INSTALLATION
OPERATION

DL1/360/370/380
Suction Pumps
and Remote
Dispensers

Includes Single,
Duo-1, Duo-2, and
Quadro® Models

Wayne DRESSER

⚠ WARNING

READ THIS MANUAL BEFORE YOU BEGIN

Dispensers have both electricity and a hazardous, flammable and potentially explosive liquid. Failure to follow the below precautions and the Warning and Caution instructions in this manual may result in serious injury. Follow all rules, codes and laws that apply to your area and installation.

SAFETY PRECAUTIONS - INSTALLATION AND MAINTENANCE

Always make sure ALL power to the dispenser is turned OFF before you open the dispenser cabinet for maintenance (Section 1.3). Physically lock, restrict access to, or tag the circuit breakers you turn off when servicing the dispenser (Section 1.3). Be sure to trip (close) the emergency valve(s) under the dispenser BEFORE beginning maintenance (Sections 2.2 and 5.1).

SAFETY PRECAUTIONS - OPERATION

Make sure that you know how to turn OFF power to the dispenser and submersible pumps in an emergency. Have all leaks or defects repaired immediately (Section 5.1).

EQUIPMENT PRECAUTIONS

Be sure to bleed all air from product lines of remote dispensers (Section 2.7) and prime suction pumps (Section 2.8) before dispensing product. Always use the approved method for lifting the dispenser (Section 2.5). Never lift by the nozzle boot, sheet metal, electronic head, etc.

HOW TO CONTACT WAYNE

Trouble with the installation and operation of the dispenser should be referred to your authorized Wayne service personnel or Wayne Technical Support (1-800-926-3737).

INDICATORS AND NOTATIONS

⚠ DANGER	Danger indicates a hazard or unsafe practice which, if not avoided, will result in severe injury or possibly death.
⚠ WARNING	Warning indicates a hazard or unsafe practice which, if not avoided, may result in severe injury or possibly death.
⚠ CAUTION	Caution indicates a hazard or unsafe practice which, if not avoided, may result in minor injury.
Note:	Important information to consider, otherwise, improper installation and/or damage to components may occur.

DL1,3/360/370/380
Suction Pumps
and
Remote Dispensers
Installation and Operation Manual

Includes Single, Duo-1, Duo-2, and Quadro Models

March 1997 Part No. 917380 Rev E

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1. INTRODUCTION

1.1. DISPENSERS COVERED

This manual covers non-blending dispensers, which means the dispensers do not combine the base products to provide a blended grade or grades. The manual describes the installation and operation of "DLx" 360, 370 and 380 series remote and suction dispensers. These are single and two grade dispensers. The "DL" refers to Data Link." The "x" represents either 1 or 3 meaning single price posting or cash/credit operation respectively. These dispensers have SC-82 computers. Both Old and New Hydraulics dispensers are covered.

The DL Series dispenser may be installed and operated as a stand-alone unit or as a component part of a Wayne® Management Control System. This manual provides installation and operation information for DLx/360/370 and 380 series dispensers operating as stand-alone units; however, information concerning Wayne Control Systems has been included where appropriate. Each side of the dispenser is referred to as a fueling point for connection to a control system. Single-sided dispensers are designated by an "R" in the model number suffix and have only one fueling point. Complete installation and operation information for the appropriate Wayne Control System can be obtained from the manuals provided with the control system being installed.

Use the correct installation and wiring instructions as shown in Appendix B of this manual.

Each model is described in the following:

- DLx/361 and 371 dispensers have one inlet (one product), one hose and are island oriented.[1]
- DLx/362 and 372 dispensers have one inlet (one product), two hoses and are island oriented.
- DLx/363 and 373 dispensers have two inlets (two products), two hoses and are island oriented.
- DLx/367,377 and 387 dispensers have one inlet (one product), two hoses and are lane oriented.[2]
- DLx/368 and 378 dispensers have two inlets (two products), two hoses and are lane oriented.
- DLx/369, 379 and 389 dispensers have two inlets (two products), four hoses and are lane oriented.

1. Island oriented - Nozzle boot is located on side of dispenser and can fuel to either lane. A sale display for each nozzle is located on both the front and back.
2. Lane oriented - Nozzle boot is located in door panel of unit and can only fuel one lane. Each nozzle boot has its own sale display which can only be viewed from same lane as nozzle boot.

1.1. DISPENSERS COVERED, continued

Any questions concerning installation and operation of the dispenser that are not covered in this manual should be referred to your authorized Wayne service personnel or Wayne Technical Support (1-800-926-3737).

1.2. LOCAL, STATE AND FEDERAL CODES

All tanks, both underground and above ground, piping, all fittings, foot valves, leak detectors, corrosion protection devices, wiring, venting systems, etc., must be installed in accordance with the manufacturers' instructions and in compliance with local and regional building codes and requirements pertaining to service stations (or other locations where the dispenser may be installed).

These requirements may include references to the National Electrical Code NFPA 70, the Automotive and Marine Service Station Code NFPA 30A, the Flammable and Combustible Liquids Code NFPA 30, the Code of Federal Regulations, Title 40, Section 280 (40-CFR 280), United States Environmental Protection Agency (U.S. EPA) Technical Regulations of 9-23-88 and U.S. EPA Financial Responsibility Regulations of 10-26-1988.

Where local requirements do not specify applicable codes, Wayne recommends using the codes listed above. These codes are comprehensive and detailed, often requiring interpretation to cover unusual situations, and, therefore, the associated handbooks, where applicable, should also be consulted. The handbooks are also available from the same sources.

Due to the variety of locations encountered, further information on installation cannot be dealt with in this document except as the codes relate directly to the installation of the dispenser. Therefore, it is strongly recommended that **a qualified engineer or contractor familiar with local regulations and practices be consulted before starting installation.**

Pertinent information and codes are available from the sources listed on the following page.

Association for Composite Tanks (ACT) North State Street Suite 720 Chicago, IL 60602 (301) 355-1307 (for information requests)	American Petroleum Institute (API) 1220 L Street, N.W. Washington, DC 20005 (202) 682-8000
Fiberglass Petroleum Tank and Pipe Institute One SeaGate, Suite 1001 Toledo, OH 43604 (419) 247-5412	National Assoc. Corrosion Engineers (NACE) Box 218340 Houston, TX 77218 (713) 492-0535
National Fire Protection Association (NFPA) One Batterymarch Park Quincy, MA 02269-9101 (617) 770-3000	National Leak Prevention Association (NLPA) 685 Fields Ertel Road Cincinnati, OH 45241 (513) 489-9844 or 1-(800) 543-1838
Petroleum Equipment Institute (PEI) Box 2380 Tulsa, OK 74101 (918) 494-9696	Steel Tank Institute P. O. Box 4020 Northbrook, IL 60065 (312) 498-1980
Underwriters Laboratories Inc. 333 Pfingsten Road Northbrook, IL 60062 (312) 272-8800	Underwriters Laboratories of Canada 7 Crouse Road Scarsborough, Ontario, Canada N1R3A9 (416) 757-3611
United States Environmental Protection Agency Office of Underground Storage Tanks 401 M St., SW (05-400WF) Washington, DC 20640 (703) 308-8850 (Underground Storage Tanks)	Western Fire Chiefs Association 5360 South Workman Mill Road Whittier, CA 90601 (213) 699-0541
U. S. Department of Labor, Occupational Safety and Health Administration (OSHA) Washington, DC 20402 • Call OSHA at (202) 523-8148 to determine specific needs; OSHA rules are covered by Title 29 of the Code of Federal Regulations (29 CFR.) • Order OSHA publications from: Government Printing Office (GPO) Washington, DC 22304 (202) 783-3238	

Note: Other regulatory codes may apply. Consult your local and regional code requirements to determine which codes are applicable for your location.

1.3. SAFETY PRECAUTIONS

NFPA 30A states that:

"When maintenance to Class I dispensing devices becomes necessary and such maintenance may allow the accidental release or ignition of liquid, the following precautions shall be taken before such maintenance is begun:

- Only persons knowledgeable in performing the required maintenance shall perform the work.
- All electrical power to the dispensing device and pump serving the dispenser shall be shut off at the main electrical disconnect panel.
- The emergency shut-off valve at the dispenser, if installed, shall be closed.
- All vehicle traffic and unauthorized persons shall be prevented from coming within 20 feet (6 m) of the dispensing device.[1]"

⚠ WARNING

Electric shock hazard! More than one disconnect switch may be required to de-energize the dispenser for maintenance and servicing. Use a voltmeter to make sure ALL circuits in the dispenser are de-energized. Failure to do so may result in serious injury.

'Lockout/Tagout' requirements of the U. S. Dept. of Labor, Occupational Safety and Health Administration (OSHA) may also apply. Refer to Title 29, Part 1910 of the Code of Federal Regulations (29CFR1910), Control of Hazardous Energy Source (Lockout/Tagout).

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2. INSTALLATION

2.1. INSPECT THE EQUIPMENT

Examine the shipment immediately upon arrival to make certain there has been no damage or loss in transit. Damaged or lost equipment must be reported to the carrier. Any damage or loss that may occur in transit is not covered under the Wayne/Dresser Warranty.

Make sure that all the component parts, including keys and any optional equipment, are accounted for. Check and save the Packing Slip, Bill of Lading, Invoice, and all other documents included in the shipment.

2.2. ISLAND CONSTRUCTION, DISPENSER ANCHORING AND PIPING

Product piping must avoid the creation of vapor in the lines and deliver a minimum pressure of 25 psi at the dispenser inlet when all dispensers at the station dispensing the same product are operating.

A concrete foundation must be provided for the dispenser. Do not pour concrete around product lines or electrical conduit risers.

Anchor bolts must be installed in the island, to allow the dispenser to be bolted down in accordance with NFPA requirements. The base of the dispenser is provided with two 1" bolt hole slots for anchoring the dispenser to the island. Position the anchor bolts in accordance with the dimensions given on the appropriate Installation Instruction (engineering drawing) in Appendix B.

Vertical supply risers and electrical conduits must be located per the installation instruction for the appropriate model. Proper height must be maintained to avoid undue stress on the dispenser.

⚠ WARNING

For remote dispensers, a Listed[1], rigidly anchored emergency shut-off valve must be installed, in accordance with the manufacturer's instructions, in each supply line at the base of each dispenser. For a typical emergency valve installation see Figure 2-1. Failure to install the proper emergency shut-off valve will present a hazardous condition that could result in serious injury.

1. "Listed" means published on a list by a nationally recognized testing laboratory (NRTL) which is responsible for product evaluation and is acceptable to the authority having jurisdiction. Underwriters Laboratories, Inc. is one example of a Nationally Recognized Testing Laboratory. For more information on NRTL's, see Title 29, Parts 1907 and 1910 of the Code of Federal Regulations, Safety Testing or Certification of Certain Workplace Equipment and Materials.

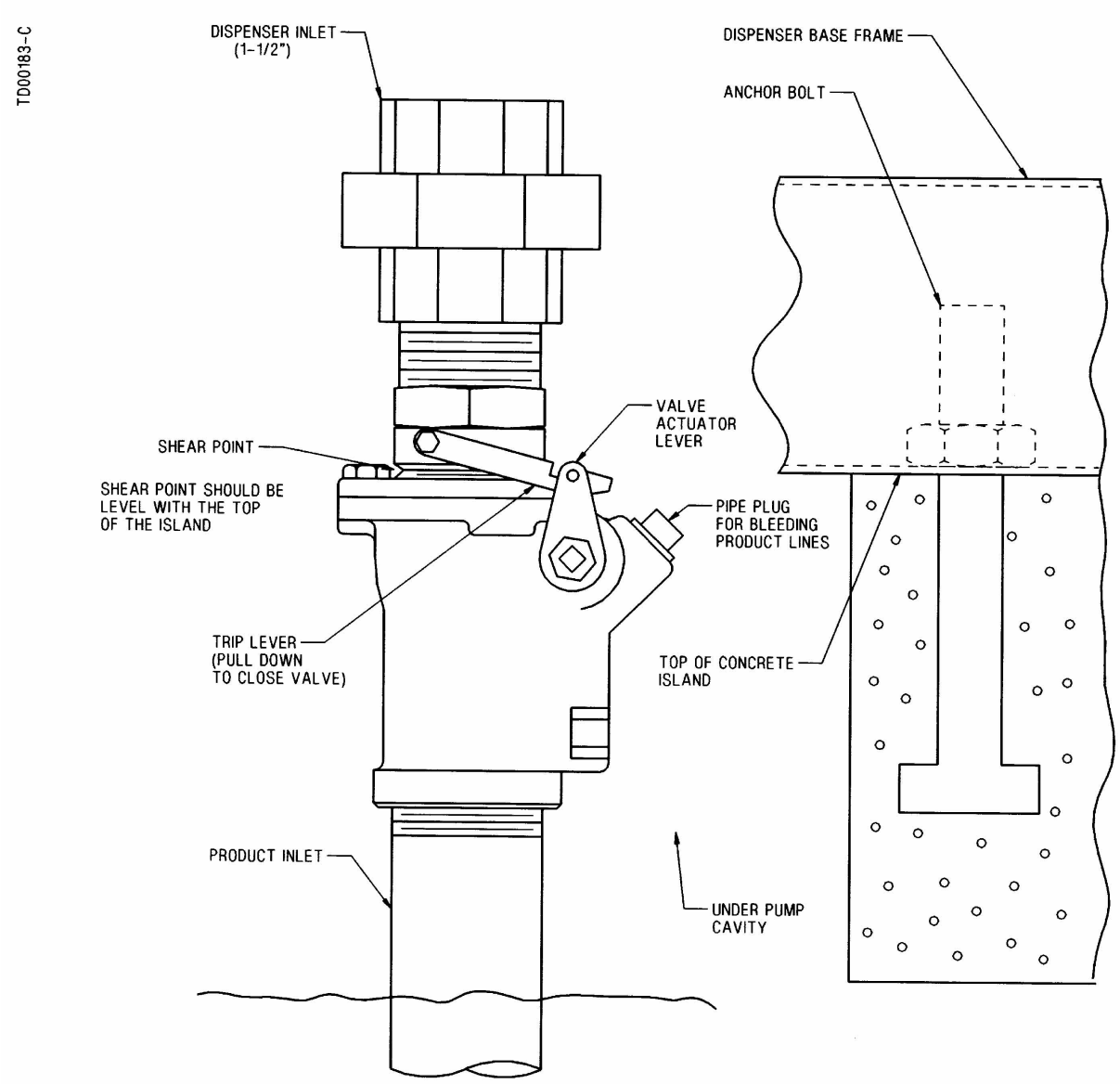

FIGURE 2-1. TYPICAL EMERGENCY VALVE INSTALLATION. *The emergency valve is designed to close the product line due to shock or fire. The shear section, shown above, functions if the dispenser is knocked out of position.*

2.3. CHECK VALVES (SUCTION PUMPS ONLY)

Suction pumps require a check valve in the product lines to stop product from draining back to the tank. Wayne recommends double poppet foot valves inside the underground tank. The foot valves should be the same size as the suction lines. Foot valves designed for handling petroleum products are equipped with a coarse mesh strainer screen. The bottom of this screen is blocked off so that the product enters the valve from the side.

Some people prefer a double poppet check valve in the line just above the tank. If a check valve is installed at the top of the tank, the end of the suction line in the tank should be equipped with a suction pipe strainer. The suction pipe strainer is similar in construction to the bottom of the foot valve and serves the same purpose.

A spring-loaded valve of any kind is not recommended. A good valve does not require a spring to hold properly. Springs increase pumping resistance and may cause erratic operations. The valve used should be one designed for use with petroleum products.

Examine the valve carefully and remove any blocks or other means used by the manufacturer for protecting the valve in shipping. Clean the valve thoroughly with mineral spirits because any dirt, lint, or foreign matter between the poppet and the seat will cause it to leak. The valve should be handled carefully; not dropped or thrown around. Never clamp the body of a check valve in a vise or apply a wrench to any part other than the hexagonal end of the valve. Doing so may spring or distort the valve, causing leakage or valve sticking.

Establish the length of the suction pipe in the tank to which the check valve will be attached, keeping in mind that the bottom of the suction stub must be at least four inches (4") off the bottom of the tank. The type of connection at the tank opening will have some bearing on the length of this pipe. Sometimes, a tank reducing plug (double tapped bushing) is used. Wayne recommends the use of an extractable foot valve for easy and quick removal of the check valve in the tank (see installation drawings in Appendix C.). The importance of keeping the end of the line in the tank at least four inches (4") off the bottom of the tank cannot be overemphasized. Condensation is constantly going on inside the tank creating water which settles to the bottom. Checking tanks for water regularly and keeping them clean reduces the risk of drawing water and debris into the lines and dispenser.

It is a good idea to test for leaks in both the check valve and the pipe (as an assembly) before installing them in the tank. Before installing the valve, pour petroleum into the check valve and pipe assembly and let it stand for an hour or two to make sure the check valve seals properly.

2.4. CONNECTING MORE THAN ONE PUMP TO A TANK (SUCTION PUMPS)

If you intend to connect more than one suction pump to a tank, it is best to obtain a tank with enough openings to provide each pump with a separate suction line. Tanks used in remote systems normally require only one submersible pump to supply several dispensers. Tanks designed specifically for suction pumps will have additional openings.

If a tank with only one opening is unavoidable, it is important that a check valve be used in each suction line branch, and that each valve be placed in the line as close as possible to the connection leading to the main suction line coming from the tank. This is necessary to prevent a pump from emptying the line leading to another pump instead of pulling the product out of the tank.

2.5. INSTALLING THE DISPENSER

Remove the dispenser from its shipping carton. Survey the site and determine if any special installation requirements, such as a canopy, etc. will affect the installation.

After the concrete has set, the dispenser can be set on the island and firmly bolted into place and the product lines connected. To gain access to the bottom section of the dispenser, unlock and remove the dispenser doors by lifting them straight up to clear the channel, and then pulling forward.

Note: Remove the shipping discs from the inlet unions and connect the product piping.

Locate the dispenser on the island as shown on the appropriate installation instruction (engineering drawing) in Appendix B, and make all piping and conduit connections. Attach the base to the island using two anchor bolts in the holes provided, as shown on the appropriate installation instruction in Appendix B. When making piping connections, to ensure tight, leak-proof connections, wash all cutting oils off the threads and use a U.L. classified pipe joint sealing compound, rated for use with petroleum-based products.

Note: When handling the dispenser, lift only by the base or main chassis. Do not lift by the computer enclosure, nozzle boot, hose outlet, operating lever or any external panels.

⚠ WARNING

Explosive or flammable vapors may accumulate within the dispenser housing. All piping connections in the final installation must be accurately fitted and all threaded joints tightly made up with a Listed gasoline-resistant pipe joint compound. Put the compound on male threads only, being careful not to get excess inside the pipe or fittings. Failure to perform the above will present a hazardous condition that could result in serious injury.

2.6. ELECTRICAL WIRING

2.6.1. General

Wayne recommends employing a qualified electrician for all wiring. A hazardous liquid is being handled, so it is important to ensure that all wiring is in accordance with the National Electrical Code (NFPA 70) and all federal, state and local regulations. Note that U.L. requires that all electrical connections to the dispenser be made with threaded, rigid conduit; sealing fittings and conductor seals. See Table 2-1. for the electrical ratings of the components.

Note: All dispensers and electrical connection boxes must be grounded per NFPA 70.

Review the location of the dispenser junction box, as well as other parts of the dispenser you may need to access during dispenser installation and start-up.

