Gord's

MICRO 2P INSTALLATION AND SERVICE MANUAL

TABLE OF CONTENTS

SECTION I — INSTALLATION

WARNING: IN INSTALLATION AND USE OF THIS PRODUCT, COMPLY WITH THE NATIONAL ELECTRICAL CODES: FEDERAL, STATE AND LOCAL CODES AND/OR ANY OTHER APPLICABLE SAFETY CODES. IN ADDITION, TURN OFF POWER AND TAKE OTHER NECESSARY PRECAUTIONS DURING INSTALLATIONS, SERVICE AND REPAIR TO PREVENT PERSONAL INJURY AND ANY EQUIPMENT DAMAGE.

CAUTION: THIS EQUIPMENT IS NOT SUITABLE FOR USE WITH INTRINSICALLY SAFE DEVICES.

A. MOUNTING

WARNING: DO NOT INSTALL THE INTERCONNECTION BOX OR CONTROL CONSOLE IN A VOLATILE COMBUSTIBLE OR EXPLOSIVE ATMOSPHERE. THE ENVIRONMENT MUST BE FREE FROM SEVERE VIBRATIONS, EXTREME TEMPERATURES.

The console should be installed where the operator has full view of the pumps being controlled. Adequate protection should be arranged to prevent unauthorized or accidental operation of the console controls. The console must be shielded from direct sunlight to prevent excessive internal heating. The interconnection box location should allow easy access to the AUTOMATIC-MANUAL switches.

B. GENERAL WIRING

WARNING: THIS EQUIPMENT IS TO BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NFPA 70) AND THE FLAMMABLE AND COMBUSTIBLE LIQUID CODE (NFPA 30).

Refer to wiring diagram for typical installations. This equipment is intended for monitoring self service type dispensing devices containing equipment suitable for that purpose. The wiring diagrams typify installation circuits for dispensers containing·

1. Computer electric reset actuator
2. Pulse transmitter with appropriate rating
3. Junction box of sufficient volume (see Table 1)
4. Pump motor (when appicable)
5. Solenoid valve (when applicable)

TABLE 1 -- SIZE OF DISPENSER JUNCTION BOXES

Size of conductor AWG (mm^2)	Free space within box for each Conductor cubic inches (cm^3)	
	Box with Hubs	Box without Hubs
16 or smaller (1.3 or less)	1.3 (21.3)	1.5 (24.6)
14 (2.1)	1.8 (29.5)	2.0 (32.8)
12 (3.3)	2.0 (32.8)	2.25(36.9)
10 (5.3)	2.2 (36.1)	2.5 (41.0)
8 (8.3)	2.7 (44.2)	3.0 (49.2)

NOTE: A conductor passing through the box and each conductor terminating in the box is counted as one conductor. No unplugged openings are permitted.

Conductor sizes for motor loads must be appropriately rated, (e.g. ½ h.p motor load requires No. 14 AWG conductors for 100 foot wiring runs). Check local codes to insure that your application meets all requirements. Wire the interconnection box and power relay box (if applicable) to the dispensers according to the wiring diagrams which have been provided. All wires should be checked for line to line or line to ground faults. All seal offs should be properly potted with sealing compound. Power connections can be made using conveniently located sub-breaker panel. The 115 VAC line to the interconnection box must be maintained on at all times. Therefore this circuit breaker should be independent of pump or lighting circuits disconnect switches or line contactors.

Power relays used in the system should have 3/4 h.p., double pole contacts with 115 VAC coils. Kraus Industries supplies upon request power relay box (SP series) with up to 12 power relays for self contained dispensers or a power relay box (TC series) with up to 4 power relays for submersible pumps. These boxes include a mounting plate with all relays and terminal strips for convenient installation.

SECTION II — POST INSTALLATION CHECK

A. GENERAL: The purpose of this check is to allow the installation contractor to test the system for proper operation. Before activating the system, the electrician should recheck all connections to the interconnection boxes, relays, pumps, pump junction boxes, pulsers and any other related electrical devices. The console can be opened at this time and the protective pieces of cardboard and foam rubber removed. The round power cable (MB101) can be installed between the console and interconnection box (MC100). The remaining two cables (MB102) should not be installed at this time. The interconnection box is shipped with the AUTOMATIC-MANUAL switches in the MANUAL position and should be left in that position until further system checkout to prevent possible damage to the interconnection box in the event of incorrect wiring.

