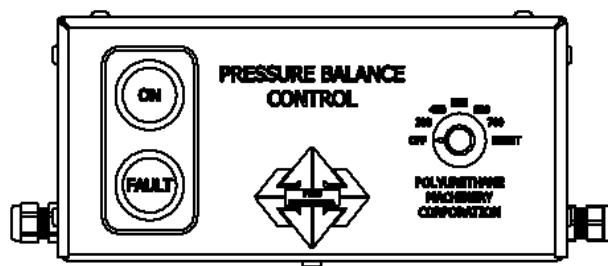




POLYURETHANE MACHINERY CORPORATION



For Installation onto
PH-25, PH-40, PHX-25, and PHX-40
Proportioners

Pressure Balance Control Box

For Better Control Over Chemical
Pressure Imbalance
For Professional Use Only
Not approved for use in explosive
atmosphere locations

Manual
Ref. # 07000

REV 1.0

Polyurethane Machinery Corp.

Corporate: 1 KOMO Drive, Lakewood, NJ 08701
Manufacturing: 2 KOMO Drive, Lakewood, NJ 08701
Phone: 732-415-4400 Fax: 732-364-4025

<http://www.polymac-usa.com>



Before installing and starting up the Pressure Balance Control Box, carefully read all the technical and safety documentation included in this manual. Pay special attention to the information in order to know and understand the operation and the conditions of use of the Pressure Balance Control Box. All of the information is aimed at improving user safety and avoiding possible breakdowns from the incorrect use of the Pressure Balance Control Box.

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Install the Pressure Balance Control Box using the provided instructions. If instructions are lost or not provided, contact an authorized PMC distributor, download, or print an instruction manual from www.polymac-usa.com. If components are not fully installed, the unit or proportioner may not work properly. If there are problems understanding or installing the unit, please contact an authorized PMC distributor.

WARRANTY

Polyurethane Machinery Corporation (hereinafter “PMC”) provides this LIMITED WARRANTY (hereinafter “Warranty”) to the original purchaser (hereinafter “Customer”) covering this equipment and the original PMC manufactured accessories delivered with the equipment (hereinafter “Product”) against defects in material or workmanship of the Product (hereinafter “Defect” or “Defective”) for a period of one (1) year from the date of first purchase as shown on the original PMC invoice (hereinafter “Warranty Period”).

If during the Warranty Period under normal use, the Product is suspected by Customer to be Defective in material or workmanship, it is Customer’s responsibility to contact PMC and return the Product to PMC as directed by PMC, freight prepaid. If PMC determines that the Product is Defective and that such Defect is covered by this Warranty, PMC will credit Customer for the reasonable freight charges incurred by Customer in returning the Defective Product to PMC, and PMC (or its authorized agent) will, at PMC’s option, repair or replace the Product, subject to the following:

Original Invoice: The original invoice must be kept as proof of the date of first sale and the Product serial number. The Warranty does not cover any Product if the Original Invoice appears to have been modified or altered, or when the serial number on the Product appears to have been altered or defaced.

Product Maintenance: It is the Customer’s responsibility to maintain the Product properly. See your maintenance schedule and owner’s manual for details. The Warranty does not cover an improperly maintained Product.

Non-PMC Components and Accessories: Non-PMC manufactured components and accessories that are used in the operation of the Product are not covered by this Warranty. Such components and accessories shall be subject to the warranty offered to the Customer, if any, by the original manufacturer of such component or accessory.

Other Warranty Exclusions: The Warranty does not cover any Product that PMC determines has been damaged or fails to operate properly due to misuse, negligence, abuse, carelessness, neglect, or accident. By way of example only, this includes:

- Normal wear and tear.
- Improper or unauthorized installation, repair, alteration, adjustment or modification of the Product.
- Use of heating devices, pumping equipment, dispensers, or other parts or accessories with the Product that have not been approved or manufactured by PMC.
- Failure to follow the operating instructions and recommendations provided by PMC.
- Cosmetic damage.
- Fire, flood, “acts of God,” or other contingencies beyond the control of PMC.

WARRANTY

THE WARRANTY DESCRIBED HEREIN IS THE EXCLUSIVE REMEDY FOR THE CUSTOMER AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, AND THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND ALL OTHER WARRANTIES ARE HEREBY DISCLAIMED. TO THE FULLEST EXTENT PERMITTED BY LAW, PMC SHALL NOT BE RESPONSIBLE, WHETHER BASED IN CONTRACT, TORT (INCLUDING, WITHOUT LIMITATION, NEGLIGENCE), WARRANTY OR ANY OTHER LEGAL OR EQUITABLE GROUNDS, FOR ANY CONSEQUENTIAL, INDIRECT, INCIDENTAL, LOST PROFITS, SPECIAL, PUNITIVE OR EXEMPLARY DAMAGES, WHETHER TO PERSON OR PROPERTY, ARISING FROM OR RELATING TO THE PRODUCT, EVEN IF PMC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH LOSSES OR DAMAGES.

