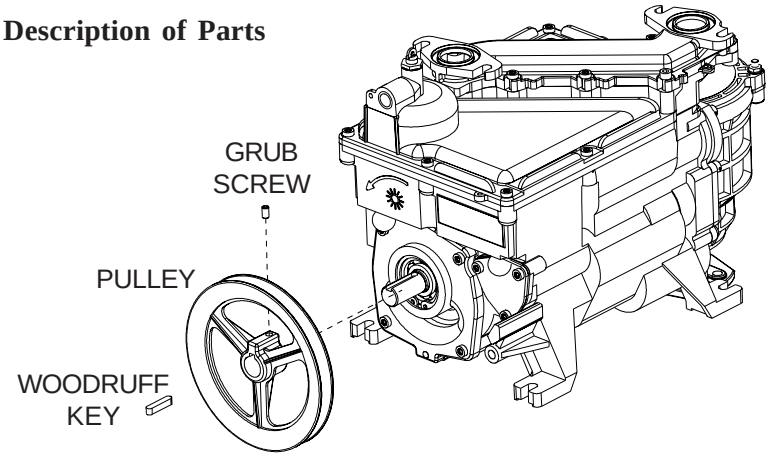
Before starting the maintenance procedure, please refer to section 2.

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 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 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.

Issue A

4.7 Changing the pulley on the TQP-RS pump

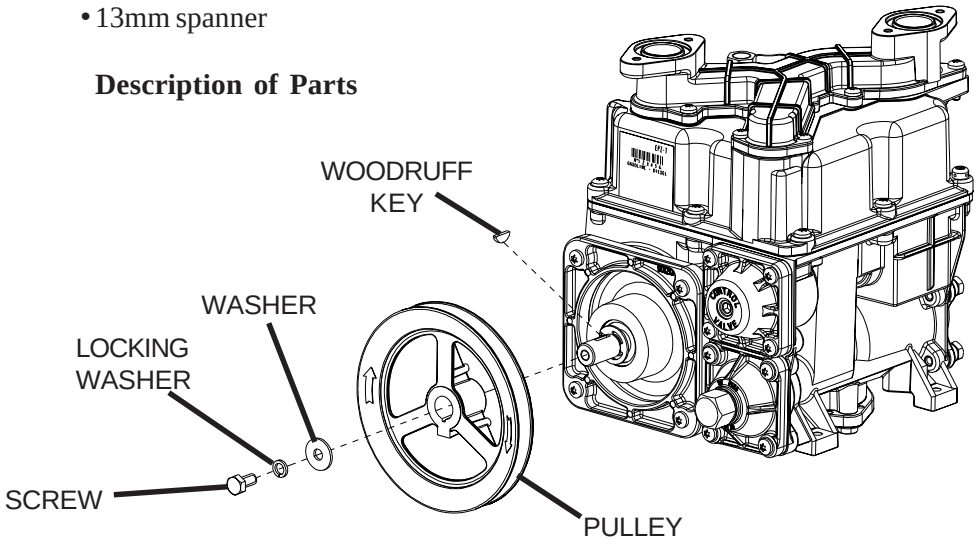
Before starting the maintenance procedure, please refer to section 2.

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

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to remove the hydraulic door.

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, plastic washer and flat washer 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 TQP-RS 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 TQP-RS 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.

Issue A

4.8 Changing theTQP-RS pump

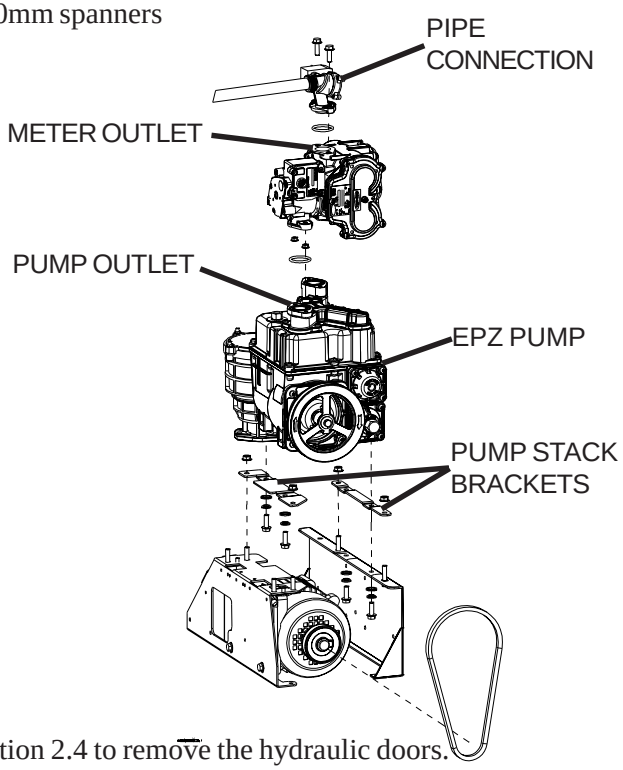
Before starting the maintenance procedure, please refer to section 2.

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)
- Replacement dampers
- 36mm, 22mm, 15mm, 13mm and 10mm spanners
- 3mm and 7mm allen keys
- 10mm and 8mm nut runners
- Loctite 577 sealant

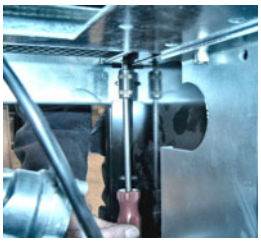
Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.4 to remove the hydraulic doors.

2) **Remove the Hydraulic Top Cover:-**



- Locate the two nuts securing the hydraulic top cover to the dispenser at the front.
- Use a 10mm nut runner to loosen and remove the nuts completely.

- Locate the seven nuts seven nuts securing the back of the hydraulic top cover to the dispenser.
- Use an 8mm nut runner to loosen and remove the nuts completely.

- Lift up the front of the hydraulic top cover and pull to release from the slots at the back. Remove the hydraulic top cover completely and place in a safe position.

Issue A

3) Identify the pumping unit to be replaced.

4) **TQP-RS 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.

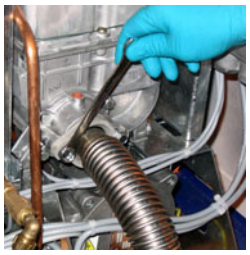
- Lift the non-return valve on the filter box. Drain the excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

5) **TQP-RS Pumps with Internal Filter only:-**

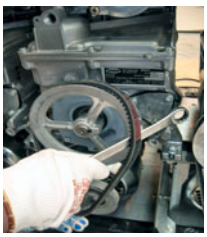
- Locate the drain plug on top of the filter flange on the relevant TQP-RS pump.
- Using a 7mm allen key, loosen and remove the drain plug. Drain the excess fuel into a suitable container.

WARNING : BEWARE OF FUEL SPILLAGE.

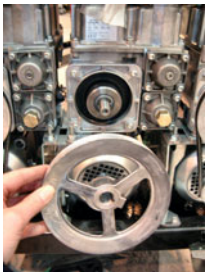


- Using a 13mm spanner, loosen the two screws on the flange on the flexible connection at the back of the TQP-RS pump.
- Disconnect the flange and flexible connection from the TQP-RS pump and move clear of the pump.

WARNING : BEWARE OF FUEL SPILLAGE.



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



7) Follow the instructions given in section 4.7 to remove the pump pulley.

8) Using a 3mm allen key, loosen and remove the four screws on the pulser casing. Remove the pulser from the meter.

Issue A

9) Using a 13mm spanner, loosen the two screws on the meter outlet connection at the top of the meter(s) secured to the pump.

WARNING : BEWARE OF FUEL SPILLAGE.

10) Leaving the screws loose (but not removed), rotate the meter flange(s) away from the pipe connection(s). Lift the pipe connection(s) away from the meter outlet connection(s).

11) Using a 13mm spanner, loosen and remove the four nuts on the two pump stack brackets positioned at the bottom of the pump.

12) 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.

13) **TQP-RS Pumps with External Filter Box only:-**

- Pull the motor cabling clear of the filter box, if fitted.
- From side B of the dispenser, lift the pump, filter box and meter(s) out towards the filter box end.

WARNING : BEWARE OF FUEL SPILLAGE.

14) **TQP-RS Pumps with Internal Filter only:-**

- From side A of the dispenser, lift the pump and meter(s) out towards the pulley end.

WARNING : BEWARE OF FUEL SPILLAGE.

Disconnect Meter from Pump (all TQP-RS Pumping Units):-

15) Using a 10mm spanner, loosen and remove the two screws at the bottom of the meter to disconnect the meter inlet connection from the pump outlet connection.

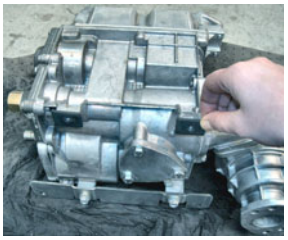
WARNING : BEWARE OF FUEL SPILLAGE.

Issue A

16) Remove meter(s) from the pumping unit.

17) Use the 13mm spanner to remove the two pump stack brackets from the bottom of the pump.

18) Fit four dampers to the new pump base before fitting the two pump stack brackets to the new pump.



19) Use the 10mm spanner to re-fit the meter(s) to the new pump.

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

21) Position the new pump and meter(s) into the unit.

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

22) Using the 13mm spanner, re-fit the four nuts to secure the pump to the pump support bracket.

23) Re-fit the pipe connection(s) to the meter outlet(s) and secure by slotting the flange into position and tightening the two screws using the 10mm spanner.

24) Re-fit the pulser into the pulser casing on the meter.

25) Using the 3mm allen key, re-fit and tighten the four screws to secure the pulser to the meter.

26) Apply new W&M sealing to the pulser and meter, where applicable.

27) Fit the pulley to the pump.

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

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

30) **TQP-RS 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 TQP-RS pump using a new gasket if required.

Issue A

31) **TQP-RS 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.

32) **Re-fit the Hydraulic Top Cover:-**

- Place the hydraulic top cover in the correct position and re-fit the seven nuts to secure to the dispenser at the back.
- Re-fit the two nuts to secure the hydraulic top cover to the dispenser at the front.

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

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

35) Re-instate power to the dispenser.

36) Test operation of the new pump.

37) Dispose of all waste accordingly.

4.9 Changing the TQP-HS pump

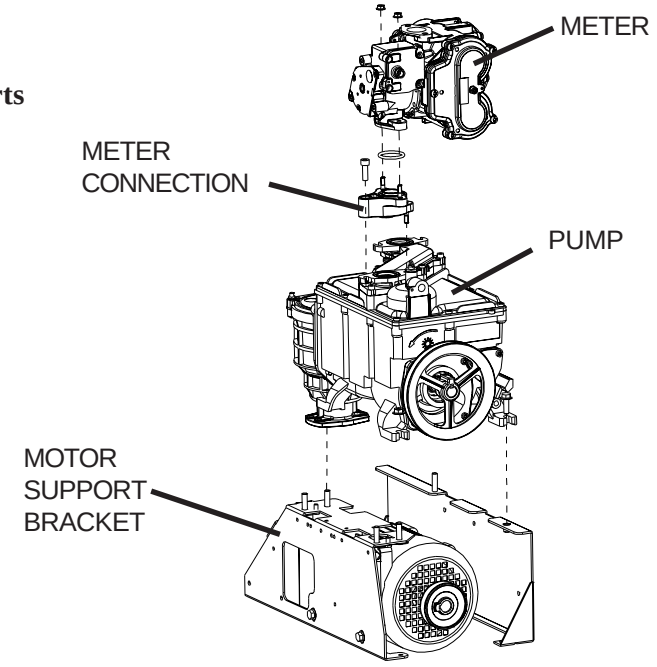
Before starting the maintenance procedure, please refer to section 2.

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.

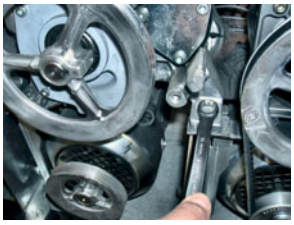
Issue A

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

6) Using a 10mm spanner, remove the two screws and nuts on the meter connection at the top of the pump to disconnect the meter from the pump.

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.

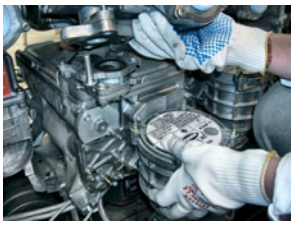


9) Pull the motor cabling clear of the filter box.

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 10mm spanner, re-fit the two screws securing the meter to the pump.

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.

Issue A

4.10 Changing the motor

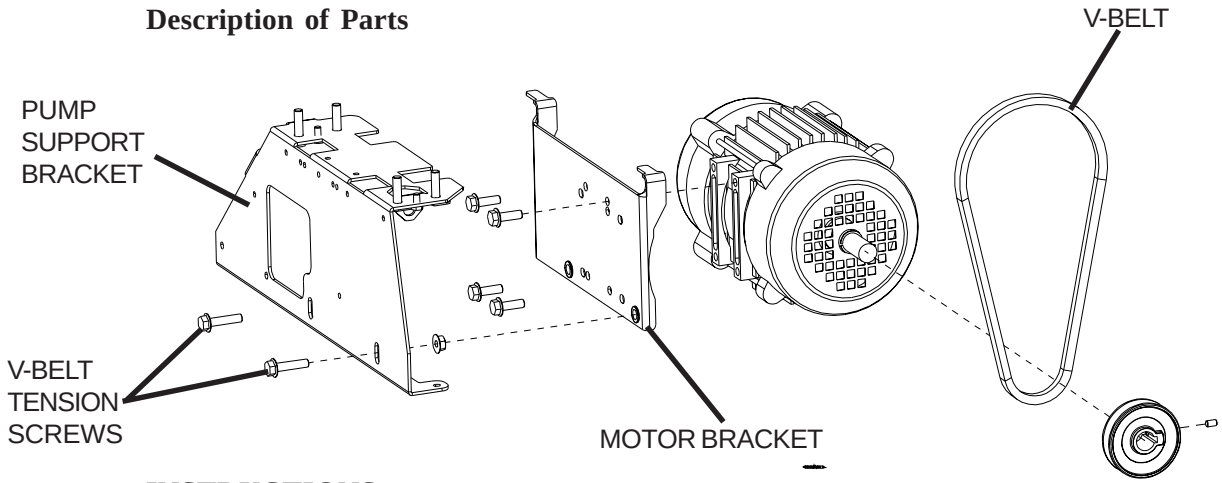
Before starting the maintenance procedure, please refer to section 2.

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

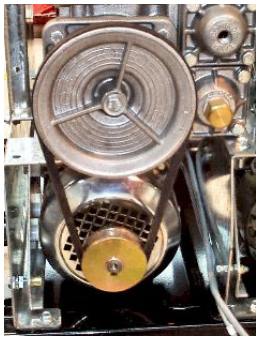
Description of Parts



INSTRUCTIONS

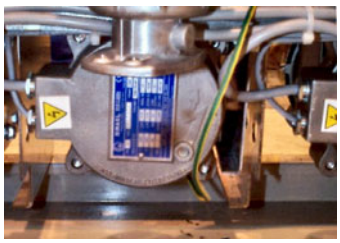
1) Follow the instructions given in sections 2.4 and 2.6 to gain access to the hydraulic area and the cable glands.

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.

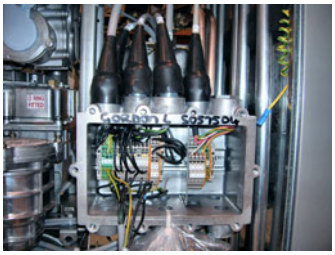
Issue A



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.

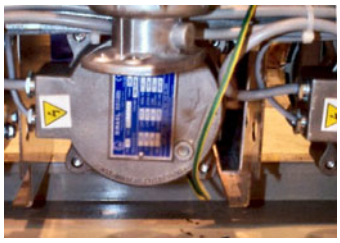
5) Cut the cable ties as required using the wire cutters. Push up the sheath covering the relevant cable gland and loosen this gland in the junction box using a 32mm spanner.



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

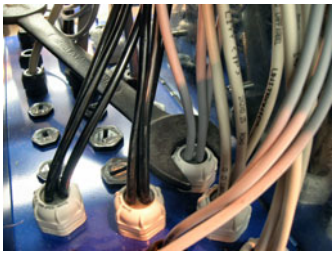
7) Remove the motor power cable from the junction box, remove the sheath completely and pull the cable through to the relevant motor.

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



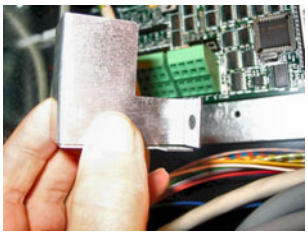
9) From side B of the dispenser, identify the motor control cable and trace to the calculator head.

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

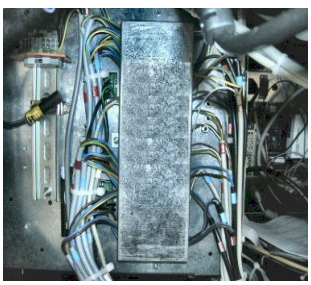


10) Cut the cable ties as required using the wire cutters. Using a 32mm spanner, loosen the relevant gland.

11) Remove all sealing etc to access the relevant board:-



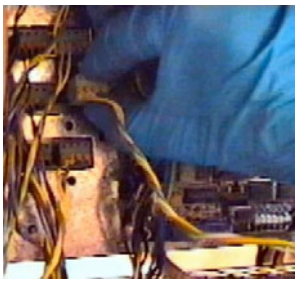
- **HOM Board connection** - break the W&M seals using wirecutters. Loosen and remove screw on HOM board sealing bracket. Locate the motor cable connection on the HOM board.



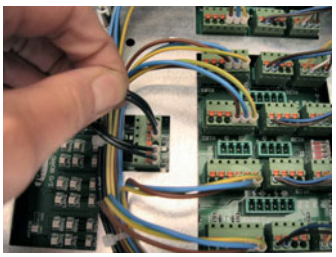
- **I/O Board connection** - break the W&M seals using wirecutters. Loosen and remove the screw on the I/O cable security cover. Locate the motor cable connection on the I/O board.

Issue A

- **Mainboard connection** - disconnect all connections on the 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 motor cable connection on the mainboard.



12) Disconnect the motor connection from the relevant board in the calculator head.



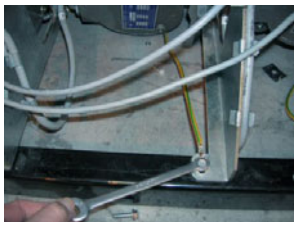
Note : take care to note the position of this connection on the relevant board.

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

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

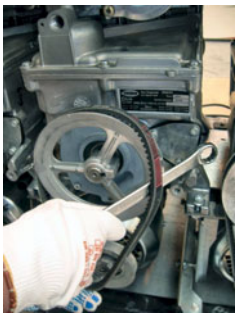
15) **SINGLE PHASE MOTORS WITH EXTERNAL CAPACITORS ONLY:-**

- Follow the instructions in section 5.5 to access the motor capacitor box.
- Trace the relevant capacitor cable to the capacitor box and disconnect the correct wires.

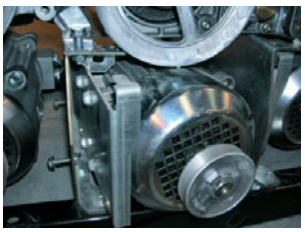


16) Using a 10mm spanner, disconnect the motor earth wire.

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) **SINGLE PHASE MOTORS ONLY:-**

- Remove the pulley on the pump (refer to section 4.6 for PAS V3 and 4.7 for EPZ pumps).

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

21) 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.

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

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

24) **SINGLE PHASE MOTORS ONLY:-**

- Replace the pump pulley as described in section 4.6 for PAS V3 and 4.7 for EPZ pump.

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

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

27) 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.

28) **SINGLE PHASE MOTORS WITH EXTERNAL CAPACITORS:-**

- Route the capacitor cable up to the capacitor box and re-connect.
- Replace the capacitor box lid as described in section 5.5.

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

Note : refer to the wiring diagram in section 7.

30) Re-connect the motor control cable connection to the relevant board in the calculator head.

Note : refer to the wiring diagram in section 7.

31) 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.

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

33) 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.

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

Note : refer to the wiring diagrams in section 7.

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

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

37) Close the calculator head access door and lock.

38) Re-fit the nozzle panel.

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

40) Re-instate power to the dispenser.

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

42) Dispose of all waste accordingly.

4.10.1 MOTOR RELAYS

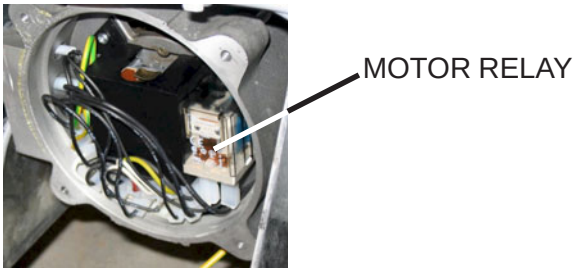
Before starting the maintenance procedure, please refer to section 2.

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



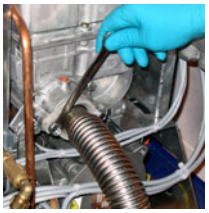
INSTRUCTIONS

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

2) **TQP-RS PUMPS ONLY**

- Locate the drain plug on top of the filter flange on the relevant TQP-RS 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 TQP-RS pump.
- Disconnect the flange and flexible connection from the TQP-RS pump.

WARNING : BEWARE OF FUEL SPILLAGE.

3) **TQP-HS 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.

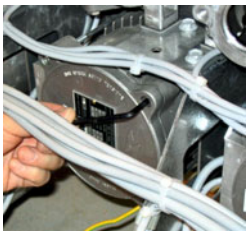
WARNING : BEWARE OF FUEL SPILLAGE.

- 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.

Issue A

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.

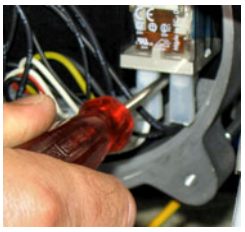


5) Remove the rear cover completely and place in a safe position.

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.

Issue A

4.10.2 MOTOR CENTRIFUGAL SWITCH (SINGLE PHASE MOTORS ONLY)

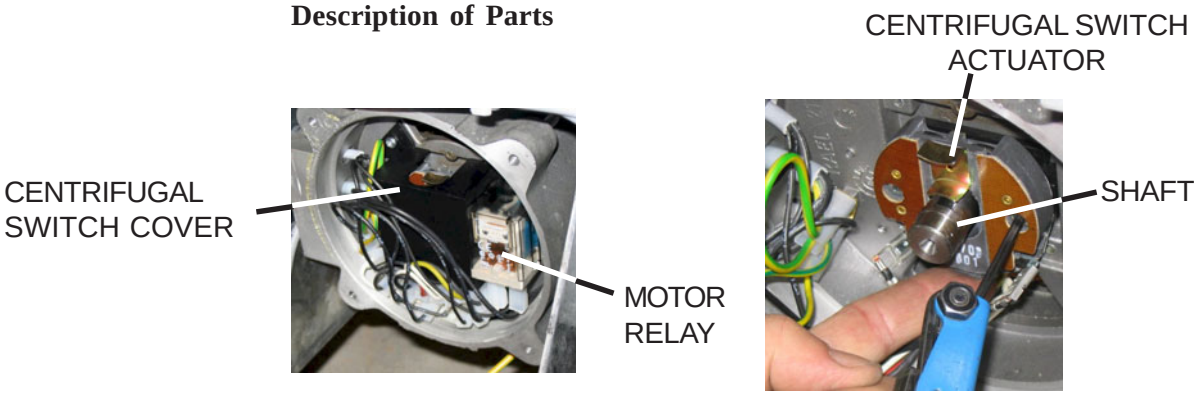
Before starting the maintenance procedure, please refer to section 2.

