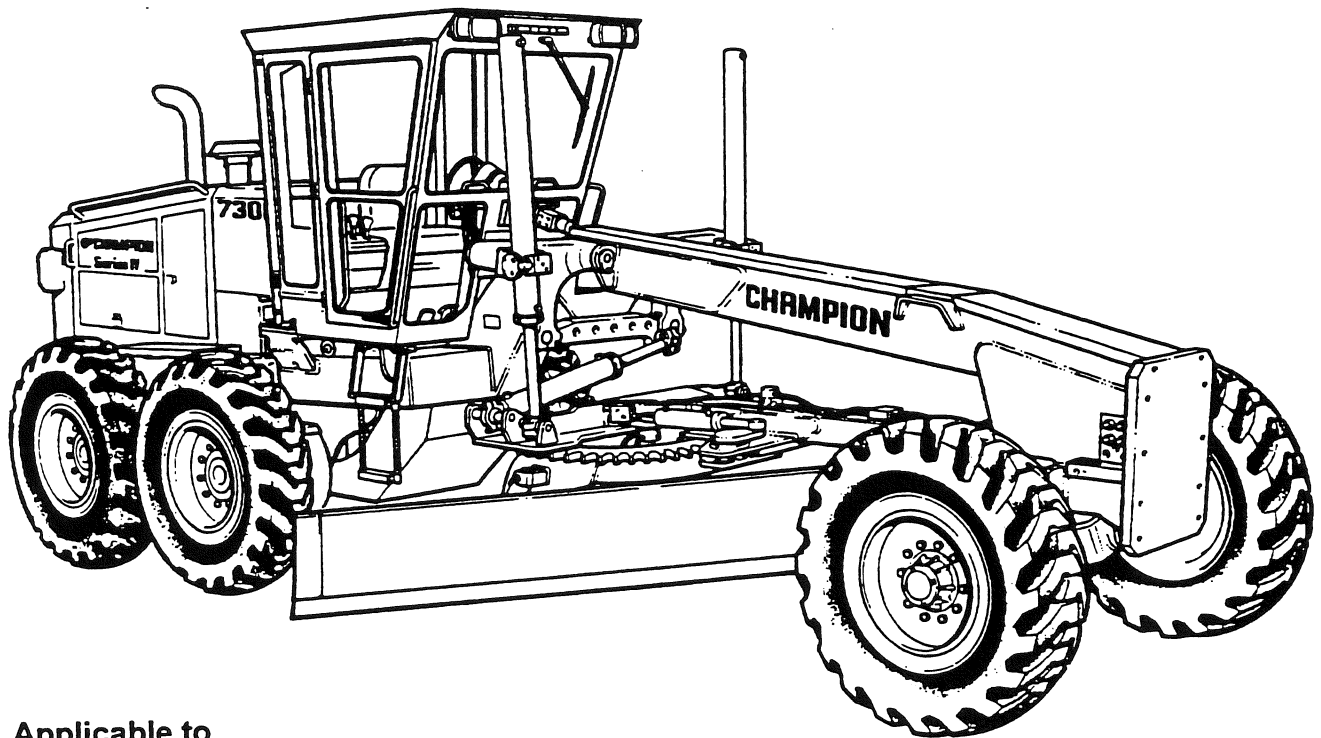




700 SERIES GRADER



Applicable to
Grader Serial Number 24260 & up.

Model 8400 Transmission Electrical Troubleshooting Guide

Error Code Table

CODE	MALFUNCTION	CODE	MALFUNCTION
1.0	Electric power is below 19.5 Vdc	3.0	Short circuit, solenoid 2 (B)
2.0	Open circuit, solenoid 2 (B)	3.1	Short circuit, solenoid 3 (R)
2.1	Open circuit, solenoid 3 (R)	3.3	Short circuit, solenoid 6 (L)
2.3	Open circuit, solenoid 6 (L)	3.4	Short circuit, solenoid 7 (H)
2.4	Open circuit, solenoid 7 (H)	3.5	Short circuit, solenoid 5 (D)
2.5	Open circuit, solenoid 5 (D)	3.6	Short circuit, solenoid 1 (A)
2.6	Open circuit, solenoid 1 (A)	4.0	Forward/Neutral input error
2.7	No power to solenoid circuits	4.1	Reverse/Neutral input error
		4.2	Controller restart error
		4.4	Forward/Reverse input error

NOTE: The information contained in this 8400 Transmission Electrical Troubleshooting Guide is for reference only. Refer to the Champion 700 Series Shop Manual for proper safety and service procedures BEFORE performing any service procedure.

