

## 1.0 INFORMATION

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## **1.1 Introduction**

### **1.1.1 About This Manual**

This manual introduces the installation and operation procedures for the KRAUS Automatic Temperature Compensation system.

In an effort to help our customers take full advantage of our state-of-the-art products, we have provided this handbook to aid in initial set up and later to be used as a reference guide should the need arise.

The three divided sections are:

#### **1. INFORMATION**

Gives general information on system functions as well as cautionary advice.

#### **2. INSTALLATION**

Gives all information needed to successfully install and operate the system, as well as technical illustrations to aid in understanding text.

#### **3. TECHNICAL DATA**

Gives information on products that make up the system, in the form of drawings, manufacturer's literature, and references to related systems and products.

These three sections are set up in such a way that information is easily understood and instantly available to those who need it, whether they are an engineer, technician or supply manager.

Due to different environmental conditions this manual may be subject to, it has been designed to fit neatly in a protective three holed binder. This also serves the function of containing information from other related products in one convenient package.

## 1.1 Introduction

### 1.1.2 Helpful Hints and Warnings

Throughout this manual, in the left hand margin, there will be indicators, with text, to give various hints and warnings. The following are examples of what you will see, and their meanings:



**SUGGESTION**

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**Gives a hint on how to best use the equipment or advice on proper procedures.**

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**ATTENTION**

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**Gives notice to an important aspect of system operation.**

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**CAUTION**

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**Gives a warning to prevent damage to equipment or cause human injury.**

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**Kraus Industries Ltd. assumes no responsibility for personal injury or equipment damage caused by non-observance of the safety warnings.**

## 1.1 Introduction

### 1.1.3 Service and Product Support

Should you experience any difficulties in system operation, customer assistance is available.

The procedure to receive such assistance is as follows:

#### 1. Document the following information:

- System Disfunctions
- Corrective Measures Taken
- System Model Number
- System Serial Number
- Purchase Order Information
- Date of Installation
- Equipment Location (i.e. City, Address etc...)

#### 2. Call or Fax our Product Service line at:

Company Service number 1 204 988 1234

Company Fax number 1 204 654 2881

One of our qualified personnel will provide assistance in getting your system operational.

## **1.2 Product Information**

### **1.2.1 System Components**

The following is a list of operating components used in this installation, along with a brief explanation of their function:

#### **ATC Board**

Takes the signals from the temperature probe and flow meter, compensates for temperature deviation from 15°C (59°F), then sends the compensated signal back to the main processor board.

#### **Intrinsic Safety (I.S.) Barrier**

Energy limits the temperature probe signal, then sends the same signal on to the ATC board.

#### **Temperature Probes**

Converts temperature of the product to a corresponding voltage signal that is sent to the ATC board, via the I.S. Barrier.

#### **Thermal Test Well**

Provides a mechanical-thermal connection to accommodate a remote temperature probe, for calibration purposes, to give a true reading of product temperature.

#### **Probe Connector Assembly**

Provides secure electrical connection between the temperature probe(s) and I.S. Barrier.

## 2.1 Pre-Installation



CAUTION

### 2.1.1 Site Preparation

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**The following is a list of precautions that should be followed before installation of this product. Failure to do so could result in serious personal injury!**

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- Extreme caution should be used to ensure that no ignition sources exist.
- The dispensing area should be roped off or isolated from public use.
- Dispenser station operator should be made aware of the work that needs to be completed to prevent accidental “turn on” of the pump.
- Any main electrical disconnection should be labeled or locked to prevent accidental power up.

### 2.1.2 Installation Requirements



ATTENTION

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**The following points should be taken into consideration before installing this product:**

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- Any electrical installation should be carried out by a registered electrician.
- Any fuel dispensing connections should be made by qualified and experienced personnel.
- Installation must be performed in accordance with the relevant standards, laws and by-laws governing the type of application.

