

MICON 100

ELECTRONIC RETROFIT
PUMP COMPUTER

KRAUS
INDUSTRIES LTD

PHONE (204) 224-1616

KRAUS
INDUSTRIES LTD
P.O. BOX 250, 204 DAY STREET
WINNIPEG, MANITOBA
R2C 1A8

TELEX 07-57829
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MICON 100

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MICON MAIN BOARDS &
ATC BOARD PROGRAMS

MICON 100
STRAUS INDUSTRIES LTD

MICON 100
STRAUS INDUSTRIES LTD

TOTAL SALE
\$ 0000.00
ACHAT TOTAL

LITRES
0000.00

PRICE PER LITRE TAXES INCLUDED
PRIX AU LITRE TAXES COMPRISES

0000

VOLUME CORRECTED TO 15° C.
VOLUME CORRIGE A 15° C.

100
ES LTD

MICON 100
Electronic Pump Computer

STRAUS INDUSTRIES LTD

MICON 100

Electronic Pump Computer

Low cost, proven reliability and unique features have made the MICON 100 the superior choice for retrofit pump electronics, and to incorporate into new designs.

FEATURING:

- Easy field installation on older pumps with mechanical computers.
- Supports simple and advanced electronic communications with pump consoles for such functions as remote price setting and totalizer reading.
- "At pump" price setting and totalizer display done simply with a small hand held communicator.
- Easy to read liquid crystal displays.
- Battery backup with displayable data while AC power is off.
- Low battery indicator.
- Can be used in high speed product delivery situations (up to 180 units per minute).
- Mechanical volume totalizer backup.
- Volume and dollar pulser outputs with optional rate output.
- Built-in slow down solenoid driver for prepay or preset operation.
- Direction of rotation sensing/compensating shaft encoder for meter input.
- Automatic shut-down on pulser fault.
- One year warranty on parts; 90 days on labour.

OPTIONS:

- Automatic Temperature Compensation for gasoline, propane and Diesel fuel.
- Two tier price switch with independent volume and dollar totalizers for each of two prices.
- Electronic calibration of meter input.
- Retrofit kits include various items depending on the make and model of pump being converted.
- Various shaft input rates and pulser output rates available.
- Customized colors.
- Customized currency and volume modes.
- Remote shaft encoder input.
- Power input 220 Volt 50/60 Hz.

SPECIFICATIONS:

- Sale display to \$9999.99 and 999.999 units on .7 inch LCD.
- Price display to \$9.999 on .5 inch LCD.
- Non resetable dollar totalizer(s) to \$999999.99.
- Non resetable dollar totalizer(s) to 999999.999 units.
- Maximum pumping rate 180 units per minute.
- Stand by battery life more than 1 month.
- Power consumption less than 50 watts max.
- Intrinsically safe design.
- Operating temperature range -55 to +70 degrees C.

For more information contact your local Kraus representative or:

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PRODUCT INFORMATION BULLETIN

SUBJECT: AUTOMATIC TEMPERATURE COMPENSATION

Kraus Industries is pleased to announce that the MICON 100 I Electronic Register is available with solid state automatic temperature compensation for use on liquid propane gas (LPG) dispensing devices, gasoline and diesel. Automatic temperature compensation is an especially important feature in LPG dispensing due to the expansion contraction properties exhibited by LPG. (See Table)

ATC OPTION OPERATION FEATURES:

- 1) Weights and Measures Approved (S.WA-2056).
- 2) Corrects dispensed volumes to 15° C.
- 3) Electronic calibration capability to compensate for meter calibration error up to $\pm 6.35\%$ or 0 to 12.75 %.
- 4) Missing pulse detector shuts down the dispenser in 45 seconds if no product is being dispensed.
- 5) Temperature probe failure detection 59.0 short, open: (-47.2).
- 6) Switch selectable feature permits the display of the following information:
 - (a) Product temperature
 - (b) Product flow rate in litres per minute
 - (c) Uncompensated volume
- 7) Adaptable to most types of propane meters.
- 8) Product temperature range from -45 to +59° C.

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Page 2 cont'd

- 9) Fast response time to changes in product temperature.
- 10) Adaptable to a wide range of fuels including gasoline and diesel.

LPG VOLUME CHANGE VS TEMPERATURE

TEMPERATURE °C	% VOLUME CHANGE FROM 15°C
-40	-13.9
-30	-11.5
-20	- 9.2
-10	- 6.8
0	- 4.2
+10	- 1.4
+15	0
+20	+ 1.4
+30	+ 4.6
+40	+ 7.7

INSTALLATION

MICON 100ITM INSTALLATION INSTRUCTIONS

NINTH EDITION

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Issue date : May 1990

1.0 IMPORTANT NOTICES

- 1) All wiring must be installed in accordance with National and local electrical codes.
- 2) **WARNING:** Substitution of components may impair intrinsic safety. **AVERTISSEMENT:** La substitution de composants peut compromettre la securite intrinseque.
- 3) When this unit is used in retail trade, Consumer and Corporate Affairs, Legal Metrology Branch, must be notified of the installation or service of this unit. This unit is subject to inspection upon installation and at such other times as the regulations may state.
- 4) When ATC is used, a thermal well must be provided. In addition to the thermal well and probe fitting, new installations will require two BC-256 labels ("CORRECTED TO 15 C"). These labels must be attached to each faceplate of the dispenser and be visible to the customer. These labels are provided with the MICON 100IP, gasoline and diesel versions, and additional labels are available upon request. (see section 7.0)

2.0 - PRE INSTALLATION CHECK

After carefully unpacking the MICON 100I inspect the computer for shipping damage.

Refer to the options label(s) on the MICON 100I nameplate(s) to ensure the MICON 100I is properly configured for the intended application.

A preliminary electrical check should be performed in the following manner:

(1) The MICON 100I computer is shipped with the pump handle actuator shaft in the battery-off position. The position of this shaft is denoted by the flat surface on the end of the shaft facing down. Rotate the coupler assembly 90 degrees so that it snaps over against the opposite stop pin. (Refer to Figure 2.1).

(2) Observe that the displays sequence through the digits 1 through 9, the option configuration display and the software version number, then show slowly flashing zeros on the dollars and volume displays only.

When the option configuration is displayed, the first eight digits of the dollars and volume displays will each show "1" or "0". The left digit on the dollars display is digit 7, the one to the right of that is digit 6, and so on down to the second digit from the left on the volume display, which is digit 0. The meaning of each digit is explained below:

(DIGIT VALUE = 0 = "STANDARD CONFIGURATION")

DIGIT	FUNCTION
7	0 = LITRE OUTPUT 10 PPU (4mSEC WIDTH OR 30mSEC SEE DIGIT 1) 1 = LITRE OUTPUT 100 PPU (2mSEC WIDTH)
6	0 = .030 UNITS SUPPRESSION AT RESET 1 = .009 UNITS SUPPRESSION AT RESET
5	0 = 1000 COUNTS / UNIT 1 = 378.4 COUNTS / UNIT
4	0 = COUNT = 1X INPUT FROM ENCODER 1 = COUNT = 2X INPUT FROM ENCODER
3	0 = DOLLARS CURRENCY MODE 1 = PESOS CURRENCY MODE
2	0 = NO IDLE FLOW SHUT DOWN 1 = IDLE FLOW SHUT DOWN AT 1.5 MINUTES

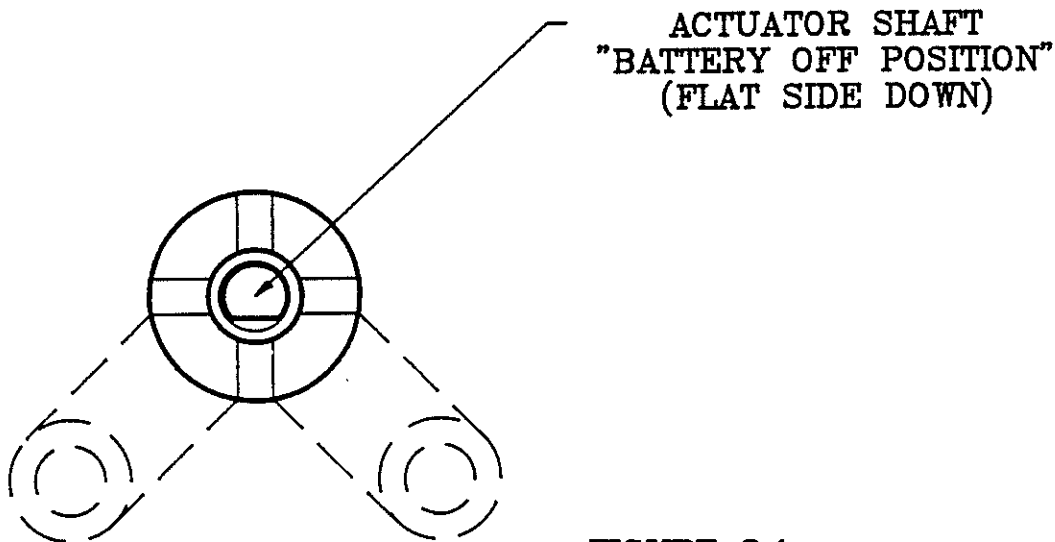
DIGIT	FUNCTION
1	0 = NORMAL PULSE WIDTH ON PULSER OUTPUTS 1 = LONG (30mSEC) PULSE WIDTH ON PULSER OUTPUTS (ONLY VALID IF BIT 7 IS IN 10 PPU MODE)
0	0 = NORMAL OPERATION 1 = DISPLAY SELF TEST (I.E. CONTINUOUSLY CYCLE THROUGH "COLD START" SEQUENCE)

(3) Enter a price as described in Section 6.2.

(4) Note the reading of the mechanical counter. Rotate the input shaft on the bottom of the MICON 100I in one direction until the mechanical counter has incremented by 1.00 units. On the MICON 100I the volume display should indicate 1.000 units. On a MICON 100I-G, the display should indicate 3.780 units. On a MICON 100IP the volume display should indicate the multiplication factor ("MF") of the ATC (eg. if the ATC has a MF of four the display should indicate 4.000 units).

(5) Rotate the coupler assembly back to the original battery-off position.

If any faults are detected during this preliminary check, consult factory or service representative.



3.0 - PHYSICAL MOUNTING CONSIDERATIONS

The MICON 100I retrofit electronic computer has been carefully designed to simulate the mechanical registers presently being used in most gasoline dispensers. Some physical differences however may exist which require some modification to the dispenser. Kraus Industries Ltd. is presently offering accessory parts to facilitate the field installation of the MICON 100I into various dispensers. These accessory parts must be ordered separately.

3.1 GENERAL

- 1) The input shaft of the MICON 100I must be driven four (4) turns per unit. Therefore, if the meter is not equipped with a metric gear kit, a metric conversion box is required.
- 2) The handle switch coupling on the side of the MICON 100I must be connected to the pump handle as shown in Figure 3.1. In most installations the pump handle can be coupled directly to the MICON 100I. However, some dispensers require an adaptor kit. The MICON 100I handle switch can be turned to the "on" position by rotating the actuator shaft 90 degrees in either a clockwise or counterclockwise direction. Refer to Section 3.2.
- 3) The customer lead exit, located on the top of the explosion-proof housing must be connected to a suitable junction box or light canopy with rigid pipe. Refer to Figure 3.1.
- 4) Consumer and Corporate Affairs, Legal Metrology Branch, requires that the MICON 100I have control of product flow so that the MICON 100I can stop product flow if a measurement fault is detected. Some dispensers in submersible systems incorporate a mechanically controlled valve which is not compatible with the MICON 100I installation. In such case an electrically controlled valve would have to be installed.

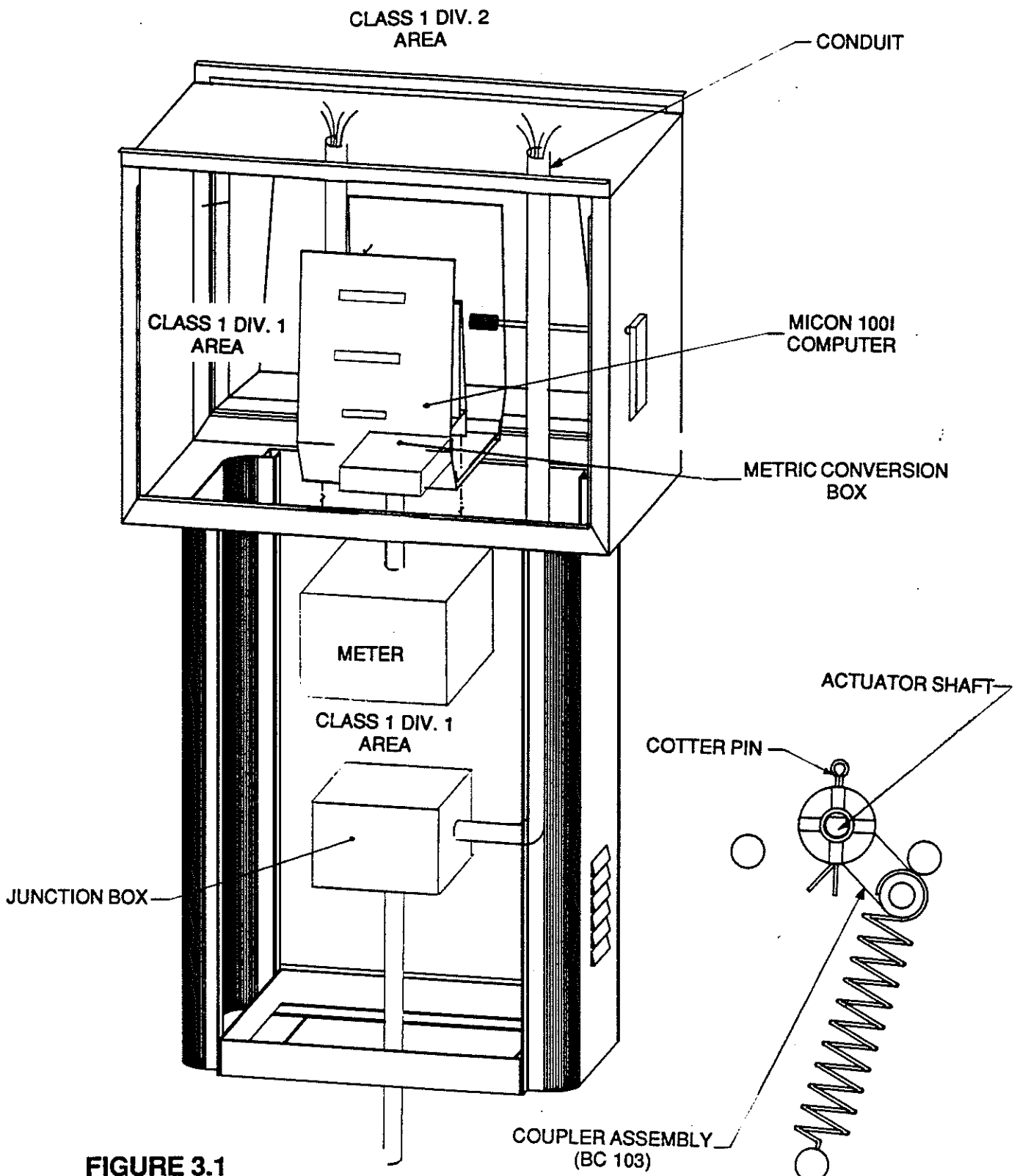


FIGURE 3.1

FIGURE 3.2

3.2 - HANDLE SHAFT ACTUATION

The MICON 100I internal switches may be switched on by rotating the actuator shaft 90 degrees in either direction. As shipped from the factory, a counterclockwise rotation (as viewed from the coupler side) is required to switch the head on. If the installation requires a clockwise rotation to turn the head on, complete the following steps:

- 1) Turn the coupler assembly to the desired "off" position.
- 2) Remove the cotter pin which secures the coupler assembly to the actuator shaft.
- 3) Rotate the actuating shaft until the flat surface on the end is facing upwards, and re-install the cotter pin.
- 4) Test for continuity between wires #14 and #15. When the actuator shaft is in the off position there should be no continuity between these leads. Switch to the on position. In the on position there should be continuity between wires #14 and #15. Return the actuator shaft to the off position.

3.3 - ACCESSORY MOUNTING KITS

The installation of the MICON 100I in certain dispensers requires the use of accessory kits. Kits are available for a variety of Tokheim, Gilbarco, Wayne, Petroquip, Bennett and Schwelm dispensers.

Please refer to Section 8 of this manual for installation of the appropriate kit.

4.0 - CUSTOMER HARNESS LEAD ELECTRICAL CONNECTIONS

4.1 - GENERAL INFORMATION

* * * R E A D C A R E F U L L Y * * *

- 1) All wiring must be installed in accordance with National and local electrical codes.
- 2) **WARNING:** Substitution of components may impair intrinsic safety.

AVERTISSEMENT: La substitution de composants peut compromettre la securite intrinseque.

3) The customer lead exit, located in the top of the explosion-proof housing must be properly sealed when exiting into a Division 2 area. A suitable battening material must first be used to prevent the sealing compound from entering the housing. The seal must be a minimum depth of 5/8 inches or the inside diameter of the opening, whichever is the greater.

4) All unused wires must be capped or taped off.

WIRE COLOUR WIRE NUMBER DESCRIPTION

120 VAC Lines

Black 18 AWG	1	120 VAC head power hot line. If power is interrupted on this line, the head will go into standby and power-fail modes.
White 18 AWG	2	Neutral for head power and main board authorize/authorize request circuit.
Green 14 AWG	3	Earth. This line is connected internally to the casting and must be connected to the service ground.
Brown 18 AWG	14	Authorize input. Application of 120 VAC will "authorize" the MICON 100I to dispense product. If 120 VAC is not present when the handle switch is turned on, the MICON 100I applies a 2.7 K ohm resistor between this line and wire #2 to serve as an authorize request load for Kraus Industries Self-Serve equipment.
Grey 18 AWG	15	Authorize output. When 120 VAC is applied to wire #14 and the handle switch is on, 120 VAC will be present on this line.
Orange 14 AWG	8	Pump motor output. When the MICON 100I is ready to dispense product, the power applied to wire #7 is switched to this line to operate the pump motor.
Black 14 AWG	7	Pump motor input. This line is connected to wire #8 when the MICON 100I is authorized and the handle switch is on. This circuit must be supplied through a circuit breaker and wiring adequate to power the pump motors.

WIRE COLOUR WIRE NUMBER DESCRIPTION

Orange 18 AWG 6 Solenoid power out. This line is used to supply power to a slow-flow or cut-off solenoid under MICON 100I control.

Purple 18 AWG 20 Solenoid power in. This line is switched to wire #6 by the MICON 100I to activate the solenoid valve.

Low Voltage Lines

Yellow 18 AWG 4 Pulser common. This line is normally connected to the pulser power supply positive line (+30 volts maximum, DC only) and provides power to the penny and volume pulser lines.

Red 18 AWG 5 Penny pulser output. The MICON 100I will source a maximum of 100 mA from the pulser common (#4) to this line to form a pulse once for each penny of product dispensed. (Used with KRAUS MONITOR and MICRO consoles.)

Blue 18 AWG 18 Volume pulser output provides a pulse (as described above for penny pulser) for each specified fraction of a unit of volume. (Used for card or key systems.)

Micro 2 & Concept 5000 Data Communications Lines

Green 18 AWG 16 Data Channel Common. This line is connected to the "DCC" terminal block of a Concept 5000 control box or to the diode board of a Micro 2RP system.

Tan 18 AWG 10 Talk-To-Console. This line is connected to the "TTC" terminal block of a Concept 5000 control box and carries messages from the pump to the console.

Pink 18 AWG 9 Talk-To-Pump. This line is connected to the appropriate terminal on the "TTP" terminal block of a Concept 5000 control box or to the diode board of a Micro 2RP system and carries messages from the console to the pump.

- #7 14GA MOTOR POWER
- #8 14GA MOTOR OUT
- #20 18GA SOLENOID POWER
- #6 18GA SOLENOID OUT
- #4 18GA PULSER COMMON
- #5 18GA PENNY PULSER
- #18 18GA LITRE PULSER
- #16 20GA DATA COMMON SUPPLY
- #10 20GA SERIAL OUT
- #9 20GA SERIAL IN
- #15 18GA SWITCHED AUTH. OUT
- #14 18GA AUTH. POWER INPUT

