# INTERCONNECTING DEVICES
# COMMON EQUIPMENT
# 142A TEST SET AND 242A ADAPTER

## 1. GENERAL

**1.01** This section provides identification, operation, and maintenance information for the 142A test set. Also covered is the 242A adapter used in conjunction with the test set.

**1.02** This issue of the section is based on the following drawing:

SD-1E258-01, Issue 1—142A Test Set

If this section is to be used with equipment or apparatus reflecting later issue(s) of the drawing, reference should be made to the SDs to determine the extent of the changes and the manner in which the section may be affected.

## 2. IDENTIFICATION

### PURPOSE

#### 142A Test Set

**2.01** The 142A test set (Fig. 1) is designed to permit field testing of various multilead interconnecting units (IU) by simulating the inputs from the customer-provided equipment (CPE). The test set can be used for installation and maintenance tests of 101- or 102-type IUs.

#### 242A Adapter

**2.02** The 242A adapter (Fig. 2) is intended to be used as a testing aid in conjunction with the 142A test set but can be used in any situation requiring access to an IU for observation of relay operation, point-to-point testing, etc, while the unit is mounted in a panel or apparatus mounting.

### ORDERING GUIDE

- Set, Test, 142A
- Adapter, 242A

***Replaceable Components*** (142A test set only)

- 841224322 Lead Assembly—two conductor, for supplying power to test set
- 841224330 Lead Assembly—ten conductor, for access to IU
- Fuse, 70H (3/4 amp)
- Lamp, A3—Replacement for PWR, CS, CBS-, C-, CRV- lamps

***Associated Apparatus***

- Set, Hand Test, 1013A, or equivalent

### DESIGN FEATURES

#### 142A Test Set

**2.03** Features of the 142A test set include:

- Self-contained in portable metal case 10 inches wide, 6 inches high and 7 inches deep, including cord storage space. The cover is removable.
- Powered from same 24-volt power source as IU under test.
- Permits complete installation or maintenance testing of 101- and 102-type IUs, typically those interfacing Bell System CO lines with a customer-provided PBX.
- Visual indications of the status of the IU output leads.
- Terminals for 1013A hand test set, or equivalent, to permit monitoring or voice communication.

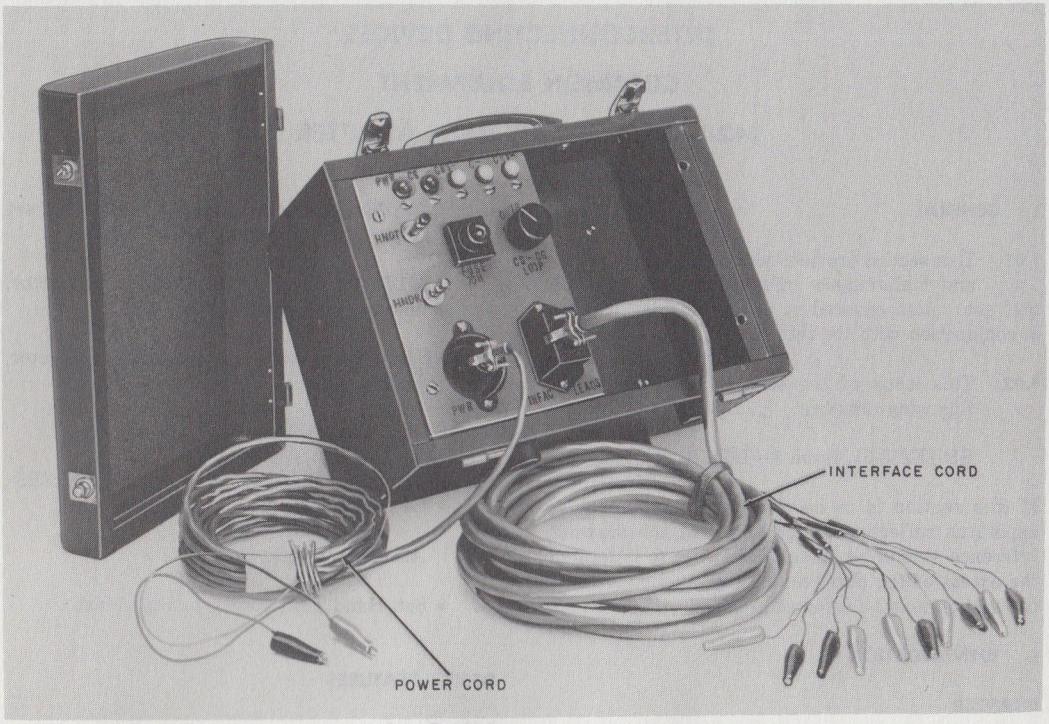


**Fig. 1—142A Test Set**

- Provision for varying resistance in CS-CG loop.

