

## Chapter 4

### **INTRODUCTION**

The information in this section of the manual describes how to wire connector blocks and make the proper cable connections to the 289H relay cards. Detailed wiring examples are provided for both of the standard wire wrap 289H connector blocks provided by System Studies. These illustrations help to explain where jumpers are terminated on the blocks and how they are routed from the blocks' internally wired cable connectors to the appropriate connectors on the 289H relay card.

An explanation of how to use PressureMAP's Cutover Worksheet is also provided in this section. It is recommended that you print a hardcopy of this worksheet before you begin to wire the 289H LSS connector block(s). Instructions on how to obtain a Cutover Worksheet are provided in the *Special Data Entry* section of the *PressureMAP System Data Entry Manual*.

The most important thing to remember when cutting over to a 289H is that, unless you are converting a very small office, most cutovers will take more than one day to complete. To help keep your PressureMAP office running and collecting data during the cutover process, a list of steps that need to be performed during the cutover process is provided starting on page 6-1 of the *Technical Notes* section in this manual. These steps should be read and understood before initiating the cutover.

Please note that because the cutover process varies from installation to installation, it is difficult to provide step-by-step cutover procedures that address the particulars of a given conversion. (For example, since the 289H does not read volume counters, these devices must be upgraded to flow transducers.) Therefore, the purpose of this section is to offer more general information to assist you in the cutover process. If desired, arrangements can be made with System Studies to have one of our Field Engineers perform the cutover.

### **ACCESS NUMBER DESCRIPTION**

Of particular importance to the 289H is the understanding and application of access numbers. Before you can use the 289H Data Conversion utility and worksheets, or understand how devices are mapped to the 289H chassis, you must understand the structure and significance of access numbers.

An access number identifies a device pair's position (or address) relative to other devices wired to the 289H monitor. Devices on dedicated and subscriber pairs use a five digit access number. The first three digits of the number designate the slot in the 289H chassis which contains the relay card to which the device pair is connected (slots 001-016 in chassis #1, and slots 017-032 in chassis #2). The last two digits of the hyphenated number represent the pins on the connector block where the device circuit is connected and the corresponding 289H pair select relay used to provide the device reading.

A typical 289H access number on a dedicated or subscriber pair would be 006-21. When PressureMAP calls the 289H to obtain device data for this access number, it checks the 21st relay on the card occupying the sixth relay card slot in the 289H chassis.

## 289H CONVERSION UTILITY

Because access numbers represent specific locations where device pairs are connected to the 289H equipment, care must be taken when assigning them. The PressureMAP 289 Conversion Utility, described in greater detail in the *PressureMAP System Data Entry Manual*, lists both the old device numbers (if you are cutting over an existing system) and suggested 289H access numbers. This utility automatically assigns access numbers and simplifies the manual assignment of numbers. For additional information on the 289H Conversion Utility, please refer to the Special Data Entry section of the *PressureMAP System Data Entry Manual*.

**Note:** For all 289H applications, it is recommended that you turn *User Defined Devices* ON in the PressureMAP editor. If User Defined Devices is set to OFF, the new 289H access number will replace your existing device number in the *Device #* data field. When User Defined Devices is turned on, however, your old device numbers will be retained (or you can customize them for specific applications). PressureMAP will acquire data from the 289H using the new access numbers, but your old or customized device numbers will continue to appear in the *Device #* data fields of all PressureMAP screens and reports.

### Using PressureMAP's Cutover Worksheet

If you have completed the data conversion procedures described in the Special Data Entry section of the *PressureMAP System Data Entry Manual*, you should have access to a 289H Cutover Worksheet. There are two types of Cutover Worksheets: the Pre-Conversion Worksheet and the Post-Conversion Worksheet.

The Pre-Conversion Worksheet contains monitoring device and wiring information from an existing office, plus it includes an extra blank line below each sequentially listed *Device #* to manually record necessary data during the cutover. The Post-Conversion Worksheet, which is shown in REPORTS 4-1 and 4-2 below, provides the individual 289H *Access #s* that are assigned automatically during the data conversion process in addition to cable, pair and module information. In most 289H LSS installations where an existing monitor is being replaced, the Post-Conversion Worksheet is the easier and more practical form to use. Both forms, however, provide a helpful reference for cutting over pairs from your existing monitor to the 289H connector blocks.

When performing the 289H wiring procedures, you will need to know the following:

- Tip and ring connector block pin designations for device pairs in the existing monitoring system
- Corresponding tip and ring connector block pin designations on the new 289H block
- How to use a standard wire wrap tool to secure the jumper connections
- Where to install the cables between the 289H connector blocks and relay cards in the 289H chassis

The instructions in this section provide much of this information, illustrating how a typical device circuit is wired to the 289H connector block and cabled to the 289H relay cards.

The Cutover Worksheet can be generated after completing the data entry process (described in Sections 8 & 9 of the *PressureMAP System Data Entry Manual*). This hardcopy worksheet simplifies the manual process of wiring the 289H connector block(s). It contains all the information needed to identify existing device circuits and determine where they should be connected to the 289H equipment.

The Post-Conversion Worksheet provides specific cable pair assignment information. There are two worksheet formats: one for Sparton monitors and one for Chatlos monitors. If you have not already converted your office to the 289H LSS format and printed out a copy of the Post-Conversion Worksheet, please do so before starting the wiring procedures described in this section.

### SPARTON CUTOVER WORKSHEET

REPORT 4-1 represents a portion of a sample Post-Conversion Worksheet from a typical Sparton office. The information in this example pertains to an office that has "User Defined Devices" set to OFF. In this worksheet example, the first 50 devices wired to the Sparton are on dedicated pairs. Beginning with old Device # T-055 (see *Remarks* column), the next group of devices is on subscriber pairs.

Cutover Worksheet (page 1)			MAP System XX.XX.XX			
02/01/2014 12:00			System Studies Incorporated			
Device #	Access #	Cable	Prim Pair	Sec Pair	Phone	Remarks
001-01	001-01	HC	34	44		(T -001, DED#01)
001-02	001-02	HC	35	45		(T -002, DED#02)
001-03	001-03	02	16	26		(T -003, DED#03)
(device listing continued)						
(page 2)						
001-50	001-50	21	114	123		(T -050, DED#89)
002-01	002-01	11	63	73	555-1314	(T -055, SUB#13)

REPORT 4-1: POST-CONVERSION WORKSHEET (SPARTON)

The device numbers and dedicated block pin numbers (*Mod/Inp#*) used in the existing Sparton system are displayed in the *Remarks* column of the worksheet. During the conversion process, the MAP software assigns these devices new access numbers. The access numbers, which identify the new 289H connector block and relay card locations, are displayed in the *Device #* and *Access #* data fields.

