



RODIX INC.
FEEDER CUBE
VARIABLE FREQUENCY
OIL RESISTANT

APPLICATION NOTE



MODEL VF-120-3

VARIABLE FREQUENCY CONTROL

P/N 121-711

NEMA-12 ENCLOSURE
INPUT: 120 VAC, 50/60 HZ
OUTPUT: 45- 170 HZ
DUTY CYCLE: 0 - 40%
FUSE: 3A MAX.

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ADJUSTMENTS AND SET UP

The VF-120-3, P/N 121-711, is a variable frequency feeder control mounted in a NEMA-12 enclosure. It features manual adjustments for frequency and amplitude (duty cycle). The input power fuse is rated at 3 amps maximum. There are no operator adjustments inside the enclosure.

FEATURES

The frequency is adjusted with two pots located on the front cover, a coarse adjustment pot and a fine adjustment pot. The **Coarse** pot adjusts the output frequency over a range of approximately 45 Hz to 170 Hz. The **Fine** pot alters the frequency setpoint of the coarse pot by +/- 10 Hz. The frequency is increased when either pot is turned clockwise.

The amplitude is adjustable from a duty cycle of 1% to 40%. Adjustment is made with the **Amplitude** knob on the front cover.

A **Run** input is provided for applications which require that the control to be turned on and off remotely. Opening the contact between the two **Run** terminals stops the feeder and closing the contact between the terminals causes the feeder to run. The circuit may be controlled by a customer-supplied contact or by an optional factory-installed relay. The factory-installed relay option allows a remote 24 VDC or 120 VAC signal to operate the **Run** contact.

Overload protection is provided by a 3 Amp fuse, and an over current trip circuit. The over current trip point is fixed at approximately 5 Amps Peak coil current. If an over current trip occurs, the control will stop running and LED D1 will light. To reset the control, turn off the power switch, reduce the amplitude, wait 2 seconds and then re-apply power.

OPERATION AND ADJUSTMENTS

Note: High voltage is present inside the enclosure for up to one minute after the power is turned off. As a safety feature, Red LED D3 is lit anytime there is live voltage inside the enclosure. There are no operator adjustments inside of the enclosure.

Connect the control to the feeder bowl, turn the **Amplitude** knob to 0. Apply power and slowly increase the **Amplitude** adjustment to about 1/3 of maximum. With the **Fine** pot set to mid-range, use the **Coarse** pot to find the frequency at which the feeder system operates the best. Use the **Fine** pot to fine-tune the frequency setting. If the feeder does not operate well at any setting of the **Coarse** pot, repeat this procedure with the **Amplitude** pot set to about 2/3 of maximum.

When the **Coarse** and **Fine** pots have been adjusted for the best frequency, use the **Amplitude** pot to adjust the control for the desired feed rate. As the feeder system runs, the **Fine** pot may have to be adjusted slightly for best operation.

TOOLING CONTROL NOTES

The VF-120-3 Variable Frequency control can be used as a tooling control for Inline Tracks and small bowls. When the tuning of the vibratory feeder is complete, a Fixed Frequency control can be used to power the vibratory feeder. The Fixed Frequency control will be able to drive the feeder slightly harder than the VF-120-3 Variable Frequency control.

Tuning a vibratory feeder with a Variable Frequency control will decrease the amount of time needed to tune a feeder. This is because it takes the guess work out of tuning a feeder.

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TUNING PROCEDURE

A frequency counter is required when performing the following procedure.

1. Firmly mount the vibratory feeder to a solid base, and tighten all bolts. Connect VF-120-3 per instructions.
2. Find the frequency that the parts feed the fastest at. See the OPERATION AND ADJUSTMENT notes.
3. Adjust the springs on the vibratory feeder for the desired line frequency. (60 Hz or 50 Hz)

If the measured frequency is above the desired line frequency, reduce the number of springs used.

If the measured frequency is below the line frequency, increase the number of springs used.

4. Repeat steps 1 through 3 until the vibratory feeder operates the best at the desired line frequency.

WARNING:

Fuses should be replaced with Littelfuse 3AB "Fast Acting" type or equivalent of manufacturer's original value.

Mounting this control on a vibrating surface will void the warranty.

