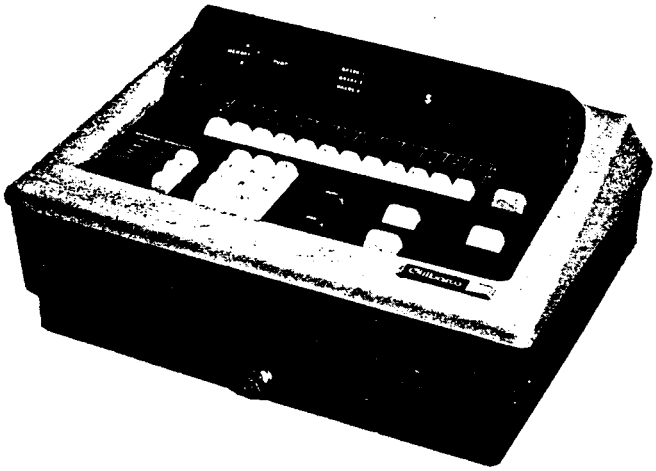
MDE-1393 B

Gilbarco Transac 10 Service Instructions



GILBARCO INC.
7300 W. FRIENDLY AVE.
P. O. BOX 22087
GREENSBORO, N. C. 27420

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INTRODUCTION

The purpose of this manual is to assist a qualified Gilbarco Service Representative with fast, efficient service of the Transac 10 system.

Three pieces of literature are shipped with the Transac 10 system. All three pieces are to be left with the equipment. Gilbarco Service Representatives may obtain any required literature from Gilbarco Inc.

The Gilbarco Service Representative should make himself familiar with all three pieces of literature prior to servicing the Transac 10 system.

MANAGERS KEY REQUIRED

All programming and inventory data is stored on Logic PC Board #1. For service involving programming or inventory memory the station manager must be present. He alone has the key for access to the station inventory memory and programming functions. For security reasons this key will not be made available to anyone except the equipment owner. Anyone he allows access to the key will be his responsibility.

REPLACEMENT OF BATTERY AND LOGIC PC BOARD #1

The Transac 10 console contains a NICAD battery for retention of data during power outages. The battery will retain data for a period of 72 hours. The battery should be replaced after 12 months. It will have the date stamped on it so that the age will be evident. The power supply has an automatic charging circuit to keep the battery charged during normal use and after power outages.

The battery is Gilbarco part number Q10432

Replacing Logic PC Board #1 requires reprogramming of all programmable data. All data from the board being removed must be recorded prior to removing the board. This data will then be programmed into the Transac 10 with the new Logic PC Board #1 installed by following the programming procedures in the Operators Manual MDE-1403 (Also for replacing the Battery)

TESTING BATTERY

To determine if the battery is defective, the following procedure should be used:

1. No inventory data as a test; we will use the price per gallon.
2. Using the Operators Manual MDE-1403 program in the corrrect price per gallon.
3. Turn the AC power to the console off. Leave off for one to two minutes.
4. Turn the AC power to the console on.
5. Display the price per gallon following the procedure in Operators Manual MDE-1403

   If the correct price per gallon is not displayed Logic PC Board #1 must be replaced.

Transac 10 Battery Installation

Note: The battery must be installed 72 hours prior to the start up of the system.

The Battery for the Transac 10 is mounted in clips but the leads must be connected as follows:

1. Remove the console cover.

2. Facing the front of the console, remove the logic board nest - This is the Logic 1 and Logic 2 board assembly.

3. Note that the battery has leads with "push-on" connectors. The smaller connector is in the red positive lead. The Logic board has two stand up tabs of different sizes.

4. Push the battery connectors onto the tabs on the board, being sure they are all the way on.

5. Reinstall the Logic board nest, taking care to be sure it is all the way into the sockets.

6. Replace the console cover.

7. The console is to be plugged into a 120 VAC outlet and allowed to run (and charge battery) for 72 hours prior to the start up of the system.

TABLE OF CONTENTS

GENERAL

Information in this section is intended for the Transac System service representative and is to be used as a guide in localizing problems, performing lubrication, repair and adjustment, and in maintaining and ordering a supply of spare parts. Servicing of the mechanical portion of the dispenser is not covered by this manual. Reference should be made to the specific technical document for the equipment.

PROBLEM LOCALIZATION

Should the Transac System become inoperative, either through obvious inability to perform as required during customer dispensing or by indications provided during installation or routine check-out of the system, the information given here will assist in locating and correcting the underlying problem. If the symptoms are readily known, the Trouble-shooting guide which follows may be used as the most direct means of recognizing the possible causes of the malfunction and the measures to be taken to correct the problem.

Recommended Test Equipment

Simpson Model 260-6 VOM

LUBRICATION, ADJUSTMENT, AND REPAIR

There are no lubrication or adjustment requirements for the Transac System.

CAUTION

Do not apply lubrication to the pulser assembly input shaft bearing. This bearing is self-lubricating. Any added lubricant might enter the housing and cause malfunctioning of the electronic circuits.

Repair or replacement by the service representative should not be conducted below the level suggested by the Trouble-shooting Guide and Spare Parts given in this section. The recommended repair-replacement action for the different components and assemblies is given in Table 1.

IMPORTANT: AC power must be "OFF" before replacing printed circuit boards.

A step by step procedure should be taken when trying to locate a malfunction in the system for fast efficient servicing.

You have three senses to help you in this procedure:

OBSERVE
LISTEN
SMELL

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
1) Turning Manager/ Operator key switch to "on" does not result in lighted displays and keyboard switches functioning.	A) No AC power to system	a) Check console power switch in service module and AC disconnect switches. b) Check for 120 VAC TB3 in service module.
	B) No AC power to console.	a) Check AC plug connection of console cable to service module.
	C) No DC power to console printed circuit boards	a) Check for loose plugs from power supply to PC boards. b) Check for blown fuses on power supply unit. If fuses are blown, turn off AC power. Replace blown fuses and disconnect plug J7, 8, 9 from power supply PC board. Turn on AC power and measure voltage on power supply test points. If there is no voltage, replace power supply assembly.
Conditions 2, 3 and 4 apply only to new dispensing units equipped with Model PA0215 or PA0216 Electric Reset.		
2) Call switch in dispenser does not sound buzzer or blink status indicator light when operate handle is turned on.	A) Field wiring not correct or loose connection.	a) Locate call signal and neutral terminals on TB1 or TB2 for dispenser in question, and connect volt meter across these two terminals. When operate handle is off, voltage will be-170 VDC. Voltage must go to zero volts when operate handle is turned on. If this does not occur, check call signal wiring and connections in dispenser. CAUTION: Turn off all AC power before opening dispenser junction box.
	B) Call switch defective	a) Disconnect dispenser wire #9 from field wiring and connect an OHM meter between it and dispenser wire #13. When operate handle is turned on, meter must read zero OHMS on RX1 scale. If it does not, then reset motor/call switch assembly is defective and must be replaced.
	C) Call printed circuit board defective.	a) If test in (A) (a) above indicates a correct call signal at TB1 or TB2 locate the call PC board. Check to be sure it is not loose in its socket. If it is not loose, replace the board.

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
3) Call sounds buzzer but status indicator light does not blink.	A) Display board plug J2 not connected	a) Check connection of plug.
	B) Display PC board defective.	a) Replace display PC board.
	C) LED board defective.	a) Replace LED board.
	D) Logic PC #1 board defective.	a) Replace Logic PC #1 board.
	E) Logic board #2 defective.	a) Replace Logic board #2.
4) Call causes status indicator to blink but does not sound buzzer.	A) Buzzer or Logic board #1 defective.	a) Replace Logic Board #1.
	B) Circuit boards not making good connection in socket.	a) Check connection.
5) Authorize button authorizes dispenser properly, but status indicator light does not come on.	A) LED board plug J2 not connected.	a) Check connection.
	B) LED board defective.	a) Replace LED board.
	C) Display board defective.	a) Replace display board.
	D) Logic #1 PC board defective	a) Replace Logic #1 PC board.
6) Authorize button does not authorize a dispenser.	A) Console/off/manual switch in off position	a) Reposition switch to console positio
	B) Incorrect field wiring	a) Turn console/off/manual switch to manual position. If dispenser does n function normally, check AC power wiring for that dispenser.
	C) Relay driver PC board.	a) Locate relay driver PC board in service module and check to be sure it is not loose in its socket. If th does not cure the problem, replace the PC board.
	D) Power relay in service module damaged or defective.	a) If status indicator light comes on when authorized, but power relay doe not pull in and relay driver PC boar is good, replace power relay.

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
	E) Electric reset in dispenser not operating.	a) Turn console/off/manual switch to manual position. Measure voltage between dispenser wires #3 and #13. If there is normal line voltage present and the electric reset does not operate when the operate handle is turned on, replace the electric reset. (See Section 3).
	F) Pump select switch defective.	a) With power off connect OHM meter across switch terminals. With switch depressed meter must read zero on RX1 scale. If it does not, replace keyboard assembly.
	G) Logic #2 board defective.	a) Replace
	H) Logic #1 board defective.	a) Replace
Authorize button will not authorize any dispensing unit.	A) No AC power to system	a) Check main disconnect switches. b) Check console manager/operator keyswitch.
	B) Console cables not plugged into service module(s).	a) Check cable connections.
	C) Manager/Operator push-button switch assembly not in operator position	a) Reposition switch to operator position.
	D) Console/off/manual switches in off position.	a) Check switches in service module.
	E) Fuses blown in console power supply	a) See Condition #1 (C), (a) and (b).
	F) Keyboard plug J1 not connected.	a) Reconnect plug J1 to mating socket.
Authorize button does not need to be depressed for authorization. Dispenser continuously authorized.	A) Console/off/manual switch in manual position.	a) Check switch in service module.
	B) Incorrect field wiring.	a) Check to see if dispenser wire #3 is wired to solid line voltage.
	C) Relay drive PC board	a) Locate relay driver PC board in service module and replace.

