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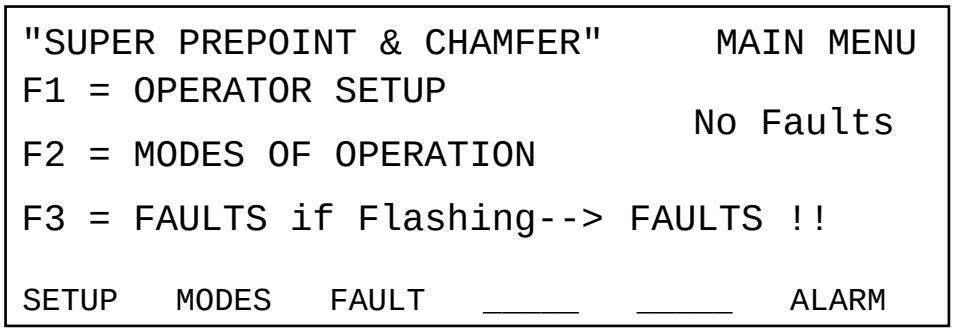
7-25-98

SUPER PREPOINT & CHAMFER MACHINE
OWNERS MANUAL

TABLE OF CONTENTS

SCREEN #1, HOME SCREEN



This is the **Main Menu** Screen for the **Super Prepoint & Chamfer machine**. When the machine is powered up either by choice or power failure, the "**FAULTS !!**" prompt will be flashing. The Operator then needs to press the **'FAULT' Button** (F3) and follow the prompts from the FAULT Screen. See page #33. When ALL Faults have been solved, the Operator will return back to this Screen. The "FAULTS !!" prompt will be gone and "**No Faults**" prompt will be seen.

Next the Operator will be able to select:

F1 SETUP -- OPERATOR SETUP (See page 3)

F2 MODES -- MODES OF OPERATION (See page 20)

F3 FAULT -- VIEW AND CLEAR ANY FAULTS(See page 33)

F4 MASKED -- Special Engineering Setup.(See page 53)

F5 MASKED -- Exit Operator Run Mode.

F6 ALARM -- Clear any Input Over Limits Value made by Operator.

Press IF any Inverted (dark) Message is

Flashing at the very top of the Operator Screen.

SCREEN #2, OPERATOR SETUP SCREENS, F1 FROM MAIN MENU

```
       OPERATOR SETUP FUNCTIONS
PREPOINT ;Diameter & Angle (From List)
 45 Deg.CHAMFER ; Long and Short
  MANUAL ENTRY  ; PREPOINT OR CHAMFER
   MORE         ; FUNCTIONS

MENU    POINT   45-CF   MAN-E   _____   MORE
```

F1 F2 F3 F4 F5 F6

F1 : MENU -- Return to Main Menu.

F2 : PREPOINT -- This function uses pre-loaded Angles from a "look up" table in the PLC logic and calculates the Trig. for the Cross Slide Infeed Travel. Diameter and Angle Required. (see page 4).

F3 : 45 DEG. CHAMFER -- This function uses a constant Trig value in the PLC logic and calculates the Cross Slide Infeed Travel. Diameter and Chamfer Leg Distance required. (see page 5).

F4 : MANUAL ENTRY -- This function does not calculate and therefore requires an Operator to provide the Cross Slide Infeed Travel Distance. (see page 8).

F5 : Not Used

F6 : MORE -- More Operator Setup Parameters to be made. (see page 9).

SCREEN #3, PREPOINT, F2 FROM OPERATOR SETUP SCREEN

```
"PREPOINT FUNCTION"   Old ANGLE= RRR Deg
Angle List: 90,118, 135, 140, 145,
& 150 Deg.---->Enter New ANGLE:  xxx Deg
                Rod DIAMETER:  x.xxx Dia
Rough Cut:x.xxxxIn.  Fine Cut: x.xxxxIn.
SETUP   MENU    ANGLE   DIA.    ROUGH   FINE
```

F1 F2 F3 F4 F5 F6

F1 : SETUP -- Return to Operator Setup.

F1 : MENU -- Return to Main Menu.

F3 : ANGLE -- Press this Button to enter a New Angle. This Angle must be from the pre-loaded "Angle List" to be able to calculate the Cross Infeed.

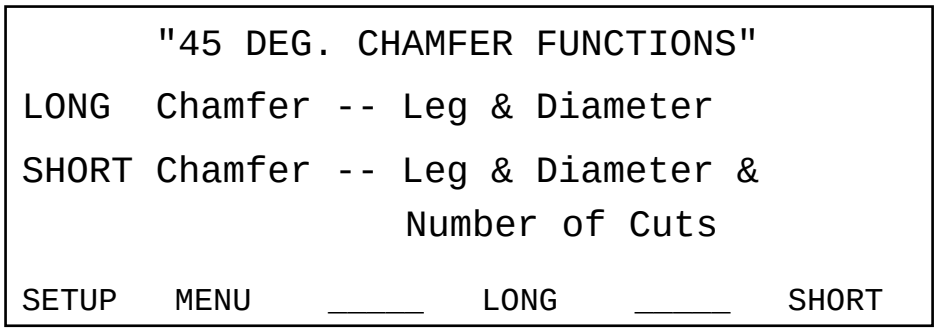
F4 : DIAMETER -- Press this Button to enter the Rod Diameter. The Diameter is Required for all functions.

F5 : ROUGH-- Press this Button to enter the value of how aggressively the Cross Slide will start to grind the material from the Rod. Value range is 0.0030" to 0.0400".

F6 : FINE -- Press this Button to enter the value of least amount of material that the Cross Slide will grind from the Rod. Value range is 0.0001" to 0.0100".

Note: The ***PREPOINT FUNCTION*** will make the Cross Slide Infeed Progressions will become less each grind stroke, until it reaches the "FINE Value", because the PLC will using the percentage of the *Remaining Total Infeed Distance* to calculate each Infeed Index Move.

SCREEN #4, CHAMFER, F3 FROM OPERATOR SETUP SCREEN



F1 F2 F3 F4 F5 F6

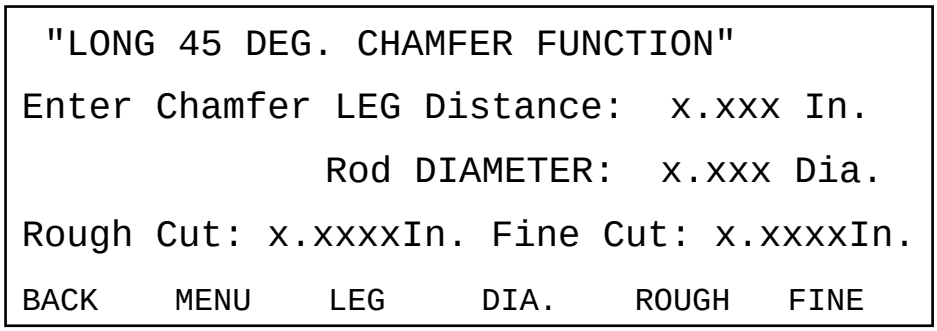
F1 : SETUP -- Return to Operator Setup.

F2 : MENU --- Return to Main Menu.

F4 : LONG --- Select Long Chamfer.

F6 : SHORT -- Select Short Chamfer.

SCREEN #5, LONG CHAMFER, F4 from Chamfer Functions.



F1 : BACK -- Return to Chamfer Setup Functions.

F1 : MENU -- Return to Main Menu.

F3 : LEG ---- Press this Button to enter the *Chamfer Leg Distance* of the Rod.

