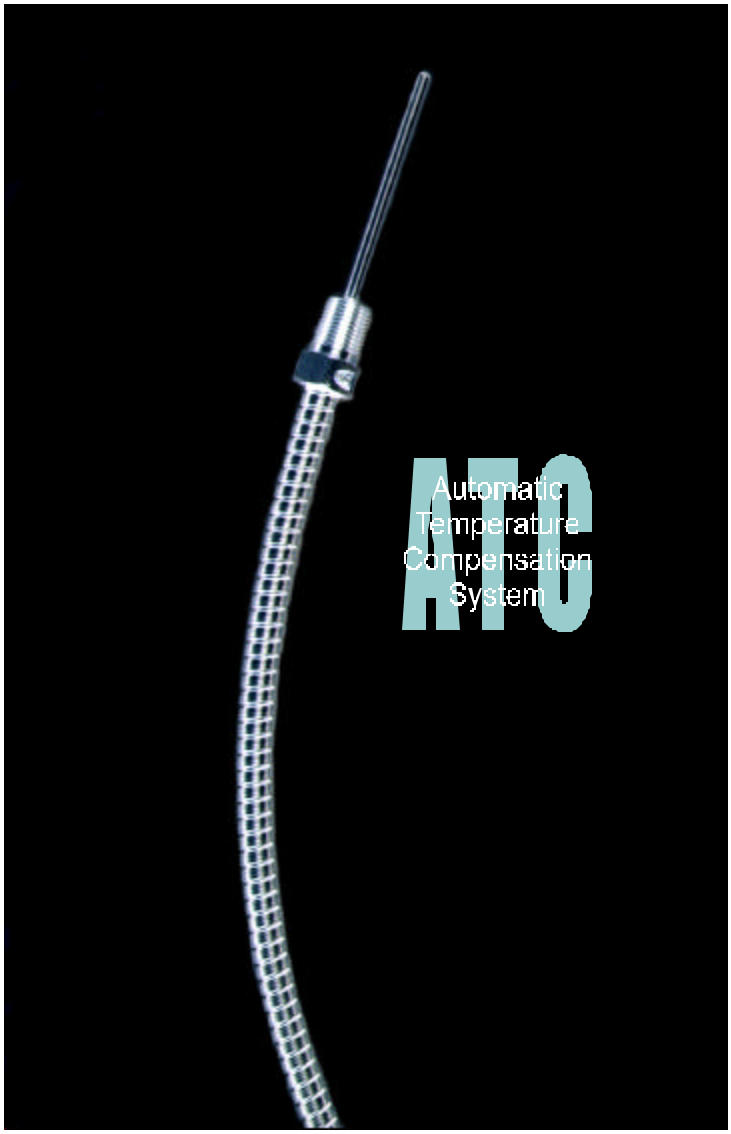
IN CONSTANT PURSUIT OF EXCELLENCE

Kraus Group Inc.

An RNG Company



229AY00.INS R01

Installation Manual

TOKHEIM 262/162 - MODEL TTC 200 ATC

Table of Contents

1.1 Introduction

1.1.1 About This Manual

This manual introduces the functions and operations, as well as installation and maintenance 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

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

ATTENTION

Gives notice to an important aspect of system operation.

CAUTION

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

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 ^{o}C (59 ^{o}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.

Probe Connector Assembly

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

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 inspection purposes, to give a true reading of product temperature.

2.1 Pre-Installation

2.1.1 Site Preparation

CAUTION

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!

- 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

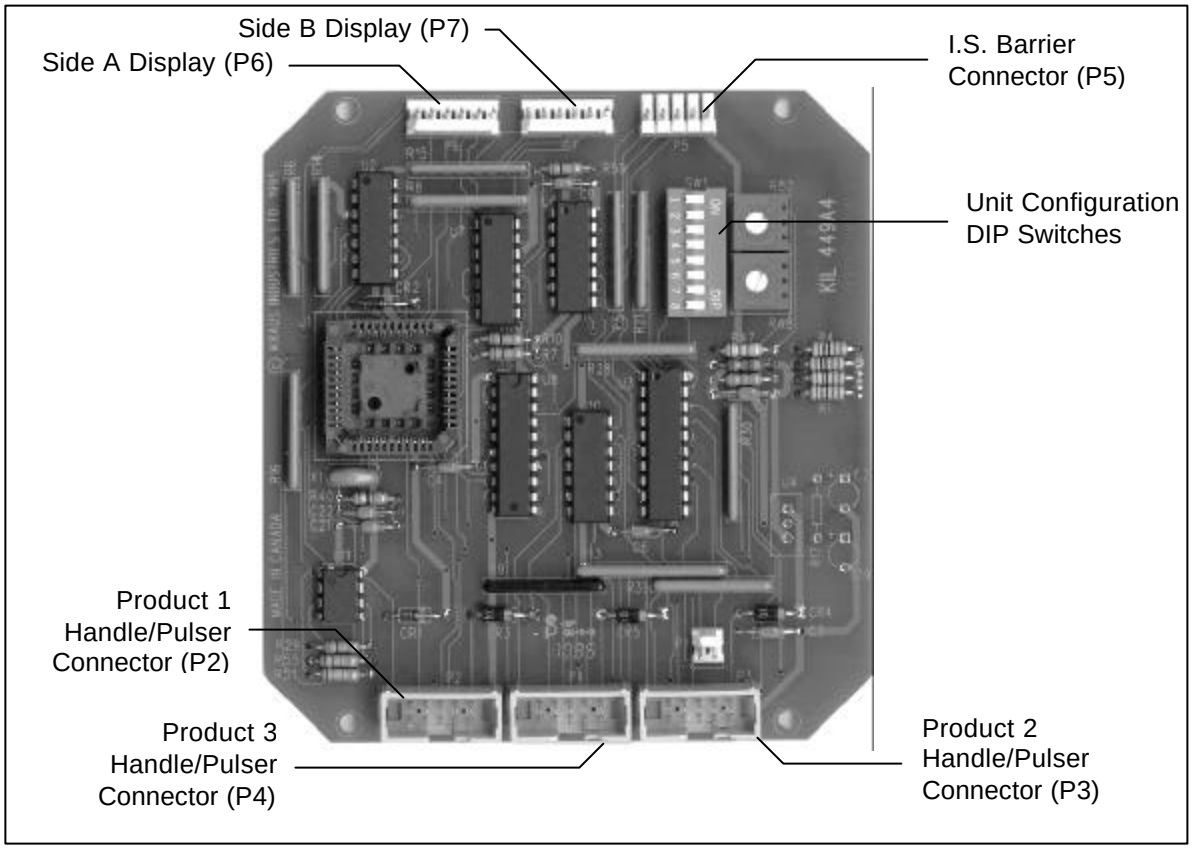
The following points should be taken into consideration before installing this product:

- 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 TTC 200 unit can be installed, it must first be configured for the type of application it is to control. This is accomplished by setting the DIP switches on the circuit board as seen in Figure 1 below.

