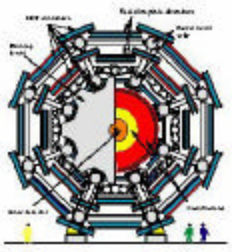


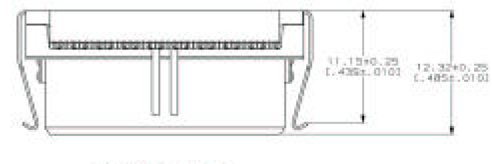
ATLAS
Muon Spectrometer

CSM to Mezz Card Cables
--- Specification ---

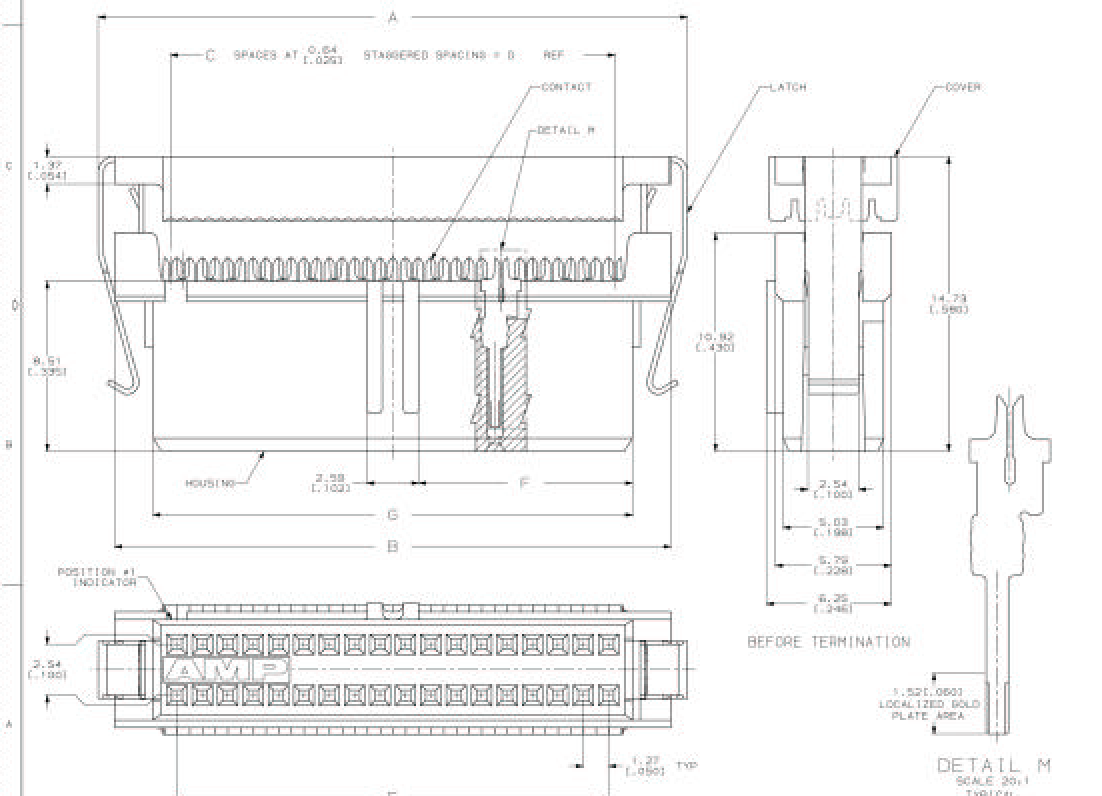
T.Fries, J.Oliver

Updated - 19 Nov 2003

Spec	Comment	Ref page
Connector	Amp system 50 P/N 111196-9	2
Cable type	Amphenol Spectra-Strip, 40 conductor, 30 AWG stranded	3,4
Drain wire	18-24 AWG with #6 Spade lug one end only, 5 cm beyond connector	5,6,7,8
Strain relief	5 cm heat shrink both ends	
Label	CSM/Mezz-Length (cm)-Orientation (e.g. CSM/Mezz-133-A)	
Cable manufacturer	Spectra-Strip Cable Products 720 Sherman Avenue Hamden, Ct 06514 USA Tel: 800.846.6400 Contact : Bob Wiggins	
Orientations	Types A,B,C,D	5,6,7,8
P/N 168-3099-994	33 cm between flats, green outer jacket	
P/N 168-3099-997	50 cm between flats, blue outer jacket	
Cable assembler	Manufacturing Resource Group 930 Washington St. Norwood, Massachusetts 02060 USA Tel : 781.440.9700 Contact : Joe Prior or Jim Vaughn	