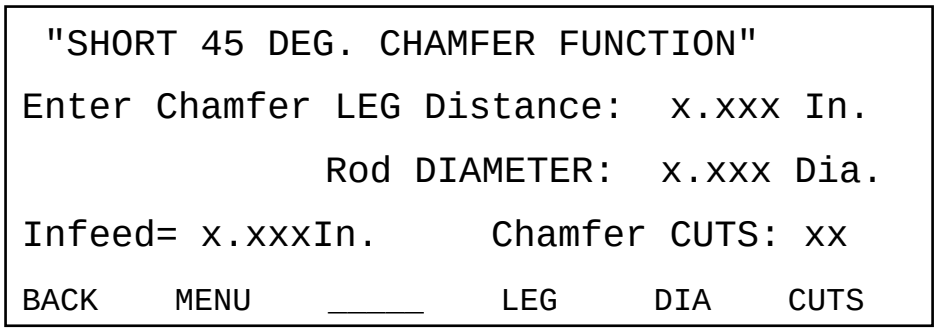
F4 : DIAMETER -- Press this Button to enter the Rod Diameter. The Diameter is Required for all functions.

F5 : ROUGH-- Press this Button to enter the value of how aggressively the Cross Slide will start to grind the material from the Rod. Value range is 0.0030" to 0.0400".

F6 : FINE -- Press this Button to enter the value of least amount of material that the Cross Slide will grind from the Rod. Value range is 0.0001" to 0.0100".

Note: The ***45DEG. CHAMFER FUNCTION*** will make the Cross Slide Infeed Progressions will become less each grind stroke, until it reaches the "FINE Value", because the PLC will using the percentage of the *Remaining Total Infeed Distance* to calculate each Infeed Index Move.

SCREEN #6, SHORT CHAMFER, F4 from Chamfer Functions.



F1 : BACK -- Return to Chamfer Setup Functions.

F1 : MENU -- Return to Main Menu.

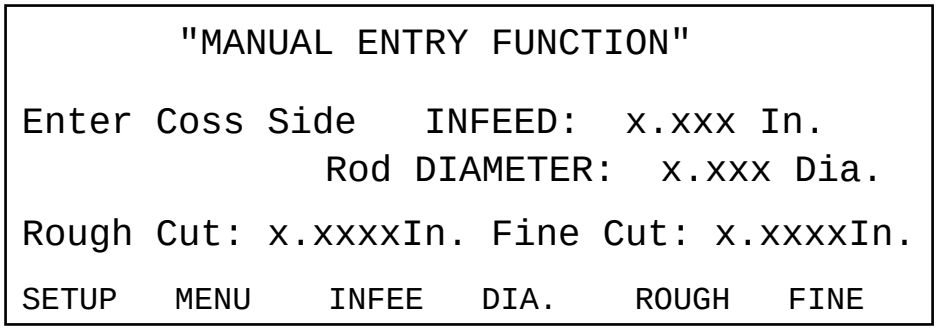
F3 : NO FUNCTION **--** Infeed= (Reads calculated Infeed Distance)

F4 : LEG ---- Press this Button to enter the *Chamfer Leg Distance* of the Rod.

F5 : DIAMETER -- Press this Button to enter the Rod Diameter. The Diameter is Required for all functions.

F6 : CUTS -- Press this Button to enter the number of CUTS to do the complete chamfer. The "Infeed=" will be divided into equal parts by the CUTS number.

SCREEN #7, MANUAL ENTRY, F4 FROM OPERATOR SETUP SCREEN



Note: This Function **requires** the **Operator** to *provide* the Cross Slide Infeed Distance. Use this Function only if the Angles are not Listed in the Angle Table for convenience.

F1 : SETUP -- Return to Operator Setup.

F1 : MENU --- Return to Main Menu.

F3 : INFEED -- Press this Button to enter the Amount of *CROSS SLIDE INFEED* of the Rod.

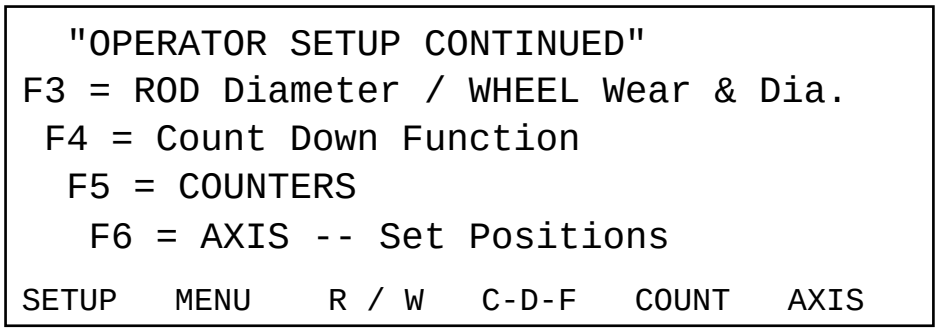
F4 : DIAMETER -- Press this Button to enter the Rod Diameter. The Diameter is Required for all functions.

F5 : ROUGH-- Press this Button to enter the value of how aggressively the Cross Slide will start to grind the material from the Rod. Value range is 0.0030" to 0.0400".

F6 : FINE -- Press this Button to enter the value of least amount of material that the Cross Slide will grind from the Rod. Value range is 0.0001" to 0.0100".

Note: The ***MANUAL ENTRY FUNCTION*** will make the Cross Slide Infeed Progressions will become less each grind stroke, until it reaches the "FINE Value", because the PLC will using the percentage of the *Remaining Total Infeed Distance* to calculate each Infeed Index Move.

SCREEN #8, MORE OPERATOR FUNCTIONS, F5 FROM OPERATOR SETUP SCREEN



F1 : SETUP -- Return to OPERATOR SETUP (see page 3).

F2 : MENU --- Return to MAIN MENU (see page 2).

F3 : R / W -- ROD Diameter and Wheel Wear Comp. and Select Wheel Dia. (see page 10).

F4 : C-D-F -- Cycle COUNT DOWN Function. (see page 10).

F5 : COUNT -- PRODUCTION COUNT and Machine OILER ON & OILER RUN TIME (see page 11).

F6 : AXIS --- SET AXIS POSITIONS Functions (see page 12).

SCREEN #9 , F3 FROM 2'ND OPERATOR SETUP SCREEN

```
ROD DIAMETER = x.xxx Dia.

Wheel WEAR Compensation = x.xxx In.

SELECT Wheel Dia. 8" or 10" = xx" Wheel
BACK    MENU     ROD    WEAR    SEL     _____
  F1      F2      F3      F4      F5       F6
```

F1 : BACK --- Return to OPERATOR SETUP CONTINUED (See page 9)

F2 : MENU --- Return to MAIN MENU

F3 : **ROD** ---- Press this to enter Rod Diameter.

F4 : WEAR --- Press this to enter a Wheel Wear Compensation.

F5 : SEL ---- Press this to Select the Wheel Diameter. Then adjust the CROSS+OT Value. (see Engineering page 48)

SCREEN #10

```
SELECT Cycle Count Down Function?:  OFF

Starting Count Down VALUE = xxx

          RESET Count Down : RRR

BACK    MENU    _____   SELCT   VALUE   RESET
 F1      F2      F3      F4      F5       F6
```

F1 : BACK --- Return to OPERATOR SETUP CONTINUED (See page 9)

F2 : MENU --- Return to MAIN MENU

F4 : SELCT -- Press this to Toggle Count Down Function "OFF or ON"

F5 : VALUE -- Press this to enter the Starting Count Down Value.

F6 : RESET -- Press this to Reset the Count Down Counter to Starting Value.

