



CONSTRUCTION AND
MAINTENANCE PRACTICES
OUTSIDE PLANT

SECTION 23

PART 112

INSTALLATION AND MAINTENANCE
OF ETDA-20 AND ETWA-20 TYPE TELEPHONE
SETS FOR HAZARDOUS LOCATIONS

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112.1 **GENERAL:** This part covers the installation and maintenance procedures for the Automatic Electric ETDA-20 and ETWA-20 telephone sets. The description and use of these telephone sets are covered in Part 111.

112.1-a These instruments meet insurance and underwriter's requirements for use in atmospheres containing explosive gas or vapor except acetylene. The use of telephone apparatus or wiring is strictly prohibited in locations where acetylene gas may become present in the atmosphere.

112.1-b Explosion-proof conduit and fittings are to be furnished, installed and maintained by the subscriber in conformance with the National Electrical Code and any state or local ordinances which apply.

112.1-c The supervisor in charge shall inspect the job site and advise the subscriber regarding the sizes, location and installation of the conduits from the telephone set to a point outside the hazardous area.

112.1-d It is essential that the fuse block and station protector, when required, be located outside the hazardous area. A Western Electric #1094A fuse block or equivalent shall be used at all installations. This protector is rated at 0.35 amperes, 500 volts in conformance with Underwriter's Laboratories specifications. This fuse block limits the current that may reach the telephone set from low voltage sources.

112.1-e Employees assigned to work on the telephone instruments covered in this practice shall be thoroughly familiar with all the details and safety precautions prescribed in Item 112.3.

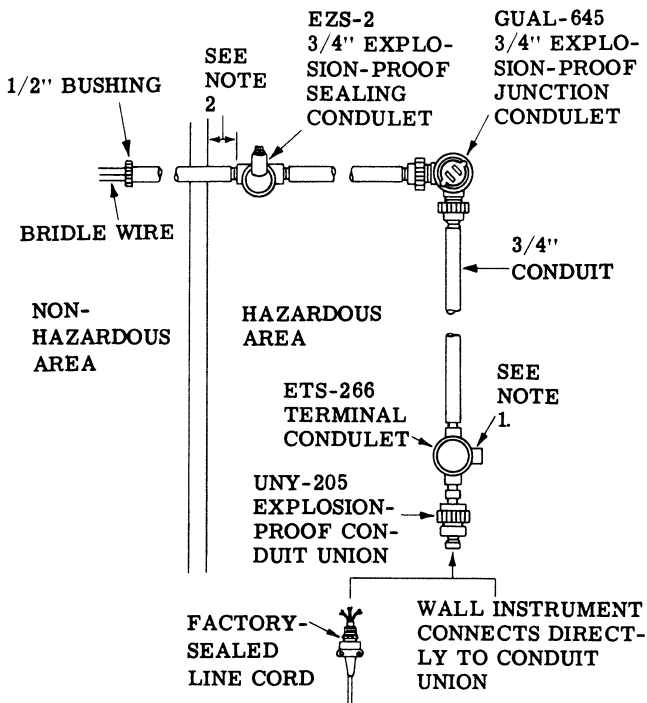
112.1-f All explosion-proof telephone sets in service shall be inspected at regular six-month intervals.

112.2 **INSTALLATION MATERIALS:** The following list shows the materials required for most installations of the ETDA-20 and the ETWA-20 telephone sets. The conduits and fittings are shown to enable the supervisor to inform the subscriber of the sizes, etc. (See paragraph 112.1-b.)

<u>Item</u>	<u>Description</u>
Bushing	3/4" Pipe bushing - for use at end of conduit
Conduit	3/4" Threaded, rigid steel conduit
Conduit Fittings	(Explosion-proof)
Condulet Junction (L)	3/4"-type GUAL-645 Crouse Hinds Junction condulet or approved equivalent
Condulet, Terminal	ETS-266 Crouse Hinds terminal condulet or approved equivalent
Condulet, Sealing	EZS-2 Crouse Hinds 3/4" sealing condulets or approved equivalent

<u>Item</u>	<u>Description</u>
Condulet, Union	UNY-205 Crouse Hinds 3/4" condulet union - for coupling sealed cord connections to terminal condulet hub.
Union	UNF-205 Crouse Hinds 3/4" union - for joining conduit to conduit
Fibre	Crouse Hinds Chico X Fibre. Used in preparing sealing fittings for sealing. (3/4 oz. furnished with 1-lb. can of Chico A Sealing Compound.)
Sealing Compound	Crouse Hinds Chico A Sealing Compound or approved equivalent. Used for sealing condulets.
Fuse Block	Western Electric 1094A
Telephone Set	Automatic Electric ETDA-20 Desk Set or ETWA-20 Wall Set
Wire	Bridle Wire

112.3 **INSTALLATION:** FIG. 1 shows a typical installation of conduit and apparatus. Either a wall or desk type instrument may be attached to the condulet. For convenience of attachment, a 3/4" union may be inserted between the instrument and the condulet.



