



CABLE COMPANY, INC.

29 August 1990

X3T9.2-90-137

Lawrence J. Lamers  
Chairman, X3T9.2 Cable Working Group  
Maxtor Corp.  
211 River Oaks Parkway  
San Jose, CA 95134

Subject: Proposed SCSI-2 color coding appendix

Dear Larry,

Attached, please find the proposed color code which was tasked to Astro and Montrose at the last Cable Working Group meeting.

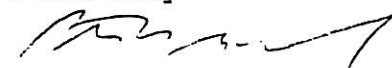
The fundamental color coding was selected with several criteria in mind:

1. For explicit application and ease of connectorization, each conductor should have a unique color. (accomplished)
2. For speed of recognition, no more than a single tracer-color should be employed on any conductor. This approach is also most conducive to ring-band marking. (accomplished)
3. The sequence should be based on a commonly used existing rotation with which most users are familiar. (essentially, we have employed color combinations found in the Western Electric inside telephone standard)
4. For ease of trouble-shooting or circuit analysis, it is beneficial if the same signal appears on a given color wire regardless of implementation. (accomplished)

One suggested additional note: "Due to the fact that the critical REQ and ACK signals do not appear on the same pins in both differential and single-ended implementations, it is recommended that cable layups be respected explicitly, and connectorized cable assemblies be properly identified."

We look forward to seeing you next week,

Sincerely

  
Peter M. Blackford



SCSI-2 SHIELDED MULTI-PAIR COLOR CODE STANDARD FOR ROUND CABLE  
REV. B 8/27/90

"A" CABLE - 8-BIT SINGLE-ENDED CONTACT ASSIGNMENTS

PAIR NBR.	WIRE 1 COLOR	PIN #	SIGNAL NAME 1	WIRE 2 COLOR	PIN #	SIGNAL NAME 2
1.	BLUE	24	GROUND	YELLOW	49	-REQ
2.	BROWN	19	GROUND	ORANGE	44	-ACK
3.	WHITE/BLUE	16	GROUND	BLUE/WHITE	41	-ATN
4.	WHITE/ORANGE	17	GROUND	ORANGE/WHITE	42	GROUND
5.	WHITE/GREEN	18	GROUND	GREEN/WHITE	43	-BSY
6.	WHITE/BROWN	20	GROUND	BROWN/WHITE	45	-RST
7.	WHITE/GRAY	21	GROUND	GRAY/WHITE	46	-MSG
8.	RED/BLUE	22	GROUND	BLUE/RED	47	-SEL
9.	RED/ORANGE	23	GROUND	ORANGE/RED	48	-C/D
10.	RED/GREEN	25	GROUND	GREEN/RED	50	-I/O
11.	RED/BROWN	14	RESERVED	BROWN/RED	39	RESERVED
12.	RED/GRAY	15	GROUND	GRAY/RED	40	GROUND
13.	BLACK/BLUE	1	GROUND	BLUE/BLACK	26	-DB(0)
14.	BLACK/ORANGE	2	GROUND	ORANGE/BLACK	27	-DB(1)
15.	BLACK/GREEN	3	GROUND	GREEN/BLACK	28	-DB(2)
16.	BLACK/BROWN	4	GROUND	BROWN/BLACK	29	-DB(3)
17.	BLACK/GRAY	5	GROUND	GRAY/BLACK	30	-DB(4)
18.	BLACK/BROWN	6	GROUND	GRAY/BLACK	31	-DB(5)
19.	YELLOW/BLUE	7	GROUND	BLUE/YELLOW	32	-DB(6)
20.	YELLOW/RED	8	GROUND	ORANGE/YELLOW	33	-DB(7)
21.	YELLOW/BROWN	9	GROUND	BROWN/YELLOW	34	-DB(P)
22.	YELLOW/GRAY	10	GROUND	GRAY/YELLOW	35	GROUND
23.	VIOLET/BLUE	11	GROUND	BLUE/VIOLET	36	GROUND
24.	VIOLET/ORANGE	12	RESERVED	ORANGE/VIOLET	37	TERMPWR
25.	BLACK	13	OPEN	RED	38	TERMPWR
11.	RED/BROWN	14	RESERVED	BROWN/RED	39	RESERVED
12.	RED/GRAY	15	GROUND	GRAY/RED	40	GROUND
13.	BLACK/BLUE	1	GROUND	BLUE/BLACK	26	-DB(0)
14.	BLACK/ORANGE	2	GROUND	ORANGE/BLACK	27	-DB(1)
15.	BLACK/GREEN	3	GROUND	GREEN/BLACK	28	-DB(2)
16.	BLACK/BROWN	4	GROUND	BROWN/BLACK	29	-DB(3)
17.	BLACK/GRAY	5	GROUND	GRAY/BLACK	30	-DB(4)
18.	YELLOW/BLUE	6	GROUND	BLUE/YELLOW	31	-DB(5)
19.	YELLOW/RED	7	GROUND	ORANGE/YELLOW	32	-DB(6)
20.	YELLOW/BROWN	8	GROUND	BROWN/YELLOW	33	-DB(7)
21.	YELLOW/GRAY	9	GROUND	GRAY/YELLOW	34	-DB(P)
22.	VIOLET/BLUE	10	GROUND	BLUE/VIOLET	35	GROUND
23.	VIOLET/ORANGE	11	GROUND	ORANGE/VIOLET	36	GROUND
24.	BLACK	12	RESERVED	RED	37	RESERVED
25.	BLACK	13	OPEN	RED	38	TERMPWR