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.

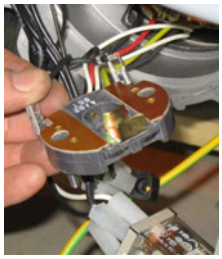
Issue A

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.

Issue A

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.

Issue A

4.11 Changing the TQM Meter

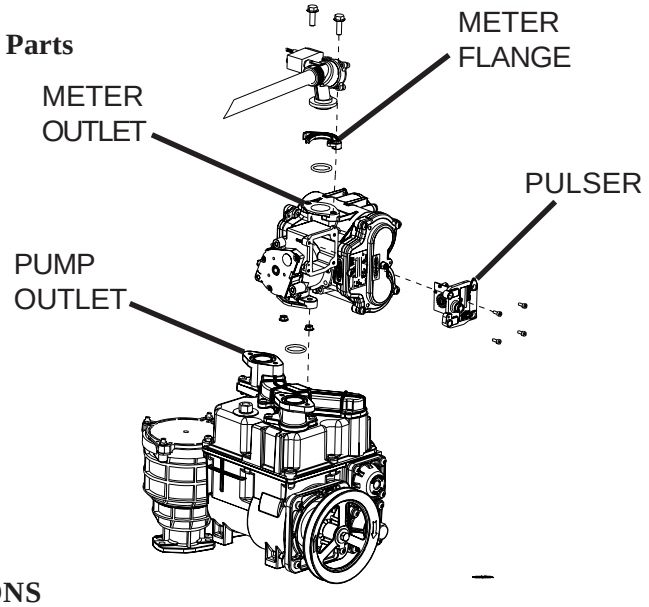
Before starting the maintenance procedure, please refer to section 2.

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 o-rings
- Replacement Weights & Measurements sealing
- 10mm, 13mm and 15mm spanners
- 3mm allen key
- Wire cutters

Description of Parts

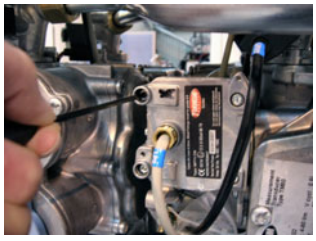


INSTRUCTIONS

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

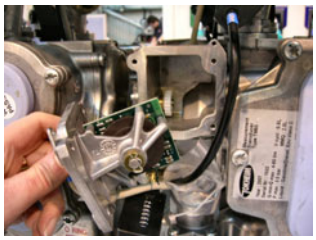
2) Use the wire cutters to remove the W&M seals from the meter and pulser.

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



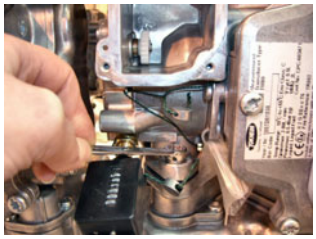
Issue A

4) Disconnect the pulser and cable from the pulser casing and remove from meter.



5) **TQP-RS PUMPS ONLY**

Using a 10mm spanner, remove the two nuts at the bottom of the meter to disconnect the meter inlet connection from the pump outlet connection.



WARNING : BEWARE OF FUEL SPILLAGE.

6) **TQP-HS PUMPS ONLY**

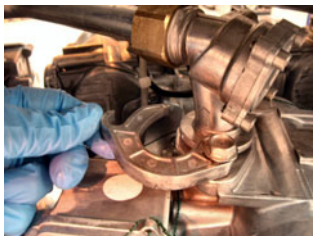
Using a 10mm spanner, remove the two screws at the bottom of the meter to disconnect the meter inlet connection from the pump.

WARNING : BEWARE OF FUEL SPILLAGE.

7) Using a 13mm spanner, loosen the two screws on the meter outlet connection at the top of the meter.

WARNING : BEWARE OF FUEL SPILLAGE.

8) Once screws are loose, rotate the meter flange away from the pipe connection.



9) Lift the pipe connection away from the meter outlet connection.

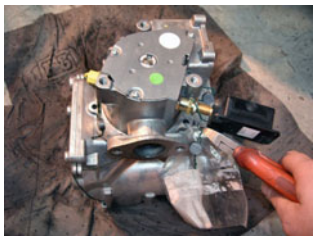
10) Carefully remove the meter from the dispenser.

WARNING : BEWARE OF FUEL SPILLAGE.

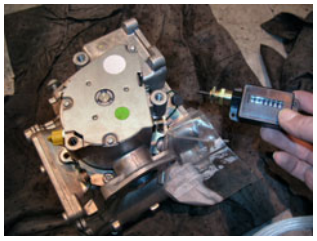
11) Use a 13mm spanner to remove the flange from the top of the meter.

Issue A

12) Use wire cutters to remove the tote sealing.



13) Use a 15mm spanner to remove the tote from the meter.



14) Fit a new o-ring to the pipe connection.

15) Fit a new o-ring to the pump outlet connection.

16) Fit the tote to the new meter and apply new sealing.
17) Use the 13mm spanner to fit the flange to the top of the new meter. Do not fully tighten the screw.
18) Position the meter inlet of the new meter onto the pump outlet connection and re-fit the two screws, securing the meter inlet to the pump connection.
19) Fit the pipe connection to the meter outlet and secure by slotting the flange into position and tightening the two screws.
20) Fit the pulser into the pulser casing on the meter.
21) Using the 3mm allen key, re-fit and tighten the four screws, securing the pulser to the meter.
22) Apply new W&M sealing to the pulser and meter, where applicable.
23) Ensure that all tools and unused materials are removed.
24) Re-fit the hydraulic doors to the dispenser and lock.
25) Re-instate power to the dispenser.
26) Test operation of the new meter.
27) Dispose of all waste accordingly.

Issue A

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CONTENTS

Issue A

5 MAINTENANCE PROCEDURES - ELECTRONICS

Q510 dispensers can be equipped with a choice of calculator heads with each side of the dispenser housing different electronics depending on the dispenser model and the options ordered.:-

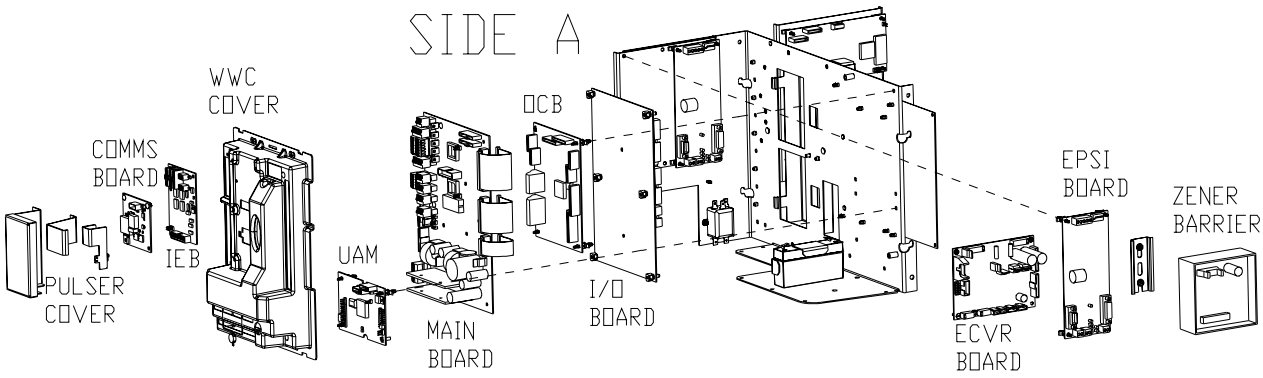
- Standard Head (with optional IQ6000, IQ7000 or Crypto VGA DIT)
- Media Head (with optional IQ6000 or Crypto VGA DIT and optional Vidium Multimedia)

Note: 4 Active Hose Models have two separate WWCs and therefore the location of the components may be different to what is specified in this section.

5.1 Calculator Head Components

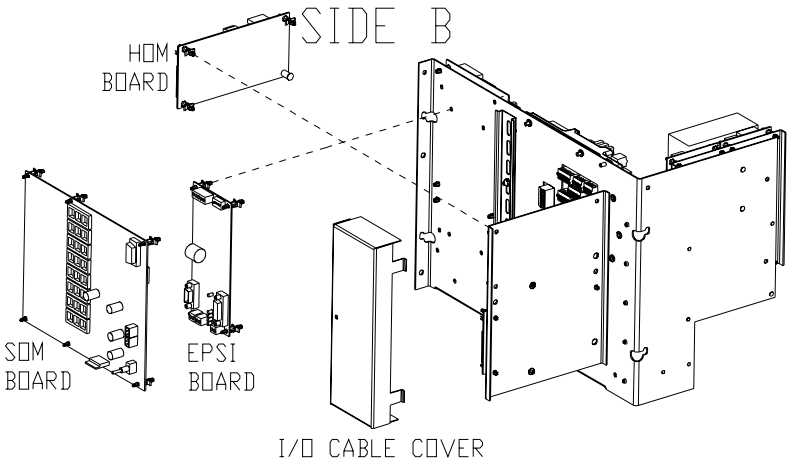
Side A of the dispenser typically houses the following:-

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



Side B of the dispenser typically houses the following:-

- Hydraulic Option Module (HOM) Board for VHS models only (on side wall of head)
- I/O Board connections
- EPSI Board (optional)
- Sound Option Module (SOM) Board (optional)



Issue A

5.2 Common Maintenance Procedures (Standard & Media Heads)

Note : The photos in this section may not be representative of all dispensers which will vary according to the exact model and options ordered.

5.2.1 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.

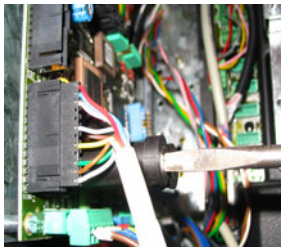
The fuses are accessed from side A of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

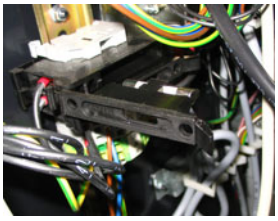
- Replacement fuse
- Flathead screwdriver

INSTRUCTIONS

1) Follow the instructions given in section 2.6 for gaining access to the calculator head.



2) Locate the fuse needing replaced (on DIN rail, centreplate cover or VRC board).
3) **Fuses on WWC 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 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.

Issue A

5.2.2 CHANGING THE BATTERY PACK

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

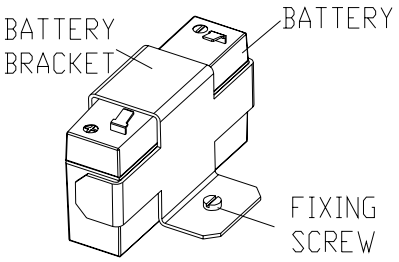
Ensure the dispenser is isolated and all power is turned off.

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

Tools required

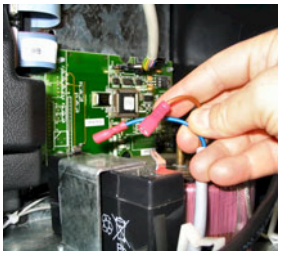
- Replacement battery
- 7mm spanner

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) Test the operation of the new battery.

12) Dispose of all waste accordingly.

Issue A

5.2.3 CHANGING THE MP-T1 PULSER ON THE METER

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

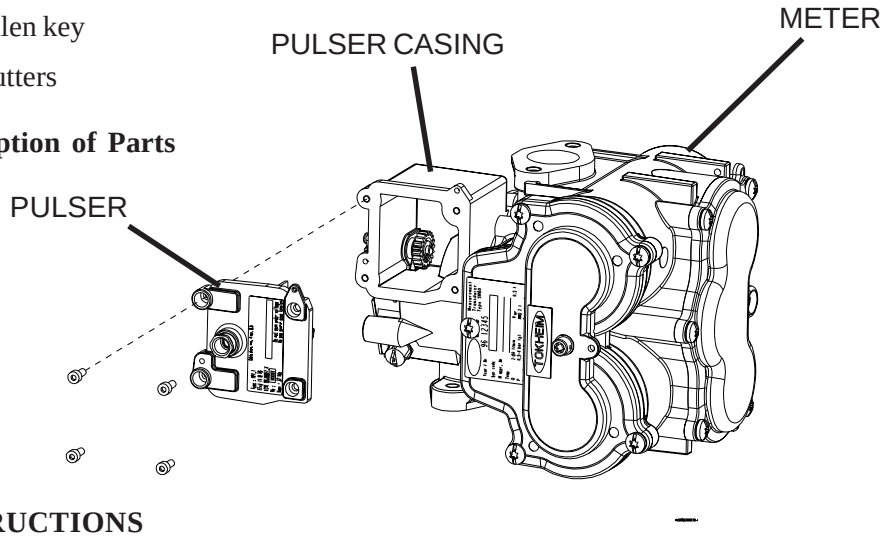
Ensure the dispenser is isolated and all power is turned off.

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 flat head screwdriver
- 7mm spanner or nutrunner
- 3mm allen key
- Wire cutters

Description of Parts



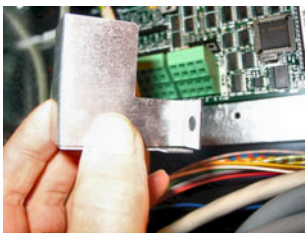
INSTRUCTIONS

1) Follow the instructions given in section 2.4 to 2.6 for the removal of the hydraulic doors, access to the 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.

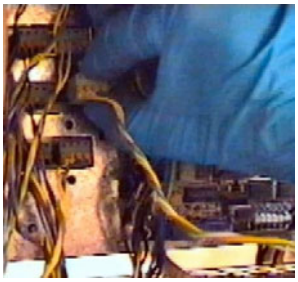
3) Disconnect the pulser cable connection in the head:-



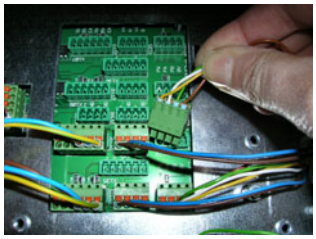
- **HOM Board connection** - break the W&M seals using wirecutters. Loosen and remove screw on HOM board sealing bracket. Locate the pulser cable connection on the HOM board.

Issue A

- **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.

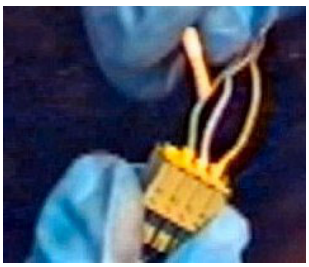


- **Mainboard connection -** disconnect all connections on the the Comms board and IEB (where fitted). Break the W&M seals on the pulser sealing bracket. Loosen and remove the two screws on the pulser sealing bracket and remove completely. Locate the pulser cable connection on the mainboard.



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

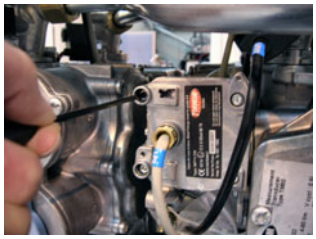
   Note : take care to note the position of this connection on the relevant board.



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

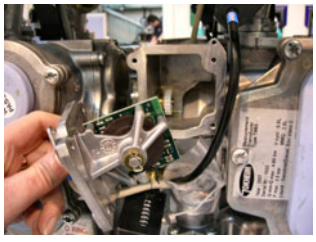
WARNING : NOTE THE ORDER OF THE COLOURED WIRES IN THE CONNECTOR.

6) Pull the pulser cable down from the calculator head to the relevant gland. Use a 32mm spanner to loosen the gland then pull the cable through and along to the relevant meter.



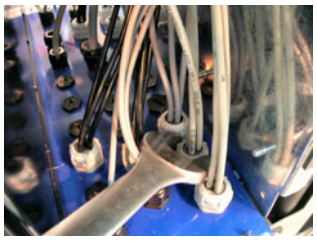
7) Using a 3mm allen key, loosen and remove the four screws on the pulser casing. Remove the pulser and cable from the dispenser.

8) Fit the new pulser into the pulser casing.



9) Using the 3mm allen key, re-fit and tighten the four screws on the pulser casing.

Issue A



10) Feed the 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.

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

    Note : refer to the wiring diagram in section 7.

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

    Note : refer to the wiring diagram in section 7.

13) 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.

14) 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.

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

16) Follow the instructions given in section 2 to replace all removed access panels/doors.

17) Re-instate power to the dispenser.

18) Test the operation of the new pulser.

19) Dispose of all waste accordingly.

Issue A

5.2.4 CHANGING THE CUSTOMER SALES DISPLAY BOARD (CSD) OR ELECTRO-MECHANICAL TOTALISER BOARD (EMT)

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

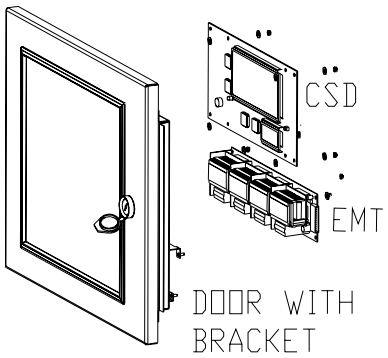
Ensure the dispenser is isolated and all power is turned off.

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

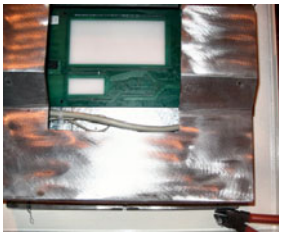
- Replacement CSD or EMT board (refer to the Parts Manual for exact part identification)
- 7mm & 5.5mm spanners
- Replacement W&M seals
- Wirecutters

Description of Parts

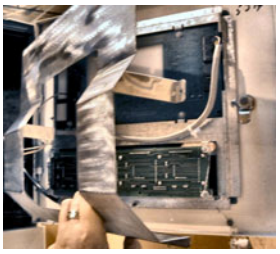


INSTRUCTIONS

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



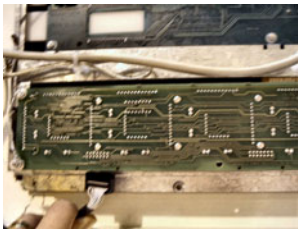
2) Where fitted, use wirecutters to cut the W&M seals on the EMT security bracket.



3) Where fitted, use a 7mm nutrunner 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.

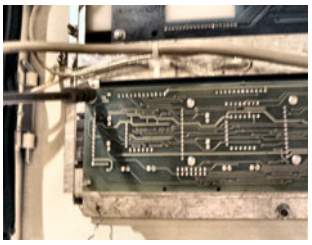
EMT Board only:-



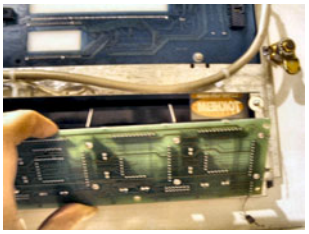
5) Disconnect the tote cable from the EMT board.

6) Where fitted, use wirecutters to cut the W&M seals on the EMT board.

Issue A



7) Use a 5.5mm nutrunner to remove the four 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.

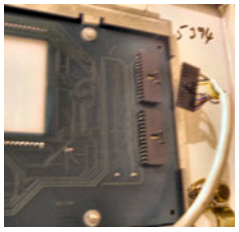


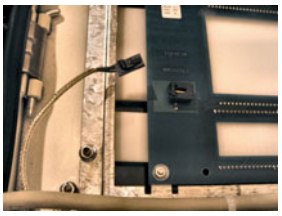
10) Re-fit the four nuts and washers to secure the new EMT board to the display bracket.
11) Where applicable, re-apply the W&M sealing to the new EMT board.

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

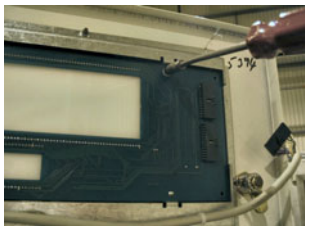
12) Re-connect the tote cable to the new EMT board.

CSD Board only:-

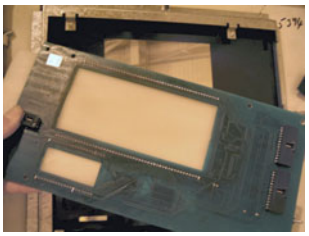




13) Disconnect the display cable from the CSD board.
14) Disconnect the infrared cable from the CSD board.



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 to the display bracket and secure using four sealing nuts and washers.
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 the operation of the new EMT or CSD board.
25) Dispose of all waste accordingly.

Issue A

5.2.5 CHANGING THE COMMS BOARD OR I/O EXTENSION BOARD

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

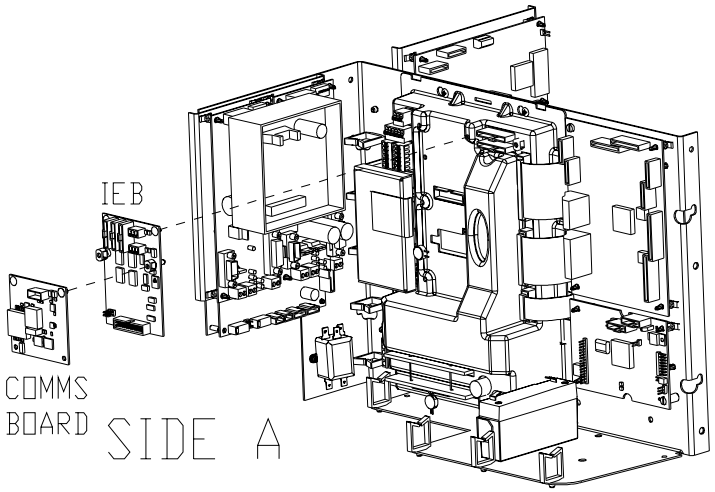
Ensure the dispenser is isolated and all power is turned off.

The Comms Board and I/O Extension Board (IEB) are accessed from side A 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

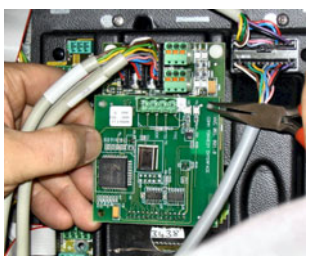
1) Follow the instructions given in section 2.5 to gain access to the calculator head on side A of the dispenser.

Comms Board Removal:-

2) Locate the Comms Board on the WWC Centreplate 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.