By using this worksheet information, you can physically identify a device pair's location on the existing (old) block and determine exactly where it should be wired on the new 289H connector block. Cable, pair and phone number data are provided to supplement the information in the *Access #* and *Remarks* columns. For Sparton cutovers that utilize SPDR relay cards, no connector block

rewiring is required as each SPDR connects directly to the A, B or C cable of the existing Sparton dedicated block. To determine how best to cut over any binary devices from the Sparton, please contact System Studies Technical Support.

### CHATLOS CUTOVER WORKSHEET

The Cutover Worksheet shown in REPORT 4-2 is a sample of the type of information provided for Chatlos monitoring systems. Like the Sparton worksheet described above, the key information used in the cutover process is located in the *Access #* and *Remarks* columns. Because User Defined Devices is set to OFF, the *Access #* and *Device #* columns contain identical information.

Cutover Worksheet (page 1)				MAP System XX.XX.XX		
02/01/2014 12:00				System Studies Incorporated		
Device #	Access #	Cable	Prim Pair	Sec Pair	Phone	Remarks
001-01	001-01	11	34	44	555-1215	(P-001) CHATLOS
001-02	001-02	11	35	45	555-6716	(P-002) CHATLOS
001-03	001-03	02	16	26	555-2223	(P-003) CHATLOS
001-04	001-04	02	17	27	555-1719	(P-004) CHATLOS
001-05	001-05	02	18	28	555-1444	(P-005) CHATLOS
001-06	001-06	02	19	29	555-3711	(P-006) CHATLOS

REPORT 4-2: POST-CONVERSION WORKSHEET (CHATLOS)

Chatlos monitoring systems typically associate device numbers (P-001, P-002, MA-001, etc.) with wire wrap pins on the Chatlos frame connect blocks. For any combination of dedicated, subscriber, or binary blocks used in the monitoring system, it is possible to determine where a device pair is wired by looking at the device number and either the Chatlos Master Transducer Log or PressureMAP's 2X Device Log for module information. (Please refer to Section 2 of the *PressureMAP System Operations Manual* for information concerning the Device Log feature.)

For example, an office monitored by a Chatlos 640 L3 may use two subscriber modules and three dedicated modules for device wiring. It is possible that Device # P-040 could be the last device wired to a subscriber block, and the next device programmed into the Chatlos, P-051, is the first device wired to a new dedicated block.

The sequentially numbered PressureMAP Device Log would indicate the change from one block type to another by showing "DT (dedicated)" in the "Module" column of the report. Subscriber device numbers P-001 to P-040 would have "ST" displayed in this column. With this information you can positively identify which device pairs are wired to which Chatlos blocks and to which tip and ring pins. And by using the 289H access number, you can identify where each pair will be placed on the 289H connector block.



The next subscriber block used in the system will connect to subscriber relay cards 3 and 4, and should be labeled accordingly. If there is a third block, it would be identified with stickers “5” and “6” and cabled to the fifth and sixth cards in the 289H. The cables used to connect the device pairs from the connector blocks to the individual relay cards should also be labeled with corresponding numbers on both ends. This will prevent confusion if it becomes necessary to change out any 289H relay boards, connector blocks, or cables used in the monitoring function. It also makes it possible to map an individual device from the frame jumpers to the 289H monitor.

### ***Wiring and Cabling Requirements***

There are a number of requirements for wiring subscriber circuits to the 289H connector block 9800-6056:

1. Two pairs of jumper wires are required for each device: one is used to jumper the device pair from the field (Facility) at central office vertical frame to the 289H block; the other pair is used to complete the connection from the block to the central office (Equipment). Each pair of jumpers must be physically wired to the block. Refer to Example 2 in Section 1 of this manual for an illustration of a typical central office installation.

When wiring a monitor that has a combination of dedicated and subscriber circuits, you would use this subscriber connector block for all the wiring. The dedicated pairs would be wired to the assigned pins in the field (Facility) section of the block. They do not require jumpers on the corresponding Equipment pins.

2. The left section of the first connector block is used to wire the first group of 25 devices. The second group of 25 devices is wired to the pins in the right section of the block. The number of additional blocks required depends upon individual monitoring requirements.
3. Device circuits (jumpers) from the central office (Equipment) **MUST** be wired to the tip and ring pins located on the **BOTTOM** of the block (refer to FIGURE 4-2.)