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
	D) Receiver PC board defective.	a) Replace receiver PC board.
	E) Pump switch in electric reset defective or needs adjustment.	a) See Electric Reset **Section 3** .
	G) Logic PC board #2 defective.	a) Replace Logic PC board #2.
	H) Logic PC board #1 defective.	a) Replace logic PC board #1.
9) Pump select button does not cause data for one dispenser to be displayed. Display shows all zeros.	A) Pump select switch defective.	a) See Condition (6) (F) (a).
	B) Incorrect field wiring of pulser circuit or unconnected wire.	a) Check connections and wiring at service module and dispensing unit.
	C) Blown ½ amp fuse in 170 VDC power supply	a) Replace fuse.
	D) Defective 170 VDC power supply	a) Verify voltages from Section 2 if incorrect, replace power supply assembly.
	E) Receiver PC board defective.	a) Replace receiver PC board.
	F) Transmitter Assembly defective.	a) Replace transmitter assembly in dispensing unit.
	G) Pulser assembly mounted on mechanical computer not functioning.	a) Check to see if mechanical computer is jammed or if price per gallon is set on all zeros.
	H) Pump switch in electric reset defective or needs adjustment.	a) See Electric Reset Section 3 .
	I) IS barrier assembly	a) Verify resistance in each line. It should be 10000 ohms. If open, replace IS barrier assembly in dispensing unit.
	J) Logic PC board #2 defective.	a) Replace logic PC board #2.
	K) Logic PC board #1 defective.	a) Replace logic PC board #1.

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
10) Incorrect data displayed for all dispensers.	A) Display PC board defective.	a) Replace display PC board.
	B) Logic PC board #2 defective.	a) Replace logic PC board #2.
	C) Logic PC board #1 defective.	a) Replace logic AC board #1.
11) Incorrect data displayed for one dispenser.	A) Receiver PC board defective.	a) Replace receiver PC board.
	B) Transmitter Assembly defective.	a) Replace transmitter assembly in dispensing unit.
	C) Pulser assembly defective.	a) Replace pulser assembly in dispensing unit.
	D) 170 VDC power supply in service module defective.	a) Check voltage between 170 VDC neutral terminals in service module for dispensing unit in question. If not 170 VDC + 10%, replace power supply.
	E) Pump switch in electric reset defective or needs adjustment.	a) See Electric Reset Section 3 .
	F) Logic PC board #2 defective.	a) Replace logic PC board #2.
	G) Logic PC board #1 defective.	a) Replace logic PC board #1.
12) Emergency stop button does not deauthorize any dispensing unit.	A) Console/off/manual switches in manual position.	a) Reposition switches in service to console position.
	B) Keyboard plug loose	a) Check plug J1 to be sure it is connected properly.
	C) Emergency stop switch defective.	a) Replace keyboard assembly.
	D) Emergency stop relay in service module(s) defective.	a) Replace emergency stop relay(s).
13) Emergency stop button does not deauthorize one dispenser.	A) Console/off/manual switch in manual position.	a) Reposition switch to console position.
	B) Incorrect field wiring	a) Verify field wiring and correct error.

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
14) No power to any dispensing unit.	A) No power to service module.	a) Check power disconnect switches.
	B) Console/off/manual switches in off position.	a) Reposition switches.
	C) Cables not plugged into service modules.	a) Verify cable connections.
	D) Blown fuse in console power supply	a) See condition (1) (C) (a) & (b).
	E) No 12 VDC in Console	a) Replace Console Power Supply.
15) No display (blank)	A) Main disconnect switch off.	a) Check disconnect switch.
	B) Console power switch S6 off.	a) Check switch in service module(s).
	C) Console cables not plugged into service module.	a) Check cable connections.
	D) Blown fuse in console power supply	a) See Condition (1) (C) (b).
	E) Display plug J1 not connected.	a) Check plug connection.
	F) Display PC board defective.	a) Replace display PC board.
16) All eights remain on display.	A) Emergency stop switch defective.	a) Replace emergency stop switch.
	B) Display PC board defective.	a) Replace display PC board.
	C) Logic PC board #1 defective.	a) Replace logic PC board #1.
17) Half of computer reading shown on display.	A) Pulser in dispensing unit defective.	a) Replace pulser in assembly.
18) Status indicator remains on.	A) Pump select switch defective.	a) See Condition (6) (F) (a).
	B) Receiver PC board defective.	a) Replace receiver PC board.
	C) Transmitter assembly in dispensing unit defective.	a) Replace transmitter assembly.

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
	D) Pump switch in electric reset defective or needs adjustment.	a) See Electric Reset Section 3 .
	E) Logic PC board #2 defective.	a) Replace logic PC board #2.
	F) Logic PC board #1 defective.	a) Replace logic PC board #1.
19) Display readout does not reset and readings accumulate.	A) Computer in dispensing unit defective.	a) Replace computer if it is not working properly.
	B) Pump switch in electric reset defective or needs adjustment.	a) See Electric Reset Section 3 .
	C) Receiver PC board defective.	a) Replace receiver PC board
	D) Transmitter assembly defective.	a) Replace transmitter assembly in dispensing unit.
	E) Logic PC board #2 defective.	a) Replace logic PC board #2.
	F) Logic PC board #1 defective	a) Replace logic PC board #1
20) Cannot preset a particular amount.	A) Trying to preset only one digit.	a) Operational error. Must preset at least two digits.
	B) Logic PC board #1 defective.	a) Replace logic PC board #1.
21) Cannot enter a particular number from keyboard.	A) Defective switch on preset keyboard assembly.	a) Replace keyboard assembly.
	B) Defective logic PC board #1.	a) Replace logic PC board #1.
22) Cannot enter any number from preset keyboard.	A) Manager/Operator key switch in off position	a) Reposition key switch to Manager or Operator position.
	B) Keyboard plug J1 or J2 not connected.	a) Reconnect plug to mating socket.
	C) Manager/Operator pushbutton switch not in proper position.	a) Select proper position.

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
	D) Key switch defective.	a) Replace key switch.
	E) Keyboard assembly defective.	a) Replace keyboard assembly.
	F) Manager/Operator pushbutton switch assembly defective.	a) Replace pushbutton assembly.
23) Dispensing unit does not go into slowdown for last 12¢ of preset delivery.	A) Operational error.	a) Verify sequence of operation.
	B) Console/off/manual switch in manual position.	a) Reposition switch to console position.
	C) Slowdown valve defective or wired incorrectly.	a) Verify wiring. If correct, replace valve.
	D) Relay driver PC board defective.	a) Replace relay driver PC board.
	E) Slowdown relay defective.	a) Replace slowdown relay.
	F) Logic PC board #2 defective.	a) Replace logic PC board #2.
	G) Logic PC board #1 defective.	a) Replace logic PC board #1.
24) Dispensing unit always in slowdown.	A) Slowdown valve defective.	a) Verify wiring. If correct, replace valve.
	B) Slowdown relay defective.	a) Replace slowdown relay.
	C) Relay driver PC board defective.	a) Replace relay driver PC board.
	D) Logic PC board #2 defective.	a) Replace logic PC board #2.
	E) Logic PC board #1 defective.	a) Replace logic PC board #1
25) Dispensing unit fails to shut off at preset amount.	A) Operational error	a) Check sequence of operation.
	B) Wiring error.	a) Verify wiring and correct error.
	C) Console/off/manual switch in manual position.	a) Reposition switch to console position
	D) Solenoid valve in dispensing unit stuck open.	a) Replace solenoid valve.

TROUBLE-SHOOTING GUIDE

CONDITION	POSSIBLE CAUSE	METHOD OF TROUBLE-SHOOTING
	E) Logic PC board #2 defective.	a) Replace logic PC board #2.
	F) Logic PC board #1 defective.	a) Replace logic PC board #1.

TABLE - 1 RECOMMENDED REPAIR/REPLACEMENT ACTION

ITEM	ACTION
Pump Select or Preset Keyboard Switch	Replace Preset Keyboard Assembly.
Signalling Buzzer	If failure occurs, replace the logic #1 PC board. No adjustments are provided.
Printed Circuit Boards (all)	Replace board with operable one. Do not attempt to repair, as special equipment is required to test for proper operation.
Keyswitch	Replace entire switch assembly.
Manager/Operator pushbutton switch assembly.	Replace entire switch assembly.
Console Power Supply assembly	Fuses and Fan in this assembly are replaceable. Do not attemp any other repair. Replace entire assembly, or Regulator Board Assembly.
Slowdown Relay	Replace relay with exact replacement.
Power Relay	Replace with exact replacement.
Emergency Stop Relay	Replace with exact replacement.
Power Supply Assembly (170 VDC-Service Module)	Fuses in this assembly are replaceable. Do not attempt any other repair. Replace entire assembly if defective.
Console/Off/Manual switches	Replace defective switch.
Light switch	Replace defective switch.
Console Power switch	Replace defective switch.
5 VDC Regulator (Service Module)	Replace with exact replacement.
Call Switch	Replacement of Reset Motor/Call Switch Assembly is desired method if proper field equipment is available. Otherwise, replace entire electric reset assembly.
Electric reset assembly	Replace gear box assembly or refer to Sec. 3 for service instructions
Pump Switch	See electric reset assembly Section 3
Pulser	Replace pulser assembly if defective, there are no adjustments.
Transmitter Assembly	Replace with exact replacement.
I. S Barrier Assembly	Replace assembly.

CONSOLE

CONSOLE POWER SUPPLY

The Transac 10 console requires four operating voltages which are provided by the console power supply. The voltages are +5VDC, -5VDC, +12VDC, and +8VDC. All of these are convenient for testing on the test points on the left forward section of the power supply except the +8VDC. The +8VDC may be measured on the outer leg of the far left transister on the Display Board. These voltages must be within ±5% except for the +8VDC which is not critical.

