APCON, INC.

INSTRUMENT IMPLEMENTED

COIN TELEPHONE

PRACTICE

NE 2000-G SET

1.0 GENERAL

1.01 This system practice provides information associated with the application and installation of the NE 2000-G type coin telephone set.

1.02 All inquiries concerning the NE 2000-G should be directed to:

APPLIED CONTROL SYSTEMS
CUSTOMER SERVICE DEPARTMENT
6440 WARREN DRIVE
NORCROSS, GA 30093
(404) 449-4666

2.0 APPLICATION:

2.01 The NE 2000-G is designed to operate on any standard, loop start, metallic, single party, touch-tone, or rotary telephone line. Application on lines equipped with subscriber carrier equipment is not recommended.

The NE 2000-G should operate with any central office type commonly found in service today including ,SXS, XY, Cross bar, electronic and digital.

2.02 All restriction functions are handled by the telephone. No special central office equipment is necessary.

2.03 The NE 2000-G is adaptable with most standard public telephone enclosures and can be used as a replacement for AE 120 (A,B) NT 400 or WE 1A1 through 1D1 type sets.

2.04 As with any other major electronic device, gas tube protection is recommended for telephone lines being equipped with the NE 2000-G instrument. Your electronic module has an electrical surge protection built-in, however, additional surge protectors such as gas tubes are always recommended for sophisticated electronic equipment.

2.05 Charge-A-Call or Third Party Billing: The recommended procedure when connecting any "Customer Owned Coin Telephone" where operator access is permitted, or when sets installed will be equipped to receive incoming-calls, is to request the telephone company to equip. the telephone line with operator call screening features. These services are offered by many local telephone companies and are intended to prevent fraudulant use of long distance service on your equipment. Usually, this service, where provided, will result in an additional monthly expense item charged to you by the local telephone company.

3.0 FEATURES

MECHANICAL:

3.01 The unitized body construction features afford the highest security possible for coin telephone set applications. Each case is made using drawn steel, reinforced with welded inserts for maximum protection.

3.02 Dead-bolt locks, two (2), secure both the upper housing unit and the cash box compartments.

3.03 Coin vault doors are made from drawn-steel, reinforced with a tungsten steel insert plate. Four locking points are engaged with a cam-action cylinder, and secured in place by a dead-bolt lock.

3.04 Keying systems, unique to the coin telephone industry, provide keyed alike upper housings and individually keyed cash compartments.

3.05 Armoured handset cords help prevent abuse while extending the serviceable-life of the handset unit. Every handset is hearing aid compatible.

3.06 Cash boxes, which have proven high security-low-cost-collection procedures established through many years of operating telephone company operations, provide the owner/operator with major advantages such as:

1. Serialized cash boxes provide for vending route location identification. When recorded at the time of the last collection visit by your route serviceman.

2. The Self-locking cash box receptacle cover prevents cash accessibility to route collectors.

NOTE: Cash boxes must be installed withthe serial number facing outward. It is possible to insert the cash box into the set in the reverse manner, however, since the coin chute and cash box lid cover openings will not aline, coin jams will result.

3.07 A weather and mar-resistant finish adds years of service to your set in out-of-doors locations.

COIN REJECTION

3.08 Slugs, washers, tokens, or foreign coins inserted through the slot in the coin guide are directed to the coin chute and rejected to the coin return assembly or held up. The coin return button, when pressed, has a positive clearing action, which releases the slugs, washers, etc., into the coin return assembly. Coin chutes must be removed from the set in some cases. In these instances care should be taken to both reinstall and check the unit for proper functioning after clearing the jam.

ELECTRICAL

3.09 Standard telephone set connection, normally associated with either residential or business-line service , is all that is required to connect this set to the telephone company network. In most states special tariffs require that privately owned public telephone sets be connected to only lines designated as "Customer Owned Coin Operated Telephones", COCOT.

NOTE

It will be necessary for compliance with state and federal regulations to determine actual requirements before connecting this set to the telephone company network. The manufacturer of this set will not be responsible for failure to follow local or federal regulations governing the functioning of a coin telephone set installed for public or private use.

3.10 Each set is equipped with an 18 volt D.C. output transformer. This transformer, which is a receptacle mounted type, is required for the operation of the escrow and electronic processor units. The transformer unit provided with your set is an indoor use only UL Approved device. Accordingly, installation of this device outdoors could cause set failures, or violate local electrical codes.

NOTE

It is absolutely recommended that all transformer installations be made so that the transformer unit can not be removed or tampered with by unauthorized personnel.

3.11 The electrical components in the coin telephone set are plug-ended for ease of substitution. The components interconnect through jacks on the apparatus module thereby making your set modularized for increased field serviceability.

3.12 The NE 2000-G coin telephone set is equipped with an electronic initial rate coin totalizer which inhibits dialing from the coin telephone until a preselected amount in coins has been deposited.

