

COLOR COMBINATIONS AND USES
WIRING AND CABLING
GENERAL EQUIPMENT REQUIREMENTS

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1. GENERAL

1.01 This section covers the general principles underlying the use of colors in the wiring and cabling of central office equipment.

(a) The color combinations for inside wiring cables, such as D and CF types, do not follow the normal color scheme shown in this section for BU-type wire (A-type cables). In the 1c color combination for BU-type wire, the BL1W lead is used for the tip function and the BL2W for the ring function. In the inside wiring color scheme and the R-type cable color scheme, these functions are indicated by WBL for tip and BLW for ring. When inside wiring cables or R-type cable is used in conjunction with central office equipment, refer to the controlling document which covers the color combinations for these cables.

1.02 This section is reissued to bring the information it contains into agreement with the latest practices. Since this reissue covers a general revision, the arrows ordinarily used to indicate changes have been omitted.

1.03 The requirements in this section shall be followed except as modified by applicable specifications and drawings.

1.04 For gauge, insulation, and use of various coded wire, see Section 800-610-153. For the selection of wires in switchboard cable form, see Section 800-612-162.

2. ABBREVIATIONS FOR WIRE COLORS

2.01 The colors of wires shown on wiring diagrams and connection charts are frequently abbreviated to conserve space. The abbreviations listed herein cover standard WE coded switchboard wire. The abbreviations for commercial wires which have colors not listed herein are covered in Section 005-101-111. The following are the standard abbreviations.

COLOR	ABBREVIATION	COLOR	ABBREVIATION
Black	BK	Red	R
Blue	BL	Slate	S
Brown	BR	Violet	V
Green	G	White	W
Novelty	N	Yellow	Y
Orange	O		

2.02 Abbreviations for combination colors, such as red-green and red-blue-white, are written with a hyphen between the color abbreviations thus: R-G, R-BL-W.

2.03 Novelty colors are abbreviated without reference to the white which distinguishes the novelty color from a solid color; that is, novelty red-white and novelty black-white are abbreviated NR and NBK, respectively.

(a) In the case of pair color combinations 181-200 where the novelty color is used to indicate mate leads, the two leads of a pair on cable connecting charts are frequently referred to as follows.

RING	TIP OR MATE
BL	BL (M)
O	O (M)
G	G (M)
Etc	Etc

2.04 Abbreviations for the colors of plastic-insulated wire (type BU) are the same as for the textile-insulated wires except that the numerals 1, 2, and 3 are used to signify the dots and dashes which are stenciled on a solid-colored background. Example:

- (a) BL1W— Blue wire with single white dots spaced about 3/4 inch apart.
- (b) BL2W— Blue wire with two white dots spaced about 1/8 inch apart; the distance between the pairs of dots is about 3/4 inch.
- (c) BL3W— Blue wire with white dashes about 1/4 inch long spaced about 3/4 inch apart.

3. COLOR COMBINATIONS

A. General

3.01 If all of the conductors in a switchboard cable or local cable form were of the same color, it would obviously be impossible to correctly connect them to apparatus without making continuity tests to identify the ends. The use of differently colored conductors thus facilitates connecting. The use of colors also is frequently of considerable assistance to maintenance.

B. Makeup of Wire Colors

3.02 Served Textile Insulated Wires: In wires of this type, in which the outer textiles are wound spirally, there is a limited number of solid colors. Mixed colors are obtained by combinations of differently colored thread bands, generally of about the same width, and all the colors are included in the designations. Examples are: orange, blue, blue-white, blue-white-red, and brown-slate-red.

3.03 Novelty Tracer: In addition to combining basic colors as described in paragraph 2.02, use has been made of what is called a novelty tracer to further facilitate selection of wires. Such a tracer is introduced in one wire of a pair when two wires paired together are otherwise of the same color. For example, a blue-white wire is paired with a second blue-white wire having a novelty tracer. To form a tracer, threads of two colors are twisted together to produce a novelty or speckled effect so that the tracer is not confused with the basic colors. Conventionally, one of the two colors in the tracer has always been white and, for brevity, white has been ignored in the designation. Thus, we say, "blue-white, novelty red" rather than "blue-white, novelty red-white."

3.04 Cotton-Braided Insulated Wires (except hookup wire per KS specification): In wires having an outer cotton braid, the colors do not appear in spiral bands; wires of mixed colors have a mottled appearance, depending on the spindle pattern in the braiding machine. Two-color wires have equal quantities of each color. In 3-color wires, the first color occupies one half of the area, while each of the other two colors occupies one quarter of the area. Like wires having an outer serving, all the colors are includ-

ed in the color designation. Examples are: black, yellow-green, and blue-orange-red. An exception is in jacketed cables where the standard sequence (blue, orange, green, etc) is used, and red is introduced in the second wire of the pair to serve the same purpose as a novelty tracer. For solid colors and for two basic colors, the red is actually a tracer of only a few strands.

3.05 Cotton-Braided Hookup Wires per KS Specifications:

In hookup wires insulated with polyvinyl chloride and a cotton braid, of which KS-13385 is typical, colors are obtained by solid colors and combinations of single color backgrounds and tracer colors. Two-color combinations are obtained by a background color and one tracer, the second color in each case being the tracer. Three colors are obtained by a background color and two tracers, the second and third colors being the tracers. Examples are: blue, orange, orange-blue, and orange-green. This system differs from that generally used in glass-braided hookup wires only in that there are a variety of single colors and more than one background color is used to obtain mixed colors.

3.06 Plastic-Insulated Wire (type BU):

Wires of this type, in which the outer textile insulation is omitted, are available in a limited number of solid colors. Multicolored combinations are obtained by using colored dots and dashes on solid-color backgrounds. Type BU wire is available in "preferred" and "conversion" color categories, as follows.

- (a) Preferred colors are used wherever plastic-insulated wire is applicable, except on drawings which specify "conversion" (textile) colors per category (b), below. The numeral 1, 2, or 3 is placed between the letters in the preferred color designations for identification. The dots, dashes, and numerals have a significance in the forming and reading of the color designations.

Examples:

FUNCTION	COLOR CODE	DESCRIPTION
Tip	BL1W	A blue wire with single white dots spaced about 3/4 inch apart

FUNCTION	COLOR CODE	DESCRIPTION
Ring	BL2W	A blue wire with two white dots spaced about 1/8 inch apart; the distance between pairs of dots is about 3/4 inch
Singles	BL3W	A blue wire with white dashes about 1/4 inch long spaced about 3/4 inch apart

- (b) Conversion colors have restricted applications. They shall be assigned only on drawings that were initially prepared using type C (Mfr Disc), BG (Mfr Disc), or BW wire. Current equipment design permits the use of PVC-insulated wire. If changes other than to specify BU wire in the manufacturing information are made, preferred colors per category (a), above, shall be used instead of the conversion colors. The conversion color designations are the same as the textile wire designations. In wires designated by two or three colors, one color is that of the insulation and the other one or two colors refer to the ink dashes on the surface. The first-named color is not necessarily the insulation color. To obtain maximum distinguishability, the lightest color is always the insulation color.

3.07 Irradiated Plastic-Insulated Wire (type DP):

Wires of this type fall into two main categories: (1) preferred colors and (2) conversion colors.

- (a) The preferred color scheme comes in solid and bicolored combinations. Bicolored combinations are obtained by using colored dashes on solid color background. The first-named color is not necessarily the color of the solid insulation.

- (b) Conversion colors are restricted to applications that were initially prepared for type C (Mfr Disc), BG (Mfr Disc), or BW wire. Current design now permits the use of type DP. Tricolored wire of the C, BG, or BW wire is not convertible to type DP and shall remain the BW type.

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C. Color Combinations for Switchboard Cables

3.08 In switchboard cables, the colors and sequence of their arrangement have been standardized and codified. The single wires and paired wires have been given separate sets of color combinations and in each case the combinations have been assigned a definite

combination number. Spare wires are given a distinctive set of color combinations.

3.09 *Served Textile-Insulated Wires:* Color combinations for single and paired conductors with served textile insulation are shown in Table A. Color combinations for the spare wires are shown in Table B.

TABLE A

COLOR COMBINATIONS FOR WIRES WITH SERVED TEXTILE INSULATION

Basic Colors

Basic colors 1-20 are used in making up the color combinations.

Example: 1=blue, 2=orange, 3=green, etc.

Single-Wire Color Combinations

A total of 20 color combinations is provided by combining each of the basic colors with a red tracer.

Paired-Wire Color Combinations

Fixed Color Combinations: In the fixed color combinations, the basic colors are confined to one wire of the pair, the other wire being white. There are 20 such paired-wire color combinations, provided by pairing each of the 20 basic colors in turn with white. In any pair, the white wire is commonly called the "tip" wire and the basic (or single wire) color is called the "ring". The white wire is also known in shop parlance as the "mate".