SCREEN #11, PRODUCTION COUNTER, F5 FROM 2'ND OPERATOR SETUP SCREEN

```
PRODUCTION COUNTER = xxxxx
F3 = To ADJUST Count;  F4 = RESET Count

Start OILER after ? Cycles :  xxx Cycles
Number of Oiler SHOTS (1-5):   xx Shots
BACK    MENU    ADJUS   RESET   OILER   SHOTS
 F1      F2      F3      F4      F5      F6
```

F1 : BACK --- Return to OPERATOR SETUP CONTINUED (See page 9)

F2 : MENU --- Return to MAIN MENU

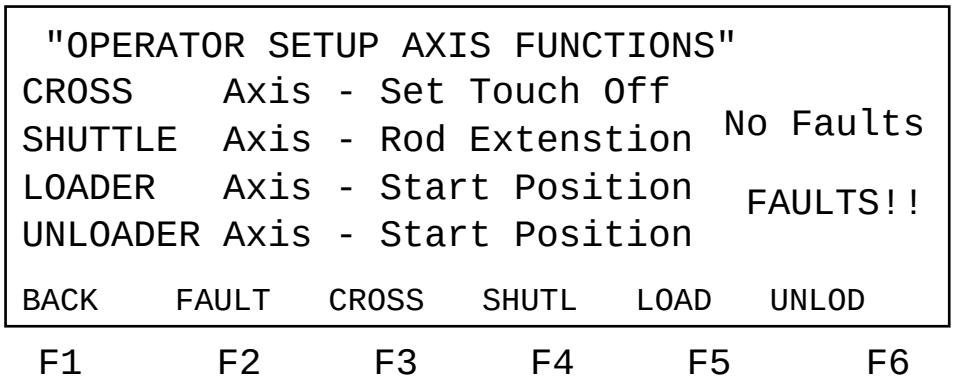
F3 : ADJUS -- Press this to Adjust the Production Count if needed.

F4 : RESET -- Press this to Reset the Production Count to Zero.

F5 : OILER -- Press this to enter the Number of Run Cycles needed to start the Machine Oiler.

F6 : SHOTS -- Press this to enter the number of Shots the Machine Oiler will make to lube the moving parts.

SCREEN #12 ,F6 FROM 2'ND OPERATOR SETUP



F1 : BACK ---- Return to OPERATOR SETUP CONTINUED (See page 9)

F2 : FAULTS -- Press this if the "**FAULTS !!**" prompt is flashing

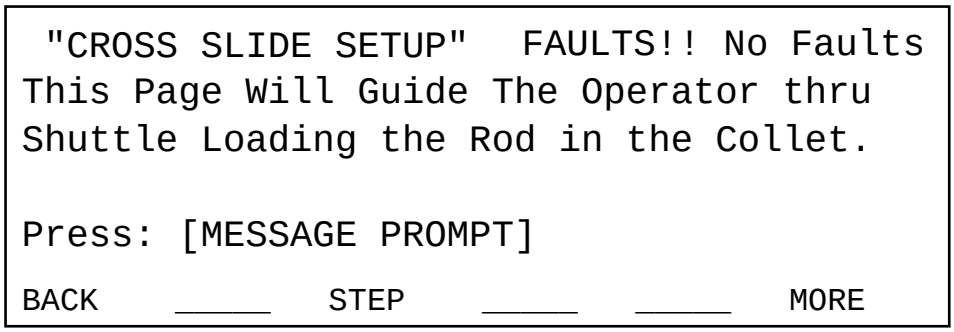
F3 : CROSS --- Press this to Select the Cross Slide Axis Setup Touch Off.

F4 : SHUTL --- Press this to Select the SHUTTLE Axis Rod Extension value and Loading Position.

F5 : LOAD ---- Press this to Select the LOADER Axis.

F6 : UNLOD --- Press this to Select the UNLOADER Axis.

SCREEN#56, F4 From Operator Setup AXIS Functions



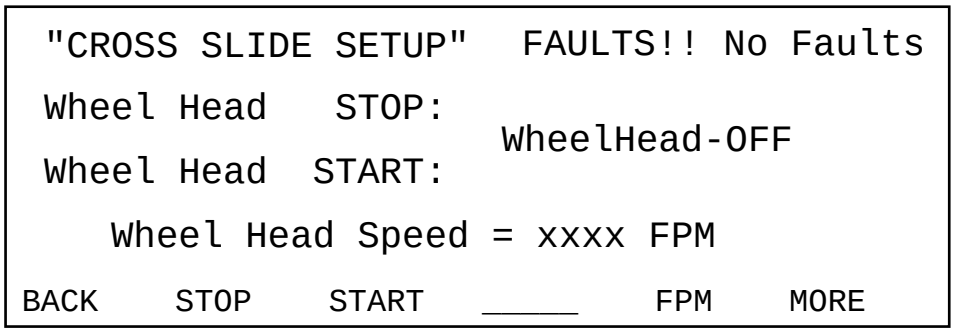
F1 : BACK --- Return to Operator Setup Jog Functions (See page 12)

F3 : STEP --- Press this to STEP thru the semi auto loading of the rod to the collet and start the Work Head.

[MESSAGE PROMPT] will inform the operator of what will happen and which key to press.

F6 : MORE --- Press this to Select the next process.

SCREEN#57



F1 : BACK --- Return to Back 1 Screen

F2 : STOP --- STOP the Wheel Head Motor.

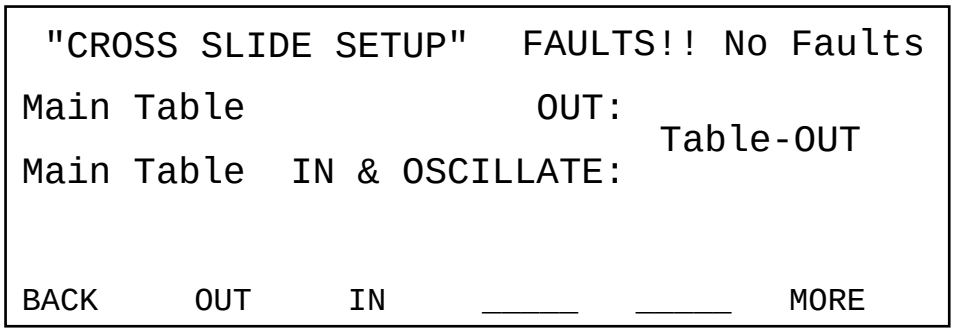
F3 : START -- START the Wheel Head Motor.

F4 : Not Used.

F5 : FPM ---- Press this to enter the Wheel Head "Feet/Per/Minute".

F6 : MORE --- Press this to Select the next process. (see page 14)

SCREEN#58



F1 : BACK -- Return to Back 1 Screen (see page 13)

F2 : OUT --- Main Table Out to Home.

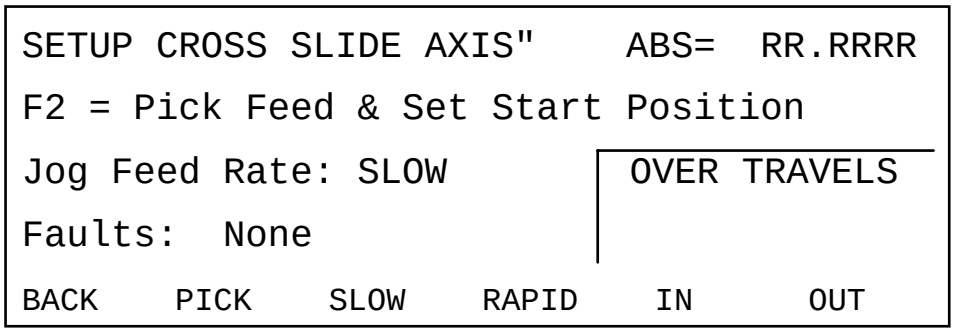
F3 : IN --- Main Table In & Oscillate from the End Limit to the Repeat Limit.

F4 : Not Used.

F5 : Not Used.

F6 : MORE --- Press this to Select the next process. (see page 15)

SCREEN#59



F1 : BACK ---- Back 1 Screen (See page 14)

F2 : PICK -- Press this to go to the next process.

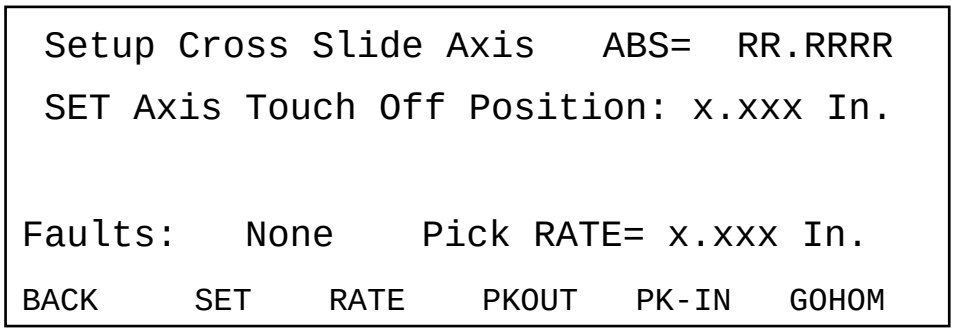
F3 : SLOW -- Select Slow Jog Travel

F4 : RAPID - Select Rapid Jog Travel

F5 : IN --- Jog In

F5 : OUT -- Jog Out

SCREEN #60



F1 : BACK -- Back 1 screen (see page 15)

F2 : SET -- Push this to enter the value of the Touch Off Position.