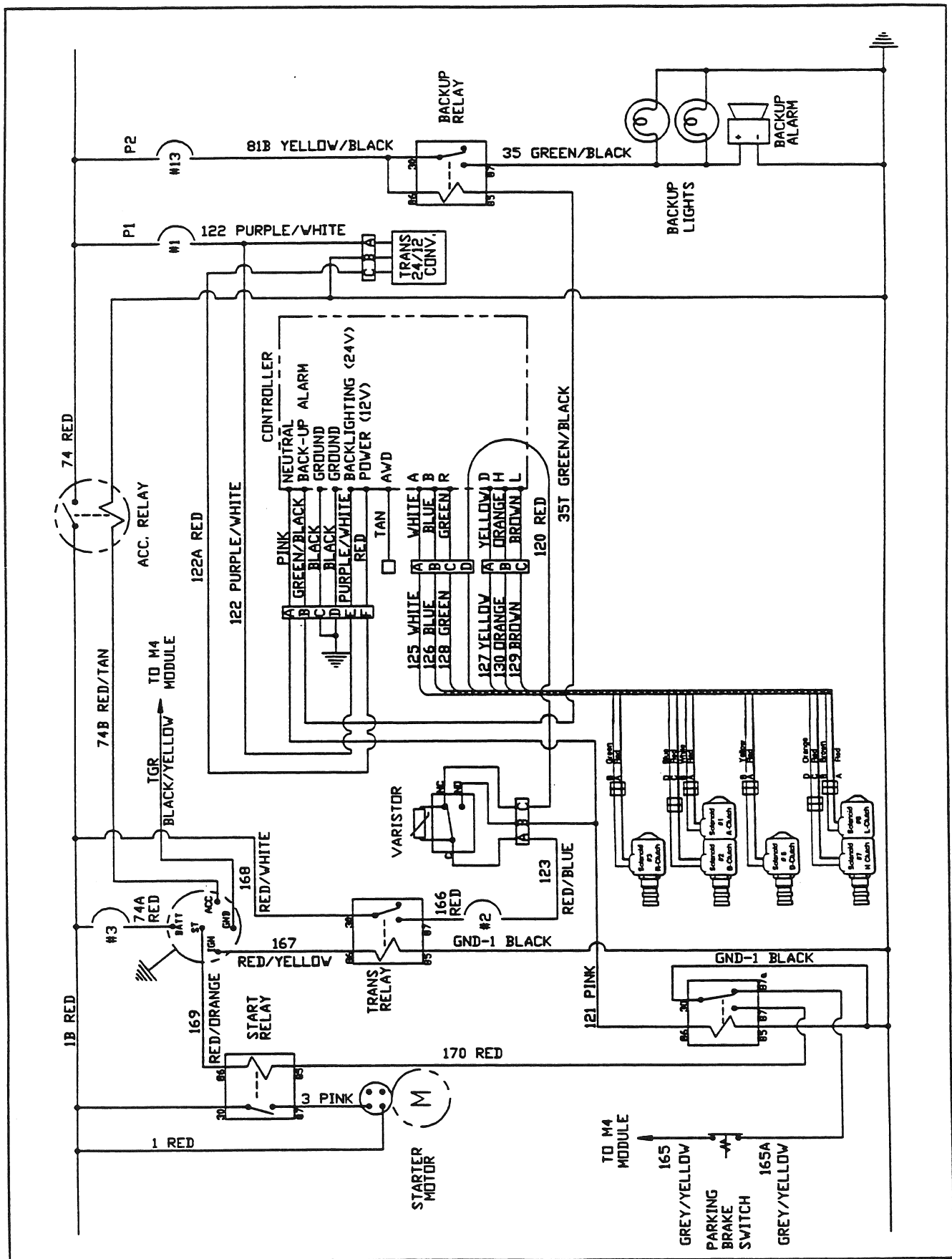
Champion Road Machinery cannot anticipate all circumstances that may arise. Use this chart only as a guide to troubleshooting the 8400 Transmission Electrical System.

