PROTECTIVE CONNECTING ARRANGEMENT AD1

23A COUPLER

1. GENERAL

1.01 This section provides identification, installation, operation, maintenance, and connection information for the 23A coupler when used in Protective Connecting Arrangement (PCA) AD1.

1.02 This section is reissued to:

- Add Table A to show connections for installation of PCA AD1 with commonly used multiline rotary dial telephone sets
- Add Table B to show connections for installation of PCA AD1 with most commonly used multiline TOUCH-TONE® dial telephone sets
- Change Fig. 3 to a simplified schematic diagram.

1.03 PCA AD1 uses the 23A coupler to provide an interface between customer-provided (CP) dc dial pulse dialers which require no transmission path and the central office (CO) or PBX station line. PCA AD1 cannot be used with CP tone dialers.

1.04 PCA AD1 does not provide for receiver muting during dialing; if this feature is provided, PCA SU7QW may be used. For installation of PCA SU7QW with multiline sets, refer to Section 463-340-104.

1.05 An associated telephone set may make a normal outgoing call with this PCA.

1.06 If the customer wants a copy of the Technical Reference which covers PCA AD1, the customer should contact the local Telephone Company Business Office or Marketing Representative.

1.07 The customer should be informed by the manufacturer or supplier of his equipment of the proper PCA to be used with the equipment.

1.08 This issue of the section is based on the following drawing: CD- and SD-69912-01, Issue 2A—23A Coupler Circuit. If this section is to be used with equipment or apparatus reflecting later issues of the drawing, reference should be made to the CD and SD to determine the extent of the changes and the manner in which the section may be affected.

2. IDENTIFICATION

PURPOSE

- To provide facilities for connecting CP dial pulse repertory dialers to the telephone line
- To provide dc isolation and hazardous voltage protection to telephone company personnel
- To provide network control by dc dial pulse repeating
- To provide fail-safe operation if dialer is disconnected or power fails.

APPLICATION

- Provides for the connection of CP dial pulse dialers that do not require a transmission path or associated telephone set receiver muting during dialing.

ORDERING GUIDE

Basic Units

- Coupler, 23A
- Transformer, 2012B (one per coupler).

DESIGN FEATURES

- Approximate dimensions are 4 inches long by 2-3/4 inches wide and 1-7/8 inches deep.
- Contains a mercury relay for long life.

- Provides covered screw terminals for line and power connections.
- Provides exposed screw terminals on top of coupler for customer connections.
- Must be mounted in vertical position.
- AC power requirements are 15 to 25 volts at 20 milliamps RMS maximum. DC power requirements are 18 to 26 volts at 22 milliamps maximum.
- Repeats dial pulses without pulse correction.
- Replaces a 42A connecting block.

3. INSTALLATION

3.01 The location and method of installing the 23A coupler shall be consistent with standard practices. Locate the 23A coupler within 5 feet of associated telephone set. Remove cover and mount coupler on wall or baseboard in a vertical position with terminal board at top. The coupler must be mounted vertically to insure that the sealed contacts of the D relay will be in the enclosed mercury pool.

3.02 Connect telephone line and telephone set mounting cord to screw terminals on terminal board at top end of coupler as shown in Fig. 2 and 3.

3.03 Single line sets are wired to the coupler as shown in Fig. 3. For multiline sets, connect the coupler as shown in Tables A and B. These connections permit the coupler to be used on all lines in the set by putting the pulsing contacts of the dialer in series with those in the telephone set.

3.04 At single installations, a 2012B transformer can be used to power the 23A coupler. For multiple coupler installations use a KS-5714, List 4 or List 5 signal transformer or a 19B2 power unit (dc signal supply).

3.05 The 2012B transformer, when used, should be plugged into a 115-volt, 60-Hz ac outlet not under control of a wall switch. Use only one coupler per transformer. Run "D" inside wire leads and terminate on screw terminals 1 and 2 located on the printed circuit board. (See Fig. 1.) When a dc power unit is used, connect the positive lead to screw terminal 1 and the negative lead to screw terminal 2.