Non-Warranty Service by PMC: If PMC determines that the suspected Defect of the Product is not covered by this Warranty, disposition of the Product will be made pursuant to the terms and conditions of PMC's written estimate on a time and materials basis.

Continuing Warranty for Products Repaired or Replaced under Warranty: Following the repair or replacement of a Product covered by this Warranty, such Product will continue to be subject to the original Warranty for the remainder of original Warranty Period or for three (3) months from the repair or replacement date, whichever is longer.

No Rights Implied: Nothing in the sale, lease or rental of any Product by PMC shall be construed to grant any right, interest or license in or under any patent, trademark, copyright, trade secret or other proprietary right or material owned by anyone; nor does PMC encourage the infringement of same.

Exclusive Warranty: This writing is the final, complete, and exclusive expression of the Warranty covering the Product. Any statements made by PMC, its employees or agents that differ from the terms of this Warranty shall have no effect. It is expressly understood that Customer's acceptance of this Warranty, by performance or otherwise, is upon and subject solely to the terms and conditions hereof, and any additional or different terms and conditions proposed or expressed by Customer or anyone, whether in writing or otherwise, are null and void unless specifically agreed to in writing by an Officer of PMC.

SAFETY AND HANDLING

This chapter contains important information on the safety, handling, and use of your Pressure Balance Control Box.



Before installing, using, and performing maintenance on your Pressure Balance Control Box, carefully read and comprehend all the technical and safety information included in this manual. The information is aimed at enhancing user safety and avoiding possible breakdowns caused by incorrect or improper use.

Always disconnect the console from the main power source before performing ANY maintenance on electrical equipments.

WARNING! Presents information to alert of a situation that might cause serious injuries if the instructions are not followed.

CAUTION Presents information that indicates how to avoid damage to the Proportioner or how to avoid a situation that could cause minor injuries.

NOTE! Is relevant information of a procedure being carried out.

Careful study of this manual will enable the operator to understand the characteristics of the Pressure Balance Control Box and the operating procedures. By following the instructions and recommendations contained herein, you will reduce the potential risk of accidents during the installation, use, and maintenance of the Pressure Balance Control Box. You will also provide a better opportunity for increased output, incident-free operation for a longer time, and the possibility of detecting and resolving problems quickly and simply.

Keep this User Manual for future consultation of useful information at all times. If you lose this manual, ask for a new copy from your authorized PMC distributor or go online at our web site (www.polymac-usa.com).

When working with the Pressure Balance Control Box in conjunction with the Proportioner, it is recommended that the operator wear suitable clothing and elements of personal protection, including, without limitation, gloves, protective goggles, safety footwear, and face masks. Use breathing equipment when working with the Proportioner in enclosed spaces or in areas with insufficient ventilation. The introduction and follow-up of safety measures must not be limited to those described in this manual. Before starting up the Proportioner, a comprehensive analysis must be made of the risks derived from the products to be dispensed, the type of application, and the working environment.



To prevent possible injury caused by incorrect handling of the raw materials and solvents used in the process, carefully read the Material Safety Data Sheet (MSDS) provided by your supplier.
Deal with waste caused according to current regulations.
Pour éviter toute blessure causée par une mauvaise manipulation des matières premières et les solvants utilisés dans le processus, veuillez lire attentivement la fiche signalétique (MSDS) fournies par votre fournisseur.



To avoid damage caused by the impact of pressurized fluids, do not open any connection or perform maintenance work on the components subject to pressure until the pressure has been completely eliminated.
Pour éviter les dommages causés par l'impact des fluides sous pression, ne pas ouvrir un lien ou d'effectuer des travaux d'entretien sur les éléments soumis à la pression jusqu'à ce que la pression a été complètement éliminé.



Use suitable protection when operating, maintaining or being present in the area where the equipment is functioning. This includes, but is not limited to, the use of protective goggles, gloves, shoes and safety clothing and breathing equipment.
Utiliser une protection appropriée utilisation, d'entretien ou d'être présents dans la région où le matériel fonctionne. Cela inclut, mais n'est pas limité à, l'utilisation de lunettes de protection, gants, chaussures et vêtements de sécurité et un équipement respiratoire.



