#### Troubleshooting Charts

Chart 1 Quick Checkout
Chart 2 Automatic Tool Changer

Chart 3 Spindle Driver
Chart 4 Axis Control
Chart 5 Repeatability
Chart 6 Computer

Chart 7 Axis Motor Runaways
Chart 8 Baldor SWEO Spindle Drive
Chart 9 Z200/Z300 Spindle Drive

Chart 10 Keyboard

Chart 11 Finish Problems

Chart 12 Bad Power / Bad Voltage Chart 13 Rotary Heads A Axis

Chart 14 FADAL TR65 Rotary Heads A & B Axis
Chart 15 Tsudakoma 301 Rotary Heads A & B Axis

Chart 16 Servo Coolant Control Chart 17 Circle Roundness

Chart 18 Error Codes Reported by Axis Card

Chart 19 Serial Port Communications

Chart 20 FADAL Servo Indexer
Chart 21 Positioning Problems
Chart 32 Chart 32

Chart 22 Scale Problems

Chart 23 Rigid Tap Chart 24 M-Function



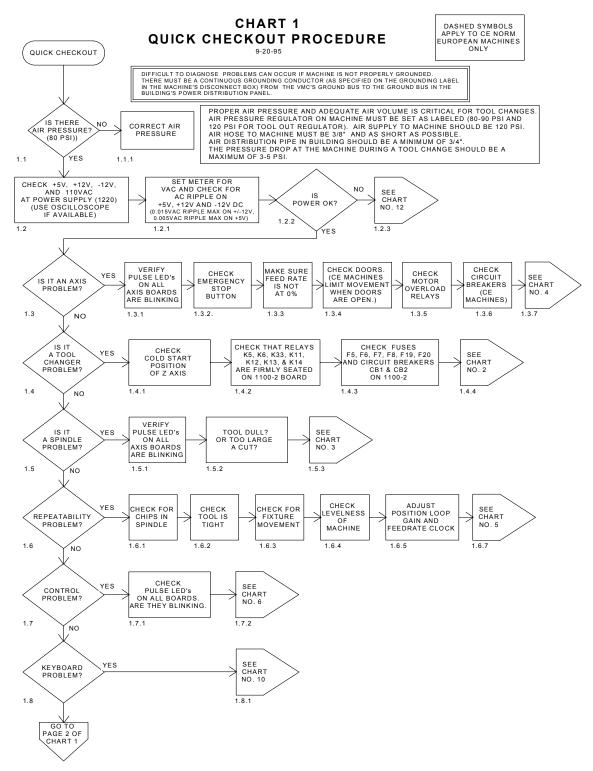


Figure 16-1 Quick Checkout Procedure

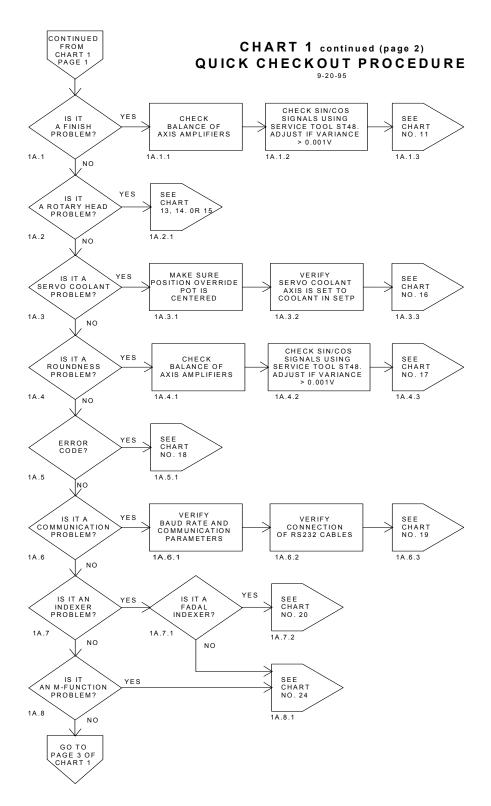


Figure 16-2 Quick Checkout Procedure (Continued)

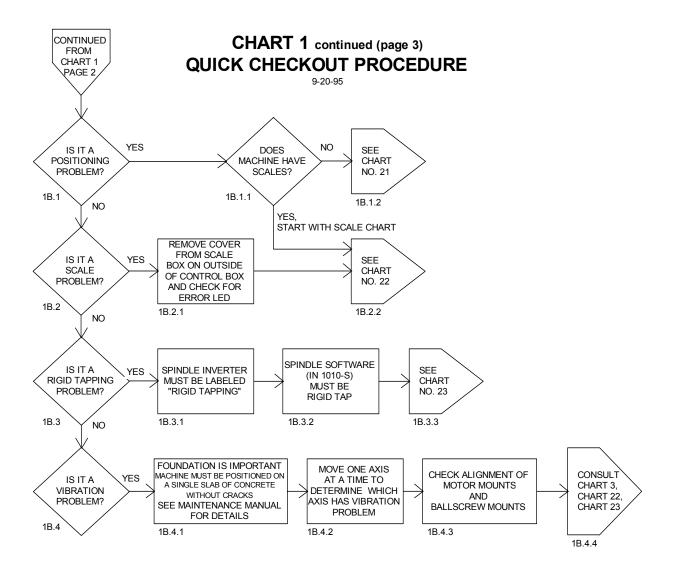


Figure 16-3 Quick Checkout Procedure (Continued)

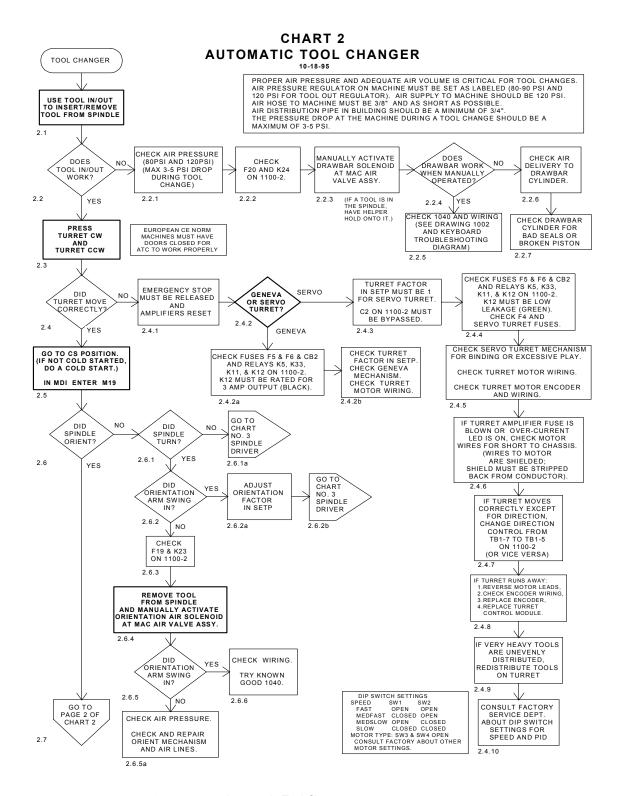


Figure 16-4 Automatic Tool Changer



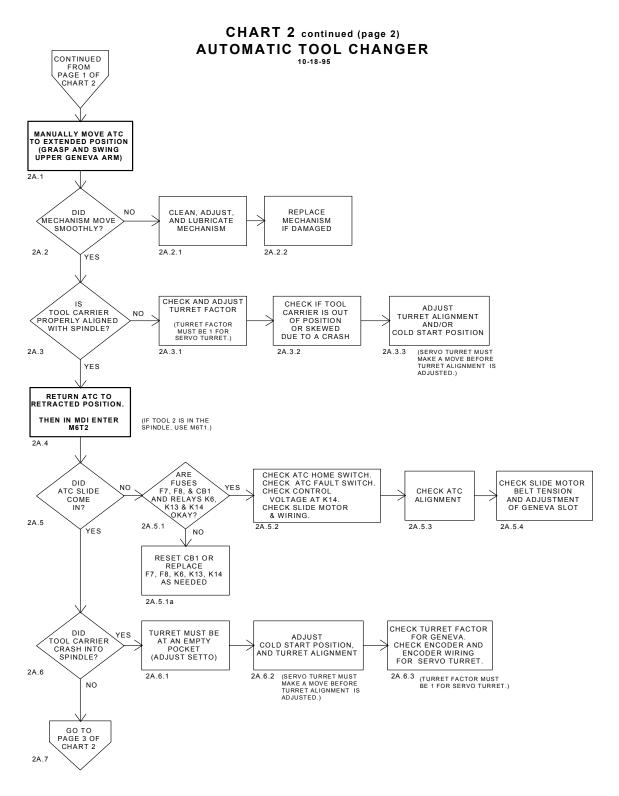


Figure 16-5 Automatic Tool Changer (Continued)