- Self-indicating fuse in power supply lead and visual indication (PWR lamp) when power is applied to test set.

- Requires a maximum of 300 ma or typical 200 ma of testing current at 24 volts dc.

**242A Adapter**

**2.04** Features of the 242A adapter include:

- Allows IU to be extended from face of mounting arrangement approximately 6 inches.

- Can be plugged into 604A, 604B or 615A panel, or 69G apparatus mounting. The notch in the top edge of the adapter accepts the designation strip on 604B and 615A panels as a latching bar to hold adapter in place.

- Connectors on adapter accept 8-inch IUs.

- All 80-pin circuit paths wired to adapter connectors.

- Hand hold to facilitate insertion and removal of adapter.

- Provides access to circuit board to permit verification of operation and in-circuit testing.

## 3. OPERATION

**3.01** The 142A test set is designed to permit a quick field test of the 101- and 102-type

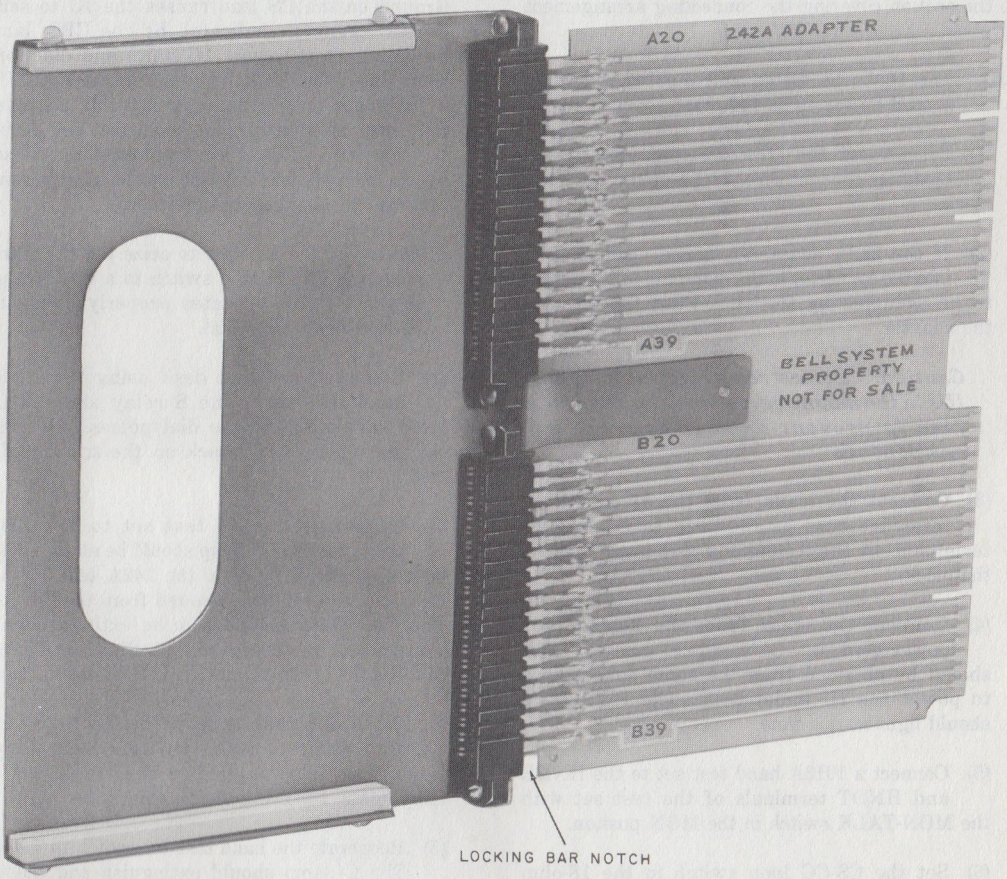


**Fig. 2—242A Adapter**

IUs using visual signals as indications of operations. It may not detect marginal operation, for instance that caused by excessive loops effecting transmission or dial pulsing. No positive test set indication is provided regarding transmission. Results may be relative with variations due to minor differences in the 1013A hand test set and the user's judgment.

