

# Hipot Testing of Cobalt Connectors and Cables

Cobalt and Cobalt 14 connectors were hipot-tested to establish appropriate voltage ratings. Each configuration was subjected to a qualification test voltage for 60 seconds to verify the voltage rating. Additionally, each configuration was tested to failure by increasing the voltage until a current of more than 1 ma was detected. These test results and voltage ratings apply only to bulkhead connectors and cables factory-assembled by Blue Trail Engineering; they do not apply to cables that are assembled by customers using cable termination kits.

## Test Results

Connector Series	Connector Pin Count	Connector Configuration <sup>1</sup>	Voltage at Failure, Shell-to-Leads <sup>2</sup> (kV)	Qualification Test Voltage, Shell-to-Leads <sup>2</sup> (kV)	Voltage at Failure, Lead-to-Lead <sup>3</sup> (kV)	Qualification Test Voltage, Lead-to-Lead <sup>3</sup> (kV)	Voltage Rating <sup>4</sup> (V)
Cobalt	3-pin	Bulkhead	4.9	1.8	4.2	1.8	400
		Cable	2.8	1.8	3.6	1.8	
		Bulkhead+Cable	2.6	1.8	3.7	1.8	
	3-pin Power	Bulkhead	4.6	1.8	5.7	1.8	400
		Cable	2.4	1.8	4.6	1.8	
		Bulkhead+Cable	2.5	1.8	4.6	1.8	
	4-pin	Bulkhead	3.4	1.8	4.5	1.8	400
		Cable	2.2	1.8	2.7	1.8	
		Bulkhead+Cable	2.2	1.8	2.8	1.8	
	6-pin	Bulkhead	5.1	1.8	4.9	1.8	400
		Cable	3.1	1.8	3.4	1.8	
		Bulkhead+Cable	2.5	1.8	3	1.8	
	6-pin Hybrid <sup>5</sup>	Bulkhead	3.5	1.3	3.1	1.3	150
		Cable	2.2	1.3	1.7	1.3	
		Bulkhead+Cable	2.2	1.3	2.4	1.3	
8-pin <sup>5</sup>	Bulkhead	3.5	1.3	4.2	1.3	150	
	Cable	3.5	1.3	1.5	1.3		
	Bulkhead+Cable	3.2	1.3	3.9	1.3		
Cobalt 14	C14 3-pin	Bulkhead	3.6	1.8	5.9	1.8	400
	C14 4-pin	Bulkhead	3.7	1.8	4.1	1.8	400

### Notes:

1. "Bulkhead" = bulkhead connector alone, "Cable" = single-ended cable alone, "Bulkhead+Cable" = bulkhead connector connected to single-ended cable
2. High-voltage cable attached to all leads, return cable attached to connector shell
3. High-voltage cable and return cable attached to closest pair of adjacent leads
4. Qualification Test Voltage = 2 x Voltage Rating +1000
5. "-R1" revision of the 6-pin Hybrid and 8-pin connectors were used, all other connectors used the "-SS" revision

## Test Parameters

Parameter	Voltage at Failure Tests	Qualification Tests
Hipot Tester Model	Associated Research 3865	
Test Type	DCW	
Voltage	6000 V	1300 V or 1800 V
HI-Limit	1000 uA	
LO-Limit	0.0 uA	
Ramp Up	5.0 s	0.4 s
Dwell Time	10.0 s	60.0 s
Ramp Down	0.0 s	
Charge-LO	1.0 uA	
Arc Sense	5	
Ramp-HI	1.0 uA	
Test Date	March 2023	