3.06 Replace cover and fasten cover-attaching screw. After installation is complete, apply power and perform operational tests given in Part 5 of this section.

3.07 The customer will provide the leads to his dialer pulsing contact and connect to screw terminals A and B located on the terminal board on the top end of the coupler. These terminals are not covered when cover is in place and are clearly marked on the terminal board. Make sure there is clear access to these terminals for the customer.

4. OPERATION

Outgoing Call

4.01 To originate an outgoing call, the customer sets the dialer selector to the desired number and goes off-hook on the associated telephone company-provided telephone set. (The telephone set must remain off-hook for duration of call.) After receiving dial tone, the customer presses the start button on his dialer to initiate the call. The pulsing contact in the CP dialer opens and closes the A and B leads, causing the D relay in the 23A coupler to open and close the tip side of the telephone line to repeat dial pulses to the CO or PBX. If power failure should occur or CP dialer becomes defective, the D relay releases after a short delay to close the tip side of the telephone line to provide normal operation of the associated telephone set. An incoming call is received in the normal manner.

5. MAINTENANCE

5.01 When trouble is reported verify that:

- Customer dial pulse interface leads are secure on coupler.
- Power is supplied to coupler with correct polarity.
- Leads to line and station set are secure.
- CO or PBX line and telephone set are operative.

5.02 After performing steps in 5.01, if trouble still exists, perform the following tests.

5.03 Disconnect the customer dialer leads from screw terminals A and B. Connect a 1013A (or equivalent) hand test set to screw terminals A and B. Place hand test set in "TALK" position. Go off-hook on associated telephone set; after receiving dial tone, dial the test number for 1000-Hz test tone using the 1013A hand test set for dialing. Verify satisfactory reception and place the 1013A hand test set in "MON" position to open the line and 1000-Hz test tone will no longer be heard. In a few seconds, dial tone should be heard as the coupler closes the tip side of line.

5.04 If the tests are satisfactory, remove all test connections to restore circuit to normal and reconnect customer dialer leads to screw terminals A and B. If coupler does not meet above tests, replace coupler.

Note: Do not attempt any test or make repairs to the CP equipment.

5.05 When in the repairman's judgment the trouble is located in the CPE, the Repair Service Bureau should be notified so that proper maintenance of service charge billing can be initiated as outlined in Section 600-101-312 entitled Maintenance of Service Charge on Services with Customer-Provided Equipment (CPE).

6. CONNECTIONS

6.01 Refer to Fig. 1, 2, and 3 for power and line connections.

6.02 Refer to Fig. 3 for connections to single line sets.

6.03 Refer to Table A for connections to typical, multiline sets equipped with rotary dials.

6.04 Refer to Table B for connections to typical, multiline sets equipped with TOUCH-TONE dials.

6.05 Terminals Y and BK are spare terminals, not internally connected, that can be used for the termination of other leads in the station mounting cord.

6.06 Pair the ring lead with the tip lead to the coupler and to the telephone set, where possible, to maintain line balance.

