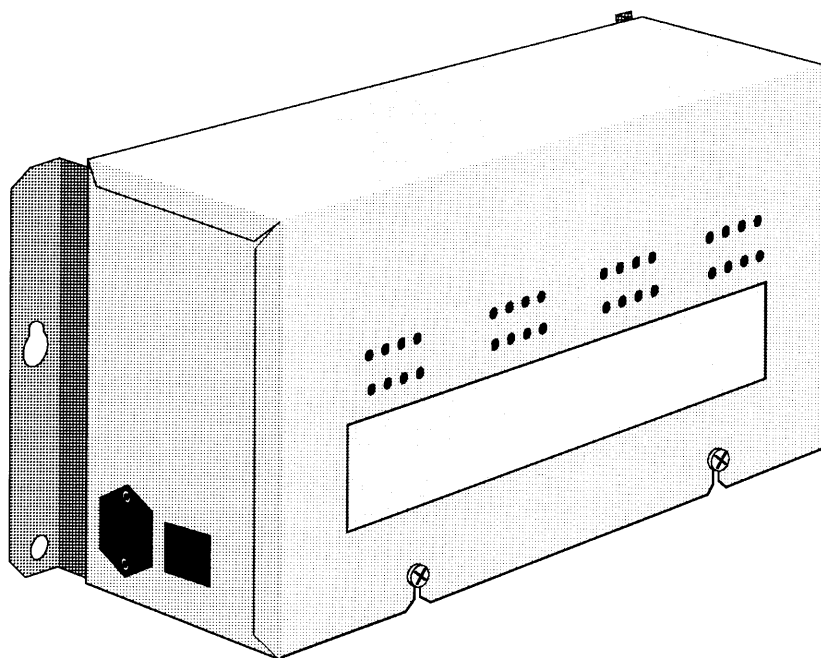


**INSTALLATION
MANUAL**

PA0242 Distribution Box



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COMPUTER PROGRAMS

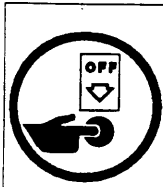
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WARNING

In an emergency (fuel spillage, etc.), remove all station power by activating the station EMERGENCY STOP switch. This will cut off the power to the pumps.

**WARNING**

Remove all power before installing kits. Turn off circuit breakers for the unit being serviced.

ELECTRICAL CIRCUITS

Some of the procedures in this manual involve the removal and reconnection of components either at start-up or to isolate a problem. Turn power off prior to performing these procedures.

Under certain conditions, dangerous potentials may exist even when the power is turned off. Always remove power and discharge and ground a circuit before touching it.

LOW VOLTAGE

Do not be misled by the term "Low Voltage." Potential voltage as low as 50 volts may cause death under adverse conditions. Whenever possible, keep one hand away from equipment to reduce hazard of current flowing through your body.

HIGH VOLTAGE

High voltage of 115 to 230 volts AC is used for operation of this equipment. Death on contact may result if you fail to observe safety precautions.

WORKING ALONE

It is highly recommended that someone who is capable of rendering aid is present. Be familiar with Cardiopulmonary Resuscitation methods if you are working with or near high voltages. This information may be obtained from the American Red Cross.

EMERGENCY POWER CUTOFF

Locate and know how to shut off all power using the "Emergency Power Cutoff" (a single control that simultaneously removes AC power from all site dispensing equipment and STPs). This control is an additional safety feature and is not a substitute for NEC/NFPA30A circuit breaker requirements.

**WARNING**

Do not use E-STOP, ALL-STOP, or PUMP-STOP keys on Gilbarco consoles/cash registers to shut off power. These keys do not remove AC power and do not always stop product flow.

Signal Words and Safety Symbols



This is a standard alert symbol. When you see this symbol, along with the following signal words in Gilbarco manuals, be alert to the potential for personal injury.

	DANGER
The hazard or unsafe practice will result in severe injury or death.	

