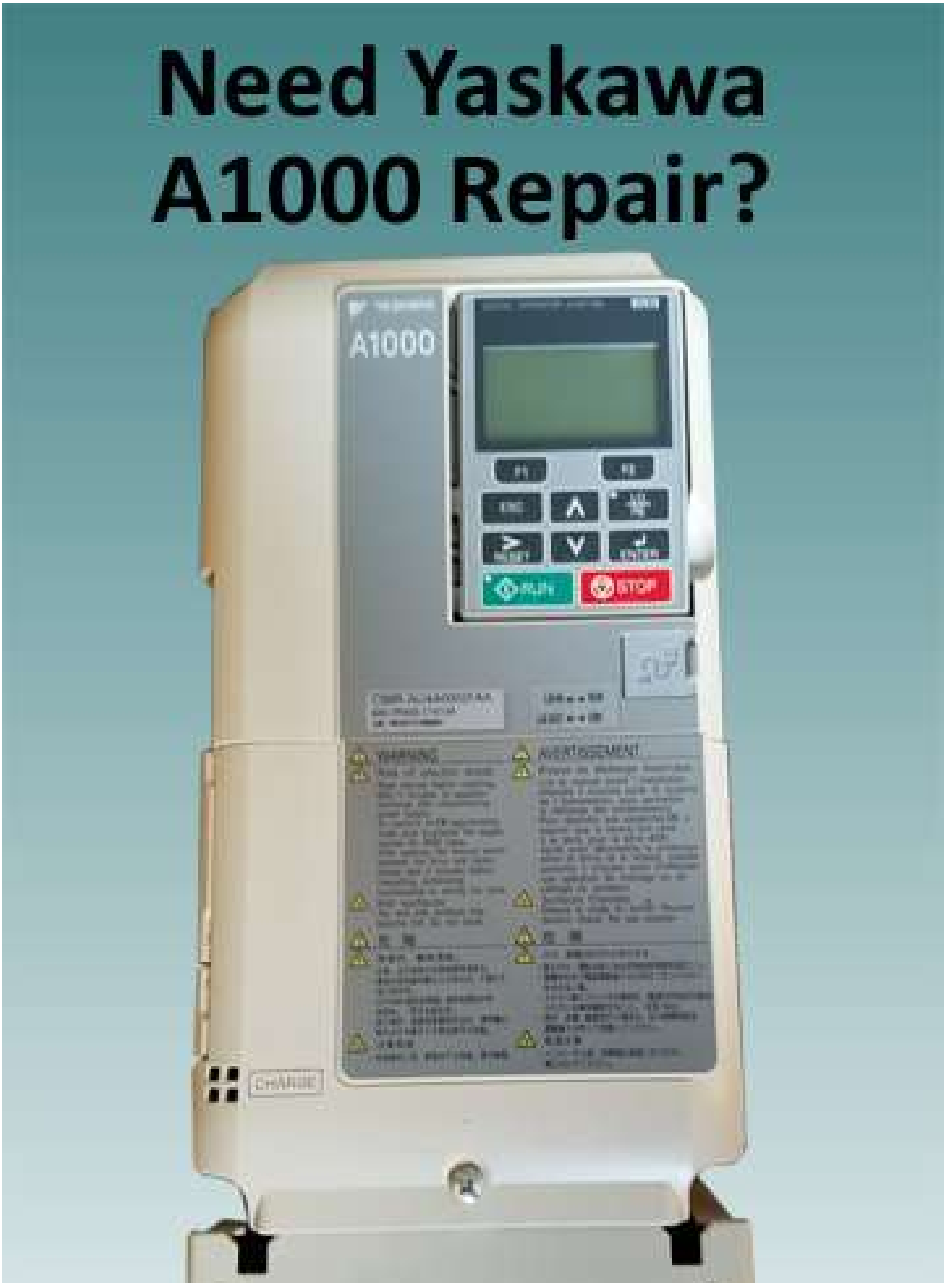
TESTING IGBTS ON THE YASKAWA A1000 DRIVE