Example:

COMBN NO	TIP COLOR	RING COLOR
1-20	White	Basic colors 1-20 (blue, orange, green, etc)

Novelty Color Combinations: In the novelty red tracer type of paired color combinations, the basic color is used in both wires of the pair and a novelty red tracer (a red tracer spotted with a few strands of white) is placed in one conductor to distinguish one from the other. There are 20 such paired-wire color combinations, consisting of the 20 basic colors paired with the same basic colors having a novelty red tracer, the latter being used as the "mate" or tip leads.

Example:

COMBN NO	TIP COLOR	RING COLOR
181-200	Basic colors 1-20 with novelty red tracer	Basic colors 1-20

Complete Color Combinations for Single and Paired Wires

BASIC COLORS		SINGLE RED TRACER	PAIRED WITH WHITE	PAIRED WITH SAME BASIC COLOR HAVING NOVELTY RED TRACER
COMBN NO	COLORS			
1	Blue	1	1	181
2	Orange	2	2	182
3	Green	3	3	183
4	Brown	4	4	184
5	Slate	5	5	185
6	Blue-White	6	6	186
7	Blue-Orange	7	7	187
8	Blue-Green	8	8	188
9	Blue-Brown	9	9	189
10	Blue-Slate	10	10	190
11	Orange-White	11	11	191
12	Orange-Green	12	12	192
13	Orange-Brown	13	13	193
14	Orange-Slate	14	14	194
15	Green-White	15	15	195
16	Green-Brown	16	16	196
17	Green-Slate	17	17	197
18	Brown-White	18	18	198
19	Brown-Slate	19	19	199
20	Slate-White	20	20	200

TABLE B

COLOR COMBINATIONS FOR SPARE WIRES WITH SERVED TEXTILE INSULATION

To distinguish spare wires from other wires, the colors red, white, and black are used, either singly or in combination with each other. The spare wire color combinations are as follows.			
SPARE SINGLES		SPARE PAIRS	
COMBN NO	COLORS	COMBN NO	COLORS
1	Red-White	1	White paired with Red
2	Black-White	2	White paired with Black
3	Red-Black	3	Red paired with Black
4	Red-Black-White	4	Red-White paired with White
		5	Red-White paired with Red
		6	Red-White paired with Black
		7	Black-White paired with White
		8	Black-White paired with Red
		9	Black-White paired with Black
		10	Red-Black paired with White
		11	Red-Black paired with Red
		12	Red-Black paired with Black

- 3.10 **Cotton-Braided Insulated Wires:** Color combinations for paired and tripled conductors with braided insulation are shown in Table C.

TABLE C

**COLOR COMBINATIONS FOR WIRES WITH BRAIDED INSULATION
(TYPES 400M TO 405M AND 450M TO 459M)**

Color combinations of paired and tripled switchboard cable conductors having braided insulation are as follows. The braided insulation on these conductors makes the use of novelty colors impracticable, and therefore, a red tracer is used instead of the novelty red; otherwise, these combinations conform with pair combinations 181 to 200 used for cables with served insulation wire.						
PAIRS			TRIPLES			
COMBN NO	COLORS		COMBN NO	COLORS		
	TIP	RING		TIP	RING	SLEEVE
1b	Blue-Red	Blue	1b	White	Blue	Blue-Red
2b	Orange-Red	Orange	2b	White	Orange	Orange-Red
3b	Green-Red	Green	3b	White	Green	Green-Red
4b	Brown-Red	Brown	4b	White	Brown	Brown-Red
5b	Slate-Red	Slate	5b	White	Slate	Slate-Red
6b	Blue-White-Red	Blue-White	6b	White	Blue-White	Blue-White-Red
7b	Blue-Orange-Red	Blue-Orange	7b	White	Blue-Orange	Blue-Orange-Red
8b	Blue-Green-Red	Blue-Green	8b	White	Blue-Green	Blue-Green-Red
9b	Blue-Brown-Red	Blue-Brown	9b	White	Blue-Brown	Blue-Brown-Red
10b	Blue-Slate-Red	Blue-Slate	10b	White	Blue-Slate	Blue-Slate-Red
11b	Orange-White-Red	Orange-White				
12b	Orange-Green-Red	Orange-Green				
13b	Orange-Brown-Red	Orange-Brown				
14b	Orange-Slate-Red	Orange-Slate				
15b	Green-White-Red	Green-White				
16b	Green-Brown-Red	Green-Brown				
17b	Green-Slate-Red	Green-Slate				
18b	Brown-White-Red	Brown-White				
19b	Brown-Slate-Red	Brown-Slate				
20b	Slate-White-Red	Slate-White				

3.11 *Plastic-Insulated Wires (type BU and BY)*: Color combinations for plastic-insulated conductors (except 741A and 742A cables), are shown in Table D.

TABLE D

COLOR COMBINATIONS FOR PLASTIC INSULATED WIRE (TYPE BU AND BY)

PAIRS			SINGLES	SPARES			
COMBN NO	TIP	RING		SPARE PAIRS			SPARE SINGLES
			COMBN NO	TIP	RING		
1c	BL1W	BL2W	BL3W	1c	W1BK	W2BK	W3BK
2c	O1W	O2W	O3W	2c	W1Y	W2Y	W3Y
3c	G1W	G2W	G3W	3c	R1W	R2W	R3W
4c	BR1W	BR2W	BR3W	4c	R1Y	R2Y	R3Y
5c	S1W	S2W	S3W	5c	R1BK	R2BK	R3BK
6c	BL1R	BL2R	BL3R				
7c	O1R	O2R	O3R				
8c	G1R	G2R	G3R				
9c	BR1R	BR2R	BR3R				
10c	S1R	S2R	S3R				
11c	BL1BK	BL2BK	BL3BK				
12c	O1BK	O2BK	O3BK				
13c	G1BK	G2BK	G3BK				
14c	BR1BK	BR2BK	BR3BK				
15c	S1BK	S2BK	S3BK				
16c	BL1Y	BL2Y	BL3Y				
17c	O1Y	O2Y	O3Y				
18c	G1Y	G2Y	G3Y				
19c	BR1Y	BR2Y	BR3Y				
20c	S1Y	S2Y	S3Y				

Note 1: In color codes for pairs, the numeral 1 signifies single dot marking. Example: BL1W is a blue wire with single white dots spaced about 3/4 in. apart. The numeral 2 signifies double dot marking. Example: O2R is an orange wire with two red dots spaced about 1/8 in. apart; the distance between the pairs of dots is about 3/4 in.

Note 2: In color codes for singles, the numeral 3 signifies dash markings. Example: G3BK is a green wire with black dashes about 1/4 in. long spaced about 3/4 in. apart.

- 3.12 **Irradiated Plastic-Insulated Wire** (type DM, used only in R-type cable): Color combinations for irradiated plastic-insulated (polyvinyl chloride) conductors (IPVC) are shown in Table E.

TABLE E

**COLOR COMBINATIONS FOR IPVC INSULATED WIRE
(TYPE DM, USED ONLY IN R-TYPE CABLE)**

COMBN NO	PAIRS			SPARES			
	TIP	RING	SINGLES	SPARE PAIRS			SPARE SINGLES
				COMBN NO	TIP	RING	
26c	W-BL	BL-W	W3BL	6c	BK-W	W-BK	W3BK
27c	W-O	O-W	W3O	7c	Y-W	W-Y	W3Y
28c	W-G	G-W	W3G	8c	W-R	R-W	W3R
29c	W-BR	BR-W	W3BR	9c	Y-R	R-Y	Y3R
30c	W-S	S-W	W3S	10c	BK-R	R-BK	
31c	R-BL	BL-R	R3BL				
32c	R-OR	O-R	O3R				
33c	R-G	G-R	R3G				
34c	R-BR	BR-R	BR3R				
35c	R-S	S-R	S3R				
36c	BK-BL	BL-BK	BL3BK				
37c	BK-O	O-BK	O3BK				
38c	BK-G	G-BK	G3BK				
39c	BK-BR	BR-BK	BR3BK				
40c	BK-S	S-BK	S3BK				
41c	Y-BL	BL-Y	Y3BL				
42c	Y-O	O-Y	Y3O				
43c	Y-G	G-Y	Y3G				
44c	Y-BR	BR-Y	Y3BR				
45c	Y-S	S-Y	Y3S				
46c			V3BL				
47c			V3O				
48c			V3G				
49c			V3BR				
50c			V3S				

Note 1: In color codes for pairs, the dash between colors indicates a base wire of the first color with ink marking of the second color about 0.019 in. long spaced about 0.690 in. apart.

Note 2: In color codes for singles, the numeral 3 between colors indicates a base wire of the first color and sets of three dots of the second color. The dots are about 0.080 in. long, spaced 0.200 in. from each other. Each set of three is spaced 0.300 in. from the next set.

3.13 *Quadded-wire color combinations* in toll cables are shown in Table F.