TERMINATED VIEW
SCALE 5:1



1. HOUSING MATERIAL: UL RATED 94V-0 LCP THERMOPLASTIC, COLOR-BLACK.
COVER MATERIAL: UL RATED 94V-0 POLYESTER MOLDING COMPOUND, COLOR-BLACK.
2. CONTACT MATERIAL: COPPER ALLOY.
3. LATCH MATERIAL: STAINLESS STEEL.
4. CONTACT FINISH: 0.00076 [.000030] MIN THICK GOLD PLATE ON LOCALIZED GOLD PLATE AREA, 0.00254-0.00508 [.000100-.000200] THICK BRIGHT TIN OR BRIGHT TIN-LEAD ON IDC END, ALL OVER 0.00127 [.000050] MIN THICK NICKEL PLATE.
5. MATES WITH 0.38 [.015] SQUARE OR ROUND POSTS, 0.38±0.25 [.015±.010] LONG, ON 1.27 [.050] x 2.54 [.100] GRID.

G	F	E	D	C	B	A	POSN	PART NO
44.30 [1.744]	20.85 [.821]	41.91 [1.650]	42.54 [1.675]	67	48.13 [1.895]	49.78 [1.960]	68	1-111196-7
64.62 [2.544]	31.01 [1.221]	62.23 [2.450]	62.86 [2.475]	99	68.45 [2.695]	70.10 [2.760]	100	1-111196-6
51.92 [2.044]	24.66 [.971]	49.53 [1.950]	50.16 [1.975]	79	55.75 [2.195]	57.40 [2.260]	80	1-111196-5
46.84 [1.844]	22.12 [.871]	44.45 [1.750]	45.08 [1.775]	71	50.67 [1.995]	52.32 [2.060]	72	1-111196-4
41.76 [1.644]	19.58 [.771]	39.37 [1.550]	40.00 [1.575]	63	45.59 [1.795]	47.24 [1.860]	64	1-111196-3
39.22 [1.544]	18.31 [.721]	36.83 [1.450]	37.46 [1.475]	59	43.05 [1.695]	44.70 [1.760]	60	1-111196-2
32.87 [1.294]	15.14 [.596]	30.48 [1.200]	31.12 [1.225]	49	36.70 [1.445]	38.35 [1.510]	50	1-111196-1
29.06 [1.144]	13.23 [.521]	26.67 [1.050]	27.30 [1.075]	43	32.89 [1.295]	34.54 [1.360]	44	1-111196-0
26.52 [1.044]	11.96 [.471]	24.13 [.950]	24.76 [.975]	39	30.35 [1.195]	32.00 [1.260]	40	111196-9
22.71 [.894]	10.06 [.396]	20.32 [.800]	20.96 [.825]	33	26.54 [1.045]	28.19 [1.110]	34	111196-8
20.17 [.794]	8.79 [.346]	17.78 [.700]	18.42 [.725]	29	24.00 [.945]	25.65 [1.010]	30	111196-7
17.63 [.694]	7.52 [.296]	15.24 [.600]	15.88 [.625]	25	21.46 [.845]	23.11 [.910]	26	111196-6
16.36 [.644]	6.88 [.271]	13.97 [.550]	14.60 [.575]	23	20.19 [.795]	21.84 [.860]	24	111196-5
13.82 [.544]	5.61 [.221]	11.43 [.450]	12.06 [.475]	19	17.65 [.695]	19.30 [.760]	20	111196-4
11.28 [.444]	4.34 [.171]	8.89 [.350]	9.52 [.375]	15	15.11 [.595]	16.76 [.660]	16	111196-3
10.01 [.394]	3.71 [.146]	7.62 [.300]	8.26 [.325]	13	13.84 [.545]	15.49 [.610]	14	111196-2
7.47 [.294]	2.44 [.096]	5.08 [.200]	5.72 [.225]	9	11.30 [.445]	12.95 [.510]	10	111196-1

REVISIONS
B REDRAWN PER DEV 4221-0856
C REV PER EC 0020-989-93
D ...
E REACTIVATE 1--7 PER EC 0020-1460-93
F REACTIVATED -6 PER EC 0020-1636-93
G REACTIVATED -10 & ADDED -1,-2,-3, -9,-13 & -14 PER EC 0020-522-94

DO NOT SCALE PRINT. UNLESS SPECIFIED DIMENSIONS IN mm [INCHES]

