

## INSIDE WIRE AND CABLE SELECTION

### 1. GENERAL

1.01 This section describes the selection of inside wire and cable.

1.02 This section is reissued to:

- Provide length restriction for inside wire
- Remove information on outside wire (refer to 462 Division for Outside Wire and Cable).

### 2. SELECTION

2.01 In selecting wire or cable, the following should be considered:

- Type and gauge* of wire or cable to meet the specific job requirements.
- Number of conductors* necessary for service and providing an economical allowance for future requirements.
- Location of terminal*, protector, connecting block, telephone set, conduit facilities provided, etc.
- Customer satisfaction with appearance and routing of wire and cable.



*Do not use privately owned wire or cable systems without the approval of a supervisor.*

### ORDERING GUIDE

#### Inside Wire

- Cordage, Flat, 4 Conductor, KS-7144\*
- Wire, Block, E\*
- Wire, Cross-Connecting, F\*
- Wire, Ground\*

- Wire, Station, B
- Wire, Station, D\*
- Wire, Station, SK\*
- Wire, Station, G\*

#### Inside Cable

- Cable, Wiring, Inside, D\*

\*Include desired type, color, gauge, and/or pair from Table A or F.

### 3. INSIDE WIRE

3.01 *Type, size, gauge, color, and use* are found in Table A.

3.02 *D Station Wire* is intended for general use in station wiring as a replacement for JKT and GS station wire.

- It is smaller in diameter and more flexible than JKT or GS, and the plastic jacket has improved frictional properties permitting placement without the aid of lubricants.
- It can be used for indoor or outdoor runs and may be terminated on any terminals which will accommodate 22 or 24 AWG conductors. *Do not use D station wire to span, eg, between buildings.*
- The insulation of the individual conductors is distinctively colored to provide identification. Refer to Table B for color codes.
- Wire runs should be limited to 250 feet for installations involving two talking circuits. Single line installation length is determined by the signaling equipment for lamp loading. See Section 501-136-100.

3.03 *G Station Wire* replaces E inside wiring cable (MD).

#### NOTICE

Not for use or disclosure outside the  
Bell System except under written agreement

-TABLE A-  
SELECTION OF WIRE

TYPE OF WIRE (NOTE)	SIZE	GAUGE	JACKET OR INSULATION COLOR			CONDUCTOR IDENTIFICATION	GROUND	CLASS OF SERVICE										CROSS-CONN. TERM. AND CROSS-CONN. BOX	REMARKS								
			BLACK	IVORY	LT OLIVE GRAY			GROUND			INDI. V/DUAL			CIRCUITS													
								SIGNAL	PROTECTOR	BUSINESS	RESIDENCE	ALL	ALL	LENGTH RESTRICTION (SEE 3.02, 3.04, 3.05)	EXTENSION RINGER	TELETYPE	LEASED WIRE			LANDSPK. AND PAGING SYSTEM, ETC.	PREWIRE						
																						PTV	COIN	EXTENSION RINGER			
Station	D	Quad	24	•	•				•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	Use for all interior station wiring including ducts and all conduits. May be run outside on wall of building for short runs between terminal and protector, protector and station, extension station, or bell where the wire run on building extends outdoors. D station wire should not be used for pre-wiring purposes.			
	G	3 Pair	24	•					•	•											•						
	KS-7144 Flat Cordage	Quad	18	•						*	*	*														Use for all prewiring purposes and for interior station wiring including ducts and conduits. Use under rugs and carpets.	
	SK	Pair	20	•																						Shielded Wire (See 3.06)	
Ground	Single	14	•				•	•																	Ground Wire Capacity  Size No.      Protectors Fused      Fuseless†		
	Single	12	•				†	•																		14    1 to 3      1	
	Single	10	•				†	•																		12    4 to 6      2	
	Single	6	•				†	•																		10    7 or more    3 to 6	
E Block	Single	21 1/2			•		•																		Used outdoors, in freezing rooms, factories, and for short runs in homes or offices.		
	Pair				•			•																			
	Triple				•			*	•	•	•	•		•	•												
F Cross-Conn	Pair	24	See Table E																						Use for all indoor cross-connections between incoming cables and station equipment. (Do not use in central office distributing frame.) It may be used for pedestal and aerial serving area interfaces.		
	Triple																										
	2 Pair																										
	3 Pair																										

Note: All wires listed should not be used near heat sources exceeding 140 degrees fahrenheit.

\* Local option.

† Any ground wire that can be used as a protector ground can also be used as a signal ground. Because of expense, it is not recommended that No. 12, 10, or 6 gauge wire be placed for use as signal ground only.

**TABLE B**  
**D STATION WIRE AND**  
**KS-7144 FLAT CORDAGE**  
**CONDUCTOR IDENTIFICATION**

SIZE	PAIR NO.	COLOR	
		TIP	RING
Quad	1	Green	Red
	2	Black	Yellow

(a) It consists of three pairs of 24 AWG annealed copper conductors; each conductor has color-coded insulation. Refer to Table C for color codes.

**TABLE C**  
**G STATION WIRE**  
**CONDUCTOR IDENTIFICATION**

SIZE	PAIR NO.	COLOR	
		TIP	RING
3 Pairs	1	W-BL	BL-W
	2	W-O	O-W
	3	W-G	G-W

(b) Length of runs is determined by the signaling equipment. For lamp circuit-loading, see Section 501-136-100.

(c) The three twisted pairs are stranded together and jacketed with light olive gray colored polyvinyl chloride plastic (PVC) underlaid by a nylon jacket-slitting cord to complete the structure.

(d) Its primary use is for prewiring houses during construction.