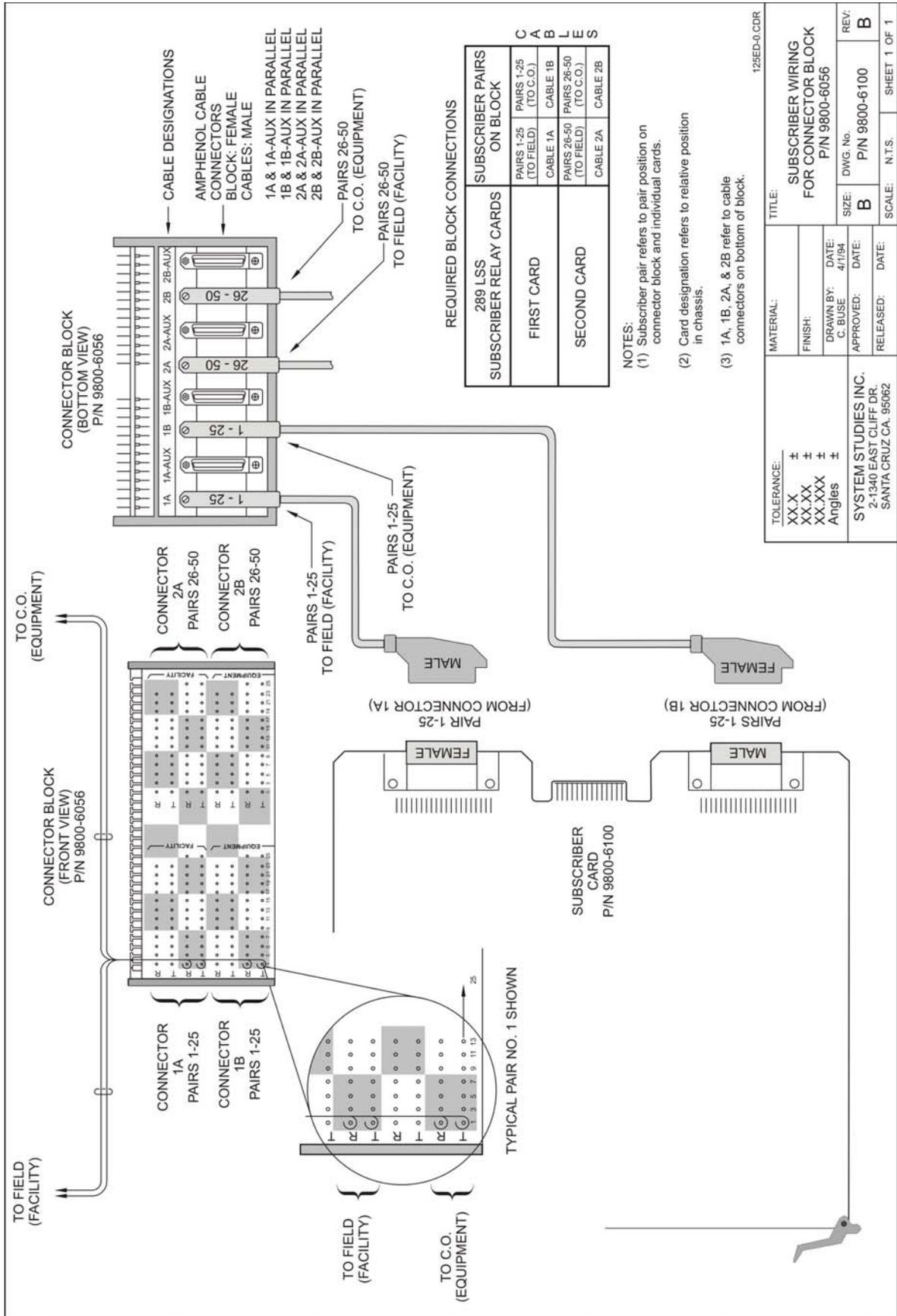


FIGURE 4-2: SUBSCRIBER WIRING FOR CONNECTOR BLOCK

4. Field (Facility) device circuits **MUST** be wired to the connector block pins on the **TOP** of the block.
5. Female cable connectors 1B and 2B, located on the block underneath the wire wrap pins, are internally wired to the four horizontal rows of pins on the bottom of the block. Connector 1B (containing the CO Equipment circuits 1-25) **MUST** be cabled to the **BOTTOM** connector of the first subscriber relay card (refer to FIGURE 4-2). Connector 2B (containing CO Equipment circuits 26-50) **MUST** be cabled to the **BOTTOM** connector of the next subscriber card installed in the chassis.

System Studies provides standard 25-pair, 50-pin cables with a female Amphenol connector on one end and a male Amphenol connector on the other end. (See FIGURE 1-14 in Section 1 for a description of cable lengths and the corresponding System Studies product numbers.) These cables are used **ONLY** to connect subscriber circuits from the block's "B" connectors to the bottom connector of the 289H's subscriber relay board.

**Note:** With the exception of the auxiliary connectors used on the P/N 9800-6056 subscriber block, all connectors are equipped with lock-in barbs to provide a positive and permanent cable connection. Once a cable has been inserted into the block's female Amphenol connector, it cannot easily be removed.

6. The 25-pair connector cable that has one male end and one female end must be identified **BEFORE** you place any cables into the block's locking connector slots. You will need to connect the male end of this cable to the block's "B" connector. If you insert this cable into connector slot "A" and complete the connection to the 289H relay card, the device numbering sequence will be disrupted and monitoring will be inaccurate.
7. Female cable connectors 1A and 2A are internally wired to the pins in the top sections of the block. Connector 1A (containing Facility device pairs 1-25) **MUST** be cabled to the **TOP** connector of the first subscriber relay card. Connector 2A (containing Facility device pairs 26-50) **MUST** be cabled to the **TOP** connector of the next subscriber card installed in the chassis.

Standard System Studies 25-pair, 50-pin cables equipped with a male connector on each end are used to make these connections.

8. When properly installed, cables will be run from connectors 1A and 1B at the block to the first subscriber 289H LSS Conversion Utility relay card in the 289H; connectors 2A and 2B will be cabled to the next subscriber card. Each additional P/N 9800-6056 connector block used in the system must follow this wiring and cabling sequence.

### ***Using the Auxiliary Connectors***

The subscriber block has four female auxiliary connectors that are wired in parallel with the primary connectors. These auxiliary connectors make it possible to disconnect subscriber device pairs from the 289H monitor without interrupting service to the customer. By placing a 25-pair cable between auxiliary connectors, you can bypass the 289H monitor without interrupting service to the subscriber (FIGURE 4-3).