Figure 1 TTC 200 Circuit Board Layout (version KIL 449A2)



Options for configuration can be set in accordance with Table 1 as follows:

Table 1 ATC Board DIP Switch Settings TTC 200

SWITCH#	OPTION	SWITCH POSITION
1	Selects whether product 1 is gasoline or diesel	ON = DIESEL
2	Selects whether product 2 is gasoline or diesel	ON = DIESEL
3	Not used	N/A
4	Selects Kraus key switch	ALWAYS ON
5	Not used	N/A
6	Selects whether 1 or 2 probes	ON = 2 PROBES
7	Not used	N/A
8	Enables ATC function	ON = ATC ENABLED

2.2 Component Installation

2.2.1 Test Well and Temperature Probes

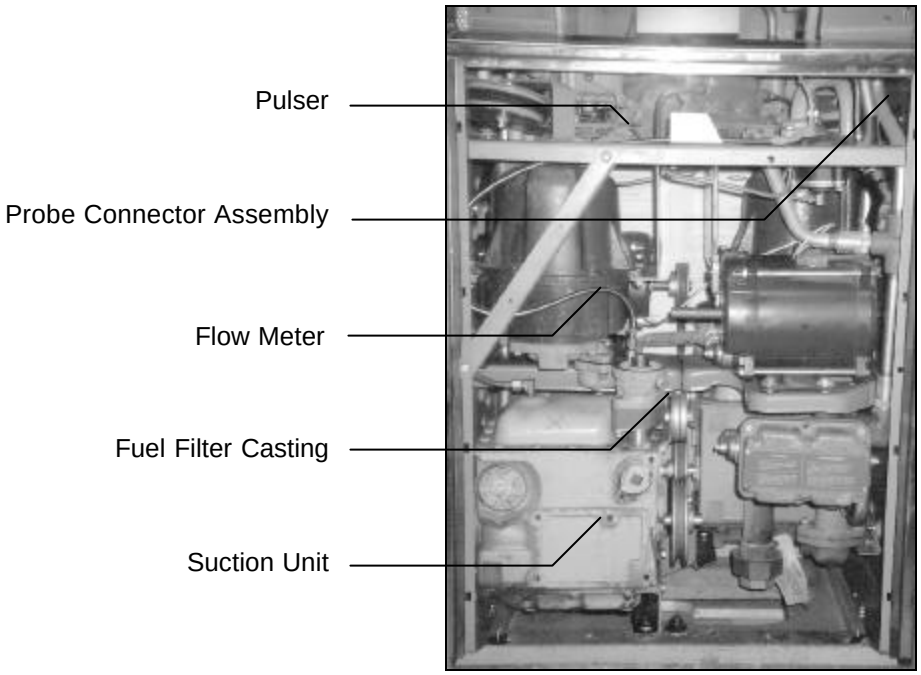
2.2.1.1 In a Single/Dual Product Suction Unit

CAUTION

Before components can be installed, power MUST be shut off to the dispenser.

1. Remove the lower panels.
2. Locate filter casting on top of the suction unit, before the meter. (See Figure 2)

Figure 2 **One/Two Product 262 Suction Unit**



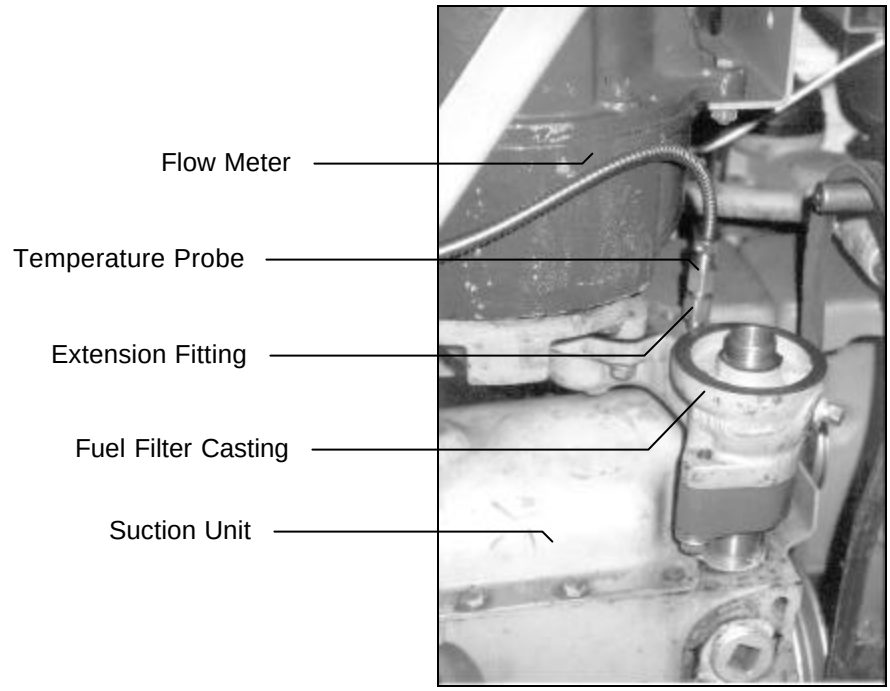
3. Remove filter casting.
4. With casting mounted securely, drill and tap (drill size Q .332", 1/8" NPT) one hole near the center to accept the temperature probe extension fitting. (See Figure 3)

   The extension fittings should be placed so that when the probe is installed, it will not interfere with the meter or the fuel filter.

2.2 Component Installation

2.2.1 Test Well and Temperature Probes

Figure 3 **Test Well and Temperature Probe Fittings**



5. Drill another hole (drill size Q, 1/8" NPT) at a 45° angle near the center of the casting for the thermal test well.

   The following guidelines should also be followed for installing the test well:

   - The hole should be drilled so that the well will be at an angle within 45° of vertical when the assembly is reconnected. This is so that it will hold thermally conductive fluid for measuring purposes.
   - The well should provide easy access for insertion of a thermometer.
   - The fittings should be placed in an appropriate position so as not to hinder reinstallation of the assembly.

ATTENTION

If connection is less than 5 threads, then soldering is required. Any other connections must be made using thread sealing compound suitable for use with gasoline.

2.2 Component Installation

2.2.1 Test Well and Temperature Probes

2.2.1.1 In a Single/Dual Product Suction Unit (Cont'd)

6. Insert the thermal test well into the hole and tighten then cover the well with the plug (provided).

ATTENTION

Before reconnecting filter casting, it must be cleaned thoroughly to prevent drill cuttings from entering the dispensing system.