SORTED BY PAIR NUMBER

LAYOUT: 2/PR + 8/PR + 15/PR

SUBJECT TO REVIEW BY COMMITTEE

SCSI-2 SHIELDED MULTI-PAIR COLOR CODE STANDARD FOR ROUND CABLE  
REV. B 8/27/90

"A" CABLE - 8-BIT SINGLE-ENDED CONTACT ASSIGNMENTS

PAIR NBR.	WIRE 1 COLOR	PIN #	SIGNAL NAME 1	WIRE 2 COLOR	PIN #	SIGNAL NAME 2
13.	BLACK/BLUE	1	GROUND	BLUE/BLACK	26	-DB(0)
14.	BLACK/ORANGE	2	GROUND	ORANGE/BLACK	27	-DB(1)
15.	BLACK/GREEN	3	GROUND	GREEN/BLACK	28	-DB(2)
16.	BLACK/BROWN	4	GROUND	BROWN/BLACK	29	-DB(3)
17.	BLACK/GRAY	5	GROUND	GRAY/BLACK	30	-DB(4)
18.	YELLOW/BLUE	6	GROUND	BLUE/YELLOW	31	-DB(5)
19.	YELLOW/ORANGE	7	GROUND	ORANGE/YELLOW	32	-DB(6)
20.	YELLOW/RED	8	GROUND	RED/YELLOW	33	-DB(7)
21.	YELLOW/BROWN	9	GROUND	BROWN/YELLOW	34	-DB(P)
22.	YELLOW/GRAY	10	GROUND	GRAY/YELLOW	35	GROUND
23.	VIOLET/BLUE	11	GROUND	BLUE/VIOLET	36	GROUND
24.	VIOLET/ORANGE	12	RESERVED	ORANGE/VIOLET	37	RESERVED
25.	BLACK	13	OPEN	RED	38	TERMPWR
11.	RED/BROWN	14	RESERVED	BROWN/RED	39	RESERVED
12.	RED/GRAY	15	GROUND	GRAY/RED	40	GROUND
3.	WHITE/BLUE	16	GROUND	BLUE/WHITE	41	-ATN
4.	WHITE/ORANGE	17	GROUND	ORANGE/WHITE	42	GROUND
5.	WHITE/GREEN	18	GROUND	GREEN/WHITE	43	-BSY
2.	BROWN	19	GROUND	ORANGE	44	-ACK
6.	WHITE/BROWN	20	GROUND	BROWN/WHITE	45	-RST
7.	WHITE/GRAY	21	GROUND	GRAY/WHITE	46	-MSG
8.	RED/BLUE	22	GROUND	BLUE/RED	47	-SEL
9.	RED/ORANGE	23	GROUND	ORANGE/RED	48	-C/D
1.	BLUE	24	GROUND	YELLOW	49	-REQ
10.	RED/GREEN	25	GROUND	GREEN/RED	50	-I/O