COIN SIGNALING

3.13 Coins inserted in the single slot and accepted by the chute are sorted into the appropriate channel before passing through the coin switch module. As the coin passes through the coin switch module, a switch is activated which in turn energizes the solid state tone generator. The generator sends bursts of tone appropriate to the coin deposited to permit processor recognition. The signals are not heard in the receiver of the coin telephone set, nor are they passed over the telephone central office line. The number of tone bursts for each coin deposited are:

* One burst for a 5-cent coin
* Two bursts for a 10-cent coin
* Five bursts for a 25-cent coin (transmitted at twice the rate of the 5-cent and 10-cent coin tone bursts.)

3.14 All connections can be made via a single four (4) wire conductor. The telephone line, 2 wire, and the transformer supply, 2 wire, can either be run directly into the set separately or in a single jacketed, 4 wire, conductor cable.

3.15 ENVIRONMENTAL FEATURES:

A) Wide temperature operational ranges from -20C to 80C.

B) Humidity: 0% to 95% RH non-condensable.

3.16 Counter - This set has been equipped with a non-resettable mechanical counter. When a collect decision has been made by the processor unit, ie: a completed call, the counter will click one digit for each 5 cent unit collected. Coins which are returned, ie: not deposited in the cash box, will not be counted.

3.17 ESCROW UNIT - The escrow unit in your set has been specifically designed for years of trouble free service in a coin telephone environment. However, there are some very important operational considerations which must be taken into account:

1. The voltage at the set provided by the transformer should be 18 volts DC. If in question this voltage should be measured. Lower voltage may cause set malfunction while higher voltages may cause severe damage to your set and thus could possibly void your set's warranty.

3. Your set has been factory programmed to automatically collect deposits which exceed $3.00. This feature is required since coin jams will occur when escrow units are loaded with coins. This is a common condition which results from "full cash boxes or bent coins". Please refer to section 5 of this practice to ensure rates of deposit do not exceed $3.00 per time interval sold.

4.0 INSTALLATION

INSTALLATION REQUIREMENTS

4.01 Before removing or inserting the PCB, disconnect the battery by removing the transformer from power source. Failure to follow these instructions will cause severe electrical damage to your set's memory module and processor control board assembly.

****NOTE** Improper connection or installation/removal of the set or memory module may void your set's factory warranty. It is always recommended to unplug your set's power supply to prevent electrical shortage at the terminal strip before performing any maintenance work.**

4.02 No repairs should be attempted, nor should components be replaced while the transformer unit is connected to a power source providing power to the set. THE TRANSFORMER MUST BE DISCONNECTED FROM POWER SUPPLY, OR THE POWER FEED REMOVED FROM THE SET'S TERMINAL STRIP.

4.03 The following factors should be considered when choosing a location for the installation of the NE 2000-G coin telephone set:

* Accessible for public usage.
* Adequate light.
* Privacy.
* Minimum noise or vibration.
* Absence of grease, smoke, or dust.
* Clear of moving machinery, piled merchandise, narrow aisles or stairway.
* Check local installation practices before mounting the coin telephone set on surfaces that would be expensive to repair if the set is removed.
* Telephone and wiring should be located at least 6 inches from neon light fixtures, transformers or other equipment likely to cause inductive effects.
* The NE 2000-G coin telephone set must be mounted on a vertical surface. A tilt greater than 1.5 degree in any direction can cause the chute to malfunction.

* Ensure that drop and inside wires are protected. Inside wiring should be protected at least 6 feet from set.
* Check visibility, accessibility, and possible accident hazards in selecting locations.
* For outdoor installations, be sure that the telephone set will not be subject to driving rain, salt spray, or splashed salt water from snow melt-off on sidewalks or roadside.
* Ensure that security studs and through-wall fasteners are used where possible . Always install all seven 1/4-20 hardened screws when mounting a set. A single 1/4-inch flat washer may be used under each screwhead for added security.

WIRING AND GROUNDING

4.04 Unless circumstances dictate otherwise, 22 guage, 4 conductor wire should be used for all inside wiring of coin station installations.

4.05 The NE 2000-G set is installed using a 4 wire (pin) modular-to-spade-tip 18" connecting (mounting) cord. This cord should be packaged with the telephone set you have purchased. This cord connects the modular wall plug to the set. The control assembly units have been equipped with a screw-down terminal strip rather than a modular-plug.

TELCO LINE

TRANSFORMER

(18 VOLTS)

WARNING

Insure that the telco line connections are properly wired at the RJ-11 connecting block on terminals Red (R) and Green (G), and the power leads from the transformer are connected at the RJ-11 on terminals Yellow (Y) and Black (B).

FAILURE TO FOLLOW THESE INSTRUCTIONS WILL CAUSE SEVERE DAMAGE TO YOUR COIN SET'S ELECTRONICS PACKAGE AND MAY VOID YOUR SET'S WARRANTY.

4.06 After installation has been completed, verify that the coin telephone set is operating correctly and that information plate agrees with mode of service and reflects any special calling instructions as may be required.

