

PAIR-A-MATIC®
CS-10 CONNECTOR PRESSER
BT-10 BALANCE TESTER
DESCRIPTION AND MAINTENANCE

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1. GENERAL

1.01 This section covers the description, operation, and maintenance of the CS-10 PAIR-A-MATIC presser and the BT-10 balance tester.

1.02 This section is reissued to add the CS-10 PAIR-A-MATIC presser and the BT-10 balance tester. The CS-6 and CS-7 PAIR-A-MATIC presser models have been superseded but will be retained in this section due to the number in use.

1.03 The various gauges and combinations of wire conductors that may be joined with B wire connectors are given in Section 632-205-201.

1.04 The method of joining and testing conductors with the CS-10 PAIR-A-MATIC and the BT-10 balance tester is described in Section 632-205-206.

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2. DESCRIPTION

2.01 The CS-10 presser and the BT-10 balance tester are component parts of the pair-a-tester splicing system commonly called pair-a-tester. (See Fig. 1.) The purpose of the pair-a-tester is to enable the employee to splice and test cable pairs simultaneously. The test is accomplished automatically when pressing a pair of B wire connectors by comparing the mutual capacitance of each pair to that of a reference pair. An audible alarm will sound if the pair is faulty but no indication will be given if the pair is good.

2.02 This test set will normally detect most splicing errors and cable faults including opens, grounds, shorts, crosses, splits, splice backs and pair unbalances. These faults will be detected at the point of the splice and in both directions from the splice, testing the entire length of the cable pair.

