

MIL-DTL-38999 Series I Type
231-217 Connector with crimp-removable, size 8 RF and high-speed contact options

HIGH-SPEED CONNECTORS

**“BETER THAN QPL”
FEATURES AND BENEFITS**

- Improved, positive-lock, 3-point stainless-steel pin bayonet coupling with outstanding vibration and shock resistance
- High-speed, high-power, and hybrid contact arrangements available
- Plug ground fingers for advanced EMC
- Glenair signature Tin Zinc finish is RoHS compliant and cadmium compatible
- Precision-machined key/keyway polarization for reliable mismatching protection
- Expanded receptacle styles include Clinch-nut and Helicoil mounting, and In-Line configuration
- Scoop-proof design prevents pin damage and short circuits
- 500 mating cycles

POWER SPECIFICATIONS

- Max operating temperature is 200°C finish dependent
- Meets Mil-Spec service rating, insert dependent

HOW TO ORDER										
Sample Part Number	231-217	-G6	NF	25	-	8	A	N	-	909CP
Basic Part Number	231-217									
Connector Style	(See Table II)									
Material/Finish	NF, MA, MT, ME, ZR, Z1, ZL, AB (See Table I)									
Connector Size	A, B, C, D, E, F, G, H, J									
Ground Option	G = Common Ground; - = None									
Insert Arrangement	PER MIL-STD-1560									
Contact Style	A = Pin Insert, Less Contacts; B = Socket Insert, Less Contacts									
Alternate Polarization	A, B, C, D, N = Normal, U = Universal									
Optional Mod Code	909** = Supplies Connector with Contacts 1213* = Supplies Connectors with Contacts Per MIL-STD-1560									

TABLE I: MATERIAL/FINISH		
Sym	Material	Finish
NF	Aluminum Alloy	Cad/O.D. Over Electroless Nickel
MA		Electroless Nickel, Matte
ME		Electroless Nickel
MN		Tri-Nickel Alloy
MT		Nickel-PTFE
TZ		Tin Zinc Over Electroless Nickel
ZR		Zinc Ni, Black (Tri-Valent CR)
Z1	Stainless Steel	Passivate
ZL		Electrodeposited Nickel
AB	Marine Bronze	None (Clean Only)

TABLE II: CONNECTOR STYLE	
Sym	Description
G6	Plug, EMI Spring, (MS27467T)
07	Receptacle, Jam-nut (MS27468T)
D0	Receptacle, Wall-mount Front Panel, Standard Holes (MS27466T)
E0	Receptacle, Extended Wall-mount, Back Panel, Standard Holes (MS27656T)
CS	Receptacle, Wall-mount, Standard Clinch-nuts
CM	Receptacle, Wall-mount, Metric Clinch-nuts
HS	Receptacle, Wall-mount, Standard Helicoils
HM	Receptacle, Wall-mount, Metric Helicoils
05	Receptacle, In-Line

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TABLE III - CONTACT REFERENCE GUIDE							
Symbol	Description	Glenair P/N	Contact Size	Accommodates Awg Size	Wire Type	Grommet Follower P/N	Application Notes
C	Coax Per M39029/76 M39029/77	Pin: 852-008-16-424 Socket: 852-009-16-428	16	Coax Cable	RG174, RG316, RG179	N/A	Analog Radio Frequency Or Microwave Applications
	Coax Per M39029/102 M39029/103	Pin: 852-004-12-558 Socket: 852-005-12-559	12	Coax Cable	RG174, RG316, RG179	N/A	
	M39029/59 M39029/60 Coax Per	Pin: 852-007-08-367 Socket: 852-006-08-366	8	Coax Cable	M17/95-RG180	859-042-02	
C1	Coax, 75 OHM	Pin: 852-056-01F Socket: 852-057-01F	8	Coax Cable	V73263, V75268, V76261	859-042-01	Analog Radio Frequency Or Microwave Applications
D	Differential Twinax	Pin: 853-014-05 Socket: 853-013-05	8	24 AWG Twinax Cable	M17/176-00002	859-042-01	1553 DATABUS/ Differential Signal
E	EI Ochito	Pin: 858-003-02 Socket: 858-004-02	8	26 AWG	963-003-26 963-033-26	687-643-8-2	1G/10G BASE-T Ethernet (White)
		Pin: 858-028-02 Socket: 858-029-02		24/26-30 AWG	963-110 & 963-118	687-643-8-2	USB 3.0 (BLUE)
		Pin: 858-030-02 Socket: 858-031-02		26-30 AWG	963-033-26	687-643-8-2	SATA 3.0 General High Speed (Red)
P	Power	Pin: 850-014 Socket: 850-013	8	8 AWG	M22759/11 OR EQUIV	859-042-03	Power
Q	Quadrax	Pin: 854-001-02 Socket: 854-002-02	8	24 AWG Quadrax	963-020	859-042-02	10/100base-T Ethernet
T	Triax/ Concentric Twinax	Pin: 853-003-08-625 Socket: 853-004-08-628	8	Twinax Cable	M17/176-00002	859-042-01	1553 Databus

