Chapter 5

PYROTENAX CABLES

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LIST OF ILLUSTRATIONS

Introduction

1. Pyrotenax cables are used in certain aircraft for electrical wiring in areas such as the engine bay where high temperature conditions may develop. This cable will withstand for a short period temperatures of up to 500 deg. C.; the cable should not, however, be allowed to operate continuously at more than 250 deg. C, beyond which point progressive oxidization of the sheath occurs.

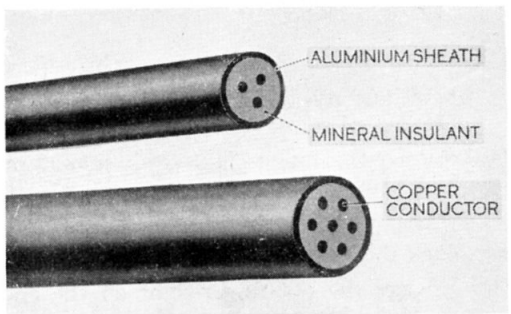

Fig. 1. 3-core and 7-core cables

DESCRIPTION

2. This type of cable is mineral-insulated, with copper conductors and an outer aluminium sheath. Provided the ends are satisfactorily sealed, it is unaffected by petrol and oil, and is proof against corrosive influences, with the exception of such acids which normally attack aluminium. The cable is robust, and although it can be bent to suit the aircraft installation, the insulation is not easily damaged by force; repeated bending, however, breaks up the mineral insulant.

3. The construction of the cable can be seen in fig. 1, the insulation being of compressed magnesium oxide. The two sizes used in aircraft are as follows:—

Stores Ref.	No. of cores	Area of conductor (sq. in.)
5E/3171	3	0·0015
5E/3174	7	0·0015

Preparation of cable ends

4. Prepare the sealing cap and sleeving assembly as follows:—

(1) Cut lengths of the neoprene tubing supplied with the sealing kit to suit the length of the conductors required at the cable end.

(2) Form an anchoring bulge on each sleeve by pushing the tubing on to the end anchoring wedge (*fig.* 2A); rotate with

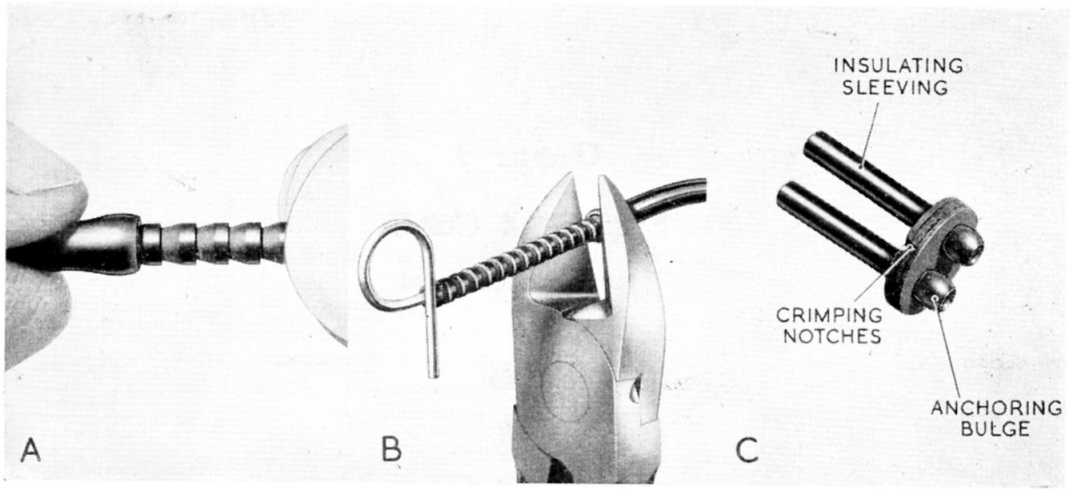

Fig. 2. Sealing cap and sleeving assembly

thumbs and forefingers until it closes over the edge of the anchoring wedge, using wire holder or conductor as a guide. When anchoring wedges are separate, use another one as a pusher.