TABLE F
COLOR COMBINATIONS FOR 500R THROUGH 506R CABLES
(QUADED-TYPE DM WIRE)

COMBN NO	PAIR NO 1		PAIR NO 2	
	TIP	RING	TIP	RING
26c	W-BL	BL-W	W3BL	BL3W
27c	W-O	O-W	W3O	O3W
28c	W-G	G-W	W3G	G3W
29c	W-BR	BR-W	W3BR	BR3W
30c	W-S	S-W	W3S	S3W
31c	R-BL	BL-R	R3BL	BL
32c	R-O	O-R	R3O*	O
33c	R-G	G-R	R3G	G
34c	R-BR	BR-R	R3BR*	BR
35c	R-S	S-R	R3S*	S
36c	BK-BL	BL-BK	BK3BL*	W
37c	BK-O†	O-BK	BK3O*	R
38c	BK-G	G-BK	BK3G*	BK
39c	BK-BR	BR-BK	BK3BR*	Y
40c	BK-S	S-BK	BK3S*	V
41c	Y-BL	BL-Y	Y3BL	BL3Y
42c	Y-O	O-Y	Y3O	O3Y
43c	Y-G	G-Y	Y3G	G3Y
44c	Y-BR	BR-Y	Y3BR	BR3Y
45c	Y-S	S-Y	Y3S	S3Y

*In these instances, the second color is the base color and the first color designates the ink mark. Example: R3O is orange wire with red ink marks.

†BK-O is W base wire with alternating BK-O ink marks.

3.14 Polyethylene-Insulated Conductors and BY Conductors of 741A and 742A Cables: Color combinations for the above conductors are shown in Table G.

TABLE G
COLOR COMBINATIONS FOR
750A THROUGH 763A and 754E CABLES

PAIR	BASIC COLOR	PAIRED WITH
1	Blue	White
2	Orange	White
3	Green	White
4	Brown	White
5	Slate	White
20A	Brown	Slate
21	Blue	Red
22	Orange	Red
23	Green	Red
24	Brown	Red
25	Slate	Red
41	Blue	Black
42	Orange	Black
43	Green	Black
44	Brown	Black
45	Slate	Black
45A	White	Black
201	Blue	Yellow
202	Orange	Yellow
203	Green	Yellow
204	Brown	Yellow
205	Slate	Yellow

4. USE OF COLOR COMBINATIONS

4.01 When a switchboard cable carries a group of like circuits, as illustrated in paragraphs 4.03 through 4.09, the circuits are connected in numerical sequence in accordance with the numerical sequence of the color combinations. Cables are made using color combinations especially adapted to 1-wire circuits, 2-wire circuits, etc, and are selected to suit the needs of the circuits which they carry.

(a) In paragraphs 4.03 through 4.09, "first and odd-numbered circuits" and "even-numbered circuits" mean circuits 1, 3, 5, 7, and 2, 4, 6, 8, etc, in the order in which the circuits which the particular cable serves are connected, rather than the actual circuit numbers as

stamped on the equipment. The abbreviations F, N, P, and IPVC used in the tables indicate Fixed, Novelty, Plastic, and Irradiated Polyvinyl Chloride color codes, respectively.

4.02 When a switchboard cable carries a group of functional leads (some of which may be in numerical sequence and some of which may be random functionals) that comprise an interconnecting path for circuit or equipment operation, the assignment of color combinations to those functionals should be dependent upon the following considerations.

- (1) Maintenance of pairing requirements.
- (2) The elimination of splitting paired conductors over fanning strip holes or apparatus locations.
- (3) The recognition of apparatus patterns for both ends of the cable so as to provide the best sequencing of color combinations.

4.03 One-Wire Circuits: When switchboard cables are used for 1-wire circuits, the wires of the "singles" group of the cables are assigned in numerical color sequence to consecutively numbered circuits unless otherwise specified. In the case of switchboard cables having paired wires, the "tip" color wires are connected to the first and all odd-numbered circuits and the "ring" color wires are connected to the even-numbered circuits. Example:

CKT NO	CODE	COLOR COMBN	MR, SLEEVE, ETC
1	IPVC	26c	W-BL
	N	181	BL-NR
	P	1c	BL1W
2	IPVC	26c	BL-W
	N	181	BL
	P	1c	BL2W
3	IPVC	27c	W-O
	N	182	O-NR
	P	2c	O1W
4	IPVC	27c	O-W
	N	182	O
	P	2c	O2W

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4.04 Two-wire circuits are usually cabled with switchboard cables having paired wires.

Example:

CKT NO	CODE	COLOR-COMBN	TIP	RING
1	IPVC	26c	W-BL	BL-W
	N	181	BL-NR	BL
	P	1c	BL1W	BL2W
2	IPVC	27c	W-O	O-W
	N	182	O-NR	O
	P	2c	O1W	O2W

4.05 Three-wire circuits are usually cabled with switchboard cables having paired and single wires.

Example:

CKT NO	CODE	COLOR COMBN		T	R	S
		PAIR	SINGLE			
1	IPVC	26c	26c	W-BL	BL-W	W3BL
	N	181	1	BL-NR	BL	R-BL
	P	1c	1c	BL1W	BL2W	BL3W
2	IPVC	27c	27c	W-O	O-W	W3O
	N	182	2	O-NR	O	R-O
	P	2c	2c	O1W	O2W	O3W

4.06 *Four-wire circuits* are usually cabled with switchboard cables having two groups of paired wires. Example:

NOVELTY, PLASTIC, AND IPVC COLOR COMBINATIONS

2-LEG FORM—10 CIRCUITS PER LEG							
CKT NO	CODE	COLOR COMBN		T	R	S	MR
		PAIR	SECT				
1	N	181	BL	BL-NR	BL	O-W-NR	O-W
	P	1c 11c		BL1W	BL2W	BL1BK	BL2BK
	IPVC	26c 36c		W-BL	BL-W	BK-BL	BL-BK
2	N	182	BL	O-NR	O	O-G-NR	O-G
	P	2c 12c		O1W	O2W	O1BK	O2BK
	IPVC	27c 37c		W-O	O-W	BK-O	O-BK
10	N	190	BL	BL-S-NR	BL-S	S-W-NR S-W-NR	S-W
	P	10c 20c		S1R	S2R	S1Y	S2Y
	IPVC	35c 45c		R-S	S-R	Y-S	S-Y
11	N	181	O	BL-NR	BL	O-W-NR	O-W
	P	1c 11c		BL1W	BL2W	BL1BK	BL2BK
	IPVC	26c 36c		W-BL	BL-W	BK-BL	BL-BK
19	N	189	O	BL-BR-NR	BL-BR	BR-S-NR	BR-S
	P	9c 19c		BR1R	BR2R	BR1Y	BR2Y
	IPVC	34c 44c		R-BR	BR-R	Y-BR	BR-Y
20	N	190	O	BL-S-NR	BL-S	S-W-NR	S-W
	P	10c 20c		S1R	S2R	S1Y	S2Y
	IPVC	35c 45c		R-S	S-R	Y-S	S-Y

SINGLE-LEG FORM—20 CIRCUITS							
CKT NO	CODE	COLOR COMBN	SECT	T	R	S	MR
1	N	181 182	BL O	BL-NR	BL	O-NR	O
	P	1c 2c	BL O	BL1W	BL2W	O1W	O2W
	IPVC	26c 27c	BL O	W-BL	BL-W	W-O	O-W
2	N	182 183	BL O	O-NR	O	G-NR	G
	P	2c 3c	BL O	O1W	O2W	G1W	G2W
	IPVC	27c 28c	BL O	W-O	O-W	W-G	G-W
19	N	199 200	BL O	BR-S-NR	BR-S	S-W-NR	S-W
	P	19c 20c	BL O	BR1Y	BR2Y	S1Y	S2Y
	IPVC	44c 45c	BL O	Y-BR	BR-Y	Y-S	S-Y
20	N	200 181	BL O	S-W-NR	S-W	BL-NR	BL
	P	20c 1c	BL O	S1Y	S2Y	BL1W	BL2W
	IPVC	45c 26c	BL O	Y-S	S-Y	W-BL	BL-W

Note: A one-color "slip" arrangement is used to avoid duplicate colors at break-out points.

4.07 Five-wire circuits are usually cabled with switchboard cables having two groups of paired wires separated by a break in color sequence and one group of single wires.