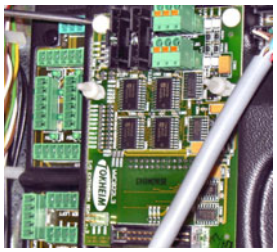


4) Use the long nose pliers to carefully squeeze the plastic pillars to release the Comms Board.

5) Carefully remove the Comms Board.

Issue A

IEB Removal:-

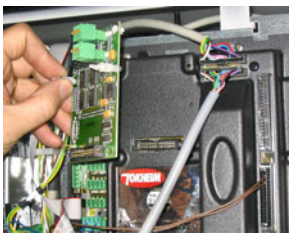


6) Remove the Comms Board as described.

7) Locate the IEB on the WWC Centreplate 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 Centreplate 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 Centreplate 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 the operation of the new comms board and/or I/O extension board.

17) Dispose of all waste accordingly.

Issue A

5.2.6 REPLACING THE I/O BOARD OR MAINBOARD

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

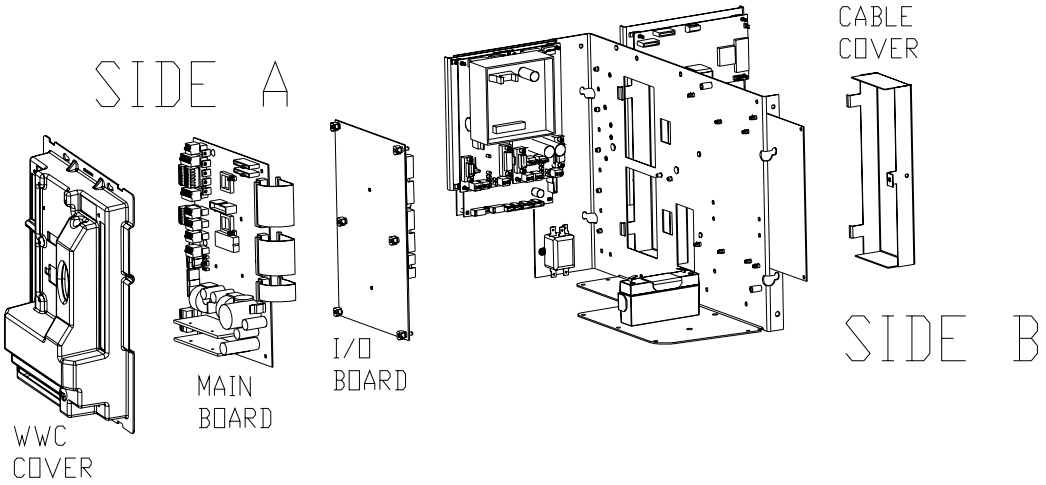
Ensure the dispenser is isolated and all power is turned off.

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

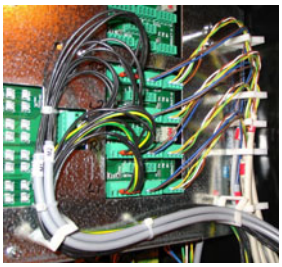
1) Follow the instructions given in section 2.5 to gain access to the calculator head.
2) Follow the instructions in section 5.9 to remove the Comms Board and IEB (where fitted).

Disconnection of I/O Board Connections (where fitted):-

3) Locate the I/O cable security cover on side B 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.

Issue A

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



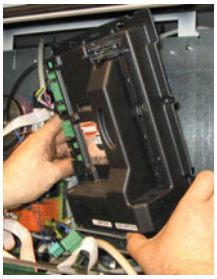
Note: Take care to note the position of the connector(s) on the I/O Board.

Removal of WWC Cover Assembly:-

7) Locate the WWC cover assembly (including Mainboard and I/O Board where fitted) on the WWC Centreplate 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.

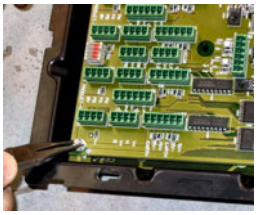
9) Locate the connectors and cables on the WWC cover. Disconnect ALL connectors and cables from the WWC cover.



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

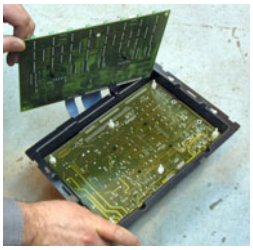
10) Use the cross head screwdriver to loosen the four screws on the WWC cover key slots.

11) Carefully remove the WWC cover assembly from the WWC Centreplate.



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.

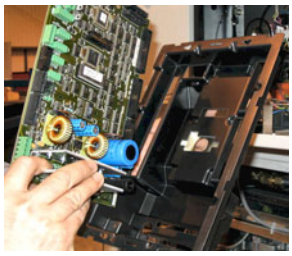
Removal of Mainboard:-

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.

Issue A

17) Carefully remove the mainboard from the WWC Centreplate 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 B 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 the operation of the new I/O board or mainboard.
31) Dispose of all waste accordingly.

5.2.7 CHANGING THE PRESET KEYPAD

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

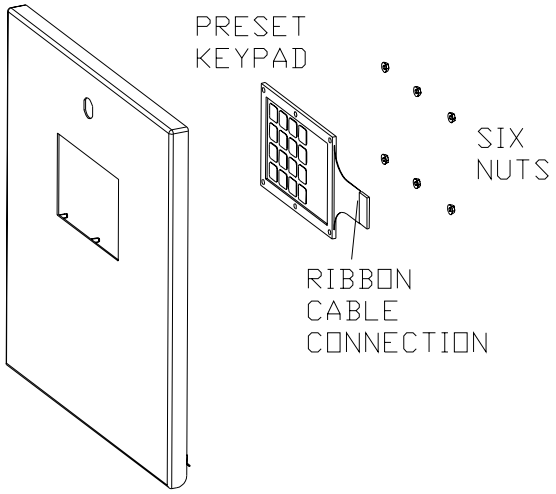
Ensure the dispenser is isolated and all power is turned off.

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 2.6 to gain access to the DIT box on the relevant side of the dispenser.
2) Locate the preset keypad on the back of the DIT 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 the operation of the new preset keypad.
10) Dispose of all waste accordingly.

Issue A

5.2.8 REPLACING THE HOM BOARD (VHS MODELS ONLY)

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

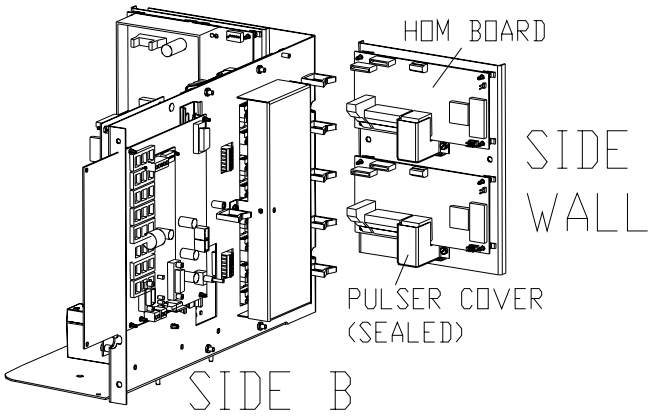
Ensure the dispenser is isolated and all power is turned off.

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

Tools required

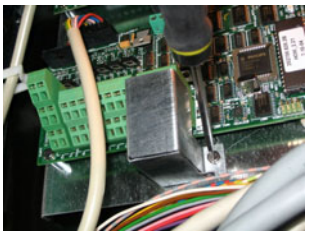
- Replacement HOM Board (refer to the Parts Manual for exact part identification)
- Replacement W&M seals
- Flat head screwdriver
- Long nose pliers

Description of Parts



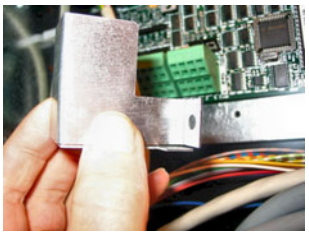
INSTRUCTIONS

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

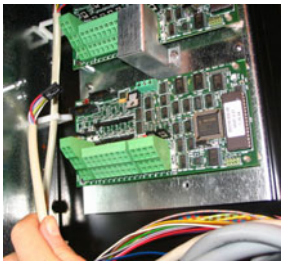


2) Locate the HOM Board on side B of the calculator head (on the RHS facing side B).

3) Use the wirecutters to cut the W&M seals on the sealed pulser connection on the HOM board.



4) Use the flat head screwdriver to loosen and remove the single screw on the pulser connection sealing bracket. Remove the bracket completely and place in a safe position.

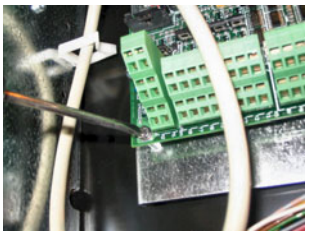


5) Locate the connectors and cables on the back of the HOM board. Disconnect ALL connectors and cables from the board.

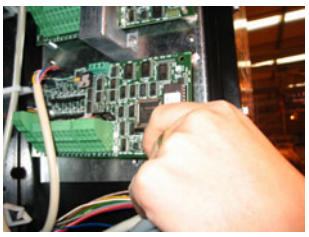
Note: Take care to note the position of the connector(s) on the HOM Board.

Issue A

6) Use the flat head screwdriver to loosen and remove the single screw on the HOM board.



7) Use the long nose pliers to squeeze the three plastic pillars to release the HOM board. Remove the HOM board completely.



8) Position the new HOM board onto the plastic pillars.
9) Re-fit the screw to secure the new HOM board to the head.
10) Re-connect all plugs to the new HOM board.
11) Re-fit the pulser connection sealing bracket and secure in position using the sealing screw.
12) Re-apply W&M seals to the pulser connection sealing bracket.

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

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 the operation of the new HOM board.
17) Dispose of all waste accordingly.

Issue A

5.2.9 REPLACING THE PRESET BUTTON/PRESET REED SWITCH

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

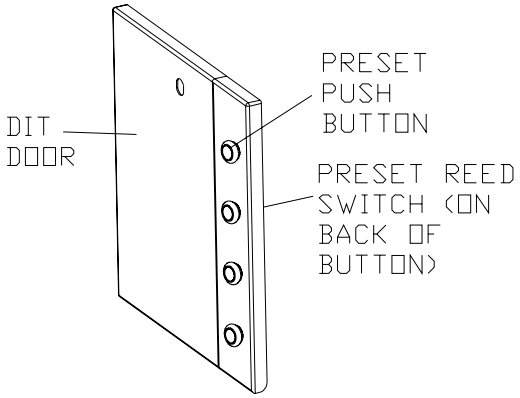
Ensure the dispenser is isolated and all power is turned off.

The preset buttons are accessed from either side of the DIT spacebox. The preset reed switch connections are accessed from side B of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement Button/Preset Reed Switch (refer to the Parts Manual for exact part identification)
- Small screwdriver and flat head screwdriver
- Wire cutters
- 5.5mm nut runner

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in sections 2.5 and 2.6 to gain access to the DIT spacebox and calculator head side B of the dispenser.

To change a preset button :-

2) Locate relevant button to be changed. Unscrew the nut on the back of the button from inside the DIT spacebox.

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

To change a preset reed switch :-

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

5) Remove the bracket and preset reed switch from the back of the button.

Issue A

6) Using a flat head screwdriver and a 5.5mm nut runner, remove the two nuts, washers and screws to release the preset reed switch from the switch bracket.

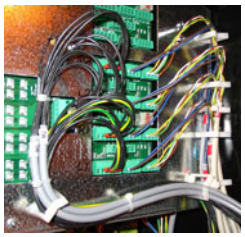
7) Trace the preset reed switch cable up to the calculator head using the wire cutters to cut any cable ties.

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

8) Using the wirecutters, break the W&M seals on the I/O cable security cover. Loosen and remove the screw on the I/O cable security cover and remove the cover completely.

9) Locate and disconnect the relevant preset reed switch cable connection on the I/O board.

10) Using a small screwdriver, release the relevant wires from the connector.



11) Ensure the preset reed switch cable is free from any cable clips and remove the cable completely.

12) Fit the new preset reed switch to the switch bracket.

13) Secure the preset reed switch to the switch bracket using the flathead screwdriver and 5.5 nut runner to re-fit and tighten the two nuts, washers and screws.

14) Re-fit the switch and switch bracket to the back of the button from inside the DIT spacebox.

15) Re-fit the nut to the back of the button to secure the switch bracket and button to the DIT spacebox.

16) Re-route the preset reed switch cable up to the calculator head.

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

17) Using a small screwdriver, re-fit the connector to the preset reed switch cable.

18) Re-connect the cable connector to the relevant board in the calculator head.

19) Re-fit the I/O cable security cover and apply new Weights & Measurements seals where applicable.

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

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

21) Follow the instructions given in section 2.7 to re-fit the DIT/blind DIT door.

22) Close the calculator head door and lock.

23) Re-instate power to the dispenser.

24) Test the operation of the new preset reed switch.

25) Dispose of all waste accordingly.

Issue A

5.2.10 REPLACING THE 40/80 BUTTON/40/80 REED SWITCH

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

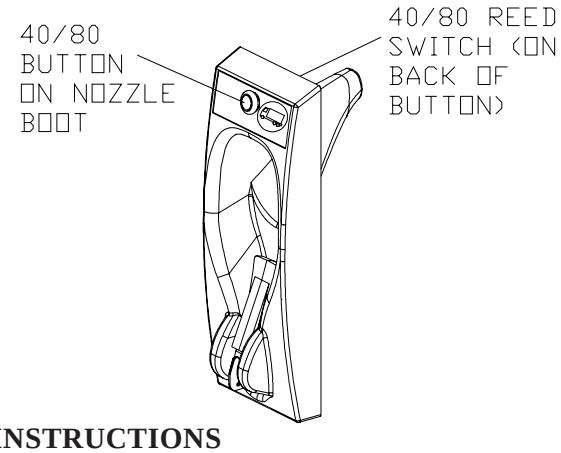
Ensure the dispenser is isolated and all power is turned off.

The 40/80 buttons are accessed from the nozzle boot on either side of the dispenser. The 40/80 reed switch connection is accessed from side B of the calculator head (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement Button/40/80 Reed Switch (refer to the Parts Manual for exact part identification)
- Small screwdriver and flat head screwdriver
- Wire cutters
- 5.5mm nut runner
- 4mm allen key

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 3.2 (from 1 to 11) to remove the nozzle cladding and gain access to the 40/80 button and 40/80 reed switch.

To change a 40/80 button :-

2) Locate the relevant button to be replaced. Unscrew the nut on the back of the button from the inside of the bottom nozzle panel.

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

To change a 40/80 reed switch :-

4) Follow the instructions given in section 2.4 to 2.8 for the removal of the hydraulic doors, top cover, access to the calculator head, DIT spacebox and cable glands.

5) Locate the 40/80 reed switch to be changed and trace the cable to the calculator head.

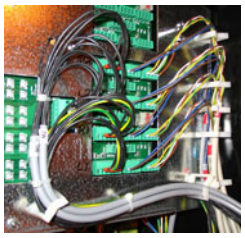
Note : the 40/80 reed switch cable has identification tags at each end.

Issue A

6) Remove the W&M seals using wirecutters. Using a screwdriver, loosen the screw on the I/O board cable security cover and remove cover completely.

7) Locate and disconnect the 40/80 reed switch cable connection from the I/O board in the calculator.

Note : take care to note the position of this connection on the I/O board.



8) Using a small screwdriver, release the 40/80 reed switch cable from the connector.

warning : note the order of the coloured wires in the connector.

9) Trace the cable down to the relevant gland. Cut the cable ties using the wirecutters and loosen the relevant gland using a 24mm spanner.

10) Pull the 40/80 reed switch cable down through the unit to the 40/80 switch bracket.

11) Remove the nut on the back of the button from the inside of the nozzle panel.

12) Remove the bracket and 40/80 reed switch from the back of the button.

13) Using a flat head screwdriver and a 5.5mm nut runner, remove the two nuts, washers and screws to release the 40/80 reed switch from the switch bracket. Remove the 40/80 reed switch completely.

14) Fit the new 40/80 reed switch to the switch bracket using the flathead screwdriver and 5.5 nut runner to re-fit and tighten the two nuts, washers and screws.

15) Route the 40/80 reed switch 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.

16) Using the small screwdriver, re-wire the cable to the relevant connector.

17) Re-fit the I/O cable security cover and apply new W&M sealing.

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

18) Follow the instructions given in section 2.8 to re-fit the cable gland brackets and the valvebox cladding U-piece.

19) Follow the instructions given in section 2.7 to re-fit the DIT/blind DIT door.

20) Close the calculator head door and lock.

21) Follow the instructions given in sections 2.5 to re-fit the hydraulic top cover.

22) Re-fit the hydraulic door, re-connect the earth cable and lock.

23) Re-fit the lower and upper nozzle panels, re-connecting any earth cables (where fitted).

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

25) Re-instate power to the dispenser.

26) Test the operation of the new 40/80 reed switch.

27) Dispose of all waste accordingly.

Issue A

5.2.11 REPLACING THE SOLENOID VALVE

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

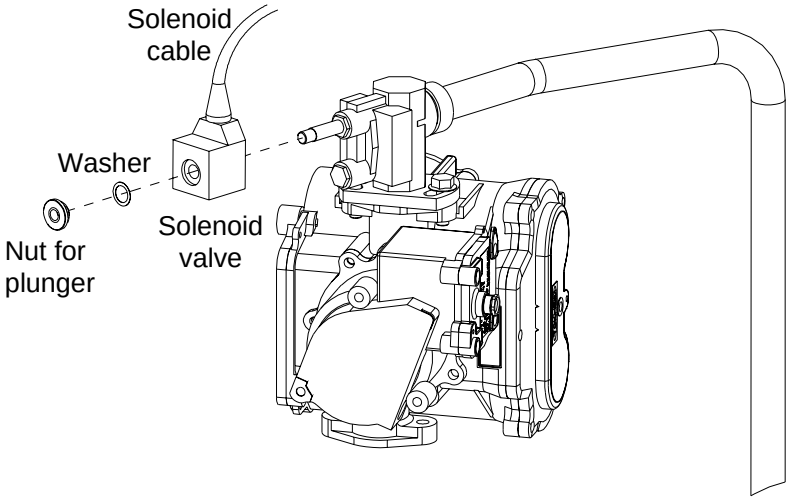
The solenoid valves are accessed from either side of the dispenser (see section 2.3 for the identification of the dispenser sides).

IMPORTANT: Only AdBlue ® compatible parts must be used on AdB side of dispenser.

Tools required

- Replacement solenoid valve (refer to the Parts Manual for exact part identification)
- Small flathead screwdriver
- Plumbers wrench

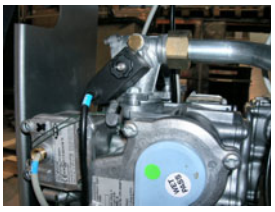
Description of Parts



INSTRUCTIONS

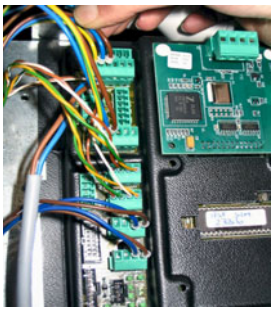
1) Follow the instructions given in section 2.4 to 2.6 for the removal of the hydraulic doors, access to the calculator head and cable glands.

2) Locate the solenoid valve to be replaced and trace the cable to the correct connector on the relevant board in the calculator head.



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

3) Disconnect the solenoid 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 solenoid cable connection on the I/O board.
- **Mainboard connection** - locate the solenoid cable connection on the mainboard.

Issue A

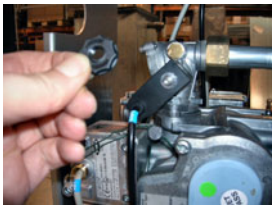
4) Disconnect the solenoid cable connection from the relevant board in the calculator.

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

5) Using a small flathead screwdriver, release the cable wires from the connector.

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

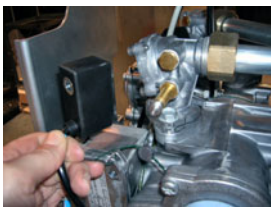
6) Use a 32mm spanner to loosen the relevant gland. Pull the cable down through the gland and back to the solenoid valve.



7) Remove the solenoid valve completely by unscrewing the nut securing the solenoid valve to the plunger.

8) Fit the new solenoid valve to the plunger.

9) Re-fit the nut and tighten to secure in position.



10) Feed the cable along the unit, through the relevant gland and up into the calaculator head. Replace any cable ties and tighten the gland.

11) Using the small screwdriver, re-fit the connector to the solenoid cable.

Note : refer to the wiring diagram in section 7.

12) Re-connectthe solenoid connector to the relevant board in the calculator head.

Note : refer to the wiring diagram in section 7.

13) Follow the instructions given in section 2 to replace all removed access panels/ doors.

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

15) Re-instate power to the dispenser and test its operation.

16) Test the operation of the new solenoid valve.

17) Dispose of all waste accordingly.

Issue A

5.2.12 REPLACING THE OPT LAMP BULB

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

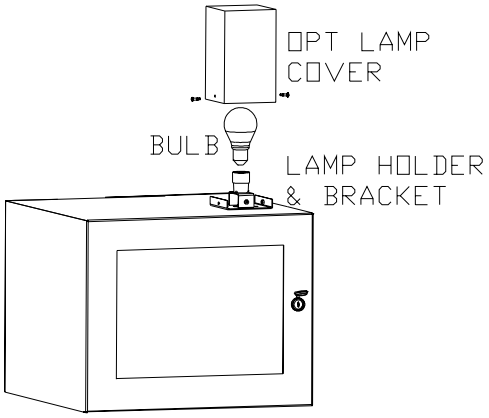
Ensure the dispenser is isolated and all power is turned off.

Identify the relevant side of the dispenser with the OPT lamp bulb to be replaced (see section 2.3 for the identification of the dispenser sides).

Tools required

- Replacement Bulb (refer to the Parts Manual for exact part identification)
- Flat head screwdriver
- Step ladder or similar

Description of Parts



INSTRUCTIONS

1) Locate the OPT bulb to be replaced.

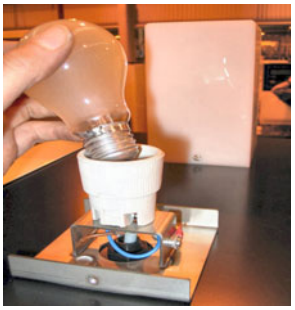
2) Using a flat head screwdriver, remove the two screws from the OPT lamp cover.

3) Lift up the OPT lamp cover, remove completely and place in a safe position.

4) Unscrew the bulb from its holder.

5) Screw the new bulb into the holder.

6) Re-fit the OPT lamp cover and secure to the lamp bracket using the two screws.



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

8) Re-instate power to the dispenser.

9) Test the operation of the new bulb.

10) Dispose of all waste accordingly.

