Filing Instructions:

THIS SECTION REPLACES SECTIONS 502-510-100CA ISS. F, 502-510-121 CA ISS. C, 502-515-100 ISS. B, 502-515-121 ISS. C, 502-515-300 ISS. A, WHICH SHOULD BE REMOVED FROM THE BINDERS AND DESTROYED. FILE THIS SECTION IN NUMERICAL SEQUENCE.

SECTION 502-5101-201
Issued: 30 November 1973
Standard

TELEPHONE SETS

NE-500, NE-1500 (MD), NE-2500

NONBUTTON AND ONE-BUTTON TYPE

IDENTIFICATION, INSTALLATION, AND MAINTENANCE

CONTENTS

1. GENERAL

1.01 This section contains information for the identification, installation, and maintenance of nonbutton and one-button NE-500, NE-1500 (MD), and NE-2500 type wall and desk telephone sets.

1.02 The NE-1500 and NE-1554 type telephone sets are manufacture discontinued (MD) and are superseded by the NE-2500 and NE-2554 type

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telephone sets. The components of the NE-1500 (MD) type telephone sets are compatible with the NE-2500 type telephone sets except for the dial and housing.

1.03 An NE-426A electron tube (Fig. 3) or a P0895087 ringer isolator kit (Fig. 4) may be installed within the telephone set to correct inductive noise conditions. Refer to the section on the P0895087 ringer isolator kit for connection information.

2. DESCRIPTION

GENERAL

2.01 The NE-500 and NE-554 type telephone sets are equipped with a rotary dial. The dial may be replaced in the field, with an NE-95B apparatus blank, if the telephone set is converted for manual operation. (Fig. 5 and 6.)

Fig. 1 – NE-2500D Telephone Set

Fig. 2 – NE-2558DR Telephone Set

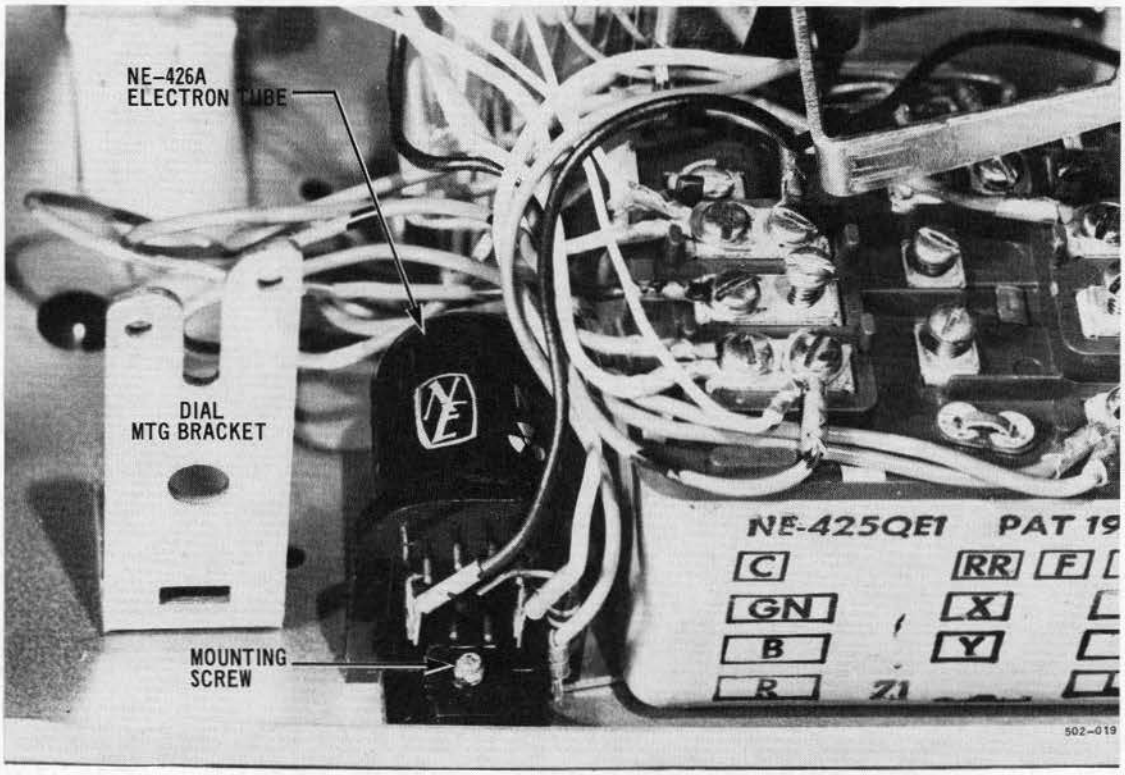

Fig. 3 – NE-500 Type Telephone Set Showing Method of Mounting NE-426A Electron Tube

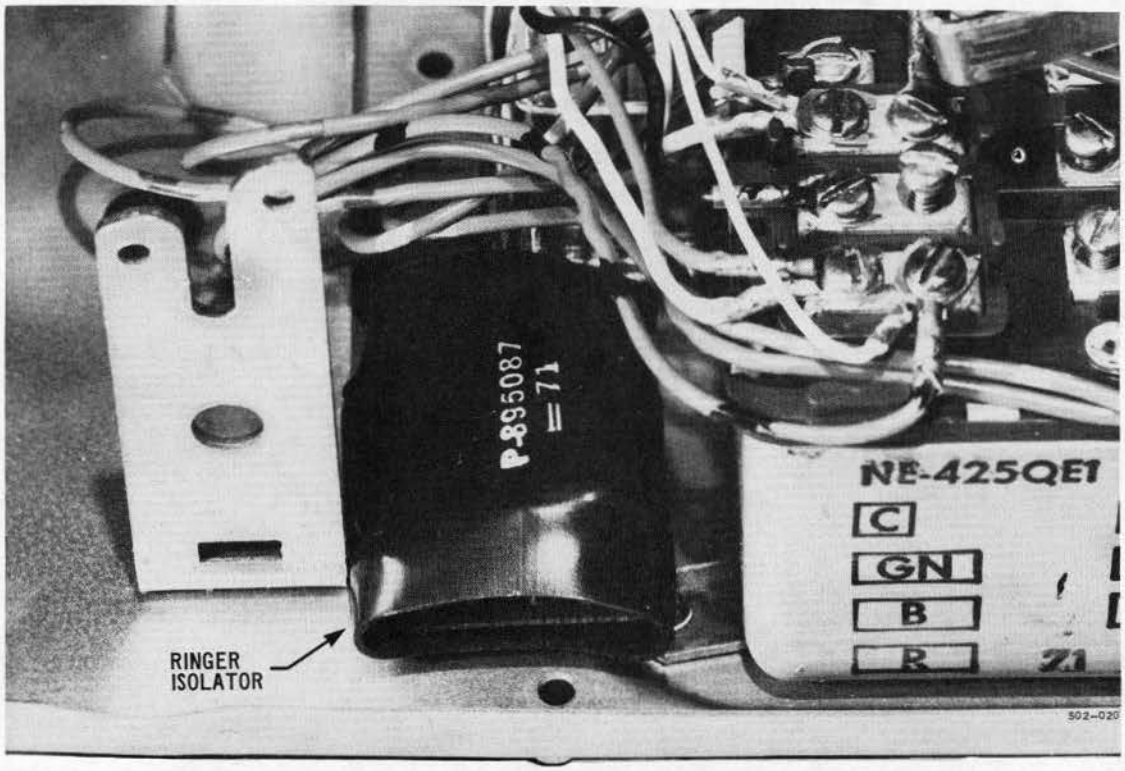

Fig. 4 – NE-500 Type Telephone Set Showing Method of Mounting P0895087 Ringer Isolator

2.02 The NE-1500 (MD) and NE-1554 (MD) type telephone sets are identical to the NE-500 and NE-554 type except they are equipped with a 10-button NE-25 type DIGITONE dial.

2.03 The NE-2500 and NE-2554 type telephone sets are similar to the NE-500 and NE-554 except they are equipped with an NE-35 type DIGITONE dial.

COMPONENTS

2.04 All components (except the line switch plungers on the desk type telephone sets) are mounted on the base of the set. The line switch plungers are part of the housing assembly.

A. Mounting Cord

2.05 NE-500, NE-1500 and NE-2500 desk type telephone sets are provided with a 5-1/2 foot mounting cord, which may be replaced with a 9- or 13-foot NE-D type 3-conductor cord, or a 13-foot NE-D type 4-, 6-, 10- or 16-conductor cord. The mounting cord is connected to the service leads through the appropriate connecting block.

B. Handset

2.06 All sets are shipped with an NE-G3AR handset. The handset may be replaced with a handset containing an amplifier, such as the NE-G6AQ1A for customers with impaired hearing, or an NE-G7AQ1A for customers with impaired speech. An NE-G8AQ1A handset may be used in noisy locations.

C. Rotary Dial (NE-500 Type Sets)

2.07 Most NE-500 type telephone sets are equipped with QDB1 type dials. The NE-7 (MD) type dial is superseded by the QDB1 type dial. The rotary dial is available with or without the word "OPERATOR" printed on the number plate and must be specified when ordering.

