

# No. 669 SCREW PROGRAMMED DIGITAL COMMUNICATOR

## GENERAL INFORMATION:

The 669 Digital Communicator transmits coded messages over the telephone system to the Ademco 660 Digital Receiver located at a central monitoring station. Special leased lines are not required.

The 669 may be powered by a low cost 6 V. dry battery (Ademco Nos. 460 or 866) or a rechargeable 6 V. DC filtered power supply (Ademco Recharge-A-Packs Nos. 96, 97, 492, 493, 497). The No. 89 pack may not be used. It may be triggered from any alarm control or other equipment that has a 6 to 12 V. DC output or normally open dry contacts.

The 669 has 3 sending channels plus a test channel. These can be used for a variety of purposes. Most often, the first channel is used to transmit a fire message, the second to send a burglar alarm message, and the third to transmit a "panic" alarm or holdup. Any of these channels can also be used to monitor other functions such as freezers, oil burners, building temperature, machine operations, etc. The test channel transmits a distinctive message whenever the system is tested, or it may be used as a fourth monitoring channel. The test channel may also be used for transmitting a number of special messages (Abort, Opening and Closing Signals, Restore Signal) as described below under "Additional Features and Information".

## OPERATION:

Whenever a channel is activated, transmission to the central monitoring station occurs as follows:

1. First, the 669 checks for dial tone on the telephone line. If dial tone is detected, the 669 immediately and automatically dials the preprogrammed telephone number of the central monitoring station.
2. The probability of immediate dial tone detection is high, but if a dial tone is not detected within a few seconds, the 669 will disconnect itself from the phone line. After waiting just long enough to disconnect any incoming calls which might interfere with dialing (anti-jam...in most localities), the 669 will reconnect to the telephone line. If a dial tone is then detected, the unit will dial out immediately. If a dial tone is not detected within a few seconds, the 669 will dial anyway, on the assumption that the connection may be good even though the dial tone is not clear.
3. When connection is made with the central monitoring receiver, a "handshake" tone (acknowledgment) is sent over the telephone lines by the Receiver to the 669. This "handshake" confirms, to the 669, that connection has been completed to the receiver. If a "handshake" is not received, the 669 will hang up and try to dial again.

4. Upon receipt of the "handshake" tone, the 669 will start transmitting its message. In less than 5 seconds, the message, consisting of a 3 digit customer identification number, and a 1 digit alarm identification number (burglary, fire, panic, freezer temperature, etc.) is sent.

Since faulty phone lines can distort the numbers, the 669 sends the message up to 4 times while the receiver compares each message with the one before it. As soon as the 660 Receiver detects 2 successive identical messages, it considers the transmission "valid" and sends a "kiss-off" code (shutdown) to the Communicator.

If the 669 does not receive the "kiss-off" code by the time it has sent its message four times, it hangs up and dials again.

5. In the event that either the "handshake" or the "kiss-off" is not received, the Communicator hangs up and tries again. If necessary, the 669 will make 10 attempts to reach the central monitoring station. If after 10 attempts the Communicator cannot make contact, or receive the "kiss-off" signal, it will shut down and stop dialing. This 10 attempt shut down may be eliminated by cutting a jumper wire on the Communicator. With this "unlimited attempt" option selected, the 669 will keep dialing until: (1) contact is made with the central monitoring station (2) the 669 is turned off by momentarily removing power (3) the battery is depleted.

To permit transmission to less sophisticated receivers manufactured by others which do not have the "kiss-off" (message validation and shutdown) capability, the 669 can be changed so that once "handshake" has been received, the unit will simply send 4 messages and then shut down without waiting for "kiss-off". This change is easily made by cutting a jumper wire.

## **ADDITIONAL FEATURES AND INFORMATION:**

**TEST:** The special test channel of the 669 is used to check the operation of the entire transmission and receiving system. When activated from the No. 664 Test Button, the Communicator performs all its normal dialing and message transmission routines except it sends a special code 9 to indicate to the monitoring station that a test is being performed. During testing, an LED indicator on the Test Button will light. If the normal sequence of dialing, "handshake" and "kiss-off" occurs, the LED on the No. 664 will go out indicating that a successful test has occurred.

**ABORT:** At the installer's option, the 669 can be wired in either the abort or non-abort mode simply by positioning a lead on the printed circuit board.

In the abort mode, if the alarm system triggering the 669 is reset prior to "handshake", the message is cancelled and no transmission will occur. If the alarm system is reset after "handshake" but before "kiss-off" has occurred, a code 9 will be transmitted to the monitoring station, instead of the alarm code.

In the non-abort mode, once the 669 is activated, the message cannot be cancelled.

The abort feature is available only on channels A and B.

**RESTORE SIGNAL:** A restore signal indicates to the central monitoring station that the alarm system on the premises has been reset after an alarm has been transmitted. The programming of this feature is optional, is only available on Channel B, and can easily be programmed by positioning 2 jumpers on the printed circuit board.

**LINE SEIZURE:** Line seizure is a built-in feature of the 669. This feature will automatically disconnect all telephones in the protected premises whenever the 669 is activated. This permits the 669 to send its emergency message without risk of interruption. The line seizure feature also keeps the Communicator normally isolated from the telephone line to protect it from voltage surges caused by lightning, phone line testing and other transients.

**OPENING AND CLOSING SIGNALS:** These signals may be transmitted by using the Test capability of the 669. Using the 664 Test Button, the subscriber may manually signal the central monitoring station at a predetermined opening and/or closing time each day. The central monitoring station can then monitor the exact entry and exit of personnel. An alarm identification code 9 will normally be displayed along with the 3 digit customer identification. For an automatic alternative to depressing the Test Button, an open circuit magnetic switch on the entrance door, connected across terminals 6 and 11 of the 669, will activate both the opening and closing signals. Note: CONTACT ACTION SHOULD BE MOMENTARY ONLY. A switch should be used to disable this contact during the day.

**LOW BATTERY DETECTION:** An important feature of the 669 is low battery detection. Whenever the battery voltage to the 669 drops to 4 V., and the unit is transmitting a test, abort, or restore signal, the usual code 9 will instead be displayed as a code 8 signifying low battery. If dry cells are used, frequent periodic testing is advised. When a low battery test code 8 is transmitted, the dry battery should be replaced.

**"HOLD" FEATURE:** The 669 will function with Ademco receivers that have multiple telephone line capability since it can automatically detect the special "hold" signal that these receivers will send when they are busy processing another call. When the receiver is ready, the 669 on "hold" will be signalled to proceed with its normal transmission. If the 669 is not taken off "hold" within approximately one minute, it will hang up and try to dial again.