Issue A

5.2.13 REPLACING THE PROGRAMMING SWITCH

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

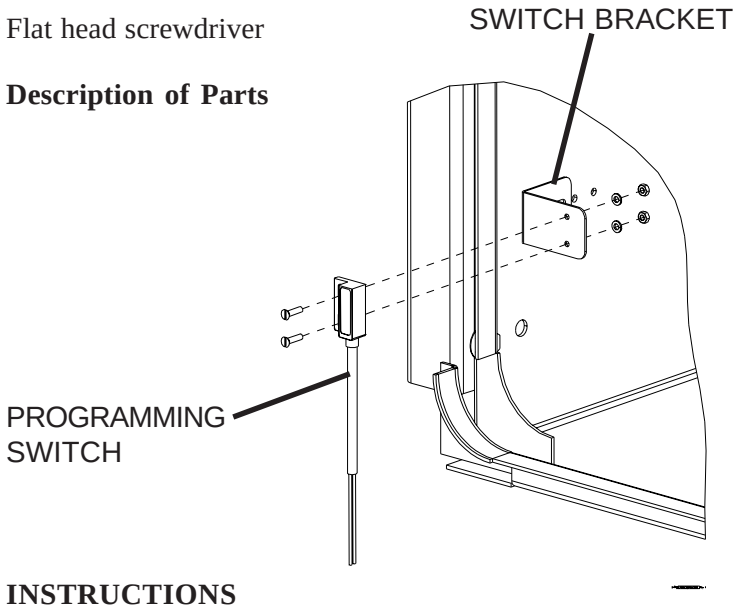
Ensure the dispenser is isolated and all power is turned off.

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

Tools required

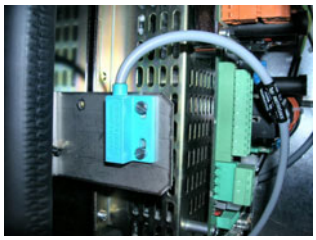
- Replacement programming switch (refer to the Parts Manual for exact part identification)
- Flat head screwdriver

Description of Parts



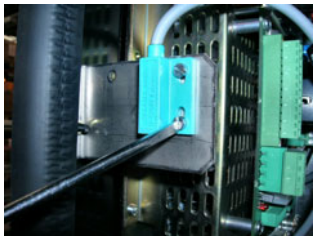
INSTRUCTIONS

1) Follow the instructions given in section 2.5 for accessing the calculator head.

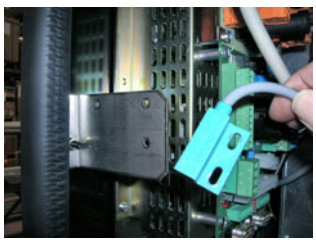


2) Locate the programming switch to be replaced.

3) Using a flat head screwdriver, remove the two screws and nuts securing the programming switch to the programming switch bracket.

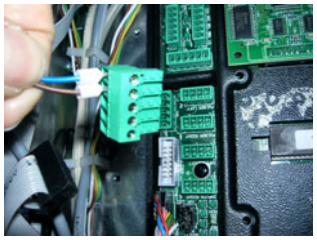


4) Remove the programming switch completely from the programming switch bracket.



Issue A

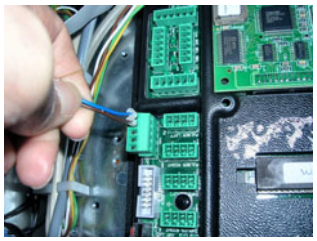
5) Trace the programming switch cable to the relevant connector in the mainboard.



6) Disconnect the relevant connector from the mainboard.

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

7) Use a small flat head screwdriver to remove the programming switch cable from the relevant connector.



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

8) Remove the programming switch completely from the dispenser.
9) Re-fit the two screws and nuts to secure the new programming switch to the programming switch bracket.
10) Route the programming switch cable to the relevant connector position on the mainboard.
11) Connect the programming switch cable to the relevant connector.
12) Ensure that all tools and unused materials are removed.
13) Close the calculator head door and lock.
14) Re-instate power to the dispenser.
15) Test the operation of the new programming switch.
16) Dispose of all waste accordingly.

Issue A

5.2.14 REPLACING A CAPACITOR

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

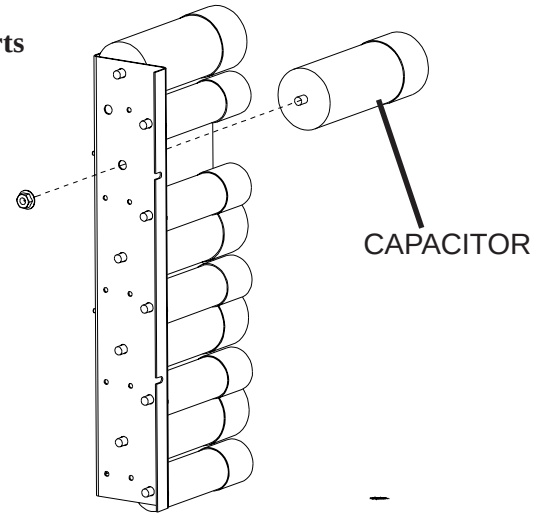
Ensure the dispenser is isolated and all power is turned off.

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

Tools required

- Replacement capacitor (refer to the Parts Manual for exact part identification)
- 13mm spanner / nut runner

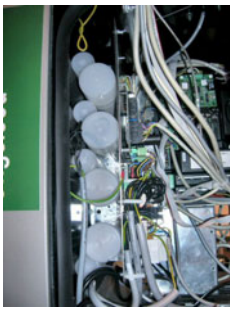
Description of Parts



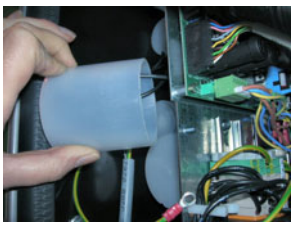
INSTRUCTIONS

1) Follow the instructions given in section 2.5 for accessing the calculator head.

2) Locate the capacitor to be replaced.



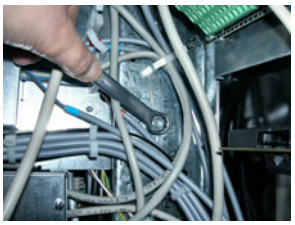
3) Carefully pull off the capacitor lid.



4) Disconnect the wires from the capacitor.

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

Issue A



5) From the opposite side of the dispenser, use a 13mm spanner to remove the nut securing the capacitor to the capacitor bracket.

6) Remove the capacitor completely from the dispenser.

7) Re-fit the nut to secure the new capacitor to the capacitor bracket.

8) Connect the wires to the new capacitor and replace the lid.

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) Test the operation of the new capacitor.

13) Dispose of all waste accordingly.

Issue A

5.3 Q510 Standard Head

5.3.1 REPLACING THE CALCULATOR DOOR PLEXI GLASS & SEAL

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

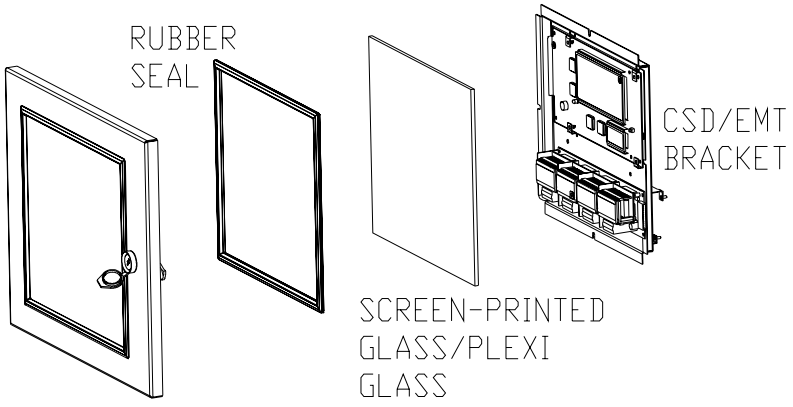
Ensure the dispenser is isolated and all power is turned off.

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 & 7mm spanners
- Flat head screwdriver
- Replacement W&M seals
- Wirecutters

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5.1 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 nutrunner 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 four nuts on the display bracket to release it from the calculator door.

Issue A

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 four 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.

5.4 Q510 Media Head

5.4.1 REPLACING THE CALC DOOR PLEXI GLASS & SEAL (VIDIUM OPTION)

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

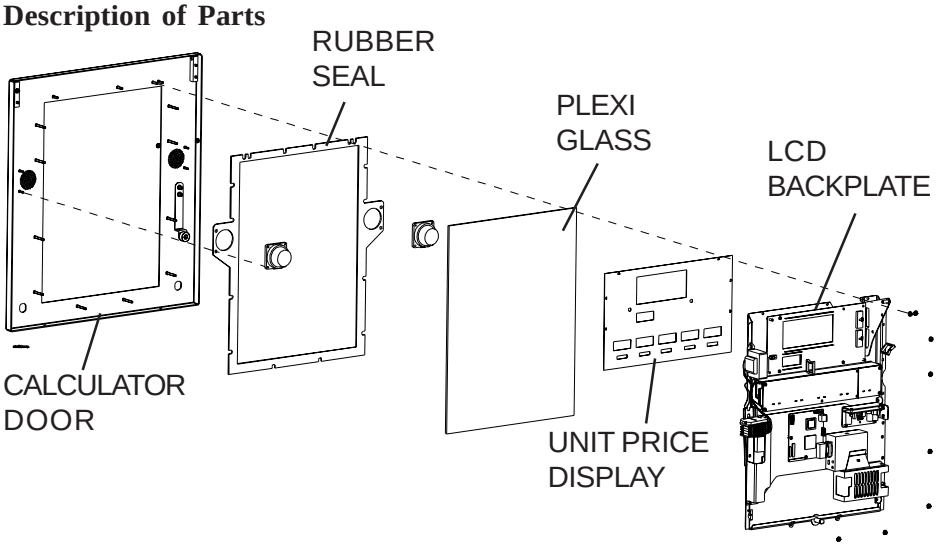
Ensure the dispenser is isolated and all power is turned off.

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, 7mm and 5.5mm nut runners/spanners
- Flat head screwdriver
- Replacement W&M seals
- Wirecutters

Description of Parts

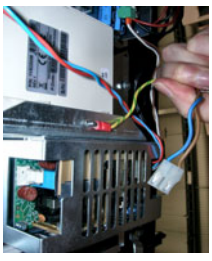


1) Follow the instructions given in section 2.5.2 to gain access to the calculator head on the relevant side of the dispenser.

Remove the Media Head Calculator Door

2) Unplug all cable connectors on the door, cutting cable ties as required:-

Note : take care to note the position of all connections on the relevant boards.



- Use a 7mm nut runner to loosen and remove the nut securing the earth cable to the LCD backplate.
- Unplug the Cat 5 receiver RJ45 connector.
- Unplug the Vidium PSU connector.

Issue A

- Use a 5.5mm nut runnner to loosen and remove the nut securing the earth cable on the PSU.

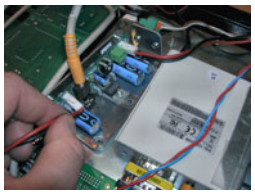
- Unplug the CSD ribbon connector.
- Unplug the CSD infra red connector.

- Where fitted, use the wirecutters to cut the W&M seals on the EMT security bracket then use a 7mm nut runner to loosen and remove the four sealing nuts and washers securing the EMT security bracket to the display bracket. Remove the EMT security bracket completely and place in a safe position.
- Unplug the two EMT ribbon connectors.

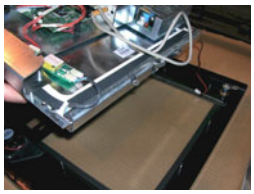
3) Locate the hinge on the inside of the calculator head door. Use a 10mm spanner to loosen and remove the two nuts securing the door to the hinge.

WARNING:- ENSURE THE CALCULATOR HEAD DOOR IS SUPPORTED THROUGHOUT THIS PROCEDURE.

4) Carefully slide the door off the hinge in the direction of the opposite hinge.
5) Place the door on a protective surface to avoid damaging the glass.
6) Using a 7mm nut runner, loosen and remove all the nuts on the LCD backplate.



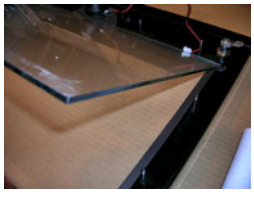
7) Unplug the speaker connectors on the Audio Amplifier.



8) Carefully lift out the entire LCD backplate (including Vidium assembly).

9) Carefully lift off the Unit Price Display.

Plexi Glass only



10) Carefully lift out the plexi glass.
11) Position new plexi glass onto the seal on the door.

Rubber Seal only:-

12) Carefully remove plexi glass as described.
13) Carefully peel back the plexi glass seal from the calculator door.
14) Fit new rubber seal to the calculator door.
15) Re-fit plexi glass onto the seal on the calculator door.

Plexi Glass and/or Rubber Seal:-

16) Replace the Unit Price Display onto the plexi glass.
17) Re-fit the display bracket onto the door studs and secure in position by re-fitting and tightening the nuts.
18) Re-fit the LCD backplate onto the studs on the door and secure in position by refitting the nuts.
19) Re-connect the speakers cables to the Audio Amplifier.
20) Slide the Multimedia door back onto the hinge and refit the opposite hinge, securing with the two nuts.
21) Re-make all connections:-
    - Plug in the two EMT ribbon connectors and, where removed, re-fit the EMT security bracket.
    - Plug in the CSD infra red connector.
    - Plug in the CSD ribbon connector.
    - Use a 5.5mm nut runnner to re-fit the nut to secure the earth cable on the PSU.
    - Plug in the Vidium PSU connector.
    - Plug in the Cat 5 receiver RJ45 connector.
    - Use a 7mm nut runner to re-fit the nut to secure the earth cable to the LCD backplate.
22) Tidy cables using cable ties as required and replace W&M seals.
23) Ensure that all tools and unused materials are removed.
24) Close and lock the calculator head door as described in section 2.5.2.
25) Re-instate power to the dispenser.
26) Dispose of all waste accordingly.

Issue A

5.4.2 REPLACING THE CALC DOOR PLEXI GLASS & SEAL (NON-VIDIUM OPTION)

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

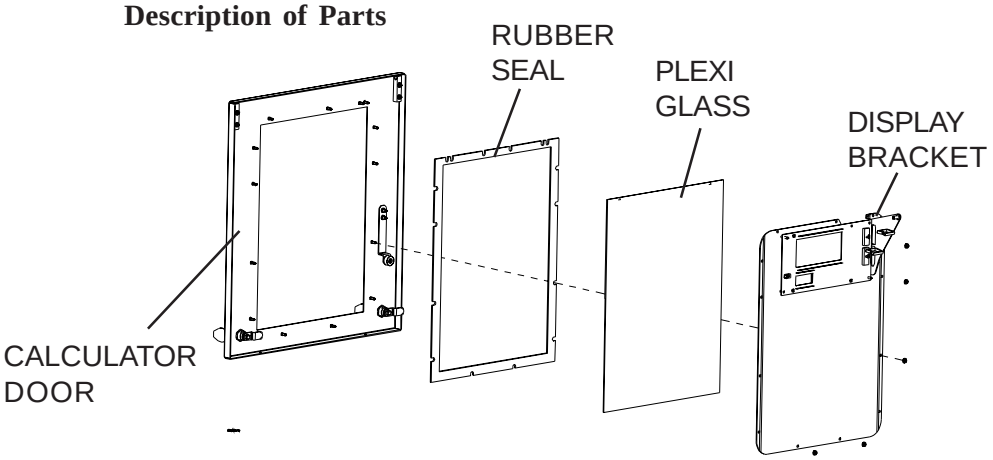
Ensure the dispenser is isolated and all power is turned off.

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

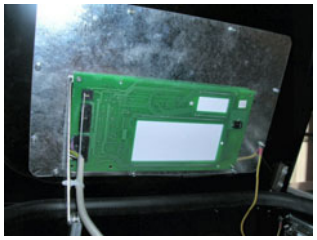
- Replacement Plexi Glass or Seal (refer to the Parts Manual for exact part identification)
- 7mm nut runner/spanner

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5.2 to gain access to the calculator head on the relevant side of the dispenser.



2) Using a 7mm nut runner, loosen and remove the earth cable from the display bracket.

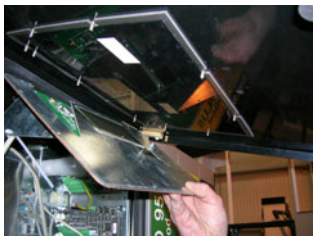
3) Disconnect the display cable and the infra red cable from the CSD board.

4) Lift the door lever up to release it from the catch inside the calculator head.

WARNING:- ENSURE THE CALCULATOR HEAD DOOR IS SUPPORTED THROUGHOUT THIS PROCEDURE.

Issue A

5) Whilst holding the calculator door open, use a 7mm nut runner to remove the ten nuts securing the display bracket to the calculator door.



6) Carefully remove the display bracket and place in a safe position.

WARNING:- BE CAREFUL AS THE PLEXI GLASS IS NOT SECURED TO ANYTHING AND MAY SLIP OUT.

Plexi Glass only:-

7) Carefully remove the plexi glass.

8) Position the new plexi glass onto the seal on the door.

Rubber Seal only:-

9) Carefully remove plexi glass as described.

10) Carefully peel back the plexi glass seal from the calculator door.

11) Fit new rubber seal to the calculator door.

12) Re-fit plexi glass onto the seal on the calculator door.

Plexi Glass and/or Rubber Seal:-

13) Re-fit the ten nuts to secure the display bracket to the calculator door.

14) Re-connect the display cable and the infra red cable to the CSD board.

15) Use a 7mm nut runner to re-fit the nut securing the earth cable to the LCD backplate.

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

17) Close and lock the calculator head door.

18) Re-instate power to the dispenser.

19) Dispose of all waste accordingly.

Issue A

5.4.3 REPLACING THE VIDEO CONTROLLER BOARD

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

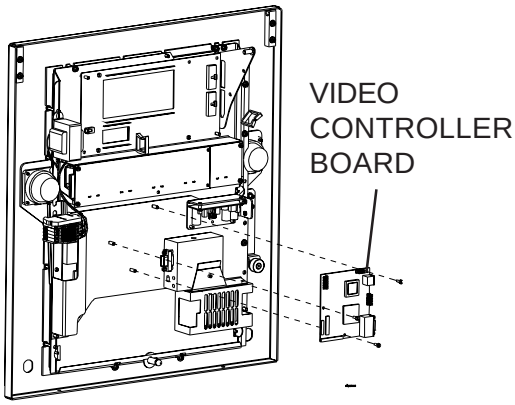
Ensure the dispenser is isolated and all power is turned off.

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 Video Controller Board (refer to the Parts Manual for exact part identification)
- 5.5mm nut runners/spanners

Description of Parts

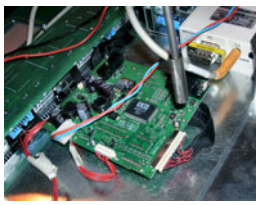


INSTRUCTIONS

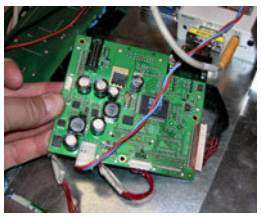
1) Follow the instructions given in section 2.5.2 to gain access to the calculator head on the relevant side of the dispenser.

2) Locate the Video Controller Board on the back of the Multimedia Door.

3) Using a 5.5mm nut runner, loosen and remove the three nuts on the Video Controller Board.



4) Remove the Video Controller Board completely and dispose of accordingly.



5) Position the new Video Controller Board onto the studs on the Multimedia door.
6) Re-fit and tighten the three nuts to secure in position.
7) Ensure that all tools and unused materials are removed.
8) Close and lock the calculator head door as described in section 2.5.2.
9) Re-instate power to the dispenser.
10) Test the operation of the new board.
11) Dispose of all waste accordingly.

Issue A

5.4.4 REPLACING THE CAT 5 RECEIVER

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

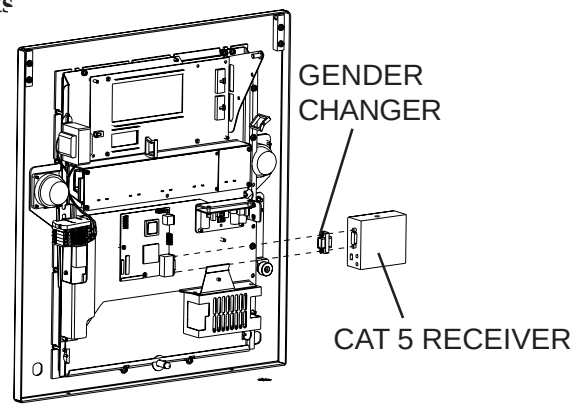
Ensure the dispenser is isolated and all power is turned off.

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 Cat 5 Receiver (refer to the Parts Manual for exact part identification)
- Double-sided sticky tape

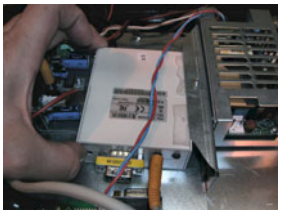
Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5.2 to gain access to the calculator head on the relevant side of the dispenser.

2) Locate the Cat 5 Receiver on the back of the Multimedia door.



3) Unplug the RJ45 connector and gender changer from the Cat 5 Receiver.
4) Carefully pull the Cat 5 Receiver to release it from the double-sided sticky tape on the PSU bracket, remove completely and dispose of accordingly.
5) Place the new Cat 5 Receiver into position under the PSU bracket using double-sided sticky tape as required.
6) Plug in the RJ45 connector and gender changer.
7) Ensure that all tools and unused materials are removed.
8) Close and lock the calculator head door as described in section 2.5.2.
9) Re-instate power to the dispenser.
10) Test the operation of the new Cat 5 Receiver.
11) Dispose of all waste accordingly.

Issue A

5.4.5 REPLACING THE AUDIO AMPLIFIER BOARD

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

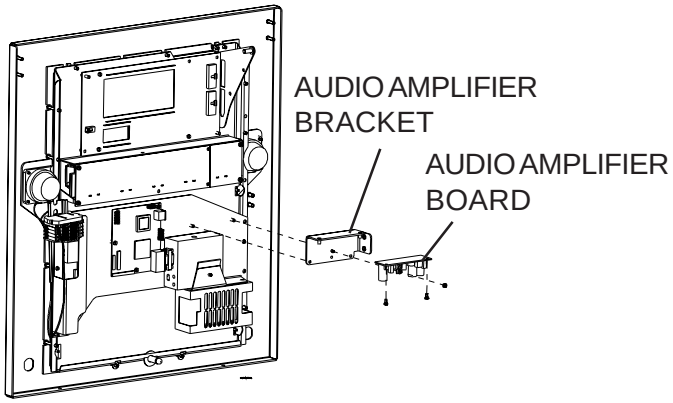
Ensure the dispenser is isolated and all power is turned off.

