Gilbarco Installation and Service Instructions

TRANSAC 12A



WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed according to instructions in this manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

This document is subject to change without notice. Considerable effort is expended to make it a valuable source of information and reference. However, it is not meant to be a substitute for adequate technical training for those involved in the installation and service of this equipment.

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TABLE OF CONTENTS

SPECIFI	CATIO	NS.	••	•	•	•	٠	•	٠	•	•	•	•	•	٠	•	•	•	•	•	٠	•	•	•	•	PAGE	1	
GENERAL	DESC	RIPT	ION	•	•	•	•	•	•	•	•	٠	•	•	•	•	•	•	•	٠	•	•	•	•	•	PAGE	2	
DISPENS	ING U	NITS	• •	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	PAGE	3	
INSTALL	ATION	INF	ORMA	TI	DN	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	PAGE	7	
INITIAL	CHECI	KOUT	•••	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	PAGE	8	
INITIAL	STAR	T-UP	••	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	PAGE	10	
COMPLET	e sys	TEM	CHECI	KOl	JT	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	PAGE	11	
SERVICE	INFO	RMAT	ION	•	•	•	•	•	٠	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	PAGE	16	
TROUBLE	SHOOT	ING	GUID	Ξ	•	•	•	•	•	•	•	•	•	•	•	٠	•	•	•	•	•	•	•	•	•	PAGE	17	
CONSOLE	DIAG	NOST	ICS	•	•	•	•	•	•	•	•	•	•	•	•	•	٠	•	•	•	•	•	•	•	•	PAGE	22	
SYSTEM	WIRIN	G ANI	D IN	5T/	ALL	_A1	II	DN	DF	RAM	۱IN	1GS	5															

CAUTION

In an emergency (spillage, etc.): Remove all station power by activating the station emergency power cut-off switch (if available). If not available, turn off all breakers controlling power to the forecourt and to the STP. <u>REASON:</u> The EMERGENCY STOP key will not stop the pumping action of the pumps submerged in tanks, and may not stop the flow of fuel from the hose in all conditions

conditions.

SPECIFICATIONS

Power Requirements per Console	115 VAC <u>+</u> 15% 3.0A
DC Power (Supplied by System)	Regulated +5 VDC, -5 VDC, +8 VDC, +12 VDC, +40 VDC
ACCURACY:	
Money	Indicates to nearest cent; maximum readout of \$999.99 on a single delivery
Volume	1/1000 gallon; maximum readout of 999.999 gallon on a single delivery
CONTROL CONSOLE HANDLING CAPABILITY:	Up to 12 single or 6 dual dispensing units or 6 MPD units
APPROXIMATE DIMENSIONS:	
Control Console	16" wide X 16" deep X 8" high
Distribution Box	16" long X 5" deep x 5.5" high
OPERATING TEMPERATURE RANGE:	
Control Console and Distribution Box	-20°C. (-4 degrees F.) to +55 degrees C. (130 degrees F.)
DISPENSING UNITS:	
Maximum Self-contained Motor Load	1/3 HP 7.2A at 120 VAC 3/4 HP 13.8A at 120 VAC
Motor Control Relay	0.1A at 120 VAC
STP	3/4 HP 6.9 A at 220 VAC 1/3 HP 3.6 A at 220 VAC
Light circuit per ballast	1 AMP, 120 VAC
Solenoid circuit	0.2 AMPS, 120 VAC
Dispenser C/D Module	2.5 AMPS, 120 VAC

BASIC FEATURES OF THE TRANSAC

- * Each console has a maximum capability of controlling twelve hoses (H-111B pumps or dispensers in any combination of singles and duals). The console can also operate up to 6 MPD units.
- * Each console will monitor the product inventory for four grades.
- * A low level inventory warning can be programmed into the console to alert the console operator if product inventory gets too low.
- * The console will handle prepay sales (The customer pays for a specific amount of product before the delivery). A Prepaid sale is indicated on console display.
- * The console will handle Postpay sales (The customer pays the cashier after the delivery).
- * The console will also handle Preset-Postpay sales (The customer desires a specific amount of product but pays after the delivery).
- The console can be programmed to Preset based on volume or money amounts.
- * The console has Status Indicators for each pump to inform the operator of the status of each pump (Call, AUTHORIZED, Delivery in progress, Payment Due).

- The console will read the dollar and volume amount of each purchase.
- * The console will set and read the prices for all pumps (Central Price Setting). Two level pricing for each grade can also be selected.
- * The console has buffer memory capabilities (This allows back-to-back sales on the same hose with the console retaining the sale amounts of each sale).
- * The console has an EMERGENCY STOP button allowing the operator to stop all deliveries and a PUMP STOP button allowing the operator to stop individual pumps.
- * The console has the capability for automatic deauthorization of a pump if the pump is not used within a programmed time period.
- * The console provides SHIFT and STATION TOTALS by grade as well as various cash totals as explained later in this manual.
- * The console is equipped with a battery backup system to retain all totals and inventory information for a minimum of 72 hours if the AC power is interrupted.
- * The console can be used to put any or all pumps in a MANUAL or Full Service mode while still retaining full totals and inventory data.

The dispensing units which complete the Transac 12A system are Highline 111 electronic dispensing units. The H-111 may be either self-contained or remote dispensers in either single or dual configuration.

Installation instructions are shipped with each dispensing unit which contains foundation layouts and general information important to installing the dispensing unit with the Transac 12A.

