IMpress Pressurisation Sets

comprising of

Basic, Advanced, Glycol and H/C.

Installation, Operation and Maintenance Manual

GRUNDFOS®

DECLARATION OF CONFORMITY

We, Grundfos, declare under our sole responsibility that the Impress and Impress Advanced, Glycol and Twin Circuit pressurisation units referenced in these installation instructions, to which this declaration relates, are in conformity with the:

Machinery (89/392/EEC), EN292
Electromagnetic Compatibility (89/336/EEC), EN50 081-1 & EN50 082-2
Electrical equipment designed for use within certain voltage limits (73/29/EEC), EN60 335-1 & EN60 335-2-51

If further details are required, please contact one of the Grundfos offices listed on the back page of these instructions.

1st August 2007
Grundfos Pumps Ltd.
Grovebury Road
Leighton Buzzard
Beds.
LU74TL

Peter Reynolds, General Manager
Grundfos Pumps Ltd

GENERAL DATA

These installation, operation and maintenance instructions are given as a guide to good practice in the installation, putting into service, operation and maintenance of the Grundfos IMpress and IMpress Advanced, Glycol and H/C units. They do not contain full service instructions, procedures for the continual service and operation of the unit. The services of a qualified engineer should be employed to maintain and repair the module. This I.O.M. manual may refer to components/functions not fitted to all units.

DELIVERY AND HANDLING

On arrival, inspect the unit(s) for signs of damage before signing the delivery note and report any damage to the supplier within 7 days. The unit is supplied from the factory on a wooden pallet suitable for handling with forklift equipment.

The weight and the size of the module may require the use of proprietary lifting equipment in order to be handled safely.

WARRANTY

1. The Grundfos warranty covers all defects within the unit originating from faulty workmanship and/or materials for a period of one year from the date of installation or eighteen months from the date of despatch from the factory, whichever is sooner. The warranty covers the replacement of any faulty parts and our labour cost to replace the faulty parts. It does not cover the cost of removing, returning and refitting the unit or any secondary losses arising from the failure.

2. Under no circumstances should faulty equipment be dismantled. Failure to comply with this instruction could invalidate the warranty.

3. Defects arising from the incorrect installation, water containing debris, or harmful chemicals, inadequate electrical protection, faulty ancillary equipment, lighting or other circumstances beyond our control is not covered by this warranty.

SITE STORAGE

It is strongly recommended once the unit has been delivered to site, that it be placed immediately into a dust, moisture and frost-free area that has been secured to prevent unauthorised interference. If this is not possible the unit should be stored in an area that is as near to the ideal storage conditions described above.

APPLICATIONS

The Grundfos range of IMpress units have been designed to be compact, reliable and simple to use and to provide many years of efficient and effective service.

The main application of the unit(s) is:
Pressurisation of sealed heating systems
Pressurisation of sealed chilled water systems

MAXIMUM OPERATING CONDITIONS

The Grundfos range of IMpress units have been designed to

Liquid temperature range	: 3 to +90°C
Ambient temperature	: up to +40°C
Relative Humidity	: up to 95 %
Maximum operating pressure	: 6 Bar
Recommended maximum start-stops per hour	: 20 - 30

NOISE LEVEL

The noise level of the pressurisation units referenced in these installation instructions is lower than the limiting values stated in the EEC machinery directive.

If pressurisation units are installed close to living accommodation, it is advisable to fit anti-vibration mountings on the unit and a flexible pipe coupling on the outlet pipework from the unit to prevent vibration being transmitted through the system pipework. This applies especially to units installed in concrete buildings.

INSTALLATION

Do not attempt to start the pump even to check the direction of rotation until the system has been filled with water and both the pump and the system have been primed/vented.

All electrical connections should be carried out by a qualified and authorised electrician in accordance with the latest issue of the I.E.E. regulations.

Do not remove motor terminal box covers, electrical cables or any other electrical protective covering without first ensuring that the electrical supply is suitably isolated and cannot be switched on.

Do not attempt to supply electricity to the unit without ensuring that all electrical fittings, cables and enclosures are intact and suitably electrically isolated from human touch during operation.

Electrical motors will have hot external surfaces during operation and care must be taken to ensure that persons cannot come into contact with the surfaces of the electric motor.

LOCATION

1. The unit should be sited in a dry, well ventilated but frost-free position where it will not be subjected to extremes of temperature.
2. The environment should be non-aggressive and the atmosphere non-explosive.
3. Ensure that there is sufficient clearance around the unit to allow maintenance operations to take place without obstruction
4. To enable maintenance and service of the unit to be carried out satisfactorily the area should have adequate lighting for this work to be carried out safely.
5. The pipe work installation of the unit should be in accordance with local water authority regulations.

FOUNDATION

The pressurisation unit should be installed on a concrete base, which is both horizontal and flat to avoid distortion of the base plate.
Please allow a minimum clearance of 500mm above the unit for servicing float valve and tank, and 750mm in front for servicing pumps and controls).

PRESSURE VESSEL(S)

On heating systems it is vitally important that the expansion vessel(s) has more than sufficient capacity for the expansion of the liquid in the system. It is better to **oversize** rather than undersize for safety reasons. It is equally important to have the correct pre-charge pressure in the expansion vessel(s) set in accordance with the manufacturers instructions and the requirements of the system.

SERVICE CONNECTIONS

Do not open electrical panel enclosures, panel components, pressure switch covers, motor terminal box covers or any other electrical protective covering without first ensuring that the electrical supply is suitably isolated and cannot be switched on.

Do not attempt to supply electricity to the control panel and run the pump electric motors without ensuring that all electrical fittings, cables and enclosures are intact and suitably electrically isolated from human touch during operation.