WARNING: HAZARDOUS VOLTAGE ARE PRESENT IN THE INTERCONNECTION BOX. TAKE PRECAUTIONS TO PREVENT PERSONAL INJURY.

B. OPERATION CHECK: The following test procedures will determine if the system is working properly.

1. Make sure all pump handles are in the OFF position.

2. Turn on pump circuit breakers. No pumps should start. If any start, recheck relays and associated circuitry.

3. Turn on interconnection box circuit breakers with the console emergency switch in the EMERGENCY position. Again no pumps should start. The console should display a system initialization number corresponding to XXXXXX0066 (X indicates don't care) and should respond to the keyboard. If the initialization number is not displayed turn the program key to the ON position and depress the TEST/CLEAR button If an incorrect display still exists refer to the troubleshooting procedures.

4. Place the console emergency switch in the OPERATE position. At this time 110 VAC will be present on all of the A terminals in the interconnection box. Therefore any shorts to neutral or earth on the A lines will trip the interconnection box circuit breaker.

5. Individually check out each pump by placing the pump handle in the ON position and dispensing some product to ensure the proper operation of the reset motor, solenoid valve, suction or submersible pump etc.

6. Install the two remaining cables (MB102) between the console and interconnection box.

7. Place the AUTOMATIC-MANUAL switches in the AUTOMATIC position. All pump handles should be in the OFF position.

8. Place the pump handle in the ON position. The appropriate AUTHORIZE REQUEST lamp on the console should come on and an audible pulsating tone will be present. Press the appropriate pump position button on the console and depress the RESET PUMP button. The PUMP READY lamp should come on and 110 VAC will be present on the A terminal in the interconnection box for that pump. The pump should reset as before. Dispense some product and place the pump handle in the OFF position. While dispensing product the appropriate PUMPING lamp on the console will flash. This lamp will cease flashing after the pump is turned off and will remain on. The console dollar reading should match that of the pump. This procedure should be repeated for all the valid hoses. Refer to the Micro-1P instruction booklet for further console operational information.

9. As a final safety check place all pump handles in the On position and via the console, reset all pumps. Next place the console emergency switch in the EMERGENCY position. Ensure that this action cuts the power to all the pumps. A failure to do so indicates a wiring fault which should be rectified.

10. In order to protect the loss of the console's memory and other programming data due to brief power outages, a 12V battery has been supplied with the Micro-1P To complete the installation this battery must be plugged into the receptacle on the side of the interconnection box.

IMPORTANT: 110 VAC must be continually supplied to the interconnection box. Failure to do so will result in a constant drainage of the battery. Deactivation of the pump control circuits in the interconnection box should be accomplished simply by placing the console emergency switch in the EMERGENCY position. If AC power to the interconnection box must be turned off for servicing, be sure to disconnect the battery before turning off the power.

SECTION III — THEORY OF OPERATION

A basic understanding of the pump control circuits in the interconnection box is a great asset in troubleshooting both pump and Kraus equipment related problems. The following table should provide a full understanding of the relay operation in the Kraus interconnection box. There are three rows of interface relays in the interconnection box. With reference to drawing number KIL 3012, the relays in the top row are K3, middle row K2, and bottom row are K1.

ACTION	RESULT
Customer places pump handle in the ON position.	Path to neutral through reset motor causes relay K2 to energize. Contacts of K2 place 14V on the AR terminal whi causes the appropriate AUTHORIZE REQUE lamp to light and the audible tone to sound in the console.
Operator depresses appropriate pump position button and the depresses the RESET PUMP button.	Appropriate PUMP READY lamp lights and relay K3 energizes. Contacts of K3 place 115 VAC on "A" terminal, ther fore K2 de-energizes and AUTHORIZE REQ lamp goes out. K3 also puts 115 VAC o "B" terminal for submersible pump prestart applications.
Reset motor resets pump display and closes associated motor switches.	115 VAC on "A" terminal is returned on "C" terminal via motor switches in pum Relay K1 energizes because of this voltage and its contacts place 14V on the "C1" terminal to the console and 115 VAC on the"B" terminal.