When the Transac 12A is to be utilized with a dual H-111, care must be taken to set the dispensing unit on the island facing in the correct direction. The numbering sequence of the dispensing units must be determined before the dispensing units are bolted to the foundation. H-111 duals must be placed on the island so the A side of the dispenser corresponds to the lower hose position number of the Transac 12A console. The A side of a dual H-111 is the left side of the dispenser as seen facing the AC junction box. To relate an H-111 hose to the desired button position (hose number) on the Transac 12A:

- A. Facing the AC junction box, remove the Display Module Bezel Assembly on that side (front) of the dispensing unit.
- B. Tilt the Display Board forward.
- C. Connector P-16 must be plugged in at this time.

- D. On the Logic Board you will see a rotary switch.
- E. Turn the rotary switch to establish the console button number that will control the hose on the left side.
- F. In the case of a dual dispensing unit, the hose on the right side will automatically be controlled by the next higher button number (hose number) on the Transac 12A.
- G. In the event the dispensing unit is placed on the island incorrectly, Kit K89752 will allow PUMP NUMBERS to be selected individually for each hose of the H-111B dispensing unit. This kit is not necessary if Logic Board W01520 is installed.
- H. For assigning each H-1118 to a particular grade on the TRANSAC TWELVE A console, refer to the following three pages.
- CAUTION: All switches MUST be set correctly prior to applying power to the H-111B dispensing unit.
- NOTE: The MPD <u>cannot</u> be assigned to Grade 4 on the T-12A console.



- (#1) <u>PUMP NUMBER SELECTOR</u> <u>SWITCH</u> The arrow must point to the number of the left hose (Hose A) on the Transac 12-A console. The right hose (Hose B) will be the higher number on the Transac 12-A console.
- (#2) GRADE SELECTOR SWITCHES Switch 6 "ON" assigns HOSE A to GRADE 1, switch 5 "ON" assigns HOSE A to GRADE 2, switch 4 "ON" assignes HOSE A to GRADE 3, switches 6 and 4 both "ON" assigns HOSE A to GRADE 4, switch 3 "ON" assigns HOSE B to GRADE 1, switch 2 "ON" assigns HOSE B to GRADE 2, Switch 2 "ON" assigns HOSE B to GRADE 3, switches 3 and 1 both "ON" assigns HOSE B to GRADE 4. In all cases switches not specified as being "ON" will be "OFF".
- (#3) <u>STRAP E9-E19</u> This determines if the Logic

Board is a single or a dual. With the strap in place, it is a dual board. With the strap removed it is a single board.

- (#4) STRAP E5-E6 This determines the position of the volume display decimal point. With the strap in place the volume readout will be XX.XXX. With the strap removed the volume readout will be XXX.XX.
- (#5) SIRAPS E3-E4 and E1-E2 These determine the volume unit. Both straps in place are for U. S. gallons. Both straps removed are for Liters. Strap E3-E4 on and strap E1-E2 removed are for Imperial Gallons.
- CAUTION GRADE 4 HOSES MUST ALSO BE PROGRAMMED FROM THE CONSOLE. SEE PAGE 11.

WARNING: If for any reason product has been delivered through a dispensing unit before the Grade Selector Switches have been properly positioned, it will be necessary to erase or clear the Pump Totals to insure that the console totals data will be accumulated correctly. To do this it is necessary to unplug connector P-16 on the H-111B and leave it disconnected for a period of at least one hour.

The T12472 Logic Board in later production models has a four position rocker switch to replace the four straps located in the same place as the switch. A strap in place represents an ON switch. A strap is removed to represent an OFF switch.

The following table lists the switch position for all strap options of an H-111B.

Switch	No. Swite	ch Position	Function
1		ON	Dual
		OFF	Single
2		ON	00.000
		OFF	000.00
3&	4	ON	U. S. Gallons
3&	4	OFF	Liters
3		ON	
4		OFF	imp. callons





- (#1) Grade Select Switches-Set as shown on Page 4.
- (#2) Strap Option Switches-Set as shown on Page 4.
- (#3) Pump Number Selector Switch for Hose A.
- (#4) Pump Number Switch for Hose B.
- (#5) S5-1 on S5-2 off

WARNING

If for any reason product has been delivered through a dispensing unit before the Grade Selector Switches have been properly positioned, it will be necessary to erase or clear the Pump Totals to insure that the console totals data will be accumulated correctly. To do this it is necessary to unplug connector P-16 on the H-111B and leave it disconnected for a period of at least one hour. Logic Board W01520 for the H-111B has been modified to incorporate jumpers in all locations where switches were used in the past. The following information is provided to assist the serviceman in proper setup of the W01520 Logic Board for any particular application. It is suggested that the serviceman retain all jumpers removed for later use. These jumpers are located where the switches on page 6 are shown.

NOTE: A jumper in place is "IN" and a jumper removed is "OUT".

Jumper group JPC is used to determine the grade assignments for the A and B side of the unit. Jumpers JPC 4, JPC 5, and JPC 6 determine the grade assignment for the "A" side of the H-111B.

	"A"	Side	
GRADE	JPC-4	JPC-5	JPC-6
G1	Out	Out	In
G 2	Out	In	Out
G3	In	Out	Out
*G4	In	Out	In

Jumpers JPC 1, JPC 2, and JPC 3 determine the grade assignments for the "B" side of the H-1118.