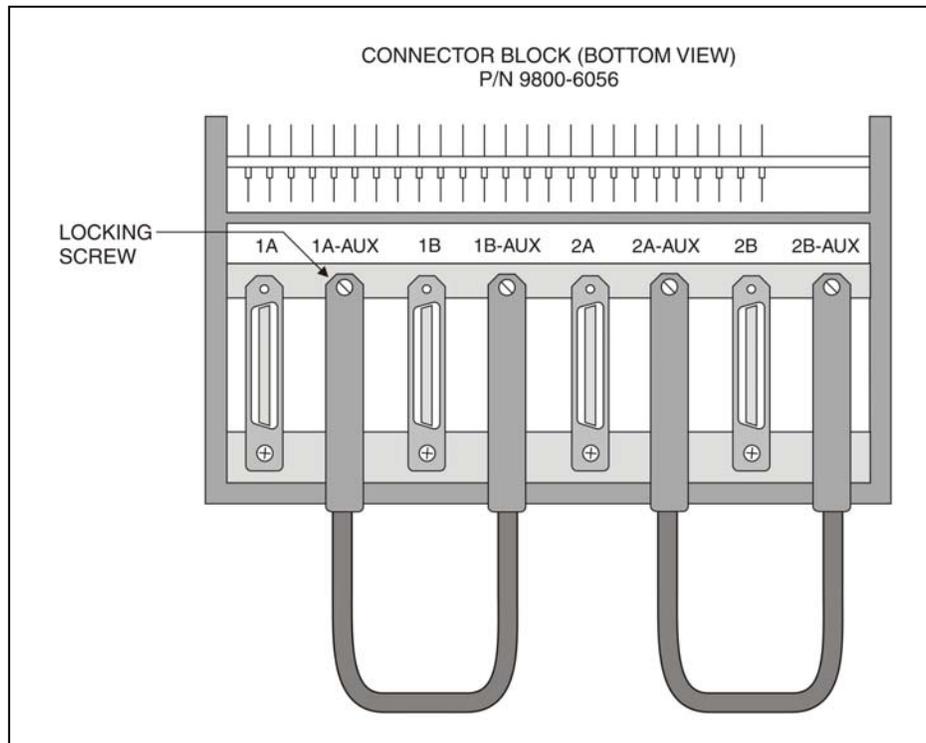


FIGURE 4-3: SUBSCRIBER BLOCK SHOWING AUXILIARY CABLING

Unlike the locking bars on the block's primary cable connectors, cables can be easily connected and disconnected from the auxiliary connectors. For example, if you need to service the subscriber relay card connected to the block's "Card 1" wire wrap pins, you would first connect a short cable (one with two male connectors) to the 1A-AUX and 1B-AUX connectors. This would allow you to disconnect the cables at the relay card without disrupting service. Cabling the 2A-AUX and 2B-AUX connectors will serve the same function for the subscriber card connected to the "Card 2" pins (FIGURE 4-3).

### Wiring Procedures

Once you understand how the P/N 9800-6056 connector block should be wired, the cutover process is relatively simple and straightforward. The procedures below describe what needs to be done to complete the cutover:

1. Obtain a copy of the 289H Cutover Worksheet for the office. You may also want to print a PressureMAP 2X Device Log report to help identify module designations for the old monitor. (Information on accessing PressureMAP Device Logs can be found in Section 2 of the MAP System Data Entry Manual.)
2. Procure new jumper wires for the 289H block connections.
3. Make sure you have a suitable wire wrap tool to make the connections to the 289H subscriber connector block.

4. Make sure that power is turned off to the 289H LSS before you make the required cable connections. Set the power switch on the utility board to the OFF position. Refer to FIGURE 3-1 in Section 3 of this manual.
5. Insert the proper connector cables into the bottom of the 289H connector block(s). See “Wiring and Cabling Requirements” on the preceding pages for information on which cables should be inserted into which Amphenol connectors.
6. Insert the other ends of the cables into the appropriate 289H relay board connector slots. Refer again to the “Wiring and Cabling Requirements” for information on proper cable connections to the 289H subscriber relay cards.
7. Install cables between the 1A-AUX and 1B-AUX connectors and between the 2A-AUX and 2B-AUX connectors. This will prevent any disruption of subscriber service during the cutover.
8. Re-lead new jumper wires from the central office frames to the connector block equipment bays for each device wired to the system. Four jumper wires will be required for each subscriber device: two for the connection from the block to the central office (Equipment) and two for the connection from the block to the field (Facility).
9. Using the 289H Cutover Worksheet and the wire wrap tool, individually wire the first 25 jumper pairs to the left side of the new 289H subscriber block. Make sure that you have properly identified each device pair at the frame and have confirmed its new pin location before you wire the conductors to the block.

Refer to FIGURE 4-1 for a close up view of the pin arrangement on the P/N 9800-6056 subscriber block. It may be helpful to refer to this drawing when wiring the block.

10. Once you have physically wired the first group of 25 Equipment and Facility pairs to the block, you can remove the jumpers for these devices from the central office frames to the old monitor.

At this point, the first 25 pairs from the field are wired through the 289H connector block to the central office switch. They will not actually be cut over to the 289H chassis until you have removed the cable between the 1A-AUX and 1B-AUX connectors.

11. Repeat procedures 8 through 10 for the next 25 subscriber devices listed on the 289H Cutover Worksheet. These device pairs should be connected to the group of pins on the right side of the block.

The procedures described above need to be completed for each new subscriber block used in the installation.

12. Once all the device circuits have been wired, turn the main power switch on the utility board to the ON position. A “power on” LED, located above the power switch on the 289H’s utility card, indicates that power is being supplied.

13. Remove the cable between the 1A-AUX and 1B-AUX connectors at the bottom of each subscriber connector block. This completes the cutover process for the first 25 monitoring devices. Next, remove the cable between the 2A-AUX and 2B-AUX connector slots. Repeat this procedure for each subscriber connector block used in the cutover process.

#### ***WIRING DEDICATED DEVICES TO SUBSCRIBER BLOCKS***

The instructions on the preceding pages describe the procedures for wiring subscriber circuits to subscriber blocks. Ideally, if your office has a combination of both types of devices, you will want to segregate the cards in the 289H chassis. This makes it easier to organize devices and update the system if it becomes necessary to add devices.

If you have an office with a majority of subscriber device circuits and only a few random dedicated device pairs, it may be easier and more economical for you to wire all of the devices on subscriber blocks. In this application, the dedicated pairs need to be terminated on the assigned pins in the UPPER (Facility) section of the subscriber block (FIGURE 4-1). The access number(s) assigned during the conversion process will indicate which pin numbers should be used for wiring dedicated pairs on the subscriber block.

#### ***CONNECTING 289H MONITOR TO SPARTON DEDICATED BLOCK***

System Studies provides two methods for simplifying the process of cutting over from a Sparton automatic cable pressurization monitor to a 289H LSS monitor. The newer method is to equip the 289H monitor with Sparton Dedicated Replacement relay cards (SPDRs) which connect directly to the existing Sparton dedicated block's A, B and C cables.

The SPDR can be read and diagnosed with PressureMAP Version 23; the automatic data conversion utility for the SPDR is available effective with Version 24. For systems running earlier versions of the PressureMAP software, System Studies supplies three special adapter cables which make it possible to connect standard 50-point dedicated relay cards in the 289H chassis to the Sparton dedicated connector block. (Instructions for connecting these cables are provided in the subsection following the SPDR setup procedures below.)

Both methods eliminate the need to run new central office jumpers for the 289H equipment. Please note that all incoming transducer pairs must be protected by central office primary voltage and current protection blocks.