SORTED BY PIN NUMBER

SUBJECT TO REVIEW BY COMMITTEE

SCSI-2 SHIELDED MULTI-PAIR COLOR CODE STANDARD FOR ROUND CABLE  
REV.C 8/29/90

PAIR NBR.	WIRE 1 COLOR	PIN #	SIGNAL NAME 1	DIFFERENTIAL	WIRE 2 COLOR	PIN #	SIGNAL NAME 2
1.	BLUE	23	+REQ		YELLOW	48	-REQ
2.	BROWN	18	+ACK		ORANGE	43	-ACK
3.	WHITE/BLUE	15	+ATN		BLUE/WHITE	40	-ATN
4.	WHITE/ORANGE	16	GROUND		ORANGE/WHITE	41	GROUND
5.	WHITE/GREEN	17	+BSY		GREEN/WHITE	42	-BSY
6.	WHITE/BROWN	19	+RST		BROWN/WHITE	44	-RST
7.	WHITE/GRAY	20	+MSG		GRAY/WHITE	45	-MSG
8.	RED/BLUE	21	+SEL		BLUE/RED	46	-SEL
9.	RED/ORANGE	22	+C/D		ORANGE/RED	47	-C/D
10.	RED/GREEN	24	+I/O		GREEN/RED	49	-I/O
11.	RED/BROWN	14	RESERVED		BROWN/RED	39	RESERVED
12.	RED/GRAY	25	GROUND		GRAY/RED	50	GROUND
13.	BLACK/BLUE	2	+DB(0)		BLUE/BLACK	27	-DB(0)
14.	BLACK/ORANGE	3	+DB(1)		ORANGE/BLACK	28	-DB(1)
15.	BLACK/GREEN	4	+DB(2)		GREEN/BLACK	29	-DB(2)
16.	BLACK/BROWN	5	+DB(3)		BROWN/BLACK	30	-DB(3)
17.	BLACK/GRAY	6	+DB(4)		GRAY/BLACK	31	-DB(4)
18.	YELLOW/BLUE	7	+DB(5)		BLUE/YELLOW	32	-DB(5)
19.	YELLOW/ORANGE	8	+DB(6)		ORANGE/YELLOW	33	-DB(6)
20.	YELLOW/RED	9	+DB(7)		RED/YELLOW	34	-DB(7)
21.	YELLOW/BROWN	10	+DB(P)		BROWN/YELLOW	35	-DB(P)
22.	YELLOW/GRAY	11	DIFFSENS		GRAY/YELLOW	36	GROUND
23.	VIOLET/BLUE	1	GROUND		BLUE/VIOLET	26	GROUND
24.	VIOLET/ORANGE	12	RESERVED		ORANGE/VIOLET	37	RESERVED
25.	BLACK	13	TERMPWR		RED	38	TERMPWR
26.	RED/BROWN	14	RESERVED		BROWN/RED	39	RESERVED
27.	RED/GRAY	25	GROUND		GRAY/RED	50	GROUND
28.	BLACK/BLUE	2	+DB(0)		BLUE/BLACK	27	-DB(0)
29.	BLACK/ORANGE	3	+DB(1)		ORANGE/BLACK	28	-DB(1)
30.	BLACK/GREEN	4	+DB(2)		GREEN/BLACK	29	-DB(2)
31.	BLACK/BROWN	5	+DB(3)		BROWN/BLACK	30	-DB(3)
32.	BLACK/GRAY	6	+DB(4)		GRAY/BLACK	31	-DB(4)
33.	YELLOW/BLUE	7	+DB(5)		BLUE/YELLOW	32	-DB(5)
34.	YELLOW/ORANGE	8	+DB(6)		ORANGE/YELLOW	33	-DB(6)
35.	YELLOW/RED	9	+DB(7)		RED/YELLOW	34	-DB(7)
36.	YELLOW/BROWN	10	+DB(P)		BROWN/YELLOW	35	-DB(P)
37.	YELLOW/GRAY	11	DIFFSENS		GRAY/YELLOW	36	GROUND
38.	VIOLET/BLUE	1	GROUND		BLUE/VIOLET	26	GROUND
39.	VIOLET/ORANGE	12	RESERVED		ORANGE/VIOLET	37	RESERVED
40.	BLACK	13	TERMPWR		RED	38	TERMPWR