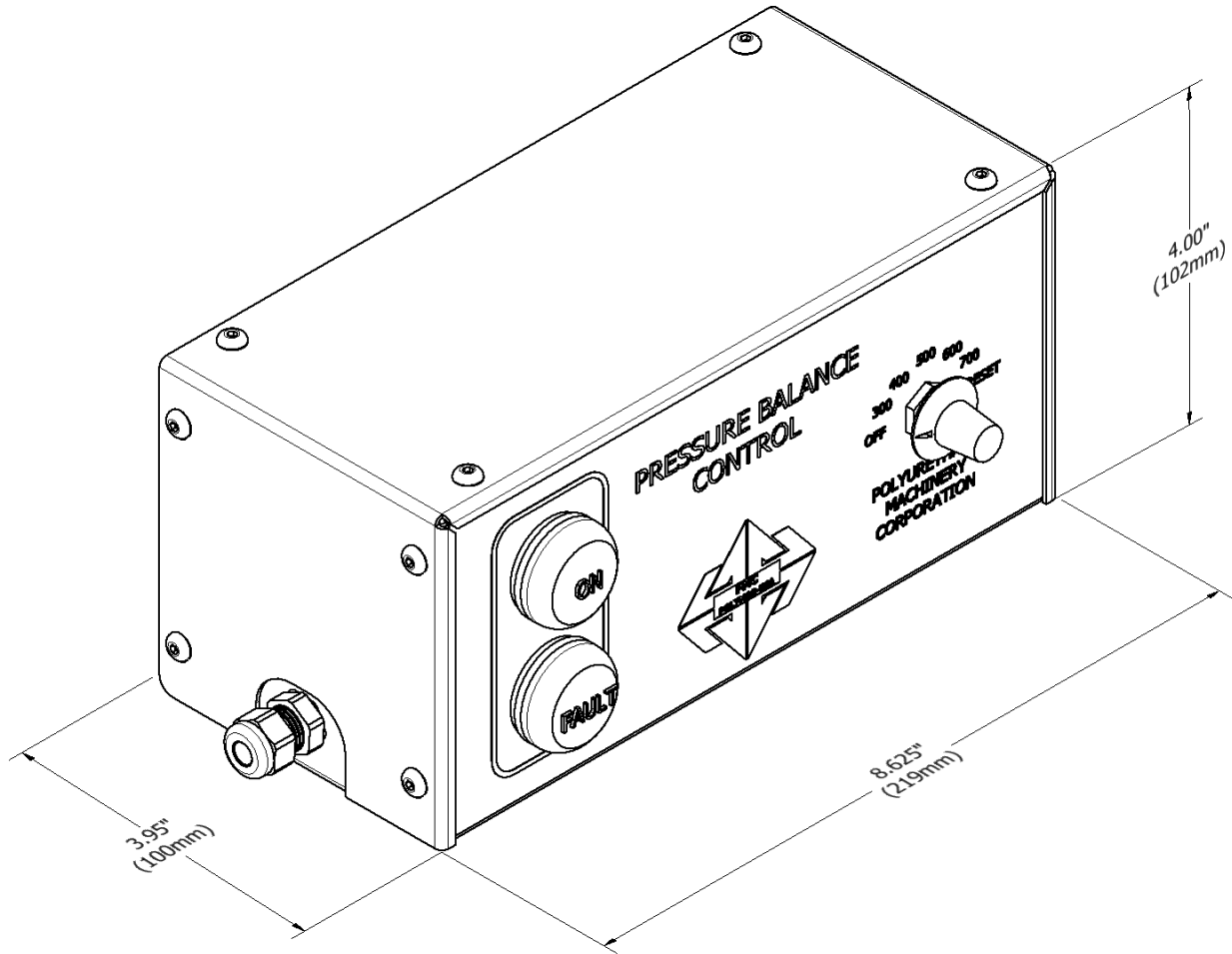
The equipment includes components that reach high temperatures and can cause burns. Hot parts of the equipment must NOT be handled or touched until they have cooled completely.
L'équipement comprend des éléments qui atteignent des températures élevées et peuvent provoquer des brûlures. Les parties chaudes de l'équipement ne doit pas être manipulé ou touché jusqu'à ce qu'ils aient complètement refroidi.



To prevent serious injury through crushing or amputation, do not work with the equipment without the safety guards installed on the moving parts. Make sure that all the safety guards are correctly reinstalled at the end of the repair or maintenance work of the equipment.
L'équipement comprend des éléments qui atteignent des températures élevées et peuvent provoquer des brûlures. Les parties chaudes de l'équipement ne doit pas être manipulé ou touché jusqu'à ce qu'ils aient complètement refroidi.



PHYSICAL SPECIFICATIONS



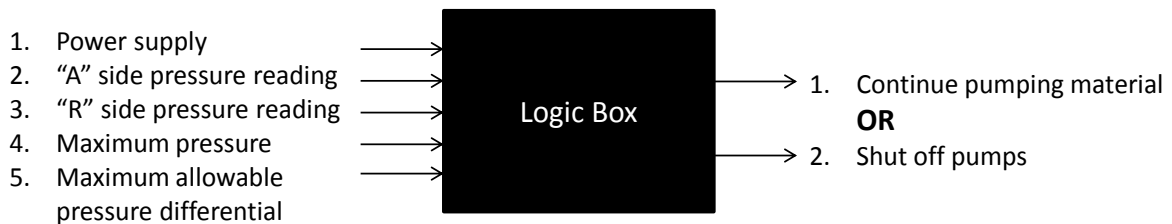
Supply/Operating Voltage _____ 24 VDC
 Power Consumption _____ 2.16 W
 Weight _____ 5lb (2.27 kg)
 Size _____ 3.95" (100) x 8.625" (219) x 4.00" (102)
 For Installation On _____ PH-25, PH-40, PHX-25, PHX-40