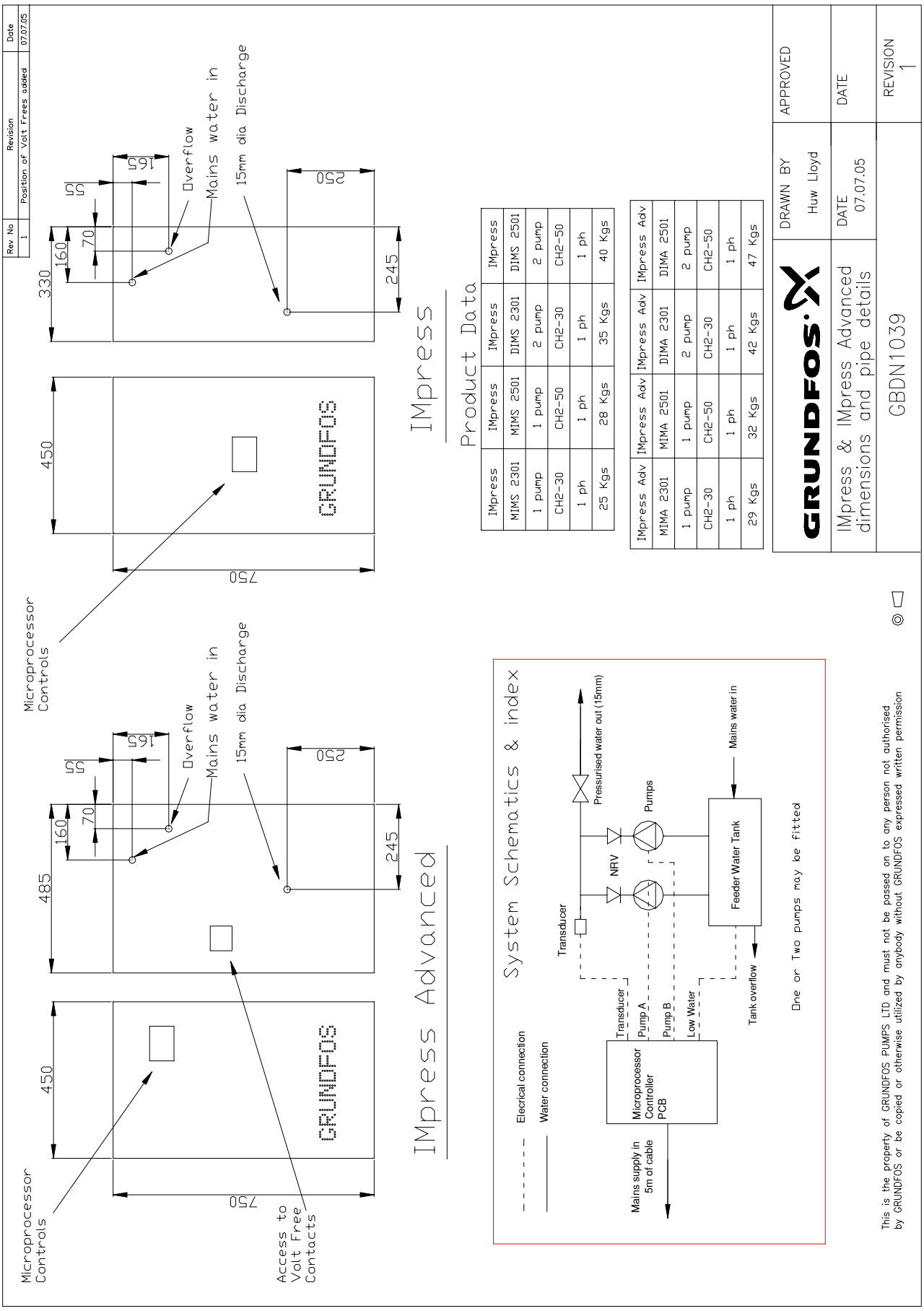
REMOVAL OF CABINET COVERS

The top and the front covers can be removed from the IMpress cabinets to allow access for making electrical and pipe work connections.
Remove the four screws from the top cover, and remove the cover/lid.
Remove the two screws on the front panel. Remove the front panel by lifting it off the locating pins in the base.

PIPEWORK CONNECTIONS

The service connections to the pressurisation unit should be made as follows.
1. Connect the mains cold water supply to the ball valve ½" BSP male connection on the side of the pressurisation unit.
2. An isolating valve must be fitted to the mains cold water supply pipework supplying the pressurisation unit.
3. Connect the discharge pipe (15mm compression) from the pressurisation unit to an appropriate position on the heating/chilled water system.
4. Connect the over flow pipe (¾" bsp male) from the pressurisation unit break tank to a suitable drain.
5. The electrical supply connections to the pressurisation unit should be made in accordance with the wiring diagrams supplied with the unit.
6. If applicable, connect the freestanding expansion tank(s) to the heating/chilled water system.
7. Ensure the pressurisation unit is not stressed by the pipework connections and that the pipework is properly supported.

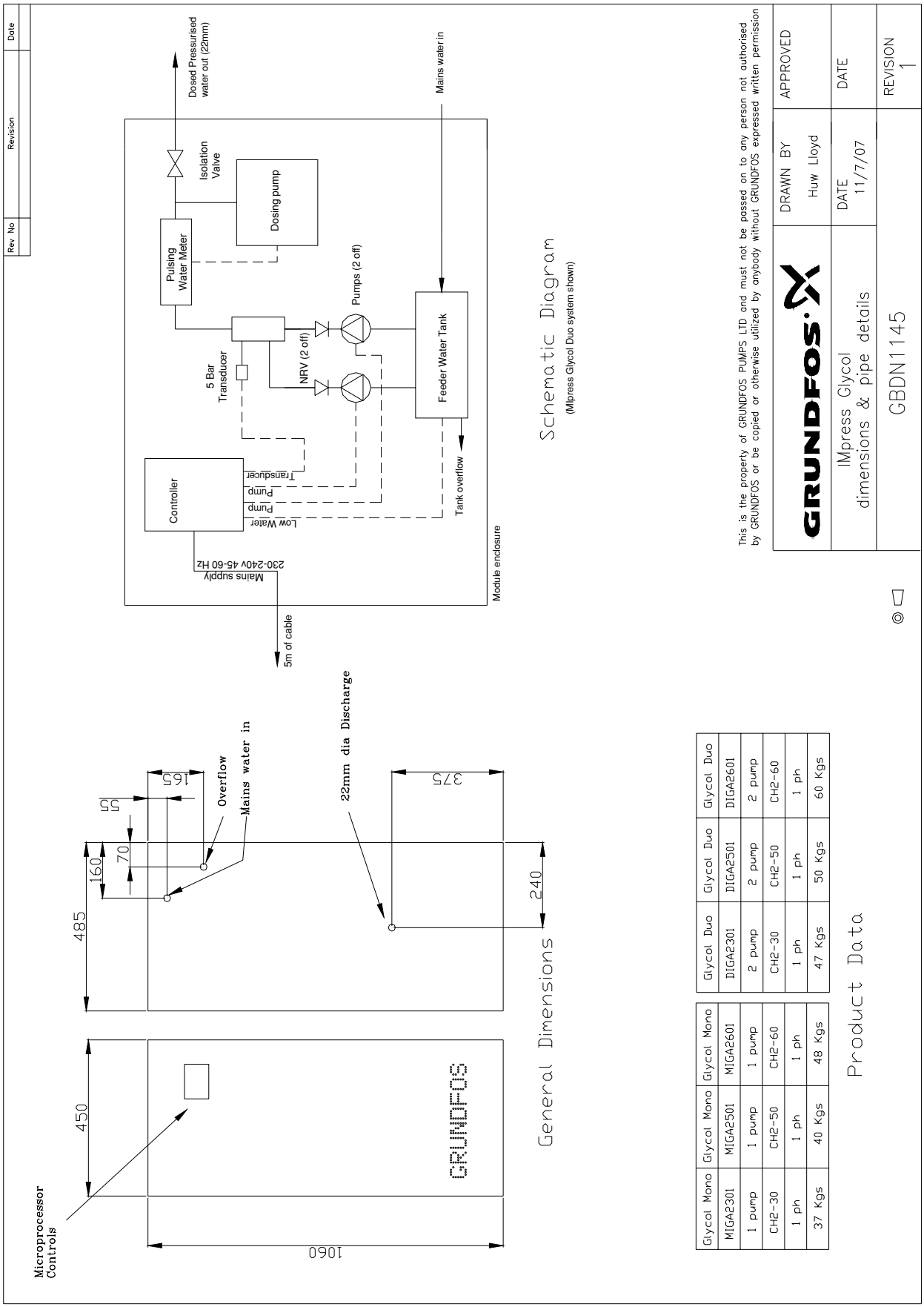
DIMENSIONS, WEIGHTS AND CONNECTION DETAILS