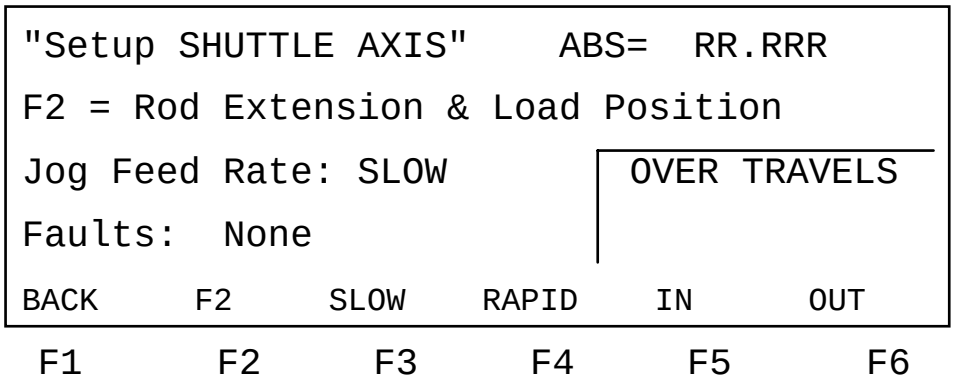
F3 : RATE -- Push this to enter the value of the Pick Feed Rate.

F4 : PKOUT - Pick Out direction of the Axis.

F5 : PK-IN - Pick In direction of the Axis.

F6 : GOHOM - Send Axis to Home Position (ABS 0.0000).

SCREEN#14, F4 From Operator Setup AXIS Functions



F1 : **BACK** -- Return to Operator Setup Functions (See page 12)

F2 : **F2** ---- Select to Go to next screens to Set Rod Extension or Shuttle Load Position.

F3 : **SLOW** -- Select Slow Jog Travel

F4 : **RAPID** - Select Rapid Jog Travel

F5 : **IN** --- Jog In

F5 : **OUT** -- Jog Out

SCREEN #15

```
"Rod Extension" ;Shuttle Axis ABS= RR.RRR
       Shuttle approx. Position = 12.125"
           Rod avr. Extension = 0.875 In.
Faults:   None    F3 = SET Ext: x.xxx In.
BACK    MORE     SET    GOHOM    IN      OUT
 F1      F2      F3      F4      F5      F6
```

F1 : BACK -- Back 1 Screen (see page 16)

F2 : MORE -- Go to Next Screen.

F3 : SET --- Select to Enter Value of Rod Extension.

F4 : GOHOM - Send Axis to Home Position (ABS 0.000").

F5 : IN ---- Jog Axis IN

F6 : OUT --- Jog Axis OUT

SCREEN #16

```
 Setup Shuttle Axis      ABS=  RR.RRR
F2 = Store ABS Position to
            Loading Position: RR.RRR In.
Faults:   None
BACK    STORE   _____   GOHOM    IN      OUT
 F1      F2      F3      F4      F5      F6
```

F1 : BACK -- Back 2 Screens (see page 16)

F2 : STORE - Select to Store ABS Value for Loading Position.

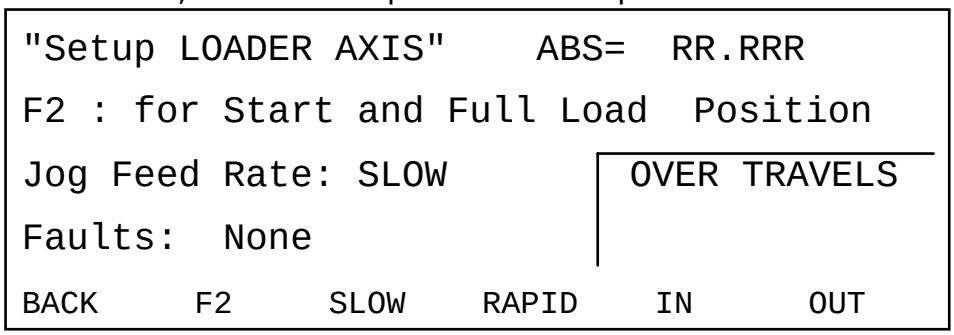
F3 : Not Used

F4 : GOHOM - Send Axis to Home Position (ABS 0.000").

F5 : IN ---- Jog Axis IN

F6 : OUT --- Jog Axis OUT

SCREEN#17, F5 From Operator Setup AXIS Functions



F1 : **BACK** -- Return to Operator Setup Functions (See page 12)

F2 : **F2** ---- Select to to Set the Loader Staring Position.

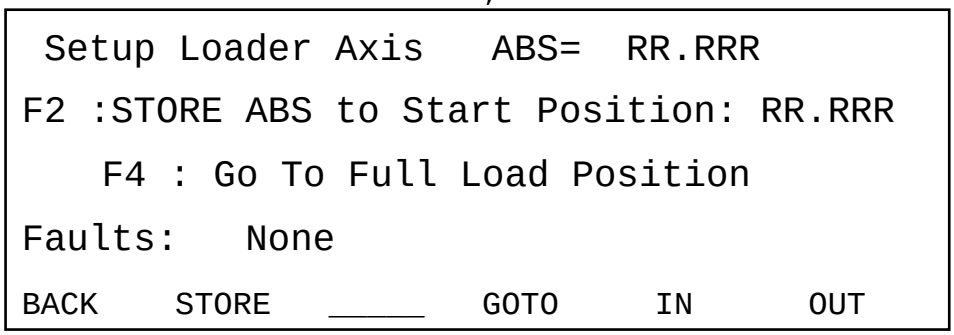
F3 : **SLOW** -- Select Slow Jog Travel

F4 : **RAPID** - Select Rapid Jog Travel

F5 : **IN** --- Jog In

F5 : **OUT** -- Jog Out

SCREEN #18,



F1 : **BACK** -- Back 1 Screen

F2 : **STORE** - Select to Store ABS Value for Starting Position.

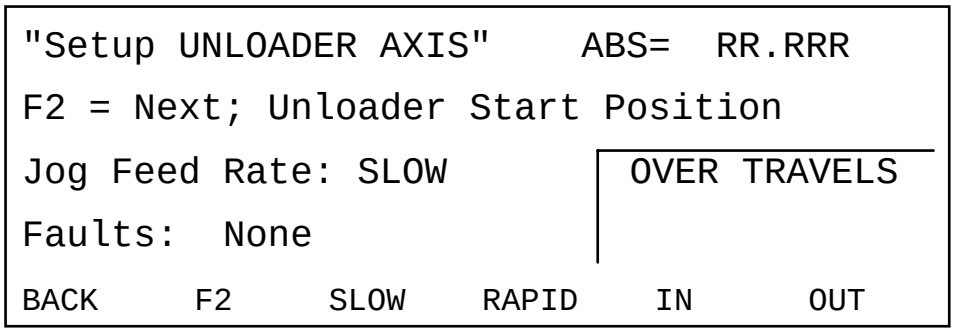
F4 : **GOTO** -- Select to GOTO Full Load Position.

F5 : **IN** ---- Jog Axis IN

F6 : **OUT** --- Jog Axis OUT

Note: After filling Loader Axis table, then Jog Axis In until the Rod falls into the Rod Bushing of the Shuttle.

SCREEN#19, F6 From Operator Setup AXIS Functions



F1 : **BACK** -- Return to Operator Setup Functions (See page 12)

F2 : **F2** ---- Go to next screen for Unloader Staring Position.