NOVELTY, PLASTIC, AND IPVC COLOR COMBINATIONS

Sectional cables adaptable to 5-wire circuits are of two types: (a) 3-section cables, 2 sections of which contain 20 pairs each while the third section contains 20 singles, and (b) 3-section cables having 2 sections of 20 pairs each with the third section containing 10 pairs. Example:

2-LEG FORM - 10 CIRCUITS PER LEG									
CABLES CONTAINING PAIRS AND SINGLES									
CKT NO	CODE	COLOR COMBN		SECT	T	R	S	M	M1
		PAIR	SINGLE						
1	N	181		BL	BL-NR	BL		O-W-NR	O-W
		191		G			R-BL		
	P	1c		BL	BL1W	BL2W		BL1BK	BL2BK
		11c		G			BL3W		
	IPVC	26c		BL	W-BL	BL-W		BK-BL	BL-BK
		36c		O			W3BL		
2	N	182		BL	O-NR	O		O-G-NR	O-G
		192		G			R-O		
	P	2c		BL	O1W	O2W		O1BK	O2BK
		12c		G			O3W		
	IPVC	27c		BL	W-O	O-W		BK-O	O-BK
		37c		O			W3O		
10	N	190		BL	BL-S-NR	BL-S		S-W-NR	S-W
		200		G			R-BL-S		
	P	10c		BL	S1R	S2R		S1Y	S2Y
		20c		G			S3R		
	IPVC	35c		BL	R-S	S-R		Y-S	S-Y
		45c		G			S3R		
11	N	181		O	BL-NR	BL		O-W-NR	O-W
		191		G			R-O-W		
	P	1c		O	BL1W	BL2W		BL1BK	BL2BK
		11c		G			BL3BK		
	IPVC	26c		O	W-BL	BL-W		BK-BL	BL-BK
		36c		G			BL3BK		
19	N	189		O	BL-BR-NR	BL-BR		BR-S-NR	BR-S
		199		G			R-BR-S		
	P	9c		O	BR1R	BR2R		BR1Y	BR2Y
		19c		G			BR3Y		
	IPVC	34c		O	R-BR	BR-R		Y-BR	BR-Y
		44c		G			Y3BR		
20	N	190		O	BL-S-NR	BL-S		S-W-NR	S-W
		200		G			R-S-W		
	P	10c		O	S1R	S2R		S1Y	S2Y
		20c		G			S3Y		
	IPVC	35c		O	R-S	S-R		Y-S	S-Y
		45c		G			Y3S		

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2-LEG FORM — 10 CIRCUITS PER LEG								
CABLES CONTAINING ONLY PAIRS								
CKT NO	CODE	COLOR COMBN		T	R	S	M	M1
		PAIR	SECT					
1	N	181		BL-NR*	BL		O-W-NR	O-W
		191	BL					
		181(1/2)	G			BL-NR*		
	IPVC	26c		W-BL	BL-W		BK-BL	BL-BK
36c		BL						
		26c(1/2)	G			W-BL*		
2	N	182		O-NR	O		O-G-NR	O-G
		192	BL					
		181(1/2)	G			BL		
	IPVC	27c		W-O	O-W		BK-O	O-BK
37c		BL						
26c(1/2)		G			BL-W			
10	N	190		BL-S-NR	BL-S		S-W-NR	S-W
		200	BL					
		185(1/2)	G			S		
	IPVC	35c		R-S	S-R		Y-S	S-Y
45c		BL						
30c(1/2)		G			S-W			
11	N	181		BL-NR	BL		O-W-NR	O-W
		191	O					
		186(1/2)	G			BL-W-NR		
	IPVC	26c		W-BL	BL-W		BK-BL	BL-BK
36c		O						
31c(1/2)		G			R-BL			
19	N	189		BL-BR-NR	BL-BR		BR-S-NR	BR-S
		199	O					
		190(1/2)	G			BL-S-NR		
	IPVC	34c		R-BR	BR-R		Y-BR	BR-Y
44c		O						
35c(1/2)		G			R-S			
20	N	190		BL-S-NR	BL-S*		S-W-NR	S-W
		200	O					
		190(1/2)	G			BL-S*		
	IPVC	35c		R-S	S-R		Y-S	S-Y
45c		O						
35c(1/2)		G			S-R*			

* Color duplication—leads are to be identified as necessary to facilitate connection.

SINGLE-LEG FORM—20 CIRCUITS									
CABLES CONTAINING PAIRS AND SINGLES									
CKT NO	CODE	COLOR COMBN		SECT	T	R	S	M	M1
		PAIR	SINGLE						
1	N	181 182	1	BL O G	BL-NR	BL	R-BL	O-NR	O
	P	1c 2c	1c	BL O G	BL1W	BL2W	BL3W	O1W	O2W
	IPVC	26c 27c	26c	BL O G	W-BL	BL-W	W3BL	W-O	O-W
2	N	182 183	2	BL O G	O-NR	O	R-O	G-NR	G
	P	2c 3c	2c	BL O G	O1W	O2W	O3W	G1W	G2W
	IPVC	27c 28c	27c	BL O G	W-O	O-W	W3O	W-G	G-W
19	N	199 200	19	BL O G	BR-S-NR	BR-S	R-BR-S	S-W-NR	S-W
	P	19c 20c	19c	BL O G	BR1Y	BR2Y	BR3Y	S1Y	S2Y
	IPVC	44c 45c	44c	BL O G	Y-BR	BR-Y	Y3BR	Y-S	S-Y
20	N	200 181	20	BL O G	S-W-NR	S-W	R-S-W	BL-NR	BL
	P	20c 1c	20c	BL O G	S1Y	S2Y	S3Y	BL1W	BL2W
	IPVC	45c 26c	45c	BL O G	Y-S	S-Y	Y3S	W-BL	BL-W

SINGLE-LEG FORM— 20 CIRCUITS								
CABLES CONTAINING ONLY PAIRS								
CKT NO	CODE	COLOR COMBN		T	R	S	M	M1
		PAIR	SECT					
1	N	181 182 181(1/2)	BL O G	BL-NR*	BL	BL-NR*	O-NR	O
	IPVC	26c 27c 26c(1/2)	BL O G	W-BL	BL-W	W-BL*	W-O	O-W
2	N	182 183 181(1/2)	BL O G	O-NR	O	BL	G-NR	G
	IPVC	27c 28c 26c(1/2)	BL O G	W-O	O-W	BL-W	W-G	G-W
19	N	199 200 190(1/2)	BL O G	BR-S-NR	BR-S	BL-S-NR	S-W-NR	SW
	IPVC	44c 45c 35c(1/2)	BL O G	Y-BR	BR-Y	R-S	Y-S	S-Y
20	N	200 181 190(1/2)	BL O G	S-W-NR	S-W	BL-S	BL-NR	BL
	IPVC	45c 26c 35c(1/2)	BL O G	Y-S	S-Y	S-R	W-BL	BL-W

* Color duplication—leads are to be identified as necessary to facilitate connection.

SINGLE-LEG FORM - 10 CIRCUITS								
CABLE CONTAINING PAIRS AND SINGLES								
CKT NO	CODE	COLOR PAIR	COMBN SINGLE	T	R	S	L	L1
1	N	181 191	1	BL-NR	BL	R-BL	O-W-NR	O-W
	P	1c 11c	1c	BL1W	BL2W	BL3W	BL1BK	BL2BK
	IPVC	26c 36c	26c	W-BL	BL-W	W3BL	BK-BL	BL-BK
2	N	182 192	2	O-NR	O	R-O	O-G-NR	O-G
	P	2c 12c	2c	O1W	O2W	O3W	O1BK	O2BK
	IPVC	27c 37c	27c	W-O	O-W	W3O	BK-O	O-BK

4.08 Six-Wire Circuits: Cables adaptable to 6-wire circuits are of two types:

- (a) Two-section cables, each of which contains 20 pairs and 20 singles, and
- (b) Three-section cables, each of which contains 20 pairs. Example:

NOVELTY AND PLASTIC COLOR COMBINATIONS

Sectional Cables

2-LEG FORM—10 ³ CIRCUITS PER LEG										
CABLES CONTAINING PAIRS AND SINGLES										
CKT NO	CODE	COLOR COMBN		SECT	T	R	S	L	M	M1
		PAIR	SINGLE							
1	N	181 191	1 11	BL	BL-NR	BL	R-BL	O-W-NR	O-W	R-O-W
	P	1c 11c	1c 11c		BL1W	BL2W	BL3W	BL1BK	BL2BK	BL3BK
	IPVC	26c 36c	26c 36c		W-BL	BL-W	W3BL	BK-BL	BL-BK	BL3BK
2	N	182 192	2 12		O-NR	O	R-O	O-G-NR	O-G	R-O-G
	P	2c 12c	2c 12c		O1W	O2W	O3W	O1BK	O2BK	O3BK
	IPVC	27c 37c	27c 37c		W-O	O-W	W3O	BK-O	O-BK	O3BK
10	N	190 200	10 20		BL-S-NR	BL-S	R-BL-S	S-W-NR	S-W	R-S-W
	P	10c 20c	10c 20c		S1R	S2R	S3R	S1Y	S2Y	S3Y
	IPVC	35c 45c	35c 45c		R-S	S-R	S3R	Y-S	S-Y	Y3S
11	N	181 191	1 11	BL-NR	BL	R-BL	O-W-NR	O-W	R-O-W	
	P	1c 11c	1c 11c	BL1W	BL2W	BL3W	BL1BK	BL2BK	BL3BK	
	IPVC	26c 36c	26c 36c	W-BL	BL-W	W3BL	BK-BL	BL-BK	BL3BK	
19	N	189 199	9 19	BL-BR-NR	BL-BR	R-BL-BR	BR-S-NR	BR-S	R-BR-S	
	P	9c 19c	9c 19c	BR1R	BR2R	BR3R	BR1Y	BR2Y	BR3Y	
	IPVC	34c 44c	34c 44c	R-BR	BR-R	BR3R	Y-BR	BR-Y	Y3BR	
20	N	190 200	10 20	BL-S-NR	BL-S	R-BL-S	S-W-NR	S-W	R-S-W	
	P	10c 20c	10c 20c	S1R	S2R	S3R	S1Y	S2Y	S3Y	
	IPVC	35c 45c	35c 45c	R-S	S-R	S3R	Y-S	S-Y	Y3S	

