TSBC Testing Plan Incident 30043

Report Prepared for: Technical Safety BC

Site: New Westminster, BC

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CANADA'S BEST MANAGED COMPANIES

Contents

1.0 Executive Summary

We completed testing on a failed MCE TORQMAX F5 Elevator Drive (Part # 11-15-2417B-G) on January 12, 2023. The tests were completed based on the manufacturer's reference manual and under the direction of Technical Safety BC.

The testing process was completed based on the G Housing Drive.

MCE-v3.33-LCD-Rev1B > 11.1 > Page 339 > Transistor Testing

Testing was completed using a Fluke 117 Multimeter.

It was noted that while completing the *Testing the braking circuit* test, that the recorded number from (-) Terminal to PB Terminal was less than the expected value. See page 5

See the complete measurements below.

We hope that this report meets all your needs and please contact us if you have any questions or concerns regarding the findings we have presented.

FSR A, Service Electrician, Burnaby

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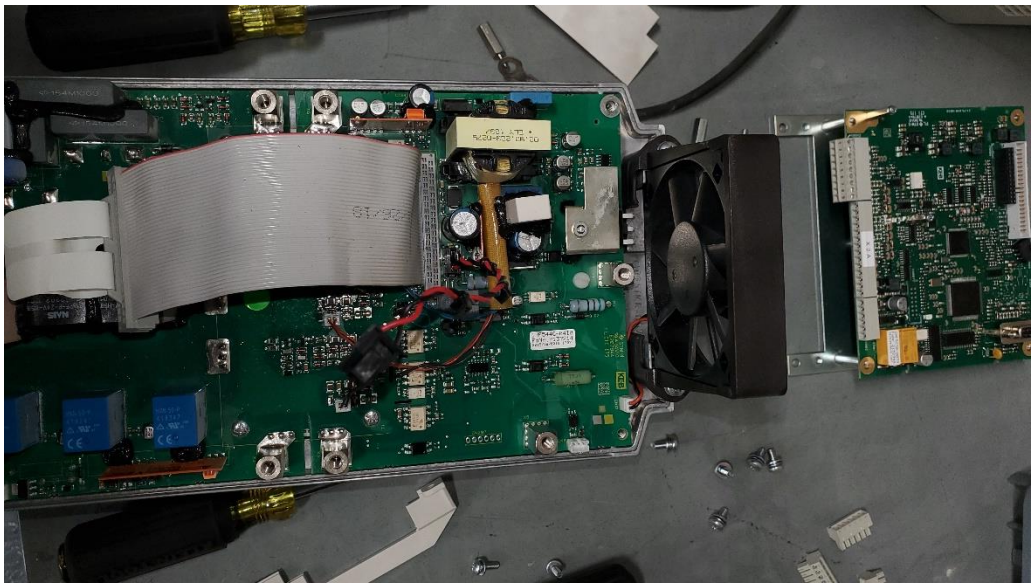
BEST MANAGED COMPANIES

2.0 Site Photos



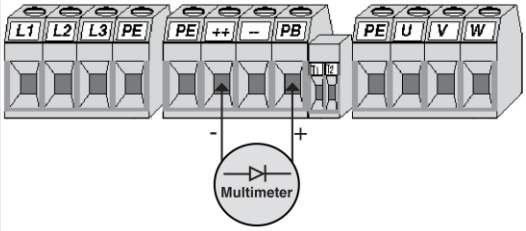
3.0 Testing the braking circuit

3.1 *Manual reference*

Testing the braking circuit

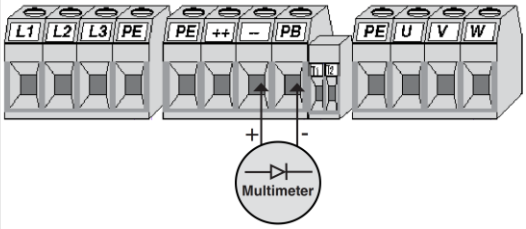
Positive Side

Negative lead of meter to positive DC terminal.
Positive lead of meter to PB terminal.



Negative Side

Positive lead of meter to negative DC terminal.
Negative lead of meter to PB terminal.



E Housing

Measurement	To	Value	Measurement	To	Value
+ Terminal	PB	0.4	- Terminal	PB	Open

G Housing

Measurement	To	Value	Measurement	To	Value
+ Terminal	PB	0.4	- Terminal	PB	1.5

H Housing

Measurement	To	Value	Measurement	To	Value
+ Terminal	PB	0.3	- Terminal	PB	0.3

R, U, and W Housings

Measurement	To	Value	Measurement	To	Value
+ Terminal	PB	0.3	- Terminal	PB	0.3

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3.1 *Site Measurements*

G Housing braking circuit					
Measurement	**To**	**Value**	**Measurement**	**To**	**Value**
(+) Terminal	PB	0.398	(-) Terminal	PB	0.008

4.0 Testing the rectifier, input circuit measurement

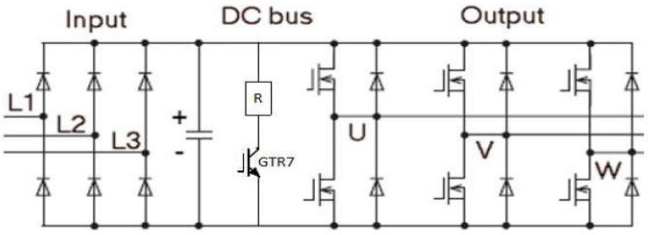
4.1 *Manual reference*

Transistor Tests MCE

11.1. Transistor Tests

The input and output circuits of the inverter can be checked externally with the inverter power off and the motor leads disconnected by use of a multi-meter set to **diode check**.