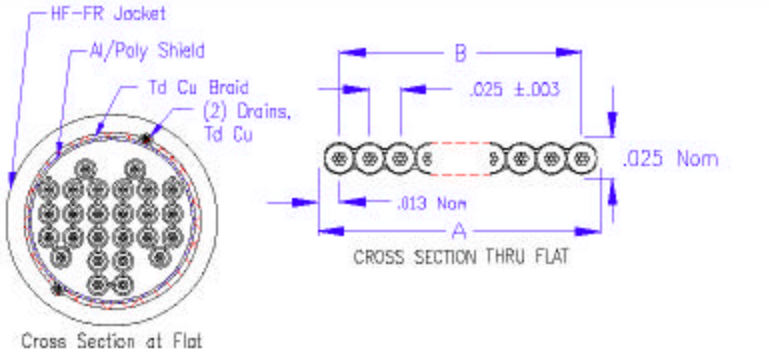
MATERIAL
MOLDED PARTS: 1
CONTACTS: 2
LATCHES: 3
FINISH
CONTACTS: 4

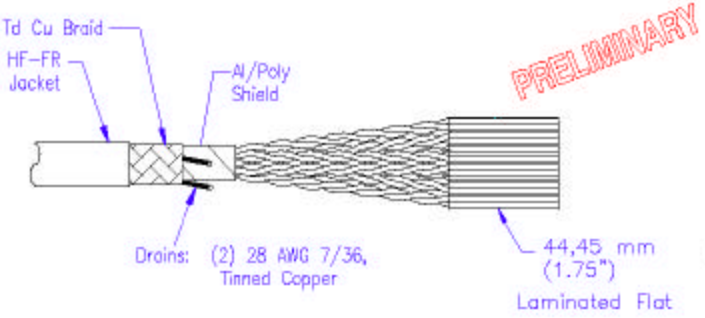
AMP Incorporated
Harrisburg, PA 17105-3608

AMP-LATCH™ SYSTEM 50, RECEPTACLE ASSEMBLY, .025 ¢ IDC

SIZE D | CAGE CODE 00779 | DRAWING NO C-111196
SCALE 10:1 | SHEET 1 OF 1

CUSTOMER DRAWING





PHYSICAL

Conductors:	30 AWG 7/38 Tinned Copper
Insulation:	.006" HF-FR Polyolefin
Laminate:	Polyester/Adhesive
Color Code:	1st Pair Red/White followed by Blue/White and Repeat
Drain:	(2) 28 AWG 7/36 Tinned Copper
Shield:	.001" Aluminum/Polyester
Braid:	Tinned Copper, 85% Min Coverage
Jacket:	.030" Blue HF-FR Polyoelfin
Temperature:	80°C

ELECTRICAL

Impedance:	112 ohms *
Capacitance:	20.6 pF/ft *
Current Rating:	.75 A @ 10°C Rise Above Ambient
Insulation Res:	10^{10} ohms – 10 ft minimum

* Above Values Estimated Differentially

APPROVALS:
UL Pending

Part Number	Count	Pairs	A-Span	B-Span	Ref Dia (Nom EST.)
168-3099-997	40	20	1.001" Nom	0.975" Nom	Ø loose Pairs 0.285" Ø Flat: 0.385"
168-3099-996	40	20	1.001" Nom	0.975" Nom	Ø loose Pairs 0.285" Ø Flat: 0.385"

Center – Center of Flats:
500 ±12,70 mm (19.69 ±0.50") and Repeat.
1000 ±12,70 mm (39.37 ±0.50") and Repeat.

DRAWN	PROD ENG	QA	MKT	P/ECN#	
ETTS 2/3/03					

DRAWING NO. 168-3099-997/996
TITLE: Halogen-Free Loose Pair Round Twist 'N' Flate Cable

AMPHENOL SPECTRA-STRIP
720 SHERMAN AVE HAMDEN CT 06514
TEL (203) 281-3200 FAX (203) 281-5872

Rev 3
SHEET 1 of 2

PROPERTY	STANDARD	REQUIREMENTS	CABLE INSULATION/LAMINATE/JACKET
FLAME AND FIRE PROPAGATION:	IEC 332-1	PASS	PASS
SMOKE DENSITY:	ASTM E 662	D_s < 250 FLAMING AND NON-FLAMING MODES	FLAMING - 15/47, NONFLAMING - 0/25
	IEC 1034-1 AND -2	PASS	PASS
TOXICITY OF FIRE GASSES:	ATS 1000.001	HF <100	HF <100
		HCl <150	HCl <150
		HCN <150	HCN <150
		$SO_2 + H_2S$ <100	$SO_2 + H_2S$ <100
		CO <3500	CO <3500
		$NO_2 + NO_x$ <100	NO + NO <100
CORROSIVITY OF FIRE GASSES:	IEC 754-2	pH >4, CONDUCTIVITY <100uS/cm	pH - 4.5, CONDUCTIVITY - NO
UV RESISTANCE:	IEC 68-2-5	NO DISCOLORATION OR STICKINESS	NA
RADIATION RESISTANCE:	IEC 544-2-5	INDEX >5.7	PASS per CERN, Inner Cable
ACID GAS GENERATION:	MIL-C-24643		0 %
SMOKE INDEX:	NES-711		NA
TOXICITY INDEX:	NES-713		0.917
LIMITING OXYGEN INDEX:	ASTM D 2863		39