## 2.1 Pre-Installation

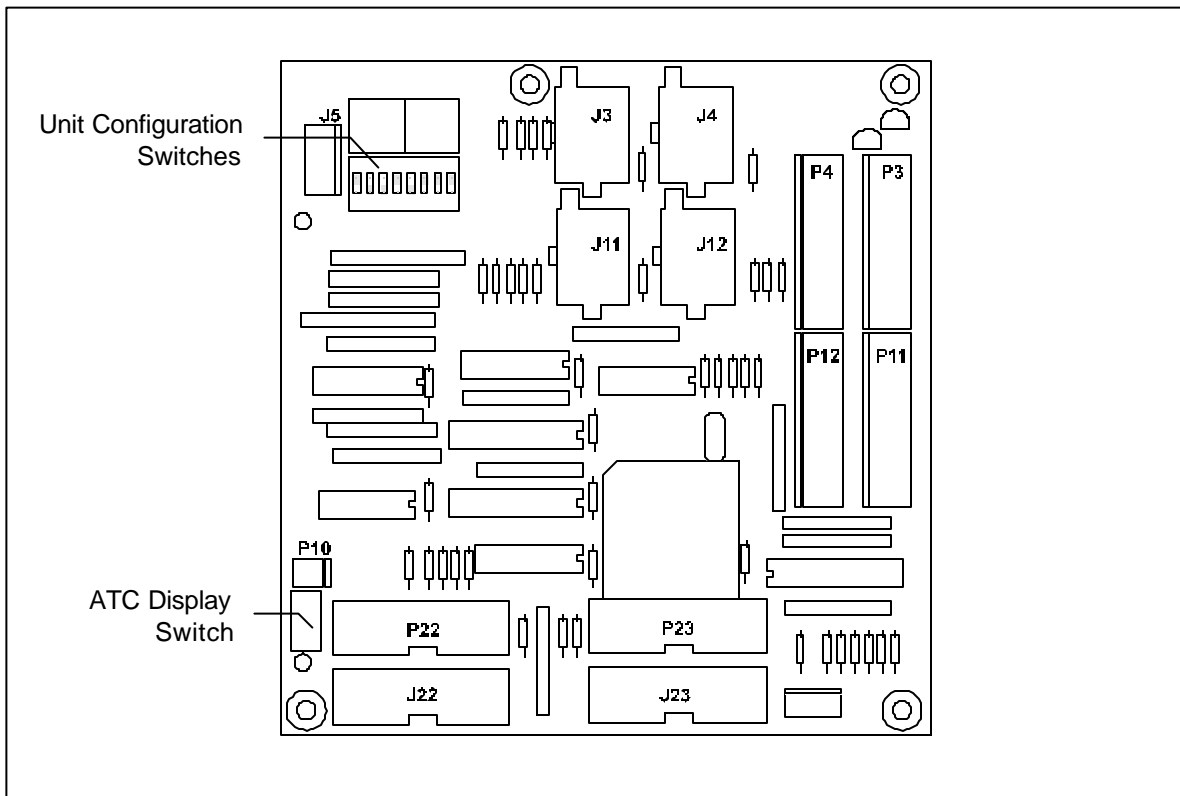
### 2.1.3 Unit Configuration

Before the ATC board can be installed, it must be configured for the particular application it is to control. This is accomplished by positioning the DIP switches, located on the circuit board.

Options for configuration can be set in accordance with the table below:

#### TPR 100 UNIT CONFIGURATION (DIP SWITCH SETTINGS)

SWITCH#	OPTION	POSITION
1	Selects whether product 1 is diesel or gasoline	ON = DIESEL
2	Selects whether product 2 is diesel or gasoline	ON = DIESEL
3	Selects whether product 3 is diesel or gasoline	ON = DIESEL
4	Selects whether product 4 is diesel or gasoline	ON = DIESEL
5	Selects whether or not blender option is enabled	ON = BLENDER
6	Selects whether or not pump is Dual 2 Product	ON = DUAL 2
7	Not Used	N/A
8	Selects whether or not ATC is enabled	ON = ATC ENABLED





