

INSTALLATION AND OPERATING INSTRUCTIONS
EXECUTONE SCHOOL-TO-HOME SYSTEM

1. APPARATUS: The equipment furnished by Executone, Inc. for a complete system consists of the following:

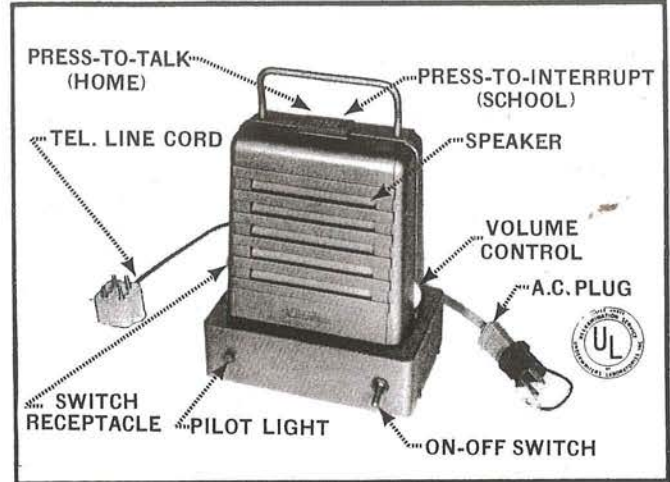
- Model F182 SCHOOL-HOME unit, W. E. No. KS19120 L-7 (connected for home operation, as shipped)
- Model F182 SCHOOL-HOME unit, W. E. No. KS19120 L-7 (connected for home operation, as shipped—to be reconnected for school position by installer)
- Model M88 REMOTE SWITCH, W. E. No. KS19120 L-5 (optional)
- Model M35 SOUNDPROOF BOOTH, W. E. No. KS19120 L-6 (optional)

Model F182 consists of Amplifier-Speaker F176 and Power Supply M192, which are mechanically joined with two screws. Model F182, equipped with a connecting cable, is shipped wired for home operation. The amplifier and power supply may be separated as described in Section 5. The F182 may be used either at home or at school. The method of connecting the unit for home or school operation is illustrated in Figure 3.

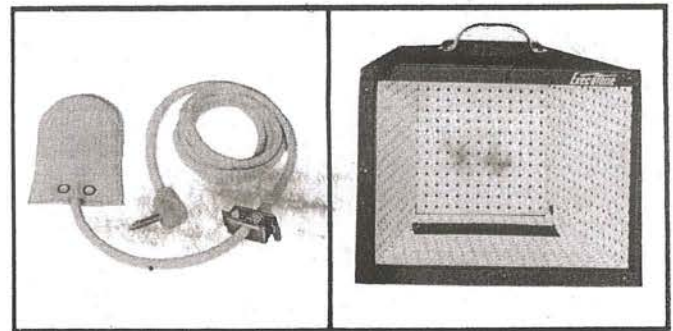
Accessory apparatus furnished by the telephone company consists of extension jacks (one at the home location and one jack for each school unit).

2. TELEPHONE LINE REQUIREMENTS: A continuous two-conductor private line from school to home (without transformers, phantom circuits, or induction coils) should be arranged for at the local central telephone office. When two or more home units are connected to a single classroom, connections are made at the telephone office so that all lines to the home are parallel with only a single line from the school to the telephone office. No power from the telephone office is required for the system.

Terminal impedance of equipment is approximately 1,000 ohms at voice frequencies. D. C. voltage from either side of the telephone pair to ground is 30 volts maximum, which is obtained from the two power supplies (Model M192). The limiting factor of connecting more than one home unit to a school unit is that the maximum permissible D. C. line resistance is 2,500 ohms for the loop circuit and the minimum permissible leakage resistance is 10,000 ohms to ground for satisfactory operating of the relays in the system. The amplifier contains a limiting circuit to prevent excessive noise level on the telephone line.