PIPEWORK CONNECTIONS

Water supply connection: ½" BSP Male
Overflow pipe: ¾" BSP Male
System connection: 15mm Compression

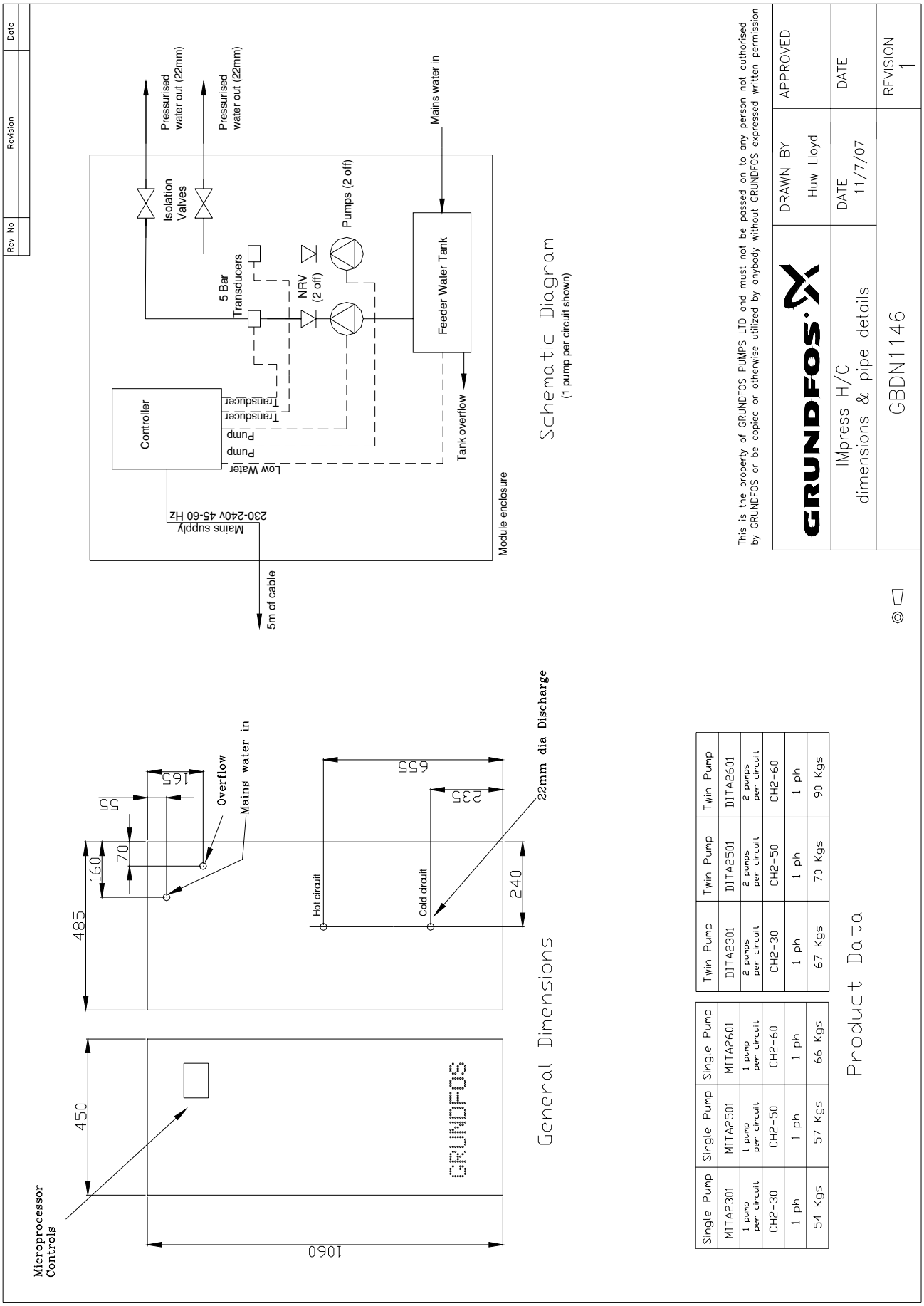
DIMENSIONS, WEIGHTS AND CONNECTION DETAILS



PIPEWORK CONNECTIONS

Water supply connection: ½" BSP Male
Overflow pipe: ¾" BSP Male
System Connections: 22mm Compression

DIMENSIONS, WEIGHTS AND CONNECTION DETAILS



Single Pump	Single Pump	Single Pump
MITA2301	MITA2501	MITA2601
1 pump per circuit	1 pump per circuit	1 pump per circuit
CH2-30	CH2-50	CH2-60
1 ph	1 ph	1 ph
54 Kgs	57 Kgs	66 Kgs

Twin Pump	Twin Pump	Twin Pump
DITA2301	DITA2501	DITA2601
2 pumps per circuit	2 pumps per circuit	2 pumps per circuit
CH2-30	CH2-50	CH2-60
1 ph	1 ph	1 ph
67 Kgs	70 Kgs	90 Kgs

PIPEWORK CONNECTIONS

Water supply connection: ½" BSP Male
Overflow pipe: ¾" BSP Male
System Connections: 22mm Compression

ELECTRICAL CONNECTIONS

In the interest of electrical safety a local means of isolating the electrical supply should be located as close as is practical to the unit.