6.07 The customer must provide leads and connect the pulsing contact of the CP dialer to terminals A and B.

6.08 Screw terminals C and 7 are spare terminals provided for future applications and are not used.

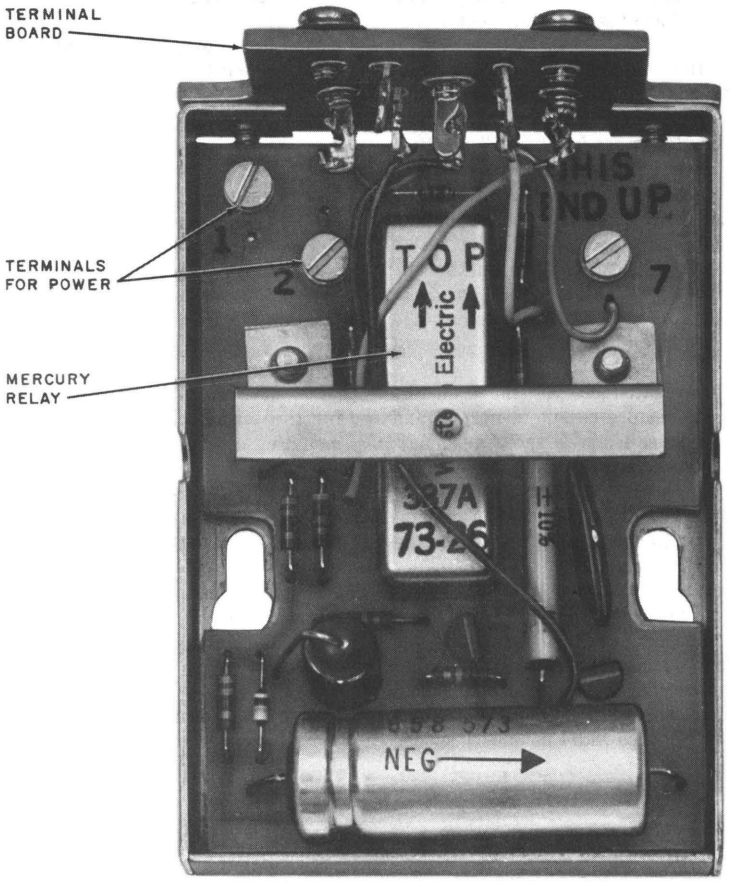


Fig. 1—23A Coupler, Front View (Cover Removed)

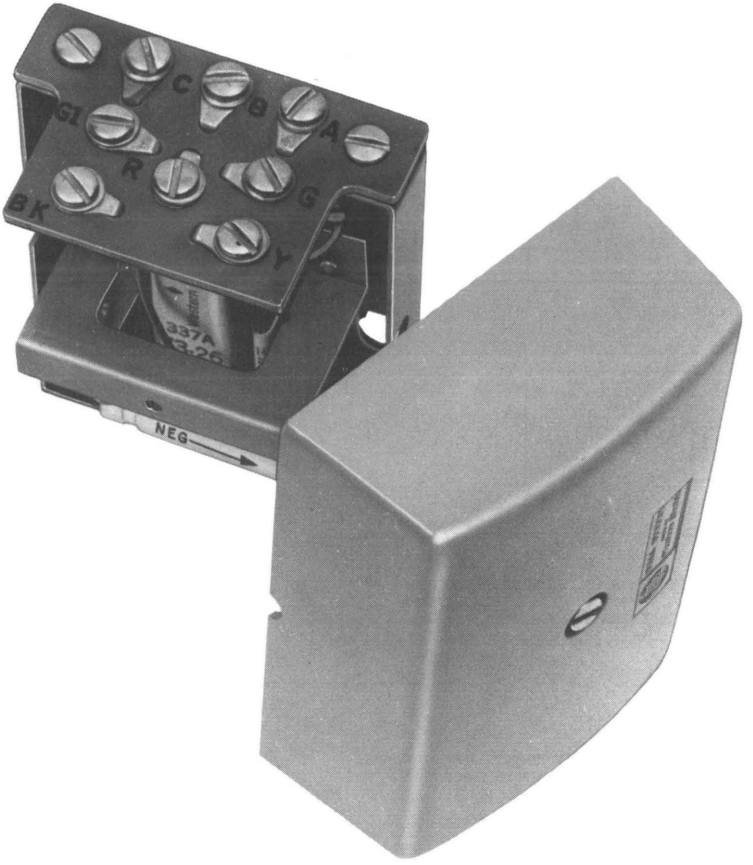
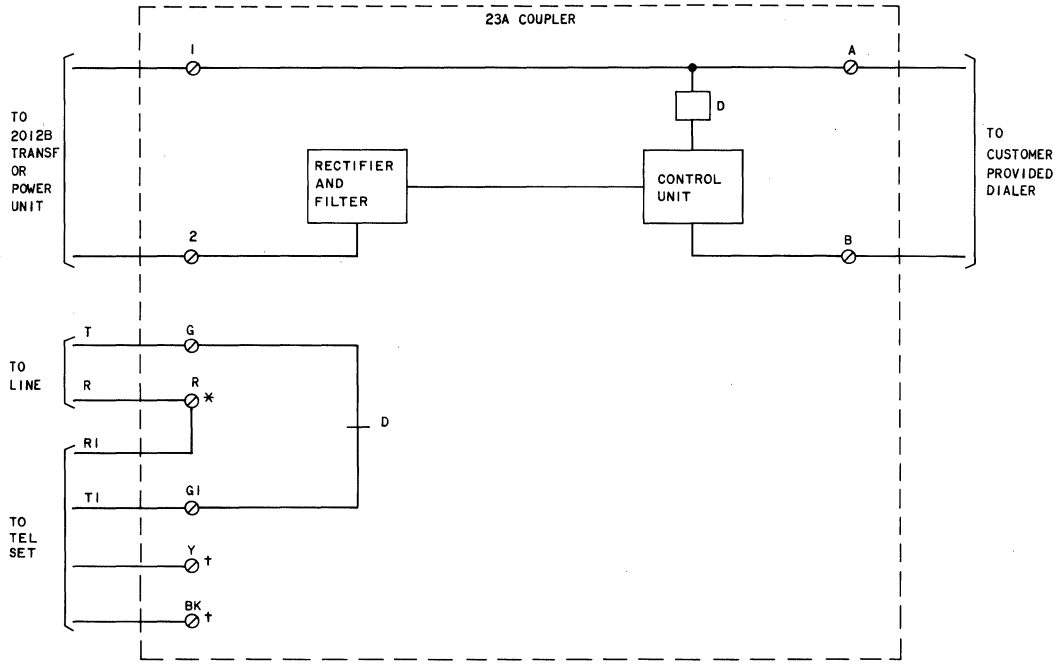