## **INSTALLATION PROCEDURE:**

### **PROGRAMMING:**

The 669 is easily programmed by placing programming screws, washers and nuts in appropriate holes on the printed circuit board. The programming hardware will be found in a separate package inside the cabinet.

The 669 must be programmed with the printed circuit board removed from the cabinet. To remove the printed circuit board from the cabinet, take out the two screws at the lower edge and pull the lower edge slightly toward you and down.

The programming area is located at the top right hand corner of the printed circuit board. Hold the printed circuit board so that the programming area appears as shown in Figure 1. The telephone number for the central monitoring station and the subscriber identification number are programmed by using the 14 columns available. The 14 columns are lettered "P A B C D E F G H J K W X Y" respectively. See the explanation of these letters immediately following Figure 1.

Located to the right of these columns are three additional columns which are used to program alarm codes for Channels (CH) A, B and C. Also, there is a screw to be located at the upper right hand corner of the programming area. This is the "FD" (Fast Dial) screw. When the FD screw is installed in this position, the dialing process bypasses prefix and area code functions thus providing faster dialing to the central monitoring station. This screw must not be used if a prefix number or an area code is required to dial the central

monitoring station. When not used, store it (and the extra screw provided) in the SPARE SCREWS area.

CAUTION: UNIT WARRANTY MAY BE VOIDED IF PROGRAMMING SCREWS ARE NOT INSERTED AS SHOWN IN FIG. 1. DO NOT OVERTIGHTEN AS DAMAGE MAY RESULT TO THE P.C. BOARD.

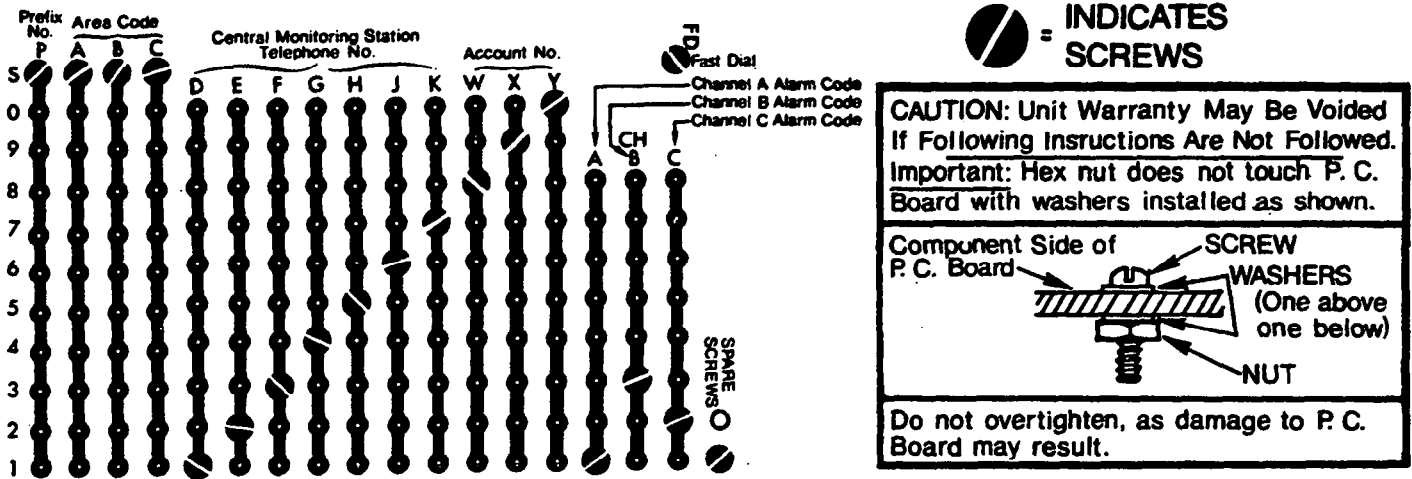


Figure 1

PROGRAMMING AREA, Showing Programming Screws inserted to dial the Central Monitoring Station (123-4567) with Account No. (890) and Channel A (Alarm Code 1), Channel B (Alarm Code 3), Channel C (Alarm Code 2). In this example, Prefix and Area Code are not used; therefore the FD Screw is shown installed.

P If local requirements specify the use of a prefix number to obtain dial tones, use this column and insert a screw, washers and nut in the appropriate numbered hole. If not used, insert the screw in the top hole in the column. (Figure 1 shows a screw in the top row "S" as no prefix is required in the example shown.)

A,B,C To be used for area code when required. If not used, place screws in the top holes of their respective columns. (Figure 1 shows screws in top row "S" as no Area Code is required in the example shown.)

NOTE: In the example shown with "P" and "A,B,C" in row "S" (unused), screw "FD" is therefore also shown installed. If either Prefix or Area Code is being used, the FD screw should not be installed, but should be stored in one of the SPARE SCREW holes.

D-K Program the central monitoring station telephone number by arranging the screws and nuts in their proper locations. (Figure 1 shows number 123-4567 programmed.)

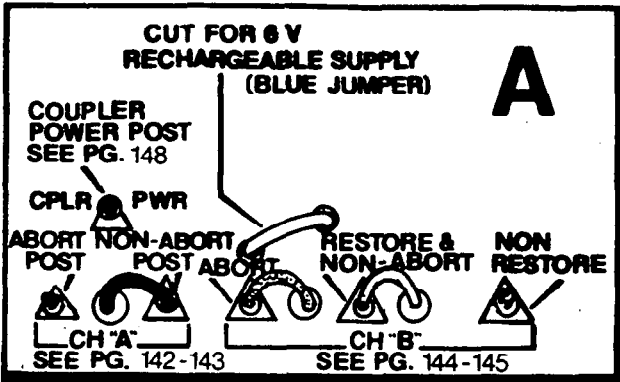
W,X,Y Program the customer's account number (identification number) by locating the screws and nuts in this area. Up to 999 different account numbers can be programmed. (Figure 1 shows account number 890 programmed.)

CH A The alarm code number for Channel A is programmed in this column. (Figure 1 shows code 1 programmed.)