TABLE 2-1. Component Electrical Ratings

Component	Electrical Ratings
Control	120 VAC, 1.5 Amp (per dispenser)
Nozzle Switch	12 VDC, 0.2 Amp
	28 VDC, 0.1 Amp
Solenoid Valve	120 VAC, 60 Hz, 8 Watts
Ballast	120 VAC, 60 Hz .067 Amps

2.6.2. Full Service (Stand-Alone) Dispenser Wiring

For full service (stand-alone) operation, make electrical connections as shown on the appropriate Installation Wiring Diagram in Appendix B. See Figure 2-2. for junction box terminal strip signal identification. A grounding screw is provided in the dispenser junction box for field connections.

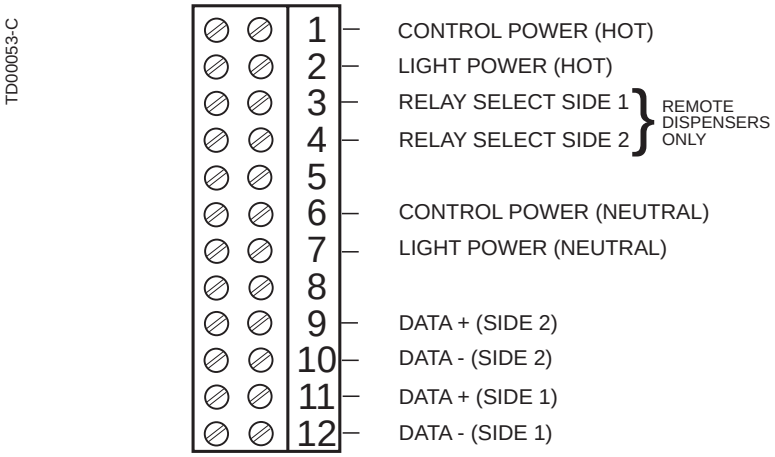

FIGURE 2-2. JUNCTION BOX TERMINAL STRIP SIGNAL IDENTIFICATION.

2.6.3. Dispenser to Wayne Control System Interconnection

For connection to a Wayne Management Control System, follow the Installation Wiring Diagram supplied with that system, however, an Interconnection Wiring Diagram is included for reference in Appendix B of this manual.

2.6.4. Submersible Pump Control Relays

Remote dispensers require a relay to control the submersible pump motor. These relays are available as an option with the 2400 MCS and Wayne Plus systems. If the dispenser is not connected to a 2400 MCS or Wayne Plus system, a UL Listed magnetic motor controller assembly, constructed with Potter and Brumfield Relay No. PRD7AYO (120) or equivalent, shall be used.

A maximum of 12 dispensers (24 fueling points) may be connected to a single PRD7AYO (120) relay; other relays may have different limitations. All dispensers operating the same pump control relay must be connected to the same circuit breaker. This may require multiple control relays for a submersible pump.

Ensure that the submersible pump receives its power from its own separate Submersible Pump Circuit Breaker as illustrated in the Typical Site Wiring Diagram 7151-C in Appendix B

2.6.5. Hose Installation

To ensure a proper joint, wash all cutting oil off the threads and use a U.L. recognized, waterproof and petroleum-proof pipe joint sealing compound. Place the sealant on the male threads only. Be careful not to get excess inside fittings. Install the fixed end of the hose to the dispenser outlet and secure according to the instructions of the sealing compound manufacturer. Install the swivel end of the hose or other swivels to the nozzle and also secure according to the instructions of the sealing compound manufacturer. Breakaway devices that stop flow in both directions should be installed on all hoses in accordance with the Automotive and Marine Service Station Code NFPA 30A.

2.7. BLEEDING PRODUCT LINES (REMOTE DISPENSER)

Note: To avoid severe damage to the dispenser, all air and air pockets must be bled from the product trunk lines before attempting to dispense product.

Make sure the power to the appropriate submersible pump is OFF.

To bleed air from a trunk line, remove the pipe plug from the safety impact valve on the dispenser farthest from the storage tank. For pipe plug location see Figure 2-1.

2.7. BLEEDING PRODUCT LINES, continued

Attach a flexible hose to the pipe plug opening in the safety impact valve. Energize the appropriate submersible pump and allow the air to bleed out of the trunk line into a test can until product flows into the test can. De-energize the submersible pump and replace the pipe plug. Repeat the procedure for each product and each trunk line.

2.8. PRIMING SUCTION PUMPS

Suction pumping units must be primed before their initial operation. It is not advisable to run any type of internal gear pump dry during the priming process. Insert a small quantity of light-grade oil (1/2 pint or 1/4 liter) through the priming plug in the pumping unit before starting the pump for the first time.

2.9. VAPOR RETURN PIPING

NFPA 30A Section 4-3-7[1] states that a vapor return pipe inside the dispenser housing shall have a shear section or flexible connector so that the liquid emergency shut-off valve will function properly.

Wayne dispensers provide 1" NPT pipe connections at the base of the dispenser for vapor return connections. (See the installation foot print for location.) A minimum 1" riser at each dispenser is connected to a minimum 2" return piping to the underground tank. If more than six (6) fueling points are connected, then underground piping must be a minimum of 3". All lines should be sloped at a minimum of 1/8" per foot (1/4" per foot preferred) from the dispenser to the tank.

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3. START-UP PROCEDURE

Note: Power should be OFF.

To use this dispenser with a Wayne Control System, follow the start-up instructions provided with that particular system, referring to the procedures in this manual only as directed.

3.1. OPTION SWITCHES

The computer option switches are set at the factory according to the tables shown in Figure 3-1. Should it be necessary to change or check this configuration, refer to Figure 3-2. for specific switch descriptions.

Note: Always turn OFF the dispenser control power circuit breaker prior to accessing the computer enclosure, pulser enclosure and/or any junction box.

Prior to removing bezels, installing and servicing personnel must wear a static control wrist strap, Part No. 916962 or equivalent, securely attached to an earth grounding point in order to prevent damage to electronic components due to static electricity.

Remove dispenser bezels by removing two screws located on each bezel. Replace bezels before powering up dispenser. Turn ON control power circuit breaker.

3.2. COMPUTER OPTION SETTINGS

TD00046-C

TABLE	DESCRIPTION
2-1A, 2-2A & 2-3	DL1/MODEL SERIES-GALLONS
2-1B, 2-2A & 2-3	DL1/MODEL SERIES-LITERS
2-1A, 2-2B & 2-3	DL3/MODEL SERIES-GALLONS
2-1B, 2-2B & 2-3	DL3/MODEL SERIES-LITERS

TABLE 2-1A
GALLONS

POSITION	DL1	DL3
1	CLOSED	CLOSED
2	CLOSED	OPEN
3	CLOSED	CLOSED
4	CLOSED	CLOSED
5	CLOSED	CLOSED
6	OPEN	OPEN
7	OPEN	CLOSED
8	OPEN	OPEN

USED TO SET S1 SWITCH

TABLE 2-1B
LITERS

POSITION	DL1	DL3
1	CLOSED	CLOSED
2	CLOSED	OPEN
3	CLOSED	CLOSED
4	CLOSED	CLOSED
5	CLOSED	CLOSED
6	OPEN	OPEN
7	OPEN	CLOSED
8	CLOSED	CLOSED

USED TO SET S1 SWITCH

TABLE 2-2A

POSITION	DL1
1	OPEN
2	OPEN
3	CLOSED
4	OPEN
5	CLOSED

USED TO SET S2 SWITCH

TABLE 2-2B

POSITION	DL3
1	CLOSED
2	OPEN
3	CLOSED
4	OPEN
5	OPEN

USED TO SET S2 SWITCH

TABLE 2-3

POSITION	DL1/DL3
1	OPEN
2	OPEN
3	CLOSED
4	OPEN
5	CLOSED

USED TO SET S3 SWITCH

NOTE: SEE TABLE 2-4 FOR SPECIFIC SWITCH DESCRIPTION.

FIGURE 3-1. FACTORY SET COMPUTER OPTION SWITCH SETTINGS. *ISee Figure 3-2. for specific switch descriptions*

TD00050-D

SWITCH LEGEND

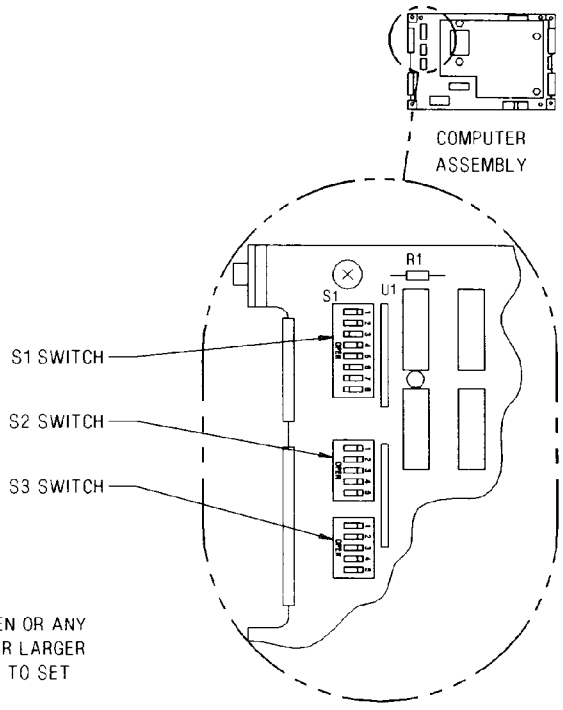
TABLE 2-4

S1 SWITCH								DESCRIPTION SEE NOTES 1 & 2
1	2	3	4	5	6	7	8	
O								.XX VOLUME DISPLAY
C								.XXX VOLUME DISPLAY
	C							NO CASH/CREDIT CONFIRMATION REQD
	O							CASH/CREDIT CONFIRMATION REQD
		C						IMMEDIATE RELAY START
		O						DELAYED RELAY START
			X					NOT USED
			X					NOT USED
				C	C			.X UNIT PRICE DECIMAL POINT
				O	C			.XX UNIT PRICE DECIMAL POINT
				C	O			.XXX UNIT PRICE DECIMAL POINT
				O	O			NO UNIT PRICE DECIMAL POINT
						C		CASH/CREDIT SELECTION REQUIRED
						O		USE CREDIT PRICE
							O	1072 PULSES/GALLON *
							C	1072 PULSES/LITER *

S2 SWITCH					DESCRIPTION
1	2	3	4	5	
			O		CASH/CREDIT SELECTION LOCKED IN WITH FIRST INDICATION OF PRODUCT FLOW.
			C		CASH/CREDIT SELECTION LOCKED IN AT NOZZLE ON.
				O	CASH/CREDIT
				C	NO CASH/CREDIT
	O	O			4.5 SECOND SOLENOID VALVE DELAY
	O	C			2.7 SECOND SOLENOID VALVE DELAY
	C	O			3.6 SECOND SOLENOID VALVE DELAY
	C	C			1.8 SECOND SOLENOID VALVE DELAY
O					TOTAL MONEY CALCULATED PER POSITION CASH PLUS CREDIT. (MUST BE OPEN FOR NON CASH/CREDIT DISPENSERS).
C					MONEY TOTALS SEPARATED INTO CASH TOTALS AND CREDIT TOTALS, PER POSITION.

* A GALLONS/LITERS SWITCH SETTING CHANGE REQUIRES A CORRESPONDING GALLONS/LITERS METER CHANGE.

S3 SWITCH					DESCRIPTION
1	2	3	4	5	
O					SINGLE COMPUTER
C					MULTI-GRADE COMPUTER
	O				2 GRADES
	C				3 GRADES
		O			NEW HYDRAULICS
		C			OLD HYDRAULICS
			O		OPEN AT ALL TIMES
				C	CLOSED AT ALL TIMES



NOTES

1. APPLIES TO -059 SOFTWARE
2. APPLIES TO -069 SOFTWARE, S1 SWITCH

1	2	3	4	5	6	7	8	DESCRIPTION
	C						O	1072 PULSES/GALLON
	O						C	1072 PULSES/LITER
		C	C					.X CASH DECIMAL
		O	C					.XX CASH DECIMAL
		C	O					.XXX CASH DECIMAL
		O	O					NO CASH DECIMAL

3. C = CLOSED
   O = OPEN
4. TO CLOSE SWITCH PUSH ON NUMBER SIDE WITH SHARP POINTED OBJECT SUCH AS AN EXTENDED PAPER CLIP. DO NOT USE A PENCIL, PEN OR ANY OBJECT WITH A DIAMETER LARGER THAN THE SWITCH GUIDE TO SET SWITCHES.

FIGURE 3-2. COMPUTER SWITCH SETTING DESCRIPTIONS. *Service personnel must wear a static control wrist strap, Part No. 916962 or equivalent, while resetting the switches.*

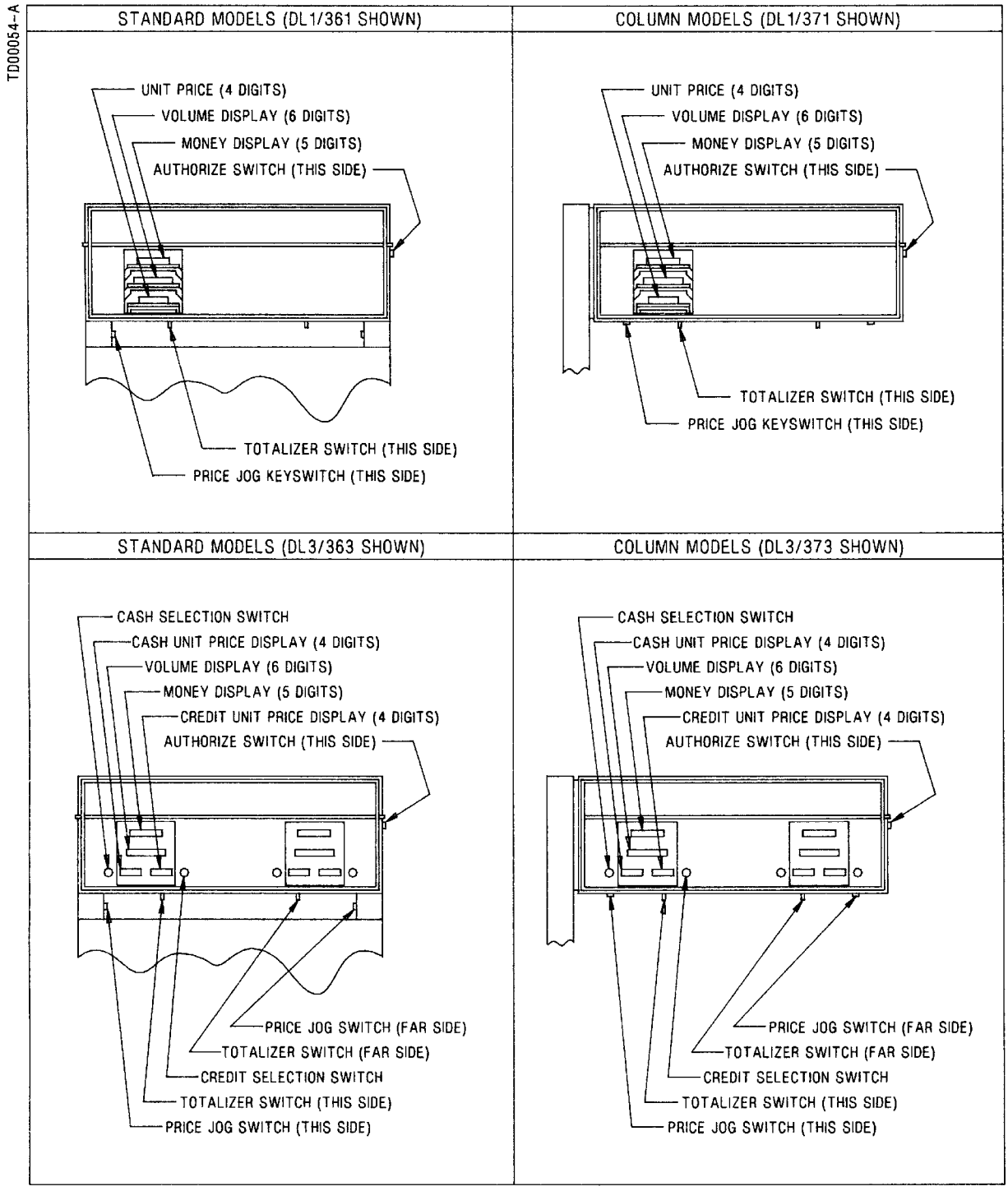


FIGURE 3-3. TYPICAL COMPUTER ASSEMBLY FUNCTIONS AND SWITCH LOCATIONS. *Older models may have the Price Jog switch on the outside of the head.*

3.3. FUELING POINT I.D. (PUMP NUMBER)

The following instructions apply only to installations interfacing a Wayne Control System to each fueling point. Each “side” of the dispenser represents a fueling point with each computer controlling one or two nozzles. Every fueling point must be identified by a unique number for communication with a control system. The fueling point number is set as follows:

1. The Price Jog keyswitch is used to enter the fueling point setting mode. The Totals switch (pushbutton) sets the fueling point number; see Figure 3-3. for switch location.
2. Turn the Price Jog keyswitch ON, then OFF.
3. To read the fueling point number, press and release the Totals pushbutton.
4. To set the fueling point number, press and hold the Totals pushbutton. The two least significant digits (see Figure 3-4.) of the unit price display will cycle 01 through 24. Release the Totals pushbutton when the correct fueling point number is displayed.
5. Cycle the Price Jog keyswitch until the original sale display returns.

3.4. UNIT PRICE

The following procedure should not be used if the dispenser is connected to a control system. Refer to the operating procedures provided with the system for a complete description of unit price setting.

Note: The operating levers must be OFF to set unit prices.

The Price Jog keyswitch (a momentary, ON-OFF switch) is used to set unit prices. See Figure 3-3. for switch location. See Figure 3-4. for Unit Price layout.

If the dispenser is equipped with the Cash/Credit pricing option, the credit price is set first, then the cash price is set. The first closure of the Price Jog keyswitch selects the least significant digit of the credit price, see Figure 3-4. The digit cycles 0 through 9 until the keyswitch is released. Each successive closure of the Price Jog keyswitch selects and advances the next most significant digit.

On Cash/Credit model dispensers, the fifth closure of the Price Jog keyswitch selects and advances the least significant digit of the cash price. Each additional closure of the switch selects and advances the next most significant digit of the cash price.

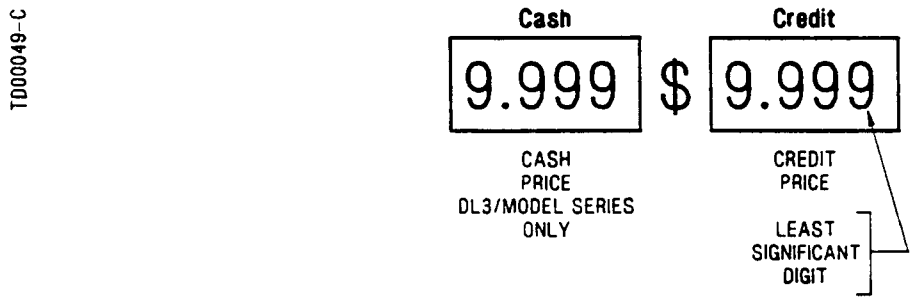


FIGURE 3-4. UNIT PRICE. *The decimal point location can be changed using SW1, see Figure 3-2.*

3.5. AUTHORIZE KEYSWITCH

The Authorize keyswitch (see Figure 3-3.) permits dispenser operation either with or without console control. In the self service position (keyswitch turned counterclockwise), the dispenser must be authorized by the console before each use. In the full service position (keyswitch turned clockwise), the dispenser may be operated repeatedly without authorization from the console. There is an Authorize keyswitch for each fueling point.

The switch may be used as a one time authorize by turning the keyswitch to the full service position and back to the self service position (operating levers must be OFF). The dispenser will operate one time following this sequence. When changing from full service to self service, turn one of the operating levers ON, then OFF to avoid the one time authorize condition.

Programming in the control system will determine the use of the Authorize keyswitch in console control. Only one nozzle per fueling point may be used at a time.

