

SHIELDED CABLES AND WIRES
 BASIC INFORMATION

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KS-19224-L1 & L2	730	9	4.76
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2. GENERAL

2.1 Over-All Scope of the 700 Series of Sections

2.11 These sections cover the general requirements and methods for removing and grounding shields, forming, splicing, and terminating shielded wiring, coaxial and twin-conductor shielded office cable.

2.1101 Section 700 describes the construction of shielded cables and wires and covers other general information pertaining to terminating drawings, grounding shields and taping.

2.1102 Section 710 covers the general requirements and methods for forming shielded wire and sewing Pe or rubber insulated wires.

2.1103 Section 720 covers the general requirements and methods for locating and insulating the shields of shielded wires and when to make crimp or solder type shield connections.

2.1104 Section 730 covers the general requirements and methods for terminating and removing the shields of coaxial and twin-conductor office cables.

2.1105 Section 740 describes a solderless crimped shield connection, outlines when crimped connections

are required, and covers the requirements and methods for making a crimped connection.

2.1106 Section 749 covers the general requirements and methods that apply when preparing cables for, and connecting cables to a 219 Connector.

2.1107 Section 750 covers the general restrictions, requirements, and methods for splicing shielded cables and wires.

2.1108 Section 760 covers the general requirements and methods for connecting and soldering shielded cables and wires.

2.1109 Section 770 covers the general requirements and methods for connecting coaxial and twin-conductor cables at coaxial type connectors, jacks, plugs, or terminals.

2.1110 Section 780 covers the verification items for the equipment installed by the operations covered in Section 710 to 770.

2.12 The 700 Series of Sections also covers the processing and terminating of 721 cable. The 721 cable, while not shielded, is identical to that portion of 720 cable underneath the shield and is to be treated in the same manner, in so far as applicable.

TABLE A
ASSOCIATED HANDBOOK INFORMATION CHART

Subject	Handbook	Section
Butting and Stripping Cable	8	400 Series
Cabling and Wiring		
J Carrier	220	5
K Carrier	221	5
L Carrier	222	10-19
N and O Carrier	219	10-19
Radio Relay (Microwave - TD2)	226A	10-19
Television Terminal Equipment	224	10-19
Video Transmission Equipment	224	10-19
TH Radio Relay System	228	5
Installation Hazards, Treatment of	0	0
Precuations, General, To Avoid -		
Damage to Building and Equipment	0	20
Personal Injury	0	1,2,3,4
Service Interruption	0	10,11,12,13

2.13 Refer to Table A for Associated Handbook Information Chart for the location of associated handbook information to which reference may be necessary when performing operations covered by these sections.

2.2 Precuations

2.21 General precautions to be taken against personal injury, equipment damage and service interruptions are covered in Handbook 0 and are to be observed at all times, as they apply to the operations being performed. Specific precautions, when applicable, are included in each section of the 700 series of sections with the associated method.

2.22 USE EXTRA CARE WHEN REMOVING AND TRIMMING SHIELDS TO AVOID PUNCTURING FINGERS ON THE ENDS OF THE SMALL SHIELDED WIRES!

2.23 Tape the ends of all shielded cable and wire before running them in the vicinity or above working equipment.

2.24 Handle shielded cable and wires with extra care in the vicinity of live fuse panels with other live equipment as the grounded shield is a service hazard. Where practicable at the time the shield is removed from the cable or conductors, the ground lead or other connecting leads should be connected to the shield or spliced to the shield ground wire, and the splice and exposed shield properly protected.

2.25 Wire ends and the clippings from the shields of wires or cables are a potential source of trouble. Treat ends of shield, except when inner conductor (s) is insulated with Pe

insulation, with cellulose acetate lacquer before trimming in order to prevent clippings from flying into equipment.

CAUTION: CELLULOSE ACETATE LACQUER IS FLAMMABLE BEFORE DRYING. KEEP TUBE COVERED AND AWAY FROM AN OPEN FLAME. USE CARE TO AVOID GETTING LACQUER ON CLOTHING AS ITS REMOVAL WILL BE DIFFICULT.

2.3 Installing Equipment and Arrangement of Tools

2.31 Installing Equipment: Each section in the 700 series lists the tools and supplies that are required for the operations covered by that particular section.

2.32 Arrangement of Tools: Prior to starting the operations covered in each section of the 700 series the tools and other items required should be arranged at the work location so as to minimize fatigue and inconvenience when handling.

2.4 Verification

2.41 Items for the verification of the equipment installed by the operations covered in the 700 series of sections are listed in Section 780.

2.42 The items marked (P) in Section 780 are so designated to denote that the equipment should be verified before it becomes inaccessible or before a portion of the work becomes indiscernible, due to following installation operations.

2.43 The items in Section 780 may also be used as a shelf-check guide when performing operations covered by the 700 series of sections.