D. DIGITONE Dial (NE-2500 Type Sets)

2.08 NE-2500 type DIGITONE sets are equipped with NE-35Q3A1 12-button dials. The NE-25 type 10-button dial and NE-35 type 12-button dial are MD and are superseded by the NE-35Q type dial. The wiring connections for the NE-35Q type dial differ from the NE-25 type and NE-35 type dials and circuit modifications must be performed as detailed in the appropriate section. The two additional buttons on the NE-35Q type dial are designated * and #. While operational, their use is restricted to end-to-end signaling. The DIGITONE dial is available with or without the word "OPERATOR" printed on the "0" button, and must be ordered accordingly.

2.09 The NE-35Q type dial assembly contains a line-powered oscillator, which generates two frequencies when a button is depressed. These frequencies are transmitted to the CO, which must be equipped with a converter. The converter accepts the oscillator signals and translates them into a 2-out-of-5 code for crossbar offices, or dial pulses for step-by-step offices.

E. Line Switch

2.10 The card-operated line switch uses bifurcated contact springs to improve reliability. These are protected by a plastic cover. The line switch is held in the off-hook position by a coil spring. The weight of the NE-G3AR handset is sufficient to overcome the force of the coil spring, allowing the card to return the line switch contacts to the on-hook position.

F. Ringer

2.11 Most telephone sets are equipped with NE-C4A ringers. The ringer volume may be adjusted for four levels using the four corresponding positions of the volume control, (Fig. 7 and 8). A fifth position is supplied for manual ringer cutoff, an installation option.

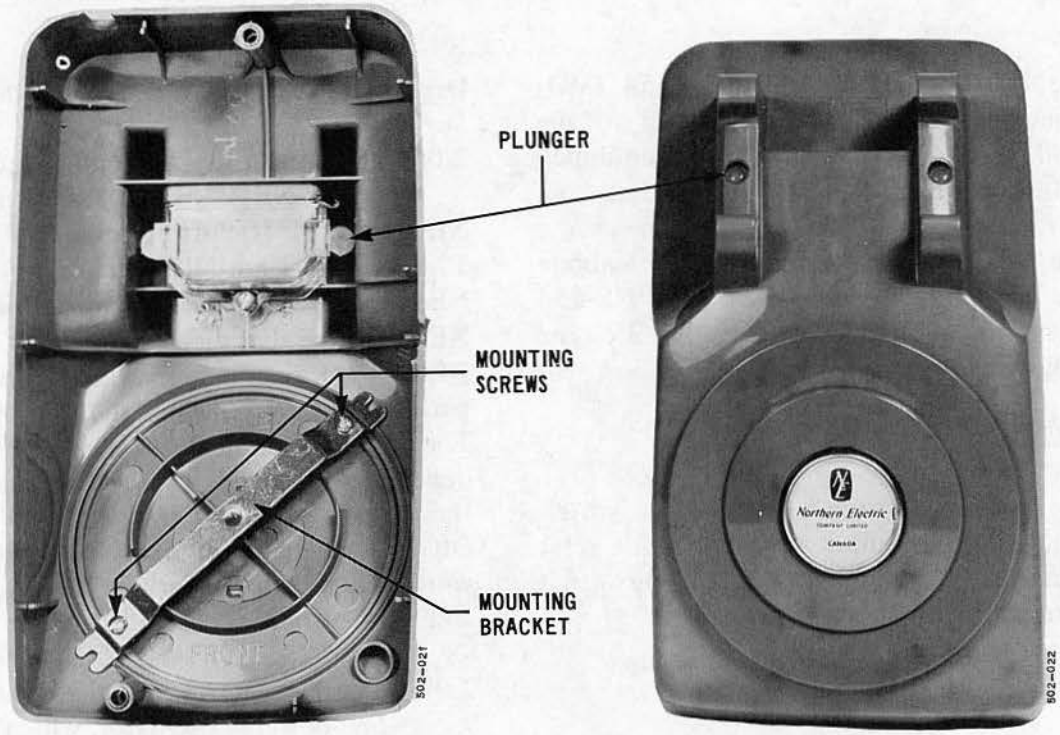

Fig. 5 – NE-500 Type Telephone Set Housing Equipped With an NE-95B Apparatus Blank

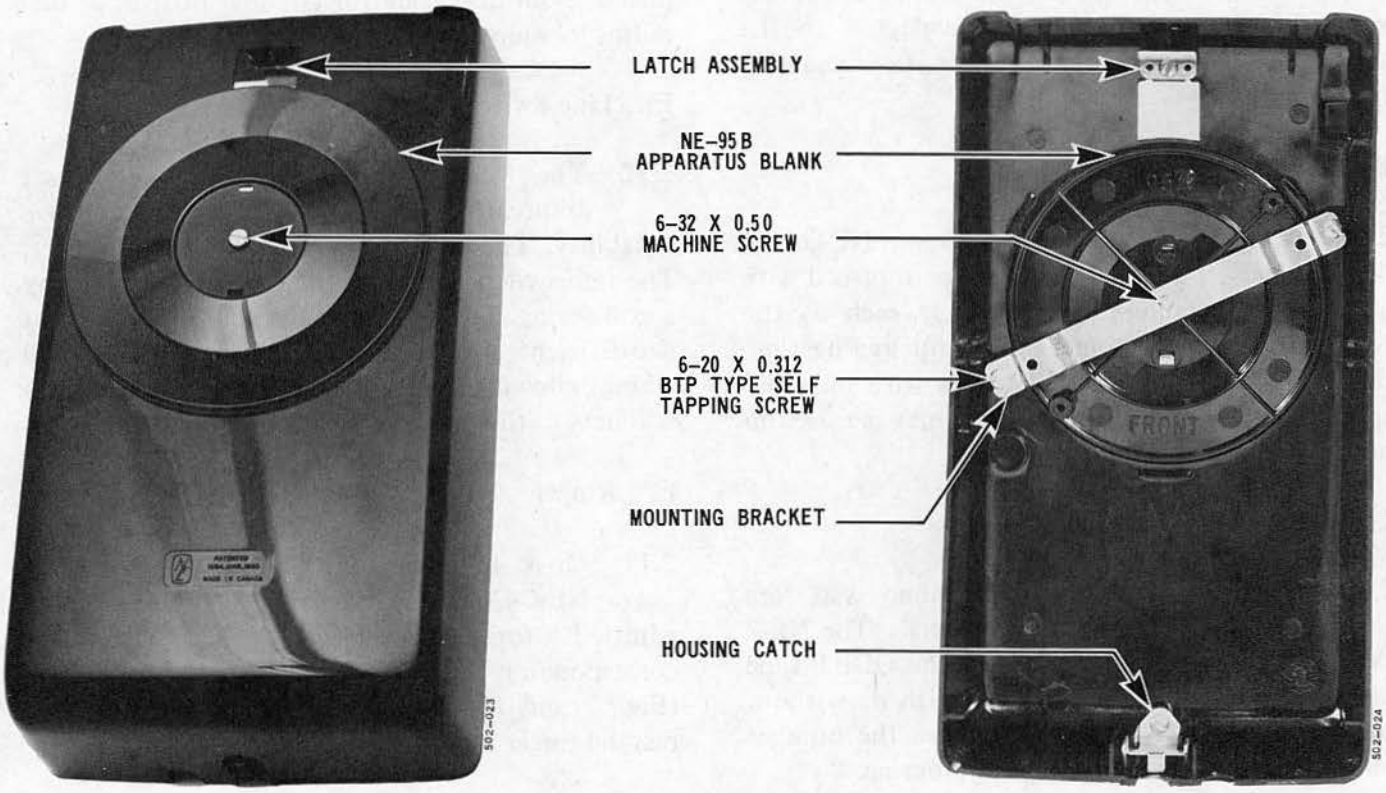

Fig. 6 – NE-554 Type Telephone Set Housing Equipped With an NE-95B Apparatus Blank

G. Network

2.12 NE-500, NE-554, NE-2500, and NE-2554 type telephone sets are equipped with an NE-425QE1 network, which contains the necessary apparatus for automatic line equalization. In most telephone sets all connections to the set are made on the network terminals. The NE-425QE1 network provides five extra bridging terminals with no electrical connection to the network circuits. The NE-425B (MD) or NE-425E (MD) networks are superseded by the NE-425QE1 network.

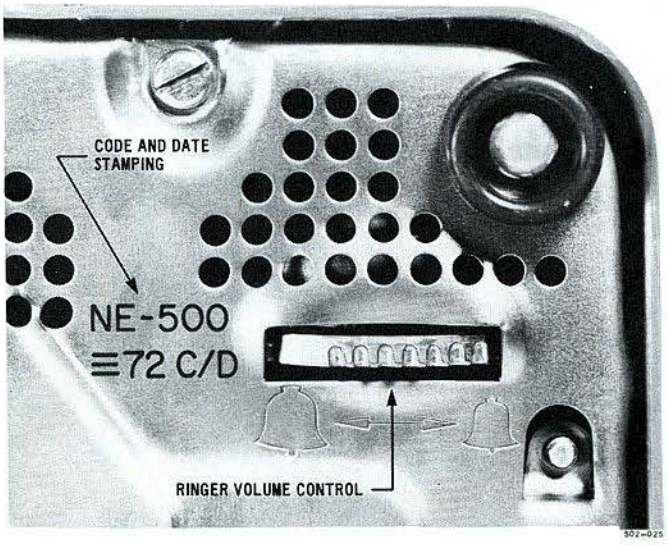

Fig. 7 – NE-500 Type Telephone Set Base Showing Date Stamp and Ringer Volume Control

ORDERING INFORMATION

2.13 When ordering the sets the desired color must be specified, using the suffixes given in Table A (e.g., to NE-500CR- add 03 to indicate black).