GRADE	JPC-1	JPC-2	JPC-3
G1	Out	Out	In
G2	Out	In	Out
G3	In	Out	Out
*G4	In	Out	In

Jumpers group JPD determines the volume decimal point placement, the unit of measure (gallons, liters) and single-dual option on the H-11B.

JPD-1 "IN" Dual H-111B "OUT" Single H-111B

JPD-2 "IN" Volume Decimal Point 00.000 "OUT" Volume Decimal Point 000.00

JPD-3 and JPD-4 Both "IN" for American Gallons Both "OUT" for Liters

The chart below will assist you in setting the console "PUMP NUMBER". Jumper group JPA sets the "A" side of the H-111B and group JPB sets the "B" side of the H-111B.

Pump Number	Jumpers "IN" (all others "OUT")
1	A1
2	A 2
3	A1 and A2
4	A4
5	A4 and A2 and A4

SITE CRITERIA

Few restrictions are imposed upon the installation site for the Transac System, since this system was intended for varied service station layouts and dispensing requirements. Mostly, the Transac System will be installed in a new service station constructed especially to accommodate it, but the system may also be installed at sites that are renovated to accept it. Following are the criteria that should be met for any type of installation site:

- Installation shall be in accordance with the National Electrical Code N.F.P.A. 70 and the flammable and combustible liquids code N.F.P.A. 30.
- 2. An enclosed weather protected structure must be located on the site for housing the Control Console, Distribution Box and wire troughs. The ambient temperature within the structure for system operation should not exceed 130 degrees F. This maximum room ambient is allowable if the units are allowed free circulation of air and will be reduced if this is restricted by close enclosure in wooden cabinetry. etc.
- The Control Console should be located such that the operator has an unobstructed view of all hose outlets.

- 4. Since the standard length of cable from the control console of the Distribution Box is 10 feet, planning should include locating these units within this distance limitation.
- 5. Foundation layouts, which are included with the dispensing unit shipped to the site, are to be used in construction planning.

PREPARATION REQUIREMENTS

Prior to actual installation of the Transac System, an inspection of the delivered equipment should be made to insure that the necessary installation materials are on hand and that the site meets with the installation requirements. Once the preparation details as given in the following paragraphs are satisfied, installation of the system can be undertaken in accordance with the instruction in this section.

UNPACKING EQUIPMENT

When the equipment arrives at the installation site, each unit should be inspected for possible shipping damage. If damage is evident, it should be reported directly to the carrier. Shipping damage is not covered by the warranty After inspection, agreement. place equipment back in the shipping cartons to prevent exposure to dust or dirt and store indoors until ready for installation.

RETURN OF COMPONENTS

Components returned to Gilbarco under warranty or for repairs are subject to severe shipping damage if not packaged properly. Return in original shipping cartons if possible. Use a durable reinforced corrugated box and obtain suitable packing material such as "Pakon" polethefoam chips, polyurathene foam chips, or polystyrene foam chips. Fill the bottom of the box with at least two inches of packing Make certain the material. component is firmly packed. Remember to include a note describing the particular malfunction along with return shipping information. It is also recommended that the package be fully insured. All returned items must be accompanied by an RGA form. WARNING: If the component arrives at Gilbarco in a damaged condition and it is ascertained that the damage was a direct result of inadequate or improper packing, such damage will not be covered under the original factory warranty and the customer will be held responsible for the cost of repair necessary to correct said damage.

MATERIALS REQUIRED

Data wire field terminations are done in the Distribution Box on terminal blocks; TB-1, TB-2, TB-3, by stripping each wire 1/4 inch and crimping on STA-KON terminals. A recommended type is Thomas and Betts part number RB1113. Care should be taken to crimp the STA-KON on correctly.

CONDUIT REQUIREMENTS

One 3/4" conduit is required for each dispensing unit single or dual - RC dispenser or self contained pump.

A wire trough in the area of the Distribution Box for termination of the conduits from the dispensing units and routing of wiring will be necessary for making the necessary submerged turbine pump control wire connections for RC dispensers.

INSTALLATION INSTRUCTIONS

These procedures are to be followed to insure proper installation of the Transac System with regard to meeting the requirements of the National and Local electrical codes, economy of costs, and correct operation of the system. Careful, step by step planning of the installation can prevent errors which are both costly and time consuming to correct.

- All conduits and wiring must be installed to meet the requirements of National and Local electrical regulations and codes.
- 2. Running two larger conduits to two contractor-installed junction boxes and then running smaller conduits between these junction boxes and the dispensing units is permissable. However, past experience has proven this method to be more expensive and more susceptible to wiring errors than running separate conduits to each dispensing unit.

- The threaded connections on all conduits must be drawn up tight.
- 4. When pulling wires through conduit, avoid damage to the wire insulation.
- 5. When making wire connections, use of U/L listed wire connectors which provide a secure connection is recommended. Pay particularly close attention to multi-wire connections.
- Foundation layouts will be found with the dispensing units shipped to the site.
- 7. DO NOT APPLY AC POWER TO THE INSTALLED SYSTEM WITHOUT FIRST PERFORMING THE INITIAL CHECK OUT PROCEDURES GIVEN IN THIS SECTION.
- 8.. Cabling and wiring connections for installing the Transac System are shown on the last pages of this book. To find the appropriate installation drawing, look in the title box and select the title that describes the particular type of installation. It may be necessary to refer to more than one drawing to cover all portions of the installation. This installation drawing is to be used as a guide only, since every installation is a special situation which cannot possibly be covered here in exact detail. 9. If an intercom system is to be installed, separate conduit and 3 wire shielded cable are to be run between the attendant's office and island speakers. The

island speakers. The island speaker must be installed a minimum of four feet above the island and 18 inches from any dispensing unit in accordance with National and Local electri-

cal codes.

