



# Quantum 500T1



## Installation Manual



Document Ref 906676-001  
Rev 2  
07/2004



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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.

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## REVISION RECORD

Date	Revision	Page	Issue	Reason
03/06/2004	1	All	A	Original Issue
22/07/2004	2	4	B	Main Contents revised
22/07/2004	2	5-1	B	Section 5 Contents revised
22/07/2004	2	5-5 to 5-8	B	New information inserted (EPZ pumps & submerged); repagination

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## CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1-2</b>
1.1	How To Use This Manual .....	1-2
1.2	Product Scope .....	1-2
1.3	Authorised Technicians .....	1-3
1.4	Contact Information .....	1-3
1.5	Health & Safety .....	1-3
1.5.1	Safety Checklist .....	1-3
1.5.2	Duties of the Employees .....	1-3
1.5.3	Hazards .....	1-4
1.5.4	Warning Signs .....	1-5
1.5.5	Personal Protective Equipment (PPE) .....	1-6
1.6	Standards & Certificates .....	1-7
1.6.1	Dispenser Marking for the ATEX Directive .....	1-7
<b>2</b>	<b>SITE PREPARATION .....</b>	<b>2-2</b>
2.1	General .....	2-2
2.1.1	Zoning Diagram .....	2-2
2.2	Basic Model Schematics .....	2-3
2.2.1	Standard Speed Models .....	2-3
2.2.2	Multi Product with High Speed Diesel Models .....	2-7
2.2.3	Multi Product with Very High Speed Diesel Models .....	2-11
2.2.4	Master & Satellite Models .....	2-13
2.3	Hydraulic Connections .....	2-16
2.3.1	Suction & Submerged Connections .....	2-16
2.3.2	Master & Satellite Connections .....	2-19
2.3.3	Vapour Recovery Connections .....	2-19
2.4	Electrical Connections .....	2-20
<b>3</b>	<b>DRAWINGS .....</b>	<b>3-2</b>
3.1	Dispenser Dimensions .....	3-2
3.1.1	Two Frames & One Column Models .....	3-2
3.1.2	Two Frames & Two Columns Models .....	3-3
3.1.3	Three Frames & Two Columns Models .....	3-4
3.1.4	Three Frames & Three Columns Models .....	3-5
3.1.5	Four Frames & Two Columns Models .....	3-6
3.1.6	Four Frames & Three Columns Models .....	3-7
3.1.7	Four Frames & Four Columns Models .....	3-8
3.1.8	Five Frames & Four Columns Models .....	3-9
3.2	Ground Plans .....	3-10
3.2.1	Two Frames & One Column Models .....	3-10
3.2.2	Two Frames & Two Columns Models .....	3-11
3.2.3	Three Frames & Two Columns Models .....	3-12
3.2.4	Three Frames & Three Columns Models .....	3-13
3.2.5	Four Frames & Two Columns Models .....	3-14
3.2.6	Four Frames & Three Columns Models .....	3-15
3.2.7	Four Frames & Four Columns Models .....	3-16
3.2.8	Five Frames & Four Columns Models .....	3-17

(CONT.)

<b>4</b>	<b>PACKAGING &amp; HANDLING .....</b>	<b>4-2</b>
4.1	Shipping Documentation .....	4-2
4.2	Packaging .....	4-2
4.2.1	Unpacking .....	4-2
4.3	Inventory Inspection .....	4-2
4.3.1	Checking List .....	4-3
4.4	Weights .....	4-3
4.5	Handling .....	4-3
4.6	Access the Hydraulic Area .....	4-4
4.7	Access the Calculator Head .....	4-4
<b>5</b>	<b>INSTALLATION .....</b>	<b>5-2</b>
5.1	General .....	5-2
5.2	Identification of Side A .....	5-2
5.3	Lifting .....	5-3
5.4	Placement .....	5-3
5.4.1	By Forklift .....	5-4
5.5	Hydraulic Connections .....	5-5
5.5.1	Pipework - Suction Dispensers .....	5-5
5.5.2	Pipework - Submerged Dispensers .....	5-7
5.6	Electrical Connections .....	5-7
5.6.1	Junction Box Wiring .....	5-7
5.6.2	Communications Wiring in Main Junction Box .....	5-12
5.6.3	Special Dispenser Configurations .....	5-14
<b>6</b>	<b>COMMISSIONING .....</b>	<b>6-2</b>
6.1	Test and Calibration of the Dispenser .....	6-2
6.1.1	Program the Dispenser .....	6-2
6.1.2	Dispenser Functions .....	6-2
6.1.3	Test the Dispenser .....	6-2
6.1.4	Calibrate the Meter .....	6-3
6.1.5	Final Checks .....	6-3
6.2	Handing over to the Station Manager .....	6-4

## CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1-2</b>
1.1	How To Use This Manual .....	1-2
1.2	Product Scope .....	1-2
1.3	Authorised Technicians .....	1-3
1.4	Contact Information .....	1-3
1.5	Health & Safety .....	1-3
1.5.1	Safety Checklist .....	1-3
1.5.2	Duties of the Employees .....	1-3
1.5.3	Hazards .....	1-4
1.5.4	Warning Signs .....	1-5
1.5.5	Personal Protective Equipment (PPE) .....	1-6
1.6	Standards & Certificates .....	1-7
1.6.1	Dispenser Marking for the ATEX Directive .....	1-7

## **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 installation and commissioning of the product.

#### **Section 2 - Site Preparation**

This section details the procedures to be carried out in preparation for receipt of equipment at site and the necessary actions prior to installation.

#### **Section 3 - Drawings**

All necessary drawings required for reference during the installation and commissioning, are listed and contained in this section.

#### **Section 4 - Packaging and Handling**

This section provides instructions for unpacking and safe handling of the equipment.

#### **Section 5 - Installation**

The instructions for the correct installation of the equipment are contained within this section.

#### **Section 6 - Commissioning**

This section highlights the actions and checks, to be carried out, in preparation for the commissioning activity and the procedures required from commissioning of the equipment to handover.

### **1.2 Product Scope**

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

The Quantum 500T1 range of fuel dispensers, with the exception of the LPG version. For information on Quantum LPG dispensers refer to the relevant LPG manual as provided by Tokheim.

All dispensers in the Quantum 500T1 range use the same standard sub-assemblies and offer a wide range of configurations and includes provision for options such as integrated payment terminal, vapour recovery etc.



### 1.3 Authorised Technicians

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



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

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

### 1.4 Contact Information

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

Technical Author  
Tokheim UK Ltd.  
Dundee, Scotland

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

### 1.5 Health & Safety

#### 1.5.1 SAFETY CHECKLIST

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

#### **Areas where special caution is required**

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

#### 1.5.2 DUTIES OF THE EMPLOYEES

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

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

This equally applies to:

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

### 1.5.3 HAZARDS

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



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

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








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.

#### 1.5.4 WARNING SIGNS

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

SIGN	MEANING	POSITION
	Do not use mobile phones	Visible from both sides of dispenser
	Naked flames and smoking forbidden	Visible from both sides of dispenser
	Do not spill fuel on the ground	Visible from both sides of dispenser
	Stop vehicle engine	Visible from both sides of dispenser
	Trucks only	At Diesel high speed dispensers near the nozzle boots
	Do not drive away with nozzle in tank	Visible from both sides of dispenser
		Next to User Instructions near the nozzle boot

**1.5.5 PERSONAL PROTECTIVE EQUIPMENT (PPE)****PROTECTIVE CLOTHING**

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

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

**SAFETY EQUIPMENT FOR WORKING IN HAZARDOUS AREAS**

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

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

**SAFETY INSTRUCTIONS**

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

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

## 1.6 Standards & Certificates

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

The components used within the dispenser, including connection facilities, are selected in accordance with the European Standard EN 50014 (Electrical apparatus for potentially explosive 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

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## CONTENTS

<b>2</b>	<b>SITE PREPARATION .....</b>	<b>2-2</b>
2.1	General .....	2-2
2.1.1	Zoning Diagram .....	2-2
2.2	Basic Model Schematics .....	2-3
2.2.1	Standard Speed Models .....	2-3
2.2.2	Multi Product with High Speed Diesel Models .....	2-7
2.2.3	Multi Product with Very High Speed Diesel Models .....	2-11
2.2.4	Master & Satellite Models .....	2-13
2.3	Hydraulic Connections .....	2-16
2.3.1	Suction & Submerged Connections .....	2-16
2.3.2	Master & Satellite Connections .....	2-19
2.3.3	Vapour Recovery Connections .....	2-19
2.4	Electrical Connections .....	2-20

## 2 SITE PREPARATION

### 2.1 General

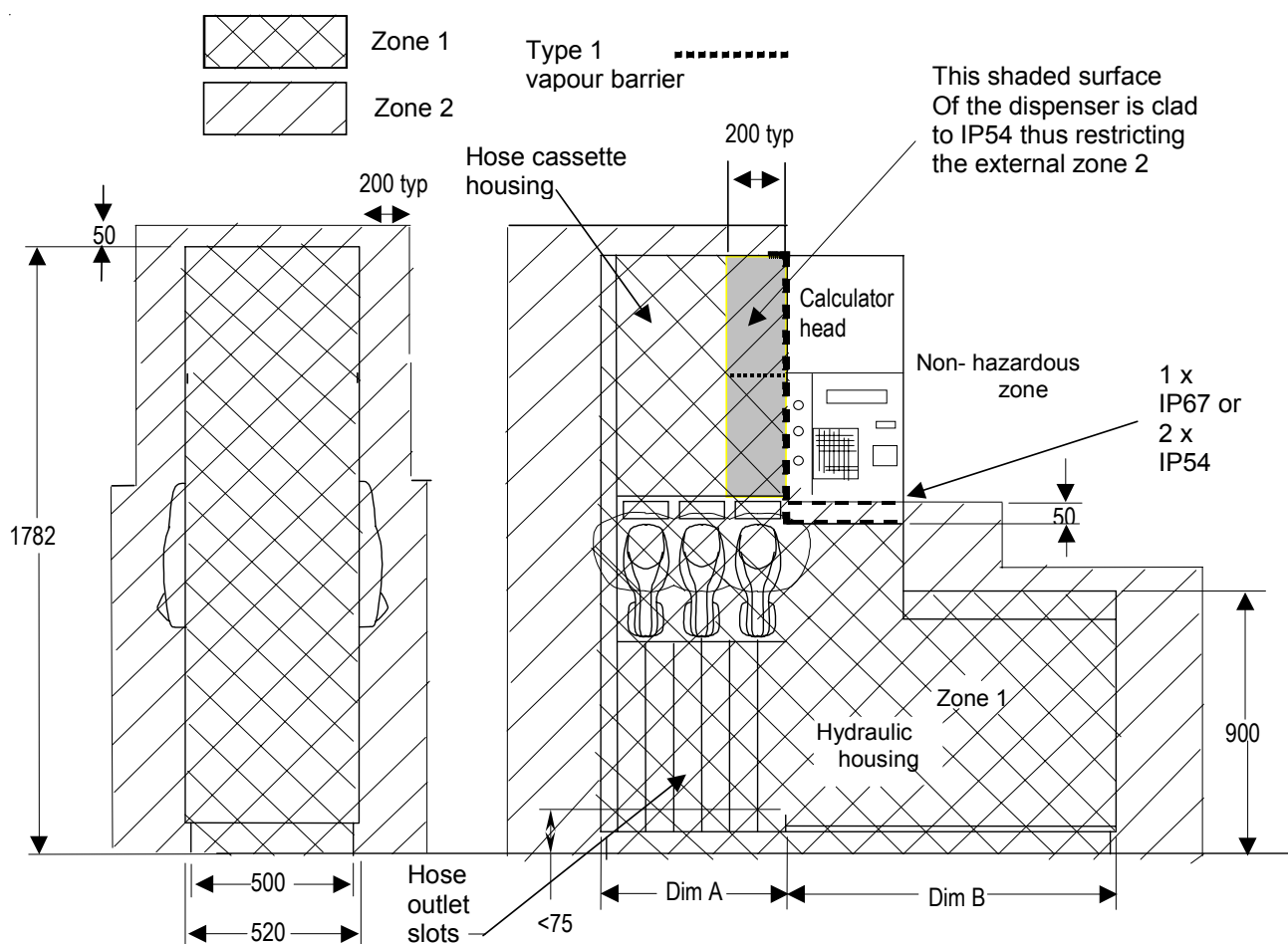
Tokheim dispensers must only be installed on a level island or forecourt surface.

The ground plan will depend on the model ordered. See drawings in Section 3.

#### 2.1.1 ZONING DIAGRAM

The classification of vapour barriers is indicated in the following diagram. The zone classifications shown are always the highest applicable to that location within the dispenser.

#### Q500T1 DISPENSER - STANDARD CONFIGURATION

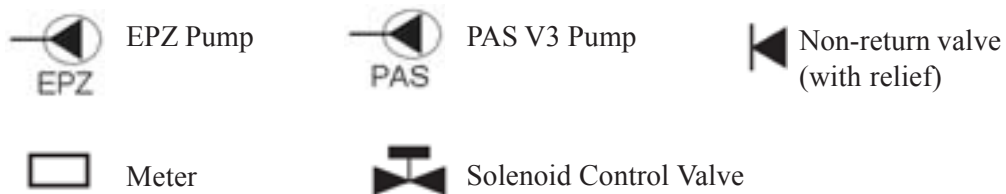


Note : On this drawing all the zone 2 areas are external  
The zone 1 is internal

Issue A

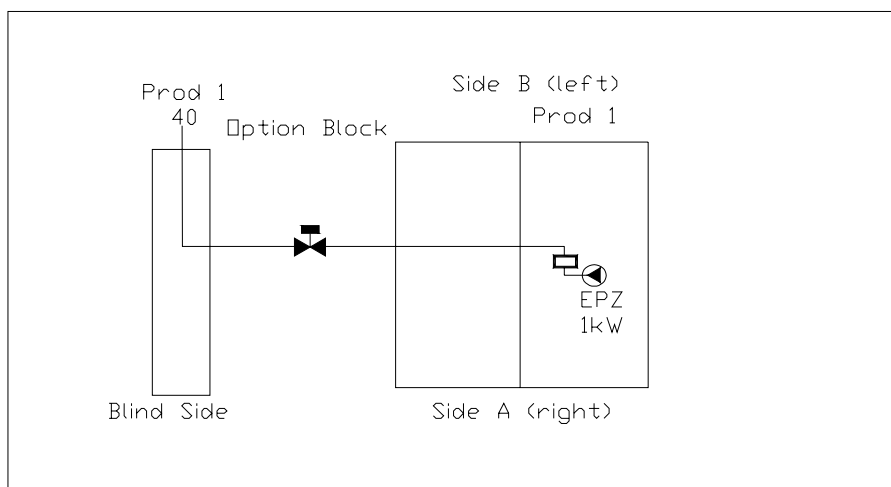


## 2.2 Basic Model Schematics

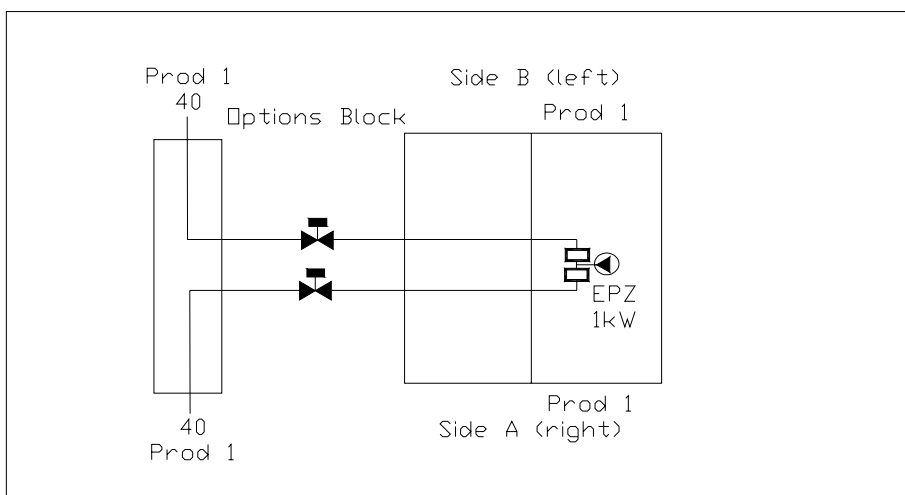


### 2.2.1 STANDARD SPEED MODELS

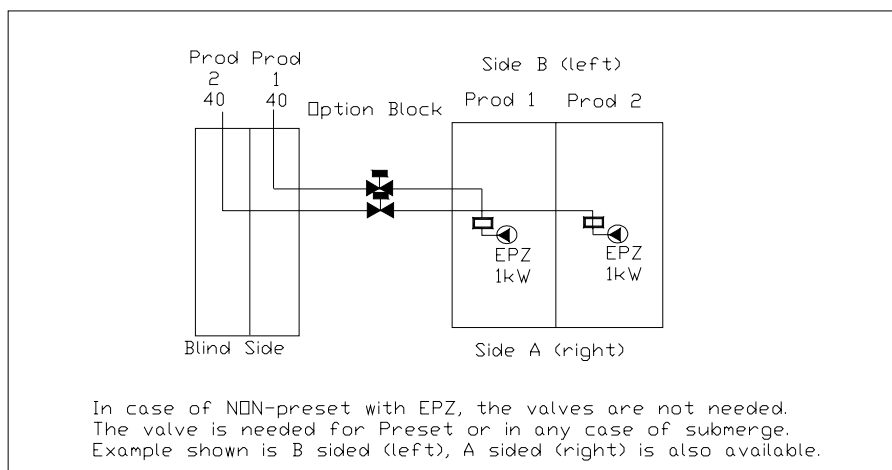
#### Model 1-1



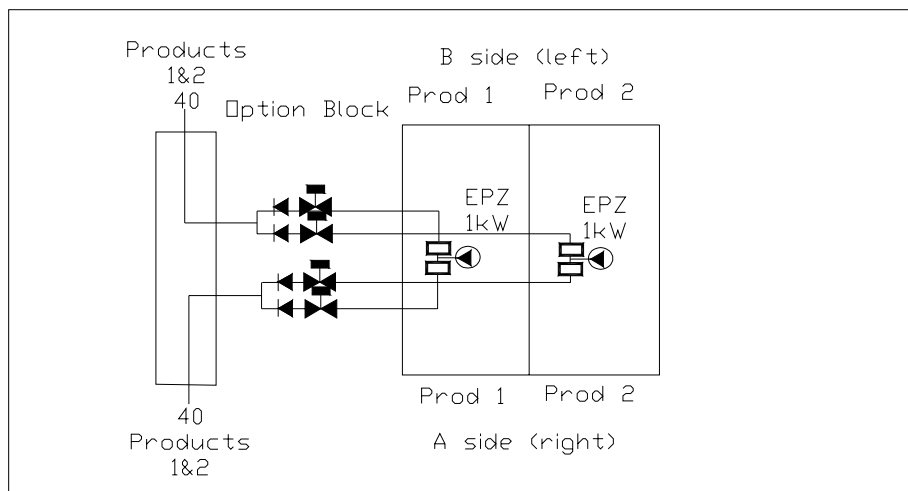
#### Model 1-2



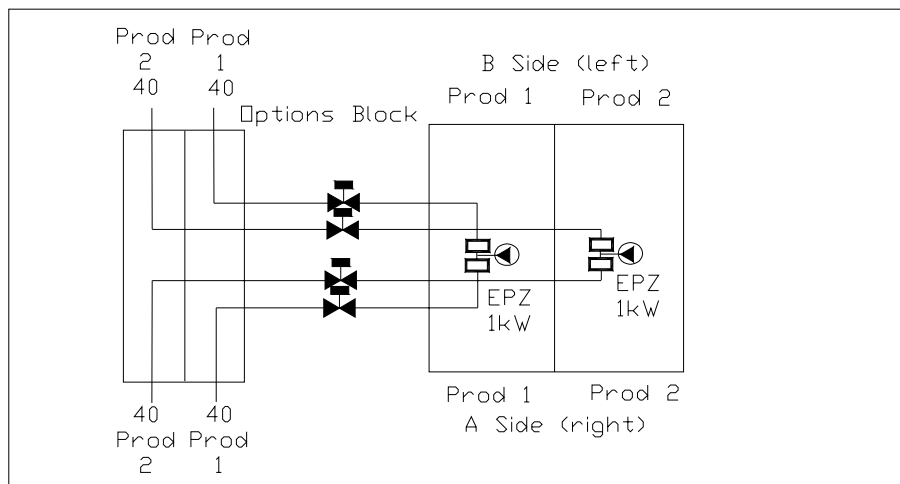
## Model 2-2

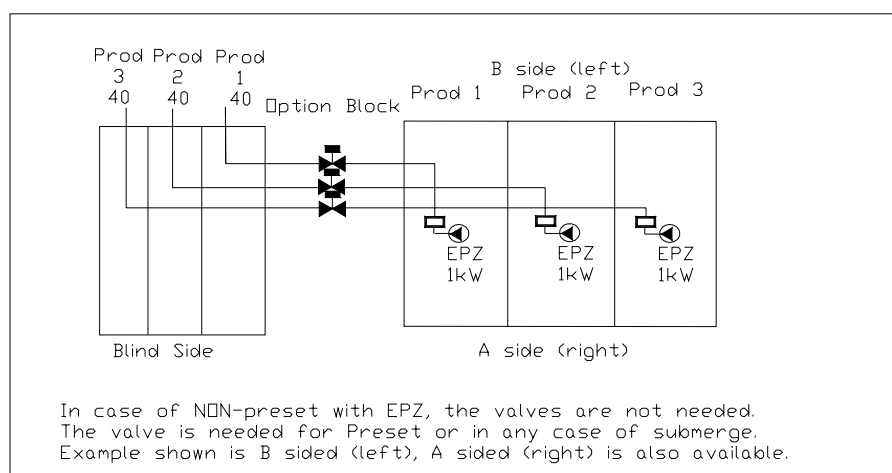
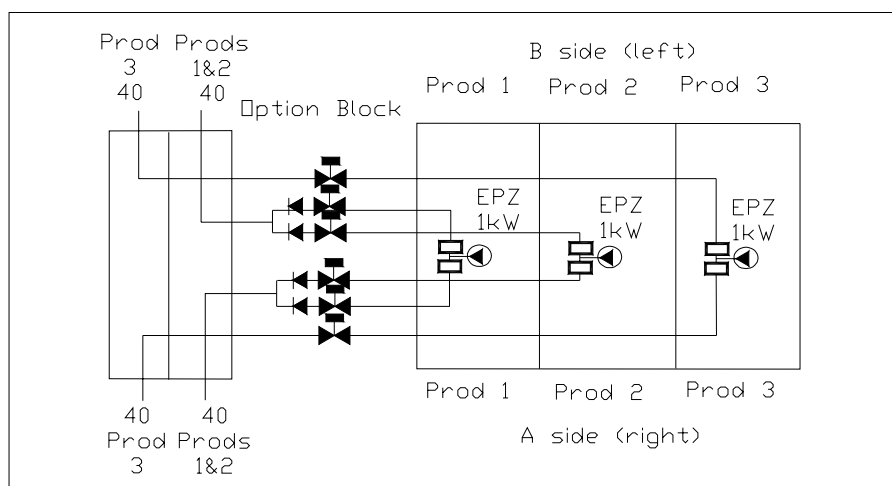
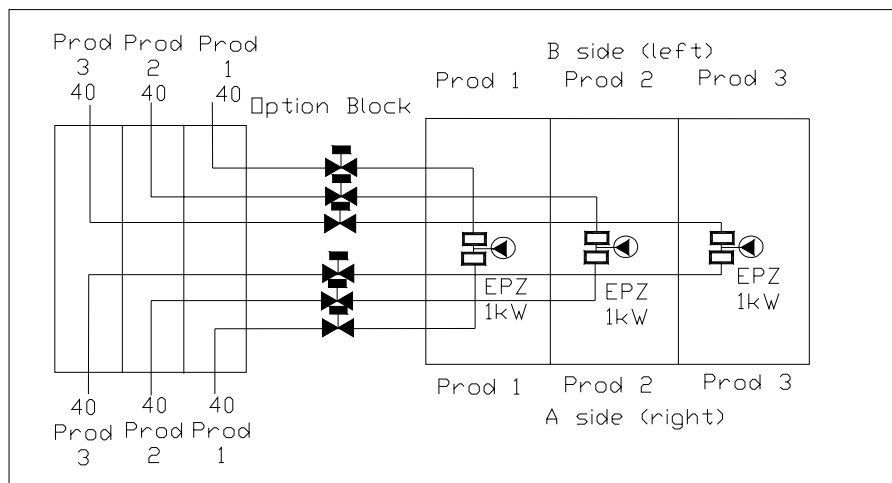