## 2.2 Component Installation

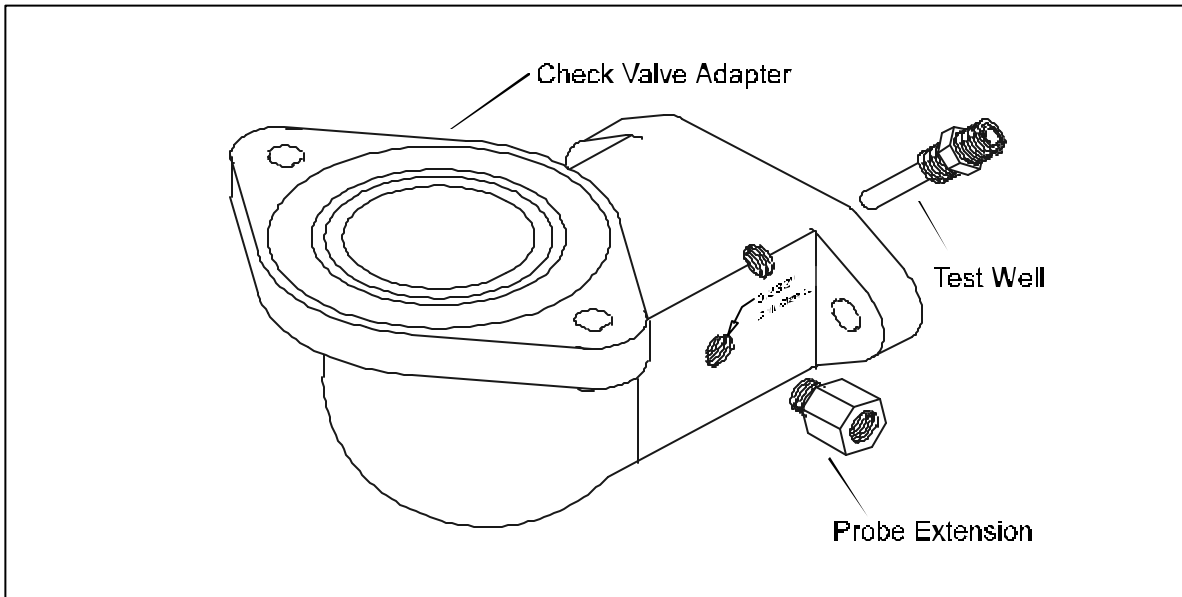
### 2.2.1 Test Well and Temperature Probes

#### 2.2.1.1 In a Dispenser

1. Remove the lower panels.
2. Locate and remove the check valve adapter casting for each product. (See Figure 3)
3. Drill and tap (0.332", tap 1/8" NPT) the casting to receive the test well and probe extension fitting as shown in Figure 3. (Drill the test well hole at a 45 degree angle as shown).
4. Install the probe extension fitting, and tighten.
5. Install the temperature probe.

**Figure 3**

**Probe and Test Well Installation**



**ATTENTION**

**Any connections must be made using thread sealing compound suitable for use with gasoline. Any connections with less than five (5) threads require soldering.**

6. Install the test well and tighten. Cover test well with the thermal well plug.
7. Re-connect check valve adapter assembly to pump.

## 2.2 Component Installation

### 2.2.1 Test Well and Temperature Probes

#### 2.2.1.2 In a Suction Unit

1. Remove the lower panels.
2. Locate and remove section of pipe, between the suction pump and branch point for the two meters, suitable to mount the temperature probe and test well.
3. Drill and tap two holes (0.332" drill size "Q", tap 1/8" NPT) in the pipe section to receive the test well and probe extension fitting.

The following guidelines should also be used when drilling the holes:

- The test well hole should be drilled so that when the well is installed, it will be at an angle within 45° of vertical. This is so that it will hold thermally conductive fluid for measuring purposes.
- The fittings should provide easy access for insertion of a thermometer.
- Probe and test well must be no closer than 5 pipe diameters from the pump discharge
- The probe extension fitting should be placed so as not to hinder reinstallation of the assembly.



