

## RINGING RANGE EXTENDER—10A

### IDENTIFICATION, INSTALLATION, AND CONNECTIONS

#### 1. GENERAL

**1.01** This section provides identification, installation, and connection information on the 10A Extender (Series 1 and 2) used in telephones, subscriber sets, and connecting blocks.

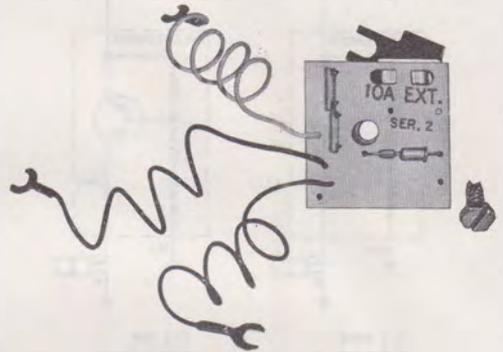
**1.02** Information contained in this section was formerly found in Section 501-320-101 which is hereby canceled.

**1.03** This device is intended to increase the ringing range on grounded ringing lines where superimposed ringing voltage is provided.

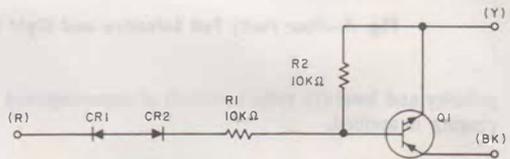
**1.04** The 10A Extender (Fig. 1 and 2) was designed to replace the 426A cold-cathode gas tube in the 500-, 501-, 554-, 556-, and 2500-type telephone set and to replace the 426N diode in the TRIMLINE® sets and PRINCESS® telephone sets on long subscriber loops. The 10A is not intended as a general replacement for the 426A tube but should only be used on long loops where increased ringing range is required.



**Fig. 1—10A Extender, Series 1**



**Fig. 2—10A Extender, Series 2**



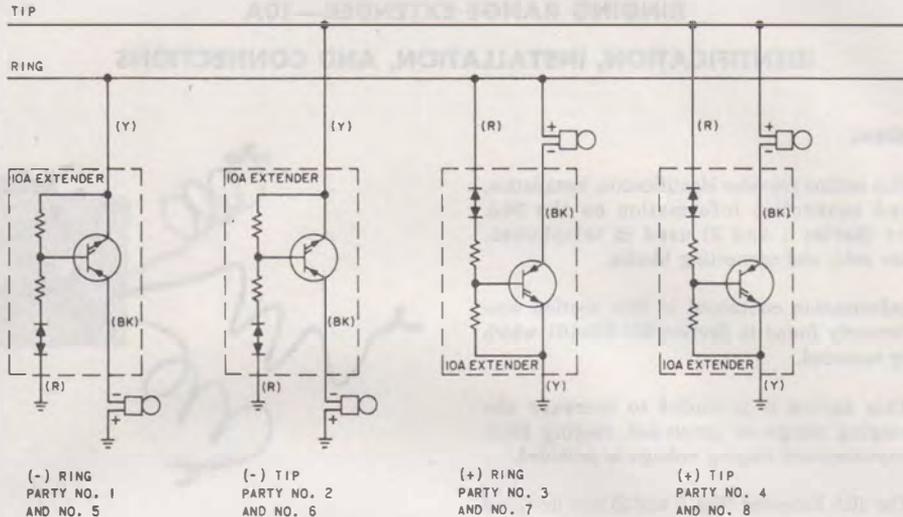
NOTE:  
FOR NEGATIVE PARTY, (R) LEAD MUST BE CONNECTED TO GROUND.

**Fig. 3—10A Extender, Schematic**

**1.05** The 10A is to be used for 4-party full selective and 8-party semiselective ringing (Fig. 4) on loops greater than 1600 ohms (if used on shorter loops it may cause pretrip problems).

#### 2. IDENTIFICATION

**2.01** The 10A Extender is a solid-state, polarity sensitive, voltage-controlled switch which connects the ringer into the circuit when the proper



## NOTE:

FOR NEGATIVE PARTY, (R) LEAD MUST BE CONNECTED TO GROUND TO AVOID POSSIBILITY OF BELL TAP.