Error Code Explanation Chart

CODE SERIES	DESCRIPTION
1.0	<p>Low system voltage Check:</p> <ul style="list-style-type: none"> - Charging system - Converter output measured at pin 'F' on 6 terminal connector (red wire 122-1) - For proper grounding of controller - High resistance at circuit breaker (transmission converter) if used
2.0 - 2.6	<p>Open circuit or short to ground in applicable solenoid circuit *Check for continuity at:</p> <ul style="list-style-type: none"> - Solenoid coil - Solenoid wiring harness - Harness connection
2.7	<p>No voltage in 5 amp circuit (transmission solenoid) Check for continuity at:</p> <ul style="list-style-type: none"> - Circuit breaker - Transmission relay - Normally closed terminals on micro switch when in Forward or Reverse - Harness connector - At each solenoid - At Transmission harness connector to controller - 3 pin connector at microswitch
3.0 - 3.6	<p>Short circuit in applicable solenoid circuit Check:</p> <ul style="list-style-type: none"> - Solenoid coil resistance - Solenoid wiring harness and coil resistance - Controller connection for corrosion
4.0 - 4.1	<p>Forward or Reverse input error Check:</p> <ul style="list-style-type: none"> - Neutral start micro switch operation - Magnets for proper clearance and adjustment
4.2	<p>Neutral input error</p> <ul style="list-style-type: none"> - F-N-R lever was left in gear when unit was shut off, or shifted during start-up sequence, or controller experienced a momentary power or ground loss - Shift F-N-R lever to Neutral - Check power supply pin 'F' on flat 6 terminal connector (red wire 122-1) on main supply harness - A 4.2 error code is normal with the ignition key in the accessory position
4.4	<p>Internal Forward or Reverse signal switch malfunction</p> <ul style="list-style-type: none"> - Obtainable only when leaving Neutral - Replace controller

* When using an ohmmeter, ensure the battery isolation switch is turned OFF.

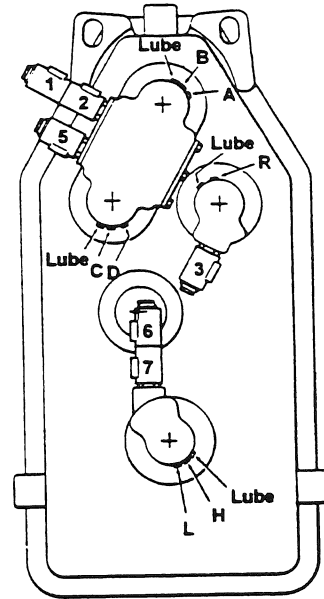
Electrical Schematic - Gearco Model 8400 Transmission