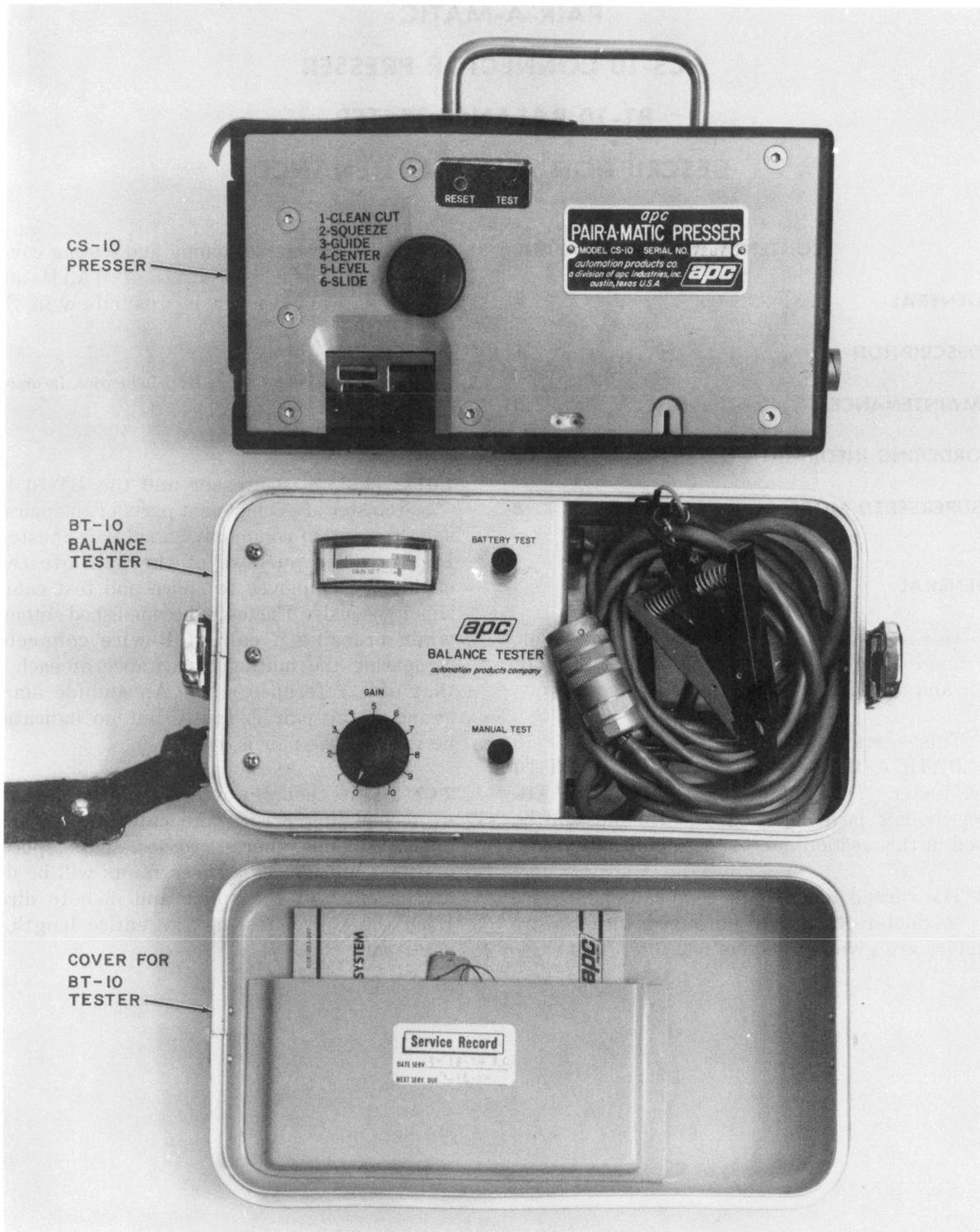


Fig. 1—PAIR-A-MATIC Splicing System

MODEL CS-10 PAIR-A-MATIC PRESSER

2.03 The CS-10 PAIR-A-MATIC (Fig. 2 and 3) is a pneumatically powered, pushbutton operated tool, used to feed and press pairs of taped B wire connectors.

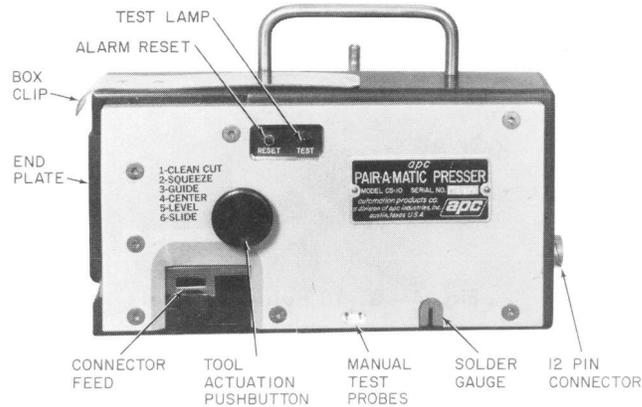


Fig. 2—CS-10 Presser (Front View)

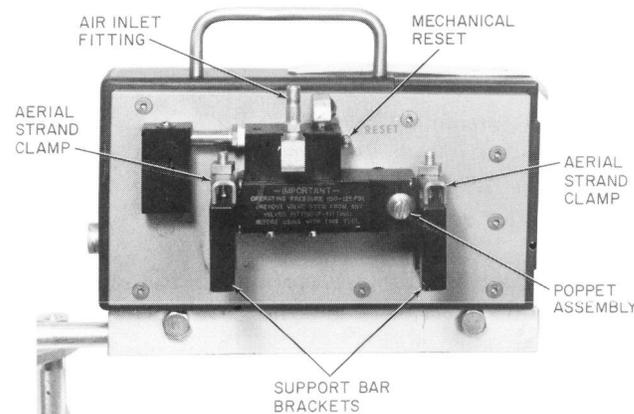


Fig. 3—CS-10 Presser (Rear View)

2.04 The PAIR-A-MATIC presser, Model CS-10, is very similar to previous models except it has the additional capability of testing pairs when being used with the balance tester.

2.05 Two small probes have been added in the rear of the tool to make the electrical connection with the pairs being pressed. The probes enter the rear opening in the B wire connector as the press is being made and do not affect the performance of the tool itself.

2.06 PAIR-A-MATIC, CS-10 Specifications

- Operating Pressure 100 to 125 PSI
- Weight with Standard Equipment 21 pounds
- Dimensions 9 1/2" x 6 3/4" x 4 1/2"

Operation of the CS-10 PAIR-A-MATIC requires an air or nitrogen source with a minimum pressure output of 100 psi. Use of a nitrogen gas cylinder or air compressor with moisture remover is recommended.

2.07 The CS-10 PAIR-A-MATIC is supplied with the following standard equipment:

- (a) CS-10 Connector Presser
- (b) Telescopic Support Bar
- (c) Aerial Strand Clamps
- (d) Dow-Corning No. 200 Liquid-Silicone Lubricant
- (e) Carrying Case.