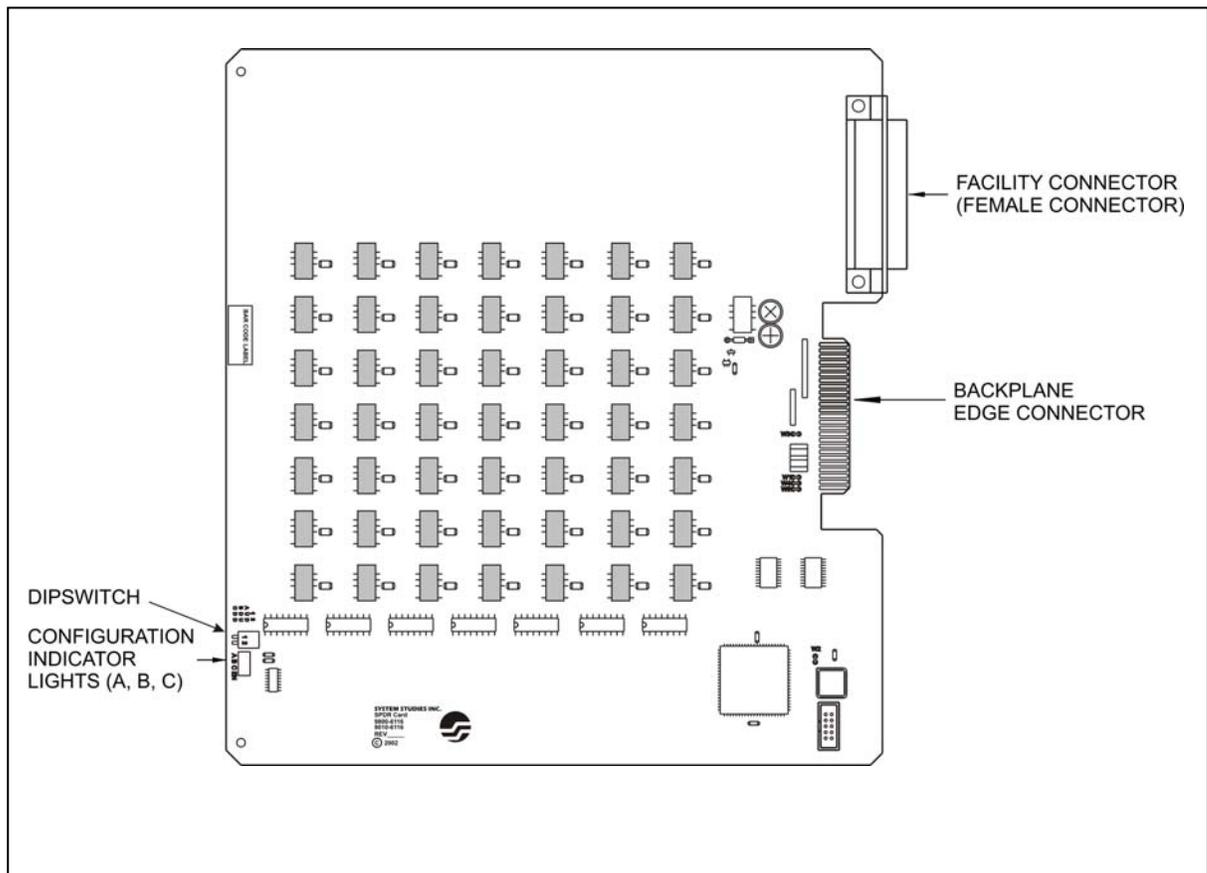
#### ***Setting Up the SPDR Relay Card***

The Sparton Dedicated Replacement relay card (P/N 9800-6116) contains relays for up to 36 dedicated Sparton pairs and connects directly to the Sparton block's A, B or C cable—inputs 1-36, 37-72 and 73-108 respectively. Please note that SPDR cards must be placed in the 289H chassis in front of other relay card types, and that they must be ordered (configured) as A, B, C, A, B, C, etc. The on-card dipswitch is set for A, B or C configuration (as appropriate) to translate the Sparton cable's pinout for 289H monitoring.

The following procedures describe how to connect the System Studies 289H LSS to the Sparton block's cables and set the relay cards' configuration.

1. Locate the cable between the Sparton monitor and Sparton connector block that represents the first 36 inputs on the block. Remove the (male) end that connects to the Sparton's J1

- module connector and attach it to the female connector on the first SPDR relay card, located in the fifth slot of 289H LSS chassis. This slot should be labeled CARD 1.
2. Repeat this procedure if there are additional Sparton cables to be connected. Remember that the Sparton block's cables must be transferred in the prescribed order. Cable A is moved from J1 to relay card #1, Cable B from J2 to relay card #2, and Cable C from J3 to relay card #3. This sequence begins again for SPDR relay card #4, if there are additional Sparton devices in the office.
  3. Identify the configuration dipswitch module located in the lower left corner of the SPDR card (see FIGURE 4-4).



**FIGURE 4-4: SPARTON DEDICATED REPLACEMENT CARD**

Switch 1 is the upper switch (away from the edge of the card), and Switch 2 is the lower switch (closer to the lower edge of the card). Set each card's dipswitches for the appropriate Sparton cable pinout (see FIGURE 4-5).

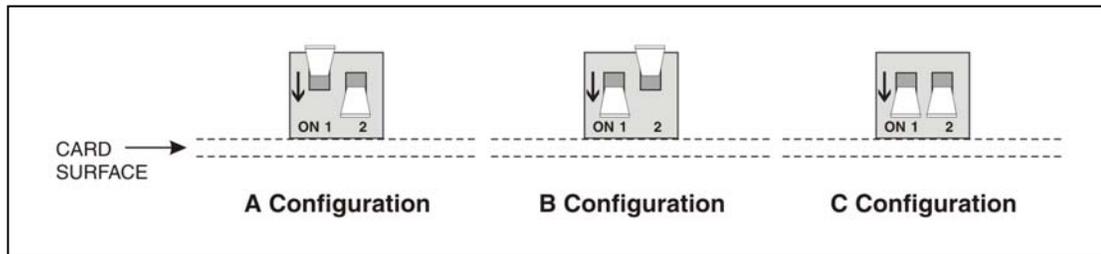


FIGURE 4-5: CONFIGURATION DIPSWITCH SETTINGS FOR SPDR

- ❖ **Card A:**
    - 1 = up (OFF), away from card surface
    - 2 = down (ON), toward card surface
  - ❖ **Card B:**
    - 1 = down (ON), toward card surface
    - 2 = up (OFF), away from card surface
  - ❖ **Card C:**
    - 1 = down (ON), toward card surface
    - 2 = down (ON), toward card surface
4. Once the SPDR cards have been connected and configured, turn the main power switch on the Utility Card to the ON position. (FIGURE 1-6 in Section 1 of this manual shows the 289H Utility Card layout.) A “power on” LED, located above the power switch, indicates whether power is being supplied.
  5. Check the configuration indicator lights on each SPDR (see FIGURE 4-4) to verify that the card has been set for the correct configuration.