(3) Nip off the anchoring wedge with cutting edge of side-cutting pliers facing sleeve (*fig.* 2B). The wire holder or conductor prevents cracking of the anchoring wedge.

(4) Assemble the sleeves to the sealing cap so that the anchoring bulges seat in the counter-sinking of the holes (*fig.* 2C).

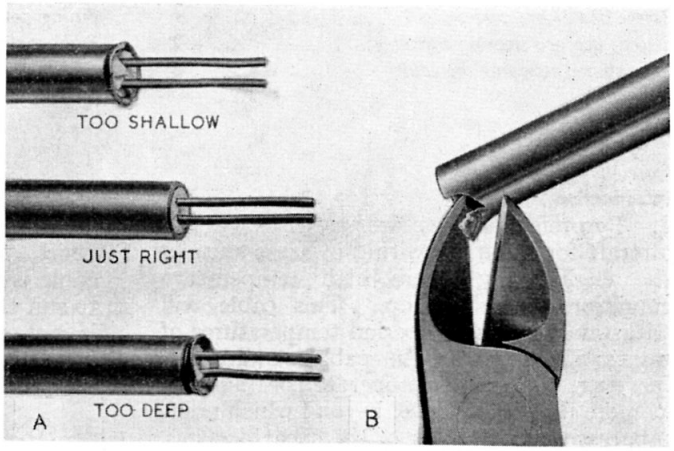

Fig. 3. Ringing and stripping the cable

5. Prepare the cable ends as follows:—

(1) Mark off the outer casing of the cable to the required length for stripping.

(2) Ring the casing, not too deeply, with the Enox No. 1 tube cutter.

Note . . .

If the ring is made too deep (*fig.* 3A), *it will be found difficult to break into it when stripping; if too shallow, the sheath will be bell-mouthed and the gland and seal parts will not readily fit on to the sheath. If the length to be stripped is very long, ringing should be deferred until stripping is within* 2 *or* 3 *in. of sealing point.*

(3) Using side-cutting pliers to start the rip (*fig.* 3B), followed by a stripping tool held at an angle of 45 deg. all the time, twist and roll back the surplus casing to the ringed mark.

(4) Loosen the magnesium oxide insulation and clean away from the base of the conductors (*fig.* 4A).

6. The cable ends are prepared as follows:—

(1) Engage the pot finger-tight on the end of the aluminium sheath and square up, then screw on with electrician's pliers until the end of the casing is flush with the inside face at the base of the pot (*fig.* 4B). Examine the inside for cleanliness. There must be no metallic swarf present in the pot.