HOME STATION Model F182



REMOTE SWITCH M88 SOUNDPROOF BOOTH M35

3. LOCATION OF APPARATUS: The home unit is placed on a table in the student's room in a position that permits him to face the front of the station and operate the controls. An electric outlet, 110 - 125 volts A. C., must be available within 6 feet of the unit.

The school unit should be located toward the front of the classroom in an area as far as possible away from sources of extraneous noise. It can be placed on or near the teacher's desk, about 5 feet from the floor. To facilitate small group discussion, the jack should be located so that the school unit can be placed in a position central to those involved in the discussion.

4. WIRING CONNECTIONS FOR SCHOOL UNIT (Where an A. C. outlet is available within 6 feet of the school unit): Jacks should be installed in each classroom within 6 feet of the selected location for the unit. The R, G, and Y terminals of these jacks should be connected in parallel, using 3- or 4-conductor wire.

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The telephone line is connected to the R and G terminals, and a good earth ground to the Y terminal. (See Figure 1.)

5. SEPARATION OF SCHOOL UNIT

(Where an A. C. outlet is NOT available within 6 feet of the school unit): The power supply and amplifier should be separated as follows:

- a) Unscrew two Phillips head screws on back of amplifier. Then carefully pry back off, starting at small rectangular opening on side opposite the volume control.

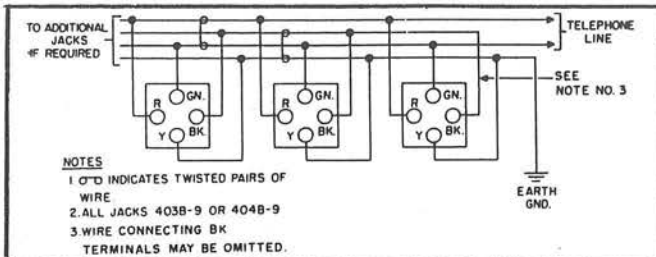


Figure 1. Wiring for School Unit, Where A. C. Outlet is Available

- b) Remove and discard the two jumpers connecting amplifier and power supply. (See Figure 3.)

- c) Partially loosen two Phillips head screws connecting amplifier and power supply. These screws are accessible through the round portion of the keyholes in the bottom of the power supply. Slide amplifier forward and disengage this unit from top keyholes in power supply. Retighten both Phillips head screws on bottom of amplifier and replace back half of unit. Both units are now ready for installation.

Locate the power supply at any convenient place (not normally accessible to students), where it is not exposed to sources of heat and is within 6 feet of an A. C. outlet. The power supply is provided with two keyholes designed to take #6 round head screws located on 4 inch centers. The line switch on the power supply may be operated daily or left on throughout the school term. Power consumption is very small and equipment life will not be affected by continuous operation.

6. WIRING CONNECTIONS FOR SCHOOL UNIT:

Where A. C. outlets are NOT available in single or multiple classroom installations, jacks should be placed within 6 feet of the amplifier. All jacks should be connected in parallel, using 4-conductor cable (either a quad or 2 twisted pair). The telephone line should be connected to the R and G terminals of the jacks. Dummy terminals 4 and 5 on the power supply are splice points provided for this purpose. The

B and Y terminals are connected to terminals 1 and 3 of the power supply, respectively. Connect a good earth ground to terminal 3 of the power supply. (See Figure 2.) If background noise from the classroom is objectionable at the home unit, the signal-to-noise ratio can be improved by putting the amplifier in the classroom into Model M35 Soundproof Booth. (See Section 9, paragraph b.) This requires separation of the amplifier from the power supply, due to the limited size of the booth. Wire units as explained in Sections 5 and 6, and see Figure 2.

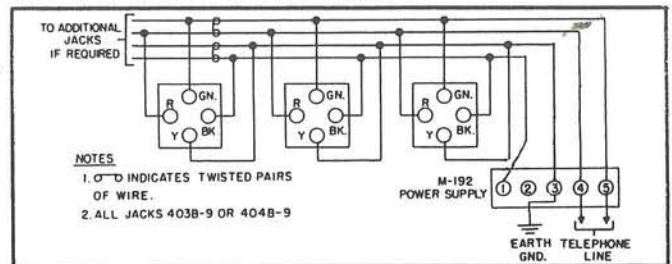


Figure 2. Wiring for School Unit, Where A. C. Outlet is NOT Available

7. WIRING CONNECTION FOR HOME UNIT:

Connect the telephone line to the R and GN terminals of the jack and a good earth ground to the Y terminal. The B terminal is unused.