7. Reconnect filter casting assembly between the suction unit and meter.

8. Insert the temperature probe into the extension fittings and tighten.

9. Repeat the above steps for a dual product unit.

2.2 Component Installation

2.2.1 Test Well and Temperature Probes

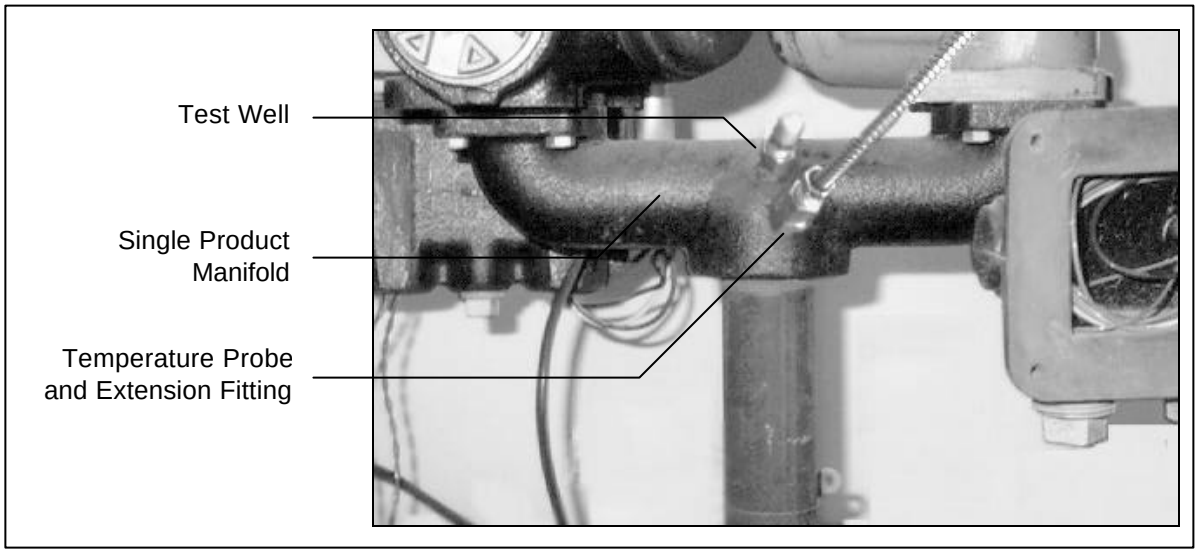
2.2.1.2 In a Single Product Dispenser

CAUTION

Before components can be installed, power MUST be shut off to the dispenser.

1. Remove the lower panels.
2. Locate the single product supply manifold. (See Figure 4).
3. Remove manifold from pump assembly.

Figure 4 **Single Product Supply Manifold**



CAUTION

Due to the presence of combustible gasses, DO NOT drill probe holes or solder fittings to parts directly connected to any piping.

2.2 Component Installation

2.2.1 Test Well and Temperature Probes

2.2.1.2 In a Single Product Dispenser (Cont'd)

4. With the manifold mounted securely, drill two holes of size Q (0.332") and tap for 1/8" NPT, male thread. Holes should be located near the center of the manifold, common to both meters.

The following guidelines should also be followed for installing the test well:

- The hole should be drilled so that the well will be at an angle within 45^{o} of vertical when installed and manifold is reconnected. This is so that it will hold thermally conductive fluid for measuring purposes.
- The fittings should provide easy access for insertion of a thermometer.
- The fitting should be placed in an appropriate position so as not to hinder reinstallation of the assembly.

ATTENTION

If a probe is for two hoses, the probe and test well must be in a portion of the flow which is common to both hoses.

5. Install temperature probe and extension fitting.

ATTENTION

Any connections must be made using thread sealing compound suitable for use with gasoline. Any connections having less than five (5) threads should be soldered.

6. Install test well into the extension fitting and, after tightening, cover with a plug (provided).

7. Re-connect manifold to pump assembly.

ATTENTION

Before reconnecting manifold, it must be cleaned thoroughly to prevent drill cuttings from entering the dispensing system.

2.2 Component Installation

2.2.1 Test Well and Temperature Probes

2.2.1.3 In a Dual Product Dispenser

CAUTION

Before components can be installed, power MUST be shut off to the dispenser.

1. Remove lower panels.
2. Locate the product supply lines. The supply lines should be similar to that of the single product dispenser (See previous section).
3. Remove the section of pipe, from each product supply line, that is most suitable for installation of the temperature probes and thermal test wells.

CAUTION

Due to the presence of combustible gasses, DO NOT drill probe holes or solder fittings to parts directly connected to any piping.

4. With the pipe section mounted securely, drill two holes of size Q (0.332") and tap for 1/8" NPT. The following guidelines should also be followed for installing the test well and probe fittings:

- The hole should be drilled so that the well will be at an angle within 45^{o} of vertical when installed. This is so that it will hold thermally conductive fluid for measuring purposes.
- The fittings should provide easy access for insertion of a thermometer.
- The fitting should be placed so as not to hinder reinstallation of the assembly.

2.2 Component Installation

2.2.1 Test Well and Temperature Probes

2.2.1.3 In a Dual Product Dispenser (Cont'd)

ATTENTION

Any connections must be made using thread sealing compound suitable for use with gasoline. Any connections having less than five (5) threads should be soldered.

5. Install the temperature probe and extension fitting.
6. Install the test well into the extension fitting and, after tightening, cover with the supplied plug.
7. Reconnect pipe section to pump assembly.