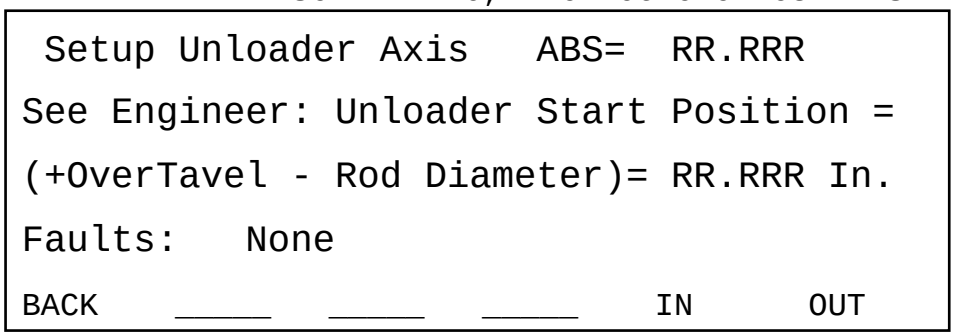
F3 : **SLOW** -- Select Slow Jog Travel

F4 : **RAPID** - Select Rapid Jog Travel

F5 : **IN** --- Jog In

F5 : **OUT** -- Jog Out

SCREEN #20, PLC LOGIC CALCULATES THIS VALUE



F1 : **BACK** -- Back 1 Screen

Engineering Value:

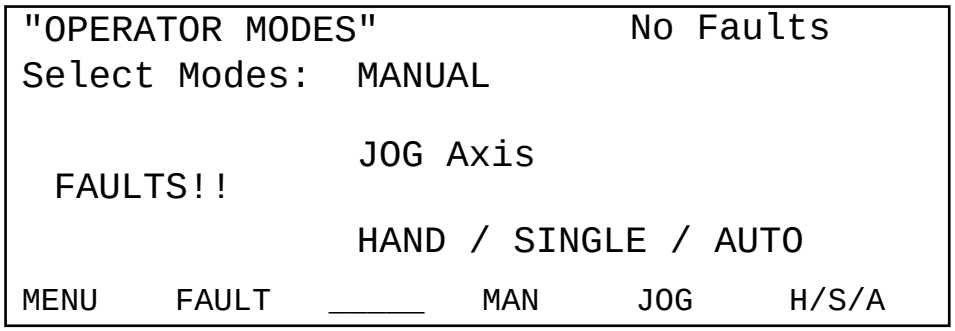
Starting Position = (+Unloader Over Travel - Rod Diameter)

F2 : Not Used **F3** : Not Used **F4** : Not Used

F5 : **IN** ---- Jog Axis IN

F6 : **OUT** --- Jog Axis OUT

SCREEN #21 OPERATOR MODES



F1 : MENU --- Return to Main Menu (see page 2)

F2 : FAULT -- Select this Key if the "FAULTS!!" prompt is Flashing. (see page 33)

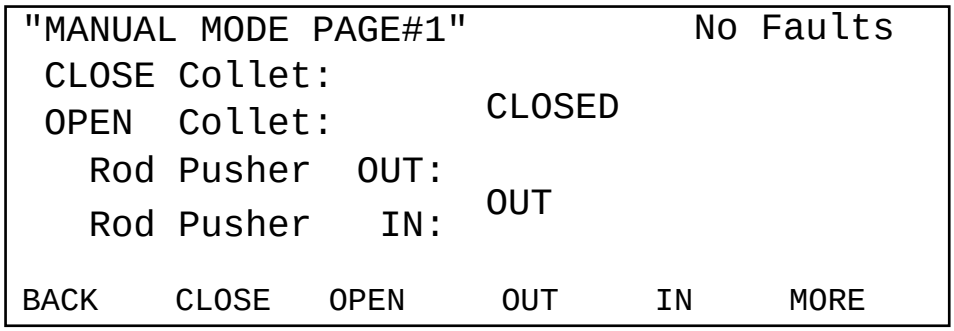
F3 : Not Used.

F4 : MAN ---- Select this Key to Manually Operate the Machine. This is used to check out moving parts of the machine.(see page 21)

F5 : JOG ---- Select this Key to Jog the Servo Axis. (see page 24)

F6 : H/S/A -- Select this Key to go to HAND / SINGLE / AUTO Cycle. (see page 28)

SCREEN #22 OPERATOR MANUAL MODE SCREEN 1



F1 : BACK --- Return to Modes Screen, or "FAULTS!!" (see page 20)

F2 : CLOSE -- Close Collet

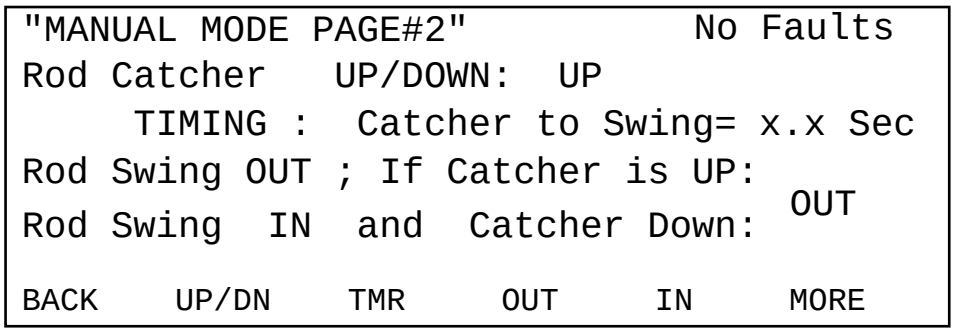
F3 : OPEN --- Open Collet ; [status CLOSED, OPEN]

F4 : OUT ---- Move Rod Pusher Out

F5 : IN ----- Move Rod Pusher In ; [status OUT, IN]

F6 : MORE --- Go to next Manual screen.

SCREEN #23



F1 : BACK --- Back 1 Screen or "FAULTS!!".

F2 : UP/DN -- Rod Catcher Up or Down : [Status UP, DOWN]

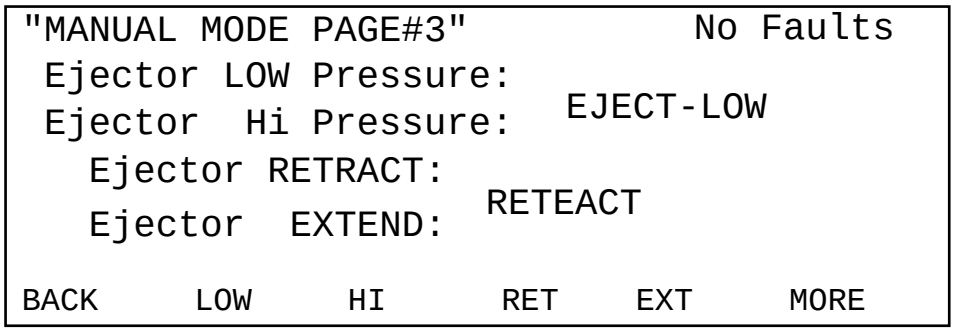
F3 : TMR ---- Timing between Rod Swing In and Rod Catcher Down

F4 : OUT ---- Move Rod Swing Out

F5 : IN ----- Move Rod Swing In and Rod Catcher Down. [Status OUT, IN]

F6 : MORE --- Go to next Manual screen. (see page 22)

SCREEN #24 OPERATOR MANUAL MODE SCREEN 3



F1 : BACK --- Back 1 Screen or "FAULTS!!". (see page 21)

F2 : LOW ---- Rod Ejector LOW Pressure.