INITIAL CHECK OUT

After the Transac system is installed, the wiring and system components are to be verified for correct operation by the procedure given in the subsequent paragraphs.

TESTING EQUIPMENT REQUIRED

500 VDC megger test unit. (If not available, use best possible substitute unit nearest 500 VDC). Biddle Model 21822 or equivalent. This tester will verify wire insulation quality.

Combination Volt-Ohmmeter (or VOM) with internal battery voltage of 10 volts or less, a sensitivity of 20,000 ohms/volt, and at least an Rx20,000 scale, Simpson Model 260-6 or equivalent. This equipment is used to test circuit continuity, voltage and resistance.

CAUTION

Do not apply AC power to any part of the system until all the preliminary tests in the following procedures are completed and any faulty wiring corrected.

500 VDC MEGGER TEST OF INSULATION

Perform a 500 VDC megger test of all installed wires prior to hook up. These tests are to be made between adjacent wires and form each wire to earth ground. Insulation resistance must be in excess of 50 megohms. Correct faulty wiring as necessary.

PHASING CHECK

Verify visually and with a voltmeter that all hot wires (A3, B3, A2, A1, B3, B12) are on the same transformer leg. (Same 120VAC leg) TRANSAC 12A BATTERY INSTALLATION

NOTE: The console must be powered for at least 72 hours, at initial startup before power is removed.

- 1. Remove the console cover.
- Facing the front of the console, remove the Processor Board by gently pulling it toward you.
- 3. Note that the battery has leads with "push-on" connectors. The smaller connector is on the red positive lead. The Processor Board has two tabs of different sizes to prevent reverse hook-up.
- 4. Push the battery connectors onto the two tabs.
- 5. Slide the Processor Board into the console.
- 6. Replace the console cover.
- 7. The console is to be plugged into a 120 VAC outlet and allowed to operate for 72 hours before the system start-up. The console may be used during this time. After the 72 hours the console battery will be charged and the system check-out can be performed.

TRANSAC 12 A OPERATIONAL CHECK-OUT

After all wiring is verified as correct, the next step is to run each dispensing unit to clear air and to check for correct operation. Because the H-111 will not deliver product with a price setting of 0.000, you must set in a price by using the console. The following steps are necessary to insure that the TRANSAC 12A/ H-111B system is installed correctly and all air is purged from the dispensing units.

- Verify that the 2-wire switch for dispensing unit is in the "UP" position.
- 2. Plug the Transac 12A console into a grounded 120 VAC outlet. After 2 seconds console should begin flashing "8s" and all Status Indicators should flash (EMERGENCY STOP)
- Verify in the Distribution Box that the loop continuity indicator is on. If not, refer to the Troubleshooting section this manual.
- 4. Turn the key to OPERATOR
- 5. Press the ON button
- 6. Press the PUMP SELECT for any operable pump (The Transac 12A will not respond to any pump number not selected on a pump) This will cause the console to stop flashing and display 3 zeros on the right with the selected pump number on the left.
- 7. Press each PUMP SELECT and verify that each pump number apepars on the Pump Number display. (Any pump number which does not appear is not communicating with the console. Refer to the Troubleshooting section of this manual.

- 8. It will be necessary to program all Grade 4 hoses to Grade 4. All Grade 4 hoses have been assigned to Grade 4 at the dispensing unit to allow console grade assignment to Grade 4. To assign a hose to Grade 4:
 - All Status Indicators on the console must be "OFF".
 - 2. Turn the Key to MGR
 - 3. Press the PRICE SET button
 - 4. Press the PUMP SELECT for a hose which is Grade 4
 - 5. Press G4
 - 6. Press AUTHORIZE
 - Repeat steps 4, 5, and
 6 for all Grade 4
 hoses.

At this time all pumps should be operational (communicating with the console), all shear valves open (dispensers only), product in the storage tanks, and the system ready for purging of the air.

PURGING THE AIR FROM ALL DISPENSING UNITS

All the Status Indicators on the console must be OFF at this time to allow programming of the system.

- * Turn the key to MANAGER
- * Press the PRICE SET button
- * Press the PPU Button
- * Press the G1 button
- * Enter a price for Grade 1 of \$.333 by pressing the 3 on the keyboard three times * Press AUTHORIZE

- * Press the G2 button
- * Enter \$.333 for Grade 2
- * Press AUTHORIZE
- * Press the G3 button
- * Enter \$.333 for Grade 3
- * Press AUTHORIZE
- * Press the G4 button
- * Enter \$.333 for Grade 4
- * Press AUTHORIZE

All the H-111B dispensing units should have a price setting of \$.333. This is not intended as an operational price, but only to allow the H-111B dispensing units to be exercised so air can be purged from all lines.

The following procedure must be performed for each hose, beginning with the hose furthest from each underground tank. If difficulty is encountered, refer to the troubleshooting section of this manual.