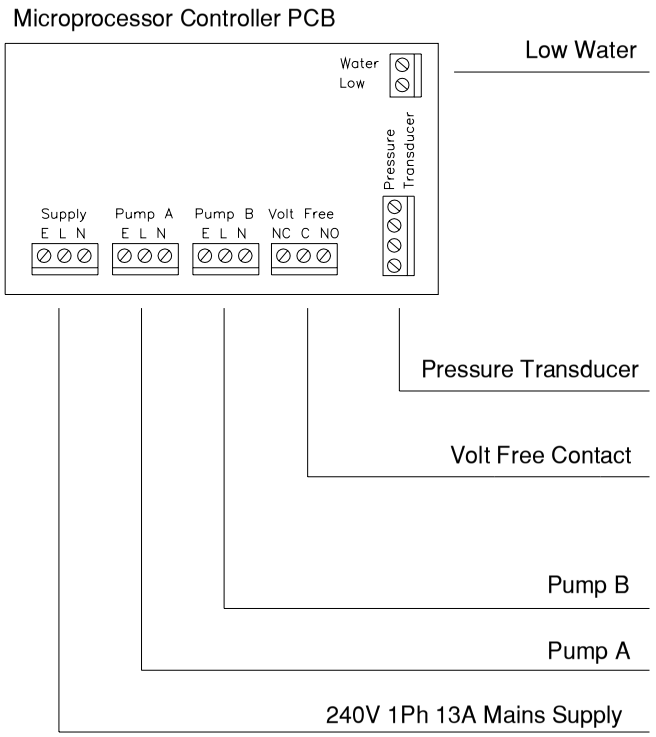
The electrical supply should be connected to a 240 volt single phase 13 amp supply only.

All cables must be of an adequate size to prevent excessive voltage drop in the supply to the unit. The electrical installation should be in accordance with the latest issue I.E.E. regulations.

The IMpress units are supplied with approximately 4m mains supply cable for connection into a local isolator switch adjacent to the unit.

Rev No	Revision	Date
1	Up-dated in line with PCB changes	15.08.07

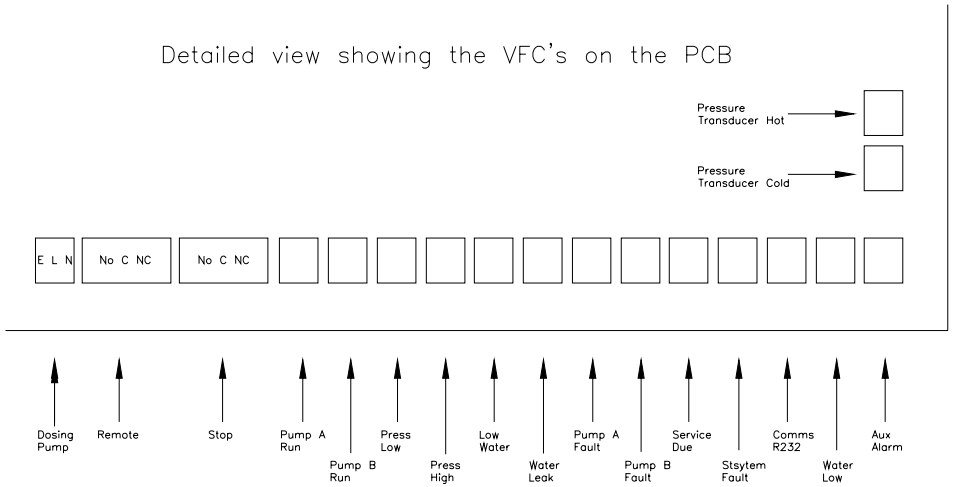
IMpress

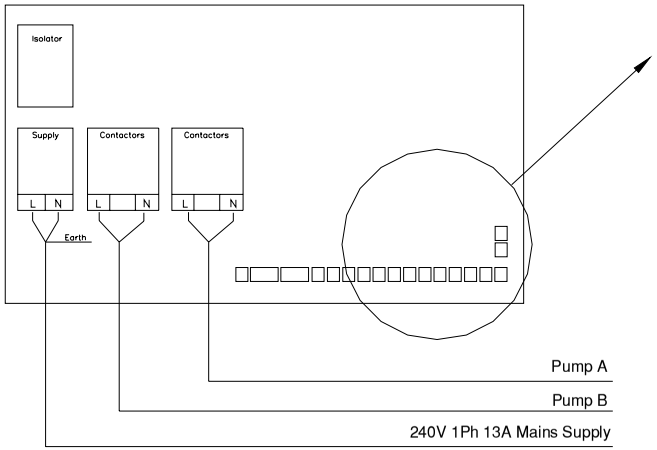


GRUNDFOS	DRAWN BY Huw Lloyd	APPROVED
IMpress Electrical Details	DATE 07.07.05	DATE
GBDN1041	SHEET 1 OF 3	REVISION 1

Rev No	Revision	Date
1	Drg up-dated in line with PCB	15.08.07

Detailed view showing the VFC's on the PCB





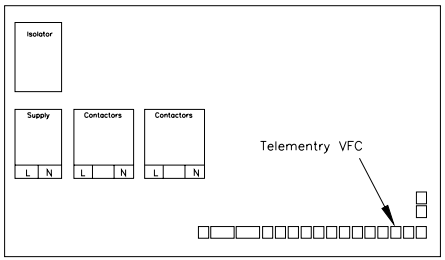
Simplistic view of the IMpress Advanced PCB

GRUNDFOS	DRAWN BY Huw Lloyd	APPROVED
IMpress Advanced, IMpress H/C & IMpress Glycol Electrical Details	DATE 15.08.07	DATE
GBDN1041	SHEET 2 OF 3	REVISION 1

Rev No	Revision	Date
1	Up-dated in line with PCB	15.08.07

IMpress Advanced Communications/Telementry Feature

1a. RS-232 Data Stream - Hardware Connection



TELEMENTRY VOLT-FREE CONTACT - 250mA/100vDC MAX

The RS-232 Dats connection is located on the Telementry Circuit Board. Connect TXD (Transmit Data) and GND (Ground) to your BMS or PC's RS-232 Port as required.

Communication Specification:-
Async. 9600 baud, 8-Bits, No Parity, 1 Stop Bit (8N1)

1b. RS-232 Data Stream - Software Specification

0000000000000000<CR><LF>
D-IMpress-A0A1A2A3A4A5A6A7A8A9<CR><LF>

The RS-232 Data Stream is a 48 byte asynchronous Packet transmitted at 9600 baud, 8 Bits, No Parity, 1 Stop Bit (8N1), approximatley once every 20 seconds whilst the IMpress Advanced is operating normally (ie not in Standby Mode).

The first section is a 16 byte NULL String (00x) preamble terminated with CR/LF pair (0Dx0Ax).

Then follows the IMpress Advanced family identification header D-IMpress-(44x2Dx49x4Dx70x72x65x73x73x2Dx), followed by an 18 byte ASCII HEX pair Data sequence (detailed below) which is finally terminated with a CF/LF (0Dx0Ax).