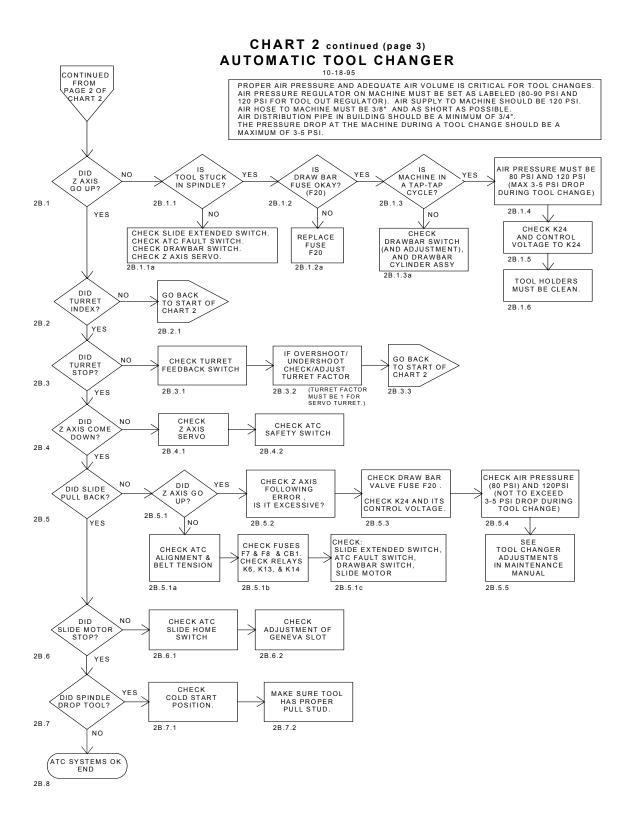


Figure 16-6 Automatic Tool Changer (Continued)



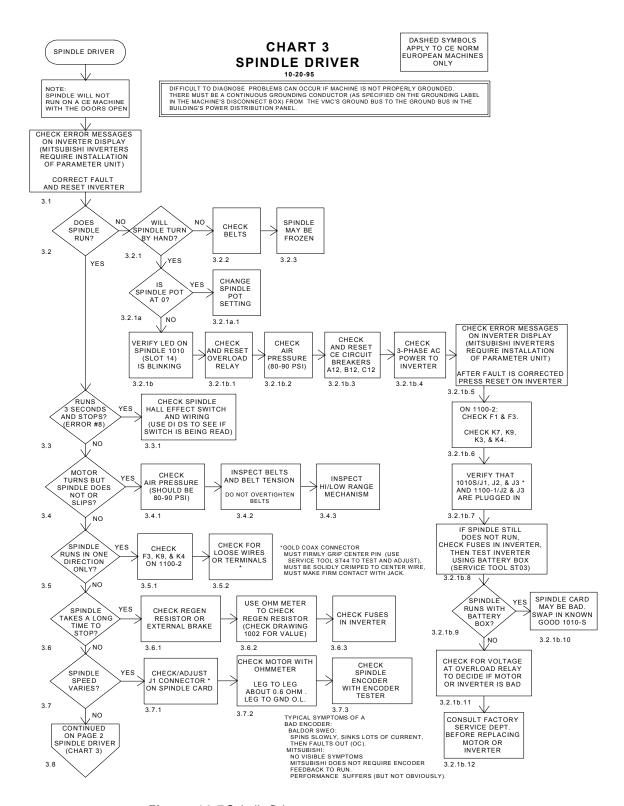


Figure 16-7 Spindle Driver



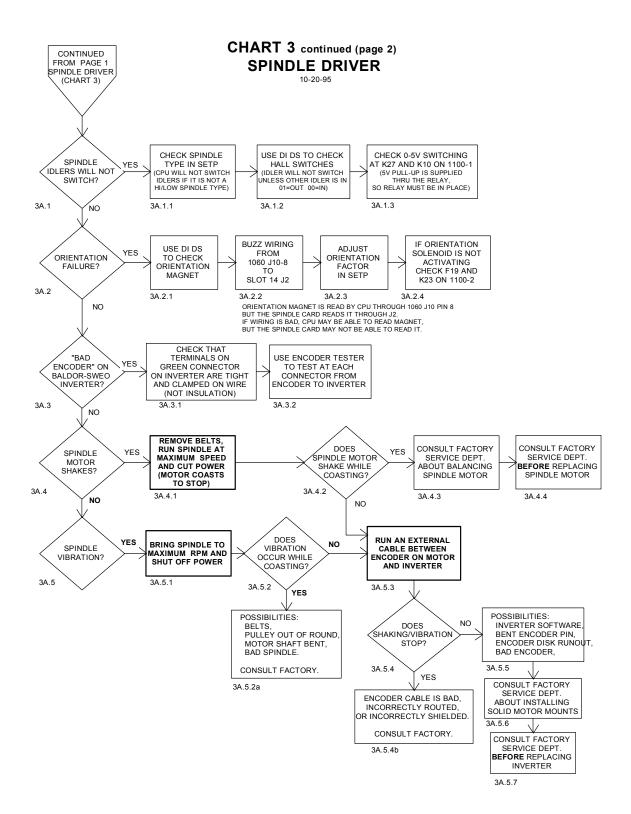


Figure 16-8 Spindle Driver (Continued)



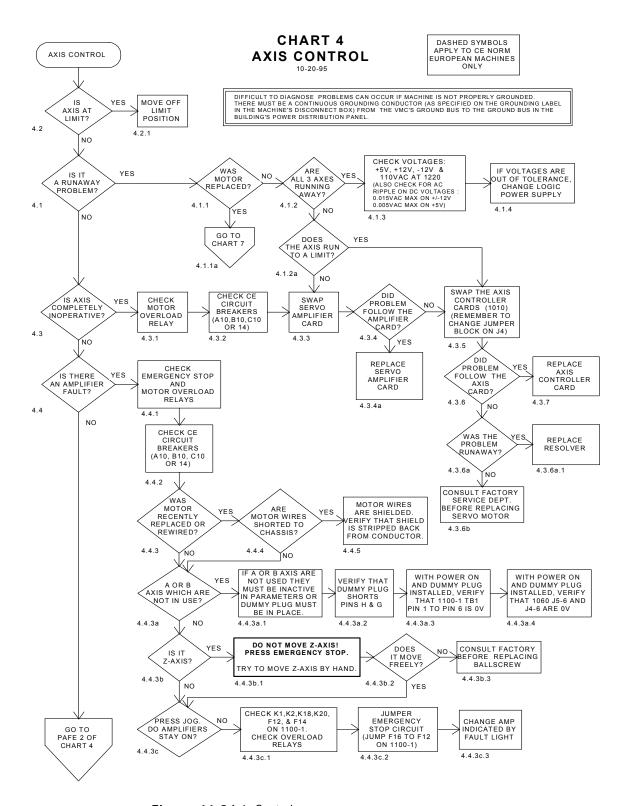


Figure 16-9 Axis Control

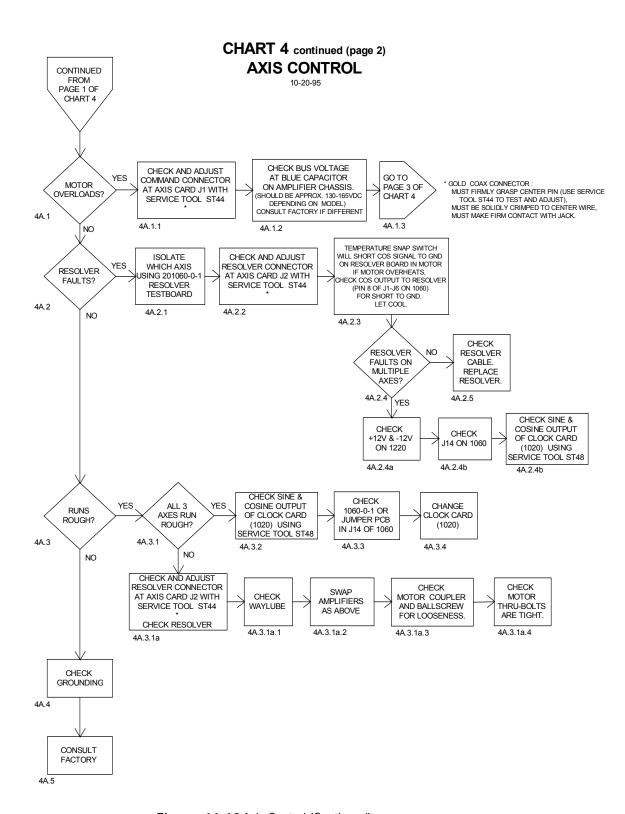


Figure 16-10 Axis Control (Continued)



# CHART 4 continued (page 3) AXIS CONTROL

#### MOTOR OVERLOADS

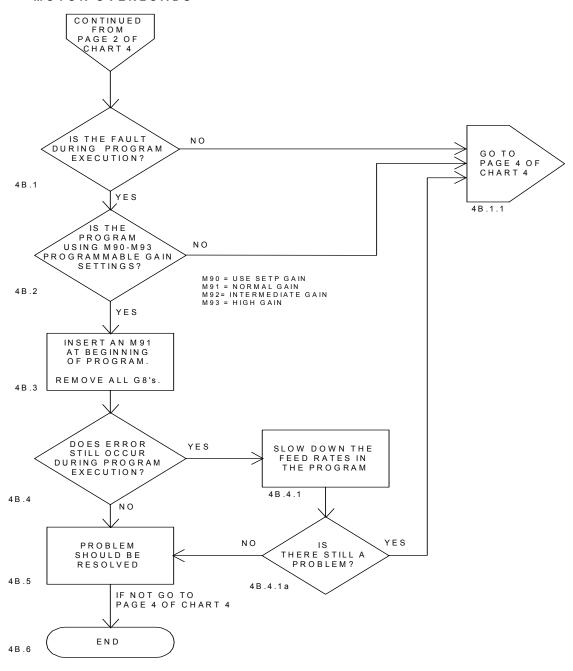


Figure 16-11 Axis Control (Continued)