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

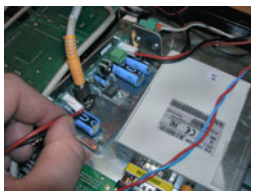
- Replacement Audio Amplifier Board (refer to the Parts Manual for exact part identification)
- 5.5mm nut runner
- Flathead screwdriver

Description of Parts



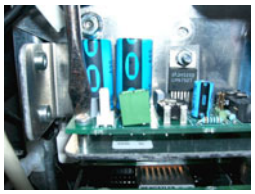
INSTRUCTIONS

1) Follow the instructions given in section 2.5.2 to gain access to the calculator head on the relevant side of the dispenser.



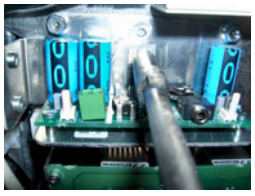
2) Locate the Audio Amplifier Board on the back of the Multimedia door.

3) Unplug the PSU connector, two speaker connectors and audio jack.



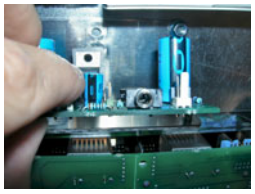
Note : take care to note the position of the connections on the relevant boards.

4) Use a flathead screwdriver to loosen and remove the two screws holding the Audio Amp board to the bracket.



5) Use a 5.5mm nut runner to loosen and remove the nut in the middle of the board, remove the board completely and dispose of accordingly.

6) Place the new Audio Amp board in position onto the stud on the bracket and secure in position by re-fitting and tightening the nut.



Issue A

7) Re-fit and tighten the two screws to secure the board to the bracket.
8) Plug in the PSU connectors, two speaker connectors and the audio jack.
9) Ensure that all tools and unused materials are removed.
10) Close and lock the calculator head door as described in section 2.5.2.
11) Re-instate power to the dispenser.
12) Test the operation of the new board.
13) Dispose of all waste accordingly.

5.4.6 REPLACING A SPEAKER

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

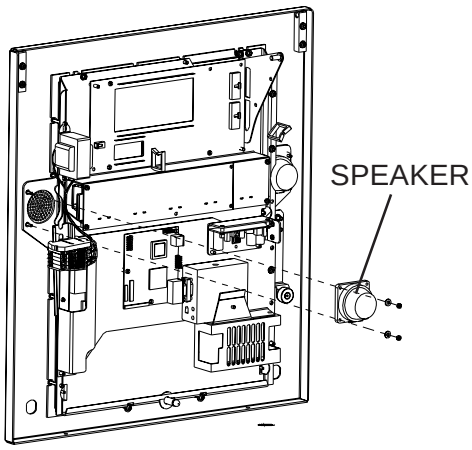
Ensure the dispenser is isolated and all power is turned off.

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 Speaker (refer to the Parts Manual for exact part identification)
- 5.5mm nut runner/spanner

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5.2 to gain access to the calculator head on the relevant side of the dispenser.

2) Locate the relevant speaker to be replaced on the back of the Multimedia door.
3) Unplug the relevant speaker connector on the Audio Amplifier Board.
4) Use a 5.5mm nut runner to loosen and remove the two nuts and washers securing the speaker to the door.

5) Carefully remove the speaker from the door and dispose of accordingly.
6) Place the new speaker in position on the door studs.
7) Re-fit and tighten the two nuts and washers to secure the speaker to the door.
8) Plug in the speaker connector to the Audio Amplifier Board.
9) Ensure that all tools and unused materials are removed.
10) Close and lock the calculator head door as described in section 2.5.2.
11) Re-instate power to the dispenser.
12) Test the operation of the new speaker.
13) Dispose of all waste accordingly.

Issue A

5.4.7 REPLACING THE BACKLIGHT INVERTER BOARD

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

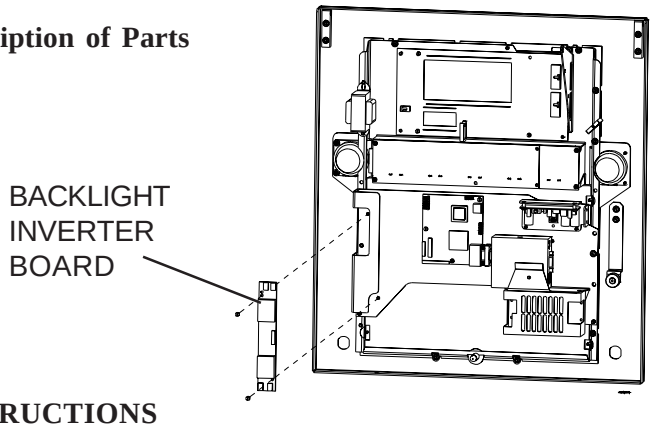
Ensure the dispenser is isolated and all power is turned off.

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

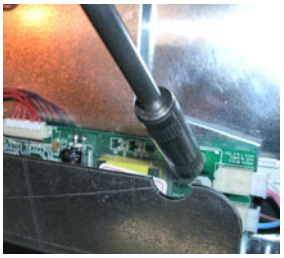
- Replacement Backlight Inverter Board (refer to the Parts Manual for exact part identification)
- 5.5mm nut runner/spanner
- Flathead screwdriver

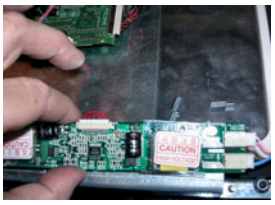
Description of Parts



INSTRUCTIONS

1) Follow the instructions given in section 2.5.2 to gain access to the calculator head on the relevant side of the dispenser.
2) Locate the Backlight Inverter Board on the back of the Multimedia door.
3) Use a 5.5mm nut runner to loosen and remove the two standoffs securing the board to the door.
4) Unplug the two connectors on both sides of the board.
5) Carefully remove the Backlight Inverter Board from the door and dispose of accordingly..
6) Place the new Backlight Inverter Board in position under the bracket.
7) Re-fit and tighten the two standoffs to secure the board to the door.
8) Re-connect the two connections to both sides of the board.
9) Ensure that all tools and unused materials are removed.
10) Close and lock the calculator head door as described in section 2.5.2.
11) Re-instate power to the dispenser.
12) Test the operation of the new board.
13) Dispose of all waste accordingly.





Issue A

5.4.8 REPLACING THE POWER SUPPLY UNIT (PSU)

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

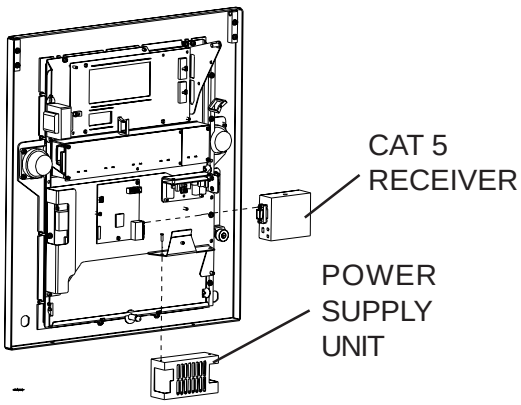
Ensure the dispenser is isolated and all power is turned off.

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

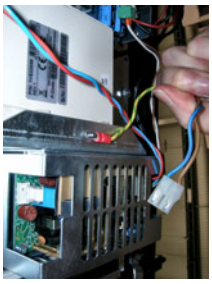
- Replacement PSU (refer to the Parts Manual for exact part identification)
- 5.5mm nut runner/spanner
- Cross Head Screwdriver

Description of Parts



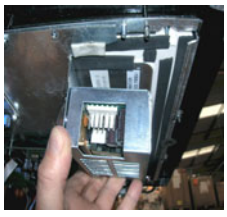
INSTRUCTIONS

1) Follow the instructions given in section 2.5.2 to gain access to the calculator head on the relevant side of the dispenser.



2) Locate the PSU to be replaced on the back of the Multimedia door.
3) Unplug the two connectors on opposite sides of the PSU.
4) Use a 5.5mm nut runner to loosen and remove the nut securing the PSU earth cable.
5) Follow the instructions in section 5.4.3 to remove the Cat 5 Receiver.

6) Use a cross head screwdriver to loosen and remove the holding screw on the back of the bracket.
7) Completely remove the PSU from the bracket and dispose of accordingly.



8) Place new PSU onto the bracket and secure in position by re-fitting and tightening the holding screw.
9) Plug in the two connectors on opposite sides of the PSU and re-fit the earth cable connection.
10) Re-fit the Cat 5 Receiver according to the instructions in section 5.4.3.
11) Ensure that all tools and unused materials are removed.
12) Close and lock the calculator head door as described in section 2.5.2.
13) Re-instate power to the dispenser.
14) Test the operation of the new PSU.
15) Dispose of all waste accordingly.

Issue A

5.4.9 REPLACING THE VIDIUM DISPLAY

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

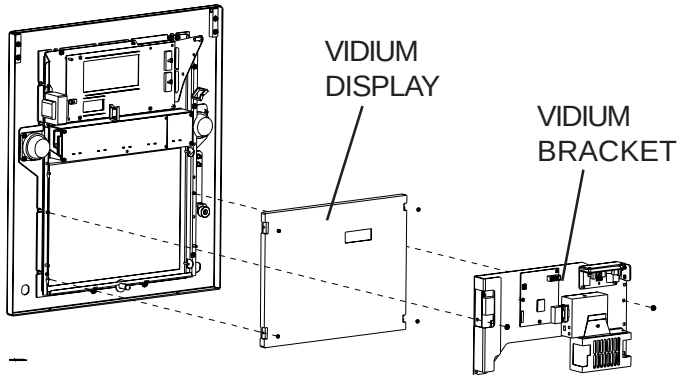
Ensure the dispenser is isolated and all power is turned off.

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

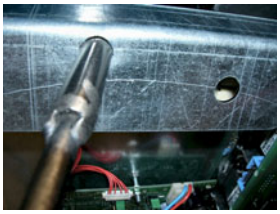
- Replacement Vidium display (refer to the Parts Manual for exact part identification)
- 5.5mm and 7mm nut runners/spanners

Description of Parts



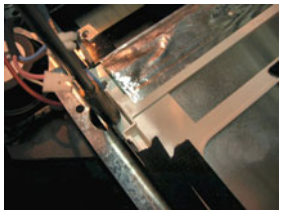
INSTRUCTIONS

1) Follow the instructions given in section 5.4.1 steps 1 to 5 to remove the Media Head Calculator Door.

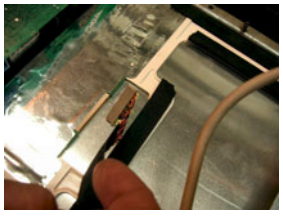


2) Locate the two nuts on the Vidium bracket (one behind the Backlight Inverter bracket and the other opposite).
3) Use a 7mm nut runner to loosen and remove the two nuts on the Vidium bracket.
4) Unplug the ribbon connector on the Video Controller Board.

5) Unplug the two connectors on both sides of the Backlight Inverter Board.
6) Carefully remove the Vidium bracket (and sub components) completely and place in a safe position.



7) Use a 5.5mm nut runner to loosen and remove the four nuts securing the Vidium display to the door.
8) Unplug the ribbon connector on the Vidium display.



9) Carefully lift out the Vidium display and dispose of accordingly.

Issue A

10) Fit new Vidium display onto the door.
11) Secure in position by re-fitting and tightening the four nuts.
12) Plug in the ribbon connector on the Vidium display.
13) Re-fit the Vidium bracket and secure in position by re-fitting and tightening the two nuts.
14) Plug in the two connectors on both sides of the Backlight Invertor Board.
15) Plug in the ribbon connector on the Video Controller Board.
16) Ensure that all tools and unused materials are removed.
17) Close and lock the calculator head door as described in section 2.5.2.
18) Re-instate power to the dispenser.
19) Test the operation of the new speaker.
20) Dispose of all waste accordingly.

CONTENTS

6 MAINTENANCE PROCEDURES - VAPOUR RECOVERY

6.1 Replacing the v-belt on the ECVR Unit

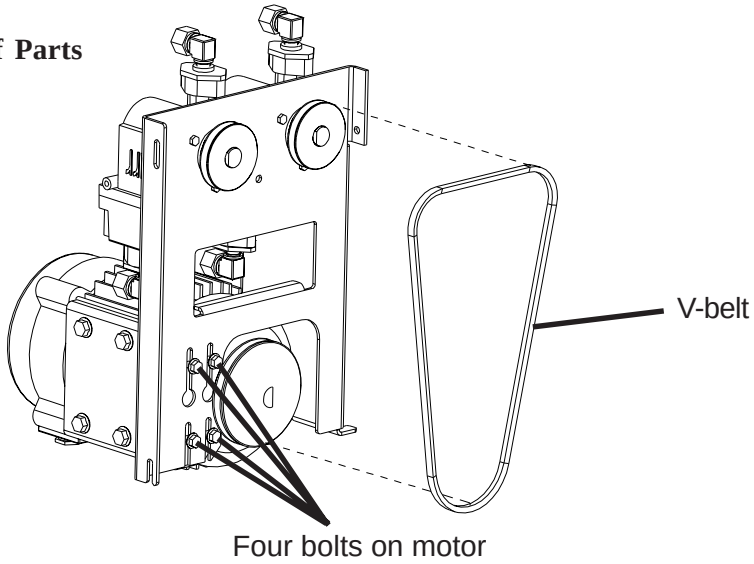
Before starting the maintenance procedure, please refer to section 2.

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

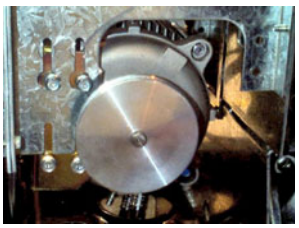
Tools required

- 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) Using a 10mm spanner, loosen the four bolts on the motor. The motor will drop down into the slots, held in place by the top two bolts.

Note : support the motor during this procedure.

3) Lift up the motor to release the tension on the v-belt.
4) Whilst supporting the motor in the raised position, remove the v-belt completely.
5) Lift up the motor into the raised position and replace the v-belt.

Note : support the motor during this procedure.

6) Using a spanner for leverage, position the motor to give the correct tension on the v-belt.
7) Using a 10mm spanner, tighten the four bolts when the tension on the v-belt is correct.
8) Ensure that all tools and unused materials are removed.
9) Secure the hydraulic panel to the dispenser.
10) Re-instate power to the dispenser.
11) Dispose of all waste accordingly.

6.2 Replacing the Durr pump on the ECVR Unit

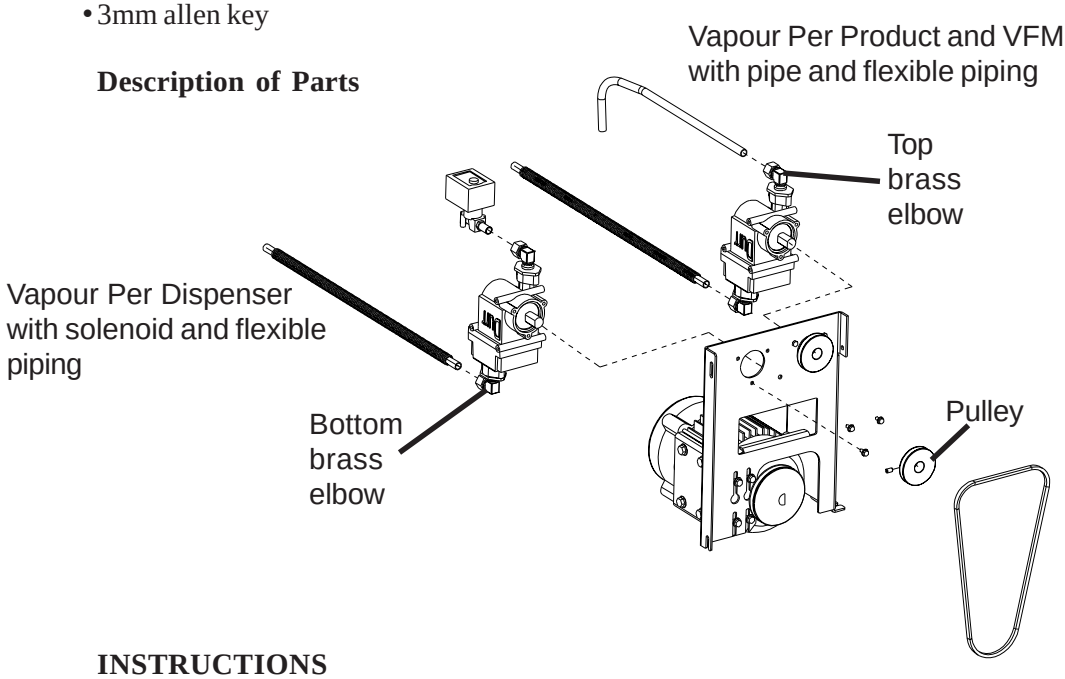
Before starting the maintenance procedure, please refer to section 2.

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

Tools required

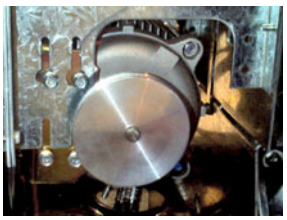
- Replacement pump (refer to the Parts Manual for exact part identification)
- 22mm and 8mm spanners
- 3mm allen key

Description of Parts



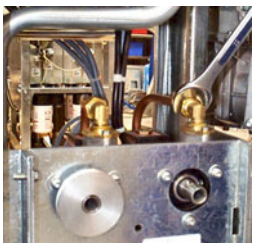
INSTRUCTIONS

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 to remove the ECVR motor 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.

Issue A

5) **FOR VAPOUR PER DISPENSER ONLY:-**

- Detach the solenoid valve assembly from the elbow at the top of the pump.

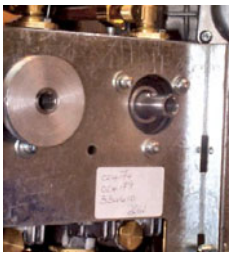
FOR VAPOUR PER PRODUCT ONLY:-

- From side B of the dispenser, use a 22mm spanner to loosen the nut at the opposite end of the copper pipe.
- Detach the copper pipe from the top elbow and remove completely.

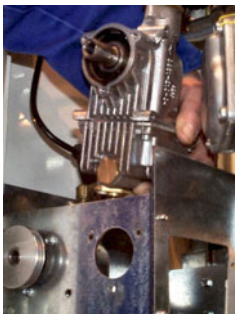
Note : retain the copper pipe to re-fit to the new pump.

6) From side B of the dispenser, use a 22m 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 a 8mm spanner to remove the three screws behind the pump pulley.
9) Lift out the pump and elbow fittings completely through the top opening.
10) Position the new pump into the unit.



11) Using the 8mm spanner, re-fit the three screws to secure the pump into position.
12) From side B of the dispenser, re-connect the flexible pipe to the elbow at the bottom of the pump.
13) Using a 22mm spanner, tighten the brass nut on the elbow at the bottom of the pump.
14) **FOR VAPOUR PER DISPENSER ONLY:-**



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

FOR VAPOUR PER PRODUCT ONLY:-

- Re-connect the copper pipe to both elbows at the top of the pump.
- Using a 22mm spanner, tighten the brass nut on the elbow at the top of the pump.
- From side A of the dispenser, use a 22mm spanner to tighten the brass nut on the elbow at the top of the pump.

15) Using a 3mm allen key, re-fit the pump pulley to the new pump.
16) Lift up the motor into the raised position, re-fit and adjust the v-belt as described in section 6.1.

Note : support the motor during this procedure.

17) Ensure that all tools and unused materials are removed.
18) Secure the hydraulic panels to the dispenser on both sides.
19) Re-instate power to the dispenser.
20) Dispose of all waste accordingly.

Issue A

6.3 Replacing the motor on the ECVR Unit

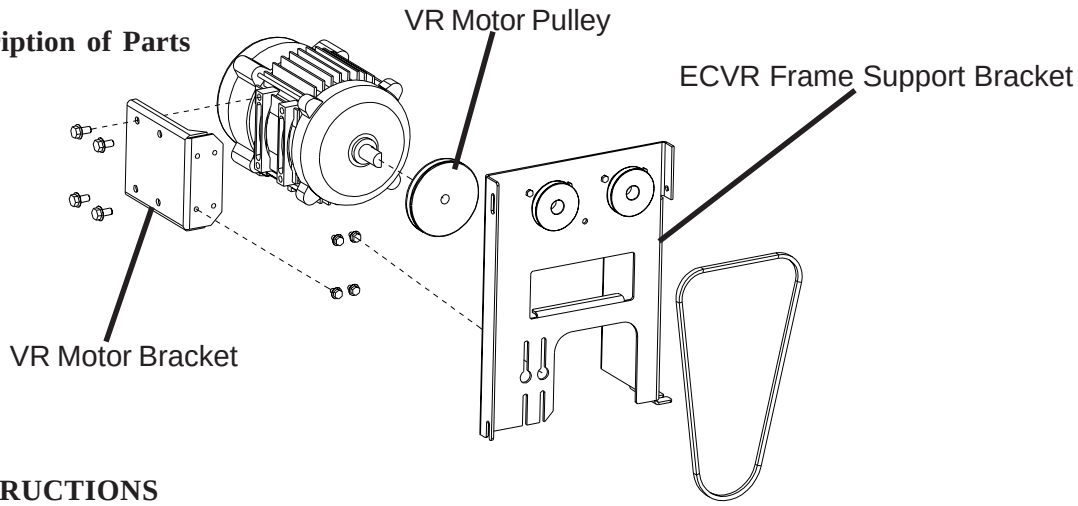
Before starting the maintenance procedure, please refer to section 2.

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)
- 13mm and 10mm spanners
- 6mm and 2mm allen keys
- Screwdriver
- Wire cutters

Description of Parts



INSTRUCTIONS

1) Follow the instructions given in sections 2.4 to 2.6 for the removal of the hydraulic doors, access to the calculator head and 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.

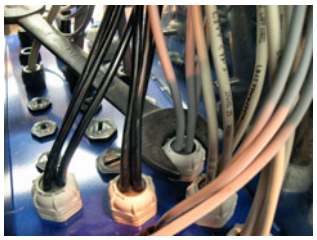
3) From side B of the dispenser, identify the VR motor power cable and trace to the junction box.

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

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

Issue A

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



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

8) Cut the cable ties using wire cutters and loosen the relevant gland.

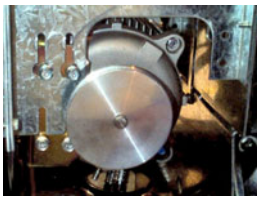
9) Locate the ECVR circuit board in the calculator head. Using a small screwdriver, disconnect the VR motor control cables (positive and negative) from the ECVR circuit board.

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

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

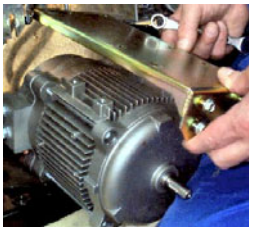
11) Using a 10mm spanner, loosen the four bolts on the motor. on side A of the dispenser. The VR motor will drop down into the slots, held in place by the top two bolts.

Note : support the VR motor during this procedure.