**ATTENTION**

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**Any connections must be made using thread sealing compound suitable for use with gasoline.**

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4. Install the test well into the pipe section, and tighten.
5. Install the probe extension fitting into the pipe section, and tighten.
6. Install the temperature probe into the probe extension fitting, and tighten.
7. Re-install completed pipe assembly to the dispenser.

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**Before reconnecting, make sure pipe section is thoroughly cleaned to prevent drill cuttings from entering the dispensing system.**

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**ATTENTION**

## 2.2 Component Installation



SUGGESTION

### 2.2.2 I.S. Barrier Installation

1. Remove front display face.
2. Drill one hole (5/16") through the side barrier, or the vapour barrier. (See Figures 4 & 5)

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**A hole may exist in the side wall that is suitable for the threaded end of the barrier to go through. It is preferable to use this hole.**

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3. Insert threaded end of I.S. Barrier through the wall and tighten with the washer and hex supplied nut.
4. Connect the green 20 AWG wires coming out of the tops of the barriers (epoxy side), to the I.S. ground.
5. Connect the yellow and green wires from the dual barrier, for products one and two, to the wires from the W17X harness with the colours matched, **using crimp on wire nuts or butt connectors only**. Red wires from the I.S. barrier are *common*, and should be connected to the red wire on the harness.



ATTENTION

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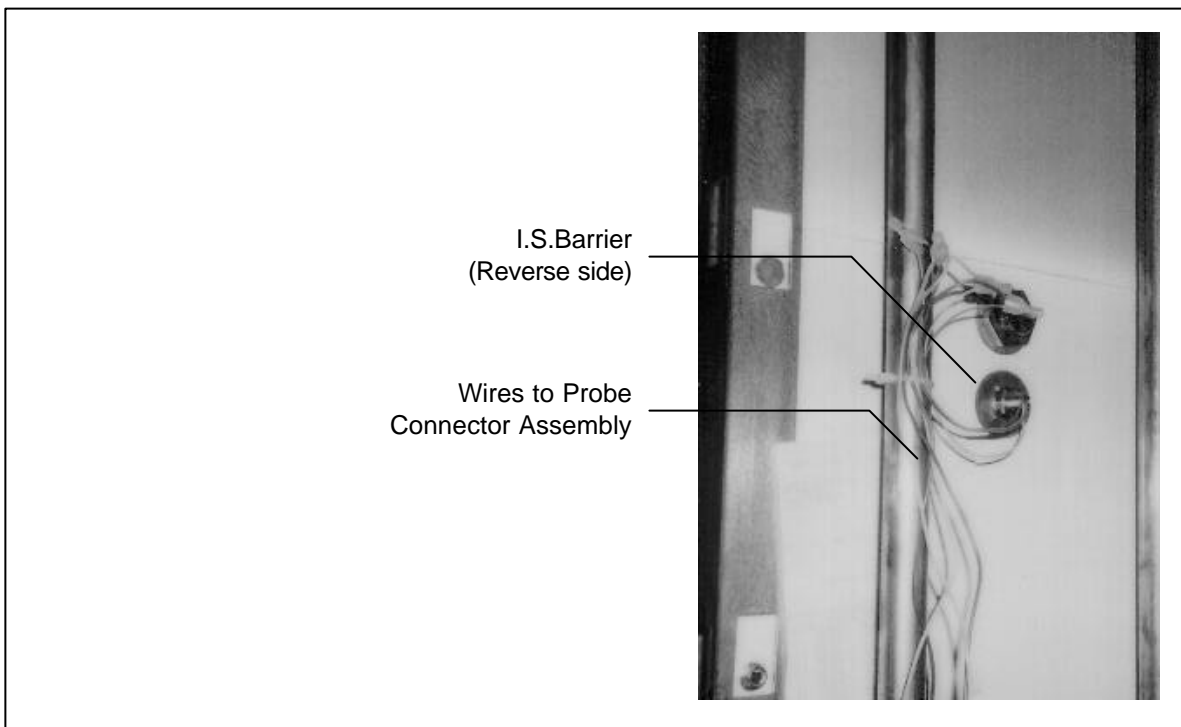
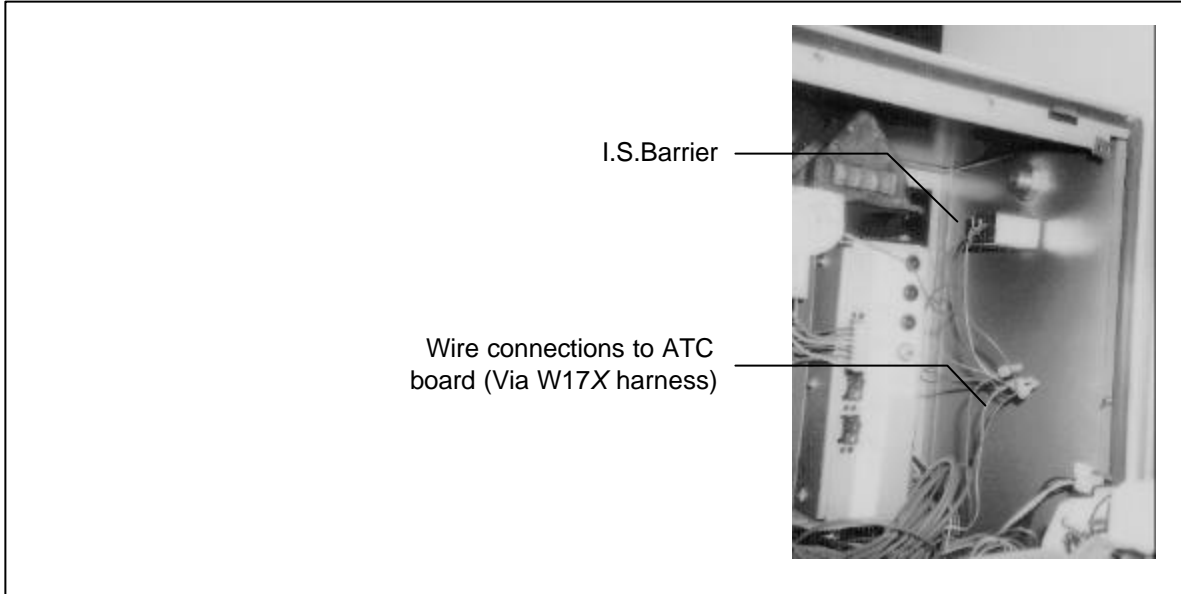
**Connections made using crimp on wire nuts or butt connectors is a Weights and Measures requirement to make the connection tamper resistant.**