**3.02** Where marginal operation is suspected, more precise testing gear may be required.

**3.03** The test set should be connected to the IU on the Telephone Company side of the interface block, permitting testing of the unit, mounting arrangement, and all wiring up to the point of demarcation from customer responsibility. ***The CPE must be disconnected before the test set is attached.***

**3.04** For the specific method of connecting the interface cord and the leads involved, refer

to the section covering the connecting arrangement involved.

**3.05** The IU to be tested and the 142A test set should be set up as follows:

(1) Disconnect the CPE by removing the B bridging clips or wire straps at the interface block.

(2) If the 242A adapter is to be used, plug it into the connector in the mounting arrangement to be occupied by the IU. Plug the IU into the adapter.

***Caution: Before removing or installing IUs in the mounting, remove the associated fuse to prevent damage to electrical components.***

(3) Connect the leads from the 10-conductor interface cord as required to the proper terminals on the Telephone Company side of the block.

(4) Connect the leads from the 2-conductor power cord to −24 volts and ground. This should be obtained from the same source used to power the IU under test. The PWR lamp should light at this time.

(5) Connect a 1013A hand test set to the HNDR and HNDT terminals of the test set with the MON-TALK switch in the MON positon.

(6) Set the CS-CG loop switch in the 18-ohm position for a 101A or 102A IU or in the 100-ohm position for a 101B or 102B IU.

**3.06** The test sequence following is general and may vary slightly, depending on the IU and connecting arrangement involved. For instance, the CBS1 and CBS2 leads are only used with the 101-type IUs (ground start trunks). The specific sequence will be covered in the section covering the arrangement involved.

**3.07** After circuit preparation, proceed as follows:

(1) Operate switch on 1013A hand test set to the TALK position. The S relay in the 142A test set will operate lighting the CS lamp and providing ground on the CS lead through the selected resistance on the CS-CG loop switch. Ground on the CS lead causes the IU to seize the CO trunk as indicated by the CBS- lamp becoming lit (101-type IU only) and dial tone being heard in the hand test set. If the IU is a 101B used on a ground start trunk, a ground hum may be heard in the hand test set during trunk seizure. This is a normal condition caused by the ground start placed on the ring passing through the coupling transformer.

***Note:*** If the IU fails to seize the CO trunk, move the CS-CG loop switch to a lower value. If the IU now operates properly, it should be considered marginal.

(2) Dial the local test desk using the 1013A hand test set. The S relay and the CS lamp should follow the dial pulses. Request the test desk to call back on the trunk under test.

(3) Operate the hand test set to the MON position. The CS lamp should be extinguished indicating the S relay in the 142A test set has released, removing the ground from the CS lead. The CBS- lamp should also be extinguished in approximately 1/2 second indicating the IU has released the CO trunk and the CO has disconnected.

(4) When the trunk is seized on the return call from the test desk, the CBS- lamp lights. When ringing is applied to the trunk, the C- lamp lights, following the ringing cycle.

(5) Reoperate the hand test set switch to TALK. The C- lamp should extinguish and the CS lamp lights indicating ringing has been tripped and the call answered. The trunk should now be cut through the IU and transmission quality judged using the hand test set.

(6) Instruct the test desk to reverse line polarity. The CRV- lamp should light and remain lit for the duration of the reversal.

(7) Have the test desk release the trunk and return hand test set switch to MON. The CBS- and CS lamps should be extinguished and the IU should be in the idle condition.

**3.08** When all testing is complete, remove power and interface cords and 242A adapter if used. Connect CPE by restoring B bridging clips or wire straps at interface connecting block.

## 4. CONNECTIONS

**4.01** Fig. 3 provides a schematic of the 142A test set and the set up required to test a typical IU. For a complete schematic of the IU and testing procedures, refer to the section for the specific connecting arrangement.