The power supply also sends a Power Fail signal to the console Logic Board #1 to allow memory storage before AC power goes away.

THERMAL OVERLOAD PROTECTION CIRCUIT

THE TRANSAC 10 CONSOLE IS EQUIPPED WITH A THERMAL PROTECTION CIRCUIT WHICH WILL REMOVE AC POWER FROM THE CONSOLE POWER SUPPLY, SHOULD THE INTERIOR OF THE CONSOLE BECOME TOO HOT (ABOVE 235°). THE PURPOSE OF THIS CIRCUIT IS TO PROTECT THE CONSOLE ELECTRONIC COMPONENTS FROM DAMAGE DUE TO EXCESS HEAT INSIDE THE CONSOLE HOUSING. THE THERMAL PROTECTION CIRCUIT WILL CAUSE POWER TO BE REMOVED SHOULD THE EXHAUST FAN BECOME CLOGGED WITH DUST OR DIRT AND FREEZE UP THUS ALLOWING THE TEMPERATURE TO RISE TO AN EXCESSIVE DEGREE, OR DUE TO ANY COMPONENT FAILURE WHICH WOULD RESULT IN CONSOLE TEMPERATURE RISING, OR DUE TO THE CONSOLE BEING INSTALLED SO AS TO EXPOSE IT TO HEAT CAUSED BY A HEATER BLOWING HOT AIR ON THE CONSOLE, OR THE EXPOSURE OF THE CONSOLE TO DIRECT SUNLIGHT THROUGH A PLATE GLASS WINDOW WHERE THE TEMPERATURE MIGHT BE EXCESSIVE.

THE THERMAL OVERLOAD CONDITION MAY BE IDENTIFIED BY OBSERVING THE RED LAMP LOCATED IN THE REAR BASE OF THE CONSOLE. IF THE RED LAMP IS ILLUMINATED, THE THERMAL OVERLOAD PROTECTION CIRCUIT IS ACTUATED INDICATING EXCESSIVE HEAT IN THE CONSOLE.

LOGIC PC BOARD #1

Logic Board #1 is the upper printed circuit board located in the front of the Transac 10 Console. The Microprocessor circuitry necessary for all memory functions (Inventory, Totals, PPG) are located on Logic Board #1. Logic Board #1 also performs all calculations required, such as converting dollar amounts to gallons. The Display Board is also driven by Logic Board #1. All keyboard entries are into Logic Board #1. Logic Board #1 also activates the Emergency Stop relay in each service module.

DISPLAY BOARD

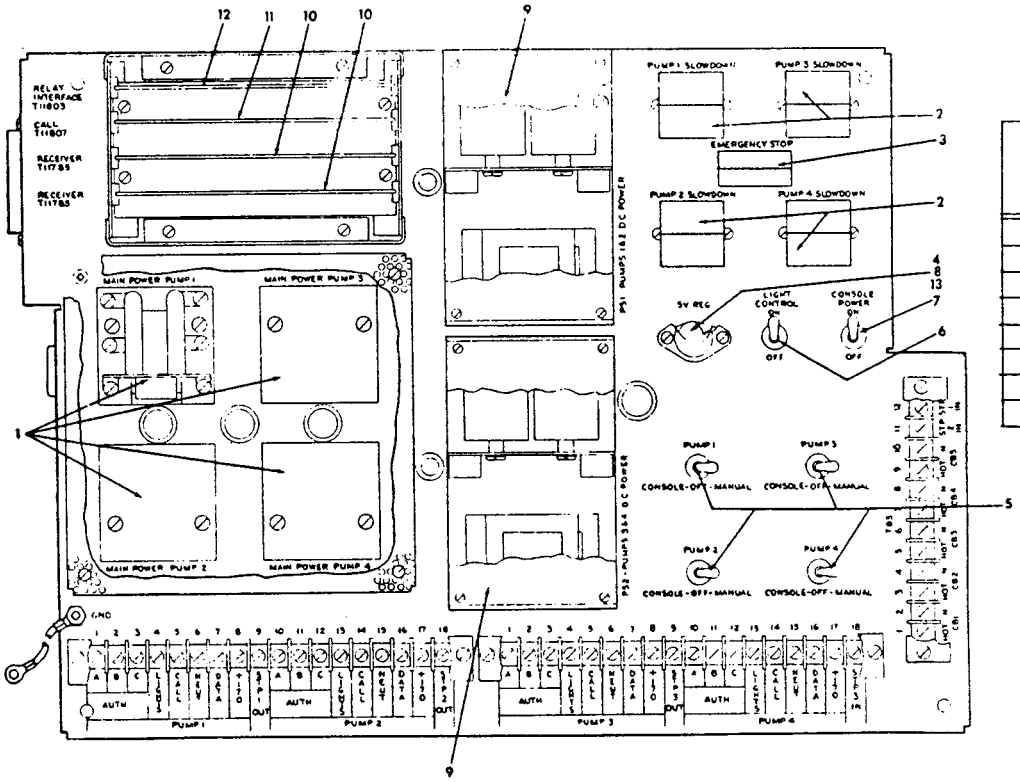
The Display Board is used to display all data. The Display Board also drives the Status Indicator LED's on the Status Indicator Board.

LOGIC PC BOARD #2

LOGIC BOARD #2 ACTS AS THE INTERFACE BETWEEN THE MICROPRESSOR CIRCUITRY ON LOGIC PC BOARD #1 AND THE SERVICE MODULES. ALL CALL SIGNALS FROM THE CALL PC BOARD (AT A 5 VOLT DC LEVEL), ALL PUMP SWITCH SIGNALS AND MONEY PULSES FROM THE RECEIVER PC BOARD (AT A 5 VOLT DC LEVEL) COME INTO LOGIC BOARD #2. LIKEWISE ALL SIGNALS FROM THE CONSOLE TO THE SERVICE MODULES ARE VIA THE LOGIC BOARD #2. THE AUTHORIZE AND SLOWDOWN SIGNALS (ALL AT A 5 VOLT DC LEVEL) TO THE RELAY INTERFACE PC BOARD COME FROM LOGIC BOARD #2. LOGIC BOARD #2 IS POWERED BY +5 VDC AND DC COMMON.

SERVICE MODULE

Contained in a steel box with a hinged cover, the SERVICE MODULE functions as the electrical interface between the CONTROL CONSOLE and the dispensing units. Four single, or two dual dispensing units can be operated from one SERVICE MODULE. There are **eight** types or models for the SERVICE MODULES. Each model or type is factory wired for the system that it will be used in. The following tabulation lists the models



SERVICE MODULE MOD. No.	VERSIONS
PA01160002	2 PUMPS, PRESET, CALL
PA011600A2	2 PUMPS, PRESET, NO CALL
PA011600B2	2 PUMPS, READOUT, CALL
PA011600C2	2 PUMPS, READOUT, NO CALL
PA01160004	4 PUMPS, PRESET, CALL
PA011600A4	4 PUMPS, PRESET, NO CALL
PA011600B4	4 PUMPS, READOUT, CALL
PA011600C4	4 PUMPS, READOUT, NO CALL

Code No.	SERVICE MODULE MOD. No. PA01160002	PA011600A2	PA011600B2	PA011600C2	PA01160004	PA011600A4	PA011600B4	PA011600C4	Symbol No.	Description of Part
1	2	2	2	2	4	4	4	4	Q10327-01	Relay
2	2	2			4	4			Q10328-01	Relay
3	1	1	1	1	1	1	1	1	Q10352-01	Relay
4	1	1	1	1	1	1	1	1	Q10364-01	Transistor Cover
5	2	2	2	2	4	4	4	4	Q10240-05	Toggle Switch
6	1	1	1	1	1	1	1	1	Q10240-04	Toggle Switch
7	1	1	1	1	1	1	1	1	Q10240-03	Toggle Switch
8	1	1	1	1	1	1	1	1	Q10143-64	5V. DC Regulator
9	1	1	1	1	2	2	2	2	T11815-G1	Power Supply Assembly (170V.)
	4	**4**	**4**	**4**	**8**	**8**	**8**	**8**	Q10271-**10**	Capacitor-180 MFD, 250 WVDC (Part of T11822-G1)
	1	1	1	1	2	2	2	2	T11822-G1	Power Supply Board Assem. (170V.)(Part of T11815-G1)
	2	2	2	2	4	4	4	4	Q10131-18	Fuse ¼ AMP., SLO-BLO (Part of T11822-G1)
	2	**2**	**2**	**2**	**4**	**4**	**4**	**4**	Q10325-01	Transformer (Part of T11815-G1)
10	1	1	1	1	2	2	2	2	T11785-G1	Receiver Printed Circuit Board Assembly
11					1		1		T11807-G1	Call P.C. Assembly
11	1		1						T11807-G2	Call P.C. Assembly
12					1	1			T11803-G1	Relay Driver P.C. Board PRESET
12							1	1	T11803-G2	Relay Driver P.C. Board READOUT
12	1	1							T11803-G3	Relay Driver P.C. Board PRESET
12			1	1					T11803-G4	Relay Driver P.C. Board READOUT
13	1	1	1	1	1	1	1	1	Q10306-01	Insulator Mica

PA0214 PULSER

THE PULSER INPUT SHAFT IS PINNED TO THE EXTENDED NON-RESETTABLE MONEY SHAFT OF THE MECHANICAL COMPUTER IN THE DISPENSING UNIT THE NON-RESETTABLE MONEY SHAFT OF THE COMPUTER TURNS ONE REVOLUTION FOR ONE REVOLUTION OF THE PENNY WHEEL. THE INPUT PULSER SHAFT IS GEARED 2:1 TO DRIVE A DISC SO THAT THE DISC WILL TURN TWO REVOLUTIONS FOR ONE REVOLUTION OF THE PENNY WHEEL

THE DISC HAS 25 SLOTS (OR HOLES) SO THAT FOR ONE REVOLUTION OF THE PENNY WHEEL THERE ARE EFFECTIVELY 50 SLOTS (OR HOLES). THE DISC TRAVELS THROUGH A CUBE WHICH CONTAINS TWO LIGHT EMITTING DIODES AND TWO PHOTO TRANSISTORS. AS A SLOT (OR HOLE) PASSES IN FRONT OF THE LIGHT EMITTING DIODE (LED) AND LETS THE LIGHT PASS THROUGH TO BE SENSED BY THE PHOTO TRANSISTORS WHICH GENERATES A PULSE. SINCE THERE ARE TWO LED'S AND PHOTO TRANSISTORS AND EFFECTIVELY 50 SLOTS DUE TO THE 2:1 DRIVE RATIO, 100 PULSES ARE GENERATED BY ONE REVOLUTION OF THE NON-RESETTABLE MONEY SHAFT, 100 PULSES FOR ONE REVOLUTION OF THE PENNY WHEEL (10¢), OR 10 PULSES PER PENNY.

