



Machine Tool Systems, Inc.

Service Bulletin

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Classification: Electrical

Author: Steve Solaris

How To Check VAC Spindle Motor Windings

Dual Range Motor

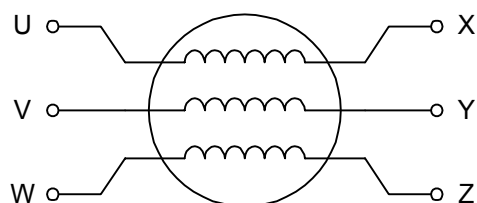
Checking VAC Motor Windings

Please Read and Follow Instructions Closely

Okuma VAC dual range spindle motors have 6 leads which are connected to Low and High range contactors. When it is necessary to check the motor for shorted or Open windings you should first disconnect the motor Leads from the contactors. This is best done at the Terminal junction terminal box XTSP. Refer to your Machines electrical diagrams to determine where XTSP Is located.

Low Range: Wye Connection
High Range: Delta Connection

VAC Two Range Motor



Low and High Ranges are Switched by contactors for Delta or Wye connection.

Checking Winding Continuity and Phase Balance

With leads disconnected, check each winding Phase for continuity as illustrated. Each phase will measure one OHM or less. Therefore, it is best to use a meter which is capable of measuring very low ohm values.

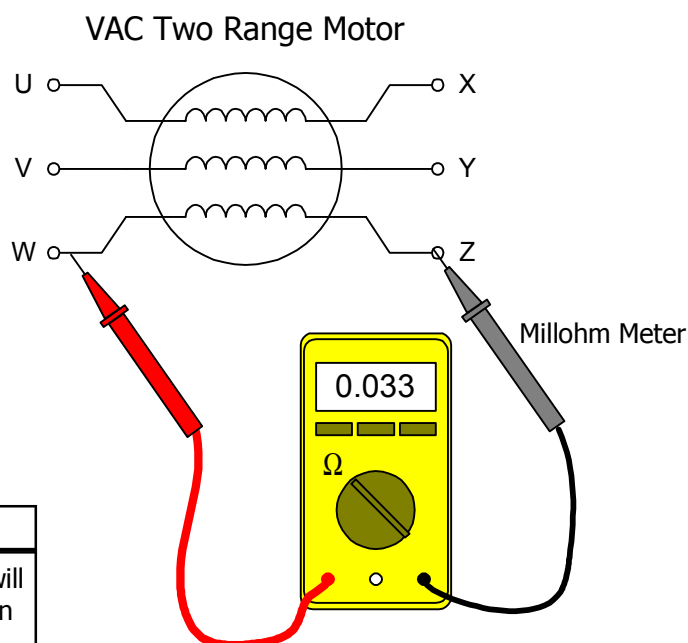
Some digital megohm meters have low ohm ranges which are ideal for checking motor windings. Just remember that each winding will have only a fraction of an ohm.

Balanced Phases

Note: Each phase should measure the same within +/- 1%.

(All Values Are Approximate)

Phase Continuity with Leads Disconnected		
U - X	0.010 to 1.00 ohms	Measured value will vary depending on size of motor.
V - Y	Same	
W - Z	Same	



Megger Test: Each Phase to Ground

Motor problems can be due to reduced insulation strength between the windings and the stator which is usually caused by coolant contamination.

Often this will not be apparent when using a multimeter or DVM to check for short to ground. Therefore it is recommended to use a "MEGGER" set on 500 volts to perform this test.

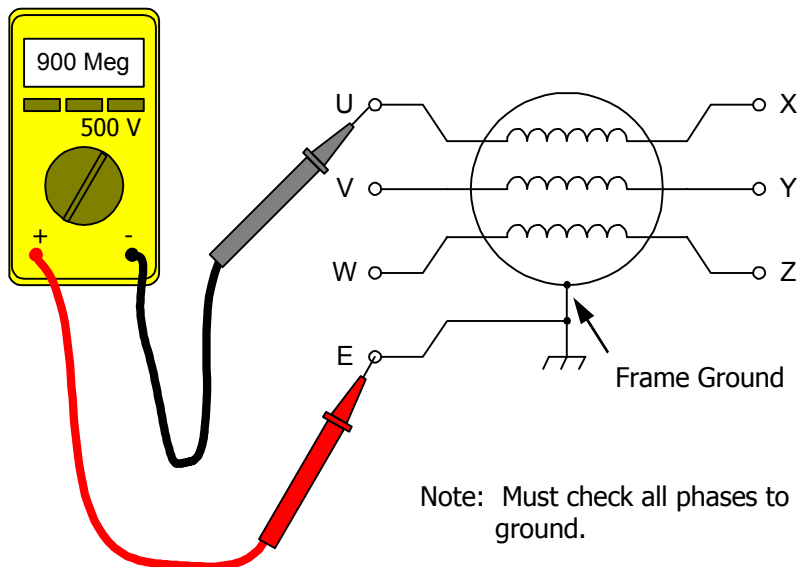
Check each phase, (U, V, & W) to motor ground, At 500 volts for 3 seconds as shown.

Some meggers also have a 1000 volt test range. Use this higher range for larger motors only!!

CAUTION



Disconnect All Motor Leads from VAC Drive Unit First !!!!