FEATURES

2.14 The features of each telephone set are shown in Tables B, C, and D.

TABLE A
TELEPHONE SET COLOR CODES

COLOR	COLOR SUFFIX
Black	-03
Ivory	-50
Green	-51
Red	-53
Yellow	-56
White	-58
Pink	-59
Light Beige	-60
Light Gray	-61
Blue	-62
Turquoise	-64

3. IDENTIFICATION

GENERAL

3.01 The code number and assembly date are stamped on the base of each telephone set (see Fig. 7). Double code numbers (e.g., NE-500 C/D or CR/DR) permit field conversion from rotary dial to manual operation or vice versa, without changing the code number stamped on the base of the set. The letter R indicates that the telephone set is equipped with a spring type retractile handset cord. The R – marking has been discontinued on telephone sets of recent manufacture.

TELEPHONE SET IDENTIFICATION

3.02 *NE-500DR.* The NE-500DR telephone set is the basic rotary dial single-line desk set. The set components include an NE-G3AR handset, a QDB1 type dial, and NE-425QE1 network, a 3-conductor mounting cord and an NE-C4 type ringer with adjustable volume control. The NE-500DR telephone set is shown in Fig. 9.

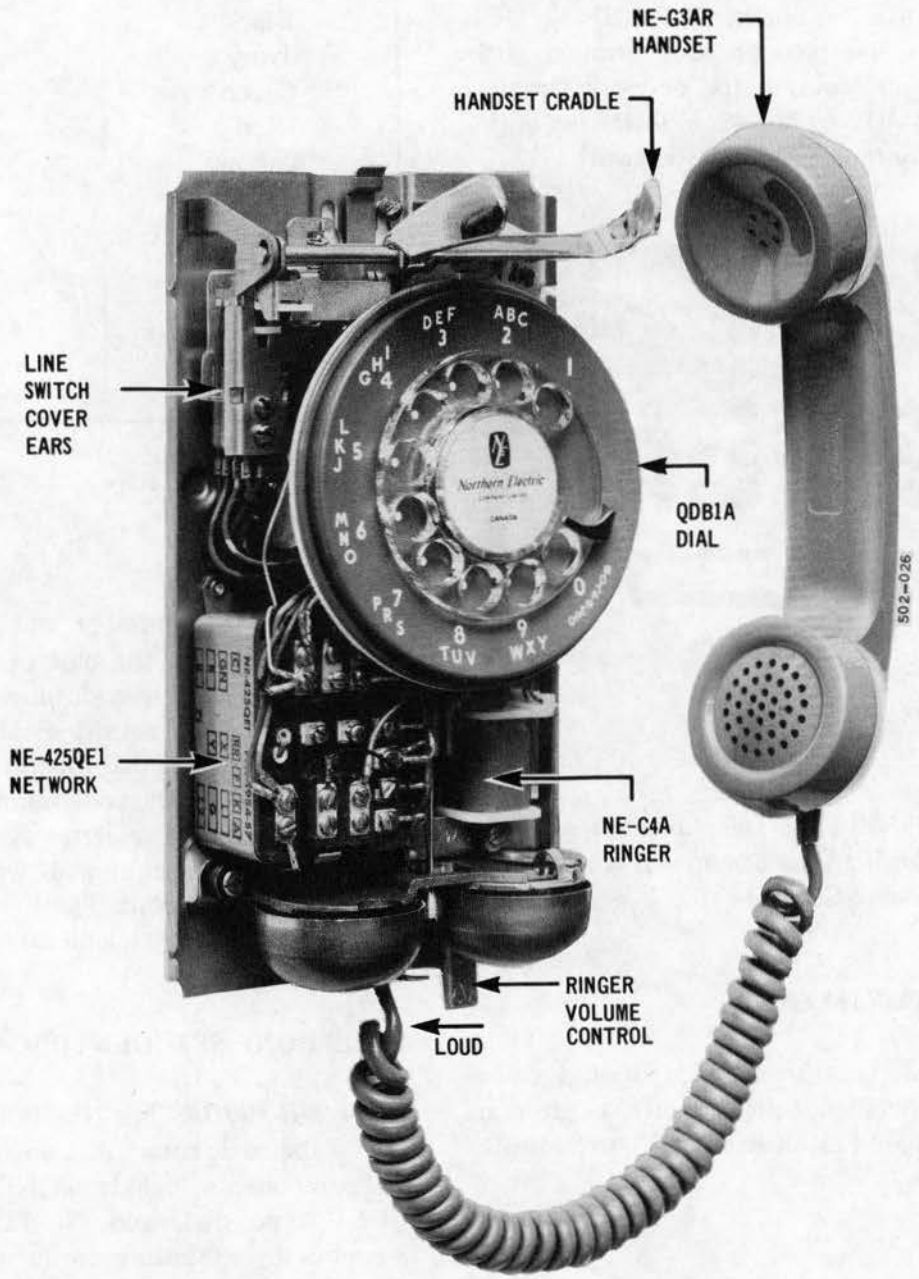

Fig. 8 – NE-554BR Telephone Set With Housing Removed

Fig. 9 – NE-500DR Telephone Set

3.03 ***NE-500CR.*** The NE-500CR telephone set is identical to the NE-500DR telephone set, except the rotary dial is replaced with an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.04 ***NE-500DQ1A.*** The NE-500DQ1A telephone set is identical to the NE-500DR telephone set, except it is equipped with a QDB1C all-number dial.

3.05 ***NE-500DQ1B.*** The NE-500DQ1B telephone set is identical to the NE-500DQ1A telephone set, except it has a grounding button.

3.06 ***NE-500QD.*** The NE-500QD telephone set is identical to the NE-500DR telephone set, except it is equipped with an NE-C4Q3A ringer which has no external volume control.

3.07 ***NE-500FR.*** The NE-500FR telephone set is identical to the NE-500DR telephone set, except it is equipped with a modified line switch and is wired to avoid interference with the dialing or talking of another subscriber on a multiparty line. When the handset is lifted off-hook, a low-loss receiver circuit is bridged across the line due to partial operation of the line switch. If the line is not busy, or if an incoming call is to be answered, the left plunger (Fig. 10) is pulled up fully to complete the operation of the line switch, completing the talking and dialing circuit. Replacing the handset restores both the line switch and monitor switch to the unoperated position.

Fig. 10 – NE-500FR Telephone Set Housing

3.08 *NE-500ER.* The NE-500ER telephone set is identical to the NE-500FR telephone set, except the dial is replaced with an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.09 *NE-500FRN.* The NE-500FRN telephone set is identical to the NE-500FR telephone set, except the instructions between the line switch plungers are printed in both English and French.

3.10 *NE-500MR.* The NE-500MR telephone set is identical to the NE-500DR telephone set, except the mounting cord has four conductors. The NE-1A1, and NE-1A2 Key Telephone System (KTS) control leads in the mounting cord are bridged on the terminal strip to the line switch assembly contacts. The NE-500MR telephone set may be rewired for audible ringing by using a separate pair of leads.

3.11 *NE-500LR.* The NE-500LR telephone set is identical to the NE-500MR telephone set, except the rotary dial is replaced with an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.12 *NE-500SR.* The NE-500SR telephone set is identical to the NE-500DR telephone set, except it has additional line switch contacts for A lead control and a 10-conductor NE-D10H mounting cord for connection to a QUS1 type hands-free unit, an NE-3 type speakerphone, and NE-1A1 KTS, and NE-1A2 KTS.

3.13 *NE-500RR.* The NE-500RR telephone set is identical to the NE-500SR telephone set, except the dial is replaced with an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.14 *NE-500YR.* The NE-500YR telephone set is identical to the NE-500DR telephone set, except it is equipped with a lamp which provides a message-waiting feature. The visual signal indication from the C0011513 neon lamp which protrudes through the housing into an amber cap, is controlled by the attendant at the message-waiting cabinet. General application of this telephone and its feature are in hotel/motel installations. The transmission, ringing, dialing and message-waiting indication circuits for the NE-500YR telephone set can be energized through a common pair of wires.

3.15 *NE-500WR.* The NE-500WR telephone set is identical to the NE-500YR telephone set, except the rotary dial is replaced with an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.16 *NE-500YQ1A.* The NE-500YQ1A telephone set is identical to the NE-500YR telephone set, except it has an MD2993 pushbutton which, when depressed, may be used for signaling.

3.17 *NE-500YQB.* The NE-500YQB telephone set is identical to the NE-500YR telephone set, except it is supplied with a QDB1C all-number dial.

3.18 *NE-500PRN.* The NE-500PRN telephone set is identical to the NE-500YR telephone set, except the message-waiting lamp is powered by 24 V dc. Power is supplied on a separate pair of leads, independent from the common pair of conductors serving the transmission, dialing, and ringing circuits.