8. ELECTRICAL INTERFERENCE AND LINE

NOISES: can frequently be corrected by one of the following procedures:

- a) Radiation—When laying out wiring for the telephone line jacks, avoid proximity to sources of electrical radiation.
- b) Noise in Telephone Lines—Under certain weather and other conditions, static crosstalk and line noises may exist in the telephone lines. If so, the usual procedures can be employed to check and test the lines and correct the trouble. Listen in on the line with an ungrounded telephone receiver, or test set, to check the performance of the system and locate the trouble.
- c) One-Way Transmission—The direction of transmission in which trouble exists should be determined. Normal sound on the telephone in one direction only may indicate a trouble in the relays or associated circuits.
- d) Equipment Noise Sources—Hum, noise, or low volume might result from a defective component in unit F182. This can be quickly determined by substituting an alternate F182 unit in the system.
- e) Extensive Repairs—Where the need for extensive repairs or adjustments are indicated, it is recommended that the F182 unit be replaced.

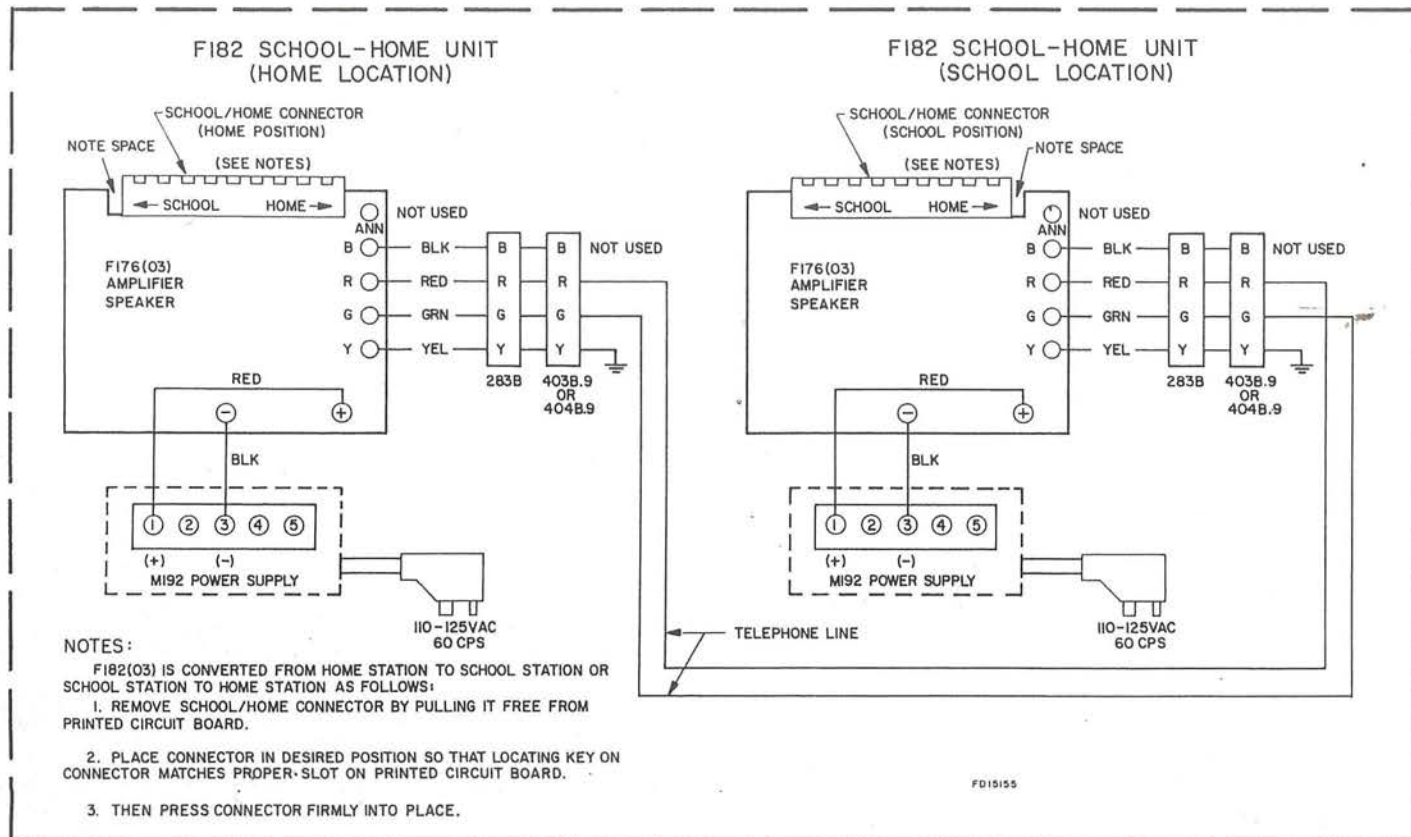


Figure 3. Interconnection and Conversion Diagram for School and Home Units

9. CORRECTING NOISE AND ACOUSTIC PROBLEMS:

Since unit F182 is capable of picking up voices from remote areas in a classroom, this unit is also sensitive to unwanted background noise. Thus, the acoustics of bare-walled classrooms may make it difficult to hear classroom conversations when there is excessive background noise. Building vibrations and noises from ventilation systems, or the street can also create interference. Increasing the volume level on the home unit will not improve audibility, but will only raise the level of background noise. To correct noise conditions, two procedures are recommended:

- a) Relocate school unit away from all sources of noise, such as doors, windows, ventilators, etc.
- b) Place unit in Model M35 Soundproof Booth. This booth can be "beamed" toward center of classroom activity away from the sources of undesirable noise. To install the amplifier in the booth (10" high, 13-1/2" wide, and 9" deep), remove power supply from unit. (Refer to Sections 5 and 6.)