2.08 The CS-10 PAIR-A-MATIC has the following major components and controls:

- (a) **Box Clip for Taped B Wire Connectors:** Holds the box of taped B wire connectors.
- (b) **End Plate for Access to Cutting Blades:** May be removed to change the cutting blade and clean the press area.
- (c) **Connector Feed:** Advances the next pair of B wire connectors when the tool is actuated.
- (d) **Tool Actuation Pushbutton:** Actuates the tool to press a pair of connectors.
- (e) **Manual Test Probes:** Used to retest a pressed pair of connectors with the BT-10 balance tester.

- (f) **Solder Gauge:** Used for testing the pressed pieces of B stearine core solder when setting the press adjustment. See 3.04.
- (g) **Test Lamp:** Flashes each time the tool is actuated indicating that the BT-10 performed a test.
- (h) **Alarm Reset Pushbutton:** Pressing this button turns off the alarm after a defective pair is detected.
- (i) **Inlet Air Fitting:** Connection from the air or nitrogen supply is made at this point. If F-fittings or other fittings with valve cores are used, the valve core must be removed to prevent restriction of the air flow to the tool.
- (j) **Mechanical Reset Button:** Pressing this button allows the tool to complete a cycle in the event that a hard object is clamped under the presser die.
- (k) **Poppet Assembly:** Removal and cleaning of this assembly is recommended as part of the maintenance process.
- (l) **Aerial Strand Clamp:** Is used to attach the tool to the suspension strand when splicing aerial cables.
- (m) **Support Bar Brackets:** Provides a means of mounting the tool to the telescopic support bar or universal support bar.
- (n) **12 Pin Connector:** Connector into which the BT-10 cord is plugged.

MODEL BT-10, APC BALANCE TESTER

2.09 The APC balance tester, Model BT-10 (Fig. 4) is a solid state unit which contains the electronics to perform the actual balance test. This instrument is interconnected with the CS-10 pair-a-matic by means of a multilead electrical cable and connector.

2.10 The balance tester can also be used independently of the pair-a-matic with a special test cord. This cord enables the user to test cable pairs by connecting the pairs directly to the balance tester.

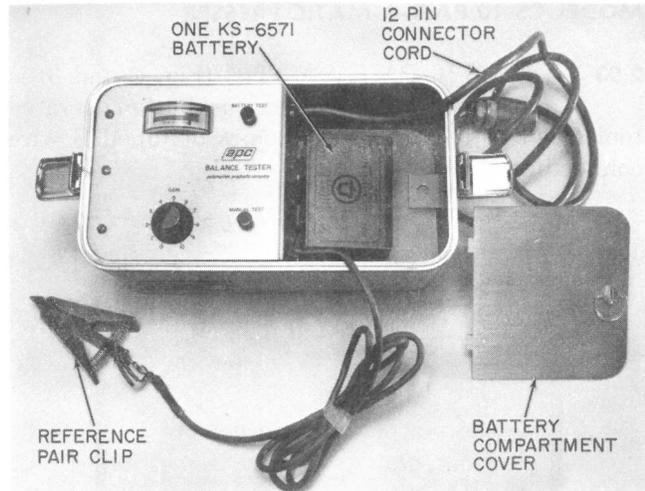


Fig. 4—BT-10 Balance Tester

2.11 Balance Tester, BT-10 Specification

- Power One 24 volt battery, KS-6571 or equivalent
- Circuitry Solid State
- Operating Temperature 0°F to 130°F
- Weight 5 pounds
- Dimensions 4" x 9" x 7 1/2"

2.12 The BT-10 balance tester has the following major components and controls:

- (a) **Error Signal Meter:** Shows the amount of unbalance between the reference pair and the test pair.
- (b) **Manual Test Pushbutton:** Actuation of this switch turns on the test and is used with the manual test probes on the CS-10.
- (c) **Battery Test Pushbutton:** Tests the condition of the 24 volt battery. A reading in the green "BATT" area indicates a good battery.
- (d) **Gain Control:** Adjusts the threshold at which the alarm in the BT-10 is activated.

- (e) **Battery Compartment with Cord Storage:** Location of 24 volt battery and cord storage when set is not in use.
- (f) **Reference Pair Clip:** Connects to pair used as a reference pair.
- (g) **12 Pin Connector Cord:** Cord for connection between the BT-10 and the CS-10.
- (h) **Safety/Carrying Strap:** Used for carrying the unit and for attaching to the aerial strand or cable rack.
- (i) **Sonalert Signal:** Solid state device which emits an audible signal when a defective pair is detected.