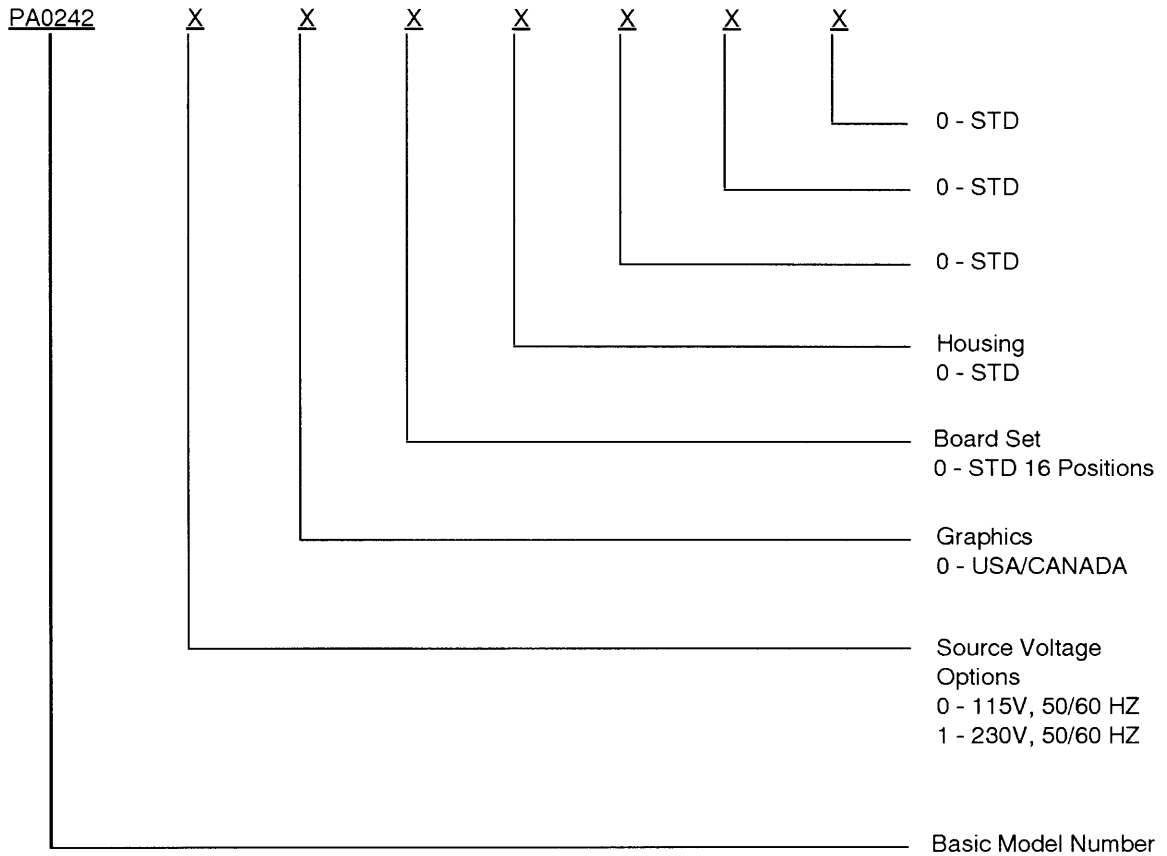
	WARNING
The hazard or unsafe practice could result in severe injury or death.	

	CAUTION
The hazard or unsafe practice could result in minor injury .	

	WARNING
You are working in a dangerous environment. Fuels are highly flammable and explosive. Observe all safety precautions. Failure to do so could result in injury or DEATH.	

Wear eye protection.	Use emergency power cutoff.	No people in area.	Clean up spills.	No smoking.
No open flames.	Collect fuel in approved containers.	No power tools.	No vehicles in area.	Use safety barricades.
	Explosive	Electricity	Flammable	
	Read instructions for this and all related equipment. Do not allow untrained or unauthorized persons to service equipment. Call a Gilbarco Authorized Service Contractor if you need help.			

MODEL NUMBER BREAKDOWN



INTRODUCTION

OVERVIEW

The distribution box houses an opto-coupled loop from the controller, twelve pump current loops, power supply and automatic isolation circuitry. A two-wire circuit carries data from the controller to pumps by encoding data into current pulses. This distribution box works with all listed Gilbarco electronic fuel dispensing consoles or controllers.

Gilbarco's PA0242 Distribution Box is required for the Transac System 1000™ controller. An extra distribution box is required with the Transac System 1000 that has three or four consoles in the system.

There are twelve individual current data loops for dispensing units. (See Figure 1). Each loop has both current regulation and automatic isolation circuitry. The dispenser data loop drivers operate at 45ma from 12VDC regulated power supply.

NOTE: Only one dispenser or console can be connected to each loop driver channel. Maximum wiring distance between distribution box and individual dispenser must not exceed 2600 feet and requires stranded or solid 14AWG wire.

NOTE: For console installation, refer to MDE-2538 Pigtail Cable. Spare Current loops in the distribution box for multi-console installations cannot be used for pump control functions.

RELATED DOCUMENTS

MDE-2381 Service Manual for Distribution Box PA0242XXXXXXX
MDE-2538 Installation Instructions Pigtail Two-Wire Cable Kit

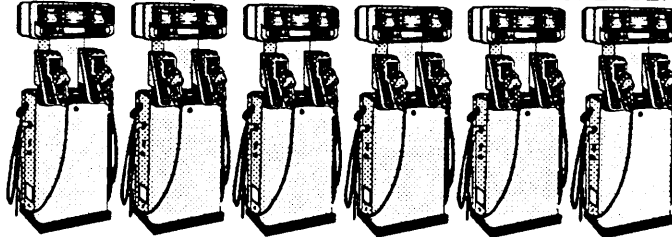
SPECIFICATIONS

Model Number	PA0242XXXXXXX	
Dimensions		
Height	7-13/16 inches	
Width	16-9/32 inches	
Depth	5-15/32 inches	
Weight	5 pounds	
Power Requirements	Dedicated Circuit - Isolated Ground Receptacle	
	USA/ Canada/International 115 VAC (UL/CSA)	115 volts AC nominal, 50/60 HZ
	International 230VAC (UL)	230 volts AC nominal, 50/60 HZ
Current Drain	0.5 amp. @ 115VAC or 0.25 amp @ 230VAC	
Operating Environment		
Minimum Temperature	+32°F (0°C)	
Maximum Temperature	+104°F (+40°C)	
Humidity	5 - 95% RH non-condensing	