- BLK OR 14GA
- Y OR 18GA
- Y R 18GA
- BLU 18GA
- GRN 20GA
- TAN 20GA
- PNK 20GA
- GRY 18GA
- BRN 18GA

- #1 BLK 18GA 120V HL.
- #3 GRN 14GA EARTH
- #2 WHT 18GA 120V NL

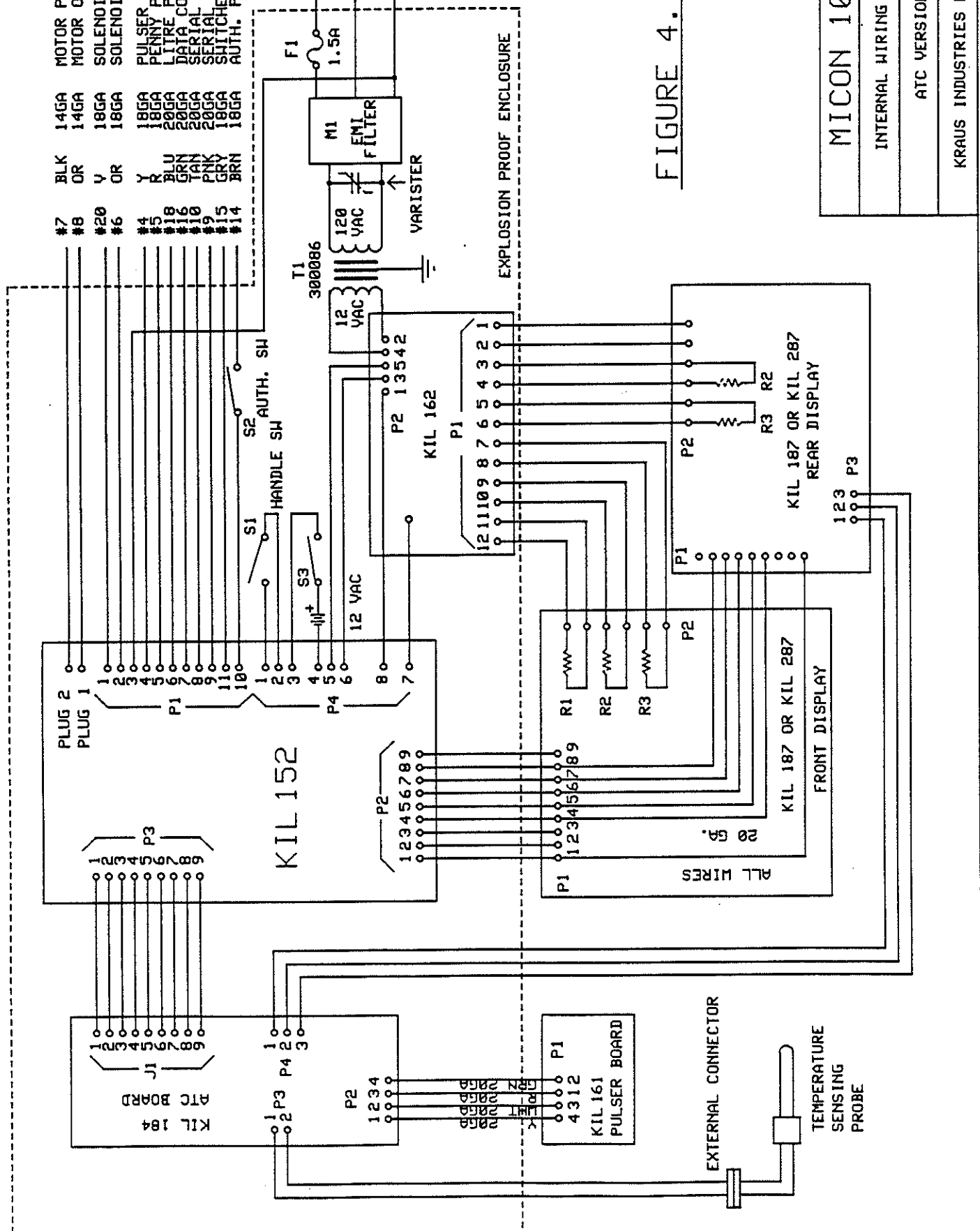


FIGURE 4.1A

MICON 100 I
 INTERNAL WIRING DIAGRAM
 ATC VERSION
 KRAUS INDUSTRIES LTD. 1990

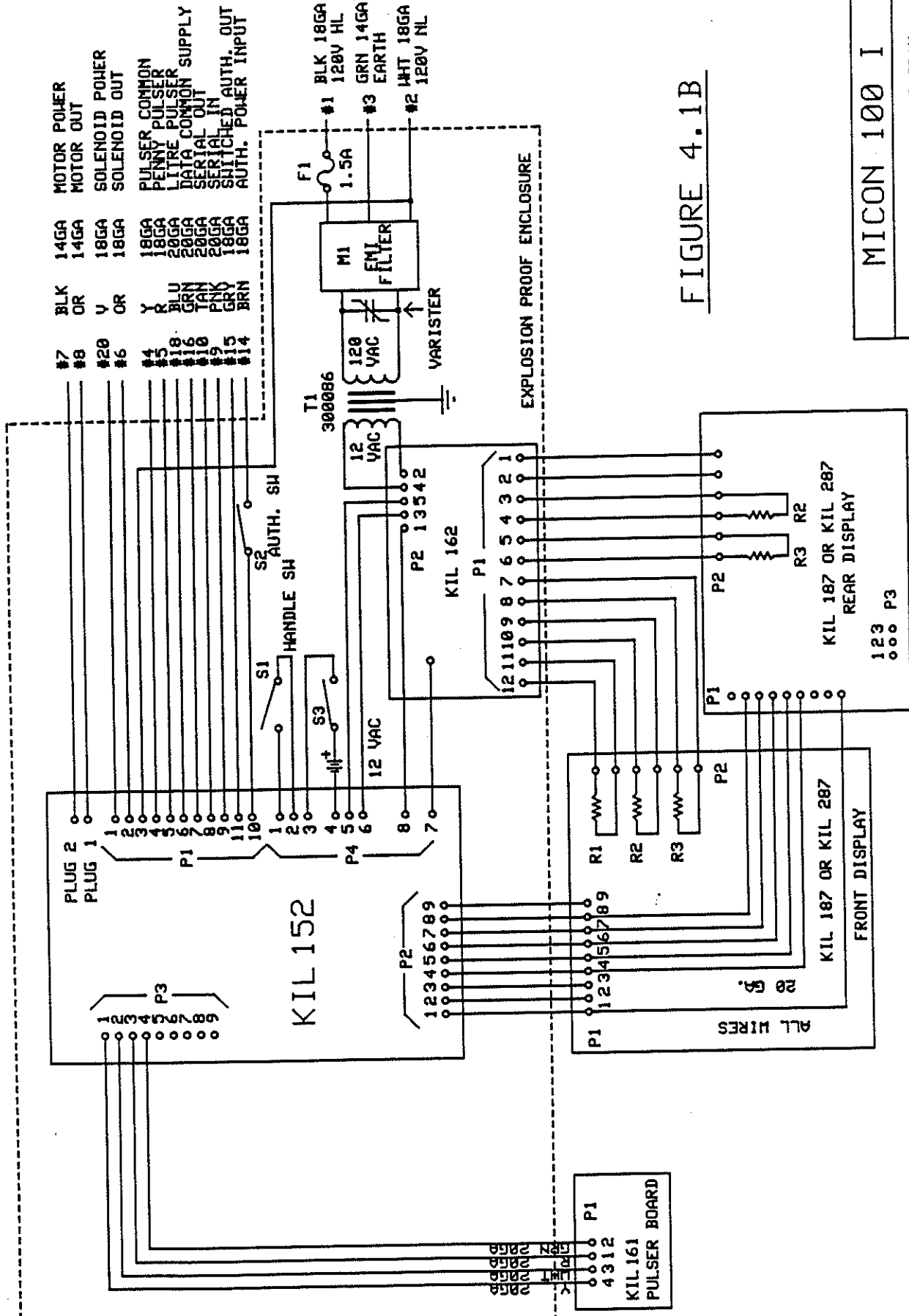
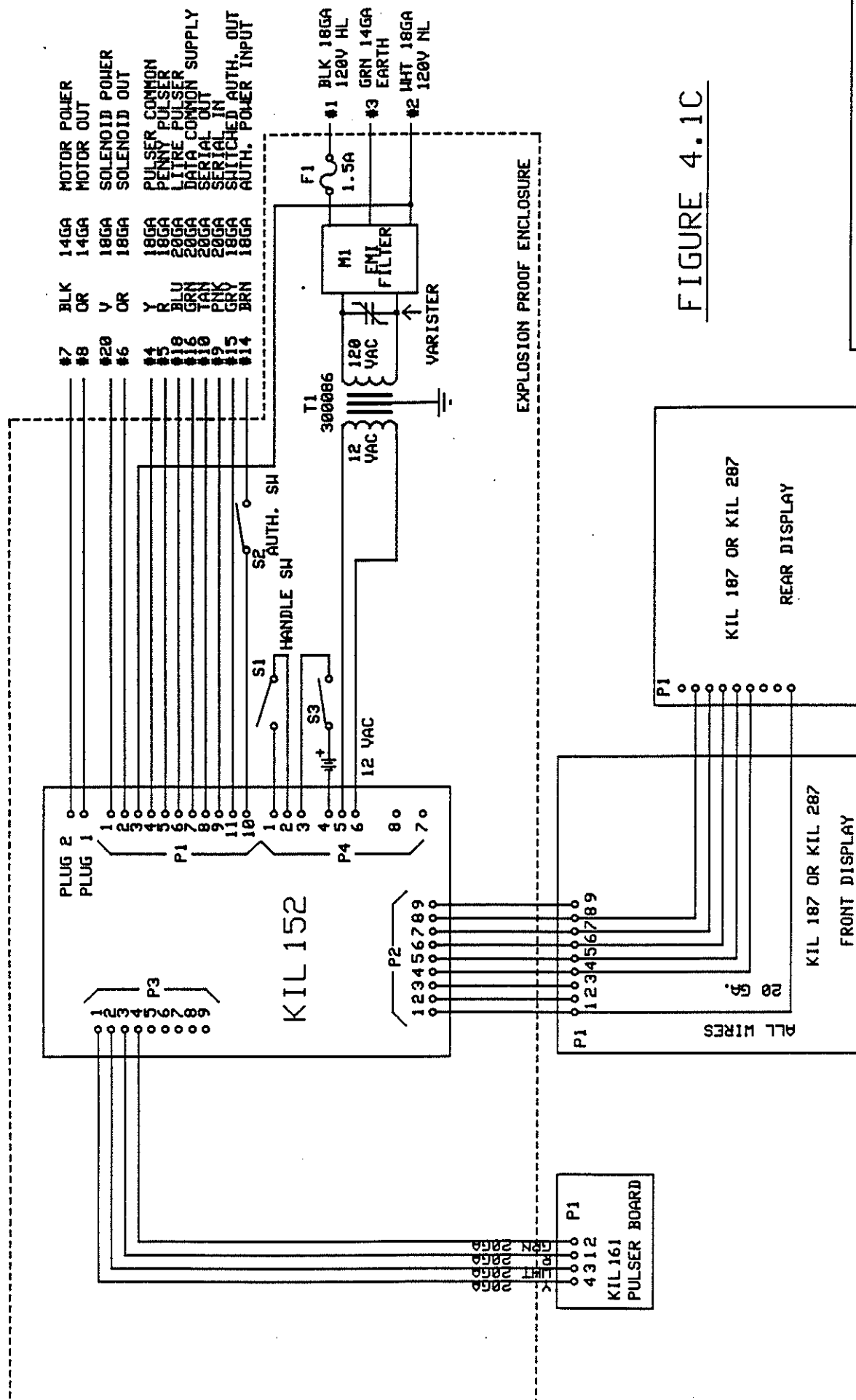


FIGURE 4.1B

MICON 100 I
INTERNAL WIRING DIAGRAM
STANDARD VERSION
KRAUS INDUSTRIES LTD. 1990



- #7 BLK 14GA MOTOR POWER
- #8 OR 14GA MOTOR OUT
- #20 V 18GA SOLENOID POWER
- #6 OR 18GA SOLENOID OUT
- #4 18GA PULSER COMMON
- #5 18GA PENNY PULSER
- #18 20GA LITRE PULSER
- #16 20GA DATA COMMON SUPPLY
- #18 20GA SERIAL IN
- #19 20GA SERIAL IN
- #15 PNK 18GA SWITCHED AUTH. OUT
- #14 BRN 18GA AUTH. POWER INPUT

- #1 BLK 18GA 120V HL
- #3 GRN 14GA EARTH
- #2 WHT 18GA 120V NL

FIGURE 4.1C

MICON 100 I
INTERNAL WIRING DIAGRAM
STANDARD VERSION WITHOUT HEATERS
KRAUS INDUSTRIES LTD. 1990

FIGURE 4.3

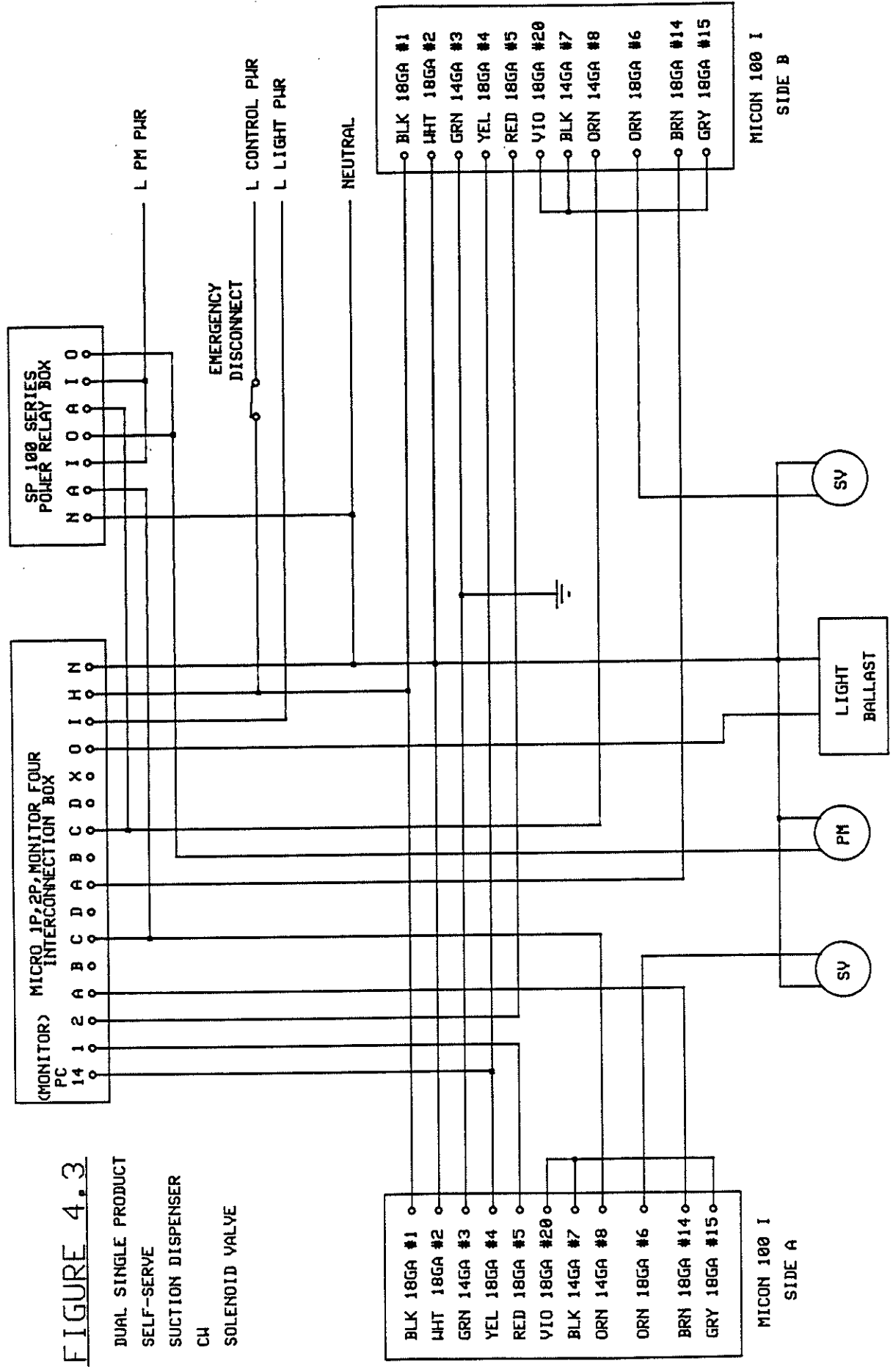


FIGURE 4.4

DUAL TWO PRODUCT/
SINGLE PRODUCT
SELF-SERVE
REMOTE DISPENSER

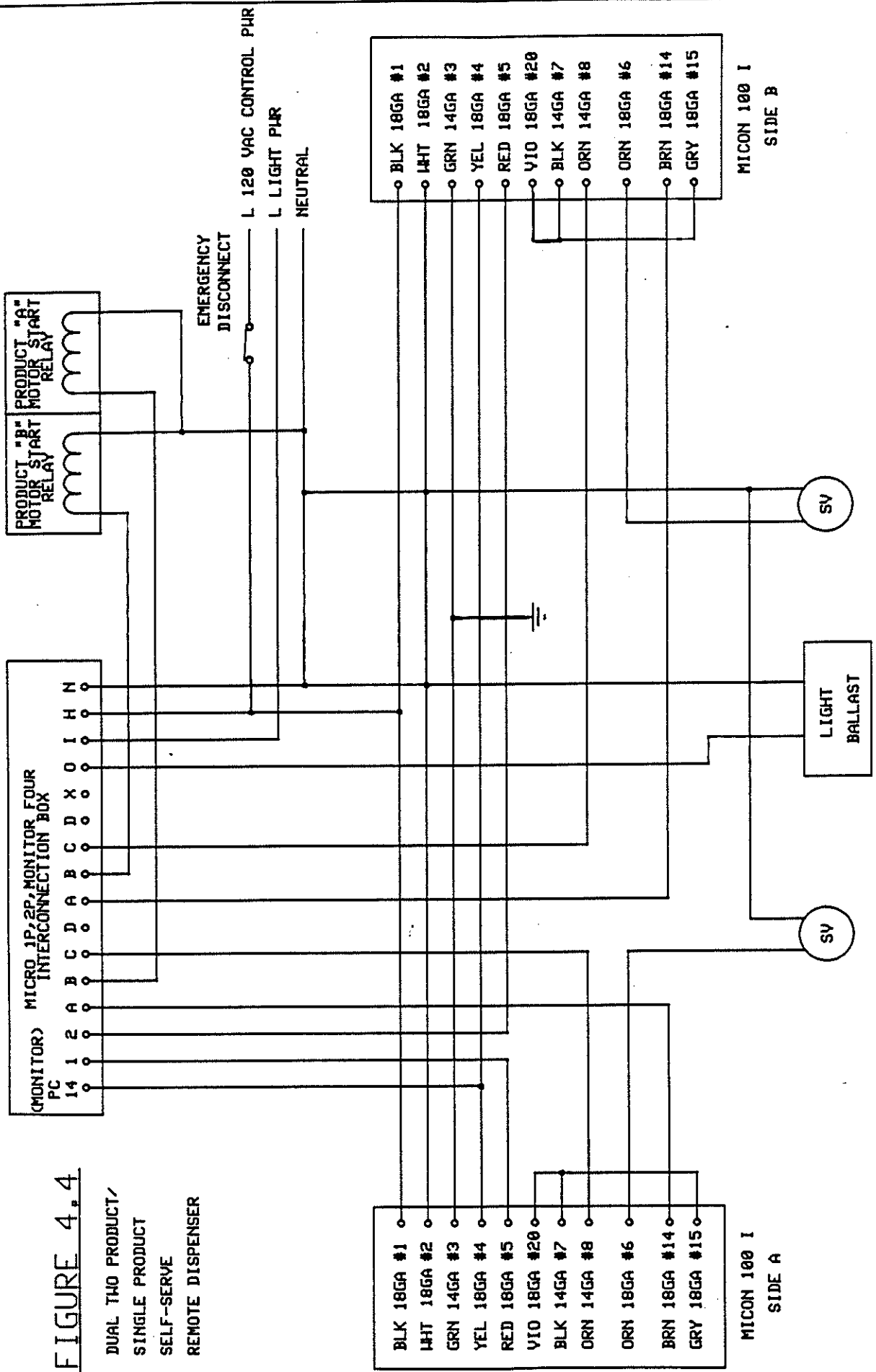


FIGURE 4.5

- DUAL TWO PRODUCT
- SELF-SERVE
- SUCTION DISPENSER
- CH TWO STAGE
- SOLENOID VALVE

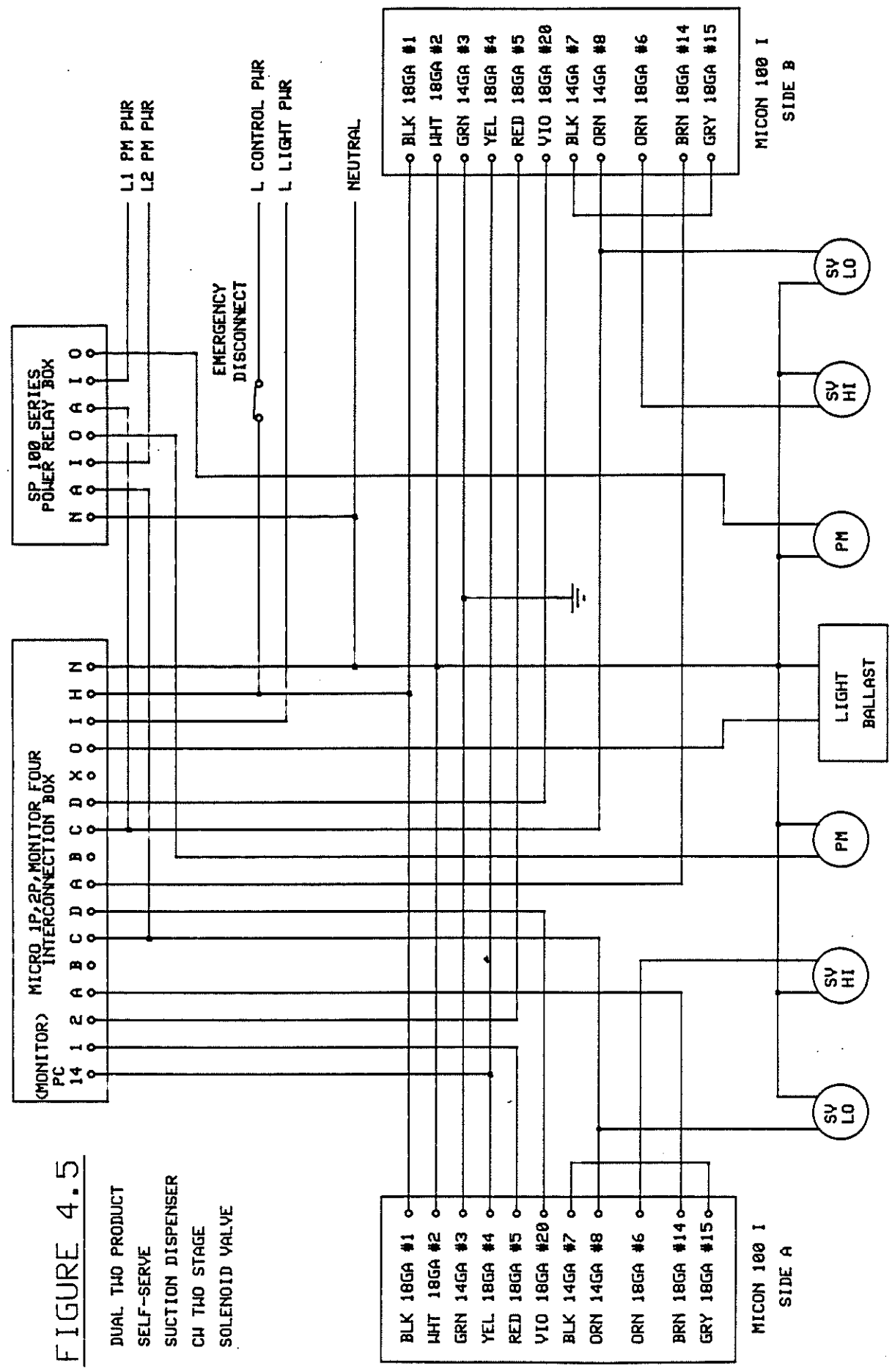


FIGURE 4.6

DUAL SINGLE PRODUCT
 SELF-SERVE
 SUCTION DISPENSER
 CH TWO STAGE
 SOLENOID VALVE

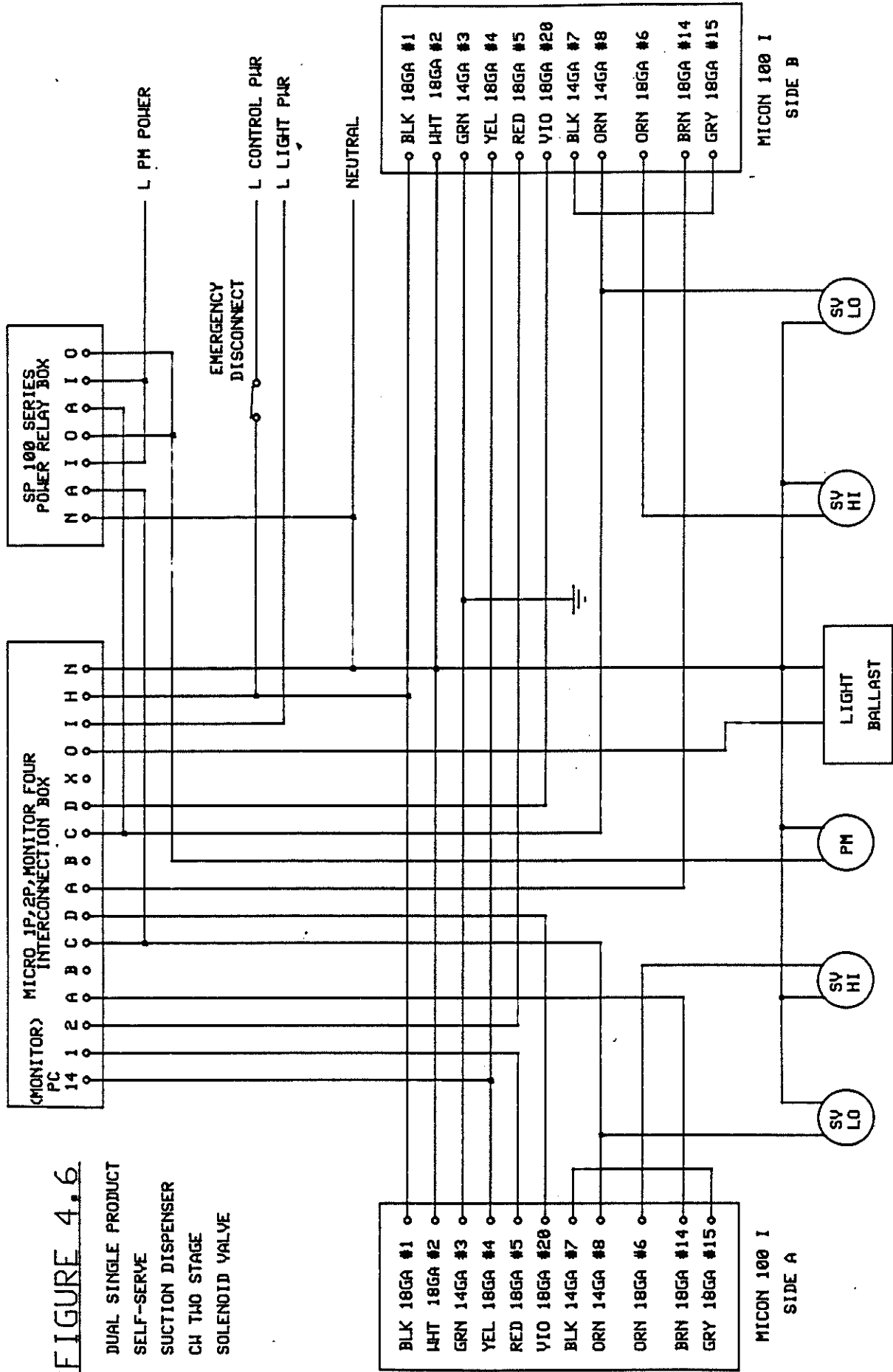


FIGURE 4.7

DUAL TWO PRODUCT/
SINGLE PRODUCT
SELF-SERVE
REMOTE DISPENSER
(NOTE 3)