## Model 2-2 CH2

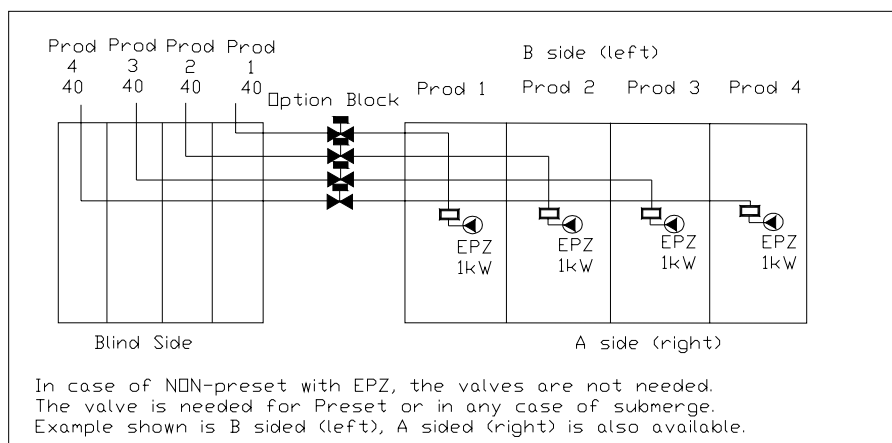


## Model 2-4

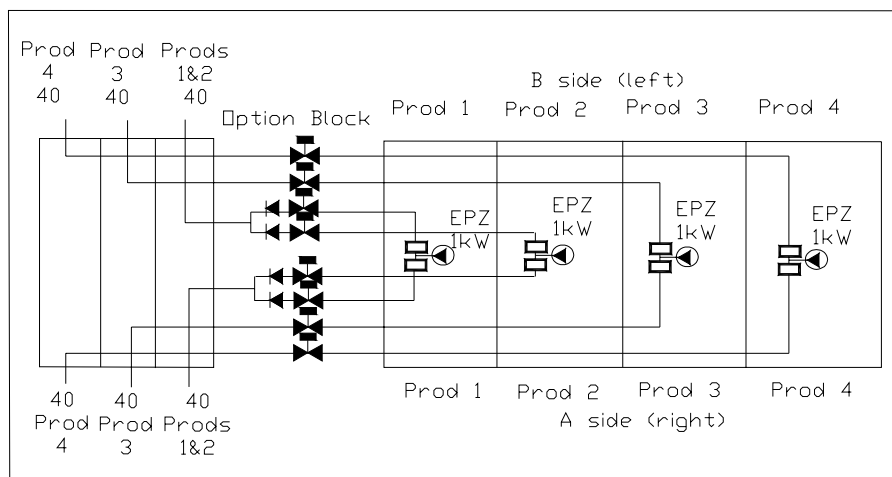


**Model 3-3****Model 3-4 CH2****Model 3-6**

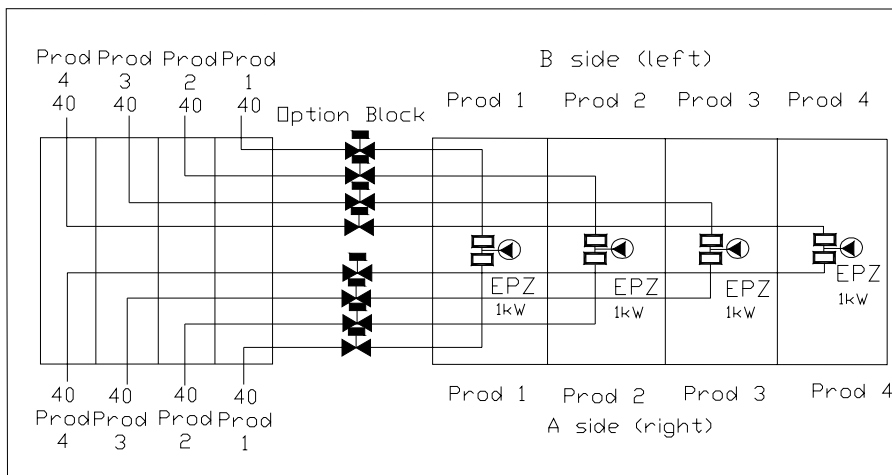
### Model 4-4



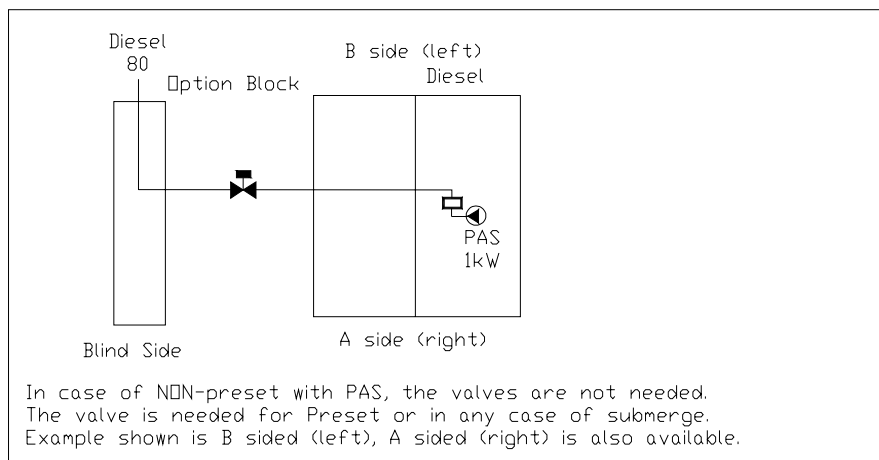
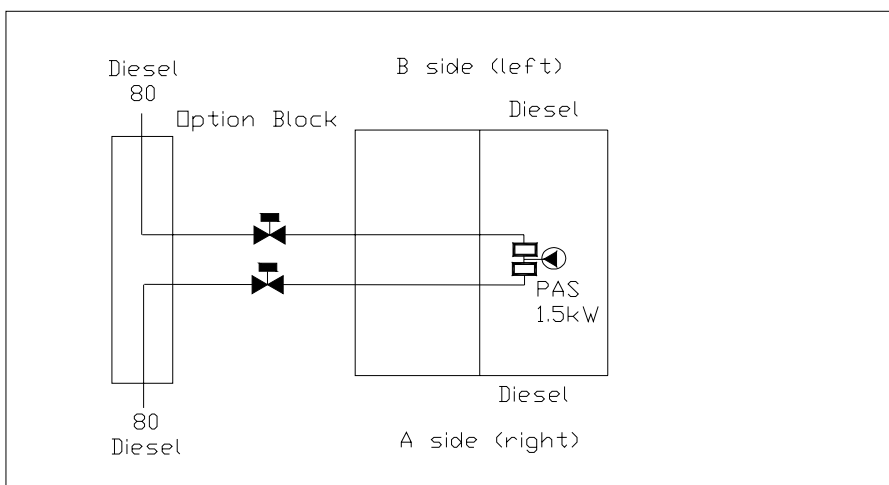
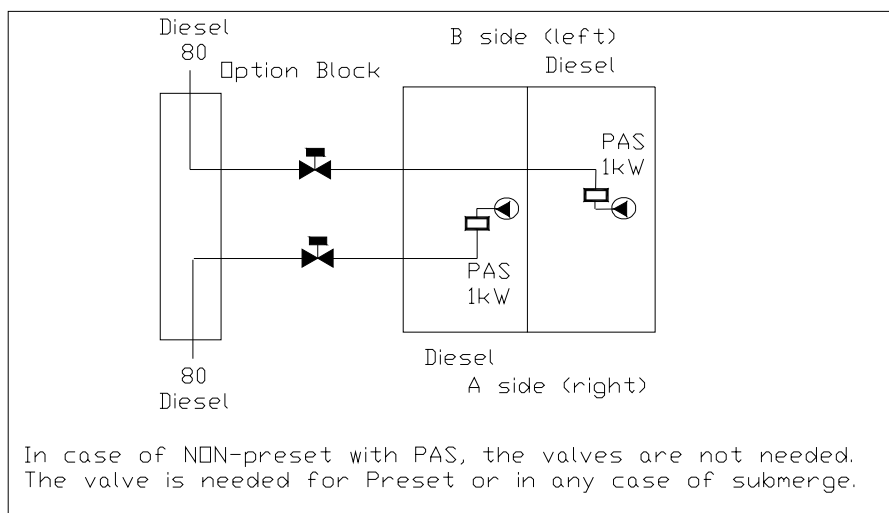
### Model 4-6 CH2



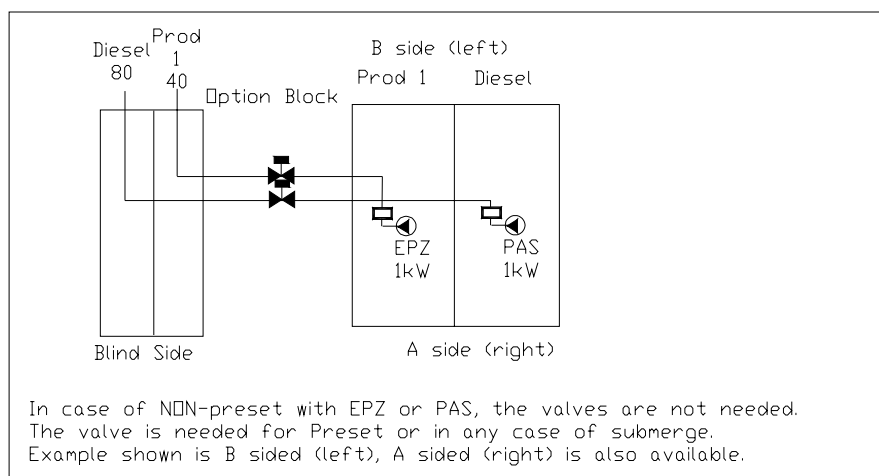
### Model 4-8



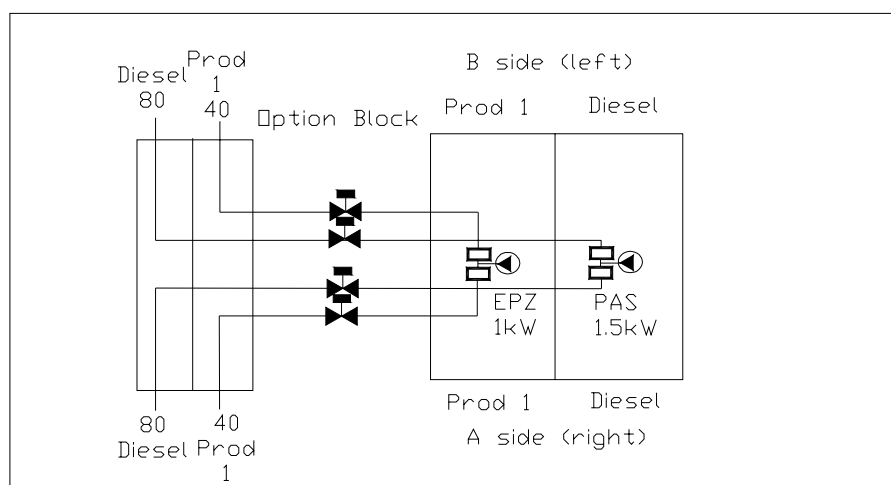
## 2.2.2 MULTI PRODUCT WITH HIGH SPEED DIESEL MODELS

**Model HS 1-1****Model HS 1-2****Model THS 1-2**

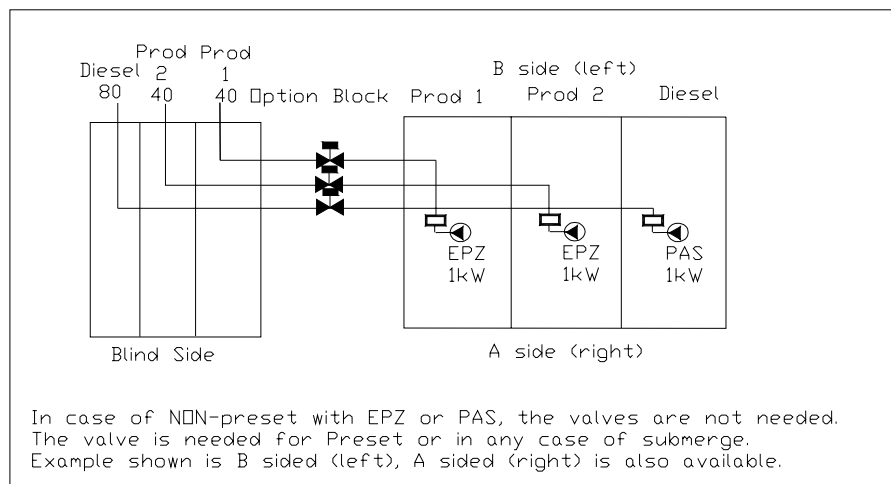
### Model HS 2-2

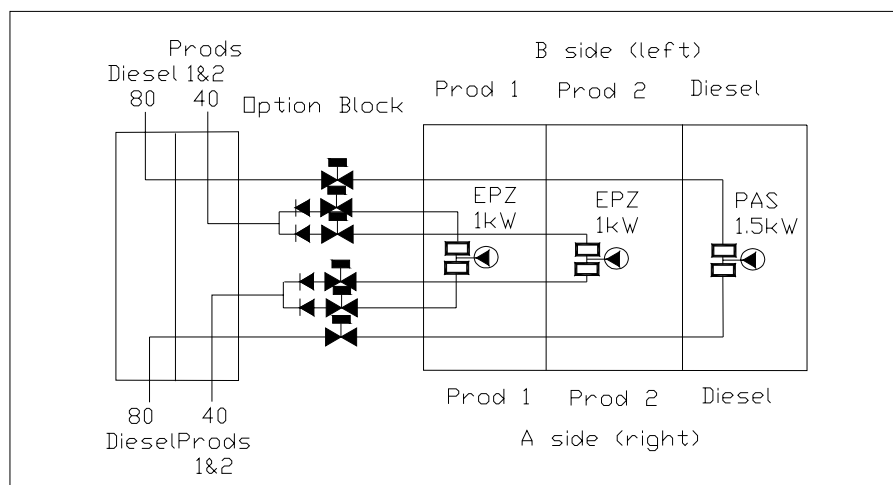
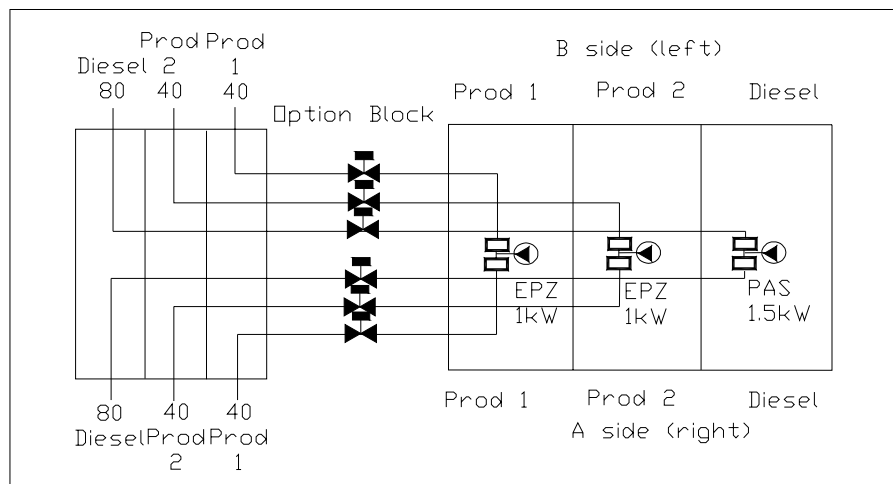
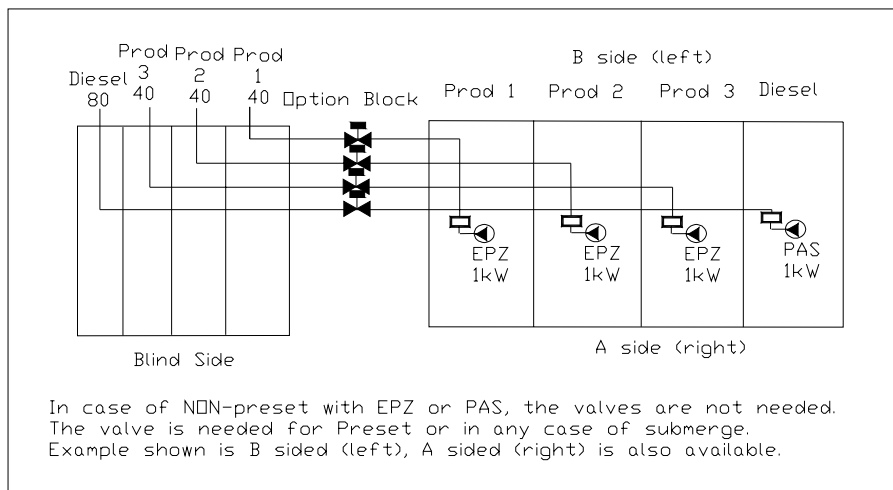


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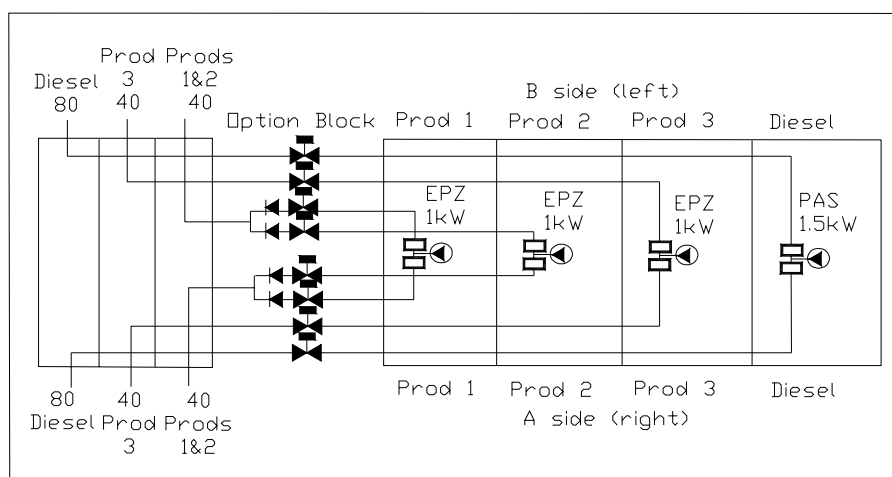


### Model HS 3-3

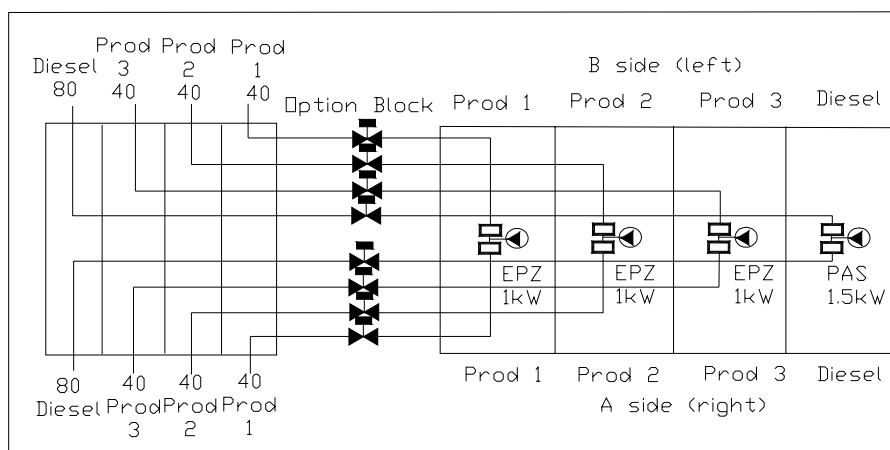


**Model HS 3-4 CH2****Model HS 3-6****Model HS 4-4**

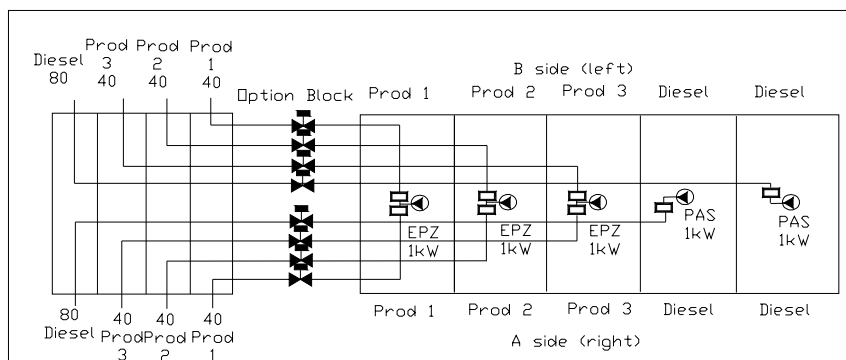
### Model HS 4-6 CH2



### Model HS 4-8



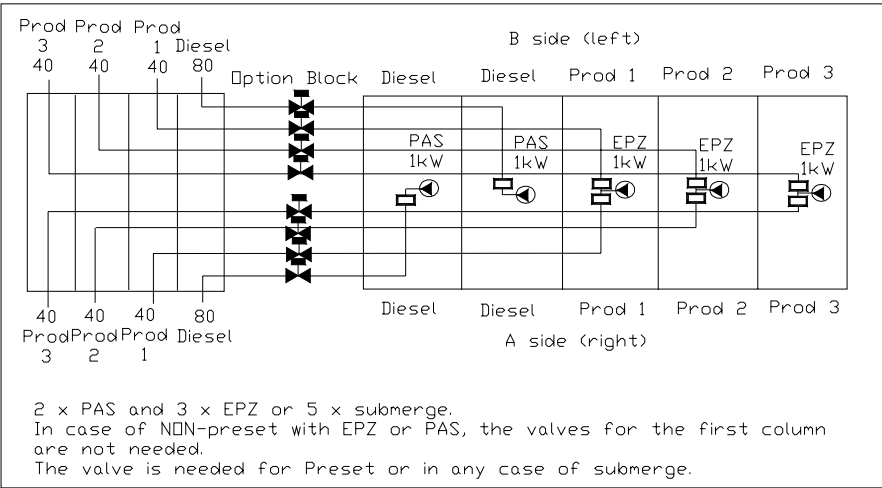
### Model HS 5-8



2 x PAS and 3 x EPZ or 5 x submerge.  
In case of NON-preset with EPZ or PAS, the valves for the last column are not needed.  
The valve is needed for Preset or in any case of submerge.

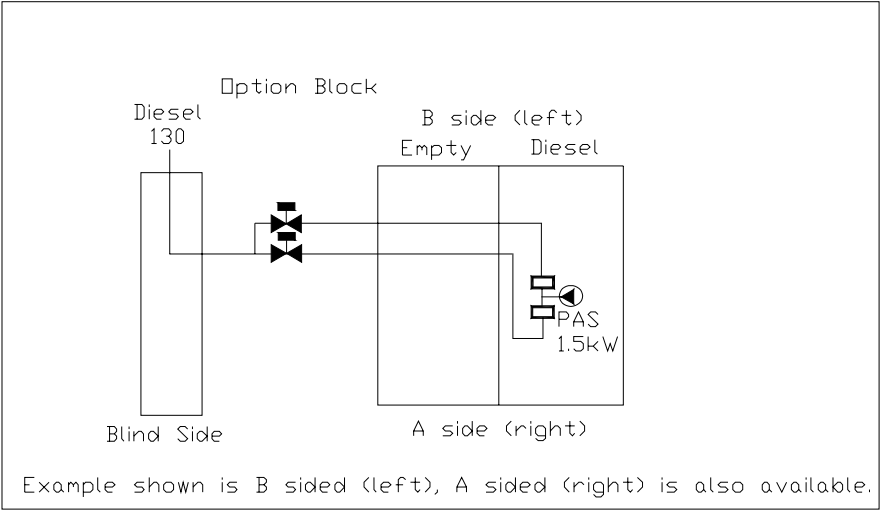


Model HS 5-8 Repsol (Diesel in first position)