ASTM E662: STANDARD TEST METHOD FOR SPECIFIC OPTICAL DENSITY OF SMOKE

ATS 1000.001: AIRBUS INDUSTRY TECHNICAL SPECIFICATION, FIRE TEST SPECIFICATION

IEC 68-2-5: SIMULATED SOLAR RADIATION AT GROUND LEVEL

IEC 332-1: TESTS ON ELECTRIC CABLES UNDER FIRE CONDITIONS

IEC 544-2,-4: GUIDE FOR DETERMINING THE EFFECTS OF IONIZING RADIATION ON INSULATING MATERIALS

IEC 754-2: TEST ON GASES EVOLVED DURING COMBUSTION OF ELECTRIC CABLES

IEC 1034-1,-2:TEST FOR THE MEASUREMENT OF SMOKE DENSITY OF ELECTRIC CABLES BURNING UNDER DEFINED CONDITIONS

PRELIMINARY

DRAWN	PRDD ENG	QA	MKT	P/ECN#	
FITTS 2/3/03					

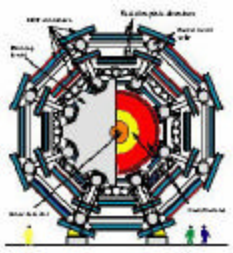
DRAWING NO. 168-3099-997/996

TITLE: Halogen-Free Loose Pair Round Twist 'N' Flat® Cable

AMPHENOL SPECTRA-STRIP
720 SHERMAN AVE TEL (203) 281-3200
HAMDEN CT 06514 FAX (203) 281-5872

Rev 3

SHEET 2 of 2



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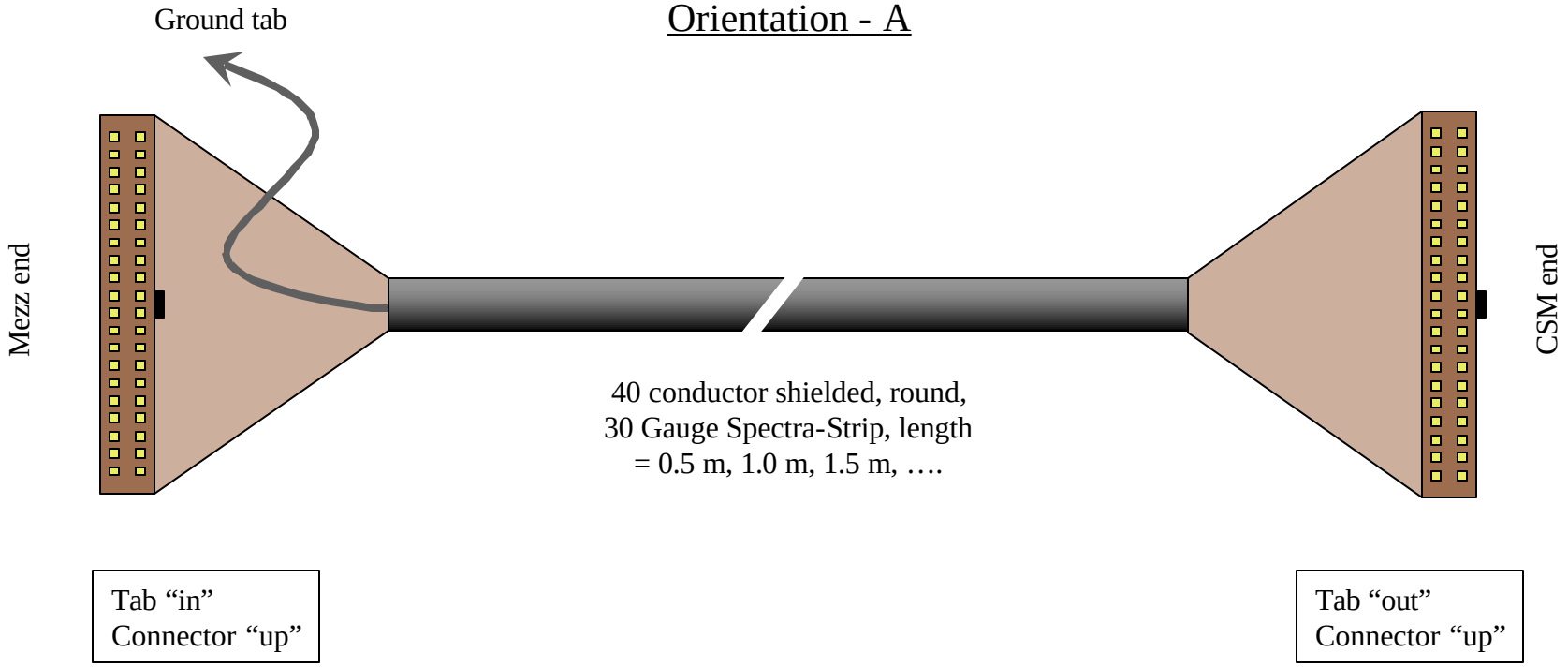
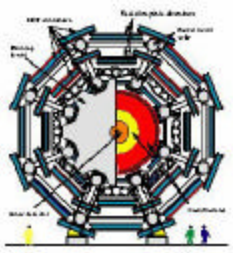
Orientation - A