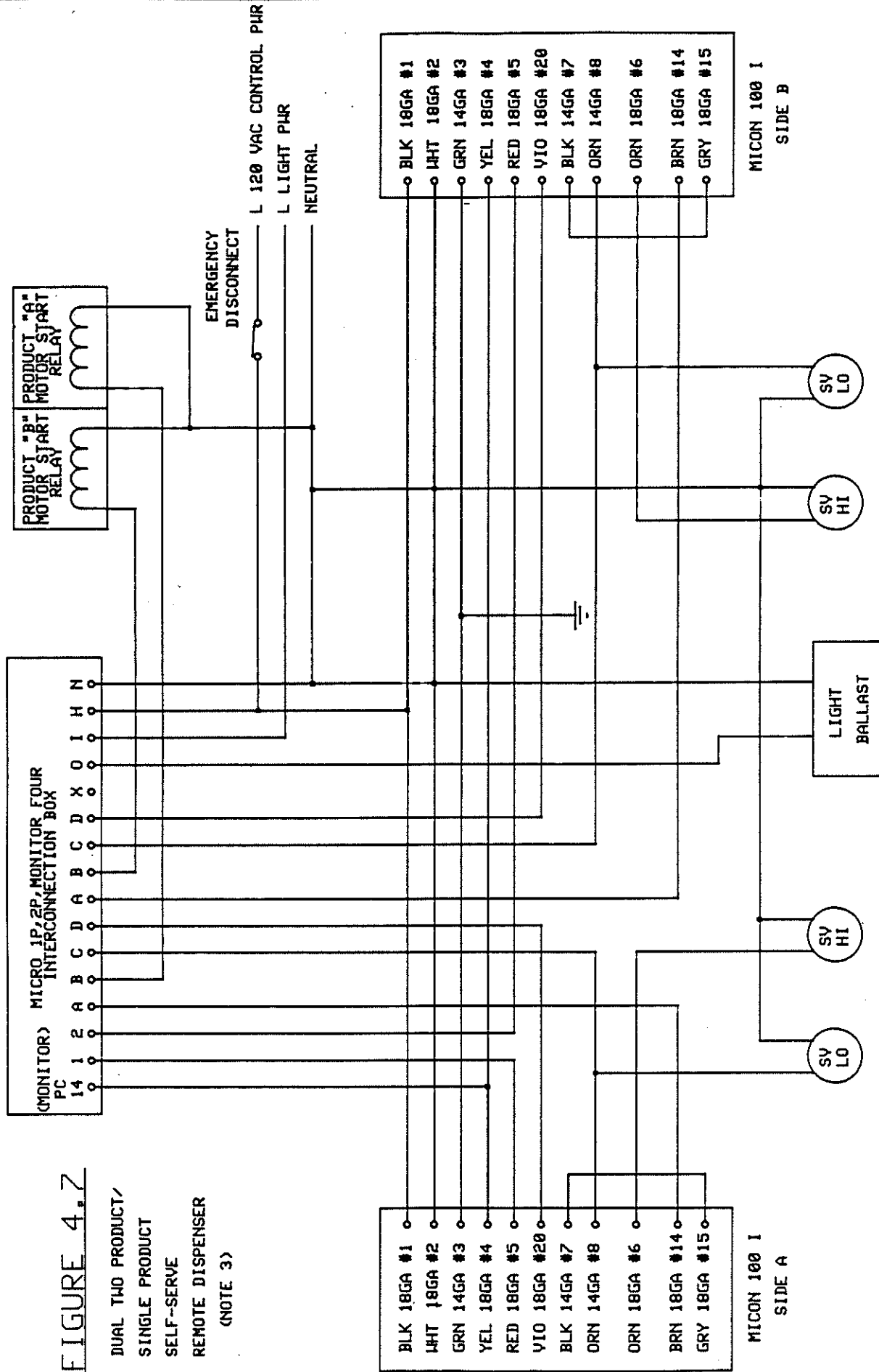


FIGURE 4.8

(NOTE 2)

DUAL SINGLE PRODUCT
ATTENDED
SUCTION DISPENSER

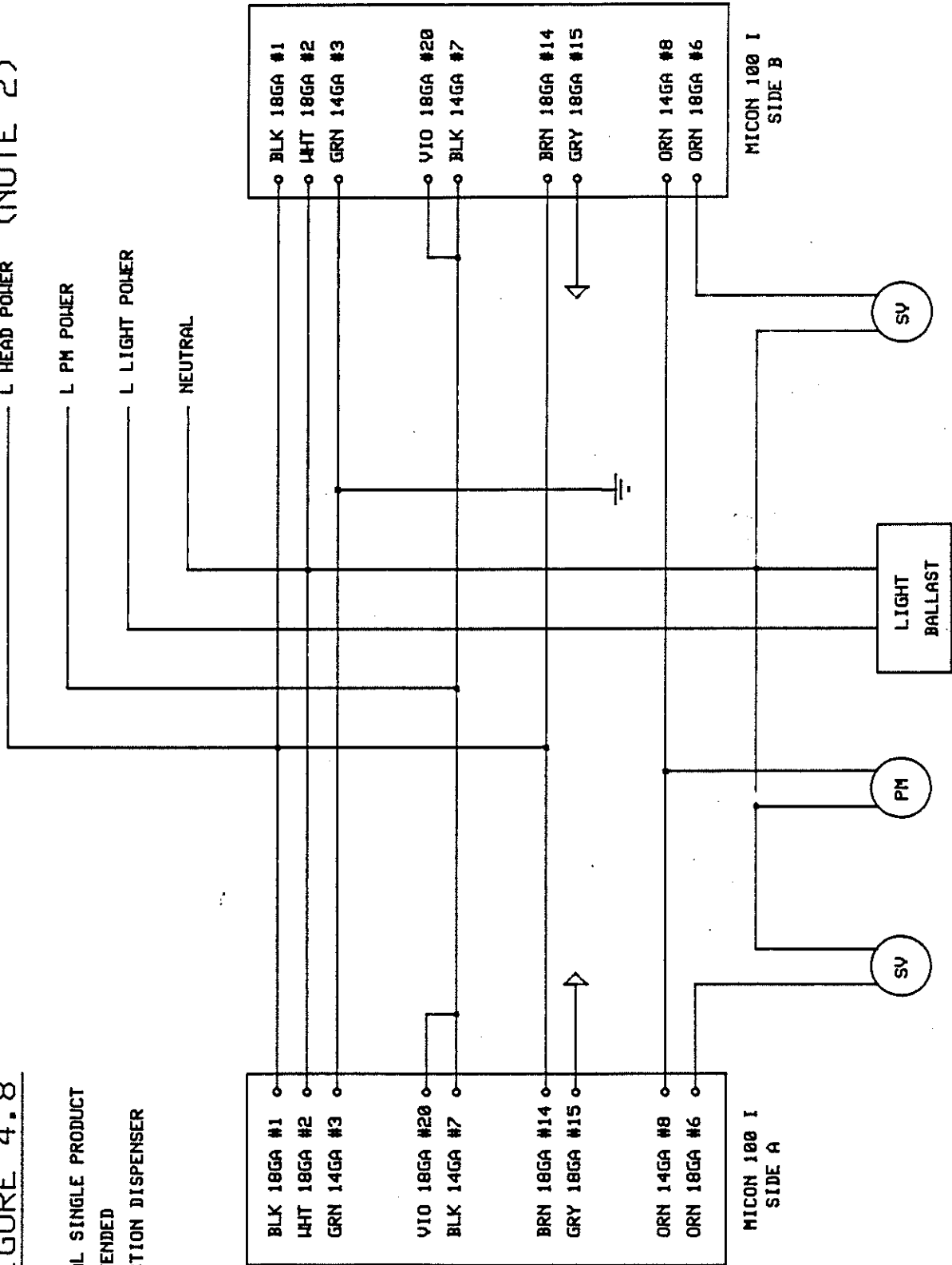


FIGURE 4.9

(NOTE 2)

DUAL SINGLE PRODUCT
ATTENDED
REMOTE DISPENSER

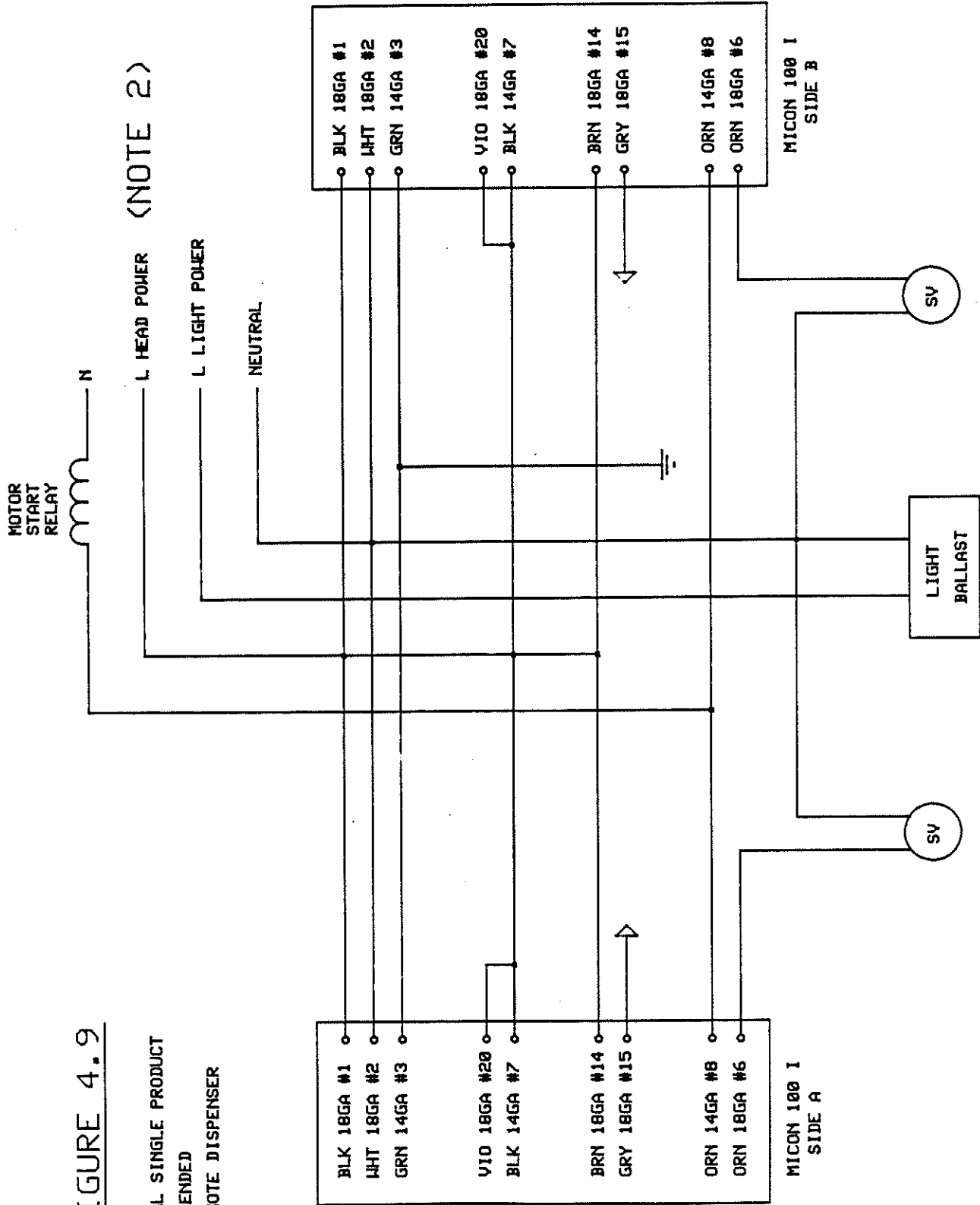
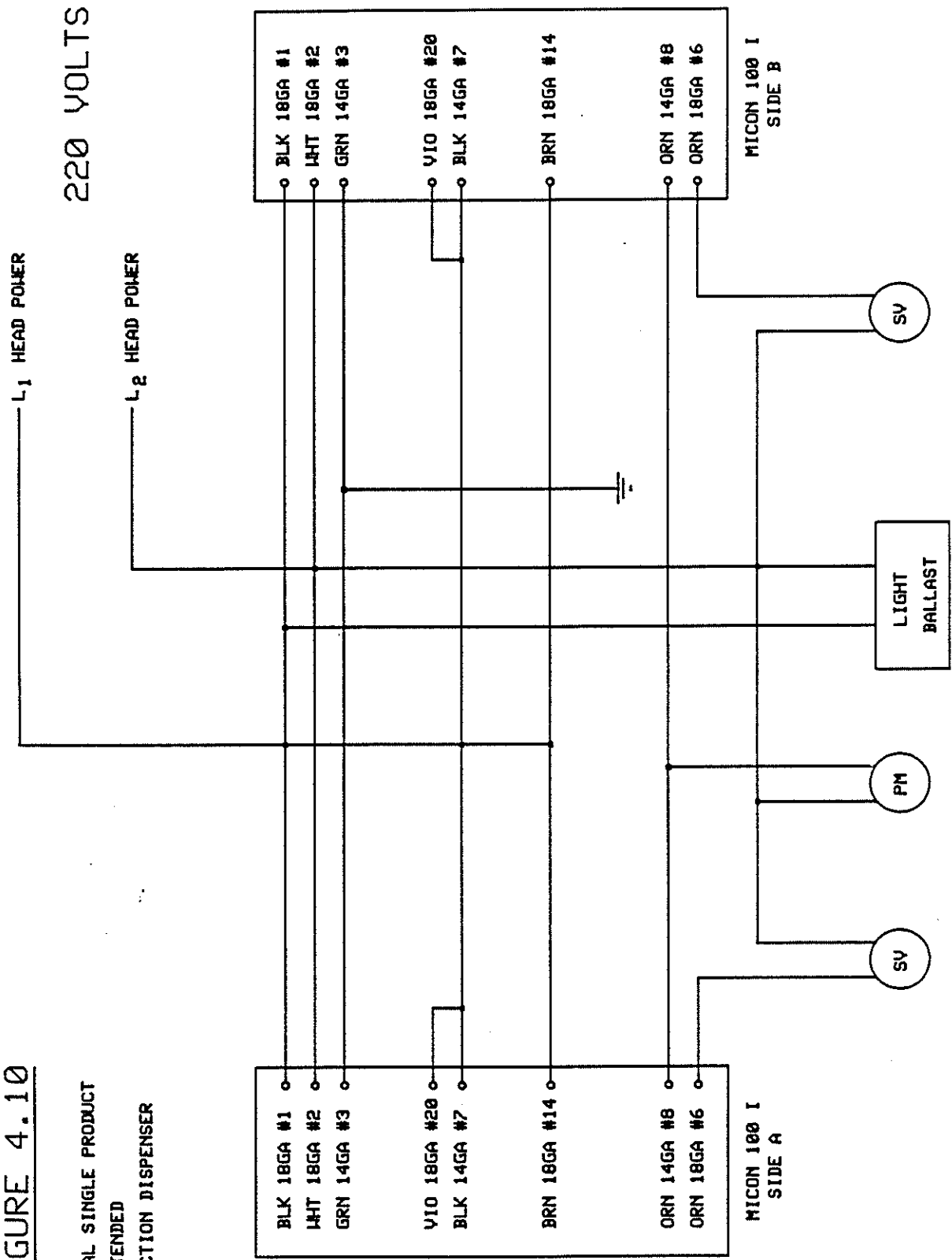


FIGURE 4.10

DUAL SINGLE PRODUCT
ATTENDED
SUCTION DISPENSER



5.0 POST INSTALLATION CHECK

After completing the installation of the Micon 100I and checking all wiring connections, the correct operation of the Micon 100I should be verified as follows:

- 1) Remove the cotter pin which secures the coupler to the actuator shaft. Rotate the actuator shaft 180 degrees so the flat side is facing up. (This will activate a micro switch which will energize the battery.) (See Figure 2.2) Carefully install the split pin in place of the cotter pin.
- 2) Enter a price as described in Section 6.1.2.
- 3) After entering a price, turn on the 115 volt head power.
- 4) Make sure the pump handle is in the off position. Turn on pump motor power and ensure that the pump motor does not run and that no product can be dispensed.
- 5) If remote self serve equipment is being used, place the pump handle in the on position. Authorize the Micon 100I with the self serve equipment. The Micon displays should flash to all 8's momentarily, displays then will blank out and then return to zero. Now, the pump motor should run and/or the solenoid valve should be energized.
- 6) For stand alone operation, turn on the pump handle. The Micon 100I displays will flash the same sequence as in section 5 and the pump motor should run and the solenoid valve will energize.
- 7) Dispense a convenient amount of product into a test can or prover and check that the Micon 100I displays the proper volume and dollar amount. For electronic calibration (if equipped with Automatic Temperature Compensation) refer to Section 7.
- 8) Place the pump handle in the off position and ensure that the pump motor and/or solenoid shuts off.

This completes the post installation check. If the unit does not function as described above contact your factory or service representative.

NOTICE

WHEN THIS UNIT IS USED IN RETAIL TRADE, CONSUMER & CORPORATE AFFAIRS, LEGAL METROLOGY BRANCH, MUST BE NOTIFIED OF THE INSTALLATION OR SERVICE OF THIS UNIT. THIS UNIT IS SUBJECT TO INSPECTION UPON INSTALLATION AND AT SUCH OTHER TIMES AS THE REGULATIONS MAY STATE.

WHEN ELECTRONIC CALIBRATION OR ATC IS USED, THE ENCLOSURE COVER MUST BE SEALED BY AN INSPECTOR AND THE UNIT MUST BE REINSPECTED IF THE SEAL IS BROKEN.

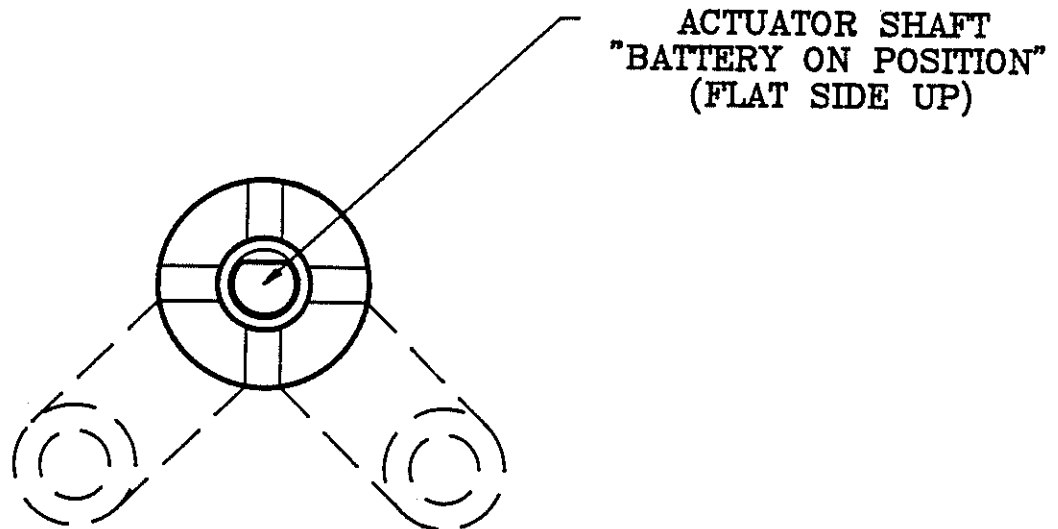


FIGURE 2.2

6.0 MICON 100I OPERATION

When the MICON 100I is used with self serve consoles other than the Concept 5000 or Micro 2P with price change, refer to Section 6.1 for information regarding price change and reading of totalizers.

When used with the Concept 5000 or Micro 2P with price change option, refer to Section 6.2. For Micro 2P with price change, totalizers must be accessed as described in Section 6.1.

6.1 - MICON 100I COMMUNICATOR OPERATION

The hand held communicator (available as an option) allows the reading of dollars and volumes totals and price setting as described below.

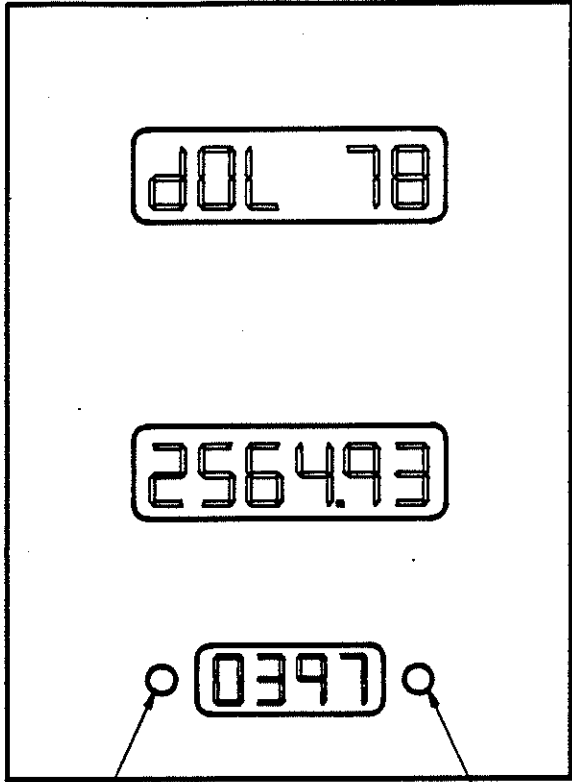
6.1.1 - READING TOTALIZERS

- 1) Ensure the pump handle is in the off position.
- 2) Aim the communicator's transmitters (located on the top of the unit) at the optical sensor located to the right of the price display. Depress and hold the "SEL" key on the communicator. The red indicator to the left of the price display will flash as the MICON 100I receives the communicator's signal.
- 3) Hold the "SEL" key until the dollar sales total is displayed. Dollars sale total uses ten digits of the dollars and volume displays preceded by the letters "DOL". Refer to Figure 6.1.
- 4) To display volume total, depress and hold the "SEL" key until the display shows "VOL" followed by the eight digit volume total. Pressing the "SEL" key repeatedly or holding it down will cause the display to switch back and forth between volume and dollars totals.

6.1.2 - PRICE SETTING

- 1) Place the pump handle in the on position.
- 2) Switch off the head power to the MICON 100I. The MICON 100I displays should now be flashing.
- 3) Aim the communicator at the optical sensor as described above and hold the "SEL" key until only the desired digit is being displayed. (If communication is properly established, only one digit of the price display will be shown at a time).