3.19 *NE-500NRN.* The NE-500NRN telephone set is identical to the NE-500PRN telephone set, except the rotary dial is replaced with an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.20 *NE-501CR, DR, ER, and FR.* The NE-501CR, DR, ER, and FR telephone sets are identical to the NE-500CR, DR, ER, and FR telephone sets respectively, except an NE-426A electron tube is supplied to permit selective ringing.

3.21 *NE-502BR.* The NE-502BR telephone set is identical to the NE-500DR telephone set, except it provides an exclusion feature. The exclusion switch assembly is activated by lifting the left line switch plunger of the telephone set. To

restore the excluded service to normal, the plunger is restored to its normal position or the handset is placed on-hook. The NE-D6AA mounting cord contains sufficient leads to permit connection to either NE-1A1 or NE-1A2 KTS or the exclusion circuit. The NE-502BR-61 telephone set is supplied with an NE-D6AA-61 cord and can be modified for use with data sets.

3.22 ***NE-502AR.*** The NE-502AR telephone set is identical to the NE-502BN telephone set, except the dial is replaced with an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.23 ***NE-502QA.*** The NE-502QA telephone set (Fig. 11) is identical to the NE-502BR telephone set, except it is equipped with an MD2993 pushbutton which, when depressed, may be used for signaling.

3.24 ***NE-510BR.*** The NE-510BR telephone set is identical to the NE-500DR telephone set, except it has two separate lines which are selected by a turnbutton-pushbutton. Depressing the button provides momentary connection between two contacts for signaling. To permit incoming-call audible signaling on both lines, an external ringer may be connected to the second line. The turnbutton can also serve as a transfer or cutoff key on lines, line extensions, ringers, etc. The features extend to the connecting block through the NE-D6AA mounting cord, which is connected to the terminal strip within the telephone set.

3.25 ***NE-510AR.*** The NE-510AR telephone set is identical to the NE-510BR telephone set, except the dial is replaced by an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.26 ***NE-510FR.*** The NE-510FR telephone set is identical to the NE-510BR telephone set, except the NE-510FR is equipped with a lift-to-talk- and-dial plunger as described for the NE-500FR telephone set. (See 3.07.)

3.27 ***NE-510ER.*** The NE-510ER telephone set is identical to the NE-510FR telephone set, except the rotary dial is replaced with an NE-95B

Fig. 11 – NE-502QA Telephone Set

apparatus blank and the set is wired for use with manual telephone systems.

3.28 *NE-510QA.* The NE-510QA telephone set is identical to the NE-510FR telephone set, except it is provided with an MD2993 pushbutton which provides the features described for the NE-502QA telephone set. (See 3.23.)

3.29 *NE-511DR.* The NE-511DR telephone set is identical to the NE-510BR telephone set (see 3.24), except it is equipped with an exclusion-switch assembly which is activated by lifting the left line switch plunger. The NE-D16QA mounting cord extends the control leads from the terminal strip and network to facilitate connection to the QUS1 type hands-free unit, the NE-3 type speakerphone, NE-1A1 KTS, NE-1A2 KTS and exclusion circuits. The NE-511DR telephone set may also be used with data sets.

3.30 *NE-511CR.* The NE-511CR telephone set is identical to the NE-511DR telephone set, except the rotary dial is replaced with an NE-95B apparatus blank and the set is wired for use with manual telephone systems.

3.31 *NE-511DQA.* The NE-511DQA telephone set is identical to the NE-511DR telephone set except it uses a QDB1D all-number dial.

3.32 *NE-2500D.* The NE-2500D telephone set is identical to the NE-500DR telephone set, except it has a DIGITONE dial. All components, except the housing, faceplate, dial, and dial bracket, are interchangeable between the NE-500D and NE-2500D telephone sets. The NE-2500D is shown in Fig. 1.

3.33 *NE-2500MQA.* The NE-2500MQA telephone set is identical to the NE-2500D telephone set, except for the NE-D4BJ 4-conductor cord which permits connection to either an NE-1A1 or NE-1A2 KTS. The NE-2500MQA telephone set may be modified on the terminal strip within the set to obtain audible signaling on a separate pair of leads.

3.34 *NE-2500SQA.* The NE-2500SQA telephone set is identical to the NE-2500D telephone set, except for additonal line switch contacts and a 10-conductor NE-D10H cord necessary for connection to the QUS1 type hands-free unit, the NE-3 type speakerphone or NE-1A1, and NE-1A2 KTS.

3.35 *NE-2500YQA.* The NE-2500YQA telephone set is identical to the NE-2500D telephone set, except for the message-waiting lamp on the face of the set. The features and their operation are identical to those described for the NE-500YR telephone set for rotary dial systems. (See 3.14.)

3.36 *NE-2511DQA.* The NE-2511DQA telephone set is similar in appearance to the NE-2500D telephone set. The NE-2511DQA telephone set is equipped with an NE-584AQA key (turnbutton-pushbutton) and an exclusion switch to provide the features as described for the NE-511DR telephone set. (See 3.29.)

3.37 *NE-554BR.* The NE-554BR telephone set is a single-line wall telephone set. (Fig. 12.) The set components include an NE-63AR handset, a QDB1 type dial, an NE-425QE1 network, and an NE-C4 type ringer with adjustable volume control.

3.38 *NE-554AR.* The NE-554AR telephone set is identical to the NE-554BR telephone set, except the dial is replaced with an NE-95B apparatus blank, (Fig. 6), and the set is wired for manual service.

3.39 *NE-593BRW.* The NE-593BRW telephone set is identical to the NE-554BR telephone set, except it is not equipped with a ringer.

3.40 *NE-503ARW.* The NE-593ARW telephone set is identical to the NE-554BR telephone set, except it is not equipped with either a ringer or a dial. The dial is replaced by an NE-95B apparatus blank and the set is wired for manual service.

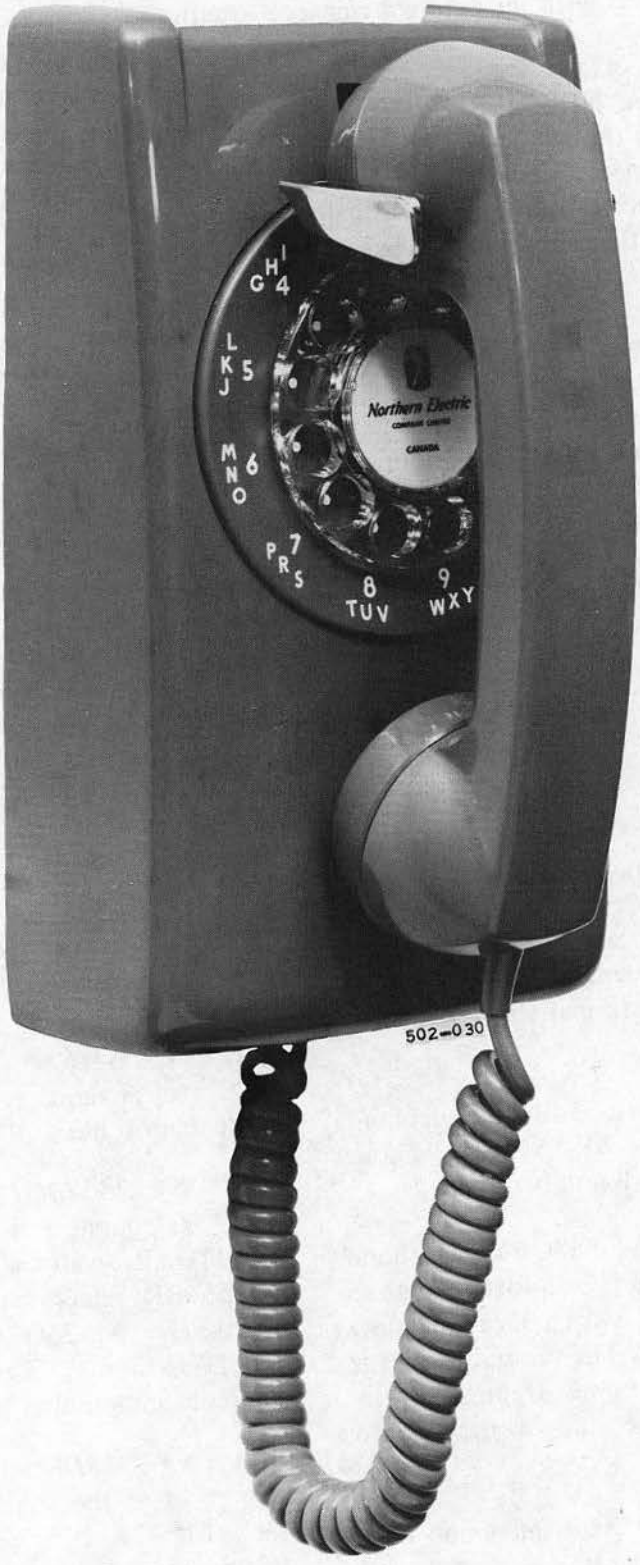

Fig. 12 – NE-554 Type Wall Telephone Set

3.41 *NE-554QD.* The NE-554QD telephone set is identical to the NE-554BR telephone set, except it is not equipped with an external ringer volume control.