2.13 The automatic presser support bar (Fig. 5) is for use in manhole or cable vault splicing operations. By mounting the support bar on a cable rack and adjusting the various bar components, the presser can be moved horizontally, vertically, laterally, and tilted into virtually any position for ease of operation and operator comfort. Figure 6 illustrates a connector presser mounted on the automatic presser support bar.

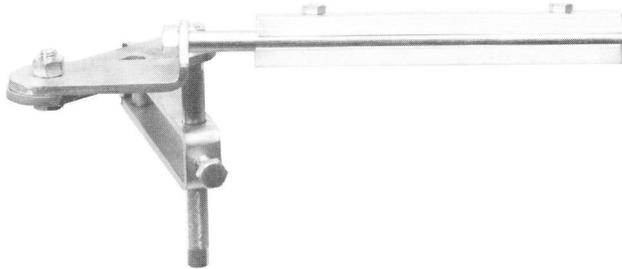


Fig. 5—Automatic Presser Support Bar

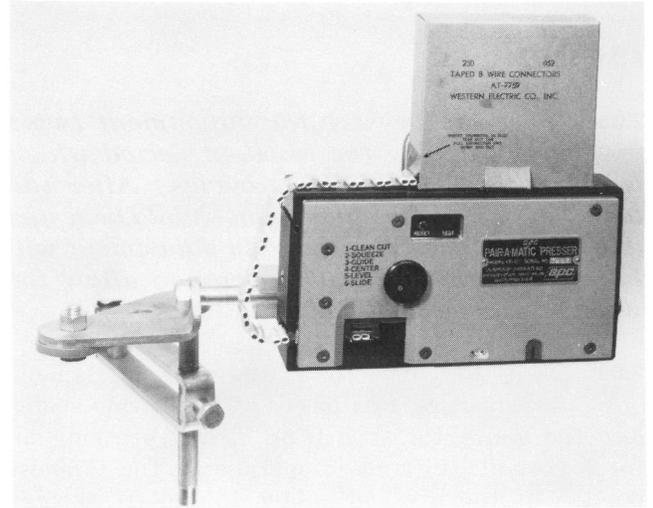


Fig. 6—Connector Presser Attached to Support Bar

3. MAINTENANCE

3.01 Under normal use the only maintenance procedures required are as follows:

- Adjustment test
- Presser adjustment by authorized personnel only
- Air system lubrication
- Cleaning
- Battery replacement (BT-10 balance tester)
- Cutting blade replacement by authorized personnel only
- Replacement of parts listed in Part 4.

3.02 For all other maintenance return the tool in accordance with local instructions. **Never disassemble the presser;** any movement of the frontplate or backplate will cause the pressing block to be permanently out of adjustment.

CS-10 PAIR-A-MATIC

ADJUSTMENT TEST

3.03 Test the presser for adjustment twice daily during the break-in period which is normally 5,000 pressing cycles. After the break-in period the adjustment should be tested daily before use. Normally an adjustment will be needed about 200,000 cycles to allow for wear on the moving parts.

3.04 Test the connector presser for adjustment by inserting two pieces of B stearine solder into the connector area (Fig. 7) and pressing as for a normal pair-a-matic operation. The thinnest portion of the pressed solder should fit *snugly* into the gauging slot (Fig. 8). If the solder will not enter the slot or if it fits the slot loosely, the presser requires adjustment.

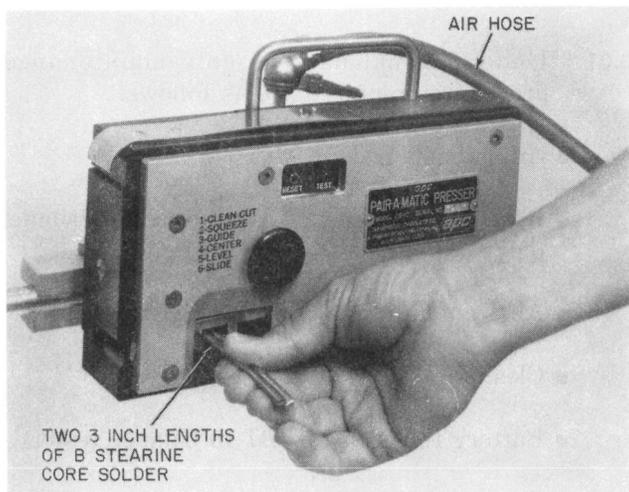


Fig. 7—Solder Test—Pressing B Stearine Core Solder

PRESSER ADJUSTMENT

3.05 It is recommended that all presser adjustments and cutting blade replacements be made by authorized personnel only. After the break-in period, the frequency of adjustments depends upon the amount of use and gauges of conductors joined. Refer to Section 632-205-201 for gauge limitations.