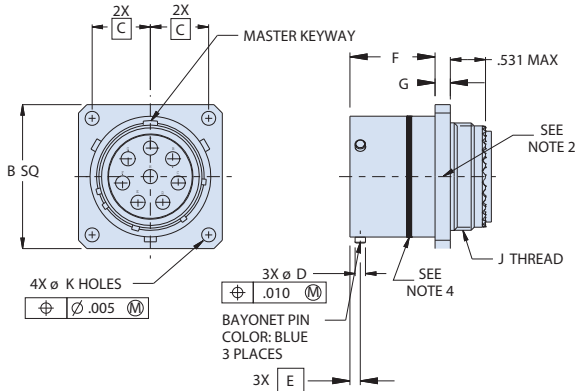
NOTES

- Material/finish:
 - Shell, barrel, coupling nut, jam-nut - see Table I
 - Insulator - high-grade rigid dielectric / N.A
 - For common ground option - al alloy / MFG. option
 - Seals, grommet - fluorosilicone blend / N.A.
 - Contacts & grommet follower to be ordered separately.
- Assembly is identified with glenair's name, cage code, part number, and date code, space permitting
- Glenair's 231-105 connectors are designed to mate with any QPL manufacturer's MIL-DTL-38999, Series I connectors having the same shell size, insert arrangement, and polarization.
- Blue color band indicates rear release retention system.
- All contacts, insertion/removal tool, and sealing plugs to be ordered separately.
- Consult factory for crimp tools and/or accessory selection.
- Alternate polarization 'U' (UNIVERSAL) is a non-standard MIL-SPEC option which allows for mating to any QPL manufacturer's MIL-DTL-38999, Series I connector having the same shell size, insert arrangement, and mating contact size. Universal connectors are intended for use in testing facilities only and should be highly evaluated before consideration in another environment.
- See Figure 2 for reference orientation of the inner pins relative to connector main key/keyway.
- Ground plane option only available for insert arrangements where all contacts are shielded type.
- Optional mod code 909** can be added to the end of part number to include contacts listed in Table III. See mod code 909 drawing. Combo layouts shall include signal contacts IAW M39029/56 & /58. Contact manufacturer for additional options.

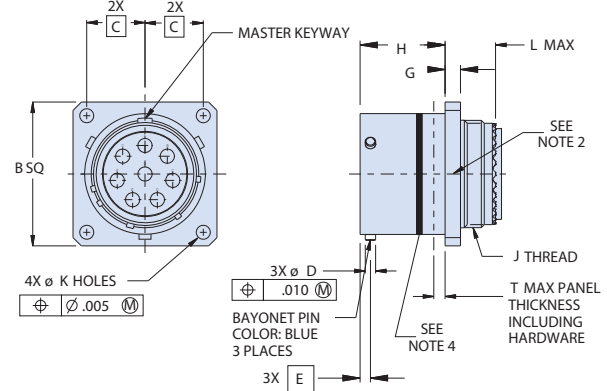
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TABLE IV - Wall-mount



D0 - WALL MOUNT FRONT PANEL RECEPTACLE
WITH STANDARD HOLES (MS27466T)

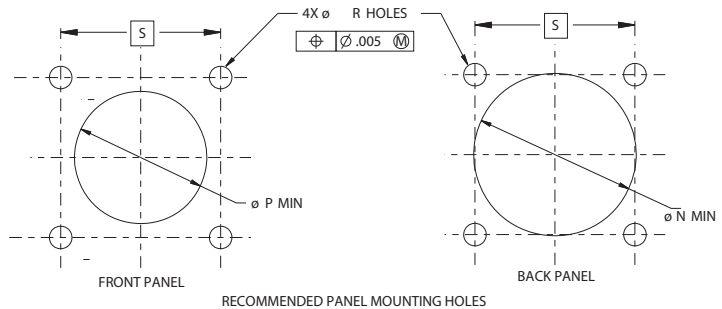


E0 - WALL MOUNT BACK PANEL RECEPTACLE
WITH STANDARD HOLES (MS27656T)