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6. In a three product kit, connect the yellow wire from the second barrier to the blue wire of the harness (W17X). Note: the green wire is unused.
7. In a four product kit, connect the yellow wire from the second barrier to the blue wire, and the green wire to the purple wire of the harness.

## 2.2 Component Installation

### 2.2.2 I.S. Barrier Installation



## 2.2 Component Installation

### 2.2.2 I.S. Barrier Installation (Cont'd)

8. Remove the covers from the lower enclosure.
9. Mount the probe connector assembly bracket on the pump frame, below the vapour barrier.
10. Connect the wires from the probe connector assembly to the like coloured wires of the I.S. barrier using crimp on wire nuts or butt connectors only.
11. Plug the temperature probes into the connector assembly.



ATTENTION

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**Connections made using crimp on wire nuts or butt connectors is a Weights and Measures requirement to make the connection tamper resistant.**

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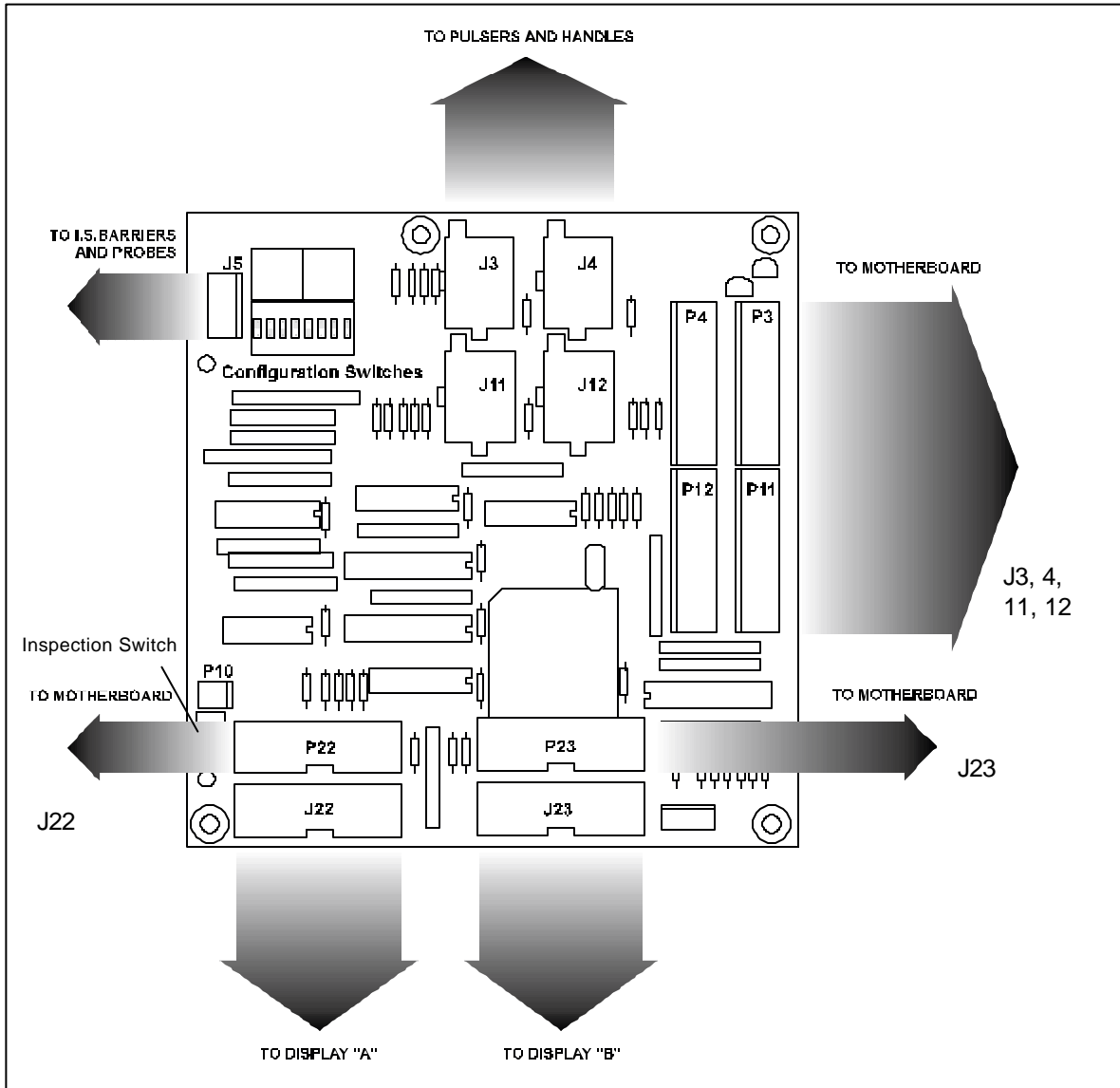
## 2.2 Component Installation

### 2.2.3 ATC Board Installation (See Figure 6)

1. Attach the ATC board to the Kraus (right angled) mounting bracket.
2. Attach the Kraus mounting bracket (with ATC board attached) to the back of the Tokheim Premier motherboard mounting plate. The back of the Premier mounting plate can be accessed by opening the display panel on the rear side of the dispenser.
3. Disconnect the Pulser and Handle plugs from J3, J4, J11 & J12 on the motherboard and connect them to J3, J4, J11 & J12 respectively, on the ATC board.
4. Connect harness W170 between P3, P4, P11 & P12 on the ATC board and J3, J4, J11 & J12 respectively, on the motherboard.
5. Disconnect the Display harnesses from J22 and J23 on the motherboard and connect them to J22, J23 ("A" Side Display to J22, "B" Side Display to J23) on the ATC board.
6. Connect harness W177 between P22 & P23 on the ATC board and J22 & J23 on the motherboard.
7. Connect the W17X harness from the I.S. Barrier to J5 on the ATC board.
8. The ATC board must be configured for use with the type of application it is to control. (See Table 1 in Section 2.1.3 at the beginning of this manual)