- Lift the operating handle of the dispenser. (The status light for that hose on the Transac 12 A should begin to flash and a beeping sound should be heard.)
- Depress that pump select (beeping stops) and then "Authorize". (Status light comes on solid) Note: during the delivery the Transac 12A display will flash "Os".
- 3. After a two second lamp test on the H-111 the pumping unit will come on and air can now be bled from the dispenser lines.
- 4. To insure all air has been bled from the lines, approximately 40 gallons should be delivered through each hose.

- 5. Put the operating handle down and hang up the nozzle. (The Transac 12 A console should beep once and the status light for that hose should begin a slow flash).
- 6. Depress that PUMP SELECT and CASH to complete the transaction. (Status light should go out.)

At this time all the H-111B dispensing units should be working properly and all air should be purged from the system. The initial installation is now complete.

COMPLETE SYSTEM CHECKOUT

To complete the Transac 12A/ H-111B system checkout it is necessary to program the console as follows:

- Price option-Single level (One price per grade)
 Dual memory
- Time Out-120 seconds
- 4) Money Preset
- 5) Reset SHIFT TOTALS to zero
- 6) Reset STATION TOTALS to zero
- 7) Inventory set to 1000 gallons for each grade
- 8) Low Inventory Warning Level set to 1000 gallons for each grade

All prices should be set as close to the expectedd price as is possible for this system verification. Programming and pricing procedures are contained in MDE-1578.

At this point all the H-111 dispensing units must be functional, all air must be purged from the system, and the console must be programmed as above. At this time record all PUMP TOTALS on Chart #2 according to MDE-1578. These will be the beginning totals. Also record the PPU displayed by the pump and the grade marked on the pump.

Record the SHIFT, STATION, and INVENTORY totals on Chart #1. (The SHIFT and STATION totals are now zero-the INVENTORY is now 1000 gallons per grade) These are the beginning totals.

The following step by step process MUST be repeated for all hoses to insure correct system operation. Begin with dispensing unit #1 and complete all steps before moving to unit #2. If any difficulty is encountered, refer to the Troubleshooting Guide in MDE-1495, H-111B Installation and Service Manual.

- Raise the Operating handle of dispensing unit #1.(ON) The Status Indicator for position #1 on the Transac 12 A console will blink (fast) and the console will beep.
- Authorize pump #1. The Status Indicator for position #1 will come on solid.
- 3. After the dispensing unit has gone through the reset cycle (all 8s) deliver 14, approximately \$1.00 and verify that all air is purged from the system. (If not, continue this delivery until all air is purged).
- 4. Lower the Operating handle (OFF)

- 5. The console will beep once and the Status Indicator for pump #1 will blink slowly. Press PUMP SELECT #1 then CASH to clear this payment due signal.
- 6. Verify the Console readout-Money and Volume. Record this amount under Transaction #1 for pump #1 on Chart #2. Verify that the Grade Light for this pump grade is blinking. (Low Inventory Warning Level) If not, recheck programming according to MDE-1578.
- Preset pump #1 for a \$.50 delivery.
- 8. Raise the Operating handle on #1 and allow the pump to deliver product until IT STOPS ITSELF. (Within \$.10 of \$.50)
- 9. Lower the pump Operating handle (OFF).
- 10. Clear the console payment due signal.
- 11. Record the amount Preset and the amount delivered under Transaction #2 for pump #1.
- 12. Repeat steps 7-10 THREE more times recording the amount Preset and the amount delivered each time. (Make sure to allow the pump to <u>STOP ITSELF</u> each time) NOTE: If by Transaction #5 the H-111B will not Preset accurately, refer to MDE-1495, H-111B Installation and Service Manual.
- 13. Add the amounts delivered in the five transactions for each hose and record the total on Chart #2. The ENDING PUMP TOTALS must equal the BEGINNING PUMP

IOTALS plus the total of transactions 1-5. If not, refer to MDE-1495, H-111B Installation and Service Instructions.

- 14. Record all console SHIFT, STATION, and INVENTORY totals on Chart #1. (Under ENDING TOTALS) Add the delivery volume totals from step 13 for all pumps assigned to Grade 1. This volume amount must equal the volume amount for Grade 1 on Line 7 of Chart 1. The Grade 2 volume totals must equal the Grade 2 line 7 amount. The Grade 3 volume totals must equal the Grade 3 line 7 amount. The Grade 4 volume totals must equal the Grade 4, line 7 amount. If any of these totals do not agree, check the Grade Selector switches on all the pump Logic Boards. Also verify that all Grade 4 hoses were programmed correctly according to Page 4.
- 15. The money amount of all transactions on Chart #2 added together must equal the total money figure on line 7 of Chart #1. If not, recheck console programming and refer to the Troubleshooting section of this manual.
- 16. Line #9 of Chart 1 must be within one unit of Line #8. This indicates that console inventory accumulation is accurate.
- 17. Verify at this time that the dispensing unit mechanical volume totals have increased the same amount as the dispensing unit electronic volume totals. This insures the dispensing unit is delivering accurately.