2-LEG FORM - 10 CIRCUITS PER LEG									
CABLES CONTAINING ONLY PAIRS									
CKT NO	CODE	COLOR COMBN		T	R	S	L	M	M1
		PAIR	SECT						
1	N	181 182 183	BL	BL-NR	BL	O-NR	O	G-NR	G
	IPVC	26c 27c 28c		W-BL	BL-2	W-O	O-W	W-G	G-W
2	N	184 185 186	BL	BR-NR	BR	S-NR	S	BL-W-NR	BL-W
	IPVC	29c 30c 31c		W-BR	BR-W	W-S	S-W	R-BL	BL-R
7	N	199 200	O	BR-S-NR	BR-S	S-W-NR	S-W		
		181						BL-NR	BL
	IPVC	44c 45c 26c	BL	Y-BR	BR-Y	Y-S	S-Y	W-BL	BL-W
8	N	182 183 184	O	O-NR	O	G-NR	G	BR-NR	BR
	IPVC	27c 28c 29c		W-O	O-W	W-G	G-W	W-BR	BR-W
10	N	188 189 190	O	BL-G-NR	BL-G	BL-BR-NR	BL-BR	BL-S-NR	BL-S
	IPVC	33c 34c 35c		R-G	G-R	R-BR	BR-R	R-S	S-R
11	N	191 192 193	O	O-W-NR	O-W	O-G-NR	O-G	O-BR-NR	O-BR
	IPVC	36c 37c 38c		BK-BL	BL-BK	BK-O	O-BK	BK-G	G-BK
14	N	200	G	S-W-NR	S-W				
		181 182				BL-NR	BL	O-NR	O
	IPVC	45c 26c 27c	O	Y-S	S-Y	W-BL	BL-W	W-O	O-W
19	N	195 196 197	G	G-W-NR	G-W	G-BR-NR	G-BR	G-S-NR	G-S
	IPVC	40c 41c 42c		BK-S	S-BK	Y-BL	BL-Y	Y-O	O-Y
20	N	198 199 200	G	BR-W-NR	BR-W	BR-S-NR	BR-S	S-W-NR	S-W
	IPVC	43c 44c 45c		Y-G	G-Y	Y-BR	BR-Y	Y-S	S-Y

SINGLE-LEG FORM — 20 CIRCUITS										
CABLES CONTAINING PAIRS AND SINGLES										
CKT NO	CODE	COLOR COMBN			T	R	S	L	M	M1
		PAIR	SINGLE	SECT						
1	N	181 182	1 2	BL O	BL-NR	BL	R-BL	O-NR	O	R-O
	P	1c 2c	1c 2c	BL O	BL1W	BL2W	BL3W	O1W	O2W	O3W
	IPVC	26c 27c	26c 27c	BL O	W-BL	BL-W	W3BL	W-O	O-W	W3O
2	N	182 183	2 3	BL O	O-NR	O	R-O	G-NR	G	R-G
	P	2c 3c	2c 3c	BL O	O1W	O2W	O3W	G1W	G2W	G3W
	IPVC	27c 28c	27c 28c	BL O	W-O	O-W	W3O	W-G	G-W	W3G
19	N	199 200	19 20	BL O	BR-S-NR	BR-S	R-BR-S	S-W-NR	S-W	R-S-W
	P	19c 20c	19c 20c	BL O	BR1Y	BR2Y	BR3Y	S1Y	S2Y	S3Y
	IPVC	44c 45c	44c 45c	BL O	Y-BR	BR-Y	Y3BR	Y-S	S-Y	Y3S
20	N	200 181	20 1	BL O	S-W-NR	S-W	R-S-W	BL-NR	BL	R-BL
	P	20c 1c	20c 1c	BL O	S1Y	S2Y	S3Y	BL1W	BL2W	BL3W
	IPVC	45c 26c	45c 26c	BL O	Y-S	S-Y	Y3S	W-BL	BL-W	W3BL

4.09 Wires of cables not covered herein, except as covered in paragraph 4.02, should be connected as nearly as possible in accordance with the color arrangement given in the following table.

SINGLE-LEG FORM—20 CIRCUITS									
CABLES CONTAINING ONLY PAIRS									
CKT NO	CODE	COLOR COMBN		T	R	S	L	M	M1
		PAIR	SECT						
1	N	181 182 183	BL O G	BL-NR	BL	O-NR	O	G-NR	
	IPVC	26c 27c 28c	BL O G	W-BL	BL-W	W-O	O-W	W-G	G-W
2	N	182 183 184	BL O G	O-NR	O	G-NR	G	BR-NR	BR
	IPVC	27c 28c 29c	BL O G	W-O	O-W	W-G	G-W	W-BR	BR-W
19	N	199 200 181	BL O G	BR-S-NR	BR-S	S-W-NR	S-W	BL-NR	BL
	IPVC	44c 45c 26c	BL O G	Y-BR	BR-Y	Y-S	S-Y	W-BL	BL-W
20	N	200 181 182	BL O G	S-W-NR	S-W	BL-NR	BL	O-NR	O
	IPVC	45c 26c 27c	BL O G	Y-S	S-Y	W-BL	BL-W	W-O	O-W

5. COLORS IN SWITCHBOARD WIRE FOR LOOSE WIRING AND LOCAL CABLE PURPOSES

5.01 Wire for loose wiring and local cables is colored similar to switchboard cable wire, but the colors are not codified since the colors of the individual wires are given on the wiring diagrams.

5.02 A few color combinations which do not occur in served wire switchboard cables are used in loose wiring and local cables. Examples of such combinations are red paired with red-green, orange paired with orange-white, and black paired with black-white.

5.03 The following lists cover the available colors for the commonly used types of switchboard wire which are stocked. Colors should be used in the sequence shown, where possible, without the introduction of excessive "F" stitches.

TYPE P—NO. 24 AND 22 GAUGE (SHIELDED—PVC JACKET)

(No. 22 gauge will be furnished unless otherwise specified)

Singles

Red	Red-Slate
Black	Red-Green
Slate	

Pairs

Slate & Red-Slate	Yellow & Yellow-Green
Red & Red-Green	Orange & Red-Orange
Brown & Red-Brown	Blue & Red-Blue
Black & Red-Black	

Triples

Brown, Red-Brown & Red-Slate
 Yellow, Yellow-Green & Red-Green
 Blue, Blue-White & White

TYPE AM—NO. 22 GAUGE

Singles

Black	Red-Slate
Red-Black	Orange
Yellow	Green-White
Yellow-Green	Red-White
Red	Black-Brown
Red-Green	Slate-White
Green	Orange-Slate
Blue	Blue-White
Brown	Blue-Orange
Slate	Blue-Green
Red-Blue	Blue-Slate
Red-Orange	Orange-White
Red-Brown	Orange-Slate

Pairs

Black & Red-Black	Slate & Slate-White
Yellow & Yellow-Green	Blue & Blue-White
Red & Red-Green	Brown & Brown-White
Brown & Red-Brown	Red & Black
Blue & Red-Blue	Black & Black-White
Orange & Red-Orange	
Green & Green-White	

Triples

Yellow, Red & Red-Green
 Yellow, Yellow-Green & Red-Green
 Brown, Red-Brown & Red-Slate
 Slate, Red & Black

Four-Wire Twist

Yellow, Yellow-Green, Red & Red-Green
 Black, White, Red & Green

TYPE AM—NO. 20 GAUGE

Singles

Same colors as listed for No. 22 gauge type AM wire.

Pairs

Same colors as listed for No. 22 gauge type AM wire.

Triples

Same colors as listed for No. 22 gauge type AM wire.

Quadded Wire (multiple twin)

Yellow, Yellow-Green & Red, Red-Green

Five-Wire Twist

Yellow, Yellow-Green, Brown, Red-Brown & Black

TYPE AM—NO. 19 GAUGE**Singles**

Same colors as listed for No. 22 gauge type AM wire.

Pairs

Same colors as listed for No. 22 gauge type AM wire.

Triples

Yellow, Red & Red-Green
Yellow, Yellow-Green & Red-Green
Orange, Black & Red

Four-Wire Twist

Yellow, Yellow-Green, Red & Red-Green

TYPE AM—NO. 16 GAUGE**Singles**

Same colors as listed for No. 22 gauge type AM wire.

Pairs

Same colors as listed for No. 22 gauge type AM wire.

Triples

Same colors as listed for No. 22 gauge type AM wire.