## 2.2 Component Installation

## 2.2.3 ATC Board Installation



## 2.3 Post Installation

### 2.3.1 Probe Connection Verification

***With the dispenser ready to be tested:***

1. Apply power to the unit, and initialize the system as per the Tokheim instructions.
2. To display the temperature, uncorrected volume, flowrate, and compensation type (gas or diesel), move the inspection switch to the ATC display position (i.e. to the UP position).
3. Run a delivery into a test can.

*The ratio of the net volume on the normal dispenser display to the gross volume on the ATC display should be the correct VCF for the temperature displayed and the product selected.*

4. Unplug the probe for the product being tested.

*The pump should stop, and the ATC display should read "ProbE" in the ppu readout to indicate temperature probe failure.*

5. Repeat the test procedure for each hose. Always ensure that the correct probe is being used to compensate each product.

*If you are testing with product one and unplug probe one, the pump should stop and the ATC display will indicate "ProbE". If the pump, for example, does not stop when probe one is unplugged but does when probe two is unplugged, then the probes are mixed up.*



## 2.3 Post Installation



**ATTENTION**

### 2.3.2 Enabling ATC Function

The ATC function must be disabled with the appropriate jumper plug (See table: Section 2.1.3) until the pump is inspected and the nameplate with the AV number must be applied to the side of the dispenser.

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**Before the dispenser can be used in trade, in the ATC mode, it must be inspected by Weights and Measures Canada**

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Once the inspector approves the pump, the seal cover may be installed over the ATC board so that the inspector can seal the unit.

The BC256A "VOLUME CORRECTED TO 15°C" labels must also be applied to the faceplates adjacent to the volume displays.

### 2.3.3 Meter Calibration

When the meters are calibrated in a pump with an ATC, it will be necessary to use either the gross volume reading from the ATC display or the mechanical counter. The temperature compensated volume on the pump display cannot be used for this purpose.

### 3.1 Components

#### 3.1.1 List of Components

TOKHEIM "PREMIER" Series		TPR 100 SINGLE PRODUCT ATC
QTY	PART #	DESCRIPTION
1	216AY00	TPR 100 ATC BOARD AND BRACKET ASSEMBLY
1	218AY00	DUAL INTRINSIC SAFETY BARRIER
2	BC256A	WHITE "VOLUME CORRECTED TO 15°C" LABEL
1	BC407	THERMOWELL
1	BC546	120-B, 1/8" NPT ADAPTER DRILLED TO 17/64" I.D.
1	BC1063	SEAL COVER PLATE
1	BC1156	SERIALIZED AV-2297 NAMEPLATE
1	W170	8 WIRE HARNESS
1	W171	5 PIN, 3 WIRE HARNESS FOR I.S. BARRIER
2	W177	20 PIN RIBBON CABLE
7		18-22 AWG CRIMP SPLICES
1	W199	TEMPERATURE PROBE ASSEMBLY
1	235-C	THERMOWELL PLUG
1	122-B	1/8" NPT x 1" HEX NIPPLE
1	103-B	1/8" NPT COUPLING
1		5/16" HEX NUT
1		5/16" FLAT WASHER
1	212AY04	SINGLE PROBE CONNECTOR ASSEMBLY
1	216KT00.INS	TPR 100 ATC INSTALLATION MANUAL

