

STATION PROTECTION MAINTENANCE

1.00 GENERAL

1.01 This section provides maintenance information for station protectors, associated protector mountings, and the 150A cover.

1.02 Information for converting the 98A and 106C protectors to fuseless operation is also provided.

1.03 Fused protectors on stations served by grounded metal sheath cable should be converted when the station is visited except when it would be necessary to place a new ground wire. The number of converted fuseless protectors which may be connected to ground wire of various sizes is covered in the section entitled Station Protection, Installation.

1.04 When station protectors, served by metal sheath cable, are in locations where atmos-

pheric corrosion is a problem, use a 123A1A protector and 150A cover in place of a converted protector and associated protector mounting.

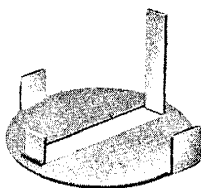
1.05 This section is reissued to revise paragraph 3.01.

1.06 Due to extensive changes marginal arrows have been omitted.

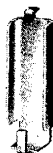
2.00 CONVERSION OF 98A AND 106C PROTECTORS TO FUSELESS OPERATION



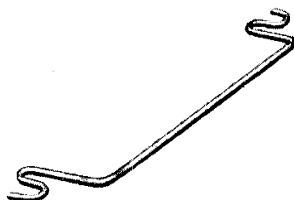
When converting station protectors on SSM (Special Safeguarding Measures) and/or SSP (Special Service Protection) lines, arrangements must be made to have the special lines taken out of service before doing any work on the protector, since this work could readily cause service interruptions.



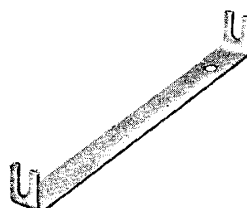
120A ADAPTER



121A ADAPTER



211A CONNECTOR



213A CONNECTOR

2.01 The following adapters and connectors (Fig. 1) are used in converting protectors:

- The 120A adapter and 211A connector are no longer manufactured but may be used, if available, from existing stocks. They may not be used to convert 98A protectors manufactured prior to 1939 because the 120A adapter will not fit over the larger ground electrode employed in these earlier protectors.
- The 121A adapter and 213A connector may be used to convert all 98A protectors.

Fig. 1 — Adapters and Connectors

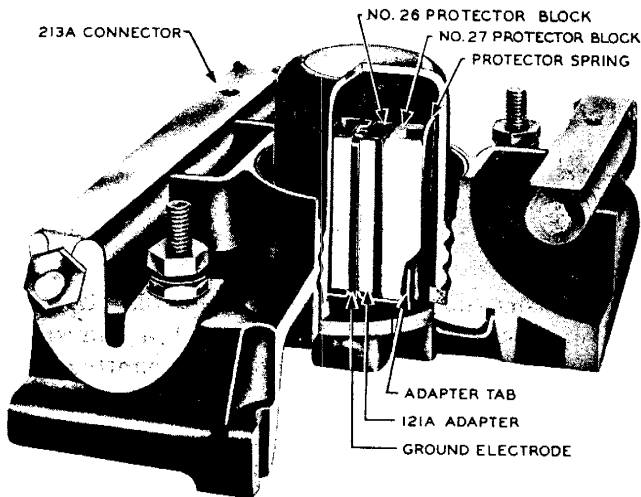


Fig. 2 — Converted 98A Protector Using 121A Adapters and 213A Connectors

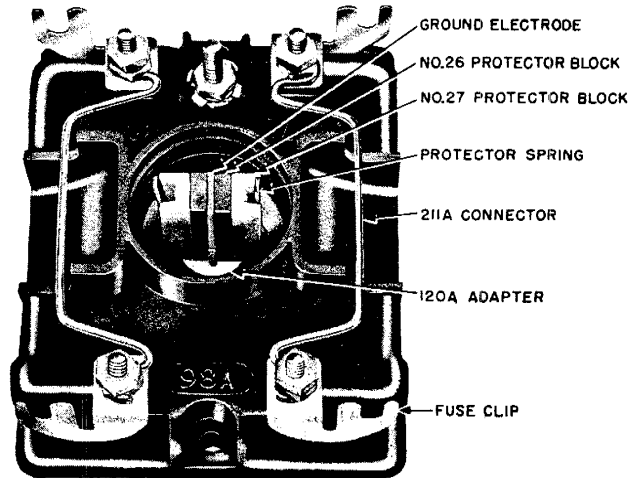


Fig. 3 — Converted 98A Protector Using 120A Adapters and 211A Connectors

2.02 For conversion of 98A protectors that are in service, see Fig. 2 and 3 and refer to Table A. Connectors may be omitted as specified in 2.04.