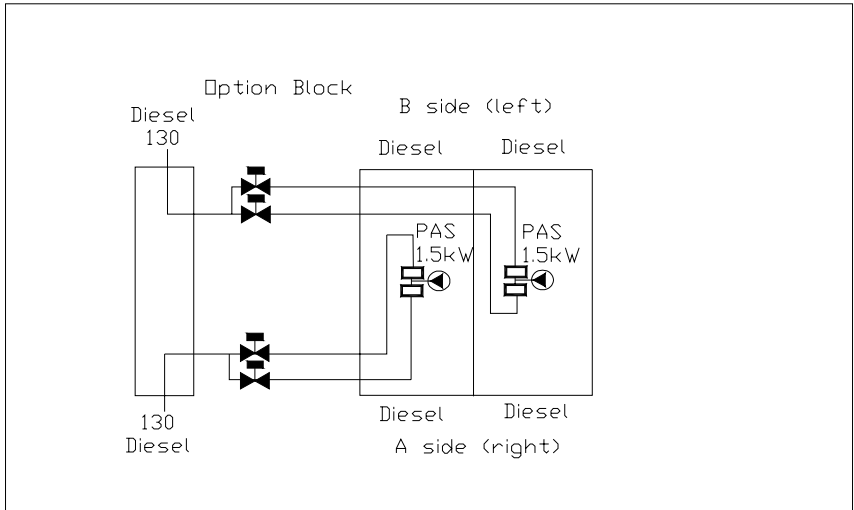


2.2.3 MULTI PRODUCT WITH VERY HIGH SPEED DIESEL MODELS

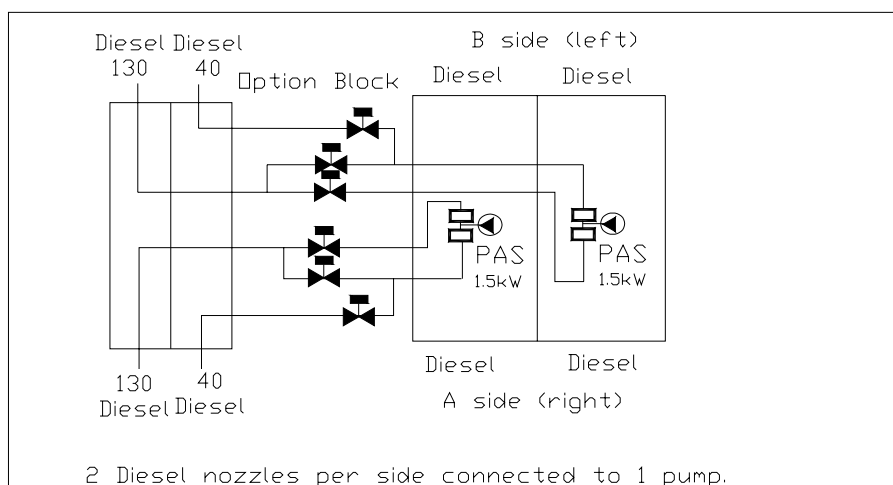
Model VHS 1-1



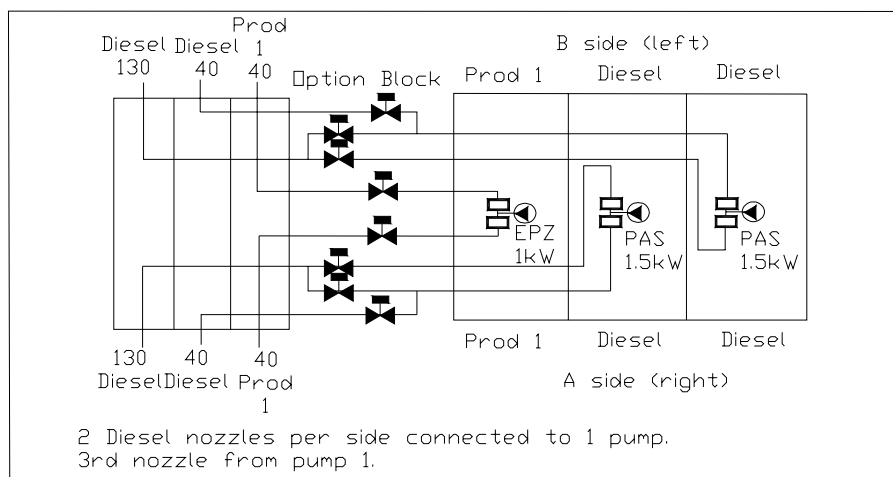
Model VHS 1-2



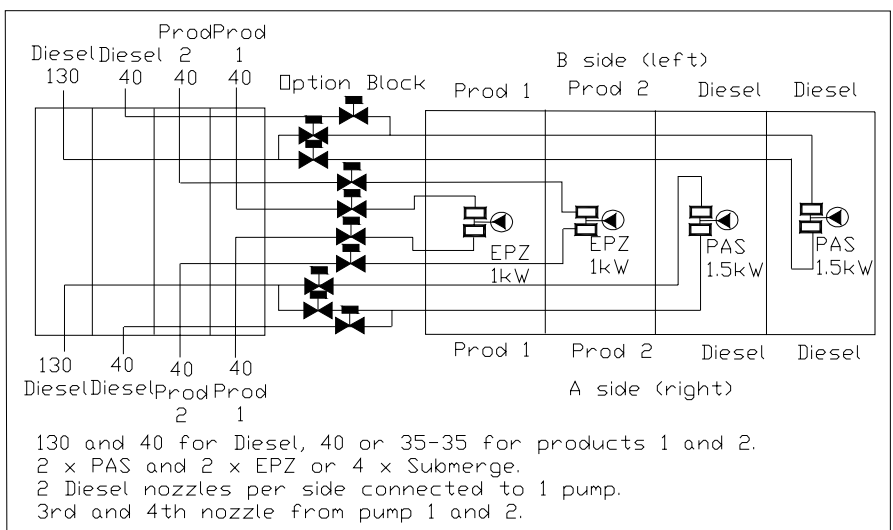
### Model VHS 2-4



### Model VHS 3-6

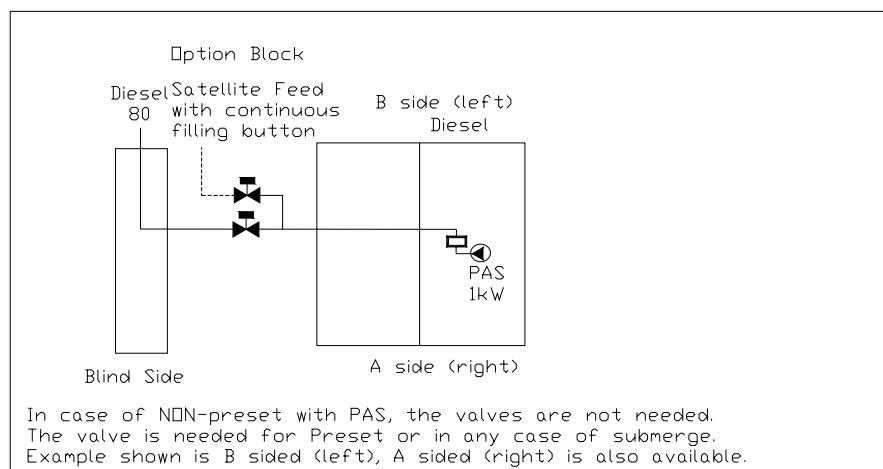


### Model VHS 4-8

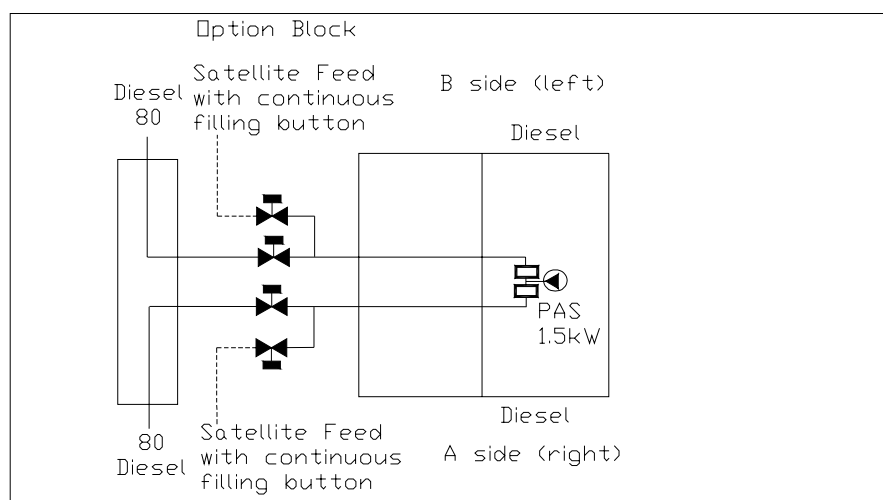


## 2.2.4 MASTER &amp; SATELLITE MODELS

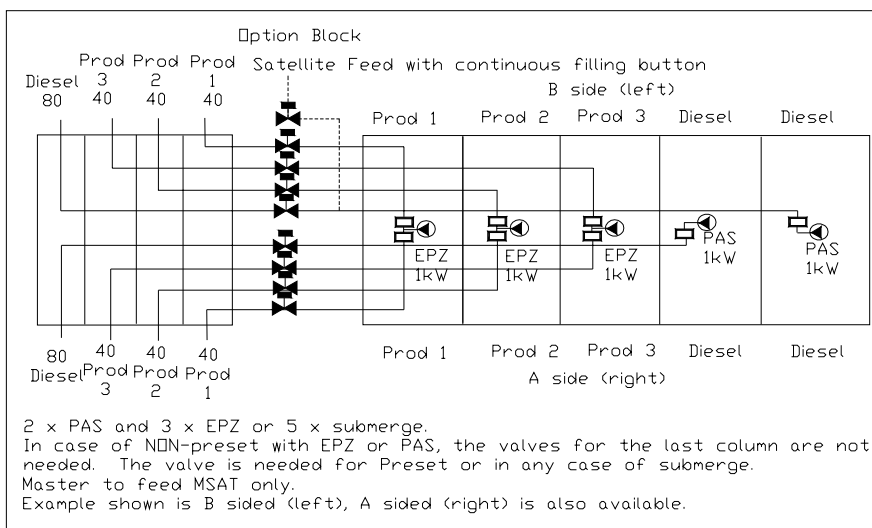
## Model HSM 1-1



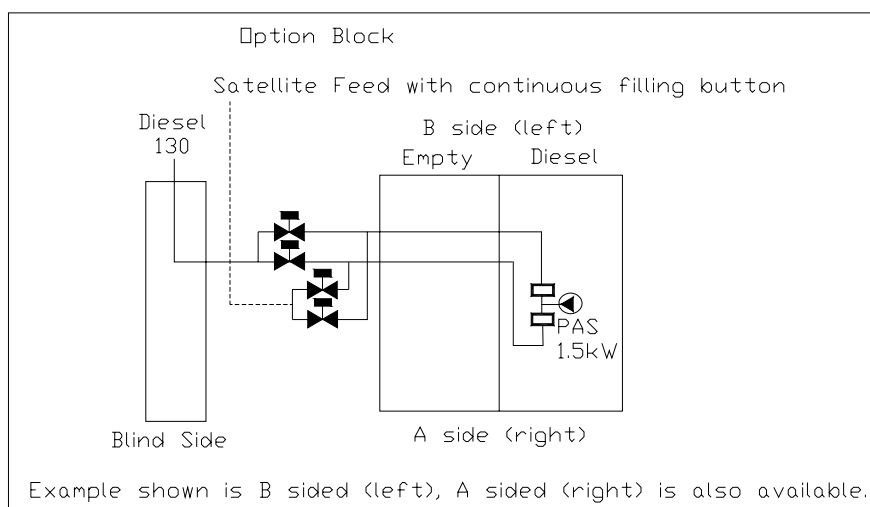
## Model HSM 1-2



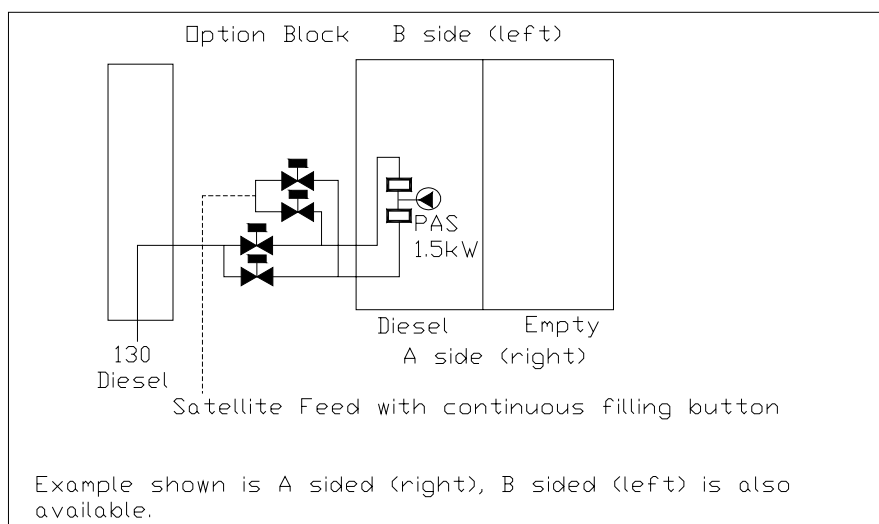
## Model HSM 5-8



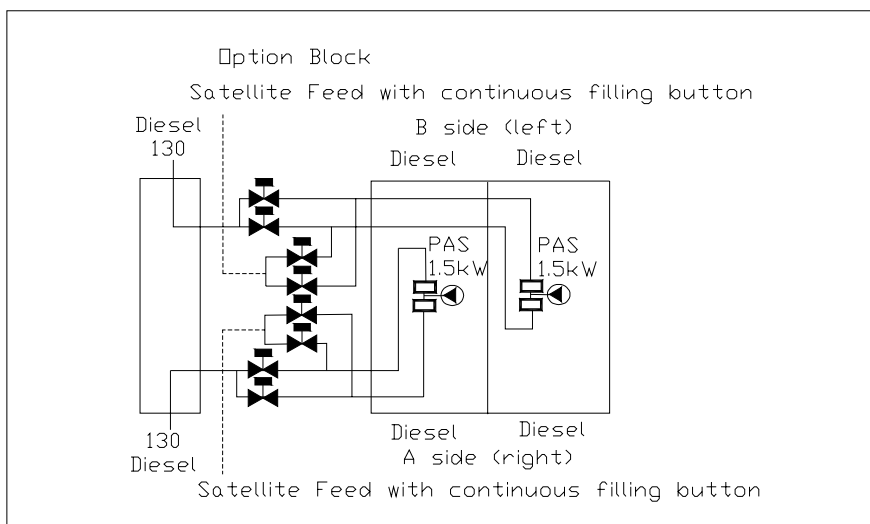
### Model VHSM 1-1 L



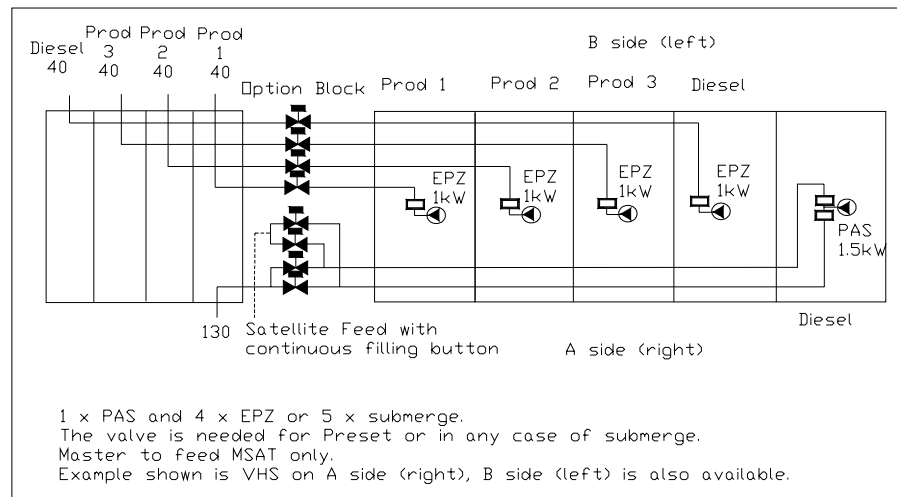
### Model VHSM 1-1 R



### Model VHSM 1-2



## Model SVHSM 5-5



## 2.3 Hydraulic Connections

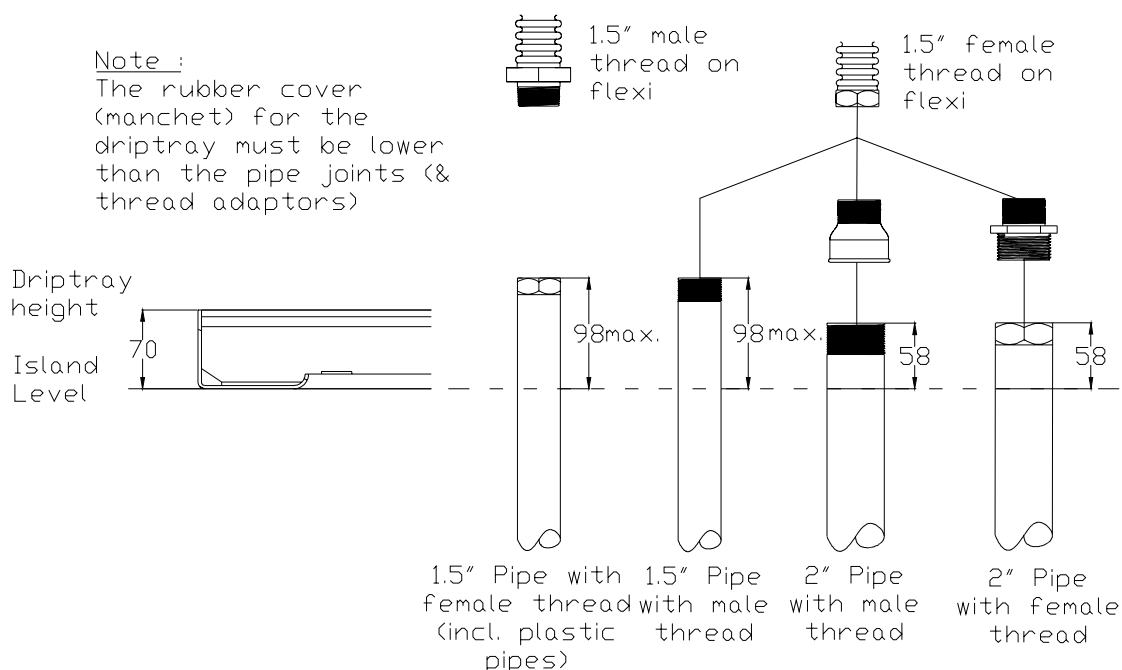
The suction pipes are accessible from Side B of the Dispenser. See section 6.2 for the identification of side B. Different types of hydraulic connection are available depending on the dispenser configuration.

**PLEASE NOTE :-** If the inlet riser pipe has a female connection, an adaptor must be used (1.5" or 2").

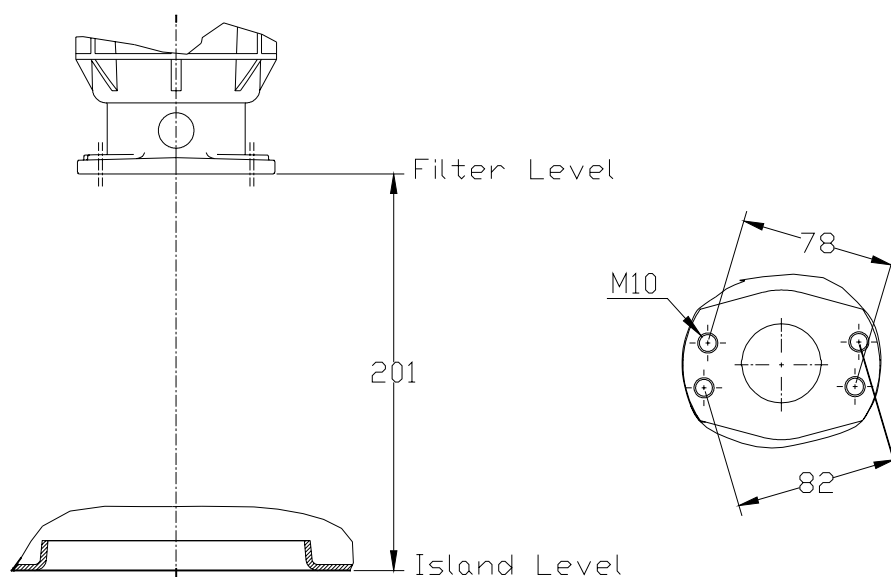
**If an adaptor is used, the dimensions shown will need to be reduced (maximum 36mm).**

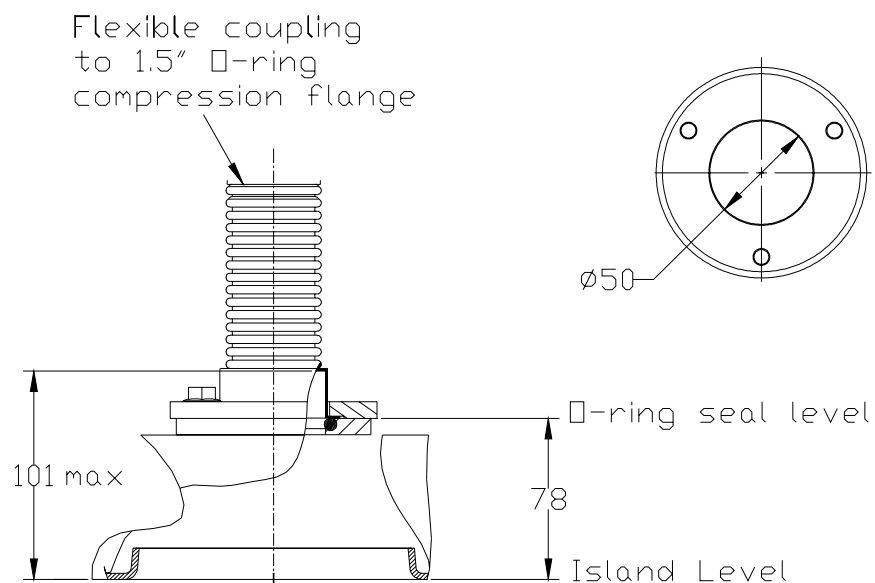
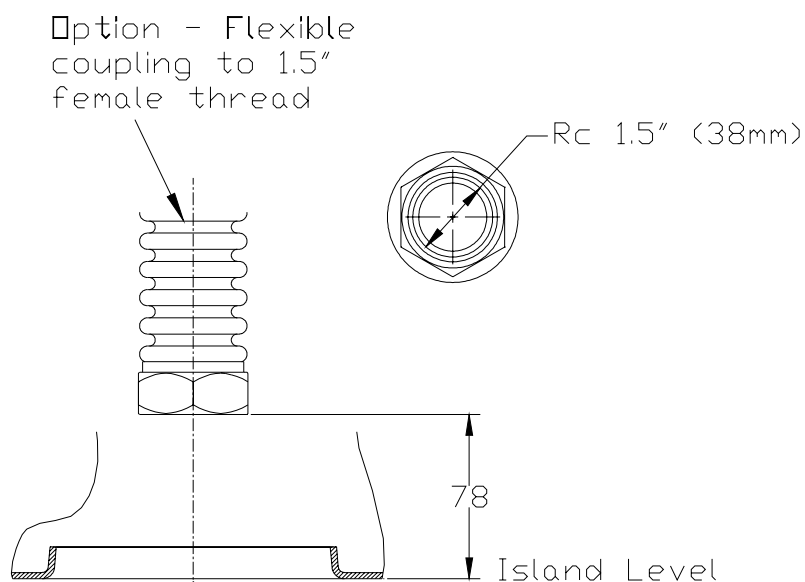
### 2.3.1 SUCTION & SUBMERGED CONNECTIONS

#### Standard Suction Connection (with & without Filterbox)

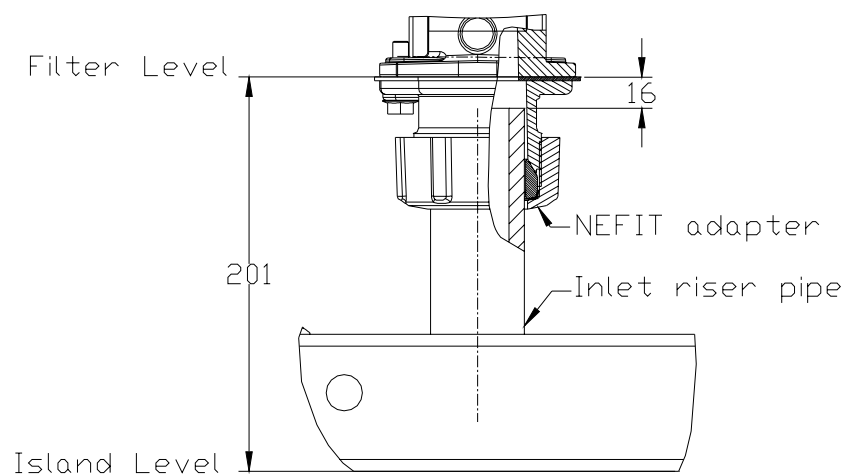


#### Suction & Submerged Connection (with Filterbox, without Flexible coupling)

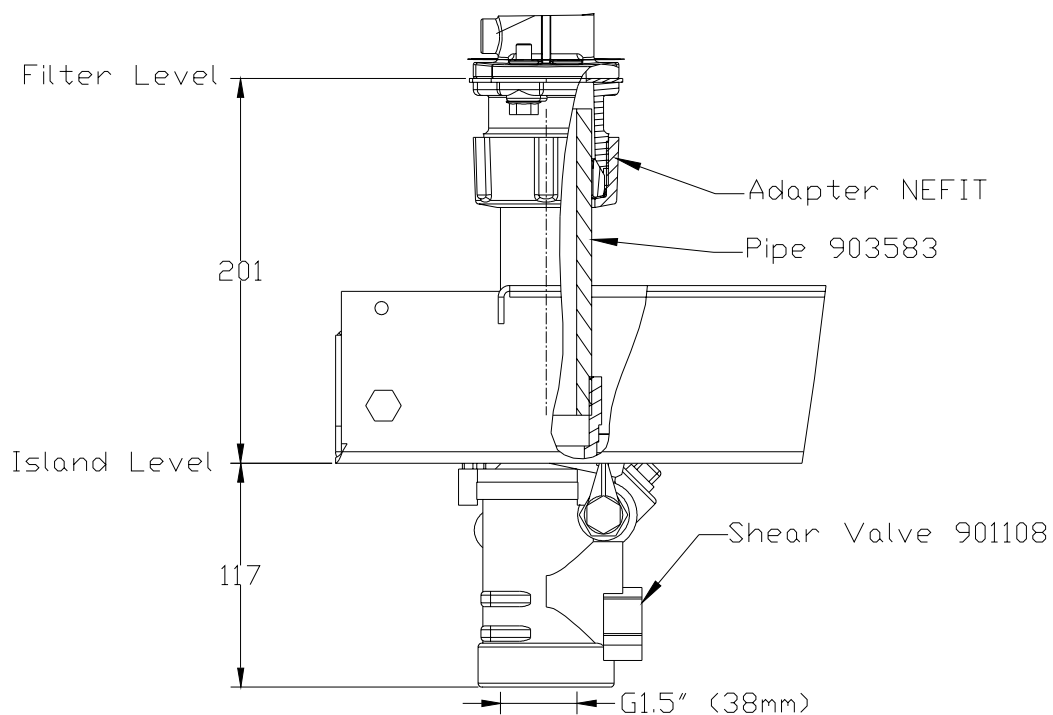


**Suction Connection - Flexible Coupling to 1.5" O-ring Compression Flange (with & without Filterbox)****Suction Connection - Flexible Coupling to 1.5" Female Thread (with & without Filterbox)**