NOTE 1: HUB FOR ATTACHMENT OF CONDUIT TO EXTENSION TELEPHONE INSERT PLUG WHEN EXTENSION IS NOT PLANNED (PLUG PROVIDED WITH CONDULET).

NOTE 2: THERE SHALL BE NO COUPLING OR FITTING IN THE CONDUIT BETWEEN THE SEALING CONDULET AND THE POINT AT WHICH THE CONDUIT LEAVES THE HAZARDOUS AREA.

Fig. 1

112.3-a Pull wires through conduit, then assemble conduit unions and fill all sealing fittings with approved sealing compound as follows:

- (1) Remove cover or plug from fitting to be sealed.
- (2) Draw wires toward the front of conduit and pack fibre into the end of conduit behind the wires. Next spread wires apart and push back, forcing fibre between and around them. Then pack fibre into space between wires and front of conduit.
- (3) Prepare conduit openings at both ends of the fittings for sealing in horizontal conduit runs. In vertical conduit runs only the bottom opening need be prepared for sealing.

Note: Directions for mixing sealing compound are furnished with each can and should be carefully followed.

- (4) Fill fitting with sealing compound; immediately close the fitting with a plug or cover.

CAUTION: When working in an explosive atmosphere, extreme care must be exercised to avoid striking tools against each other, the telephone set or other objects. Under no circumstances shall testing equipment or other apparatus capable of producing an electrical spark be used in an explosive atmosphere. Apparatus having exposed electrical contacts are prohibited. If necessary, remove the telephone set from the explosive atmosphere.

112.3-b Wall Installations. Connect wiring to the terminal strip in the base of the instrument. Replace the instrument cover on the base taking care to insert the cabling plugs into the base sockets. Make certain that the cabling between the cover and base does not tangle with the dial or ringer.

112.3-c Desk Installation. Insert the wires at the free end of the line cord assembly into the conduit through the bottom hub of the housing. Then screw the threaded connector into this hub. The line cord leads are colored white, black, red and green.

112.3-d The protectors shall not be installed until all wiring connections are complete, the cover securely in place and all unused conduit hubs and condulets are sealed. The protectors must be located outside the explosive area.

112.3-e The protector, when required, and the fuse block should be wired with the outside line wires connected to the fuse end of the station protector and the wires from the telephone installation connected to the fuse block. This arrangement is shown in FIG. 2.

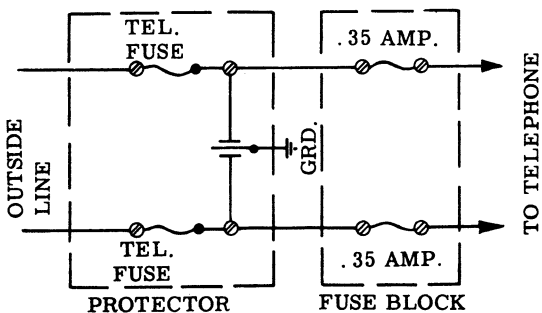


Fig. 2

112.3-f Dialing, ringing and talking tests are to be made only after the installation of the protectors is complete.

112.3-g Under no circumstances is the housing of the telephone set to be opened without first removing both fuses from the fuse block.

112.4 **MAINTENANCE:** It is imperative that all worn or broken parts be replaced and any adverse conditions, however slight, be corrected as soon as possible.

112.4-a Precautions prescribed in paragraphs 112.3-a, 112.3-d and 112.3-g shall be carefully observed whenever telephones in explosive atmospheres are to be serviced.

112.4-b Care should be taken not to set the cover of the instrument down where it might be damaged or accumulate dirt. Prior to reassembling the set, remove all dirt or dust from the machined edges of the housing.

112.4-c Dial. When removing the dial from the instrument, disconnect the four leads to the dial first. Then remove the two screws holding the dial mounting bracket to the housing and lift the dial and bracket out of the cover. The dial mounting bracket is removed from the dial by removing the three small screws holding the bracket. When replacing the dial, the finger arm mounted on the underside of the cover fits into the "O" position on the finger plate.

112.4-d Ringer. The ringer volume is controlled by adjusting the eccentric-mounted gongs, on the underside of the base. To remove the ringer from the set, two leads must be disconnected first. Then remove the screw located at the top end of the terminal strip and slip the strip sideways. This will provide access to one of the screws holding the equipment mounting plate to the base. Remove the four mounting plate screws (one at each corner of the plate) and lift the plate away from the base. Remove the two screws holding the ringer to the plate and lift the ringer free from the mounting plate.