Note: Different drive housings will have different readings. Measured values per housing are given in tables below.

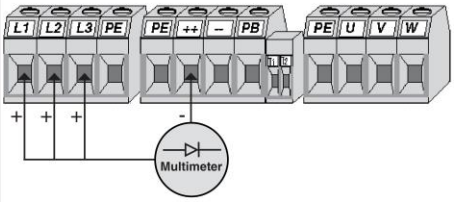


The inverter power must be de-energized and locked out for these tests! Disconnect the mains wiring, motor wiring, and braking resistor from the inverter before taking measurements.

Testing the rectifier, input circuit measurement

Positive Side

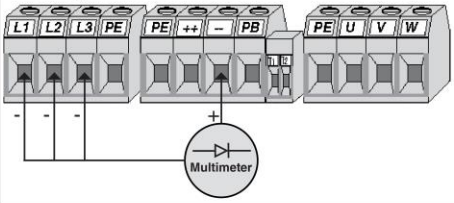
Negative lead of meter to positive DC terminal.
Positive lead of meter to L1/L2/L3 terminals.



E, G, and H Housings					
Measurement	To	Value	Measurement	To	Value
+ Terminal	L1	0.4 - 0.5	- Terminal	L1	0.4 - 0.5
+ Terminal	L2	0.4 - 0.5	- Terminal	L2	0.4 - 0.5
+ Terminal	L3	0.4 - 0.5	- Terminal	L3	0.4 - 0.5

Negative Side

Positive lead of meter to negative DC terminal.
Negative lead of meter to L1/L2/L3 terminals.



R, U, and W Housings					
Measurement	To	Value	Measurement	To	Value
+ Terminal	L1	0.4 - 0.5	- Terminal	L1	0.4
+ Terminal	L2	Open	- Terminal	L2	0.4
+ Terminal	L3	Open	- Terminal	L3	0.4

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4.2 *Site Measurements*

G Housing rectifier, input circuit					
Measurement	**To**	**Value**	**Measurement**	**To**	**Value**
(+) Terminal	L1	0.497	(-) Terminal	L1	0.497
(+) Terminal	L2	0.499	(-) Terminal	L2	0.497
(+) Terminal	L3	0.499	(-) Terminal	L3	0.496

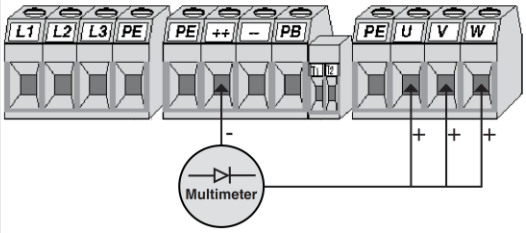
5.0 Testing the IGBTs, output circuit measurement

5.1 *Manual Reference*

Testing the IGBTs, output circuit measurement

Positive Side

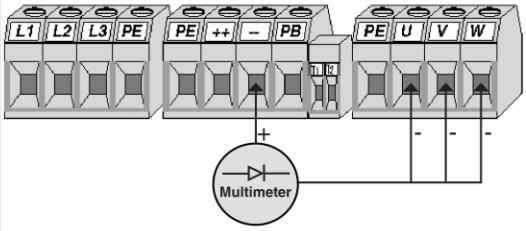
Negative lead of meter to positive DC terminal.
Positive lead of meter to U/V/W terminals.



E, G, and H Housings					
Measurement	To	Value	Measurement	To	Value
+ Terminal	U	0.3 - 0.4	- Terminal	U	0.3 - 0.4
+ Terminal	V	0.3 - 0.4	- Terminal	V	0.3 - 0.4
+ Terminal	W	0.3 - 0.4	- Terminal	W	0.3 - 0.4

Negative Side

Positive lead of meter to negative DC terminal.
Negative lead of meter to U/V/W terminals.



R, U, and W Housings					
Measurement	To	Value	Measurement	To	Value
+ Terminal	U	0.2 - 0.4	- Terminal	U	0.2 - 0.4
+ Terminal	V	0.2 - 0.4	- Terminal	V	0.2 - 0.4
+ Terminal	W	0.2 - 0.4	- Terminal	W	0.2 - 0.4

5.2 *Site Measurements*

G Housing rectifier, output circuit					
Measurement	**To**	**Value**	**Measurement**	**To**	**Value**
(+) Terminal	U	0.388	(-) Terminal	U	0.384
(+) Terminal	V	0.388	(-) Terminal	V	0.395
(+) Terminal	W	0.387	(-) Terminal	W	0.399