**Suction Connection with Nefit Adaptor (Filterbox only)**

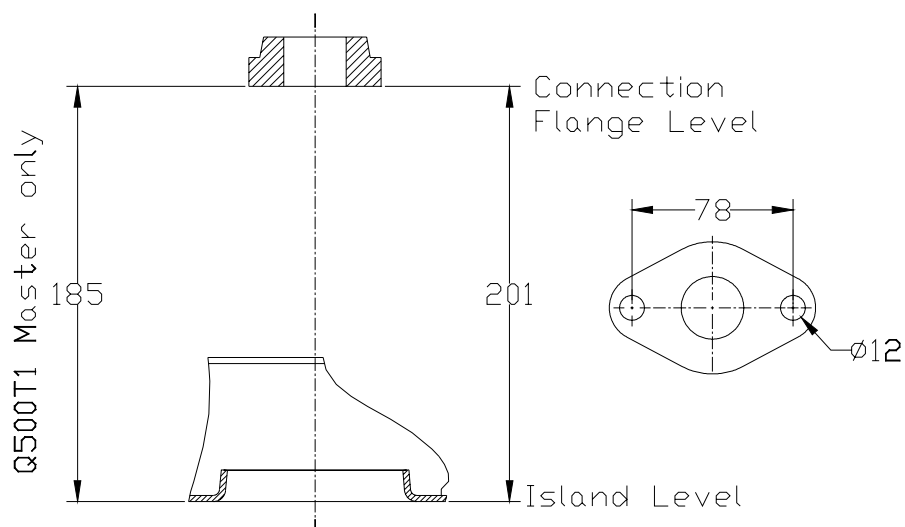


**Submerged Connection with Nefit Adaptor & Shear Valve (Filterbox only)**

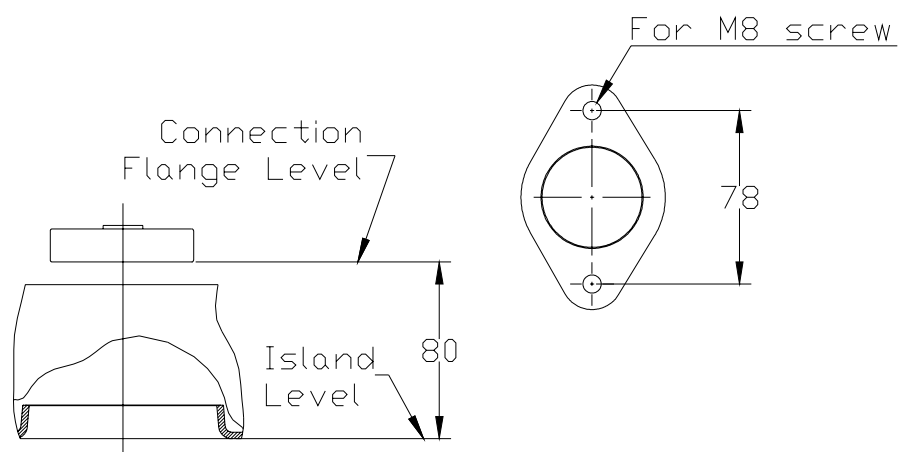




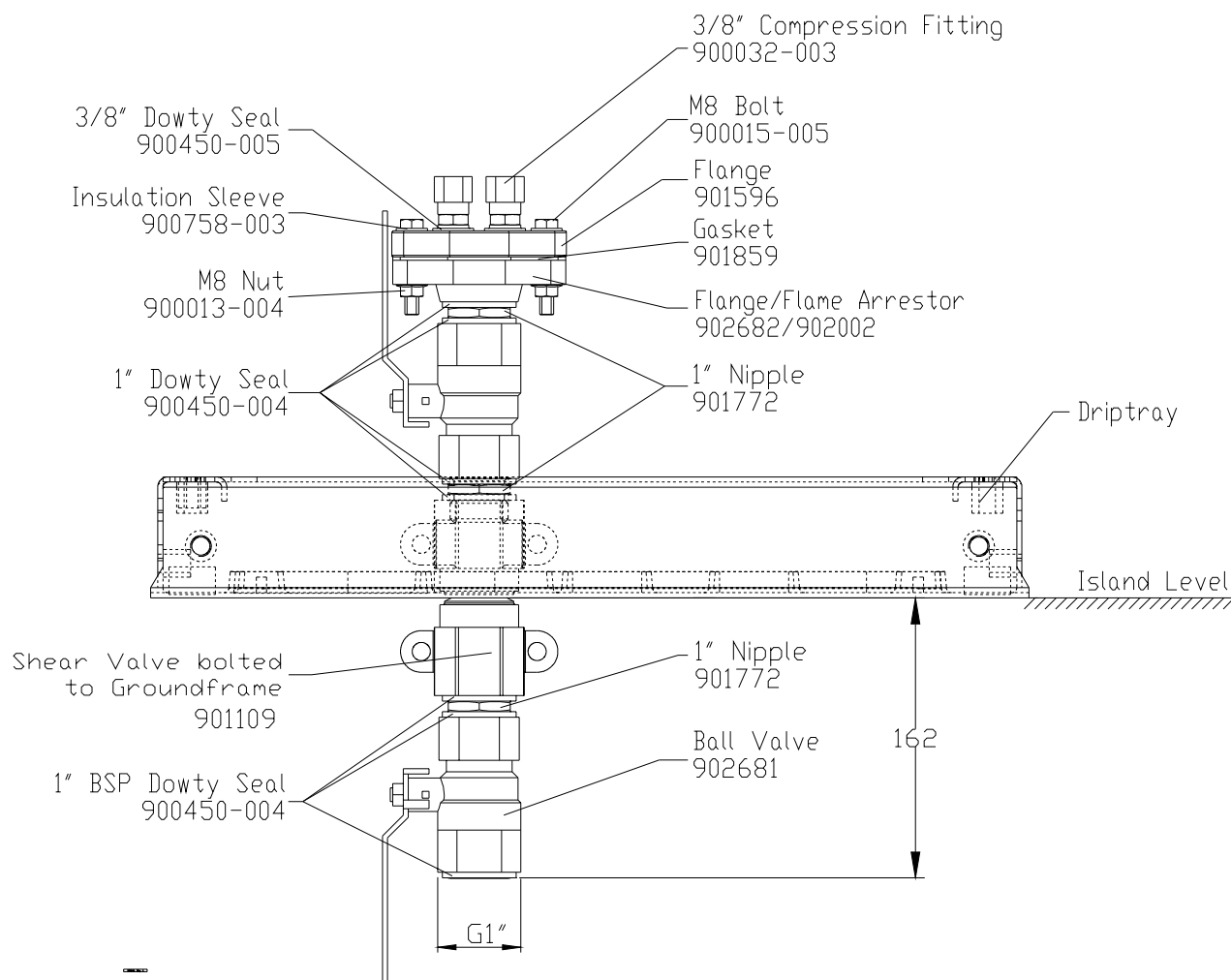
## 2.3.2 MASTER &amp; SATELLITE CONNECTIONS

Standard Master to Satellite Connection

## 2.3.3 VAPOUR RECOVERY CONNECTIONS

VR Connection - Standard

**VR Connection with Shear Valve Option (UK only)**



## 2.4 Electrical Connections

The electrical connection to be established between the kiosk and the dispenser exists in different configurations. The mains connection (power from the mains supply panel to the dispenser) and the data connection (link between forecourt controller and calculator) are customer, country and configuration specific. The number of cores and the cross section of the cable will be specified, as will the cable construction (armoured or Explosion proof) and guidance troughs, channels or cable trunks have to be carried out in accordance with national technical regulations.

## CONTENTS

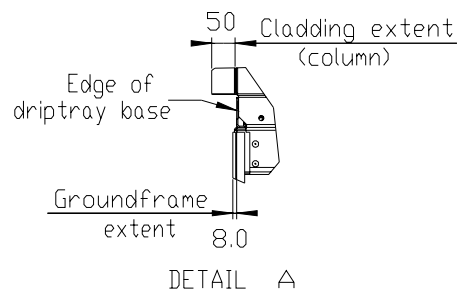
<b>3</b>	<b>DRAWINGS .....</b>	<b>3-2</b>
3.1	Dispenser Dimensions .....	3-2
3.1.1	Two Frames & One Column Models .....	3-2
3.1.2	Two Frames & Two Columns Models .....	3-3
3.1.3	Three Frames & Two Columns Models .....	3-4
3.1.4	Three Frames & Three Columns Models .....	3-5
3.1.5	Four Frames & Two Columns Models .....	3-6
3.1.6	Four Frames & Three Columns Models .....	3-7
3.1.7	Four Frames & Four Columns Models .....	3-8
3.1.8	Five Frames & Four Columns Models .....	3-9
3.2	Ground Plans .....	3-10
3.2.1	Two Frames & One Column Models .....	3-10
3.2.2	Two Frames & Two Columns Models .....	3-11
3.2.3	Three Frames & Two Columns Models .....	3-12
3.2.4	Three Frames & Three Columns Models .....	3-13
3.2.5	Four Frames & Two Columns Models .....	3-14
3.2.6	Four Frames & Three Columns Models .....	3-15
3.2.7	Four Frames & Four Columns Models .....	3-16
3.2.8	Five Frames & Four Columns Models .....	3-17

### 3 DRAWINGS

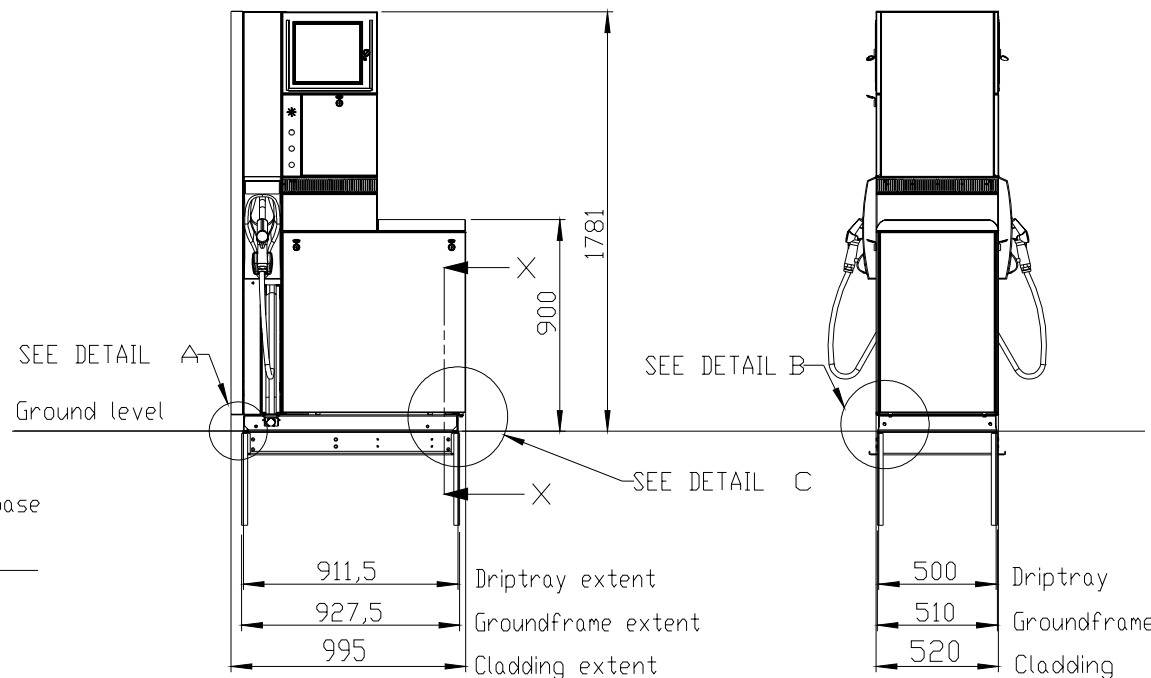
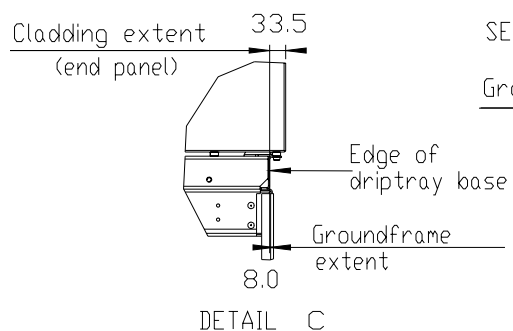
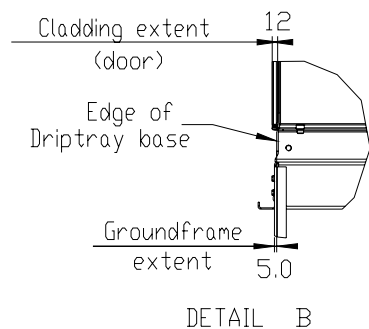
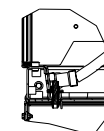
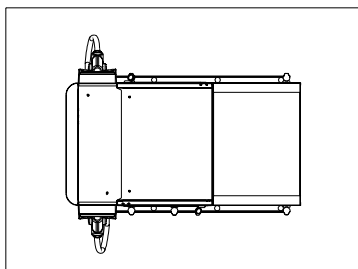
#### 3.1 Dispenser Dimensions

##### 3.1.1 TWO FRAMES & ONE COLUMN MODELS (1-1, 1-2, 2-2 CH2, HS 1-1, HS 1-2, THS 1-2, HSM 1-1, HSM 1-2, VHS 1-1, VHS 1-2, VHSM 1-1, VHSM 1-2)

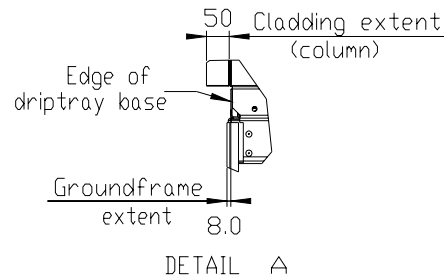
Ensure 100mm all round dispenser remains free from any obstruction



B Side

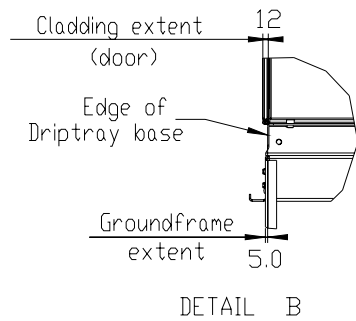
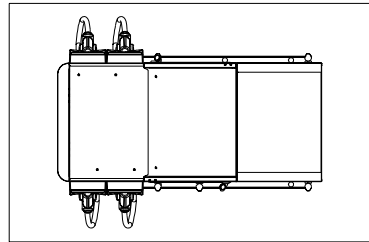


### 3.1.2 TWO FRAMES & TWO COLUMNS MODELS (2-2, 2-4, HS 2-2, HS 2-4)

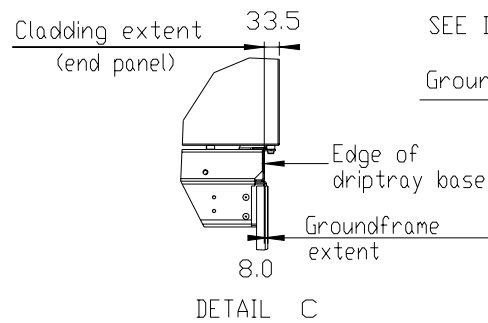


Ensure 100mm all round dispenser remains free from any obstruction

B Side

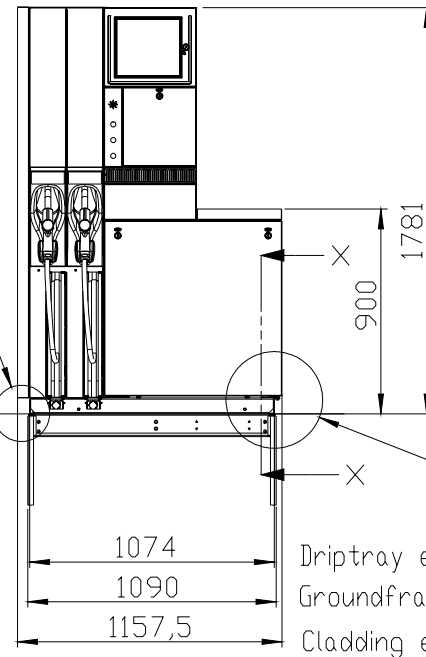


A Side

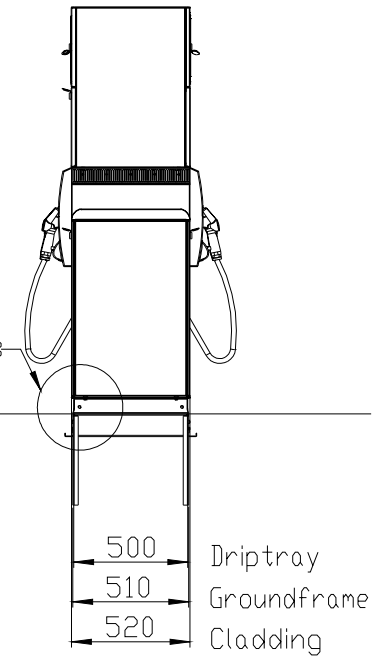


SEE DETAIL A

Ground level

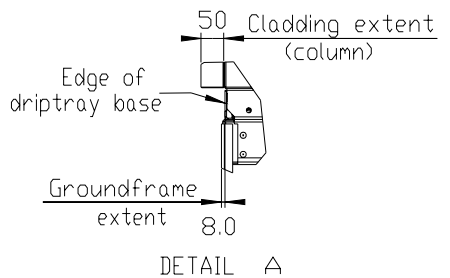


SEE DETAIL B

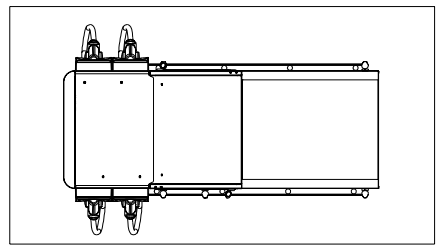


### 3.1.3 THREE FRAMES & TWO COLUMNS MODELS (3-4 CH2, HS 3-4 CH2)

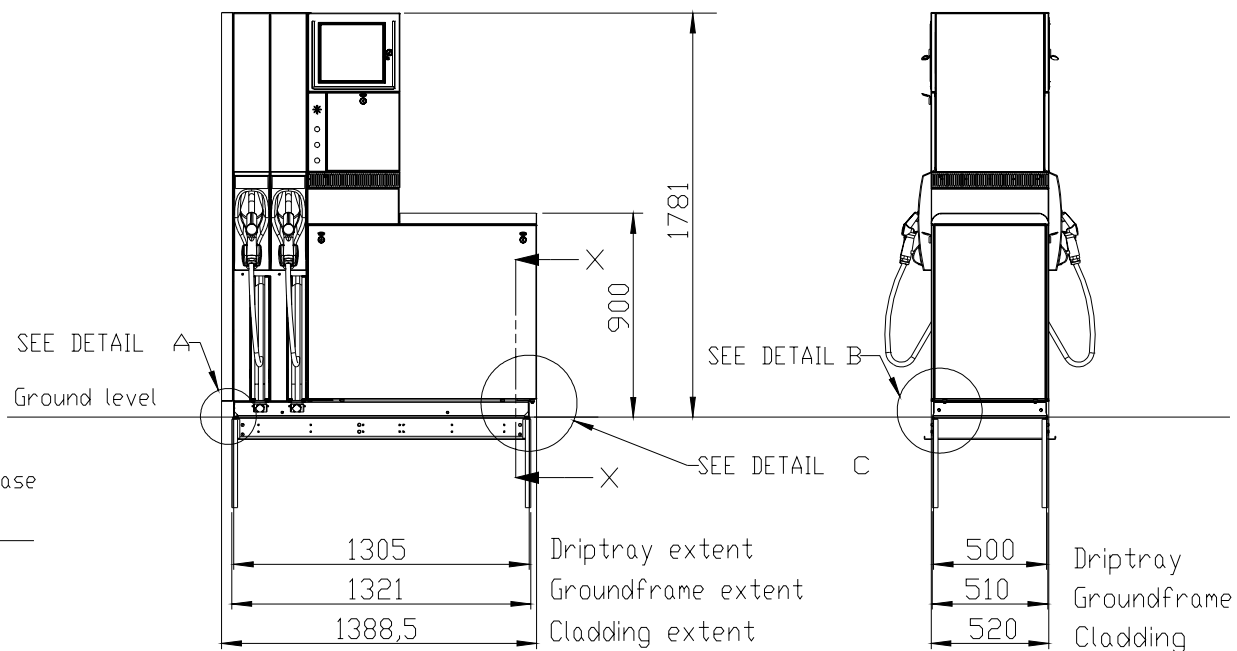
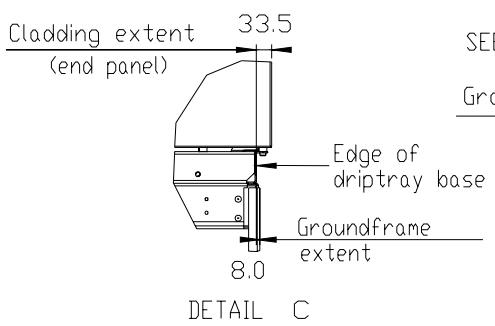
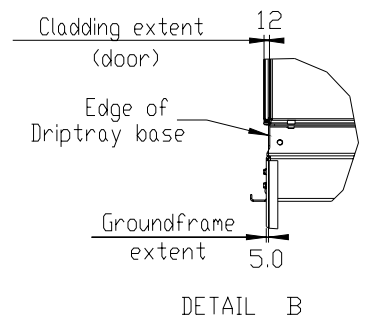
Ensure 100mm all round dispenser remains free from any obstruction



B Side



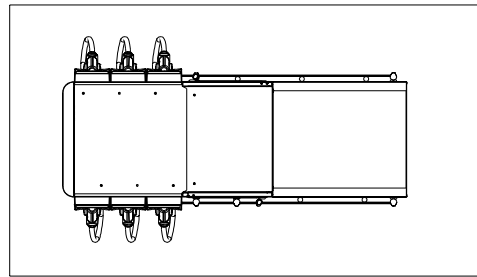
A Side



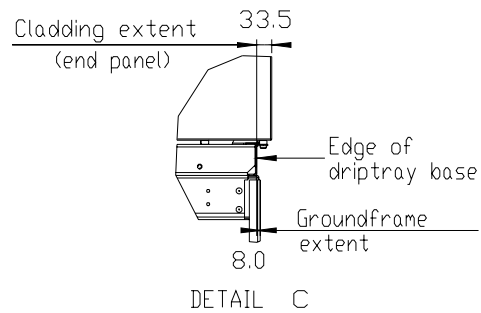
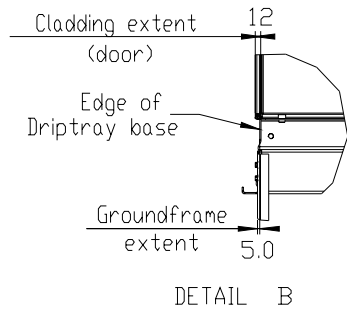
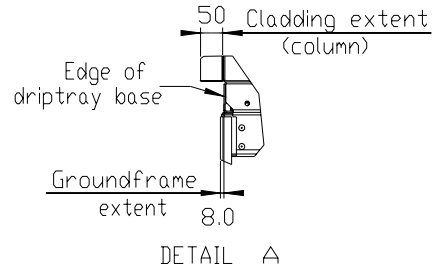
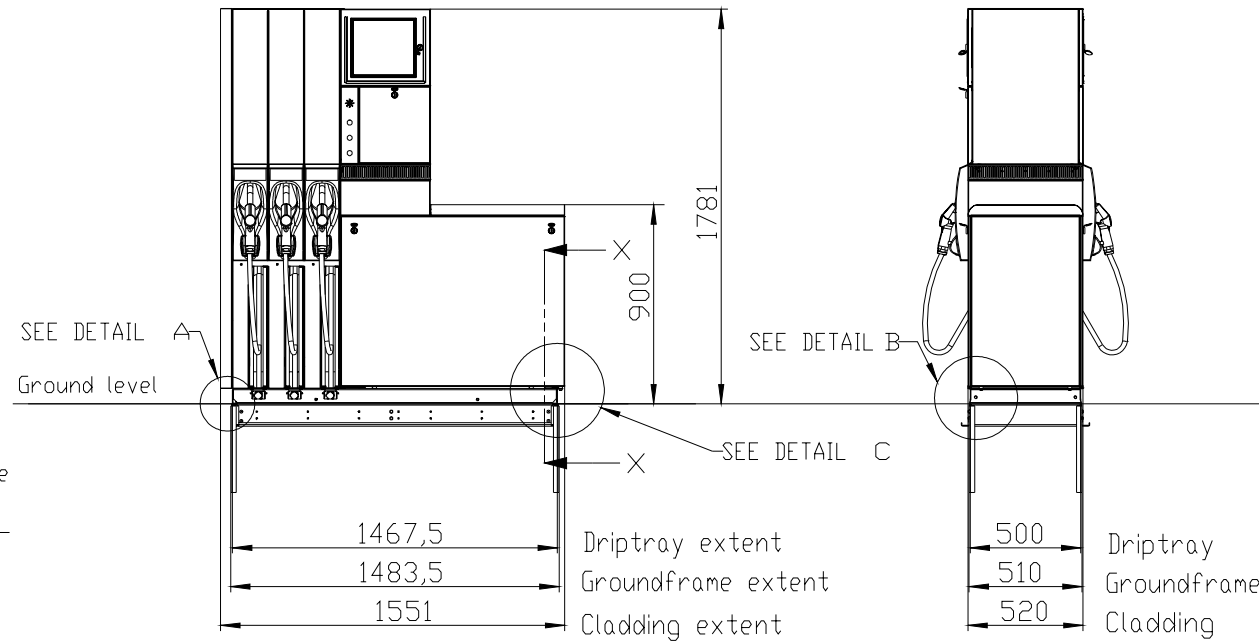
### 3.1.4 THREE FRAMES & THREE COLUMNS MODELS (3-3, 3-6, HS 3-3, HS 3-6, VHS 3-6)

Ensure 100mm all round dispenser remains free from any obstruction

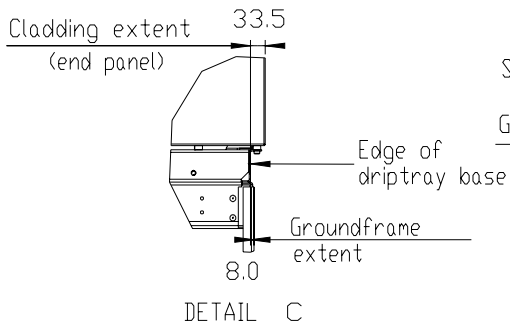
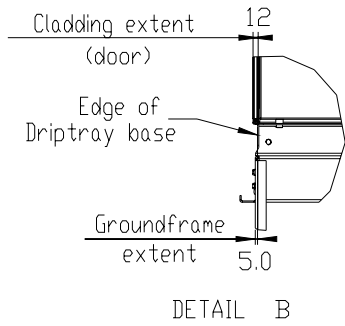
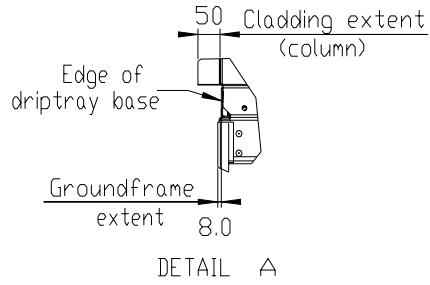
B Side