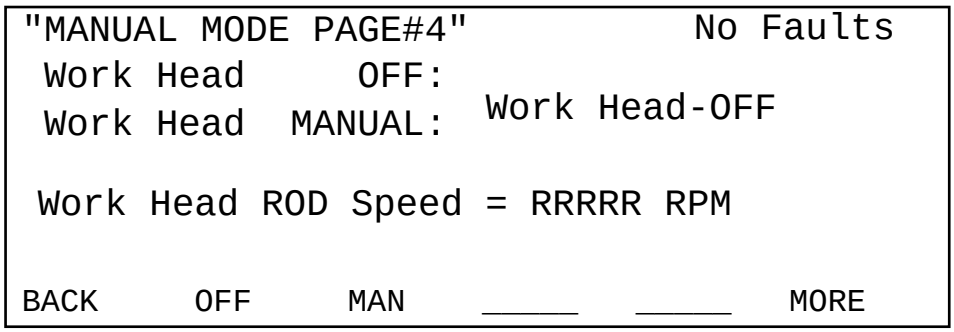
F3 : HI ----- Rod Ejector HI Pressure: [Status EJECT-LOW, EJECT-HI]

F4 : RET ---- Retract Rod Ejector.

F5 : EXT ---- Extend Rod Ejector. [status RETRACT, EXTEND]

F6 : MORE --- Go to next Manual screen.

SCREEN #25



F1 : BACK --- Back 1 Screen or "FAULTS!!".

F2 : OFF ---- Work Head OFF. [Status Work Head-OFF, Work Head-MAN]

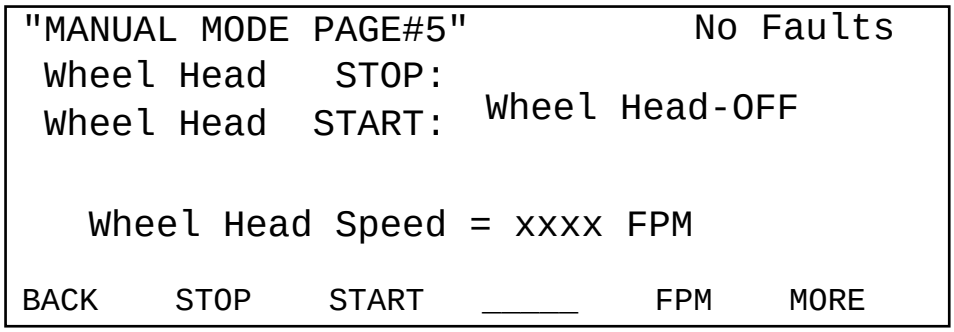
F3 : MAN ---- Work Head Manually On:

Work Head Speed is Calculated from Rod Diameter.

F4 : Not Used **F5 :** Not Used

F6 : MORE --- Go to next Manual screen. (see page 23)

SCREEN #26 OPERATOR MANUAL MODE SCREEN 5



F1 : BACK -- Back 1 Screen or "FAULTS!!". (see page 21)

F2 : STOP -- Stop Wheel Head.

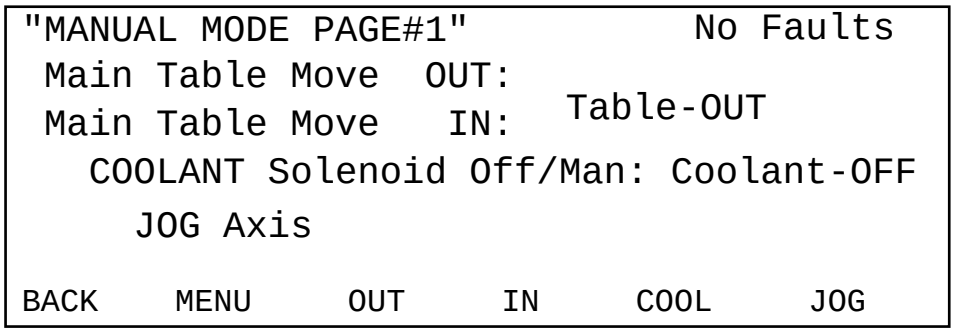
F3 : START - Start Wheel Head: [Status Wheel Head-OFF, Wheel Head-ON]

F4 : Not Used

F5 : FPM --- Select to enter Wheel Head "Feet Per Minute"

F6 : MORE -- Go to next Manual screen.

SCREEN #27



F1 : BACK -- Back 1 Screen or "FAULTS!!".

F2 : MENU -- Back to MODE Menu screen. (see page 20)

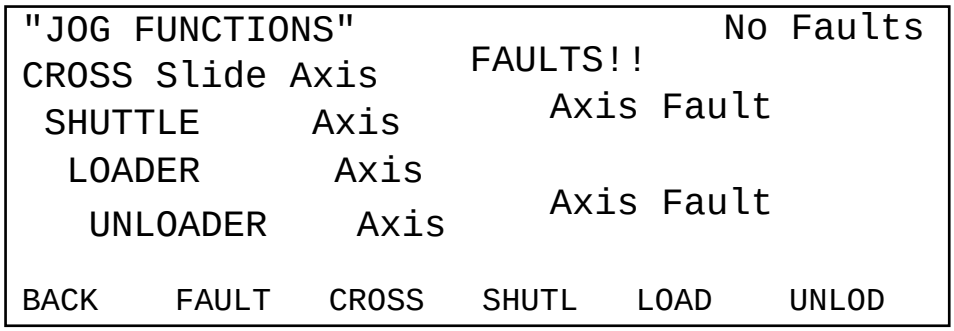
F3 : OUT --- Move Main Table Out to Home.

F4 : IN ---- Move Main Table In; [Status Table-OUT, Table-IN**]**

F5 : COOL -- Toggle Coolant Solenoid; [Status Coolant-OFF, Coolant-ON]

F6 : JOG --- Go to next Manual screen. (see page 24)

SCREEN #28 OPERATOR MANUAL MODE - JOG



F1 : BACK -- Back 1 Screen. (see page 23)

F2 : FAULT - Select if "FAULTS!!" or "Axis Fault" prompt is Flashing.

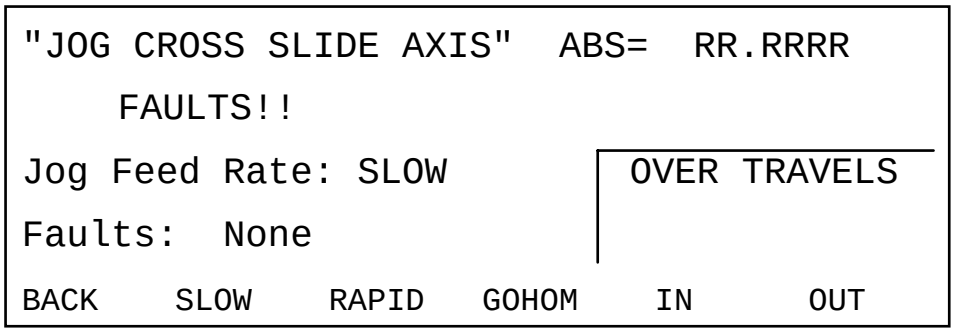
F3 : CROSS - Select Manual Cross Axis. (see page 25)

F4 : SHUTL - Select Manual Shuttle Axis. (see page 25)

F5 : LOAD -- Select Manual Loader Axis. (see page 26)

F6 : UNLOD - Select Manual Unloader Axis. (see page 26)

SCREEN #29 OPERATOR MANUAL MODE - JOG



F1 : BACK -- Back to Jog Screen or if "FAULTS!!".(see page 24)

F2 : SLOW -- Select for Slow Jog Rate of 0.050" per Sec.

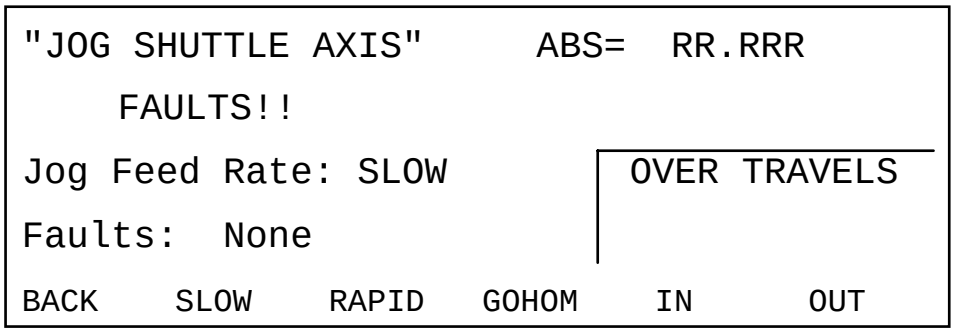
F3 : RAPID - Select for Rapid Jog Rate of 1.000" per Sec.