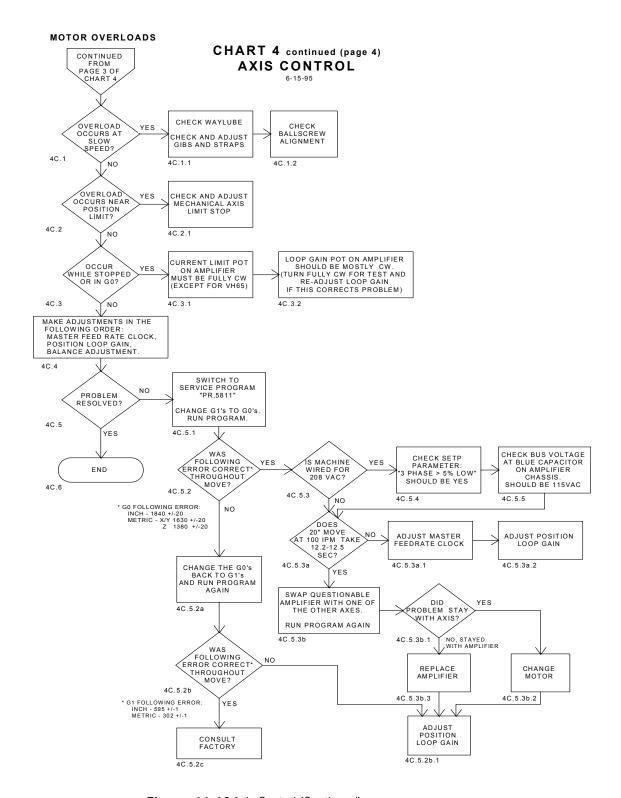


Figure 16-12 Axis Control (Continued)

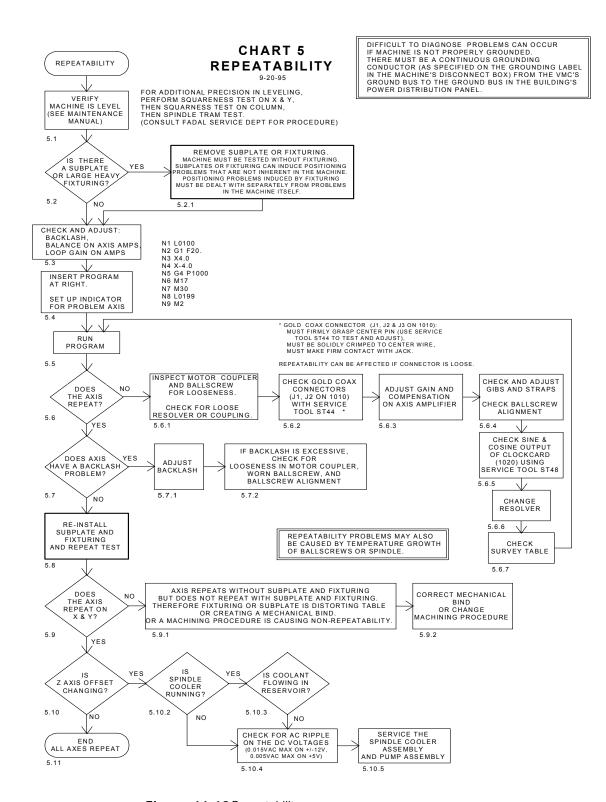


Figure 16-13 Repeatability

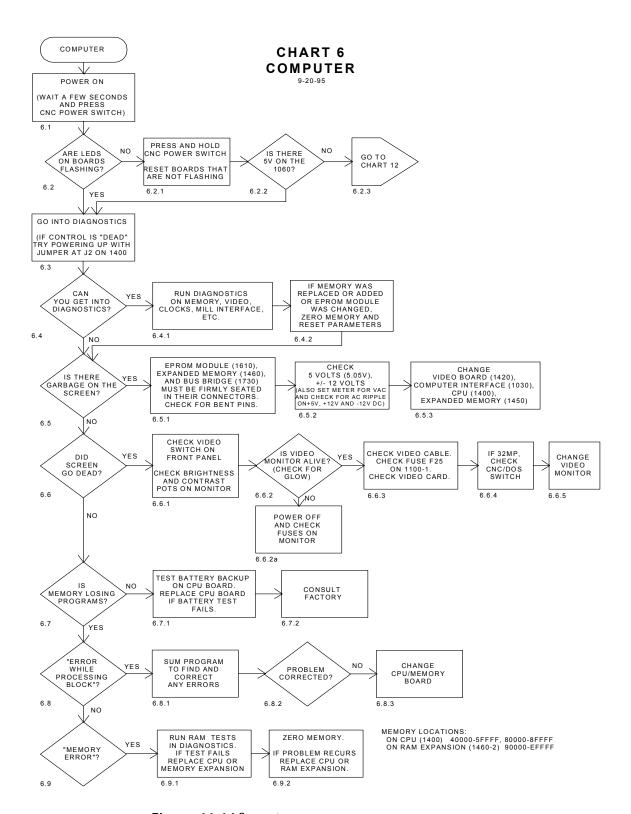


Figure 16-14 Computer



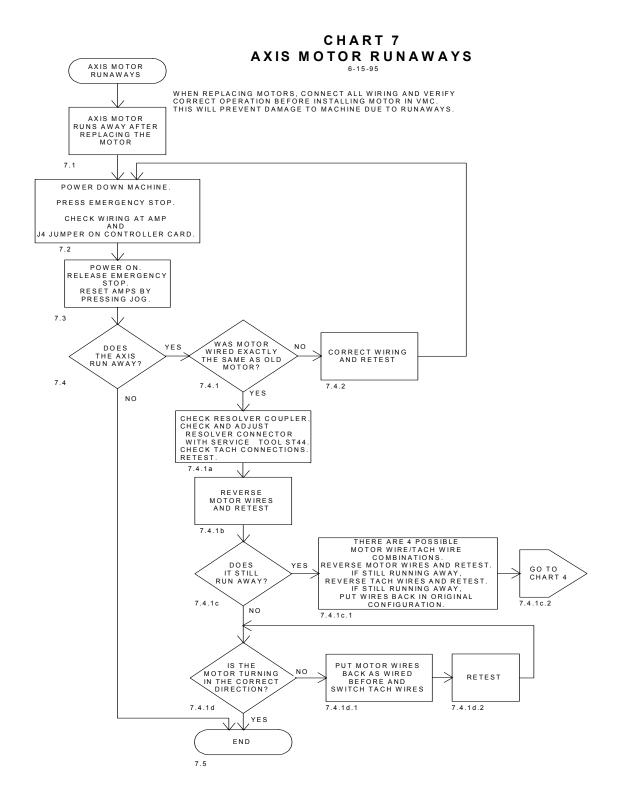


Figure 16-15 Axis Motor Runways

Table 1: Baldor SWEO Spindle Drive Error Messages

DESCRIPTION	ALARM DISPLAY
This fault occurs when the main bus supply voltage has gone too low, even momentarily.	DCLO
This fault occurs when the main bus supply voltage has gone too high, even momentarily.	DCHI
These faults are usually the result of an excessive load on the drive output. The fault condition can be permanent, occurring when the drive is enabled, or intermittent, occurring randomly during normal operation.	PH-1 PH-2 PH-3
Motor is over temperature.	OH E
Baldor SWEO drive is over temperature.	OH C
Overspeed on the motor has been detected.	OSP
The Baldor SWEO power supply has momentarily experienced a reduction of the +/- 15 volts below allowable levels.	15DC
Spindle motor has overloaded.	OL
Spindle motor is not properly connected, to torque.	I LO
Drive cannot follow the speed command within the error band setting.	F. ERR
Parameters need to be reloaded.	PAR
Power has been interrupted.	UP
EPROMs have faulted.	PROG

Table 2: Z200/Z300 Spindle Drive Error Messages

DESCRIPTION	ALARM DISPLAY
Inverter output current exceeded the overcurrent limit during acceleration.	EOC1
Inverter output current exceeded the overcurrent limit during constant speed operation.	EOC2
Inverter output current exceeded the overcurrent limit during deceleration.	E0C3
Braking regenerative power from motor exceeded the regenerative overvoltage limit.	EOVT
Electronic thermal relay in the inverter was activated (current is below 150% of preset current).	ETHM
Electronic thermal relay in the inverter was activated (current is over 150% of preset current).	ETHT
Instantaneous power failure protective function was activated.	EIPF
Temperature of transistor heatsink exceeded the specified limit.	EFIN
Brake transistor fault detection.	E BE

#### Table 2: Z200/Z300 Spindle Drive Error Messages

DESCRIPTION	ALARM DISPLAY
Stall preventative function was activated during constant speed operation and stopped the motor.	EOLT
Memory in the inverter is corrupted.	E PE
Inverter input voltage fell below the specified limit.	EUVT
Overcurrent due to earth fault on the inverter output side.	E GF
Externally installed thermal relay activated (overheat).	EOHT
Built-in optional unit connection failure during operation	EOPT