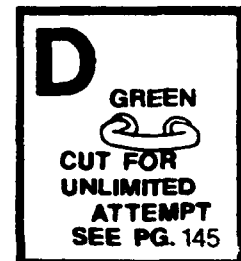
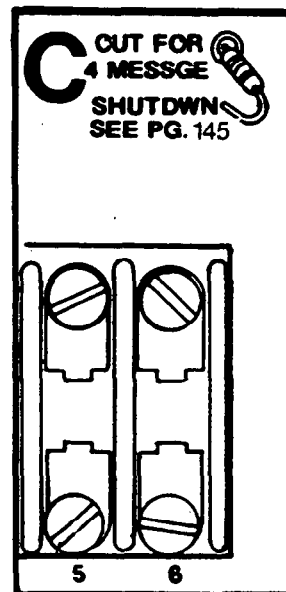
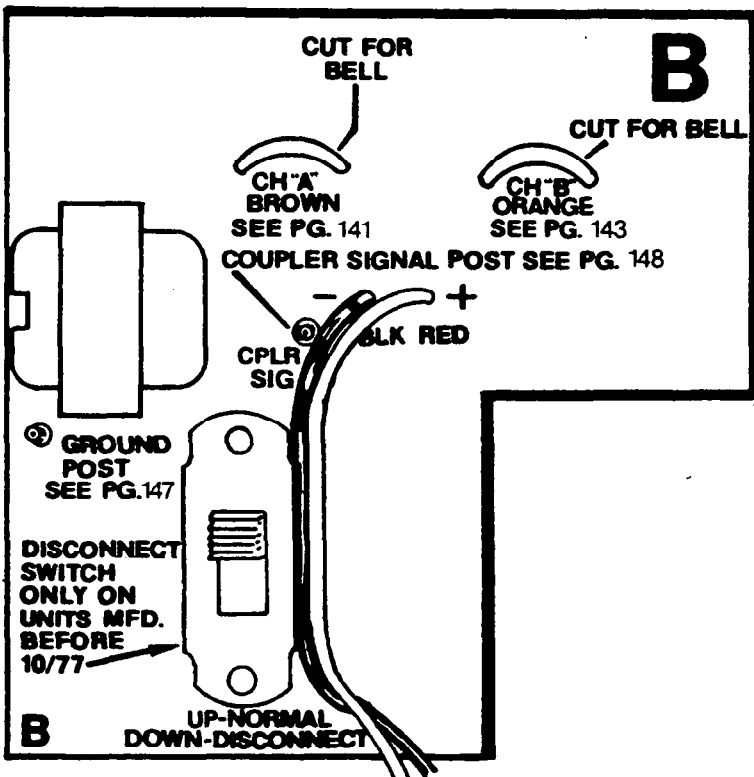
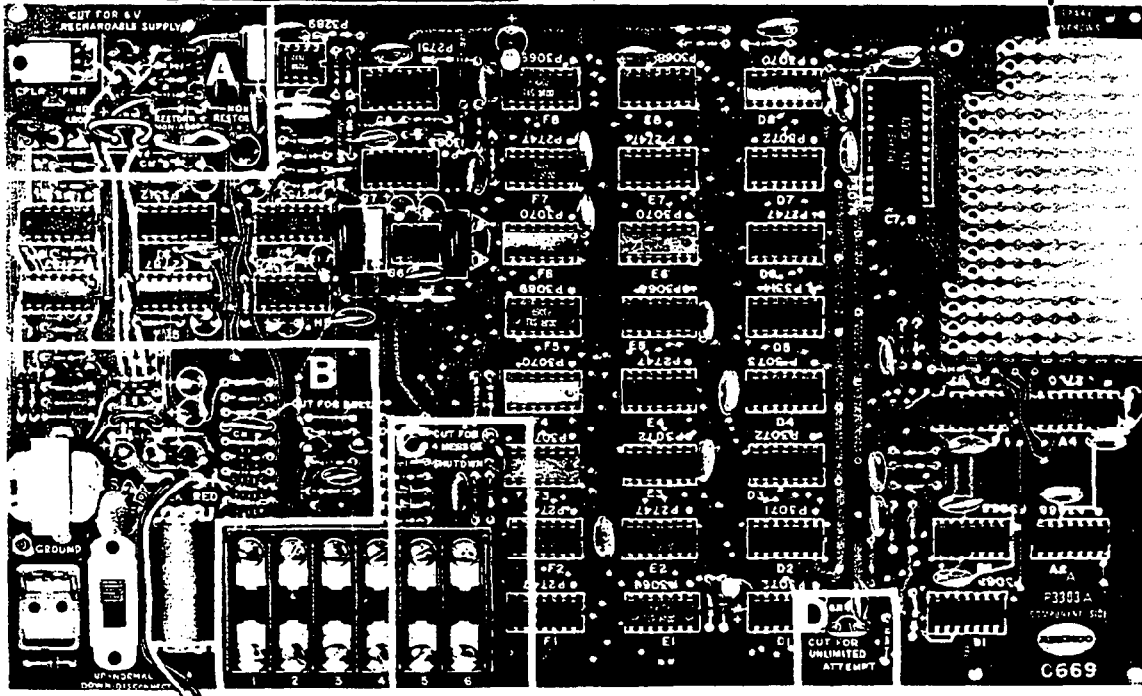
CH B The alarm code number for Channel B is programmed in this column. (Figure 1 shows code 3 programmed.)

CH C The alarm code number for Channel C is programmed in this column. (Figure 1 shows code 2 programmed.)

Figure 2



PROGRAMMING AREA (SEE Figure 1)



When two alarms are tripped simultaneously, the numerically lower alarm code always takes priority over the higher. For example, if an alarm code 2 is tripped on Channel A and a code 1 is tripped on Channel B, the lower code 1 will take priority and send its message.

We recommend that codes be assigned as follows:

1. Fire
2. Hold-up (Panic)
3. Burglary
4. )
5. ) As required.
6. )
7. )

8&9. Code 8 and 9 should never be assigned as they are preset at the factory and reserved for "Test", "Abort" and "Restore". Normal code for these functions is 9. If a low battery condition exists, the 669 automatically transmits a code 8 instead.

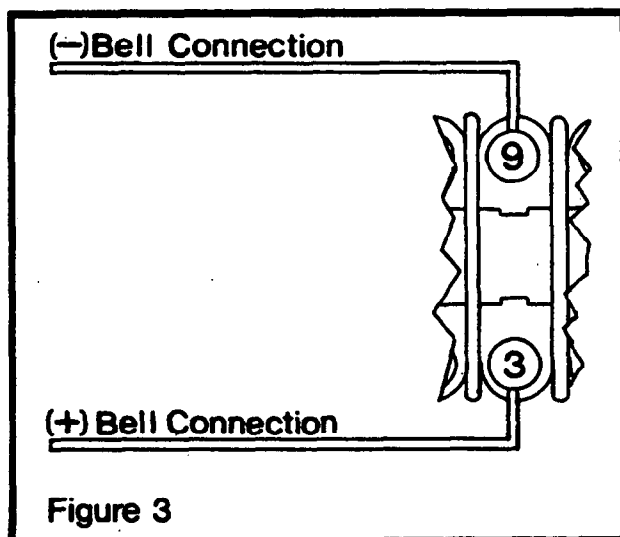
BEFORE REINSTALLING THE PRINTED CIRCUIT BOARD IN THE CABINET:

- A. Verify that all screws and nuts are tight.
- B. Make certain that there is only one screw and nut in each column (P,A,B,C, etc).
- C. Mount cabinet.
- D. Carefully reinstall the printed circuit board in the cabinet. Make sure the top edge is in its proper slots before replacing the screws removed previously.