Hex Pair	Description
A0	System Pressure in 100 milliBar steps. Example '1A' Hex (31x41x) represents decimal 26 namely 2.6 Bar.
A1	Set point Pressure in 100 milliBar steps. Example '0E' Hex (30x0Ex) represents decimal 15 namely 1.5 Bar.
A2	Error status Byte A (Bit Set on Error/Condition) Bit 0 - Pressure Low Error Bit 1 - Pressure High Error Bit 2 - Water Low Error

Hex Pair	Description
A2	Bit 3 - Water Leak error Bit 4 - General Pump Fault (any/all Pumps) Bit 5 - Service Due Error Bit 6 - System Fault Error Bit 7 - System LOCKED
A3	Error Status Byte B (Bits Set on Error/Condition) Bit 0 - Pump A Failure Bit 1 - Pump B Failure Bit 2 - Pump C Failure Bit 3 - Pump D Failure Bit 4 - Pumptest Failure Bit 5 - Water Refilling Flag Bit 6 - Special Feature Bit 7 - Sensor Error
A4	Pump A Run Status. Speed proportional control byte in 255 increment steps (ie 00 (30x30x) represents decimal decimal zero (Pump Off), FF (46x46x) represents decimal 255 (Pump running maximum speed)
A5	Pump B Run Status (see Pump A description)
A6	Reserved for Future Use. Zero Data (30x30x)
A7	Reserved for Future Use. Zero Data (30x30x)
A8	Data Integrity Check Digit. Ones-compliment of bytes A0 tru A7

GRUNDFOS	DRAWN BY Huw Lloyd	APPROVED
IMpress Advanced, IMpress H/C & IMpress Glycol Electrical Details	DATE 15.08.07	DATE
GBDN1041	SHEET 3 OF 3	REVISION 1

VOLT FREE CONTACTS CONNECTIONS

IMpress (Standard) Unit

If a connection to the volt free contact (VFC) is required, it is necessary to remove the cover from the control box within the cabinet as follows.
After removal of the cabinet top and front panels, remove the four screws from the control box front cover. The display is connected to the back circuit board by a cable. If required, the display can be detached by unplugging from the cable from the main circuit board. Push back the locking tabs at each end of the connector and remove the connector, do not pull on the cable. Do not attempt to detached from the display board on the front cover. The VFC changeover terminals are marked 'STOP'.
No other connections are required or should be made into the control box.

IMpress Advanced, IMpress Glycol and IMpress H/C

If a connection to the volt free contacts (VFC) is required, it is only necessary to remove the cover of the VFC connection box on the side of the cabinet. **There is no need to remove the cover from the control box within the cabinet.**

CABLE GLANDS

A single M12 cable gland is included, which can be fitted once the M12 knockout has been carefully removed.
The VOLT FREE Contacts are marked C=Common, NC=Normally Closed, NO=Normally Open. The maximum contact rating is 240V AC 10A (Resistive).

COMMISSIONING GUIDE

Do not attempt to start the pump(s) even to check the direction of rotation until the system has been filled with water and both the pump and the system have been primed/vented.

Arrangements should be made for an engineer to commission the pressurisation unit. Please contact the GRUNDFOS service company EUROPUMP SERVICES LTD by telephoning 08450 508100 where arrangements can be made for an engineer to commission the unit.

FILLING

The system should be initially filled via a filling loop. Turn on the water supply and ensure the tank fills properly and stops. Ensure there are no leaks. DO NOT ALLOW the tank to empty, and the pumps to run dry, as this could invalidate the pump warranty. This is especially important after initial installation and during the fill cycle.

OPERATION

Do not attempt to supply electricity to the control panel and run the pump electric motors without ensuring that all electrical fittings, cables and enclosures are intact and suitably electrically isolated from human touch during operation.

Pump electric motors will have hot external surfaces during operation and care must be taken to ensure that people cannot come into contact with the surfaces of the electric motors.

When all electrical covers are in place, and the pumps have been vented, and the cabinet covers replaced, then the electrical supply to the unit can be switched on.

The pressurisation unit will start two seconds after electrical supply has been applied.

CONTROL

THE PANEL BUTTONS & INDICATORS

Digital Display
The Liquid Crystal Display (LCD) shows the current operational status along with any error conditions.

DOWN Button
When in Set-Up/Menu Mode, this button is used to decrease (where permitted) any displayed value.

UP (Mute) Button
When in Normal (Operational) Mode, pressing this button will cause the controller to toggle the Alarm Beeper On or Off. When in Set-Up/Menu Mode, this button increases (where permitted) any displayed value.

STATUS LED
This indicator will display GREEN when all systems are operating within normal parameters, and will flash RED if an Alarm Condition exists.

SET (Set-Up/Menu) Button
When in Normal (Operational) Mode, pressing this button will cause the controller to jump into the Set-Up (Menu) Mode. When in Set-Up Mode, this button will cause any displayed value to be saved, and will progress to the next item.

SET-UP/MENU MODE

To enter the **Set-Up/Menu Mode**, press the **SET** Button whilst the unit is in its Normal (Operational) Mode. The Display will change prompting the user with **Enter PIN:** You now need to enter a valid PIN. The Factory PIN is 0000 (4 Zero's).


Use the **UP** and **DOWN** Buttons to scroll through selecting the individual character for each of the four possible characters making up the PIN.

Press **SET** to advance from one character to the next. For security, the previously entered character changes to a star '*' , press set again after the fourth character.

Access is gained to the Set-Up menu, after a correct PIN entry (0000). An incorrect PIN entry will cause "**INVALID PIN**" to be displayed. If you need to reset the PIN (to all blanks), press and hold the set button, whilst powering up the pressurisation unit. This button must be held for at least FIVE seconds.

SET UP MENU

Set Pressure:
Enter the pressure the required cold fill cut out pressure, the cut in pressure is set under differential (see below). Setting range 0.5 to 16 bars, default setting: 1.5 bars.

Pump A/B Control:
Select between **OFF** - Pump is disabled, **Auto** - Pump is available for operation, or **ON** - Pump is switched manual ON. Manual ON, causes the pump to run for approximately 30 seconds. Use the **UP or DOWN** Keys to switch pump off before the 30 seconds has elapsed time if required. Default setting: Auto

Pump Lettering. Pump A is designated as the first (or only) pump in the unit. Pump B is the second pump (where fitted). Some Set-Up/Menu options are repeated for a multiple-pump installation. These options will not appear if a single pump installation is enabled.

Differential
This is the pressure at which a pump engages below the Set Pressure. The pump will switch off when the Set Pressure is reached. Setting range 0 to 16 bars, default setting 0.3 bars. Note, the setting for Differential B can be ignored.

Pump Test
This feature prevents pumps seizing up through inactivity, by briefly running a pump if it has not been run after a set number of hours. Setting range 0 to 250 hours, if set to 0, the feature is disabled. This is not recommended for small systems, as it can gradually raise the system pressure over a period of time, if there are no leaks.

P- Low Alarm On, and P- Low Alarm Off
The pressures at which the low pressure alarm comes on and goes off at. Setting range 0 to 25 bar, default setting: On = 1 bar, Off = 1.3 bar.

P-High Alarm On, and P- High Alarm Off
The pressures at which the high pressure alarm comes on and goes off at. Setting range 0 to 25 bar, default setting: On = 2.5 bar, Off = 2.2 bar.