A Side

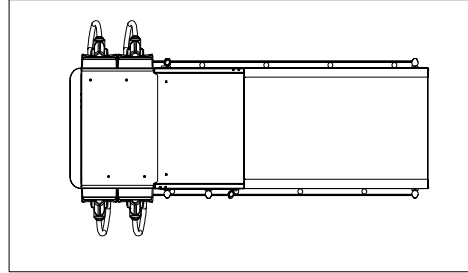


### 3.1.5 FOUR FRAMES & TWO COLUMNS MODELS (2-4 BELGIUM)

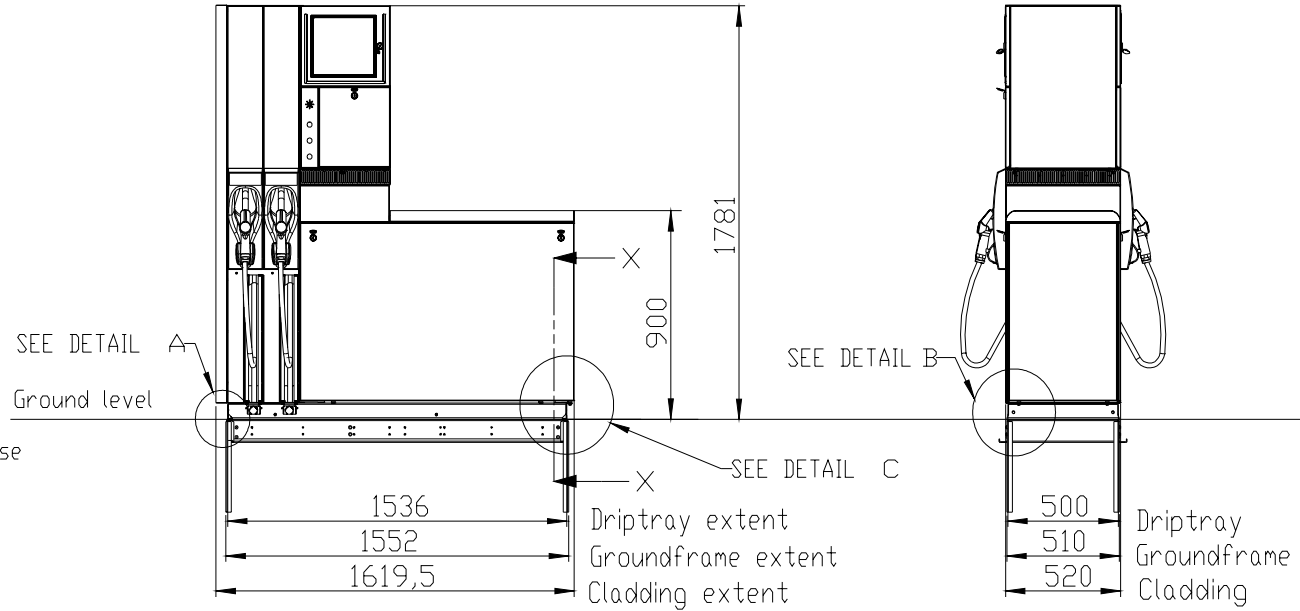


Ensure 100mm all round dispenser remains free from any obstruction

B Side



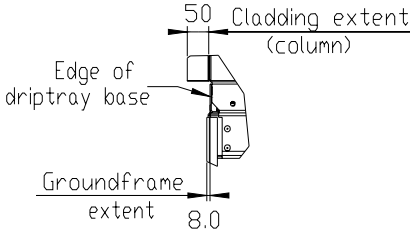
A Side



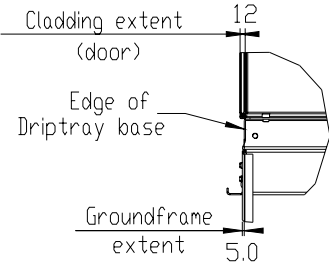


3.1.6 FOUR FRAMES & THREE COLUMNS MODELS (3-6 BELGIUM, 4-6 CH2, HS 4-6 CH2)

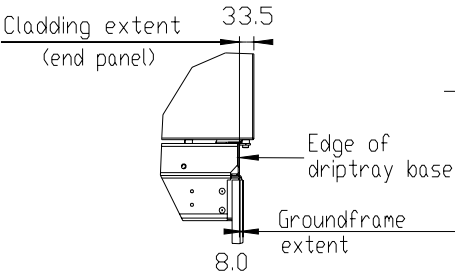
Ensure 100mm all round dispenser remains free from any obstruction



DETAIL A

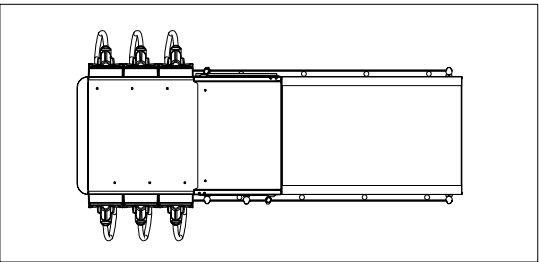


DETAIL B

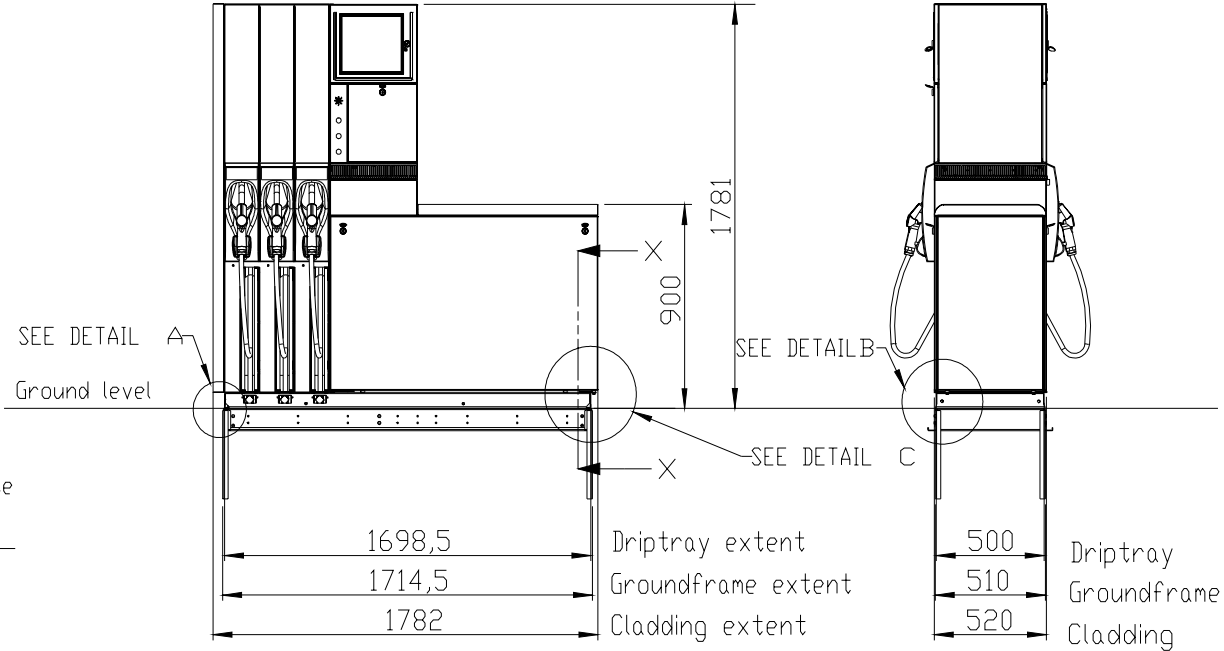


DETAIL C

B Side



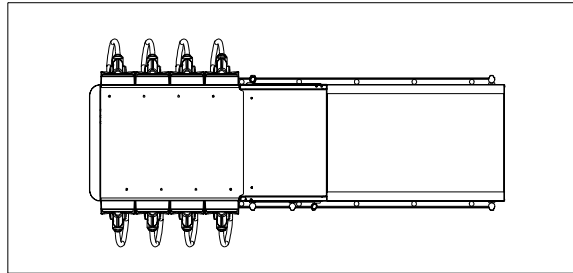
A Side



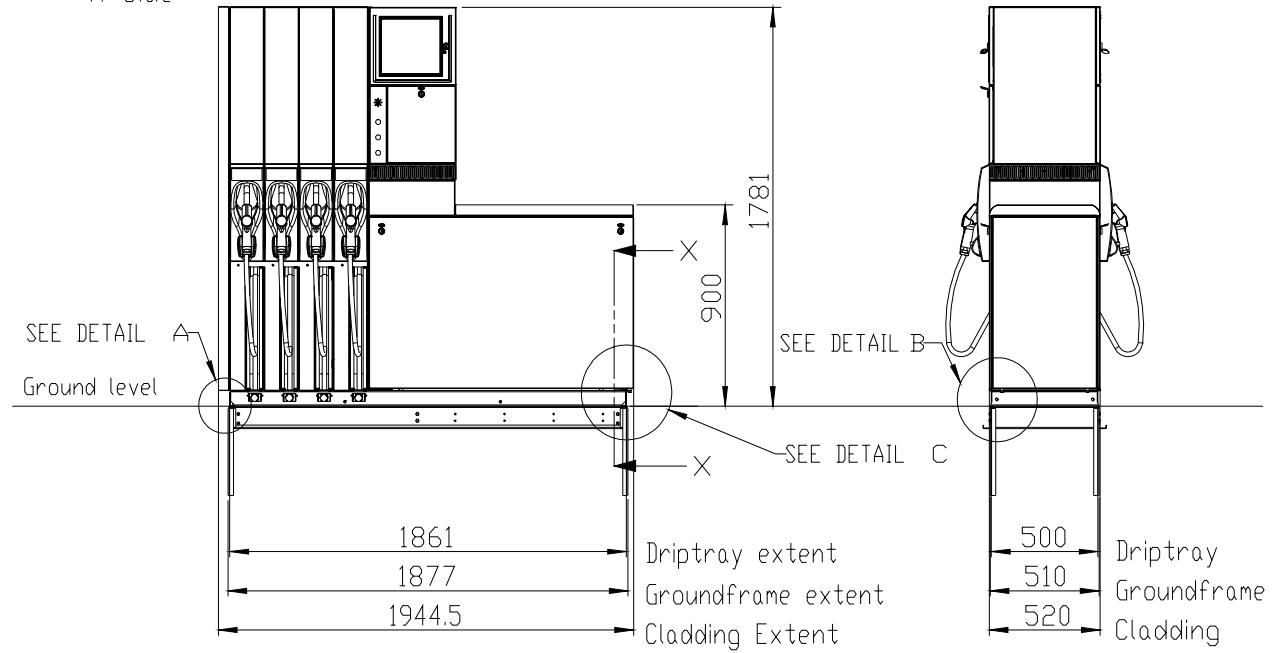
### 3.1.7 FOUR FRAMES & FOUR COLUMNS MODELS (4-4, 4-8, HS 4-4, HS 4-8, VHS 4-8)

Ensure 100mm all round dispenser remains free from any obstruction

B Side

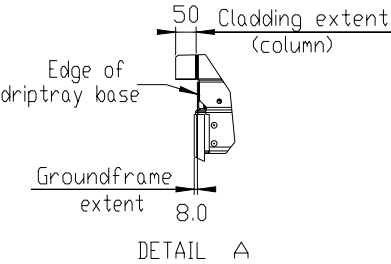


A Side

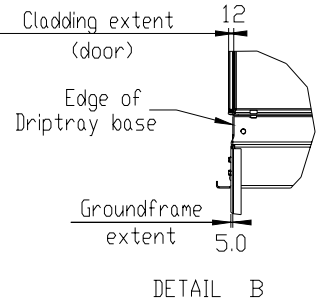
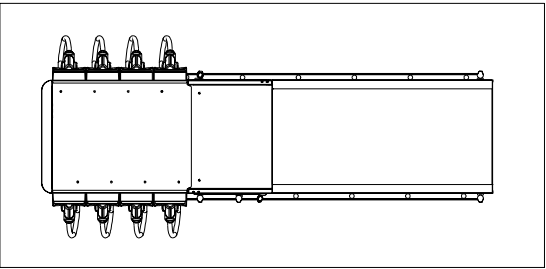


3.1.8 FIVE FRAMES & FOUR COLUMNS MODELS (HS 5-8, HSM 5-8, SVHSM 5-5 ONLY)

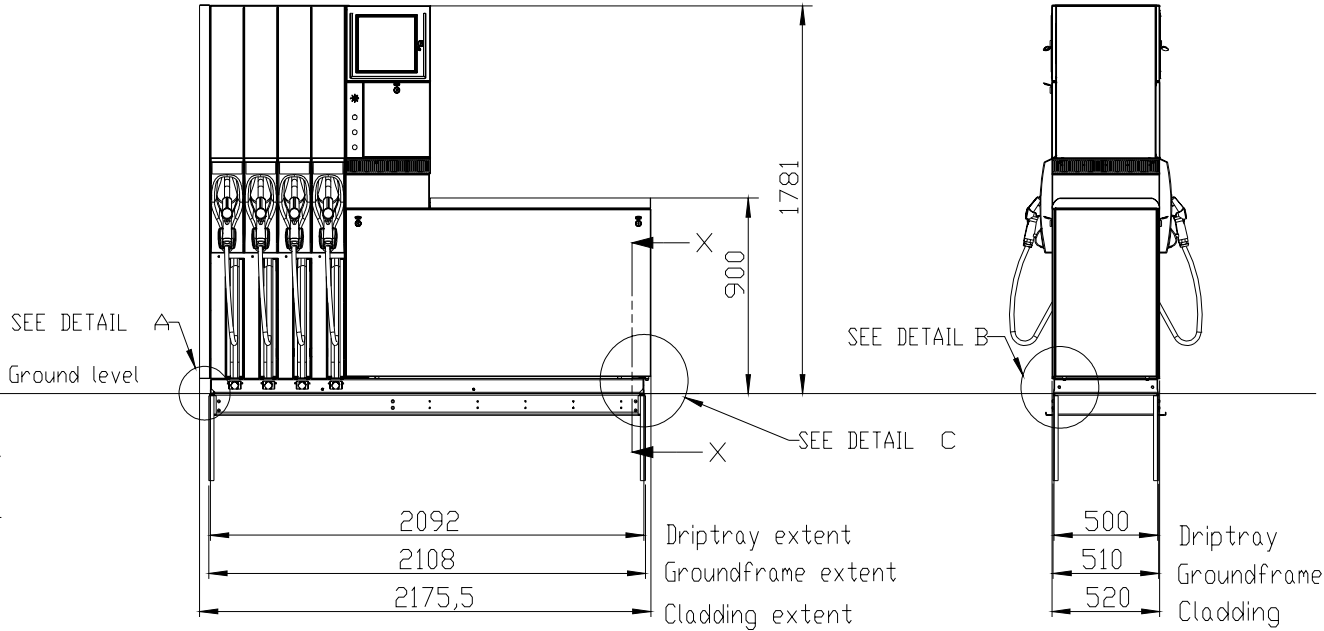
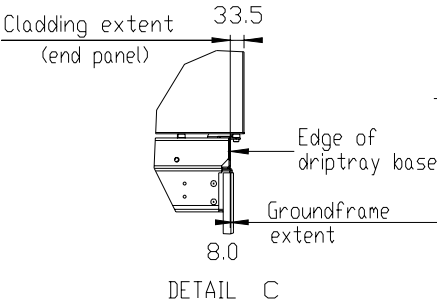
Ensure 100mm all round dispenser remains free from any obstruction



B Side

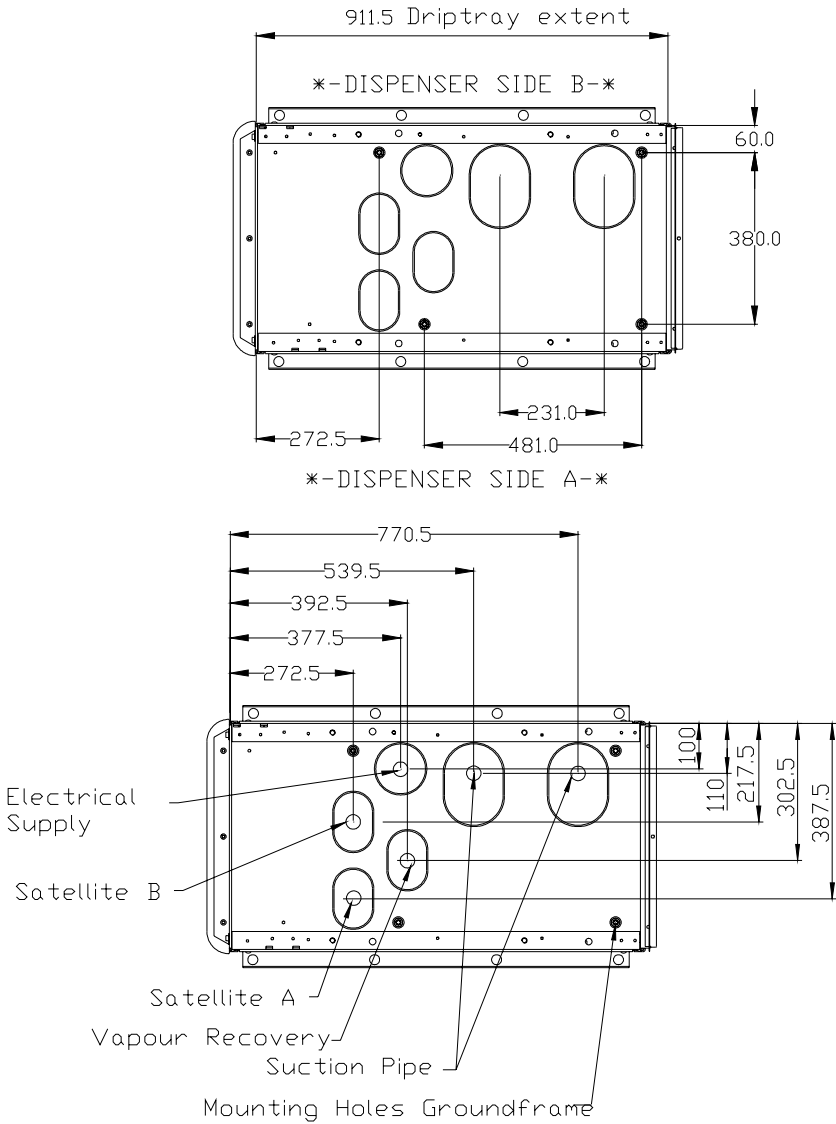


A Side

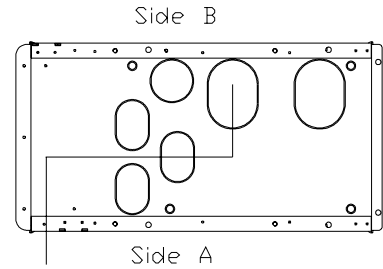


3.2 Ground Plans

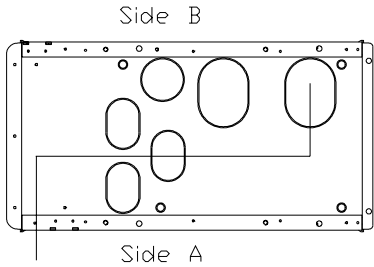
3.2.1 TWO FRAMES & ONE COLUMN MODELS (1-1, 1-2, 2-2 CH2, HS 1-1, HS 1-2, THS 1-2, HSM 1-1, HSM 1-2, VHS 1-1, VHS 1-2, VHSM 1-1, VHSM 1-2)



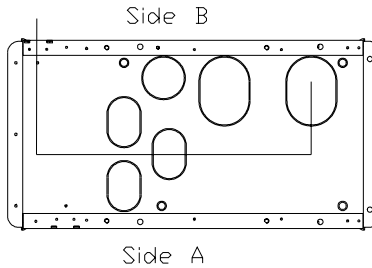
MODELS VHS 1-1R, VHSM 1-1R



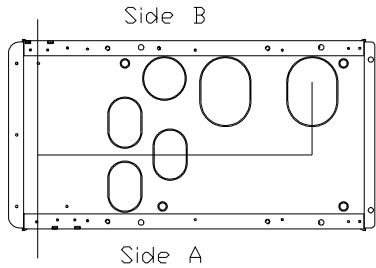
MODELS 1-1R, HS 1-1R, HSM 1-1R



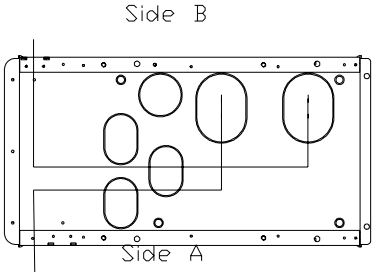
MODELS 1-1L, HS 1-1L, VHS 1-1L, HSM 1-1L, VHSM 1-1L



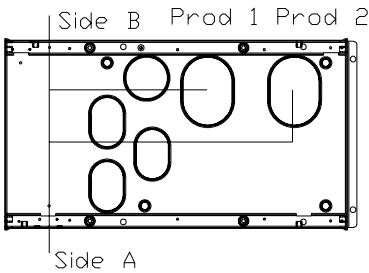
MODELS 1-2, HS 1-2, HSM 1-2



MODELS VHS 1-2, VHSM 1-2, THS 1-2

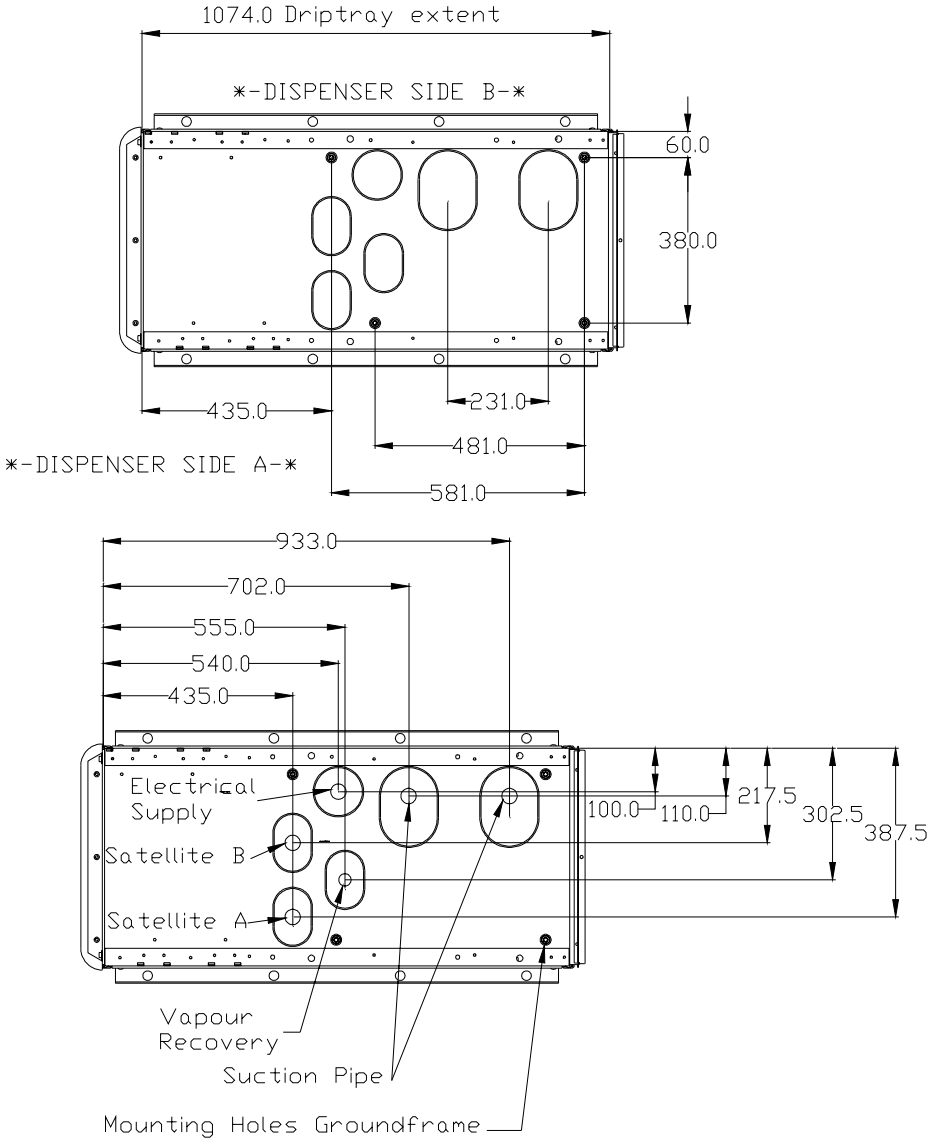


MODEL 2-2 CH2

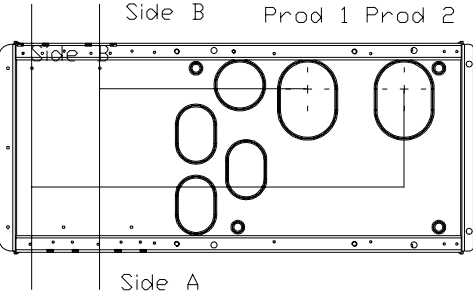


NOTE : When measuring from the external edge of a factory supplied groundframe, add 5mm to dimensions referenced from edge of driptray base.