### Connections - Channel A

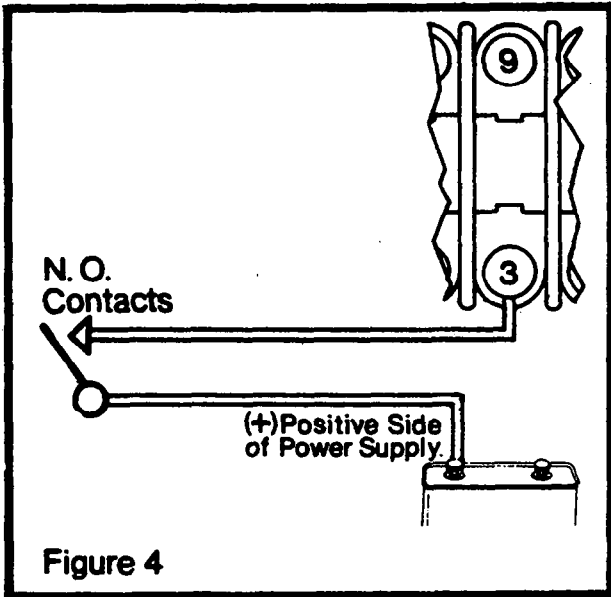
CHANNEL A CAN BE ACTIVATED IN TWO WAYS:

1. By a 6-12 V. DC voltage input from a control instrument (Fig. 3).  
This method is used when the 669 is connected as a "slave" to an existing local alarm. The 669 is connected to the local alarm bell terminals.



- a. Connect the positive bell terminal from the local alarm control to terminal 3.
- b. Connect the negative bell terminal to terminal 9.
- c. Cut the Channel A Jumper (brown). (See Fig. 2, PC board photo.)

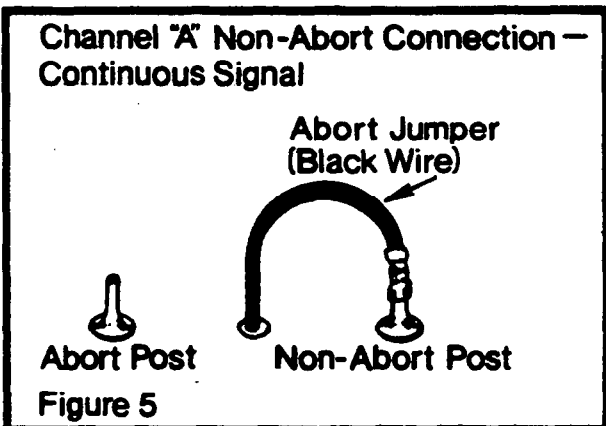
2. By a normally open "dry" contact closure (Fig. 4). In this mode, Channel A will activate when it senses the closure of a normally open circuit.



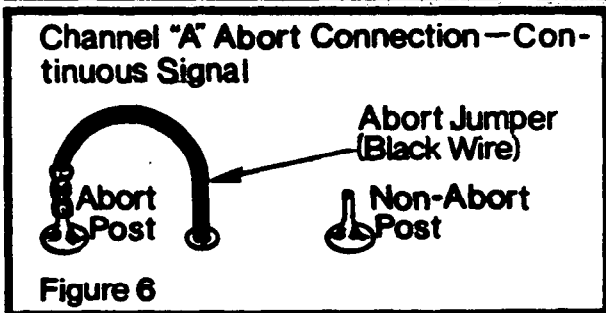
- a. Connect one lead from the normally open circuit to the (+) terminal of the 669's power supply.
- b. Connect the other lead from the normally open circuit to terminal 3 on the 669's terminal strip.
- c. Do not cut the Channel A Jumper (brown). This is only cut when a voltage input is used.

CHANNEL A ABORT, NON-ABORT CONNECTIONS:

If the alarm condition that has triggered the 669 is reset before the Communicator has sent its message, the message will be cancelled (aborted) or allowed to go through (non-aborted) depending on which option the installer has selected. These options may be selected by placing the Abort Jumper (black) on the proper post, as shown in the following figures.

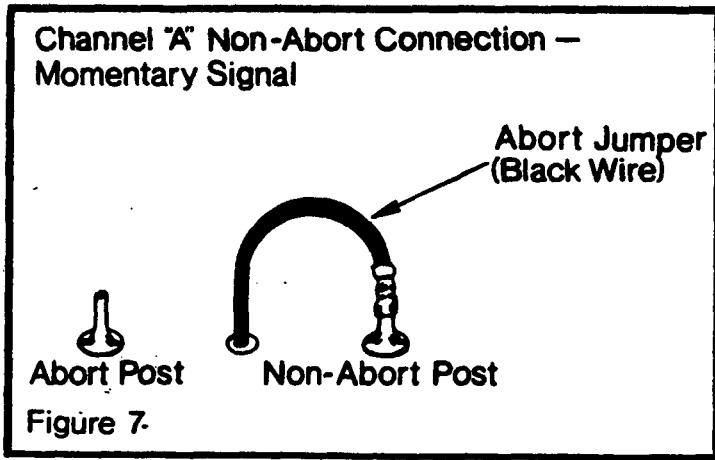


- a. If the input signal to Channel A is continuous, and you do not want messages to be aborted, place the Channel A Abort Jumper (black) on the Non-Abort Post. (Fig. 5)



- b. If the input signal to Channel A is continuous and you DO wish to abort messages if the alarm system is reset quickly, place the Channel A Abort Jumper (black) on the Abort Post. (Fig. 6) See note below.

NOTE: If the input signal is removed before the 669 receives the "handshake" (acknowledge signal) from the receiver, the Communicator will hang up and not send any message at all. If the input signal is removed after "handshake", but before "kiss-off", a code 9 message will be sent.