Four-Wire Twist

Yellow, Yellow-Green, Red & Red-Green

TYPE AM—NO. 14 GAUGE**Singles**

Same color as listed for No. 22 gauge type AM wires.

Pairs

Black & Red-Black	Slate & Red-Slate
Yellow & Yellow-Green	Blue & Red-Blue
Red & Red-Green	Red & Black
Brown & Red-Brown	Black & Black-White

Triples

Yellow, Yellow-Green & Red-Green
Brown, Red-Brown & Red-Slate
Orange, Orange-Red & Green

Four-Wire Twist

Yellow, Yellow-Green, Red & Red-Green

TYPE BH—NO. 24 GAUGE**Singles**

Blue	Orange-Slate
Orange	Orange-Black
Green	Green-White
Brown	Green-Brown
Slate	Green-Slate
White	Green-Black
Red	Brown-White
Black	Brown-Slate
Yellow	Red-White
Blue-White	Red-Blue
Blue-Orange	Red-Orange
Blue-Green	Red-Green
Blue-Brown	Red-Brown
Blue-Slate	Red-Slate
Orange-White	Red-Black
Orange-Green	Yellow-Green
Orange-Brown	Black-Brown

Pairs

Yellow & Yellow-Green	Green & Green-White
Slate & Red-Slate	Black & Red-Black

Triples

Yellow, Yellow-Green & Red-Green

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TYPE BH—NO. 22 GAUGE

Singles

Same colors as listed for No. 20 gauge type BH wire.

Pairs

Orange & Orange-White, otherwise same colors as listed for No. 20 gauge type BH wire.

Triples

Yellow, Yellow-Green & Red-Green
 Green, Orange & Red-Orange
 Slate, Red & Black
 Red, Black & White
 Black, Brown & Red-Brown
 Red-Slate, Brown & Red-Brown
 Yellow, Red & Red-Green

Four-Wire Twist

Blue, Red-Blue, Slate & Red-Slate
 Black, White, Red & Green
 Yellow, Yellow-Green, Red & Red-Green

Quadded Wire (multiple twin)

Yellow, Yellow-Green & Red, Red-Green

TYPE BH—NO. 20 GAUGE

A novelty black tracer is used in the cotton braid of No. 20 gauge wire to distinguish the No. 20 gauge from the No. 22 gauge wire.

Singles

Blue
 Orange
 Green
 Brown
 Slate
 White
 Red
 Black
 Yellow
 Blue-White
 Blue-Orange
 Blue-Green
 Blue-Brown
 Blue-Slate
 Orange-White

Orange-Slate
 Green-White
 Brown-White
 Red-White
 Red-Blue
 Red-Orange
 Red-Green
 Red-Brown
 Red-Slate
 Red-Black
 Yellow-Green
 Slate-White
 Black-Brown
 Black-White

Pairs

Blue & Blue-White	Red & Black
Blue & Red-Blue	Red & Red-White
Orange & Red-Orange	Red & Red-Orange
Green & Green-White	Red & Red-Green
Brown & Brown-White	Yellow & Yellow-Green
Brown & Red-Brown	Black & Black-White
Slate & Slate-White	Black & Red-Black
Slate & Red-Slate	

Triples

Yellow, Yellow-Green & Red-Green
 Orange, Black & Red-Black
 Green, Orange & Red-Orange
 Slate, Red & Black
 Black, Brown & Red-Brown
 Red-Slate, Brown & Red-Brown
 Yellow, Red & Red-Green

Quadded Wire (multiple twin)

Yellow, Yellow-Green & Red, Red-Green

Five-Wire Twist

Yellow, Yellow-Green, Brown, Red-Brown & Black

TYPE BU—NO. 24 AND 22 GAUGE

The following conditions apply to the listings of type BU wire colors:

- (a) The usage of preferred and conversion colors shall be in accordance with paragraph 4.06.
- (b) Except for solid colors, there shall be no mixing of preferred and conversion colors within an equipment unit.
- (c) Type BU wire is not recommended for use in surface wiring applications.
- (d) The designations for some conversion color combinations deviate from the convention of specifying base color first and, in all such cases, the conventional color designation is shown below in parentheses. However, designations in parentheses are for information only, and shall not be shown on drawings. On systems drawings employing conversion colors,

lead designations shall adhere to the textile insulation color code.

(e) Solid colors are for use with either preferred or conversion colors. For convenience, however, they will be listed under the preferred colors only.

Singles — Preferred Colors

Blue	Green 3 Yellow
Orange	Brown 3 Yellow
Green	Slate 3 Yellow
Brown	Blue 2 White
Slate	Orange 2 White
White	Green 2 White
Red	Brown 2 White
Black	Slate 2 White
Blue 3 White	Blue 2 Red
Orange 3 White	Orange 2 Red
Green 3 White	Green 2 Red
Brown 3 White	Brown 2 Red
Slate 3 White	Slate 2 Red
Blue 3 Red	Blue 2 Black
Orange 3 Red	Orange 2 Black
Green 3 Red	Green 2 Black
Brown 3 Red	Brown 2 Black
Slate 3 Red	Slate 2 Black
Blue 3 Black	Blue 2 Yellow
Orange 3 Black	Green 2 Yellow
Green 3 Black	Brown 2 Yellow
Brown 3 Black	Slate 2 Yellow
Slate 3 Black	Orange 2 Yellow
Blue 3 Yellow	Orange 3 Yellow

Singles — Conversion Colors

Red-White (White-Red)
 Red-Blue
 Red-Orange (Orange-Red)
 Red-Green
 Red-Brown (Brown-Red)
 Red-Slate (Slate-Red)
 Blue-White (White-Blue)
 Blue-Orange (Orange-Blue)
 Blue-Green (Green-Blue)
 Blue-Brown (Brown-Blue)
 Blue-Slate (Slate-Blue)
 Orange-White (White-Orange)
 Orange-Green
 Orange-Brown
 Orange-Slate (Slate-Orange)
 Green-White (White-Green)
 Green-Brown (Brown-Green)

Green-Slate (Slate-Green)
 Brown-White (White-Brown)
 Brown-Slate (Slate-Brown)
 Slate-White (White-Slate)
 Black-White (White-Black)
 Black-Orange (Orange-Black)
 Black-Green (Green-Black)
 Black-Slate (Slate-Black)
 Red-Black
 Black-Brown (Brown-Black)
 Black-Blue (Blue-Black)
 Red-Blue-White (White-Red-Blue)
 Red-Orange-White (White-Red-Orange)
 Red-Green-White (White-Red-Green)
 Red-Brown-White (White-Red-Brown)
 Red-Black-Orange (Orange-Red-Black)
 Red-Black-Green
 Red-Black-Slate (Slate-Red-Black)
 Black-Orange-Green (Orange-Black-Green)
 Black-Orange-Slate (Slate-Black-Orange)
 Black-Orange-White (White-Black-Orange)
 Black-Green-Slate (Slate-Black-Green)
 Black-Green-White (White-Black-Green)
 Black-Orange-Brown (Orange-Black-Brown)
 Red-Black-Blue
 Black-Green-Brown (Brown-Black-Green)
 Black-Brown-White (White-Black-Brown)
 Red-Black-Brown (Brown-Red-Black)
 Black-Blue-White (White-Black-Blue)

Pairs — Preferred Colors

Blue 1 White & Blue 2 White
 Orange 1 White & Orange 2 White
 Green 1 White & Green 2 White
 Brown 1 White & Brown 2 White
 Slate 1 White & Slate 2 White
 Blue 1 Red & Blue 2 Red
 Orange 1 Red & Orange 2 Red
 Green 1 Red & Green 2 Red
 Brown 1 Red & Brown 2 Red
 Slate 1 Red & Slate 2 Red
 Blue 1 Black & Blue 2 Black
 Orange 1 Black & Orange 2 Black
 Green 1 Black & Green 2 Black
 Brown 1 Black & Brown 2 Black
 Slate 1 Black & Slate 2 Black
 Blue 1 Yellow & Blue 2 Yellow
 Orange 1 Yellow & Orange 2 Yellow
 Green 1 Yellow & Green 2 Yellow
 Brown 1 Yellow & Brown 2 Yellow
 Slate 1 Yellow & Slate 2 Yellow