## 5. MAINTENANCE

**5.01** Maintenance of the 142A test set is limited to replacement of the components listed in the ***Ordering Guide.***

**5.02** To replace the A3 lamps, remove the 2-type lamp caps using a 319B tool and the lamp using a 553A tool. When installing new lamp, ensure lamp contact surfaces mate with those in the socket.

**5.03** Removing the cap of the fuse block will provide access to the 70H fuse if replacement is required.

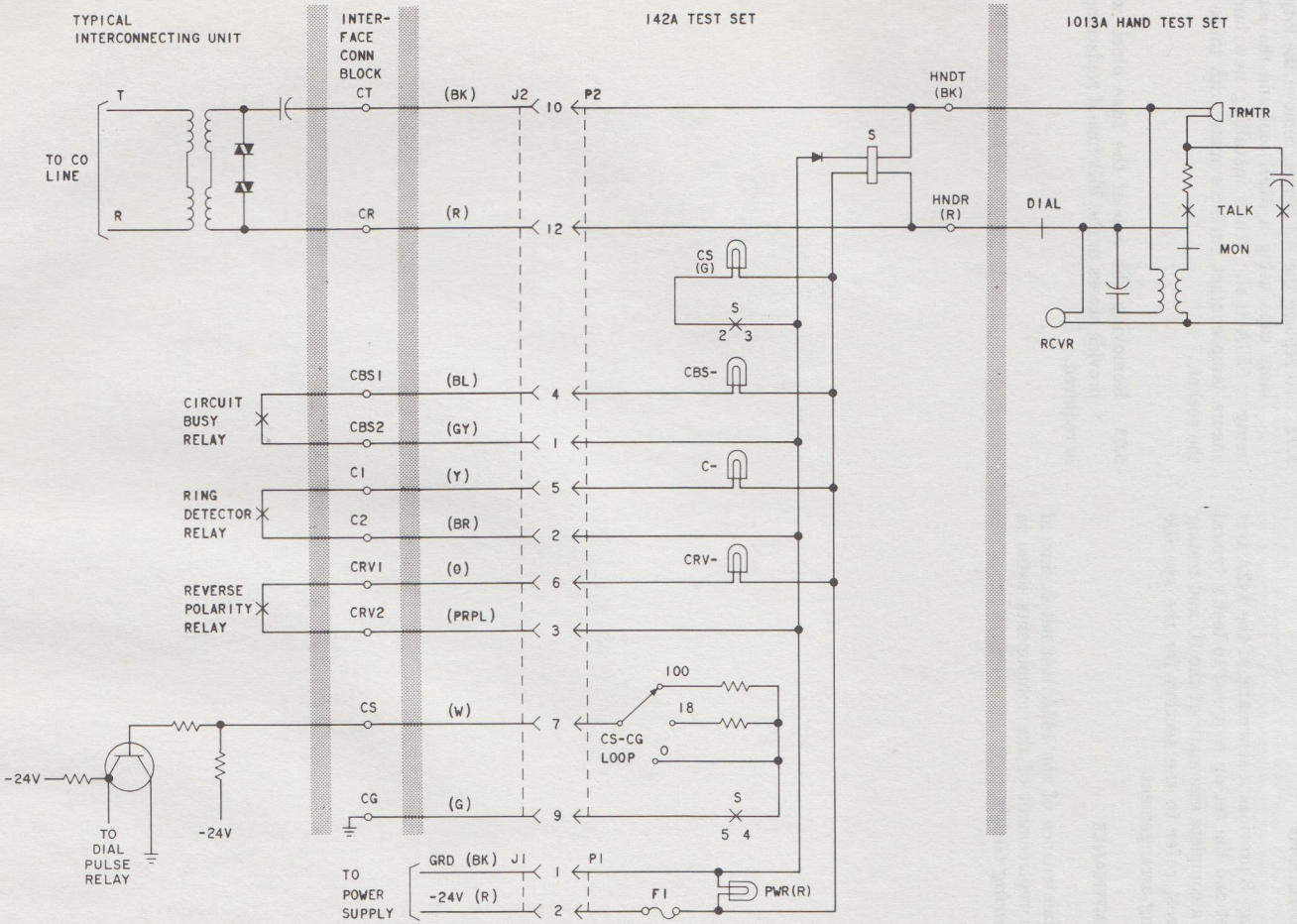


**Fig. 3—142A Test Set, Connections**