Shell Size Code	Shell Size	B SQ	C BSC	F	G	H	J Thread	øK Holes	L Max	øD	E BSC	T Max
A	9	.958 (24.33) .918 (23.32)	.3595 (9.13)				.4375-28 UNEF-2A					
B	11	1.051 (26.70) 1.011 (25.68)	.406 (10.31)				.5625-24 UNEF-2A					
C	13	1.145 (29.08) 1.105 (28.07)	.453 (11.51)	.632 (16.05)	.100 (2.54)	.820 (20.83)	.6875-24 UNEF-2A	.138 (3.51) .123 (3.12)	.469 (11.91)	.084 (2.13) .076 (1.93)	.100 (2.54)	.234 (5.94)
D	15	1.239 (31.47) 1.199 (30.45)	.4845 (12.31)	.627 (15.93)	.085 (2.16)	.815 (20.70)	.8125-20 UNEF-2A					
E	17	1.332 (33.83) 1.292 (32.82)	.531 (13.49)				.9375-20 UNEF-2A					
F	19	1.458 (37.03) 1.418 (36.02)	.578 (14.68)				1.0625-18 UNEF-2A					
G	21	1.582 (40.18) 1.542 (39.17)	.625 (15.88)	.602 (15.29)	.130 (3.30)	.790 (20.07)	1.1875-18 UNEF-2A	.157 (3.99) .142 (3.61)	.500 (12.70)			.204 (5.18)
H	23	1.708 (43.38) 1.668 (42.37)	.6875 (17.46)	.597 (15.16)	.115 (2.92)	.785 (19.94)	1.3125-18 UNEF-2A					
J	25	1.832 (46.53) 1.792 (45.52)	.750 (19.05)				1.4375-18 UNEF-2A					
										.131 (3.33) .123 (3.12)	.109 (2.77)	.193 (4.90)

TABLE V - MOUNTING HOLES

Shell Size Code	Shell Size	øN Min	øP Min	øR Holes	S BSC
A	9	.656 (16.66)	.516 (13.11)		.719 (18.26)
B	11	.796 (20.22)	.625 (15.88)		.812 (20.62)
C	13	.922 (23.42)	.750 (19.05)	.133 (3.38) .123 (3.12)	.906 (23.01)
D	15	1.047 (26.59)	.906 (23.01)		.969 (24.61)
E	17	1.219 (30.96)	1.016 (25.81)		1.062 (26.97)
F	19	1.297 (32.94)	1.141 (28.98)		1.156 (29.36)
G	21	1.422 (36.12)	1.266 (32.16)		1.250 (31.75)
H	23	1.547 (39.29)	1.375 (34.92)	.159 (4.04) .149 (3.78)	1.375 (34.92)
J	25	1.672 (42.47)	1.484 (37.69)	.155 (3.94) .145 (3.68)	1.500 (38.10)



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TABLE VI - Wall-mount, Clinch-nut AND HELICOIL

Shell Size Code	Shell Size	B' SQ	C BSC	G	G'	H	J Thread	K' Thread	K' Thread	L Max	ØD	E BSC	T Max
A	9	1.094 (27.79) 1.054 (26.77)	.3595 (9.13)				.4375-28 UNEF-2A						
B	11	1.187 (30.15) 1.147 (29.13)	.406 (10.31)				.5625-24 UNEF-2A						
C	13	1.281 (32.54) 1.241 (31.52)	.453 (11.51)	.100 (2.54)	.179 (4.55)	.820 (20.83)	.6875-24 UNEF-2A			.469 (11.91)			.234 (5.94)
D	15	1.344 (34.14) 1.304 (33.12)	.4845 (12.31)	.085 (2.16)	.140 (3.56)	.815 (20.70)	.8125-20 UNEF-2A	.112-40 UNC-3B	M3X0.5		.084 (2.13) .076 (1.93)	.100 (2.54)	
E	17	1.437 (36.50) 1.397 (35.48)	.531 (13.49)				.9375-20 UNEF-2A						
F	19	1.531 (38.89) 1.491 (37.87)	.578 (14.68)				1.0625-18 UNEF-2A						
G	21	1.625 (41.28) 1.585 (40.26)	.625 (15.88)	.130 (3.30)	.190 (4.83)	.790 (20.07)	1.1875-18 UNEF-2A						.204 (5.18)
H	23	1.750 (44.45) 1.710 (43.43)	.6875 (17.46)	.115 (2.92)	.170 (4.32)	.785 (19.94)	1.3125-18 UNEF-2A	.138-32 UNC-3B	M4X0.7	.500 (12.70)			
J	25	1.875 (47.63) 1.835 (46.61)	.750 (19.05)				1.4375-18 UNEF-2A				.131 (3.33) .123 (3.12)	.109 (2.77)	.193 (4.90)