SORTED BY PAIR NUMBER

LAYOUT: 2/PR + 8/PR + 15/PR

SUBJECT TO REVIEW BY COMMITTEE

SCSI-2 SHIELDED MULTI-PAIR COLOR CODE STANDARD FOR ROUND CABLE  
REV.C 8/29/90

PAIR NBR.	WIRE 1 COLOR	PIN #	SIGNAL NAME 1	DIFFERENTIAL	WIRE 2 COLOR	PIN #	SIGNAL NAME 2
23.	VIOLET/BLUE	1	GROUND		BLUE/VIOLET	26	GROUND
24.	VIOLET/ORANGE	12	RESERVED		ORANGE/VIOLET	37	RESERVED
25.	BLACK	13	TERMPWR		RED	38	TERMPWR
26.	RED/BROWN	14	RESERVED		BROWN/RED	39	RESERVED
27.	RED/GRAY	25	GROUND		GRAY/RED	50	GROUND
28.	BLACK/BLUE	2	+DB(0)		BLUE/BLACK	27	-DB(0)
29.	BLACK/ORANGE	3	+DB(1)		ORANGE/BLACK	28	-DB(1)
30.	BLACK/GREEN	4	+DB(2)		GREEN/BLACK	29	-DB(2)
31.	BLACK/BROWN	5	+DB(3)		BROWN/BLACK	30	-DB(3)
32.	BLACK/GRAY	6	+DB(4)		GRAY/BLACK	31	-DB(4)
33.	YELLOW/BLUE	7	+DB(5)		BLUE/YELLOW	32	-DB(5)
34.	YELLOW/ORANGE	8	+DB(6)		ORANGE/YELLOW	33	-DB(6)
35.	YELLOW/RED	9	+DB(7)		RED/YELLOW	34	-DB(7)
36.	YELLOW/BROWN	10	+DB(P)		BROWN/YELLOW	35	-DB(P)
37.	YELLOW/GRAY	11	DIFFSENS		GRAY/YELLOW	36	GROUND
38.	VIOLET/BLUE	1	GROUND		BLUE/VIOLET	26	GROUND
39.	VIOLET/ORANGE	12	RESERVED		ORANGE/VIOLET	37	RESERVED
40.	BLACK	13	TERMPWR		RED	38	TERMPWR
41.	RED/BROWN	14	RESERVED		BROWN/RED	39	RESERVED
42.	RED/GRAY	25	GROUND		GRAY/RED	50	GROUND
43.	BLACK/BLUE	2	+DB(0)		BLUE/BLACK	27	-DB(0)
44.	BLACK/ORANGE	3	+DB(1)		ORANGE/BLACK	28	-DB(1)
45.	BLACK/GREEN	4	+DB(2)		GREEN/BLACK	29	-DB(2)
46.	BLACK/BROWN	5	+DB(3)		BROWN/BLACK	30	-DB(3)
47.	BLACK/GRAY	6	+DB(4)		GRAY/BLACK	31	-DB(4)
48.	YELLOW/BLUE	7	+DB(5)		BLUE/YELLOW	32	-DB(5)
49.	YELLOW/ORANGE	8	+DB(6)		ORANGE/YELLOW	33	-DB(6)
50.	YELLOW/RED	9	+DB(7)		RED/YELLOW	34	-DB(7)
51.	YELLOW/BROWN	10	+DB(P)		BROWN/YELLOW	35	-DB(P)
52.	YELLOW/GRAY	11	DIFFSENS		GRAY/YELLOW	36	GROUND
53.	VIOLET/BLUE	1	GROUND		BLUE/VIOLET	26	GROUND
54.	VIOLET/ORANGE	12	RESERVED		ORANGE/VIOLET	37	RESERVED
55.	BLACK	13	TERMPWR		RED	38	TERMPWR