		CONSOLE DATA	GRADE 1	GRADE 2	GRADE 3	GRADE 4	TOTAL \$(00)
BEGINNING TOTALS	ч	SHIFT					
	2	STATION					
	ω	INVENTORY					
ENDING TOTALS	4	SHIFT					
	ა	STATION					
	6	INVENTORY					
Line 4 minus Line 1	7	SHIFT					
Line 5 minus Line 2	œ	STATION					
Line 3 minus Line 6	۷	INVENTORY					

CHART #1

				ſ								
12												
11												
10												
6												
∞												
7												
و												
5												
4												
۳												
2												
1												
			ELEC	MECH	N	Z	N	N	Z		ELEC	MECH
PUMP NUMBER	PPU	GRADE	BEGINNING	TOTALS	TRANSACTIO! #1	TRANSACT IOI #2	TRANSACTIO! #3	TRANSACT IOI #4	TRANSACT IO #5	TOTAL 1-5	ENDING	rumr TOTALS

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FUNCTIONAL DESCRIPTION

The Transac 12A Highline 111 system is a solid state self service system utilizing the latest in microprocessor technology. The console and dispensing units are electrically connected in a series loop as shown in the figure below:



Any break or discontinuity in the series loop would result in complete loss of console control. To prevent this from occurring each dispensing unit has two wire brought into a distribution box where by using switches any dispensing units can be isolated from the loop and restore loop continuity to allow console control of the remaining dispensing units.

In the 12A, H-111 system the console is in communication with the dispensing units and gets transaction data from each unit in the loop. Each dispensing unit has an address code determined by the Pump Number Selector Switch as shown in the Installation Instruc-The console sends out tions. a different code for each PUMP SELECT button that is depres-This code is sent to all sed. the dispensing units in the Only the unit with the loop. correct address code will respond to the console. From this it is easy to see that any dispensing unit may be assigned

to any PUMP SELECT button by the PUMP NUMBER SELECTOR switch and not by its physical location or the wiring position in the distribution box. For any fill-up or preset transaction the console sends the information (price level, preset amount (if any) and authorization) through the data loop and the assigned dispensing unit will receive and act on this information. In the Transac 12A system, price setting is done on a grade basis. The Grade Select switches for each H-111B dispensing unit determine the grade for that unit and therefore the price it will accept from the console. Onlv Grade 4 requires programming of Grade Assignment from the con-All totals information sole. except the individual PUMP TOTALS are retained in the console memory and may be cleared or reset. Pricing information is sent by the console but is retained by the individual dispensing unit. In the event any problem is encountered with Shift. Station, or Inventory totals accumulation, verify console programming.

BOARD BY BOARD ANALYSIS

The TRANSAC 12A consists of seven major components. Each of these components has a separate function, but all must be functioning together correctly to allow the TRANSAC 12A to control the H-111 dispensers.

The POWER SUPPLY MODULE derives the low level DC voltages required by the console and the data loop from 110 VAC. The operating voltages of the TRANSAC 12A are +5VDC, -5VDC, +12VDC, +8VDC and a constant current source of approximately +40VDC at 40MA which are not critical. Each operating voltage is fused to protect the supply against damage. An AC input fuse is provided for console protection. The TRANSAC 12A power supply is also equipped with a thermal (heat sensitive) protection device which will remove AC power from the power supply in the event the console interior temperature exceeds +235 degrees F.

This condition will automatically correct itself when the cause for the overheating is eliminated.

The Power Supply also generates a power Fail signal. This signal is used to notify the console processor board when AC power is removed. The Processor Board will then store all the console totals memory. If the power fail timing or voltage levels are incorrect, the console could lose memory. Thus, the power supply could be responsible for console memory loss.

The Processor Board in the TRANSAC 12A console is responsible for all communication between the console and the dispensing units (e.g., generating PUMP SELECT codes, sending AUTHORIZE, preset, etc.) The Processor Board also accepts all keyboard inputs, mode switch and keyswitch inputs. The Processor Board sends codes to the display board for use in generating readouts and status indications. The audible signals from the console are also generated on the Processor Board. The Processor Board is also responsible for all totals and Inventory functions (Except the individual PUMP TOTALS)

Most totals or inventory problems will be traced to operator error or programming error, however if no valid programming error is detected the Processor Board is to Memory retention is blame. also done by the console Processor Board and this board should be replaced first in the event of memory loss. The Keyboard selects the functions of the TRANSAC 12A console. Each key is a separate reed switch used to make a connection into the Processor Board when depressed.

The KEYSWITCH selects different modes of operation of the console. Each key position makes a connection into the KEYBOARD and from there into the Processor Board.

The Display Board contains all circuitry necessary to drive the Seven Segment LED displays and the indicator LED's both on the Display Board and also on the LED board. The Display Board receives coded information from the Processor Board and drives the display and LEDs accordingly.

TROUBLESHOOTING GUIDE

General Information

Any difficulty encountered with the T-12A H111 system will be in one of three areas: The console, the field wiring, or the Highline dispenser(s). The first step in troubleshooting the system is to localize the problem to one of these three areas. It is possible to localize a problem using the diagnostic checks built into the TRANSAC 12A console. This process is explained in the diagnostic section of the TROUBLESHOOTING GUIDE. As a general rule if difficulty is encountered with one dispensing unit only, then the problem will be in that dispensing unit. Any problem encountered which affects all the dispensing units controlled by the TRANSAC 12A console would be in the console itself or in the data loop.

The following general cautions should be observed to make the TROUBLESHOOTING PROCESS as simple and error-free as possible.

- Never remove or replace printed circuit boards with power applied to the unit.
- 2. Use your three senses, SIGHT, SMELL, and HEARING to eliminate obvious faults. (E.g., connectors not securely plugged in, breakers thrown, visual damage to components, and burnt components)
- Determine the exact malfunction and try to relate any past problems which could have contributed to the malfunction.
- Ask questions to determine the malfunction but always try to duplicate the problem for your own observation.
- 5. Follow the TROUBLESHOOTING GUIDE as a guideline but in case of difficulties not covered call for help.