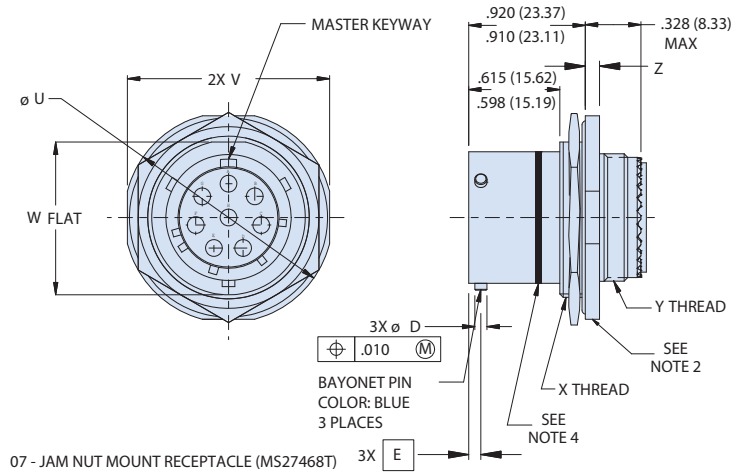
TABLE VII - MOUNTING HOLES

Shell Size Code	Shell Size	ØN Min	ØR Holes	S BSC
A	9	.656 (16.66)		.719 (18.26)
B	11	.796 (20.22)		.812 (20.62)
C	13	.922 (23.42)		.906 (23.01)
D	15	1.047 (26.59)	.133 (3.38) .123 (3.12)	.969 (24.61)
E	17	1.219 (30.96)		1.062 (26.97)
F	19	1.297 (32.94)		1.156 (29.36)
G	21	1.422 (36.12)		1.250 (31.75)
H	23	1.547 (39.29)	.159 (4.04) .149 (3.78)	1.375 (34.92)
J	25	1.672 (42.47)	.155 (3.94) .145 (3.68)	1.500 (38.10)

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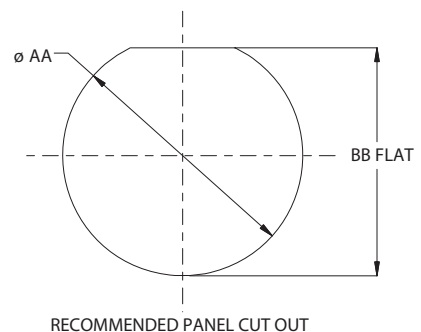
TABLE VIII - Jam-nut MOUNT



Shell Size Code	Shell Size	ϕU	V	W Flat	X Thread	Z	L Max	ϕD	E BSC	ϕFF	ϕGG
A	9	1.204 (30.58) 1.172 (29.77)	1.078 (27.38) 1.046 (26.57)	.655 (16.64) .645 (16.38)	.6875-24 UNEF-2A	.120 (3.05) .099 (2.51)	1.006 (25.55)	.084 (2.13) .076 (1.93)	.100 (2.54)	.475 (12.07)	.538 (13.67)
B	11	1.391 (35.33) 1.359 (34.52)	1.266 (32.16) 1.234 (31.34)	.755 (19.18) .745 (18.92)	.8125-20 UNEF-2A					.600 (15.24)	.662 (16.81)
C	13	1.516 (38.51) 1.484 (37.69)	1.391 (35.33) 1.359 (34.52)	.942 (23.93) .932 (23.67)	1.000-20 UNEF-2A					.700 (17.78)	.762 (19.35)
D	15	1.641 (41.68) 1.609 (40.87)	1.516 (38.51) 1.484 (37.69)	1.066 (27.08) 1.056 (26.82)	1.1250-18 UNEF-2A					.835 (21.21)	.898 (22.81)
E	17	1.766 (44.86) 1.734 (44.04)	1.641 (41.68) 1.609 (40.87)	1.191 (30.25) 1.181 (30.00)	1.2500-18 UNEF-2A					.960 (24.38)	1.022 (25.96)
F	19	1.954 (49.63) 1.922 (48.82)	1.828 (46.43) 1.796 (45.62)	1.316 (33.43) 1.306 (33.17)	1.3750-18 UNEF-2A	.151 (3.84) .130 (3.30)	1.037 (26.34)			1.062 (26.97)	1.125 (28.58)
G	21	2.078 (52.78) 2.046 (51.97)	1.954 (49.63) 1.922 (48.82)	1.441 (36.60) 1.431 (36.35)	1.5000-18 UNEF-2A					1.188 (30.18)	1.250 (31.75)
H	23	2.204 (55.98) 2.172 (55.17)	2.078 (52.78) 2.046 (51.97)	1.566 (39.78) 1.556 (39.52)	1.6250-18 UNEF-2A					1.275 (32.39)	1.338 (33.99)
J	25	2.328 (59.13) 2.296 (58.32)	2.204 (55.98) 2.172 (55.17)	1.691 (42.95) 1.681 (42.70)	1.7500-18 UNEF-2A					1.475 (37.47)	1.538 (39.07)