ACTION	RESULT
Customer dispenses product.	Pulses are presented on the impulser line. After one cent (one pulse) is dispensed appropriate PUMPING lamp starts flashing.
Customer places Pump handle in OFF position.	Relay K1 de-engerizes. 14V is removed from C1 terminal PUMPING lamp stays on. Relay K3 de-ener thus 115 VAC is removed from the "A" terminal.

SECTION IV — TROUBLE SHOOTING GUIDE

The section dealing with theory of operation should be read and fully understood before any attempt at trouble shooting is made. In general most problems which affect the general operation of the control console can be attributed to the console.

NOTE: It is extremely important that the round power cable (MB101) be unplugged from the console when replacing any circuit boards or assemblies.

FAILURE INDICATION	PROBABLE CAUSES	CORRECTIVE ACT
1. Pump operates properly but no money registers on console. Other pumps register properly.	Defective Impulser and/or wiring in pump.	check out impulser a replace if necessary
	Defective relay K1 in (IC)	Replace relay K1.
	Defective Cables (MB102)	Replace.
	Defective microframe board	Replace.
2. PUMP READY lamp cannot be turned on with either the RESET PUMP or PUMP ON buttons but pump operates normally.	Defective PUMP READY lamp on keyboard	Replace keyboard.
3. Same as (2) but pump will not operate.	Defective microframe board.	Replace microframe b
4. PUMP READY lamp can be turned on but pump will not operate because 115 VAC is not present on "A" terminal in IC box.	Faulty cables (MB102)	Replace cables.
	Faulty relay K3	Replace.
	Blown connection under relay board.	Check for continuity between pin 5 or 6 on relay socket K3 and the "A" terminal Repair if blown.
		Check for continuity between pin 9 or 10 relay socket K3 and "X" terminal. Repai blown.

SECTION V — POWER SUPPLY MEASUREMENT

The following voltages are measured with the negative lead of the voltmeter connected to the terminal marked 0 V. It will be necessary to reverse the meter leads to measure the negative voltage. The following voltage within the prescribed tolerances should be obtained or replacement of the power supply module will be necessary.

NAME	TOLERANCE
16 V	± 2 VDC
10 V	± 1 VDC
-17 V	± 2 VDC (SEE NOTE)

The following voltage measurement is made with the negative meter lead connected to the terminal marked GR.