Fig. 4—Four Party Full Selective and Eight Party Semiselective Ringing with 10A Extender

polarity and level (75 volts nominal) of superimposed ringing is applied.

**2.02** Fig. 3 is a schematic for the 10A Extender, Series 1 and 2. The two versions are electrically equivalent with the difference being in physical appearance. Series 1 has two diodes mounted on a circuit board; Series 2 has a single diode that contains two separate diodes mounted on a circuit board.

**2.03** The 10A (Fig. 1) consists of a small printed circuit board mounted on a metal bracket with a No. 6 self-tapping screw provided for mounting the bracket. Three spade-tipped conductors (red, yellow, and black) approximately six inches long are provided for connection to other apparatus.

### 3. INSTALLATION AND CONNECTIONS

**3.01** The universal mounting bracket (840830616) is used when mounting the 10A in a telephone set. Fig. 5 and 6 show the 10A installed in a 500-type and PRINCESS telephone set. For

connections (other than TRIMLINE sets), refer to Table A.

**3.02** The 10A Extender will mount in a 74C connecting block (Fig. 7) when used with AC1 or AD1 telephone bases for TRIMLINE set (Fig. 8). For connections (TRIMLINE set only), refer to Tables B and C.

**3.03** The 74C connecting block is available in Light Olive Gray (-49) or Ivory (-50).



*For negative parties, the (R) lead should always be connected to ground to avoid the possibility of bell tap.*

**3.04** The 10A can be used on lines experiencing inductive interference up to 20 to 25 volts RMS and should be limited to a medium to low noise environment (similar to 426A gas tube).