ATTENTION

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

2.2 Component Installation

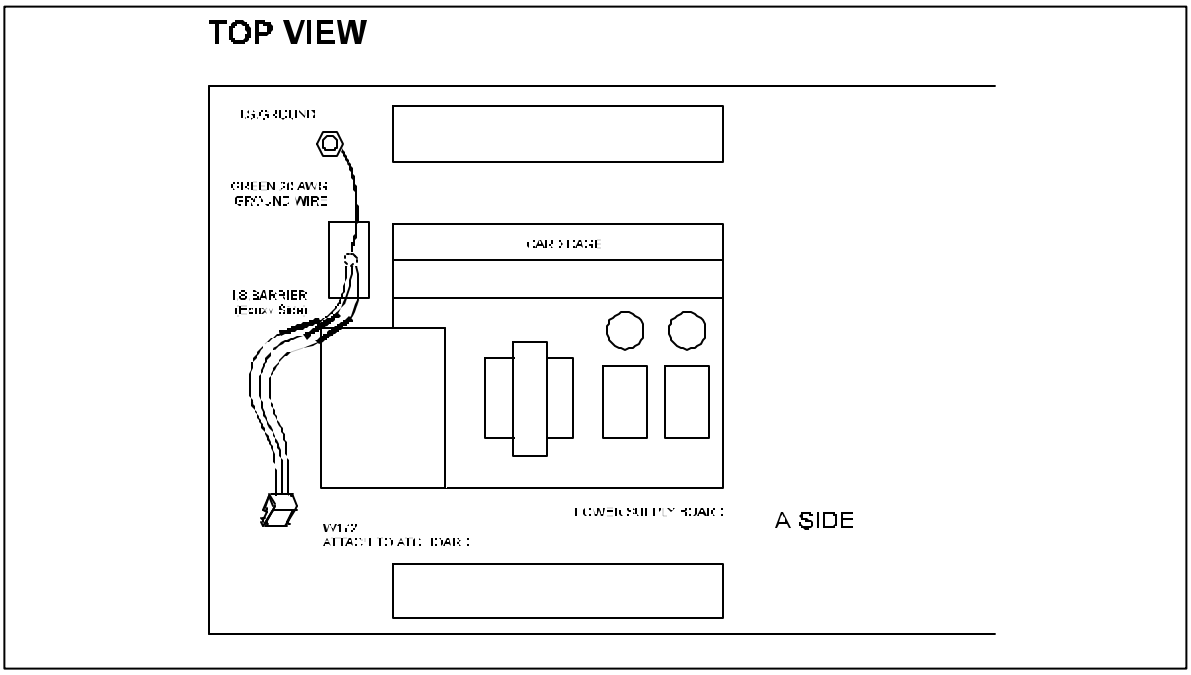
2.2.2 I.S. Barrier Installation

1. Remove the cover from the pillars on the front side of the dispenser.

2. Remove the top cover from the head.

3. Remove one of the head mounting bolts and install the I.S. Barrier in its place as shown in Figure 5 below.

Figure 5 **I.S. Barrier Installation**



4. Connect the three short wires extending from the epoxy side of the I.S. barrier to the three wires of the W172 harness by matching the like coloured wires, using crimp on wire connectors.

ATTENTION

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

5. Connect the intrinsic safety barrier ground (20 AWG green wire) to the grounding stud.

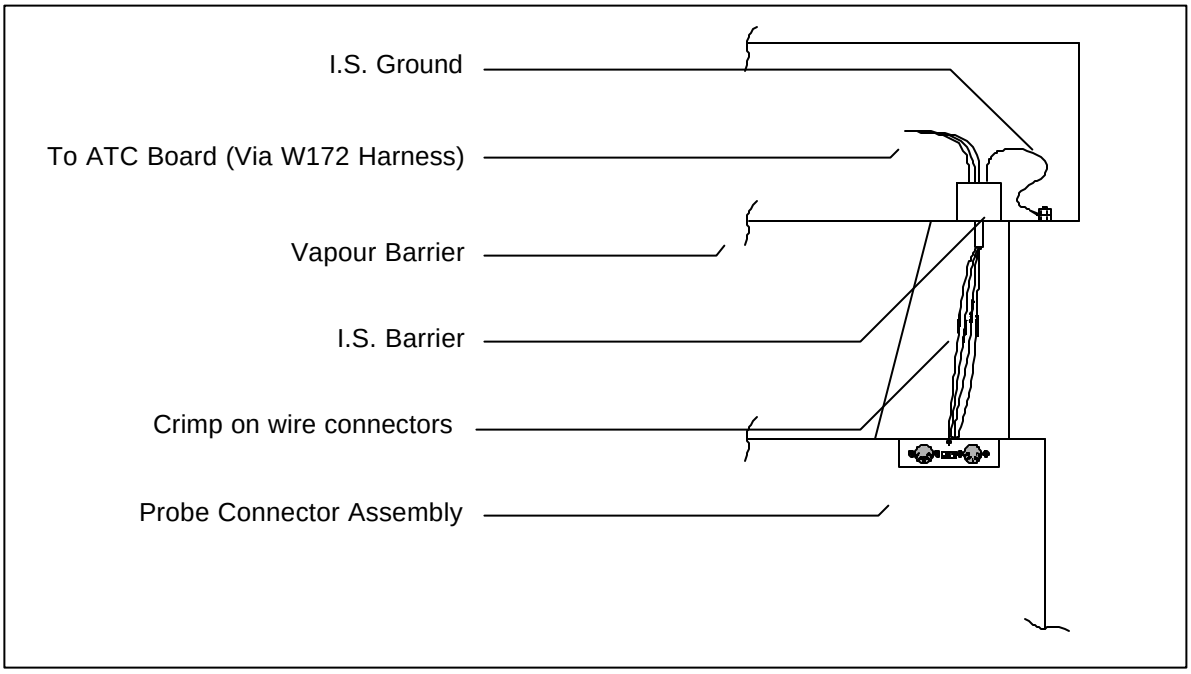
2.2 Component Installation

2.2.3 Probe Connector Assembly Installation

1. Remove the covers from the lower enclosure.

2. Remove the nut and washer from one of the pillar mounting bolts (See Figure 6) and install the probe connector assembly bracket.

Figure 6 **Probe Connector Assembly Connection**



3. Connect the wires from the probe connector to the like coloured wires from the I.S. barrier using crimp on wire connectors only.

ATTENTION

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

4. Plug the temperature probe plugs into the appropriate jacks on the probe connector assembly.

5. Coil and suitably fasten the armoured cable to take up the excess, as well as to prevent the weight of the cables from pulling on the plugs.

2.2 Component Installation

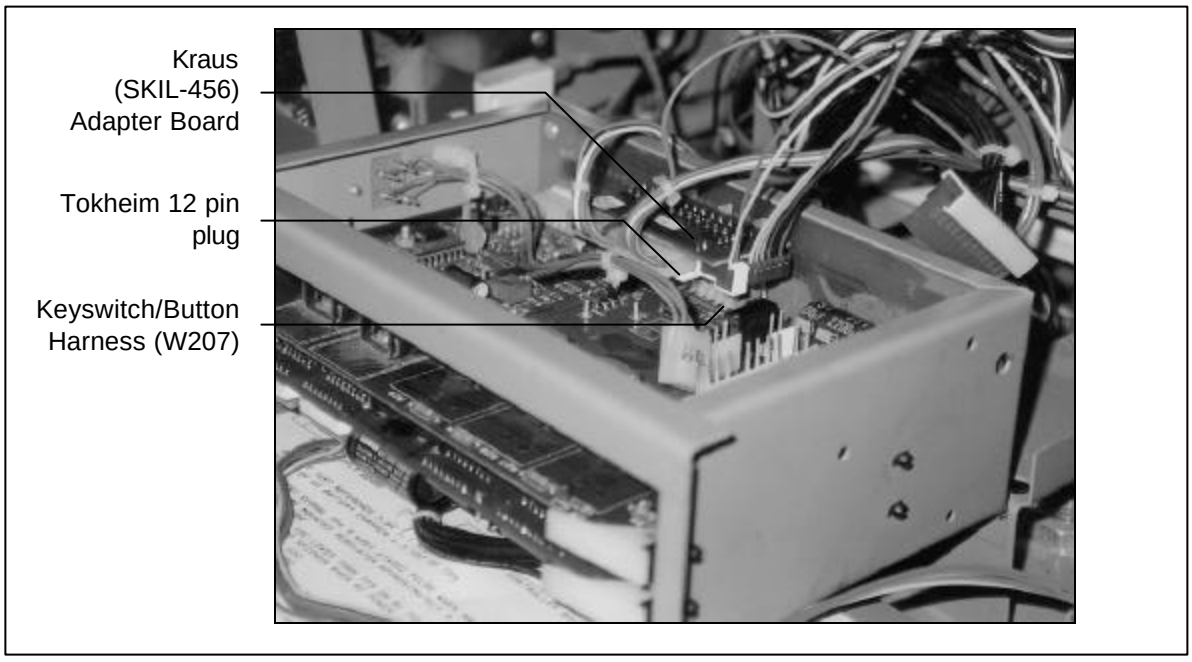
2.2.4 Installation of the TTC 200 ATC Board in a 262