TABLE IX - PANEL-MOUNT

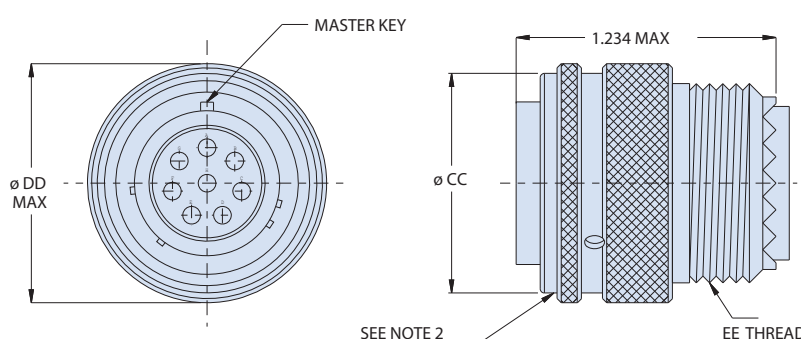
Shell Size Code	Shell Size	ϕAA	BB: Flat
A	9	.703 (17.86): .693 (17.60)	.661 (16.79): .654 (16.61)
B	11	.835 (21.21): .825 (20.96)	.771 (19.58): .761 (19.33)
C	13	1.020 (25.91): 1.010 (25.65)	.955 (24.26): .945 (24.00)
D	15	1.145 (29.08): 1.135 (28.83)	1.085 (27.56): 1.075 (27.30)
E	17	1.270 (32.26): 1.260 (32.00)	1.210 (30.73): 1.200 (30.48)
F	19	1.395 (35.43): 1.385 (35.18)	1.335 (33.91): 1.325 (33.65)
G	21	1.520 (38.61): 1.510 (38.35)	1.460 (37.08): 1.450 (36.83)
H	23	1.645 (41.78): 1.635 (41.53)	1.585 (40.26): 1.575 (40.00)
J	25	1.770 (44.96): 1.760 (44.70)	1.710 (43.43): 1.700 (43.18)



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TABLE X - IN-LINE								
Shell Size Code	Shell Size	F	G	J Thread	øD	E BSC	øM Max	
A	9	.632 (16.05) .627 (15.93)	.100 (2.54) .085 (2.16)	.4375-28 UNEF-2A	.084 (2.13) .076 (1.93)	.100 (2.54)	.859 (21.82)	
B	11			.5625-24 UNEF-2A			.984 (24.99)	
C	13			.6875-24 UNEF-2A			1.156 (29.36)	
D	15			.8125-20 UNEF-2A			1.281 (32.54)	
E	17			.9375-20 UNEF-2A			1.406 (35.71)	
F	19			1.0625-18 UNEF-2A			1.516 (38.51)	
G	21	.602 (15.29) .597 (15.16)	.130 (3.30) .115 (2.92)	1.1875-18 UNEF-2A	.131 (3.33) .123 (3.12)	.109 (2.77)	1.641 (41.68)	
H	23			1.3125-18 UNEF-2A			1.766 (44.86)	
J	25			1.4375-18 UNEF-2A			1.891 (48.03)	