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Pairs—Conversion Colors

Blue & Blue-White (Blue & White-Blue)
Orange & Orange-White (Orange & White-Orange)
Green & Green-White (Green & White-Green)
Brown & Brown-White (Brown & White-Brown)
Slate & Slate-White (Slate & White-Slate)
Red & Red-White (Red & White-Red)
Red & Red-Green
Black & Black-White (Black & White-Black)
Red & Blue
Red & Orange
Red & Green
Red & Brown
Red & Slate
Red & White
Blue & White
Red & Blue-Orange (Red & Orange-Blue)
Red & Blue-Green (Red & Green-Blue)
Red & Blue-Slate (Red & Slate-Blue)
Red & Blue-White (Red & White-Blue)
Red & Orange-Green
Red & Orange-Brown
Red & Orange-Slate (Red & Slate-Orange)
Red & Orange-White (Red & White-Orange)
Red & Green-Brown (Red & Brown-Green)
Red & Green-Slate (Red & Slate-Green)
Red & Green-White (Red & White-Green)
Red & Brown-Slate (Red & Slate-Brown)
Red & Brown-White (Red & White-Brown)
Red & Slate-White (Red & White-Slate)
Red & Black-White (Red & White-Black)
Red & Black-Orange (Red & Orange-Black)
Red & Blue-Brown (Red & Brown-Blue)
Red-White & White (White-Red & White)
Red-Green & Red-Slate
(Red-Green & Slate-Red)
Red-Blue-White & Red-Orange-White
(White-Red-Blue & White-Red-Orange)
Red-Green-White & Red-Brown-White
(White-Red-Green & White-Red-Brown)
Black-Blue-White & Black-Orange-White
(White-Black-Blue & White-Black-Orange)
Black-Green-White & Black-Brown-White
(White-Black-Green & White-Black-Brown)

Triples—Preferred Colors

Blue 1 White, Blue 2 White & Blue 3 White
Orange 1 White, Orange 2 White & Orange 3 White

Triples—Conversion Colors

White, Green & Green-White (White, Green & White-Green)
Red-Blue-White, Red-Green-White & Red-Brown-White (White-Red-Blue, White-Red-Green & White-Red-Brown)

Quadded Wire (multiple twin)—Preferred Colors

Blue 1 White, Blue 2 White & Blue 3 White, Blue
Orange 1 White, Orange 2 White & Orange 3 White, Orange

Four-Wire Twist—Conversion Colors

Blue, Orange, Green & Brown

TYPE BW—NO. 26 GAUGE

Singles

Blue	Orange-Slate
Orange	Green-White
Green	Green-Brown
Brown	Green-Slate
Slate	Brown-Slate
White	Brown-White
Red	Slate-White
Black	Black-White
Red-White	Black-Orange
Red-Blue	Black-Slate
Red-Orange	Black-Green
Red-Green	Yellow
Red-Slate	Yellow-Green
Red-Black	Red-Orange-White
Red-Brown	Red-Green-White
Blue-White	Red-Blue-White
Blue-Orange	Red-Black-Orange
Blue-Green	Red-Black-Green
Blue-Slate	Red-Black-Blue
Orange-White	Red-Black-Brown
Orange-Green	Red-Black-Slate
Orange-Brown	

Pairs

Blue & Blue-White	Black & White
Orange & Orange-White	Blue-Orange & Blue-Green
Green & Green-White	Red-Blue & Orange
Brown & Brown-White	Red-Blue & Blue-Slate
Slate & Slate-White	Yellow & Yellow-Green
Red & Black	

Triples

Blue, Blue-White & Red-Blue
 Yellow, Yellow-Green & Red-Green

Four-Wire Twist

White, Black, Red & Green
 Blue, Orange, Green & Brown
 Red-White, Red-Blue, Red-Orange &
 Red-Green
 Black-White, Black-Orange, Black-Green &
 Black-Slate
 Blue, Blue-White, Orange & Orange-White

Quadded Wire (multiple twin)

Blue, Orange & Green, Brown

TYPE BW—NO. 24 GAUGE

Singles

Blue	Green-Brown
Orange	Green-Slate
Green	Brown-Slate
Brown	Brown-White
Slate	Slate-White
White	Black-White
Red	Black-Orange
Black	Black-Slate
Red-White	Black-Green
Red-Blue	Yellow
Red-Orange	Yellow-Green
Red-Green	Red-Orange-White
Red-Slate	Red-Green-White
Red-Black	Red-Brown-White
Red-Brown	Red-Blue-White
Blue-White	Red-Black-Orange
Blue-Orange	Red-Black-Green
Blue-Green	Red-Black-Blue
Blue-Brown	Red-Black-Grown
Blue-Slate	Red-Black-Slate
Orange-White	Black-Orange-Green
Orange-Green	Black-Orange-Slate
Orange-Brown	Black-Orange-White
Orange-Slate	Black-Green-Slate
Green-White	Black-Green-White

Pairs

Blue & Blue-White	Red & Orange-White
Orange & Orange-White	Red & Green-Brown
Green & Green-White	Red & Green-Slate
Brown & Brown-White	Red & Green-White
Slate & Slate-White	Red & Brown-Slate
Red & Red-White	Red & Brown-White
Red & Red-Green	Red & Slate-White
Black & Black-White	Red-White & White
Red & Blue	Red-Green & Red-Slate
Red & Orange	Red & Black-White
Red & Green	Red & Black-Orange
Red & Brown	Red & Black-Orange
Red & Slate	Red-Blue-White &
Red & White	Red-Orange-White
Red & Black	Red-Green-White &
Blue & White	Red-Brown-Shite
Red & Blue-Orange	Black & White
Red & Blue-Green	Blue-Orange & Blue-Green
Red & Blue-Slate	Red-Blue & Orange
Red & Blue-White	Red-Blue & Blue-Slate
Red & Orange-Green	Brown & Red-Brown
Red & Orange-Brown	Slate & Red-Slate
Red & Orange-Slate	Yellow & Yellow-Green

Triples

White, Green & Green-White
 Red-Blue-White, Red-Green-White &
 Red-Brown-White
 Blue, Blue-White & Red Blue
 Yellow, Yellow-Green & Red-Green

Four-Wire Twist

White, Black, Red & Green
 Blue, Orange, Green & Brown
 Red-White, Red-Blue, Red-Orange &
 Red-Green
 Black-White, Black-Orange, Black-Green,
 & Black-Slate
 Blue, Blue-White, Orange &
 Orange-White
 Red-Blue-White, Red-Orange-White,
 Red-Green-White & Red-Brown-White

Quadded Wire (multiple twin)

Blue, Orange & Green, Brown

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TYPE BW—NO. 22 GAUGE

Singles

Blue	Green-Brown
Orange	Green-Slate
Green	Brown-White
Brown	Brown-Slate
Slate	Slate-White
White	Black-White
Red	Red-Black
Black	Black-Orange
Red-White	Black-Green
Red-Blue	Black-Slate
Red-Orange	Red-Blue-White
Red-Green	Red-Orange-White
Red-Brown	Red-Green-White
Red-Slate	Red-Brown-White
Blue-White	Red-Black-Orange
Blue-Orange	Red-Black-Green
Blue-Green	Red-Black-Slate
Blue-Brown	Black-Orange-Green
Blue-Slate	Black-Orange-Slate
Orange-White	Black-Orange-White
Orange-Green	Black-Green-Slate
Orange-Brown	Black-Green-White
Orange-Slate	Yellow
Green-White	Yellow-Green

Pairs

Blue & Blue-White	Red-Blue-White &
Orange & Orange-White	Red-Orange-White
Green & Green-White	Red-Green-White &
Brown & Brown-White	Red-Brown-White
Slate & Slate-White	Blue & Red-Blue
Red & Red-White	Orange & Red-Orange
Red & Red-Green	Brown & Red-Brown
Black & Black-White	Slate & Red-Slate
Red & Blue	Black & Red-Black
Red & White	Yellow & Yellow-Green
Blue & White	Red & Black
Red-White & White	Black & White
Red-Green & Red-Slate	Red-White & Red-Blue
	Red-Orange & Red-Green

Triples

Blue, Blue-White & White
 Yellow, Yellow-Green & Red-Green

Four-Wire Twist

Blue, Orange, Green & Brown

Quadded Wire (multiple twin)

Red-White, Red-Blue & Red-Orange, Red-Green
 Blue, Blue-Red & Blue-Nvlt* Black, Blue-Nvlt
 Red
 Orange, Orange-Red & Orange-Nvlt Black,
 Orange-Nvlt Red
 Green, Green-Red & Green-Nvlt Black, Green-
 Nvlt Red
 Brown, Brown-Red & Brown-Nvlt Black,
 Brown-Nvlt Red
 Slate, Slate-Red & Slate-Nvlt Black, Slate-Nvlt
 Red
 Blue-White, Blue-White-Red & Blue-White-Nvlt
 Black, Blue-White-Nvlt Red
 Blue-Orange, Blue-Orange-Red & Blue-Orange-
 Nvlt Black, Blue-Orange-Nvlt Red
 Blue-Green, Blue-Green-Red & Blue-Green-Nvlt
 Black, Blue-Green-Nvlt Red

TYPE BW—NO. 20 GAUGE

Singles

Blue	Black
Orange	Red-White
Green	Black-White
Brown	Blue-White
Slate	Orange-White
White	Green-White
Red	Brown-White

TYPE BY—NO. 26 GAUGE

Singles

Same colors as listed for No. 24 gauge type BU
 wire on the preferred color list.

Pairs

Same colors as listed for No. 24 gauge type BU
 wire on the preferred color list.

* For description of novelty colors see para-
 graph 3.03.

Pairs (special)

The following are colors listed for pairs with a special 0.500-inch twist length.