WARRANTY AND TERMS

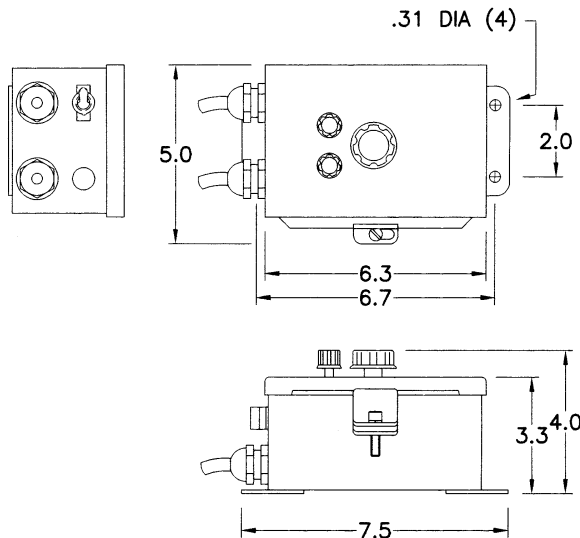
Rodix Control Products are Warranted for normal use for a period of two years. Should you have a problem installing or operating your Rodix Control please call the factory. We have technical help available to answer your questions and to Fax to you any needed information. If you need to return a control for IN or OUT of Warranty Service, please ship it prepaid to:

Rodix Inc., ATTN: Repair Department

No RMA (Return Merchandise Authorization) number is required. If under Warranty, Rodix will repair or replace your control at no charge. If the unit is out of Warranty, we will repair it and you will be billed for the repair charges (Time and Material) plus the return freight. Quotes for repairs are available upon request. A brief note describing the symptoms is appreciated by our Technicians.

Rodix (seller) shall not be responsible for any change, modification, or alteration in the product after it leaves the seller. Seller makes no express or implied warranty of fitness or merchantability or any other express or implied warranty. There are no warranties which extend beyond the face hereof. Seller shall not be liable for consequential, special, or indirect damages of any nature, such as loss of business operation or profits from the use or handling of this product. There shall be no variation or exception from this warranty unless in writing and signed by our authorized representative. The above is in lieu of all other remedies.