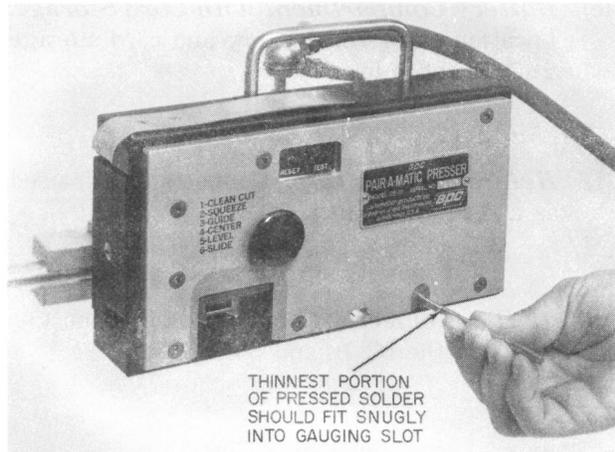


Fig. 8—Solder Test—Gauging Pressed B Stearine Core Solder

3.06 To make a press adjustment, remove the box clip on the top of a pair-a-matic by removing the two screws which hold it in place. The adjustment screw on the top of the pair-a-matic will be exposed when the clip is removed.

3.07 Adjust the presser by turning the adjustment screw with a screwdriver. The amount of press is increased by turning the screw clockwise and decreased by turning it counterclockwise. One quarter turn of the screw will change the adjustment 0.001 inch. Perform the solder test after each 1/4 turn until the two pieces of solder fit into the gauge but *do not exceed one full turn*. An adjustment requiring more than one full turn indicates excessive wear.

Warning: Do not overadjust the presser. Overpressing the connectors may cut off fine gauge conductors and/or cause unnecessary wear to the connector presser. If the correction cannot be made within the limits set above, return the presser for repair.

CLEANING

3.08 The upper and lower pressing blocks should be cleaned monthly or more often if required. The blocks can be cleaned by use of a cotton-tipped stick moistened with B cleaning fluid.

3.09 Slivers of tape or other foreign debris can build up the connector area and cause misfeeding or other malfunctions. The cutting blade and presser die should be cleaned monthly, or as required, by removing the end plate on the left-hand side of the tool and brushing out the accumulated debris (Fig. 9 and 10).

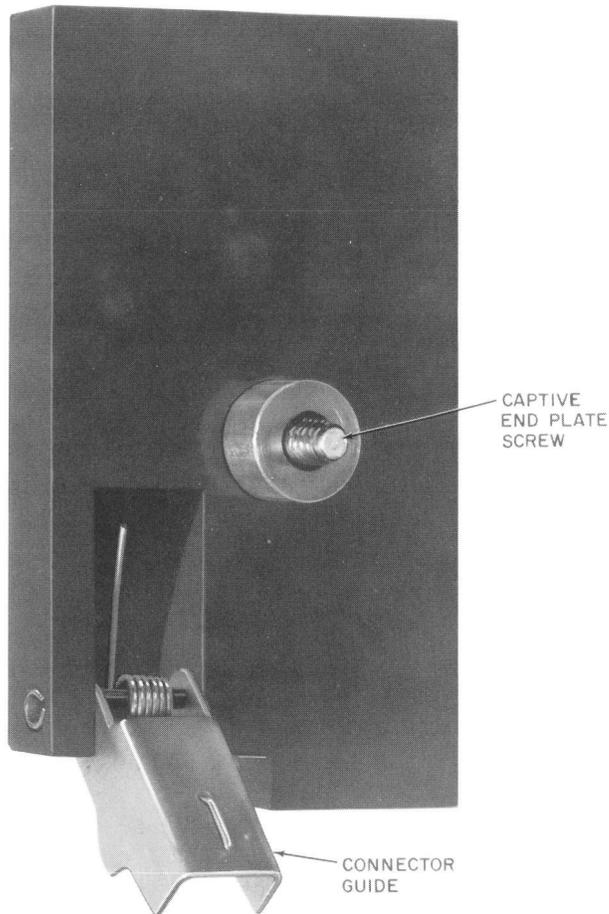


Fig. 9—Connector Presser End Plate Removed

3.10 Dirt can accumulate within the air system and cause the pair-a-matic to become sluggish or cycle erratically. With a large bladed screwdriver remove the large brass screw on the black valve in the back of the pair-a-matic. Remove the poppet assembly underneath the valve and clean the poppet and O-ring very thoroughly. Relubricate with the Dow Corning No. 200 and replace the assembly in the reverse sequence. Be careful not to damage the O-ring during cleaning and reassembly.