3.42 *NE-554FRN.* The NE-554FRN telephone set is identical to the NE-554BR telephone set, except it is equipped with a modified line switch and is wired to avoid interference with the dialing or talking of another subscriber on a party line. When the handset is lifted, a low-loss receiver circuit is bridged across the line due to partial operation of the line switch. If the line is not busy, or if an incoming call is to be answered, pushing in the monitor switch (located on the right side of the set), fully operates the line switch, completing the talking and dialing circuit. Replacing the handset restores both the line switch and monitor switch.

3.43 *NE-556FRN (MD).* The NE-556FRN (MD) telephone set is identical to the NE-554FRN telephone set, except it has an NE-426A electron tube, and is intended for 4-party selective and 8-party semiselective (polarized ringing line) service.

3.44 *NE-554BQA.* The NE-554BQA telephone set is identical to the NE-554BR telephone set, except it has a QDB1C all-number dial, and a P096C252 signal switch located below and to the right of the dial. The signal switch leads are connected to a P338886 terminal strip located on the dial bracket.

3.45 *NE-551BQ1A.* The NE-554BQ1A telephone set is identical to the NE-554BR telephone set, except it has a QDB1C all-number dial.

3.46 *NE-551Q4A.* The NE-554Q4A telephone set is identical to the NE-554BR telephone set, except it has a ground switch located below and to the right of the dial. The ground switch is wired between tip and ground. Depressing the switch button connects one side of the line to ground.

3.47 *NE-558DR.* The NE-558DR telephone set is the standard 2-line set. It is equipped with standard components, except the dial is a QDB1B dial with an additional set of contacts, which mute the dial pulses for use in speakerphone systems. In addition, the NE-558DR telephone set is equipped with an exclusion switch and an NE-584B turnbutton-pushbutton. Holes are provided in the baseplate for mounting an NE-659A transmitter for use in home communication systems. The exclusion switch and turnbutton-pushbutton provide the following services:

(a) The exclusion switch provides a means of disconnecting an extension station by raising the plunger projecting through the top of the housing. The switch returns to normal when the handset is replaced.

(b) In home communications systems, the exclusion switch may be used to place the CO line on hold while using the intercom.

(c) The turnbutton-pushbutton provides a means of transferring the talking circuit to either of two lines. This switch can also be used to cut off or transfer lines, extension stations, ringers, etc. Depressing the button momentarily closes a pair of contacts to provide signaling.

3.48 *NE-558CR.* The NE-558CR telephone set is identical to the NE-558DR telephone set, except the dial is replaced with an NE-95B apparatus blank, and the set is wired for manual service.

3.49 *NE-558DQA.* The NE-558DQA telephone set is identical to the NE-558DR telephone set, except it has a QDB1D all-number dial.

3.50 *NE-2554BQ1A.* The NE-2554BQ1A telephone set is the standard single-line DIGITONE wall set. It is identical to the NE-554BR telephone set, except it is equipped with an NE-35Q3A (MD) or NE-35Q3A1 DIGITONE dial. Left and right dial-mounting adapters are required to mount the dial.

3.51 *NE-2558DR.* The NE-2558DR telephone set is the standard 2-line DIGITONE wall set, (Fig. 2). It is identical to the NE-558DR telephone set except it is equipped with an NE-35Q3G (MD) or NE-35Q3A1 DIGITONE dial, and a P096C204 2-line switch, which allows the A lead to be switched when changing lines.

TABLE B
ONE-BUTTON DESK TELEPHONE SET FEATURES
(Double-Line or Additional Equipment)

TELEPHONE SET			ALL NUMBER CALLING	ELEC. TUBE 4-PARTY SEL. RING	KEY SYSTEMS	SPEAKER-PHONE	LIFT-TO-TALK	NUMBER OF LINES PICKED UP	SIGNALING CIRCUIT	LINE RINGER	COMMON OR PRIVATE LINE RINGER OR BUZZER	EXCLUSION	RINGER OR BUZZER CUTOFF BY EXCL.	CUTOFF BY KEY		AUXILIARY RECEIVER	QBB1A CONN. BLK.	GROUND BUTTON
MANUAL	DIAL													RINGER OR BUZZER IN SET	EXTENSION STATION OR RINGER			
	ROTARY	DIGITONE																
NE-501CR-*	NE-501DR-*			√				1										
NE-501ER-*	NE-501FR-*			√			√	1										
NE-502AR-*	NE-502BR-*				√			1		√		√						
NE-502AR-*	NE-502BR-*				√			1			√		√					
	NE-502QA-*							1										√
NE-510AR-*	NE-510BR-*							2		√								
NE-510AR-*	NE-510BR-*							1	√	√								
NE-510AR-*	NE-510BR-*							1	√	√				√				
NE-510AR-*	NE-510BR-*							1		√					√			
NE-510AR-*	NE-510BR-*							1		√						√		
NE-510ER-*	NE-510FR-*							2	√	√								
NE-510ER-*	NE-510FR-*							2			√				√			
NE-510ER-*	NE-510FR-*							1	√	√						√		
NE-510ER-*	NE-510FR-*							1	√	√							√	√
	NE-510QA-*							1				√						
NE-511CR-*	NE-511DR-*	NE-2511DQA-*			√	√		2	√	√		√						
NE-511CR-*	NE-511DR-*	NE-2511DQA-*			√	√		2	√		√		√					
NE-511CR-*	NE-511DR-*	NE-2511DQA-*			√	√		2	√		√	√		√				
NE-511CR-*	NE-511DR-*	NE-2511DQA-*			√	√		1	√	√		√		√				
NE-511CR-*	NE-511DR-*	NE-2511DQA-*			√	√		1	√	√		√			√			
NE-511CR-*	NE-511DR-*	NE-2511DQA-*			√	√		1	√	√		√				√		
	NE-511DQA-*		√		√	√		1	√	√		√				√		

* When ordering the telephone set the desired color must be specified using the suffixes in Table A.

TABLE C
NONBUTTON DESK TELEPHONE SET FEATURES
(Single-Line)

TELEPHONE SET CODE			DIAL		LIFT-TO-TALK MARKING		KEY SYSTEM	SPEAKER-PHONE	MESSAGE WAITING	GROUND BUTTON	QBB1A CONN. BLK.	SEE NOTE
ROTARY	DIGITONE	MANUAL	NUMERIC	ALPHA-NUMERIC	ENGLISH	ENGLISH AND FRENCH						
NE-500DR-*	NE-2500D-*	NE-500CR-*		√								
NE-500DQ1A-*			√								√	
NE-500DQ1B-*			√							√	√	
NE-500FR-*		NE-500ER-*		√	√							
NE-500FRN-*				√		√						
NE-500MR-*	NE-2500MQA-*	NE-500LR-*		√			√					
NE-500QD-*			√								√	1
NE-500SR-*	NE-2500SQA-*	NE-500RR-*		√			√	√				
NE-500YR-*	NE-2500YQA-*	NE-500WR-*		√					√			4
NE-500YQ1A-*				√					√	√	√	2,4
NE-500YQB-*			√					√				4 3
NE-500PRN-*		NE-500NRN-*		√				√	√			3

* When ordering the telephone set the desired color must be specified using the suffixes in Table A.

Notes:

1. Equipped with NE-C4Q3A ringer and no external volume control.
2. Not equipped with a Ringer.
3. For Hotel 24 V dc System message-waiting lamp circuit.
4. Equipped with neon lamp for message-waiting.

TABLE D
NONBUTTON AND ONE-BUTTON WALL TELEPHONE SET FEATURES

TELEPHONE SET			ALL NUMBER DIAL	ELECTRON TUBE 4-PARTY SEL. RING	LIFT-TO-TALK	NUMBER OF LINES PICKED UP	SIGNALING CIRCUIT	LINE RINGER	EXCLUSION	GROUND BUTTON
MANUAL	DIAL									
	ROTARY	DIGITONE								
NE-554AR-*	NE-554BR-*	NE-2554BQ1A-*				1		√		
NE-593ARW-*	NE-593BRW-*					1				
	NE-554FRN-*				√	1		√		
	NE-554BQA-*		√			1	√	√		
	NE-554BQ1A-*		√			1		√		
	NE-554Q4A-*					1				√
NE-558CR-*	NE-558DR-*	NE-2558DR-*				2	√	√	√	
	NE-558DQA-*		√			2	√	√	√	
	NE-556FRN-*			√	√	1		√		
		NE-1554B-*				1		√		
	NE-554QD-*					1	†			

* When ordering the telephone set the desired color must be specified using the suffixes in Table A.

† No Ringer volume control.

