

SECTION 5: Troubleshooting

5.1 GENERAL

Should the engine experience abnormal behavior, or malfunction during use please cross-reference **Figure 5-4: VNR750EFI Circuit Diagram** for possible causes and solutions.

For additional troubleshooting information contact your dealer or Vanair® Customer Service.

5.2 FAULT LIGHTS (VNR460VEI ENGINE ONLY)

If you have an electronic fuel injection engine, confirm that the engine fault light is not flashing before starting the engine to ensure safety.

When the engine fails to start, suddenly stops during operation, or runs abnormally, please check for a flashing fault status light when the power is turned on and the engine is not running. Refer to **Table 5A: Fault Lights** to determine what the fault indicator means.

1. Normally, the system will perform a self-check after the engine is powered on. The fault light will light up for 4 seconds as part of the self-test before going out.
2. When the engine malfunctions during self-test or during operation, the fault light will illuminate to notify the user. Please observe the fault light flashing when operation has been stopped and it is safe to do so.
3. The fault light turns on for 1.2 seconds and turns off for 0.5 seconds (slow flashing), it indicates a digit in the tens column; The fault light turns on for 0.25 seconds and turns off for 0.5s (quick flashing) is a single digit. For example, the fault light flashes 2 slow flashing and 7 quick flashing you determine this is the number is "27". Referring to the fault table, it shows 27 is a fault code for *Throttle Stuck*.

Another example: If the flash code shows 3 quick flashes (single digit) and no others, it is a "3", - cylinder temperature is too high.

4. Should multiple engine faults occur, the interval between individual flashing fault code numbers is 2 full seconds.
5. After the current flashing fault code (or codes) is shown, the fault light will remain on for 4 seconds, then it will repeat.

5.2.1 FAULT LIGHT DETAILS

1. The Fault Lights cannot be used to replace the *Engine Maintenance Schedule*. The engine should be checked and maintained according to the manufacturers instructions.
2. Explanation of Fault Levels.
 - **Level 0:** the fault does not affect the normal operation of the engine and can be ignored or will correct itself.
 - **Level 1:** the fault will affect system performance to some degree, but is not fatal. In this case, the fault light will alarm and the engine will keep running.
 - **Level 2:** the ECU controls the engine to cut off fuel and ignition to stop the engine, with the fault light flashing; In this case, please DO NOT restart the engine. Follow the instructions in **Table 5A: Fault Lights** for troubleshooting.
3. If the engine malfunctions, please read and remember the flashing code(s) of the fault light for quick problem diagnosis.
4. If the engine does not start please refer to **Table 5B: Troubleshooting**.

TABLE 5A: FAULT LIGHTS

Flashing Code	Fault Level	Fault Description	Solution
2	2	Throttle Position Sensor Fault	Contact your authorized dealer for servicing.
3	1	Cylinder Temperature Too High	Stop the machine and check that the oil was properly added, or if there are any obstructions around the engine that may affect the engine's ability to dissipate heat (after machine cools down). After checking, restart the engine. If the fault cannot be cleared, contact your authorized dealer.
5	0	Low Battery Voltage	Recharge the battery. If the fault cannot be eliminated, contact your authorized dealer.
6	2	System Voltage Too High	Contact your authorized dealer for servicing.
7	2	Cylinder Overheating/High Temperature Alarm	Stop the machine and check that the oil was properly added, or if there are any obstructions around the engine that may affect the engine's ability to dissipate heat (after machine cools down). After checking, restart the engine. If the fault cannot be cleared, contact your authorized dealer.
11	2	Fuel Injection Fault	Contact your authorized dealer for servicing.
13	2	Fuel Pump Fault	Stop the machine to check if the fuel is sufficient. If the fault cannot be eliminated after adding fuel, contact your authorized dealer for servicing.
15	2	Ignition Coil Fault	Contact your authorized dealer for servicing.
17	2	ECU Fault	Contact your authorized dealer for servicing.
18	0	Interference From Crankshaft Position Sensor	Disconnect the power and restart. If the fault cannot be eliminated, contact your authorized dealer for servicing.
19	0	System Reset	Disconnect the power supply, check the circuit for poor contact and restart after troubleshooting. If the fault cannot be eliminated, contact your authorized dealer for servicing.
22	2	Engine Overspeed Fault	Contact your authorized dealer for servicing.
23	2	Speed Control Switch Fault	Contact your authorized dealer for servicing.
25	2	CO Sensor Alarm	Please immediately ventilate and move personnel to an outdoor ventilated area. Move the machine to a well-ventilated location and restart.
27	2	Throttle Stuck	Contact your authorized dealer for servicing.
28	0	Unable to Start	Retry.