SUGGESTION

Be sure to have configured the ATC board, as shown in 2.1.3 Unit Configuration, before installation.

1. Remove the 12 pin plug from the “A” side motherboard. (See Figure 7)

Figure 7 **Adapter Board Connection**



2. Connect the SKIL-456 Adapter board to the motherboard.

3. Reconnect the 12 pin plug to the 12 pin connector on the adapter board.

4. Connect the 6 pin plug, with the RED wire, on the pulser and handle harness (W209) to connector P1 on the adapter board.

ATTENTION

The W209 Pulser and handle adapter wiring harness has two 5 pin adapter connectors. The connector with the red wire is for Side A, the other is for Side B. If there is only one side, use only the Side A connector.

2.2 Component Installation

2.2.4 Installation of the TTC 200 ATC Board in a 262

5. Remove the 12 pin plug from the “B” side mother board.

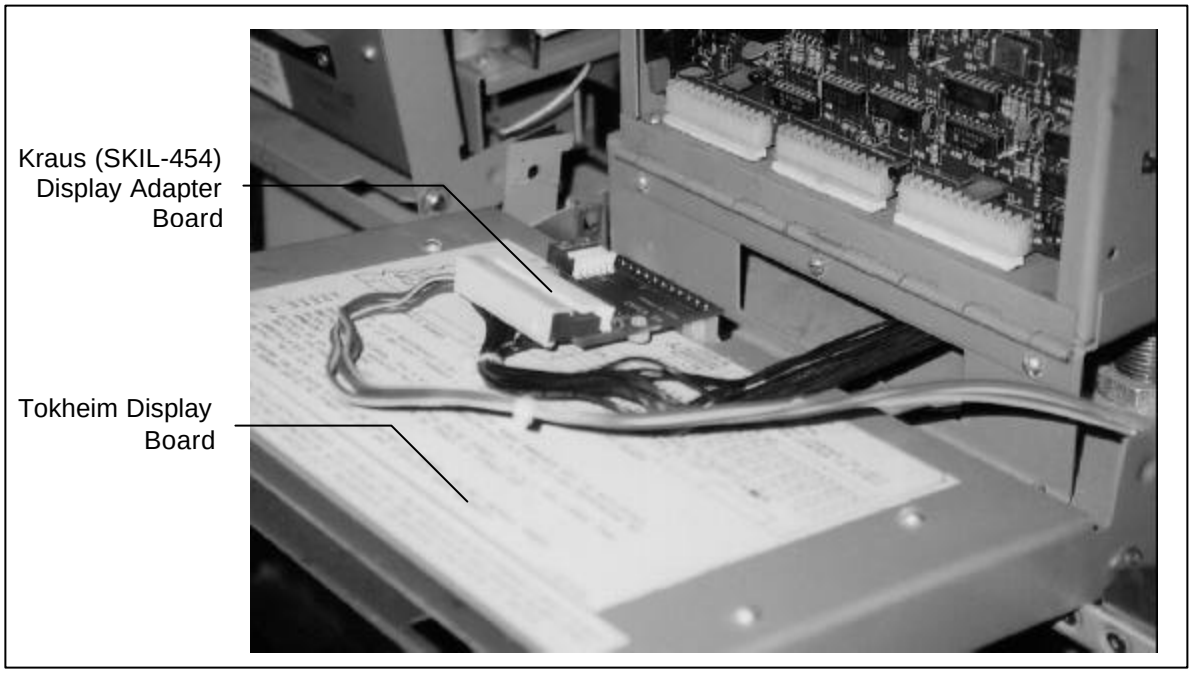
6. Connect the other SKIL-456 Adapter board to the “B” side motherboard.

7. Reconnect the 12 pin plug to the 12 pin connector on the adapter board.

8. Connect the remaining 6-pin plug (NO RED WIRE) on the pulser and handle harness (W209) to connector P1 on the “B” side adapter board.

9. Disconnect the 12 pin plug from the “A” Side display (See Figure 8).

Figure 8 **Display Adapter Board Connection**



10. Connect the SKIL-454 Display Adapter board to the back of the display (support Tokheim board from below when attaching Kraus Adapter board).

2.2 Component Installation

2.2.4 Installation of the TTC 200 ATC Board in a 262

11. Reconnect the 12 pin plug to the SKIL-454 adapter board.

ATTENTION

For connecting the display adapters, connect all display adapters to displays on the same side as the pump keyswitch and buttonswitch.

12. Connect one of the 6 pin display wiring harnesses (W208) to P1 on the “A” side display adapter board.
13. Repeat steps 10 to 12 for “B” side display.
14. Connect the common end of the W209 pulser and handle harness (12 pin plug) to P2 on the TTC 200 board.
15. Connect the other end of the W208 “A” side display wiring harness to connector P6 on the TTC 200 board.
16. Connect the other end of the W208 “B” side display wiring harness to connector P7 on the TTC 200 board.
17. Connect the 5 pin, 3 wire plug from the I.S. barrier (W172) to connector P5 on the TTC 200 board.
18. The TTC 200 unit should be placed, at the end of the head next to the “A” side computer.

2.2 Component Installation

2.2.4 TTC 200 / Tokheim 162 Wiring Connections

Circuit board numbers and connections differ from section 2.2.3 as indicated in Tables 2, 3 and 4 below. If there is only one side, use the side A connector, as indicated in previous section.

Connections indicated in greater detail in Figures 9, 10 and 11 on following pages.