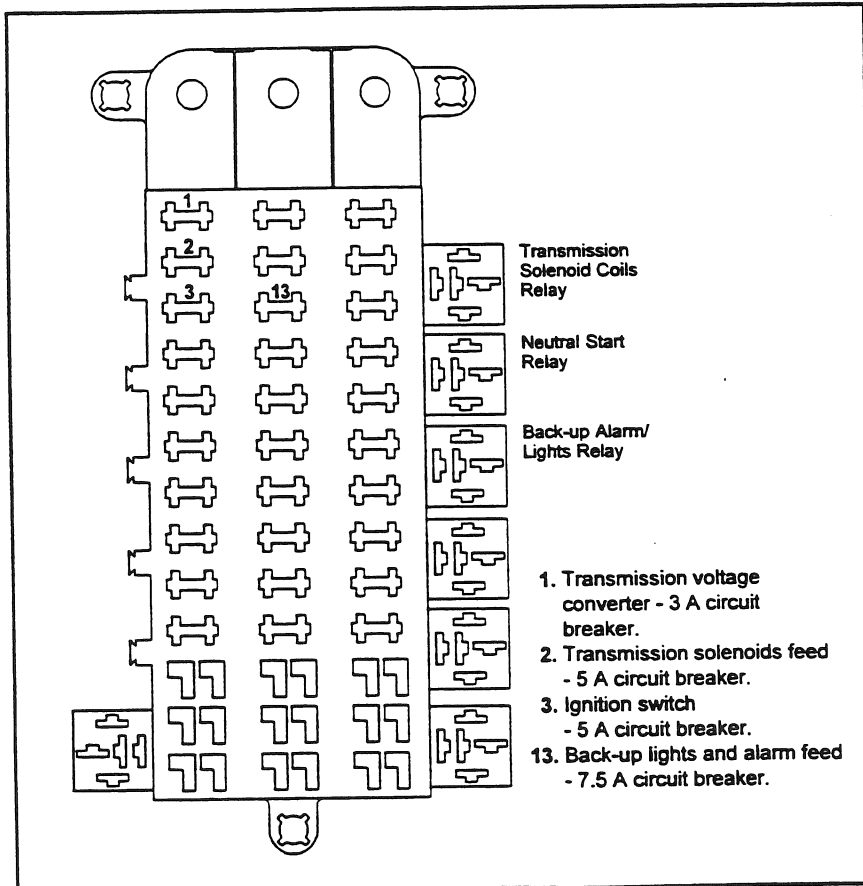
Solenoid/Clutch Engagement

SPEED	SOLENOIDS ENERGIZED	CLUTCH ENGAGED
1	1, 6	ACL
2	2, 6	BCL
3	1, 5, 6	ADL
4	2, 5, 6	BDL
5	1, 7	ACH
6	2, 7	BCH
7	1, 5, 7	ADH
8	2, 5, 7	BDH
Neutral	None	C
-1	3, 6	RCL
-2	3, 5, 6	RDL
-3	3, 7	RCH
-4	3, 5, 7	RDH