**Note:** If the SPDR card’s configuration needs to be changed after the card has been installed, turn off the power switch on the Utility Card first. After making the changes needed, power the card back on. This ensures that the new configuration is initialized in the 289H’s memory.

### **Using Sparton Adapter Cabling**

System Studies supplies three special cables that simplify the cutover process from a Sparton monitor to a 289H LSS monitor. These cables connect standard 50-point dedicated relay cards in the 289H to the existing Sparton dedicated connector block.

Each of the three cables has the same dimensions and appearance (FIGURE 4-6). They are approximately five feet in length and equipped with three connectors—two that lead to the 289H LSS standard dedicated relay card and one that connects to the end of the cable that was originally plugged into the back of the Sparton chassis.

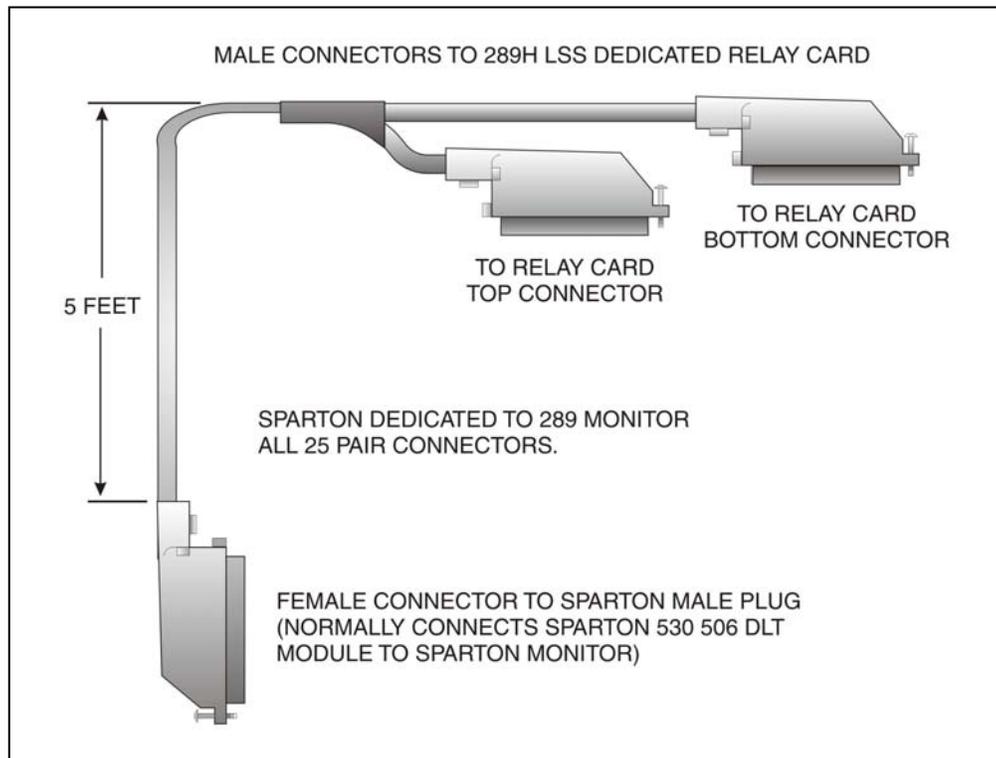


FIGURE 4-6: SPARTON TO 289H LSS CABLE

Because of the Sparton connector block wiring convention, which provides 36 monitoring points for each connectorized cable, a modification of the standard 289H LSS cabling is required. The Sparton A Cable (P/N 9800-6020) is used to connect Sparton inputs 1-36; Sparton B Cable (P/N 9800-6058) connects inputs 37-72; and the Sparton C Cable (P/N 9800-6059) connects inputs 73-108. The distinct wiring patterns in each of these cables is repeated in succession for cutovers that require more than three cables. For example, you would use another Cable A for the wiring of inputs 109-145, a second Cable B for inputs 146-182, etc.

**Note:** In some situations, the cables supplied will be identified by a manufacturer part number. Cable #CA4-0006489SSI1 represents Sparton Cable A; Cable #CA4-0005490SSI1 represents Sparton Cable B; and Cable #CA4-0005491SSI1 represents Sparton Cable C.

#### **CABLE INSTALLATION PROCEDURES**

The following procedures describe how to install the System Studies 289H LSS to Sparton Cabling.

1. Locate the cable between the Sparton monitor and Sparton connector block that represents the first 36 inputs on the block. Remove the end that connects to the Sparton and attach the female end of Cable A to the existing Sparton cable's male end.
2. Next connect the shorter of the two male connectors on Cable A to the top connector of the first dedicated relay card located in the fifth slot of 289H LSS chassis. This slot should be labeled CARD 1.
3. Connect the longer male end of Cable A to the bottom connector of this first relay card.

- Repeat this procedure if there are additional Sparton cables to be connected. Remember that the Sparton to 289H LSS cables supplied by System Studies must be used in the order described in the preceding paragraphs. Cable A is connected to relay card #1, Cable B to relay card #2, and Cable C to relay card #3. This sequence begins again for relay card #4.

## DEDICATED BLOCK

The standard dedicated connector block (P/N 9800-6055) used for the 289H installation provides wire wrap pins for 100 devices on dedicated pairs. Like subscriber block P/N 9800-6056, the face of the block (the side with the wire wrap pins) is divided into two main groups of pins. The left group is used to wire the first 50 device pairs to the 289H; the right group is used for the next 50 pairs (FIGURE 4-7).