Check that when the operating lever is lifted, the submersible pump motor is activated, and at the end of the display reset (approximately three seconds) the solenoid valve(s) opens (listen for an audible click of the valve(s).

Deliver product and check that the correct sale amount is displayed (volume times (X) unit price ± 1/2 cent). Dispense at least 20 gallons (75 liters) of product to completely fill the system and discharge all air from the line and dispenser.

3.6. METER CHECK

Note: Before performing the following procedure, check your local code requirements concerning meter adjustment, certification, and sealing, then modify the following procedure accordingly to comply with your local code requirements.

All meters are adjusted for accuracy at the factory before shipping. However, it is required to recheck the accuracy of the meter after the dispenser has been installed and prior to placing it in service. After sufficient product has been run through each of the meters to thoroughly flush out all air and completely fill the systems, they can be checked and adjusted if necessary, using the following procedures.

Dispense a measured amount of product into a test can and check meter calibration. If meter adjustment is required, the adjustment knob is located on the top of the meter; see Figure 3-5. If the test can reads low or high, break the seal, lift the adjustment knob and turn it clockwise (if the test can reads low) or counter-clockwise (if the test can reads high), viewing the knob from the top of the meter. The lower portion of the knob is hexagonal and, in a normal position, that portion of the knob is inserted in the output shaft assembly. There are 18 vertical notches within the shaft, therefore, as the adjustment is made, the knob can be felt to click over the leading edge of the notches. Each notch is equivalent to a correction of approximately one cubic inch in five gallons.

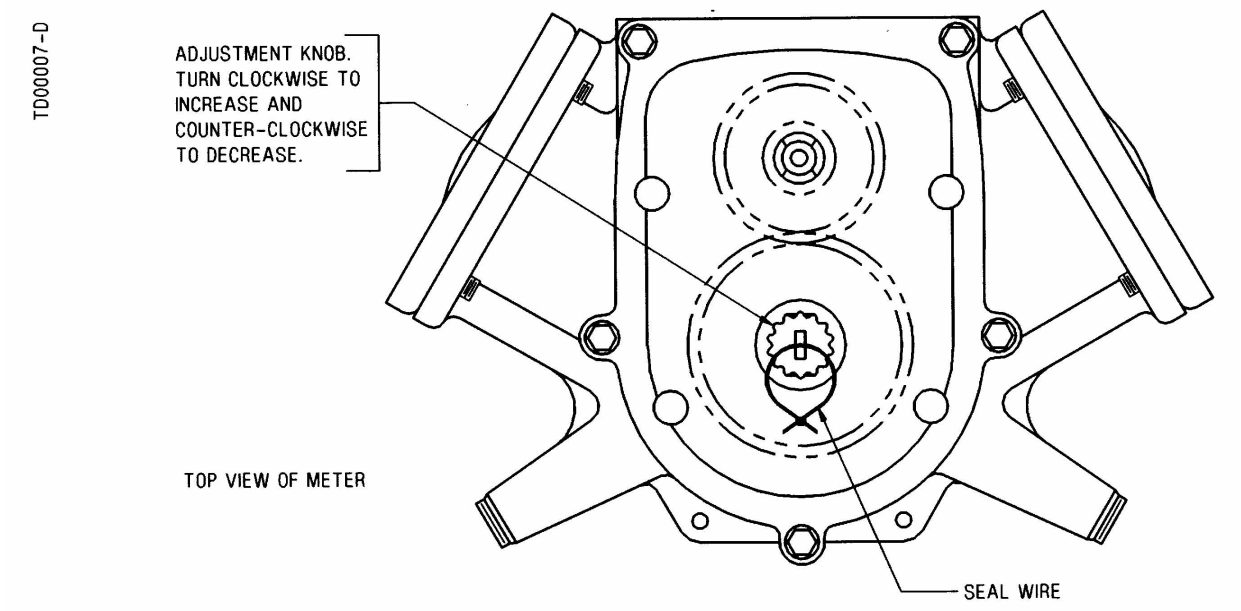


FIGURE 3-5. METER ADJUSTMENT. *After the meter has been adjusted and brought within tolerance, replace the seal wire and seal by pinching the lead lock on the wire.*

3.7. OPERATING LEVER CHECK AND HANDLE SWITCH SETTING

The operating lever is a spring over center device that normally does not require adjustment. When the operating lever is lifted just over center and then released, the lever will spring to the fully-on position. When the operating lever is lowered just over center and then released, the lever will spring to the fully-off position.

If setting the operating lever is necessary, push the nozzle support to the fully-on position as shown in Figure 3-6. Snap the ball joint off the rod and turn it once or twice to lengthen or shorten the rod as required. Lengthening the rod will slow the turn-on time of the pump; shortening it will turn the pump on more quickly. Do not snap the ball joint back on to the rod yet - hold it in place while checking the accuracy of the setting.

To test the accuracy, slowly push the nozzle support toward the “down” or “off” position. Note when the pump turns off. The pump must turn off at, or slightly past, the over-center position. Be certain that the dispenser does not come on again when the nozzle support is in the “fully-off” or “fully-down” position.

All moving parts of the nozzle boot should operate freely without binding or sticking. The levers should click audibly during the up and down operation of the nozzle supports.

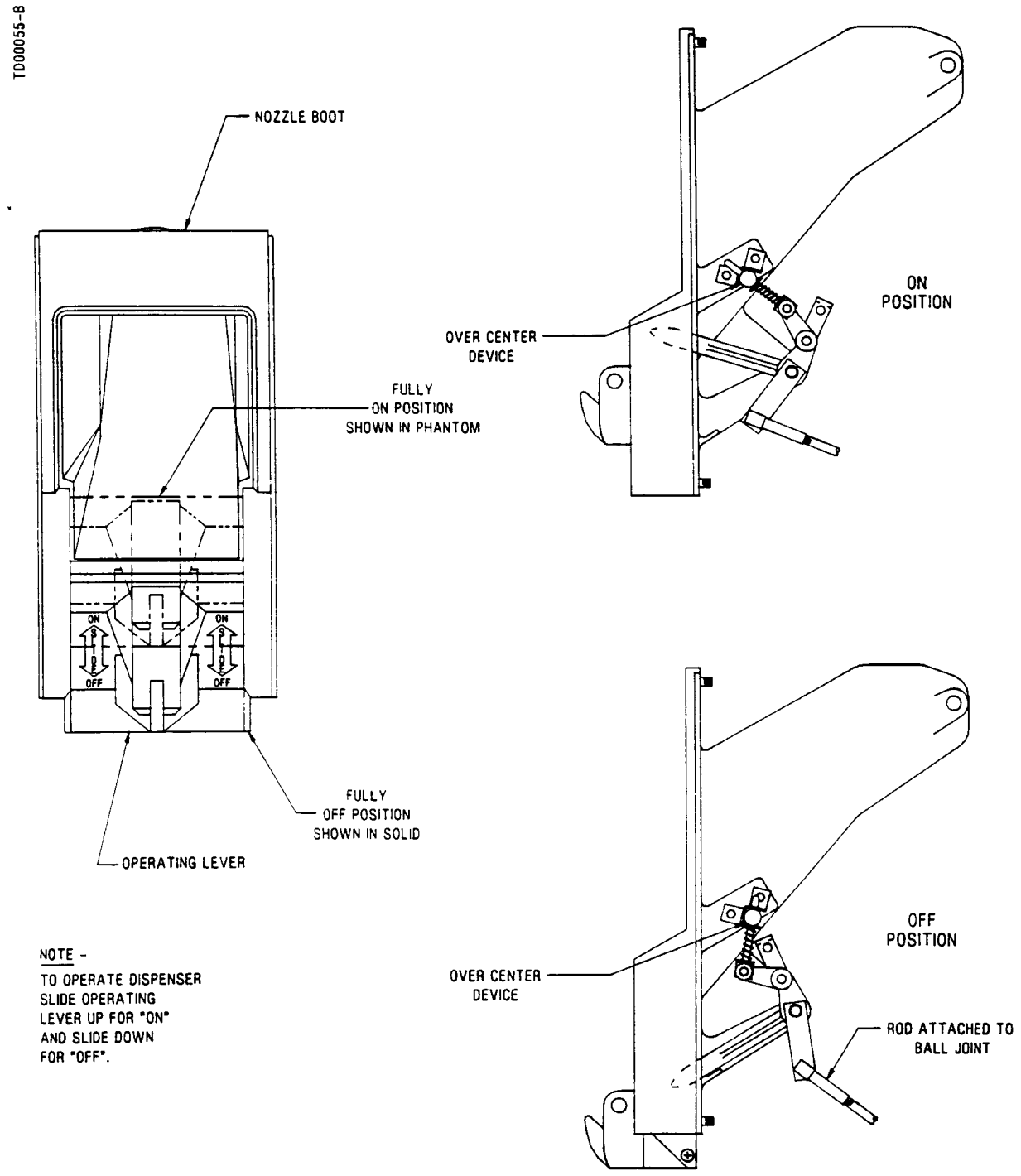


FIGURE 3-6. OPERATING CHECK AND HANDLE SWITCH SETTINGS FOR SUCTION AND OLD HYDRAULICS MODELS. *The rod will be located on the opposite side and upside down on some models.*

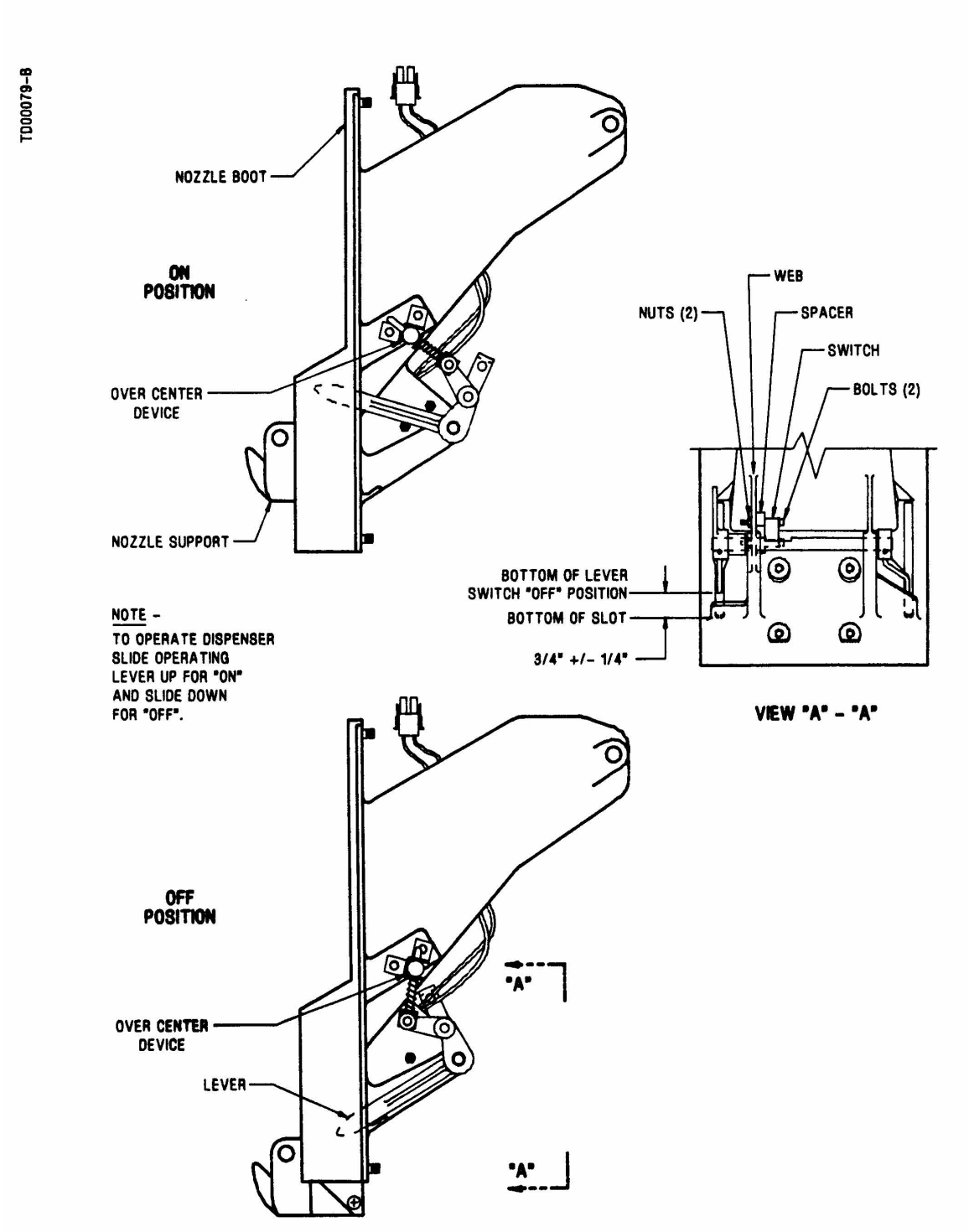


FIGURE 3-7. OPERATING CHECK AND HANDLE SWITCH SETTINGS FOR NEW HYDRAULICS MODELS. *Adjustment requirements are minimal with this design.*

3.8. FLUORESCENT LIGHTS

Turn the light circuit breaker ON to ensure the proper operation of the fluorescent lights. After initial station startup, bulb replacement is the responsibility of the station operator.

3.9. TOTALIZER READINGS

Each fueling point of the dispenser maintains four electronic totalizers in dispensers equipped for Cash/Credit operation and three electronic totalizers in dispensers without Cash/Credit option; see Figure 3-3. for the location of the Totals switch.

Read and record the mechanical totalizer (Figure 3-8.). Activate the Totals switch (see Figure 3-3. for switch location) and record the electronic money and volume totals (Figure 3-9.). These reading must be given to the station manager in order to maintain accurate accounting.

Totals automatically cycle approximately every ten seconds after initial switch closure. The subsequent closure of the totals switch also cycles totals. A battery within the dispensers retains totalizer data. The dispenser may be turned off at night or for servicing without affecting totalizer readings.

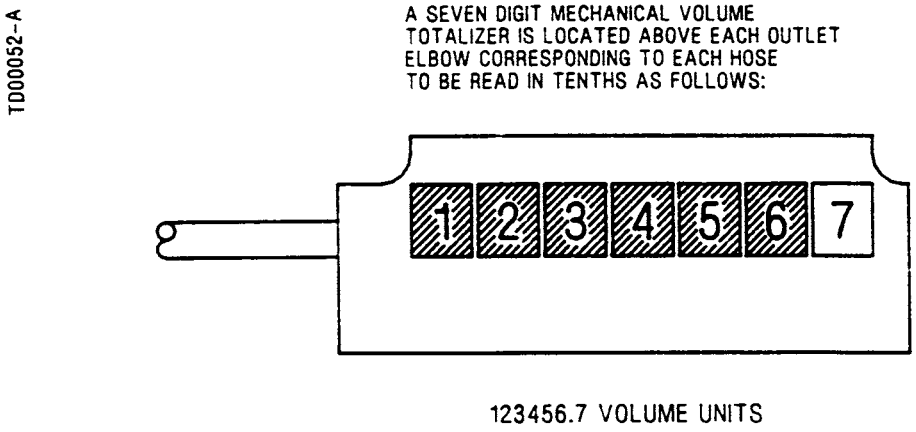


FIGURE 3-8. MECHANICAL TOTALIZER. *Some older remote models may read to the 1/100ths of a volume unit.*

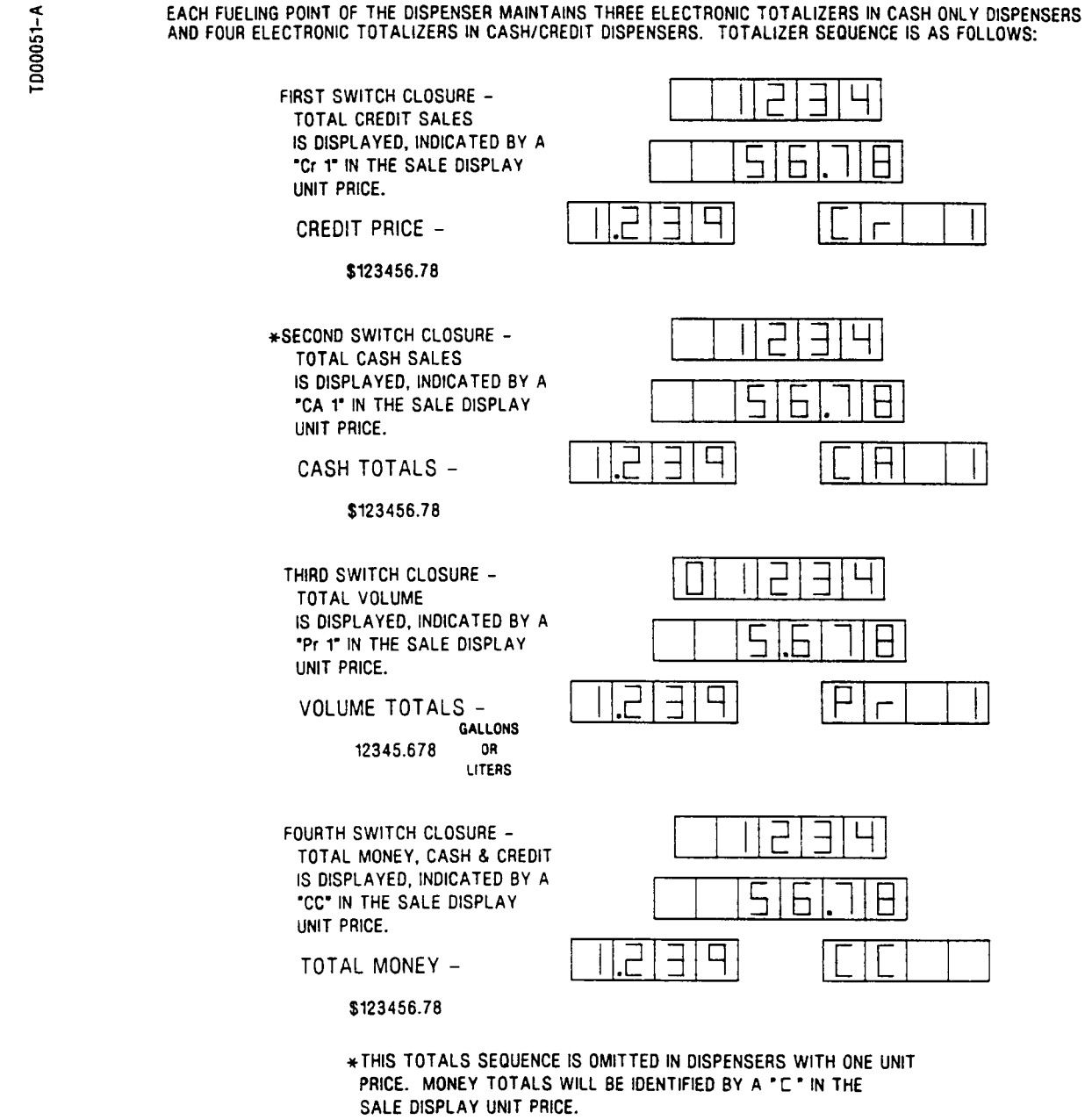


FIGURE 3-9. ELECTRONIC TOTALIZER READINGS. *The same information can be viewed and printed on a Wayne control system.*

4. OPERATION

4.1. INTRODUCTION

The dispensers are one or two product dispensers, depending on the model. Each side of the dispenser represents one fueling point, with one dispenser computer servicing all nozzles on that side.

The Authorize keyswitch must be in the full service position, or the dispenser must be authorized by a control system for the dispenser to operate.

To operate the dispensers independently from a control system, the following initial steps must be performed:

1. In the data distribution box, switch the Auto/Bypass switch for the dispenser to the Bypass position. See Figure 4-1.
2. Turn the Authorize keyswitch to the full service position (clockwise).
3. Cycle power (turn dispenser control power OFF, then ON.)