CHARACTERISTICS

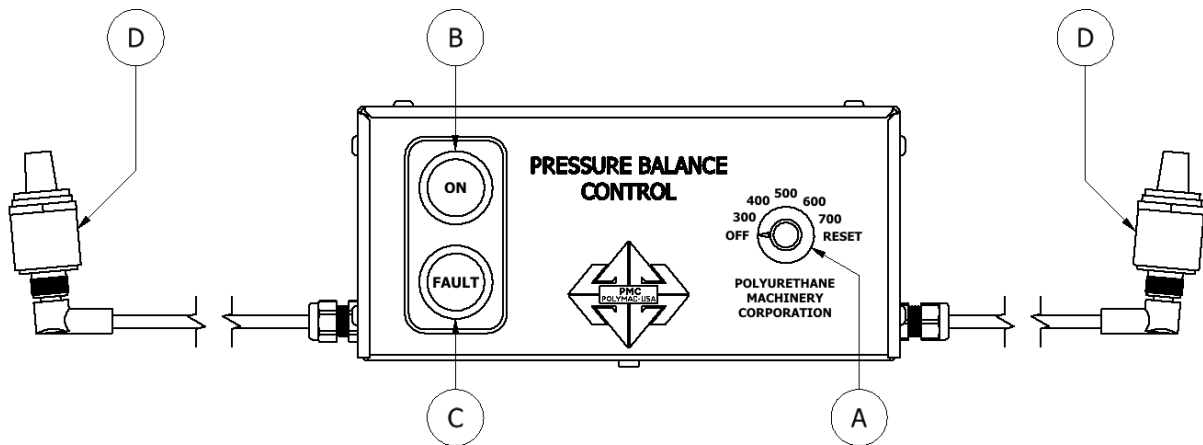
The Pressure Balance Control (PBC) Box provides better control over a chemical pressure imbalance. When the system is turned off, the Proportioner will perform as if there is no PBC box and will continue pumping material. When the system is turned on, it will continually monitor the pressure between the two chemicals (known as the **pressure differential**). If the pressure differential becomes equal to or greater than the set **maximum allowable pressure differential**, the pumps will be shut off.

The Pressure Balance Control Box can be simplified into a logic box diagram with inputs and outputs. There are five inputs: the power supply from the main console, the pressure readings from each chemical, the maximum pressure, and the maximum allowable pressure differential. Inside the logic box, the actual pressure differential of the chemicals is compared to the maximum allowable pressure differential. Depending on the circumstances of all five inputs, there are only two possible outputs: either the pumps will continue to pressurize and move material, or the pumps will shut off and flow will be lost.

Logic Box Representation



DESCRIPTION



- A. Selector Switch** – Allows the user to turn on/off the Pressure Balance Control System, specify the maximum allowable pressure differential, and reset the system after resolving a pressure imbalance.
- B. ON Light** – Indicates that the maximum allowable pressure differential has been specified by the user and the system is monitoring the actual pressure differential.
- C. FAULT Light** – Indicates that the actual pressure differential has become equal to or greater than the maximum allowable pressure differential and the pumps have shut off.
- D. Pressure Transducer** – Converts pressure measurements into electrical signals so the system can interpret the signals and react accordingly.

OPERATION

Position the selector switch on one of the three options:

- **Pressure differential number** – these consist of 300 PSI (20.7 bar), 400 PSI (27.6 bar), 500 PSI (34.5 bar), 600 PSI (41.4 bar), and 700 PSI (48.3 bar). Selecting any of these numbers with the switch will activate the green ON light. While the pressure differential numbers are selected, the control box will continually monitor pressure on both sides of the Proportioner. In the event that the pressure differential between both sides of the Proportioner is equal to or larger than the selected number, a fault is given (the red fault light is turned on and the active green light is turned off) and shuts down.
- **Off** – if the selector switch is placed in this position, the Proportioner will operate as though there is NO PRESSURE BALANCE CONTROL SYSTEM (neither the red fault light nor the active green light will be lit). The over pressure system will remain active for the machine and personnel protection.
- **Reset** – in the event of a pressure imbalance, resolve the Proportioner imbalance, position the selector switch on reset to clear the fault light and restore power to the Proportioner. After the fault has been cleared, position the switch in either a Pressure Differential number or in the Off Position to continue operations.

TROUBLE SHOOTING

This chapter contains information on possible faults that may interrupt the operation of the Pressure Balance Control System. The information provided will serve as a guideline to detect and resolve problems. In any case, feel free to contact your authorized PMC Distributor, where a qualified technician will advise you.

WARNING: Only qualified personnel should perform troubleshooting. Unqualified personnel may cause damage to the unit and put the operator at risk.



To prevent possible injury caused by incorrect handling of the raw materials and solvents used in the process, carefully read the safety data sheet provided by your supplier.

Deal with the waste caused according to current regulations.