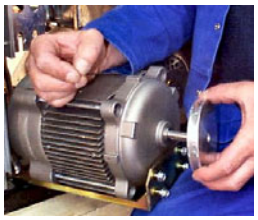
12) Follow the instructions given in section 6.1 to remove the ECVR motor v-belt.

13) Release the four nuts from the slots on the ECVR frame support bracket. Push the VR motor towards side B of the dispenser to release it. Lift out the motor from the unit.



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

15) Using a 2mm allen key, loosen and remove the VR motor pulley.



16) Using a 2mm allen key, fit the VR motor pulley to the new VR motor.

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

18) Position the new VR motor into the unit, locating the four bolts in the slots on the ECVR frame support bracket.

19) Lift up theVR motor into the raised position and re-fit and adjust the v-belt as described in section 6.1.

Note : support the motor during this procedure.

20) Feed the VR motor control cable up the unit, through the gland and into the calculator head. Replace cable ties and tighten the relevant gland.

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

Issue A

21) Using a small screwdriver, re-connect the VR motor control cables (positive and negative) to the ECVR circuit board.

Note : refer to the wiring diagram in section 7.

22) Feed the VR motor power cable up the unit, through the gland and into the junction box. Replace the cable ties and tighten the relevant gland.

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

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

Note : refer to the wiring diagram in section 7.

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

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

26) Follow the instructions given in section 2 to replace all removed access panels/doors.

27) Re-instate power to the dispenser.

28) Test the operation of the new ECVR motor.

29) Dispose of all waste accordingly.

6.4 Replacing the solenoid valve on the ECVR Unit

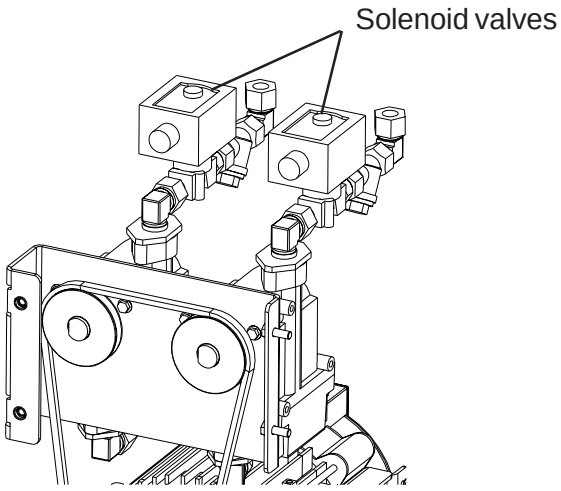
Before starting the maintenance procedure, please refer to section 2.

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

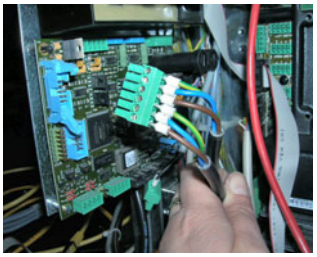
Description of Parts



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.

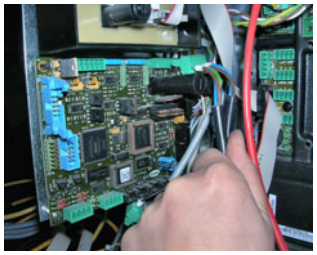
5) Using a small flathead screwdriver, disconnect the solenoid cable from the connector.

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

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

Issue A

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) Follow the instructions given in section 2 to replace all removed access panels/doors.
17) Re-instate power to the dispenser.
18) Test the operation of the new ECVR solenoid valve.
19) Dispose of all waste accordingly.

Issue A

6.5 Replacing the VFM Unit

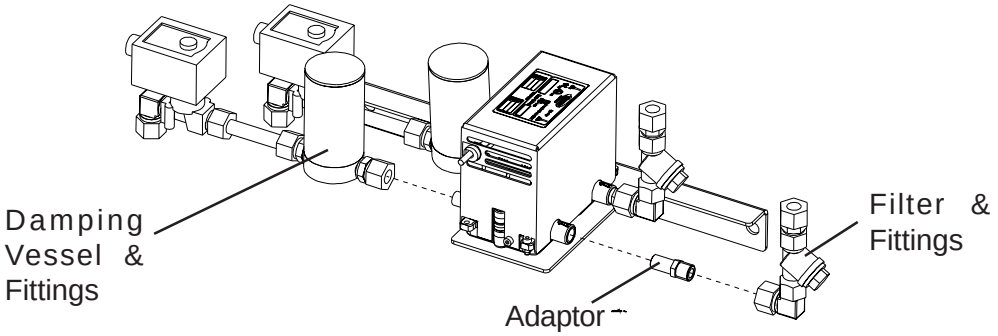
Before starting the maintenance procedure, please refer to section 2.

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

Tools required

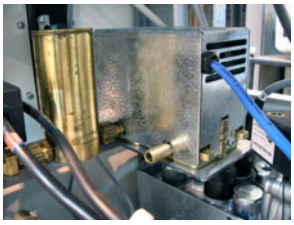
- Replacement VFM unit (refer to the Parts Manual for exact part identification)
- 14mm, 22mm and 24mm spanners
- Small flathead screwdriver
- Wirecutters
- 10mm ratchet

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.



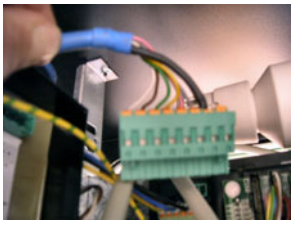
2) Locate theVFM unit to be replaced.

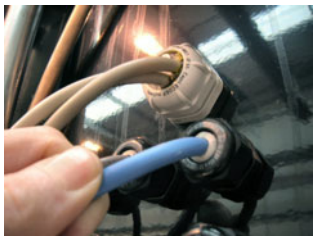
3) Trace the VFM cable up through the glands to the VFM Board on side A of the calculator head.

4) Remove the VFM connector from the VFM Board.

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

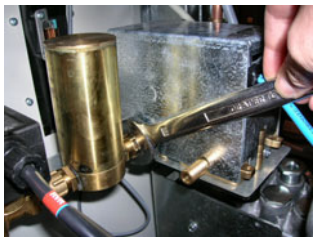
6) Trace the VFM cable back to the relevant gland(s). Use wire cutters to remove any cable ties securing the VFM cable.





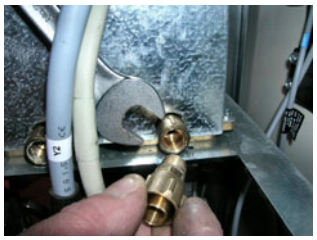
7) Using a 24mm spanner, loosen the relevant gland(s).

8) Free the VFM cable and pull down through the dispenser to the VFM unit.



9) From side A of the dispenser, use a 22mm spanner to loosen the brass nut securing the damping vessel and fittings to the adaptor. Disconnect the vessel and fittings from the adaptor.

WARNING : BEWARE OF FUEL SPILLAGE.



10) Using a 14mm spanner, remove the small adaptor from the VFM unit.

Note : the adaptor is sealed with loctite.

11) From side B of the dispenser, use a 22mm spanner to loosen the brass nut securing the VR filter and fittings to the VFM unit. Disconnect the filter and fittings from the VFM unit.

WARNING : BEWARE OF FUEL SPILLAGE.

12) Use a 10mm ratchet or spanner to remove the four screws at the base of the unit securing the VFM unit to the SCS bracket.

13) Remove the VFM unit from the dispenser.

14) Secure the new VFM unit to the SCS bracket by re-fitting the four screws to the bottom of the VFM unit.

15) From side A of the dispenser, use a 22mm spanner to refit the damping vessel and fittings to the VFM unit.

16) From side B, use a 14mm spanner to fit the adaptor to the new VFM unit. Use loctite to seal the join between the adaptor and the VFM unit.

17) Use a 22mm spanner to re-fit the VR filter and fittings to the adaptor.

18) Feed the new VFM cable up through the relevant glands to the VFM board in the calculator head. Use a 24mm spanner to tighten the glands and replace any cable ties.

19) Use the small screwdriver to attach the VFM cable to the connector.

20) Re-fit the connector onto the VFM board.

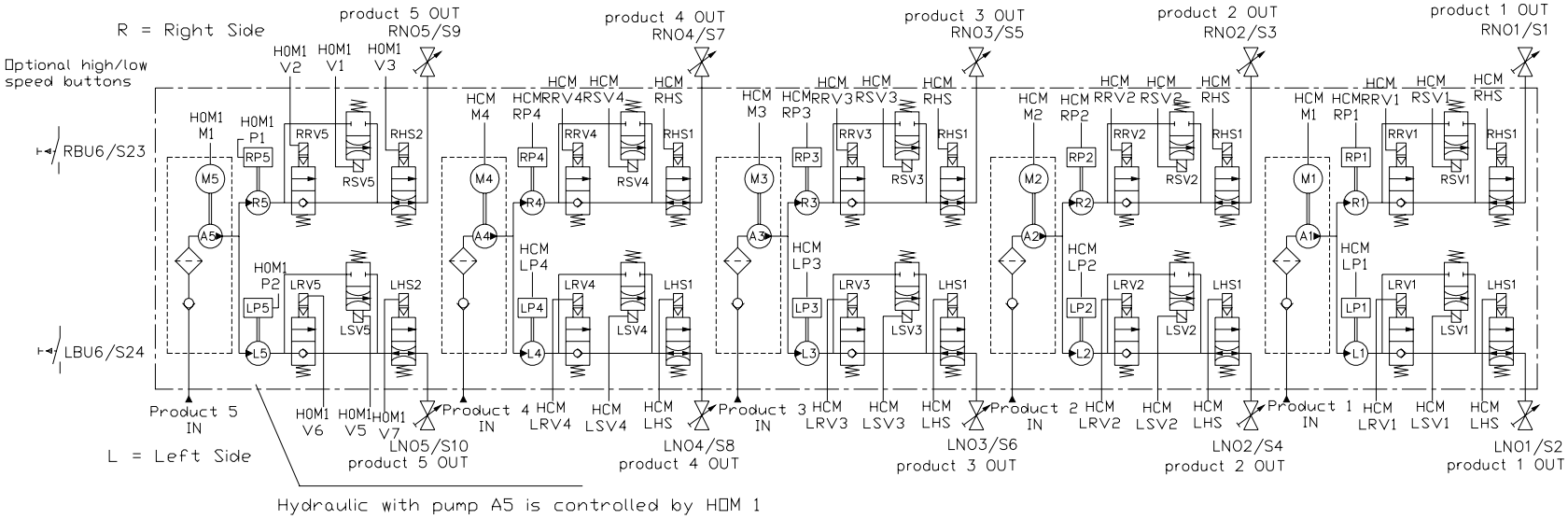
21) Ensure that all tools and unused materials are removed.
22) Follow the instructions given in section 2 to replace all removed access panels/doors.
23) Re-instate power to the dispenser.
24) Test the operation of the new VFM unit.
25) Dispose of all waste accordingly.

CONTENTS

7 DRAWINGS

7.1 Hydraulic Set Up 50

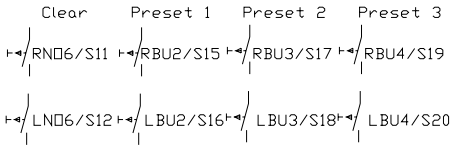
7.1.1 MODELS 1-1, 1-2, 2-2, 2-4, 3-3, 3-6, 4-4, 4-8, HS 1-1, HS 1-2, HS 2-2, HS 2-4, HS 3-3, HS 3-6, HS 4-4, HS 4-8



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

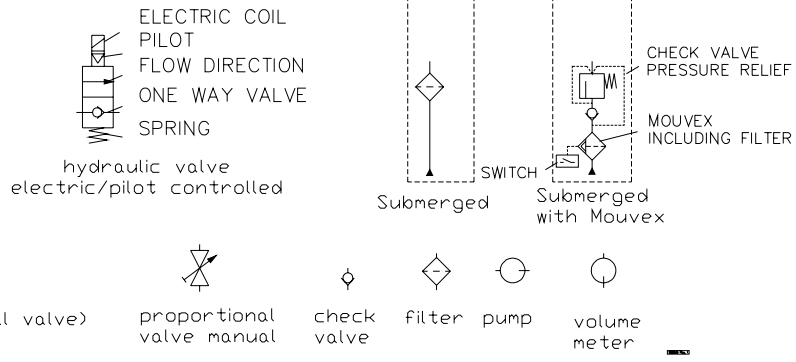
Optional Preset buttons



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

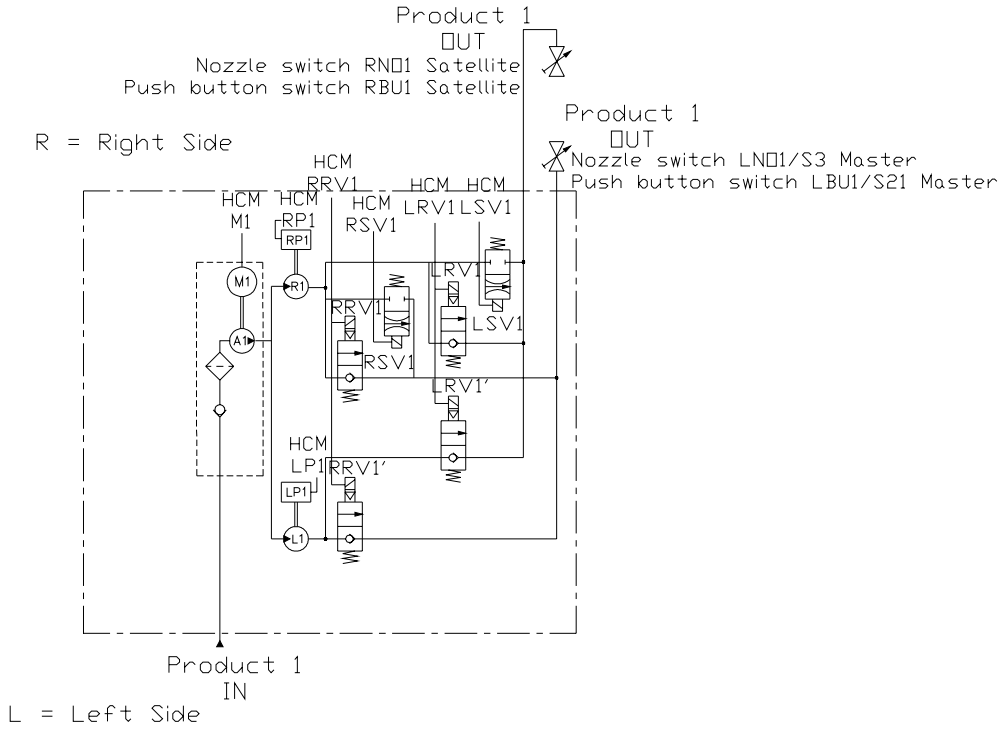
Explanation symbols



7.2 Hydraulic Set Up 51

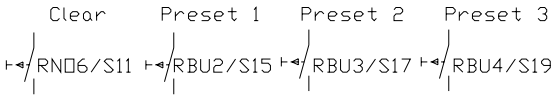
7.2.1 MODELS VHS 1-1, VHSM 1-1

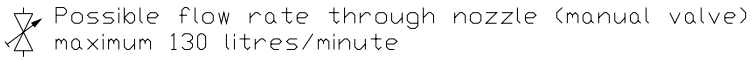
Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve 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

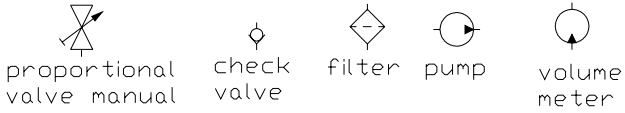


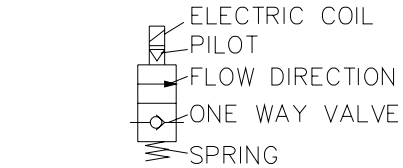
Explanation symbols

Optional Preset buttons

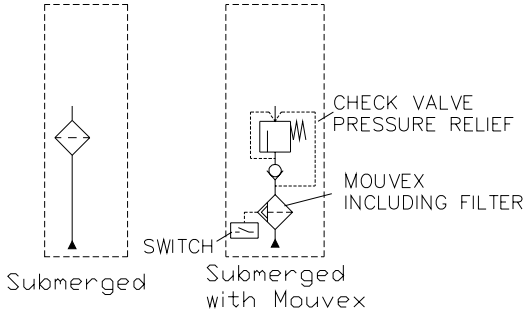






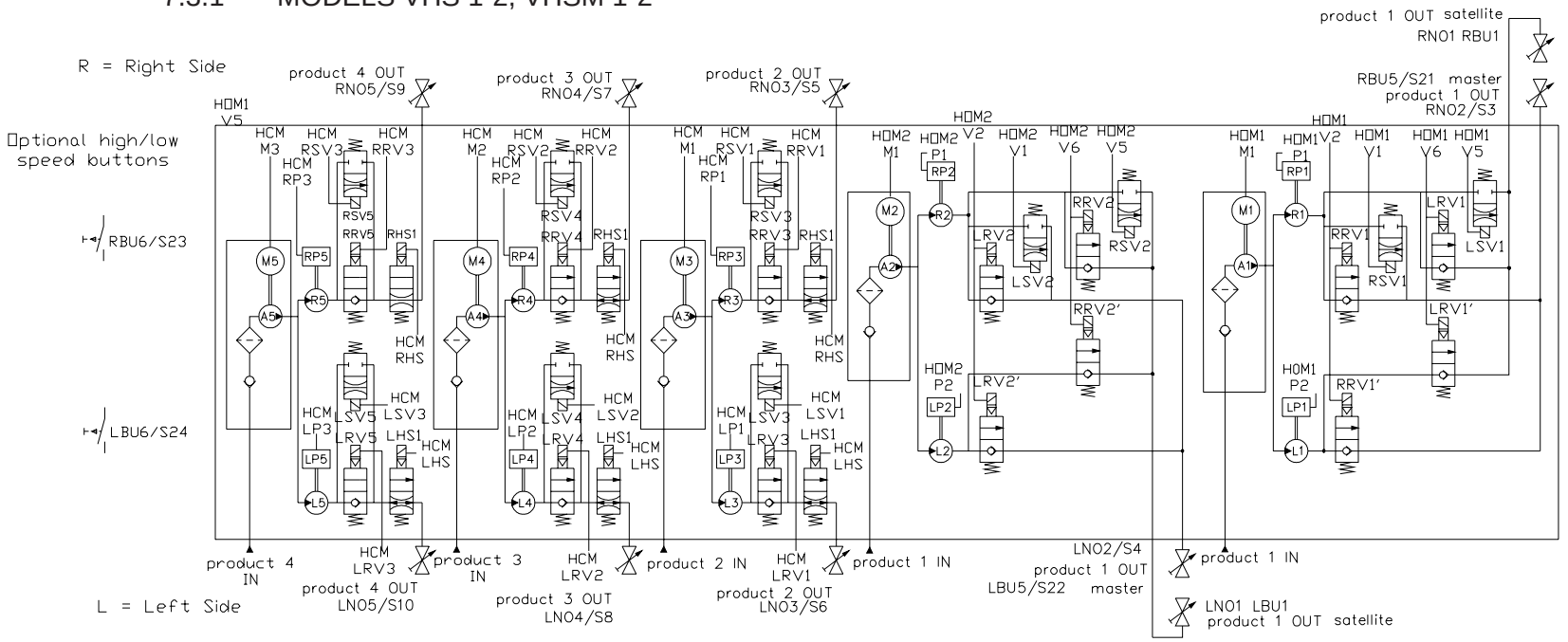


hydraulic valve
electric/pilot controlled



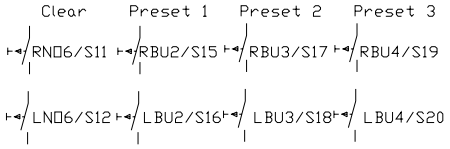
7.3 Hydraulic Set Up 52

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

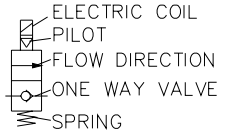
Optional Preset buttons



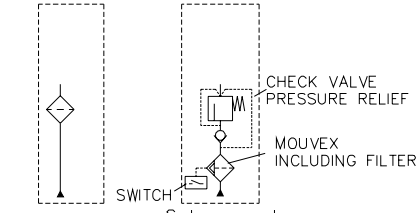
Remarks:
On HOM one extra HS valve per side
Standard One HS valve per side

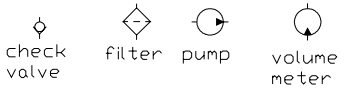
Possible flow rate through nozzle (manual valve)
0, 40 and 130 litres/minute

Explanation symbols



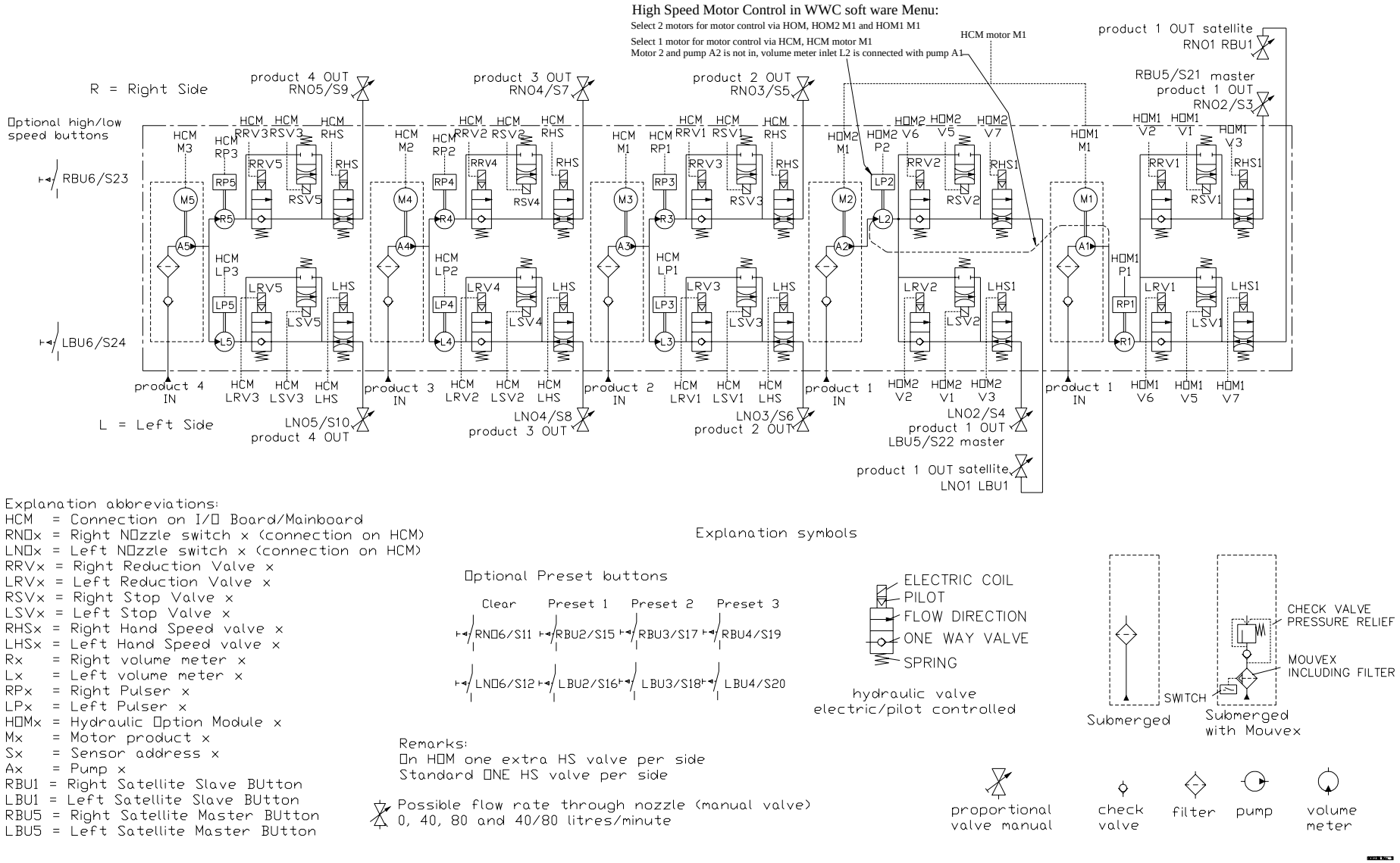
hydraulic valve electric/pilot controlled