NAME	TOLERANCE
14 V	± 2 VDC

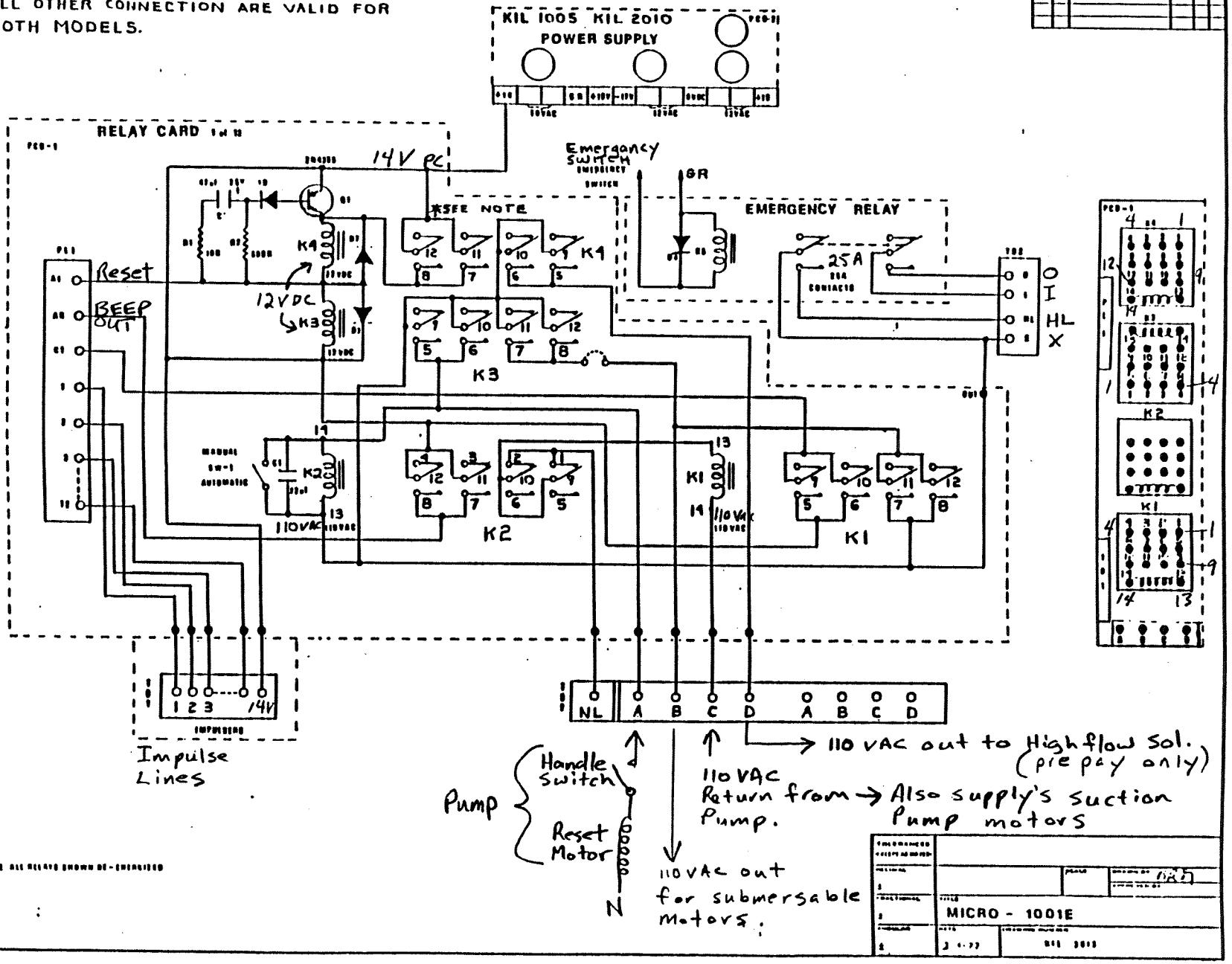
The standby battery is continually being charged. This charging voltage can be measured at the battery plug receptacle and should be 13.8 ± .5 VDC with the battery unplugged.

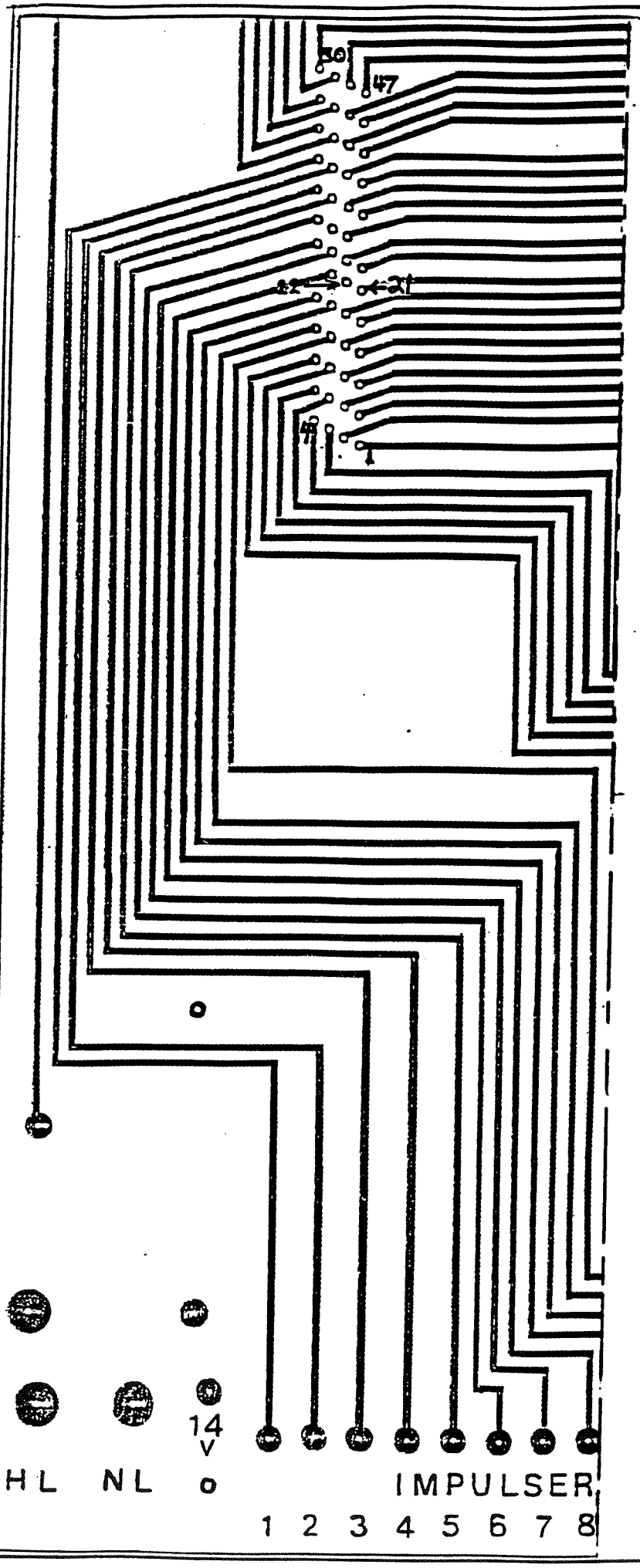
A short circuit or malfunction insided the control console could cause all or some of the above voltages to be absent, therefore the console should be unplugged and these voltages checked again before a decision to replace the power supply module is made.