THE PULSER OPERATES ON 12 VOLTS DC SUPPLIED BY THE TRANSMITTER ASSEMBLY AND DRAWS APPROXIMATELY 6 TO 8 MILLIAMPS.

DO NOT OPERATE ANY DISPENSING UNIT WITH THE PULSER DISCONNECTED FROM THE IS BARRIER OR THE IS BARRIER DISCONNECTED FROM THE TRANSMITTER AS DAMAGE TO THE TRANSMITTER AND/OR THE RECEIVER PC BOARD WILL RESULT.

TRANSMITTER ASSEMBLY

The purpose of the Transmitter Assembly is to interface the pulser with the Service Module. It is powered by +170 volts DC from the Power Supply in the Service Module. The +170 VDC is tied to the red wire and the white wire is connected to AC neutral. The violet wire from the Transmitter Assembly is connected to one side of a switch in the electric reset. The other side of the switch is connected to AC neutral. When the switch closes it provides the pump switch signal to the Transmitter Assembly. This signal acts as an "Enable" to the Transmitter to allow it to transmit the pulses to the Receiver PC Board in the Service Module.

The Transmitter Assembly steps down the +170 volts DC to provide +12 volts DC and DC common to power the pulser. It receives both positive and negative pulser outputs which is converted through an Optical Coupler to a high voltage DC pulser train to be Transmitted on the Enable Data Line. Refer to proper voltage chart section 2 - page 12 .

RECEIVER PC BOARD

The Receiver PC Board has two circuits, one circuit for one hose position. The purpose of the receiver circuit is to interface the high voltage data from the Transmitter with the low DC voltage requirement of the console logic circuitry. This interface is accomplished by employing Optical Couplers. The input side of the circuitry is powered by -170 volts DC and neutral from the 170 VDC power supply and fed a high voltage data signal. The output side of the circuit is powered by +5 VDC and DC common from the 5 volt regulator in the Service Module. The output side of the circuitry provides a low voltage pump switch signal and low voltage DC pulses to the console. The Optical Couplers completely isolate the high voltage input from the low voltage DC output.

CALL PC BOARD

The Call PC Board serves all hose positions in a Service Module. This may be from one to four. Like the Receiver PC Boards there is a seperate circuit for each hose. The function of which is to interface the high voltage signal coming from the dispensing unit from the low voltage DC required by the console circuitry. Like the receiver circuits this is accomplished by the use of Optical Couplers. The high voltage side of the circuit is powered by -170 volts DC. The low voltage side of the circuit is powered by 5 volts DC and DC common from the 5 volt regulator in the Service Module.

RELAY INTERFACE PC BOARD

The Relay Interface PC Board interfaces the low voltage DC signals from the console with the 120 volt AC power, slowdown, and emergency relays in the Service Module. This is done by the use of Reed Relays with 5 volt DC coils. There is one Reed Relay on the Relay Interface PC Board for each relay in the Service Module. A 5 volt signal from the console will energize the coil of the Reed Relay. The contacts of the relay complete the AC neutral to the coil of the proper power, slowdown or emergency relay causing the coil of the relay to be energized.

COMPONENT TESTING

BLOWN FUSES

IF CONSOLE POWER SUPPLY FUSES ARE BLOWN:
TURN OFF AC POWER
REPLACE BLOWN FUSE
DISCONNECT PLUGS J7, J8, and J9 FROM POWER SUPPLY PC BOARD
TURN ON AC POWER
MEASURE VOLTAGE AT TEST POINTS ON POWER SUPPLY PC BOARD IF THERE IS NO VOLTAGE, INCORRECT VOLTAGE OR FUSE BLOWS AGAIN REPLACE POWER SUPPLY ASSEMBLY.

IF ½ AMP FUSE IN 170 VDC POWER SUPPLY IS BLOWN:
TURN OFF AC POWER
REPLACE BLOWN FUSE
DISCONNECT FIELD WIRES AT TERMINAL STRIP FOR THE 170 VDC TO THE TRANSMITTER ASSEMBLY AND REMOVE THE RECEIVER PC BOARD TURN ON AC POWER.
MEASURE THE 170 VDC WITH DC VOLTMETER (POSITIVE LEAD ON +170 VDC TERMINAL ON TERMINAL STRIP 1 OR 2 FOR APPROPRIATE POSITION,
NEGATIVE LEAD ON AC NEUTRAL TERMINAL)
IF THERE IS NO VOLTAGE, INCORRECT VOLTAGE, OR FUSE BLOWS AGAIN REPLACE THE 170 VDC POWER SUPPLY ASSEMBLY.

TESTING THE CALL SWITCH (AT DISPENSING UNIT)
DISCONNECT PUMP/DISPENSER WIRE #9 FROM FIELD WIRING
CONNECT AN OHM METER BETWEEN WIRE #9 AND PUMP/DISPENSER WIRE #13.
WITH PUMP/DISPENSER OPERATING HANDLE ON, THE METER MUST READ ZERO OHMS ON THE R X 1 SCALE
WITH THE PUMP/DISPENSER HANDLE OFF, THE METER MUST READ INFINITY.
IF EITHER OF THE TWO MEASUREMENTS IS INCORRECT THE RESET MOTOR/CALL SWITCH ASSEMBLY IS DEFECTIVE AND MUST BE REPLACED.

(AT SERVICE MODULE)
LOCATE THE CALL SIGNAL AND NEUTRAL TERMINALS ON TB1 OR TB2 FOR DISPENSING UNIT IN QUESTION, AND CONNECT VOLT METER ACROSS THESE TWO TERMINALS.
WITH THE OPERATING HANDLE OF THE DISPENSING UNIT IN THE OFF POSITION, THE VOLTAGE WILL BE - 170 VOLTS DC.
THE VOLTAGE MUST GO TO ZERO VOLTS WHEN THE DISPENSING UNIT OPERATING HANDLE IS TURNED ON.
IF THIS DOES NOT OCCUR, CHECK THE CALL SIGNAL WIRING AND CONNECTIONS IN THE DISPENSING UNIT.
CAUTION: TURN OFF ALL AC POWER BEFORE OPENING THE DISPENSING UNIT JUNCTION BOX.

TESTING THE ELECTRIC RESET
TURN THE CONSOLE/OFF/MANUAL SWITCH IN THE SERVICE MODULE TO THE MANUAL POSITION.
WITH AN AC VOLTMETER, MEASURE THE VOLTAGE BETWEEN DISPENSING UNIT WIRES #3 AND #13.
IF THERE IS NORMAL LINE VOLTAGE PRESENT AND THE ELECTRIC RESET DOES NOT OPERATE, WHEN THE OPERATING HANDLE IS TURNED ON, DISCONNECT THE RESET LINKAGE TO THE COMPUTER TO DETERMINE IF THE ELECTRIC RESET IS DEFECTIVE OR THE COMPUTER IS BOUND. IF THE ELECTRIC RESET STILL DOES NOT OPERATE WITH LINKAGE DISCONNECTED, REPLACE THE ELECTRIC RESET. (REFER TO SECTION 3)

TESTING THE "PUMP SWITCH"
IN THE DISPENSING UNIT JUNCTION BOX DISCONNECT WIRE #4. WITH AN OHM METER MEASURE THE RESISTANCE BETWEEN WIRE #4 AND WIRE #13. WITH THE DISPENSING UNIT OPERATING HANDLE OFF THE READING SHOULD BE INFINITY.
TURN ON THE OPERATING HANDLE AND ALLOW THE COMPUTER TO RESET TO ZERO. LEAVE THE

OPERATING HANDLE ON. THE METER SHOULD NOW READ ZERO OHMS ON THE R X 1 SCALE IF EITHER OF THE READINGS IS INCORRECT THE PUMP SWITCH IS OUT OF ADJUSTMENT OR DEFECTIVE. (SEE SECTION 3)

TESTING THE PULSER (NO COUNTS SHOWN ON DISPLAY)

THE BEST MANNER FOR TESTING THE PULSER IS SUBSTITUTION. TURN CONSOLE/MANUAL SWITCH FOR DISPENSING UNIT IN QUESTION TO THE OFF POSITION. REMOVE THE PULSER AND TAKE IT TO A KNOWN GOOD DISPENSING UNIT. TURN CONSOLE/OFF/MANUAL SWITCH FOR THAT UNIT OFF. UNPLUG THE GOOD PULSER. PLUG IN THE SUSPECTED PULSER. TURN THE CONSOLE/OFF/MANUAL SWITCH TO CONSOLE. AUTHORIZE THE DISPENSING UNIT AND TURN ON THE OPERATING HANDLE. TRUN THE PULSER INPUT SHAFT BY HAND AND SEE IF THE CONSOLE DISPLAY INDICATES PULSES ARE BEING COUNTED. IF NO COUNTING IS SHOWN ON THE DISPLAY THE PULSER IS DEFECTIVE.