SHOW USERS HOW TO OPERATE EQUIPMENT

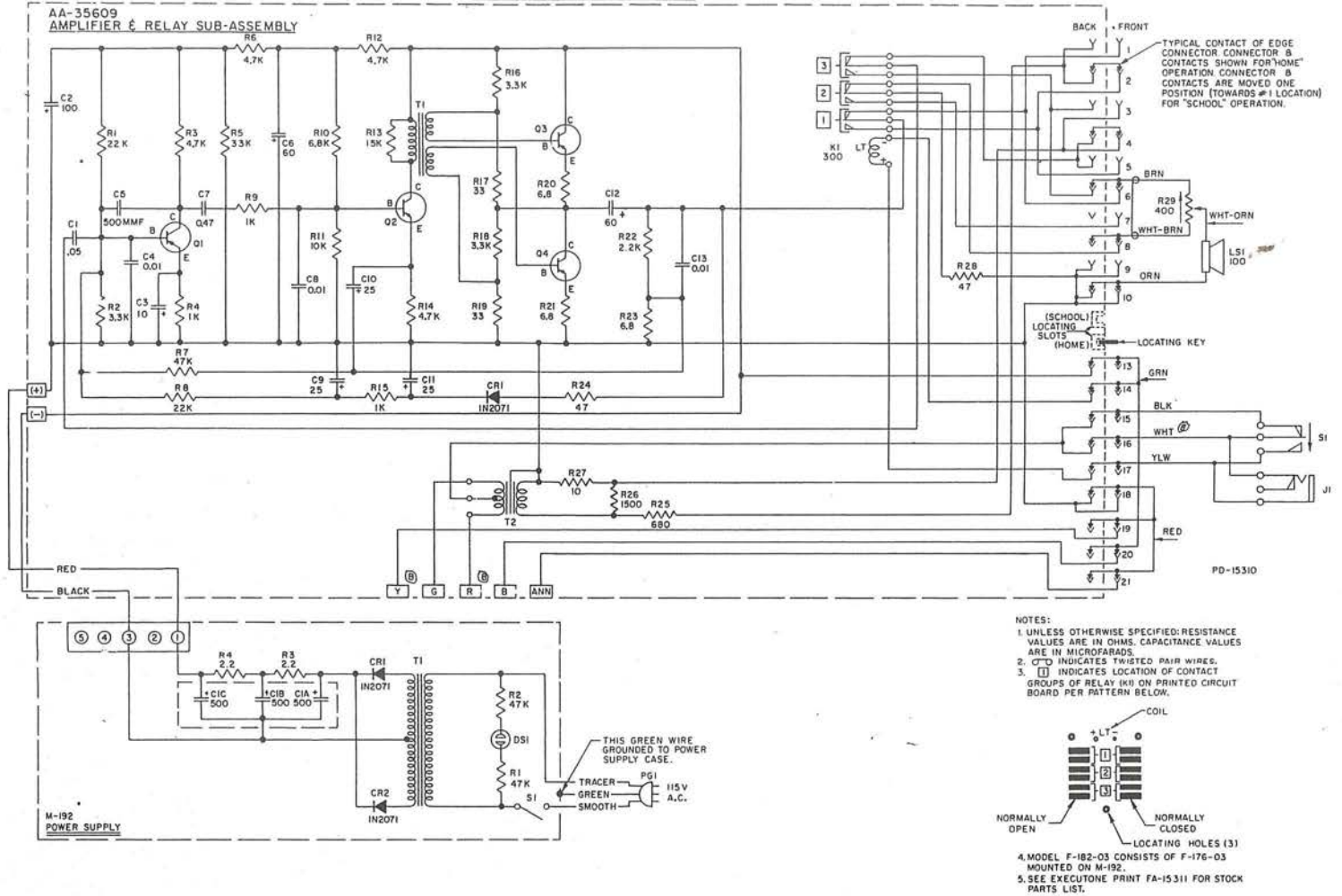
After the installation has been completed, instruct the teachers, the principal, and the shut-in student in the proper operation and use of the equipment. Copies of "How to Operate the School-to-Home Equipment," bulletin TB#34 (which can be used as a guide in demonstrating the equipment) should be given to the users or tied to the handles of the home and school units.

PROVIDE ALL USERS WITH COPY OF INSTRUCTION BOOKLET

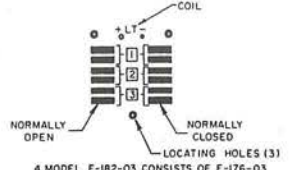
Each shipping carton containing Model F182 School-Home unit also contains an instruction booklet entitled, "How to Teach Shut-in Students by Telephone," together with a reply card for ordering additional copies of this booklet. The booklet, which contains information on how to use and operate the F182 unit, should be made available to all those who are going to use the equipment. Additional copies may be obtained either from your Telephone Supply distributor or Executone, Inc., Long Island City, New York (11101).

Inter-Communication Equipment TECHNICAL BULLETIN No. 1227

F-176-03 (AMPLIFIER-SPEAKER)



NOTES:
1. UNLESS OTHERWISE SPECIFIED, RESISTANCE VALUES ARE IN OHMS, CAPACITANCE VALUES ARE IN MICROFARADS.
2. CTD INDICATES TWISTED PAIR WIRES.
3. [] INDICATES LOCATION OF CONTACT GROUPS OF RELAY (K) ON PRINTED CIRCUIT BOARD PER PATTERN BELOW.