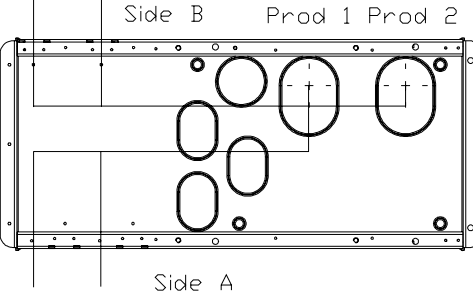
3.2.2 TWO FRAMES & TWO COLUMNS MODELS (2-2, 2-4, HS 2-2, HS 2-4, VHS 2-4)



MODELS 2-2, 2-4, HS 2-2, HS 2-4

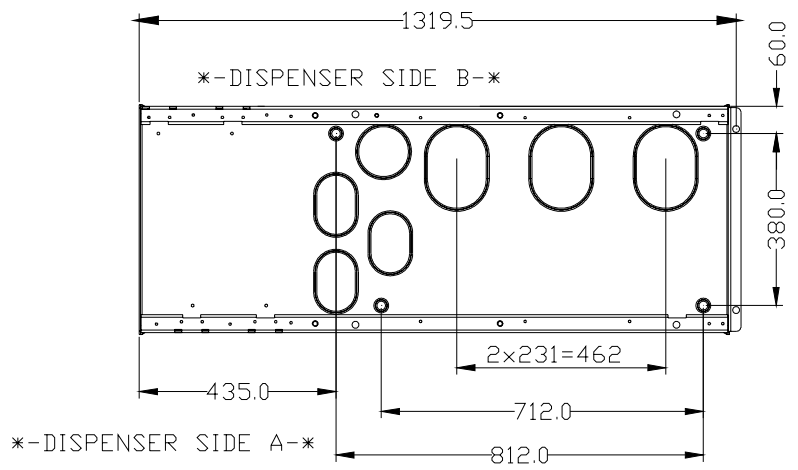


MODEL VHS 2-4

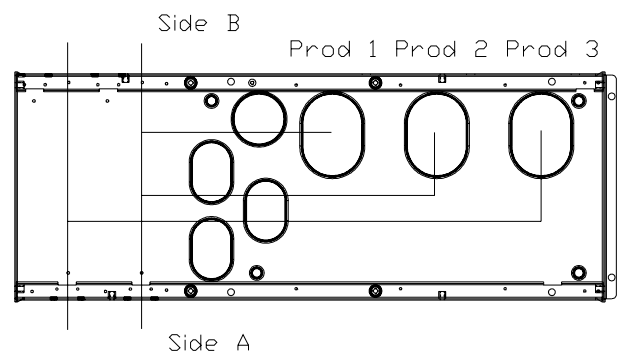


NOTE : When measuring from the external edge of a factory supplied groundframe, add 5mm to dimensions referenced from edge of drip tray base.

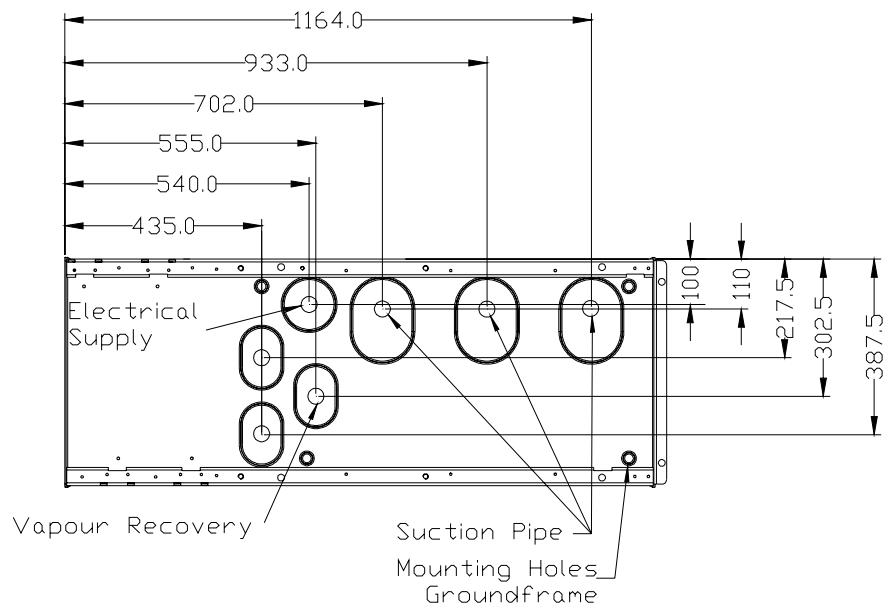
### 3.2.3 THREE FRAMES & TWO COLUMNS MODELS (3-4 CH2, HS 3-4 CH2)



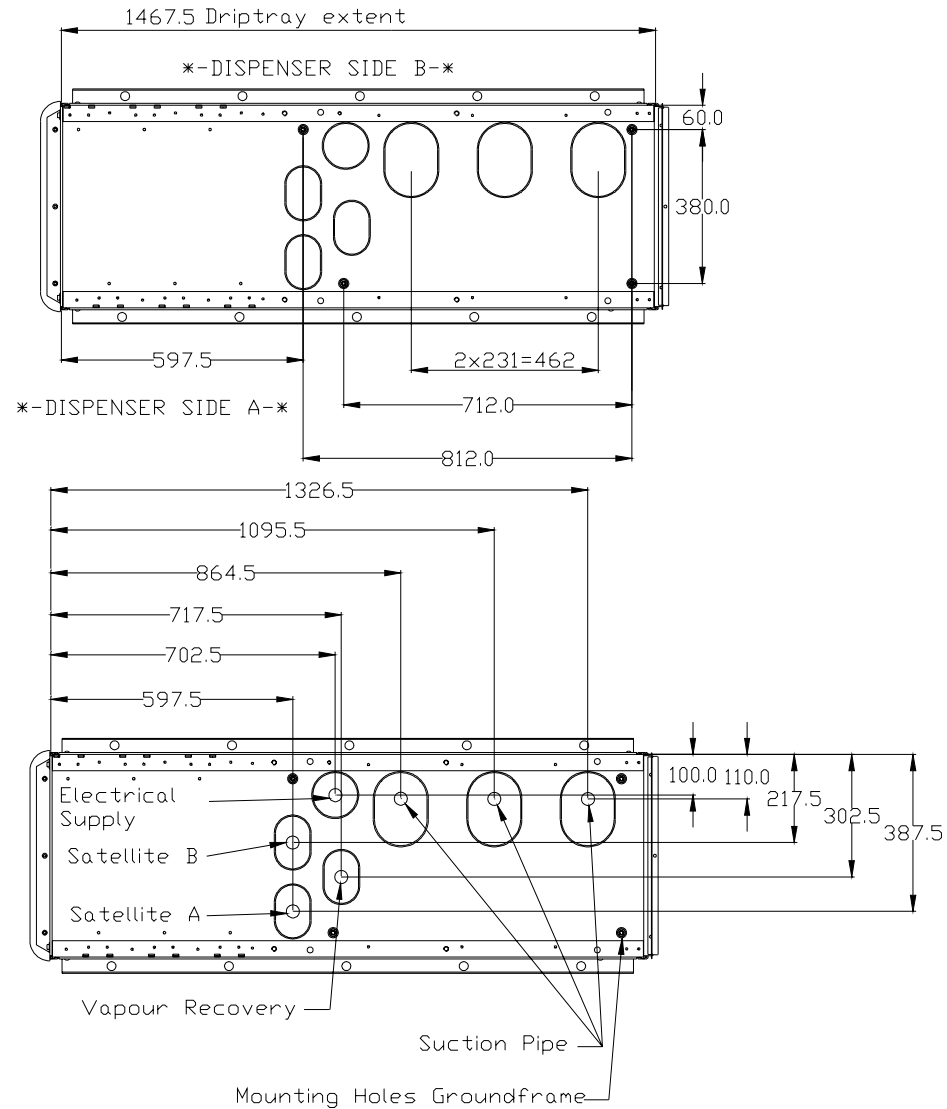
MODELS 3-4 CHS, HS 3-4 CH2



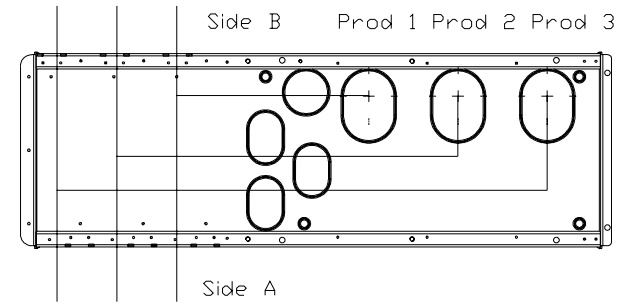
NOTE : When measuring from the external edge of a factory supplied groundframe, add 5mm to dimensions referenced from edge of drip tray base.



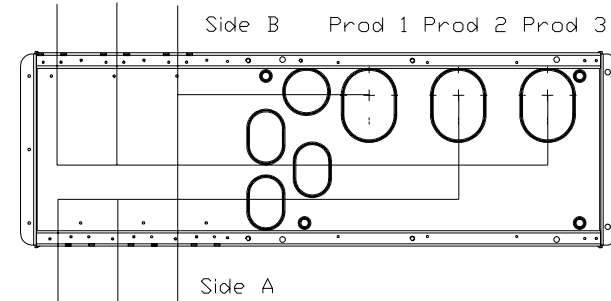
### 3.2.4 THREE FRAMES & THREE COLUMNS MODELS (3-3, 3-6, HS 3-3, HS 3-6, VHS 3-6)



MODEL 3-3, 3-6, HS 3-3, HS 3-6

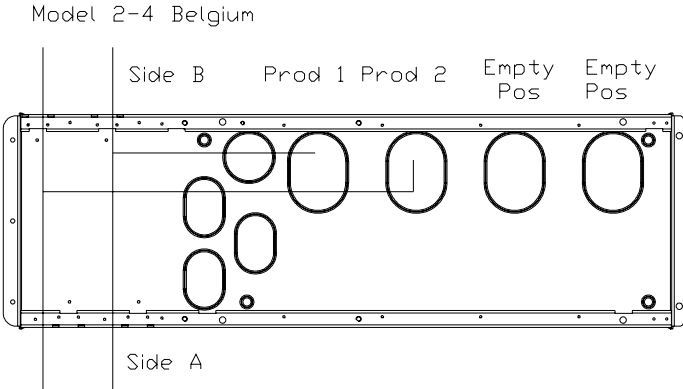
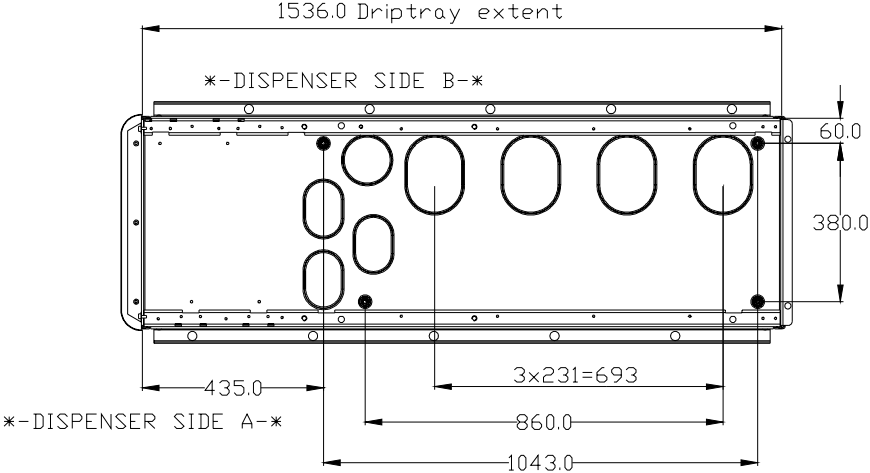


MODEL VHS 3-6

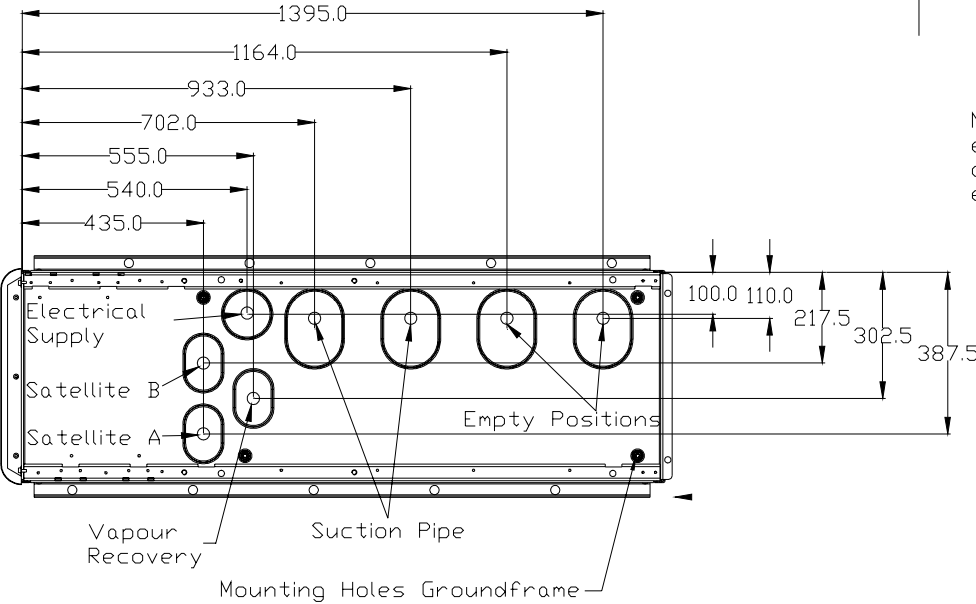


NOTE : When measuring from the external edge of a factory supplied groundframe, add 5mm to dimensions referenced from edge of drip tray base.

3.2.5 FOUR FRAMES & TWO COLUMNS MODELS (2-4 BELGIUM)

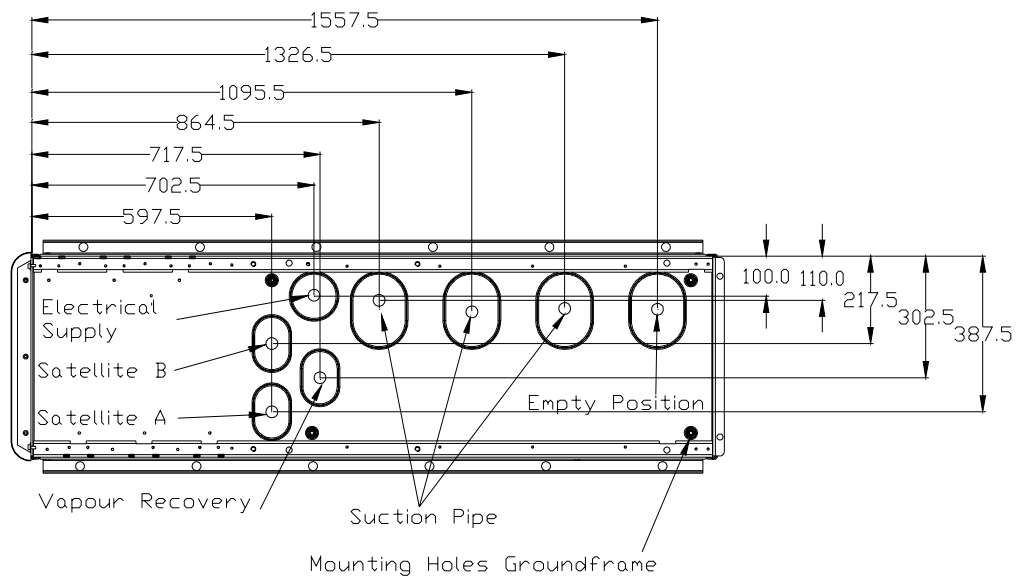
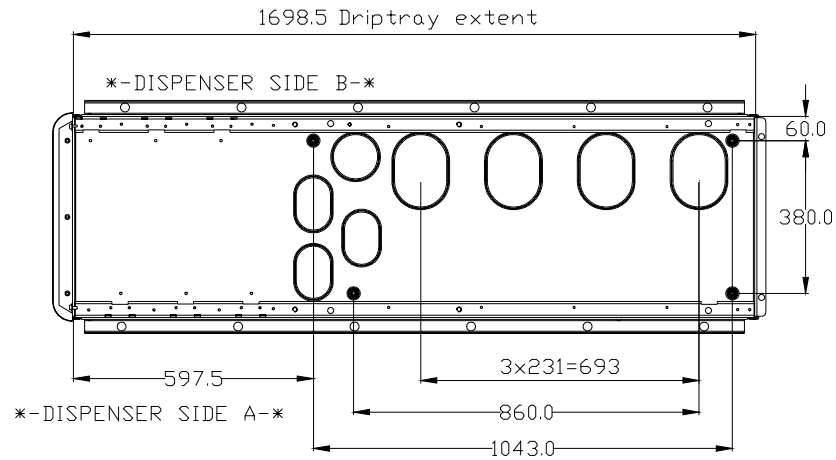


NOTE : When measuring from the external edge of a factory supplied groundframe, add 5mm to dimensions referenced from edge of drip tray base.

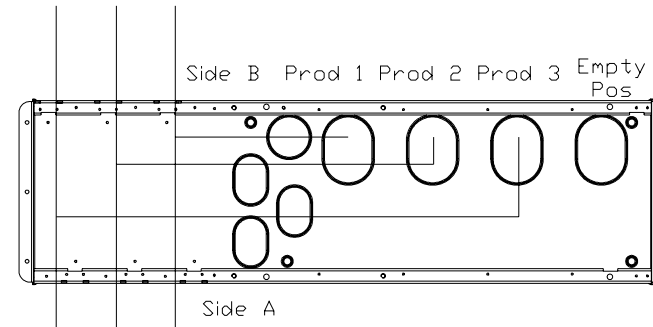




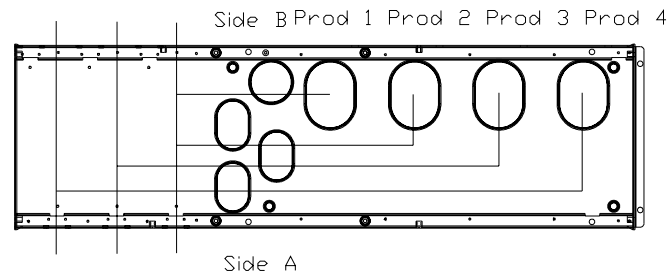
### 3.2.6 FOUR FRAMES & THREE COLUMNS MODELS (3-6 BELGIUM, 4-6 CH2, HS 4-6 CH2)



MODEL 3-6 BELGIUM

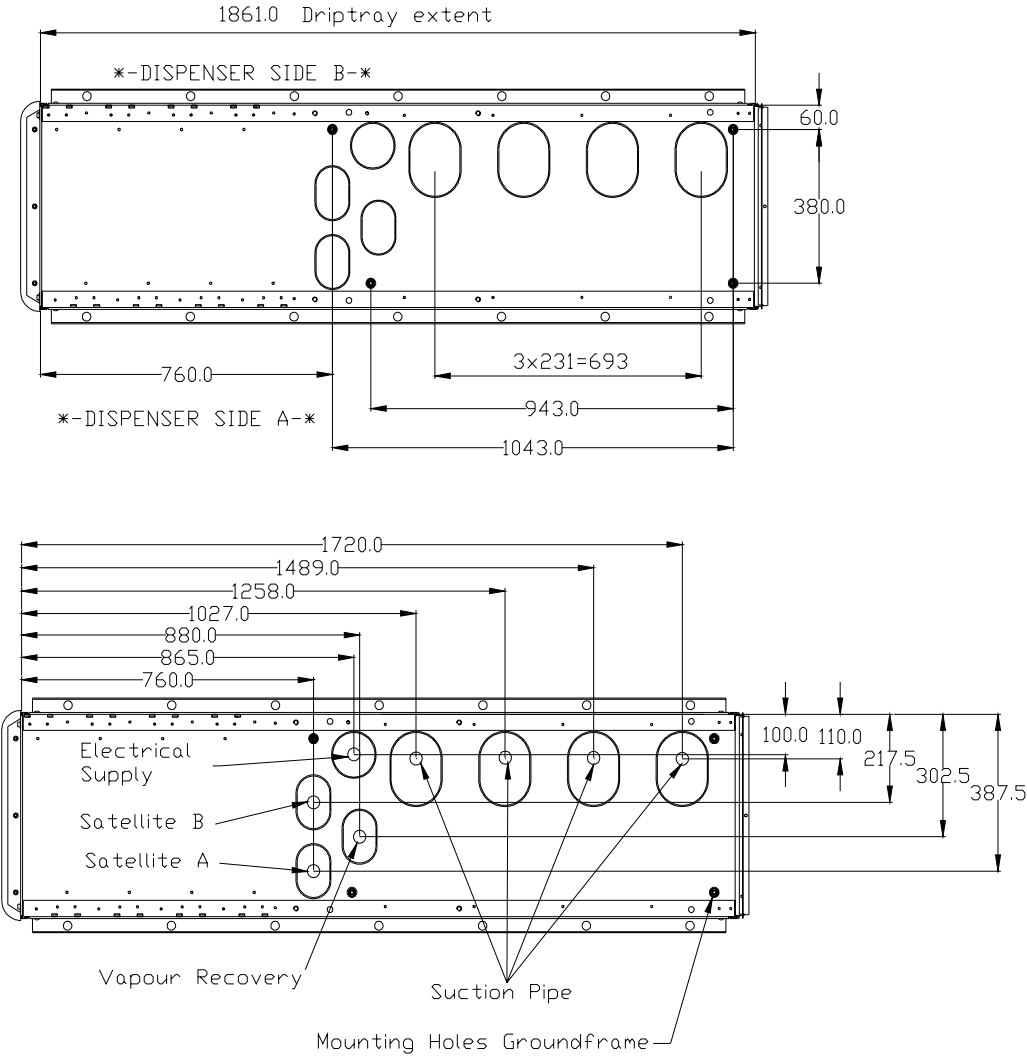


MODELS 4-6 CH2, HS 4-6 CH2

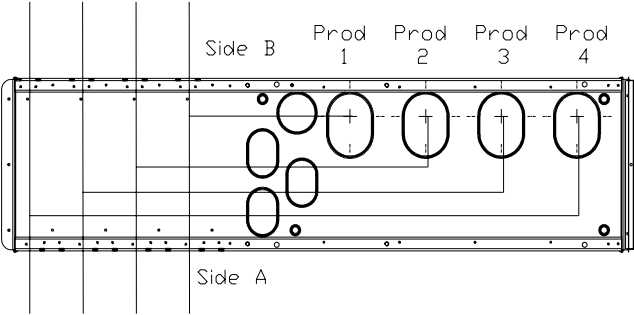


NOTE : When measuring from the external edge of a factory supplied groundframe, add 5mm to dimensions referenced from edge of drip tray base.

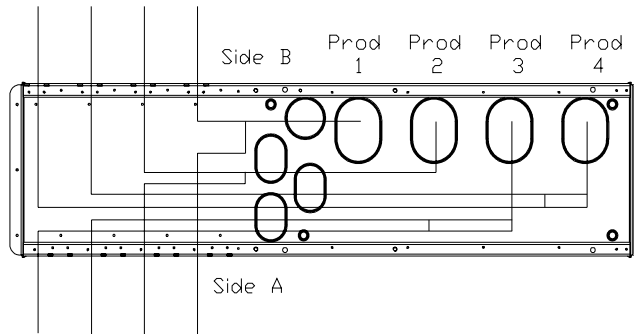
3.2.7 FOUR FRAMES & FOUR COLUMNS MODELS (4-4, 4-8, HS 4-4, HS 4-8, VHS 4-8)



MODELS 4-4, 4-8, HS 4-4, HS 4-8



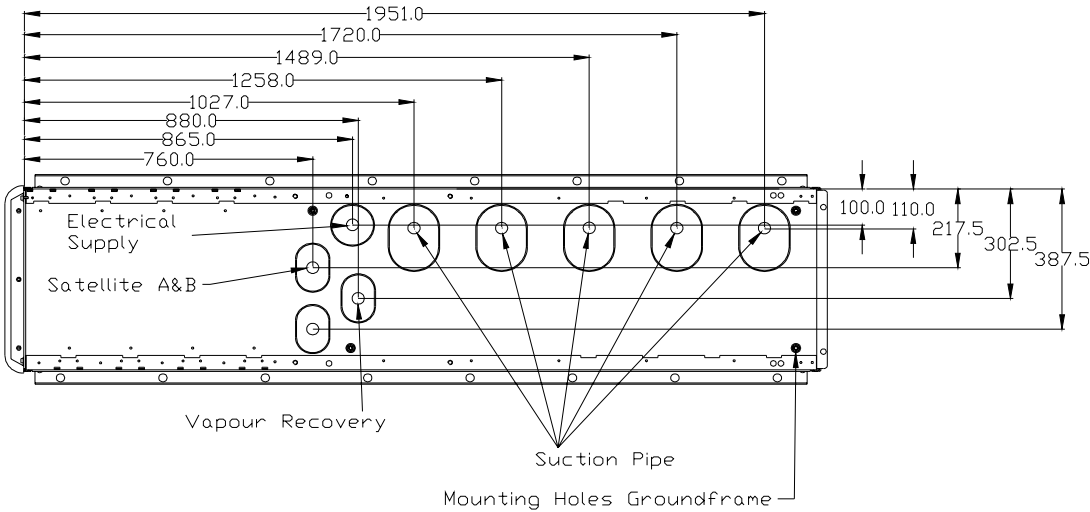
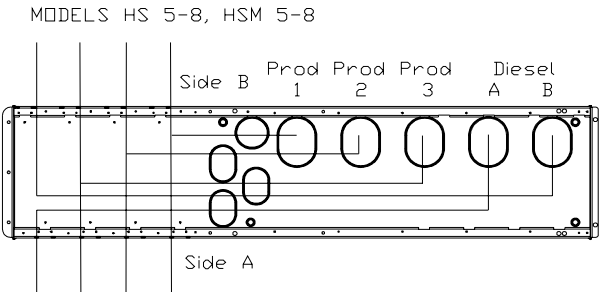
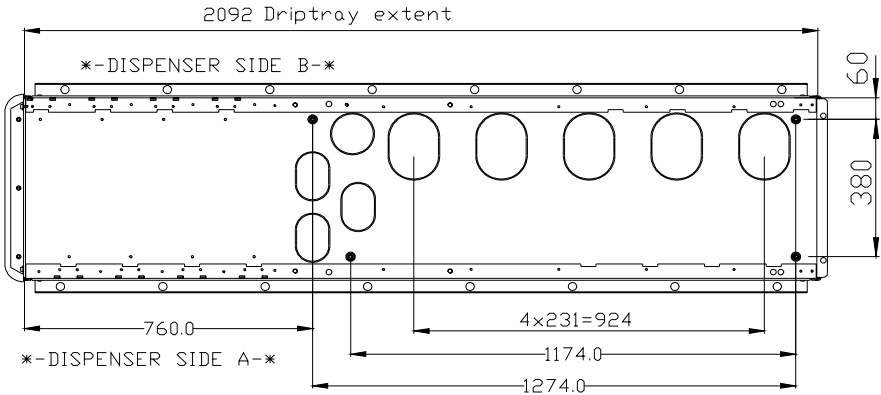
MODEL VHS 4-8



NOTE : When measuring from the external edge of a factory supplied groundframe, add 5mm to dimensions referenced from edge of drip tray base.