SORTED BY PIN NUMBER

LAYOUT: 2/PR + 8/PR + 15/PR

SUBJECT TO REVIEW BY COMMITTEE

SCSI-2 SHIELDED MULTI-PAIR COLOR CODE STANDARD FOR ROUND CABLE  
REV.A 8/27/90

"P" CABLE - 16-BIT SINGLE-ENDED CONTACT ASSIGNMENTS

PAIR NBR.	WIRE 1 COLOR	PIN #	SIGNAL NAME 1	WIRE 2 COLOR	PIN #	SIGNAL NAME 2
1.	BLUE	29	GROUND	YELLOW	63	-REQ
2.	BROWN	24	GROUND	ORANGE	58	-ACK
3.	WHITE/BLUE	21	GROUND	BLUE/WHITE	55	-ATN
4.	RED/ORANGE	28	GROUND	ORANGE/RED	62	-C/D
5.	WHITE/GREEN	23	GROUND	GREEN/WHITE	57	-BSY
6.	WHITE/BROWN	25	GROUND	BROWN/WHITE	59	-RST
7.	WHITE/GRAY	26	GROUND	GRAY/WHITE	60	-MSG
8.	WHITE/ORANGE	22	GROUND	ORANGE/WHITE	56	GROUND
9.	RED/BLUE	27	GROUND	BLUE/RED	61	-SEL
10.	RED/GREEN	30	GROUND	GREEN/RED	64	-I/O
11.	RED/BROWN	19	RESERVED	BROWN/RED	53	RESERVED
12.	RED/GRAY	15	GROUND	GRAY/RED	49	GROUND
13.	YELLOW/GRAY	16	GROUND	GRAY/YELLOW	50	-DB(P)
14.	YELLOW/BROWN	14	GROUND	BROWN/YELLOW	48	GROUND
15.	VIOLET/BLUE	20	GROUND	BLUE/VIOLET	54	GROUND
16.	VIOLET/ORANGE	5	GROUND	ORANGE/VIOLET	39	-DB(P1)
17.	BLACK/BLUE	6	GROUND	BLUE/BLACK	40	-DB(0)
18.	BLACK/ORANGE	7	GROUND	ORANGE/BLACK	41	-DB(1)
19.	BLACK/GREEN	8	GROUND	GREEN/BLACK	42	-DB(2)
20.	BLACK/BROWN	9	GROUND	BROWN/BLACK	43	-DB(3)
21.	BLACK/GRAY	10	GROUND	GRAY/BLACK	44	-DB(4)
22.	YELLOW/BLUE	11	GROUND	BLUE/YELLOW	45	-DB(5)
23.	YELLOW/ORANGE	12	GROUND	ORANGE/YELLOW	46	-DB(6)
24.	YELLOW/RED	13	GROUND	RED/YELLOW	47	-DB(7)
25.	WHITE/RED	31	GROUND	BLACK/WHITE	65	-DB(8)
26.	WHITE/BLACK	32	GROUND	RED/WHITE	66	-DB(9)
27.	WHITE/YELLOW	33	GROUND	YELLOW/WHITE	67	-DB(10)
28.	WHITE/VIOLET	34	GROUND	VIOLET/WHITE	68	-DB(11)
29.	VIOLET/GREEN	1	GROUND	GREEN/VIOLET	35	-DB(12)
30.	BROWN/BROWN	2	GROUND	BROWN/VIOLET	36	-DB(13)
31.	WHITE/WHITE	3	GROUND	GRAY/VIOLET	37	-DB(14)
32.	BLACK/BLACK	4	GROUND	YELLOW/BLACK	38	-DB(15)
33.	BLACK/GRAY	17	TERMPWR	RED	51	TERMPWR
34.	GREY	18	TERMPWR	WHITE	52	TERMPWR