**3.05** The 10A should not be used on loops having battery boost circuits in the **RING** lead. It

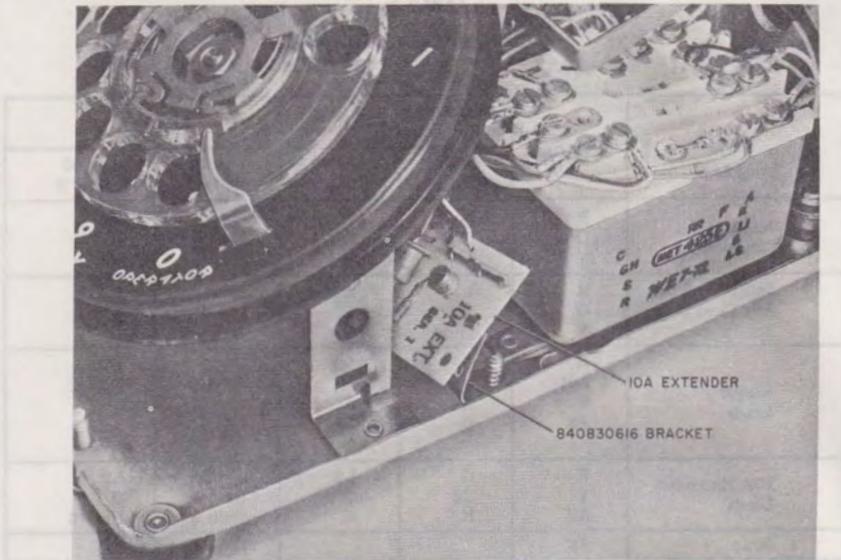


Fig. 5—10A Extender Installed in a 500-Type Telephone Set

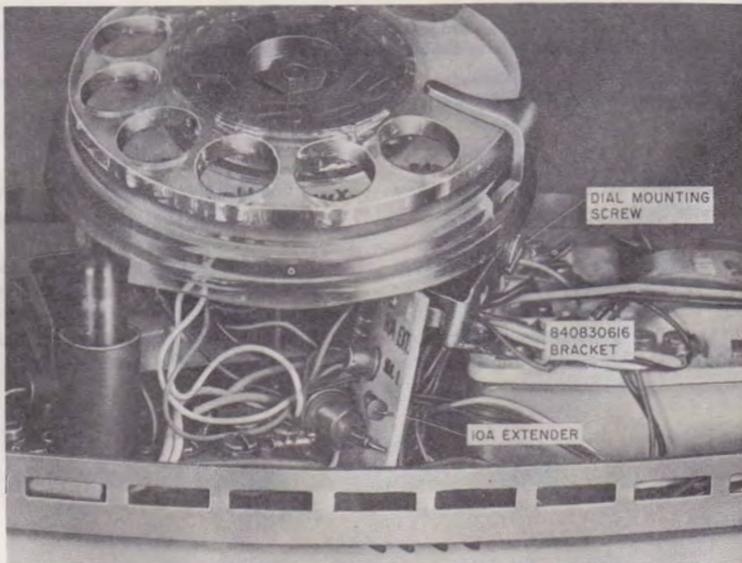


Fig. 6—10A Extender Mounted in a PRINCESS Telephone Set

**TABLE A**  
**RINGER CONNECTIONS**  
**4 PARTY FULL SELECTIVE – 8 PARTY SEMISELECTIVE**

WIRE OR LEAD	COLOR	500, 501, 554, 556, 2500 SETS		702B SET	
		- RING (NOTE 1)	+ RING (NOTE 1)	- RING (NOTE 1)	+ RING (NOTE 1)
Mtg Cord at Conn. Block	R	R	R	R	R
	G	G	G	G	G
	Y	Y	Y	Y	Y
Inside Wire or Mtg Cord at Set Term.	R	L2	L2	L2	L2
	G	L1	L1	L1	L1
	Y	G	G	G	G
Ringer Leads	R	G	L2	G	L2
	S-R	K	K	Note 2	Note 2
	S	A	A	*	*
	BK	G	L2	A†	A‡
10A Extender Leads	R	G	L2	G	L2
	Y	L2	G	L2	G
	BK	K	K	Note 2	Note 2
Strap	BK			K-G†	H-K

\* Insulate and store.

† Use M1W cord or equivalent (not furnished with extender) and insulate and store (BK) strap.

‡ Remove (S) line switch lead from terminal A; insulate and store.

**Notes:**

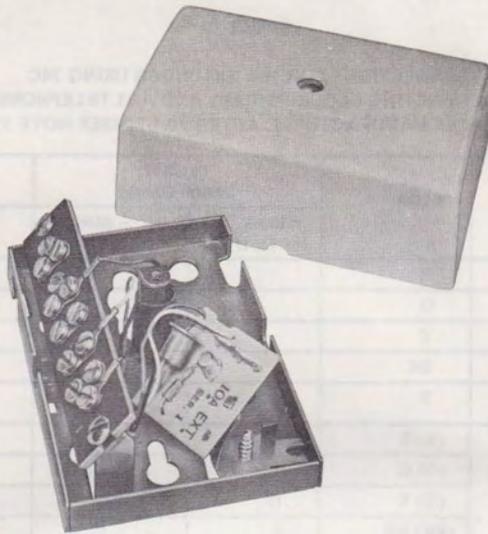
- Reverse (R) and (G) mounting cord leads at connector block for tip party connection. For TOUCH-TONE sets, also reverse dial leads at terminals F and C of network.
- Connect (BK) lead of 10A Extender to (S-R) lead of ringer with D-161488 connector (not furnished with extender) and insulate.

can be used with a 96V DLL circuit since they provide 48-volt boost in the tip lead.

**3.06** In order to avoid the possibility of premature ring trip on loops containing a Range Extender with Gain (REG), no more than two 10As should be used on bells that ring simultaneously on loops between 1600 and 2000 ohms. On loops greater

than 2000 ohms, no more than three 10As should be used on bells that ring simultaneously.

**3.07** On loops with no range extenders or on loops with a miniature dial long line (DLL), no more than four 10As can be used on loops that ring simultaneously and the 10A should not be used on loops shorter than 1600 ohms.



**Fig. 7—10A Extender Mounted in a 74C Connecting Block**

**TABLE B**

**CONVERSION OF EARLY MODEL AC1 AND AD1 TELEPHONE BASES MANUFACTURED PRIOR TO 10-1-72 TO AGREE WITH CURRENT PRODUCTION MODELS**

WIRE OR LEAD (SEE NOTE)	COLOR	REMOVE FROM	CONNECT TO
Ringer Leads	BL	B	*
	S	*	B
	BK†	G	L1
Strap from A	BK	A	L2

\*Insulate and store.