TESTING THE IS BARRIER ASSEMBLY

WITH POWER OFF DISCONNECT THE CONNECTORS AT THE PULSER AND THE TRANSMITTER. USING AN OHM METER MEASURE THE RESISTANCE BETWEEN THE TWO ENDS OF EACH LINE. THE METER MUST READ 10,000 OHMS $\pm$10% ON EACH LINE. IF IT DOES NOT, THE IS BARRIER MUST BE REPLACED.

TESTING THE TRANSMITTER ASSEMBLY

WITH POWER ON, AFTER VERIFING "PUMP SWITCH" IS GOOD AND PULSER IS GOOD, CONNECT A DC VOLTMETER BETWEEN THE +170 VDC TERMINAL AT TB1 OR TB2 FOR APPROPRIATE DISPENSING UNIT AND THE NEUTRAL TERMINAL. THE METER SHOULD READ 170 VOLTS DC ($\pm$15%).

CONNECT THE DC VOLTMETER BETWEEN THE DATA TERMINAL AT TB1 OR TB2 FOR APPROPRIATE DISPENSING UNIT AND THE NEUTRAL TERMINAL. WITH THE DISPENSING UNIT NOT AUTHORIZED AND THE OPERATING HANDLE OFF THE METER SHOULD READ - 55 VOLTS DC $\pm$ 10%. WITH THE DISPENSING UNIT AUTHORIZED AND THE OPERATING HANDLE ON AND COMPUTER RESET TO ZERO, THE METER SHOULD READ ZERO VOLTS DC.
IF EITHER OF THE ABOVE MEASUREMENTS ARE INCORRECT THE TRANSMITTER IS DEFECTIVE AND SHOULD BE REPLACED

THE ABOVE TEST MAY BE MADE AT THE DISPENSING UNIT JUNCTION BOX. THE FOLLOWING TRANSMITTER WIRE COLORS CORRESPOND TO THE TEST POINTS.

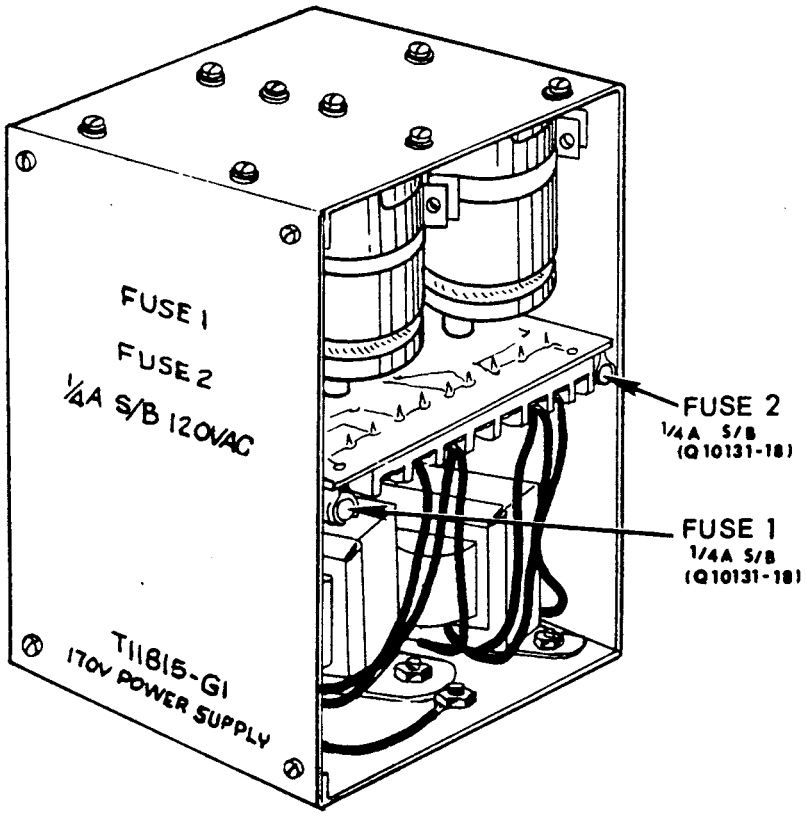
RED WIRE	+170 VDC
BLUE WIRE	DATA
WHITE	NEUTRAL

TESTING THE 5 VOLT DC REGULATOR

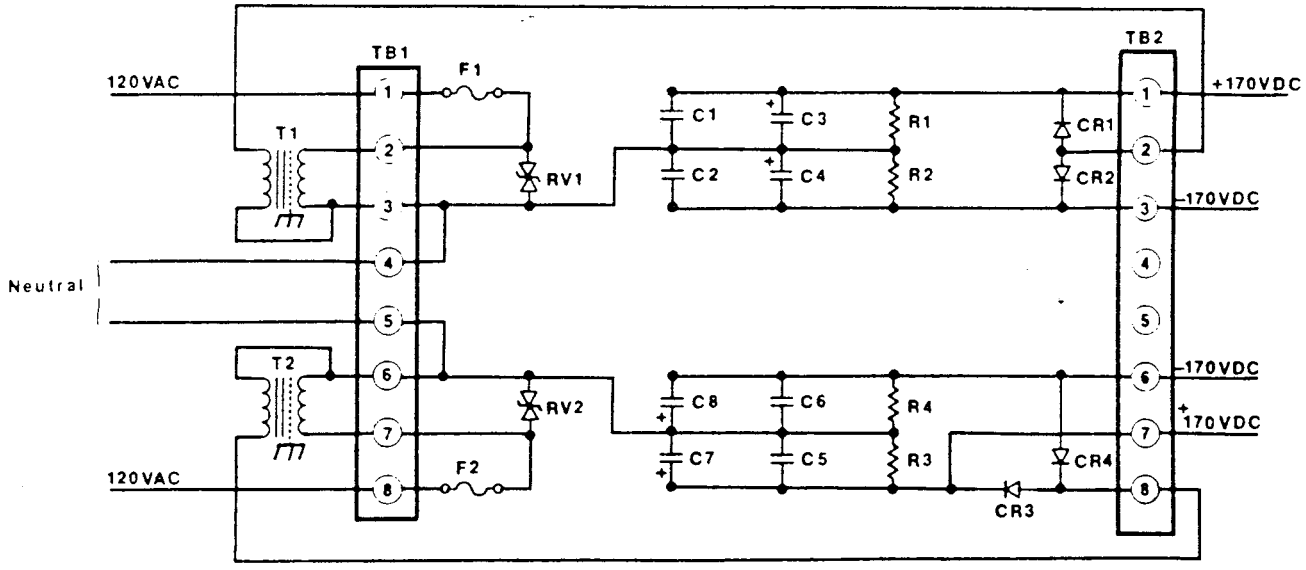
TURN CONSOLE/OFF/MANUAL SWITCHES FOR DISPENSING UNITS 3 AND 4 IN SUSPECT SERVICE MODULE TO THE OFF POSITION. REMOVE BOTTOM RECEIVER PC BOARD (FOR PUMPS 3 AND 4). USING A DC VOLTMETER WITH THE POSITIVE LEAD ON PIN 3 OF THE LEFT SET OF PINS AND THE NEGATIVE LEAD ON PIN 8 OF THE LEFT SET OF PINS OF THE MOTHERBOARD PLUG FOR THE REMOVED RECEIVER PC BOARD, MEASURE THE VOLTAGE. IT MUST READ 5 VOLTS DC $\pm$ 10%. IF IT DOES NOT MEASURE CORRECTLY, MEASURE THE VOLTAGE BETWEEN PIN 34 (POSITIVE LEAD) AND PIN 36 (NEGATIVE LEAD) OF THE SIGNAL CABLE PLUG. THE VOLTMETER SHOULD READ 11 VOLTS DC $\pm$ 10%. IF THE 11 VOLTS DC IS CORRECT AND THE 5 VOLTS DC IS NOT THE 5 VOLT REGULATOR NEEDS TO BE REPLACED. IF THE 11 VOLTS DC IS NOT CORRECT THE PROBLEM IS WITH THE CONSOLE POWER SUPPLY OR THE SIGNAL CABLE.

TESTING KEYBOARD SWITCHES

WITH POWER OFF CONNECT AN OHM METER ACROSS THE SWITCH TERMINALS OF THE SUSPECTED SWITCH. WITH THE SWITCH DEPRESSED THE METER MUST READ ZERO OHMS ON THE R X 1 SCALE. WHEN THE SWITCH IS RELEASED THE METER MUST READ INFINITY. IF EITHER READING IS INCORRECT THE KEYBOARD ASSEMBLY MUST BE REPLACED.



170VDC POWER SUPPLY
T11815-G1



R1, R2, R3, R4 — 220K, 1/4W

C1, C2, C5, C6 — .02 Mfd. 1KV

C3, C4, C7, C8 — 180 Mfd. 250V

RV1, RV2 — 150LA20A

F, F — .25 Amp

CR1, CR2, CR3, CR4 — 1N5061

Fuse Replacement on the 170 Volt DC Power Supply

The 170 Volt DC power supply assembly or assemblies are located in the center portion of the service module. Each assembly contains two independent power supplies, one for each hose outlet. Because the two power supplies inside each assembly are independent, there is a fuse to protect each one. These fuses F1 and F2 are rated at ½ AMP Slo-Blo 3 AG (¼ x 1¼). Page 10 shows the location of the fuses on the power supply assembly.

CAUTION: High Voltage is present at the fuse block since the fuse is in series with the 120 Volt AC input (primary) of the power supply transformer.