4.07 The telephone set receives all internal connections required via the modular connecting cord and associated RJ-11 connecting block. Optional installation connections can be accomplished by running telephone and/or power connections direct into the set and connecting to the set's terminal strip.

NOTE: For security reasons, the installation location of the RJ-11 block must be inaccessible to the public.

4.08 Conceal wiring near telephone. Use approved molding or tubing if necessary. An approved grounded source is recommended for protection of all telephone equipment. Check your local electrical code requirements for approved grounding sources.

4.09 Locate station protectors (power supply), connecting blocks, etc., where they will be inaccessible to people using coin telephone set. This will help prevent customer fraud of coin equipment.

POWER SUPPLY

4.10 Your NE 2000-G is designed for operation using an external transformer which serves as a power supply. This transformer controls the operation of the coin escrow unit which is vital to the collection/return of all coins deposited.

4.11 The transformer unit provided with your set is U.L. Approved, receptacle mounted, screw terminal, with an 18 volt output. This unit has been carefully selected to meet all operational requirements of the NE 2000-G. Should the need ever arise to replace a transformer unit, a unit with similar voltage output is required.

4.12 When installing the transformer a separate wire run is required to connect the transformer to the RJ-11 connecting block at the set. The recommended method is through the use of a single wire run from an equipment room to the set. An alternative installation method; is to run a line direct from the transformer unit to the terminal strip located inside of the NE 2000-G set.

4.13 Where possible, transformer connections should be made with the shortest possible wiring runs to the telephone set. It is recommended that runs over 75' feet in length be avoided to ensure proper set operation.

4.14 The following is a table of wire gauge sizes for various distances between the power pak and the 2000G series phones.

GAUGE (SOLID)	MAXIMUM DISTANCE
26	75 FT.
24	120 FT.
22	200 FT.
18	400 FT.
16	800 FT.

5.0 OPERATION

5.01 The NE 2000-G is an electronic coin telephone designed to provide local coin service on a measured or non-measured basis. The charge for a local call is selectable in 5 cent increments beginning at 20 cents.

5.02 Local call rates, as well as all other rates, are programmable from the set's dial pad. Refer to programming instructions in this section.

5.03 Local call duration, the amount of time a user receives per unit of deposit, is also a field programmable option.

5.04 This telephone accepts nickels, dimes and quarters and operates on a pre-pay basis for all calls. Coins are returned to user for improperly dialed or incomplete calls.

5.05 The telephone will give a short warning announcement before expiration of time limit on local or long distance calls, where timed local or long distance time intervals have been completed (expired). If no additional money is deposited, the telephone will disconnect the call causing central office to revert back to dial tone. If non-measured local call option is selected, no time limit is imposed on local calls. Additional deposits can be made while the call is still in progress, so long as the amount of deposit rate is greater than the required rate. In other words, the processor is aware of both time and rate and is keeping a running tally of both conditions simultaneously.

5.06 PROGRAMMING

Your set has been designed to provide you with the maximum level in field programmability. All set functions, rate of deposit, time of call duration, etc., is adjustable in the field by following the operational instructions below:

5.07 This unit is equipped with an eight position "dip switch" control panel which is located on the set's ELECTRONIC CONTROL ASSEMBLY. These switches control basic set operational features as follows:

SWITCH POSITION	ON	OFF
1	PROGRAM MODE	OPERATIONAL MODE
2	PULSE DIAL	DTMF DIAL
3	TIMED LOCAL CALL	UNLIMITED LOCAL CALL
4	MIC. REMAINS MUTED	NORMAL MIC. OPERATION
5	ALLOW ACOUSTIC DIALERS	DISALLOWS
6	FUTURE EXPANSION	
7	DISABLE RINGER	ALLOWS RINGER
8	FUTURE EXPANSION	

5.08 It is mandatory that each dip switch be selected in accordance with your particular operational requirements.

5.09 Before any programmable feature can be loaded, the program mode dip switch position must be placed in the "on" position. After all desired program options have been entered, the set must be returned to the normal operational mode by switching the dip switch to the off position.

5. Timers, "Some Basic Guidelines":

a) Timers are always calculated in seconds and can be extended to a maximum of 255 seconds. Where a time is entered which is greater than 255 seconds, the program will consider an error condition to exist, and all times over 255 seconds will be defaulted to 255 seconds.

b) Timers can only be a three digit number.

c) Where no timer is desired, enter a zero in that field. "Unlimited Time Calls", those calls when placed that do not restrict call time length, and accordingly no time limit would be appropriate in these instances would be programmed for time duration as follows:

EXAMPLE:

1. #100 0 * 000 #
2. #100 0 * 00 #
3. #100 0 * 0 #

These entries, all equivalent, would make telephone numbers loaded in table positions 101 to 129, Free with no time limit on call duration. Any eight digit number, or less, loaded in table 100 would accorfingly be a free call with no time limit.