TOTAL DOLLAR
SALES DISPLAY

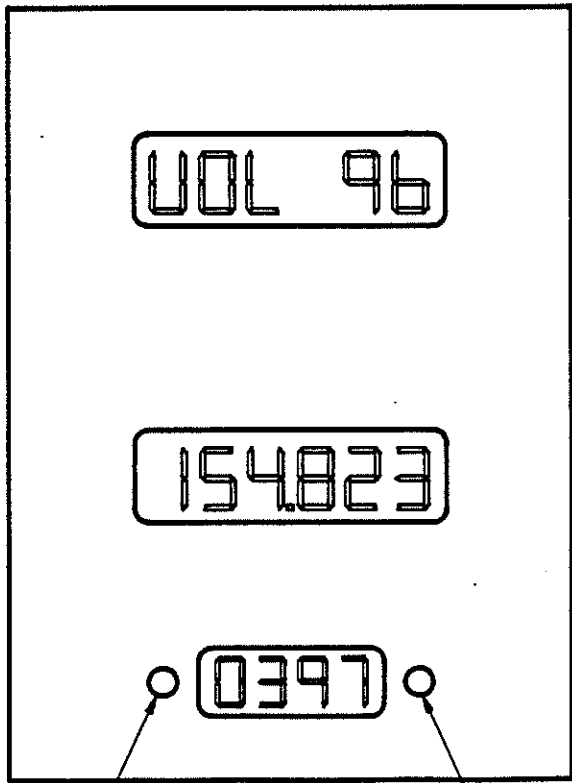


DISPLAY READS
\$782564.93

STATUS INDICATOR

OPTICAL READER

TOTAL VOLUME
SALES DISPLAY



DISPLAY READS
96154.823 UNITS

STATUS INDICATOR

OPTICAL READER

4) Depress and hold the "SET" key until the display increments to the desired number.

The "SEL" key may be used to select the next digit to be changed and the "SET" key to change the selected digit to the desired value.

5) When the correct price per unit has been entered return the handle switch to the off position and restore head power.

6.2 DATA CHANNEL OPERATION

6.2.1 MICRO 2P

When the MICON 100I is used with a Micro 2P console with price change option, pump prices may be changed from the console. Please refer to the console owner's manual for details.

6.2.2 CONCEPT 5000

When the MICON 100I is used with a Concept 5000 console, MICON 100I totalizers and prices may be accessed through the console. Refer to the console owner's manual for details.

NOTE : If it is required to place the station in the manual mode of operation, all of the affected pumps must be "reset". Place the console Emergency switch in the Emergency position and wait for all MICON 100I registers to go blank. Return the Emergency switch to the normal position. The station may now be operated in the manual mode.

6.3 TWO TIER PRICE OPERATION

On MICON 100 units equipped with the two tier price option it is possible to make sales at two different prices. The unit maintains separate totalizers for each price of sales.

MAKING DISCOUNT PRICE SALES

To make a discount priced sale simply press the "DISCOUNT" push button located on the side of the pump before turning the pump handle "ON". When the button is pressed the discount price will be displayed and the next sale will occur at the discounted price. When the discounted sale is completed by turning the pump handle to the "OFF" position the regular price will again be displayed and subsequent sales will occur at the regular price.

If the "DISCOUNT" button is pressed by mistake and you do not wish to make a discounted sale simply press the "DISCOUNT" button again and the pump will revert back to the regular price.

Pressing the discount button while the pump handle is in the "ON" position has no effect on the pump.

SETTING THE DISCOUNT PRICE

First set the regular price per litre in the normal fashion, then press and HOLD the DISCOUNT button. At this time the DISCOUNT price is displayed and can be set in the same way the regular price is set. I.E. while the discount button is held you can access and set the discount price.

READING DISCOUNT TOTALIZERS

The pump contains two sets of totalizers. A set of volume and dollar totals for the regular priced sales and a set of volume and dollar totals for the discount priced sales.

First read the regular priced sales totalizers in the normal fashion, then press and HOLD the DISCOUNT button. At this time the DISCOUNT sale totalizers can be read in the same way the regular totals are read. I.E. while the discount button is held you can read the discount sales totalizers.

Grand total volume and dollar sales are the sum of the regular and discount sales volume and dollar totals.

7.0 - AUTOMATIC TEMPERATURE COMPENSATION

The MICON 100IP contains an additional module which can provide both/either electronic calibration of the dispenser meter and/or automatic temperature compensation of the product dispensed.

To install the MICON 100IP, it will be necessary to install the temperature probe and a test well in the meter line. The probe fitting and test well are 1/8" NPT, male thread. The line must be drilled and tapped (drill size Q) to accept the fittings. These fittings are to be as close together as practical and the test well must be accessible to the inspector after installation and must also be within 45 degrees of vertical to facilitate filling the well with fluid. These fittings are supplied with the MICON 100IP. Additional fittings are available upon request.

In addition to the test well and probe fitting, new installations will require two BC-256 label ("CORRECTED TO 15 C"). These labels must be attached to each faceplate of the dispenser and be visible to the customer. These labels are provided with MICON 100IP, gasoline and diesel versions, and additional labels are available upon request.

7.1 - ELECTRONIC CALIBRATOR ADJUSTMENT

The MICON 100IP is equipped with an Automatic Temperature Compensator which also contains an electronic calibration feature. This feature provides the MICON 100IP with the capability of electronically compensating for meter errors of +/- 6.35% with the "Z" option, or +0 to +12.7% with the "P" option. Other ranges are available upon request. The required calibration error is programmed into the ATC via 8 switches located within the explosion-proof housing. These switches are factory set for 0% calibration error. If the meter is correctly calibrated, no further adjustment is necessary.

When the switch on the front display is in the up, or "ATC" position, The ATC readings are shown on the display. The display then indicates as follows:

TOP DISPLAY % calibration (While sw 10 "on")
 temperature (While sw 10 "off")

CENTER DISPLAY uncompensated vol.

BOTTOM DISPLAY flow rate/status

for the first 5 seconds after reset a software ID message will be displayed on the bottom display as follows:

2 2 x x
^ ^ ^ ^-- = multiplication factor (1 to 4)
I I I---- = No flow time out of:
I I I 0 = no flow time out
I I I 1 = 15 second time out
I I I 3 = 45 second time out
I I----- = revision number
I----- = version number

After the first 5 seconds after reset and until/unless FLOW BEGINS or a shut down error occurs, the product compensation type will be displayed for one of the following products:

GAS = gasoline
ProP = propane
dEs1 = diesel fuel

If normal flow begins, the flow rate display will be displayed continuously until/ unless an error occurs. If a pump shut down occurs, the reason code will replace the above message with one of:

bAd = temperature probe defect (valid only if ATC on)
FLO = If shut down due to no flow time out
Err = If pulser error caused shut down

If electronic calibration is required, the following method may be used to calibrate the system:

- 1) Remove the cover from the housing and place switch #10 on the ATC board in the ON position. Ensure all other switches are set for 0% calibration (factory setting -see tables in this section or observe calibration reading on display).
- 2) Place the handle switch in the ON position and observe that the MICON 100IP dollars and volume displays reset to zero.
- 3) Dispense a known volume of product and record the reading on the volume display.
- 4) Use the formula below to calculate the percentage correction required:

$$\% \text{ CORRECTION} = \frac{(\text{ACTUAL VOLUME} - \text{REGISTER VOLUME})}{\text{REGISTER VOLUME}} \times 100$$

- 5) Refer to Table 7.1 on the next page for the closest correction value and set switches 1 through 8 as shown in the table.

Example:	Product dispensed	25.00	Litres
	Register reading	26.360	Litres

$$\% \text{ CORRECTION} = \frac{(25.000 - 26.360)}{26.360} \times 100 = -5.159\%$$

TABLE 7.1

SWITCH SETTINGS FOR 100% CENTER POINT CALIBRATION ("Z" Option)

Switch setting 87654321	Compensation	Switch setting 87654321	Compensation
00000000	-6.40%	C0000000	0.00%
0000000C	-6.35%	C000000C	+0.05%
0000000CO	-6.30%	C000000CO	+0.10%
0000000CC	-6.25%	C000000CC	+0.15%
0000000C00	-6.20%	C000000C00	+0.20%
000000C0C	-6.15%	C00000C0C	+0.25%
000000CCO	-6.10%	C00000CCO	+0.30%
000000CCC	-6.05%	C00000CCC	+0.35%
00000C000	-6.00%	C0000C000	+0.40%
00000C00C	-5.95%	C0000C00C	+0.45%
00000C0C0	-5.90%	C0000C0C0	+0.50%
00000C0CC	-5.85%	C0000C0CC	+0.55%
00000C000	-5.80%	C0000C000	+0.60%
00000C0C0C	-5.75%	C0000C0C0C	+0.65%
00000C0CCO	-5.70%	C0000C0CCO	+0.70%
00000CCCC	-5.65%	C0000CCCC	+0.75%
00000C0000	-5.60%	C0000C0000	+0.80%
00000C000C	-5.55%	C0000C000C	+0.85%
00000C00C0	-5.50%	C0000C00C0	+0.90%
00000C00CC	-5.45%	C0000C00CC	+0.95%
00000C0C00	-5.40%	C0000C0C00	+1.00%
00000C0C0C	-5.35%	C0000C0C0C	+1.05%
00000C0C0CO	-5.30%	C0000C0C0CO	+1.10%
00000C0C0CC	-5.25%	C0000C0C0CC	+1.15%
00000C0C000	-5.20%	C0000C0C000	+1.20%
00000C0C00C	-5.15%	C0000C0C00C	+1.25%
00000C0C0C0	-5.10%	C0000C0C0C0	+1.30%
00000C0C0CC	-5.05%	C0000C0C0CC	+1.35%
00000C0C000	-5.00%	C0000C0C000	+1.40%
00000C0C00C	-4.95%	C0000C0C00C	+1.45%
00000CCCC0	-4.90%	C0000CCCC0	+1.50%
00000CCCCC	-4.85%	C0000CCCCC	+1.55%
00C000000	-4.80%	C0C000000	+1.60%
00C00000C	-4.75%	C0C00000C	+1.65%
00C0000C0	-4.70%	C0C0000C0	+1.70%
00C0000CC	-4.65%	C0C0000CC	+1.75%
00C000C00	-4.60%	C0C000C00	+1.80%
00C000C0C	-4.55%	C0C000C0C	+1.85%
00C000C0CO	-4.50%	C0C000C0CO	+1.90%
00C000C0CC	-4.45%	C0C000C0CC	+1.95%

SWITCH SETTINGS FOR 100% CENTER POINT CALIBRATION ("Z" OPTION)

Switch setting 87654321	Compensation	Switch setting 87654321	Compensation
OOCOC000	-4.40%	COCOC000	+2.00%
OOCOC00C	-4.35%	COCOC00C	+2.05%
OOCOC0CO	-4.30%	COCOC0CO	+2.10%
OOCOC0CC	-4.25%	COCOC0CC	+2.15%
OOCOC0C0	-4.20%	COCOC0C0	+2.20%
OOCOC0CC	-4.15%	COCOC0CC	+2.25%
OOCOC0CC	-4.10%	COCOC0CC	+2.30%
OOCOC0CC	-4.05%	COCOC0CC	+2.35%
OOCOC000	-4.00%	COCOC000	+2.40%
OOCOC00C	-3.95%	COCOC00C	+2.45%
OOCOC0CO	-3.90%	COCOC0CO	+2.50%
OOCOC0CC	-3.85%	COCOC0CC	+2.55%
OOCOC0C0	-3.80%	COCOC0C0	+2.60%
OOCOC0C0	-3.75%	COCOC0C0	+2.65%
OOCOC0C0	-3.70%	COCOC0C0	+2.70%
OOCOC0CC	-3.65%	COCOC0CC	+2.75%
OOCOC000	-3.60%	COCOC000	+2.80%
OOCOC00C	-3.55%	COCOC00C	+2.85%
OOCOC0CO	-3.50%	COCOC0CO	+2.90%
OOCOC0CC	-3.45%	COCOC0CC	+2.95%
OOCOC0C0	-3.40%	COCOC0C0	+3.00%
OOCOC0C0	-3.35%	COCOC0C0	+3.05%
OOCOC0CC	-3.30%	COCOC0CC	+3.10%
OOCOC0CC	-3.25%	COCOC0CC	+3.15%
OOCOC000	-3.20%	COCOC000	+3.20%
OOCOC00C	-3.15%	COCOC00C	+3.25%
OOCOC0CO	-3.10%	COCOC0CO	+3.30%
OOCOC0CC	-3.05%	COCOC0CC	+3.35%
OOCOC0C0	-3.00%	COCOC0C0	+3.40%
OOCOC0C0	-2.95%	COCOC0C0	+3.45%
OOCOC0C0	-2.90%	COCOC0C0	+3.50%
OOCOC0CC	-2.85%	COCOC0CC	+3.55%
OOCOC000	-2.80%	COCOC000	+3.60%
OOCOC00C	-2.75%	COCOC00C	+3.65%
OOCOC0CO	-2.70%	COCOC0CO	+3.70%
OOCOC0CC	-2.65%	COCOC0CC	+3.75%
OOCOC0C0	-2.60%	COCOC0C0	+3.80%
OOCOC0C0	-2.55%	COCOC0C0	+3.85%
OOCOC0CC	-2.50%	COCOC0CC	+3.90%
OOCOC0CC	-2.45%	COCOC0CC	+3.95%

SWITCH SETTINGS FOR 100% CENTER POINT CALIBRATION ("Z" OPTION)

Switch setting 87654321	Compensation	Switch setting 87654321	Compensation
OCOC0000	-2.40%	CCOC0000	+4.00%
OCOC000C	-2.35%	CCOC000C	+4.05%
OCOC00CO	-2.30%	CCOC00CO	+4.10%
OCOC00CC	-2.25%	CCOC00CC	+4.15%
OCOC0C00	-2.20%	CCOC0C00	+4.20%
OCOC0C0C	-2.15%	CCOC0C0C	+4.25%
OCOC0C0C	-2.10%	CCOC0C0C	+4.30%
OCOC0CCC	-2.05%	CCOC0CCC	+4.35%
OCOC0000	-2.00%	CCOC0000	+4.40%
OCOC000C	-1.95%	CCOC000C	+4.45%
OCOC00CO	-1.90%	CCOC00CO	+4.50%
OCOC00CC	-1.85%	CCOC00CC	+4.55%
OCOC00C0	-1.80%	CCOC00C0	+4.60%
OCOC00CC	-1.75%	CCOC00CC	+4.65%
OCOC00C0	-1.70%	CCOC00C0	+4.70%
OCOC00CC	-1.65%	CCOC00CC	+4.75%
OCC00000	-1.60%	CCC00000	+4.80%
OCC0000C	-1.55%	CCC0000C	+4.85%
OCC000CO	-1.50%	CCC000CO	+4.90%
OCC000CC	-1.45%	CCC000CC	+4.95%
OCC00C00	-1.40%	CCC00C00	+5.00%
OCC00C0C	-1.35%	CCC00C0C	+5.05%
OCC00C0C	-1.30%	CCC00C0C	+5.10%
OCC00CCC	-1.25%	CCC00CCC	+5.15%
OCC00C00	-1.20%	CCC00C00	+5.20%
OCC00C0C	-1.15%	CCC00C0C	+5.25%
OCC00C0C	-1.10%	CCC00C0C	+5.30%
OCC00C0C	-1.05%	CCC00C0C	+5.35%
OCC00CC0	-1.00%	CCC00CC0	+5.40%
OCC00CC0	-0.95%	CCC00CC0	+5.45%
OCC00CC0	-0.90%	CCC00CC0	+5.50%
OCC00CCC	-0.85%	CCC00CCC	+5.55%
OCCC0000	-0.80%	CCCC0000	+5.60%
OCCC000C	-0.75%	CCCC000C	+5.65%
OCCC00CO	-0.70%	CCCC00CO	+5.70%
OCCC00CC	-0.65%	CCCC00CC	+5.75%
OCCC00C0	-0.60%	CCCC00C0	+5.80%
OCCC00C0	-0.55%	CCCC00C0	+5.85%
OCCC00C0	-0.50%	CCCC00C0	+5.90%
OCCC00CC	-0.45%	CCCC00CC	+5.95%

SWITCH SETTINGS FOR 100% CENTER POINT CALIBRATION ("Z" OPTION)

Switch setting 87654321	Compensation	Switch setting 87654321	Compensation
OCCCC000	-0.40%	CCCCC000	+6.00%
OCCCC00C	-0.35%	CCCCC00C	+6.05%
OCCCC0C0	-0.30%	CCCCC0C0	+6.10%
OCCCC0CC	-0.25%	CCCCC0CC	+6.15%
OCCCCC00	-0.20%	CCCCCC00	+6.20%
OCCCCC0C	-0.15%	CCCCCC0C	+6.25%
OCCCCCC0	-0.10%	CCCCCCC0	+6.30%
OCCCCCCC	-0.05%	CCCCCCCC	+6.35%

TABLE 6-2

SWITCH SETTINGS FOR 100% to +112.75% CALIBRATION ("P" Option)

Switch setting 87654321	Compensation	Switch setting 87654321	Compensation
00000000	0.00%	C0000000	+6.40%
0000000C	+0.05%	C000000C	+6.45%
0000000CO	+0.10%	C000000CO	+6.50%
0000000CC	+0.15%	C000000CC	+6.55%
0000000C00	+0.20%	C000000C00	+6.60%
0000000COC	+0.25%	C000000COC	+6.65%
0000000C0C	+0.30%	C000000C0C	+6.70%
0000000C0CC	+0.35%	C000000C0CC	+6.75%
0000000C000	+0.40%	C000000C000	+6.80%
0000000C00C	+0.45%	C000000C00C	+6.85%
0000000C0C0	+0.50%	C000000C0C0	+6.90%
0000000C0CC	+0.55%	C000000C0CC	+6.95%
0000000C000	+0.60%	C000000C000	+7.00%
0000000C00C	+0.65%	C000000C00C	+7.05%
0000000C000	+0.70%	C000000C000	+7.10%
0000000C000	+0.75%	C000000C000	+7.15%
0000000C000	+0.80%	C000000C000	+7.20%
0000000C000	+0.85%	C000000C000	+7.25%
0000000C000	+0.90%	C000000C000	+7.30%
0000000C000	+0.95%	C000000C000	+7.35%
0000000C000	+1.00%	C000000C000	+7.40%
0000000C000	+1.05%	C000000C000	+7.45%
0000000C000	+1.10%	C000000C000	+7.50%
0000000C000	+1.15%	C000000C000	+7.55%
0000000C000	+1.20%	C000000C000	+7.60%
0000000C000	+1.25%	C000000C000	+7.65%
0000000C000	+1.30%	C000000C000	+7.70%
0000000C000	+1.35%	C000000C000	+7.75%
0000000C000	+1.40%	C000000C000	+7.80%
0000000C000	+1.45%	C000000C000	+7.85%
0000000C000	+1.50%	C000000C000	+7.90%
0000000C000	+1.55%	C000000C000	+7.95%
0000000C000	+1.60%	C000000C000	+8.00%
0000000C000	+1.65%	C000000C000	+8.05%
0000000C000	+1.70%	C000000C000	+8.10%
0000000C000	+1.75%	C000000C000	+8.15%
0000000C000	+1.80%	C000000C000	+8.20%
0000000C000	+1.85%	C000000C000	+8.25%
0000000C000	+1.90%	C000000C000	+8.30%
0000000C000	+1.95%	C000000C000	+8.35%

SWITCH SETTINGS FOR 100% to 112.75% CALIBRATION ("P" Option)

Switch setting 87654321	Compensation	Switch setting 87654321	Compensation
00C0C000	+2.00%	C0C0C000	+8.40%
00C0C00C	+2.05%	C0C0C00C	+8.45%
00C0C0C0	+2.10%	C0C0C0C0	+8.50%
00C0C0CC	+2.15%	C0C0C0CC	+8.55%
00C0CC00	+2.20%	C0C0CC00	+8.60%
00C0CC0C	+2.25%	C0C0CC0C	+8.65%
00C0CCCO	+2.30%	C0C0CCCO	+8.70%
00C0CCCC	+2.35%	C0C0CCCC	+8.75%
00CC0000	+2.40%	C0CC0000	+8.80%
00CC000C	+2.45%	C0CC000C	+8.85%
00CC00C0	+2.50%	C0CC00C0	+8.90%
00CC00CC	+2.55%	C0CC00CC	+8.95%
00CC0C00	+2.60%	C0CC0C00	+9.00%
00CC0C0C	+2.65%	C0CC0C0C	+9.05%
00CC0CC0	+2.70%	C0CC0CC0	+9.10%
00CC0CCC	+2.75%	C0CC0CCC	+9.15%
00CC0000	+2.80%	C0CC0000	+9.20%
00CC000C	+2.85%	C0CC000C	+9.25%
00CC0C00	+2.90%	C0CC0C00	+9.30%
00CC0C0C	+2.95%	C0CC0C0C	+9.35%
00CCCC00	+3.00%	C0CCCC00	+9.40%
00CCCC0C	+3.05%	C0CCCC0C	+9.45%
00CCCCC0	+3.10%	C0CCCCC0	+9.50%
00CCCCCC	+3.15%	C0CCCCCC	+9.55%
0C000000	+3.20%	CC000000	+9.60%
0C00000C	+3.25%	CC00000C	+9.65%
0C0000C0	+3.30%	CC0000C0	+9.70%
0C0000CC	+3.35%	CC0000CC	+9.75%
0C000C00	+3.40%	CC000C00	+9.80%
0C000C0C	+3.45%	CC000C0C	+9.85%
0C000CC0	+3.50%	CC000CC0	+9.90%
0C000CCC	+3.55%	CC000CCC	+9.95%
0C00C000	+3.60%	CC00C000	+10.00%
0C00C00C	+3.65%	CC00C00C	+10.05%
0C00C0C0	+3.70%	CC00C0C0	+10.10%
0C00C0CC	+3.75%	CC00C0CC	+10.15%
0C00CC00	+3.80%	CC00CC00	+10.20%
0C00CC0C	+3.85%	CC00CC0C	+10.25%
0C00CCCO	+3.90%	CC00CCCO	+10.30%
0C00CCCC	+3.95%	CC00CCCC	+10.35%

SWITCH SETTINGS FOR 100% to 112.75% CALIBRATION ("P" Option)

Switch setting 87654321	Compensation	Switch setting 87654321	Compensation
OCOC0000	+4.00%	CCOC0000	+10.40%
OCOC000C	+4.05%	CCOC000C	+10.45%
OCOC00CO	+4.10%	CCOC00CO	+10.50%
OCOC00CC	+4.15%	CCOC00CC	+10.55%
OCOC0C00	+4.20%	CCOC0C00	+10.60%
OCOC0C0C	+4.25%	CCOC0C0C	+10.65%
OCOC0C0C	+4.30%	CCOC0C0C	+10.70%
OCOC0CCC	+4.35%	CCOC0CCC	+10.75%
OCOC0000	+4.40%	CCOC0000	+10.80%
OCOC000C	+4.45%	CCOC000C	+10.85%
OCOC0C0C	+4.50%	CCOC0C0C	+10.90%
OCOC0C0C	+4.55%	CCOC0C0C	+10.95%
OCOC0C00	+4.60%	CCOC0C00	+11.00%
OCOC0C0C	+4.65%	CCOC0C0C	+11.05%
OCOC0C0C	+4.70%	CCOC0C0C	+11.10%
OCOC0CCC	+4.75%	CCOC0CCC	+11.15%
OCC00000	+4.80%	CCC00000	+11.20%
OCC0000C	+4.85%	CCC0000C	+11.25%
OCC000CO	+4.90%	CCC000CO	+11.30%
OCC000CC	+4.95%	CCC000CC	+11.35%
OCC00C00	+5.00%	CCC00C00	+11.40%
OCC00C0C	+5.05%	CCC00C0C	+11.45%
OCC00C0C	+5.10%	CCC00C0C	+11.50%
OCC00CCC	+5.15%	CCC00CCC	+11.55%
OCC0C000	+5.20%	CCC0C000	+11.60%
OCC0C00C	+5.25%	CCC0C00C	+11.65%
OCC0C0C0	+5.30%	CCC0C0C0	+11.70%
OCC0C0CC	+5.35%	CCC0C0CC	+11.75%
OCC0CC00	+5.40%	CCC0CC00	+11.80%
OCC0CC0C	+5.45%	CCC0CC0C	+11.85%
OCC0CCCC	+5.50%	CCC0CCCC	+11.90%
OCC0CCCC	+5.55%	CCC0CCCC	+11.95%
OCCC0000	+5.60%	CCCC0000	+12.00%
OCCC000C	+5.65%	CCCC000C	+12.05%
OCCC00C0	+5.70%	CCCC00C0	+12.10%
OCCC00CC	+5.75%	CCCC00CC	+12.15%
OCCC0C00	+5.80%	CCCC0C00	+12.20%
OCCC0C0C	+5.85%	CCCC0C0C	+12.25%
OCCC0C0C	+5.90%	CCCC0C0C	+12.30%
OCCC0CCC	+5.95%	CCCC0CCC	+12.35%

SWITCH SETTINGS FOR 100% to 112.75% CALIBRATION ("P" Option)

Switch setting 87654321	Compensation	Switch setting 87654321	Compensation
OCCCC000	+6.00%	CCCCC000	+12.40%
OCCCC00C	+6.05%	CCCCC00C	+12.45%
OCCCC0C0	+6.10%	CCCCC0C0	+12.50%
OCCCC0CC	+6.15%	CCCCC0CC	+12.55%
OCCCCC00	+6.20%	CCCCC000	+12.60%
OCCCCC0C	+6.25%	CCCCC0C0	+12.65%
OCCCCC0C	+6.30%	CCCCC0C0	+12.70%
OCCCCCCC	+6.35%	CCCCCCCC	+12.75%

The closest value listed in Table 7.1 is -5.15% which calls for the switch settings:

8 OFF, 7 OFF, 6 OFF, 5 ON, 4 ON, 3 OFF, 2 OFF, 1 ON

6) Place switch 10 into the ON position.