NOTE: This supply is not used with a KIL 2006 microframe and therefore it will tend to float upward. This does not indicate a defective power supply.

The -17 V supply has been eliminated on a MICRO 2P power supply and therefore no reading will be obtained.

NOTE: RELAY K4 IS APPLICABLE ONLY ON UNITS WHICH ARE SUPPLIED WITH PREPAY OPTION. ALL OTHER CONNECTION ARE VALID FOR BOTH MODELS.





KIL 1001D AND 2001A CONTROL BOX CONNECTOR SIGNAL LIST

PIN	SIGNAL	PIN	SIGNAL
1	6C	26	7I
2	5C	27	6I
3	7C	28	8AR
4	8C	29	SPARE
5	4C	30	5I
6	3C	31	9AR
7	9C	32	10AR
8	10C	33	4I
9	2C	34	3I
10	1C	35	11AR
11	11C	36	12AR
12	12C	37	2I
13	1AR	38	1I
14	2AR	39	1A
15	12I	40	2A
16	11I	41	12A
17	3AR	42	11A
18	4AR	43	3A
19	10I	44	4A
20	9I	45	10A
21	5AR	46	9A
22	SPARE	47	5A
23	8I	48	6A
24	6AR	49	8A
25	7AR	50	7A

A = 'A' LINE CONTROL 0V WHEN K3 RELAY ENERGIZED, 12-14VDC WHEN RELAY DE-ENERGIZED

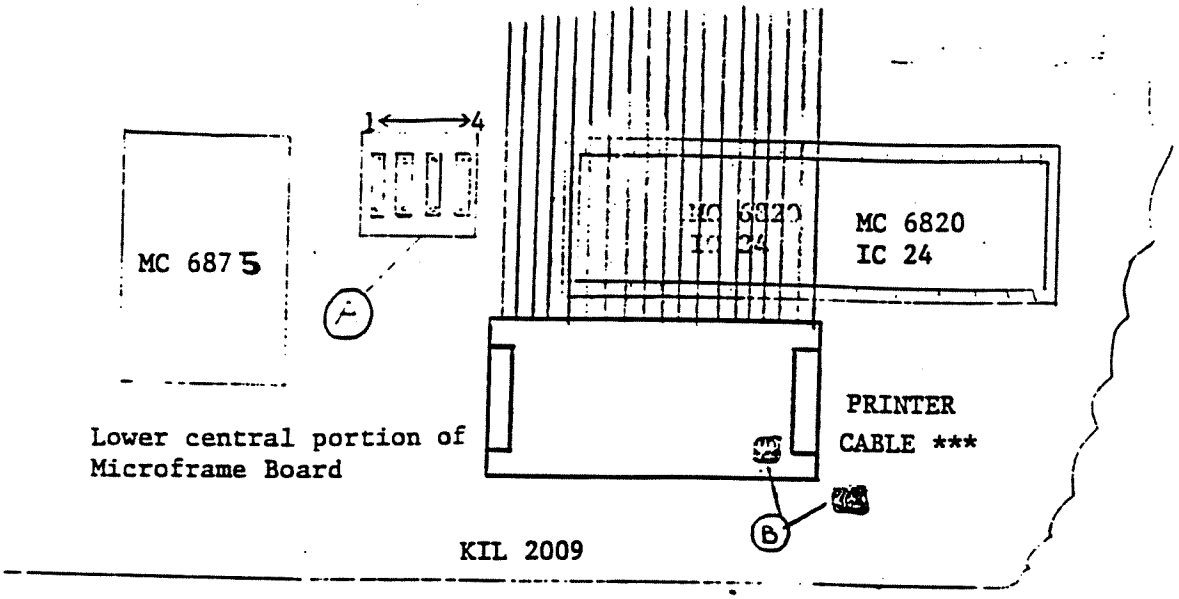
C = 'C' LINE TO CONSOLE, 12-14VDC IF 'C' TERMINAL CONNECTED TO 110VAC. (K1 ENERGIZED)