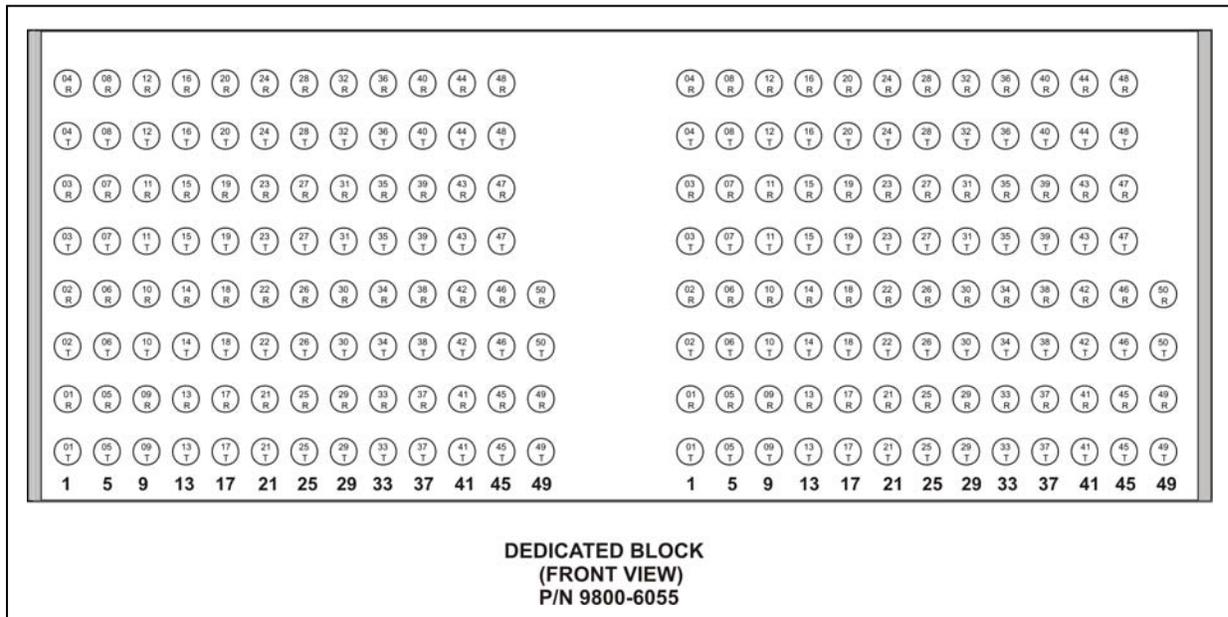


FIGURE 4-7: DEDICATED CARD

Pins are arranged on each section of the block in ascending order, beginning in the lower left corner. The first vertical row of pins in each group starts with the Tip 01 pin, followed by the Ring 01 pin, the Tip 02 pin, the Ring 02 pin, etc. There are eight pins (four tip and ring pairs) in each vertical row. The last row of pins in each section of the block contains only four pins, two each for the 49th and 50th device pairs (FIGURE 4-7).

To simplify the installation process and help in mapping device pairs to the individual boards in the 289H monitor, it is recommended that you place numbered stickers on the connector blocks to identify the 289H relay cards associated with a particular block.

For example, if your system uses all dedicated pairs for device monitoring, the first 100 device pairs in the system will be connected to the P/N 9800-6055 dedicated block and then cabled to the first two dedicated relay cards in the 289H (card slots 1 and 2). All input from the left side of the block will be connected to the first dedicated relay card; input from the right side will be connected to a second relay card. To provide a visual reference of this connection, it is a good idea to place a sticker

indicating the number “1” near the left group of pins. A number “2” should be placed near the right group of pins.

The next dedicated block used in the system will connect to dedicated relay cards 3 and 4, and should be labeled accordingly. If there is a third block, it would be identified with stickers “5” and “6” and cabled to the fifth and sixth dedicated cards in the 289H. The cables used to connect the device pairs from the connector blocks to the individual relay cards should also be labeled with corresponding numbers on both ends. This will prevent confusion if it becomes necessary to change out any 289H relay boards, connector blocks, or cables used in the monitoring function. It also makes it possible to map an individual device from the frame jumpers to the 289H monitor.

### ***Wiring and Cabling Requirements***

There are a number of requirements for wiring dedicated circuits to the 289H connector block 9800-6055:

1. One pair of jumper wires is required for each device. Jumpers from the central office frames will be used to wire device pairs from the field to the dedicated connector block. Refer to Example 1 in Section 1 of this manual for an illustration of a typical central office installation.
2. The left section of the connector block is used to wire the first group of 50 devices. The second group of 50 devices is wired to the pins on the right side of the block.

The number of additional blocks required depends upon your system’s monitoring requirements.  
Cabling Requirements

3. Female cable connectors 1A and 1B, located at the bottom of the block, are internally wired to the pins in the left section of the block. Connector 1A (containing device pairs 1-25) **MUST** be cabled to the TOP connector of the dedicated relay card. Connector 1B (containing device pairs 26-50) **MUST** be cabled to the BOTTOM connector of the card (refer to FIGURE 4-8).