†AD1 base only.

TABLE C

CONNECTIONS FOR 10A EXTENDER USING 74C  
CONNECTING BLOCK FOR AC1 AND AD1 TELEPHONE  
BASES MANUFACTURED AFTER 10-1-72 (SEE NOTE 2)

WIRE OR LEAD		COLOR	TEL SET TERM. BOARD		74C CONN BLK	
			+ RING (NOTE 1)	- RING (NOTE 1)	+ RING (NOTE 1)	- RING (NOTE 1)
Inside Wire at Conn. Blk	Ring	R			4	4
	Tip	G			5	5
	Grd	Y			1	1
Dial Light Transf	Batt	BK			3	3
	Grd	Y			1	1
Inside Wire (AC1 only) or D5AL Mtg Cord (AD1 only)	(R) R		L2	L2	4	4
	(G) G		L1	L1	5	5
	(Y) Y		G	G	2	2
	(BK) BK		1	1	3	3
	(W) Y†		3	3	1	1
10A Extender Leads	R				4	1
	BK				2	2
	Y				1	4
Ringer	BK		K	K		
	S-R		G	G		
	R		A	A		
Line Switch	S		*	*		
Strap from A	BK		L2	3		

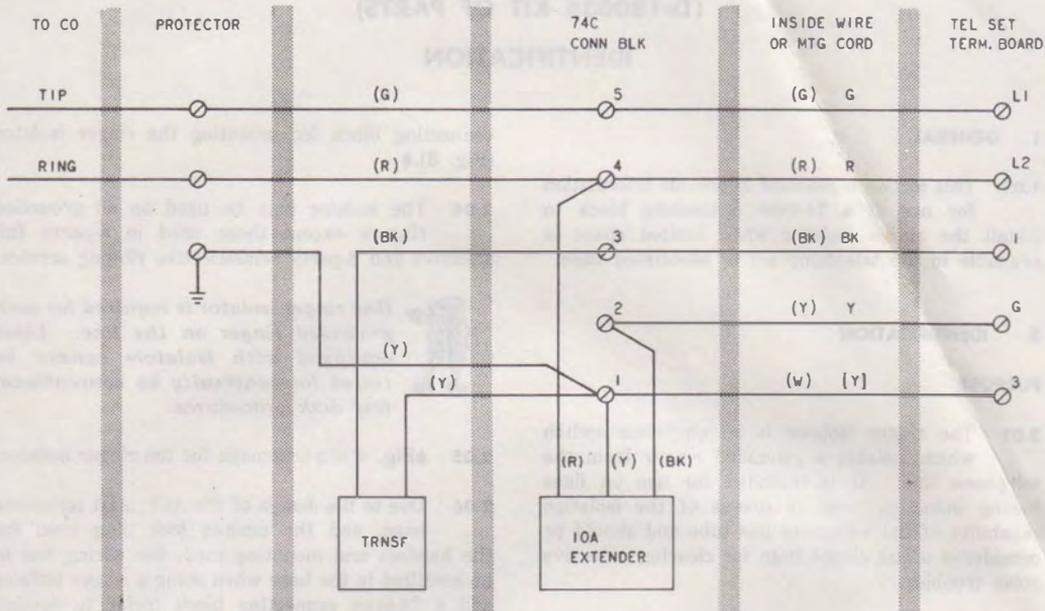
\* Insulate and store.

† Yellow conductor from second inside wire (quad)

( ) D5AL mounting cord.

**Notes:**

1. For tip party connections, reverse tip and ring leads at connecting block. For TOUCH-TONE® dial sets reverse (R) and (G) from handset cord jack at C and F on base terminal board.
2. When 10A extender is used with AC1 or AD1 telephone bases manufactured prior to 10-1-72, refer to conversion Table B, and convert prior to using Table C.



( ) DSAL MOUNTING CORD  
 [ ] WIRE FROM SECOND INSIDE WIRE (QUAD)

NOTE:  
 POSITIVE RING PARTY CONFIGURATION SHOWN. FOR ALL OTHER CLASSES OF SERVICE REFER TO TABLE C.

Fig. 8—Connections for 10A Extender using 74C Connecting Block for AC1 and AD1 Telephone Bases