TABLE 2 – TTC-200/TOKHEIM 162 SIDE 'A' CONNECTIONS

	Connect to: 458 Adapter Board – SIDE 'A'
Tokheim wire harness – SIDE 'A'	**P2** (10 pin)
Tokheim 162 power supply board – SIDE 'A'	**P3** (10 pin)
P3 (8 pin) **with RED wire** on TTC 200 dual 162 harness (W212)	**P1** (8 pin)

	Connect to: SKIL-449 ATC Board
P1 (6 pin) on TTC 200 dual 162 harness (W212)	**P2** (pins 6 to 10)
P2 (13 pin) on TTC 200 dual 162 harness (W212)	**P6** - connects side 'A', **P7**

TABLE 3 – TTC-200/TOKHEIM-162 SIDE 'B' CONNECTIONS

	Connect to: 458 Adapter Board – SIDE 'B'
Tokheim 162 power supply board – SIDE 'B'	**P3** (10 pin)
P4 (8 pin); **NO red wire** on TTC 200 dual 162 harness (W212)	**P1** (8 pin)

	Connect to: SKIL-449 ATC Board
P2 (13 pins) on TTC 200 dual 162 harness (W212)	**P6**, **P7** - connects side 'B'

TABLE 4 – CONNECTIONS FROM PULSERS TO ATC BOARD

From Pulsers:	**Connect to: SKIL-449 ATC Board**
Pulser B IN (WHITE)	**P2-1**
Pulser A OUT (YELLOW)	**P2-2**
Pulser A IN (ORANGE)	**P2-3**
Pulser B OUT (GREY)	**P2-4**