5.3 TROUBLESHOOTING

For engine starting issues please refer to **Table 5B: Troubleshooting Table** for additional troubleshooting information.

TABLE 5B: TROUBLESHOOTING TABLE

Failure/Issure	Secondary Condition	Possible Cause	Solution
Engine Does Not Start		• Engine Switch is in the OFF position	Set the engine switch to the ON position.
		• No Fuel	Refuel the tank according to the instruction in this manual.
		• Engine Oil Level Low	Check the engine oil volume. Some engines are equipped with a low oil sensor and will not start if the oil level is below the low oil limit.
		• No Ignition	Remove the spark plug cap. Clean away any dirt or debris from around the base of the spark plug so no dirt falls through the spark plug opening when it is removed. Remove the spark plug from the engine using a spark plug socket, then reinsert it into the spark plug cap. Set the engine switch to the ON position and connect the electrode with any earth ground terminal of the engine. Pull the recoil starter and look for sparks between gap of the spark plug. If there are no sparks, the spark plug needs replacing. Reinstall the spark plug according to the instructions in this manual. Please consult with your dealer if needed or contact Vanair® Customer Service.
Abnormal Behaviour During Opeation			
Low Engine Speed, Inadequate Power Output		• Part/parts wear. • Low ignition energy. • Cylinder carbon deposits. • Mechanical clearance for valve and rocker arm too large. • Only one cylinder working.	• Replace worn part(s). • Remove carbon deposits. • Replace spark plug or flywheel. • Adjust or replace related parts. • Check spark of cylinder that is not working.
Popping		• Wide/narrow spark plug clearance.	• Check spark plug gap.
Hunting		• Governor assembly needs adjustment. (Contact dealer.) • Spark plug issue.	• Adjust governor assembly. • Adjust spark plug gap.
Abnormal Noise		• Clearance between valve and rocker arm is too large. • Cam gear damage.	• Adjust or replace related part or parts. • Replace cam.
Hard Start or Will Not Start			
Weak/No Spark At Spark Plug	Current is Present	• Spark plug carbon deposits. • Spark plug insulation is damaged. • Spark plug gap too wide/narrow.	• Remove carbon build-up from spark plug. • Replace spark plug. • Adjust spark plug gap to 0.6-0.8mm.
	No Current Present	• Spark plug damaged. • Trigger or wiring harness is damaged. • Regulator damage.	• Replace spark plug. • Replace trigger or wiring harness. • Replace regulator.
	Intermittent or No Current Present	• Bad connection between ignition wire and spark plug. • Malfunction or short-circuit of Stop Switch.	• Properly connect ignition wire to spark plug. • Adjust or replace switch.
Ignition/ Fuel Supply Present	Good Compression	• Cylinder is flooded. • Fuel quality poor, or water/ contaminants in fuel.	• Clean spark plug. • Drain and Change fuel.
	Adequate Fuel Supply, Low Compression	• Piston ring worn. • Spark plug loose. • Cylinder Head Gasket leakage. • Mechanical clearance between rocker arm and valve too large. • Timing issue.	• Replace rings. • Tighten plug. • Replace gasket and reassemble head. • Adjust valve clearance. • Adjust timing.
	Ignition/Fuel Supply Work Properly	• Bad connection between ignition wire and spark plug. • Malfunction or short-circuit of stop switch. • Low oil level.	• Properly connect ignition wire to spark plug. • Adjust or replace switch. • Check oil level.
Note: If the solutions provided here do not solve the issue/problem, or you have questions, please contact your dealer or Vanair® Customer Service.			

5.4 ENGINE CIRCUIT DIAGRAMS

Please see the following engine circuit diagrams for the VNR460VEI, VNR680 and VNR750EFI engines.

Figure 5-1: VNR460VEI Circuit Diagram, Figure 5-2: VNR680 Circuit Diagram, and Figure 5-3: VNR750EFI Circuit Diagram.