7.4 Hydraulic Set Up 53

7.4.1 MODEL HS 5-8, HSM 5-8



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
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

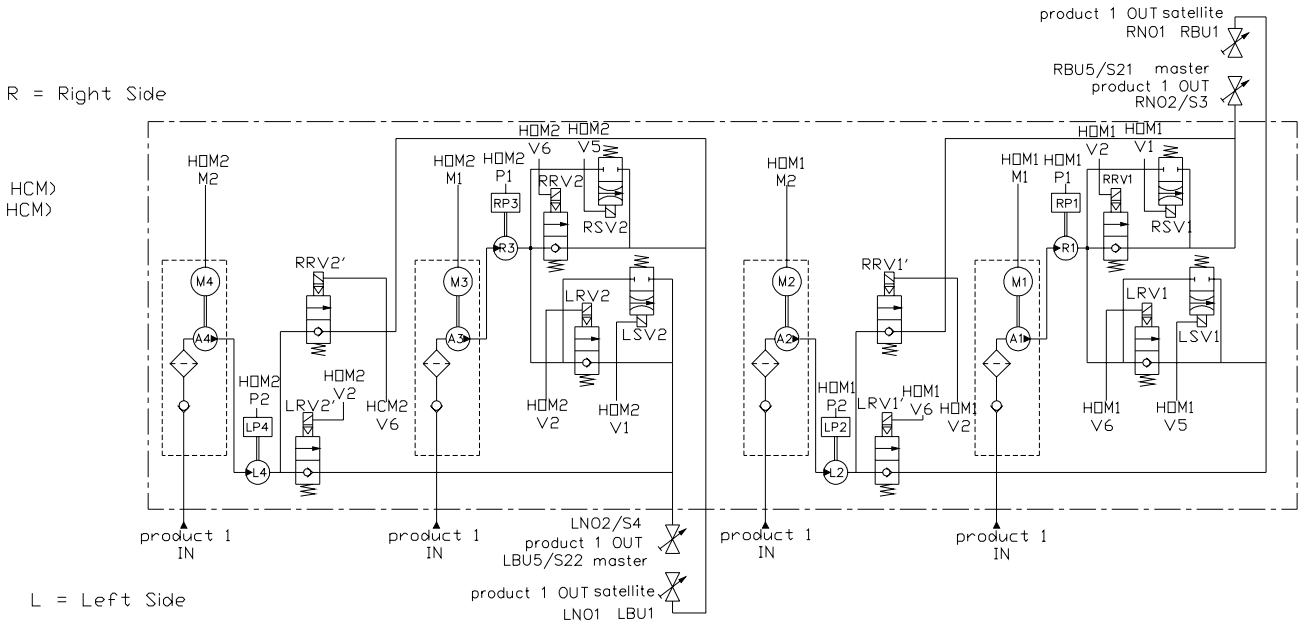
Explanation symbols

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

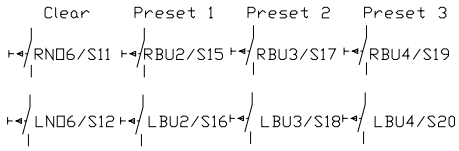
Possible flow rate through nozzle (manual valve)
0, 40, 80 and 40/80 litres/minute

7.5 Hydraulic Set Up 54

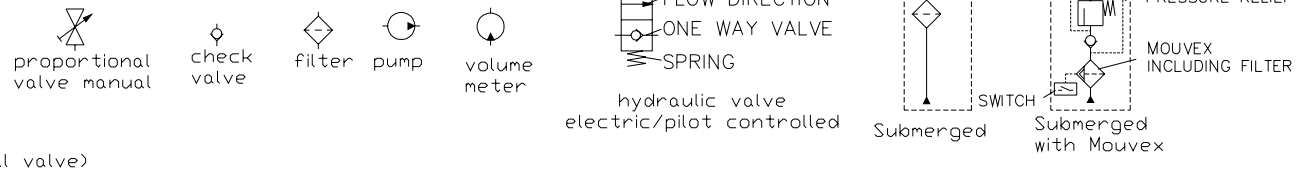
Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve 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



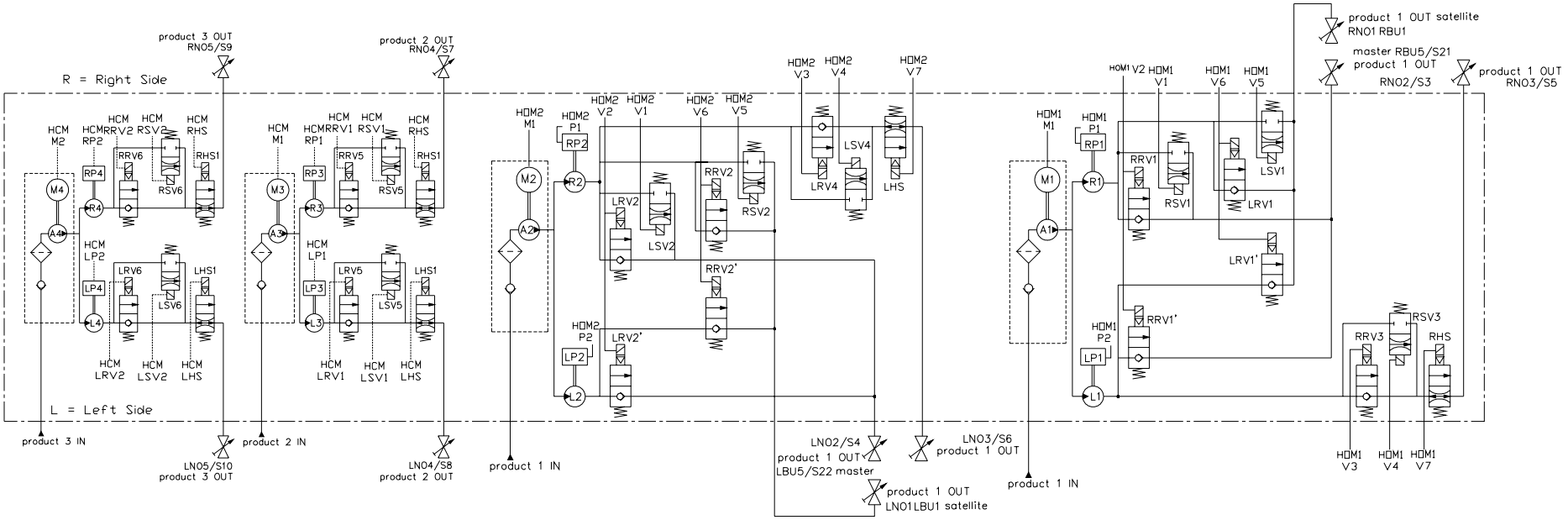
Explanation symbols



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

7.6 Hydraulic Set Up 55

7.6.1 MODELS VHS 2-4, VHS 3-6, VHS 4-8



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)
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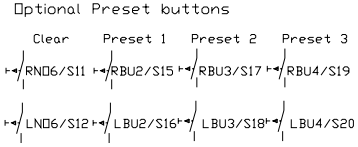
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor 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

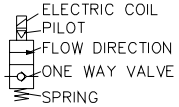
Optional Preset buttons



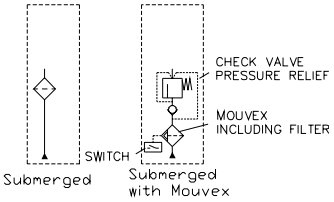
Remarks:
On HOM one extra HS valve per side
Standard ONE HS valve per side

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

Explanation symbols

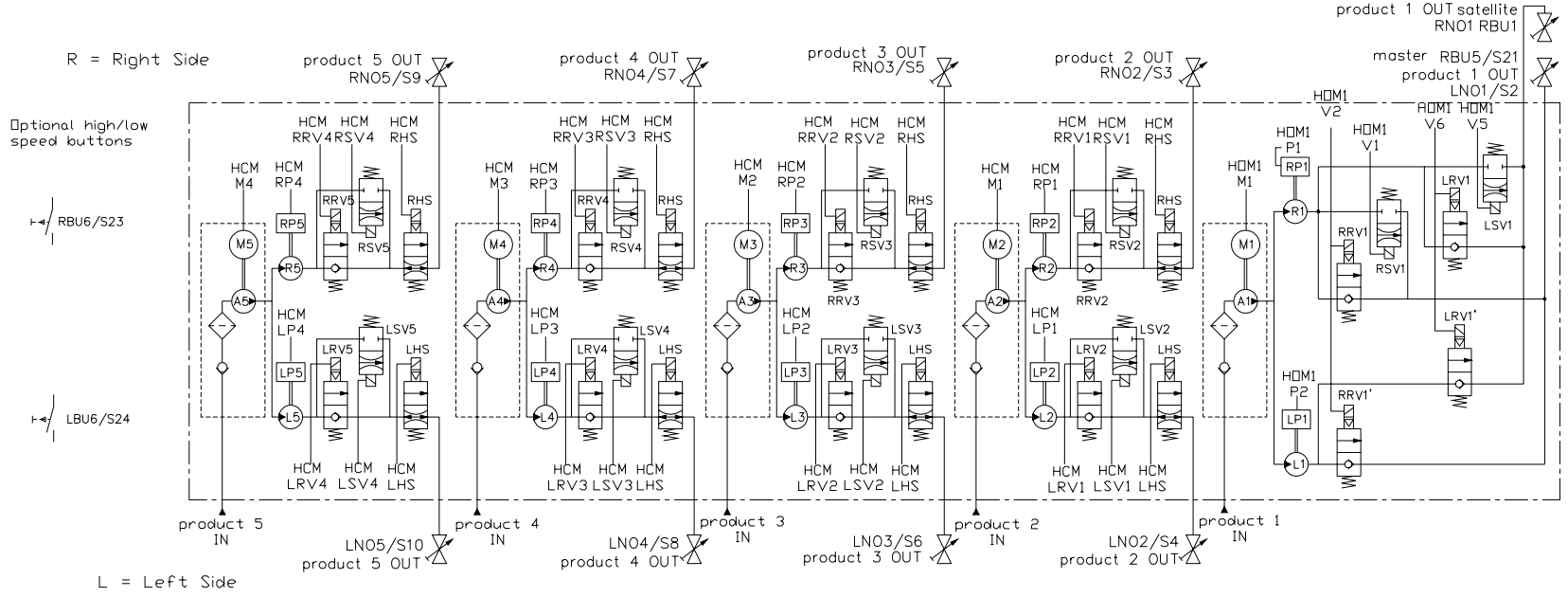


hydraulic valve electric/pilot controlled



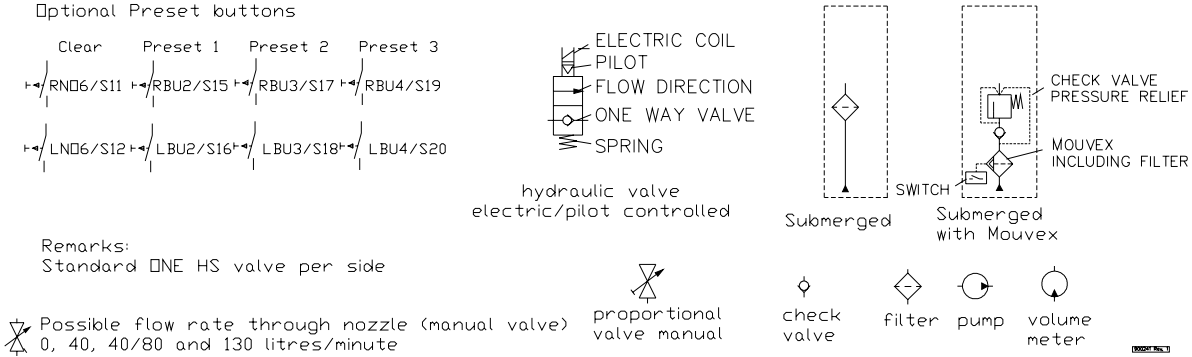
7.7 Hydraulic Set Up 56

7.7.1 MODEL SVHSM 5-5

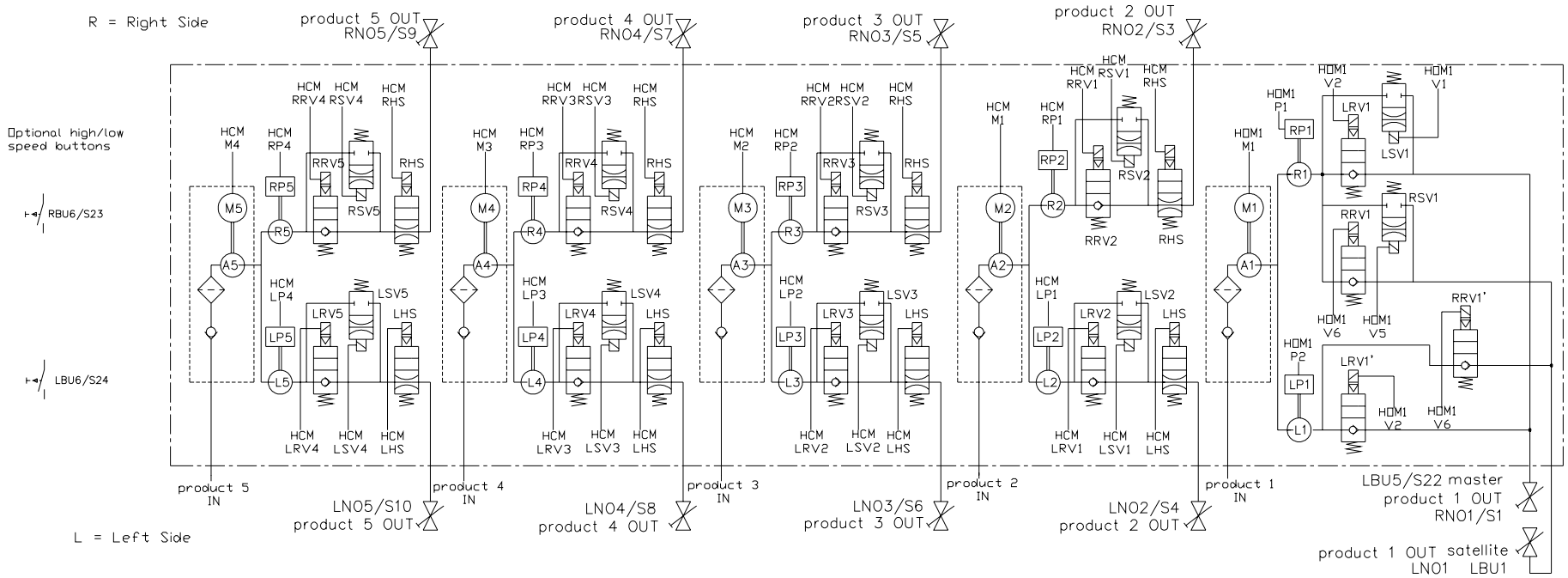


Explanation abbreviations:
HCM = Connection on I/O Board/Mainboard
RNOx = Right NOzzle switch x (connection on HCM)
LNOx = Left NOzzle switch x (connection on HCM)
RRVx = Right Reduction Valve x
LRVx = Left Reduction Valve x
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve 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



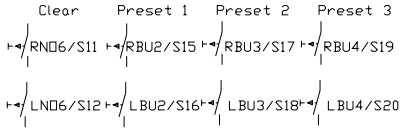
7.8 Hydraulic Set Up 57



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

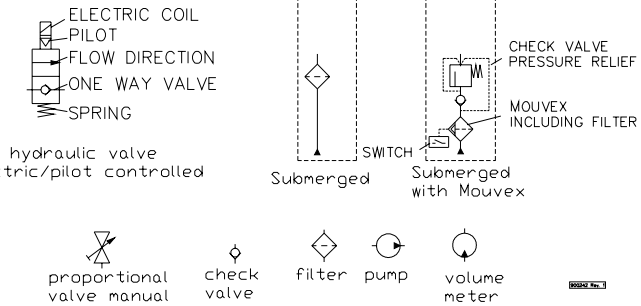
Explanation symbols

Optional Preset buttons



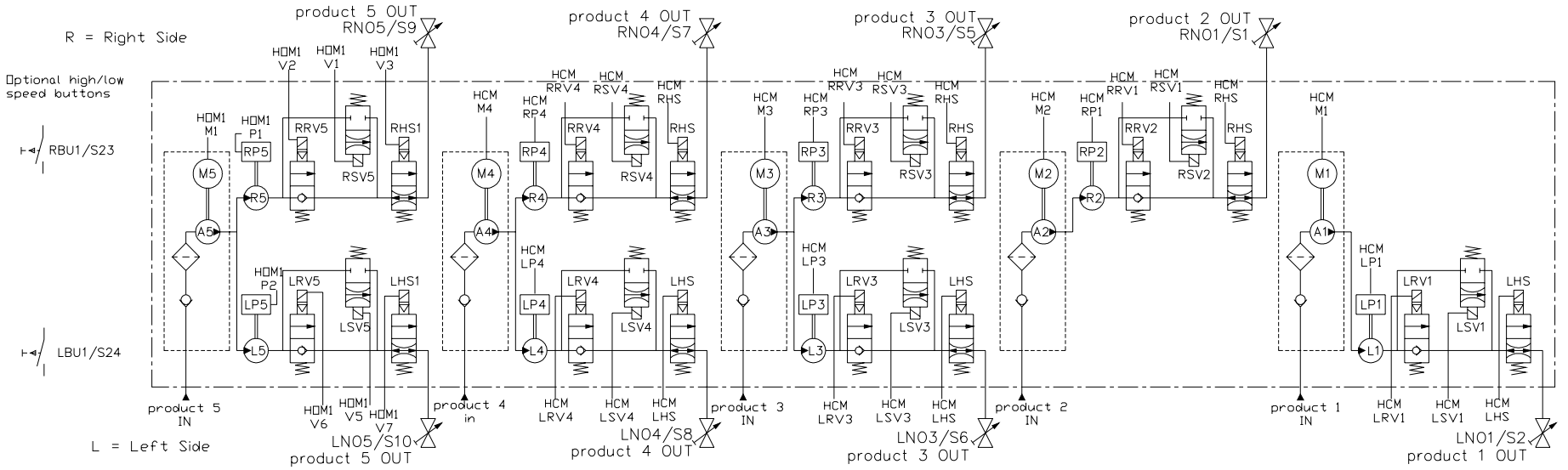
Remarks:
Standard ONE HS valve per side

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



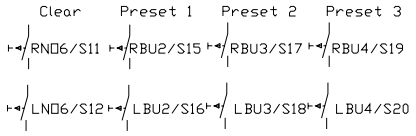
7.9 Hydraulic Set Up 58

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

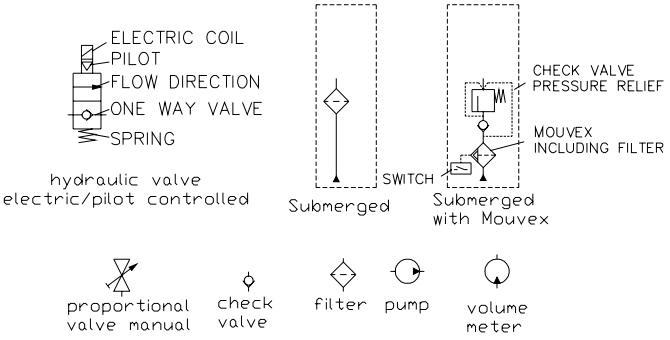
Optional Preset buttons



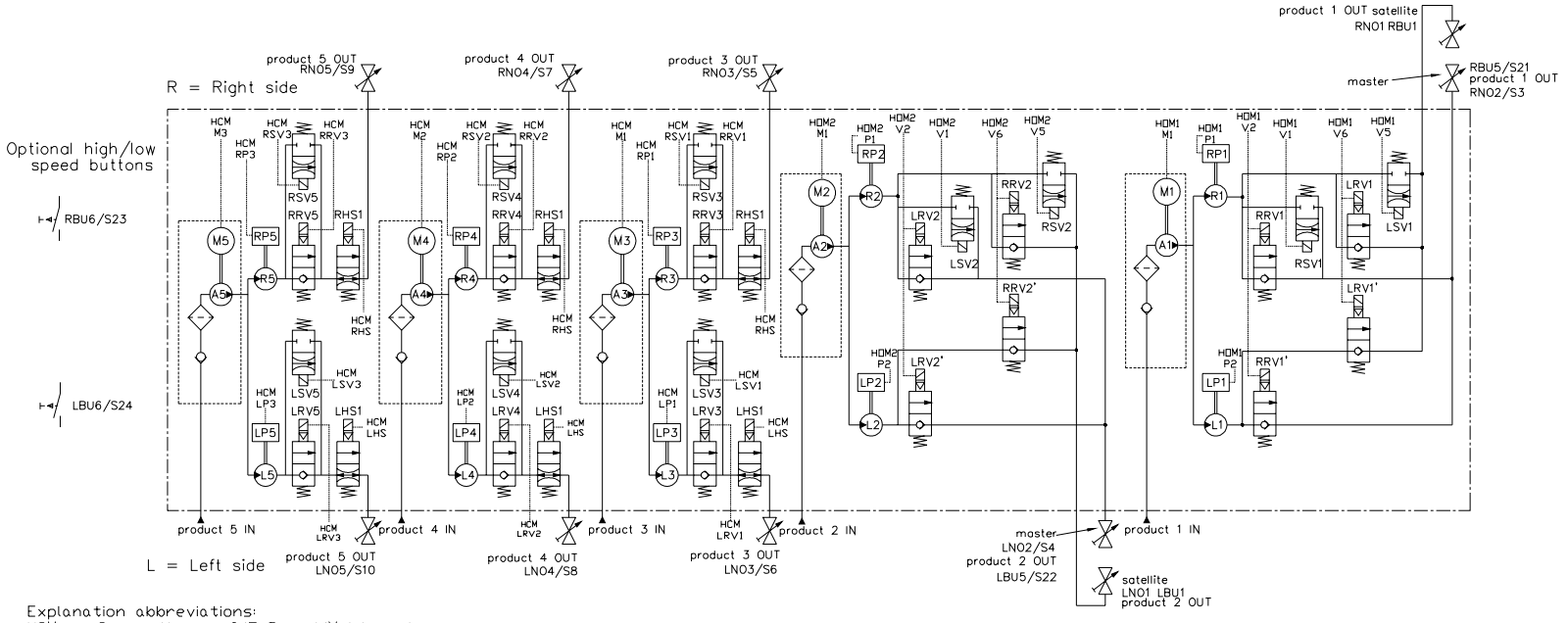
Remarks:
On HOM one extra HS valve per side
Standard ONE HS valve per side