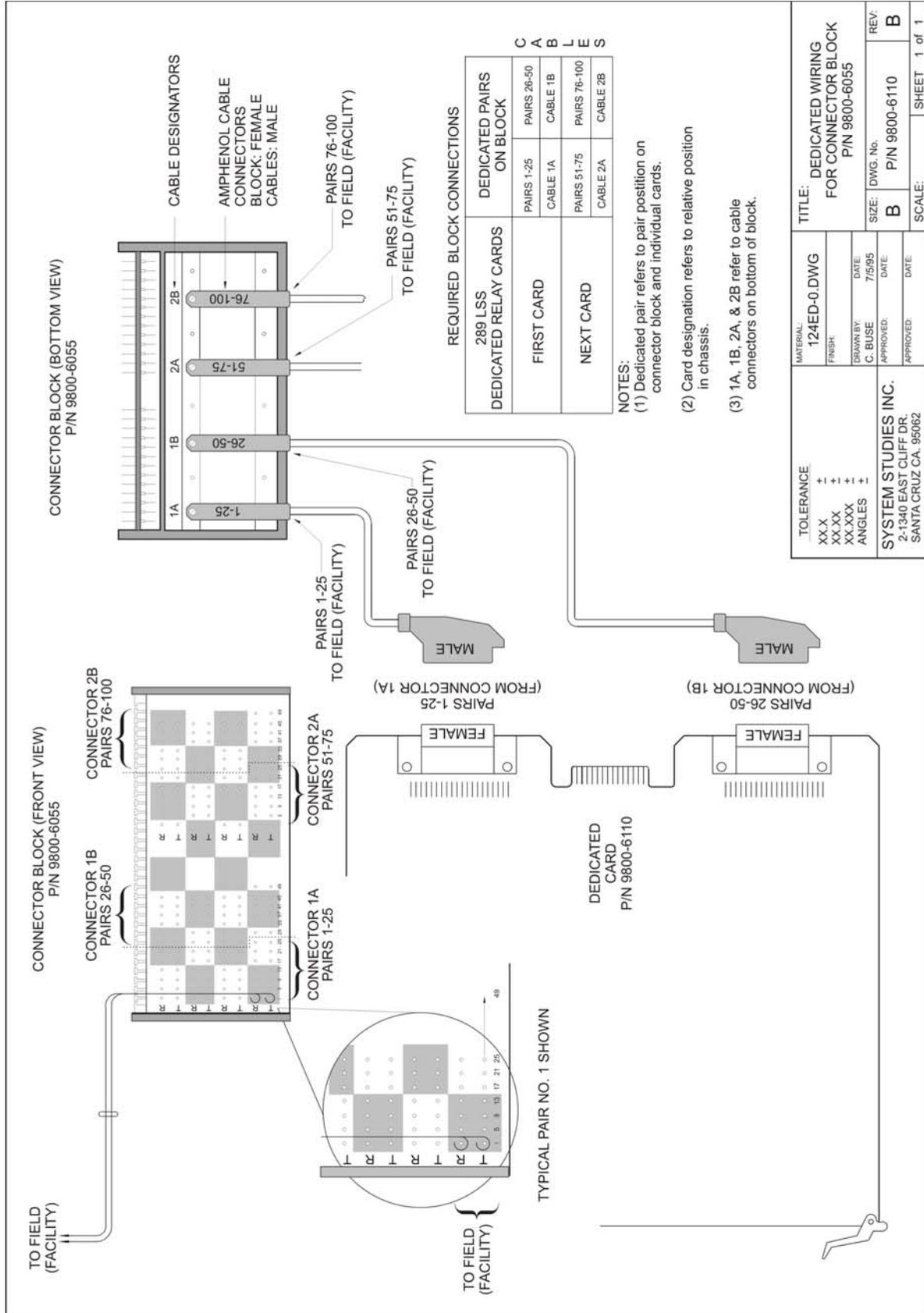


FIGURE 4-8: DEDICATED WIRING FOR DEDICATED BLOCK

System Studies provides standard 25 pair, 50 pin cables of varying lengths with male Amphenol connectors on both ends to make the connection between the block and the 289H relay board in the chassis. (See FIGURE 1-16 in Section 1 for a description of cable lengths and System Studies Product Numbers.)

**Note:** All of the connectors on the P/N 9800-6055 block are equipped with lock-in barbs to provide a positive and permanent cable connection. Once a cable has been inserted into the block's female Amphenol connector, it cannot easily be removed.

4. Female cable connectors 2A and 2B are internally wired to the pins in the right section of the block. Connector 2A (containing device pairs 51-75) MUST be cabled to the TOP connector of the next dedicated relay card in the 289H. Connector 2B (containing device pairs 76-100) MUST be cabled to the BOTTOM connector of this card (refer to FIGURE 4-8).
5. When properly installed, cables will be run from connectors 1A and 1B at the block to the first dedicated relay card in the 289H; connectors 2A and 2B will be cabled to the next dedicated card.

Follow this wiring and cabling sequence for each additional dedicated connector block used in the system.

### ***Wiring Procedures***

Once you understand how the dedicated connector block should be wired and cabled to the 289H LSS, you can begin the cutover process. Please note that the steps below describe the general procedures required to cut over an existing office monitor to the 289H. Some variations in these procedures may be required depending upon individual office/monitor requirements.

1. Obtain a copy of the 289H Cutover Worksheet for the office. You may also want to print a PressureMAP 2X Device Log report to help identify module designations for the old monitor. (Information on accessing PressureMAP Device Logs can be found in Section 2 of the MAP System Data Entry Manual.)
2. Procure new jumper wires for the 289H block connections.
3. Make sure you have a suitable wire wrap tool to make the connections to the 289H dedicated connector block.
4. Make sure that power is turned OFF to the 289H LSS before you make the required cable connections.
5. Insert the proper connector cables into the bottom of the 289H connector block(s). See "Wiring and Cabling Requirements" on the preceding pages for information on which cables should be inserted into which Amphenol connectors.
6. Insert the other ends of the cables into the appropriate 289H dedicated Monitoring Card connector slots. Refer again to the preceding two subsections of this manual for information on proper cable connections.

7. Re-lead new jumper wires from the central office frames to the connector block equipment bays for each device wired to the system. Two jumper wires will be required for each device on a dedicated circuit.
8. Using the 289H Cutover Worksheet and the wire wrap tool, individually wire the first 50 jumper pairs to the left side of the new 289H dedicated block. Make sure that you have properly identified each device pair at the frame and have confirmed its new pin location before you wire the conductors to the block.

Refer to FIGURE 4-7 for a close-up view of the pin arrangement on the dedicated block. It may be helpful to refer to this drawing when wiring the block.

9. Once you have physically wired the first group of dedicated pairs to the 9800-6055 block, you can remove the jumpers for these devices from the central office frames to the old monitor.
10. If applicable, repeat procedures 7 through 9 for the next 50 dedicated devices listed on the 289H Cutover Worksheet. These device pairs should be connected to the group of pins on the right side of the block.
11. When all the jumper connections have been made on the first dedicated block, continue wiring devices to the next connector block(s) until all devices have been cut over to the new system.
12. Once all the device circuits have been wired, turn the main power switch on the utility card to the ON position. (Refer to FIGURE 1-6 in Section 1 of this manual for a description of the 289H utility card.) A “power on” LED, located above the power switch, indicates that the power is being supplied.

## **SYSTEM CALIBRATION**

With the devices cut over to the new 289H monitor, and with the PressureMAP database for the office established using the conversion utility, the system can now be placed in operation. It is important to note that the 289H LSS does not require any external calibration. It automatically calibrates its measurement circuit against built-in, precision, stable resistances before each relay card is accessed. The calibration process compensates for changes in supply voltage and system conditions. Calibration constants are routinely supplied to PressureMAP for each relay card before the data points for the card are accessed.