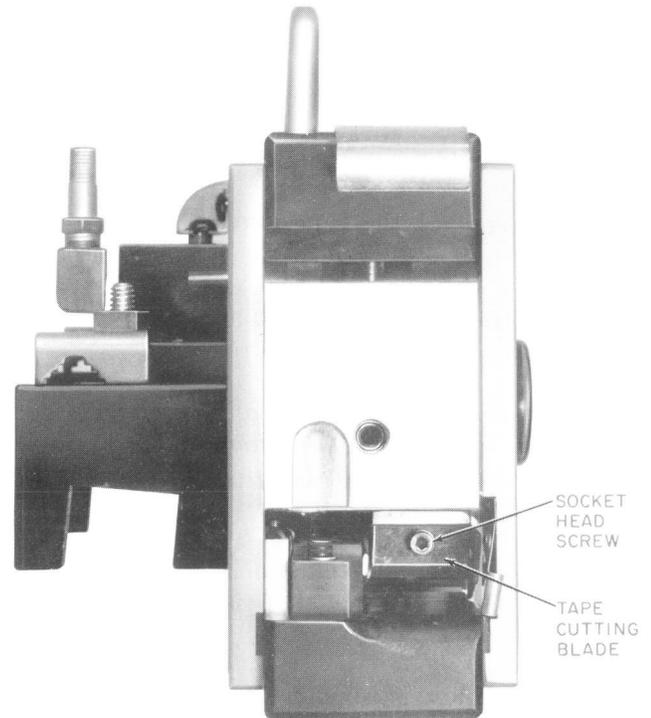


Fig. 10—Tape Cutting Blade

LUBRICATION

3.11 The CS-10 PAIR-A-MATIC requires more lubrication than the earlier models and *should be lubricated on a daily basis while it is in use*. Several drops of the lubricant should be placed in the air fitting in the back of the tool where the air hose is attached (Fig. 11).

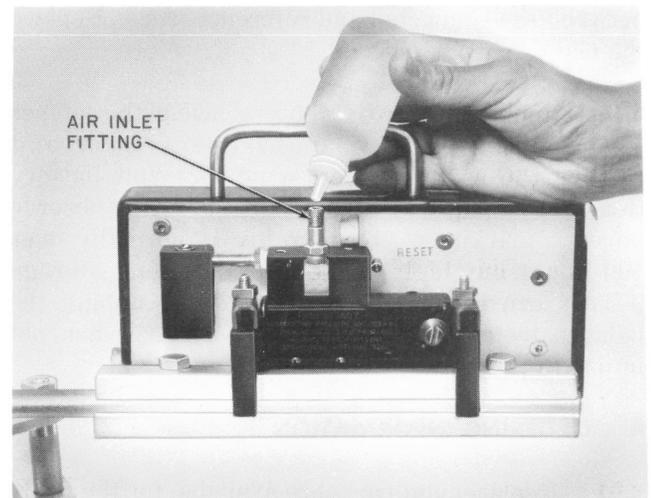


Fig. 11—Lubricating PAIR-A-MATIC

SECTION 081-320-107

BLADE REPLACEMENT

3.12 If the solder test is satisfactory and there is no build-up of tape slivers on the blade but difficulty is experienced in cutting the tape, the blade should be replaced.

3.13 To replace the tape cutting blade remove the left end plate of the pair-a-matic. This will expose the cutting blade and the Allen head screw in the center of the blade. Remove this screw with a 7/64 inch Allen wrench.

Caution: *Always disconnect the air hose prior to removing the end plate and exposing the cutting blade to prevent accidental operation of the presser.*

3.14 The balance tester generally requires little maintenance other than battery replacement. However, you should:

- (a) Keep the instrument clean and refrain from unnecessarily rough handling.
- (b) Keep the battery and cord storage area free from debris such as bits of wire and dessicant powder that might penetrate the unit and damage the printed circuit board.
- (c) Although the unit is designed for use in rugged areas, do not allow moisture or rain to seep into the unit.

3.15 The reference pair clip and cord may become damaged and not make proper contact between the connected and reference pairs. Replace the clip or cord as needed.