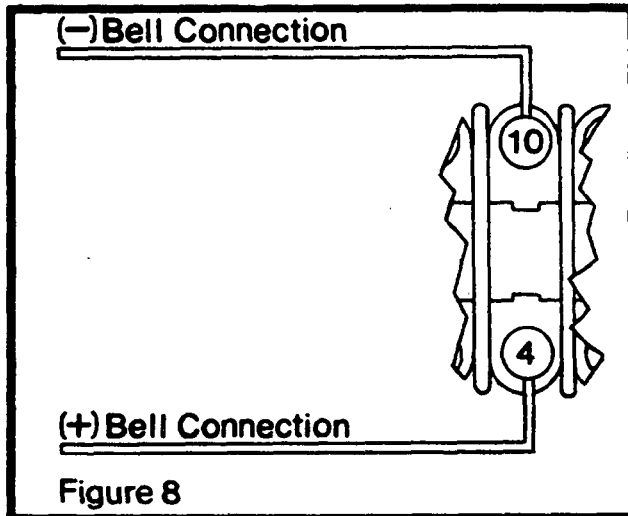


- c. If the input signal to Channel A is momentary, the Non-Abort Post MUST be selected. The Channel A Abort (black) must be placed on the Non-Abort Post. (Fig. 7)

**Connections - Channel B**

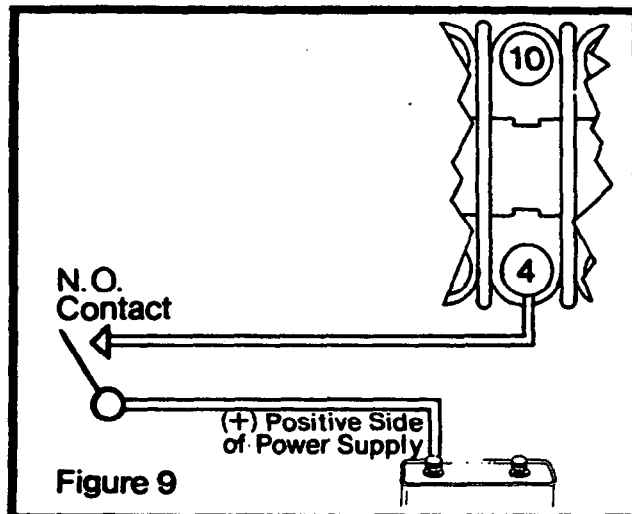
CHANNEL B, LIKE CHANNEL A CAN BE ACTIVATED IN TWO WAYS:

1. By a 6-12 V. DC voltage input from a control instrument (Fig. 8).  
This method is used when the 669 is used as a "slave" to an existing local alarm,



- a. Connect the positive bell terminal from the local alarm control to terminal 4.
- b. Connect the negative bell terminal to terminal 10.
- c. Cut the Channel B Jumper (orange). (See Fig. 2, PC board photo.)

2. By a normally open "dry" contact closure (Fig. 9). In this mode, Channel B will activate and transmit upon sensing the closure of a normally open circuit.

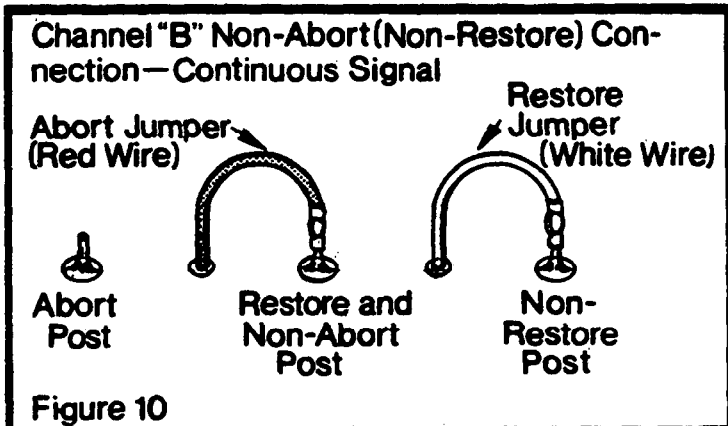


- a. Connect one lead from the normally open circuit to the (+) terminal of the 669's power supply.
- b. Connect the other lead from the normally open circuit to terminal 4 of the 669's terminal strip.
- c. Do not cut the Channel B Jumper (orange). This is only cut when a voltage input is used.

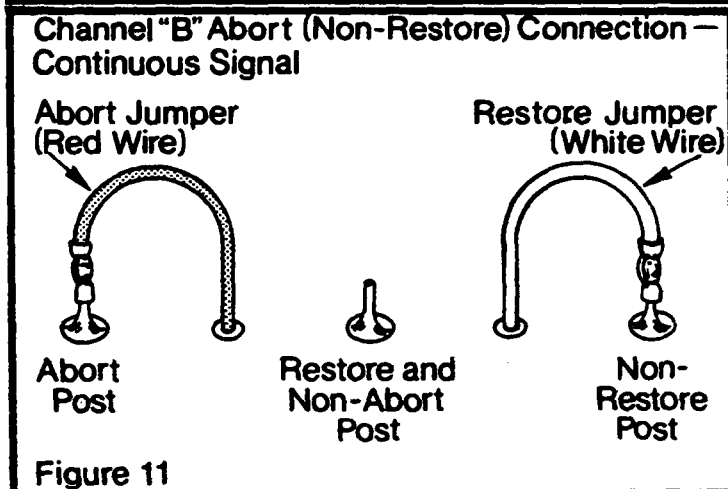


CHANNEL B ABORT, NON-ABORT, RESTORE, NON-RESTORE CONNECTIONS:

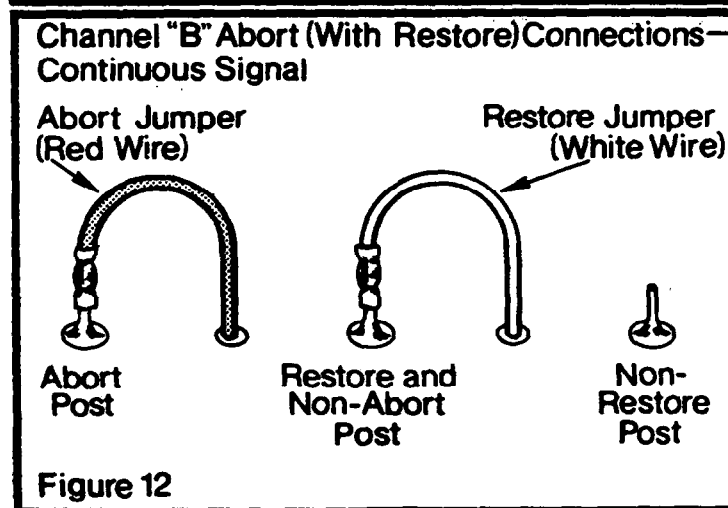
Like Channel A, Channel B may be wired for either abort or non-abort. In addition, Channel B may also be wired to send a restore signal. When wired for Abort (with Restore), an abort occurs if the alarm condition is cleared before "handshake" has been received. A code 9 message will be sent if the input signal is removed after "handshake" but before "kiss-off". A restore signal occurs if the alarm condition has been removed from the 669 after the monitoring station has received the full alarm message and "kiss-off" has taken place. The purpose of this restore signal is to allow the monitoring station to determine when the alarm condition has been cleared.