DIMENSIONS



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FEEDER CUBE

VF120-3

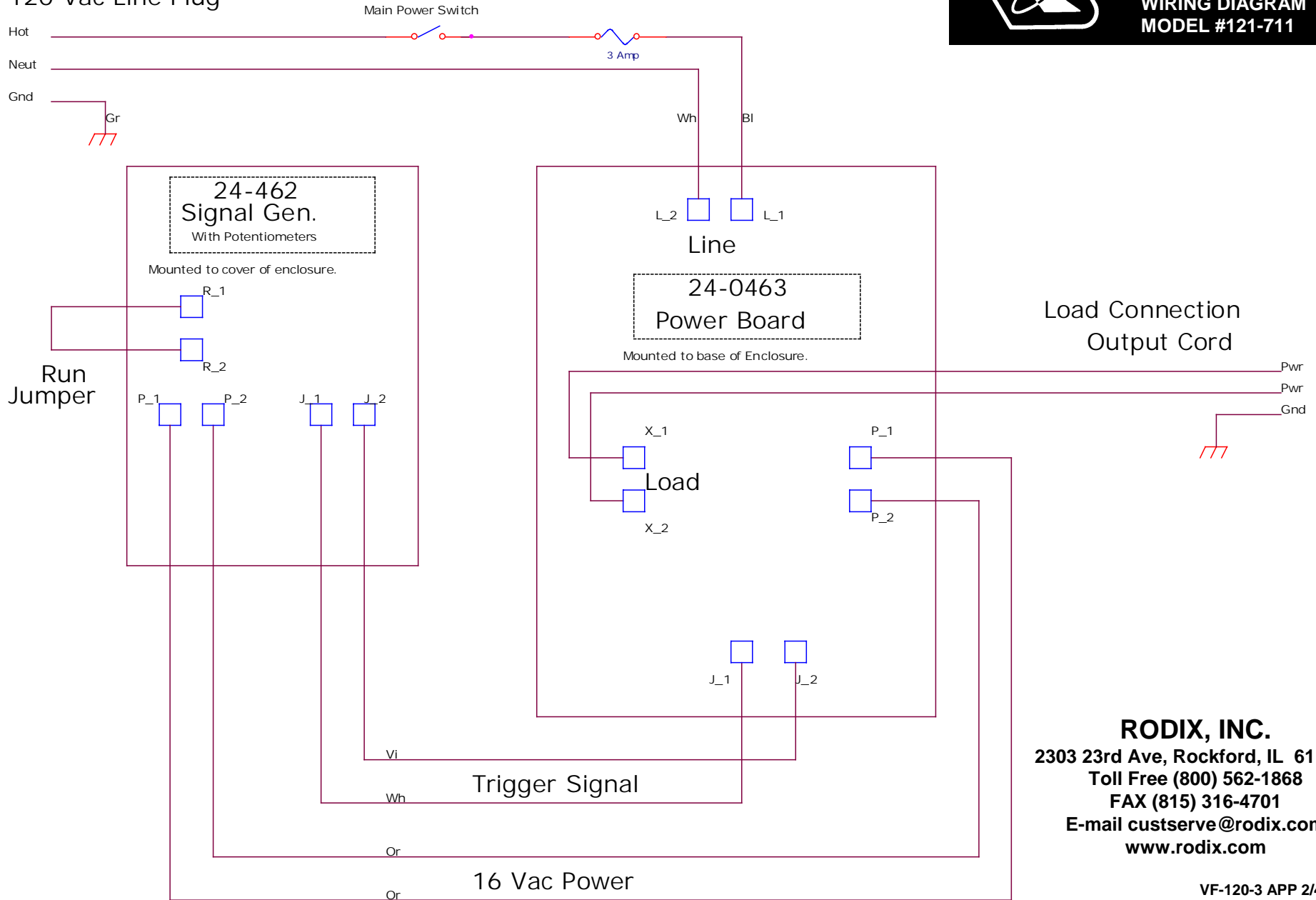
OIL RESISTANT

IMPORTANT: APPLICATION NOTE



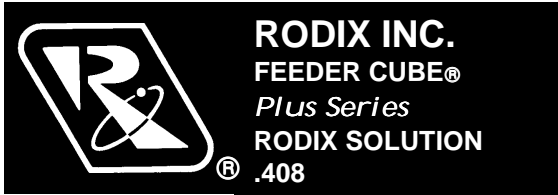
RODIX INC.
FEEDER CUBE
VF-120-3
WIRING DIAGRAM
MODEL #121-711

120 Vac Line Plug



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RODIX SOLUTION

Good wiring practices for avoiding electrical noise problems.

Rodix controls have been designed with a high degree of immunity to electrical noise; however, depending on the control installation, electrical noise can cause problems. These problems occur in less than 1% of the product installations. Most electrical noise problems can be avoided by following some simple guidelines. Good wiring practices need to be used to prevent electrical noise from interfering with your control's operation. Another name for electrical noise is Electro-Magnetic Interference (EMI).

Symptoms of Electrical Noise

The symptoms of electrical noise would appear as follows: a brief pause or a brief "bump" in the vibratory feeder's output that the control automatically recovers from. In rare cases the control will either stop operating or run continuously at full power in 120 pulse mode until the power switch is slowly cycled OFF and ON.

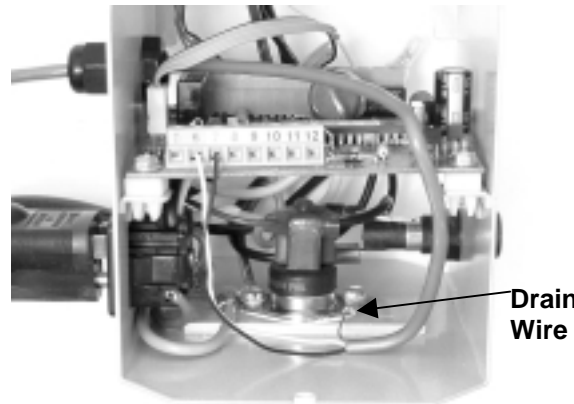
Sources of Electrical Noise

Electrical noise is generated by devices like relay coils, solenoid valves, contactors, servo motors, and variable

frequency inverter drives. The electrical noise is then transferred to another device by one of three ways. The noise could be conducted through the power wires, or capacitively coupled from wire to adjacent wire, or it is transmitted from the wires of a noise source.

Solutions for Electrical Noise

1. Use shielded wires for all I/O (Input / Output) signals. The I/O signals may include: 4-20mA input, Run input, Sensor input, 0-5VDC input, Interlock input or AUX output. The shield "drain" wire should be tied to the chassis in the Rodix control. The drain wire should be kept shorter than 2". Please see the enclosed picture.

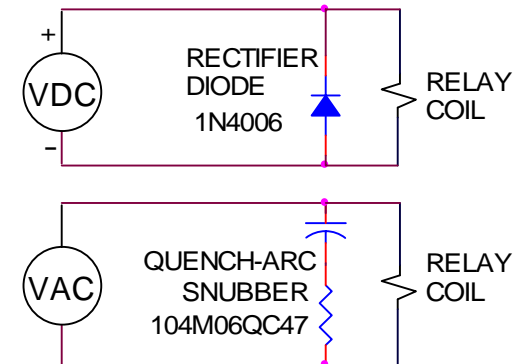


Example of a "drain" wire termination

2. Never run I/O signal wires in the same conduit or raceway as AC power lines such as wires to motors, solenoids, heaters, welders and Rodix controls, etc.

3. I/O wires within an enclosure should be routed as far away as possible from relays, solenoids, transformers, power wiring and other noisy equipment. Keep the I/O signal wires separate from the control's input and output power wiring. Secure the wires in place.

4. Whenever relays or solenoid valves are used, install a Snubber on them to reduce electrical noise. Use a diode on a DC coil. Use a RC Snubber on an AC coil.



5. In extremely high EMI environments, Power Line Filters and ferrite beads can be effective. Install ferrite beads on I/O signal wires as close as possible to the circuit board terminal strip. Loop the wire through the bead several times or use several beads on each wire for additional protection.

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