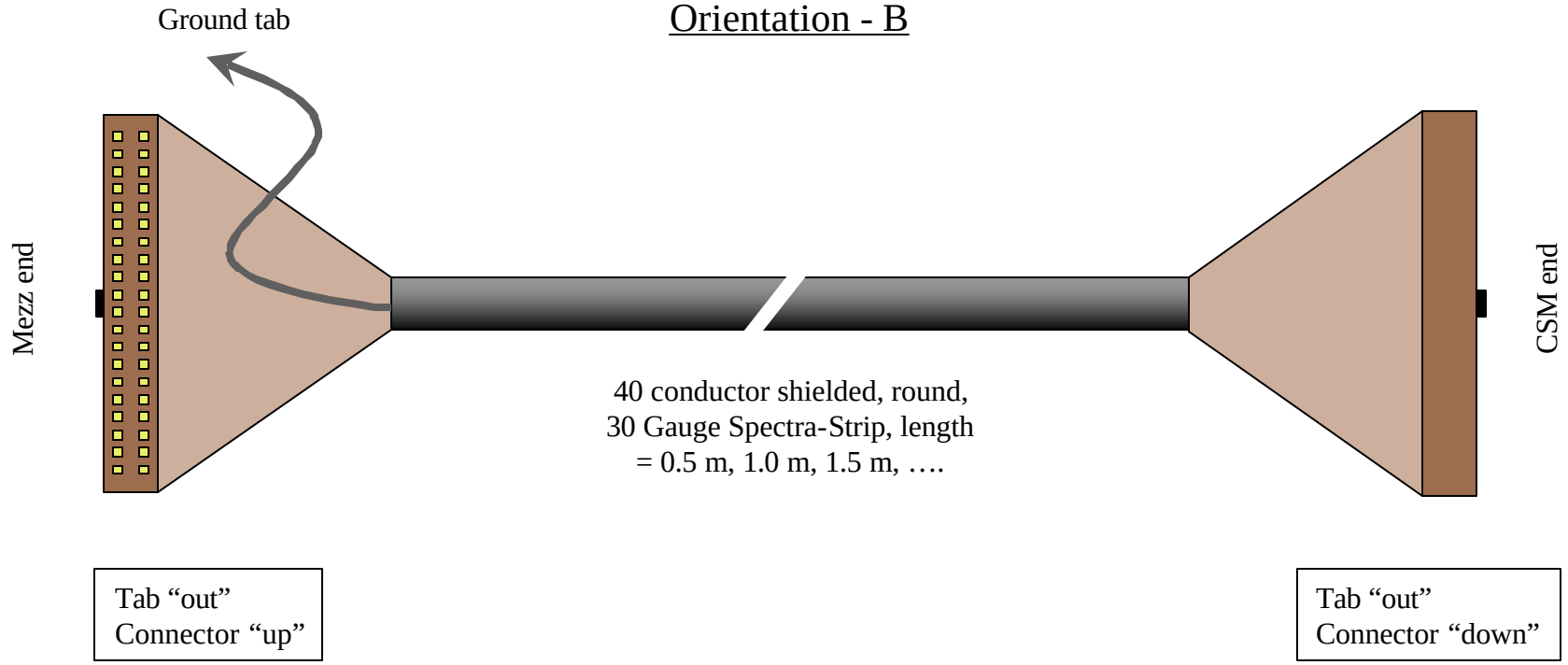
Note on labeling

- US cable assembler, MRG, will place two labels
  - Cable orientation code and length (cm) at mezz card end
  - Part number and date code someplace on cable
- On-chamber cable installers should apply standard numbering labels corresponding to chamber slot number to *both ends of the cable*.