7) Place the selector switch on the front display board in the ATC (down) position. The dollars display on the front display will now show the meter calibration error which you have programmed into the MICON 100IP. For the above example the display will show "-5.15". If the value shown is not correct, one or more of the switches was incorrectly set.

8) Repeat step 2 above to verify the calibration of the MICON 100IP.

9) Return switch 10 to the OFF position if the MICON 100IP is to be used in the automatic temperature compensation mode. When the ATC feature is used, a temperature probe of the proper type must be connected.

If ATC is not going to be used (I.E. calibration only), leave switch 10 in the ON position.

10) Replace the cover of the explosion-proof housing and install a suitable (legal) seal through the two adjacent drilled cover bolts to ensure the cover can not be removed without breaking the seal.

11) Return the front display selector switch to the NORMAL (upwards) position.

7.2 - AUTOMATIC TEMPERATURE COMPENSATION

In addition to electronic calibration the Automatic Temperature Compensator will compensate the volume of product delivered to the equivalent volume at 15 degrees Celsius. In order to accurately sense the temperature of the product, the probe must be directly immersed into the product as close as possible to the meter. The use of a thermal well is NOT allowed. The following procedure should be used to verify the operation of the ATC:

1) Install and connect the temperature probe.

2) Place the selector switch located on the front display board in the ATC (downward) position.

3) Dispense a convenient volume of product into a test can and record the temperature and volume of the product in the can.

4) The volume indicated on the front display of the MICON 100IP is the UNCOMPENSATED volume. This volume should agree directly with the volume measured in the test can. If it

does not agree, the meter is out of calibration.

5) Calculate the compensated volume in the test can using the actual volume and the temperature of the product in the test can and the appropriate correction tables. The calculated compensated volume should agree with the compensated volume shown on the rear display of the MICON 100IP. If the values do not agree a problem exists in the ATC or its installation.

6) Return the switch on the front display to the upwards position for "normal" display position.

This completes the testing of the ATC. If you encounter any difficulty please contact your service representative.

8.0 - TWO TIER OPTION INSTALLATION

The two tier pricing option requires a version 5 KIL-152 main control board, and a two tier pricing kit. See "MICON 100I Options and Ordering Information". To install the two tier kit, connect the push button switch between the 2nd and 4th wires from the bottom in the 9-pin display harness, as shown in fig. 8. The push button switch can be mounted in a 7/8" hole in the side of the dispenser. An optional keyswitch is available, which can be used instead of, or together with the pushbutton.

NOTE: The old KIL-152 board must be returned to the factory or the new price will be charged for the new board.

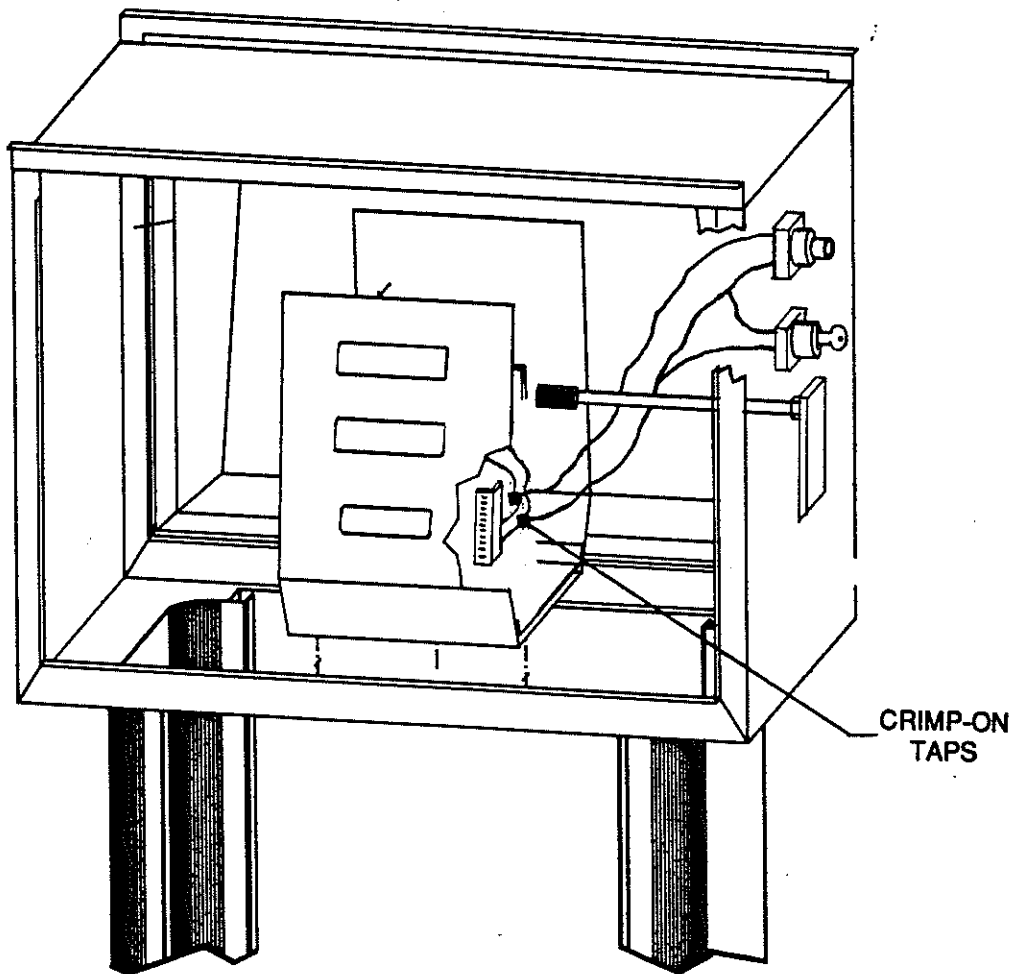


FIGURE 8

9.0 - INSTALLATION KITS

Drawings referred to in the following kit installation instructions will be found at the end of this section.

9.1 - TOKHEIM DISPENSERS (DS1 through DS6)

- 1) Remove the existing register and faceplates.
- 2) Install the BC101 conversion shaft into the reset housing as shown in Figure 9.1.
- 3) Remove the MICON 100I faceplates and install the display standoff brackets (BC105) between the MICON 100I faceplates and the register base as shown in Figure 9.2.
- 4) Install the new faceplates supplied with the installation kit (BC115, BC114L & BC114R, or BC114).
- 5) Install the MICON 100I register using the handle link (BC183, or BC176) supplied with the kit.

NOTE : Some Tokheim models use a mechanically controlled valve. To adapt to the MICON 100I, this valve must be replaced with a solenoid valve.

9.2 - GILBARCO (DS7 & DS8)

- 1) Remove the existing register and the electric reset housing from the dispenser.
- 2) On the MICON 100I register, remove the existing detent assembly and replace with the BC233 adapter. (The BC233 is similar to the assembly removed but does not have a handle switch coupling).
- 3) On the opposite side of the MICON 100I register, install the BC109 detent adapter. (The BC109 does not have a detent spring retaining post, as does the BC233).
- 4) Refer to Figure 9.3 and install the BC120 handle shaft plate under the two cover bolts as shown.
- 5) Refer to Figure 9.4 and install the handle switch parts as illustrated.
- 6) Install the MICON 100I register into the dispenser and connect the connecting rod as shown in Figure 9.3.
- 7) Install the dispenser faceplates supplied with the kit.

9.3 - WAYNE (DS9 thru DS11)

- 1) Remove the existing register. Save the existing handle linkage parts.
- 2) Refer to Figure 9.5 and install the BC145 support plate.
- 3) Install the original upper handle switch arm on the handle link (BC173, or BC146) and install the MICON 100I register into the dispenser. Figure 9.5 illustrates the handle switch linkage arrangement.
- 4) Install the faceplates supplied with the installation kit.

9.4 - ASTRO (DS12 & DS13)

9.5 - BENNETT (DS14, DS15, & DS17)

- 1) Remove the existing register.
- 2) Install the MICON 100I register using the handle shaft extender supplied with the installation kit.

9.6 - SCHWELM (DS16)

- 1) Remove the existing register.
- 2) Refer to Figure 9.6 and install the handle support bracket, handle shaft, pump handle detent, meter adapter, and MICON 100IP mounting plate.
- 3) Install the MICON 100IP register into the dispenser. Note the handle and detent positions shown in Figure 9.6.
- 4) Install the MICON 100IP temperature probe in the air eliminator as shown in Figure 9.6.

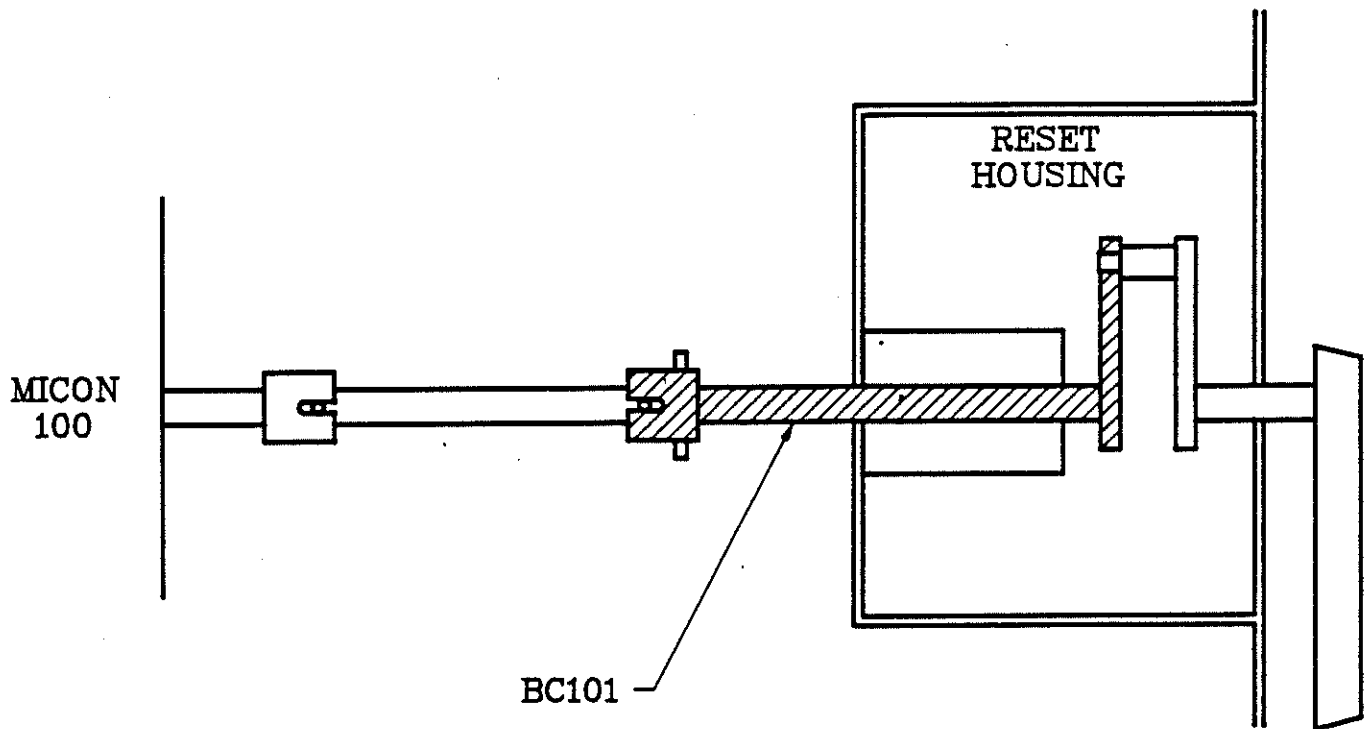


FIGURE 9.1

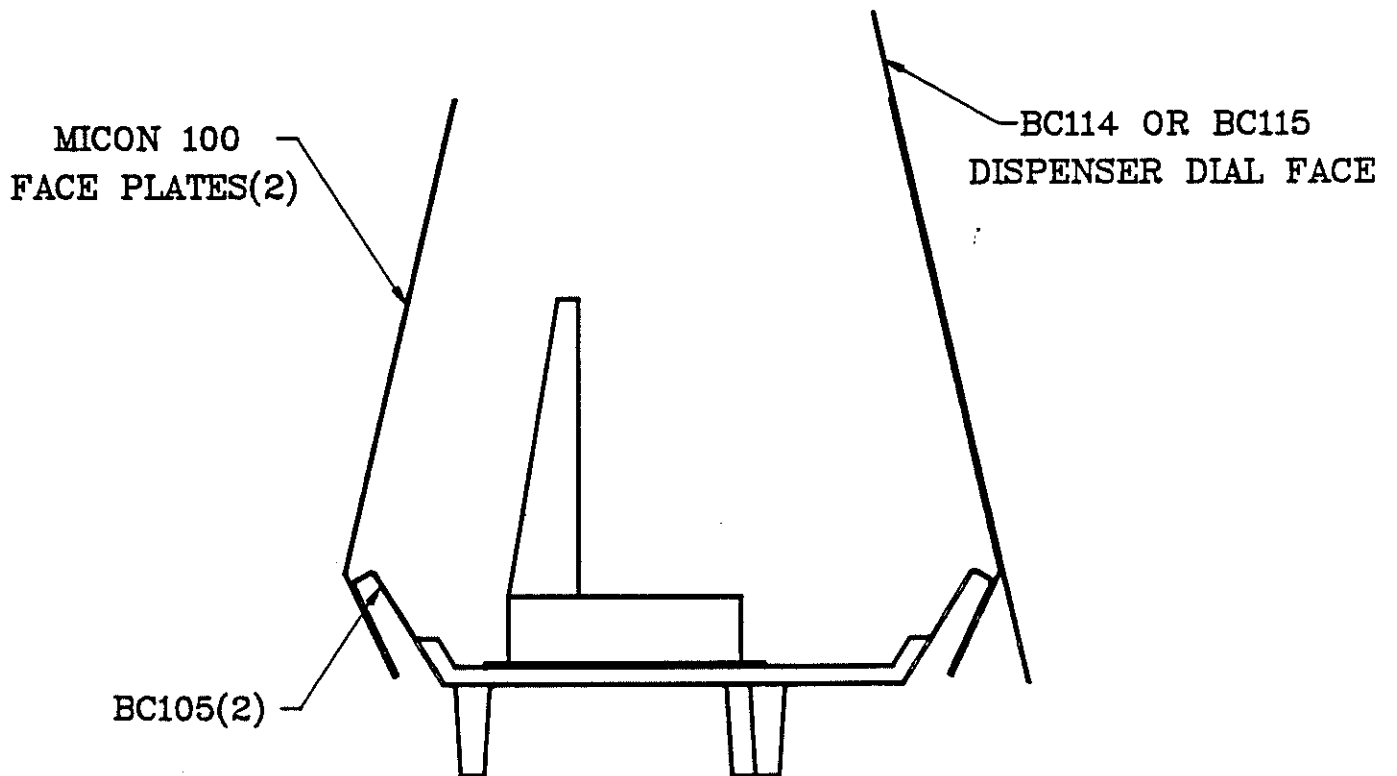


FIGURE 9.2

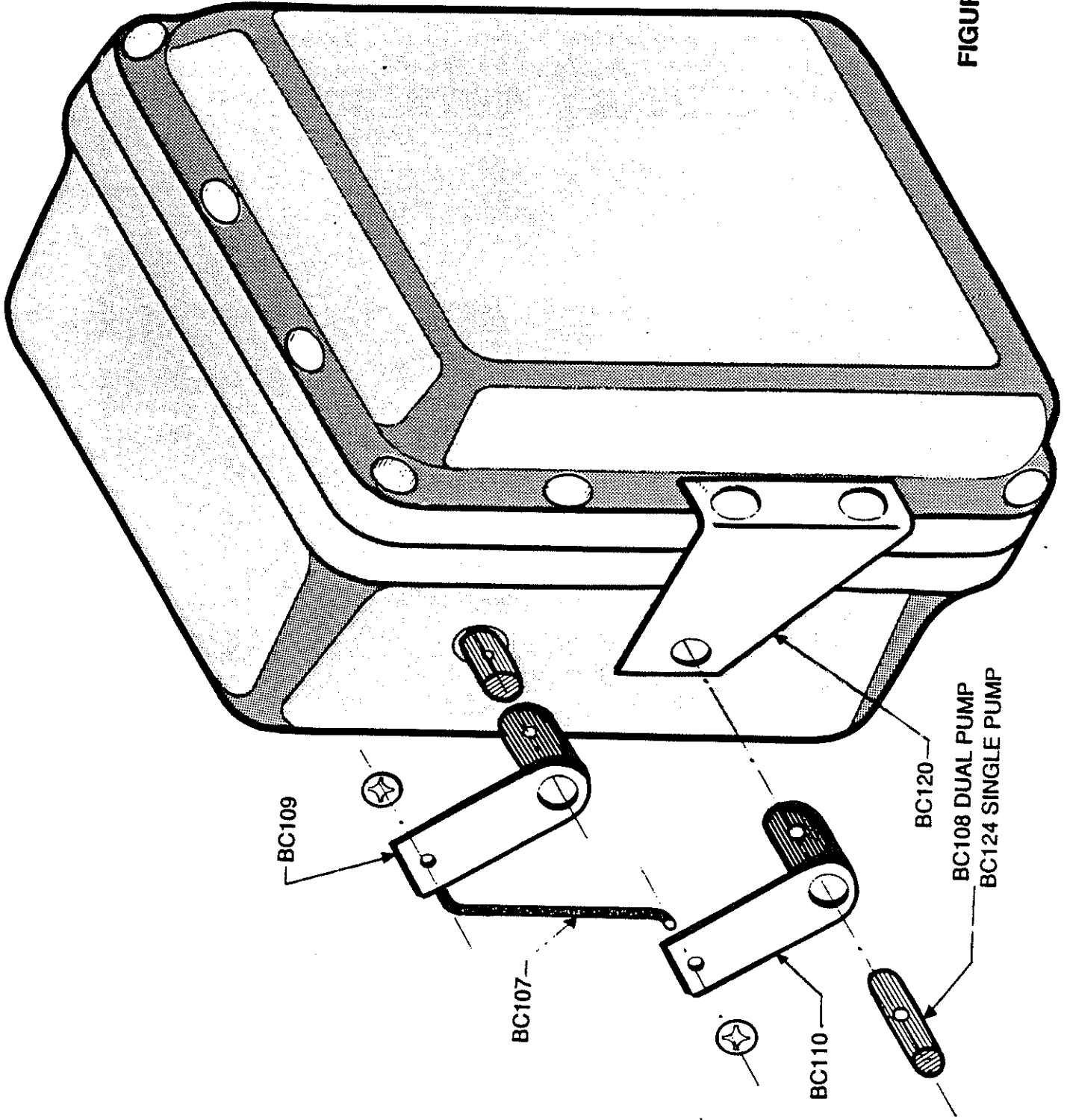
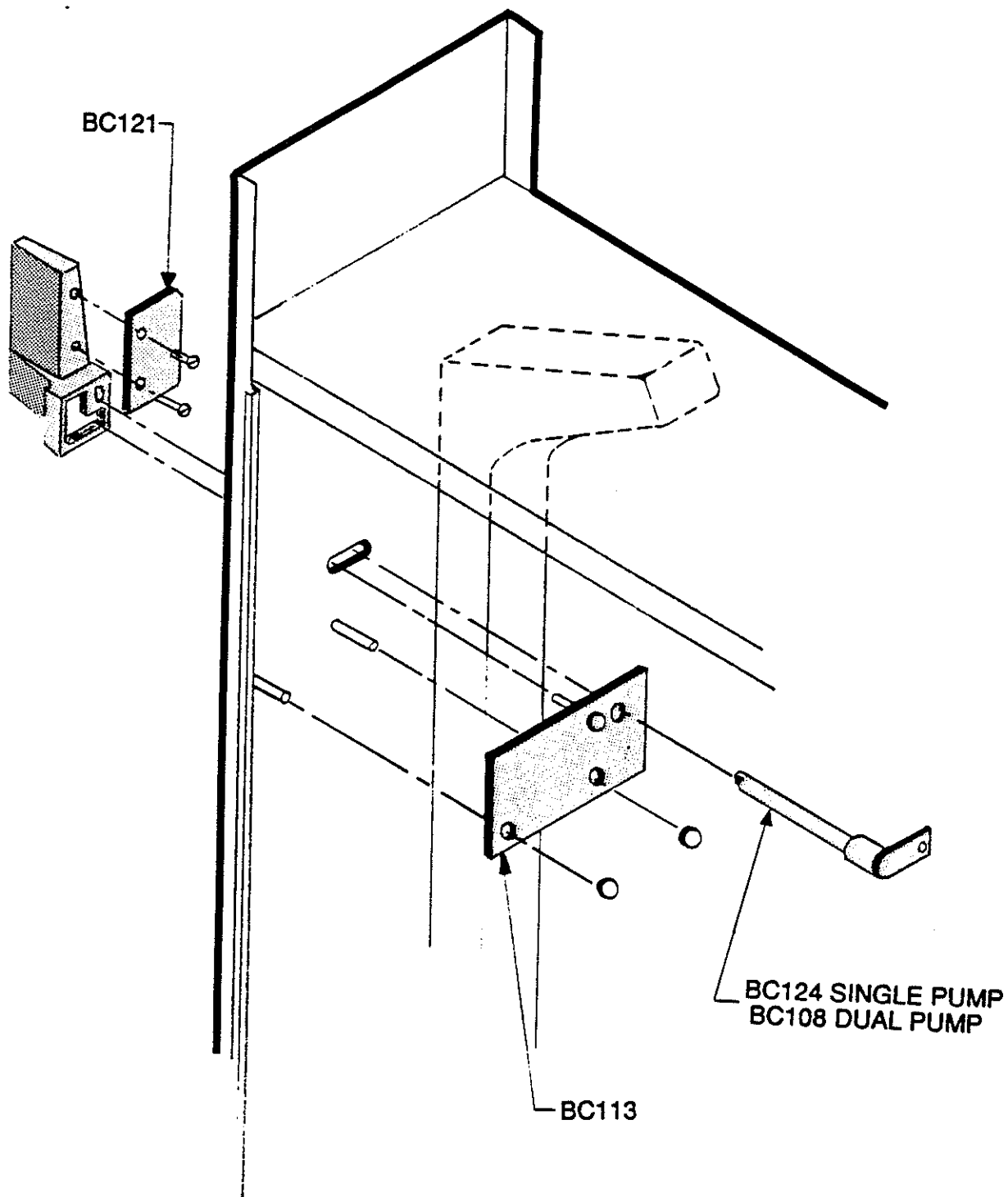
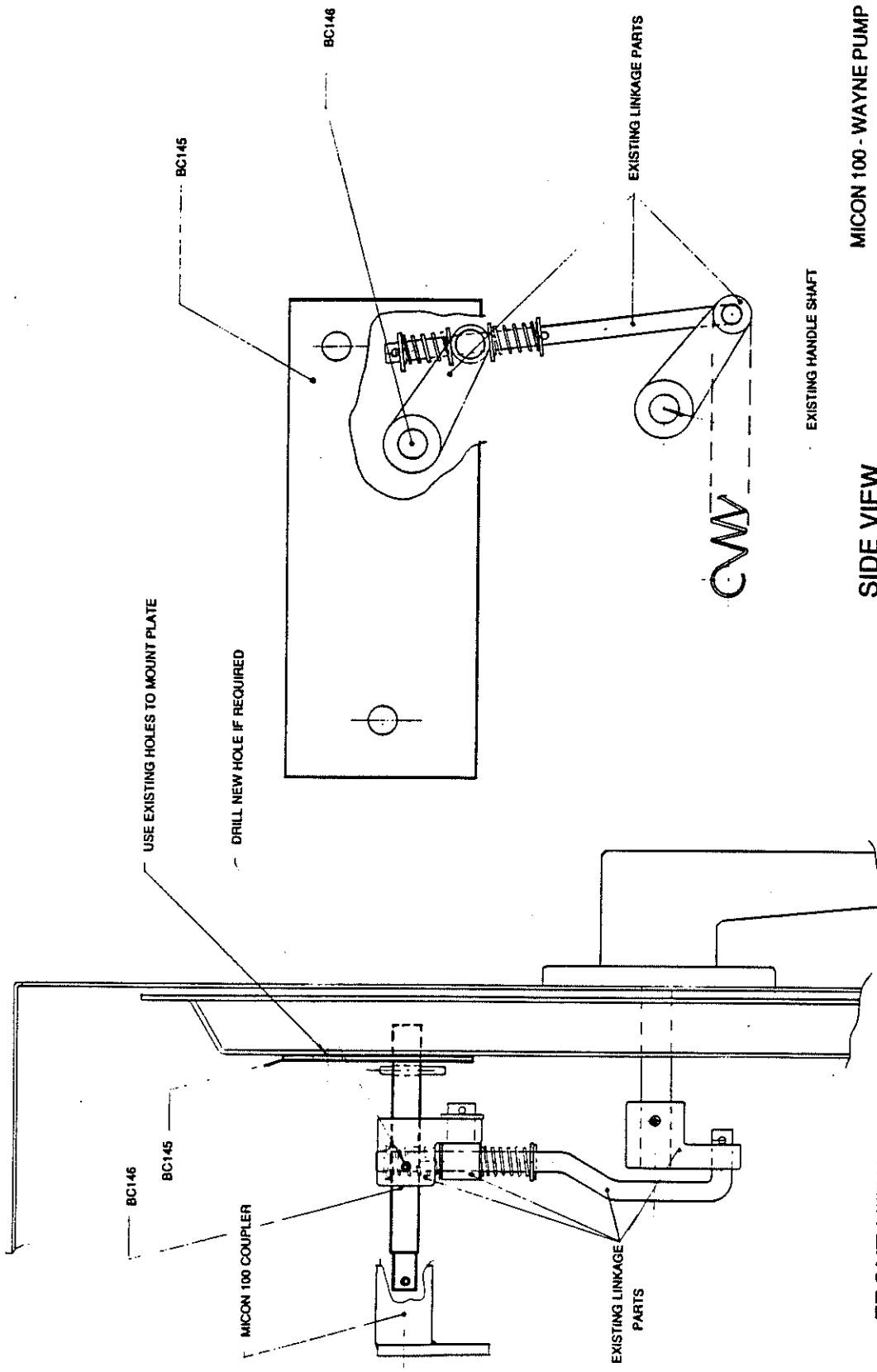