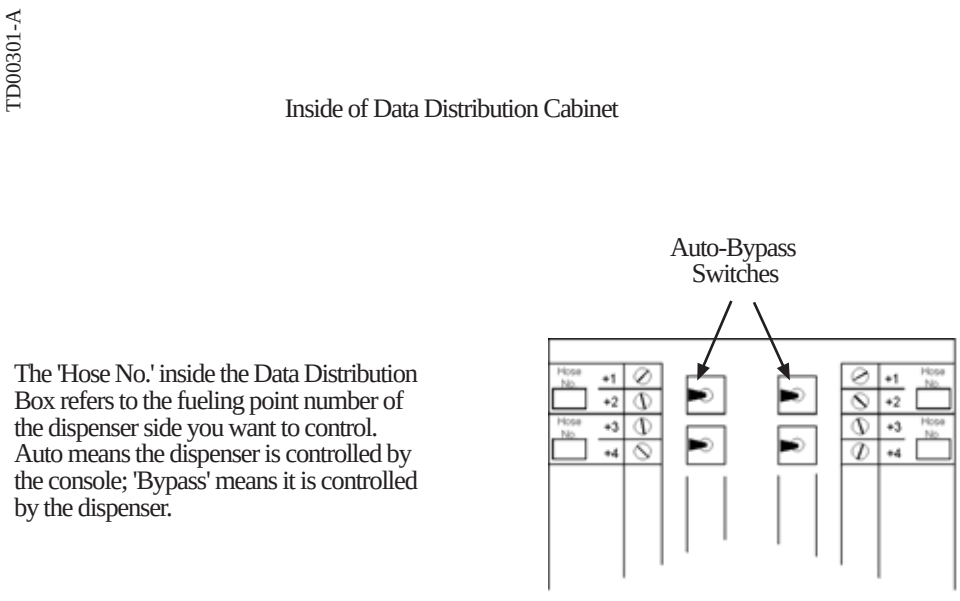


FIGURE 4-1. DATA DISTRIBUTION BOX. *The Auto/Bypass switches connect or disconnect a dispenser from the control system.*

4.2. DL1/MODEL SERIES

The DL1/model series dispenser is equipped with one unit price per nozzle. The dispenser is turned ON by lifting the nozzle from its bracket and sliding the operating lever up. The sale display shows all eights, then blanks and resets to zero. The submersible pump starts at the beginning of the reset cycle and the solenoid valve opens approximately 3 seconds later.

At the end of the delivery, the operating lever is slid down to the OFF position and the nozzle is replaced.

4.3. DL3/MODEL SERIES

The DL3/model series dispenser is equipped with two unit price displays per nozzle and Cash/Credit selection switches. The left unit price display is the cash price and the right unit price display is the credit price. Cash/Credit price selection may be made at the dispenser. Select Cash or Credit by lightly touching the appropriate selection switch. When the operating lever is slid to the ON position the Cash or Credit unit price selected flashes on and off until product delivery begins. The unit price not selected displays dashes. A red LED above each unit price is on to indicate which unit price was used for the previous sale. Cash or Credit must be selected before the pump will reset, otherwise, dispenser operation is the same as the DL1/model series.

4.4. RESETTING AFTER SHUTDOWN

If the dispenser does not deliver product, slide the operating lever OFF and record the amount on the display. Now, slide the operating lever ON. The dispenser must be authorized or the Authorize keyswitch must be in the full service position before the unit will reset.

If a fault in the dispenser is detected by the computer, an error message is displayed in the sale display, such as 2s, 6s, 7s, or 8s. Be sure to make a note of the displayed error message. It may be possible to restart the dispenser by the following sequence:

1. Make sure all operating levers are OFF.
2. Turn the control power (circuit breakers) OFF for approximately five seconds. Turn the control power ON.
3. Slide the operating lever to the ON position. (Make sure the dispenser is authorized.) The dispenser should operate normally.

If it is not possible to restart the dispenser using this procedure, or if an error message continues to be displayed, consult appropriate service personnel. Be certain to give them the amount at which the dispenser stopped and the error message, if any.

4.5. RESTARTING AFTER POWER FAILURE OR ALL STOP

The display accurately displays the amount of the sale in money and volume with the loss of power for approximately 15 minutes. When power is restored, all sale information returns to the displays. Deliveries which were being made at the time of power interruption may be continued if the dispensers operating levers remained on.

5. PREVENTIVE MAINTENANCE

5.1. GUIDELINES

The safety precautions described in see Section 1.3. apply to the following preventive maintenance procedures. A correctly installed dispenser, given proper preventive maintenance attention, will seldom require emergency service. Perform the following checks on a regular basis:

- Check the dispenser for internal and external leaks regularly. Check nozzles, swivels, hoses, and joints for leaks and wear. Have all defects repaired immediately.
- Do not abuse the hose by trying to stretch it to reach an automobile. This will cause early failure at the couplings.
- Keep the dispenser clean at all times. Use only mild soap and water with a soft cloth. Do not use gasoline or other petroleum-based products to clean the dispenser. Do not use abrasive cleaners on any part of the dispenser. All stainless steel surfaces require polishing with a non-abrasive silicone wax a minimum of three times per year to maintain a bright finish and prevent corrosion.
- If it is necessary to wipe off the dispenser, use a damp (not wet) cloth.

⚠ CAUTION

Do not spray the dispenser with water.

- Before removing the bezel, wipe off any water lying along the top edge of the dispenser so it will not run inside when the bezel is removed.
- If the bezels must be removed during rainy weather, take care to prevent rain from getting inside the dispenser.
- Test the tank for water regularly. Water in petroleum is not only a source of engine trouble but will also cause damage to the dispenser.
- Check the operating lever operation. If this does not operate easily, too much force may be applied on the switch mechanisms, causing premature failure. The over-center device must remain coated with a waterproof lubricant.
- The mechanical totalizer flex cable must be inspected for wear and remain coated with waterproof lubricant.
- Periodically check and lubricate all key lock cylinders and locking mechanisms.

A dirty strainer screen and/or fuel filter will slow down the delivery of product. If the underground installation is a new one, it may be necessary to clean the strainer screen two or three times during the first few days of operation to remove installation debris and pipe sealant. After this, occasional cleaning is all that should be required.

⚠ WARNING

Before removing the strainer or filter turn the power to the dispenser and submersible pump(s) OFF and close the emergency shut-off valves on the dispenser being serviced.

- Remove the strainer for cleaning by unfastening the cap; see Figure 5-1. Place a container under the cap to catch the petroleum and sediment. Wash the screen in gasoline and dislodge lint and other foreign particles with compressed air. Check for leakage after reinstalling.

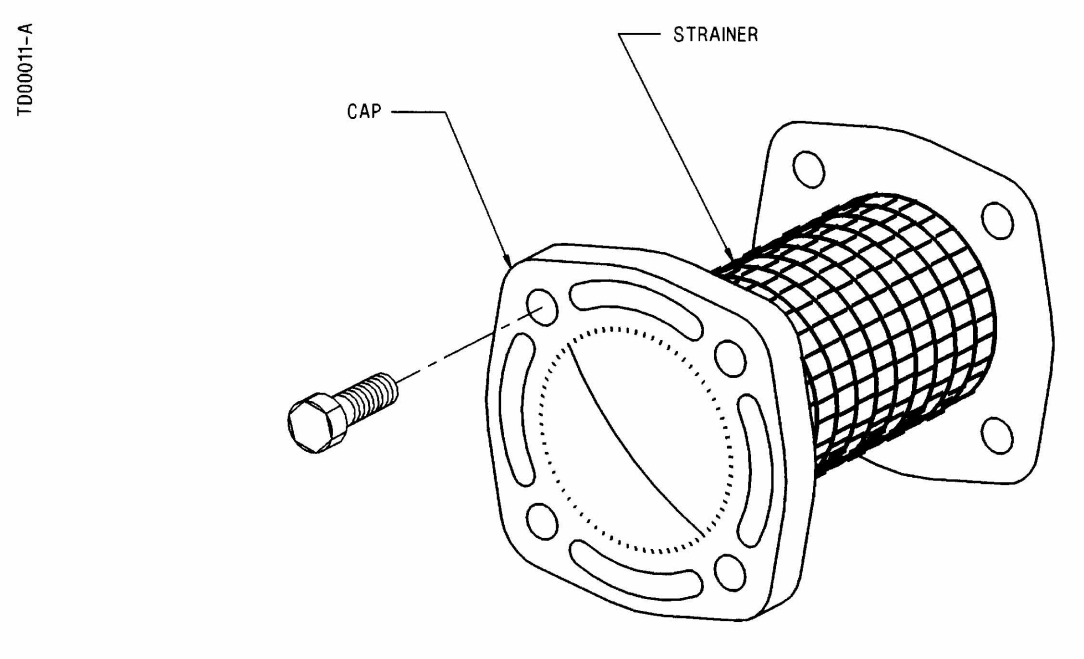


FIGURE 5-1. STRAINER ASSEMBLY. *The strainer should be cleaned as needed to remove any debris it has captured.*

- Some dispensers are equipped with fuel filters. The fuel filter is removed by unscrewing it (the same way an oil filter is removed from a car engine). Place a container under the filter to catch the product and sediment. To install the new filter, first apply a film of oil to the gasket and hand turn until gasket contacts base, then tighten one half turn. Open the emergency shut-off valve(s), turn the electrical power ON and check for leaks.

Note: Replacement fuel filters can be obtained from the vendor or from Wayne Division, Dresser Industries, Inc.

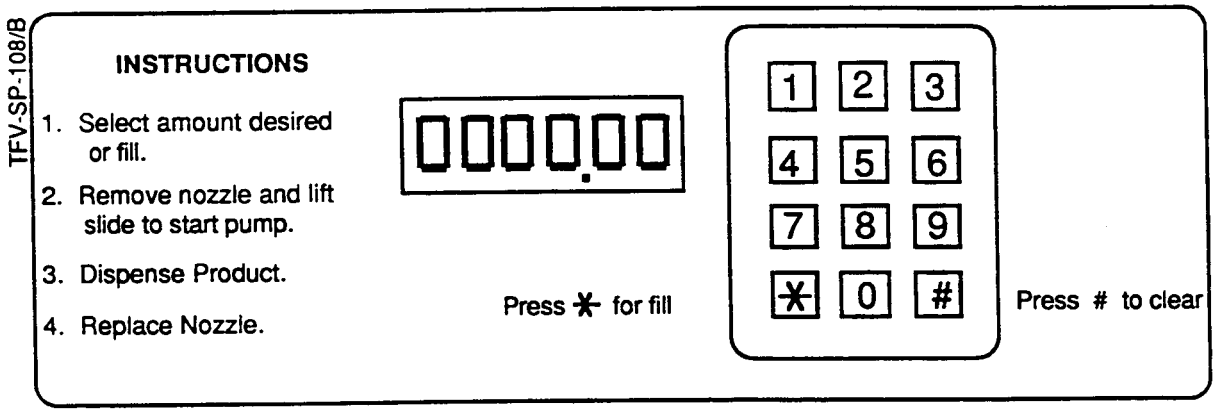
APPENDIX A. DISPENSERS WITH PRESET OPTION

A.1. INTRODUCTION

Dispensers with an “S” in the model number suffix have the preset option installed at the factory. This is a keypad installed in the dispenser which allows the customer (or attendant) to input the exact amount of product desired, either in volume or money, prior to delivering the product.

Dispensers with the preset option installed will have two components in the electronics enclosure in addition to the components in a standard dispenser; the preset control board and the preset keypad assembly. One keypad is installed per fueling point. The preset keypad assembly (Figure A-1.) consists of the bezel, the keyboard, and the display. All island oriented models will have the keypad located on the side of the head to allow access from either side. The preset control board is mounted to the top section of the dispenser electronics enclosure, above the computers and between both light tubes.

Drawings 7077-C, “Instructions - Preset Switch Programming” (Figure A-2., Figure A-3., and Figure A-4.) show the location of the switches and gives a complete description of all the available switch settings.



(The Preset Bezel is black plastic with white letters)

FIGURE A-1. PRESET KEYPAD ASSEMBLY. *The Preset can be programmed by the user to stop at a predetermined money or volume unit.*

A.2. PRESET CONTROL BOARD

The preset control board is the heart of the preset system. It determines the operation of the preset system in a stand-alone system and, if the station is equipped with a Wayne Management Control System, handles all of the communications with the Site Controller. Always wear a static control wrist strap (Part No. 916962 or equivalent) when accessing the preset control board (or any other part of the computer enclosure) to prevent damage due to static electricity.

A.2. PRESET CONTROL BOARD, continued

Switches SW-1 and SW-2 on the Preset Control Board are 8-bank option switches and determine how the preset will operate.

A.3. GENERAL OPERATION

Pressing the '*' sign on the keyboard (see Figure A-1.) authorizes the dispenser and allows the customer or attendant to fill the tank. If switch SW-1, Position 7 is set to CLOSED, the word "FILL" will be displayed in the preset display when the "*" key is pressed. If Position 7 is set to OPEN, four dashes "- - - -" will be displayed instead.

Preset dispensers can operate with or without a control system installed. However, the operation will be slightly different in the two configurations:

- In a stand-alone dispenser, a dispenser not connected to a control system, the preset acts as it's own self-contained control system. The preset control board can be programmed to require a keypad entry (switch SW-1, Position 8 set to OPEN). However if switch S1, Position 8 is set to CLOSED and no entry is made on the preset keypad, the dispenser will default to a "fill" mode when the start lever is lifted. If an amount is selected from the keypad, the dispenser will start its delivery, initiate slow flow delivery at the programmed slowdown point, and stop at the selected amount.
- With dispensers attached to a Wayne Management Control System, the basic operation of the preset is similar to that described above, with three differences. First, the dispenser will have to be authorized from the console before it will reset and dispense product. Second, the slowdown point which is programmed in the control system will override what is set on the preset control board. Third, if a preset amount is programmed in the console as well as at the dispenser, the lower of the two amounts will take effect.

A.4. OPERATION - CASH ONLY PRESET

If the Preset Board is set to accept only cash inputs for the preset (switch SW-1, Position 5 set to OPEN and Position 6 set to CLOSED), dashes will scroll across the center of the LCD display until an amount is selected. Pressing the "#" key (see Figure A-1.) will clear the last entry.

The preset board can be programmed to accept cash entries of whole units only (such as dollars) or fractional units (such as dollars and cents) depending on the settings of switch SW-2, Positions 5 through 8. A wide variety of cash settings are available; see Figure A-3. and Figure A-4.

A.5. OPERATION - CASH/VOLUME PRESET

If the Preset Board is set to accept either cash or volume inputs for the preset (SW-1, Position 5 set to CLOSED and Position 6 set to either OPEN or CLOSED), dashes will scroll across the top of the LCD display if a Money amount is to be input; dashes will scroll across the bottom of the display if a Volume amount is to be input. Pressing the "#" key will toggle between the Money and Volume input modes.

If switch SW-1, Position 4 is set to CLOSED, Volume amount will be entered in tenths of units; if Position 4 is set to OPEN, Volume amount is entered in whole units. When inputting Volume amounts on the preset board, the non-significant units (such as hundredths and thousandths) will display as a half-height "0" (zero), using only the lower half of the volume LCD display.

TABLE 1 - SWITCH FUNCTIONS FOR SWITCH SW-1

POSITION	SETTING	DESCRIPTION
1	CLOSED	CLOSED AT ALL TIMES
2	CLOSED	CLOSED AT ALL TIMES
3	CLOSED	CALCULATE CASH USING VOLUME TIMES UNIT PRICE.
	OPEN	CALCULATE CASH USING VOLUME TIMES TEN TIMES UNIT PRICE.
4	CLOSED	VOLUME SELECTION ENTERED IN TENTHS (0.100) OF UNITS.
	OPEN	VOLUME SELECTION ENTERED IN WHOLE (1.000) UNITS.
5	CLOSED	CASH OR VOLUME PRESET CAN BE SELECTED.
	OPEN	SELECTION RESTRICTED ACCORDING TO SETTING OF POSITION 6.
6	CLOSED	CASH SELECTION ONLY IS ALLOWED.
	OPEN	VOLUME SELECTION ONLY IS ALLOWED.
7	CLOSED	"FILL" IS DISPLAYED WHEN FILL IS SELECTED.
	OPEN	"----" IS DISPLAYED WHEN FILL IS SELECTED.
8	CLOSED	PRESET ENTRY IS OPTIONAL.
	OPEN	VALID ENTRY MUST BE MADE.

TABLE 2 - VOLUME SLOWDOWN SETTINGS - SWITCH SW-2

SWITCH SW-2, POSITIONS 1 THROUGH 4, SET THE VOLUME PRECUTOFF SLOWDOWN AMOUNT, WHICH IS THE VOLUME BEFORE THE END OF THE SALE AT WHICH THE DISPENSER WILL GO INTO SLOW FLOW. EACH VOLUME AMOUNT SHOWN WILL BE ADDED TO THE BASE AMOUNT OF .060 GALLONS (226 MILLILITERS) IF THE CORRESPONDING SWITCH POSITION IS OPEN.

SWITCH POSITION	GALLONS	MILLILITERS
1	.956	3618
2	.478	1809
3	.239	905
4	.119	452

BASE AMOUNT IS .060 GALLONS (226 MILLILITERS)

EXAMPLES:

1. IF SWITCH POSITION 4 IS OPEN AND ALL OTHERS ARE CLOSED, THE SLOWDOWN AMOUNT WILL BE .060 + .119 = .179 GALLONS.
2. IF SWITCH POSITIONS 3 AND 4 ARE OPEN AND ALL OTHERS ARE CLOSED, THE SLOWDOWN AMOUNT WILL BE .060 + .119 + .239 = .418 GALLONS.
3. ALL SWITCHES OPEN = 1.852 GALLONS.
4. ALL SWITCHES CLOSED = .060 GALLONS.

FACTORY SETTINGS PRESET BOARD

SWITCH POSITION	SWITCH SW-1	SWITCH SW-2
1	CLOSED	CLOSED
2	CLOSED	CLOSED
3	CLOSED	CLOSED
4	OPEN	OPEN
5	OPEN	CLOSED
6	CLOSED	OPEN
7	CLOSED	OPEN
8	CLOSED	CLOSED

IMPORTANT NOTE

IF TWO COMPUTERS ARE CONNECTED TO A PRESET CONTROL BOARD, THE FUELING POINT NUMBER OF THE COMPUTERS MUST BE DIFFERENT. THE COMPUTER(S) MUST BE ASSIGNED A FUELING POINT NUMBER IN ORDER TO OPERATE.

REFER TO THE INSTALLATION MANUAL OF THIS DISPENSER FOR INSTRUCTIONS ON HOW TO ASSIGN THE FUELING POINT NUMBER.

TABLE 3 - FIRST DIGIT OF CASH ENTRY - SWITCH SW-2

SWITCH POSITION				LOCATION OF THE FIRST DIGIT ENTERED FROM THE PRESET KEYPAD IS SHOWN AS "N" DIGITS TO THE RIGHT OF "N" WILL BE ZERO AND DO NOT CHANGE. ADDITIONAL ENTRIES CAUSE PREVIOUSLY ENTERED DIGITS TO SHIFT TO LEFT. *				
5	6	7	8					
CLOSED	OPEN	CLOSED	CLOSED					.N
OPEN	OPEN	CLOSED	CLOSED				N	.0
CLOSED	CLOSED	OPEN	CLOSED				.0	N
OPEN	CLOSED	OPEN	CLOSED				.N	0
CLOSED	OPEN	OPEN	CLOSED			N	.0	0
OPEN	OPEN	OPEN	CLOSED			.0	0	N
CLOSED	CLOSED	CLOSED	OPEN			.N	0	0
OPEN	CLOSED	CLOSED	OPEN		N	.0	0	0
CLOSED	OPEN	CLOSED	OPEN		.0	0	0	N
OPEN	OPEN	CLOSED	OPEN		.N	0	0	0
CLOSED	CLOSED	OPEN	OPEN	N	.0	0	0	0
OPEN	CLOSED	OPEN	OPEN	.0	0	0	0	N
CLOSED	OPEN	OPEN	OPEN	.N	0	0	0	0
OPEN	CLOSED	CLOSED	CLOSED					N

* FOR EXAMPLE, IF THE SWITCHES ARE SET C, O, O, C, AND "2" "5" IS PRESSED AT THE KEYPAD, THE DISPENSER WILL BE PRESET FOR $ 25.00. IF THE SWITCHES ARE SET, C, C, O, C, THE SAME "2" "5" ENTRY WILL PRESET THE DISPENSER FOR $ 0.25.