Solenoid/Pressure Checkpoint Locations



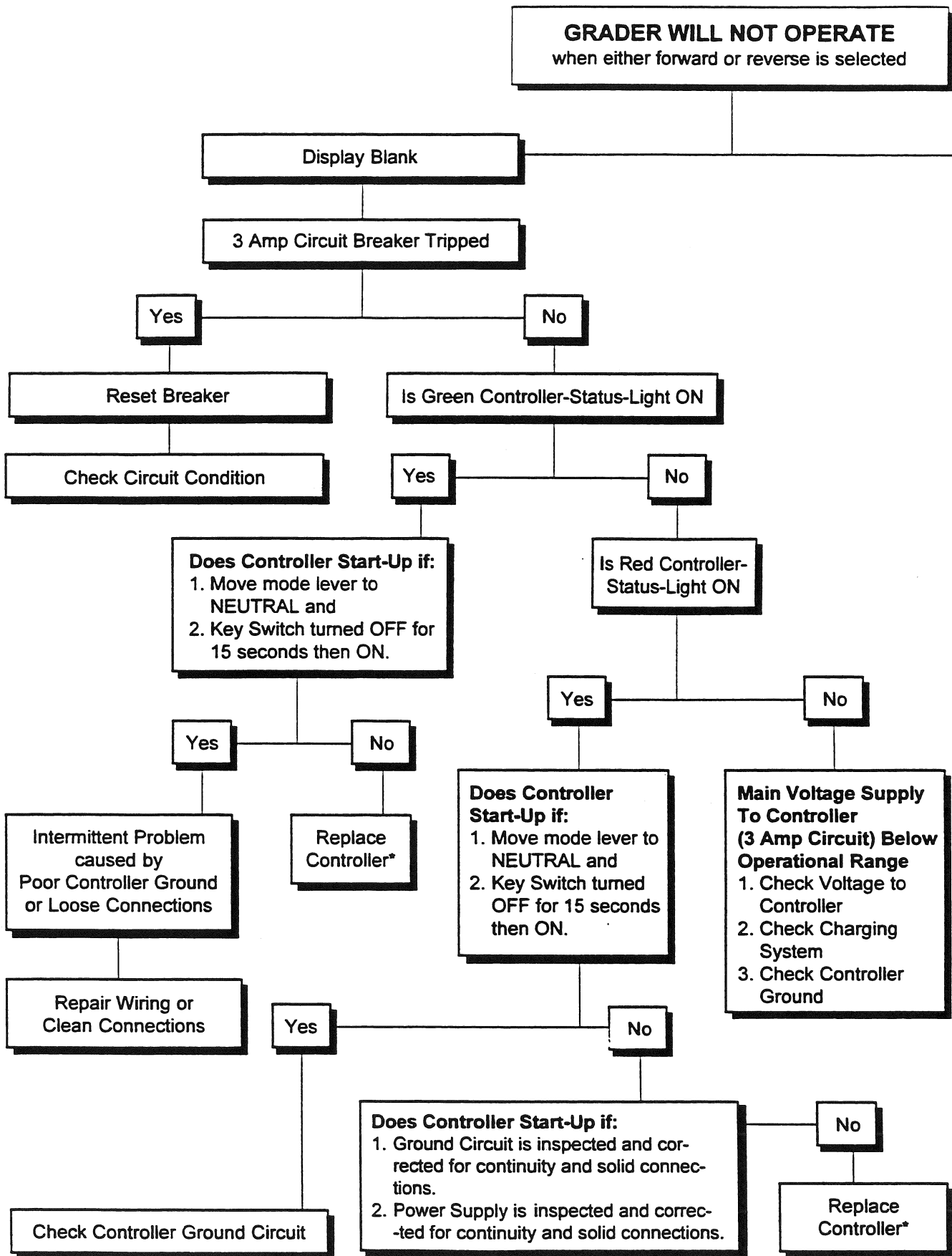
Fuse Panel

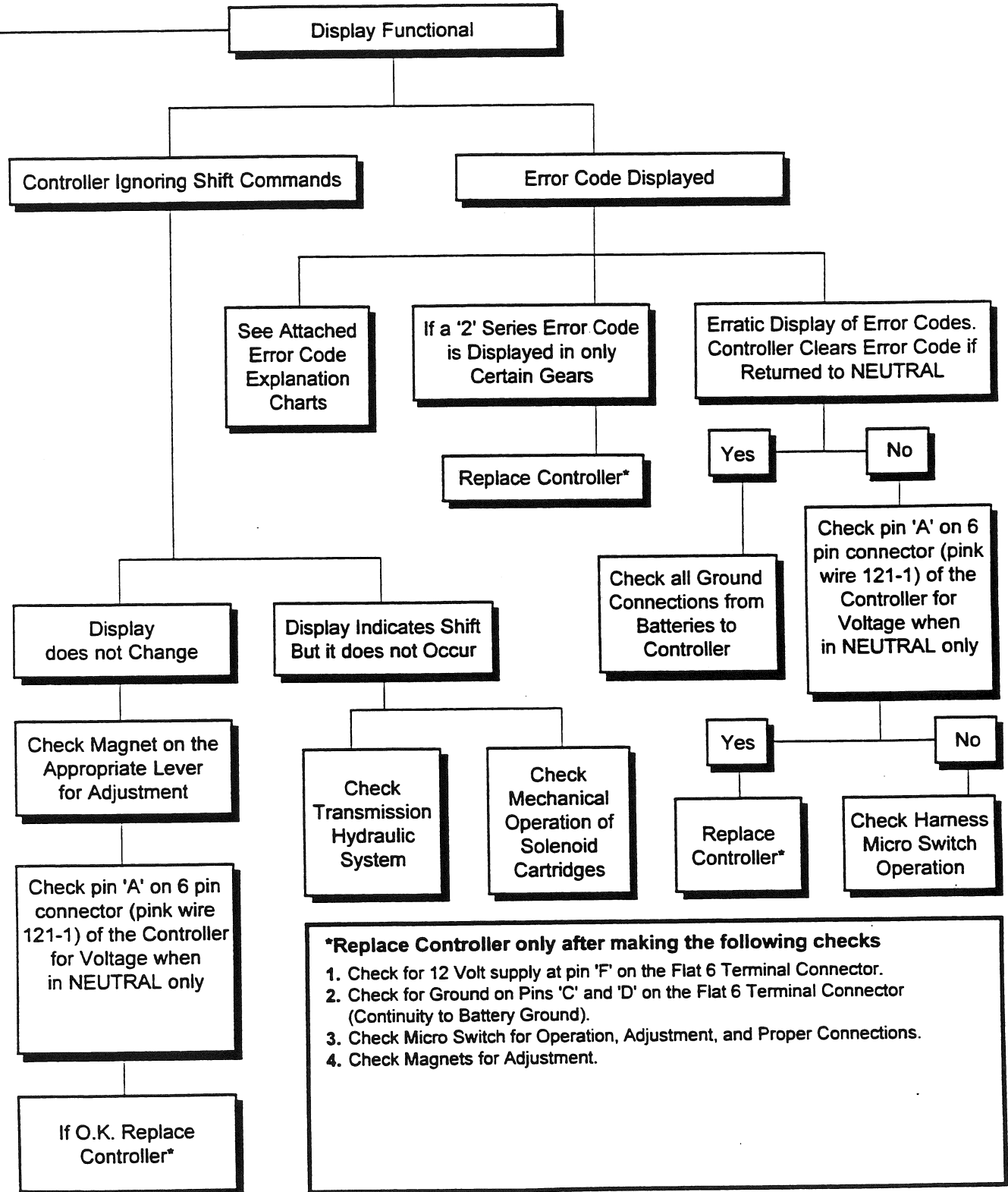


These are the fuses, circuit breakers and relays on the fuse panel that relate to the transmission and starting circuit.

The fuse panel is located inside the side console and is accessible through the removeable fuse access door or by lifting the side console cover. Thumb screws allow easy removal of both.

Grader will not Operate





“Smart Shift” Memory Gear Feature - S/N 24736 & UP

The “smart shift” memory gear feature allows the operator to customize the shift patterns of the transmission in the lowest gears to the job at hand. **Table A** shows the default shift pattern before the operator uses the memory gear function.

Table A

Forward Gear	Reverse Gear
1	-2
2	-2
3	-2
4	-2
5	-3
6	-3
7	-3
8	-4

To obtain different shift patterns, such as FORWARD 2 and REVERSE 1, you must manually shift the transmission to that gear. The memory feature remembers the selected gear that was last used in either FORWARD or REVERSE, and upon returning to that direction the controller automatically selects that gear. You only have to select the required gears in either FORWARD or REVERSE, no

other programming action is needed. Refer to **Table B** for the allowable memory gear selections.

Once you have obtained a valid memory gear combination, you can ‘shuttle-shift’ between FORWARD and REVERSE without moving the PULSER lever. However, you must still use the engine clutch.

From a gear in column **A**, you can access a gear in column **B** using the memory gear function.

Table B

Forward to Reverse		Reverse to Forward	
A	B	A	B
1	-1 -2	-1 -1 -1	1 2 3
2	-1 -2	-2	1 2 3 4 5
3	-1 -2 -3	-3 -3 -3	3 4 5
4	-2 -3	-4	5
5	-2 -3		
6	-3		
7	-3		
8	4		

If a selected combination of FORWARD and REVERSE gears is not valid (see **Table B**), the transmission controller automatically selects the closest appropriate gear.