5.10 The software package in this set has been designed to permit you, the owner/operator, to select precise rate and time call durations desired to meet your revenue requirements and/or tarriff restrictions. Program tables have been established into which telephone numbers, specific area codes, local exchange codes, etc., can be grouped as to effect:

1. Free Calls
2. Restrict Calls
3. Zoned Calls
4. Time Duration Calls

5.11 Tables have been established into which telephone numbers or number groupings are loaded. These groups once loaded are processed according to rate and time duration selections choosen to define the following conditions when a telephone number is dialed into the processor:

1. The amount of initial deposit required.
2. The amount of time the user has purchased with his initial deposit.
3. The amount of additional units of deposits, ie: second time intervals (the next minute)

5.13 To begin programming there are only a few basic rules which must be observed. The following steps/procedures apply:

1. The "Program Dip Switch", which is located on the first (top) switch, must be switched to the "on position".
2. All entries must begin and end with the pound # sign (key).
3. The first three entries following # must be numeric as they represent the table location.
4. When programming "Timer Tables"or"Default Tables", the first entry following the table location number must be an asterick * (key).
5. The asterick * must be followed by a numeric entry.

EXAMPLES:

1. #813* 015 #
2. #813* 15 #

Both of these entries are in fact treated the same in the program. In the above examples the program has set the "Time Interval Between Requests" for required deposits at 15 seconds.

6. Error conditions in programming are confirmed when correct programming entries are not detected via voice instructions, "Please Try Again". When this announcement is heard during the programming of any particular entry, the entered data, only in that particular field entered, must be re-entered. The program is automatically returned to beginning of the table location.

7. RATES: SOME BASIC GUIDELINES:

   a) Rate Default; this is the basic rate(s) which will apply to all calls not specifically indentified by an earlier specified rate in another table. As an exception to the use of a # sign (key), the Rate Default Table does not use this symbol since by definition the program only is looking for a numeric entry in this field. Also, this field is a four (4) digit field maximum.

EXAMPLES:

1.) # 80025 #

2.) #800025 #

3.) #8000025#

These entries, all equivalent, would set all seven (7) digit calls, those not specifically identified in anotner table, a 25 cent initial deposit.

b) Rate Tables; when programming selections are to be entered for rate deposits to be required, rate amounts up to but not to exceed $12.70 can be entered. Amounts over $12.70 are considered to be an error condition by the processor and all rates loaded in excess of $12.70 will automatically be locked out and calls using this rate will not be processed. The use of amounts equal to $12.71 and over, therefore, are loaded as "the rate" into table headers for number groups for which are to be locked-out or restricted from user dialing.

c) Rates are always rounded-up to the next highest 5 cent increment. Therefore, rates maybe entered as any amount but are calculated only in five-cent increments.

EXAMPLE:

#3000021 * 180 #

This call will require 25 cents for the first 3 minutes.

8) While rates can be loaded up to $12.70, as a practical consideration, no single "initial rate" should be selected where the required deposit will exceed $3.00 for the initial time unit sold. This is due to the set's escrow unit capacity before dump (collection). The factory program has been factory set at $3.00. Calls initiated and not completed, busy, no answer, etc., can be made and the caller's money returned where inital deposits are maintained at $3.00 or less. Where call amounts require an inital deposit over $3.00, shorter time units can be sold to compensate for lower deposits. Also, the second rate and time charge can be higher than the initial rates to compensate for smaller initial rates. This condition is required to lessen the incorrect escrow collect when calls are not answered.

9. HEADERS - Headers are used to group numbers by area code, NNX, rate of deposit required, etc., into specific rates and units of time. All groups loaded into any particular heading group will be treated as to the headers rate and time parameters established.

EXAMPLE:

HEADER #300 0075 * 060 #

LOCATIONS: #301 404 #

#302 912 #

#303 377 #

#304 564 #

This is a combination of area codes and NNX's which have been grouped, and when dialed will require a deposit of seventy-five (75) cents for the first minute.

10) TIMERS; SOME GENERAL GUIDELINES:

a) "Bad Call Timer" This timer is available to permit a caller to complete a call, hear a message, hang-up, and get his money back. This condition is generally encountered where a called number reaches operator intercept. In most instances, it is recommended that twenty seconds would permit a caller to receive a message of this type.

Some Highlights of the Bad Call Timer:

1. Bad call is totally adjustable from 1 second to 255 seconds.

2. The Bad Call Timer is always in effect. In fact after the call-progress monitor has determined a valid answer condition, "The Bad Call Time Setting" must expire before coins are collected!

EXAMPLE:

813 * 015#

This will set the "Bad Call Time" at fifteen seconds. Accordingly, no coins deposited will be collected if the call is terminated before 15 seconds has elapsed.

b) "SAFETY TIMER": This timer is present, and like all other features key pad programmable, to protect against calls for which the call progress monitor could not determine a valid collect decision. A case in point is where all valid "collect algorithms" were not satisfied but time off-hook exceeded a maximum limit established. This condition is only valid where ringing signals or other repeating type signals were not detected by the "Call Progress Monitor". Where ringing signals are detected the Call-Progress-Monitor over-rides the Safety Timer thereby

there is in effect no time limit on "no answer calls".