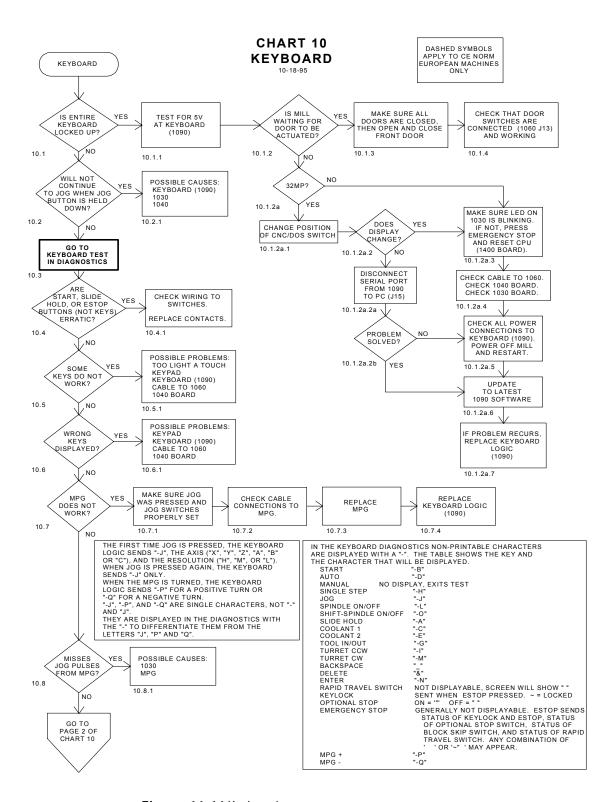


Figure 16-16 Keyboard

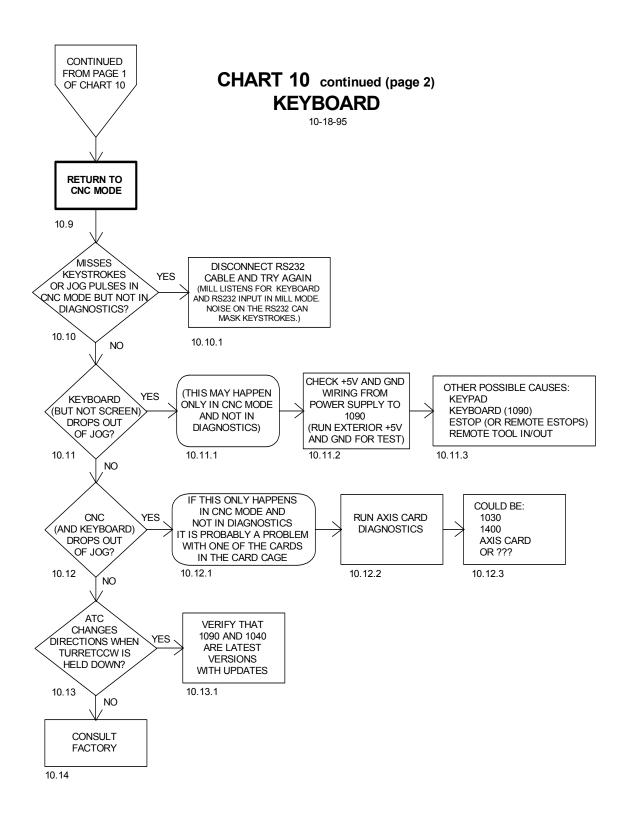


Figure 16-17 Keyboard (Continued)

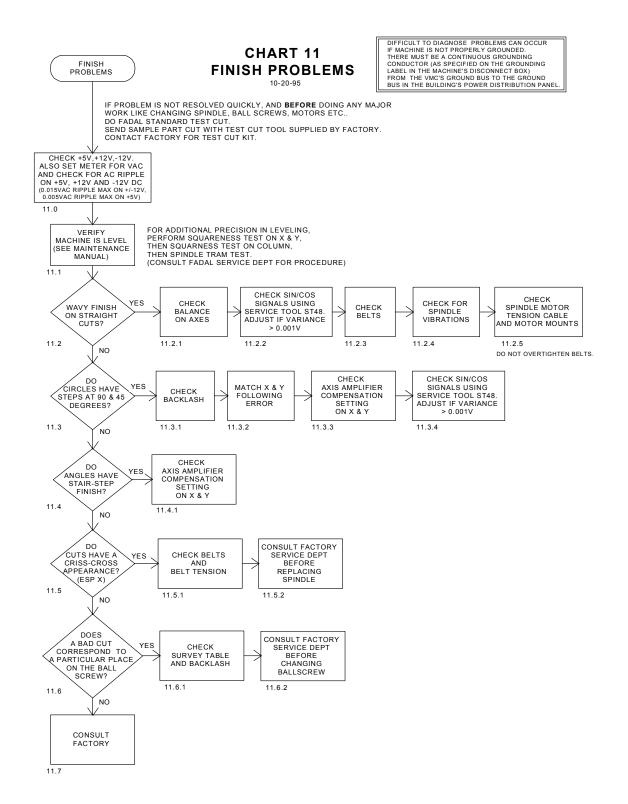


Figure 16-18 Finish Problems



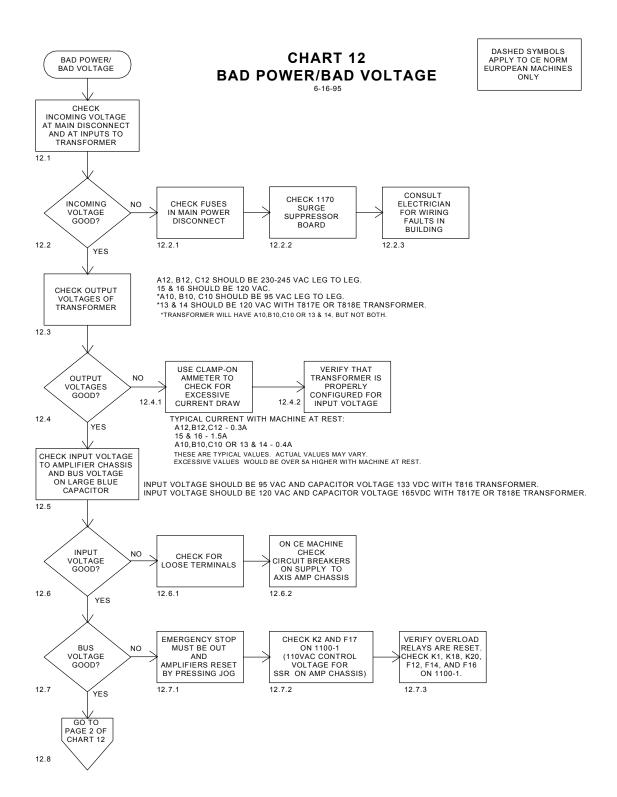


Figure 16-19 Bad Power/Bad Voltage



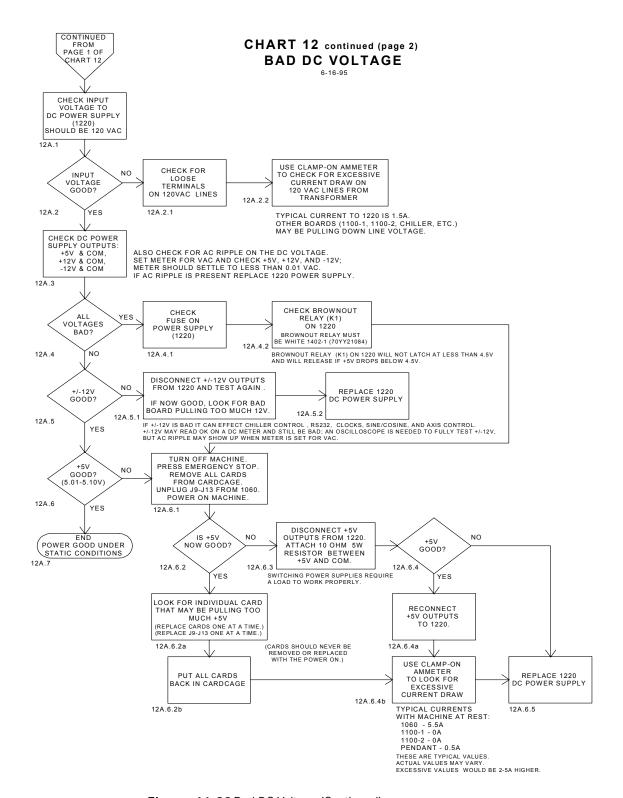


Figure 16-20 Bad DC Voltage (Continued)