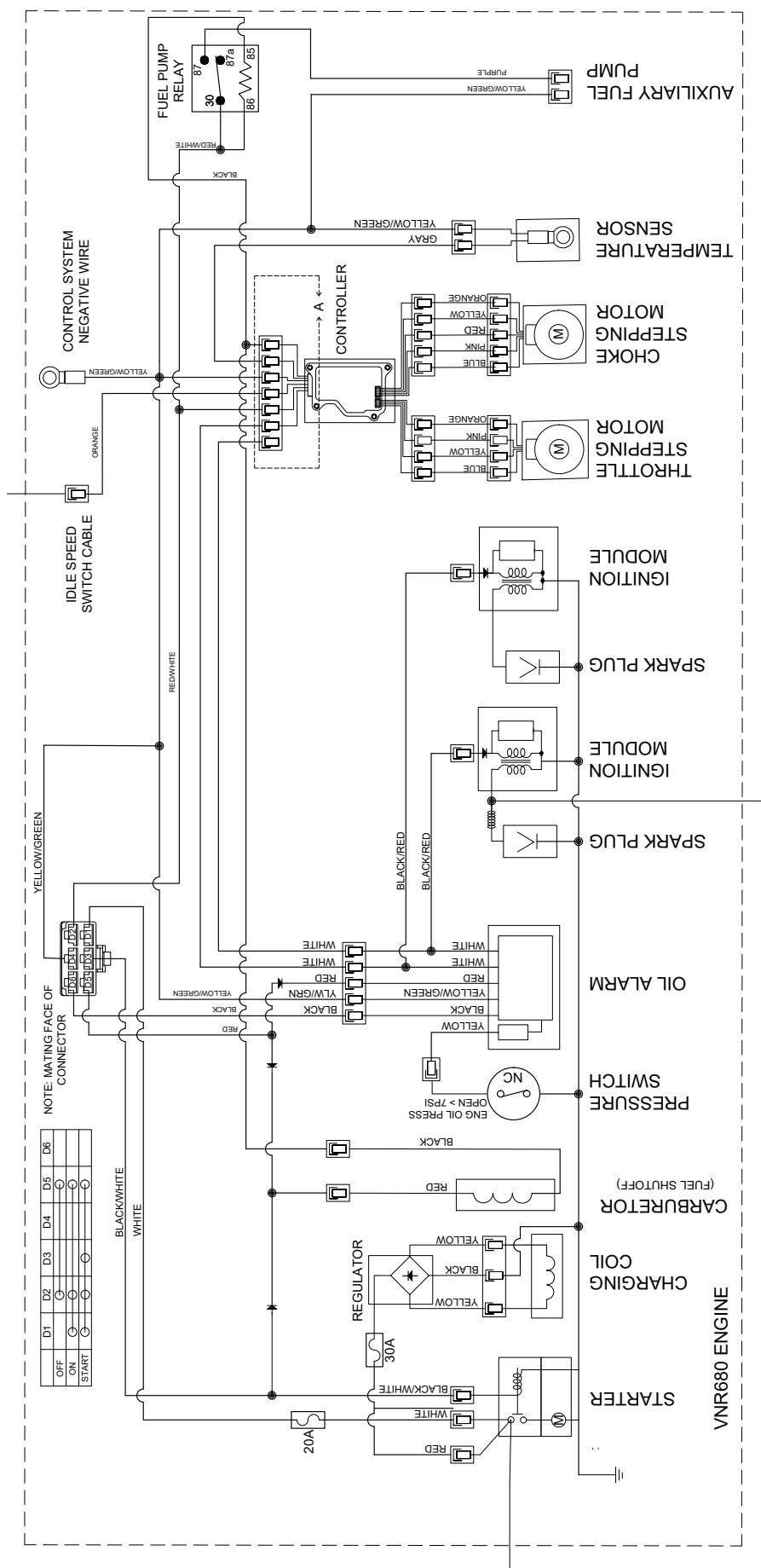
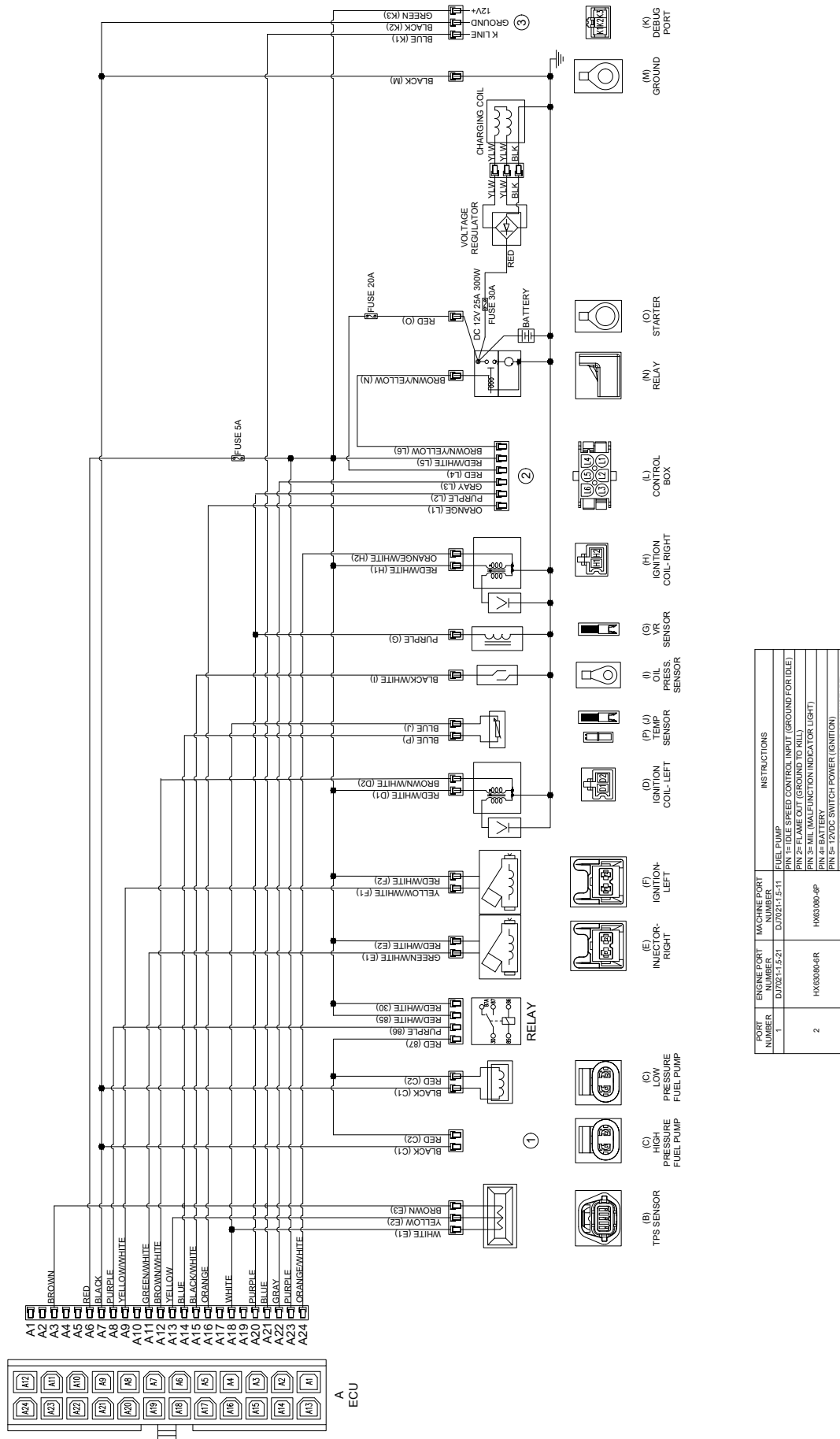


Figure 5-2: VNR680 Circuit Diagram

VNR750EFI [2ND PROTOTYPE]



PORT NUMBER	ENGINE PORT	MACHINE PORT	INSTRUCTIONS	
			FUEL PUMP	
1	DJ702-1.15-2.1	DJ702-1.15-11	PIN 1= IDLE SPEED CONTROL INPUT (GROUND FOR IDLE)	
2	HX63080-6R	HX63080-6P	PIN 2= FLAME OUT (GROUND TO KILL)	
			PIN 3= ML (MALFUNCTION INDICATOR LIGHT)	
			PIN 4= BATTERY	
			PIN 5= STARTER SWITCH POWER (IGNITION)	
			PIN 6= STARTER SOLENOID (ENGINE CRANKS START)	

Figure 5-3: VNR750EFI Circuit Diagram



VANAIR®

A Lincoln Electric Company

10896 West 300 North • Michigan City, IN 46360

Telephone (toll free): (800) 526-8817

Service (toll free): (844) VAN-SERV (844) 826-7378

Telephone: (219) 87905100

vanair.com

090234-OP_r01 VNR Engines (September 2026)