3.16 Replace the battery by releasing the latches on the battery compartment cover and remove the cover. Insert a new 24 volt battery (KS-6571 or equivalent) making sure you observe polarity markings. Battery life is normally over 100 hours but high temperatures or long storage periods can reduce this time. Always unplug the balance tester from the PAIR-A-MATIC when not in use to preserve battery life.

4. ORDERING INFORMATION

4.01 Replacement parts are available for the CS-10 PAIR-A-MATIC presser. These parts with their part numbers are listed as follows:

APC Part No.	Part Name
1000-0491-101	CS-10 PAIR-A-MATIC Presser includes telescopic support bar Dow Corning No. 200 Lubricant and standard carrying case
1500-0132-101	CS-10 PAIR-A-MATIC Splicing Kit includes CS-10 PAIR-A-MATIC, telescopic support bar, universal tool bar, APC shears, regulator, 25 foot hose, 6 foot hose (optional), large carrying case
1000-0534-401	BT-10 Balance Tester
0001-8826-101	Universal Tool Bar
0001-8918-301	High Pressure Regulator
0001-9955-301	25 foot Hose
0001-9954-301	Twin 6 foot Hose (for operating 2 pressers from one source)
0001-8289-501	Standard Carrying Case
1000-0436-501	Large Carrying Case
0001-8290-201	Dow Corning 200 Silicone Lubricant
1500-0142-101	PAIR-A-MATIC Repair Kit
0001-9760-201	Tape Cutting Blade

4.02 Orders for replacement parts should include the part name and the part number as shown below:

(Quantity) Blade Tape Cutting, No. 0001-9760-201 for CS-10 PAIR-A-MATIC Connector Presser.

5. SUPERSEDED MODELS

5.01 Connector pressers which are superseded but still in use are listed below. The CS-6 connector presser is superseded by the CS-7 connector presser which has been superseded by the CS-10 connector presser. The CS-6 and CS-7 models may be upgraded to CS-10 capability.

5.02 The Model CS-7 PAIR-A-MATIC connector presser (Fig. 12 and 13) is a pneumatically powered push-button operated tool, used to feed and press pairs of taped B wire connectors.

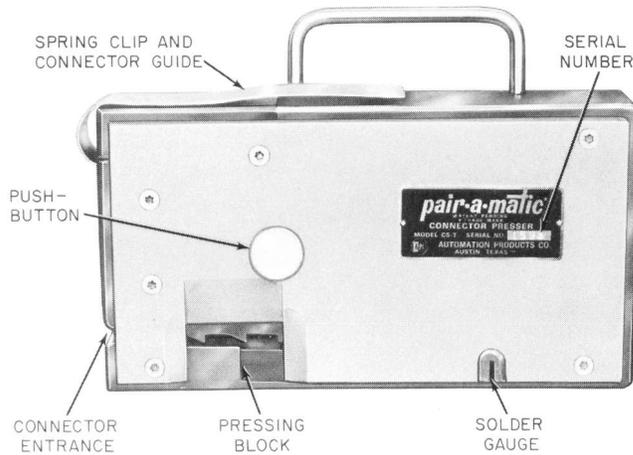


Fig. 12—CS-7 PAIR-A-MATIC Connector Presser—Front View

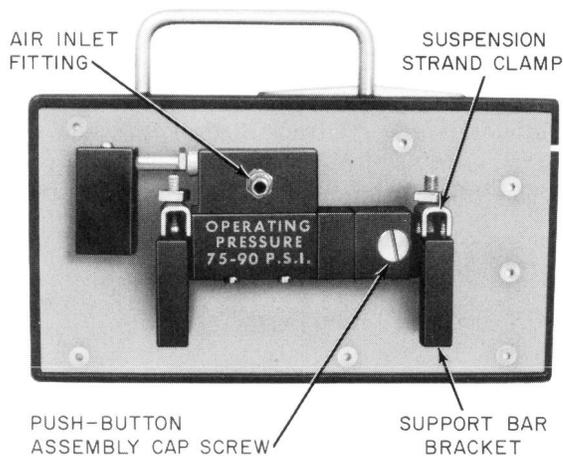


Fig. 13—CS-7 PAIR-A-MATIC Connector Presser—Rear View

5.03 The CS-7 PAIR-A-MATIC connector presser is supplied with the following standard equipment:

- (a) CS-7 Connector Presser
- (b) Telescopic Support Bar
- (c) Aerial Strand Clamps
- (d) Dow-Corning No. 200 Liquid Silicone Grease
- (e) Carrying Case.