Blue & White	Slate & Red
Orange & White	Blue & Black
Green & White	Orange & Black
Brown & White	Green & Black
Slate & White	Brown & Black
Blue & Red	Slate & Black
Orange & Red	Blue & Yellow
Green & Red	Orange & Yellow
Brown & Red	Green & Yellow

TYPE DP—NO. 24 GAUGE

Preferred Colors for No. 24 Gauge DP Wire

The following color lists will be used where DP wire will be specified on all new jobs.

Singles

Blue	Blue-Black
Orange	Orange-Black
Green	Green-Black
Brown	Brown-Black
Slate	Slate-Black
White	Red-Black
Red	Red-Blue
Black	Orange-Red
Yellow	Slate-Red
Violet	Yellow-Black
White-Blue	Yellow-Blue
White-Orange	Yellow-Orange
White-Green	Yellow-Green
White-Brown	Yellow-Brown
White-Slate	Yellow-Slate
White-Black	

Pairs

Blue & White-Blue	Slate-Black & Yellow-Slate
Orange & White-Orange	Brown & Blue
Green & White-Green	Red & Orange
Brown & White-Brown	Red & Green
Slate & White-Slate	Red & Brown
Blue-Black & Yellow-Blue	Red & Slate
Orange-Black & Yellow-Orange	Red & White
Green-Black & Yellow-Green	Red & Black
Brown-Black & Yellow-Brown	Black & White

Triples

Blue-Black, White-Blue & Yellow-Blue
 Orange-Black, White-Orange & Yellow-Orange
 Green-Black, White-Green & Yellow-Green
 Brown-Black, White-Brown & Yellow-Brown
 Slate-Black, White-Slate & Yellow-Slate

Quadded Wire (multiple twin)

(Blue & Orange) & (Green & Brown)

Conversion Colors for No. 24 Gauge DP Wire

Conversion colors are to be used when existing cables using type BW, BG, or C wire are replaced by type DP wire. Tricolored wire such as Red-Blue-White is not convertible to DP wire and shall remain the BW type.

Singles

Blue	Blue-Brown
Orange	Blue-Slate
Green	Orange-White
Brown	Orange-Green
Slate	Orange-Brown
White	Orange-Slate
Red	Green-White
Black	Green-Brown
Red-White	Green-Slate
Red-Blue	Brown-Slate
Red-Orange	Brown-White
Red-Green	Slate-White
Red-Slate	Black-White
Red-Black	Black-Orange
Red-Brown	Black-Slate
Blue-White	Black-Green
Blue-Orange	Yellow
Blue-Green	Yellow-Green

Pairs

Blue & Blue-White	Red & Green
Orange & Orange-White	Red & Brown
Green & Green-White	Red & Slate
Brown & Brown-White	Red & White
Slate & Slate-White	Red & Black
Red & Red-White	Blue & White
Red & Red-Green	Red & Blue-Orange
Black & Black-White	Red & Blue-Green
Red & Blue	Red & Blue-Slate
Red & Orange	Red & Blue-White
	Red & Orange-Green

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Red & Orange-Brown	Red-Green & Red-Slate
Red & Orange-Slate	Red & Black-White
Red & Orange-White	Red & Black-Orange
Red & Green-Brown	Black & White
Red & Green-Slate	Blue-Orange & Blue-Green
Red & Green-White	Red-Blue & Orange
Red & Brown-Slate	Red-Blue & Blue-Slate
Red & Brown-White	Brown & Red-Brown
Red & Slate-White	Slate & Red-Slate
Red-White & White	Yellow & Yellow-Green

Triples

White, Green & Green-White
 Blue, Blue-White & Red-Blue
 Yellow, Yellow-Green & Red-Green

Quadded Wire (multiple twin)

White, Black, Red & Green
 Blue, Orange, Green & Brown
 Red-White, Red-Blue, Red-Orange & Red-Green
 Black-White, Black-Orange, Black-Green &
 Black-Slate
 Blue, Blue-White, Orange & Orange-White

TYPE DP—NO. 22 GAUGE

Preferred Colors for No. 22 Gauge DP Wire

Same colors as listed for No. 24 gauge preferred type DP wire

Conversion Colors for No. 22 Gauge DP Wire

Conversion colors are to be used when existing cables using type BW, BG, or C wire are replaced by type DP wire. Tricolored wire such as Red-Blue-White is not convertible to DP wire and shall remain the BW type.

Singles

Blue	Red-Green
Orange	Red-Brown
Green	Red-Slate
Brown	Blue-White
Slate	Blue-Orange
White	Blue-Green
Red	Blue-Brown
Black	Blue-Slate
Red-White	Orange-White
Red-Blue	Orange-Green
Red-Orange	Orange-Brown

Orange-Slate	Black-White
Green-White	Red-Black
Green-Brown	Black-Orange
Green-Slate	Black-Green
Brown-White	Black-Slate
Brown-Slate	Yellow
Slate-White	Yellow-Green

Pairs

Blue & Blue-White	Red-White & White
Orange & Orange-White	Red-Green & Red-Slate
Green & Green-White	Blue & Red-Blue
Brown & Brown-White	Orange & Red-Orange
Slate & Slate-White	Brown & Red-Brown
Red & Red-White	Slate & Red-Slate
Red & Red-Green	Black & Red-Black
Black & Black-White	Yellow & Yellow-Green
Red & Blue	Red & Black
Red & White	Black & White
Blue & White	Red-White & Red-Blue
	Red-Orange & Red-Green

Triples

Blue, Blue-White & White
 Yellow, Yellow-Green & Red-Green

Quadded Wire (multiple twin)

Red-White, Red-Blue & Red-Orange, Red-Green
 Blue, Orange, Green & Brown

TYPE DP—NO. 20 GAUGE

Conversion Colors for No. 20 Gauge DP Wire

Conversion colors are to be used when existing cables using type BW, BG, or C wire are replaced by type DP wire. Tricolored wire such as Red-Blue-White is not convertible to DP wire and shall remain the BW type.

Singles

Blue	Black
Orange	Red-White
Green	Black-White
Brown	Blue-White
Slate	Orange-White
White	Green-White
Red	Brown-White

**KS-13385 HOOKUP WIRE
GAUGES 22 TO 8 STRANDED OR 22 TO 14 SOLID**

Where 2-color combinations are shown in the lists below, the first color is the background color and the second color is the tracer color.

Singles

Blue	Orange-Red
Orange	Orange-White
Green	White-Blue
Brown	White-Green
Slate	White-Brown
Black	White-Black
Red	White-Red
White	Red-Black
Orange-Blue	Yellow
Orange-Green	Orange-Yellow
Orange-Brown	White-Yellow
Orange-Black	Green-Yellow

Pairs

- Slate & Slate-Black
- Red & Red-Black
- Brown & White
- Green & Green-White

**KS-13385 WIRE SHIELDED PER KS-13586
(ground wire under shield)
OR KS-13587 (no ground wire under shield)**

Singles

COLOR OF OUTER BRAID	COLOR OF WIRE
Gray	White
Red	Red
Blue	Blue
Green	Green

Pairs

COLOR OF OUTER BRAID	COLOR OF WIRE
Gray	Slate & Slate-Black
Red	Red & White-Red
Blue	Blue & White-Blue

6. COLORS IN SURFACE WIRING

6.01 Except for battery and ground leads, all wiring is generally of one color. Battery leads include those supplying dc potential only; for example, 22V, 24V, 48V, 60V, trip battery, 64V message register battery, 110V coin control battery, 130V plate battery, and multiple extensions of such leads. Ground leads include those supplying ground associated with dc potential only and multiple extensions of such leads. All other leads including ringing and tone leads and leads which are subject to change in color status, such as in the case of rectifiers or due to the presence or absence of circuit options, are considered general wiring and should be colored green. Other colors may be used, however, when required for specific purposes or to facilitate manufacture. On D3 surface wiring where pairing is not disregarded, other colors may be used for pairs, triples, and quads and should be selected from the available colors listed under the type of wire specified. Standard color assignments are as follows.

(a) **Step-by-Step Switches**

- Green—General wiring
- Red—Ground leads
- White—Battery leads

(b) **Equipment Other Than Step-by-Step Switches**

- Green—General wiring
- Black—Ground leads
- Red—Battery leads

7. COLORS IN DISTRIBUTING FRAME WIRE

7.01 The following list covers the available colors for the commonly used distributing frame wire. This wire should be used *only* on distributing frames.

Type DT—No 24 Gauge

Singles

- Black

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Pairs

Yellow & Blue
Yellow & Orange
Yellow & Green
Yellow & Red

Triples

Yellow, Blue & Red

Quadded Wire (multiple twin)

Yellow, Blue & Red, Green

TYPE DT—NO 22 GAUGE

Singles

Slate

Pairs

White & Blue
White & Orange
White & Green
White & Red

Triples

White, Blue & Red

Quadded Wire (multiple twin)

White, Blue & Red, Green

TYPE DT—NO 20 GAUGE

Singles

Brown

Pairs

Brown & Blue