Water- Low Alarm
This should be set to **Alarm on Make**.

Water- Low Reset
The time until the pumps can operate again following a Water-Low Alarm. Setting range 0-255 seconds, default 120 seconds. This prevents pumps from continually switching on and off of the tank float switch.

Leak Alarm
An alarm is caused if pumps have run for equal to or more than the total cumulative preset time in any hour (excludes Manual-On). If set to 0 seconds this feature is disabled. Setting range 0 to 59 minutes, default setting: 0 seconds.

Volt Free Relay
Sets all the conditions that operate the volt free relay. The **Failsafe** option reverses the operation of the relay, i.e. it is de-energised on fault. Failsafe allows for the provision of an Alarm on Power-Failure to be programmed. The operation of the NC/NO contacts are reversed if the Failsafe setting option is used.

Beeper / Alarm LED
Sets all the conditions that will enable the audible Beeper and Alarm LED.
The **Beeper Key Press** setting enables or disables the audible 'plip' every time a panel control button is pressed.

LED Constrast : LCD Backlight
Changes the LCD display contrast ratio, setting range 0 to 6, default setting 2.
LCD backlight level adjust to suit lighting conditions, setting range 0 to 5, default setting 2.

Standby Mode
When set to 'Yes', causes the unit to enter Standby Mode following Power-On. The **SET** button will need to be pressed for at least five seconds to start the pressurisation unit. When set to 'NO' causes the unit to start as soon as power is applied.

User PIN
Sets the PIN (Password) to enter the Set-Up mode. The default setting is 0000
Passwords: Four characters need to be entered. The PIN is case sensitive, so 'abcd' is *NOT* the same as 'ABCD'. A setting of 'all spaces' (blanks), disables the PIN.
Whilst it is recommended that a PIN be always programmed to prevent unauthorised tampering, the User Set-Up Menu is factory shipped without a PIN to facilitate initial configuration. Please record and retain any PIN codes that you set.

MAINTENANCE

IMPORTANT: There are NO User Serviceable parts inside this equipment. Please Refer Servicing to Qualified Personnel.

Grundfos pressurisation units have been designed to require the minimum of maintenance. While the unit requires minimal maintenance it should be inspected on a regular basis, as failure of the unit could potentially cause personal injury and considerable damage. It is therefore recommended that a Grundfos maintenance contract be taken out to cover maintenance of the unit. Please contact Grundfos Europump Service department on 0845 508 100 for further details.
However, it is the customer's responsibility to inspect the unit in addition to any maintenance contract to ensure the safety and correct operation of the unit during the interim periods between service visits. It is recommended that the following checks be carried out at regular intervals.

1. Check there are no leaks on pipe work both in and around the unit.
2. Check the unit is on, the unit **must** be switched on all the time.
3. Check for any corrosion.
4. Check unit operates quietly and smoothly.
5. Check that the electrical mains lead to unit is not damaged.

USER SETUP

SET-UP ITEM DESCRIPTION	FACTORY VALUE	PERMITTED OPTION RANGE
Standby Mode	Yes	Yes, No
Set Pressure	1.5 Bar	0.5-16.0 Bar
Pump-A Control	Auto	Auto, OFF, ON
Differential-A	0.3 Bar	0.0-16.0 Bar
Hold-Off-A	0	0.0-16.0 Bar
Run-On-A	0	0-250 Seconds
Cooldown Delay-A	0	0-250 Seconds
Pump-B Control	Auto	Auto, OFF, ON
Differential-B	0.3 Bar	0.0-16.0 Bar
Hold-Off-B	0	0.0-16.0 Bar
Run-On-B	0	0-250 Seconds
Cooldown Delay-B	0	0-250 Seconds
Inter-Pump Delay	3	0-60 Seconds
Pump Test	0	0-250 Hours
P-Low Alarm-On	1.0 Bar	0.0-25.0 Bar
P-Low Alarm-Off	1.3 Bar	0.0-25.0 Bar
P-High Alarm-On	2.5 Bar	0.0-25.0 Bar
P-High Alarm-Off	2.2 Bar	0.0-25.0 Bar
Water Low Mode	Alarm on Make	Alarm on Make, Alarm on Break
Water Low Reset	120	0-255 Seconds
Leak Alarm	0	0-59 Minutes
Stop Relay		
- Pressure Low	- ON	- ON, OFF
- Pressure High	- ON	- ON, OFF
- Water Low	- OFF	- ON, OFF
- Water Leak	- OFF	- ON, OFF
- Pump Fault	- OFF	- ON, OFF
- Service Due	- OFF	- ON, OFF
- System Fault	- ON	- ON, OFF
- Failsafe	- OFF	- ON, OFF
Beeper		
- Pressure Low	- ON	- ON, OFF
- Pressure High	- ON	- ON, OFF
- Water Low	- ON	- ON, OFF
- Water Leak	- ON	- ON, OFF
- Pump Fault	- ON	- ON, OFF
- Service Due	- ON	- ON, OFF
- System Fault	- ON	- ON, OFF
- Keypress	- ON	- ON, OFF
Alarm LED		
- Pressure Low	- ON	- ON, OFF
- Pressure High	- ON	- ON, OFF
- Water Low	- ON	- ON, OFF
- Water Leak	- ON	- ON, OFF
- Pump Fault	- ON	- ON, OFF
- Service Due	- ON	- ON, OFF
- System Fault	- ON	- ON, OFF
- System Lock	- ON	- ON, OFF
Set Contrast	2	0-6
Set Backlight Level	2	0-5
User PIN	0000	*Any 4 displayable characters*

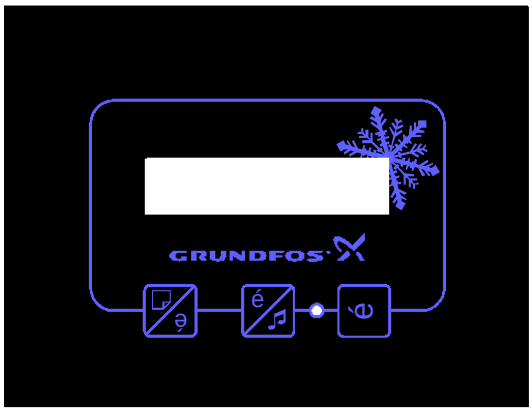
IMpress GLYCOL

Overview.

The IMPRESS GLYCOL model is an enhanced version of the IMPRESS ADVANCED with some additional Hardware and Software.