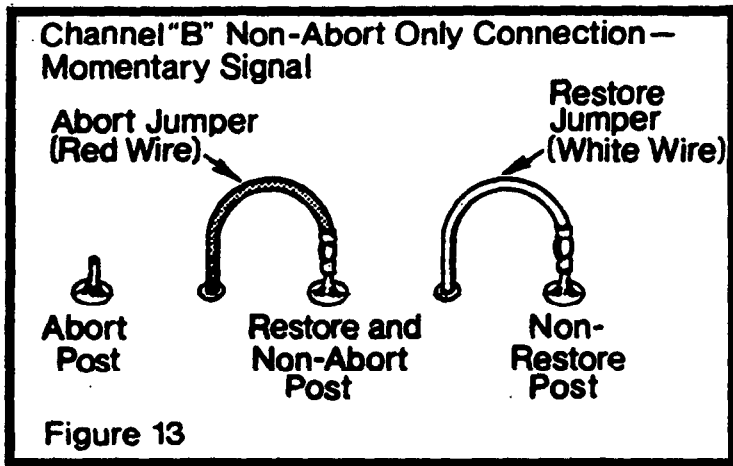
- a. If the input signal to Channel B is continuous and you do not want messages to be aborted, place the Channel B Abort Jumper (red) on the Restore and Non-Abort Post. In this condition, you cannot get a restore signal; therefore, the Restore Jumper (white) must be placed on the Non-Restore Post (Fig. 10).



- b. If the input signal to Channel B is continuous and you DO wish to abort messages if the alarm condition is cleared quickly, but you DO NOT want a Restore signal, place the Channel B Abort Jumper (red) on the Abort Post and leave the Channel B Restore Jumper (white) on the Non-Restore Post (Fig. 11).



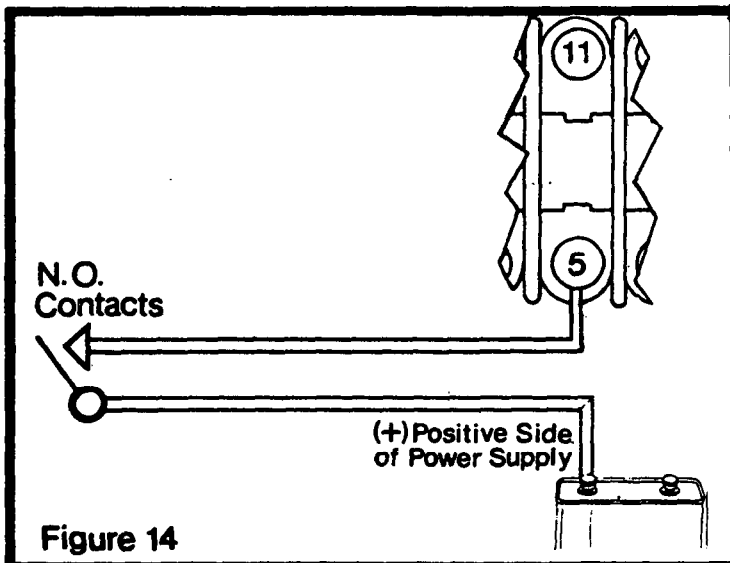
- c. If the input signal to Channel B is continuous and you DO wish to abort messages and you DO desire a Restore Signal, place the Channel B Abort Jumper (red) on the Abort Post and the Channel B Restore Jumper (white) on the Restore and Non-Abort Post (Fig. 12).



- d. If the input signal to Channel B is momentary, the Non-Abort Post must be selected. Place the Channel B Abort Jumper (red) on the Restore and Non-Abort Post. In this condition, you cannot get a Restore signal; therefore, place the Channel B Restore Jumper (white) on the Non-Restore Post (Fig. 13).

### Connections-Channel C:

CHANNEL C, UNLIKE CHANNELS A AND B CAN ONLY BE ACTIVATED BY NORMALLY OPEN DRY CONTACT CLOSURE (FIGURE 14). It should not be activated by voltages derived from external sources.



A lock-in hold-up device such as the Ademco 268 and 269 is ideal for this purpose. Momentary devices may also be used. Since this channel is primarily intended for (but not limited to) use as a "Hold-up" or "Panic" Channel, it is a "non-abort" channel only.

### Four Message Shutdown Option:

The 669 contains an option which will cause it to send four messages after receipt of "handshake" and then shut down. When this option is selected, the usual up-to-10-attempts to seek-"handshake" is not affected, but code comparisons and "kiss-off" signals are not used.

To obtain the four message shutdown option, cut the resistor jumper (see Fig. 2, PC board photo).

### Unlimited Attempt Option:

The 669 contains an option which will prevent it from shutting down after making 10 attempts to communicate with the central station. When this option is selected, the 669 will dial the central monitoring station until successful connection is made. There is no limit to the number of dialing attempts which can be made to obtain this connection. All other functions of the 669 are unchanged. To obtain the Unlimited Attempt Option, cut the green jumper (see Fig. 2, PC board photo).

## Testing The Communicator:

It is advisable to test the operation of the 669 periodically with the central monitoring station so that improper conditions (such as low battery) might reveal themselves. The Ademco No. 664 Test Button (Digital Communicator Tester) should be used. The 664 contains a normally open momentary contact switch and a solid state indicator lamp. Momentary closure of the switch will initiate the test function and cause the 669 to dial the No. 660 Receiver and send a test signal (code 9). The solid state indicator lamp will light whenever the 669 is operating. It will turn off when the 669 shuts off. Transmission time of the test may vary if the central monitoring station is busy or if telephone problems exist. As a general rule, the LED on the test button should turn off in 5 minutes or less. If the LED is still on after 5 minutes, the subscriber should check with the central monitoring station. (See Figure 15)