EXAMPLE

#813 * 90 #

This will set the "Safety Timer" at ninety seconds. Accordingly, any call lasting longer than 90 seconds will be collected, even though the "Call Progress Monitor" did not reach a valid collect decision.

c) "Time Between Requests": This timer adjusts the amount of time which is allowed between requests for deposit where the amount of deposit required has not been satisfied.

d) "Time Before Line Dropped": This timer is present as a safe guard where off-hook conditions do not continue to tie-up central office lines

e) "Time Added Per Coin Drop": This timer adds incremental time, resets "Time Between Requests", to allow for coin deposits.

5.14 The following program layout is available in groupings as indicated below. Please note that each division is a specific length. Entries longer than the field size can be entered, but digits entered in excess over the field capacity are ignored.

TABLE GROUPS	UNIT LENGTH (DIGITS)	FUNCTION
000 - 002	11	HEADER AND 2-11 DIGIT TABLE
100 - 129	8	HEADER AND 29-8 DIGIT TABLE
200 - 229	8	HEADER AND 29-8 DIGIT TABLE
300 - 349	3	HEADER AND 49-3 DIGIT TABLE
350 - 399	3	HEADER AND 49-3 DIGIT TABLE
400 - 449	3	HEADER AND 49-3 DIGIT TABLE
450 - 499	3	HEADER AND 49-3 DIGIT TABLE
500 - 549	3	HEADER AND 49-3 DIGIT TABLE
550 - 599	3	HEADER AND 49-3 DIGIT TABLE
600 - 649	3	HEADER AND 49-3 DIGIT TABLE
650 - 699	3	HEADER AND 49-3 DIGIT TABLE
700		RESERVED SPEED DIALING
800	1	START RATE (7 DIGIT OR LESS)
801	1	RATE #1 FOR 8 DIGIT NUMBERS
802	1	RATE #2 FOR 8 DIGIT NUMBERS
803	1	RATE #1 FOR 11 DIGIT NUMBERS
804	1	RATE #2 FOR 11 DIGIT NUMBERS
805 - 809		RESERVED FUTURE RATE
810	1	1ST TIME UNIT
811	1	2ND TIME UNIT
812	1	SAFETY TIMER
813	1	BAD CALL TIMER
814	1	TIME BETWEEN REQUESTS, TIME BEFORE LINE DROPPED TIME ADDED PER COIN DROP

815 - 819	RESERVED FUTURE TIMERS
800 - 899	RESERVED
900 - 999	RESERVED

NOTE: NUMBERS NOT LISTED WILL BE TREATED AS ERRORS OR WILL PERFORM NO FUNCTION IF ACCESSED.

5.15 TABLE MATCH DATA ENTRYS:

To enter the match data you want in any given table, you supply only that information that would make the search find just what you want to apply. The easiest way to learn is to show you some examples:

TYPICAL ENTRYS:

#0011800555121?#

This entry would process only the number 1800555121? as per the header at table 000

#0021*5551213#**

This entry would make all long distance 5551213 numbers apply to the header at table 000

#1011*#

This entry would make all long distance and short long distance conform to header 100

NOTE: Normally, you would reserve the long numbers for the longer tables between 000 and 200. You could lock out, for example all long distance by putting the last example into tables 300 thru 650 for example.

5.16 SPECIAL NOTE: Tables 300 thru 650 may surprise you, as they have an additional feature that the others do not. If you enter A 0 or A 1 as your first match data entry, it will be stripped and ignored if your second match data entry is a number. This is so that you can use the numerous out small (3 numbers) buffers for prefixes and for area codes if you wish . This allows you to avoid area rom programming if you wish. If you want to have A 0 or 1 first data entry remain in the match table, simple follow the first entry with a wildcard marker (*) or a terminator symbol (#) or put it into tables 000 thru 200.

5.17 Buffers are scanned in order from 000 thru 030 looking for a match. If one is found, the match processing is terminated and the call proceeds. This allows you to prioritize your matched data. All tables can be set up any way you like. If no match is found and you have an 11 digit number, the program checks to see if your area rom has been activated. If it has been, then the rate is taken from the area rom. Times are taken from the default tables in the 800 table. If no area rom is activated then the rates and times are taken from the

800 table which is the predetermined "default" for times and rates.

5.19 THE FOLLOWING RULES THUS APPLY:

If the number is 7 digits or less, the rate is taken from 800 and no time limit is set on the call unless the timed local call switch is set. In which case the 1st time unit is taken from 810 and the second from 811.

If the number is 8 digits long (short long distance), then

801 supplys the first rate

810 supplys the first time

802 supplys the second rate

811 supplys the second time.