112.4-e Condenser. When removing the 5 mf condenser, coded D-68258-A, disconnect the two leads to the condenser taking extreme care not to short-circuit these leads while in the explosive area. Then remove the two screws holding the condenser to the equipment mounting plate

and lift the condenser free from the mounting plate. The resistor which is bridged across the terminal lugs of the condenser, may be detached by removing the two screws used to connect the leads to the condenser.

112.4-f The induction coil, coded D-282996-A, and the 1 mf condenser, coded D-68262-A, shall not be replaced in the field. The leads to these parts employ soldered connections. The use of electrical soldering irons in explosive atmospheres is prohibited.

112.4-g Handset. If any part of the handset assembly becomes defective, the complete handset assembly (handset, cord and cord sealing unit) must be replaced as a unit, inasmuch as the safety features may be altered by field maintenance of any of the components comprising the assembly. Do not replace the L-9019-HO handset with another type. If the handset cord appears to be damaged or dangerously worn, replace the entire handset unit.

112.5 **CONNECTIONS:** The following circuit diagrams show the Automatic Electric set wired for metallic ringing.

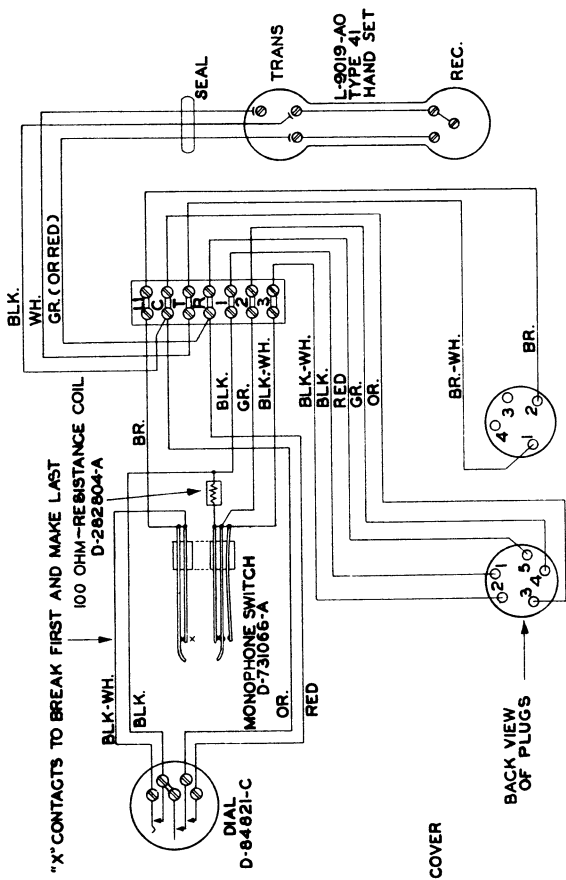


Fig. 3

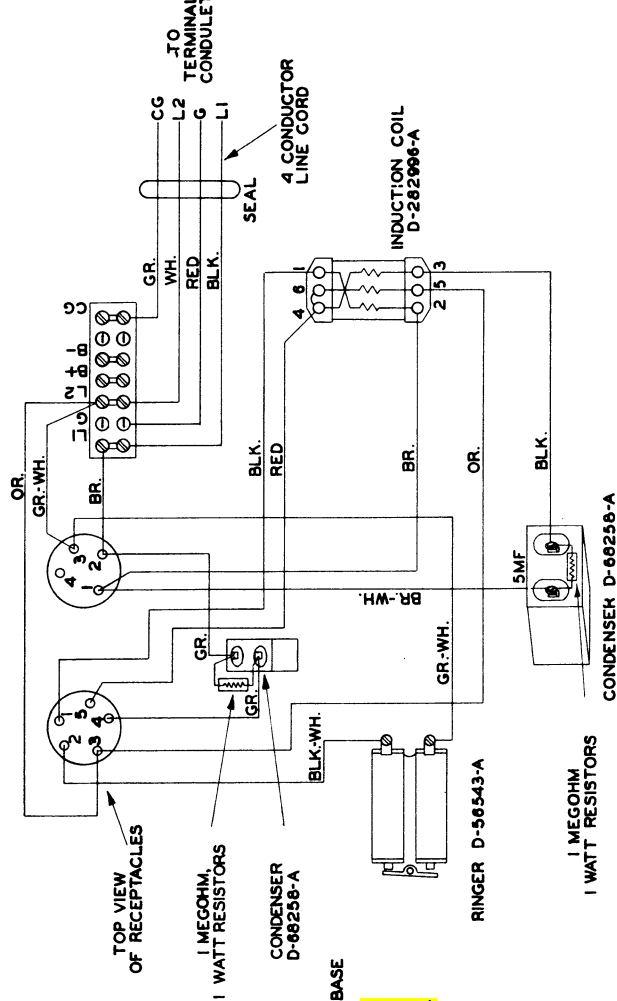


Fig. 4

112.5-a To silence the ringer, move the green-white ringer lead to the vacant terminal adjacent to L2 on the base terminal strip.