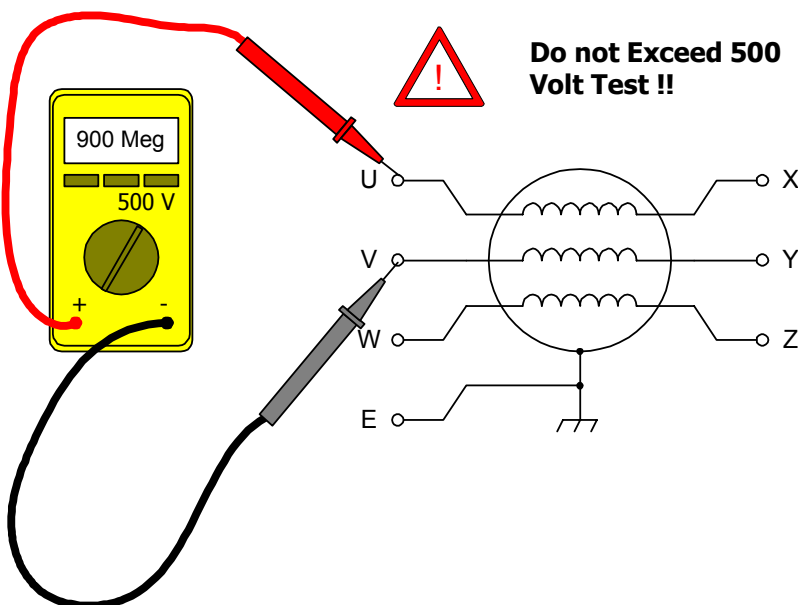


Phase to Ground Check		
U-phase to Ground	900 megohms or greater	Megger set for 500 volt test voltage. Hold for 3-seconds.
V-phase to Ground	Same	
W-phase to Ground	Same	

Checking for Phase-to-Phase Short

Check each phase to another phase for internal shorts.

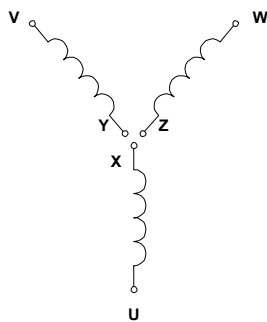
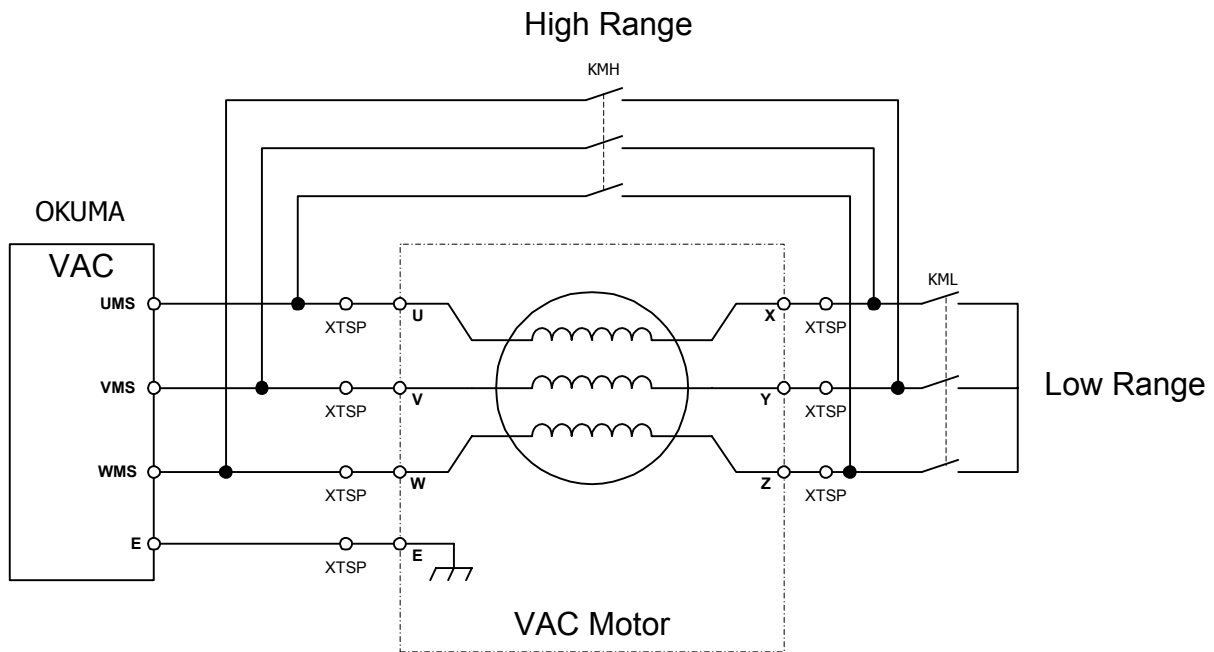
Do not exceed 500 volt test voltage!



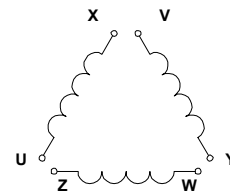
Phase-to-Phase	
U to V	900 megohms or greater
U to W	Same
V to W	Same

Example Circuit Diagram

This is for reference only. The actual wire numbers, connector names, etc. may vary depending on your machine model



WYE Connection



Delta Connection