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

Explanation symbols



7.10 Hydraulic Set Up 62



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

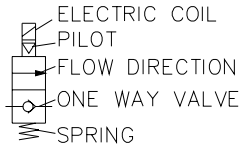
Explanation symbols

Optional Preset buttons

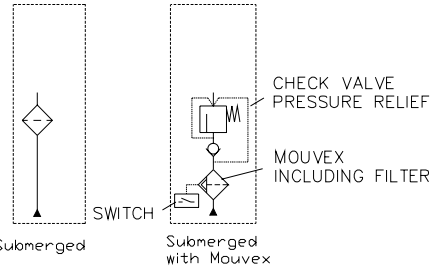
Clear	Preset 1	Preset 2	Preset 3
RNO6/S11	RBU2/S15	RBU3/S17	RBU4/S19
LNO6/S12	LBU2/S16	LBU3/S18	LBU4/S20

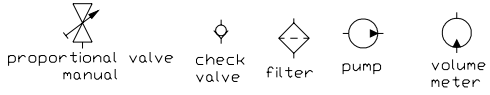
Remarks:
Standard ONE HS valve per side

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

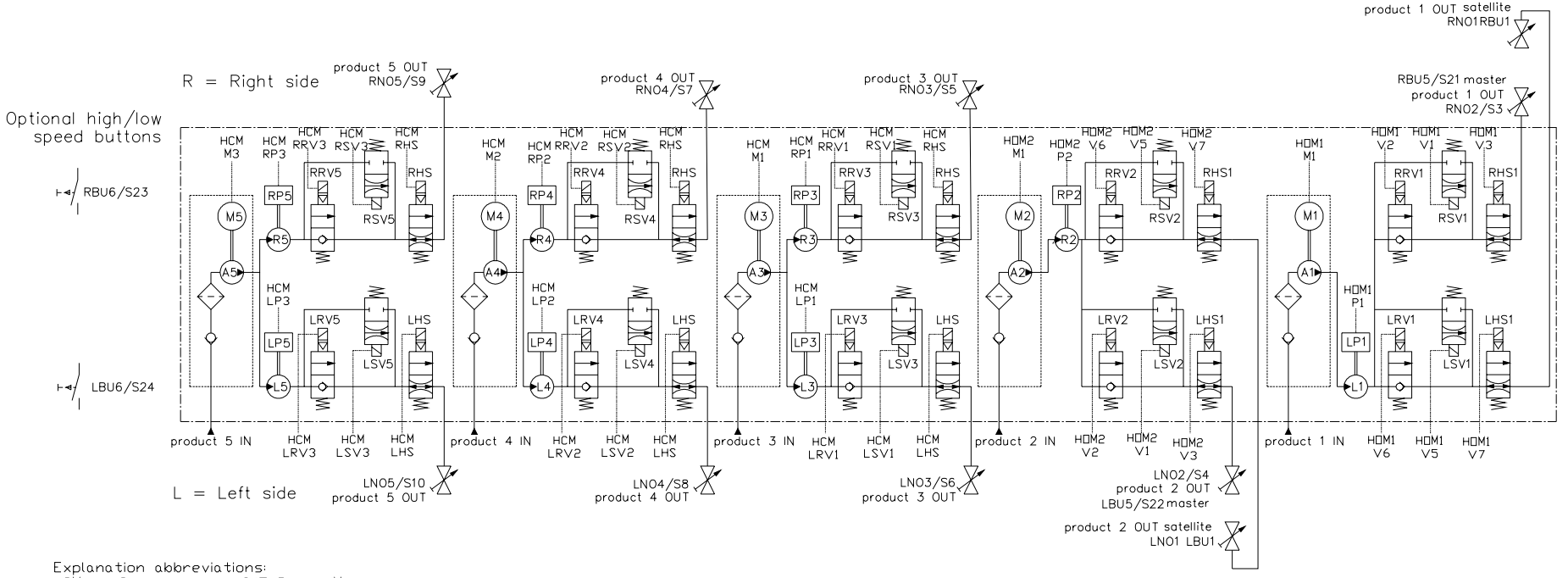


hydraulic valve
electric/pilot controlled





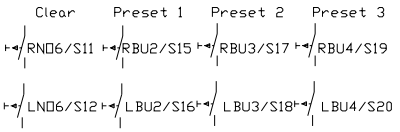
7.11 Hydraulic Set Up 63



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

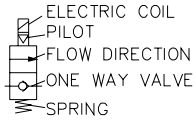
Explanation symbols

Optional Preset buttons

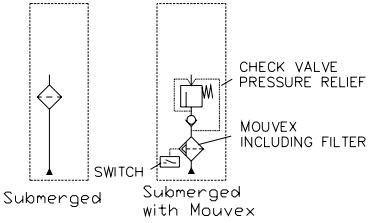


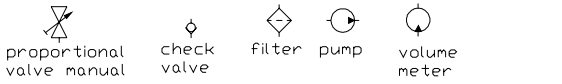
Remarks:
Standard ONE HS valve per side

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

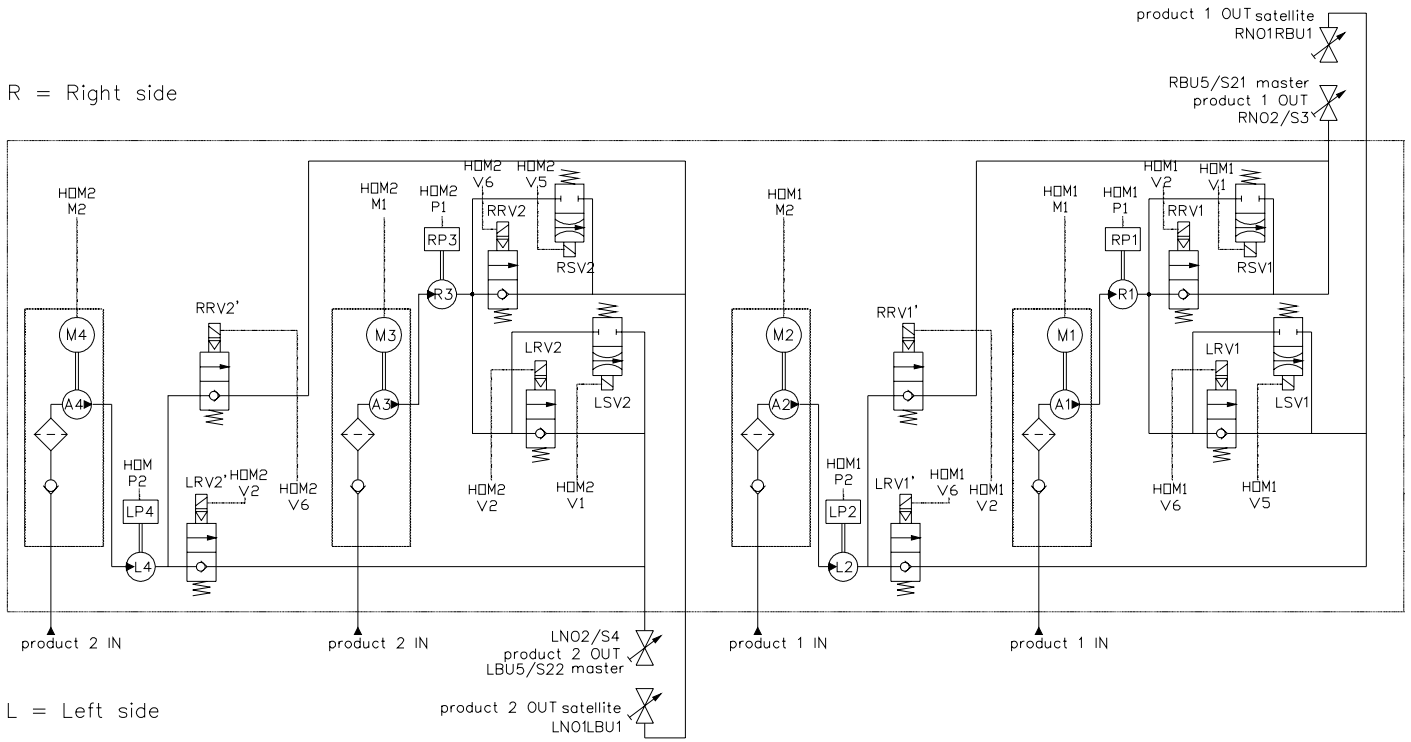


hydraulic valve electric/pilot controlled





7.12 Hydraulic Set Up 64



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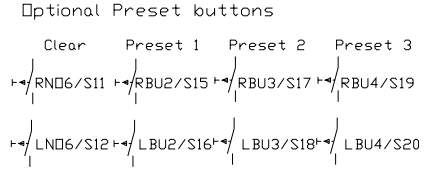
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

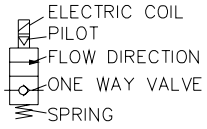
Explanation symbols

Optional Preset buttons

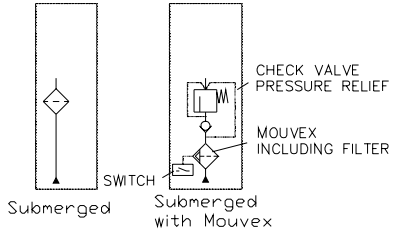


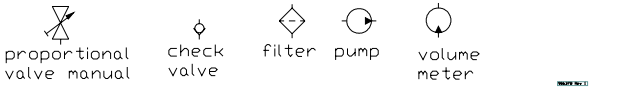
Remarks:
Standard ONE HS valve per side

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

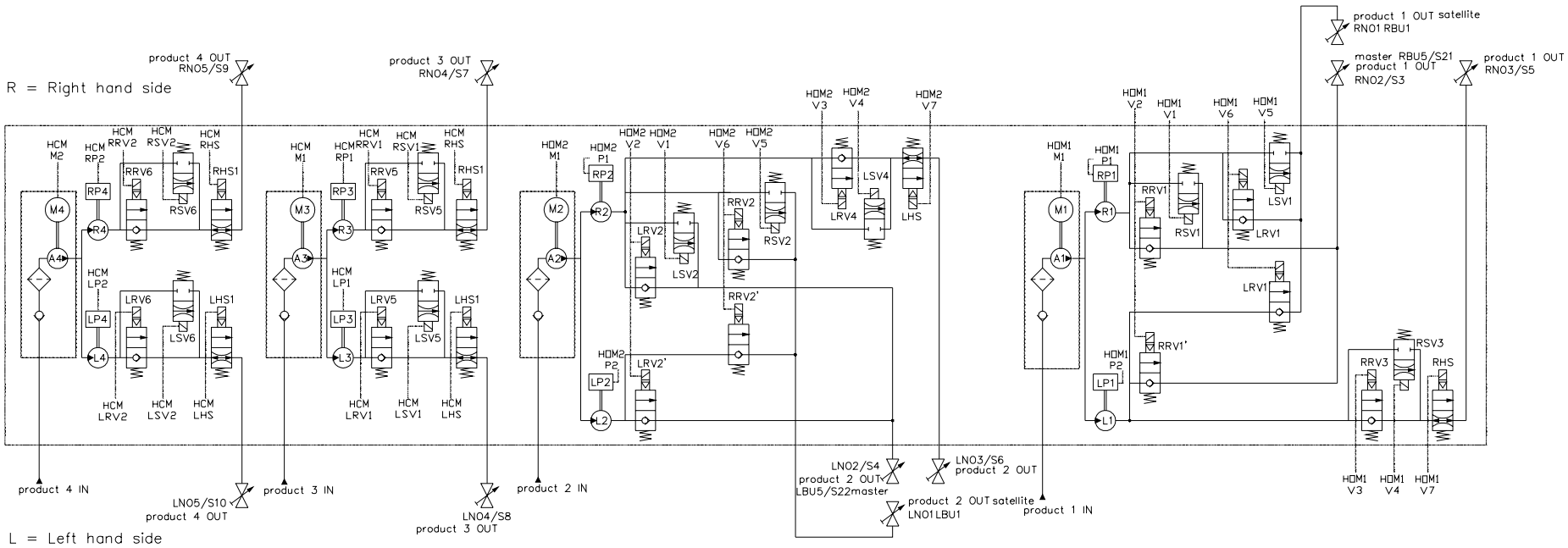


hydraulic valve electric/pilot controlled





7.13 Hydraulic Set Up 65



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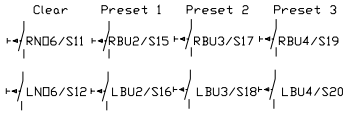
RSVx = Right Stop Valve x
LSVx = Left Stop Valve x
RHSx = Right Hand Speed valve x
LHSx = Left Hand Speed valve x
Rx = Right volume meter x
Lx = Left volume meter x
RPx = Right Pulser x
LPx = Left Pulser x
HOMx = Hydraulic Option Module x
Mx = Motor product x
Sx = Sensor address x
Ax = Pump x
RBU1 = Right Satellite Slave BUtton
LBU1 = Left Satellite Slave BUtton
RBU5 = Right Satellite Master BUtton
LBU5 = Left Satellite Master BUtton

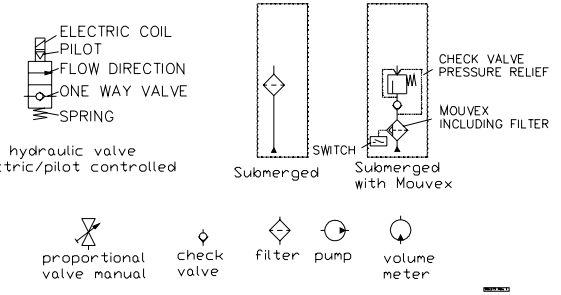
Explanation symbols

Optional Preset buttons

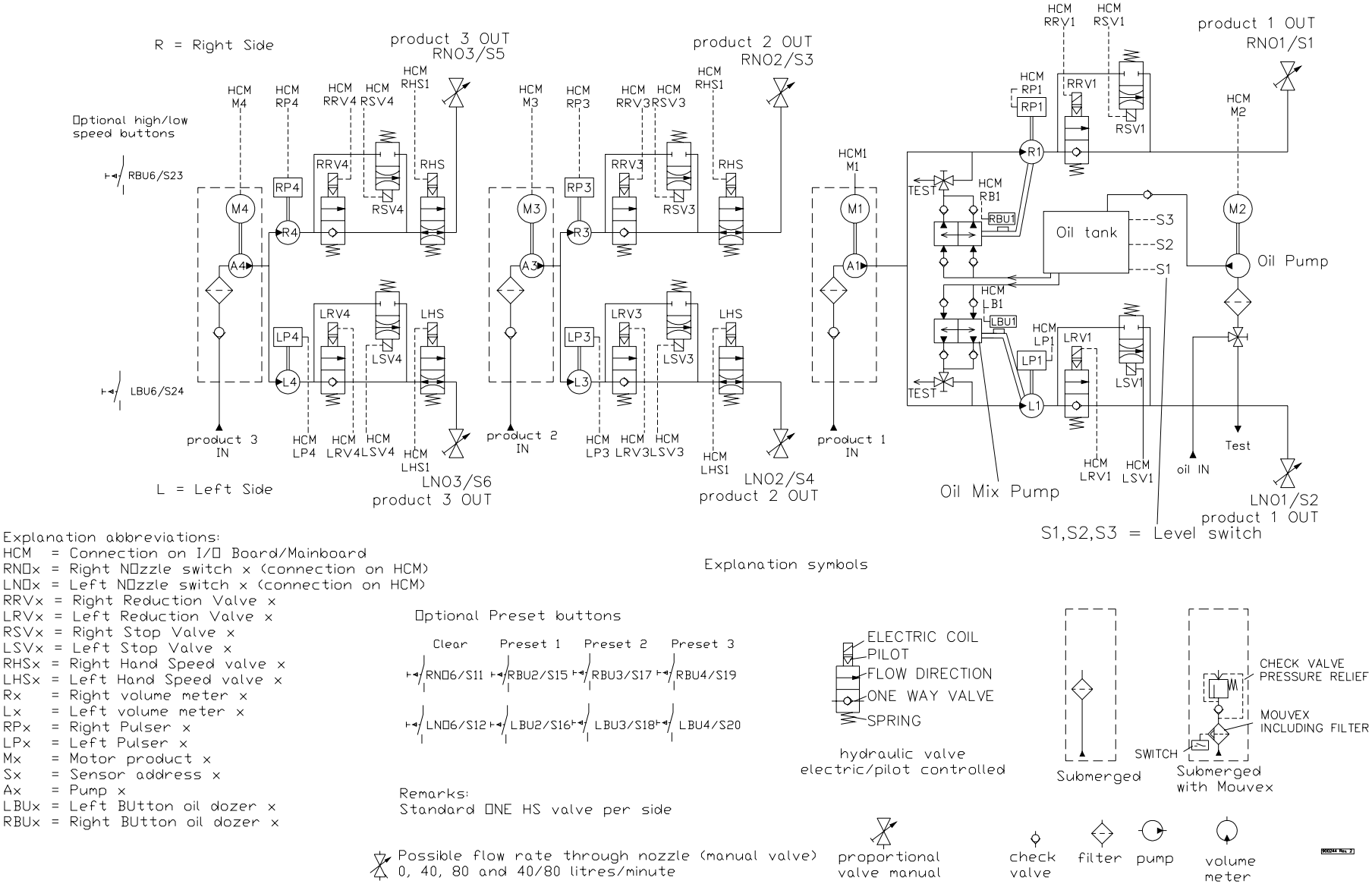


Remarks:
Standard ONE HS valve per side

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



7.14 Hydraulic Set Up 80



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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

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

Explanation symbols

hydraulic valve
electric/pilot controlled

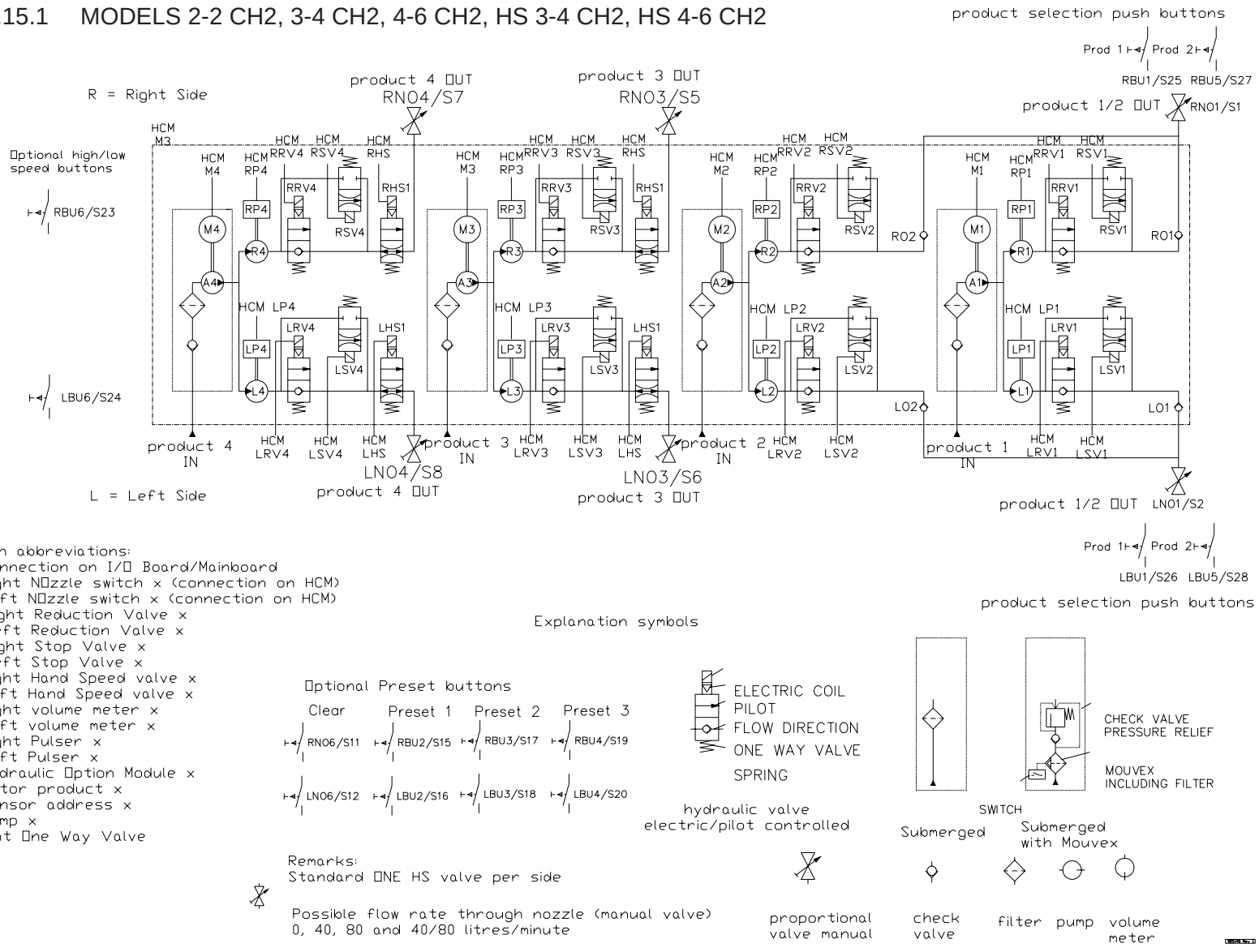
Submerged

Submerged
with Mouvex

proportional
valve manual

7.15 Hydraulic Set Up 90

7.15.1 MODELS 2-2 CH2, 3-4 CH2, 4-6 CH2, HS 3-4 CH2, HS 4-6 CH2



Explanation abbreviations:
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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
ROx = Right One Way Valve

Explanation symbols

Optional Preset buttons

Clear	Preset 1	Preset 2	Preset 3
RN06/S11	RBU2/S15	RBU3/S17	RBU4/S19
LN06/S12	LBU2/S16	LBU3/S18	LBU4/S20

Remarks:
Standard ONE HS valve per side

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

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