FIGURE 9.3

FIGURE 9.4

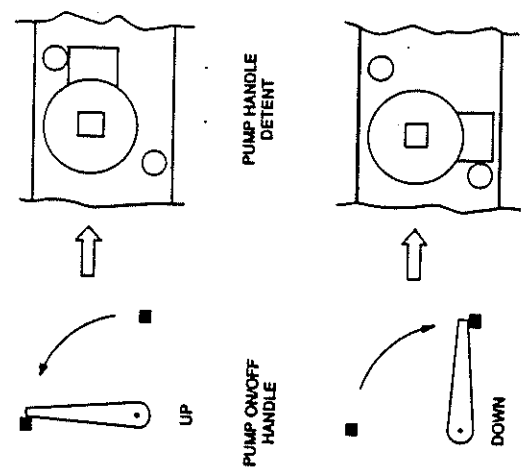




MICON 100 - WAYNE PUMP
 DS - 10 KIT LINKAGE
 ASSEMBLY

SIDE VIEW

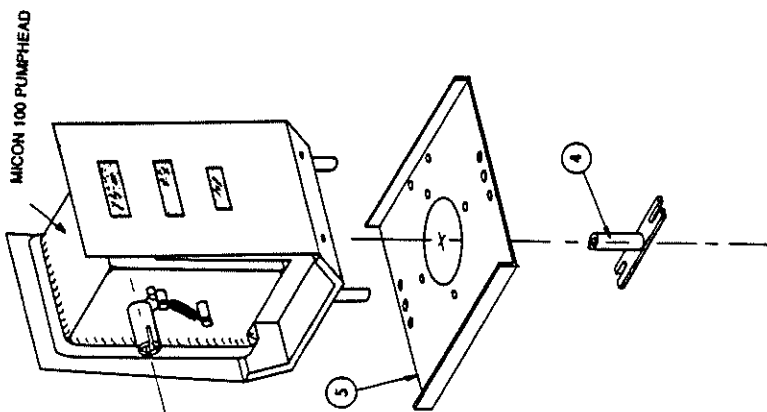
FRONT VIEW



PUMP ON/OFF HANDLE

PUMP HANDLE DETENT

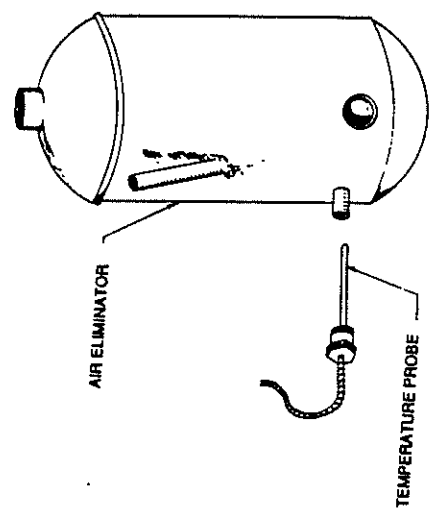
PUMP HANDLE AND DETENT ORIENTATION



MICON 100 PUMPHEAD

PUMP ON/OFF HANDLE

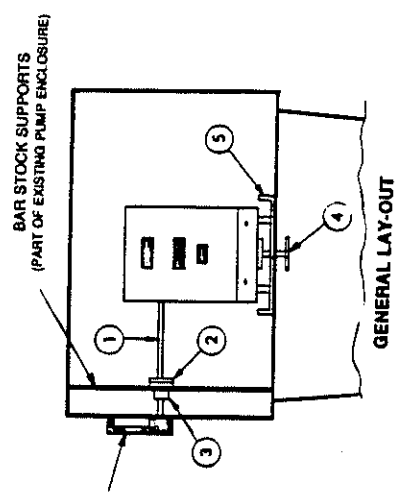
SCHWELM PUMP ADAPTER KIT
-EXPLODED VIEW.



AIR ELIMINATOR

TEMPERATURE PROBE

PROBE LOCATION



BAR STOCK SUPPORTS
(PART OF EXISTING PUMP ENCLOSURE)

GENERAL LAY-OUT

PARTS LIST	
REF	DESCRIPTION
1	SCHWELM HANDLE SHAFT
2	SCHWELM PUMP HANDLE SUPPORT
3	SCHWELM PUMP HANDLE DETENT
4	SCHWELM METER ADAPTER
5	SCHWELM PUMP MICON MOUNTING PLATE

MICON 100 PUMPHEAD
SCHWELM PUMP ADAPTER KIT
INSTALLATION REFERENCE

OPERATION & SERVICE

MICON 100-I OPERATION & SERVICE MANUAL

FOURTH EDITION MAY 1990

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 - 4-2 STANDBY BATTERY MEASUREMENT
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5. PARTS REPLACEMENT PROCEDURE
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 - 5-3 DISPLAY ASSEMBLY
 - 5-4 PULSER ASSEMBLY
 - 5-5 MICROSWITCH
 - 5-6 COMMUNICATOR BATTERY
 - 5-7 KIL 184 ATC BOARD

1 POWER OFF MODES

During power failure (ie. absence of 110 volt head power) the MICON-100 first goes into standby mode for about a minute and then if the handle switch is off, the MICON-100 will go into the power fail mode.

While the MICON-100 is in the standby mode, the dollar and volume displays will be flashing to indicate the standby mode & in this mode the price can be set by the Micon Communicator and totals can be read (see MICON-100 Communicator use). After the pump has gone into power fail mode it can be brought back into the standby mode by turning the handle switch on. As long as the handle switch is on, the MICON-100 will remain in standby mode. Standby mode can be supported by the internal batteries for about 20 minutes. Operation in this mode should be kept to a minimum time length, operation beyond 20 minutes will discharge the battery. (ie. Be sure the handle switches on the pumps are turned off during extended power failures).

Power fail mode is entered after standby mode. In this mode all power is removed from the unit except for the memory of the price, last sale and totalizers. The pump can remain in this mode and retain this data for one week. If longer periods of power failure are anticipated, the battery should be disconnected from the circuit.

2 MICON 100 COMMUNICATOR OPERATION

2-1 READING TOTALIZERS

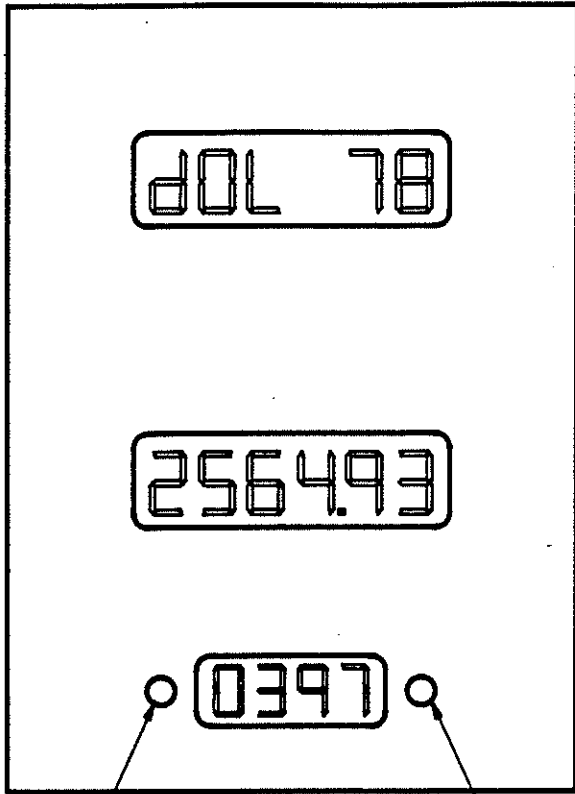
- 1) PUMP HANDLE MUST BE IN OFF POSITION.
- 2) Aim the communicator's beam transmitters at the optical reader in the MICON 100. The reader is located on the right side of the price display. Reception of the beam is indicated by the red indicator flashing on the left side of the price display.
- 3) Depress and hold the "SEL" key until the total dollar sales is displayed. Total dollar sales utilizes the ten digits of the dollar and volume displays, preceeded by the letters "DOL".
(See figure 2-1. Continuing to depress the "SEL" key will cause the total volume sales to be displayed. Total volume sales is indicated by the letters "VOL" on the dollar display. The display will oscillate between total dollar and total volume sales if the "SEL" key is continually depressed.

2-2 PRICE SETTING

- 1) Place the pump handle in ON position.
- 2) Switch off 120 VAC head power to MICON 100. The MICON 100 display should be flashing.
- 3) Aim the communicator at the optical reader on the MICON 100 as in section 2-1.
- 4) Depress and hold the "SEL" key until the required digit of the price display is being shown. Depress and hold the "SET" key until the digit has incremented to the correct value. Then depress and hold the "SEL" key in order to select another digit. After the correct price per litre has been entered, place the pump handle in the OFF position and switch on the 120 VAC head power.

IMPORTANT: READING TOTALIZERS AND PRICE SETTING CAN ONLY BE ACCOMPLISHED FROM ONE SIDE OF THE MICON 100-I. THE CORRECT SIDE IS INDICATED BY THE ILLUMINATED RED STATUS INDICATOR LOCATED ON THE LEFT SIDE OF THE PRICE DISPLAY.

TOTAL DOLLAR
SALES DISPLAY

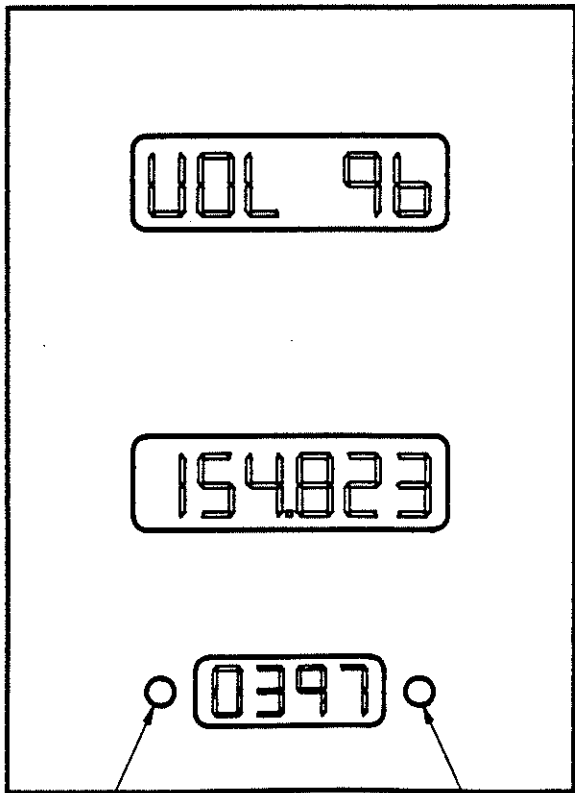


DISPLAY READS
\$782564.93

STATUS INDICATOR

OPTICAL READER

TOTAL VOLUME
SALES DISPLAY



DISPLAY READS
96154.823 UNITS

STATUS INDICATOR

OPTICAL READER

3. MICON-100 I TECHNICAL DATA

ELECTRICAL: TA = 25°C UNLESS OTHERWISE NOTED

POWER CONSUMPTION (OPERATING) - @ 25°C 90-120 VAC @ .4 AMPS MAX.
@ -40°C 90-120 VAC @ .8 AMPS MAX.

MOTOR CONTROL OUTPUT - UP TO 15 AMPS @ 220 VAC CONTINUOUS

SOLENOID CONTROL OUTPUT - UP TO 1 AMP @ 220 VAC CONTINUOUS

PENNY PULSER OUTPUT¹ - SOLID STATE SWITCH 5 - 30 VDC @ 100ma
MAX. RS < 40 OHMS PULSE WIDTH 7.5m SEC.

VOLUME PULSER OUTPUT¹ - AS ABOVE EXCEPT 1 PULSE PER .1 UNIT

AUTHORIZE INPUT - 90 TO 125 VAC @ 80ma MAX.
RIN = 2.7 K OHMS TYPICAL

COMMUNICATION LINK - COMPATIBLE WITH KRADALTM EQUIPMENT

BATTERY LIFE IN POWER FAIL MODE - 200 HOURS MIN.

* * * * *

¹ Actual pulse output time may lag actual delivery time depending on delivery rate (see pulse width spec.). If the delivery rate exceeds minimum pulse width spec., pulses will be stored and will eventually be given. Storage roll over will occur at +9999 pulses stored.

FUNCTIONAL: OPERATING TEMP. -55° to +50°C R.H. 5 to 100% Non Condensing

STANDBY TEMP. (1 DAY) -50° to +70°C R.H. 50% MAX.

STORAGE TEMP. (3 DAYS) -55° to +70°C R.H. 25% MAX.

STORAGE TEMP. INDEFINITE -40° to +50°C R.H. 50% MAX.

DISPLAYS (LCD):

VIEWING ANGLE ±60° NOMINAL

DOLLAR VOLUME UP TO 9999.99 PER SALE + .5 CENTS MAX.

UNIT VOLUME UP TO 999.999 UNITS PER SALE ± .004 UNITS METRIC/± .001 UNITS NORMAL

TOTAL DOLLAR VOLUME UP TO 999999.99 BEFORE ROLL OVER

TOTAL UNIT VOLUME UP TO 99999.999 UNITS BEFORE ROLL OVER

PRICE SET/0 to 9.999 PER UNIT

DISPLAY TOTAL VOLUME (MECHANICAL) UP TO 99999.99 UNITS BEFORE ROLL OVER

INPUT SHAFT:

MAX. SHAFT SPEED 300 RPM MAX. TORQUE 10 OZ/INS. 4 TURNS CW OR CCW PER UNIT
IN NORMAL MODE.

INTERNAL RESOLUTION:

± .001 UNITS IN NORMAL MODE

± .004 UNITS IN METRIC MODE



P.O. BOX 250, 204 DAY ST
WINNIPEG, MANITOBA
R2C 1A8

MICON 100

4.1

TROUBLESHOOTING AND REPAIR GUIDE

PROBLEM

POSSIBLE CAUSE

- | | |
|--|---|
| 1) Displays blink slowly on and off with pump handle in the on position, customer cannot dispense product. | <p>Breaker supplying power to the #1 wire shut-off.</p> <p>No head power. Check 120 VAC supply to leads #1 (hot) and #2 (neutral) (open connection).</p> <p>Blown fuse.</p> <p>Defective SKIL152.</p> |
| 2) Display blinks slowly on and off with pump handle in the on position but, customer <u>can</u> dispense product. | <p>Defective KIL152 main board.</p> |
| 3) Micon 100 keeps blowing breaker. | <p>Possible line short on #1 wire (underground).</p> <p>Varister (protection for surges on #1 wire) blown.</p> |
| 4) Displays immediately blank when 120 VAC head power is disconnected. | <p>Defective battery pac.</p> <p>Defective KIL152 Control board.</p> |
| 5) Segment(s) on display board staying on all the time or missing entirely. One display or all displays reading eights. Other display board reads correctly. | <p>Defective display board.</p> <p>Defective display wiring harness (check connections).</p> |
| 6) Both display boards reading eights or erroneous segments being displayed. | <p>Defective display board. Unplug the display boards one at a time to see if problem clears up.</p> <p>Defective display wiring harness.</p> <p>Defective KIL152 control board.</p> |

PROBLEMPOSSIBLE CAUSE

- | | |
|--|--|
| 7) Pump motor and/or solenoid valve will not turn on when pump handle placed in the "ON" position. Reset sequence (previous sale not cleared) when handle turned on. | Defective or inoperative linkage to Micon 100 handle shaft (detent). |
| | No authorize input voltage. Check for 120 VAC on the #14 wire. |
| | Defective internal micro-switch operation (the micro-switch which #14 wire is attached to). |
| 8) Same problem as #7 but reset sequence is displaying No. 8's and clearing last sale when pump handle is placed in the "ON" position. | No power supplying the internal triacs [#7 (pump) and #20 (solenoid)]. Check for 120 VAC. |
| | Defective KIL152 control board. Check output power on #6 (solenoid) or #8 (motor) wires. |
| <p><u>NOTE:</u> If when changing KIL152 main board, one of the triacs is physically burnt, check for short on either motor or solenoid (in propane, also check dead man switch for short).</p> | |
| 9) Pump motor always on when pump handle is in the "OFF" position (new installation). | Micon detent in wrong position. Remove cottoe pin or split pin and rotate detent to opposite position. |
| 10) Product can be dispensed but not registering on either mechanical totalizer or electronic display. | Inoperative drive to Micon input shaft.

Stripped or loose gears on Micon base or remote pulser (propane). |
| 11) Product flow registering only on mechanical totalizer. | Defective micon base (pulser) or remote pulser (propane).

Defective KIL152 control board.

Defective KIL184 ATC board (temperature compensation units only). |
| 12) Micon 100 shuts off while customer is topping sale off. | Metering system causing input shaft to jitter forward and backward. Replace base with a one-way bearing base (gasoline only). Available July 1986 new KIL152 control board for reverse pulses. |

PROBLEMPOSSIBLE CAUSE

- | | |
|---|---|
| 13) Micon 100 shuts off during delivery at certain amounts (eg. \$10.00, \$15.00). | Defective KIL152 control board. |
| 14) Micon 100 shuts off at beginning of delivery (eg. \$0.00 - \$1.00). | Defective Micon base or remote pulser (propane). |
| | Defective KIL184 ATC board (temperature compensation units only). Bad temperature probe. |
| | Defective KIL152 control board. |
| 15) Micon 100 registering in imperial gallons instead of litres (gas only). | Metric conversion box not installed. Micon 100 requires 4 turns per litre on input shaft. |
| 16) Micon 100 registering certain multiplying factors out (eg. x2, x4) (propane only). | Wrong KIL184 ATC board program chip (different pumps, different programs). |
| 17) Unable to read totals or set prices with communicator; however, the communicator functions normally with other Micon heads. | Defective optical reader on display board. |
| | Defective display wiring harness. |
| | Defective KIL152 control board. |
| 18) Communicator exhibits poor range when attempting to set prices or read total on all Micon heads. | Optical reader is in direct sunlight. (Shadow sunlight with hand.) |
| | Weak or dead battery in communicator. |
| | Improperly adjusted communicator (usually dropped). Try another unit. |
| 19) Micon front display LED flashing while in normal operation. | Defective battery pac. |
| | Defective charging system on KIL152 control board. |
| 20) For self-service, when pump handle is turned on no authorize request is present. | K-2 relay not pulling in.
Defective KIL152 control board. |
| 21) Micon 100 losing it's price and totals. | Defective battery pac (measure). |
| | Defective KIL152 control board. |
| 22) Micon 100 totals jumping or price changing by itself. | Defective or low battery pac (measure). |
| | Defective KIL152 control board. |

PROBLEM

POSSIBLE CAUSE

23) Micon displays will not reset to zero when pump handle placed in "ON" position. Product can be dispensed and previous sale(s) adds on to sale being dispensed.

Defective internal micro-switch (Switch S1).

4-2 STANDBY BATTERY MEASUREMENT

Under normal operating conditions the 8 volt standby battery will last at least 5 years. If the life of the standby battery is shortened considerably it could be due to improper charging voltage or prolonged operation on battery power. The KIL 152 ASSY 15 control board has a low battery detect circuit which causes the red status indicator on the front display to turn on and off approximately once per second. The condition of the standby battery should be verified in the following manner.

- 1) Place the pump handle in the ON position.
- 2) Turn off the 120 VAC head power.
- 3) The red status indicator on the front display should remain on to indicate the satisfactory condition of the battery.
- 4) Turn on the 120 VAC head power.

NOTE: The internal battery will self discharge during storage and therefore depending on the degree of discharge it may be necessary to allow the battery to charge for up to 8 hours to conduct a valid test.

If the above test indicates that the battery is not properly charged, then the faulty condition could be caused by a defective charging circuit. The proper operation of the charger should be verified in the following manner.