TOKHEIM "PREMIER" Series		TPR 100 DUAL PRODUCT ATC
QTY	PART #	DESCRIPTION
1	216AY00	TPR 100 ATC BOARD AND BRACKET ASSEMBLY
1	218AY00	DUAL INTRINSIC SAFETY BARRIER
2	BC256A	WHITE "VOLUME CORRECTED TO 15°C" LABELS
2	BC407	THERMOWELLS
2	BC546	120-B, 1/8" NPT ADAPTERS DRILLED TO 17/64" I.D.
1	BC1063	SEAL COVER PLATE
1	BC1156	SERIALIZED AV-2297 NAMEPLATE
2	W170	8 WIRE HARNESSES
1	W172	5 PIN, 3 WIRE HARNESS FOR I.S. BARRIER
2	W177	20 PIN RIBBON CABLES
10		18-22 AWG CRIMP SPLICES
2	W199	TEMPERATURE PROBE ASSEMBLIES
2	235-C	THERMOWELL PLUGS
2	122-B	1/8" NPT x 1" HEX NIPPLES
2	103-B	1/8" NPT COUPLINGS
1		5/16" HEX NUT
1		5/16" FLAT WASHER
1	212AY05	DUAL PROBE CONNECTOR ASSEMBLY
1	216KT00.INS	TPR 100 ATC INSTALLATION MANUAL

### 3.1 Components

#### 3.1.1 List of Components (Cont'd)

TOKHEIM "PREMIER" Series		TPR 100 THREE PRODUCT ATC
QTY	PART #	DESCRIPTION
1	216AY00	TPR 100 ATC BOARD AND BRACKET ASSEMBLY
2	218AY00	DUAL INTRINSIC SAFETY BARRIERS
2	BC256A	WHITE "VOLUME CORRECTED TO 15°C" LABELS
3	BC407	THERMOWELLS
3	BC546	120-B, 1/8" NPT ADAPTER DRILLED TO 17/64" I.D.
1	BC1063	SEAL COVER PLATE
1	BC1156	SERIALIZED AV-2297 NAMEPLATE
3	W170	8 WIRE HARNESSSES
1	W173	5 PIN, 4 WIRE HARNESS FOR I.S. BARRIER
2	W177	20 PIN RIBBON CABLES
17		18-22 AWG CRIMP SPLICES
3	W199	TEMPERATURE PROBE ASSEMBLIES
3	235-C	THERMOWELL PLUGS
3	122-B	1/8" NPT x 1" HEX NIPPLES
3	103-B	1/8" NPT COUPLINGS
2		5/16" HEX NUTS
2		5/16" FLAT WASHERS
1	212AY04	SINGLE PROBE CONNECTOR ASSEMBLY
1	212AY05	DUAL PROBE CONNECTOR ASSEMBLY
1	216KT00.INS	TPR 100 ATC INSTALLATION MANUAL

TOKHEIM "PREMIER" Series		TPR 100 FOUR PRODUCT ATC
QTY	PART #	DESCRIPTION
1	216AY00	TPR 100 ATC BOARD AND BRACKET ASSEMBLY
2	218AY00	DUAL INTRINSIC SAFETY BARRIERS
2	BC256A	WHITE "VOLUME CORRECTED TO 15°C" LABELS
4	BC407	THERMOWELLS
4	BC546	120-B, 1/8" NPT ADAPTERS DRILLED TO 17/64" I.D.
1	BC1063	SEAL COVER PLATE
1	BC1156	SERIALIZED AV-2297 NAMEPLATE
4	W170	8 WIRE HARNESSSES
1	W174	5 PIN, 5 WIRE HARNESS FOR I.S. BARRIER
2	W177	20 PIN RIBBON CABLES
20		18-22 AWG CRIMP SPLICES
4	W199	TEMPERATURE PROBE ASSEMBLIES
4	235-C	THERMOWELL PLUGS
4	122-B	1/8" NPT x 1" HEX NIPPLES
4	103-B	1/8" NPT COUPLINGS
2		5/16" HEX NUTS
2		5/16" FLAT WASHERS
2	212AY05	DUAL PROBE CONNECTOR ASSEMBLIES
1	216KT00.INS	TPR 100 ATC INSTALLATION MANUAL