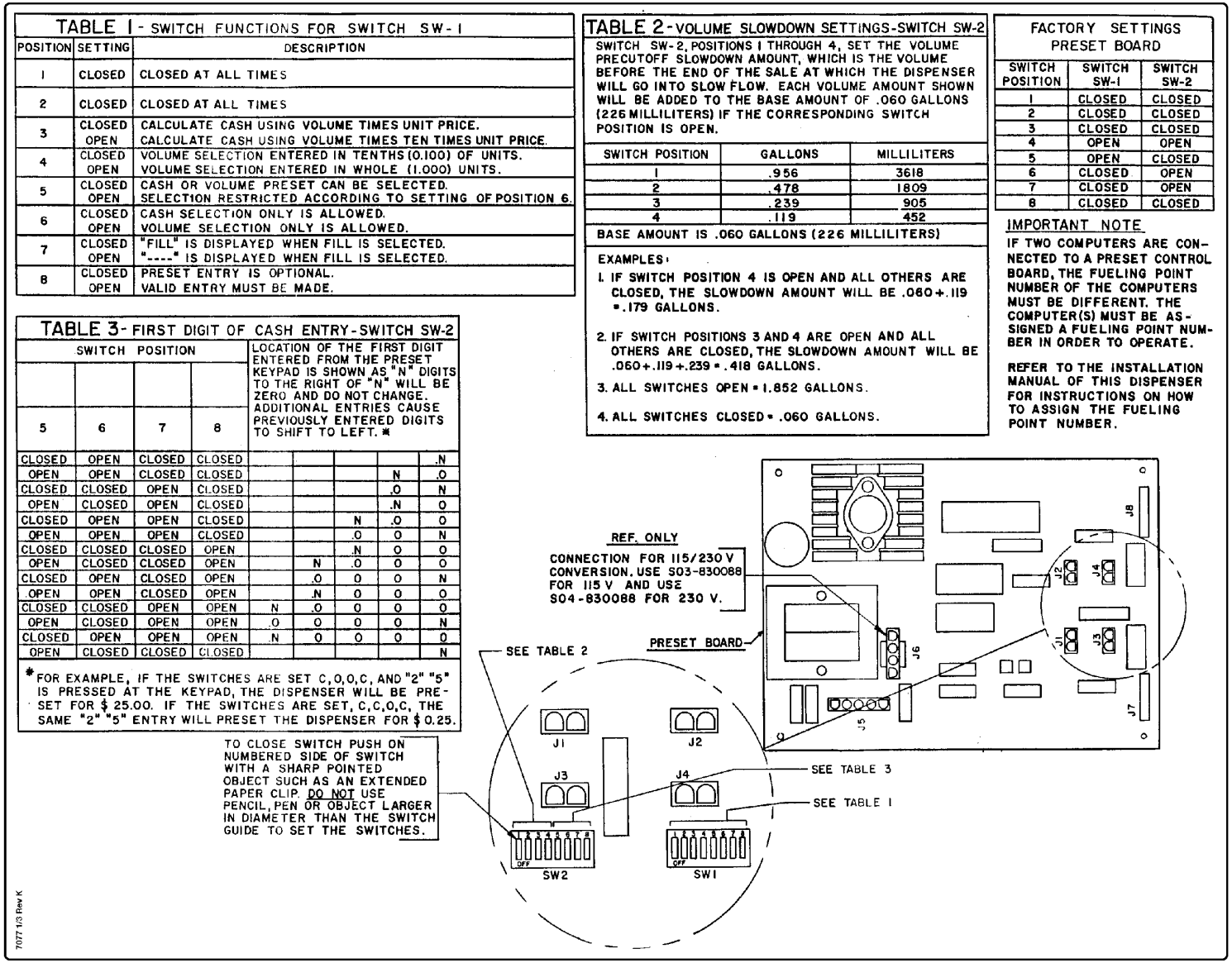


FIGURE A-2. 7077-C INSTRUCTIONS - PRESET SWITCH PROGRAMMING (SHEET 1 OF 3).

7077 2/3 Rev K

INSTRUCTION Nº	7077-C		2-7077-C		3-7077-C		4-7077-C		5-7077-C	
SWITCH DESIGNATIONS	SW 1	SW 2	SW 1	SW 2	SW 1	SW 2	SW 1	SW 2	SW 1	SW 2
	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8
	C C C O O C C C	C C C O C O O C	C C C O O C C C	C C C O O C C C	C C C O O O C C	C C C C C O C O	C C C O O C C C	C C C C O O C O	C C C O O C C C	C C C O O C O C
FIRST ENTRY SPEC.	XXXN.XX		XXXXXN.		XXXN.XX TIMES 10		XXN.XXX		XXXX.NX	
USAGE BY COUNTRY	USA-(STANDARD) BAHAMAS BARBADOS BELIZE DOMINICAN REPUBLIC GUATEMALA HAITI NETHERLAND ANTILLES PANAMA TRINIDAD VENEZUELA PUERTO RICO CANADA HONG KONG MAYLAYSIA PEOPLE'S REPUBLIC OF CHINA REPUBLIC OF PHILIPPINES SINGAPORE SRI LANKA THAILAND MOROCCO (K) SAUDI ARABIA UNITED ARAB EMIRATES		CHILE COLOMBIA TAIWAN CANARY ISLAND GREECE PORTUGAL SPAIN CYPRUS (F) PARAGUAY (K)		COSTA RICA JAMAICA PERU KENYA		BAHRAIN JORDAN OMAN			

FIGURE A-3. 7077-C INSTRUCTIONS - PRESET SWITCH PROGRAMMING (SHEET 2 OF 3).

7077 3/3 Rev K

INSTRUCTION Nº	6-7077-C																7-7077-C															
SWITCH DESIGNATIONS	SW 1								SW 2								SW 1								SW 2							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
	C	C	C	O	C	C	C	C	C	C	C	O	O	O	C	C	O	C	C	C	O	O	C	C	C	C	C	O	O	O	C	C	O
FIRST ENTRY SPEC.	XXN.XXX																XXN.XXX															
USAGE BY COUNTRY	SYRIA																TUNISIA															

FIGURE A-4. 7077-C INSTRUCTIONS - PRESET SWITCH PROGRAMMING (SHEET 3 OF 3).

APPENDIX B. ENGINEERING DRAWINGS

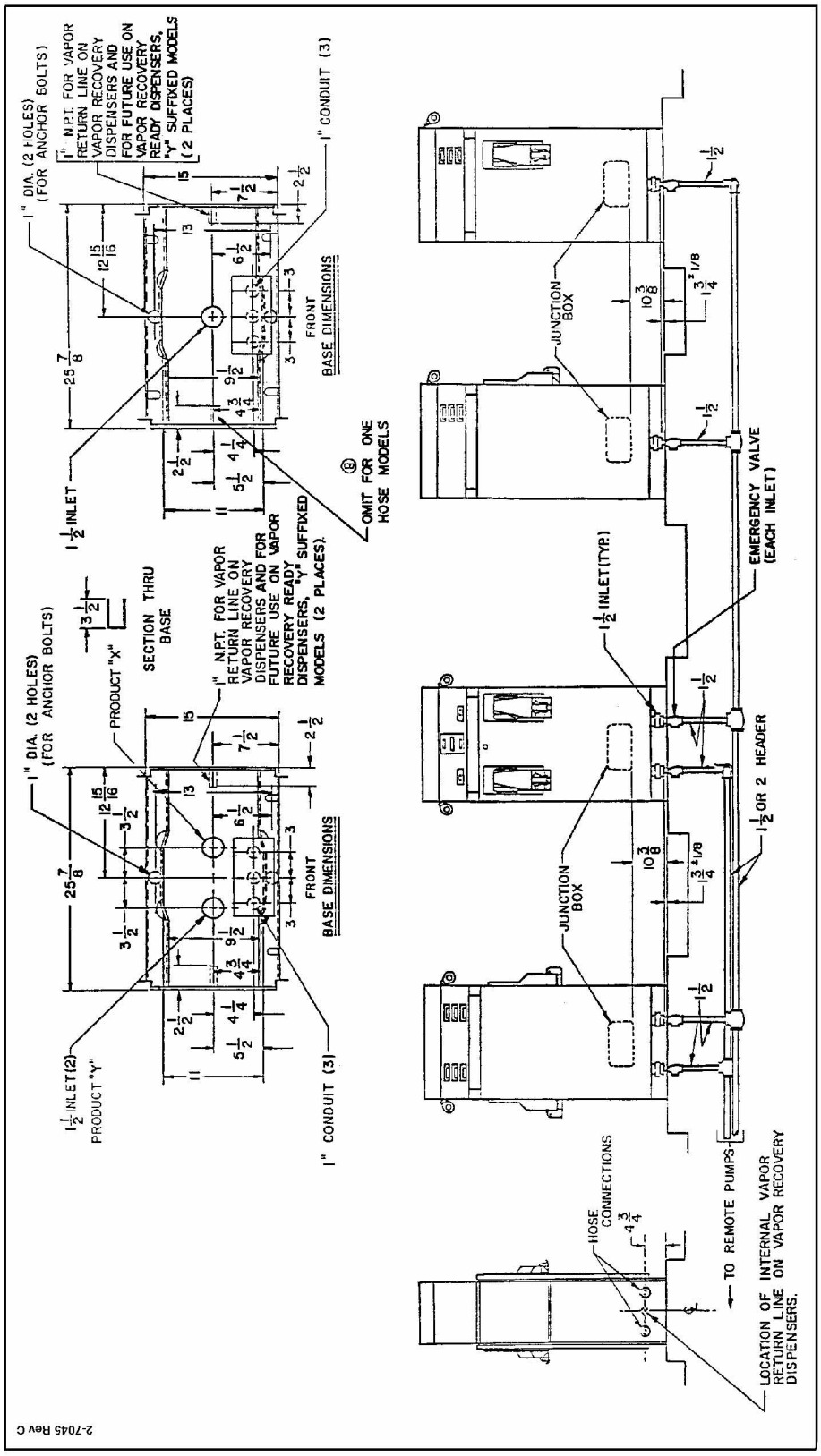


FIGURE B-1. 2-7045 INSTALLATIONS INSTRUCTIONS - 361, 371, 362, 372, 363, 373, 367, 377, 387, 369, 379, AND 389 REMOTE DISPENSERS.

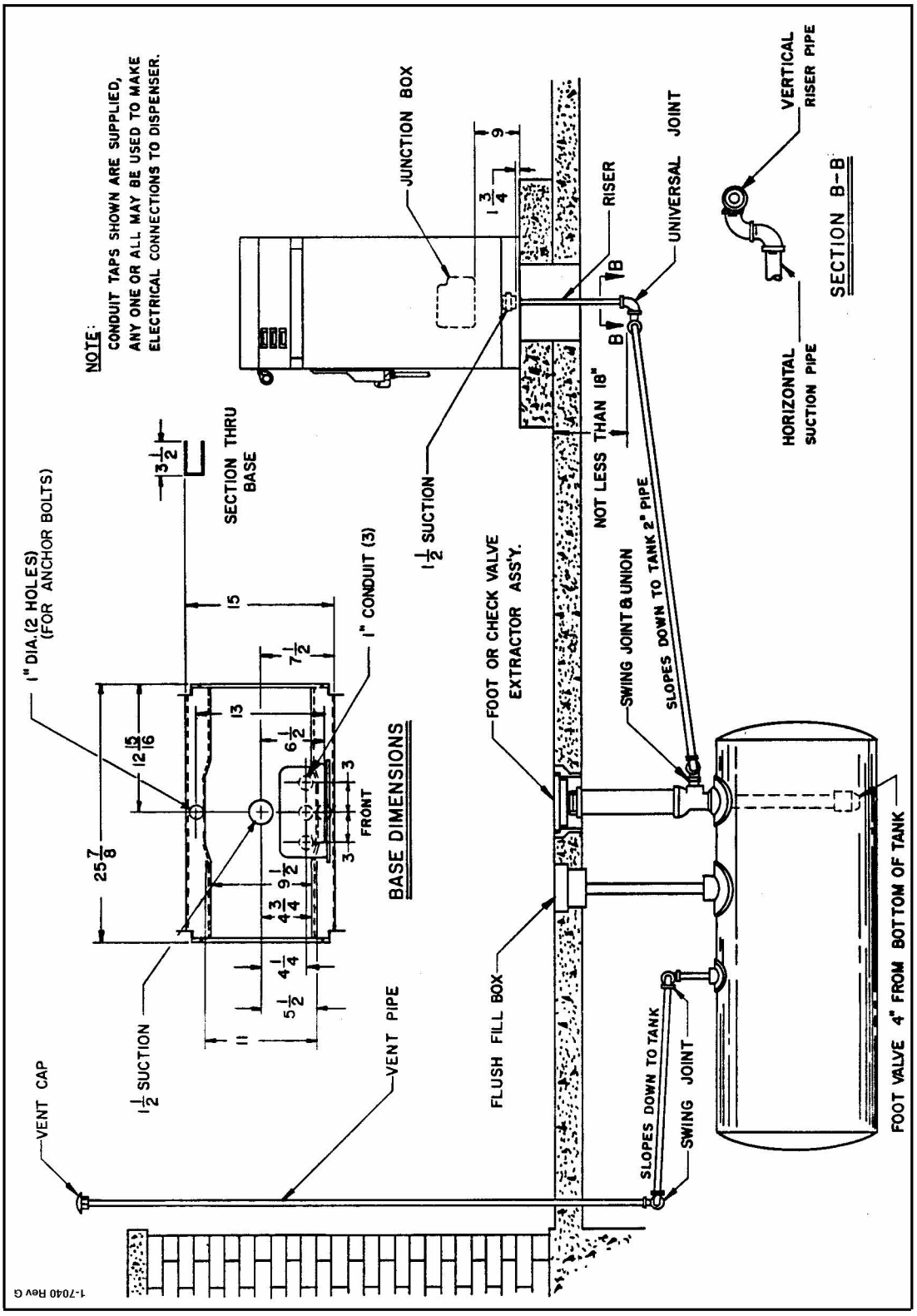


FIGURE B-2. 1-7040 INSTALLATION INSTRUCTION - 361, 371, 362, 372, 367, 377, 387, AND 389 SUCTION DISPENSERS.

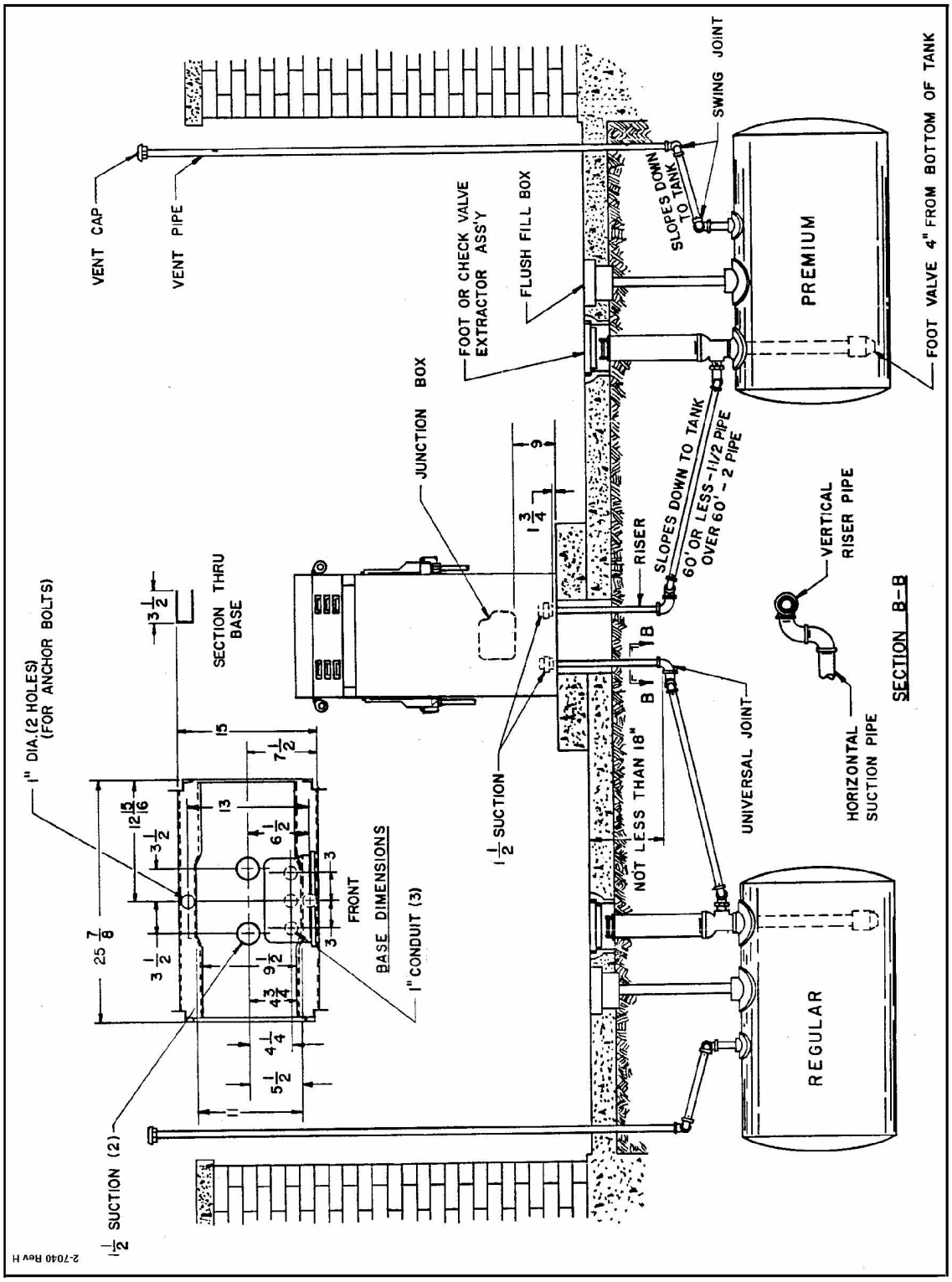


FIGURE B-3. 2-7040 INSTALLATION INSTRUCTION - 363, 373, 368, AND 378 SUCTION DISPENSERS.