FIGURE 1 - SYSTEM CONFIGURATION

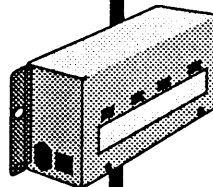
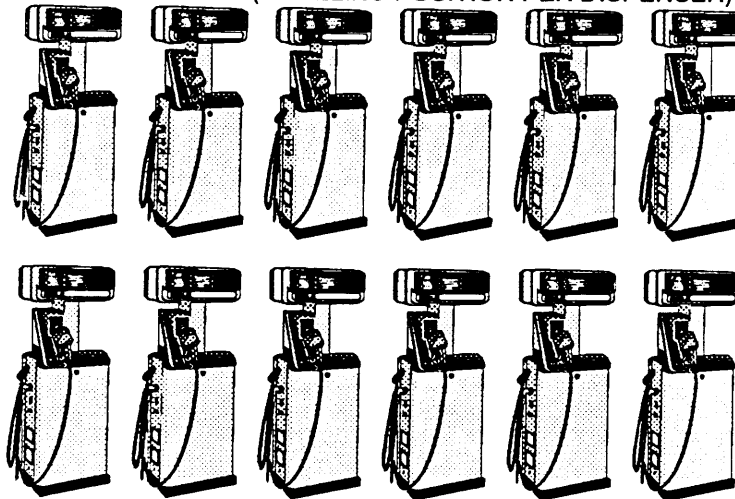
UP TO 12 ELECTRONIC FUELING POSITIONS IN
DUALS, SINGLES, OR COMBINATION OF BOTH

6 DUAL HOSE (2 FUELING POSITIONS PER DISPENSER)



OR

12 SINGLE HOSE (1 FUELING POSITION PER DISPENSER)



PA0 242
DISTRIBUTION BOX

TO ANY UL LISTED GILBARCO
TWO-WIRE CONSOLE OR
CONTROLLER

PRELIMINARY PREPARATION

Before installing equipment, inspect the site and delivered equipment to ensure necessary materials are on hand and site meets all criteria specified in this manual.

- Unpacking Equipment

When equipment arrives at the installation site, unpack each unit, check by model and serial numbers against packing list on carton. Inspect for possible shipping damage. If damage is evident, it must be reported to the carrier. Shipping damage is not covered under Gilbarco's warranty policy. After visual inspection, place unit back in its shipping carton to prevent undue exposure to the elements, and store indoors until ready for installation.

- Return of Components

Equipment or components returned to Gilbarco under warranty or for repairs are subject to severe shipping damage if not packaged properly. Whenever possible, return units or components in original shipping cartons. If original packing materials are unavailable, use a durable reinforced corrugated box and obtain suitable packing material, such as PAKON, polyurethane, or polystyrene foam chips. Fill bottom of box with at least two inches of packing material. Place printed circuit boards in antistatic shielding bags. Make certain component is firmly packed. It is also recommended that the package be fully insured. All returned items must be accompanied by a Returned Goods form. Remember to include a description of the malfunction or damage and return shipping information.

NOTE: If the component arrives at Gilbarco in a damaged condition and it is determined that damage was a direct result of improper packing, such damage is not covered under the original factory warranty and the customer is held responsible for cost of repair to correct damage.

BASIC SITE CRITERIA

- Installation of PA0242 must be in accordance with National Electrical Code NFPA 70, and the Automotive and Marine Service Station Code NFPA 30A.
- The site must be equipped with electric service allowing compliance with all installation requirements of a complete fueling system.
- An enclosed weather-protected structure must be located on the site for housing the PA0242. Room ambient temperature should not exceed +40°C (104°F). This maximum ambient temperature is allowed only if the equipment is allowed free air flow.
- All Megger testing of dispensing unit wiring must be done prior to connecting wires to the PA0242 (refer to section on Megger Testing). The PA0242 cables to the system controller must be kept separate from all other power and control lines.
- One conduit from the breaker panel to the PA0242 location is required. This conduit must contain three 14AWG wires, 115VAC hot, neutral and ground or L1, L2 and ground for 230VAC. **DO NOT USE ELECTRICAL CONDUIT TO PROVIDE EARTH GROUND.**
- The circuit powering the PA0242 must not power other devices. This circuit must not share a conduit with wiring for device drawing high amperage (compressor, freezer, etc.) or a device which is a source of RFI (TV, microwave, intercom, two-way radio, etc.). It is permissible to share a conduit with wires for other Gilbarco equipment.