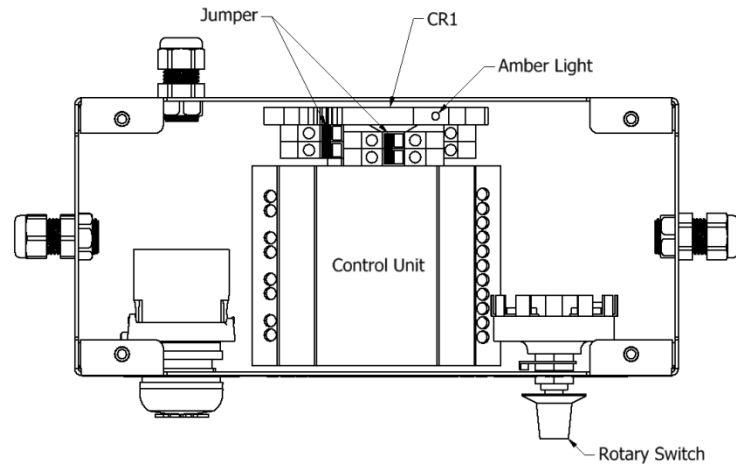
To avoid damage caused by the impact of pressurized fluids, do not open any connection or perform maintenance work on components subject to pressure until the pressure has been completely eliminated.

Use suitable protection when operating, maintaining or being present in the area where the equipment is functioning. This includes, but is not limited to, the use of protective goggles, gloves, shoes and safety clothing and breathing equipment.

The equipment includes components that reach high temperatures and can cause burns. Hot parts of the equipment must not be handled or touched until they have cooled completely.

To prevent serious injury through crushing or amputation, do not work with the equipment without the safety guards installed on the moving parts. Make sure that all the safety guards are correctly reinstalled at the end of the repair or maintenance work of the equipment.

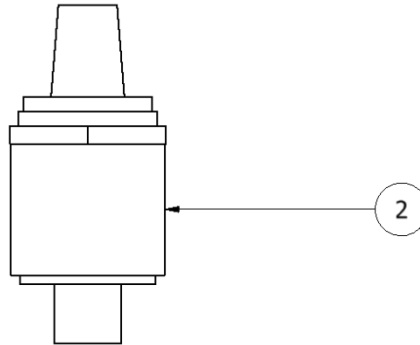
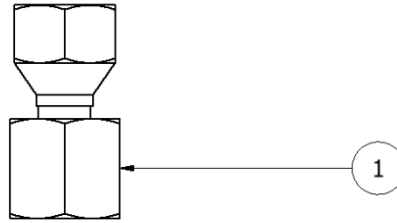
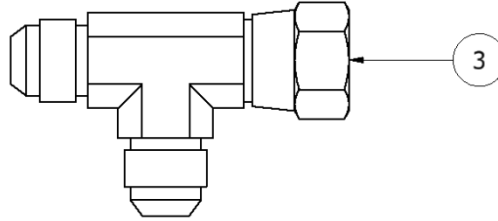
If the Pressure Balance Control box is not working properly, follow these steps to resolve the potential issue:



1. With the Main Power **ON**, check the Power/Run light on the Control Unit:
 - a. If **OFF**, the Control Unit is not getting power. Check for loose or poor wire connections between the Power Supply (located in the main console) and the Control Unit (see pages 14 and 15 for wire schematics). Also, ensure that the jumpers between the two power terminals in the PBC box are inserted properly. If the Power/Run light still does not turn on, contact your authorized PMC distributor.
 - b. If **SOLID**, the Control Unit has power but no program. Contact your authorized PMC distributor.
 - c. If **BLINKING**, the Control Unit has power and is programmed properly. Proceed to the next step.
2. With Main Power **ON**, turn the Rotary Switch to a Pressure Differential Number and check the Amber light on 1CR:
 - a. If **OFF**, 1CR is not activating properly. Check for loose or poor wire connections between the Control Unit and 1CR (see pages 14 and 15 for wire schematics).
 - b. If **ON**, 1CR is activating, but the mechanical switch inside the relay may not be functioning properly. If the system has faulted (i.e. a pressure imbalance exists, the ON light turns off, and the FAULT light turns on), but the pumps do not shut off, check for continuity between contacts 11 and 12 on 1CR. If there is continuity, contact your authorized PMC distributor. If there is discontinuity, proceed to the next step.
3. With Main Power **OFF**:
 - a. Check all remaining wires to ensure secure and proper connections.
 - b. Check for continuity across the ON light terminals and the FAULT light terminals. These light units are LEDs (light emitting diodes) which means that only one direction has continuity (similar to a check valve). When checking for continuity, make sure to use the correct terminals on the multimeter (i.e. positive goes to X1 and negative/common goes to X2).
4. Contact your authorized PMC distributor for further assistance.