3.2.8 FIVE FRAMES & FOUR COLUMNS MODELS (HS 5-8, HSM 5-8, SVHSM 5-5)

Note : the same satellite riser positions are used for A and B side connections



NOTE : When measuring from the external edge of a factory supplied groundframe, add 5mm to dimensions referenced from edge of driptray base.

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## CONTENTS

<b>4</b>	<b>PACKAGING &amp; HANDLING .....</b>	<b>4-2</b>
4.1	Shipping Documentation .....	4-2
4.2	Packaging .....	4-2
4.2.1	Unpacking .....	4-2
4.3	Inventory Inspection .....	4-2
4.3.1	Checking List .....	4-3
4.4	Weights .....	4-3
4.5	Handling.....	4-3
4.6	Access the Hydraulic Area .....	4-4
4.7	Access the Calculator Head .....	4-4

## 4 PACKAGING & HANDLING

### 4.1 Shipping Documentation

The following documents will accompany every delivery:-

- Shipping List
- Packing/Checking List
- CE Sticker
- Certificate of Conformity

The Serial Number on the dispenser should be identical to the Serial Number on the Shipping List, CE sticker and Certificate of Conformity. Please inform Tokheim UK Ltd before unpacking if there are any discrepancies in the notation.

### 4.2 Packaging

The type of packing depends on the destination of the goods. All products containing a frame are fixed on a pallet by means of screws and by the use of beams or blocks screwed onto the frame.

The goods are protected from moisture and scratching by bubble wrap and polystyrene corner blocks and a standard carton is used for packing. Where the use of a forklift truck or pallet truck is necessary, special arrangements make this possible through the use of pallets, beams, dispenser beam bridges or blocks.

All separate components belonging to the same delivery are packed together.

#### 4.2.1 UNPACKING

When the dispensers arrive at the installation site, the unpacked units should be inspected for possible shipping damage. If damage is evident, it must be reported to the carrier. Shipping damage is not covered under the Tokheim warranty policy.

After checking the equipment, the dispenser may be unwrapped. Cladding is packed in such a way that paint, screening and stickers are protected. Take care when unwrapping so that these elements are not damaged.

After unwrapping, the dispensers must be checked for any faults or damage. Any faults or damage found must be reported to the Installation Supervisor immediately.

Make sure that all packing materials are removed from the service station. It is recommended that you discuss this with the station's supervisor.

### 4.3 Inventory Inspection

After unpacking and prior to installation, the delivered equipment should be inspected to ensure that all the required materials are on hand, and the dispensers have all the ordered options and markings. If discrepancies in dispenser options and markings are evident, contact Tokheim UK Ltd.

#### 4.3.1 CHECKING LIST

Proper installation of today's sophisticated electronic dispensing systems is essential to ensure trouble-free performance. Therefore, Tokheim has established inspection and check-out procedures to be followed to ensure correct equipment installation.

All products within a package are listed on the Checking List. Follow the procedure on the Checking List to ensure all required components have been delivered then return the completed Checking List to the Quality Dept., Tokheim UK Ltd, Dundee, Scotland.

#### 4.4 Weights

Approximate weight per dispenser type:-

- One Product Dispenser : 220kg
- Two Product Dispenser : 450kg
- Three Product Dispenser : 650kg
- Four Product Dispenser : 790kg

**PLEASE NOTE : THE ABOVE WEIGHTS ARE APPROXIMATE AND WILL VARY ACCORDING TO OPTIONS FITTED.**

#### 4.5 Handling

The recommended procedure for safe handling of the dispenser is by use of a forklift under the pallet.

The installer must supply all handling equipment and ensure safe working practice at all times.



#### 4.6 Access the Hydraulic Area

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

- 1) Locate the keys for the hydraulic doors.
- 2) Simultaneously open both keylocks on the relevant hydraulic door.
- 3) Disconnect the retaining cords on the hydraulic door.
- 4) Lift up the hydraulic door to release the locating pins from the holes in the drip tray.
- 5) Remove the door completely and place in a safe position.
- 6) Repeat for the opposite side of the dispenser as required.



#### 4.7 Access the Calculator Head

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

- 1) Locate the key for the calculator head door.
- 2) Unlock the calculator head door on the relevant side of the dispenser.
- 3) Carefully open the calculator head door.
- 4) Repeat for the opposite side of the dispenser as required.

**Note :** ensure all cables remain inside when closing the calculator head door.





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## CONTENTS

<b>5</b>	<b>INSTALLATION .....</b>	<b>5-2</b>
5.1	General .....	5-2
5.2	Identification of Side A .....	5-2
5.3	Lifting .....	5-3
5.4	Placement .....	5-3
5.4.1	By Forklift .....	5-4
5.5	Hydraulic Connections .....	5-5
5.5.1	Pipework - Suction Dispensers .....	5-5
5.5.2	Pipework - Submerged Dispensers .....	5-7
5.6	Electrical Connections .....	5-7
5.6.1	Junction Box Wiring .....	5-7
5.6.2	Communications Wiring in Main Junction Box .....	5-12
5.6.3	Special Dispenser Configurations .....	5-14

## 5 INSTALLATION

### 5.1 General

Before the dispenser can be installed, the Safety Instructions as described in Section 1.5 and the Installation Instructions in this section must be carefully read.

Follow unpacking instructions in Section 4.2.1.

After unwrapping and before installation, the dispensers must be checked for any faults or damage. Any faults or damage found must be reported to the Installation Supervisor immediately.

**NOTE: IF USING SUBMERGED PUMPS, THE CONTROL MUST BE COMPLETELY ISOLATED DURING ALL PHASES OF INSTALLATION.**

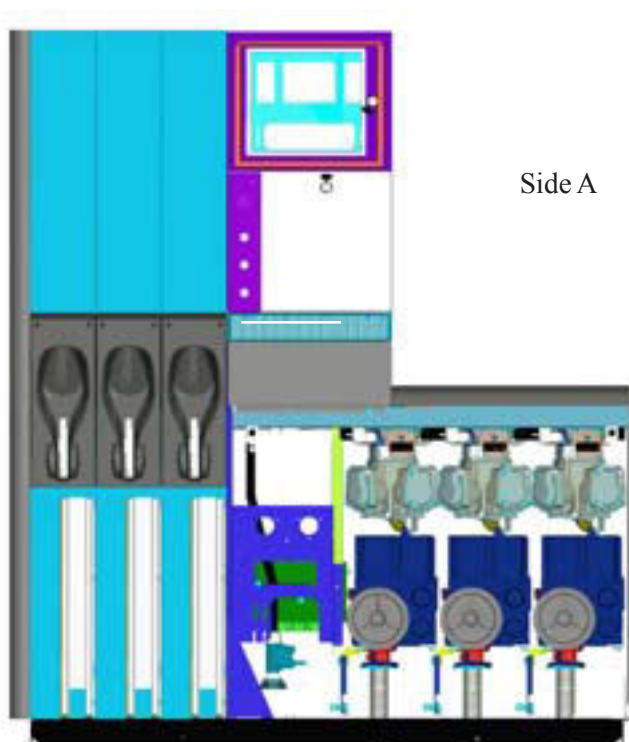
The following checks need to be made before starting the installation :-

- Check that the electric cabling and the piping arrangements have been made in accordance with the Installation drawings in section 3.
- Check that the leakage plates have been produced in accordance with the Installation drawing. Any differences or defects should be reported to the Installation Supervisor immediately. The function of the leakage plate is to drain leakages to the outside of the dispenser where they act as a warning to the station attendant.
- Check that all flame arresters are correctly installed according to the drawings.

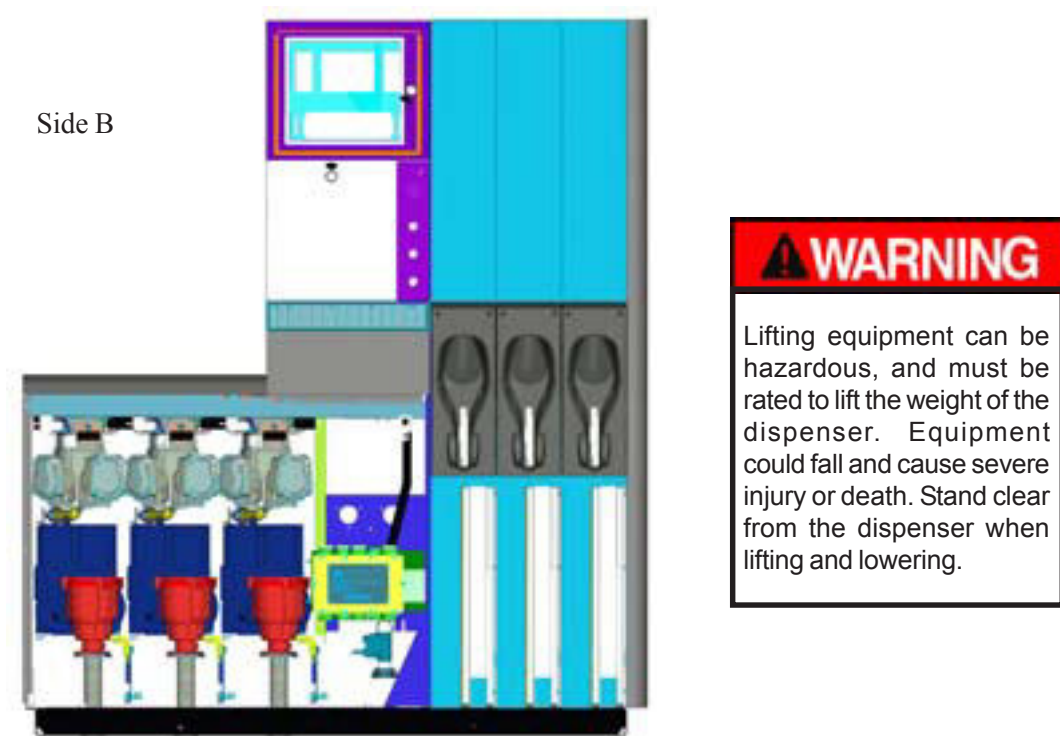
### 5.2 Identification of Side A

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

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



- 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.



### 5.3 Lifting

The responsibility for carrying out the procedures described in this manual lies with the persons lifting and placing the dispenser.

The installer must supply all lifting equipment and ensure safe working practice at all times.

The Quantum 500T1 Dispenser can be lifted by forklift truck under the pallet.

### 5.4 Placement

Before placement on the island can take place, the following procedures must be carried out:-

- Check that the electric cabling and piping arrangements have been made in accordance with the Installation drawing
- Check the pipes have been flushed before connecting the hydraulic components (if necessary, contact the tank installer)
- Removal of stop plugs on fuel and vapour recovery pipes
- Preparation of mounting frame

**Note :** Ensure all mounting holes in the ground frame are free from debris

- Fitting of seals for cable, fuel and vapour recovery pipe access
- Sealing of non-used holes

**IMPORTANT -** Ensure Side A of the dispenser is positioned onto the island per customer specifications. See Section 5.2 for locating Side A.

## 5.4.1 BY FORKLIFT

Follow the instructions in section 4.6 to gain access to the dispenser hydraulic area.

**PREPARE THE DISPENSER FOR LIFTING**

- 1) Use a 13mm spanner or socket to loosen and remove the two bolts on the centre pallet section on both sides of the dispenser.



- 2) Carefully remove the centre pallet sections on both sides of the dispenser.



- 3) With the dispenser stable on the two end pallet sections, carefully position the forklift truck to lift the dispenser under the drip tray.

**POSITION THE DISPENSER ON THE ISLAND**

- 4) Lift the dispenser and use a 19mm spanner or socket to loosen and remove the two bolts on the end pallet sections on both sides of the dispenser.



- 5) Carefully remove the end pallet sections on both sides of the dispenser.

- 6) Position the dispenser over the island and feed the cables up through the electrics hole position in the drip tray.



- 7) Carefully position the dispenser so that the filter boxes are directly above the fuel supply risers. Lower the dispenser onto the island.



**Note : Do NOT remove the forklift at this point.**

- 8) Align the mounting holes in the dispenser drip tray with the corresponding holes in the ground.
- 9) Use a 19mm spanner or socket to secure the dispenser to the ground (at the opposite side to the forklift) by locating two of the four bolts (supplied in the installation kit) into the holes in the ground.
- 10) With one side of the dispenser secured, remove the forklift. Locate the remaining two bolts into the holes provided and use the 19mm spanner or socket to secure the dispenser to the ground.

Dispenser placement is complete.



## 5.5 Hydraulic Connections

Connect all hydraulic and electric junctions according to the specifications as described in this section and indicated on the drawings in Section 3.

Flow rates achieved are dependent upon the type of submerged pumping system used and other site-specific conditions.

**Note : The maximum pressure must not exceed 3.5 bar.**

### 5.5.1 PIPEWORK - SUCTION DISPENSERS

Connections to the fuel supply pipes and the vapour return lines are accessible from side B of the dispenser (see section 5.2 for identification of sides).

The dispenser is positioned with the filter box positioned above the relevant fuel supply risers. If required, adapters should be fitted to the supply pipes. The flexible connection (rigid for pressurised systems) should then be fitted between the fuel supply risers and the filter box.

#### DISPENSERS FITTED WITH PAS V3 PUMPS

- 1) Remove the protective covers on the fuel supply riser pipe and on the filter box.



**WARNING : BEWARE OF FUEL SPILLAGE.**



- 2) Apply a sealant compound to the fuel supply riser and to the inside of the flexible coupling.



- 3) Fit the flexible coupling to the fuel supply riser pipe.

**Note : Hand tighten only at this point.**





- 4) Insert the top hat filter (provided in the installation kit) into the flexible coupling.



- 5) Manoeuvre the flexible coupling into the correct position, ready for securing to the filter box.



- 6) Insert the gasket between the filter box and the flange on the flexible coupling.

- 7) Fit the flange to the filter box using the two screws provided in the installation kit.



**Note : Hand tighten only at this point.**

- 8) Use a large adjustable spanner to tighten and secure the flexible connection to the fuel supply riser pipe.



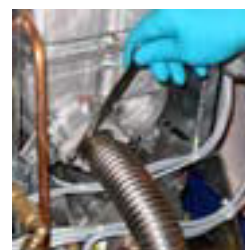
- 9) Using a 15mm spanner or socket, tighten the two screws on the flange.



- 10) Repeat steps 1 to 10 for each hydraulic position.

#### **DISPENSERS FITTED WITH EPZ PUMPS**

- 1) If the riser pipe is not 1.5" diameter male thread then an adaptor will need to be fitted by the Installer.
- 2) Fit the female end of the flexible connection to the male thread on the fuel supply pipe in the ground and tighten using a large adjustable spanner.
- 3) Where fitted, remove the hygiene cover on the inlet connection on the EPZ pump.
- 4) Using a 13mm spanner, fit the two bolts on the flange to secure the flexible connection to the EPZ pump.
- 5) Repeat steps 1 to 4 for each hydraulic position.



### 5.5.2 PIPEWORK - SUBMERGED DISPENSERS

Connect the fuel supply pipe to the filter box or optional flange (where fitted). The installer is responsible for all pipework and connections below the filter connection.

## 5.6 Electrical Connections

During installation, the main switch must be switched off - ensure the main switch cannot be switched on inadvertently.



The installation of the cables must be carried out carefully to ensure the Eex-norm is enforced (insertion of cables via glands).

The electrical connections are compatible with all European installation practices and typical country specific cable types.

The maximum number of forecourt cables required will be :-

- One power cable for motor power supply
- One power cable for calculator and lighting supply
- One/two cable(s) for dispenser communications
- One cable for speaker (optional)
- One cable per side for OPTimum communications (optional)
- One cable per submerged pump control signals (where applicable)

### CABLING

The type of cabling used will differ by country according to local and/or national laws and regulations. The drawings in this section show the minimum number of cores required in cables and the minimum core cross sectional area. Cables with more than the minimum can be used provided that the cables are suitable for use with the cable gland sizes fitted. Individual cables can be combined provided that the minimum number of conductors remains.

### ELECTRONICS AND LIGHTING PROTECTION

Tokheim recommends the use of a 2-pole thermal-magnetic device for the protection of the metering pump electronics. A fuse must **NOT** be used in the neutral conductor. Thermal-magnetic Breakers or fuses must be capable of extinguishing a fault current of at least 4000A. Pump lighting and remote lighting switches are options.

### MOTOR WIRING

The number of motors per dispenser will vary according to different models and options. Always connect to the furthest left terminal first. Jumper sizes and positions will vary according to the number of motors.

#### 5.6.1 JUNCTION BOX WIRING

During the removal or replacement of the M2000 Junction Box cover, the machined flame path of the cover and the junction box should be inspected for damage. If any defects or scratches are found then the junction box and/or cover must be replaced - this is essential for product safety. Once removed, always store the cover in a safe place.

**Note :** The correct tightening torque for the junction box cover is 18Nm.

Three different sizes of cable gland entries are available from Tokheim for the M2000 Junction Box:-

- For cable sizes 8-11mm
- For cables sizes 10-13mm
- For cable sizes 14-17mm

Ensure that the correct gland size is chosen to suit each installation cable. Failure to do so will compromise product safety.

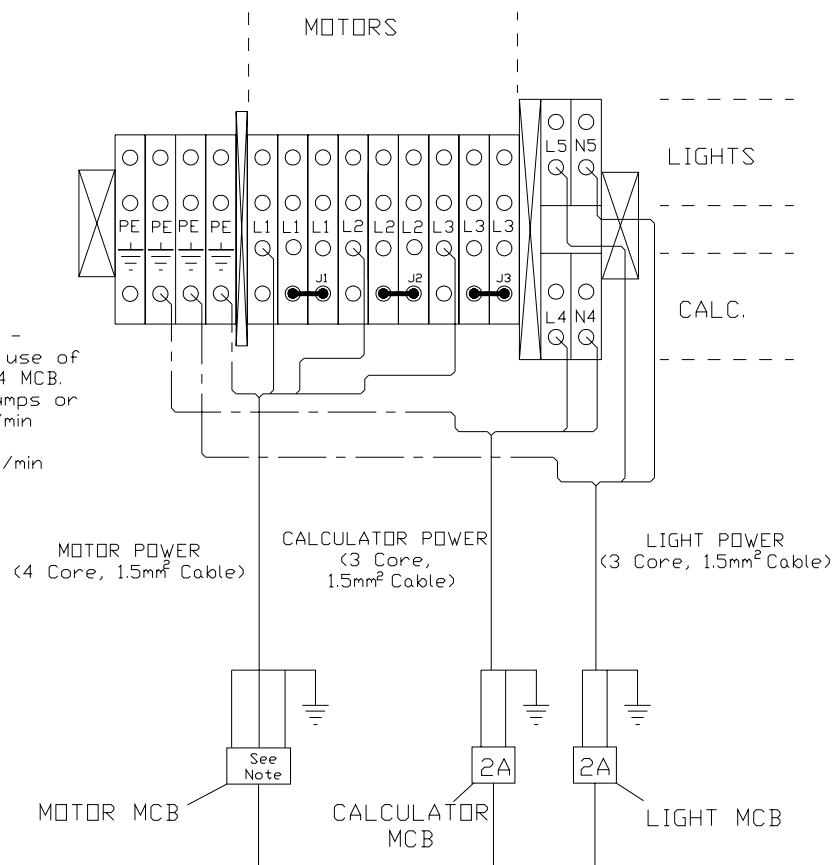
The special requirements relating to the use of the M2000 Junction box are:-

- All glands must be tightened to a torque of 35Nm.
- Ensure that all cables terminating in the M2000 Junction Box are securely fastened to the dispenser frame adjacent to the box.

The wiring in the main junction box will vary according to different models and options. The drawings in this section show the Tokheim recommended installation but differences may exist in the standards relating to installation in different countries and local regions, in which case the local and/or national standards must be employed.

### Three Phase Suction

**Note : Motor Protection** -  
Tokheim recommends the use of a 3 P+N Lockable Type 4 MCB.  
10 amp for 40/80 MPD pumps or single product 130 litre/min pumps.  
16 amp for MPD 130 litre/min pumps.

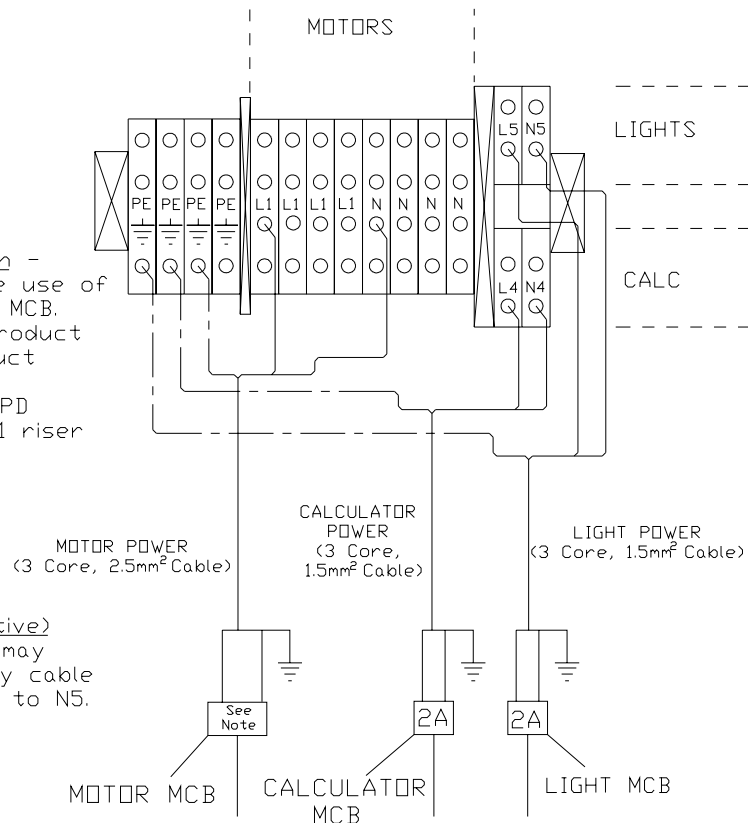




**Single Phase Suction**

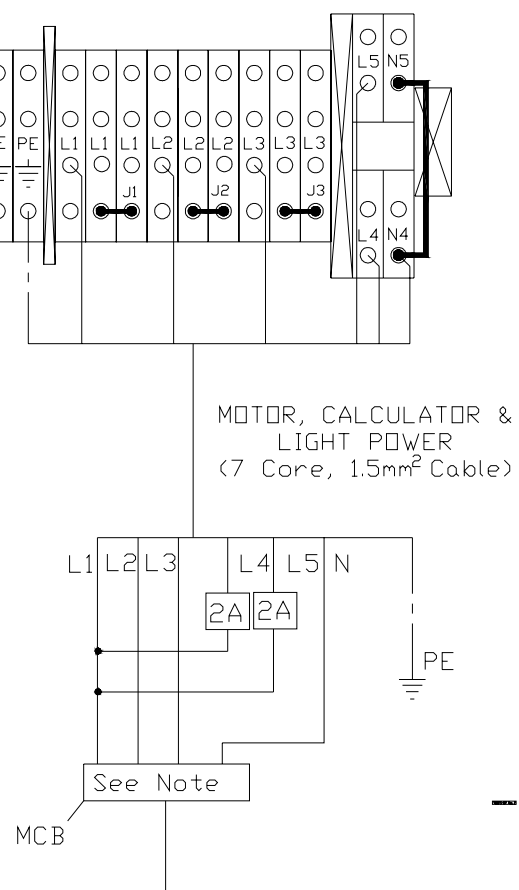
Note : Motor Protection -  
Tokheim recommends the use of  
a 2P Lockable Type 'D' MCB.  
16 amp for all single product  
dispensers and 2 product  
40/80 dispensers.  
20 amp for all other MPD  
(single product implies 1 riser  
position)

Single Phase (Alternative)  
Calculator & Lighting may  
share a common supply cable  
and link L4 to L5, N4 to N5.

**Three Phase Suction (Alt)**

Note : Motor, Electronics & Lighting Protection  
Tokheim recommends the use of  
a 3 P+N, Lockable Type 4 MCB.  
6 amp for submerged pumps.  
10 amp for 40/80 MPD pumps or  
single product 130l/min pumps.  
16 amp for MPD 130l/min pumps.

Installation with a 5 core MICC  
cable is possible by linking L3  
to L4 and L5 within the  
dispenser mains box.



### Submerged

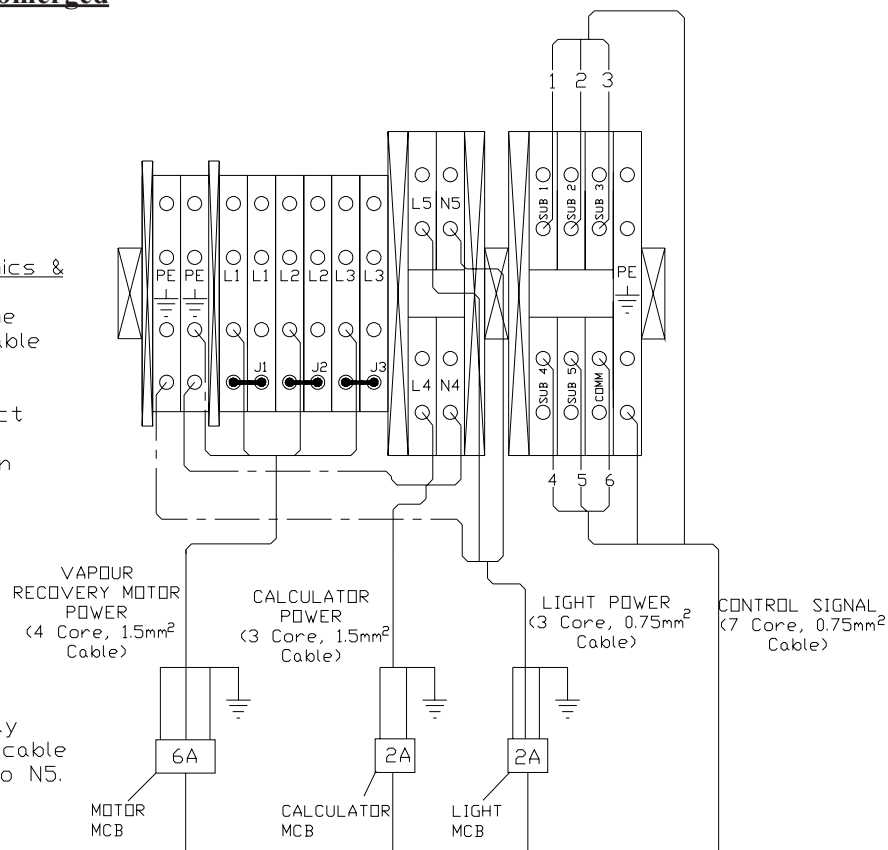
#### Note : Motor, Electronics & Lighting Protection

Tokheim recommends the use of a 3 P+N, Lockable Type 4 MCB.