SORTED BY PAIR NUMBER  
CABLE LAYUP: 5 + 11 + 18  
SUBJECT TO REVIEW BY COMMITTEE

SCSI-2 SHIELDED MULTI-PAIR COLOR CODE STANDARD FOR ROUND CABLE  
REV.A 8/27/90

"P" CABLE - 16-BIT SINGLE-ENDED CONTACT ASSIGNMENTS

PAIR NBR.	WIRE 1 COLOR	PIN #	SIGNAL NAME 1	WIRE 2 COLOR	PIN #	SIGNAL NAME 2
29.	VIOLET/GREEN	1	GROUND	GREEN/VIOLET	35	-DB(12)
30.	VIOLET/BROWN	2	GROUND	BROWN/VIOLET	36	-DB(13)
31.	BLACK/GRAY	3	GROUND	GRAY/VIOLET	37	-DB(14)
32.	BLACK/YELLOW	4	GROUND	YELLOW/BLACK	38	-DB(15)
16.	VIOLET/ORANGE	5	GROUND	ORANGE/VIOLET	39	-DB(P1)
17.	BLACK/BLUE	6	GROUND	BLUE/BLACK	40	-DB(0)
18.	BLACK/ORANGE	7	GROUND	ORANGE/BLACK	41	-DB(1)
19.	BLACK/GREEN	8	GROUND	GREEN/BLACK	42	-DB(2)
20.	BLACK/BROWN	9	GROUND	BROWN/BLACK	43	-DB(3)
21.	BLACK/GRAY	10	GROUND	GRAY/BLACK	44	-DB(4)
22.	YELLOW/BLUE	11	GROUND	BLUE/YELLOW	45	-DB(5)
23.	YELLOW/ORANGE	12	GROUND	ORANGE/YELLOW	46	-DB(6)
24.	YELLOW/RED	13	GROUND	RED/YELLOW	47	-DB(7)
14.	YELLOW/BROWN	14	GROUND	BROWN/YELLOW	48	-DB(P)
12.	RED/GRAY	15	GROUND	GRAY/RED	49	GROUND
13.	YELLOW/GRAY	16	GROUND	GRAY/YELLOW	50	GROUND
33.	BLACK	17	TERMPWR	RED	51	TERMPWR
34.	GREY	18	TERMPWR	WHITE	52	TERMPWR
11.	RED/BROWN	19	RESERVED	BROWN/RED	53	RESERVED
15.	VIOLET/BLUE	20	GROUND	BLUE/VIOLET	54	GROUND
3.	WHITE/BLUE	21	GROUND	BLUE/WHITE	55	-ATN
8.	WHITE/ORANGE	22	GROUND	ORANGE/WHITE	56	GROUND
5.	WHITE/GREEN	23	GROUND	GREEN/WHITE	57	-BSY
2.	BROWN	24	GROUND	ORANGE	58	-ACK
6.	WHITE/BROWN	25	GROUND	BROWN/WHITE	59	-RST
7.	WHITE/GRAY	26	GROUND	GRAY/WHITE	60	-MSG
9.	RED/BLUE	27	GROUND	BLUE/RED	61	-SEL
4.	RED/ORANGE	28	GROUND	ORANGE/RED	62	-C/D
1.	BLUE	29	GROUND	YELLOW	63	-REQ
10.	RED/GREEN	30	GROUND	GREEN/RED	64	-I/O
25.	WHITE/BLACK	31	GROUND	BLACK/WHITE	65	-DB(8)
26.	WHITE/RED	32	GROUND	RED/WHITE	66	-DB(9)
27.	WHITE/YELLOW	33	GROUND	YELLOW/WHITE	67	-DB(10)
28.	WHITE/VIOLET	34	GROUND	VIOLET/WHITE	68	-DB(11)