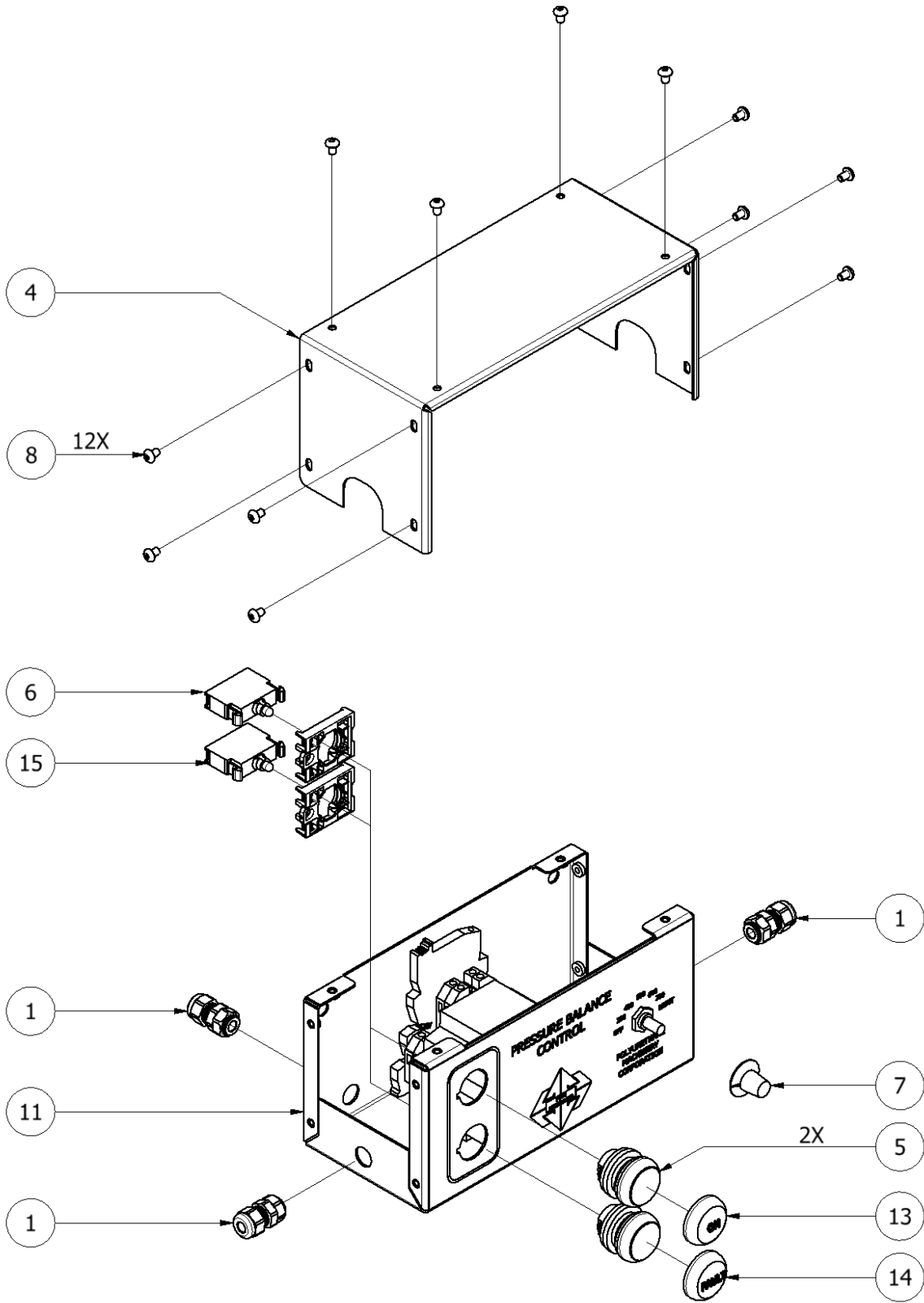
PART IDENTIFICATION

EL-200

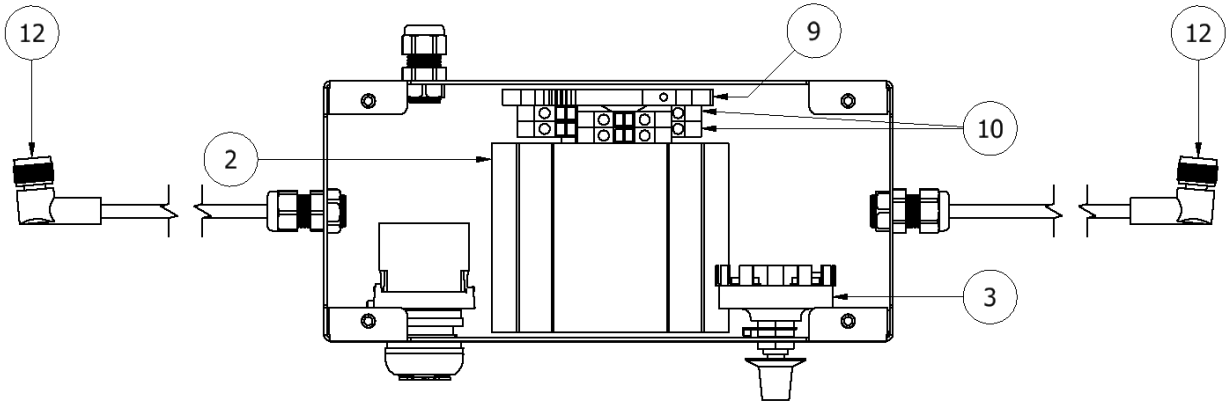


EL-200			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	HI-05006-6	1/4 NPT X 6 JIC GUAGE FITTING
2	1	EL-195	0-5000 PRESSURE TRANSDUCER
3	1	HI-05006-5	6 JIC SWIVEL NUT RUN TEE