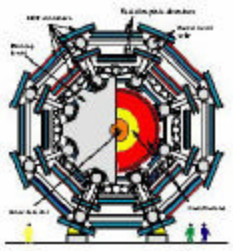
ATLAS
Muon Spectrometer

Orientation - B



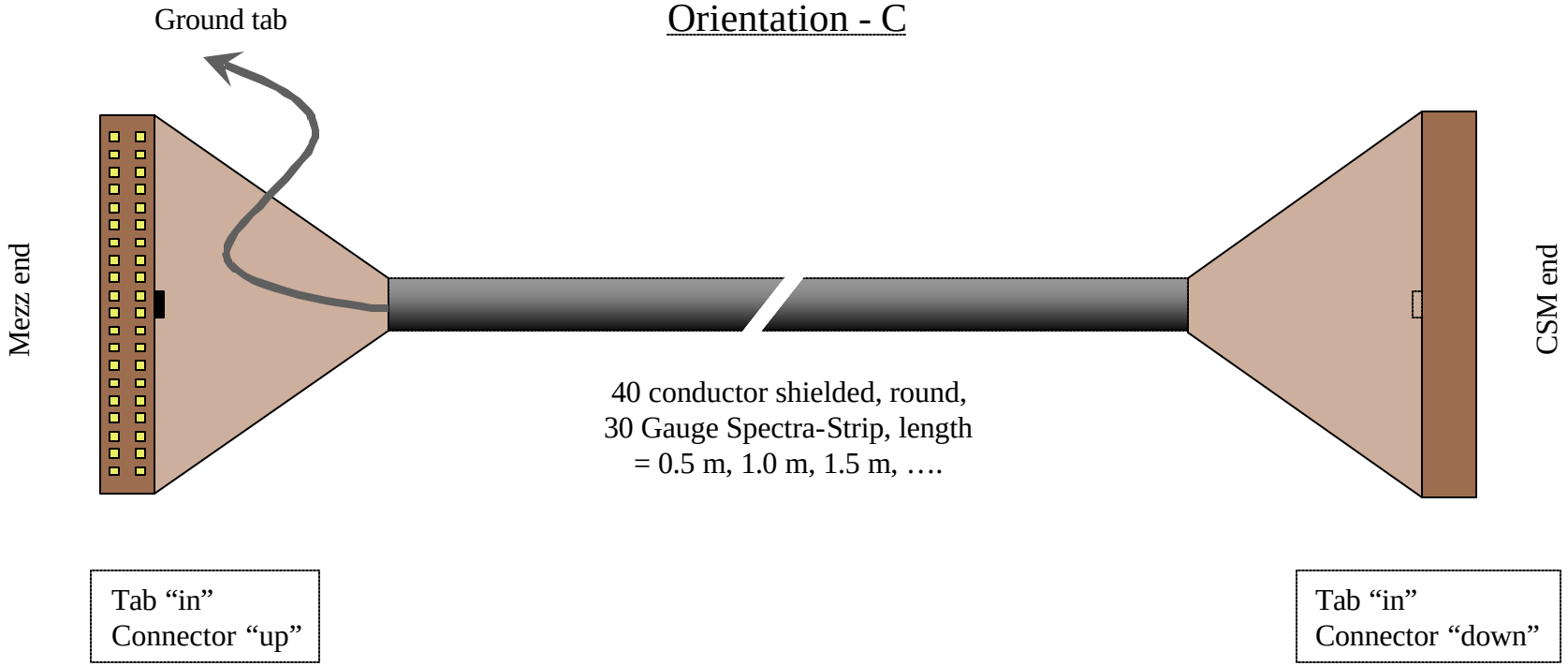
Note on labeling

- US cable assembler, MRG, will place two labels
  - o Cable orientation code and length (cm) at mezz card end
  - o Part number and date code someplace on cable
- On-chamber cable installers should apply standard numbering labels corresponding to chamber slot number to *both ends of the cable*.