5.04 The CS-7 connector presser measures approximately 9-1/2 by 6-3/4 by 4-1/2 inches. It weighs approximately 9 pounds (19 pounds with standard equipment in carrying case). The connector presser has the following major components:

- Pressing Block and Tape Cutter
- Air Input Fitting
- Pressed Solder Gauge
- Retaining Clip for Taped B Wire Connectors
- Support Bar Brackets
- Push-Button Valve
- Suspension Strand Clamps
- Carrying Handle.

Model CS-6

5.05 The superseded Model CS-6 PAIR-A-MATIC connector presser (Fig. 14 and 15) is similar in appearance and operation to the Model CS-7, except that it is foot-valve operated and has two air hose connections instead of one.

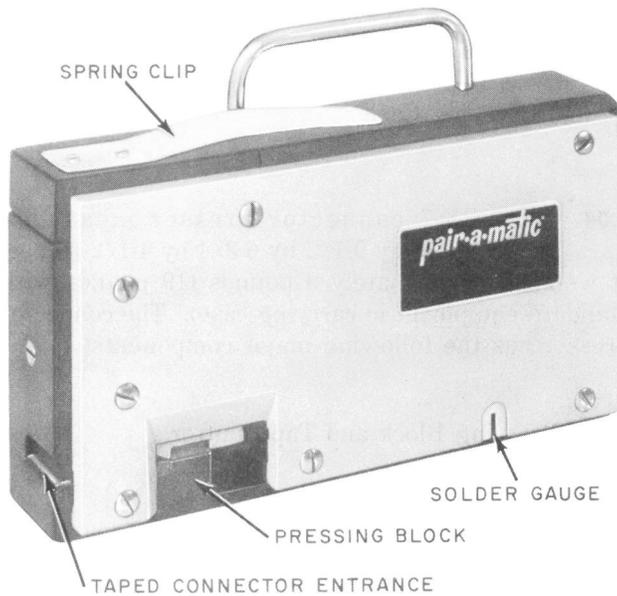


Fig. 14—CS-6 PAIR-A-MATIC Connector Presser—Front View

REPLACEMENT PARTS

5.06 The following replacement parts are available for the pair-a-matic connector presser:

AUTOMATION PRODUCTS

COMPANY

PART NUMBER	PART NAME
1000-0382-501	PAIR-A-MATIC (presser only)
0001-8227-401	Strand Clamps
0001-8826-101	Universal Tool Bar
0001-8289-501	Carrying Case

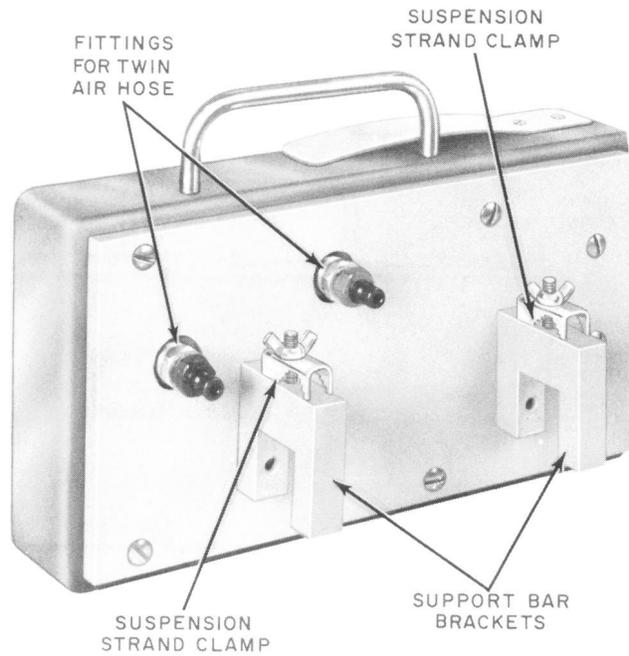


Fig. 15—CS-6 PAIR-A-MATIC Connector Presser—Rear View

0001-7490-001 Cutting Blade Kit

Parts for Push-button assembly:

0001-8636-001 Push-button

0001-8788-001 Cap Screw

3530-0028 Fiber Washer

0001-8787-001 Spring

0001-8786-001 Poppet

5.07 Orders for replacement parts should include the part name and the part number as shown in the following example:

(Quantity) Kit, Blade, Cutting, No. 0001-7490-001, for PAIR-A-MATIC connector presser.