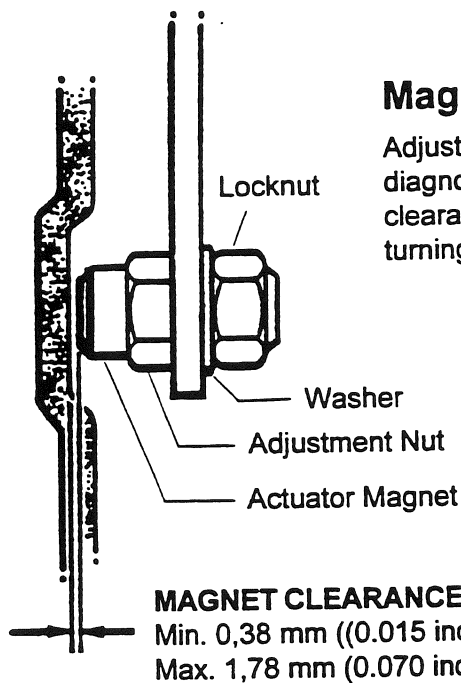
When the controller is in NEUTRAL, the LCD display always indicates the FORWARD and REVERSE gears available.

Operating the PULSER lever while in NEUTRAL cancels the memory gear function and returns the transmission shift pattern to the default settings.

You must make a complete shift sequence (i.e., F-N-R or R-N-F) to use the memory gear function. If you make an incomplete shift sequence (i.e., F-N-F or R-N-R), the transmission returns to the previous FORWARD and REVERSE gear selection.

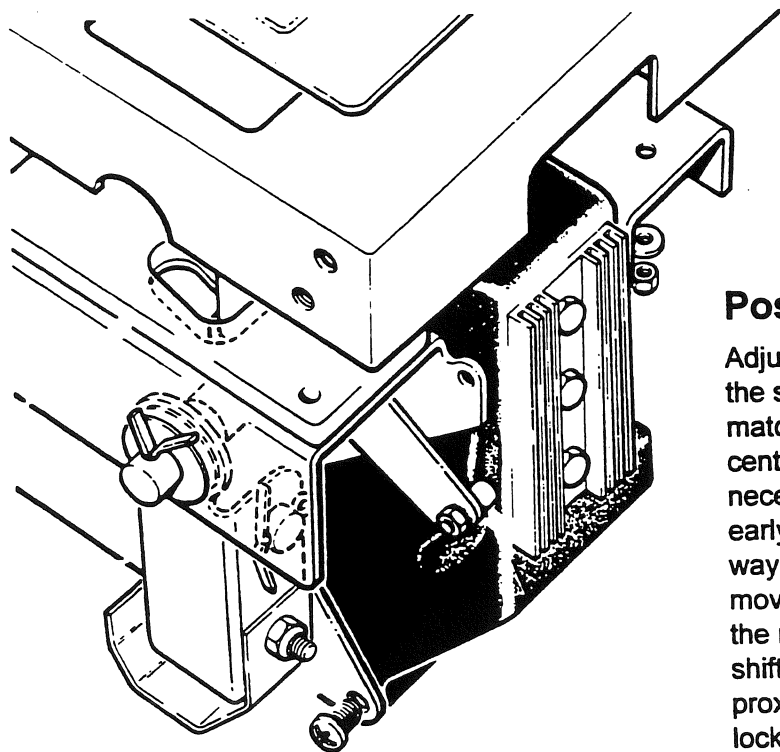
Actuator Magnet Adjustment

These adjustments apply to both, the Mode Lever and the Pulser Lever.



Magnet Clearance Adjustment

Adjust the magnet clearance if an error code or the diagnostic flow chart indicate a need. The magnet clearance is adjustable by loosening the lock nut and turning the adjustment nut in or out. Tighten the lock nut.



Position Adjustment

Adjust the magnet in the slot if the shift response does not match the strokes evenly from centre position. Adjustment is necessary if a lever reacts very early in its stroke moving one way and very late in its stroke moving the opposite way. Move the magnet in the slot until the shift reaction strokes are approximately equal. Loosen the lock nut to adjust the magnet's position. Tighten the lock nut.