F4 : GOHOM - Select to Send Axis to Home Position ABS 0.0000"

F5 : IN ---- Select to Jog Axis In.

F6 : OUT --- Select to Jog Axis Out.

SCREEN #30



F1 : BACK -- Back to Jog Screen or if "FAULTS!!". (see page 24)

F2 : SLOW -- Select for Slow Jog Rate of 0.050" per Sec.

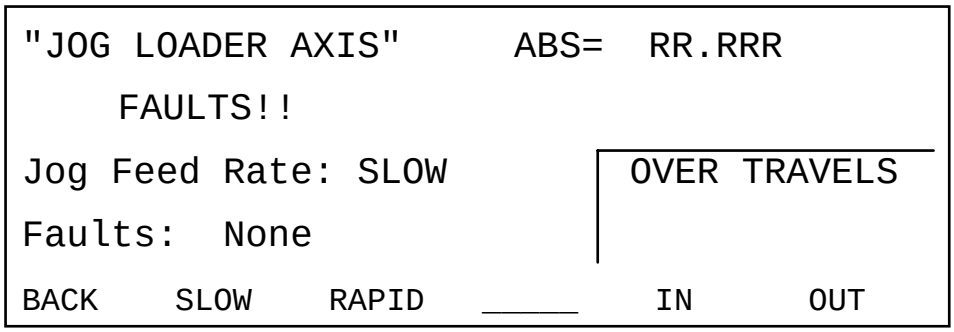
F3 : RAPID - Select for Rapid Jog Rate of 1.000" per Sec.

F4 : GOHOM - Select to Send Axis to Home Position ABS 0.0000"

F5 : IN ---- Select to Jog Axis In.

F6 : OUT --- Select to Jog Axis Out.

SCREEN #31 OPERATOR MANUAL MODE - JOG



F1 : BACK -- Back to Jog Screen or if "FAULTS!!". (see page 24)

F2 : SLOW -- Select for Slow Jog Rate of 0.050" per Sec.

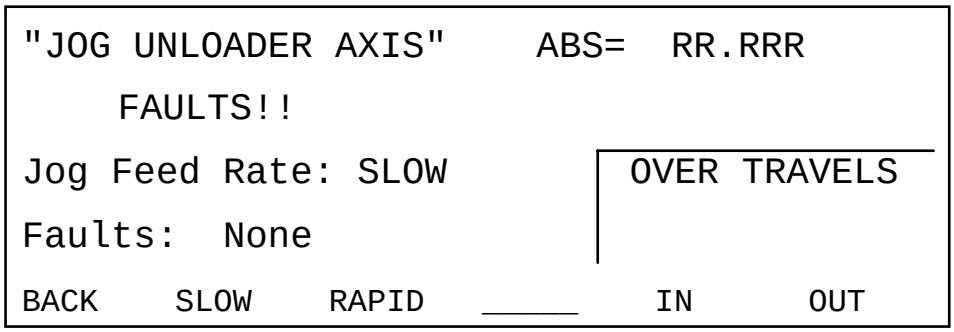
F3 : RAPID - Select for Rapid Jog Rate of 1.000" per Sec.

F4 : Not Used

F5 : IN ---- Select to Jog Axis In.

F6 : OUT --- Select to Jog Axis Out.

SCREEN #32



F1 : BACK -- Back to Jog Screen or if "FAULTS!!". (see page 24)

F2 : SLOW -- Select for Slow Jog Rate of 0.050" per Sec.

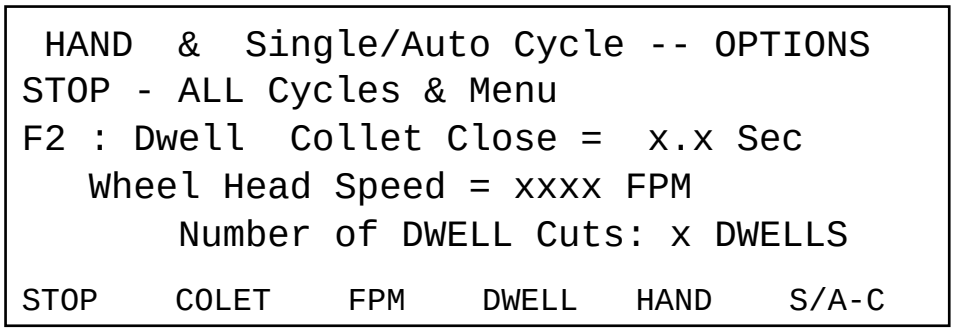
F3 : RAPID - Select for Rapid Jog Rate of 1.000" per Sec.

F4 : Not Used

F5 : IN ---- Select to Jog Axis In.

F6 : OUT --- Select to Jog Axis Out.

SCREEN #33 OPERATOR SELECT HAND & SINGLE/AUTO CYCLE OPTIONS



F1 : STOP -- STOP ANY CYCLE and back to MODE Menu screen.

(see page 24)

F2 : COLET - Enter Time to Dwell the Collet Closing.

F3 : FPM --- Change the Wheel Head Speed in "Feet Per Minute".

F4 : DWELL - To enter the Number of no Infeed cuts; value 0 to 5.

F5 : HAND -- Select HAND Load Cycle. (see page 29)

F6 : S/A-C - Select SINGLE and AUTO Cycle. (see page 28)

SCREEN #34 OPERATOR SELECT SINGLE/AUTO CYCLE OPTIONS

```
-- Single / Auto Cycle -- OPTIONS
BACK  :to Options; Stop & Mode Menu
 LOADER --- Return to Start Position
    UNLOADER - Return to Start Position
          F6 = MORE Single/Auto Options
BACK    _____   LOAD    UNLOD   _____   MORE
```

F1 F2 F3 F4 F5 F6

F1 : BACK -- Back 1 screen for Options. (see page 27)

F2 : Not Used.

F3 : LOAD -- Select to send Loader Axis to previous Start Position.

F4 : UNLOD - Select to send Unloader Axis to previous Start Position.

F5 : Not Used.

F6 : MORE -- Select for More SINGLE and AUTO Cycle Options.

SCREEN #35

```
-- Single / Auto Cycle -- OPTIONS
BACK  :to Options;
   SELECT  - Cycle Count Down: OFF
     RESET - Count Down VALUE: RRR
                F6 = Goto Single Cycle
BACK    _____   SELCT   RESET   _____   SINGL
```

F1 F2 F3 F4 F5 F6

F1 : BACK -- Back 1 screen for Options.

F2 : Not Used.

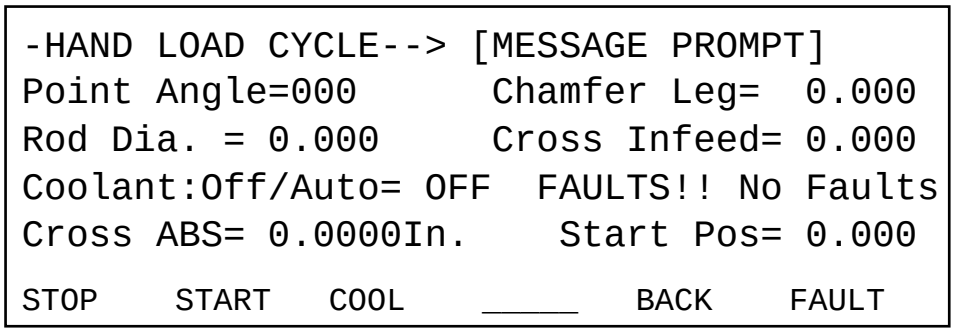
F3 : SELCT - Toggles "Cycle Count Down" Off or On. [Status OFF, ON]

F4 : RESET - Reset "Cycle Count Down" to Preset Value to use again.

F5 : Not Used.