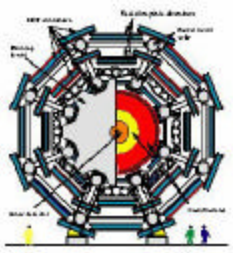
ATLAS
Muon Spectrometer

Orientation - C



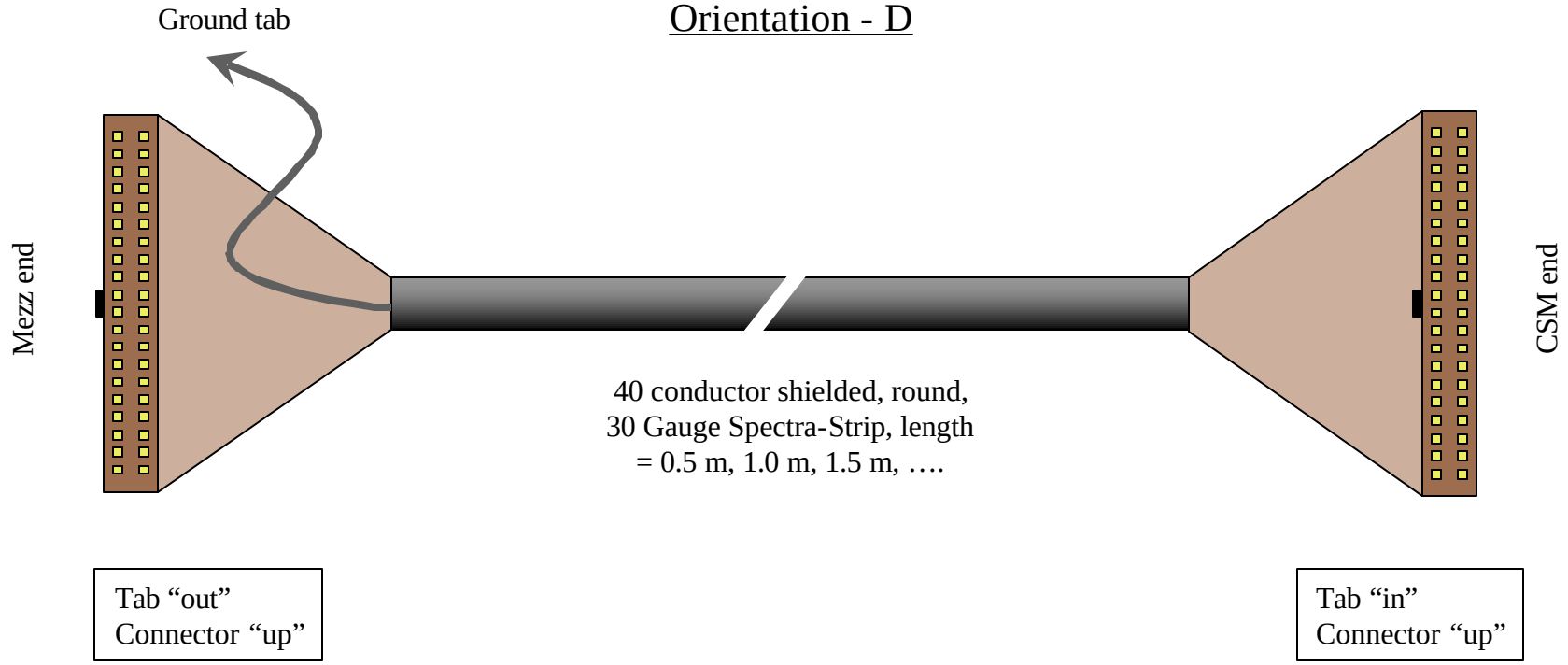
Note on labeling

- US cable assembler, MRG, will place two labels
  - Cable orientation code and length (cm) at mezz card end
  - Part number and date code someplace on cable
- On-chamber cable installers should apply standard numbering labels corresponding to chamber slot number to *both ends of the cable*.



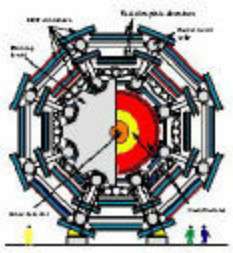
ATLAS
Muon Spectrometer

Orientation - D



Note on labeling

- US cable assembler, MRG, will place two labels
  - o Cable orientation code and length (cm) at mezz card end
  - o Part number and date code someplace on cable
- On-chamber cable installers should apply standard numbering labels corresponding to chamber slot number to *both ends of the cable*.