2.03 For conversion of 106C protectors to fuseless operation, two connectors are required except as covered in 2.04 where connectors may be omitted. When connectors are used to convert 106C protectors, they are installed in the same manner as that outlined in Table A for 98A protectors; no adapters are required. *The 106A protector cannot be converted to fuseless operation because of insufficient current-carrying capacity.*

2.04 Alternate methods of converting to fuseless operation are:

- The 98A protector may be converted by connecting line wires directly to station side of protector if they are of sufficient length. The connectors may be omitted. The 120A or 121A adapter(s) must still be used.
- The 106C protector may be converted by connecting line wires directly to station side of protector if they are of sufficient

length. The connectors may be omitted. No adapters are necessary. (Fig. 4.)

3.00 MAINTENANCE

3.01 Station protectors should be inspected on every visit to customer's premises.

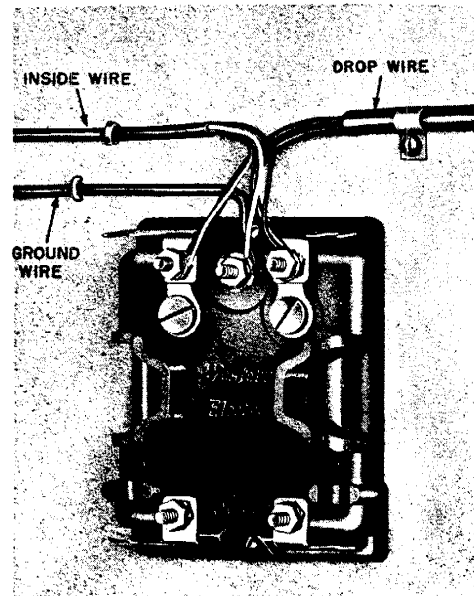


Fig. 4 — Alternate Method of Converting 106C Protector

TABLE A
CONVERSION OF 98A PROTECTOR

Using a 120A Adapter and Two 211A Connectors		Using Two 121A Adapters and Two 213A Connectors	
Step	Procedure	Step	Procedure
1	Disconnect line and station wires.	1	Remove cap and No. 26 and 27 protector blocks.
2	Remove cap and No. 26 and 27 protector blocks.	2	Insert the 121A adapters all the way into the protector well with flat side against the ground electrode.
3	Insert 120A adapter over ground electrode. Press adapter all the way down.	3	Check for ground on all binding post terminals (Note 1).
4	Check for grounding on all binding post terminals (Note 1).	4	Remove adapters.
5	Replace No. 26 and 27 protector blocks. Make certain that they are properly seated on the face of the adapter.	5	Assemble a No. 26 and a No. 27 protector block in each adapter.
6	Check for grounds (Note 1).	6	Install assemblies in protector well.
7	Remove 11C fuses.	7	Check for grounds (Note 1).
8	Place 211A connectors under the bottom binding post nuts. Tighten binding post nuts securely (Note 2).	8	Loosen both nuts on 11C fuses.
9	Reconnect line and station wires.	9	Insert 213A connector over each fuse with bent down ends inside fuse clips and pilot hole at the instrument end of the protector (Note 3).
		10	Tighten nuts on fuses.

Note 1: If an adapter does not provide solid ground with the carbon blocks removed or if ground exists when the carbon blocks are in place, discard adapter and replace with one that will meet requirements. If the requirements cannot be met on second attempt, do not try to convert the protector; instead, install a fuseless protector. *Do not attempt to bend or adjust adapter tabs or protector block springs.*

Note 2: Fuse clips may be removed. A binding post washer (P-234967) should be placed under the bottom nut and the 211A connector placed between the washer and the bottom binding post nut when clips are removed.

Note 3: In cases where fuses have shrunk slightly, one or both connector ends may be placed outside fuse clips. Some bowing of the connector may be encountered with short fuses; this condition is not considered objectionable. If desired, a bow may be placed prior to installation. With 213A connectors, the fuses only provide a physical means for securing the connectors in place; defective fuses may be used for this purpose.