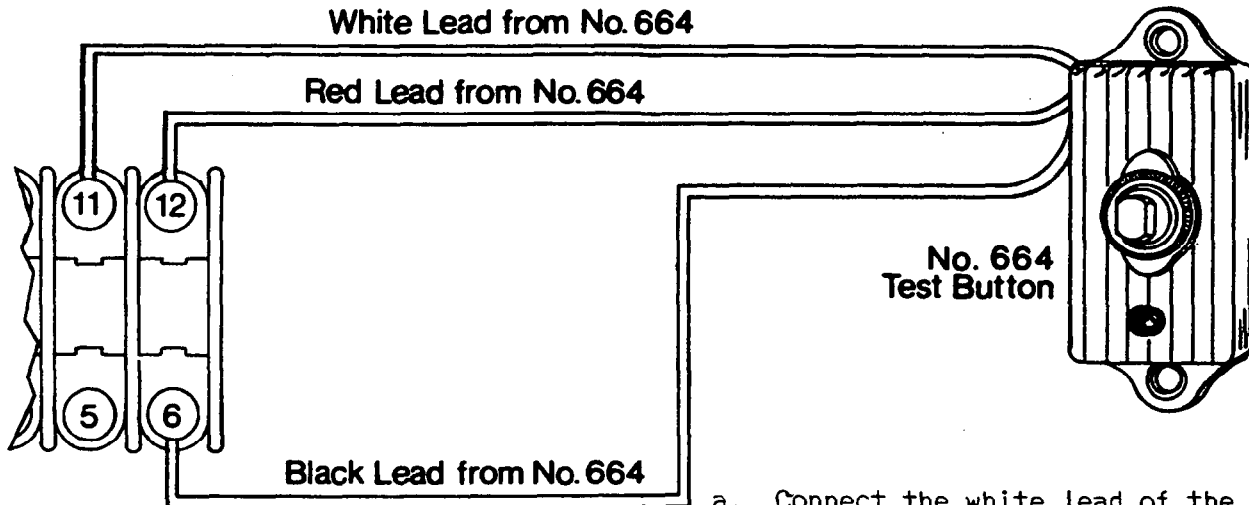


Figure 15

- a. Connect the white lead of the No. 664 to terminal 11 of the 669.
- b. Connect the black lead of the No. 664 to terminal 6 of the 669.
- c. Connect the red lead of the No. 664 to terminal 12 of the 669.

## Power Connections: NOTE: Before connecting power:

- a) Inspect PC board for any loose bits of wire or other foreign matter.
- b) Recheck to insure that all connections are according to instructions.

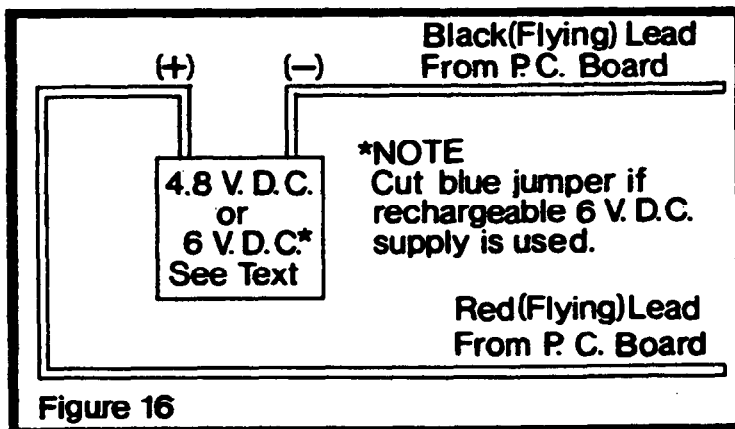


Figure 16

- i. The 669 can be powered \*by:
  - a. Rechargeable 6 V. DC filtered power supply, such as Ademco Nos. 96, 97, 492, 493 or 497. The blue jumper on the 669 should be cut if a rechargeable 6 V. DC supply is used. (See Fig. 2, PC board photo.)
  - b. Rechargeable 4.8 V. DC battery pack. (Do not cut blue jumper.)

- c. Dry lantern battery such as Ademco Nos. 460 or 866. (Do not cut blue jumper.)

\*See CAUTION on next page.

- d. No. 89 Energy Packs or other power supplies supplying pulsating DC may not be used.

**CAUTION:** If the 669 is powered from the same supply that powers the control instrument, bells, sirens or other devices that pulsate may not be used. Unless the control instrument is wired for "silent" operation, a separate power supply should be used for the 669.

2. The black (flying) lead from the PC Board should be connected to the negative (-) terminal of the power source. The red lead should be connected to the positive (+) terminal.
3. If a rechargeable power supply is used, the plug-in transformer should be installed in an outlet that is always ON (24 hour outlet).

### Ground Connection:

The 669 contains surge arrestors to help protect the dialer circuits from voltage surges on the telephone line. A cold water pipe ground is necessary for this protection. A length of wire has been furnished for this purpose. Connect the end with the socket to the ground post. (See Fig. 2, PC board photo.) The remaining end of the wire connects to a cold water pipe ground.

### Telephone Line Connections:

**NOTE:** Units manufactured before October 1977 contain an ON/OFF isolation switch which, in the OFF (DOWN) position, disconnects the Communicator for telephone company testing of the phone lines. (See Fig. 2) This switch is not on later units as quick and easy connection to and disconnection from the phone lines can now be accomplished with the Ademco No. 620 Direct Connect Cord which plugs into a telephone company supplied jack (USOC No. RJ31X).

1. Not using a coupler: If a telephone company coupler is not used, the telephone line, usually the red and green wires, can be connected directly to terminal numbers 1 and 7 of the 669. Since the 669 has built-in line seizure priority, it is recommended that all handsets be connected to terminal numbers 2 and 8 of the 669. This insures that the 669 will control the telephone line and that a handset off-hook will not prevent the completion of a call to the central monitoring station. (See Fig. 17 for connections.)