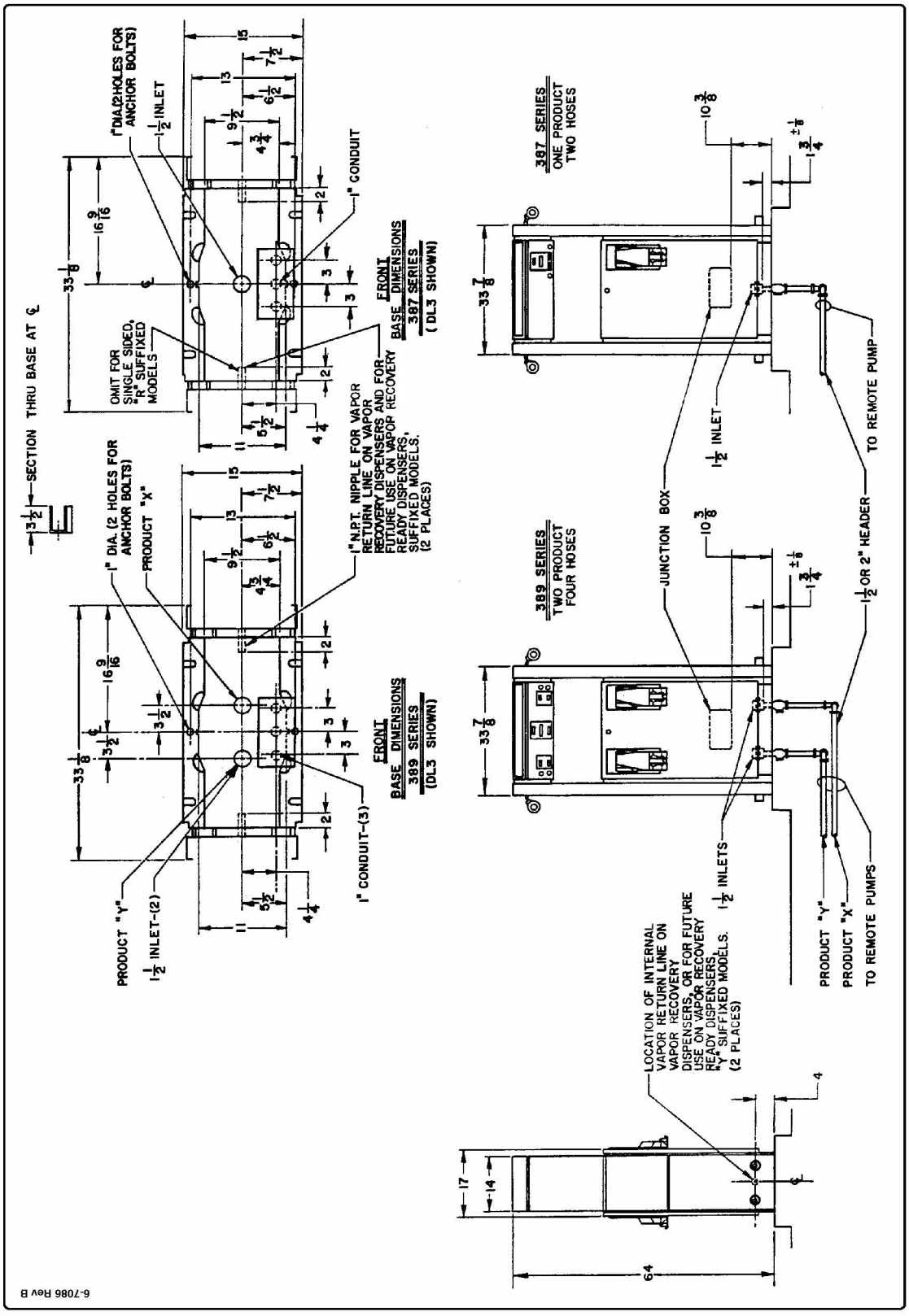


FIGURE B-4. 6-7086 INSTALLATION INSTRUCTION - 387, 389 REMOTE DISPENSERS.

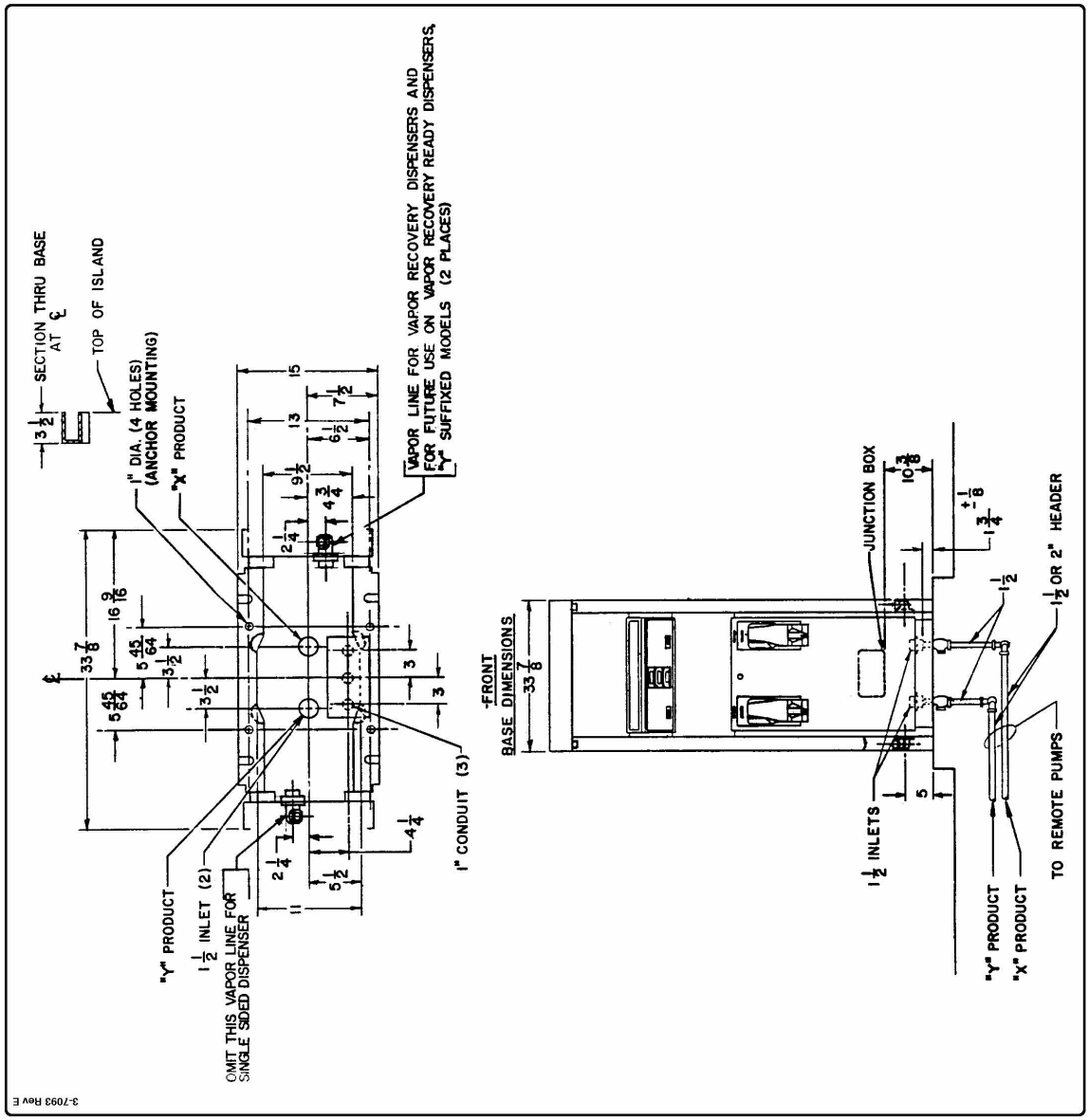


FIGURE B-5. 6-7086 INSTALLATION INSTRUCTION - 389/E REMOTE DISPENSERS.

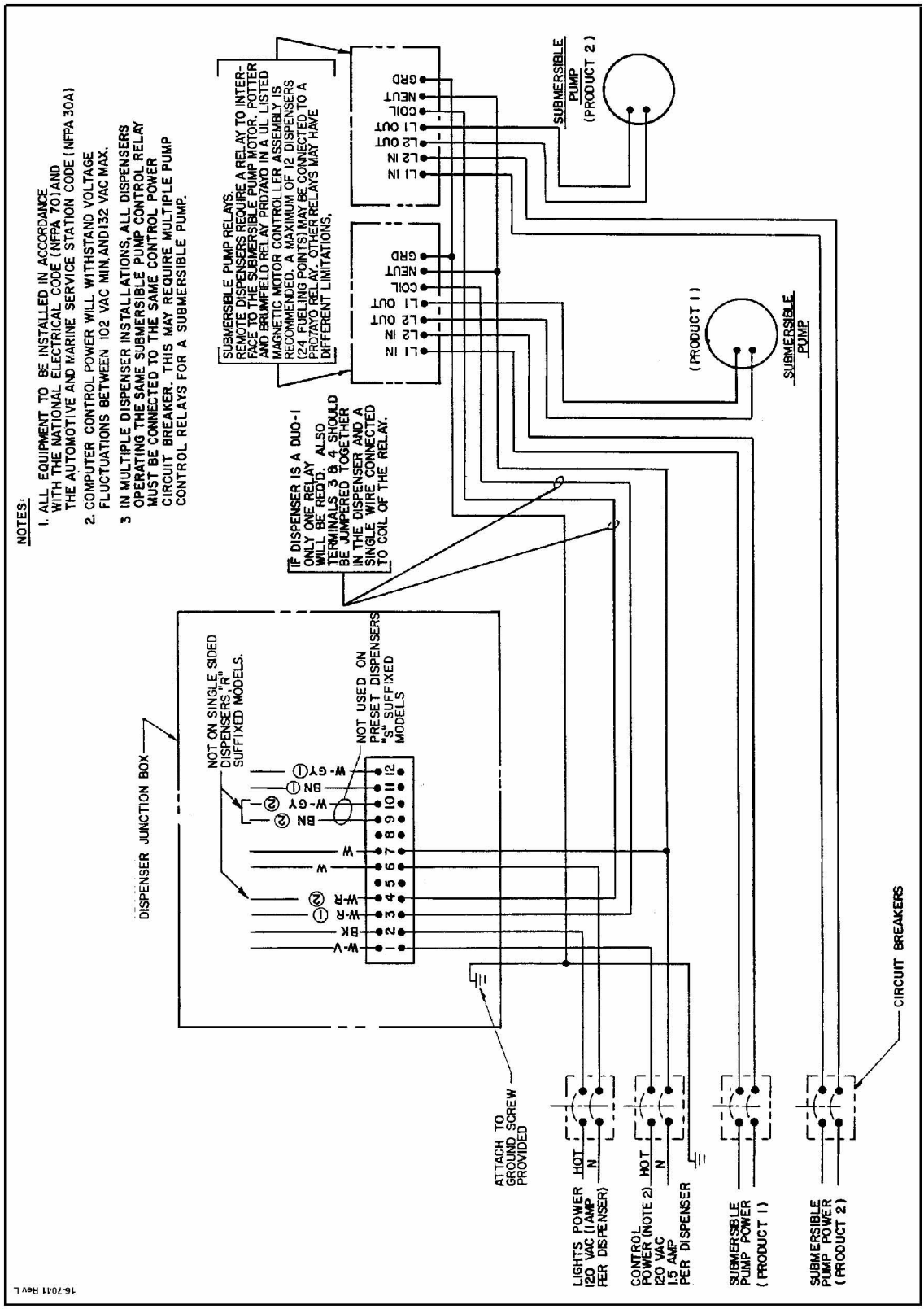


FIGURE B-6. 16-7041 WIRING DIAGRAM - 361, 371, 362, 372, 363, 373, 367, 377, 368, AND 378 REMOTE DISPENSERS.

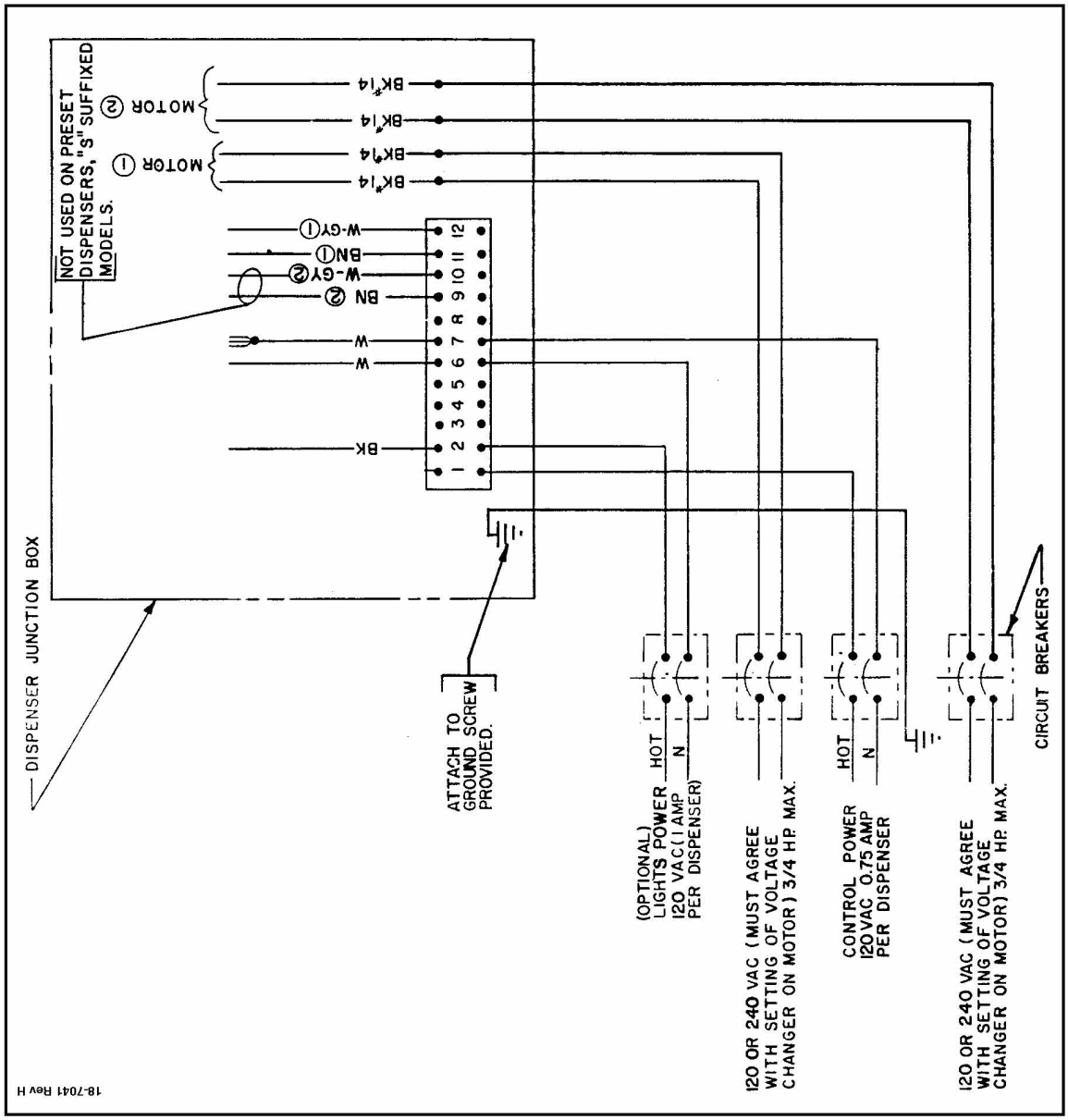


FIGURE B-7. 18-7041 WIRING DIAGRAM - 361, 371, 362, 372, 363, 373, 367, 377, 368, AND 378 SUCTION DISPENSERS.

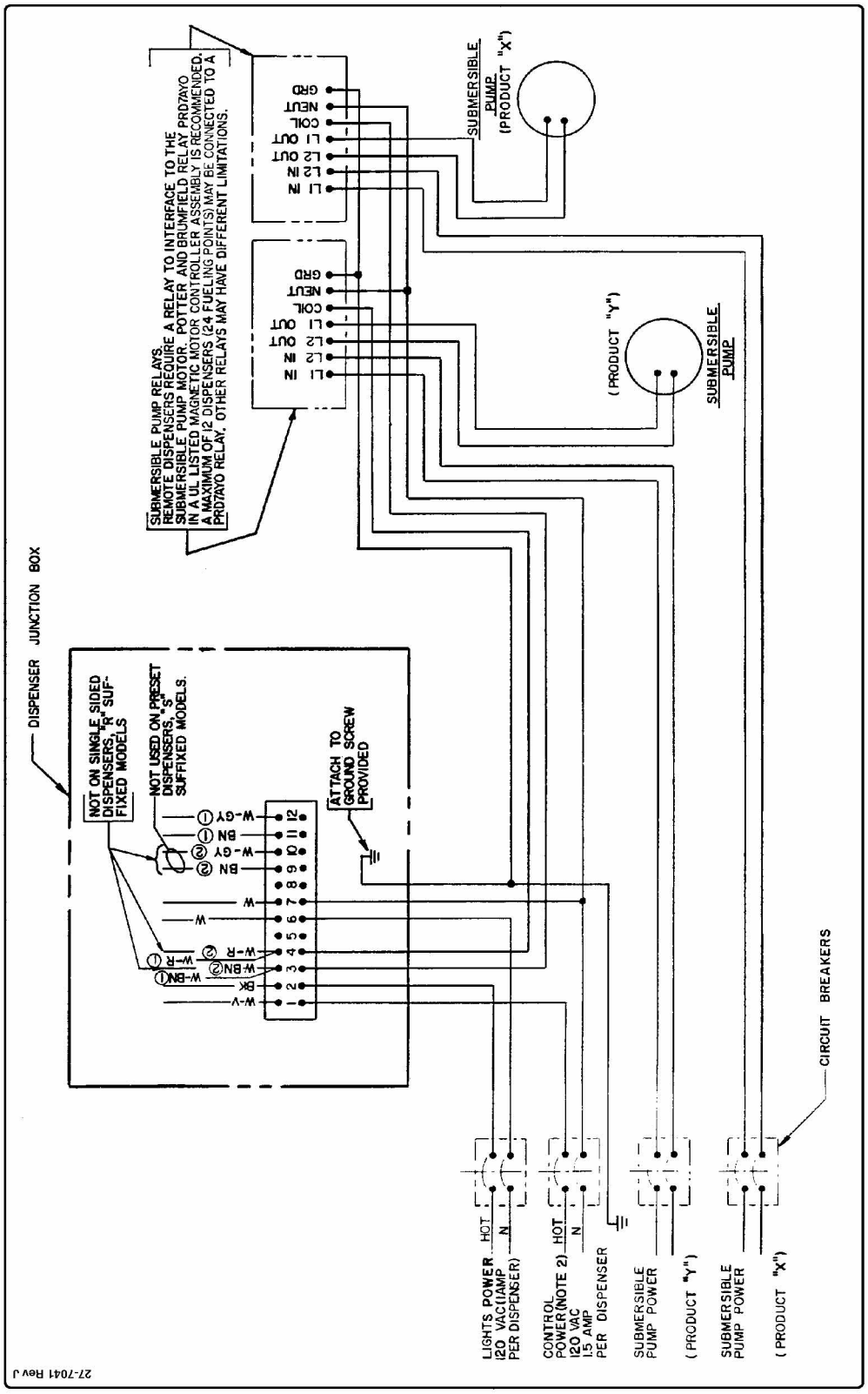


FIGURE B-8. 27-7041 WIRING DIAGRAM - 369, 379, AND 389 REMOTE DISPENSERS.