NOTE: DEFAULTED 8 AND 11 DIGIT NUMBERS ARE ALWAYS TIMED.

NOTE: WHEN A TIMER IS USED IN A TABLE. THE RATE AND TIME CHOSEN IS USED FOR ALL INTERVALS. AREA ROMS SUPPLY THE FIRST AND SECOND RATES BUT THEIR TIMES ALWAYS COME FROM 810 AND 811.

Exhibit No. One.

2000G ELECTRONIC MODULE

DIP SWITCH SETTINGS

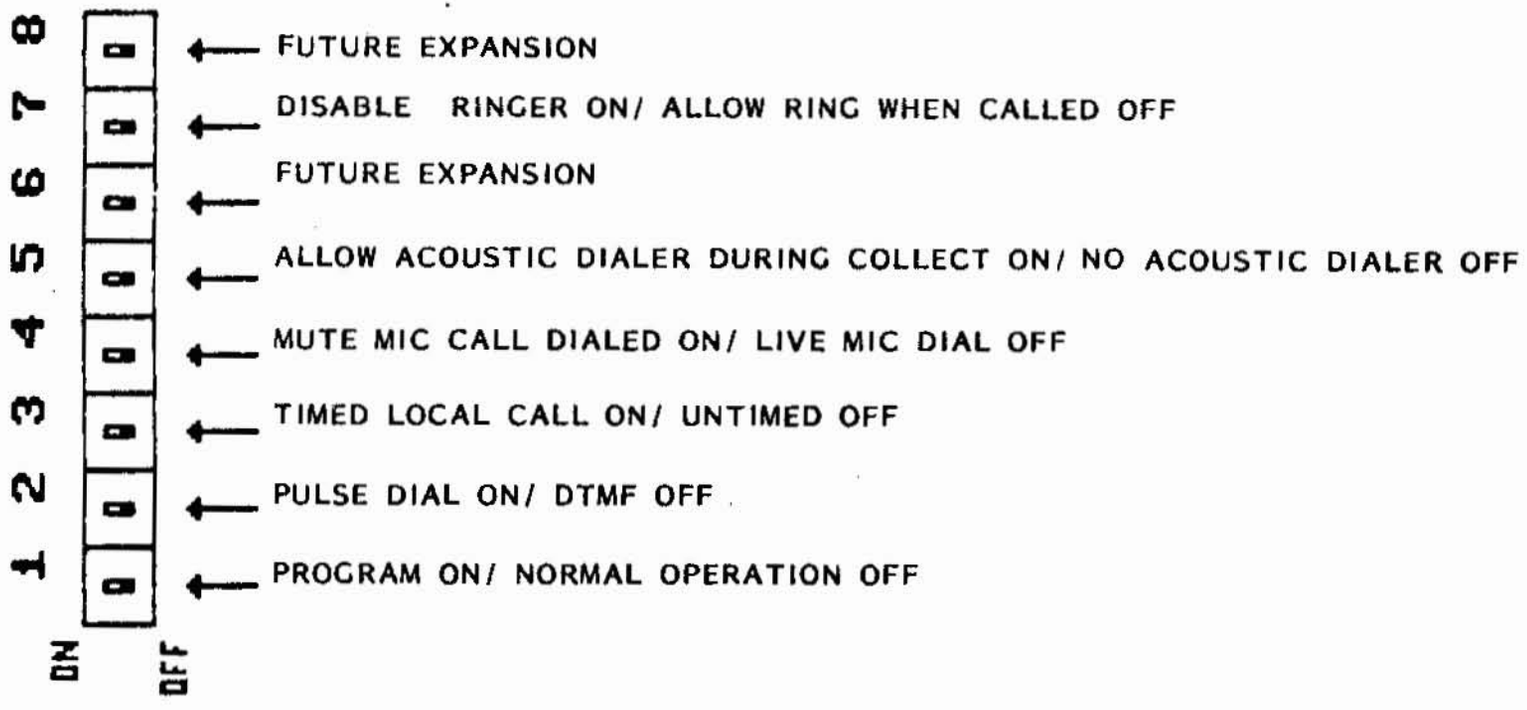
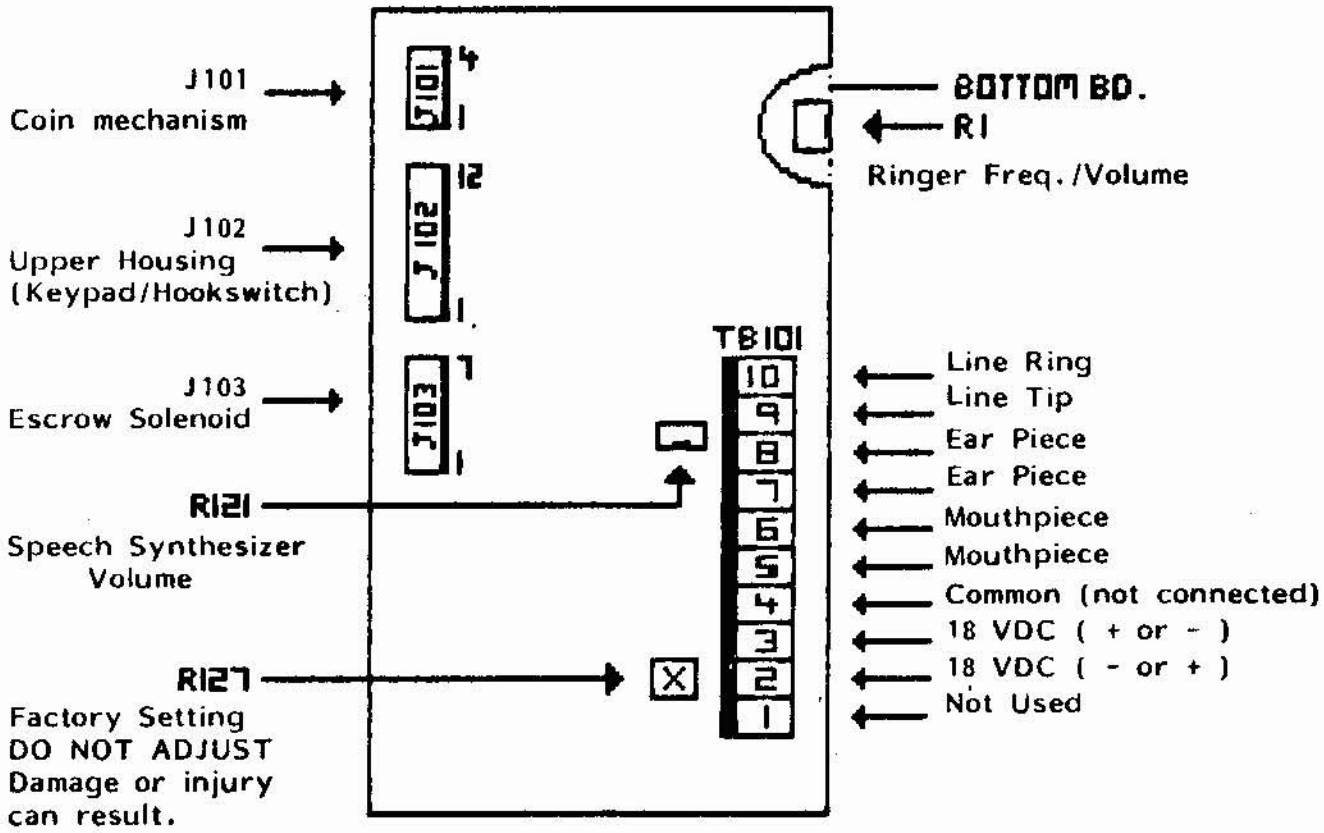