SORTED BY PIN NUMBER  
CABLE LAYUP: 5 + 11 + 18  
SUBJECT TO REVIEW BY COMMITTEE

SCSI-2 SHIELDED MULTI-PAIR COLOR CODE STANDARD FOR ROUND CABLE  
REV.A 8/27/90

"P" CABLE - 16-BIT DIFFERENTIAL CONTACT ASSIGNMENTS						
PAIR NBR.	WIRE 1 COLOR	PIN #	SIGNAL NAME 1	WIRE 2 COLOR	PIN #	SIGNAL NAME 2
1.	BLUE	28	+REQ	YELLOW	62	-REQ
2.	BROWN	23	+ACK	ORANGE	57	-ACK
3.	WHITE/BLUE	20	+ATN	BLUE/WHITE	54	-ATN
4.	RED/ORANGE	27	+C/D	ORANGE/RED	61	-C/D
5.	WHITE/GREEN	22	+BSY	GREEN/WHITE	56	-BSY
6.	WHITE/BROWN	24	+RST	BROWN/WHITE	58	-RST
7.	WHITE/GRAY	25	+MSG	GRAY/WHITE	59	-MSG
8.	WHITE/ORANGE	21	GROUND	ORANGE/WHITE	55	GROUND
9.	RED/BLUE	26	+SEL	BLUE/RED	60	-SEL
10.	RED/GREEN	29	+I/O	GREEN/RED	63	-I/O
11.	RED/BROWN	19	RESERVED	BROWN/RED	53	RESERVED
12.	RED/GRAY	6	GROUND	GRAY/RED	40	GROUND
13.	YELLOW/GRAY	16	DIFFSENS	GRAY/YELLOW	50	-DB(P)
14.	YELLOW/BROWN	15	+DB(P)	BROWN/YELLOW	49	-DB(P)
15.	VIOLET/BLUE	30	GROUND	BLUE/VIOLET	64	GROUND
16.	VIOLET/ORANGE	5	+DB(P1)	ORANGE/VIOLET	39	-DB(P1)
17.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
18.	BLACK/GRAY	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
19.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
20.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
21.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
22.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
23.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
24.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
25.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
26.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
27.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
28.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
29.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
30.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
31.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
32.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
33.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
34.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
35.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
36.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
37.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
38.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
39.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
40.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
41.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
42.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
43.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
44.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
45.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
46.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
47.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
48.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
49.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
50.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
51.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
52.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
53.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
54.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
55.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
56.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
57.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
58.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
59.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
60.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
61.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
62.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
63.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
64.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
65.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
66.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
67.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
68.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
69.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
70.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
71.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
72.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
73.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
74.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
75.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
76.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
77.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
78.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
79.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
80.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
81.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
82.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
83.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
84.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
85.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
86.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
87.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
88.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
89.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
90.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
91.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
92.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
93.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
94.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
95.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
96.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
97.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
98.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
99.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
100.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
101.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
102.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
103.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
104.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
105.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
106.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
107.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
108.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
109.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
110.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
111.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
112.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
113.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
114.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
115.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
116.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
117.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
118.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
119.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
120.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
121.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
122.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
123.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
124.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
125.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
126.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
127.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
128.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
129.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
130.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
131.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
132.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
133.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
134.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
135.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
136.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
137.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
138.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
139.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
140.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
141.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
142.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
143.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
144.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
145.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
146.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
147.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
148.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
149.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
150.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
151.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
152.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
153.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
154.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
155.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
156.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
157.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
158.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
159.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
160.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
161.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
162.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
163.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
164.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
165.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
166.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
167.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
168.	BLACK/YELLOW	4	+DB(15)	ORANGE/VIOLET	39	-DB(P1)
169.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
170.	BLACK/BLUE	7	+DB(0)	BLUE/BLACK	41	-DB(0)
171.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
172.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
173.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
174.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
175.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
176.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
177.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
178.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
179.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
180.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
181.	WHITE/VIOLET	34	+DB(11)	VIOLET/WHITE	68	-DB(11)
182.	VIOLET/GREEN	1	+DB(12)	GREEN/VIOLET	35	-DB(12)
183.	VIOLET/BROWN	2	+DB(13)	BROWN/VIOLET	36	-DB(13)
184.	VIOLET/YELLOW	3	+DB(14)	GRAY/VIOLET	37	-DB(14)
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186.	BLACK/GRAY	11	GROUND	GRAY/RED	40	GROUND
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188.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
189.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK	43	-DB(2)
190.	BLACK/BROWN	10	+DB(3)	BROWN/BLACK	44	-DB(3)
191.	BLACK/GRAY	11	+DB(4)	GRAY/BLACK	45	-DB(4)
192.	YELLOW/BLUE	12	+DB(5)	BLUE/YELLOW	46	-DB(5)
193.	YELLOW/GRAY	13	+DB(6)	ORANGE/YELLOW	47	-DB(6)
194.	YELLOW/RED	14	+DB(7)	RED/YELLOW	48	-DB(7)
195.	WHITE/BLACK	31	+DB(8)	BLACK/WHITE	65	-DB(8)
196.	WHITE/RED	32	+DB(9)	RED/WHITE	66	-DB(9)
197.	WHITE/YELLOW	33	+DB(10)	YELLOW/WHITE	67	-DB(10)
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205.	BLACK/ORANGE	8	+DB(1)	ORANGE/BLACK	42	-DB(1)
206.	BLACK/GREEN	9	+DB(2)	GREEN/BLACK		