TYPE	CODE	COND.	O. D	COND. INSL.	INSIDE BENDING RADIUS		GA	DHMS IMP.	DESCRIPTION	
					REG.	MIN.				
CU	730A 731A	2	.260	POLYETH	2"	1"	23	75	COAXIAL CABLE, DOUBLE SHIELD L MULTIPLEX & RADIO SYSTEMS	
RU	762A	20	.64X.81	POLYETH	4" FLAT 4" EDGE		24		CONSISTS OF TEN 716A TYPE CABLES	
CU	724	2	.312MAX	POLYETH	3"	1-1/2"	20	75	COAXIAL CABLE, DOUBLE SHIELD	
CU	726	2	.312MAX	POLYETH	3"	1-1/2"	20	75	COAXIAL CABLE NICHROME CON- DUCTOR (TD-2) DOUBLE SHIELD	
CU	727A	2	.312MAX	POLYETH	3"	1-1/2"	20	75	COAXIAL CABLE (L3), DOUBLE SHIELD	
CU	728A	2	.312MAX	POLYETH	3"	1/2"	.0311	75	COAXIAL CABLE (TD-2 AND TH) DOUBLE SHIELD	
RU	754E	2	.425	POLYETH	3"	2"	19	124	BALANCED PAIR (VIDEO CABLE), DOUBLE SHIELD	
RU	760A	2	.315MAX	POLYETH	3"	1-1/2"	22	124	BALANCED PAIR (TJ), DOUBLE SHIELD	
RU	761A	2	.225MAX	POLYETH		1/2"	24		BALANCED PAIR, DOUBLE SHIELD	
EU	KS-19414- L1	2	.160	TEFLON	1/2"	1/4"	24		BALANCED PAIR, COPPERWELD SILVERPLATED CONDUCTORS, SINGLE SHIELD	
CU	KS-8086	2	.292	RUBBER	2"	1"	22	70	COAXIAL CABLE, DOUBLE SHIELD	
CU	RG-59/U SDC-75-2S	2	.242	POLYETH	2"	1"	23	77	COAXIAL CABLE RG-59/U (FORMERLY KS-13679), SINGLE SHIELD	
CU	KS-13730	2	.405	POLYETH	4"	*3"	22	125	COAXIAL CABLE RG-63/U, SINGLE SHIELD	
CU	KS-19224- L1	2	.096	TEFLON	1/2"	1/4"	29	75	COAXIAL CABLE, COPPERWELD SILVERPLATED CONDUCTOR, SINGLE SHIELD	
EU	750A	4	.35X.22	POLYETH	1" FLAT 2" EDGE		22	110	2 PAIR	Polyethylene (Pe) insulated conductors twisted into pairs. Each pair is covered with a braided shield.
	751A	6	.43		2"	1"			3 PAIR	
	725A	12	.57		3"	2"			6 PAIR	
	753A	24	.68		4"	3"			12 PAIR	
	758A	8	.48		3"	2"			4 PAIR	
	759A	16	.62		4"	3"			8 PAIR	
EU	755A	4	.37X.23	POLYETH	1" FLAT 2" EDGE		100	100	2 PAIR	
	756A	16	.71		4"	3"			8 PAIR	
	757A	20	.74		4"	3"			10 PAIR	
U	479M	8	.049	PVC-CL	2"	1"	22		4 SHIELDED PAIRS - TYPE "P" WIRE	
U	TYPE P WIRE	1,2,3		PVC-CL			22		SHIELDED SINGLE, PAIR OR TRIPLE	
	TYPE AK WIRE	1		EDACBL			16		SHIELDED - J CARRIER WIRING	

TYPE	CODE	COND.	O.D.	COND. INSL.	INSIDE BENDING RADIUS		GA	OHMS IMP.	DESCRIPTION
					REG.	MIN.			
BU	TYPE BF WIRE	1,2,3		POLYETH			22	110	SHIELDED SINGLE, PAIR OR TRIPLE
	TYPE BK WIRE	1,2,3		EDACBL			16.20		SHIELDED SINGLE, PAIR OR TRIPLE
	TYPE BS WIRE	1		DACBL			22		SHIELDED - NO. 4A TOLL SWITCHING (TRANSLATOR CABINET)
	BAM	6-606 pair		PE-PVS	**		22		CORRUGATED ALUMINUM SHIELD OVER CLEAR PLASTIC JACKET
RU	763A	24	.069	POLYETH	4"FLAT 3"		24		12 JACKETED, SHIELDED PAIRS
CU	KS-19224-L2	2	.116	TEFLON	3/4"	3/8*	29	75	COAXIAL CABLE DOUBLE SHIELD MULTIPLEX SYSTEMS
CU	KS-19906-L1	2	.159 ±.004	POLYETH	1/2"	1/4*	7 Str # 35	75	COAXIAL CABLE, DOUBLE BRAID SF SUBMARINE CABLE

* The minimum bending radius of the polyethylene insulated coaxial cables is permissible only if bend is made after the connection has cooled or if no heat is to be applied within 3 inches of the bend. Formed fiber snap-on details (P-188058 for 180° bends and P-188059 for 90° bends) should be used to maintain a 2 inch bending radius in 724 cable where the weight of the cable as in ducts) or where presence of framework or pressure from other cables might adversely affect the bending radius.