Figure 9 **TTC 200 / TOKHEIM 162 WIRING DIAGRAM**

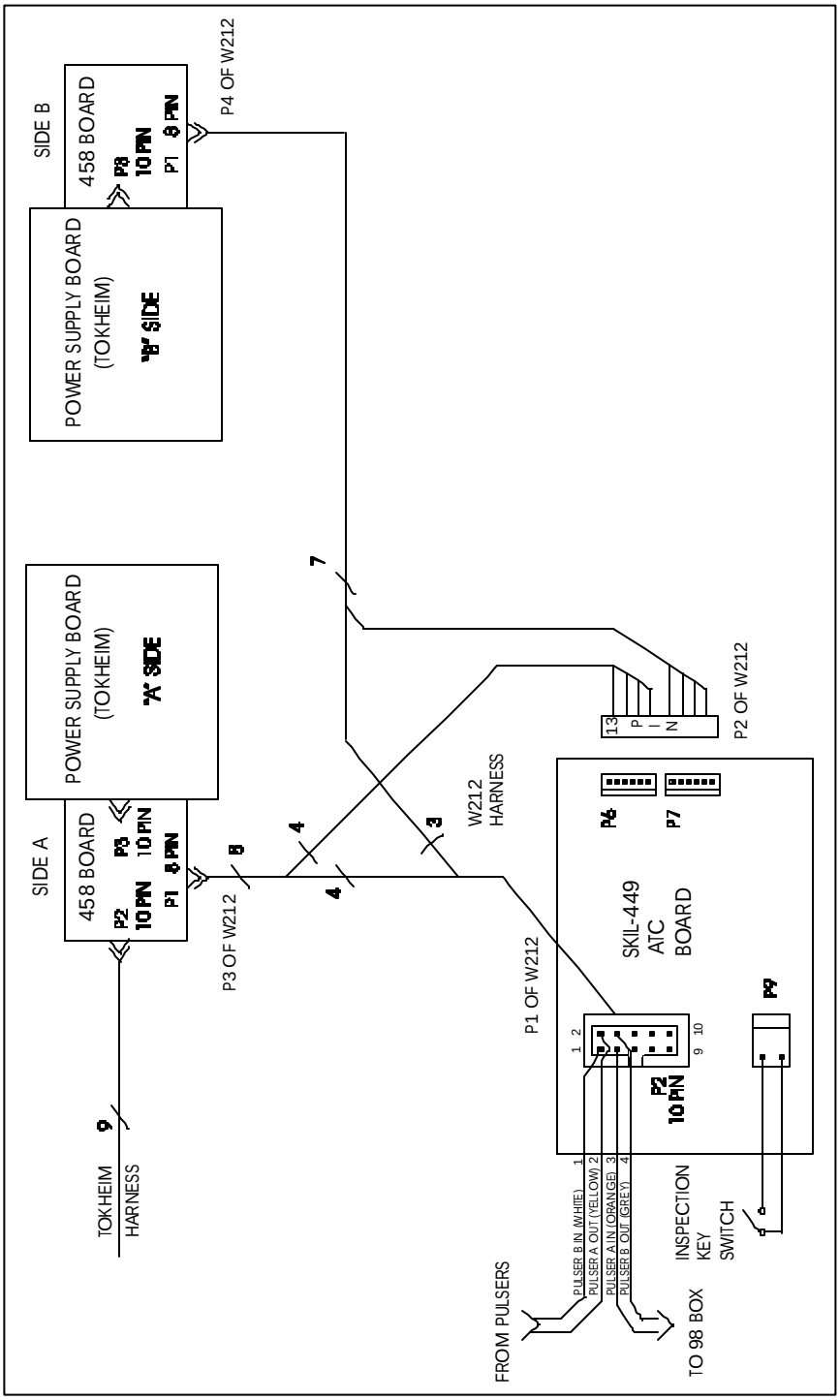


Figure 10 **TTC-200 / TOKHEIM 162 ADAPTER BOARD**

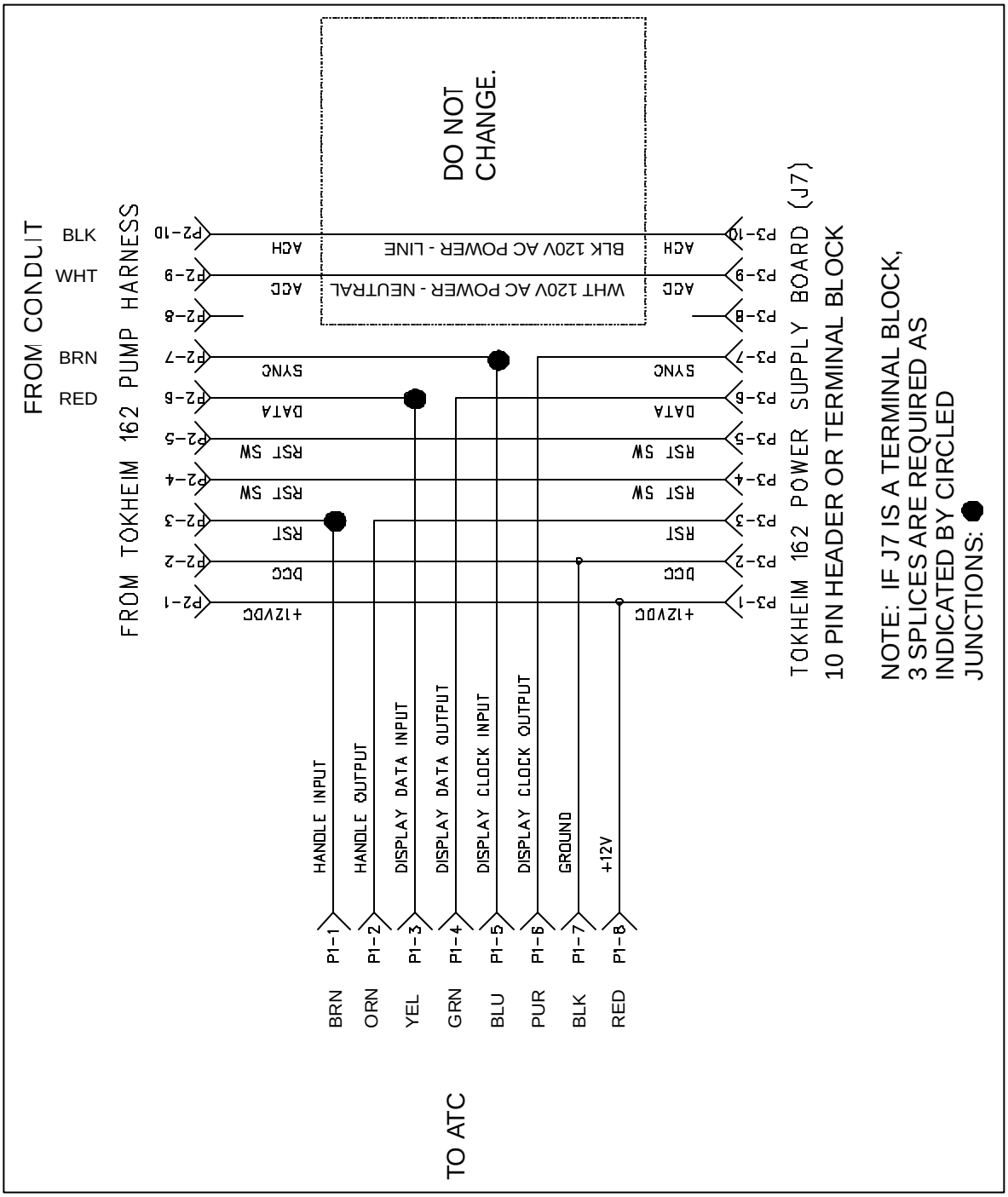
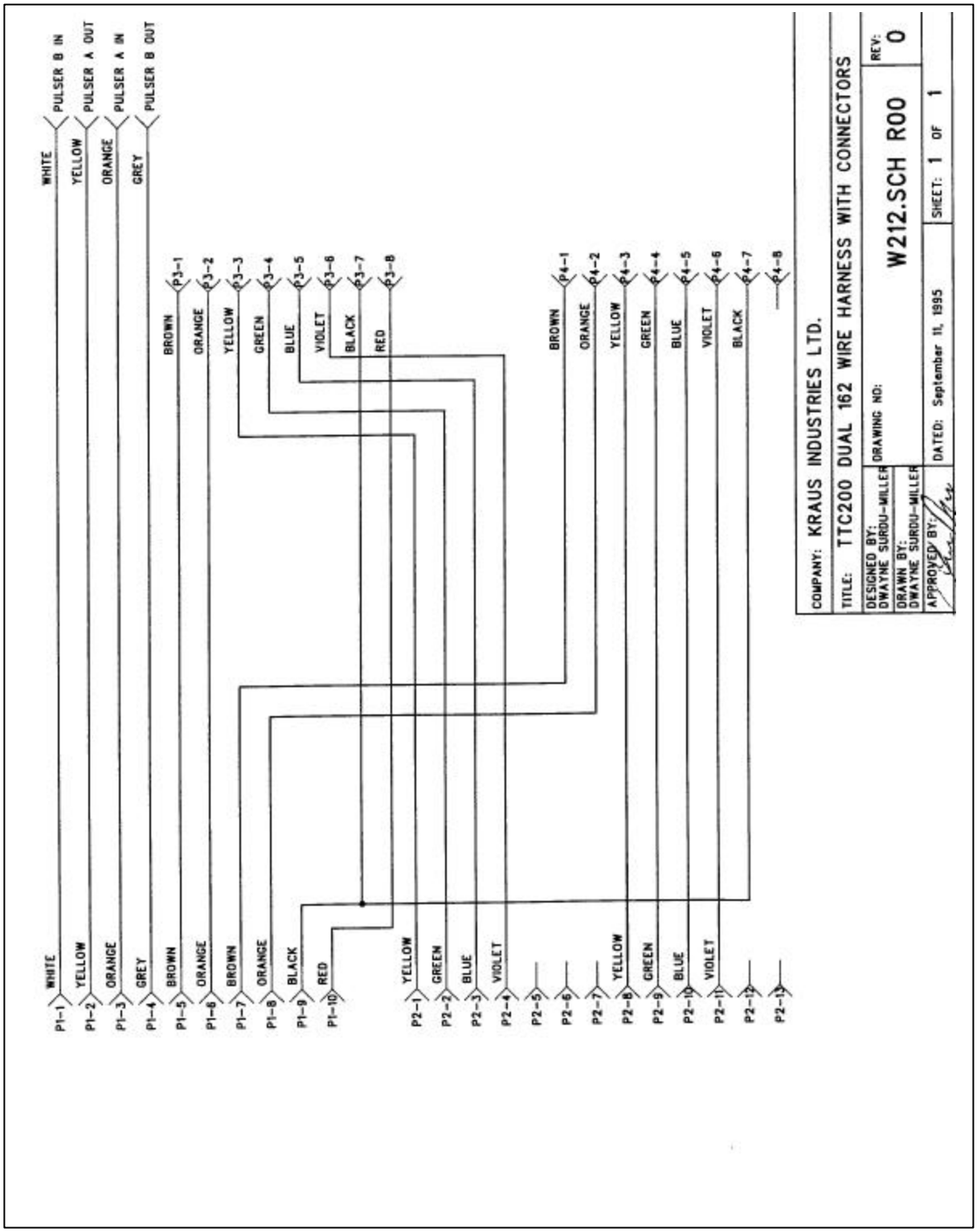


Figure 11 **TTC DUAL 162 WIRE HARNESS WITH CONNECTORS**



2.3 Post Installation

2.3.1 Probe Connection Verification

1. Apply power to the unit, and initialize the system as per the Tokheim instructions.

2. Run a delivery into a test can.

   The ratio of the net volume and gross volume should be the correct VCF for the temperature displayed and the product selected. Now unplug the probe to the selected product. The pump should stop delivering fuel the display should indicate a temperature probe failure.