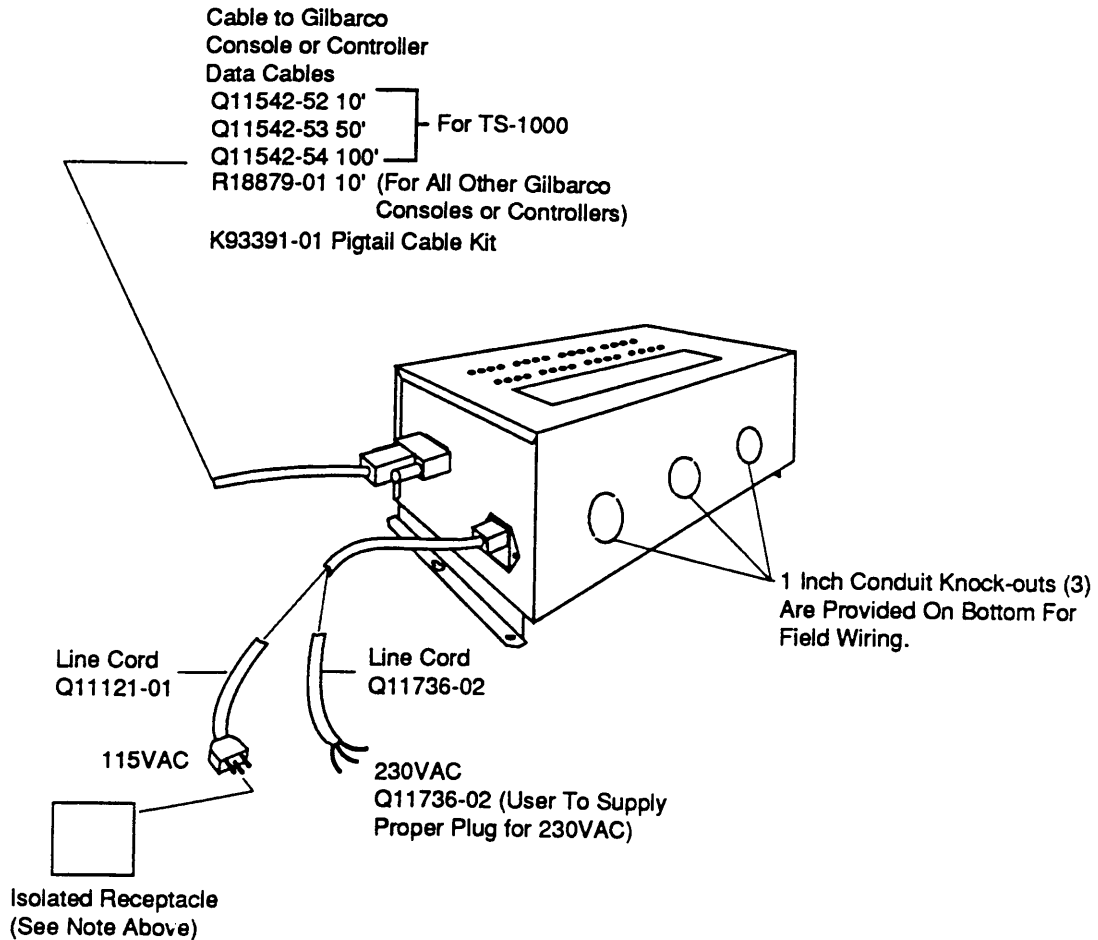
- Do not route cables over fluorescent lights, compressor wiring, etc., or near other sources of interference.

PHYSICAL PLACEMENT

- Locate the PA0242 in an area not subjected to extreme temperature variations. The ambient temperature must remain relatively constant.
- Do not install in a position subjected to direct sunlight. If conditions so dictate, provide a suitable sunscreen.
- Locate in an area minimizing the possibility of liquids being spilled into it.
- The PA0242 is suitable for use over hazardous locations and must be installed at least eighteen inches above the floor.
- Install all cables so they are protected from damage or accidental disconnection. Route along a wall or under a counter and secure with cable ties or suitable cable clamps.
- In a new site, mount unit to the wall before running conduit. Locate on a wall convenient to conduits containing communication wires from devices and an isolated AC circuit from the breaker panel. The wall receptacle (Hubbell #IG5621 or equivalent) should be within six feet of the PA0242. See Figure 2.
- In an existing site, placement is dictated by existing space and other conditions.

FIGURE 2 - DATA CABLES/LINE CORD FOR DISTRIBUTION BOX

NOTE: User to supply proper receptacle to meet local electrical code requirements. The receptacle providing power to the PA0242 must be a properly installed isolated ground receptacle (Hubbell # IG 5261 or equivalent). This type receptacle is easily identified by its bright orange color and by the triangle embossed into the face of the outlet. The green grounding screw must be attached to the grounding conductor.