The location of the fuse blocks on the PC board makes it difficult to reach the fuses with a standard fuse puller. To remove the fuse, it is necessary to snap out one end of the fuse with a small blade screwdriver. The fuse can then be pulled out with fingers or small pliers.

A blown fuse in a power supply will result in no DC output. However, because of slow capacitor discharge allow approximately one minute before checking the + DC output. The + 170 VDC (± 10%) outputs can be checked between TB2, terminal #1 or 7 and AC Neutral. The - 170 VDC (± 10%) outputs can be checked between TB2 terminal #3 or 6 and AC Neutral. If no DC output exists, check the 120 Volt AC input on TB1 terminal #1 or 8. If the power supply AC input is within limits (± 10%) and no DC output is present, it is likely that the fuse is blown.

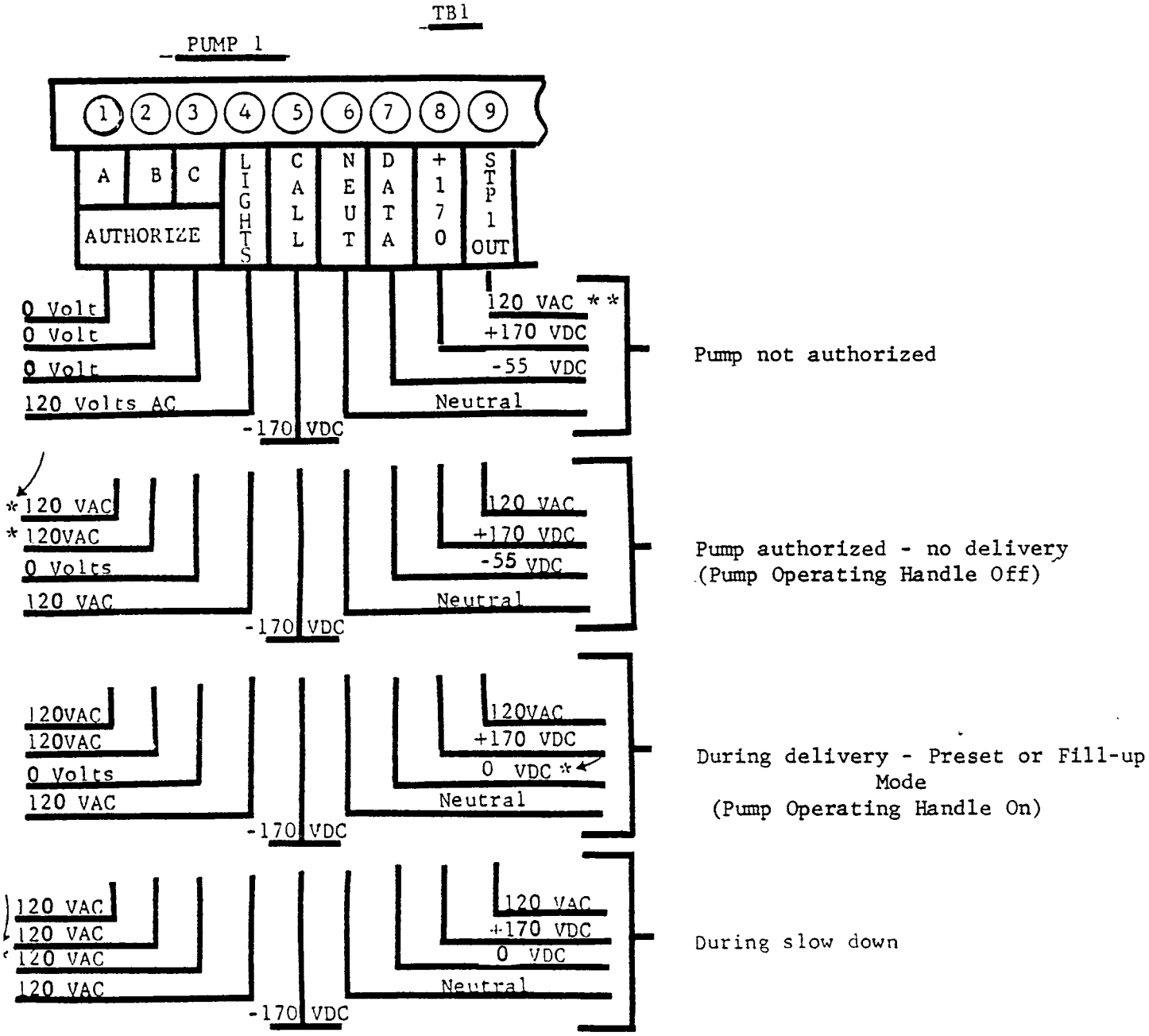
When checking the fuse, be sure no voltage is present on TB1 of the power supply assembly. AC input voltage to each power supply can be interrupted by throwing the mode switch for that position to OFF. As an additional safety precaution, cut off power to both power supplies in each assembly before attempting to remove fuse F1 or F2.

After the fuse is removed it can then be checked with an ohm meter. The ½ AMP Slo-Blo fuse should read 5 ohms (± 10%) resistance when tested. If the fuse is blown, the meter should indicate infinite resistance.

NORMAL OPERATING VOLTAGES TAKEN BETWEEN EACH TERMINAL AND NEUTRAL
IN TRANSAC /0 SERVICE MODULE

* Indicates change in voltage from previous mode of operation.

** Indicates system with no control box for submerged turbine pump
For systems using a control box, voltage is 0.
Systems using self contained pumps are not wired to this terminal



ELECTRIC RESET

(DIE CAST MODEL)

TROUBLE-SHOOTING AND REPAIRS

This instruction will assist the field mechanic in trouble-shooting a suspected electric reset failure. With several simple checks, a minor adjustment may correct the complaint or permit identification of other possible cause.

Refer to parts list for identification. (Page 12)

If the reset will not operate when the handle is "on" remove the telescopic link and pin assembly (N19009 code 35) between reset and computer. Turn operating handle "on". If reset cycles normally, a computer malfunction is indicated. Check computer by manually rotating center shaft, if excessive torque is required, or binding (hard spots) occur at any point during a complete revolution of the center shaft, either lubricate, repair, or replace the computer with an exchange unit.

Before replacing drive link to computer, make certain that the two timing holes on computer shifting cam are positioned at 10 o'clock, or toward rear money wheels.

Cycle reset several times to make sure reset operation is normal.

If reset will not cycle when drive linkage to computer is removed:

1. Remove cover (code 1) by removing 11 bolts.
   Note: Cover is also pinned to housing to maintain alignment of output shaft. If working on dual pump, the computer must be removed to gain access to electric reset.

   If reset cycles with cover removed, the output shaft bearing is binding. One or both cover locating pins may have to be removed to realign adapter (N19008 code 26) in cover bearing.
2. Check end play of operating shaft (N20458-01 code 14) by grasping operating handle (R14071-02 code 15) and moving in and out. Normal end play is about ⅛ inch.
3. Check power to reset motor. (Lower junction box, wire marked #3). 115 volts AC.

   If there is power to reset: With cover removed, turn operating handle to "on" position. By watching reset mechanism, see if lever contacts roller on switch (K**89377** code 11) to close it. If in doubt, close switch manually. If this does not start reset motor, connect a jumper across switch. If motor starts, this indicates that switch is defective. If motor does not start with jumper across switch, one of the wires of the motor has a break or motor is defective. Resistance across motor winding should be approximately 6 ohms.

   Note: If motor is defective, remove T10411 gear box assembly and replace complete assembly.

To remove T10411 gear box assembly:

1. Turn off power to equipment.
2. Loosen screw holding bracket for pump light switc (K84354 code 31) located near top of panel.
3. Remove spring (K86675 code 24) from operatin handle shaft assembly.
4. Remove 2 panel screws located at top and bottor of gear box assembly.
5. Gear box assembly T10411 can now be remove from housing.

When inserting new gear box assembly, carefull position wires to prevent pinching or interference witl moving parts in panel.

Pump motor will not start after computer resets to zero

1. Check if gear box assembly mechanism is closin switch (N18965-01 code 10) at end of cycle. (Switcl is located at bottom of panel.)
2. Broken or missing spring (K86674 code 8).
3. Open wire to motor.
4. Switch (N18965-01 code 10) defective. Connec jumper across terminals to determine if switch i open or check with voltmeter or test lamp.
5. Defective pump motor.

Pump motor runs but no product is delivered.

1. Check motor pulleys.
2. Check belt.
3. Use standard procedures for repairing pump.

Pump motor will not stop when operating handle i turned off.

1. Check if reset mechanism is releasing the moto switch N18965-01 lever.
2. If switch is held in closed position with operatin handle in "off" position, loosen screws holdin switch assembly and reposition.
3. Check if switch is shorted with volt ohmeter or tes lamp.

Reset motor operates but computer will not return t zero, pump motor will not start.

1. Adapter N19008 binding in cover bearing. Cove locating pins missing or not aligning bearing pro perly.

2. Gear train on back of T10411 panel not meshing properly. Gear teeth broken or worn.

3. Reset motor not aligned properly or loose.

4. Pin K46992 (when used) in coupling to to computer, sheared or missing.

Reset Cycles Continually.

1. Spring (K86673 code 7) missing, disconnected or broken.

2. Lever to which spring (K86674 code 8) is connected bent and preventing proper latching.

3. Reset motor not aligned properly. Affects braking action of motor.

4. Actuator reset lever (K86695 code 9) bent.

Operating Handle will not stay in "ON" position firmly.

1. Leaf spring (K86673 code 7) broken, bent or missing.

Operating Handle will not stay in "OFF" position firmly.

1. Spring (K86675 code 24) missing, disconnected or broken.

2. Anchor for spring K86614 code 22 broken.

Adjustment of Reset Motor/Call Switch (This is the small switch at the top of the reset assy.)