- 1) Place the handle actuator shaft in the BATTERY OFF position. This position is denoted by the flat side on the end of the actuator shaft facing down.
- 2) Remove the cover from the explosion proof housing. Measure the voltage at TP3 on the KIL 152 ASSY 15 control board. The negative lead of the voltmeter should be connected to the MICON case. The charging voltage varies slightly with temperature. The following table can be used to determine the proper charging voltage at a given ambient temperature.

+40°C	9.31	-10°C	9.41
+30°C	9.33	-20°C	9.43
+20°C	9.35	-30°C	9.45
+10°C	9.37	-40°C	9.47
0°C	9.39		

TOLERANCE \pm .05 VDC

- An improper voltage at this test point indicates a defective control board.
- 3) Replace the cover on the explosion proof housing.
 - 4) Rotate the handle actuator shaft 180 degrees to reconnect the internal battery.

4-3 MICROSWITCH OPERATION CHECK

The pump handle which is mechanically coupled to the MICON 100 I actuates 2 internal microswitches. The correct mechanical and electrical operation of this system can be verified in the following manner.

- 1) The ON/OFF operation of the pump handle should allow the coupler assembly to travel fully between the stops on the side of the computer. See Figure 4-1. This operation must also rotate the actuator shaft a full 90 degrees.
- 2) Disconnect 120 VAC supply to the #14 lead. Moving the pump handle from the OFF to the ON position should cause the MICON displays to flicker briefly. This verifies the proper electrical operation of microswitch S1.
- 3) Connect 120 VAC to the #14 lead. Place the pump handle in the OFF position. Measure the voltage on the #15 lead with respect to neutral. A reading of 0 VAC should be obtained. Place the pump handle in the ON position. A reading of 120 VAC (nominal) should be obtained on the #15 lead. This check verifies the correct operation of microswitch S2. Refer to Section 5-5 if replacement is necessary.

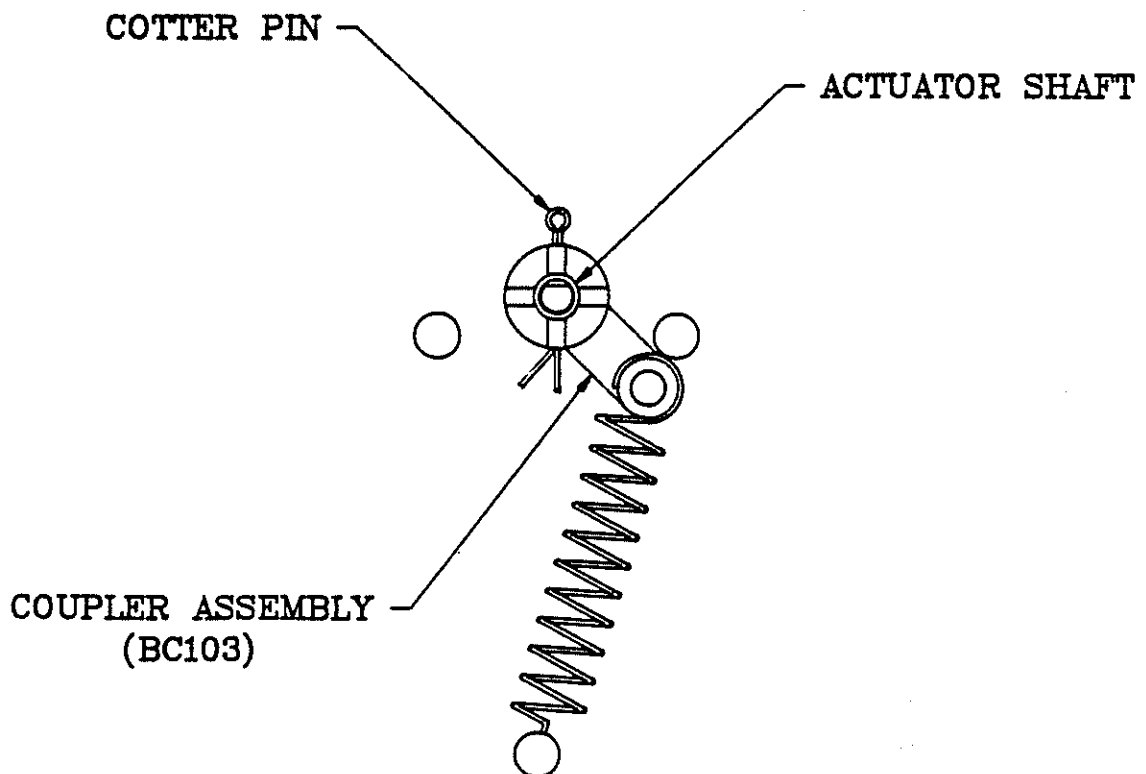


FIGURE 4.1

5. PARTS REPLACEMENT PROCEDURE

WARNING: High voltage is present inside the explosion proof enclosure. Take necessary precautions to avoid electrical shock and or personal injury.

5.1 KIL 152 ASSY 15 CONTROL BOARD REPLACEMENT

- 1) Take totalizer readings.
- 2) Disconnect 120 VAC supply to customer wire leads #7, #20 and #14.
- 3) Remove cover from explosion proof housing.
- 4) Remove fuse (F1). See figure 5-1.
- 5) Place the handle actuator shaft in the BATTERY OFF position.
- 6) Remove the 2 screws securing the KIL 152 board to the enclosure.
- 7) Disconnect all applicable connectors in order to remove the control board.
- 8) Install replacement board ensuring that the connectors are properly aligned and secured. Reverse the above procedure to complete the repair.
- 9) Before installing the cover check out the MICON for proper operation.
- 10) Finally, install the cover ensuring that all 14 bolts are tightened.

5.2 STANDBY BATTERY REPLACEMENT

- 1) Remove KIL 152 PCB as described in Section 5-1.
- 2) Disconnect the positive and the negative leads from the battery pack.
- 3) Remove the wing nut which secures the battery pack to the pan and remove the defective battery pack.
- 4) Reverse the above procedure when installing the replacement part.
- 5) Measure the battery charging voltage as described in Section 4-2.

5.3 DISPLAY ASSEMBLY REPLACEMENT

- 1) Unplug the 2 connector P1 and P2 from the display board.
- 2) Remove the 3 mounting screws which secure the face plate to the cast aluminum base. Do not remove the display board from the face plate.

- 3) Install the new display assembly. Plug in the 2 connectors P1 and P2. Ensure that the connectors are not misaligned or interchanged.
- 4) Verify the proper operation of the display assembly.

5.4 PULSER ASSEMBLY REPLACEMENT

If troubleshooting procedures indicate a defective pulser board and or disk then the entire base assembly should be replaced as follows:

- 1) Remove the MICON face plates.
- 2) Cut the 4 wires which enter the pulser housing (See note below).

CAUTION: DO NOT SHORT THE RED WIRE WHICH EXISTS FROM THE EXPLOSION PROOF HOUSING TO THE CASE OR TO ANY OF THE OTHER PULSER WIRES.

- 3) Remove other necessary hardware in order to slide the base out from under the explosion proof housing.
- 4) Install on the new base assembly.
- 5) Reassemble the MICON 100. It will be necessary to splice the 4 pulser wires coming from the explosion proof housing together with those coming from the new pulser assembly.
- 6) Test the dispenser for proper operation.

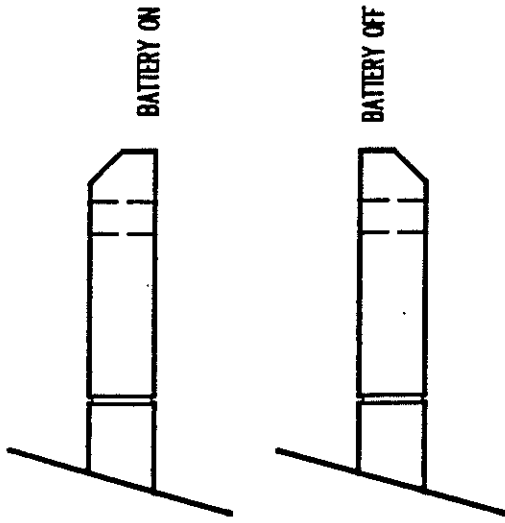
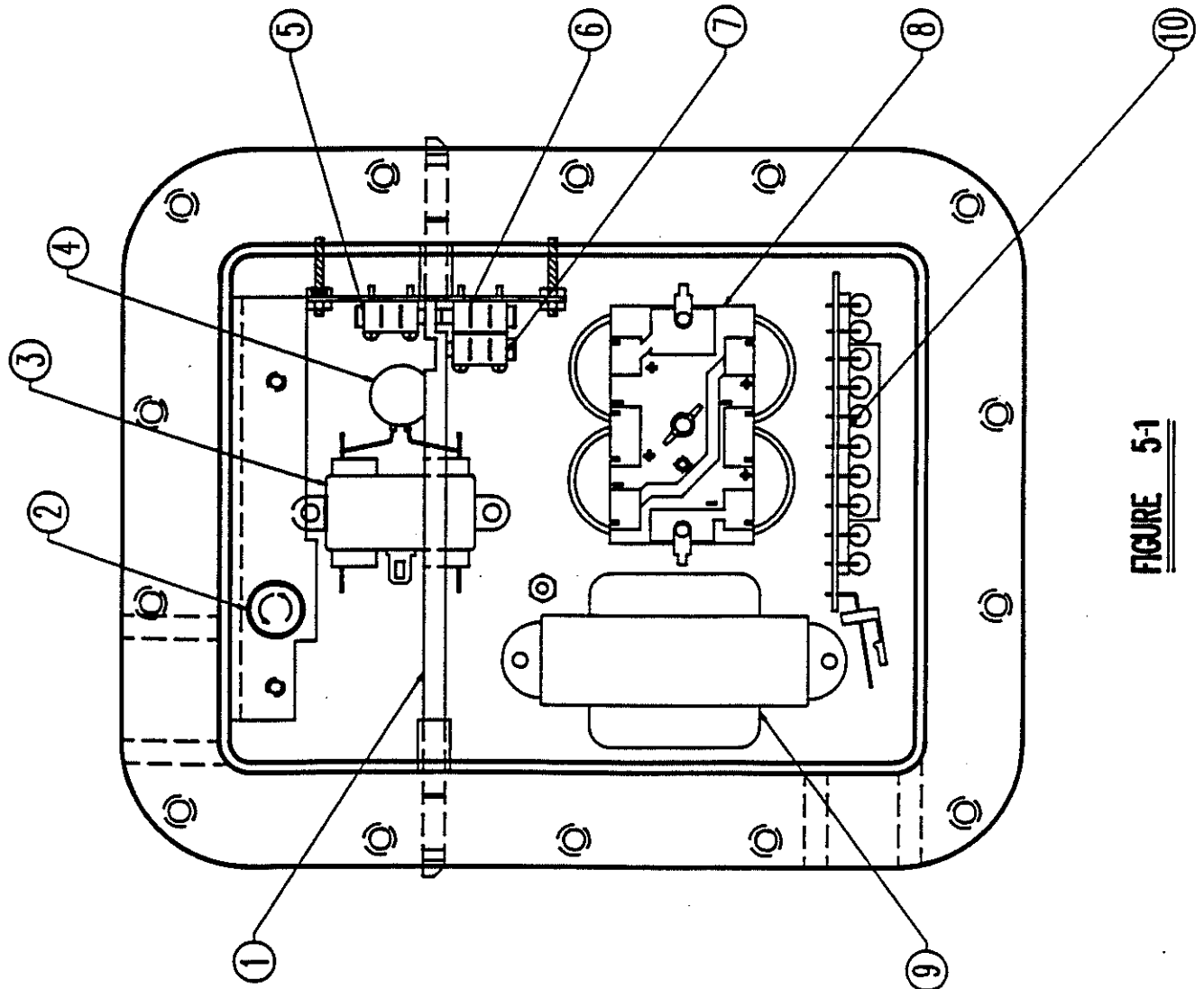
NOTE: Some models of MICON computers are equipped with a pulser harness in line connector in which case it will not be necessary to cut the pulser wires.

5-5 MICROSWITCH REPLACEMENT

- 1) Remove the KIL 152 PCB as described in SECTION 5-1.
- 2) Desolder the appropriate leads and replace the defective switch.
- 3) Reverse the above procedure to reassemble the unit.

5-6 KIL 184 ATC BOARD REPLACEMENT

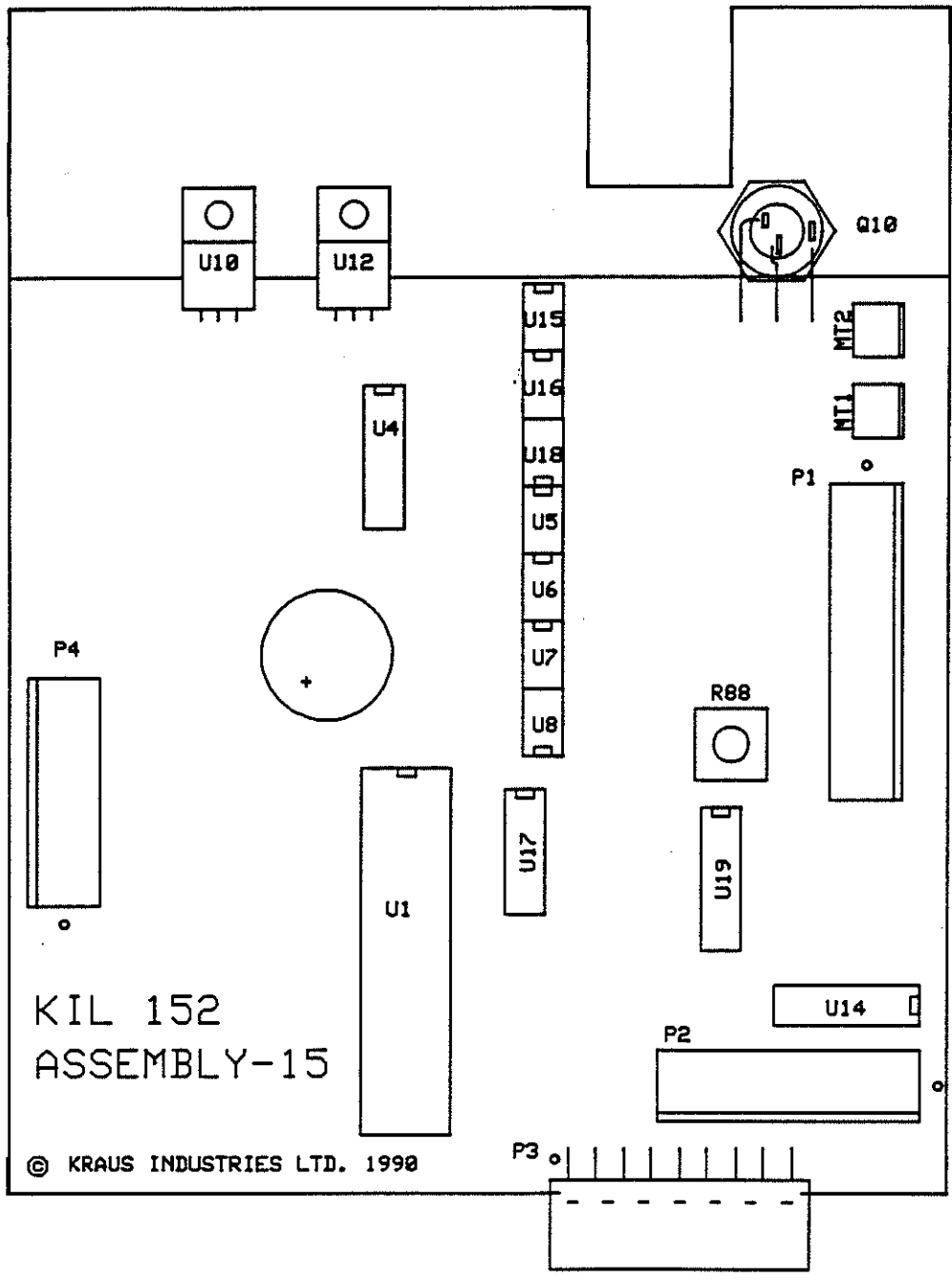
- 1) Remove the KIL 152 PCB as described in Section 5-1.
- 2) Unplug the KIL 184 ATC board from the KIL 152 board.
- 3) Disconnect all applicable connectors from the KIL 184 board and remove.
- 4) The switch settings on the new board must be changed to coincide with the settings on the defective board. In addition the programmable chip which is resident on the KIL 184 board is unique to the various types of installations and therefore these boards are not completely interchangeable.
- 5) Install the replacement board ensuring that all applicable connectors are properly aligned and secured.
- 6) Check MICON for proper operation.
- 7) Install cover and displays.
- 8) Place pump handle in the ON position.
- 9) Place the rear display selector switch in the down position.
- 10) Observe the top readout on the rear display. The probe temperature must be displayed to signify a properly functioning system.
- 11) Perform a functional test on the unit to ensure proper operation.
- 12) Return the rear display selector switch to the NORMAL (UP) position.
- 13) Install cover and tighten.



- 1 INTERNAL CONTROL SHAFT.
- 2 MAKE SURE CUTOUPS LINE UP WITH MICROSWITCHES.
- 3 FUSE HOLDER. HOLDS 1.5 AMP FUSE 120 VAC.
- 4 EMI FILTER
- 5 VARISTOR
- 6 MICROSWITCH S2, AUTHORIZE POWER CONTROL.
- 7 MICROSWITCH S3, BATTERY CONNECT.
- 8 MICROSWITCH S1, REGISTER RESET CONTROL.
- 9 BATTERY, 8 VOLT RECHARGABLE.
- 10 TRANSFORMER 120 V TO 12 VAC.
- HEATER BOARD.

MICON HEAD INTERNAL ASSEMBLY
3771

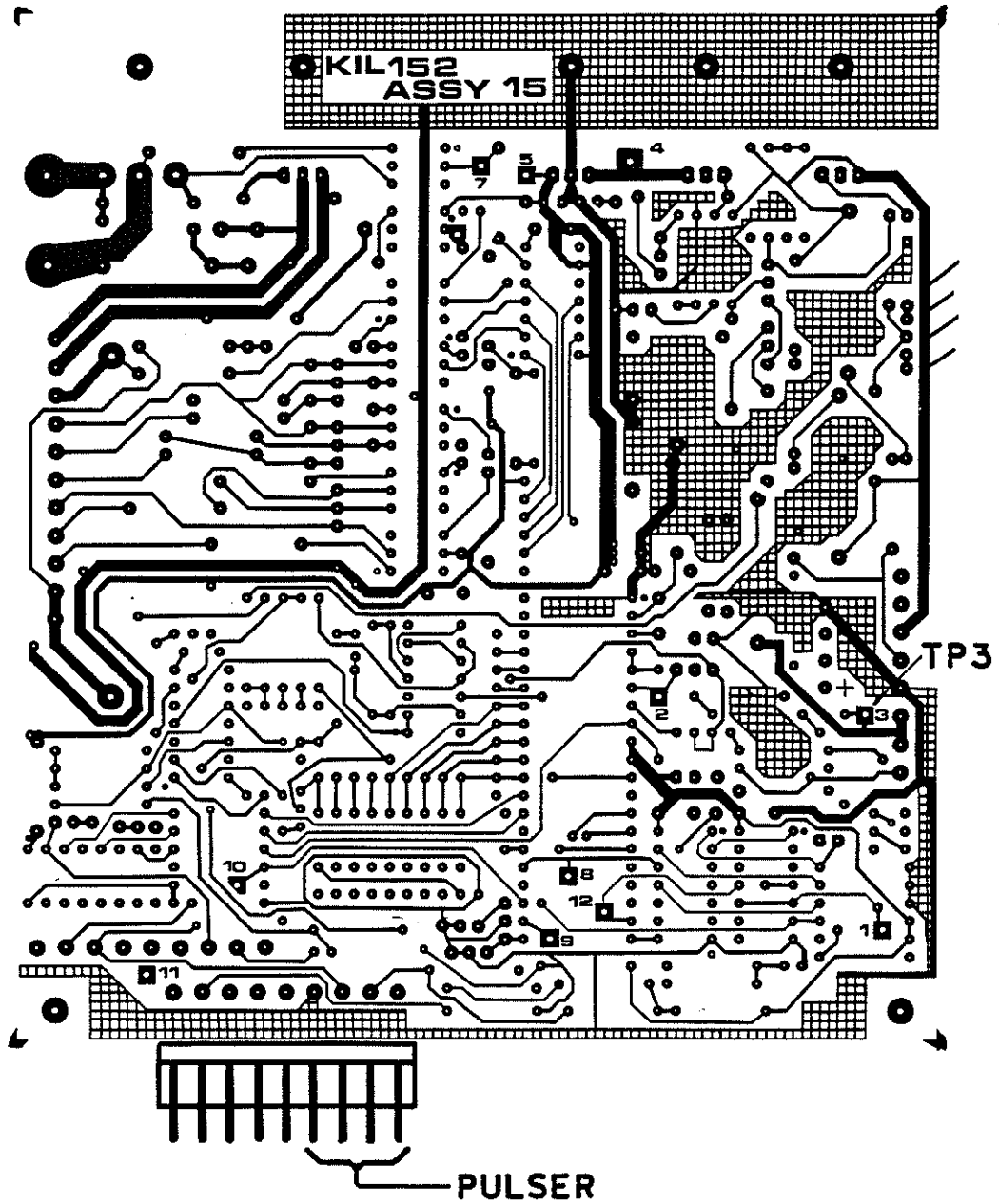
FIGURE 5-1



KIL 152
ASSEMBLY-15

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ORN
PLUG 2
PLUG 1
BLK



BULLETINS

PHONE (204) 224-1616

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WINNIPEG, MANITOBA
R2C 1A8

TELEX 07-57829
FAX (204) 222-0846

MAY 24, 1990

ATTENTION: INSTALLER

WEIGHTS AND MEASURES REQUIRES THAT THE ENCLOSED NAMEPLATE,
WHICH DISPLAYS THE MODEL, SERIAL, AND APPROVAL NUMBERS, BE
AFFIXED TO THE OUTSIDE OF THE DISPENSER AFTER INSTALLING A
MICON 100-I ELECTRONIC REGISTER.

KRAUS INDUSTRIES LTD.