3. Repeat the test procedure for each product on both sides of the dispenser.

2.3.2 TTC 200 Keyswitch

KEY REMOVABLE CENTRE POSITION – NORMAL

KEY TO LEFT – ATC INSPECTION

KEY TO RIGHT – NOT USED

2.3 Post Installation 2.3.3 TTC 200 Display Messages

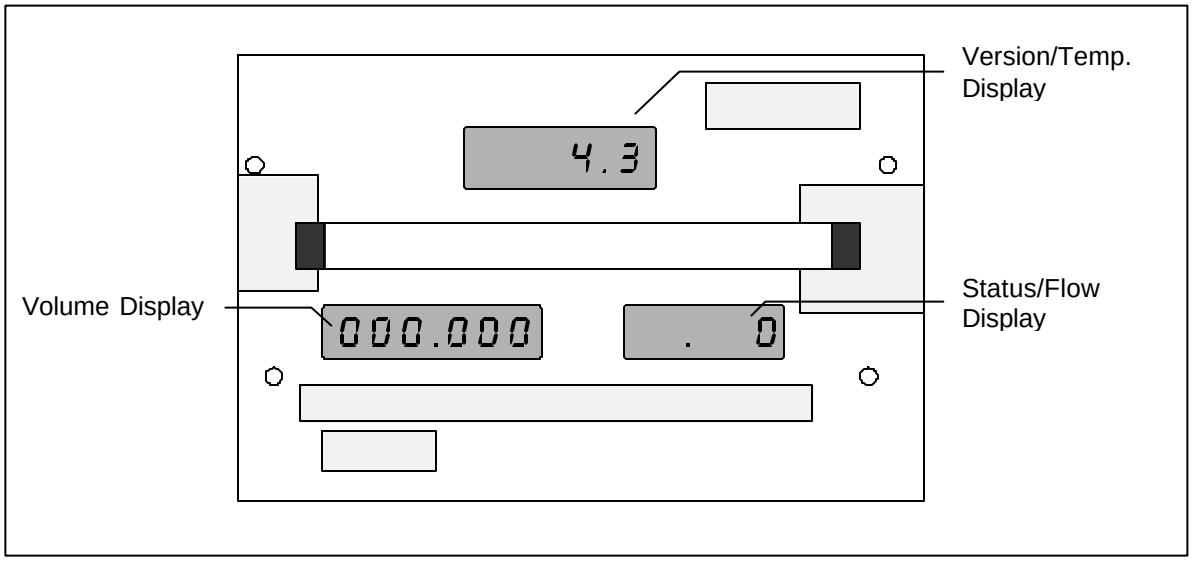
The TTC 200 Version/Temperature display becomes active when the dispenser handle is lifted. The version number of the TTC 200 firmware is displayed for a short period, then the product temperature, in degrees Celsius, is displayed.

The TTC 200 Status/Flow display shows status when the dispenser handle is active and no flow has begun. Before flow has begun, the status is display as follows:

- The rightmost digit is a “0” if ATC is OFF, “1” if product is gasoline, or “2” if product is diesel.
- The digit immediately left of the rightmost digit should always be blank.
- The digit immediately right of the decimal point is normally blank, or is “8” if there is a probe error.
- The leftmost digit is normally blank, or is “8” if there has been an abnormal reset.

When flow has begun, the flow rate is displayed as hundreds of volume units per minute.

Figure 12 Display Messages



2.3 Post Installation

2.3.4 Enabling ATC Function

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

The ATC function must be disabled with the appropriate DIP switch until the pump is inspected.

Once the pump has been approved by the inspector, the appropriate DIP switch should be positioned to enable the ATC function.

The BC256B "VOLUME CORRECTED TO 15° C" labels must then be applied to the faceplates adjacent to the volume displays, and the plate with the AV number must be applied to the side of the dispenser.

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

3.1 Components

3.1.1 TTC 200 Tokheim 262/162 ATC Kit Components

The following is a list of components supplied for installation on a Tokheim 262 (Table 5) and Tokheim 162 (Table 6):

Table 5 List of Components
TOKHEIM 262 ATC

QTY	PART #	DESCRIPTION
1	229AY00	TTC 200 ATC BOARD & BOX ASSEMBLY
2	SKIL-454	TTC 200/TOKHEIM 262 DISPLAY ADAPTER BOARD
2	SKIL-456	TTC 200/TOKHEIM 262 PULSER/HANDLE ADAPTER BOARD
1	218AY00	DUAL INTRINSIC SAFETY BARRIER
1	212AY05	DUAL PROBE CONNECTOR ASSEMBLY
1	W172	5 PIN 3 WIRE HARNESS FOR I.S. BARRIER
2	W199	PROBE ASSEMBLY
2	BC407	THERMOWELL
2	BC546	120-B 1/8" NPT ADAPTER DRILLED TO 17/64" I.D.
2	235-C	THERMOWELL PLUG
2	122-B	1/8" NPT x 1" HEX NIPPLE
2	103-B	1/8" NPT COUPLING
4	BC256A	WHITE "VOLUME CORRECTED TO 15°C" LABEL
2	W208	DISPLAY ADAPTER HARNESS
10		18-22 AWG CRIMP SPLICE
1	W314	KEYSWITCH ASSEMBLY
1	W209	PULSER/HANDLE ADAPTER HARNESS
1	BC1380	SERIALIZED AV-2322 NAMEPLATE
1		5/16" HEX NUT
1		5/16" FLAT WASHER

Table 6 List of Components
TOKHEIM 162 ATC

QTY	PART #	DESCRIPTION
1	229AY00	TTC 200 ATC BOARD & BOX ASSEMBLY
2	SKIL-458	TTC 200/TOKHEIM 162 ADAPTER BOARD
1	218AY00	DUAL INTRINSIC SAFETY BARRIER
1	212AY05	DUAL PROBE CONNECTOR ASSEMBLY
1	W172	TWO-PROBE WIRE HARNESS
2	W199	PROBE ASSEMBLY
2	BC407	THERMOWELL
2	BC546	120-B 1/8" NPT ADAPTER DRILLED TO 17/64" I.D.
2	235-C	THERMOWELL PLUG
2	122-B	1/8" NPT x 1" HEX NIPPLE
2	103-B	1/8" NPT COUPLING
4	BC256A	WHITE "VOLUME CORRECTED TO 15°C" LABEL
20		18-22 AWG CRIMP SPLICE
1	W314	KEYSWITCH ASSEMBLY
1	W212	TTC 200 TOKHEIM 162 ADAPTER HARNESS
1	BC1380	SERIALIZED AV-2322 NAMEPLATE
1		5/16" HEX NUT
1		5/16" FLAT WASHER

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