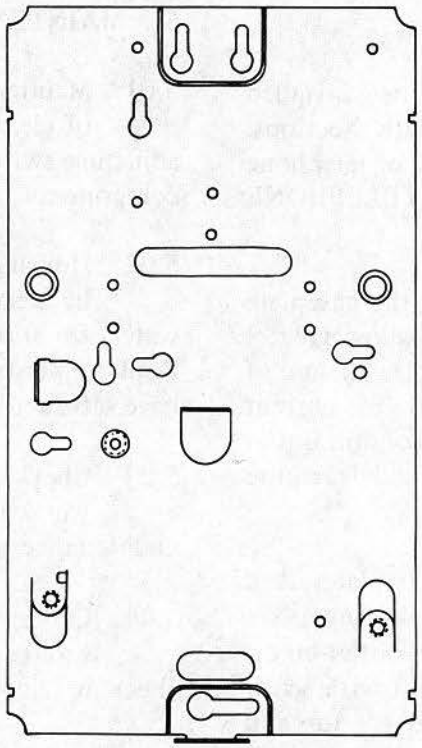

Fig. 13 – Present Production Baseplate (Wall Telephone)

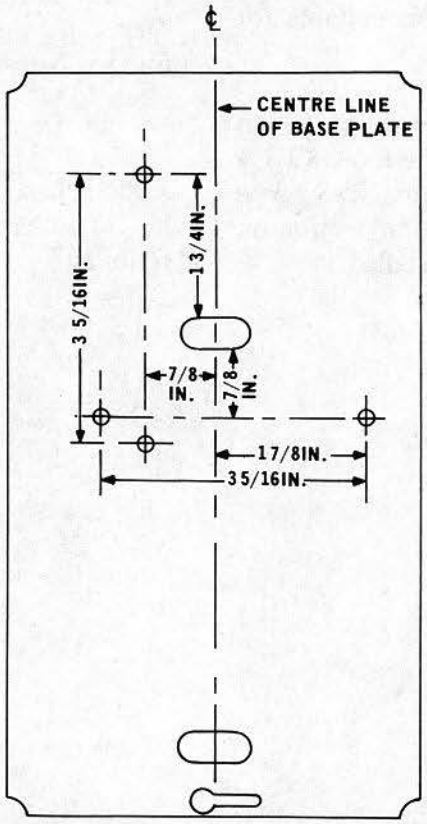

Fig. 14 – Early Production Baseplate (Wall Telephone)
Showing Drilling Location for Mounting Holes

4. INSTALLATION

4.01 The telephone sets shall be installed according to the appropriate sections. Connection information for each type of telephone set is located in the section entitled, TELEPHONE SETS – TYPE CONNECTIONS.

4.02 Several holes are provided in the baseplate of the wall telephone set to allow greater flexibility in mounting and to minimize the use of a backboard (Fig. 13). Baseplates of current manufacture may be mounted on a conduit outlet box. Baseplates of early production models require modification.

4.03 To modify early production baseplates, drill two holes as shown in Fig. 14 using a No. 17 (0.173 inch) drill bit. If a conduit outlet box is not available, mount the telephone set with screw anchors, using the mounting holes at the top and bottom of the baseplate.

4.04 Refer to the appropriate section for information on screw anchors suitable for mounting wall telephone sets.

4.05 When connecting a telephone set to an NE-1A, NE-1A1, NE-1A2, or NE-6A KTS, a QUSI-type hands-free unit or an NE-3 type speakerphone, refer to the connection section on the particular telephone set being installed.

5. MAINTENANCE

5.01 Maintenance of the telephone sets consists of cleaning exterior surfaces, burnishing and adjusting switch contacts, and replacing defective components.

5.02 Housing, handset and dial pushbuttons can be cleaned with a soft cloth moistened with water. ***Do not use scouring powders or cleaners.*** Replace plastic components if cleaning does not have satisfactory results.

5.03 Check line and ground terminations, and wire dressing before proceeding with maintenance.

5.04 CO station ringer and dial test circuits should be used where possible when checking telephone sets.

5.05 Network and line switch assemblies are riveted to the baseplate. These assemblies are not normally replaced in the field, however, they can be replaced by drilling out the rivet and using a No. 4 by 0.250 (P097D700) self- tapping screw.

5.06 Chart 1 lists common troubles and their probable causes, with suggested corrective actions.

CHART 1 – FAULT LOCATION GUIDE		
INDICATION	**PROBABLE CAUSE**	**CORRECTIVE MEASURE**
Bell does not ring.	Ringer disconnected or incorrectly wired in set.	Connect correctly. Refer to appropriate connection section.
	Volume control wheel in cutoff position.	Move control wheel to ring position and advise customer of cutoff position.
	Open winding.	Replace ringer.
	Metal particles in armature gap.	Remove with adhesive tape or approved equivalent.
	Open tube.	Short-circuit yellow and black tube leads. If ringer operates when ringing voltage of correct polarity is applied, replace tube.
	Open ringing capacitor.	Replace telephone set, or bridge A&K terminals of the NE-425QE1 Network with a QCC12A capacitor.
Bell too loud.	Volume control wheel in wrong position.	Move control wheel to softer position and advise customer on proper use.
Bell too soft.	Volume control wheel in wrong position.	Move control wheel to louder position and advise customer on proper use.
	Set on sound-absorbent material.	Mount set on hard surface.
	Cord touching gong.	Dress cord properly.

CHART 1 (Cont) – FAULT LOCATION GUIDE

INDICATION	PROBABLE CAUSE	CORRECTIVE MEASURE
Bell taps while dialing or operating line switch.	Incorrect wiring.	Check mounting cord and ringer connections.
	Loose gong.	Tighten screw as required.
Bell rings or taps when other party is called (cross ring or false ring).	Incorrect wiring.	Check mounting cord and ringer connections.
	Biasing tension too low.	Place bias spring in high-tension notch. If ringer still cross-rings, replace ringer.
Bell keeps ringing when handset is lifted.	Open handset cord or dial pulse contacts.	Replace handset cord or dial.
	Defective network or open set wiring.	Replace set.
	Contacts on line switch do not close.	Check switch cover and lugs; lugs should fit into notches. Clean or adjust line switch contacts.
No dial tone, or set dead.	Open line or handset cord.	Replace cord.
	Defective receiver unit or varistor shorted.	Replace receiver unit.
	Dial pulse contacts open or off-normal shunt contacts closed.	Replace dial.
	Open network.	Replace telephone set.
	Line switch contacts do not close.	Check switch cover for proper installation. Clean or adjust line switch contacts.

CHART 1 (Cont) – FAULT LOCATION GUIDE

INDICATION	PROBABLE CAUSE	CORRECTIVE MEASURE
Cannot break dial tone.	Dial pulse contacts do not open.	Replace dial.
	Dial filter capacitor in network shorted.	Replace telephone set.
	DIGITONE dial inoperative.	Replace dial.
	DIGITONE dial leads reversed.	Check dial lead polarity.
	Depressing more than one button at a time.	Instruct customer on correct dialing procedures.
Loud clicks while dialing.	Dial off-normal shunt contacts do not close.	Clean contacts or, replace dial.
Cannot hear.	Open or shorted receiver unit or handset cord.	Replace receiver unit or handset cord.
	Dial off-normal shunt contacts closed.	Replace dial.
	Open induction coil or network.	Replace telephone set.
	Line switch receiver contacts do not open.	Check switch cover for interference.
Cannot be heard.	Defective transmitter or open handset cord.	Replace transmitter or handset cord.
High sidetone.	Defective sidetone balancing network.	Replace telephone set.
Cannot transfer between lines using 2-line pickup key.	Turnbutton/pushbutton key contacts do not close.	Check key contacts. Replace set if key contacts cannot be cleared or adjusted.

CHART 1 (Cont) – FAULT LOCATION GUIDE

INDICATION	PROBABLE CAUSE	CORRECTIVE MEASURE
Pushbutton will not operate signaling circuit.	Incorrect wiring.	Check wiring and connections.
	Pushbutton contacts do not close.	Check contacts.
	Defective signal device.	Replace bell or buzzer.
Cannot exclude extension station or cutoff external ringer.	Exclusion switch contacts do not close.	Check exclusion switch. Replace set if switch contacts cannot be cleared or adjusted.
Noisy set.	Defective handset cord or dirty potentiometer in amplifier (NE-G6AR or NE-G7AR handset).	Change handset cord or Replace amplifier handset.
Volume of entire set low (below normal set).	Open or short in amplifier in NE-G6AR or NE-G7AR handset.	Replace amplifier handset.
Does not amplify.	Open potentiometer. Open or short in amplifier.	Replace amplifier handset.
Entire set dead.	Open semiconductor diode.	Replace amplifier handset.
Maximum volume cannot be turned down.	Shorted potentiometer.	Replace amplifier handset.

A. Line Switch Assembly

5.07 Field maintenance of the line switch should be limited to replacing the cover, cleaning and adjusting the contacts, lubricating bearing points and replacing the operating card.

5.08 Remove the line switch cover by depressing the sides between the thumb and index finger to disengage the side tabs, move the cover down slightly to disengage the top tab, then tilt the cover towards the base and slide up to remove. (See Fig. 15.)

5.09 Clean the contacts with a NE-265C tool. Use an NE-363 tool to adjust the contacts.

5.10 The line switch assembly should function without binding or squeaking. To eliminate any binding or squeaking, clean the spring anchor points, shaft bearing points and shaft with a soft cloth (NS2423) moistened with petroleum spirits (NS7860). Lubricate the bearing surfaces (Fig. 10) with a No. 2, or softer, graphite pencil.

Caution: NS7860 petroleum spirits are flammable. Use safety precautions when handling.

5.11 If the line switch operating card is broken or damaged, examine the position of the card before removing it, to ensure proper placement of the contact springs in the new card fingers. Exercise care when removing the broken card and inserting the new card. Do not bend or deform the contact springs. Examine the assembly for correct contact sequence before replacing the switch cover. If the contact springs are damaged, or the stationary card is broken, replace the telephone.

B. Exclusion or Monitor Switch

5.12 The plunger shall:

(a) remain in the operated position when pulled up to the full extent of its travel.