4. MODEL F-182-03 CONSISTS OF F-176-03 MOUNTED ON M-192.
5. SEE EXECUTONE PRINT FA-15311 FOR STOCK PARTS LIST.

MODEL F-176-03 SPEAKER-AMPLIFIER			
PART ORDERING INFORMATION			
DESIG	DESCRIPTION	EXECUTONE PART NO.	EQUIVALENT OR ALTERNATE PART
AMPLIFIER & RELAY SUB ASSEMBLY AA35609 (SEE NOTE 1)			
CAPACITORS			
C1	0.05MFD 50V	A-9738	
C2	1000MFD 16V	A-9732	
C3	100MFD 15V	A-9902	
C4, C5, C13	0.01MFD 500V	A-7939	
C6	3000MFD 200V	A-179	
C7, C12	80MFD 20V	A-39243	
C8	0.47MFD 12V	A-9787	
C9, C10, C11	25MFD 20V	A-7785	
CH	Diode 1N2071	A-9091	
K1	Relay 300 Ω	KW-9994-99-02X	
Q1, Q2, Q3, Q4	Transistors	A-9467	
RESISTORS			
R1, R5	2200 Ω 1/2 W ± 10%	A-1661	WECO KS-13490, L2 or Allen Bradley Type EB
R2, R16, R17, R18, R19, R20, R21, R23	4700 Ω	A-1656	
R3, R4	1000 Ω	A-1653	
R6	3300 Ω	A-1662	
R7	4700 Ω	A-1583	

MODEL F-176-03 SPEAKER-AMPLIFIER (Cont'd)			
PART ORDERING INFORMATION			
DESIG	DESCRIPTION	EXECUTONE PART NO.	EQUIVALENT OR ALTERNATE PART
AMPLIFIER & RELAY SUB ASSEMBLY AA35609 (SEE NOTE 1)			
RESISTORS (Cont.)			
R10	680 Ω 1/2 W ± 10%	A-1658	WECO KS-13490, L2 or Allen Bradley Type EB
R11	1000 Ω	A-1659	
R12	1500 Ω	A-1660	
R17, R19	33 Ω	A-1644	
R20, R21	6.5 Ω	A-1677	
R22	2200 Ω	A-1655	
R24, R25	47 Ω	A-1645	
R26	680 Ω	A-1652	
R27	1500 Ω	A-1654	
T1	Transformer	A-9474	
T2	Transformer	A-9713	
MISCELLANEOUS PARTS			
J1	Jack	A-2371	Switchcraft No. 12A "Little Jack"
L51	5" Speaker 100 Ω	A-9919	
P29	400 Ω Potentiometer Volume Control	A-9302	CTS Corp Type PE70
S1	Switch	A-9914	
	Cord		WECO D48P-3

MODEL M-192 POWER SUPPLY			
PART ORDERING INFORMATION			
DESIG	DESCRIPTION	EXECUTONE PART NO. (SEE NOTE 3)	EQUIVALENT OR ALTERNATE PART
C1	3X500UF 30 V Dc Capacitor	A-9711	Sprague Type "TVL" or Mallory Type "FP" 85° C Operation
CR1, CR2	Diode	A-9091	1N2071
DS1	Pilot Light	A-9717	Industrial Devices, Inc. #2190A30
PG1	Line Cord & Plug	A-9945	Type 19/3 SPT2 6 Ft. Long Graybar Electric Co.
	Adapter for 3 Wire Line Cord	A-30070	Eagle Electric No. 419
R1, R2	47000 Ω Resistor 1/2 W	A-1583	WECO KS-13490, L2 or Allen Bradley Type EB
R3, R4	2.2 Ω Resistor ≥ 10°	A-7402	
S1	Switch	A-71-13	Cutler Hammer No. 3906K134
T1	Transformer	A-9803	Power Transformer

NOTES:
1. AMPLIFIER AND RELAY SUBASSEMBLY AA35609 MAY BE OBTAINED AS A COMPLETE UNIT FROM EXECUTONE, INC.
2. REFER TO EXECUTONE, INC. PRINT PD-15310 FOR SCHEMATICS OF UNITS.
3. MAY BE OBTAINED FROM EXECUTONE, INC. 47-27 AUSTELL PLACE, LONG ISLAND CITY, N. Y. 11101.

Figure 4