FIELD WIRING CONSIDERATIONS

- All electrical wiring must conform to National Electrical Code (NEC) and local wiring codes, as well as the criteria in this manual.
- Use stranded or solid 14AWG wire for Gilbarco equipment. When making wire connections, Gilbarco recommends the use of UL Listed wire connectors.
- Improper wiring can cause failures not covered by the Gilbarco warranty. Care must be taken to establish a pure path to ground to prevent picking up stray electrical noise.
- One conduit is required from the breaker panel to the PA0242 location, terminating at a dedicated outlet box.
- A wire trough located in the vicinity of the PA0242 will be necessary for making wire connections for the routing of wiring and for termination of the one inch conduits from other devices. It is necessary to leave two feet of wire exposed as a service loop for installing Wago connectors for mating with the circuit board. See Figure 3.
- When pulling wires, avoid damage to the wire insulation. Megger testing should be done after threaded connections on all conduits are drawn up tight.

AC CONNECTION

Type of Receptacle

The receptacle providing power to the PA0242 must be a properly installed isolated ground receptacle (Hubbell #IG5261 or equivalent). It is easily identified by its bright orange color and by the triangle embossed into the face of the outlet. The green grounding screw must be attached to the grounding conductor.

Electrical Considerations

Do not use extension cords for Gilbarco equipment.

For 115VAC Operation:

- Outlets for 115VAC connection must be dedicated-isolated circuit.
- The PA0242 must be located within six feet of the outlet. A 7.5 foot detachable power cord is provided.
- The PA0242 has a molded receptacle and the other end has a molded plug conforming to NEMA 5-15P standards.
- It is the customer's responsibility to supply an alternate plug required to meet local electrical codes and UL standards.

For 230VAC Operation:

- Outlets for 230VAC connection must be dedicated-isolated circuit.
- The PA0242 must be located within eight feet of the outlet. A 9 foot detachable power cord is provided.
- The PA0242 has a molded receptacle and the other end has the jacket stripped back two inches.
- It is the customer's responsibility to supply an alternate plug required to meet local electrical codes and UL standards.

PRELIMINARY FIELD WIRING CHECKOUT

Test Equipment

500VDC MEGGER TEST UNIT - Biddle Model 21811 or equivalent

This tester verifies wire insulation quality. If not available, use best possible substitute unit nearest 500VDC.

NOTE: To avoid serious equipment damage and to fulfill commissioning obligations, test all field wiring with a Megger or similar high voltage tester prior to hookup of a Gilbarco electronic or electromechanical delivery system. Before applying AC power to the system, make sure all field wiring has been tested and wiring faults corrected.

Read and understand manufacturer's literature for the tester.

500VDC Megger Test of Wire Insulation

Prior to connecting wires to the PA0242, Megger test all wires of the dispensing unit. These tests are to be made between adjacent wires and from each wire to earth ground. Insulation resistance must be in excess of 50 megohms. Correct faulty wiring and retest.

Numbers on the Megger scale start at 1 and go to infinity. Most Meggers read directly in megohms (millions of ohms). To pass this test, a wire must show a minimum resistance of 50 megohms.

For proper wire testing, perform the following procedure:

1. On one end of conduit, cut all wires flush. Make sure bare ends do not touch other wires or conduit.
2. On other end of same conduit, strip all wires 1/2 inch. Twist entire bundle together.
3. Attach one Megger probe to wire bundle and the other to conduit.

4. Activate Megger and read resistance.
 - If the reading is lower than 50 Megohms, proceed to Step 5.
 - If the resistance reading is 50 Megohms or higher, separate one wire from bundle, attach one Megger probe to this wire and proceed to Step 7.
5. Separate one wire from the bundle. Attach one Megger probe to this wire and leave other one attached to conduit.
6. Activate Megger and read resistance.
 - If reading is higher than 50 megohms, go to Step 7.
 - If reading is lower than 50 megohms, the wire is defective and must be replaced. Mark wire to indicate this and continue testing at Step 5.
7. Leave one probe attached to single wire and attach other Megger probe to bundle.
8. Activate Megger and read resistance.
 - If reading is lower than 50 megohms, the wire just tested has defective insulation and must be replaced.
 - If reading is higher than 50 megohms, the wire is good. Mark wire, good or defective.
9. Repeat Steps 5 through 8 for all wires.

INSTALLATION

In a new installation, power up fuel dispensers as standalone units. Verify operation of units, then set PA0242 jump jacks to NORMAL.

Set dispensing units for two-wire operation according to their respective manuals. Hook up channel connections with only one dispensing unit wired per channel. For Transac System 1000™ installation, dispensing units must be numbered sequentially from Channel 1 to Channel 12. Maximum wiring distance between distribution box and individual dispenser must not exceed 2,600 feet. Refer to Figure 4.

For Transac System 1000™ multi-console configurations, connect consoles to the distribution box by using R19000-02 Pigtail Assembly. Refer to Figure 5.