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TABLE XI - PLUG				
 G6 - PLUG WITH EMI SPRING (MS27467T)				
Shell Size Code	Shell Size	øCC	øDD Max	EE Thread
A	9	.791 (20.09); .780 (19.81)	.859 (21.82)	.4375-28 UNEF-2A
B	11	.916 (23.27); .905 (22.99)	.984 (24.99)	.5625-24 UNEF-2A
C	13	1.072 (27.23); 1.061 (26.95)	1.156 (29.36)	.6875-24 UNEF-2A
D	15	1.197 (30.40); 1.186 (30.12)	1.281 (32.54)	.8125-20 UNEF-2A
E	17	1.312 (33.32); 1.301 (33.05)	1.406 (35.71)	.9375-20 UNEF-2A
F	19	1.433 (36.40); 1.422 (36.12)	1.516 (38.51)	1.0625-18 UNEF-2A
G	21	1.555 (39.50); 1.544 (39.22)	1.641 (41.68)	1.1875-18 UNEF-2A
H	23	1.678 (42.62); 1.667 (42.34)	1.766 (44.86)	1.3125-18 UNEF-2A
J	25	1.804 (45.82); 1.793 (45.54)	1.891 (48.03)	1.4375-18 UNEF-2A

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EL OCHITO MATING CONTACT		
Mating Part Number		Protocols
WHITE-PIN	858-003	Use for Gb ethernet and 10Gb ethernet protocols
WHITE-SKT	858-004	Use for Gb ethernet and 10Gb ethernet protocols
BLUE-PIN	858-028	Use for USB 3.0 (90 Ohm)
BLUE-SKT	858-029	Use for USB 3.0 (90 Ohm)
RED-PIN	858-030	Use for all high-bandwidth 100 ohm differential lines
RED-SKT	858-031	Use for all high-bandwidth 100 ohm differential lines

EL OCHITO PROTOCOLS		
		
WHITE	BLUE	RED
10GBASE-T	USB 3.0	HDMI, SATA, DisplayPort

The Ochito octaxial contact has a color-coded insulator signifying the data protocol. White is used for 10 Gb Ethernet, blue is used for USB 3.0, and red is used for multi gigabit 100 ohm protocols including HDMI, DisplayPort and SATA. The connector part number includes a protocol code from Table III. This code determines specific contact position for every combination of protocol.



Example
Code E7



Example
Code E5

TABLE III - OCHITO POSITIONS B = BLUE, R = RED, W = WHITE								
SYM	Contact 1	Contact 2	Contact 3	Contact 4	Contact 5	Contact 6	Contact 7	Contact 8
E	W	W	W	W	W	W	W	W
E2	B	W	W	W	W	W	W	W
E3	R	W	W	W	W	W	W	W
E4	B	B	W	W	W	W	W	W
E5	R	B	W	W	W	W	W	W
E6	R	R	W	W	W	W	W	W
E7	B	B	B	W	W	W	W	W
E8	R	B	B	W	W	W	W	W
E9	R	R	B	W	W	W	W	W
E10	R	R	R	W	W	W	W	W
E11	B	B	B	B	W	W	W	W
E12	R	B	B	B	W	W	W	W
E13	R	R	B	B	W	W	W	W
E14	R	R	R	B	W	W	W	W
E15	R	R	R	R	W	W	W	W
E16	B	B	B	B	B	W	W	W
E17	R	B	B	B	B	W	W	W
E18	R	R	B	B	B	W	W	W
E19	R	R	R	B	B	W	W	W
E20	R	R	R	R	B	W	W	W
E21	R	R	R	R	R	W	W	W
E22	B	B	B	B	B	B	W	W
E23	R	B	B	B	B	B	W	W
E24	R	R	B	B	B	B	W	W
E25	R	R	R	B	B	B	W	W
E26	R	R	R	R	B	B	W	W
E27	R	R	R	R	R	B	W	W
E28	R	R	R	R	R	R	W	W
E29	B	B	B	B	B	B	B	W
E30	R	B	B	B	B	B	B	W
E31	R	R	B	B	B	B	B	W
E32	R	R	R	B	B	B	B	W
E33	R	R	R	R	B	B	B	W
E34	R	R	R	R	R	B	B	W
E35	R	R	R	R	R	R	B	W
E36	R	R	R	R	R	R	R	W
E37	B	B	B	B	B	B	B	B
E38	R	B	B	B	B	B	B	B
E39	R	R	B	B	B	B	B	B
E40	R	R	R	B	B	B	B	B
E41	R	R	R	R	B	B	B	B
E42	R	R	R	R	R	B	B	B
E43	R	R	R	R	R	R	B	B
E44	R	R	R	R	R	R	R	B
E45	R	R	R	R	R	R	R	R