FUSE	RATING	LOCATION	CAN BE AFFECTED BY
F - 1	3 Amp	Rear of Console housing	Any printed circuit board or the power supply itself
F – 2	7.5 Amp	Power Supply Regulator Board	Processor Board or Power Supply Module
F-3	5 Amp	Power Supply Regulator Board	Processor Board, Display Board, LED Board, or Power Supply Module
F-4	.5 Amp	Power Supply Regulator Board	Processor Board or Power Supply Module
F-1	.1 Amp	Current Source Board (piggyback on Power Supply Regulator Board)	Current Source Board Data Cable, Distri- bution Box, or field wiring.

The above chart is intended to guide the serviceman in locating the cause of a blow fuse and should be referred to any time a fuse needs replacement.

The following Troubleshooting Chart is meant to be followed from beginning to end and is valid only if all preceding checks have been made and found correct.

	SYMPTOM		PROBLEM		POSSIBLE CAUSE	<u> </u>	ORRECTIVE ACTION
-	No Display on Console	;	No AC power to console	Â)	Circuit Breaker Tripped	A)	Reset Circuit Breaker
				B)	Console AC fuse blown	8)	Replace AC fuse (3 Amp)
				ົວ	Console overheated and in Thermal Overload condition.	ິບ	Correct the overheat con- dition (Clean fan, move console from sun, etc.)
		5	Power supply has no out- put(s) (Measure at the test points shown on page 24	F	DC fuse(s) blow To determine which section of the T-12A system will affect each fuse refer to the chart on Page 18.	Â	Replace fuse with proper size as indicated on the Power Supply PC Board. If the replacement fuse(s) blow unplug all power supply connectors (except 32) and try again. If the fuse(s) blow again replace power supply.
21		3)	Power supply has incorrect outputs.	B)	Power Supply defective	B)	Replace Power Supply
L		(†	Display board has no display	(A	Connector P-1 (on display board) not secure	Э.	Secure P-1.
				B)	Display Board defective	B)	Replace Display Board
11.	Display incorrect on power	;	One individual LED or segment blank or dim	(A)	LED or segment of readout defective	Â	Replace Display or LED board
		2)	A group (2 or more LED's or segments of 2 or more	(A	Defective Display Board or defective LED board.	A)	Replace Display or LED board.
			utsprays/ are prank or unit.	B	P-1 or P-2 connector (On display board) insecure	B)	Secure connector
				ົວ	One or more wires in cable defective or loose in con- nector	ົວ	Verify and replace or repair as necessary.
				D	Processor Board 113321-G1	â	Replace Processor Board
•		<u>.</u>					

	SYMPTOM	PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
111.	Display will not stop "Emergency Stop" con-	1) Incorrect Operation	 A) Operator Error (Keyswitch not in OPER or ON button 	A) Refer to programming instructions
	dition when all Pump Select buttons are tried.	 Data Loop not complete LED indicator in distri- bution box not lighted) 	not pressed)	
			<pre>A) Isolate switches not cor- rectly positioned.</pre>	 A) Flip switches with cor- responding dispensing units to NORMAL.
			B) No dispensing units have pump numbers assigned or some are incorrectly assigne	B) Verify and correct PUMP NUMBER SELECTOR switches J.
22			C) Current source defective	<pre>C) Measure between the black and red wires in the Dis- tribution Box (approxi- mately 40VCD) with the loop Continuity Indicator off. Refer to console diagnostic procedure if there is not 40 VDC.</pre>
		Keyswitch sending wrong information	<pre>A) Keyswitch faulty or in- correctly connected.</pre>	<pre>A) Replace keyswitch and verify the wiring.</pre>
IV.	For any problem involving d diagnostic procedures immed authorize, preset, pump tot	ne or two dispensing units not re iately after this Troubleshooting als, data transmission, etc.)	ponding to the console in any fas Guide. (This means PUMP SELECT b	nion please refer to utton not working, call,
	Any problem relating to SHI After the programming is ve	FT TOTALS, STATION TOTALS, or INV rified the console processor boar	NTORY accumulation will probably should be replaced.	oe a programming error.
.IV	If the Iransac 12A console completely clear the consol	nemory becomes scrambled (indicat e memory by:	d by erratic displays and no oper	ation) it is possible to
		 Unplug the console and remov Slide the console processor Short between TP7 and TP8. Plug the short between TP7 a Remove the short between TP7 a 	the upper housing. oard out of the front. d TP8. and TP8.	
		The console memory will now be c scrambling occurs again, replace	mpletely cleared. If memory the console processor board.	

CONSOLE DIAGANOSTIC PROCEDURES

It is possible to use the Console itself to check out many of the console functions and also to test and verify field wiring in the event trouble is encountered with the Transac 12A H-111 system. The following procedures will check virtually all functions of the console. *Note 1.

- To put the console into the DIAGNOSTIC mode:
 - a. Turn the key OFF
 b. Press keyboard 2-2 and then AUTHORIZE
- 2. To test each digit on the display:
 - a. Press keyboard 1 and then AUTHORIZE.
 (Observe as each digit on the console will count 0 thru 9)
- 3. To check the status LEDs and decimal points:
 - a. Press keyboard 2 and then AUTHORIZE. (Each status indicator and decimal point will blink one at a time. Replace the display board or the status indicator board as necessary)
- 4. To check each key on the keyboard for correct operation:
 - a. Press keyboard 3 and then AUTHORIZE (As each button or switch is activated, observe the display for the correct code according to the following chart)

*1 If the console fails to enter the DIAGNOSTIC mode, verify the power supply voltages and if they are correct, replace the Processor Board.