(b) return to the fully depressed position when the handset is placed in the cradle.

5.13 With the housing removed, the following may be examined:

(a) normally closed contacts of the exclusion switch shall have perceptible follow when the switch is operated manually.

(b) normally open contacts shall have a minimum separation of 0.015 inches.

C. Turnbutton/Pushbutton

Note: The turnbutton/pushbutton should be adjusted in the field ***only*** if replacement of the set is impractical.

5.14 Use an NE-363 tool to adjust the key. Be sure there is adequate light. Pay particular attention to the turnbutton contact operating sequence. If any adjustment is made to the contact springs, recheck all requirements applicable to the key. If the springs cannot be adjusted, replace the set.

5.15 Key requirements are:

(a) The pushbutton shall operate freely in either turnbutton position, and shall return to normal after being depressed to the limit of its stroke.

(b) Contacts of the turnbutton function shall not be made or broken by operation of the plunger as a pushbutton.

(c) The pushbutton contacts shall have a minimum separation of 0.030 inches.

(d) It shall not be possible to make or break the contacts by any side thrust against the plunger in either the operated or unoperated position.

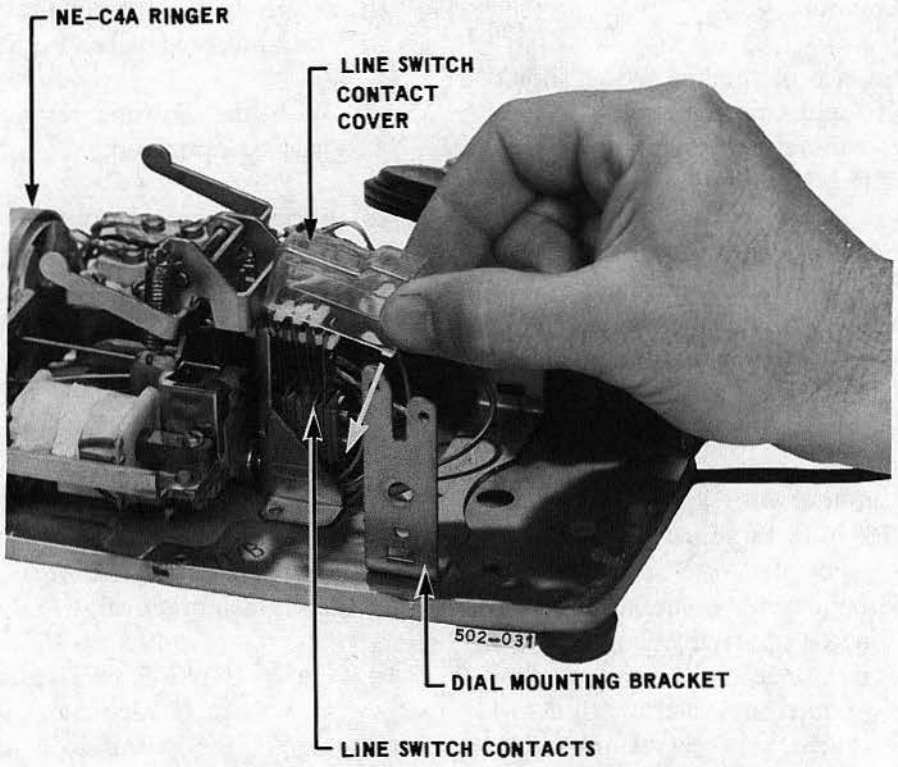

Fig. 15 – Removing Line Switch Cover

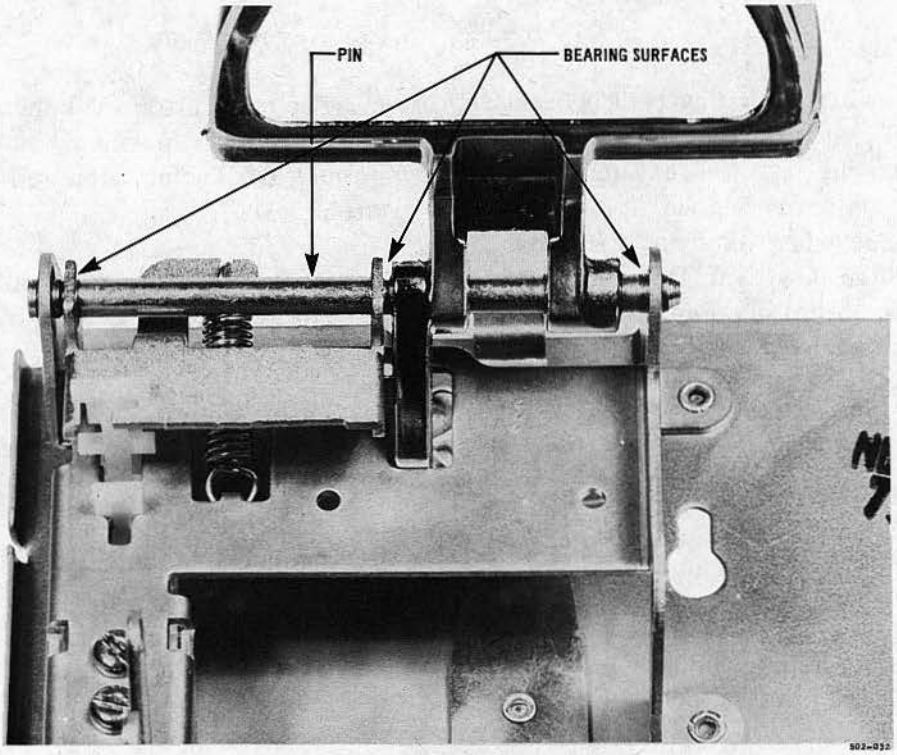

Fig. 16 – Line Switch Assembly

(e) All contact springs, including those which make when the key is unoperated, shall have perceptible follow (approximately 0.010 inches).

(f) All normally closed contacts shall break before any normally open contacts make.

(g) Normally closed turnbutton contacts shall have a break of at least 0.015 inches. Normally open contacts shall have a break of at least 0.025 inches.

D. Ringer Capacitor

5.15 An externally-mounted QCC12A capacitor may be used to replace an open or shorted ringer capacitor in the NE-425QE1 network. The ringer capacitor is connected between terminals A and K on the network (Fig. 17).

5.16 When the ringer capacitor is shorted, it is necessary to use a QCM12A connector in conjunction with the QCC12A capacitor. This connector consists of a terminal for connecting two spade-tipped leads together, and an insulating sleeve. (Fig. 17.) Connect one side of the QCC12A capacitor to terminal A of the network; leave the ringer lead of this terminal. Remove the ringer lead from terminal K of the network, and connect it to the other side of the QCC12A capacitor, using the QCM12A connector.