Exhibit No. Two.

2000G SERIES MODULES

CONNECTION AND ADJUSTMENTS

DIAGRAM



NOTE: AN APPROVED EARTH GROUND WIRE MUST BE CONNECTED TO THE SCREW LOCATED BELOW AND TO THE LEFT OF THE ESCROW SOLENOID IN THE TELEPHONES ENCLOSURE. DO NOT CONNECT EARTH GROUND TO ANY PART OF THE 2000G SERIES MODULE.

TYPICAL INSTALLATION

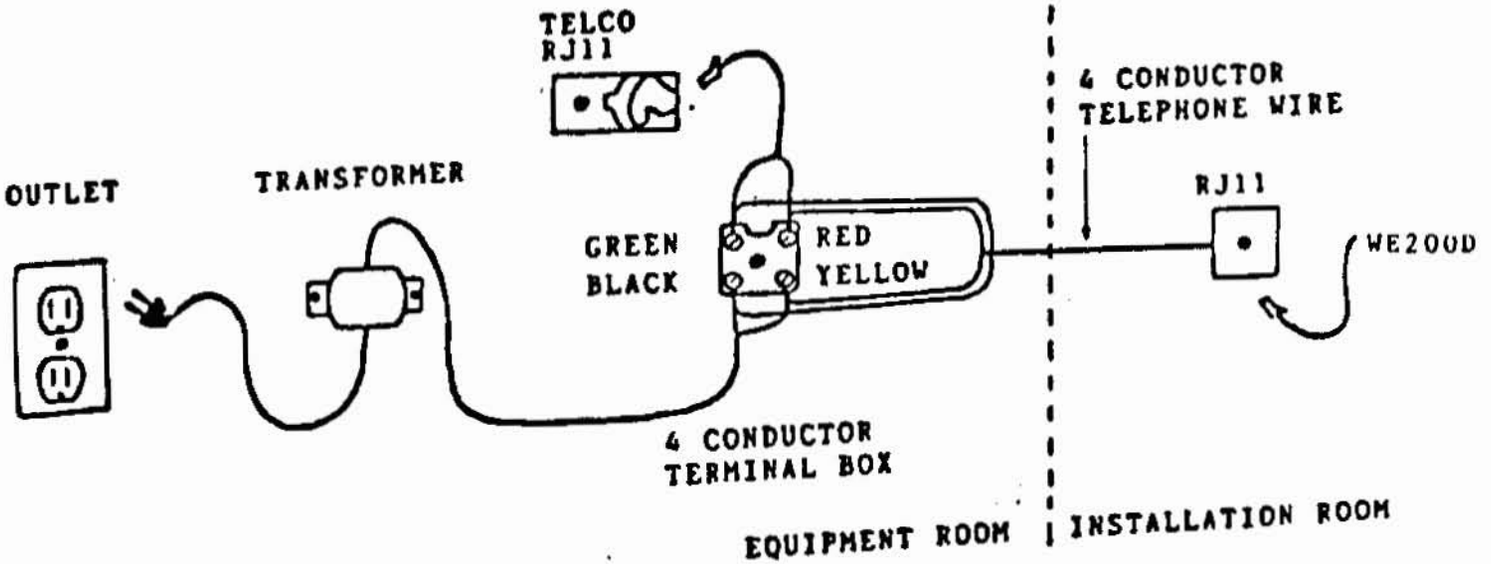


Exhibit No. Three.

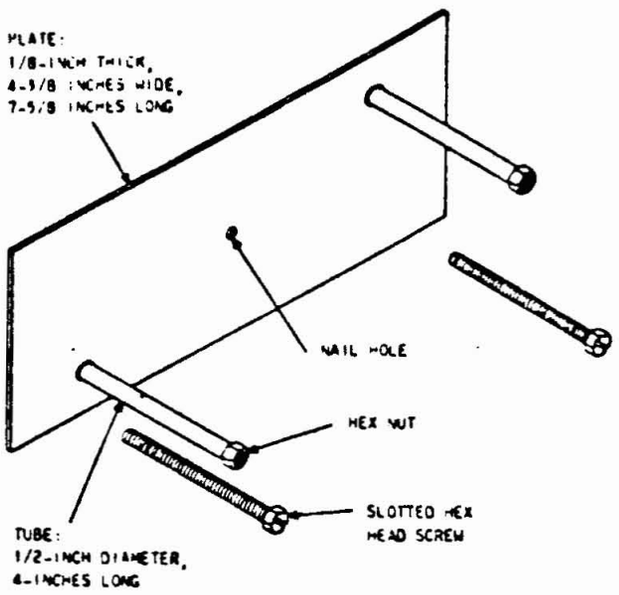
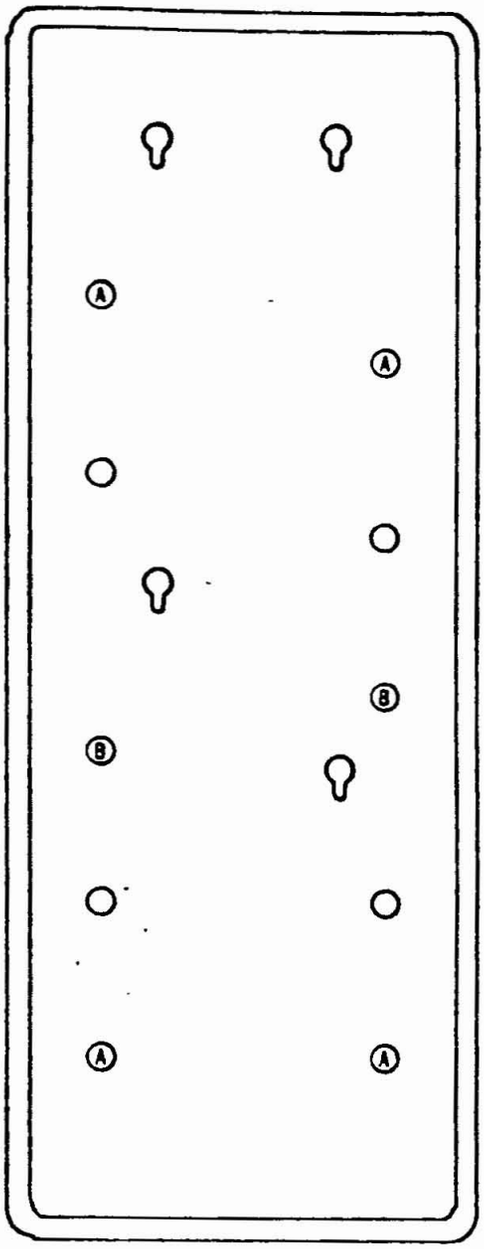


Fig. 1: Twin-Bolt Fastener



NO. 178A BACKBOARD

NOTE:
USE HOLES "A" WHEN FOUR THROUGH-WALL FASTENERS ARE REQUIRED. USE HOLES "B" WHEN TWIN-BOLT FASTENER OR TWO LONG-BOLT FASTENERS ARE REQUIRED

Fig. 2 178A Backboard Showing Mounting Holes