At-a-Glance

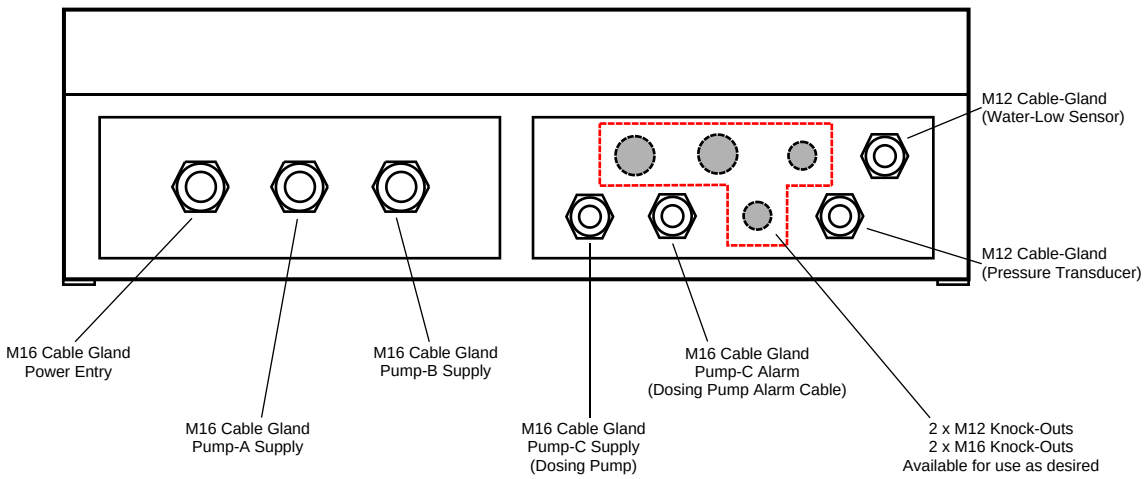
The noticeable differences are that the GLYCOL version has a SNOWFLAKE on the face of the Control Panel Decal, and two additional grey M16 Cable-Glands fitted to the enclosure. On Power-Up the display identifies with the word GLYCOL.



Cable-Entry

Facilities for Cable Entry have been much expanded to keep abreast of additional Alarm, BMS/Telemetry and Communications features. The Bottom of the Control Box is provided with two additional grey M16 Cable Glands and FOUR additional knock-outs for M12 and M16 Cable Glands.

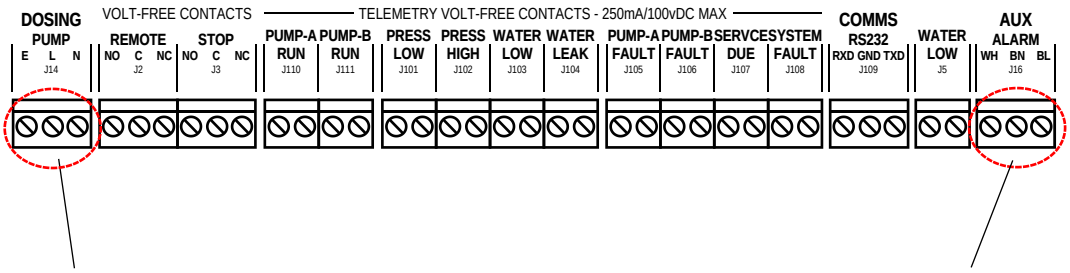
Control Panel (Base View) GLYCOL Version



Terminal Connections

The GLYCOL Main Board has the same connector arrangement as the standard IMPRESS ADVANCED Board with two noticeable differences;

Main PCB (Internal Front View)
Terminal Connections
GLYCOL Version



Dosing Pump Supply

AUX Alarm Sensor Input

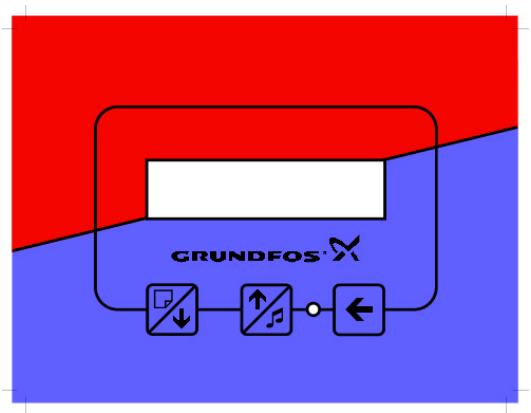
IMpress H/C

Overview.

The IMPRESS H/C model is an enhanced version of the IMPRESS ADVANCED ADVANCED with some additional Hardware and Software. To connect either of the transducers will result in a SYSTEM FAILURE and the controller will shut-down.

At-a-Glance

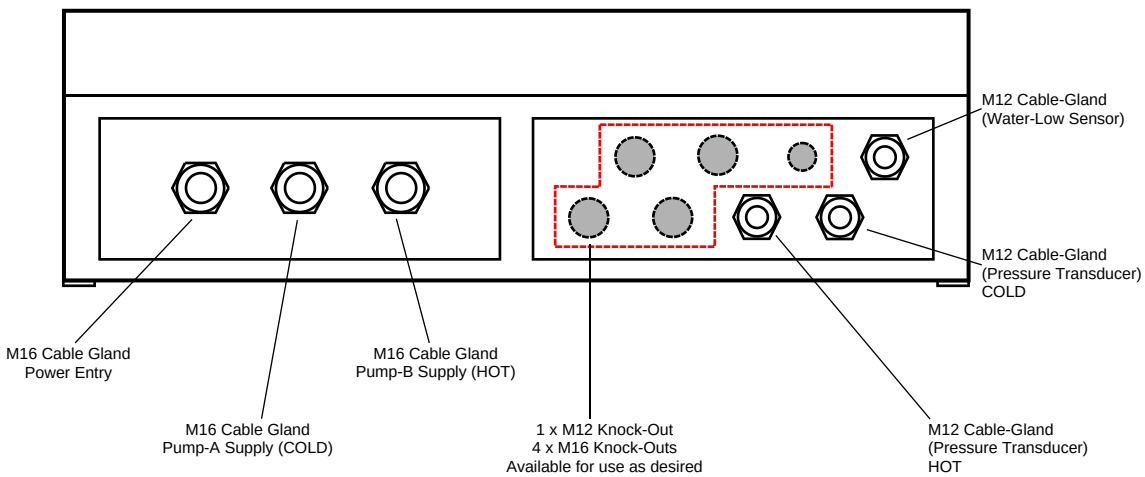
The noticeable differences are that the TWIN version has a TWO COLOUR (red & Blue) Control Panel Decal (eg Hot & Cold). Additionally the TWIN has TWO transducer cables fitted, one for each plumbing circuit. On Power-Up the display identifies with the word DUAL.



Cable-Entry

Facilities for Cable Entry have been much expanded to keep abreast of the additional Alarm, BMS/Telemetry and Communications features of the Impress Advanced Mk-2. The Bottom of the Control Box is provided with two additional grey M16 Cable Glands and FOUR additional knock-outs for M12 and M16 Cable Glands.