AR = AUTHORIZE REQUEST TO CONSOLE 12-14VDC WHEN RELAY K2 IS ENERGIZED.

NOTE: ALL VOLTAGES MEASURED WITH RESPECT TO RELAY GROUND (TERMINAL "GR" ON SUPPLY)

SECTION VI - CONTINUED

B. KIL 2009 Series Microframe Board



*** IMPORTANT: REVERSING PRINTER CABLE WILL DESTROY THE PRINTER.

(A) OPTION SELECTOR SWITCHES

SWITCH POSITION	FUNCTION
1	Closed to enable prepay option if supplie
2	Closed to limit preauthorization to 10 se
3	Closed only if printer is supplied
4	NOT USED (LEAVE OPEN)

(B) RED ALIGNMENT MARKS

BE SURE PRINTER CABLE IS ORIENTED AS SHOWN AND ALL 24 PINS ARE IN THE SOCKET BEFORE APPLYING POWER TO THE UNIT. OTHERWIZE THE PRINTER WILL BE DAMAGED.

SECTION VII - PARTS REPLACEMENT

Under no circumstances should the console or any internal parts be replaced without powering down the system using the following procedure.

1. Disconnect the standby battery.
2. Turn off the circuit breaker supplying the Kraus equipment.

The console or internal parts may be safely replaced at this time. When replacing the microframe board, ensure that the edge connector on the rear left side lines up properly with the fingers on the console connector. DIP connectors should be examined for bent pins before they are plugged in. After the necessary work has been completed, the system can be powered up using the following procedure.

1. Turn on the circuit breaker supplying the Kraus equipment and examine system for proper operation.
2. Connect the standby battery.

Kraus Employee Sign-In Sheet

Date:

	NAME	TIME IN	LUNCH OUT	LUNCH IN	OTHER OUT	OTHER IN	REASON	TIME OUT
	Terry							
F	**Jan**							
I	Marlene							
N	**Arlene**							
	Mindy							
	Valerie							
&	Penny							
	Ross							
A	Richard							
D	**Wendy**							
M	Harbir							
I	**Rob S.**							
N	Jean							
	Darren							
	Joel							
E	**Bruce**							
N	Dwight							
G	**John O.**							
I	Manfred							
N	**Pam**							
E	Phil							
E	**Rob K.**							
R	Manny							
I	**Jim**							
N	Rob M.							
G	**Scott**							
	Rodney							
	John-Paul							
	Jennifer							
QA	Linda							
	Lesley							
	Robert D.							
	Kent							
	Andy							
	Jason							
S	Malcolm							
A	**Gord**							
L	Jim K.							
E	**Marc**							
S	Dave M.							
	Ian							
	Sloane							
	Shannon							
	John							
	David							
	Julian							
	Marianne							
	Barry							
	Willie							
P	Donald							
R	**Archie**							
O	Darren N.							
P	**Susan**							
R	Bill							
C	**Ken**							
	Gord K.							