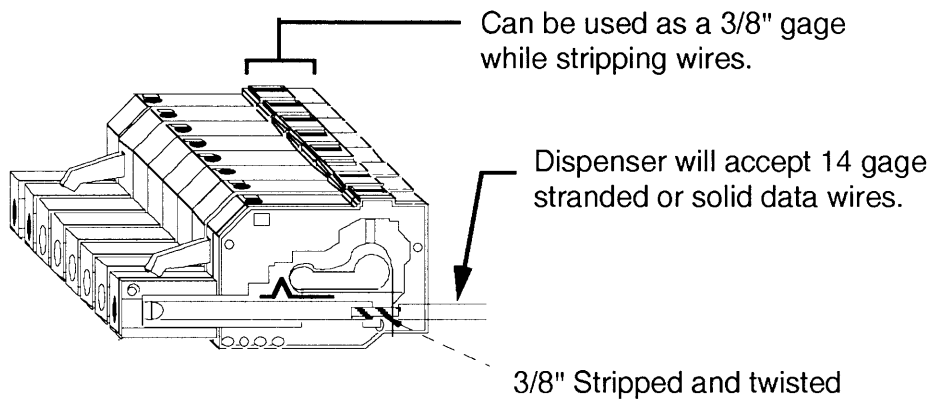
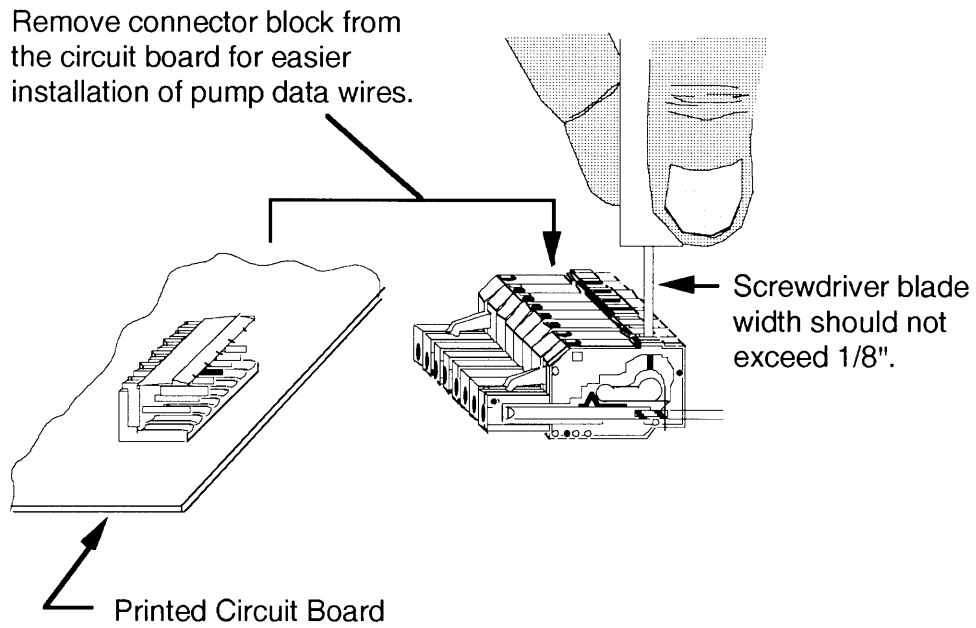
1. Remove two screws on bottom front of distribution box and lift off lid.
2. Carefully remove foam blocks from corners of distribution box. Discard packing blocks and other packing material.
3. Disconnect two discrete wire cables from circuit board connectors, P903 and P904.
4. Remove printed circuit board assembly (with mounting plate) from PA0242 and set aside.
NOTE: Removing board avoids unnecessary damage to board and its components while mounting unit to wall and performing the required field wiring.
5. Mount distribution box to wall.
 - Allow clearance on left side to connect 9 Pin D Sub Cable to Controller and AC Input Cord.
 - Leave clearance above distribution box to allow cover to be installed.
6. Mount AC receptacle within six feet of distribution box.
7. Install conduit and wiring for two-wire data circuits to dispensers.
NOTE: When pulling wire to dispensers, leave two feet of wire inside distribution box. This allows for easy installation of Wago connectors to the wire, as well as mating to the circuit board.
8. Connect dispenser (or console pigtail) two-wire data lines to WAGO plug as shown in Figure 3.
CAUTION: To avoid damage to the Distribution Board, disconnect Wago from board before connecting or disconnecting Discrete Wires.
9. Replace printed circuit board assembly.
10. Reconnect P903 and P904 cables.
11. Connect two-wire data cable (Q11542-53 or -54) to 9 Pin D Sub, and plug in WAGO connectors to circuit board.
12. Plug in AC power cord.
13. Change jump jacks (ISO-NOR) one at a time to NORMAL position.
 - LED closest to WAGO connector should light. If not, refer to MDE-2381 Service Manual.
 - Check for pump communication.

Steps Continued Page 11

Steps Continued

- 14. Repeat Step 13 until all dispensers are on line and working properly.
- 15. Replace top cover and secure with two screws.