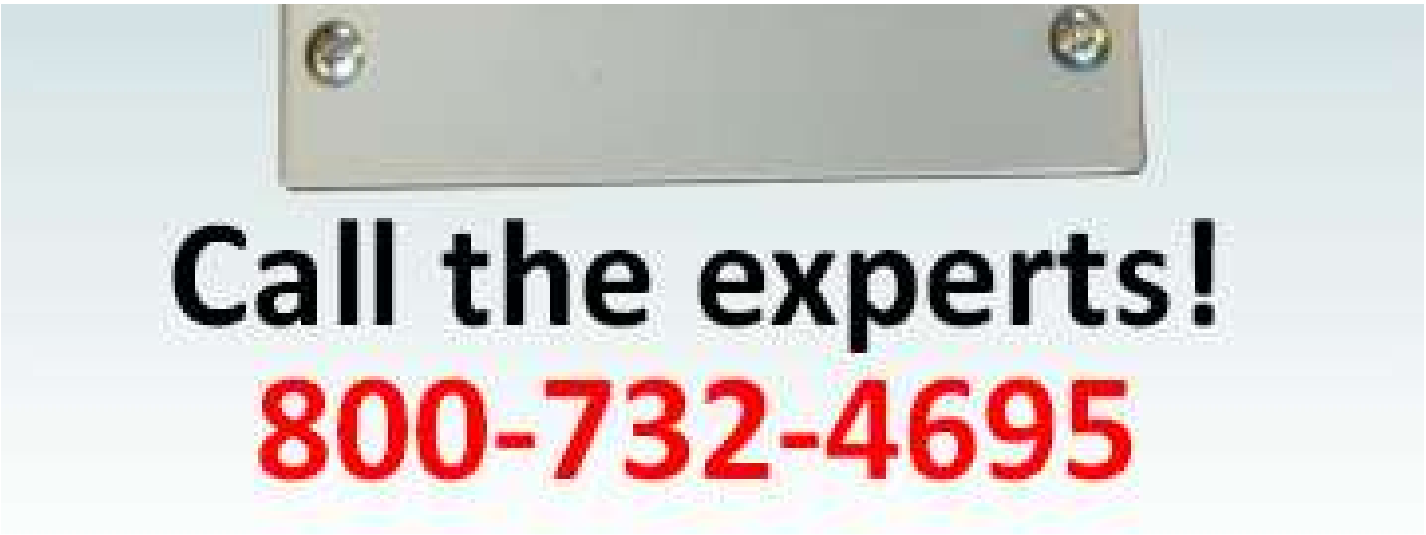
04/10/2017
Problems that arise during operation of your Yaskawa A1000 series drive usually happen at the most inconvenient times. One step of your troubleshooting process to determine if a repair is necessary is a check of the IGBT modules. Before you start these checks be sure that power is disconnected from the drive. Also be sure to disconnect the motor from the output of the drive as well. You should use a digital multimeter set to the diode check function for these tests.

Step 1

Place the positive lead of the meter on the U/T1 terminal. Place the negative lead of the meter on the positive (+) terminal. The meter reading should be approximately 0.5Vdc. Place the positive lead of the meter on the V/T2 terminal. Place the negative lead of the meter on the positive (+) terminal. The meter reading should be approximately 0.5Vdc. Place the positive lead of the meter on the W/T3 terminal. Place the negative lead of the meter on the positive (+) terminal. The meter reading should be approximately 0.5Vdc.

Step 2


Need Yaskawa
A1000 Repair?
A1000
RUN
STOP
CHARGE



Place the positive lead of the meter on the U/T1 terminal. Place the negative lead of the meter on the negative (-) terminal. The meter reading should read OL. Place the positive lead of the meter on the V/T2 terminal. Place the negative lead of the meter on the negative (-) terminal. The meter reading should read OL. Place the positive lead of the meter on the W/T3 terminal. Place the negative lead of the meter on the negative (-) terminal. The meter reading should read OL.

Step 3

Place the positive lead of the meter on the negative (-) terminal. Place the negative lead of the meter on the U/T1 terminal. The meter reading should be approximately 0.5Vdc. Place the positive lead of the meter on the negative (-) terminal. Place the negative lead of the meter on the V/T2 terminal. The meter reading should be approximately 0.5Vdc. Place the positive lead of the meter on the negative (-) terminal. Place the negative lead of the meter on the W/T3 terminal. The meter reading should be approximately 0.5Vdc.

Step 4

Place the positive lead of the meter on the positive (+) terminal. Place the negative lead of the meter on the U/T1 terminal. The meter reading should read OL. Place the positive lead of the meter on the positive (+) terminal. Place the negative lead of the meter on the V/T2 terminal. The meter reading should read OL. Place the positive lead of the meter on the positive (+) terminal. Place the negative lead of the meter on the W/T3 terminal. The meter reading should read OL.

The meter may not show OL immediately. Larger drives take time for the snubber capacitors to charge. The readings listed here are approximate and what you see during testing may vary a little but any major changes or differences indicate an open or shorted IGBT.

TESTING IGBT's SET TO DIODE, BE SURE DRIVE IS DISCONNECTED ON LINE AND LOAD

	TEST LEAD	CONNECTION		TEST LEAD	CONNECTION		ACTUAL READING	TARGET READING
STEP 1	POS	U/T1		NEG	BUS +			approx. 0.5VDC
	POS	V/T2		NEG	BUS +			approx. 0.5VDC
	POS	W/T3		NEG	BUS +			approx. 0.5VDC
STEP 2	POS	U/T1		NEG	BUS -			O/L
	POS	V/T2		NEG	BUS -			O/L
	POS	W/T3		NEG	BUS -			O/L
STEP 3	POS	BUS -		NEG	U/T1			approx. 0.5VDC
	POS	BUS -		NEG	V/T2			approx. 0.5VDC
	POS	BUS -		NEG	W/T3			approx. 0.5VDC
STEP 4	POS	BUS +		NEG	U/T1			O/L
	POS	BUS +		NEG	V/T2			O/L
	POS	BUS +		NEG	W/T3			O/L

METER MAY NOT SHOW O/L IMMEDIATELY ON SOME DRIVES AS SNUBBER CAPACITORS TAKE TIME TO CHARGE

ACTUAL READINGS MAY VARY. LOOK FOR CONSISTENCY ON EACH PHASE

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- JOHN NUZUM / LOUDOUN COUNTY PUBLIC SCHOOLS

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