1. Turn off the electrical power to the dispenser.

2. Remove the telescoping coupling between the computer and the reset. Remove the reset box cover.

3. Move the operating handle to the "ON" position.

4. Step #3 should actuate the switch to the "ON" position. If the switch does not snap to the "ON" position it would be necessary to loosen the mounting screws that hold the bakelite plate to the gear box casting. Move the switch so that the pressure of the lever against the switch roller will actuate the switch to the "ON" position.

5. Be sure the switch mounting screws have been retightened.

6. With the switch correctly adjusted to the "ON" position there must be clearance between the switch roller bracket and the plastic body of the switch.

7. Move the operating handle to the "OFF" position, check to be sure that the lever falls away from the switch roller and that the switch snaps to the off or open position.

8. If the switch has been over adjusted so that it does not open when step 7 is followed, it will be necessary that you go back and start with step 3 of this procedure and readjust the switch.

Adjustment of the Power Switch Assembly

1. Turn the operating handle to the "ON" position, allow the reset to complete its cycle and leave the handle in the "ON" position.

2. Turn off the electrical power to the dispenser.

3. Remove the telescoping coupling between the computer and reset box. Remove the reset box cover.

4. Adjust the power switch assembly so that all switches snap closed. CAUTION: If you remove the leads from the switch to allow the use of an ohm meter, Be Sure the leads are reconnected to the same switch terminals from which they were removed.

5. While the switch assembly is held in the adjusted "ON" position, retighten the switch assembly mounting screws.

6. Move the operating handle to the "OFF" position, (this should cause all switches to open).

7. All switches must remain in the open position when a .020" feeler gage is passed between the roller and the switch actuating lever. If the feeler causes any one of the switches to close it will be neeessary to turn the electrical power on and readjust the switch assembly by starting with step #1 of this procedure.

INSTALLATION AND OPERATION INSTRUCTIONS

TALK-A-PHONE K86877-01 TWO-STATION INTERCOM SYSTEM

OPERATION

CONTROLS

Volume Control/On-Off Switch: Located at the left of the cabinet on Master Station only. Click "on" by rotating clockwise. Continue rotating clockwise to increase volume.

Talk-Listen Control: Located at the right of cabinet. Basically, depress control to "talk"; release to "listen".

Translucent Indicator: Located to left, and below volume control knob on Master Station. Indicator is illuminated by permanent-type bulb, which characteristically may flicker, to show when system is "on".

OPERATION OF MASTER STATION

Plug in the line cord, extending from underneath the Master Station, into an electrical outlet of 110-120 Volts, AC or DC. Turn the Master Station "on" and increase the Volume Control to maximum (rotate the Volume Control clockwise as far as it will go). Depress the Talk-Listen Control as far as it will go and talk. Release the Talk-Listen Control and listen. Then, adjust the Volume Control until desired volume is obtained. If the system does not operate when DC current is used, reverse the plug in the outlet to correct polarity. When AC current is used, try and reverse the plug in the outlet for minimum hum. System is designed to operate without objectionable hum under normal conditions. The master Station can be left on during all hours when instant communication is desired.

OPERATION OF SUB-STATIONS

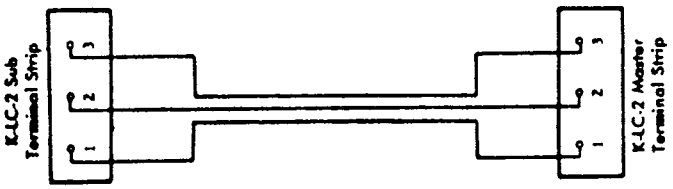
When System is "Non-Private": Sub-Station can communicate with Master Station without any operation on the part of the person at the Sub-Station, and at a distance from the Sub-Station, since Master listens in on Sub-Station at all times.

Close proximity of the Sub-Station to the Master Station may result in a howl (acoustical feedback) when either one calls the other. Reduce the volume on the Master Station or keep them partitioned from each other. A few minutes spent in practice operation will enable you to become familiar with the system's use. The system should provide years of satisfactory performance. Should you have any questions concerning the operation and performance of this system (even those questions which might be peculiar to local electrical and other environmental conditions) we would welcome your inquiries; as we may have special information and suggestions for you.

THIS SYSTEM IS DESIGNED
TO OPERATE ON 110-120
VOLTS, A.C.-D.C.
CONSUMES 7.5 WATTS.

INSTALLATION

Interconnecting Cable Connections for K-LC-2 System.



Set up the Master Station and the Sub-Station in the desired locations. Run a length of Talk-A-Phone #6303 (3-conductor shielded) cable, or #5303 (3-conductor) cable between the Master and the Sub-Station. #6303 provides noise-free cable lines in home, office and industry. Connect wire of corresponding color to same terminal number on both Master and Sub-Station. With #6303 Shielded cable, connect bare wire of #6303 to terminal "3" on Master and Sub. With #5303 cable, substitute a color-coded wire between terminals "3".

Underneath the Master and Sub-Station is a cable clamp. Remove screw on cable clamp and pass interconnecting cable underneath clamp. Adjust cable clamp so that it holds cable securely, and replace screw.

NOTE: Only one Master Station can be used in this system.

TO REMOVE CHASSIS

Remove two knobs on front of Master Station (one knob on front of Sub-Station) and the four screws on bottom of unit that are adjacent to end panels (2 screws per side). On Models with Cradle Phone, also remove the cradle rest assembly. Lift out chassis.

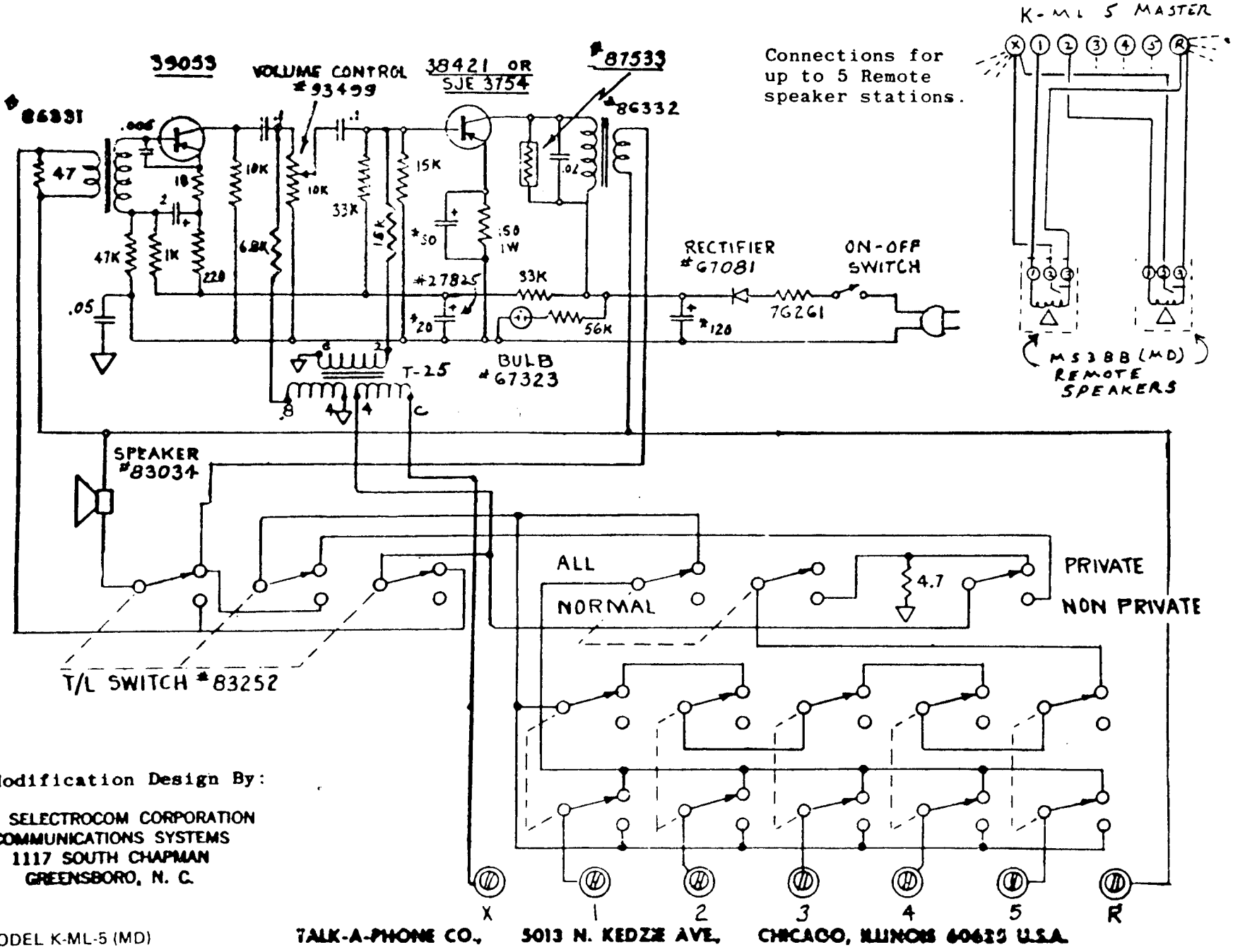
MODIFIED ESPECIALLY FOR GILBARCO

MODIFICATIONS TO THIS UNIT ARE AS FOLLOWS:

A transformer is installed in the Master Station. A push button switch is mounted on the Sub-Station. The addition of these two components provides a method, to signal the Master Station from the Sub-Station.