FIGURE 3 - WAGO CONNECTOR



DISTRIBUTION BOX DIAGRAM

FIGURE 4 - DISTRIBUTION BOX DIAGRAM

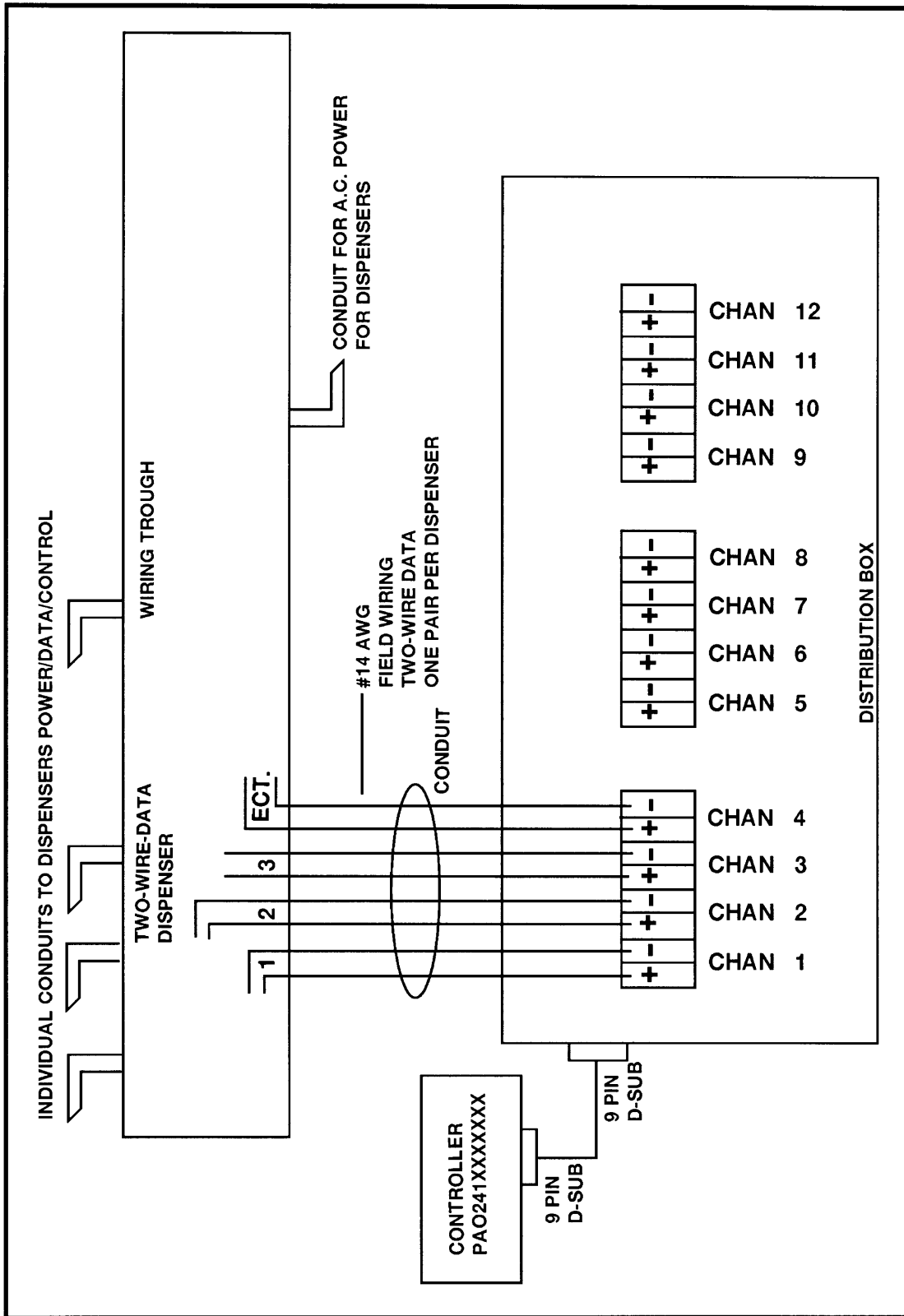
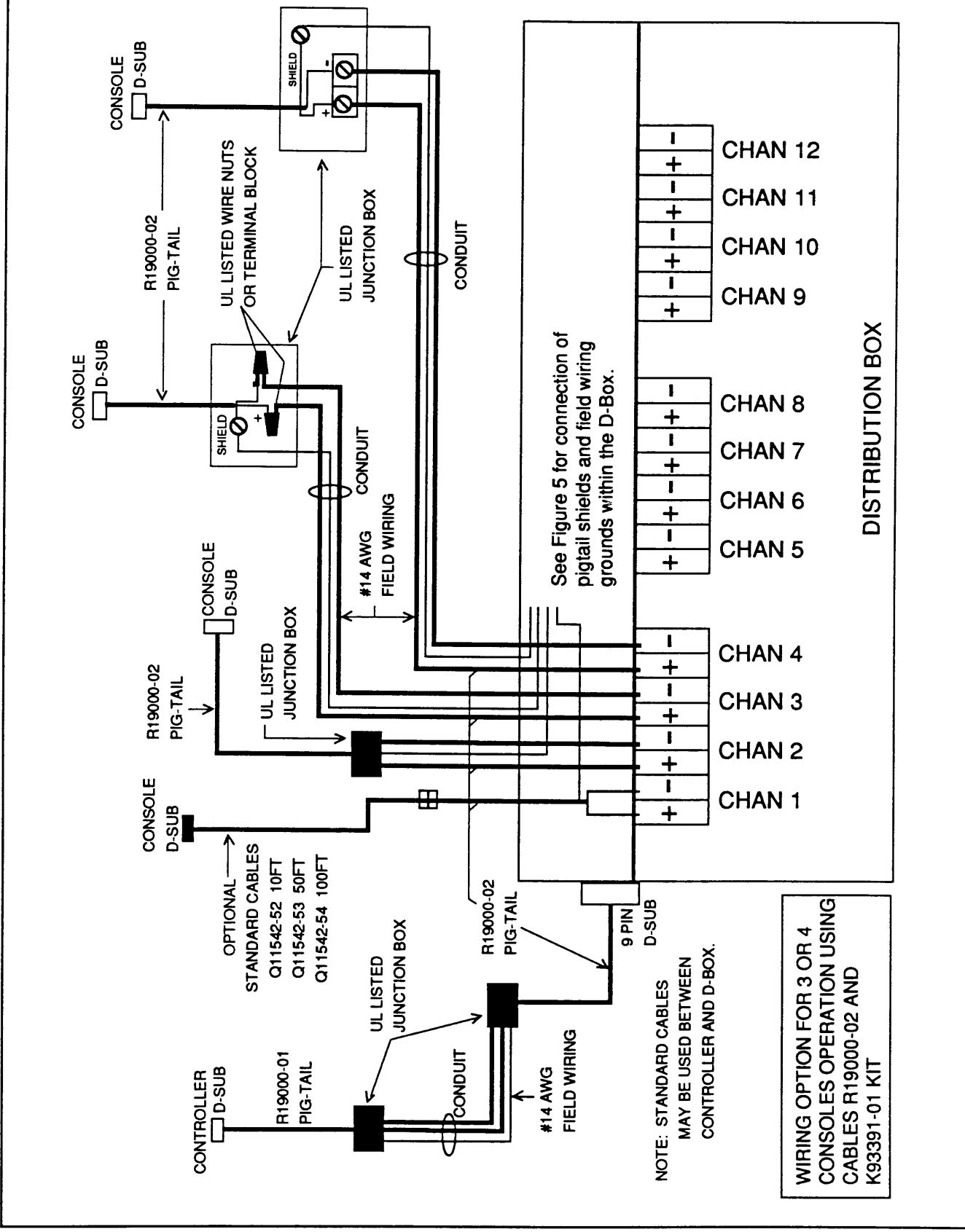