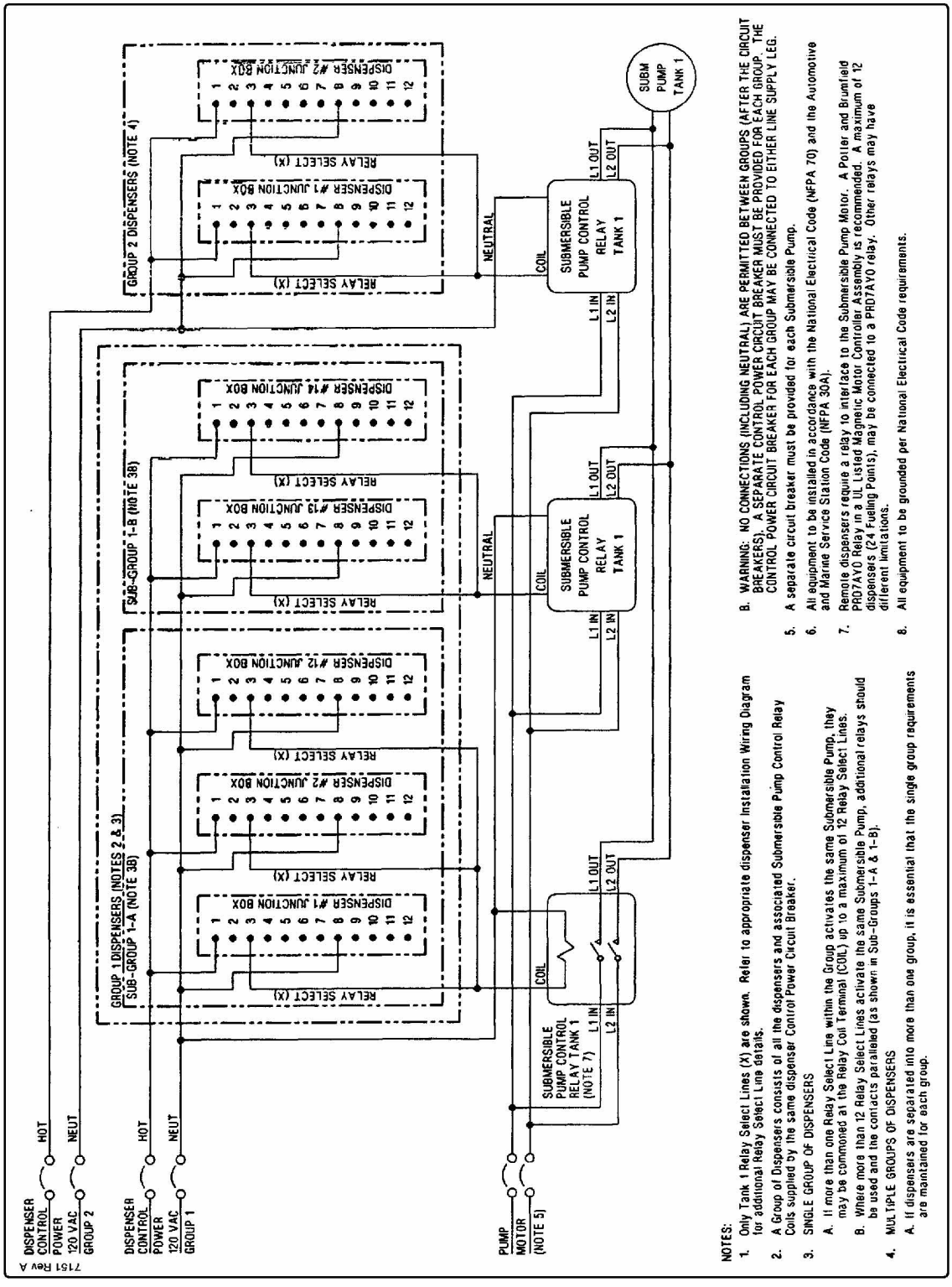


FIGURE B-9. 7151 - TYPICAL DISPENSER SITE WIRING DIAGRAM.

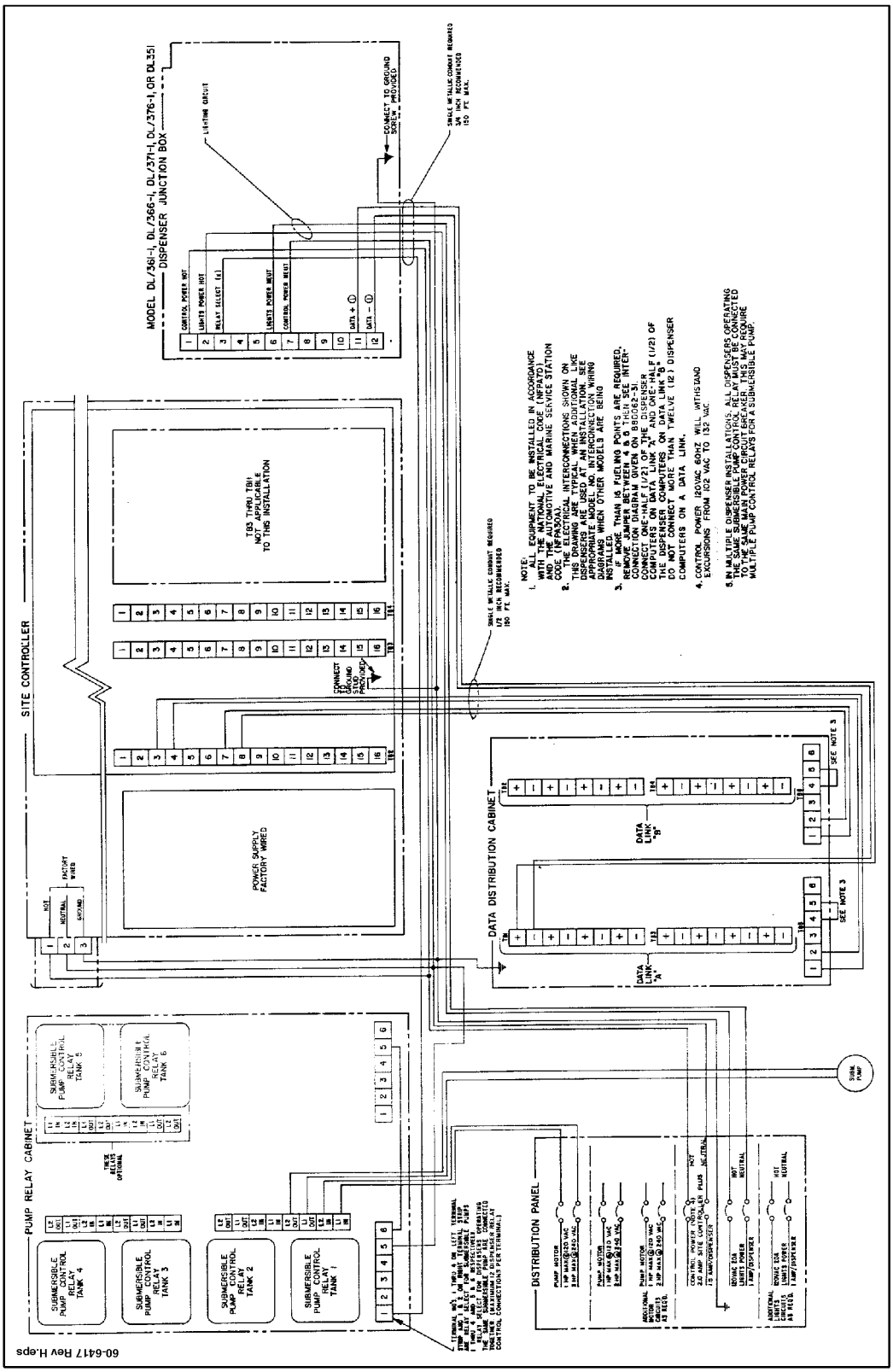


FIGURE B-10. 60-6417 - INTERCONNECTION WIRING DIAGRAM SITE CONTROLLER TO REMOTE MODEL 361, AND 371.

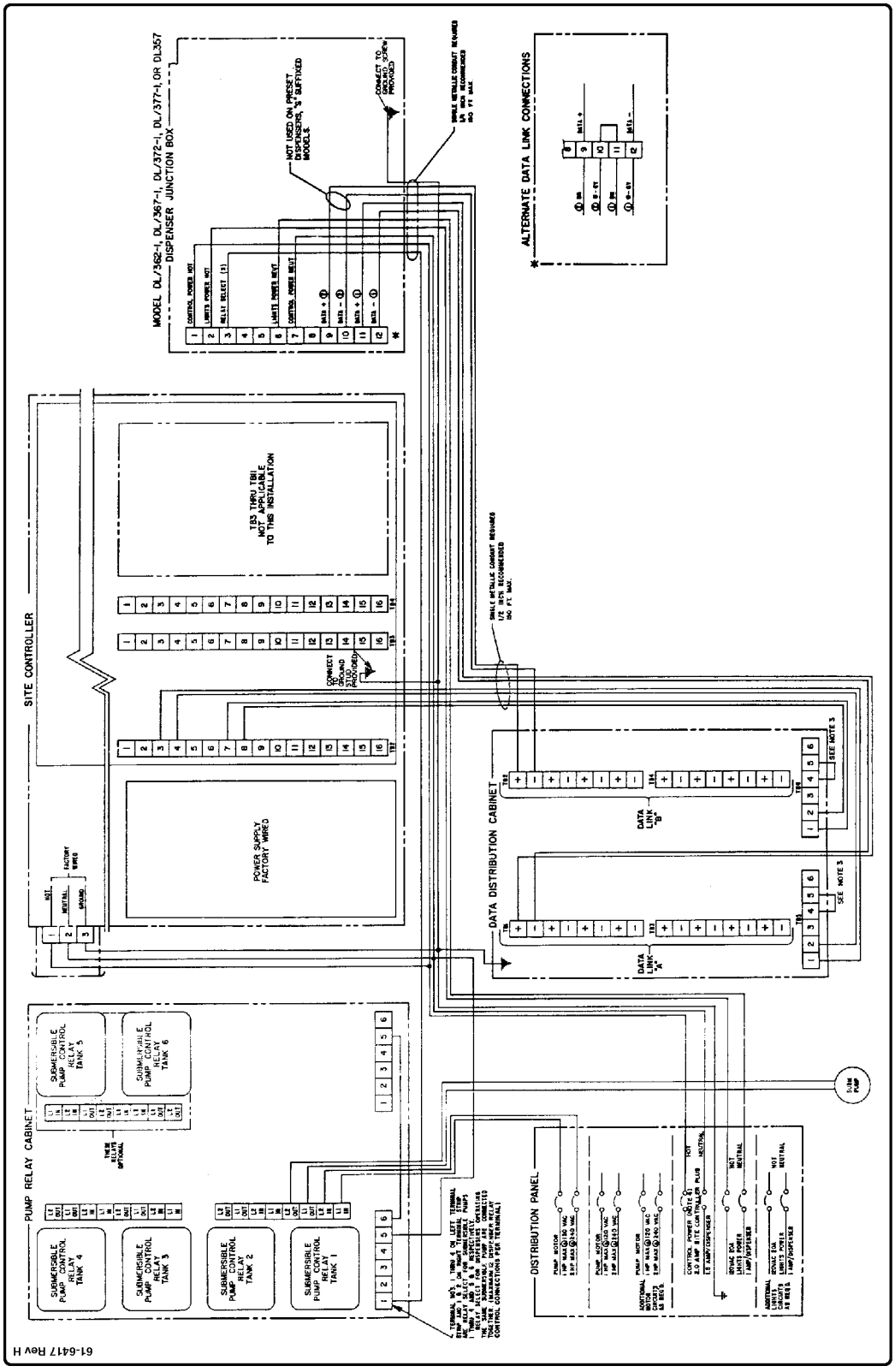


FIGURE B-11. 61-6417 - INTERCONNECTION WIRING DIAGRAM SITE CONTROLLER TO REMOTE MODEL 362, 372, 367, 377 AND 387.

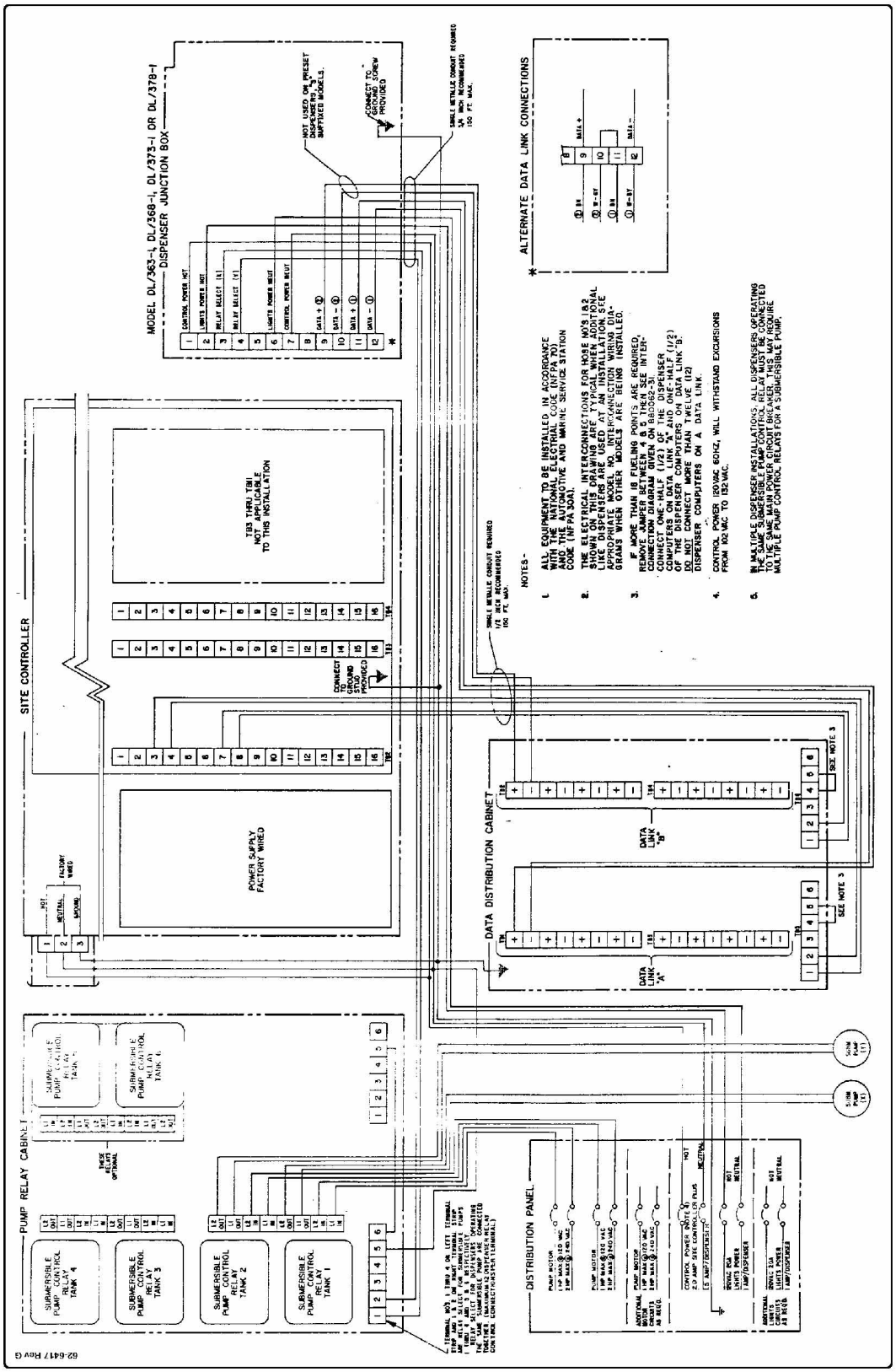


FIGURE B-12. 62-6417 - INTERCONNECTION WIRING DIAGRAM SITE CONTROLLER TO REMOTE MODEL 363, 373, 368, AND 378 .

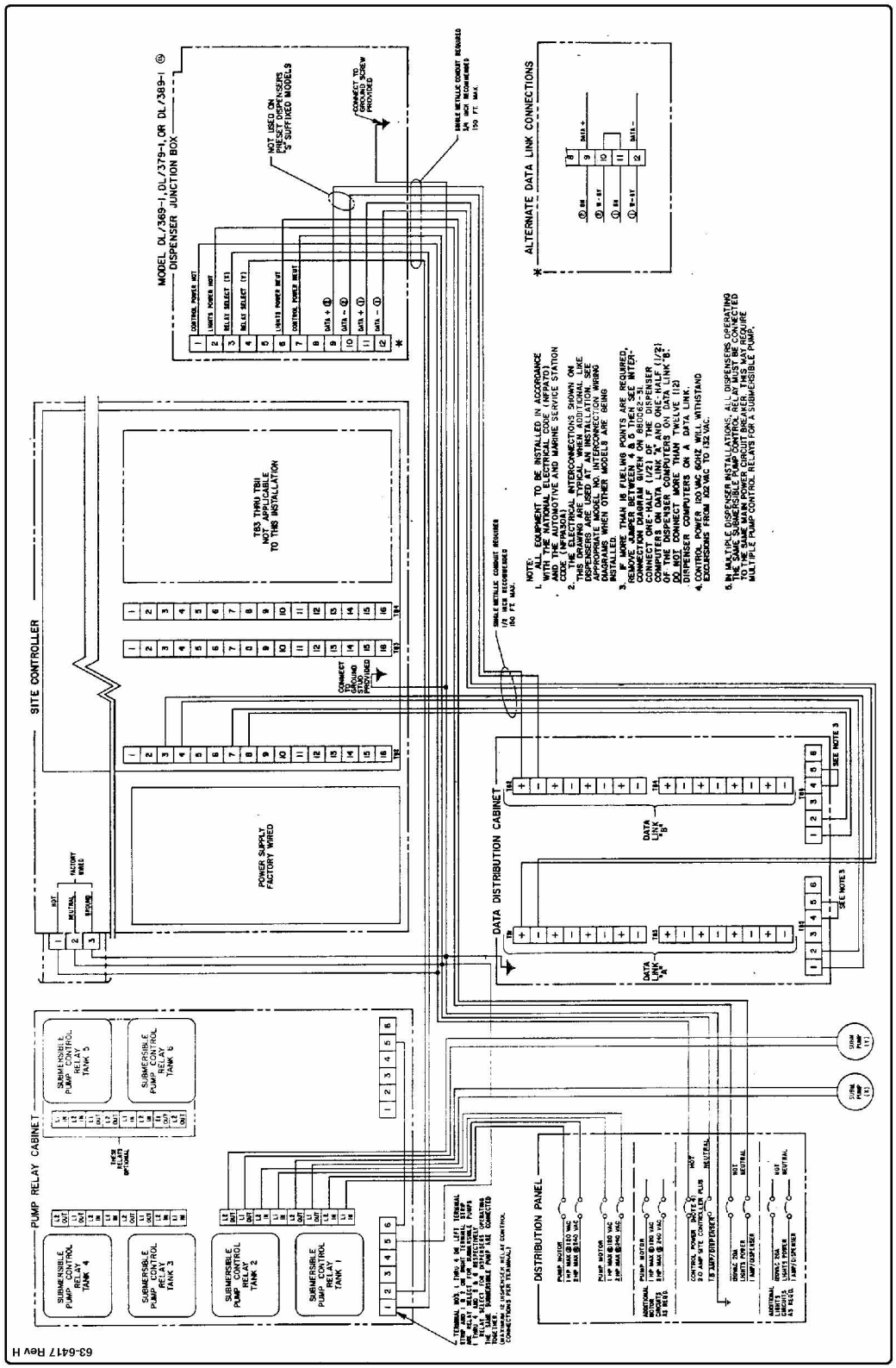
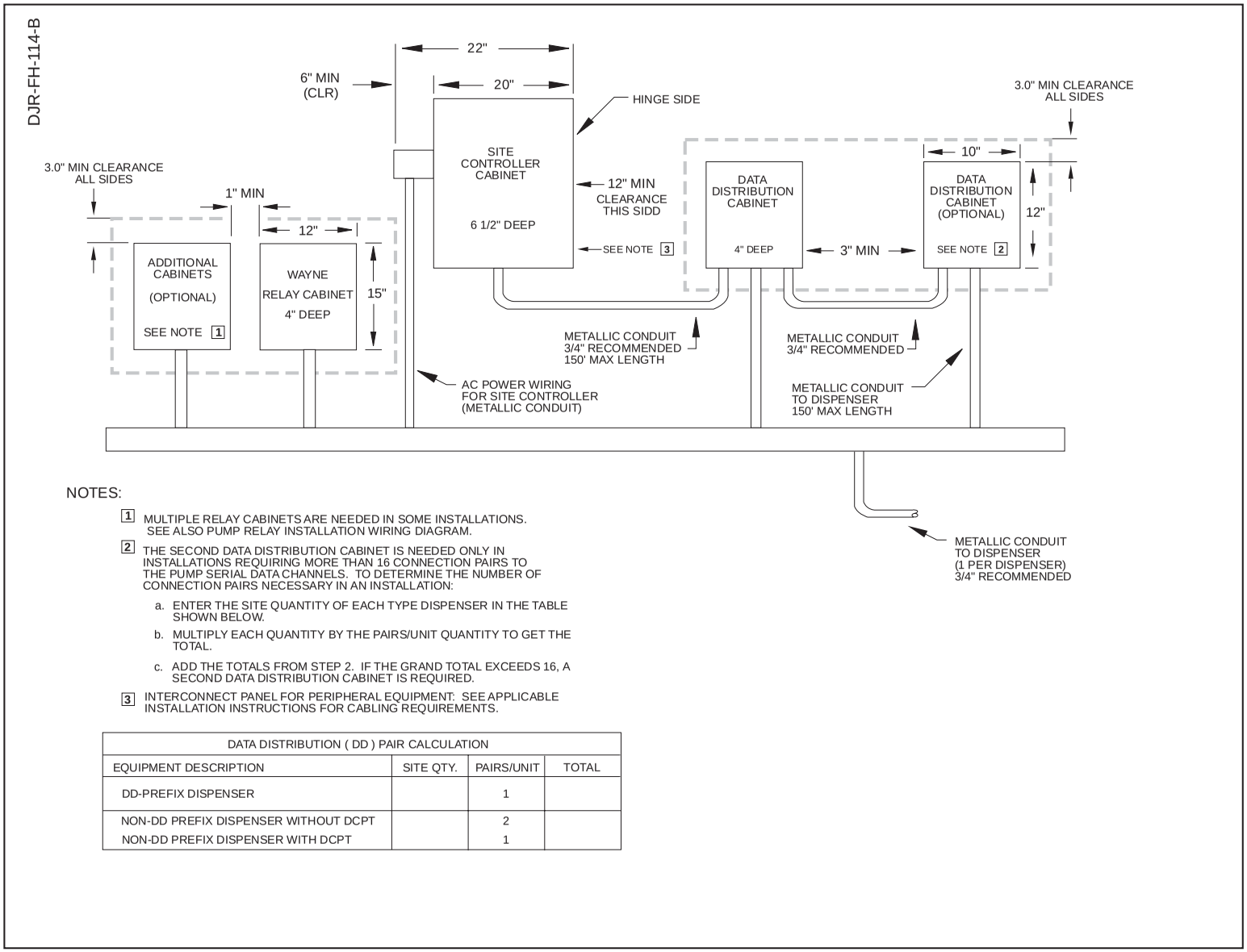