EL-199



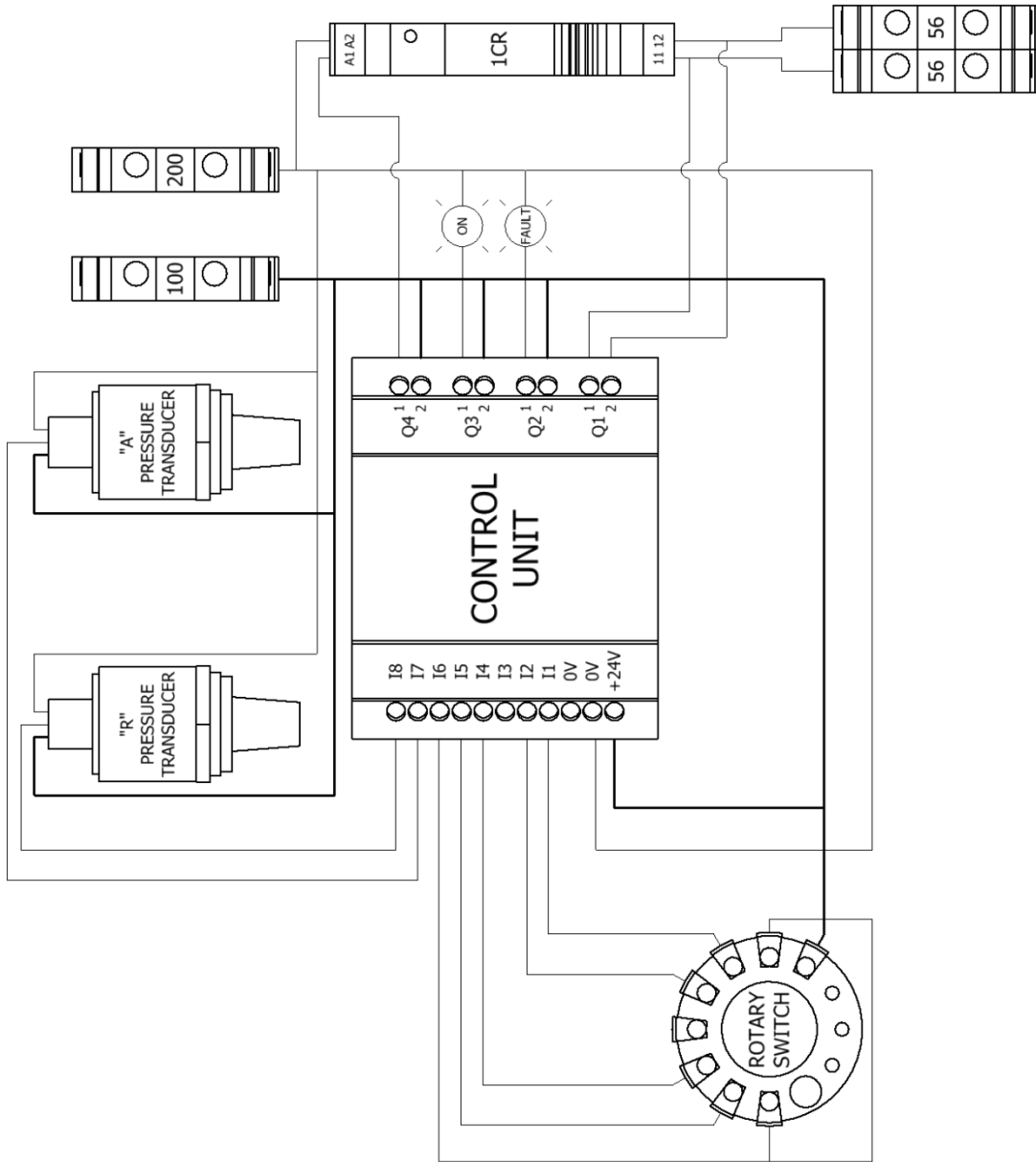
PART IDENTIFICATION



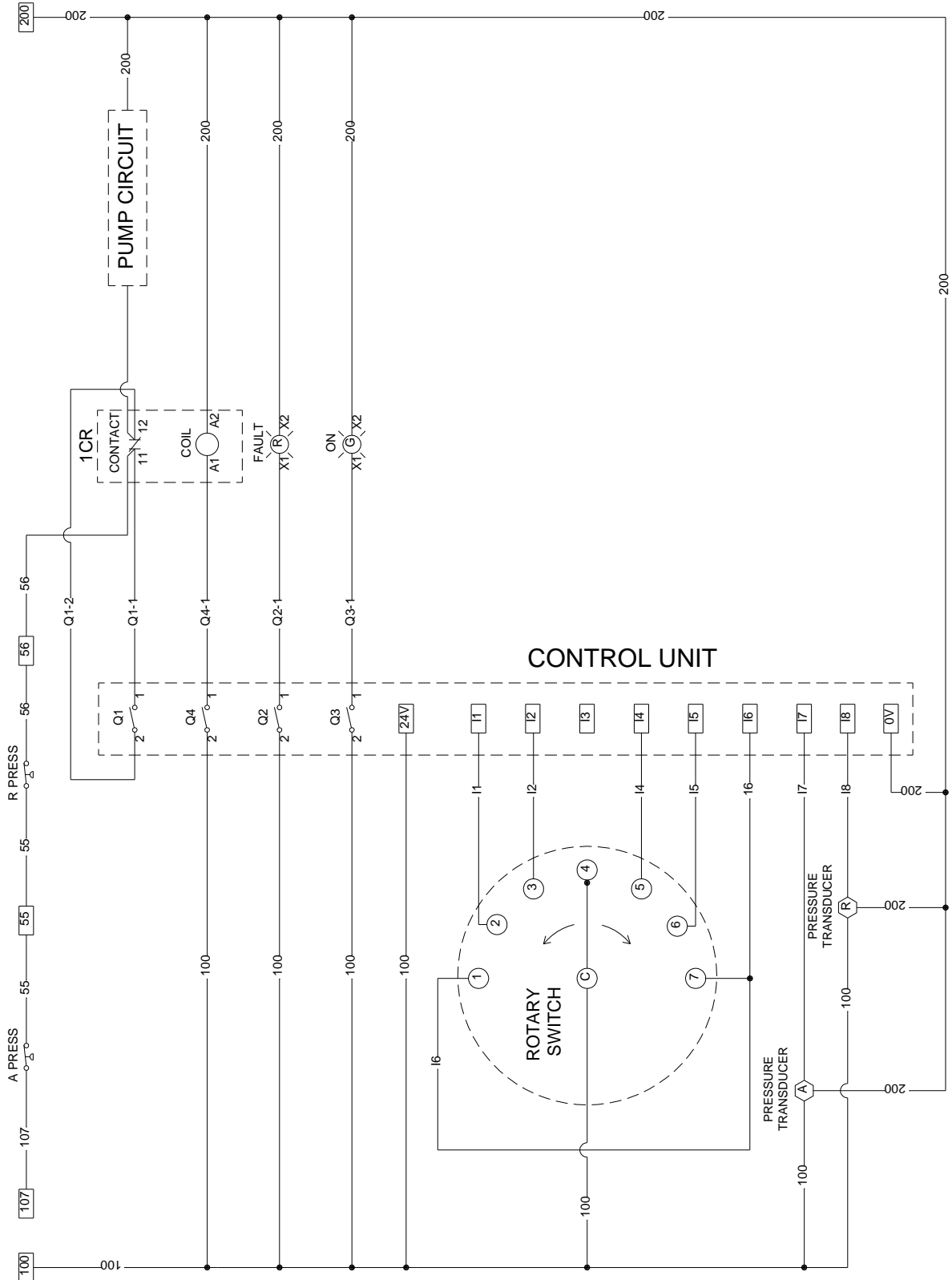
PRESSURE BALANCE CONTROL			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	3	EL-000P7	HAYCO SR
2	1	EL-194-1	PROGRAMMED; EZ CONTROL RELAY
3	1	EL-196	SWITCH, ROTARY, 7 POS, 15A
4	1	CL-03003	PBC BOX TOP
5	2	EL-134	LIGHT SWITCH
6	2	EL-131-G	LIGHT UNIT; GRN; 24VDC
7	1	EL-197	KNOB, ¼ DIA. BLACK
8	12	FLOOR STOCK	#8-32 X 1/4 HEX SOCKET BUTTON HEAD CAP SCREW
9	1	EL-198	SPDT RELAY
10	2	EL-140-D	TERMINAL BLOCK; 5.2; DOUBLE
11	1	CL-03002	PBC BOX BOTTOM
12	2	EL-158	MICRO CORDSET 90 DEGREE
13	1	EL-135	GREEN LENS; "ON"
14	1	EL-137-F	RED LENS; "FAULT"
15	1	EL-131-R	LIGHT UNIT; RED; 24VDC
16	1	EL-140	TERMINAL BLOCK; 5.2MM (NOT SHOWN)

WIRE SCHEMATICS

POINT TO POINT DIAGRAM



LADDER DIAGRAM



MANUAL REVISIONS

REVISION	DATE	CHANGES	APPROVED
1.0	02-Feb-2015	INITIAL RELEASE	VADAMS