FIGURE 5 - MULTI-CONSOLE WIRING



NOTE: STANDARD CABLES MAY BE USED BETWEEN CONTROLLER AND D-BOX.

WIRING OPTION FOR 3 OR 4 CONSOLES OPERATION USING CABLES R19000-02 AND K93391-01 KIT

DISTRIBUTION BOX

This is a recommended method for installing the PA0242 Distribution Box into an existing site. This method will prevent undue disruption of station operation. This procedure will switch one dispenser/pump at a time from the old distribution box to the new one without taking the console off line.

1. Mount new distribution box near old box and wiring trough. The new box requires a dedicated-isolated AC outlet.
2. Prewire a piece of conduit with enough conductors to connect all pumps/dispensers.
3. Install conduit between new distribution box and trough.
4. Remove AC power from distribution box.
5. Remove printed circuit board.
6. Terminate pairs at new distribution box as shown in Figure 3.
CAUTION: To avoid damage to the Distribution Board, disconnect Wago from board before connecting or disconnecting Discrete Wires.
7. Reinstall printed circuit board.
8. Connect AC power.
9. Open trough and locate cable pairs coming from old distribution box.
10. Obtain R19000-02 Two-Wire Cable. One end has a subminiature DB9 Connector and the other has stripped (+) and (-) wires.
11. Isolate, using ISOLATE/NORMAL switch, one of the positions in old distribution box, preferably an unused position.
12. If it is necessary to isolate an used position, disconnect pair from terminal strip and connect (+) and (-) wires from R19000-02 Cable.
13. Connect nine pin connector at opposite end of cable to J905 on new distribution box.
14. Bring switch to NORMAL position.
15. Locate in wiring trough, first pair to be switched over. Place switch for this pair in ISOLATE.
16. Disconnect wires at their splice point.
17. Connect pair coming from pump/dispenser to one of pairs going into new distribution box.
18. Leave this dispenser in ISOLATE position in old distribution box.
19. In new distribution box, move jump jack from ISOLATE to NORMAL.
20. Verify dispenser is back on line.
21. Repeat for each dispenser, one at a time, until all dispensers have been moved to new distribution box.

When Transac System 1000™ is ready to be installed, disconnect R19000-02 Cable from new distribution box and connect distribution/controller data cable to new distribution box.



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