**3.04** ♦ **B Station Wire** (adhesive-backed wire) availability is indeterminate. In areas where it is impossible or impractical to use D station wire and standard fasteners due to construction of buildings, consider pressure sensitive adhesive-backed

wire available from general trade manufacturers. All adhesive-backed wire should be used with the following precautions:

- Installations are much more expensive than conventional station installations.
- Mounting surfaces must be clean in order to obtain satisfactory adhesion.
- Solvent-activated primers improve adhesion to slightly soiled surfaces but doubles the cost of installation.
- Never mount on damp surfaces, raw plaster, or a coarse surface such as cinder block or untreated concrete.
- Wire runs should be limited to 100 feet for any single line installation and 60 feet for installations involving two talking circuits. This assumes the use of parallel conductors and a wire with a rectangular cross-section.♦

**3.05** **KS-7144 Flat Cordage** is used for station wiring under rugs on subscriber premises.

- (a) Insulation of individual conductors is colored red, green, yellow, and black for identification.
- (b) ♦ Wire runs should be limited to 100 feet for any single line installation and 60 feet for installations involving two talking circuits.♦

**3.06** **SK Station Wire** is a shielded twisted pair wire.

- (a) It is used where trouble is experienced with impulse noise between dc metallic teletypewriter loops and DATA-PHONE® lines in the same run.
- (b) It is used in loudspeaker systems as amplifier output leads and associated wiring.
- (c) Insulation of individual conductors is colored red or green.

**3.07** **Ground Wire** is a single conductor-insulated wire.

- (a) No. 6 ground wire is used to make ground connections to protected cable, cable terminals, protector mountings, and to groups of station protectors.

**SECTION 461-200-100**

(b) No. 10, 12, and 14 ground wire is used to make ground connections primarily in station wiring.

**3.08 E Block Wire** is used in block distribution and in ring runs on buildings. It may also be used inside factories, freezing rooms, or for short runs in homes.

- (a) It may be used in spans not exceeding 35 feet in length.
- (b) Ridge tracers are provided in the insulation for conductor identification. Refer to Table D.

→TABLE D←

**E BLOCK WIRE  
CONDUCTOR IDENTIFICATION**

SIZE	RIDGE TRACER		
	DOUBLE	SINGLE	PLAIN
Single	•		
Pair		•	•
Triple	•	•	•

**3.09 F Cross-Connecting Wire** is used for all indoor cross-connection applications between incoming cables and station equipment. (Not for

use in central offices.) ♦It may be used for pedestal and aerial Serving Area Interfaces (SAI).♦

- (a) Conductor identification is established through use of colored insulation in combination with single dashes of colored ink. Refer to Table E.

**4. INSIDE WIRING CABLE**

**4.01 Type, size, gauge, and use** are found in Table F.

**4.02 D Inside Wiring Cable** is for general use in customer telephone systems wiring. The plastic jacket has improved frictional properties, permitting placement without the aid of lubricants. Lubricants could eventually corrode and clog conduit, making it more difficult to place additional wire.

- (a) All pairs in the 6- to 25-pair sizes are stranded around each other to form the cable.
- (b) The 50- to 100-pair is composed of 2 to 4 units of 25 pairs each. The units are stranded together to form the core. Each unit has a different color binder for unit identification. Refer to Table G.
- (c) The colored insulation in combination with single dashes of colored ink provide individual conductor identification.
- (d) Length of runs is determined by the signaling equipment. For lamp circuit-loading, see Section 501-136-100.

→TABLE E←

F CROSS-CONNECTING WIRE  
CONDUCTOR IDENTIFICATION

SIZE	PAIR NO.	COLOR		
		TIP	RING	SLEEVE OR GROUND
Pair		Y-BL	BL-Y	
Triple		O-BK	BL-BK	G-BK
2 Pair	1	R-BL	BL-R	
	2	R-O	O-R	
3 Pair	1	W-BL	BL-W	
	2	W-O	O-W	
	3	W-G	G-W	

→TABLE F←

SELECTION OF INSIDE WIRING CABLE

TYPE CABLE	PAIR SIZE	GAUGE	JACKET			USE		REMARKS
			LIGHT OLIVE GRAY	POLYVINYL CHLORIDE (PVC) PLASTIC	DUCT AND CONDUIT SYSTEMS	TERMINALS AT		
						DAMP LOCATIONS	DRY LOCATIONS	
D Inside Wiring	6, 12, 16, 21, 25, 50, 75, 100	24	•	•	•	•	•	Annealed-copper conductors (plastic insulated) color coded

**TABLE G**  
**D INSIDE WIRING CABLE**  
**CONDUCTOR IDENTIFICATION**

PAIR	RING WIRE	TIP WIRE	BINDER COLOR FOR 25, 50, 75 AND 100 PAIRS
1	BL-W	W-BL	BL-W
2	O-W	W-O	
3	G-W	W-G	
4	BR-W	W-BR	
5	S-W	W-S	
6	BL-R	R-BL	
7	O-R	R-O	
8	G-R	R-G	
9	BR-R	R-BR	
10	S-R	R-S	
11	BL-BK	BK-BL	
12	O-BK	BK-O	
13	G-BK	BK-G	
14	BR-BK	BK-BR	
15	S-BK	BK-S	
16	BL-Y	Y-BL	
17	O-Y	Y-O	
18	G-Y	Y-G	
19	BR-Y	Y-BR	
20	S-Y	Y-S	
21	BL-V	V-BL	
22	O-V	V-O	
23	G-V	V-G	
24	BR-V	V-BR	
25	S-V	V-S	
26-50	Repeat First 25 Colors		O-W
51-75	Repeat First 25 Colors		G-W
76-100	Repeat First 25 Colors		BR-W