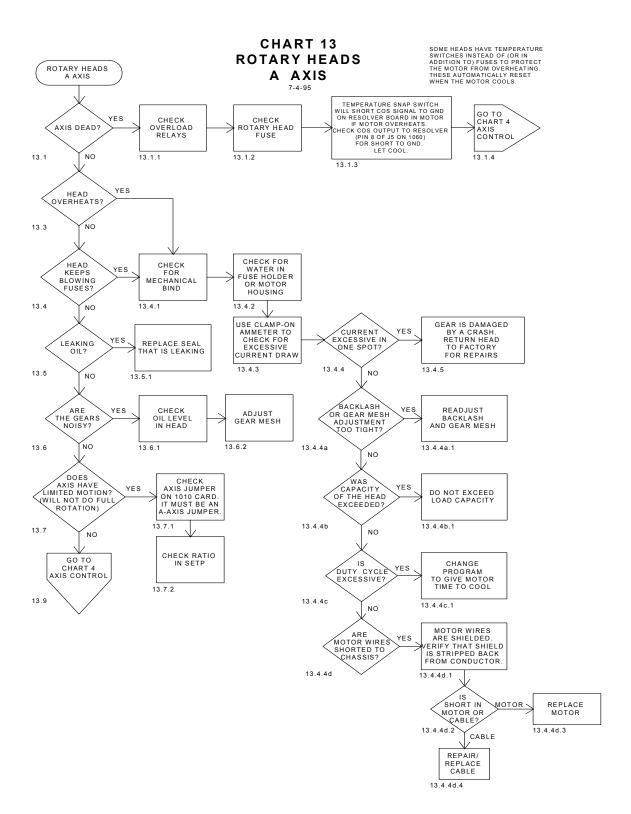


Figure 16-21 Rotary Heads A Axis



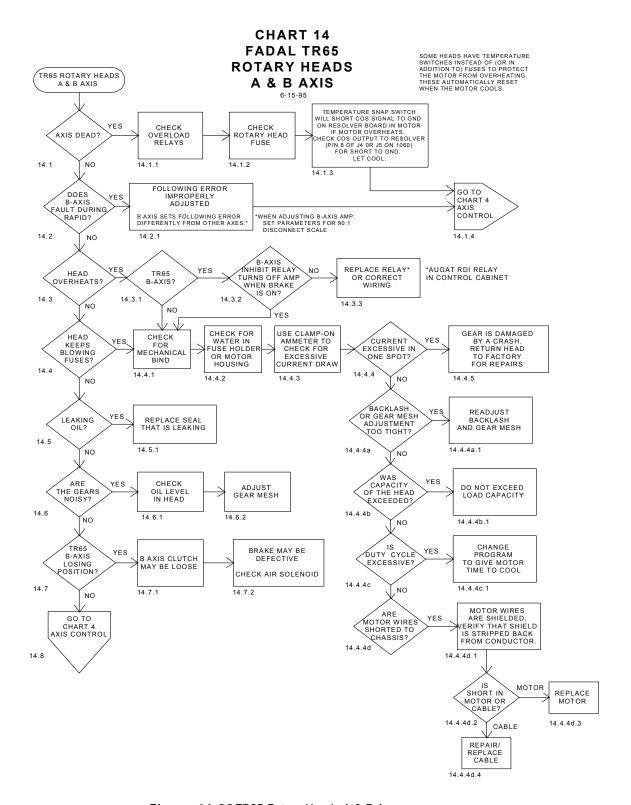


Figure 16-22 TR65 Rotary Heads A & B Axes



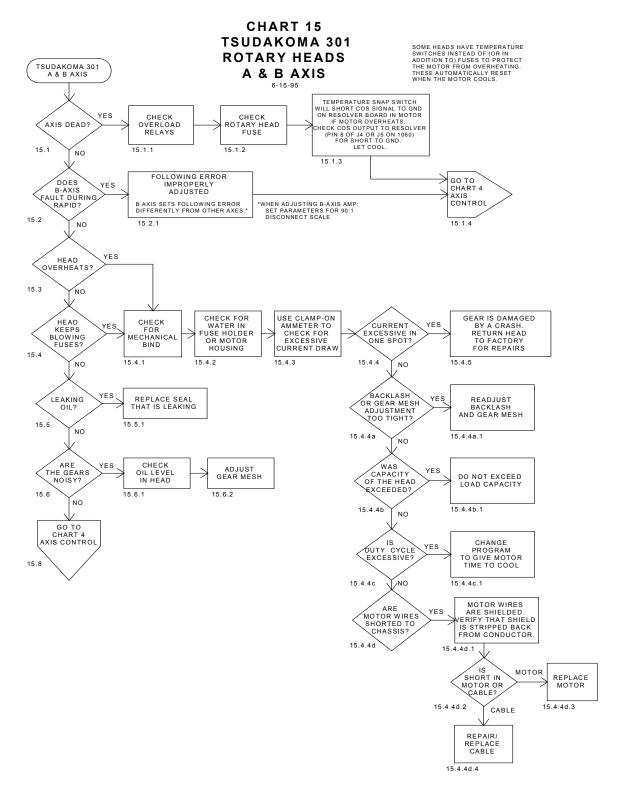


Figure 16-23 Tsudakoma 301RotaryHeads A & B Axes

## **Fadal**

#### SERVO COOLANT CONTROL 12-5-95 **SERVO** THE COOLANT AXIS MUST BE SET TO COOLANT IN SETP. COOLANT IF AXIS IS SET TO 90:1, THE MILL WILL NOT COLD START. AXIS CARD MUST HAVE SERVO COOLANT SOFTWARE POSITION OVERRIDE POT MUST BE: COMMAND SIGNAL ENCODER MUST BE AMPLIFIER MAY BE CENTERED, COOLANT MUST BE CONNECTED UNPLUGGED OR DEAD PLUGGED INTO J3 NOZZI E WILL CONNECTED AT (J5 OF 1010, J2 & J3 OF 1890-0, AND CHECK AMPLIFIER FUSE. (AMPLIFIER IS ALIVE OF APPROPRIATE AMPLIFIER AND NOT MOVE 1010 CARD. J1 OF 1010 9-PIN MOLEX AT MOTOR) IF GREEN LED IS LIT.) CONNECTED TO GND AND +12V. 16.1 AMPLIFIER FUSE HOLDER IS PART OF NO 16 1 2 16 1 3 POWER RECEPTACLE ON AMPLIFIER ADJUST POSITION OVERRIDE OVERTEMP SWITCH NOZZLE YES CHECK ON MOTOR MAY AMPLIFIER MAY BE POSITIONING IS WRONG POT TO NEUTRAL (VERTICAL) **PARAMETERS** HAVE TRIPPED MISADJUSTED IN SETP POSITION 16.1.5 16.2 16.2.1 16.2.2 16.2.3 NO AXIS MUST BE ACTIVE IN SETP AND SET TO "COOLANT" SIGNAL UNPLUGGED **ENCODER CABLE** YES NOZZLE REVERSED AT FROM AMPLIFIER DISCONNECTED **RUNS AWAY AMPLIFIER** OR J1 OF 1010 OR ENCODER BAD AMC BE25A20-AC-FD2 DIP SWITCH SETTINGS: 1- OUT (OFF) TEST/OFFSET 2- IN (ON) DECREASE CURRENT LOOP GAIN 3- IN (ON) 100% CURRENT SCALING 4- OUT (OFF) LOOP INTEGRATOR 5- OUT (OFF) DUTY CYCLE FEEDBACK 6- IN (ON) VELOCITY FEEDBACK 16.3.1 16.3.2 16.3.3 16.3 NO 7 IN (ON) VELOCITY DIRECTION 8- IN (ON) CURRENT REDUCTION 9- IN (ON) INCREASE INTEGRATOR CAP 10- OUT (OFF) 120/60 PHASING AMPLIFIER ENCODER IS YES RESPONSE AMPLIFIER IS DIP SWITCHES UNPLUGGED FROM AMPLIFIER POT PRESETS: LOOP GAIN FULLY CCW, THEN 5 TURNS CW. CURRENT LIMIT FULLY CW. IS MUSHY MISADJUSTED ARE SET WRONG REF IN GAIN FULLY CW. 16.4.1 16.4.2 16.4.3 NO AMP ADJUSTMENTS AMP ADJUS IMENTS. REMOVE NOZZLE. DISCONNECT COMMAND SIGNAL. ADJUST OFFSET POT TO STOP AXIS. CHECK CONNECT COMMAND SIGNAL. IN SETP SET COOLANT AXIS RATIO TO COOLANT. COLD START. VERIFY COOLANT VALVE NO COOLANT FLOOD COOLANT IS WORKING IN SETP SET COOLANT AXIS RATIO TO 90:1. NOZZLE. USE PROGRAM 5815 TO ADJUST AXIS: SET FEEDRATE TO 2000. ADJUST REF IN GAIN AND OFFSET FOR FOLLOWING ERROR OF 4/-680. PRESS SLIDE HOLD AND ADJUST LOOP GAIN TO REDUCE OVERSHOOT AND MINIMIZE VIBRATION. (VIBRATION IS THE MORE SERIOUS PROBLEM, 16.5.1 16.5.2 16.5 NO

**CHART 16** 

Figure 16-24 Servo Coolant Control

"UP" DIRECTS NOZZLE

UP THE TOOL.
"DOWN" DIRECTS

NOZZLE DOWN THE TOOL

BY EMERGENCY STOP

OR OVERTEMP OF MOTOR

RESPONSE

OF OVERRIDE POT

IS REVERSED

RED LED

ON AMPLIFIER

NO

16.6

16.7

YES

16.6.1

POT IS MISWIRED

OR J4 ON 1890-0 IS

MISWIRED \*

WIRES TO MOTOR ARE SHIELDED. SHIELD MUST BE STRIPPED BACK

FROM CONDUCTOR OR A

SHORT TO GROUND WILL OCCUR

16.6.2

\* VMC MUST BE OFF WHEN WIRING IS BEING CHANGED. DISCONNECT J4 FROM 1890-0 BEFORE REWIRING POT OR 1890-0 MAY BE DAMAGED.

OVERSHOOT IS OK.)

AMPLIFIER

DIP SWITCH FOR

PHASING

MAY BE MIS-SET

16.7.3

WHEN AMP IS ADJUSTED, SET COOLANT AXIS RATIO TO COOLANT IN SETP.