FIGURE B-13. 63-6417 - INTERCONNECTION WIRING DIAGRAM SITE CONTROLLER TO REMOTE MODEL 369, 379, AND 389.

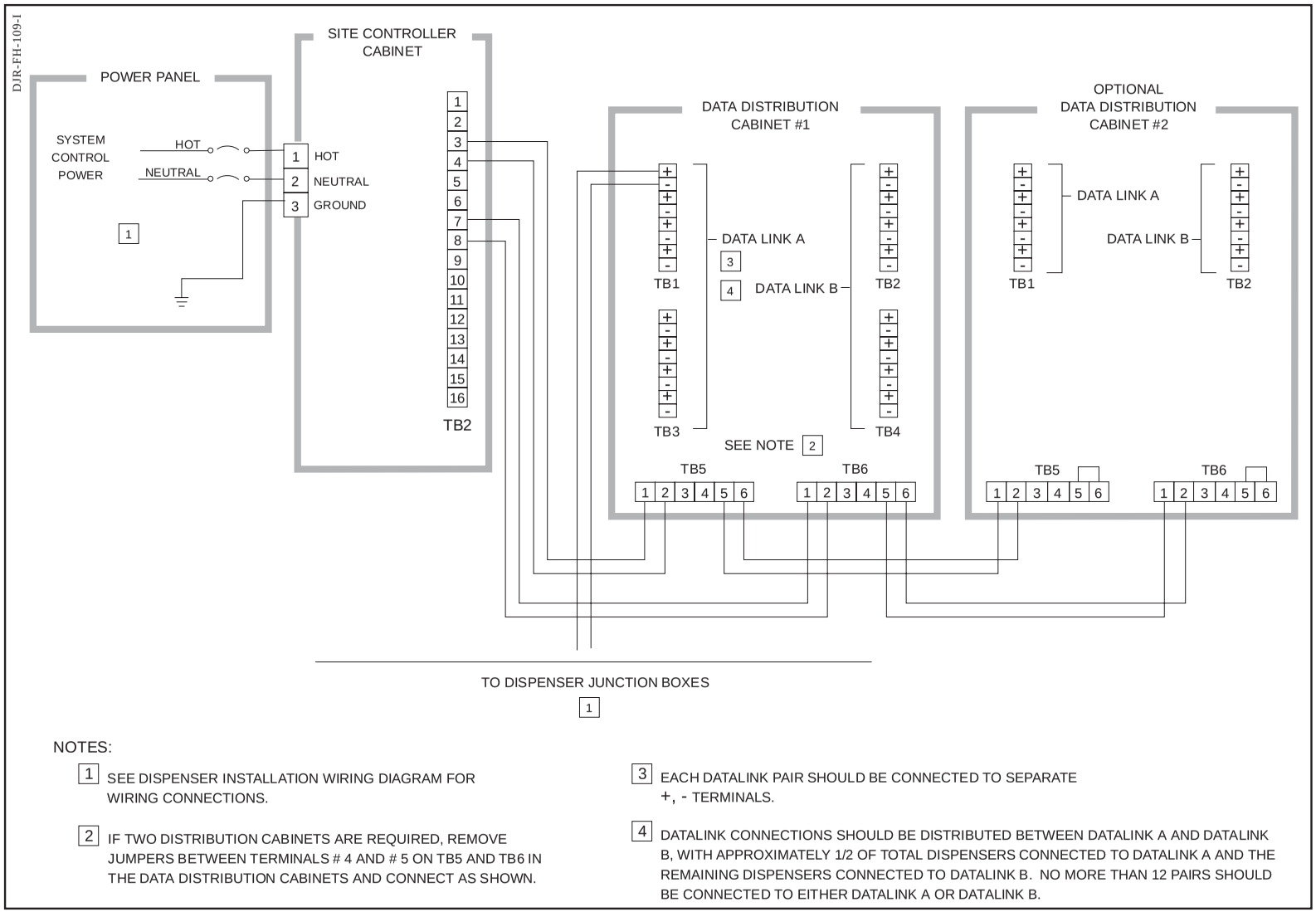


NOTES:

1. MULTIPLE RELAY CABINETS ARE NEEDED IN SOME INSTALLATIONS. SEE ALSO PUMP RELAY INSTALLATION WIRING DIAGRAM.
2. THE SECOND DATA DISTRIBUTION CABINET IS NEEDED ONLY IN INSTALLATIONS REQUIRING MORE THAN 16 CONNECTION PAIRS TO THE PUMP SERIAL DATA CHANNELS. TO DETERMINE THE NUMBER OF CONNECTION PAIRS NECESSARY IN AN INSTALLATION:
   a. ENTER THE SITE QUANTITY OF EACH TYPE DISPENSER IN THE TABLE SHOWN BELOW.
   b. MULTIPLY EACH QUANTITY BY THE PAIRS/UNIT QUANTITY TO GET THE TOTAL.
   c. ADD THE TOTALS FROM STEP 2. IF THE GRAND TOTAL EXCEEDS 16, A SECOND DATA DISTRIBUTION CABINET IS REQUIRED.
3. INTERCONNECT PANEL FOR PERIPHERAL EQUIPMENT: SEE APPLICABLE INSTALLATION INSTRUCTIONS FOR CABLING REQUIREMENTS.

DATA DISTRIBUTION (DD) PAIR CALCULATION			
EQUIPMENT DESCRIPTION	SITE QTY.	PAIRS/UNIT	TOTAL
DD-PREFIX DISPENSER		1	
NON-DD PREFIX DISPENSER WITHOUT DCPT		2	
NON-DD PREFIX DISPENSER WITH DCPT		1	

FIGURE B-14. BACKROOM INSTALLATION - WAYNE MANAGEMENT CONTROL SYSTEM.



NOTES:

1. SEE DISPENSER INSTALLATION WIRING DIAGRAM FOR WIRING CONNECTIONS.
2. IF TWO DISTRIBUTION CABINETS ARE REQUIRED, REMOVE JUMPERS BETWEEN TERMINALS # 4 AND # 5 ON TB5 AND TB6 IN THE DATA DISTRIBUTION CABINETS AND CONNECT AS SHOWN.
3. EACH DATALINK PAIR SHOULD BE CONNECTED TO SEPARATE +, - TERMINALS.
4. DATALINK CONNECTIONS SHOULD BE DISTRIBUTED BETWEEN DATALINK A AND DATALINK B, WITH APPROXIMATELY 1/2 OF TOTAL DISPENSERS CONNECTED TO DATALINK A AND THE REMAINING DISPENSERS CONNECTED TO DATALINK B. NO MORE THAN 12 PAIRS SHOULD BE CONNECTED TO EITHER DATALINK A OR DATALINK B.

FIGURE B-15. INTERCONNECTION WIRING DIAGRAM, DATA DISTRIBUTION CABINET TO DISPENSERS.

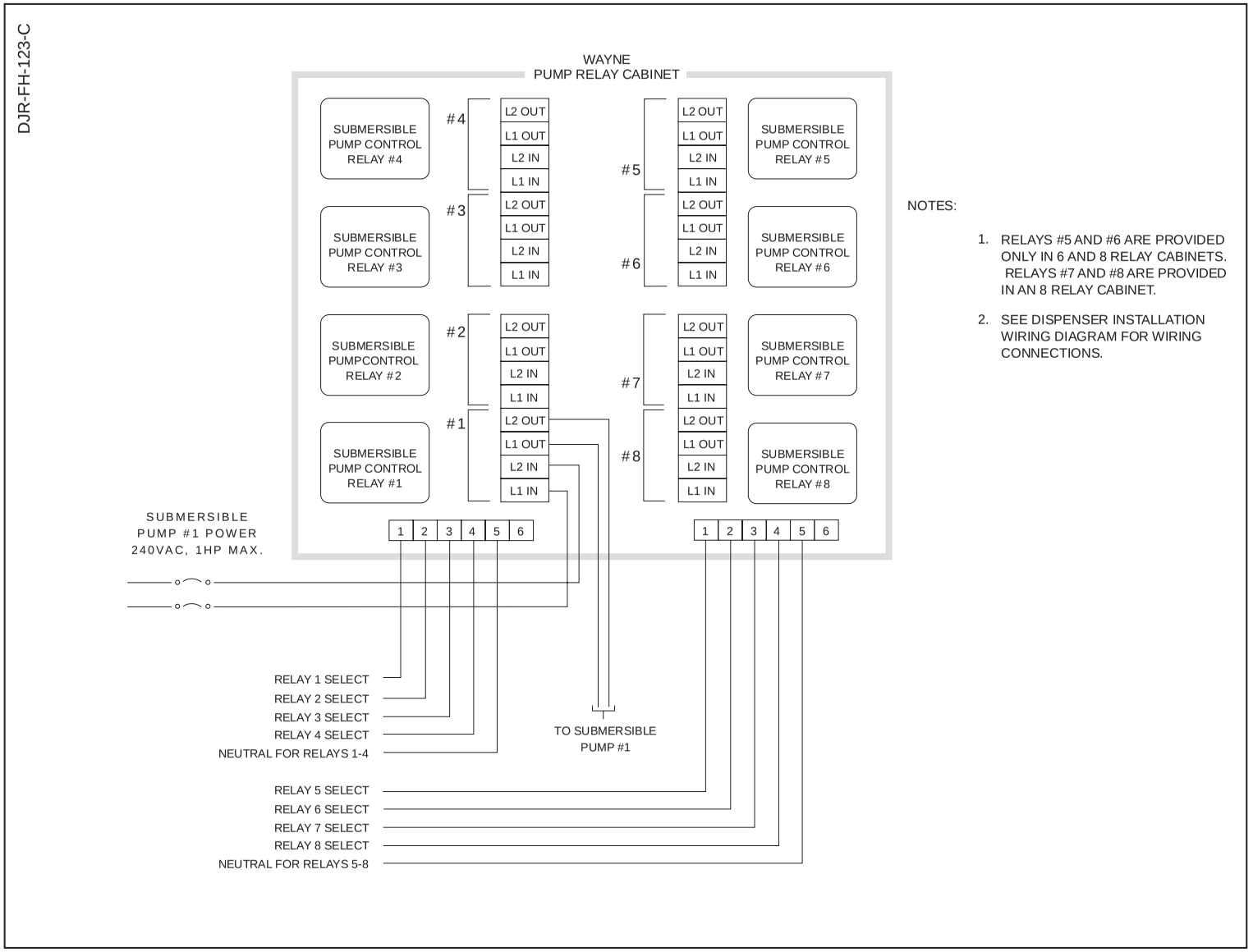


FIGURE B-16. SUBMERSIBLE PUMP RELAY INSTALLATION WIRING DIAGRAM.

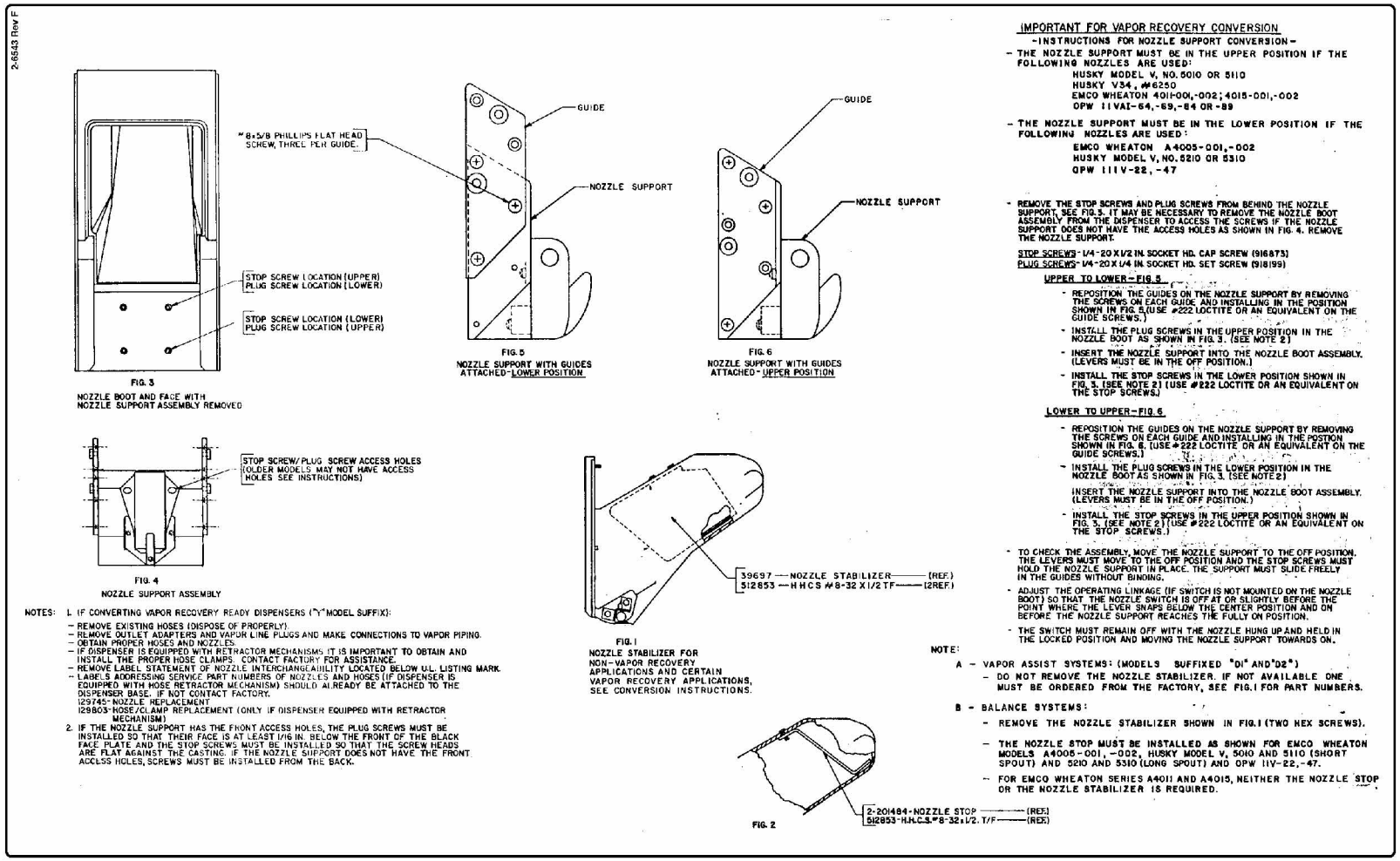
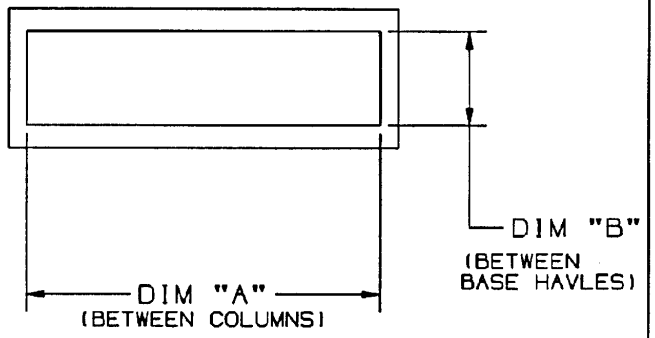


FIGURE B-17. 2-6543 INSTRUCTIONS - SLIDE TO START NOZZLE BOOT ADJUSTMENT FOR VAPOR RECOVERY NOZZLES.

MODEL SERIES	DIMENSION "A"	DIMENSION "B"
360	25	9.500
370	25	9.500
380	27	9.500
390	42	11.500
490	42	11.500
585	27	9.500
590	42	11.500
V380	29	11.500
V390	42	11.500
V490	42	11.500
V580	29	11.500
V585	29	11.500
V590	42	11.500



REMOVE BURRS AND BREAK SHARP EDGES

TOLERANCES
.X : : .050
.XX : : .025
.XXX : : .010
UNLESS OTHERWISE SPECIFIED

WAYNE DIVISION
DRESSER INDUSTRIES INC.
SALISBURY, MARYLAND 21801

TITLE
DIMENSIONAL DRAWING
INSIDE FOOT PRINT

DESIGNED GAH SCALE NONE
DRAWN JDD DATE JUNE 19, 1991
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CHECKED D.J.G.
APPROVED

10196-B

FIGURE B-18. 10196-B DIMENSIONAL DRAWING - INSIDE FOOTPRINT.

DL1,3/360/370/380 Suction Pumps and Remote Dispensers
Installation and Operation Manual
Includes Single, Duo-1, Duo-2, and Quadro Models

Written and illustrated by Stephen N. Hart.

Review and technical assistance by Stephen G. Martin.

This manual was produced using Adobe® FrameMaker® on a Power Macintosh® 8100/80.

Page design uses Times 12 and Helvetica 10 Fonts.

Manuals were electronically produced on a Xerox Docutech 135 Publishing System at 600 dpi.

Art was produced using Aldus® Freehand® and Adobe® PhotoShop®.

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The Documentation fax number is (410)-546-6753.

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Part No. 917380 Rev. E 3/97 50/3/97

917380 E