5.17 Dress and store all leads in a convenient location, keeping leads away from the ringer gongs.

6. ASSEMBLY OF PARTS

6.01 Mechanical faults in the replaceable parts, detected by visual inspection or electrical

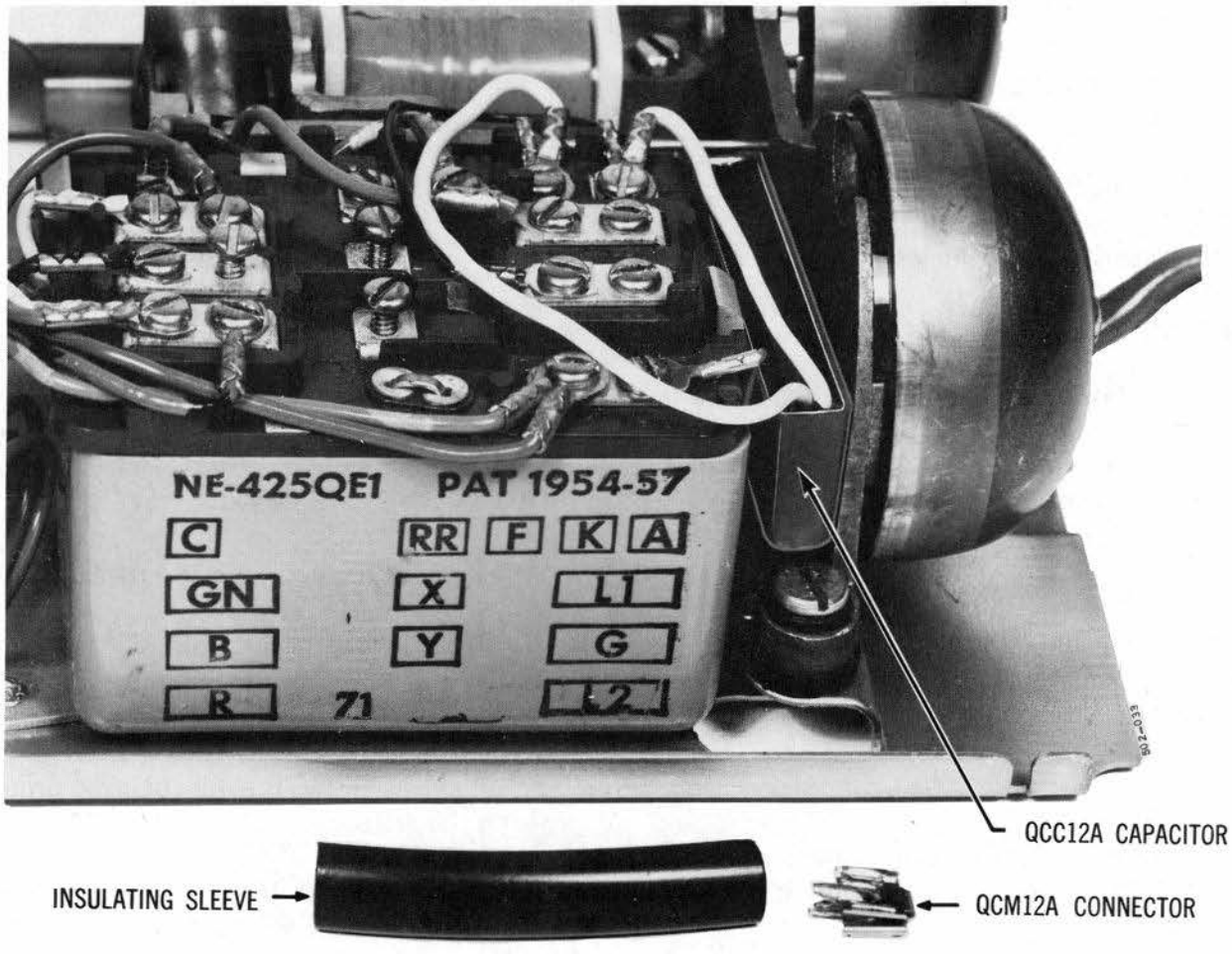

Fig. 17 – Replacing Defective Ringer Capacitor

faults detected by use of the fault location guide should be repaired by substitution of the items as described below.

A. Housing (Desk Telephones)

Removal

1. Loosen the captive screws (Fig. 12) in the base of the telephone set until the screws disengage from the housing.

2. Tilt the housing forward and lift the housing vertically from the telephone set base until the dial, line switch, exclusion switch and turnbutton are cleared.

Assembly

1. Align the housing over the telephone set base so the dial and turnbutton coincide with their respective holes.

2. Lower the housing onto the telephone set base.

3. Tighten the two captive screws in the base.

B. Housing (Wall Telephones)

Removal

1. Push inward on the bottom of the housing,

2. Depress with a screwdriver, the tab of the snap fastener located in the handset cord slot (Fig. 3 and 4),

3. While the tab is depressed, lift the lower part of the housing outward and upward, releasing the fastener catch and disengaging the latch opening assembly.

Assembly

1. Slip the housing over the handset cradle and dial (and monitor or exclusion button if applicable).

2. Engage the housing latch (Fig. 4), located in the top of the housing, in the base spring. If a ground or 2-line switch is present in the set, ensure that the switch is in line with the housing hole.

3. Press firmly on the lower part of the housing to engage the catch.

C. Ringers

Removal

1. Remove the housing per 6.01 A or B.

2. Disconnect the ringer leads.

3. Loosen the two pan head mounting screws next to the gongs, until the screws disengage from the telephone set base. (Fig. 13.)

4. Remove the ringer and grommet from the lower edge of the line switch assembly mounting.

Assembly

1. Install the ringer by reversing the above procedure.

D. Dial

Removal

1. Remove the housing per 6.01 A or B.

2. Loosen, but do not remove, the two screws on each side of the dial (Fig. 6).

3. Lift the dial from the bracket (it may be necessary to force the bracket arms away from the dial).

4. Disconnect the dial leads from the network, and from the terminal strip if applicable.

Assembly

1. Connect the dial leads as described in the appropriate section.
2. Loosen, but do not remove, the two screws on the sides of the dial.
3. Slide the dial screws into the slots on the mounting bracket.
4. Position the dial so that the locating points on the dial are seated in the corresponding holes in the dial bracket.
5. Tighten the two dial screws.
6. Replace the housing.

E. Apparatus Blank (Desk Telephones)

Assembly

1. Remove the housing per 6.01 A.
2. Remove the dial per 6.01 D.
3. Mount the NE-95B apparatus blank with the marking "FRONT" at the lower end of the housing as shown in Fig. 5.
4. Rest the tip of the bracket in the opening in the ridge encircling the dial cutout.
5. Fasten the two self-tapping screws to the apparatus blank through the two holes on the bracket.
6. Place the card holder parts group assembly on the apparatus blank.
7. Rewire the telephone set for manual service as described in the appropriate section on telephone set connections.
8. Replace the housing.

Removal

1. Remove the housing per 6.01 A or B.
2. Remove the two screws securing the bracket to the apparatus blank.
3. Install the dial referring to the applicable section.
4. Replace the housing.

F Apparatus Blank (Wall Telephones)

Assembly

1. Remove the housing per 6.01 B.
2. Remove the dial per 6.01 D.
3. Rewire the telephone set for manual service as described in the appropriate section on telephone set connections.
4. Fasten the mounting bracket to the telephone set housing using two self-tapping screws. (Fig. 6)
5. Replace the housing per 6.01 B
6. Fasten the NE-95B apparatus blank to the mounting bracket.

Removal

1. Remove the screw holding the NE-95B apparatus blank on the mounting bracket.
2. Remove the housing.
3. Remove the mounting bracket from the housing.
4. Install the dial referring to the applicable section.
5. Replace the housing.

G. Cords (Handset and Mounting)

Removal

1. Remove the housing per 6.01 A or B.

2. To gain access to the handset cord connections, remove the dial per 6.01 D.

3. Disconnect the handset and/or mounting cord leads.

4. Disengage the cord retainer (Fig. 6) on the handset or mounting cord from the base of the telephone set.

Assembly

1. Insert the cord retainer hook at the end of the cord covering into the rectangular opening in the telephone set base. The left side opening is allocated to the handset cord and the rear opening to the mounting cord. On wall telephone sets the opening is on the bottom edge.

2. It may be necessary to crimp the retaining hook to the telephone set base to prevent the cord from disengaging.

3. Connect the cord leads to the network and the terminal strip as described in the appropriate section on cord connections.

4. Mount the dial on the bracket, if applicable, per 6.01 D.

5. Replace the housing.

H. Line Switch Cover Assembly

Removal

1. Remove the housing per 6.01 A or B.

2. Loosen the dial from the dial bracket.

3. Apply enough pressure on the sides of the line switch contact cover to release the two line switch cover lugs from the slots in the line switch assembly mounting bracket (Fig. 14).

4. Pivot the line switch contact cover on its upper edge until it is released from the line switch assembly mounting bracket (Fig. 14).

Assembly

1. Insert the upper edge of the line switch contact cover into the opening above the line switch card.

2. Press on the side of the line switch contact cover and lower until it is held in place by the line switch cover lugs which engage in the slots on the line switch assembly mounting bracket.

3. Mount the dial if applicable per 6.01 D.

4. Replace the housing.

I. Exclusion Switch (Desk Telephones)

Removal

1. Remove the housing per 6.01 A.

2. Detach the dial from the dial bracket per 6.01 D.

3. Disconnect the exclusion switch leads.

4. To remove the exclusion switch assembly, release the spring securing the switch to the bracket.

5. To remove the exclusion switch bracket, remove the screw at the line switch assembly mounting.

Assembly

1. To assemble the exclusion switch, reverse the above procedure.

J. Plunger (Desk Telephones)

Removal

1. Remove the housing as described in 6.01 A.

2. Remove the handhole cover mounting screw.
3. Slide out the handhole cover mounting.
4. Pull out the plunger(s).

Assembly

1. Insert the plunger(s). The right plunger is the exclusion plunger when assembling from within the housing.
2. Slide the handhole cover mounting into position.
3. Insert the screw and tighten it to secure the handhole cover mounting.
4. Replace the housing.

K. Turnbutton and Terminal Strip

Removal

1. Remove the housing per 6.01 A.
2. Detach the dial from the dial mounting per 6.01 D.
3. Disconnect the dial leads from the terminal strip.

   Note: Do not disconnect the soldered connections between the turnbutton and the terminal strip.

4. Remove the two screws on the underside of the telephone set base securing the turnbutton to the base.
5. Remove the screw in the left arm of the dial bracket.
6. Remove the retainer and the terminal strip.

Assembly

1. To assemble the turnbutton and terminal strip, reverse the above procedure.

L. Faceplate (NE-2500 Type Telephone)

Removal

1. Insert the NS16750-L3 releaser into the faceplate retaining spring clip notch (top center of faceplate).
2. Move the retaining clip toward the housing until the releaser can be pushed down behind the upper edge of the faceplate.
3. Pry the faceplate forward with the releaser until it clears the retaining clip.
4. Move the faceplate forward and lift out.

Assembly

1. Key the lower edge of the faceplate into the housing opening.
2. Move the retaining clip toward the housing using the NS16750-L3 releaser and seat the faceplate in the housing.
3. Remove the releaser and the retaining clip will spring back into position, locking the faceplate in place.

M. Designation Window (NE-2500 Type Telephone)

Removal

1. Insert the NS16750-L3 releaser in the hole of the plastic designation window.
2. Pry the designation window until it bows clear of the faceplate; then lift it out of position.
3. Pull the designation window away from the faceplate.

Assembly

1. Set the number card in the appropriate slot on the faceplate.
2. Wedge the nonslotted end of the designation window in the housing.
3. Bow the window until it can slide into the slot and lock in place.