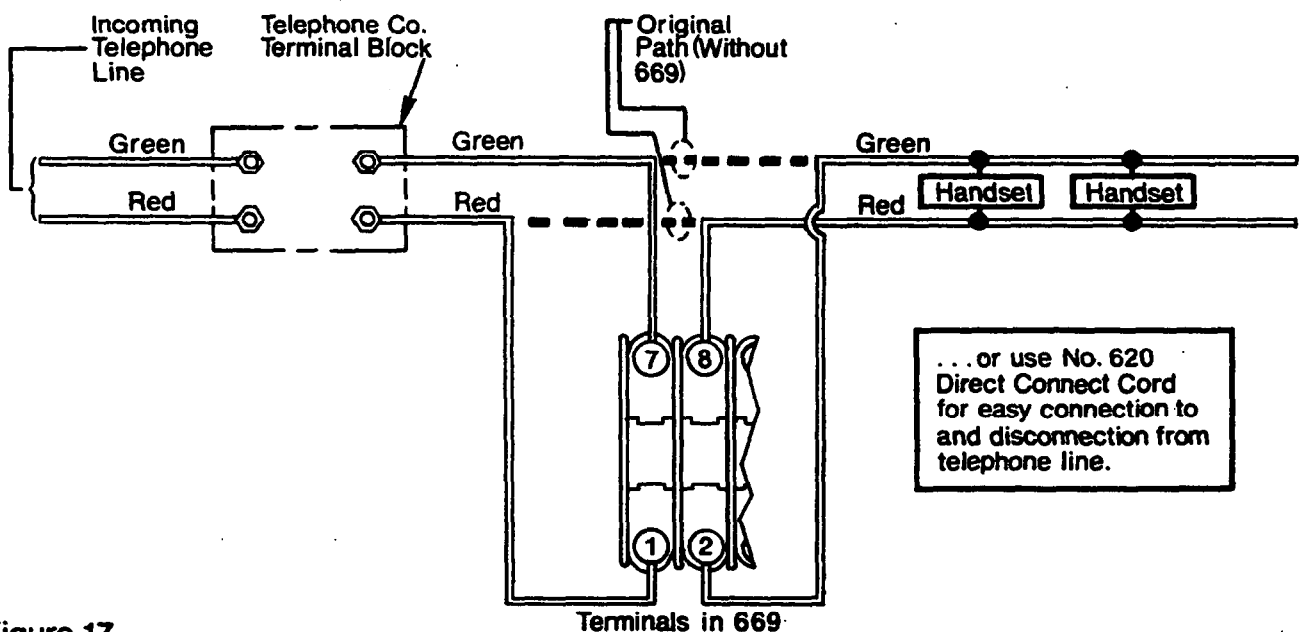


Figure 17

NOTE: If a telephone company supplied jack (USOC No. RJ31X) is being used to connect the 669 to the telephone line, an Ademco No. 620 Direct Connect Cord is required. Make the connections as follows:

No. 620 Cord (Color)	Communicator (Terminal No.)
RED	1
GREEN	7
BROWN	2
GRAY	8

2. Using a coupler: If a telephone coupler (model SU6AQ) is used to connect the 669 to the telephone line, a No. 616 power supply must be used to power the coupler and the 669. A No. 617 Coupler Cord must be used to make proper connections from the 669 to the coupler. Cut the blue jumper near the coupler power post on the 669. (See Fig. 2, PC board photo) and make connections as follows:

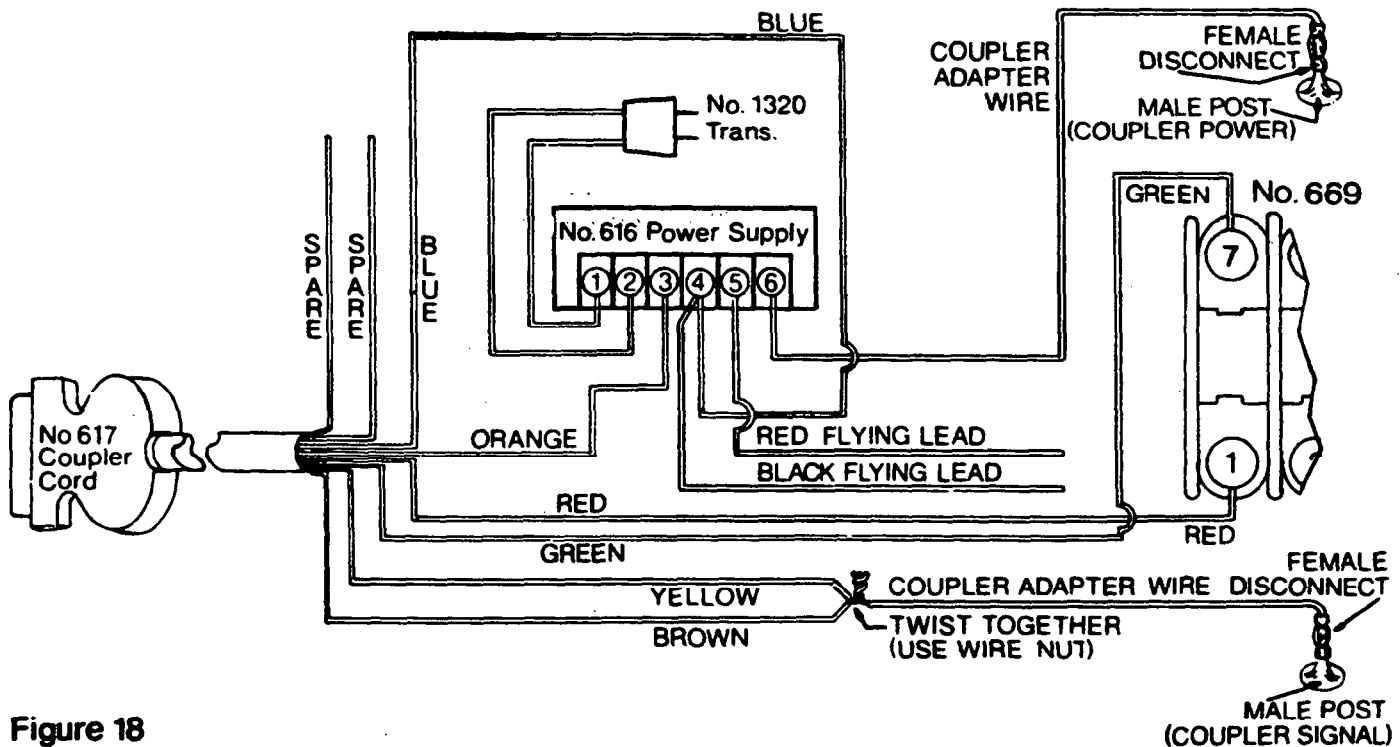


Figure 18

From	To	From	To
Orange Wire (617)	Terminal 3 (616)	Yellow & Brown Wires (617)	Coupler Signal Post (669)
Blue Wire (617)	Terminal 4 (616)	Terminal 1 (669)	Red Wire (617)
Black Flying Lead (669)	Terminal 4 (616)	Terminal 6 (616)	Coupler Power Post (669)
Red Flying Lead (669)	Terminal 5 (616)	Terminal 1 } (616)	{ 12 V. AC Terminals of No. 1320 Transformer
Green Wire (617)	Terminals 7 (669)	Terminal 2 }	

NOTE: The two remaining spare wires may be wired in series with the protective circuit of this local alarm to supervise the coupler cord. If not used, tape the wire ends.

## GENERAL SPECIFICATIONS:

### Current Drain:

In standby (non-activated)- negligible (below 0.01 ma)  
During call (activated) - 0.6 Amps.

### Dimensions:

12" x 12" x 3" (30.5 x 30.5 x 7.5 cm approx.)

### Power:

6 V. DC (dry battery or rechargeable, filtered power supply) or 4.8 V. DC (rechargeable battery pack).

### Activating Inputs (Triggering):

Channel A: 6 V. DC to 12 V. DC (battery or full wave rectified) or "dry closure".  
Channel B: 6 V. DC to 12 V. DC (battery or full wave rectified) or "dry closure".  
Channel C: "Dry Closure" only.  
Test Channel: "Dry Closure" only.