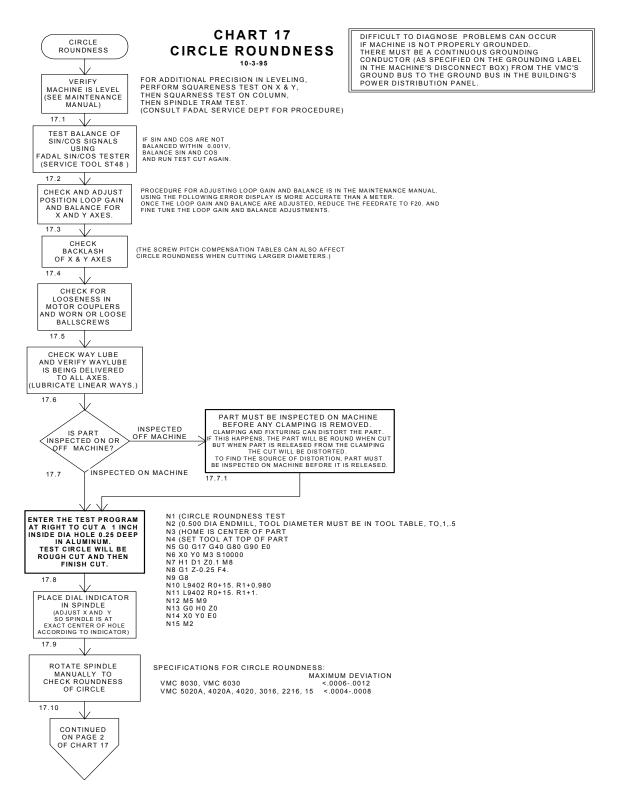


Figure 16-25 Circle Roundness

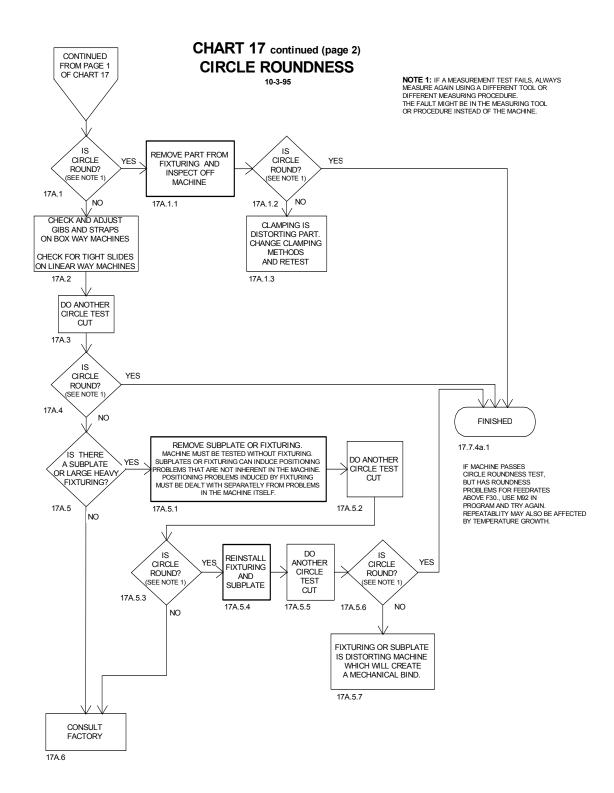


Figure 16-26 Circle Roundness (Continued)



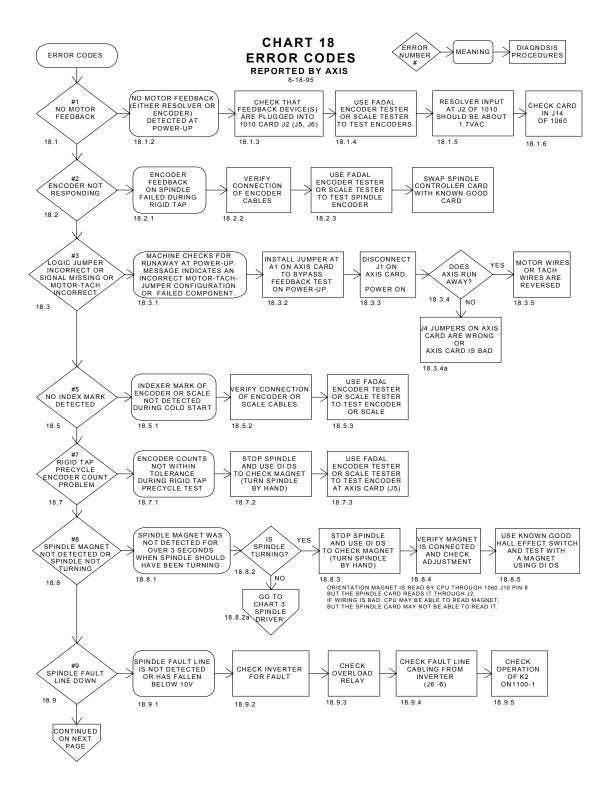


Figure 16-27 Error Codes

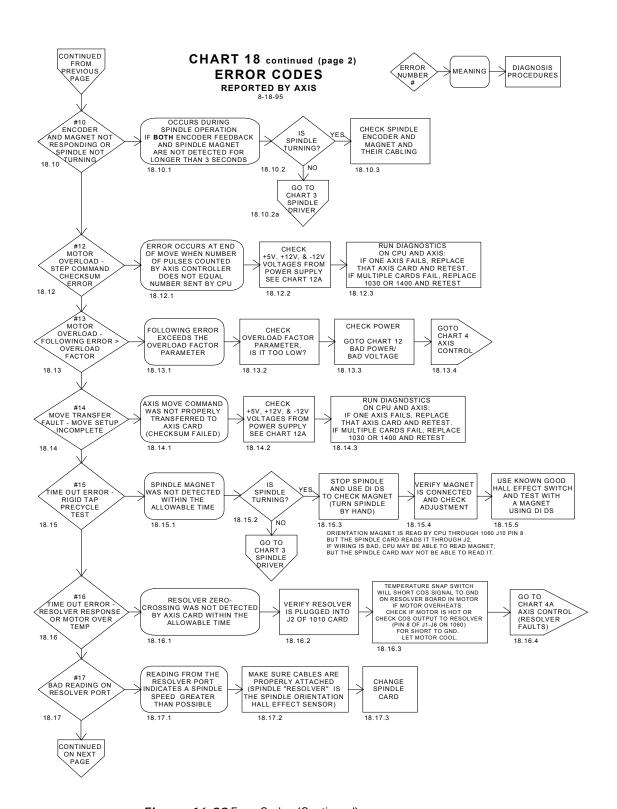


Figure 16-28 Error Codes (Continued)