3.02 When a protector is visited, the following work operations shall be performed:



Inspect the ground wire, ground clamp, and ground tag. If the grounding medium is not the best choice available (as outlined in the section entitled Protector and Signaling Grounds), change the ground connection to use the best grounding medium present, or report the substandard condition to supervision for later correction. If the best medium available is a ground rod, make sure that the telephone rod is bonded to the power ground rod, as directed in the section mentioned above.

- Replace protectors, mountings, and associated parts which are defective or are in poor condition.
- Replace broken or cracked carbon blocks on the 98-type protector.
- If No. 26 protector block is excessively pitted, turn over and re-use opposite side if it is in good condition. If neither side is satisfactory, replace block.
- Replace all 2A1-type protector units (carbon block assemblies used in 111A, 106A, 106C, 106CA, 116A, 116C, 117A, and 117B protectors) or 2B1A protector units (carbon block assembly used in 123A1A protector) that ground the line.
- Replace converted 98A protector when operated due to a power cross (permanent contact between spring and adapter tab). (When the protector is subject to continuous current discharges such as those resulting from power crosses, the protector springs become annealed and deformed near their point of contact with the No. 27 protector blocks thus making solid contact with the adapter taps and, thereby, providing a low-resistance path to ground.)
- Inspect wire terminations at protector for tightness, broken wires, and corrosion.

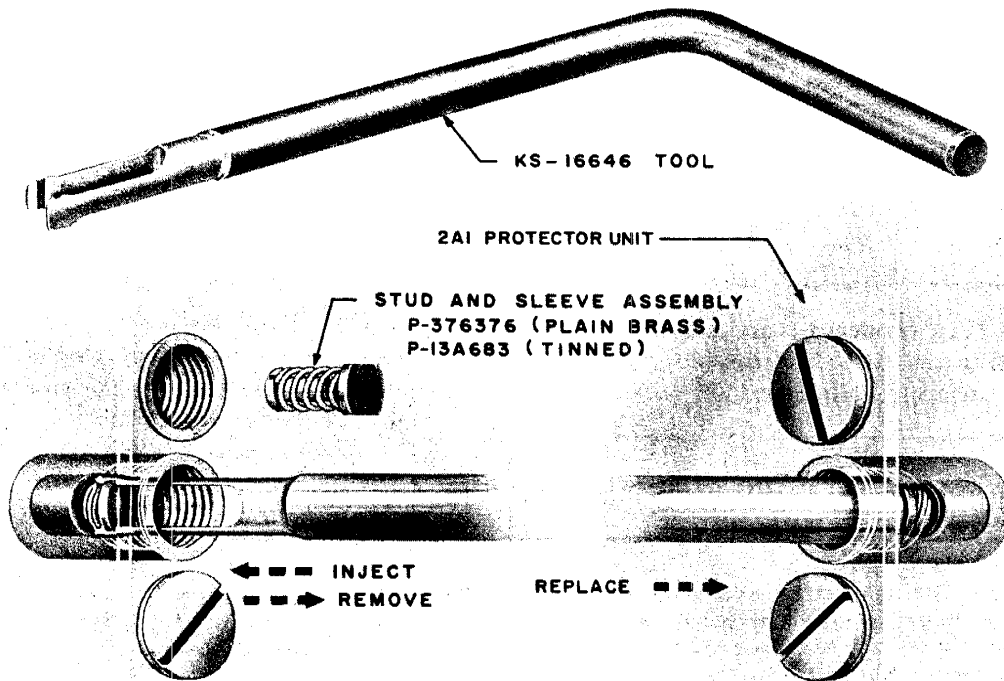


Fig. 5 — KS-16646 Tool

4.00 STUD AND SLEEVE ASSEMBLY REPLACEMENT

4.01 The stud and sleeve assembly associated with station protectors (such as 106A, 116C, or 117B) using a 2A1-type protector unit may become damaged due to heavy power or lightning surges. This will be evidenced by the end of the stud and sleeve assembly's becoming pitted and burned or by the lack of spring tension in the assembly.

4.02 The KS-16646 tool is used to remove damaged stud and sleeve assemblies and to insert the replacement (Fig. 5). Replacement should not be attempted on 106CA or 111A protectors.

4.03 The P-13A683 stud and sleeve assembly is used in station protectors using 2A1-type protector units and is tinned to ensure a low-resistance path through the protector.

4.04 The P-376376 stud and sleeve assembly (plain brass) is used in some types of cable terminals and not in station protectors.

5.00 DISCONNECTS

The disposition of wire where protector is removed on disconnects shall be treated as described in the section entitled Handling Wire and Cable.