10 amp for 40/80 MPD pumps or single product 130l/min pumps.  
16 amp for MPD 130l/min pumps.

#### Submerged (Alternative)

Calculator & Lighting may share a common supply cable and link L4 to L5, N4 to N5.



### Shock Detection

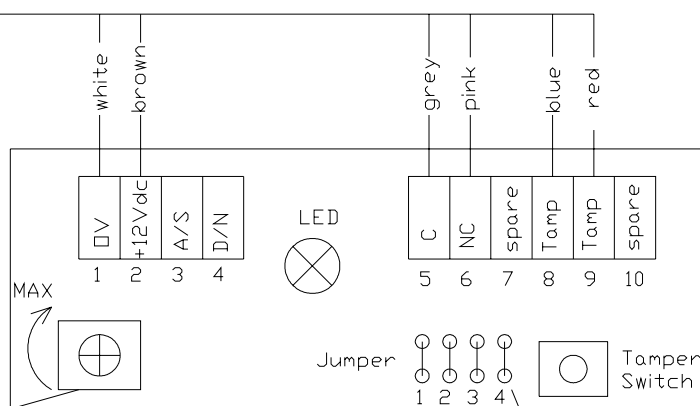
TO MAIN SWITCHBOARD

6 x 0.5mm<sup>2</sup>

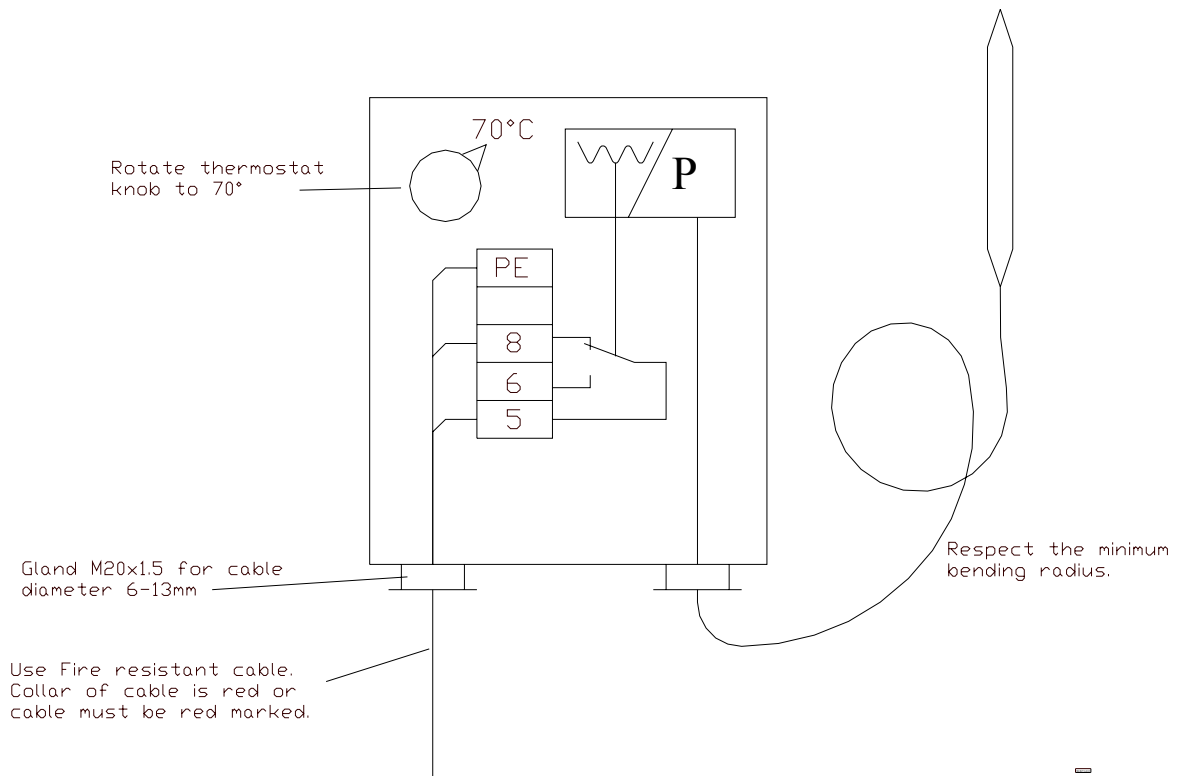
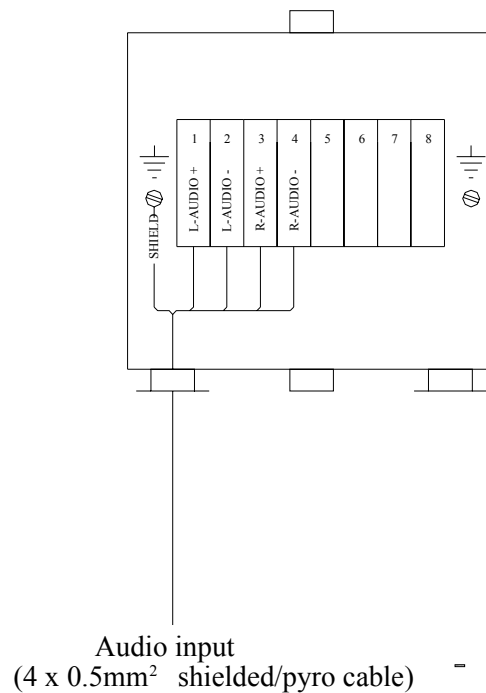
#### Note:

- 1) Sensor housed in Main Eexd Junction Box.
- 2) When Dispenser is fitted with an Optimum and EPS software, Optimum Comms are fitted in separate Junction Box.

Best setting of sensitivity:  
Turn the potentiometer maximum anti-clockwise, and then turn it approximately 20° clockwise

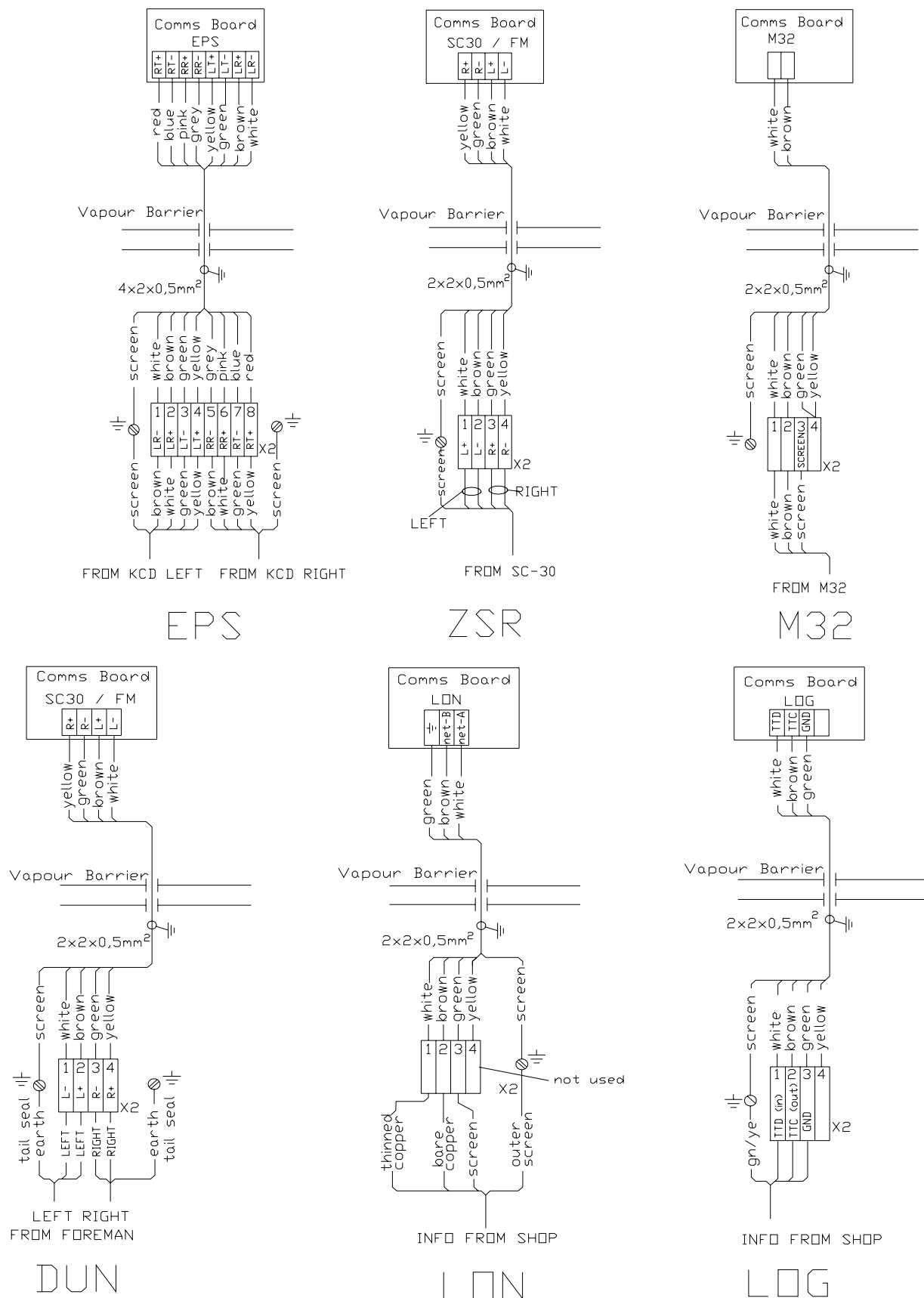


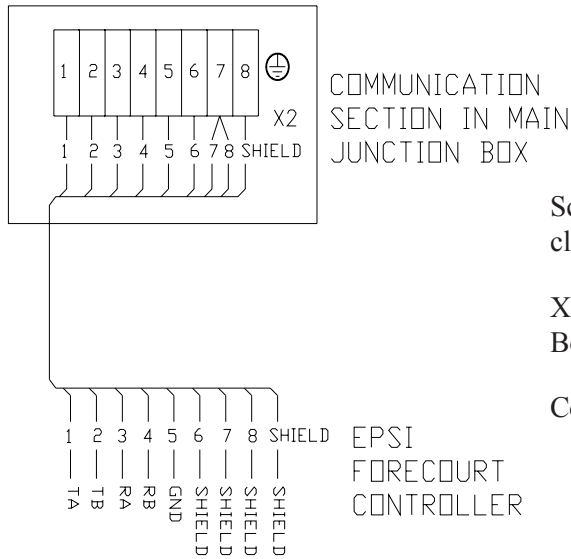
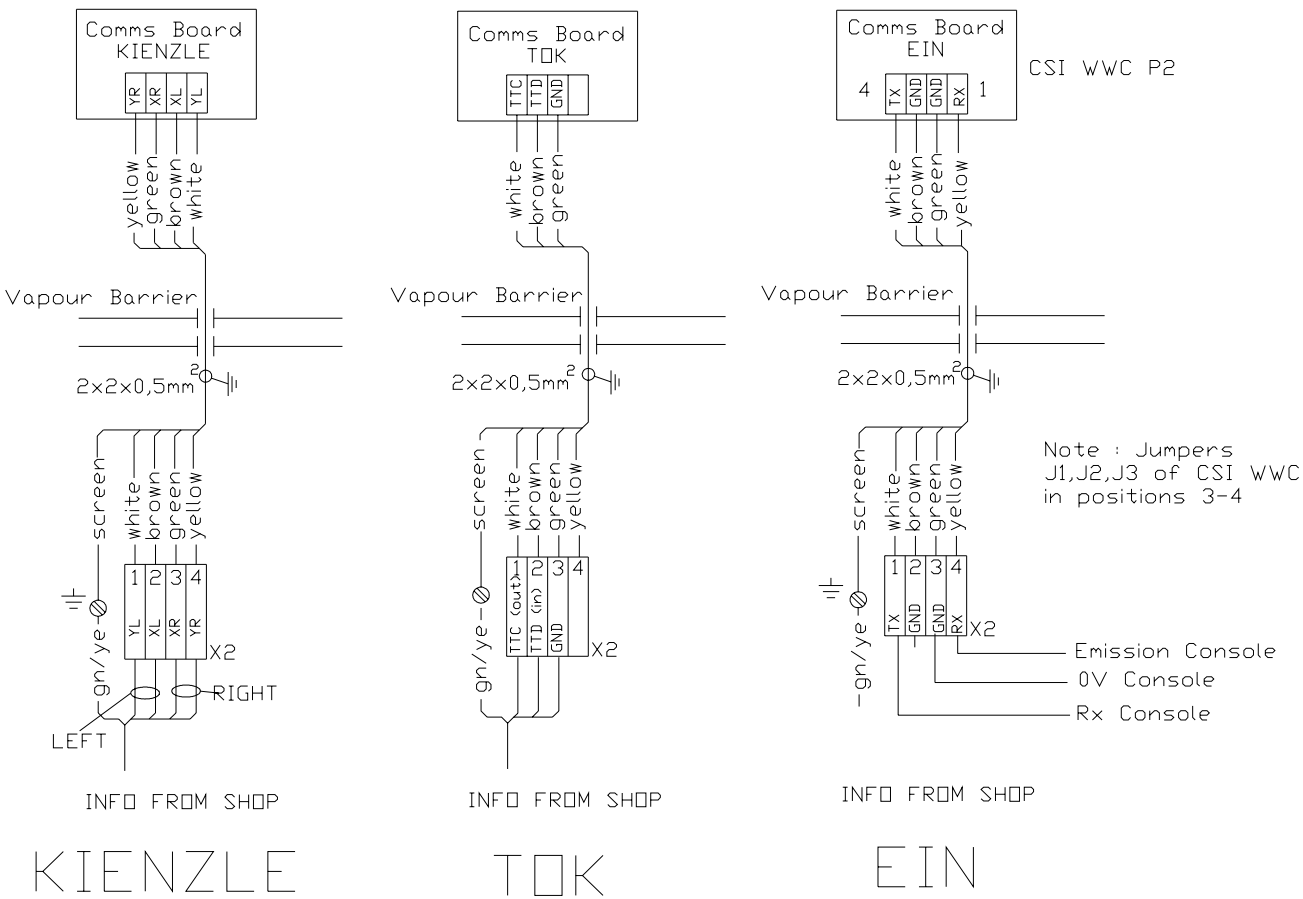
Ensure all 4 jumpers are fitted.

**Fire Detection****Audio Option (in Bernstein Junction Box)****Terminals in Audio Junction box (above main J/Box)**

## 5.6.2 COMMUNICATIONS WIRING IN MAIN JUNCTION BOX

Communications wiring in the main junction box will vary according to the different communication protocols.



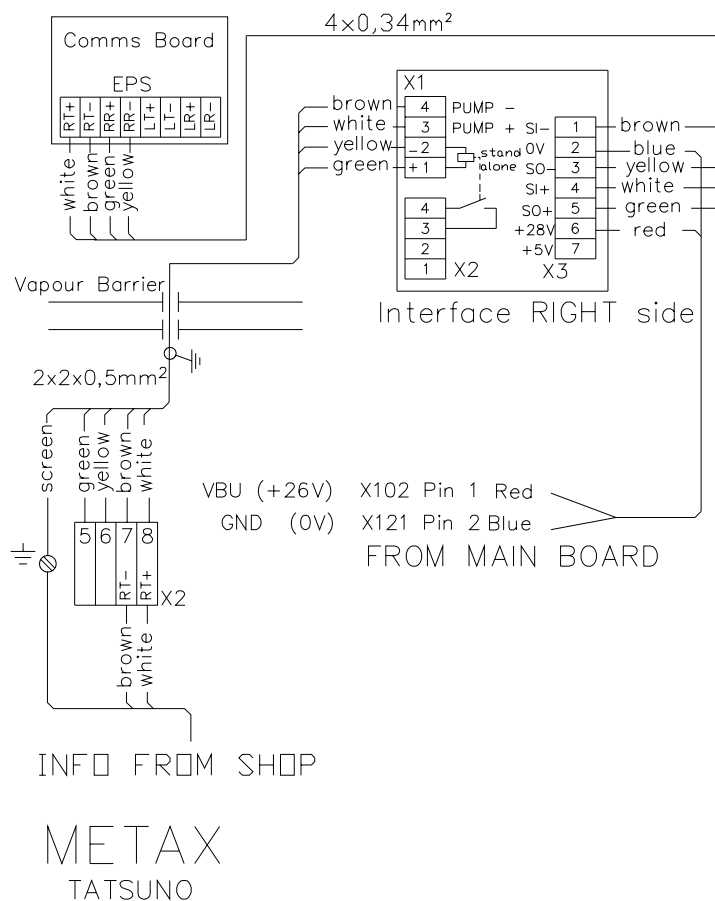


## EPSI Interface

Screen and unused wires should be cut as close as possible to the cable gland.

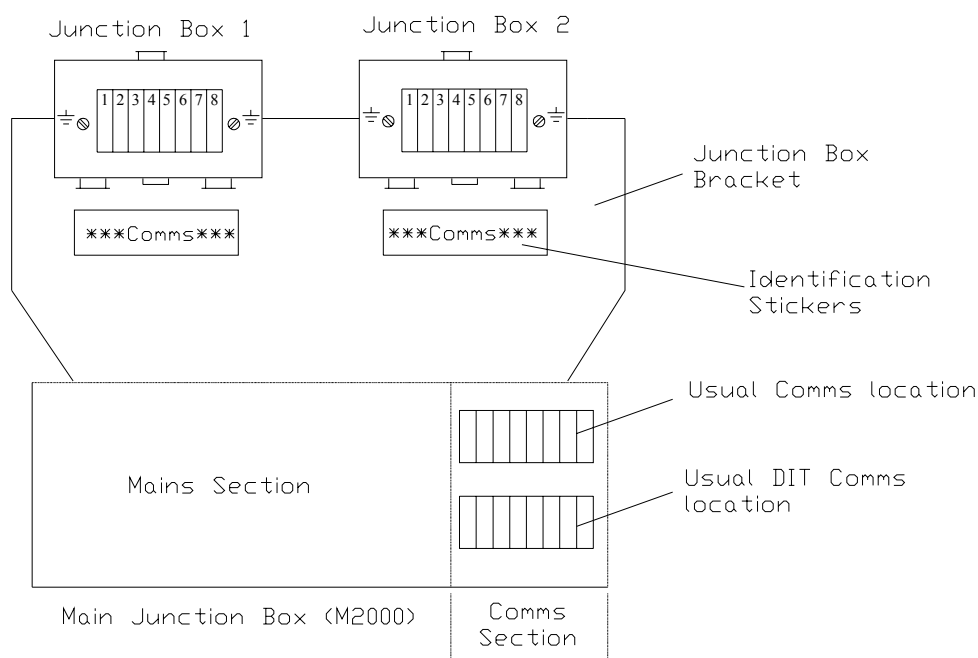
X2 = Connection Strip mounted in Junction Box mains.

Coding signals on X2 are calculator signals.



### 5.6.3 SPECIAL DISPENSER CONFIGURATIONS

With certain combinations of options, additional junction boxes may be required.



- Audio option - if the dispenser is fitted with speakers then the audio connections are always housed in Junction Box 1.
- Shock Detection option - if the dispenser is fitted with shock detection then the unit is housed in the Comms section of the Main Junction Box and the dispenser communications are housed as follows:-

Option Combination	Main Junction Box	Additional Junction Box 1	Additional Junction Box 2
Shock Detection, non-EPS Comms & DIT	Shock Detection, non-EPS Comms & DIT	None	None
Shock Detection, EPS Comms & DIT	Shock Detection & EPS Comms	DIT Comms	None
Shock Detection, EPS Comms, DIT & Audio	Shock Detection & EPS Comms	Audio	DIT Comms

- High Speed Single Phase Motors - if the dispenser is fitted with high speed single phase motors then the motor capacitors are housed in the Comms section of the Main Junction Box and the dispenser communications are housed as follows:-

Option Combination	Main Junction Box	Additional Junction Box 1	Additional Junction Box 2
High Speed single phase motor	Motor Capacitors	Dispenser Comms	None
High Speed single phase motor & DIT	Motor Capacitors	Dispenser Comms	DIT Comms
High Speed single phase motor & Audio	Motor Capacitors	Audio	Dispenser Comms
High Speed single phase motor, DIT & Audio	Not an option	Not an option	Not an option

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## CONTENTS

<b>6</b>	<b>COMMISSIONING .....</b>	<b>6-2</b>
6.1	Test and Calibration of the Dispenser .....	6-2
6.1.1	Program the Dispenser .....	6-2
6.1.2	Dispenser Functions .....	6-2
6.1.3	Test the Dispenser .....	6-2
6.1.4	Calibrate the Meter .....	6-3
6.1.5	Final Checks .....	6-3
6.2	Handing over to the Station Manager .....	6-4

## 6 COMMISSIONING

The procedures in this section are Tokheim recommended procedures for commissioning the dispenser but differences may exist in the standards relating to commissioning in different countries and local regions, in which case the local and/or national standards must be employed.

Follow the instructions given in section 4.7 to gain access to the calculator head.

### 6.1 Test and Calibration of the Dispenser

Prior to Commissioning, the following must be checked:-

- Ensure that all the cabling and hydraulic connections have been made correctly.
- Check that power is present.

**Note : Disconnect the Comms before switching on power to the dispenser. This will reduce the possibility of errors.**

- Check that the voltage of power supply is in accordance with the WWC calculator voltage.
- Check that back-up batteries are in correct working order.

#### 6.1.1 PROGRAM THE DISPENSER

- If permitted, use the User Access Keypad (UAK) to place the dispenser(s) in Stand-alone Mode and enter the unit prices.
- Alternatively, use the UAK to place the dispenser in Self-Service Mode. Re-program the console for the new dispenser. The unit prices will be communicated automatically to the dispenser.
- Check the unit prices are correct for each new dispenser.
- Where applicable, note the readings on the electronic and mechanical totalisers.

#### 6.1.2 DISPENSER FUNCTIONS

- Where fitted, check that the leakage plates are correctly installed.
- Carry out a test filling using each nozzle and check all supported functions are working correctly (local preset, HS/LS, etc.).
- Check that the nozzles correspond to the correct products and that product names are correct.
- Check the correct operation of all hose retraction systems.
- Check the correct operation of all locks.
- Check the calculator lighting (where applicable).
- Check that all required warning stickers are in the correct positions.

#### 6.1.3 TEST THE DISPENSER

The following procedures must be performed at each nozzle position:-

- Test the flow rates (litres/minute) - refer to the WWC Calculator Manual.
- Where applicable, test the Vapour Recovery for correct operation.

- Test the meters are within the legal requirements:-
  - Lift each nozzle and deliver approximately 20 litres into a Tokheim approved calibrated container until all air and fuel substitute has been expelled through the nozzle and/or air vent pipes.

**Note : Discard this filling since it will contain fuel substitute from the dispenser pipes and components and air from the supply pipes.**

**IMPORTANT : DISCARD ALL TEST FILLINGS SAFELY.**

- Perform a test filling into the calibrated container until 20 litres have been dispensed according to the calculator display.
- Read the measurement on the calibrated container.

If the fuel dispensed into the container is above or below the calibration line (i.e. greater or less than the 20 litres dispensed) then the meter must be adjusted to ensure Weights & Measures (W&M) compliance.

**Note : W&M regulations vary according to different countries.**

#### 6.1.4 CALIBRATE THE METER

- Carefully remove the W&M seal on the bottom of the meter.

**Note : Store the seal in a safe place for re-use.**

- Use a small screwdriver to adjust the calibration on the meter.



**Note : each notch on the meter corresponds to approximately 20ml.**

- Adjust in a clockwise direction to reduce the amount of fuel delivered i.e. if the fuel in the container is greater than the reading on the calculator display.
- Adjust in an anti-clockwise direction to increase the amount of fuel delivered i.e. if the fuel in the container is less than the reading on the calculator display.
- Re-test the dispenser until calibration is within acceptable tolerance levels.
- Replace the W&M seals to the bottom of the adjusted meter(s).

#### 6.1.5 FINAL CHECKS

- Check that all W&M requirements have been fulfilled.
- Where applicable, use the UAK to check the limit of the High Speed Diesel as per W&M regulations.
- Where applicable, note the readings on the electronic and mechanical totalisers.
- Where applicable, clear the error counters.
- Note the type/serial number(s) of the dispenser(s).
- Complete the Arrival Quality checklists and country specific product identification forms for the dispensers and return them to the local Sales & Service Division.

**6.2 Handing over to the Station Manager**

Explain to the Station Manager the working of the dispenser(s) and train him in their use (according to the User Manual).

Together with the Station Manager, go through the Acceptation checklist to check that everything has been delivered as ordered and is in good condition. Both the Service Engineer/Technician and Station Manager must sign the checklist.

The Station Manager must check the unit prices.

Hand over the following documents to the Station Manager:-

- One copy of the installation report including the totals of all totalisers and the type and serial numbers of dispenser(s).
- User Manual.
- Declaration of Conformity (usually located in the Calculator Head).
- Copy of signed Acceptation checklist (usually located in the Calculator Head).
- All keys.

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*As Tokheim regularly improves its products to ever better respond to evolving market and regulatory requirements, it reserves the right to change any of the specifications of these products, and this without prior notice.*

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