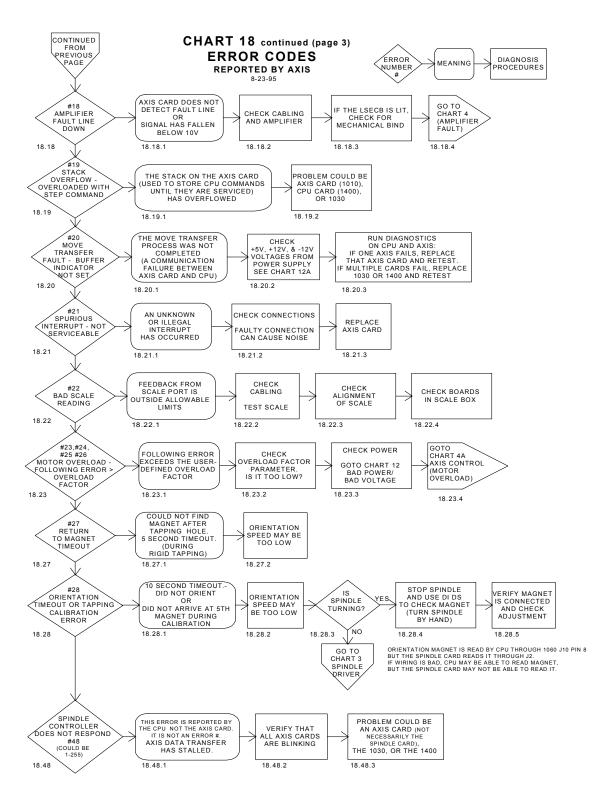


Figure 16-29 Error Codes



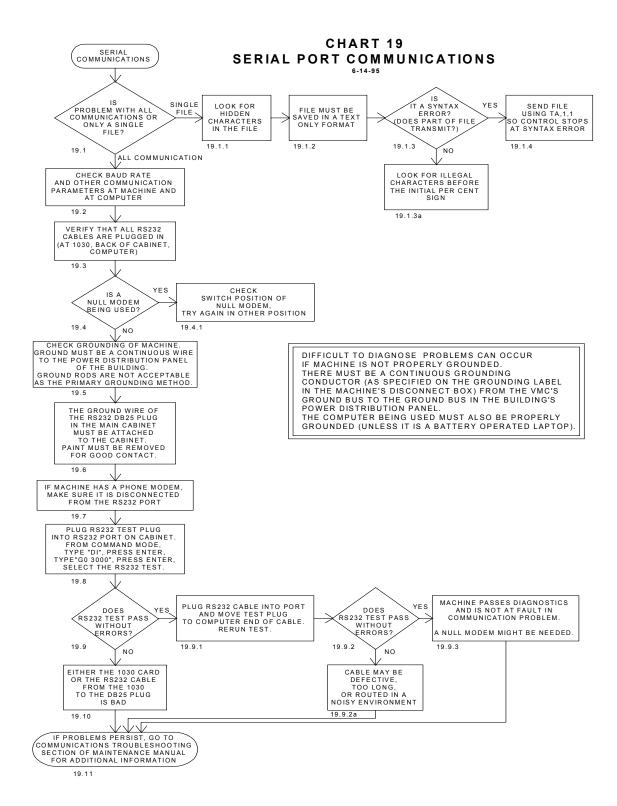


Figure 16-30 Serial Port Communications



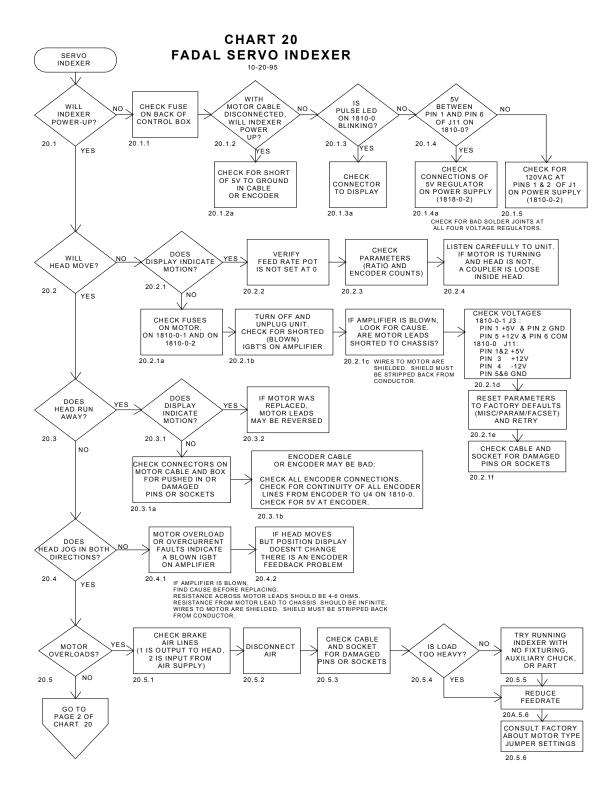


Figure 16-31 Servo Indexer



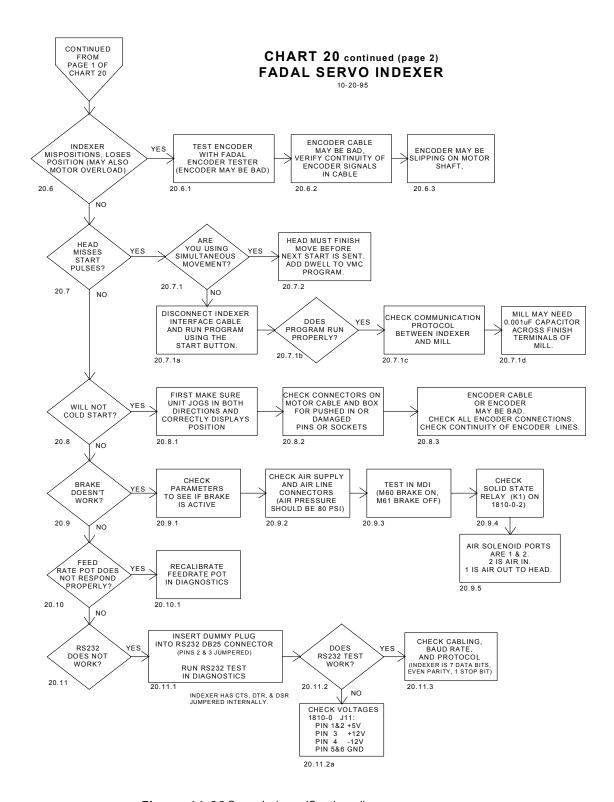


Figure 16-32 Servo Indexer (Continued)



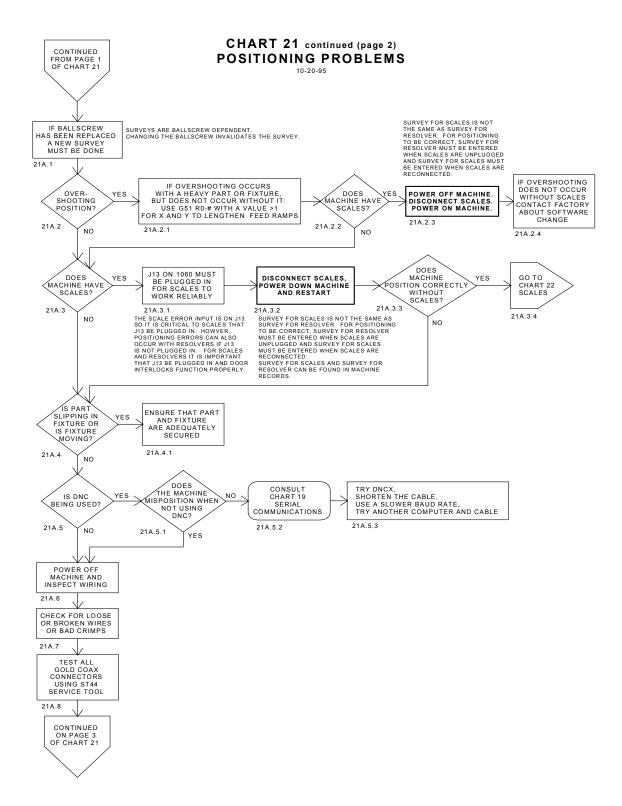


Figure 16-33 Positioning Problems



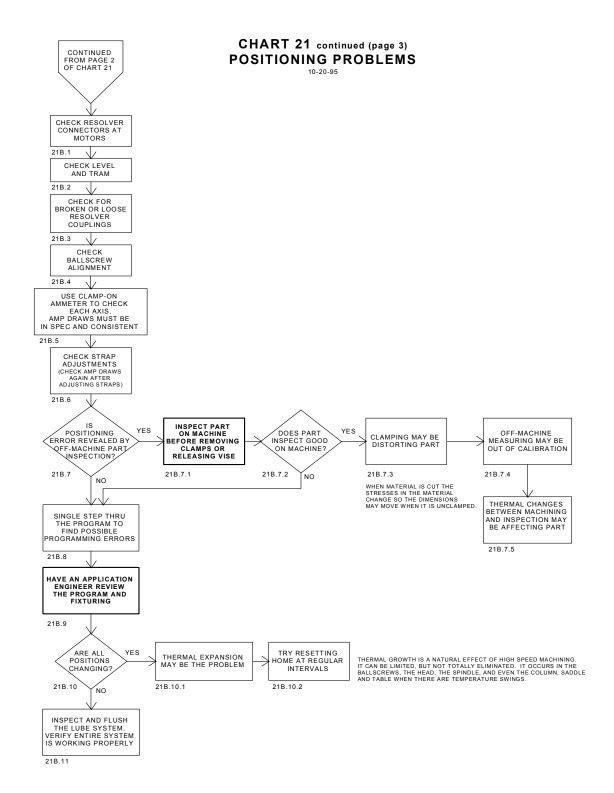


Figure 16-34 Positioning Problems



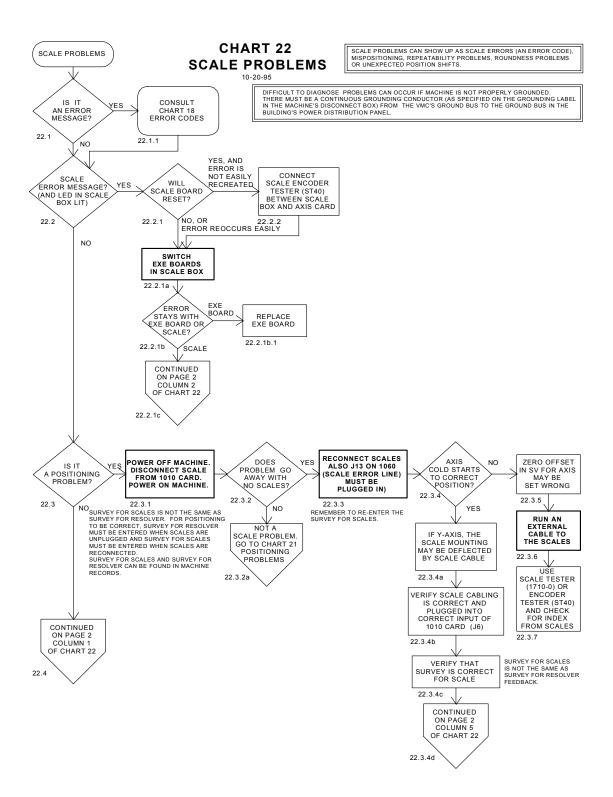


Figure 16-35 Scale Problems

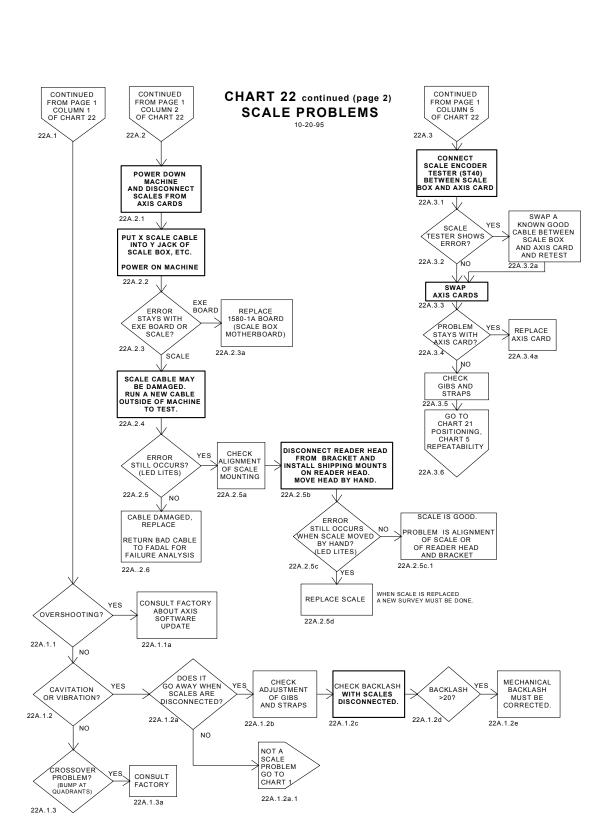


Figure 16-36 Scale Problems (Continued)