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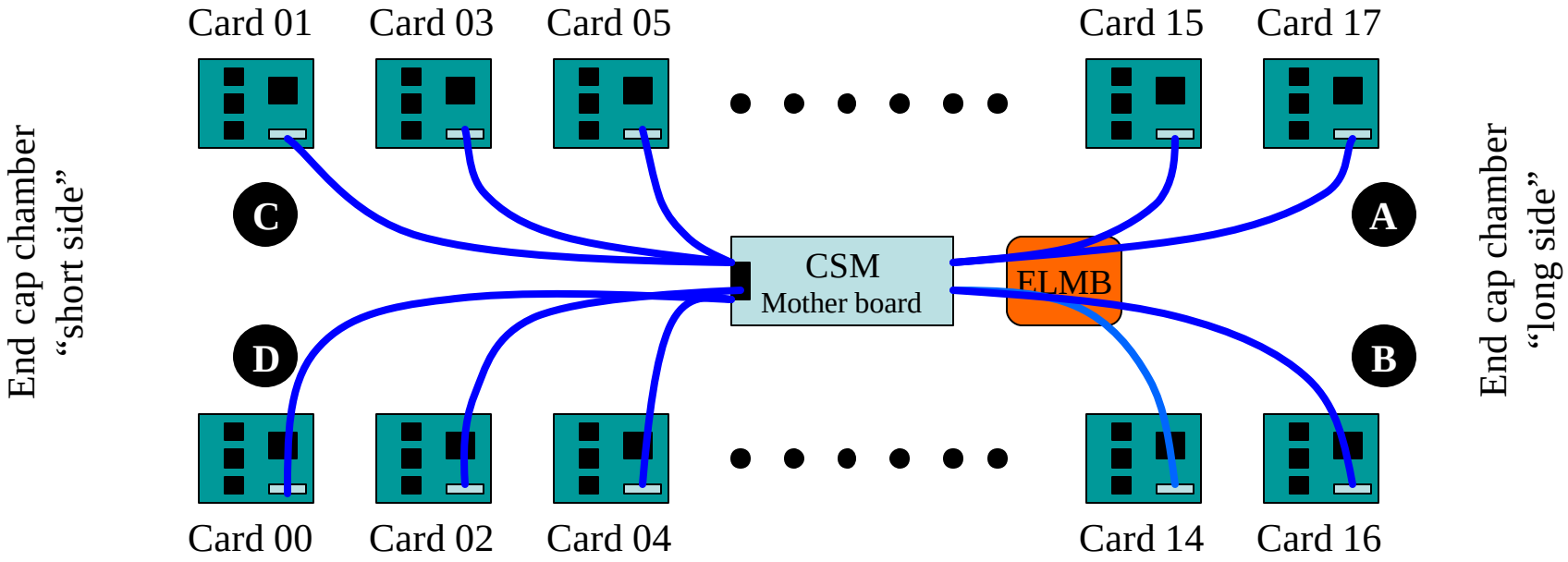
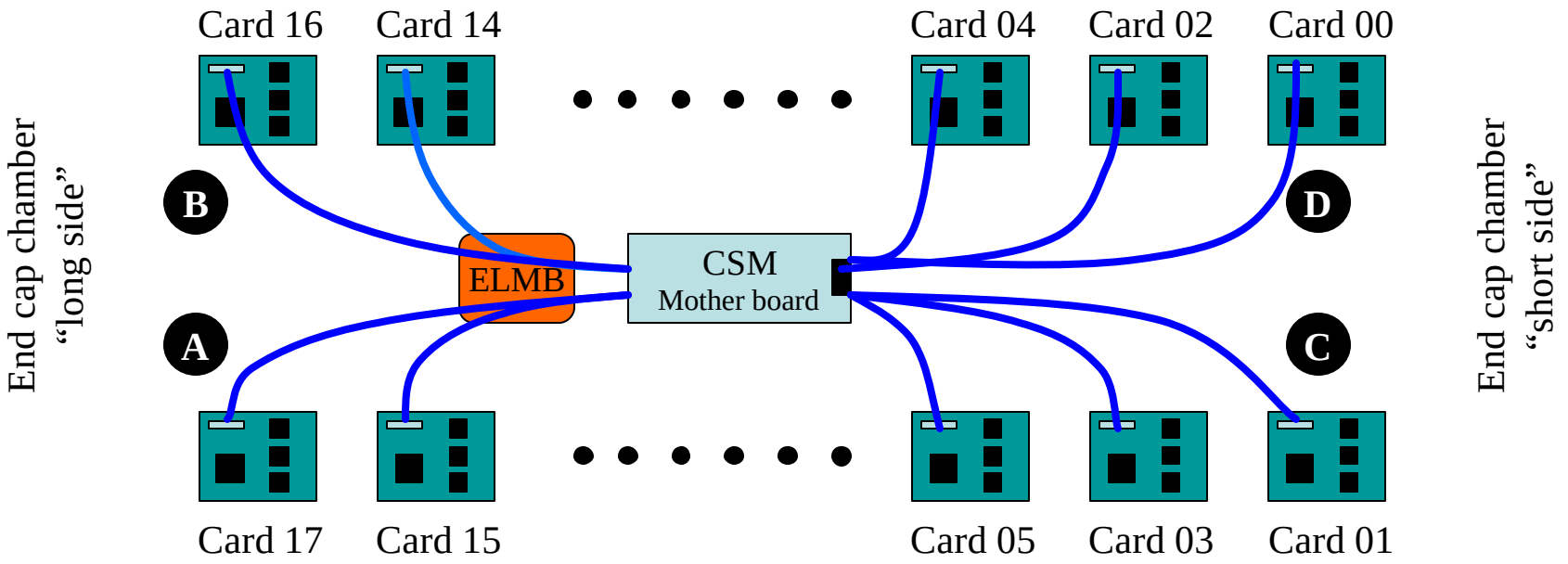
"Standard" cable connection scheme



Note:

- Designations A,B,C, & D correspond to cable "types" or "orientations"
- Chamber shown with
  - mezz card connectors "down" (mezz card screen printing right-side-up)
  - CSM mother board power connector to left
  - ELMB to left

"Standard" cable connection scheme
(shown rotated 180 deg)



Note:

- Designations A,B,C, & D correspond to cable "types" or "orientations"
- Chamber shown with
  - mezz card connectors "up" (mezz card screen printing upsidedown)
  - CSM mother board power connector to right
  - ELMB to left