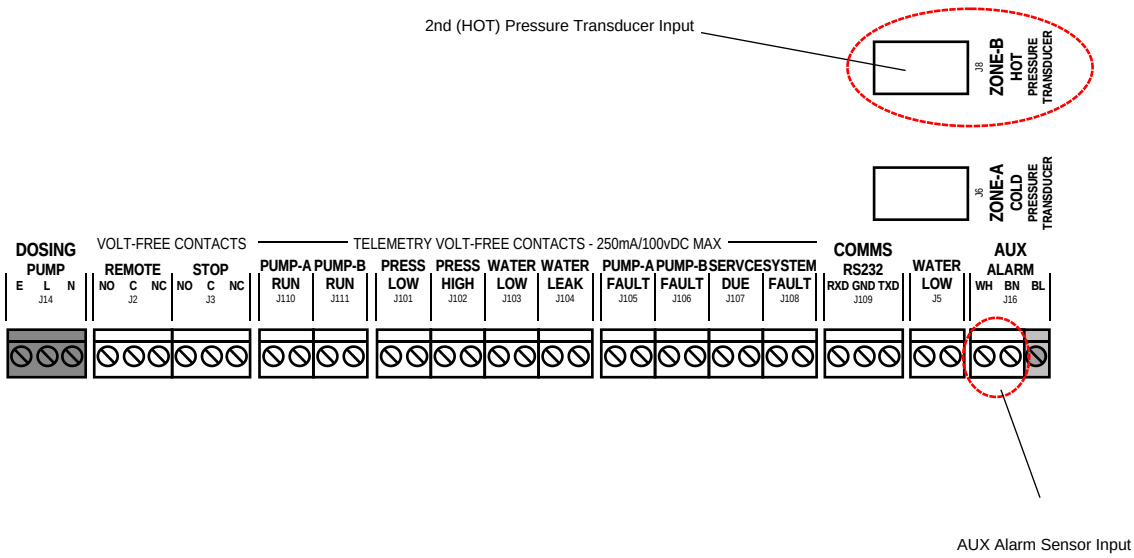
Control Panel (Base View) DUAL Version



Terminal Connections

The Controller has the additional circuitry and connector fitted to accept a 2nd Pressure Sensor for the (HOT) plumbing circuit at connector J8.The existing transducer connector is the COLD circuit. BOTH transducers need to be connected, otherwise a SYSTEM FAILURE condition will exist.

Main PCB (Internal Front View)
Terminal Connections
IMpress H/C
Note: Greyed-out terminals may not be installed in this version



Control Settings

CONFIGURE to access the COLD sub-section or SKIP SUB-MENU to bypass this section.

By selecting CONFIGURE and pressing the SET Button, you will then have access to the following **COLD CHANNEL** options:-

Set Pressure
Pump A Hand-Off-Auto
Pump A Differential
Pump A Hold-Off *(see Note A)*
Pump-A Run-On *(see Note A*)
Pump A Cooldown *(see Note A)*
Pump B Hand-Off-Auto *(see Note B)*
Pump B Differential *(see Note B)*
Pump B Hold-Off *(see Note A and Note B)*
Pump-B Run-On *(see Note A and Note B)*
Pump B Cooldown *(see Note A and Note B)*
Pressure Low Alarm-On *(see Note C)*
Pressure Low Alarm-Off *(see Note C)*
Pressure High Alarm-On *(see Note C)*
Pressure High Alarm-Off *(see Note C)*

All of the above options operate in exactly the same way as they do on any other IMpress unit, but they only affect the COLD channel operation.

HOT Set-Up:

Similarly to the COLD Set-UP, there are a number of Set-Ups that refer to the HOT only which have been separated out for clarity into a separate sub-section. This sub-section (for the HOT) Is accessed through the HOT SET-UP option. Select CONFIGURE to access the HOT sub-section or SKIP SUB-MENU to bypass this section.

By selecting CONFIGURE and pressing the SET Button, you will then have access to the following **HOT CHANNEL** options:-

Set Pressure
Pump C Hand-Off-Auto
Pump C Differential
Pump C Hold-Off *(see Note A)*
Pump-C Run-On *(see Note A*)
Pump C Cooldown *(see Note A)*
Pump D Hand-Off-Auto *(see Note B)*
Pump D Differential *(see Note B)*
Pump D Hold-Off *(see Note A and Note B)*
Pump-D Run-On *(see Note A and Note B)*
Pump D Cooldown *(see Note A and Note B)*
Pressure Low Alarm-On *(see Note C)*
Pressure Low Alarm-Off *(see Note C)*
Pressure High Alarm-On *(see Note C)*
Pressure High Alarm-Off *(see Note C)*

All of the above options operate in exactly the same way as they do on any other IMpress unit, but they only affect the HOT channel operation.

Pressure Display Change

The system pressures, simultaneously for both HOT and COLD are displayed in the form:-

C: 2.1B H: 1.9B

Where C: indicates the COLD circuit in the range to a maximum of 10.0 Bar, and H: indicates the HOT circuit similarly to 10.0 Bar.

All other options and features remain the same as for the standard unit previously described.

FAULT FINDING

PRESSURE HIGH	The system pressure has exceeded the Pressure-High Alarm. The pumps will STOP until the pressure drops below the Pressure-High Alarm OFF Level. Check that the Pressure-High Alarm setting has not been set too low. Check that the capacity of the expansion tanks is adequate for the system. Check that the pre-charge pressure has been set correctly.
PRESSURE LOW	The system pressure has dropped below the Pressure-Low Alarm setting. This will NOT stop the pumps from running unless the Water Leak alarm has cut in.
PUMP A FAULT PUMP B FAULT	Indicates that either the pump-Overload has tripped (ADVANCED model) or the respective Pump FUSE has blown.
PUMP TEST FAILURE PUMP A FAULT PUMP B FAULT	Displayed along with a respective indication of which pump has failed the pump test. Check whether the pump shaft is free to turn. Check that the pumps are vented.
SENSOR ERROR	Pressure sensor fault. Check the cables to the pressure sensor.
SERVICE DUE	The unit has reached the SERVICE DUE interval. It is important that an engineer attends site to inspect the unit, as soon as possible.
SYSTEM FAILURE	Can be displayed along with SENSOR ERROR - in this case check the Sensor or it's Cabling FIRST. If displayed just on its own, then the controller could be faulty. Replace as a module.
SYSTEM LOCK	Indicates the System has been Locked from operating.
WATER LEAK	The pumps have exceeded the maximum time they are allowed to run in any given hour. Reset this alarm by Powering-OFF and back again.
WATER LOW	Sensor (Float Switch), low water level in break tank. Check water level. Check ball valve, if level is low. Check wiring to float switch if level is OK.
WATER LOW WATER REFILLING	This not a fault condition, but is for information, and indicating that the water has now satisfied the Sensor/Float but the controller is allowing the tank to refill before operating the pump again. See the Water Low Reset user Set-Up option, for the reset time.

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