Fig. 2—23A Coupler, Top View (Cover Removed)



NOTE:
LINE AND TELEPHONE SET CONNECTIONS SHOWN ARE FOR SINGLE LINE SETS. REFER TO TABLE A FOR MULTILINE SETS.

* R TERMINAL NOT INTERNALLY CONNECTED USE TO CONNECT R OF LINE TO RI OF TEL SET.

† TERMINALS Y AND BK NOT INTERNALLY CONNECTED. USE FOR TERMINATION OF OTHER LEADS IN STATION MOUNTING CORD WHEN REQUIRED.

Fig. 3—23A Coupler, Simplified Schematic Diagram

→TABLE A←

TYPICAL MULTILINE
ROTARY DIAL TELEPHONE SET CONNECTIONS

23A COUPLER		511D/558D	565GK 565HK 565LK	630-, 632-TYPE	830-, 831-TYPE
PULSING CONTACTS	G	Remove (BL) dial lead from F terminal of network. Connect to lead from G of coupler using D-161488 connector or spare terminal.			
	G1	Connect lead from G1 of coupler to F terminal of network.			
SPARE TERMINALS	Y	Connect a spare lead of cord to terminal for termination. Not internally connected.			
	BK	Connect a spare lead of cord to terminal for termination. Not internally connected.			

Note: For multiline telephone sets that are equipped with rotary dials and not included in this table, refer to Section 512-125-400. Refer to Fig. 3 for single line telephone set connections.

→TABLE B←

TYPICAL MULTILINE TOUCH-TONE TELEPHONE SET CONNECTIONS

23A COUPLER		2511F 2558D	2565GK	2565HK 2565LK	2630-, 2632- TYPE	2830-, 2831- TYPE
PULSING CONTACTS	G	Remove G dial lead from F on network AND	Remove G dial lead from G on network AND	Remove G dial lead from L2 on network AND	Remove G dial lead from 4 on term. block AND	Remove G dial lead from 8 on term. board AND
		Connect to R of dialer telephone cord with D-161488 connector				
	G1	To F on network	To G on network	To L2 on network	To term. 4 on term. block	To term. 8 on term. board
SPARE TERMINALS	Y	Connect spare lead of cord to screw terminal for termination. Not internally connected.				
	BK	Connect spare lead of cord to screw terminal for termination. Not internally connected.				

Note: For multiline telephone sets that are equipped with TOUCH-TONE dials and not included in this table, refer to Section 512-125-410. Refer to Fig. 3 for single line telephone set connections.