** Varies from 1-1/2" for 6 pair to 7" for 606 pair.

NOTE:

Braided Copper Shielding: (Applied directly over insulated wire specified.)

KS-13586, Braided Tinned Copper Shielding, Cotton Braid Lacquered (with a ground wire under the shield).

KS-13857, Braided Tinned Copper Shielding, Cotton Braid Lacquered (without a shield ground wire.)

3. DESCRIPTION AND WIRING SYMBOLS

3.1 Description of Shielded Cables and Wires

3.11 ABAM cable consists of an inner core of leads enclosed in a clear plastic jacket, over which is a corrugated aluminum shield, and an outer PVC jacket. The leads are comprised of 22 gauge tinned wire, dual insulated with PVC over PE. The cable comes in eleven sizes ranging from 6 to 606 pairs.

3.111 This cable is used in N and T Carrier Systems and some noncarrier applications such as PBS's.

3.12 The descriptions of various shielded wires coaxial cables, twin-conductor office cables and other cables with shielded pairs are shown in Figure 1.

3.121 Shielded wire or shielded wiring refers to coded shield wire, such as types BF, P, KS-13385 shielded per KS-13856-87, and shielded pairs in cables, such as the 750A, etc.

3.122 Coaxial office cable includes 724, 726, 728A, 730A, KS-8086, SDC-75-2S, (RG-59/U), KS-19224-L1, and similar types, and is referred to in the 700 series of sections as coaxial cable.

3.123 Twin-conductor shielded office cable includes 720, 754, 760, 761A, 762A (10-761A Prs.) & 763A, KS-19414-1L, and any similar types that may be introduced in the future. These cables are sometimes referred to as balanced pair transmission cables. They are referred to in the 700 series of sections as twin-conductor office cable.

3.2 Wiring Symbols

3.21 The symbols used on drawings for shielded cable and wire are as follows:

- CU - Coaxial shielded cable
- EU - Shielded polyethylene-insulated wire (type BF wire and shielded pairs in 750-type cables, except 754-type)
- RU - Twin-Conductor office cable - 720, 754, 760 and 761A-type cable.
- U - Shielded PVC cotton lacquered-insulated wire (type P wire and shielded pairs in 479M cable)

4. TERMINATING DRAWINGS

4.1 The following drawings are required and are normally furnished to jobs installing coaxial, twin-conductor office, or ABAM cables. They cover detailed information for terminating and connecting at various apparatus, making solderless crimp connections and splices, and installing pads in the cables.

ED-92524-10	Methods of Terminating to - 20 Coaxial and Twin-Conductor Office Cables.
ED-92774-11	Splices for Office-Type Coaxial Cable and Balanced-Pair Transmission Cable
ED-92731-10	Installing Pi-Type Pad in Office-Type Coaxial Cable
ED-92839-10	Installing Square-Type Pad in Office-Type Balanced-Pair Cables
ED-97270-10	ABAM Aluminum Sheath Termination
ED-5G229-10	SF Submarine Cable System methods of terminating coaxial KS-19906L-1 and KS-19224L-1 to Coaxial Plugs, Jacks and Connectors.

NOTE: The above drawings may change particularly the dash numbers, as a result of newer developments. The job specifications should therefore, be consulted for such drawings that apply on a particular job.

➔ Arrowed lines indicate new or changed information.

5. GROUNDING SHIELDS

5.1 The wiring and schematic drawings indicate whether or not the shield of (U, EU or RU or any other shielded wiring are to be grounded. If the shields are to be grounded or several shields, are to be bonded together, the wiring diagram will show the points at which the ground or other connecting leads are to be attached.

6. TAPING

6.1 Where taping of shielded cable and wire butts is specified in the 700 series of sections use the 1/2 inch gray plastic tape (R-3359). Refer to Paragraph 6.5 for the method of applying this tape.

6.2 Where the use of gray plastic adhesive tape per KS-14890 is specified on the terminating drawings, use the R-3359 tape which is identical.

6.3 Where taping of Pe or rubber insulated wire forms is specified in Section 710, use the 3/4 inch gray plastic tape (R-3428). Refer to Paragraph 6.5 for the method of applying this tape.

6.4 Where acetate fiber adhesive tape per KS-13979 is specified on terminating drawings for treating butts of cotton covered cable use R-3428 Gray Plastic Tape.

6.5 Apply plastic tape by winding it tightly and evenly around the form, shielded cable or wire with at least a 3/16 inch lap. Wherever possible, apply tape directly from roll. Place the last two turns at right angles to the cable, form or wire so that the end of the tape will adhere to the taped portion of the cable, form or wire. Due to the tendency, of plastic tape to recede, place the last two turns on without tension. It is not necessary to shellac this tape.

Manager, Engineering Transmission Products

REASON FOR REISSUE:

To remove reference to Section 722 of this handbook.