PHONE (204) 224-1616

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INDUSTRIES LTD
P.O. BOX 250, 204 DAY STREET
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TELEX 07-57829
FAX (204) 222-0846

May 24, 1990

SERVICE BULLETIN

ATTENTION: SERVICE MANAGER

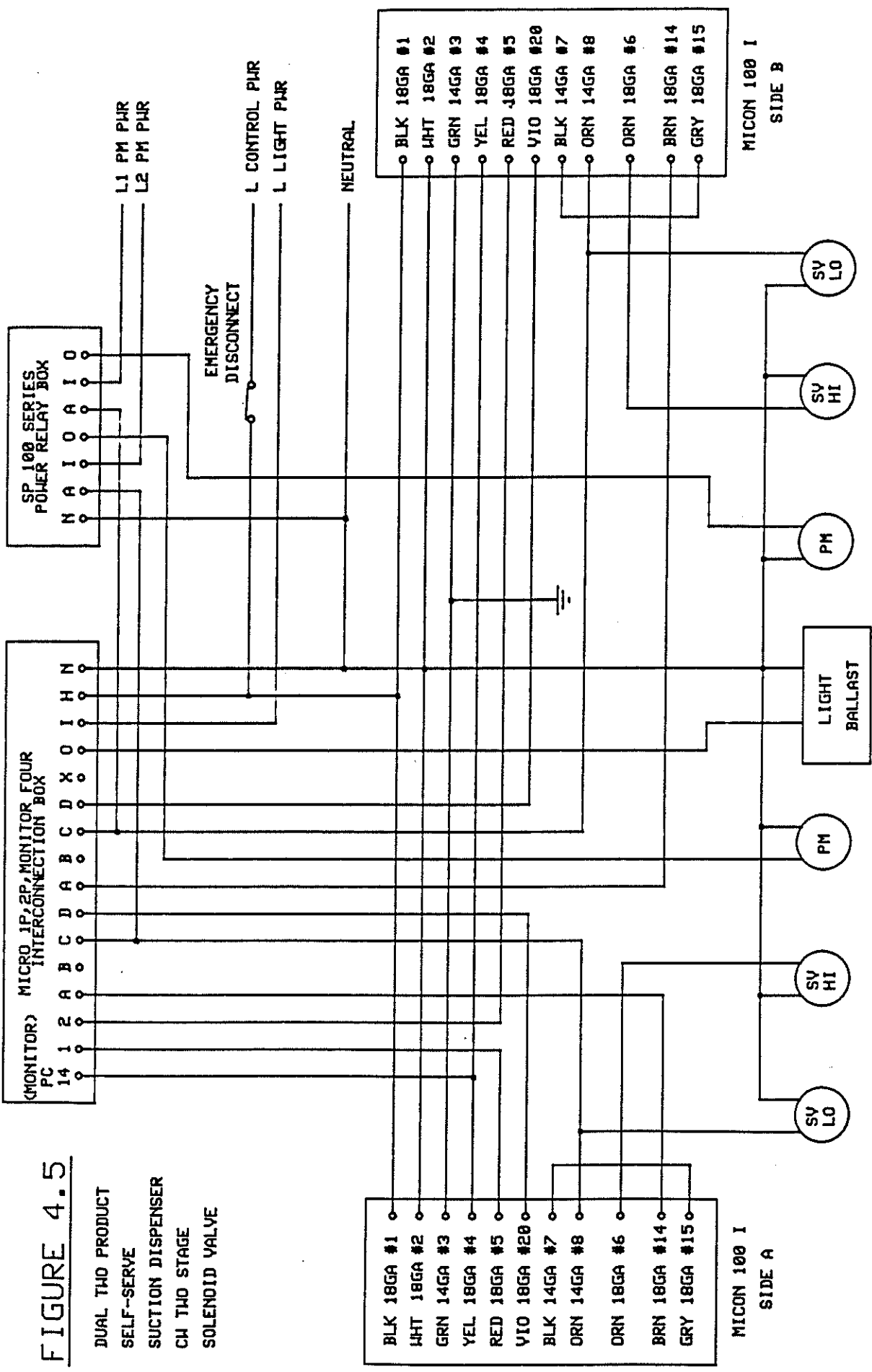
SUBJECT: MICON 100-I INSTALLATION

In the past there has been some confusion regarding the electrical connection of the MICON head power (#1 BLACK LEAD). In order to satisfy the requirements of the national fire code, Kraus Industries recommends the installation of an additional emergency disconnect switch as shown on the attached diagram which would be utilized solely for emergency shut down. The console EMERGENCY/OPERATE switch would then function as a NIGHT/DAY switch to be used for station shut down at night.

If you have any questions, please contact Kraus Industries.

FIGURE 4.5

- DUAL TWO PRODUCT SELF-SERVE
- SUCTION DISPENSER
- CH TWO STAGE SOLENOID VALVE





P.O. BOX 250, 204 DAY ST
WINNIPEG, MANITOBA
R2C 1A8

SERVICE BULLETIN

NOV. 9/83

SUBJECT: MICON 100-I ELECTRONIC REGISTER

Kraus Industries has recently made some changes to the MICON electronic register which will affect the field servicing of these units. The nature of these changes is as follows:

1. KIL 152 ASSY 11 control board is being phased out and replaced by the KIL 152 ASSY 15 control board. These two control boards are not interchangeable.
2. The KIL 171 display board is being replaced by the KIL 187 display board which can be used with either the KIL 152 ASSY 11 or 15 control board. The KIL 171 display board however, can only be used with the ASSY 11 control board.
3. The MICON register is now available with automatic temperature compensation as an option.

The model number designation on these units has been changed to MICON 100-IP. This ATC option requires the addition of the KIL 184 board inside the explosion proof housing.

4. The external battery connection has been eliminated. An internal microswitch which is actuated by the handle shaft is used to connect or disconnect the internal battery. See MICON 100-I INSTALLATION INSTRUCTIONS-FOURTH EDITION.
5. A low battery detect circuit has been added to the KIL 152 ASSY 15 control board. This feature will cause the red status indicator on the front display to flash on and off approximately once per second when the internal battery and or charging circuit is defective.

The applicable manuals have been changed to reflect these construction changes. If you have any questions please contact Kraus Industries' Service Department.

MICON 100N FIELD CHANGE NOTICE

Kraus Industries Ltd. will soon be introducing a new and improved version of the Micon 100 called the Micon 100N. The unit is functionally identical to the Micon 100I, but features internal construction changes to reflect improvements in technology. The following is a summary of the differences between the Micon 100N and the Micon 100I:

The SKIL-152 main board has been replaced by the new SKIL-252 board. The two boards are not compatible.

The SKIL-187 display board has been replaced by the new SKIL-287 board. These two boards are not compatible, but the KIL-287 PC board can be assembled for use with the Micon 100I.

The SKIL-184 ATC board has been replaced by the new SKIL-291 board. These boards are both compatible with either Micon 100 providing that the appropriate software is used.

The SKIL-161 pulser board has been replaced by the SKIL-246 board in the standard base, and by the SKIL-296 board in the metric base. The SKIL-246 board, which is the same as the remote pulser board except for the connector, can be used as a direct replacement for the SKIL-161 board in the Micon 100I.

The SKIL-162 heater board and the heater harness have been eliminated.

The 8 volt battery pack has been replaced by a standard 6 volt, one amp-hour gel-cell battery. The two batteries are not compatible.

The Micon 100N subassembly is different and the transformer is smaller.

The fuse rating has been reduced from 1.5A to 0.5A.

The Micon 100N can be identified by the LED on the front display. The LED is normally off and flashes when the Micon transmitter is used, or when operating off of battery power when the battery is low. On the Micon 100I, the LED is on and flickering during normal operation. On the SKIL-287 display board, the six pin heater connector is absent, unless the board is assembled for use with the Micon 100I. The nine and three pin connectors on the Micon 100N displays have the polarizing clips towards the inside rather than the outside as on the Micon 100I.

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April 16, 1990.

**SKIL 287 DISPLAY
INTRODUCTION NOTICE**

The SKIL 187 Display has now been replaced by the new SKIL 287 Display. The SKIL 287 Display will have the same compatibility as the SKIL 187. This means that the SKIL 287 will work with any SKIL 152 main board.

The price will remain the same (new, exchange and up-grade).

Any questions please contact Kraus Industries Service Department.

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SERVICE BULLETIN

MICON 100I CUSTOMER HARNESS

WIRE COLOUR CODE CHANGE

A change in the wire colour code is being made for the Micon 100I customer harness. This will make it easier to distinguish between the three blue wires which are presently used. The change will help prevent wiring errors during site installations or servicing.

These are the changes in the colour code:

<u>WIRE NUMBER</u>	<u>OLD COLOUR</u>	<u>NEW COLOUR</u>
Wire #9 (Talk-To-Console)	Light Blue	Pink
Wire #10 (Talk-To-Pump)	Dark Blue	Tan

PHONE (204) 224-1616



P.O. BOX 250, 204 DAY ST
WINNIPEG, MANITOBA
R2C 1A8

February 2, 1984

SERVICE BULLETIN

ATTENTION: SERVICE MANAGER

SUBJECT: MICON 100I ELECTRONIC REGISTER

In order to accommodate the different types of equipment and their associated interface requirements Kraus Industries has developed specialized versions of the KIL 152 control board. These boards will be identified with a special part number and if required must be replaced with an indential board in order to retain the special features.

PART #	FEATURES
152-11-10PPU 152-15-10PPU	10 PULSES PER LITRE STANDARD OUTPUT CAPABILITY
152-11-10EPPU 152-15-10EPPU	10 PULSES PER LITRE OUTPUT CAPABILITY FOR OLDER KEYGUARD SYSTEMS I.E. PETROVEND MODEL K095
152-11-100PPU 152-15-100PPU	100 PULSES PER LITRE OUTPUT CAPABILITY FOR NEWER CARD SYSTEMS I.E. PETROVEND MODEL 3000E

If you have any questions please contact Kraus Industries service department.

MICON MAIN BOARD & ATC BOARD PROGRAM

For Assembly
used with...

KRAUS INDUSTRIES MICON MAIN BOARD AND ATC BOARD PROGRAMS

For Gasoline, Propane and Natural Gas Dispensers

MICON MAIN BOARD [SKIL152A15 or SKIL152A11; the two are not interchangeable and only the SKIL152A15 can be used for Automatic Temperature Compensation (ATC)]

TYPE I

[Identified by the Micro Processor (a 40-pin socketed IC)]

1. HD63A01V1P (Stamped "KRAUS")
 - A. No label or a 10 PPU label on back of board (soldered side) indicates a 10 pulse per unit board or 10 PPU. Can be used as a stand alone operation or with a Kraus Industries self serve console: Monitor-4 or Micro 1P and 2P.
 - B. 100 PPU label on back of board (soldered side) 100 pulses per unit. Can be used as a stand alone operation or any card system that requires 100 pulses per unit.
2. DANPMP 34 (Label on the Processor)
 - A. Indicates a 10 Extended Pulse Per Unit or 10 EPPU. Can be used either as a stand alone operation or on a key system that requires an extended pulse.
3. DANPMP 55 (Label on the Processor)
 - A. No label or a 10 PPU label on back of board (soldered side) indicates a 10 pulse per unit board or 10 PPU. Can be used as a stand alone operation or with a Kraus Industries self serve console: Monitor-4 or Micro 1P and 2P.
 - B. 100 PPU label on back of board (soldered side) 100 pulses per unit. Can be used as a stand alone operation or any card system that requires 100 pulses per unit.

NOTE:

For Automatic Temperature Compensation (ATC) Type I Micon Main Board can only be used with Type A ATC Main Board.

TYPE II

[Identified by the Micro Processor (a 40-pin socketed IC)]

1. DANPMP 3.1 (Label on the Processor)
 - A. 10 PPU label on the back of the board (soldered side) indicates a 10 pulse per unit board. Can be used as a stand alone operation, self serve consoles (Monitor-4, Micro 1P and 2P and CONCEPT 5000.
 - B. 10 EPPU label on the back of the board (soldered side) indicates 10 extended pulses per unit. Can be used as a stand alone operation or on a key system that requires 10 extended pulses.
 - C. 100 PPU label on the back of the board can be used as a stand alone operation or any card system that requires 100 pulses per unit.
2. DANPMV3.1G (Label on the Processor)
 - A. This board is used with Gilbarco T10 Transac Console with Micon heads.
3. DANPMV5.2 (Label on the Processor)
 - A. This board is used for two tier pricing on Micon heads. (Two different prices, 2 separate totalizers.)

NOTE:

For Automatic Temperature Compensation (ATC), Type II Micon Main Board can only be used with Type B ATC Main Board.

ATC MAIN BOARDS [SKIL184 "CP1.2" and SKIL184 "ATC2.0 to 2.4"; The two boards are not interchangeable]

TYPE #A [Identified by the IC that is present on the 28-pin socket]

1. CP1.2 x 2 45 sec - Canadian propane, revision 1.2, x 2 meter (used for Bennett, Interquip) 45 second time out.
2. CP1.2 x 4 45 sec - Canadian propane, revision 1.2, x 4 meter (used for Schwelm), 45 second time out.
3. CP1.2 x 1 45 sec SP - Canadian propane revision 1.2, x 1 meter (used for Neptune), 45 second time out, special offset for Neptune.
4. CP1.2 x 4 45 sec SP - Canadian propane revision 1.2, x 4 meter (used for Neptune), 45 second time out, special offset for Neptune.
5. CP1.2 x 1 45 sec - Canadian propane, revision 1.2, x 1 meter (used for Interquip pumps), 45 second time out.
6. CG1.3 x 1 NT - Canadian gas, revision 1.3, x 1 meter (used for all gas pumps), no time-out.

NOTES:

1. Type A ATC Main Board to be used only with Type I Micon Main Board.
2. On the KIL184 ATC Main Board all switches off indicate zero calibration.
3. For calibration settings (standard units ± 6.35 or SP units 0 to $^{+}12.7\%$) switches 1 - 7 are used, switch 8 off means high (+), 8 on means low (-), refer to Table #1.
4. Switch #10 off, temperature compensation is on.
Switch #10 on, temperature compensation is off.

TYPE #B

[Identified by the IC that is present on the 28-pin socket]

1. ATC2.4PC3Z2 - Automatic Temperature Compensation, Revision 2.4, propane, centigrade, 3 - 45 second time out, Z offset, 2: (used for Bennett, Interquip, LTS).
2. ATC2.4PC3Z4 - Automatic Temperature Compensation, Revision 2.4, propane, centigrade, 3 - 45 second time out, Z offset, 4: (used for Schwelm).
3. ATC2.4PC3P1 - Automatic Temperature Compensation, Revision 2.4, propane, centigrade, 3 - 45 second time out, P offset, 1: (used for Neptune).
4. ATC2.4PC3P4 - Automatic Temperature Compensation, Revision 2.4, propane, centigrade, 3 - 45 second time out, P offset, 4: (used for Neptune).
5. ATC2.4GCOZ1 - Automatic Temperature Compensation, Revision 2.4, gasoline, centigrade, 0 - no time out, Z offset, 1 (used for all types of gasoline dispensers).
6. ATC2.4DCOZ1 - Automatic Temperature Compensation, Revision 2.4, Diesel, centigrade, 0 - no time out, Z offset, 1 (all diesel pumps).

NOTES:

1. Type B ATC Main Board to be used only with Type II Micon Main Board.
2. On the KIL184 ATC Main Board with Z offset, (± 6.35 refer to Table #2 for switch 1 - 8 settings) switch #8 on, all other switches off zero calibration.
3. On the KIL184 ATC Main Board with P offset, (0 to $^{+}12.75\%$, switches 1 - 8 are used, refer to Table #3) switches 1-7 off, switch 8 on zero calibration.
4. Switch #10 off, temperature compensation is on.
Switch #10 on, temperature compensation is off.

SPECIAL NOTES

Changing ATC Main Boards:

1. When changing at ATC Main Board (SKILL184) of the same type always make sure that:
 - 1) The program has to be the same as the previous board eg. CP1.2 x 2 45 has to be changed with another CP1.2 x 2 45.
 - 2) If the switches are selected, make sure the new board has the same settings.
2. When changing a **Type I Main Board, Type A ATC Board** to a **Type II Main Board, Type B ATC Board** use the following steps:
 - 1) Z Offset ATC Boards - Make sure that the programs are the same; eg. CP1.2 x 2 45 sec (Bennett) is changed with ATC2.4PC3Z2 (Bennett). Also if the switches are selected first get the setting from the Type A ATC Main Board, Table #1. Make sure you check switch 8 for hi or low setting then set the same setting, using Table 2, for your Type B board. **Note:** Type B Micon Main Board must be used.
 - 2) P Offset ATC Boards - Again, make sure the programs match; eg. CP1.2 x 1 45 SP (Neptune) is changed with ATC2.4PC3P1 (Neptune). Read the switch settings for Type A ATC Main Board from Table #1 then add 6.35. With these settings you then refer to Table #3 and set your switches. **Note:** Type B Micon Main Board must be used. **See Example.**

EXAMPLE:

1 x SKIL152A15 DANPMP 55
1 x SKIL184 CP1.2 x 1 45 sec SP

1. Change to: 1 x SKIL152A15 DANPMP 3.1 - 100 PPU
1 x SKIL184 ATC2.4PC3P1

2. Readings on switches on SKIL184CP1.2 x 1 45 sec SP

Switch 7 - On #8 - Off - hi
6 - On
5 - Off
4 - Off
3 - On
2 - On
1 - On

Reading from Table #1 is 5.15+

3. Now add $6.35 + 5.15 = 11.50$

4. Refer to Table #3 for P offsets

Switch 8 - On
7 - On
6 - On
5 - Off
4 - Off
3 - On
2 - On
1 - Off

} 11.50

5. Now change your boards.

FLOW CHART

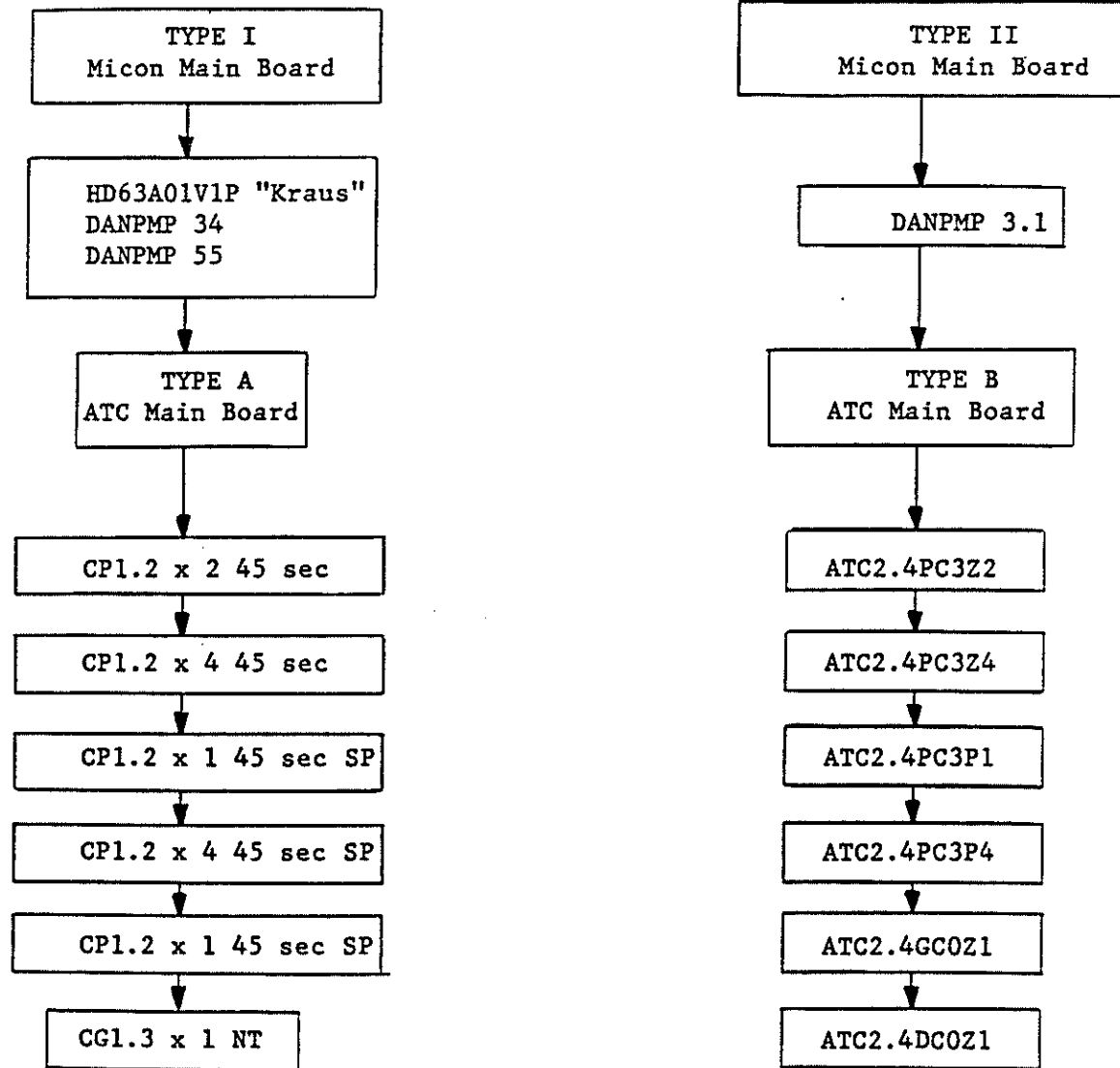


TABLE OF SWITCH POSITIONS

FOR

ELECTRONIC CALIBRATION

TABLE 1

--> SWITCH OFF
X-> SWITCH ON

OFFSET %	SWITCH # 7 6 5 4 3 2 1	OFFSET %	SWITCH # 7 6 5 4 3 2 1
0.00	- - - - -	2.00	- X - X - - -
0.05	- - - - - X	2.05	- X - X - - X
0.10	- - - - - X -	2.10	- X - X - X -
0.15	- - - - - X X	2.15	- X - X - X X
0.20	- - - - X - -	2.20	- X - X X - -
0.25	- - - - X - X	2.25	- X - X X - X
0.30	- - - - X X -	2.30	- X - X X X -
0.35	- - - - X X X	2.35	- X - X X X X
0.40	- - - X - - -	2.40	- X X - - - -
0.45	- - - X - - X	2.45	- X X - - - X
0.50	- - - X - X -	2.50	- X X - - X -
0.55	- - - X - X X	2.55	- X X - - X X
0.60	- - - X X - -	2.60	- X X - X - -
0.65	- - - X X - X	2.65	- X X - X - X
0.70	- - - X X X -	2.70	- X X - X X -
0.75	- - - X X X X	2.75	- X X - X X X
0.80	- - X - - - -	2.80	- X X X - - -
0.85	- - X - - - X	2.85	- X X X - - X
0.90	- - X - - X -	2.90	- X X X - X -
0.95	- - X - - X X	2.95	- X X X - X X
1.00	- - X - X - -	3.00	- X X X X - -
1.05	- - X - X - X	3.05	- X X X X - X
1.10	- - X - X X -	3.10	- X X X X X -
1.15	- - X - X X X	3.15	- X X X X X X
1.20	- - X X - - -	3.20	X - - - - - -
1.25	- - X X - - X	3.25	X - - - - X
1.30	- - X X - X -	3.30	X - - - - X -
1.35	- - X X - X X	3.35	X - - - - X X
1.40	- - X X X - -	3.40	X - - - X - -
1.45	- - X X X - X	3.45	X - - - X - X
1.50	- - X X X X -	3.50	X - - - X X -
1.55	- - X X X X X	3.55	X - - - X X X
1.60	- X - - - - -	3.60	X - - X - - -
1.65	- X - - - - X	3.65	X - - X - - X
1.70	- X - - - X -	3.70	X - - X - X -
1.75	- X - - - X X	3.75	X - - X - X X
1.80	- X - - X - -	3.80	X - - X X - -
1.85	- X - - X - X	3.85	X - - X X - X
1.90	- X - - X X -	3.90	X - - X X X -
1.95	- X - - X X X	3.95	X - - X X X X

NOTE: For SP readings add 6.35

cont'd

OFFSET %	SWITCH # 7 6 5 4 3 2 1	OFFSET %	SWITCH # 7 6 5 4 3 2 1
4.00	X - X - - - -	5.20	X X - X - - -
4.05	X - X - - - X	5.25	X X - X - - X
4.10	X - X - - X -	5.30	X X - X - X -
4.15	X - X - - X X	5.35	X X - X - X X
4.20	X - X - X - -	5.40	X X - X X - -
4.25	X - X - X - X	5.45	X X - X X - X
4.30	X - X - X X -	5.50	X X - X X X -
4.35	X - X - X X X	5.55	X X - X X X X
4.40	X - X X - - -	5.60	X X X - - - -
4.45	X - X X - - X	5.65	X X X - - - X
4.50	X - X X - X -	5.70	X X X - - X -
4.55	X - X X - X X	5.75	X X X - - X X
4.60	X - X X X - -	5.80	X X X - X - -
4.65	X - X X X - X	5.85	X X X - X - X
4.70	X - X X X X -	5.90	X X X - X X -
4.75	X - X X X X X	5.95	X X X - X X X
4.80	X X - - - - -	6.00	X X X X - - -
4.85	X X - - - - X	6.05	X X X X - - X
4.90	X X - - - X -	6.10	X X X X - X -
4.95	X X - - - X X	6.15	X X X X - X X
5.00	X X - - X - -	6.20	X X X X X - -
5.05	X X - - X - X	6.25	X X X X X - X
5.10	X X - - X X -	6.30	X X X X X X -
5.15	X X - - X X X	6.35	X X X X X X X