(2) Fan out the conductors to prevent twisting, and insert them through the

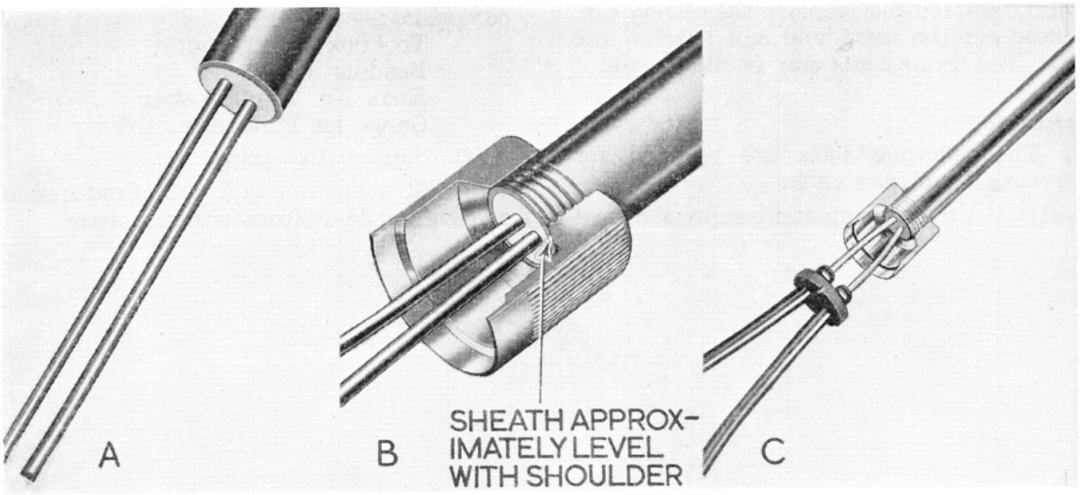

Fig. 4. Fitting pot type seal

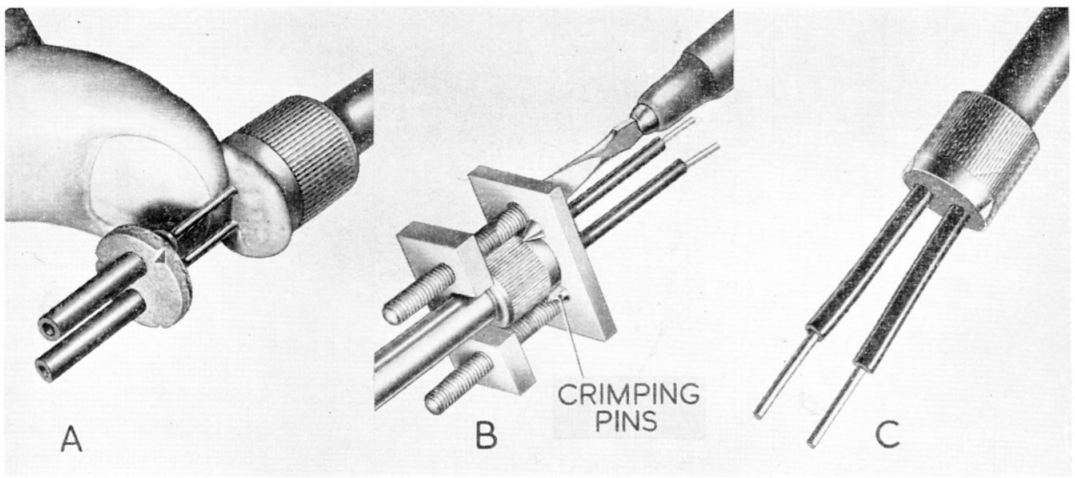

Fig. 5. Final sealing of pot type seal

sealing cap and sleeving assembly in their correct order (*fig.* 4C).

(3) Test the sealing cap in the pot for fit, and withdraw enough to allow for insertion of the plastic insulating compound. Press in with the thumb until the pot is packed tightly (*fig.* 5A).

Note . . .
On no account should any unused compound be returned to the packet owing to the risk of metal filings being present if it happens to have been dropped or placed upon the bench.

(4) Press the sealing cap and sleeving assembly in by hand, then force home by means of the compressing tool, thus automatically crimping the assembly as the crimping pin locates in the notches provided (*fig.* 5B *and* 5C).

7. Test each cable for mechanical soundness by pulling on the end of each conductor, and test the insulation of each cable to earth and between cables, with a standard insulation resistance tester. All readings should be infinity.

(A.L.48, Nov. 55)

Dismantling

8. To dismantle a seal, open the crimps with a pointed tool, remove the sealing cap, scrape out the compound and unscrew the pot. The components may be used again.

Special tools

9. The following tools are required for servicing Pyrotenax cables:—

(1) G size crimping and compression tool

(2) H size crimping and compression tool

(3) Tools for ATD, outfit AP.W1119, comprising:—

Tool box for ATD outfit
Bending levers
Enox No. 1 tube cutter
Gauge for Pyrotenax cable

(4) Side-cutting pliers

(5) Stripping tool (a length of rod split at one end, made up from local resources).