Solenoid Coil Resistance Values

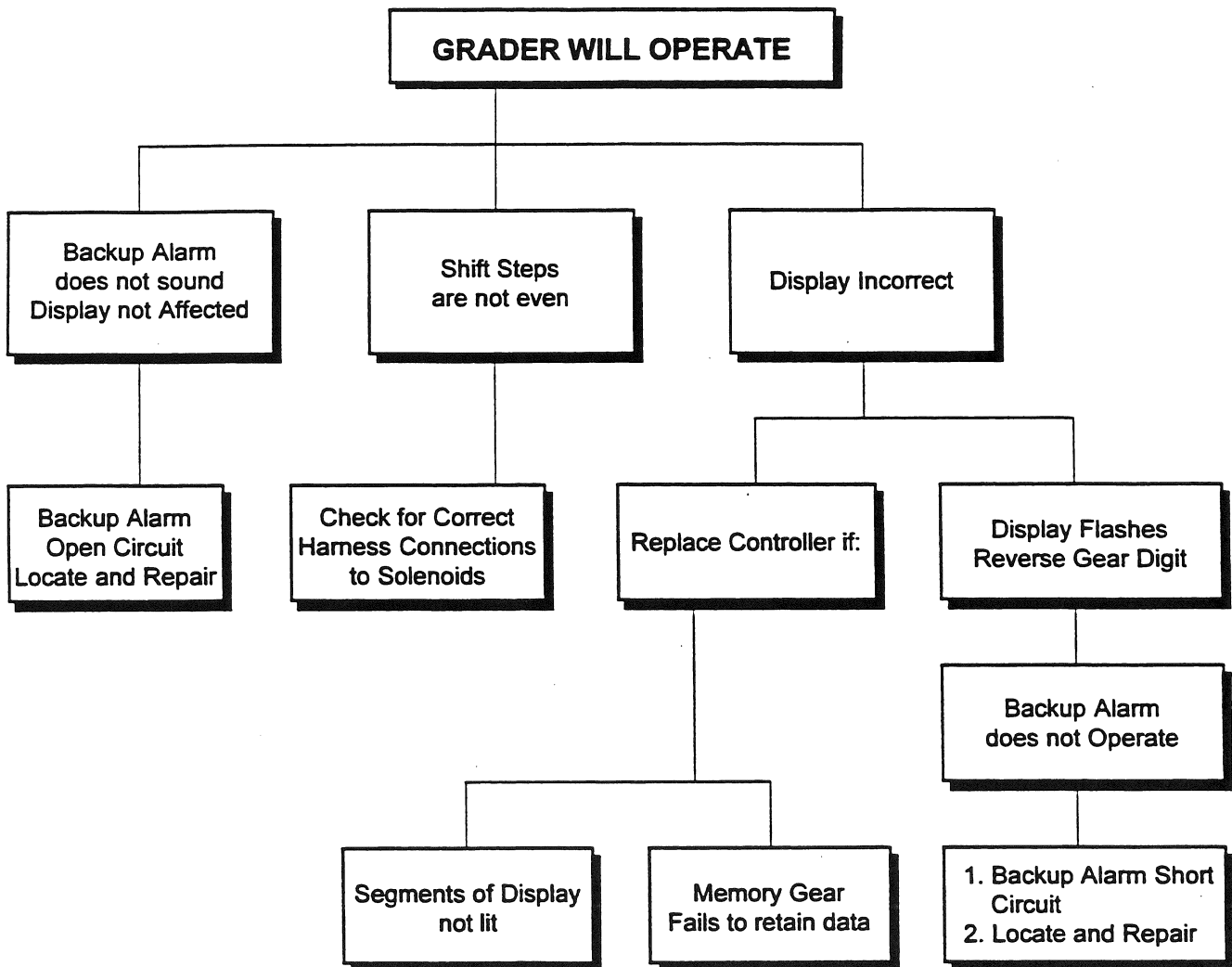
SOLENOID COIL	PART NUMBER	RESISTANCE VALUE
24 Volt	58728	28.8 (Ω) \pm 5%

Resistance at a temperature of 20°C (68°F).

Torque Specifications

APPLICATION	lbf·ft	N·m
Solenoid Cartridges	25	33,9
Solenoid Retaining Nut	5	6,8

Grader will Operate



Notes