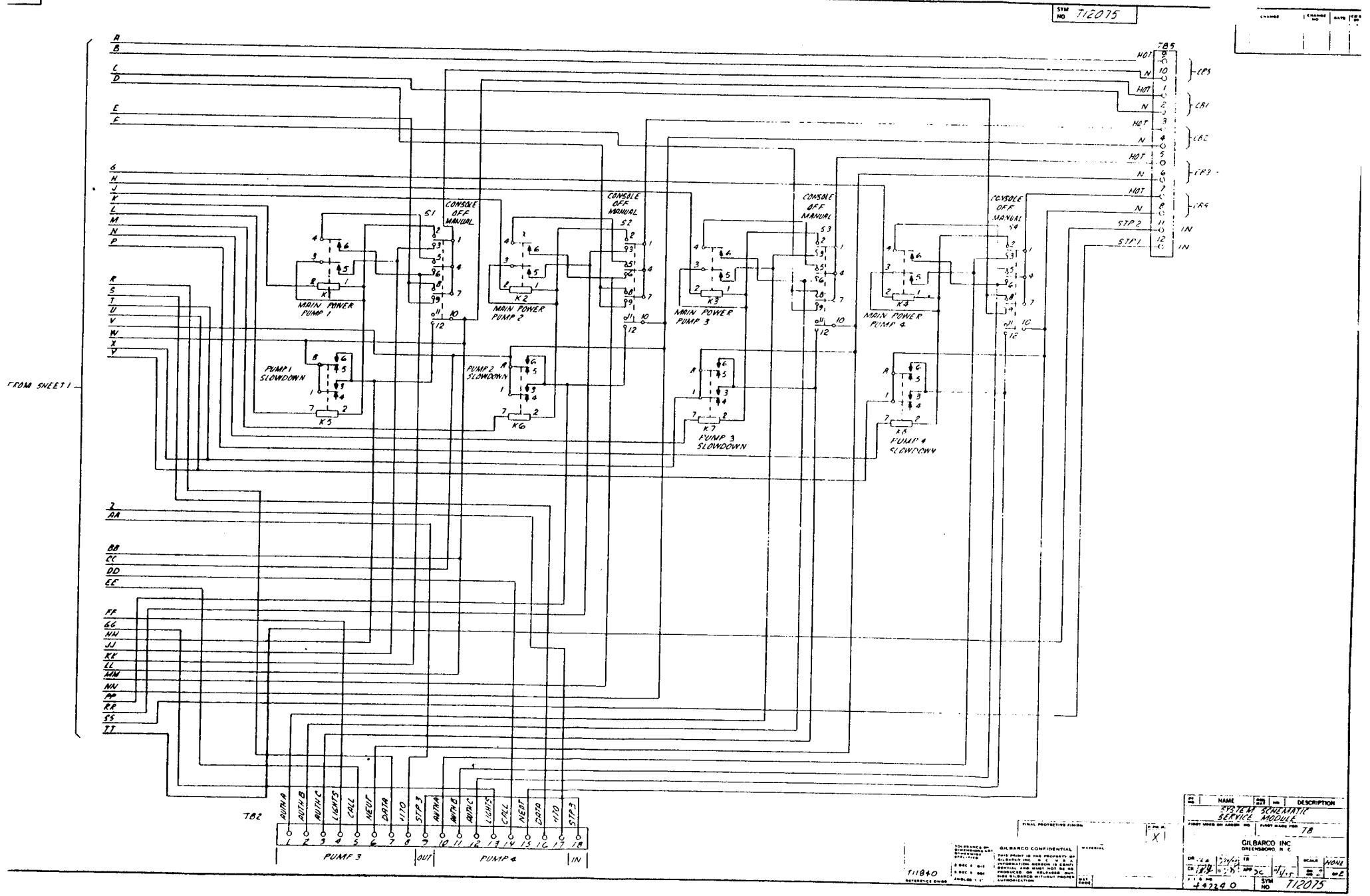
NOTE: With reference to figure 1, interconnecting cable, a three wire conductor can be used if run through conduit. If cable is not run through conduit, a three wire shielded cable should be used.

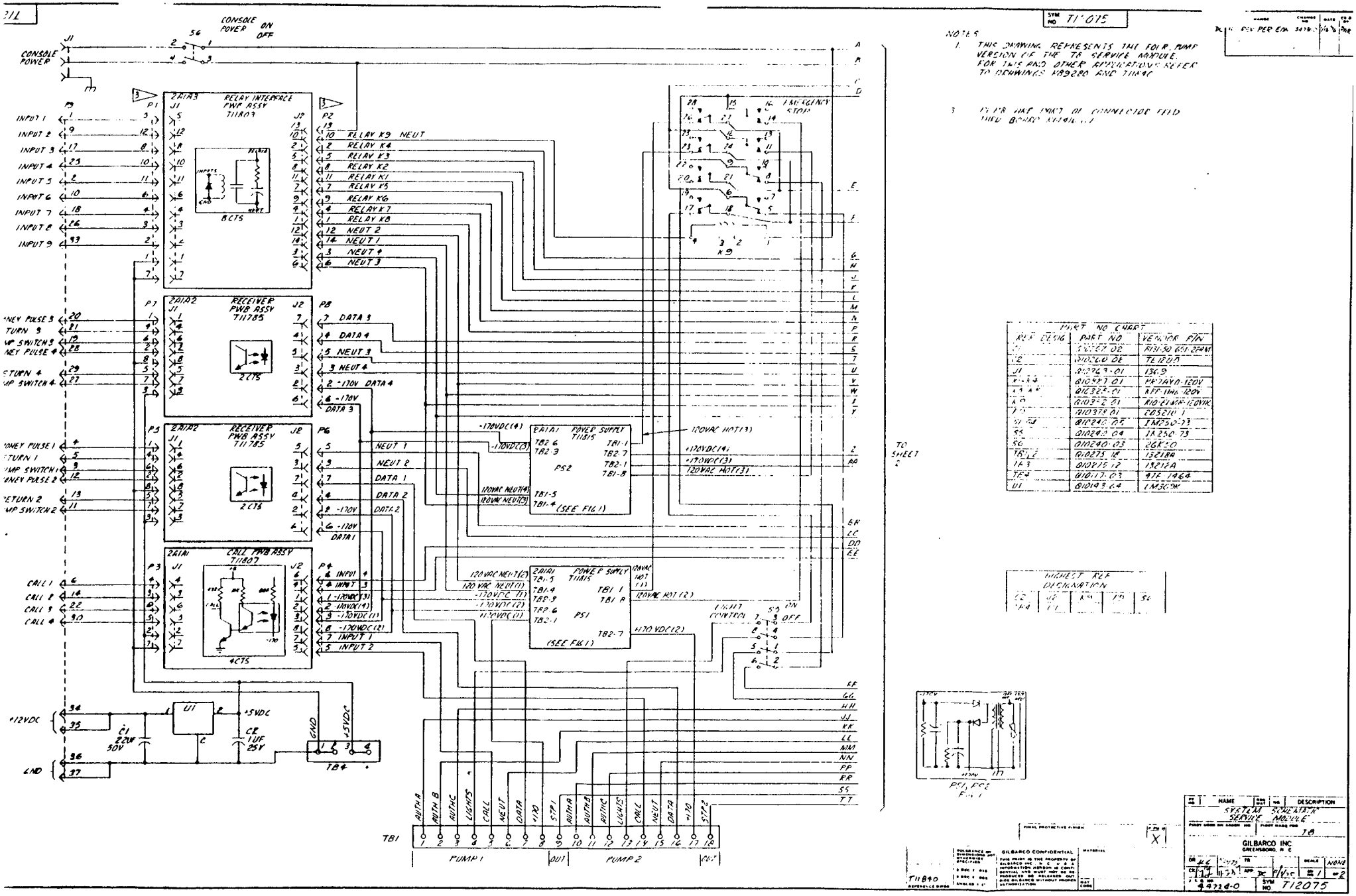
The interconnecting cable should not be run through any conduit containing A.C. Power Lines.



Modification Design By:

THE SELECTROCOM CORPORATION
COMMUNICATIONS SYSTEMS
1117 SOUTH CHAPMAN
GREENSBORO, N. C.


SYM NO T1E075
FROM SHEET 1
TB5
HOT
N
STP2
STP1
IN
CB3
CB1
CB2
CB4
MAIN POWER PUMP 1
MAIN POWER PUMP 2
MAIN POWER PUMP 3
MAIN POWER PUMP 4
CONSOLE OFF MANUAL
PUMP 1 SLOWDOWN
PUMP 2 SLOWDOWN
PUMP 3 SLOWDOWN
PUMP 4 SLOWDOWN
K1
K2
K3
K4
K5
K6
K7
K8
TB2
AUTO A
AUTO B
AUTO C
LIGHTS
CALL
NEXT
DATA
+10
STP 3
PUMP 3
OUT
PUMP 4
IN
T11840
REFERENCE DWGS
GILBARCO CONFIDENTIAL
GILBARCO INC
GREENSBORO, N C
SYSTEM SCHEMATIC
SERVICE MODULE
SYM NO T12075


CONSOLE POWER ON OFF
CONSOLE POWER
RELAY INTERFACE PWR ASSY T11809
RECEIVER PWB ASSY T11785
RECEIVER PWB ASSY T11785
CALL PWB ASSY T11807
POWER SUPPLY T11815
POWER SUPPLY T11815
PS1
EMERGENCY STOP
LIGHT CONTROL
PUMP 1
PUMP 2
TB1
TB4
+12VDC
GND
+5VDC
-170VDC
120VAC HOT
120VAC NEUT
NOTES
1. THIS DRAWING REPRESENTS THE FOUR PUMP VERSION OF THE TR SERVICE MODULE. FOR THIS AND OTHER APPLICATIONS REFER TO DRAWINGS T89280 AND T11890.
3. FOR PART NUMBER OF CONNECTOR FIELD WIRED BOARD SEE T11890.
PART NO CHART
REF DESIG
PART NO
VENDOR P/N
HIGHEST REF DESIGNATION
TO SHEET 2
SYSTEM SCHEMATIC SERVICE MODULE
GILBARCO INC
GREENSBORO, N C
SYM NO T12075
SYM NO T11815