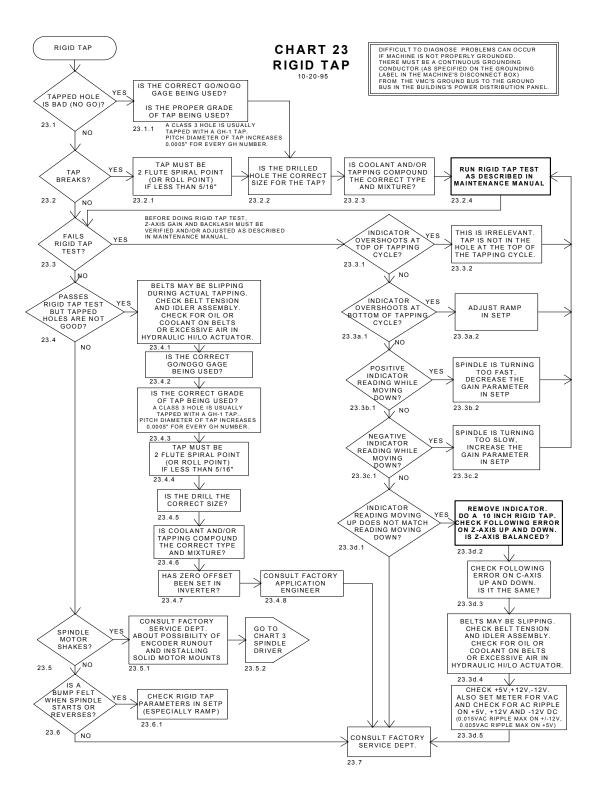


Figure 16-37 Rigid Tap

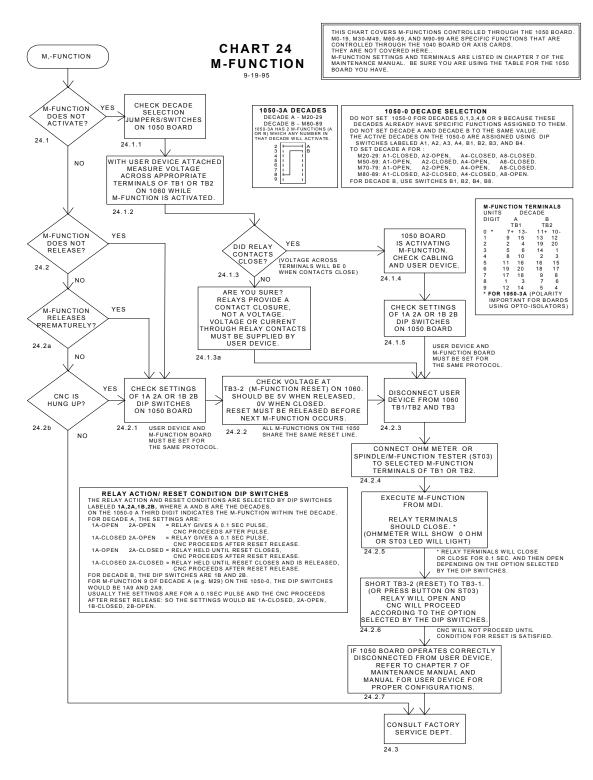


Figure 16-38 M-Function



#### INDEXER WIRING DIAGRAM

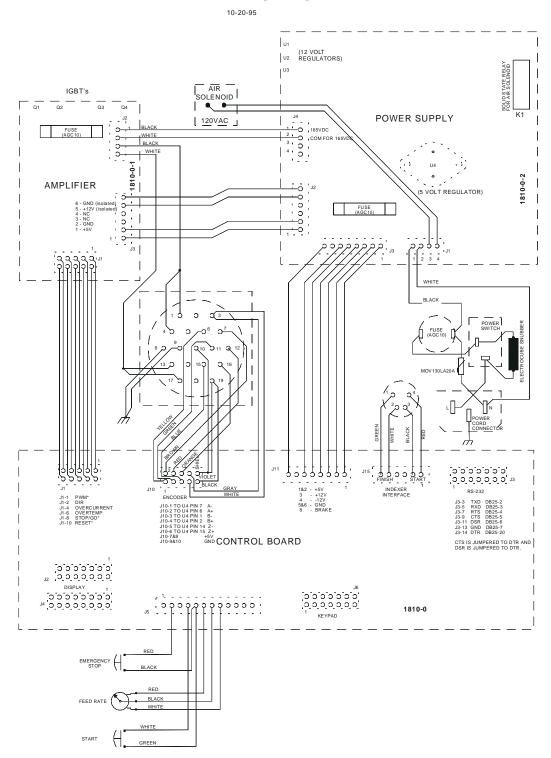
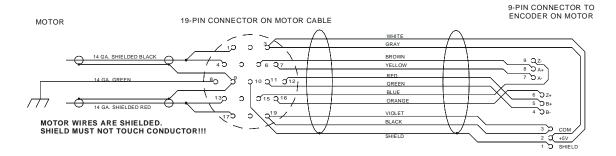
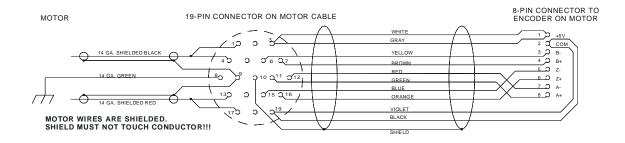


Figure 16-39 Indexer Wiring Diagram





#### MOTOR CABLE WIRING FOR VH-5C INDEXER



# MOTOR CABLE WIRING FOR VH-65 INDEXER

# BULKHEAD CONNECTOR WIRING FOR CLOCKWISE POSITIVE MOTION

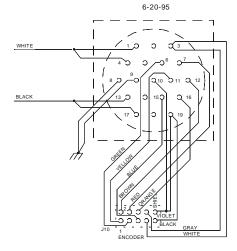


Figure 16-40 Motor Cable Wiring & Bulkhead Connector Wiring



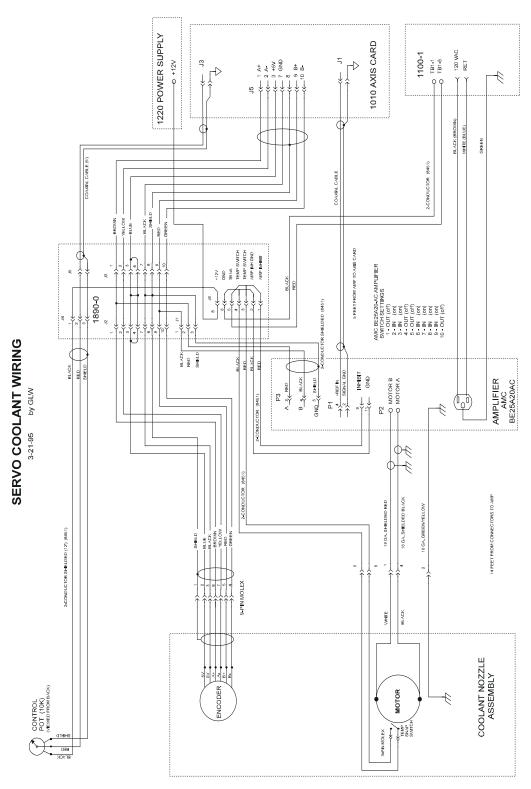


Figure 16-41 Servo Coolant Wiring

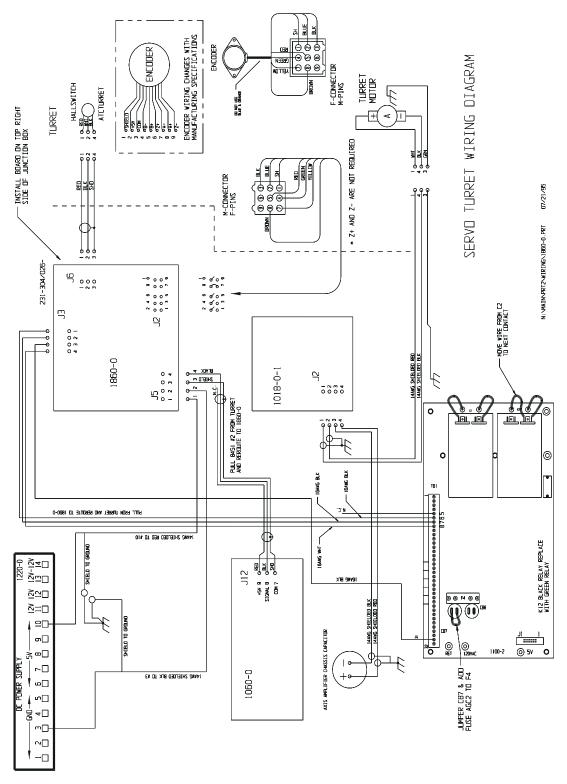


Figure 16-42 Servo Turret Wiring