KEYBOARD TEST CODES

KEYBOARD KEY CODE Digit O 00 Digit 1 01 Digit 2 02 Digit 3 03 Digit 4 <u>04</u> Digit 5 05 Digit 6 06 Digit 7 07 Digit 8 08 Digit 9 09 Digit 00 10 Pump Select 1 11 Pump Select 2 12 Pump Select 3 13 Pump Select 4 14 Pump Select 5 15 Pump Select 6 16 Pump Select 7 17 Pump Select 8 18 Pump Select 9 19 Pump Select 10 20 Pump Select 11 21 Pump Select 12 22 L1/L237 31 G1 G2 32 G3 33 G4 34 AUTH 23 CREDIT 36 CASH 35 VOL/CASH 27 A/B 26 PPU 29 E-STOP 30 P-STOP 24 P-TOTAL 28 OFF POSITION 38 OPERATOR POSITION 39 MANUAL POSITION 41 MANAGER POSITION 45 ON/RESET POSITION 47 PROG/INVENT POSITION 48 PRICE SET/SHIFT TOTAL POSITION 50

DATA DUMP/STATION TOTAL POSITION 54

23

- 5. The following two test portions of the Processor Board:
 - a. Press keyboard 4 and then AUTHORIZE (If the display reads anything other than 00, replace the Processor Board.
 - b. Press keyboard 7 and then AUTHORIZE (If the display read anything other than 00, replace the Processor Bd)
- This test exercises the buzzer (or call beep)
 - a. Press keyboard 8 and then AUTHORIZE (The beeper should beep 1 time)
- 7. This test will exercise the printer. (if applicable)
 - a. Press keyboard 9 and then AUTHORIZE (The printer will print out a message)

DATA LOOP CHECKOUT

The following tests are used to verify the field wiring and also to verify correct operation of the data loop. First, the serviceman should look into the distribution box and verify that the Data Loop continuity indicator is lighted. As explained earlier in this manual, the data loop must be complete (have continuity) in order for any dispensing unit to respond to the console.

If the Continuity Indicator is not lighted, the first step is to determine if the problem is in a dispenser or in the console distribution box. 1. Turn all Normal/Isolate switches to ISOLATE. If the Continuity Indicator now comes on, skip to Step 4. If the Continuity Indicator does not come on, continue.

Unplug the two data wires 2. (one black and one red) coming from the console and short the two wire ends together. Enter Test mode, then press keyboard 5 and AUTHORIZE. The console display should ready OO. (This indicates the console data loop power supply and the data cable to the distribution box are okay. If the display reads 00, the distribution box P.W.B. T12679-G1 must be replaced. If the console displays read 01 or 02, continue.

3. Unplug the end of the data cable in the Transac 12A (Red and Black wire console. which plug into the piggyback board on the power supply) Tie the two pins coming up from the board together with a piece of wire. Now press keyboard 5 and then AUTHORIZE. The console display should read OO. (This tests the data loop current source) If the console display does read 00, replace the data cable (N20953-G1) If the console display reads 01 or 02, replace the current source R15257-G1.

4. Turn the NORMAL/ISOLATE switches being used to NORMAL one at a time (in pairs if the field wiring bridges two switch positions) and observe the Continuity Indicator. Any dispensing unit whose wiring is broken or which has a two-wire defect will prevent the Continuity Indicator from lighting when these NORMAL/ISOLATE switch(s) are switches to NORMAL. When you have determined which dispenser or dispensers are keeping the Continuity Indicator off, continue to the next step.

5. Open the AC Junction Box of the suspect dispensing unit. Disconnect the two data wires (A9 and A19) from the field Connect the two field wires. wires together. Put the NORMAL/ISOLATE switches for this position on NORMAL. The Continuity Indicator should light. (This verifies the field wiring for this position) If the Continuity Indicator does not light, the field wiring is defective and must be replaced. If the Continuity Indicator does light, this verifies that the problem is in the dispenser.

6. Put the NORMAL/ISOLATE switch in the ISOLATE position to complete the loop for the other hoses and refer to the H-111 service manual to troubleshoot the dispenser.

Once the data loop is complete through each dispenser as indicated by the Continuity Indicator being lighted, proceed with the following steps to verify the loop and to verify that each dispenser is responding to the console.

1. Enter the test mode. Press keyboard 5 and then AUTHORIZE. The console display should read OO indicating the two wire system is okay.

2. Press keyboard 6 and then AUTHORIZE.

The pump number of each dispensing unit which is responding to the console will appear on the console beginning with the highest dispenser and counting down to the lowest dispenser number. Any dispenser whose number does not appear is not responding and should be verified as to the correct Pump Selector Switch setting and two wire switch positioning.

To leave the Diagnostic mode of operation, it is necessary only to turn the keyswitch to OPER.



- Control Panel Assembly 1. 2. Keyswitch Status Indicator Board 3. Display Board 4. Cable Assembly (Displays and Power Supply) Cable Assembly (Keyboard) 5. 6. Logic Board Cable Assembly (Printer Output) 7. 8. Keyboard Assembly Mode Switch Assembly Battery (3.6VDC Nickle Cadmium) 9.
- 10.11.