F6 : SINGL - Select SINGLE and AUTO Cycle. (see page 30)

SCREEN #36 OPERATOR MODE - HAND LOAD CYCLE



F1 : STOP --- STOP Hand Load Cycle.

F2 : START -- START Hand Load Cycle.

F3 : COOL --- Toggle the Coolant Solenoid Off/On. [Status OFF, ON]

F4 : Not Used.

F5 : BACK --- Back to Hand / Single/Auto Options screen. (see page 27)

F6 : FAULT -- Select this if the "FAULTS!!" prompt is flashing.

[MESSAGE PROMPT] prompts to:

Open Collet, Load Rod, Close Collet, Start Cycle;

by pressing F2 Cycle Start.

Point Angle: displays the Rod Angle selected by Setup if used.

Rod Dia. : displays the Rod Diameter selected by Setup.

Coolant : displays the status of the coolant solenoid.

Chamfer Leg: displays the Length of the Chamfer Leg if used.

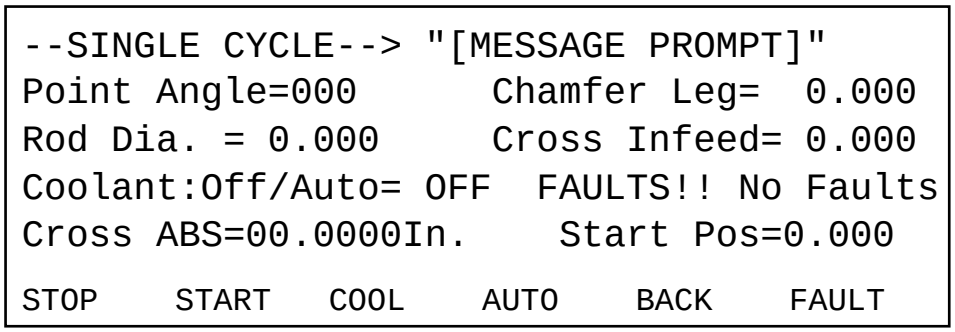
Cross Infeed: displays the calculated or entered Cross Infeed distance.

Start Pos : displays the Cross Axis Starting (Touch off) Value.

Cross ABS : displays the Cross Axis ABS Position.

Faults status : displays either "No Faults" or "FAULTS!!" flashing.

SCREEN #37 OPERATOR MODE - SINGLE CYCLE



F1 : STOP --- STOP Hand Load Cycle.

F2 : START -- START Hand Load Cycle.

F3 : COOL --- Toggle the Coolant Solenoid Off/On. [Status OFF, ON]

F4 : AUTO --- Select Full Auto Cycle. (see page 31)

F5 : BACK --- Back to Single/Auto Options screen. (see page 28)

F6 : FAULT -- Select this if the "FAULTS!!" prompt is flashing.

[MESSAGE PROMPT] displays either:

POINT OPERATION , CHAMFER OPERATION, SHORT CHAMFER,

MANUAL ENTRY

Point Angle: displays the Rod Angle selected by Setup if used.

Rod Dia. : displays the Rod Diameter selected by Setup.

Coolant : displays the status of the coolant solenoid.

Chamfer Leg: displays the Length of the Chamfer Leg if used.

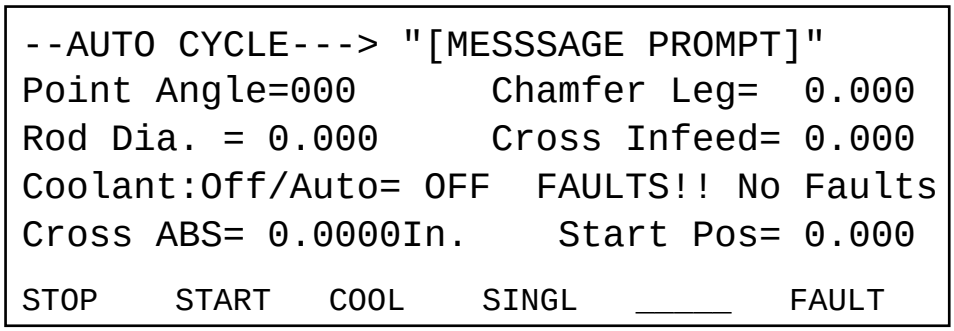
Cross Infeed: displays the calculated or entered Cross Infeed distance.

Start Pos : displays the Cross Axis Starting (Touch off) Value.

Cross ABS : displays the Cross Axis ABS Position.

Faults status : displays either "No Faults" or "FAULTS!!" flashing.

SCREEN #38 OPERATOR MODE - AUTO CYCLE



F1 : STOP --- STOP Hand Load Cycle.

F2 : START -- START Hand Load Cycle.

F3 : COOL --- Toggle the Coolant Solenoid Off/On. [Status OFF, ON]

F4 : SINGL -- Select Single Auto Cycle. (see page 30)

F5 : Not Used.

F6 : FAULT -- Select this if the "FAULTS!!" prompt is flashing.

[MESSAGE PROMPT] displays either:

POINT OPERATION , CHAMFER OPERATION, SHORT CHAMFER,

MANUAL ENTRY

Point Angle: displays the Rod Angle selected by Setup if used.

Rod Dia. : displays the Rod Diameter selected by Setup.

Coolant : displays the status of the coolant solenoid.

Chamfer Leg: displays the Length of the Chamfer Leg if used.

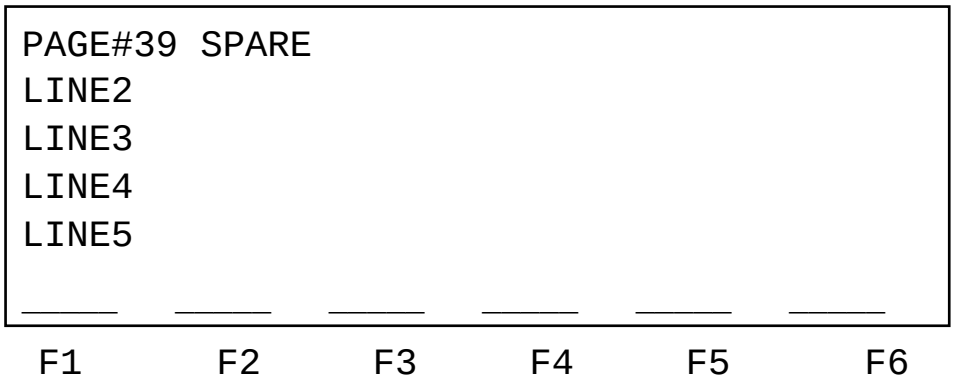
Cross Infeed: displays the calculated or entered Cross Infeed distance.

Start Pos : displays the Cross Axis Starting (Touch off) Value.

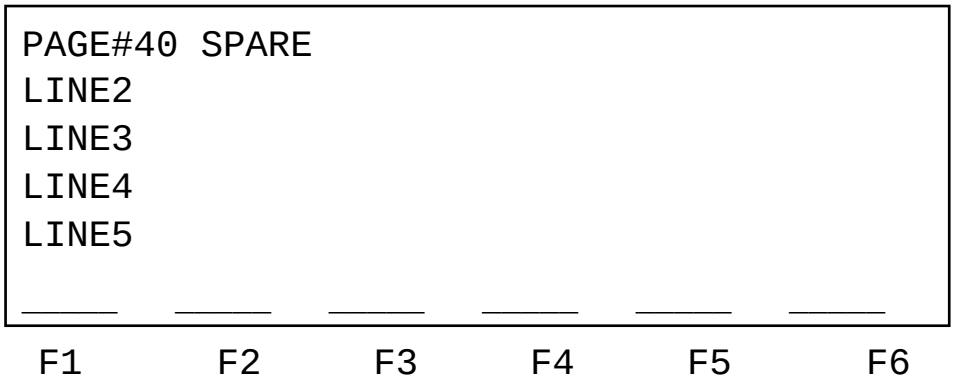
Cross ABS : displays the Cross Axis ABS Position.

Faults status : displays either "No Faults" or "FAULTS!!" flashing.

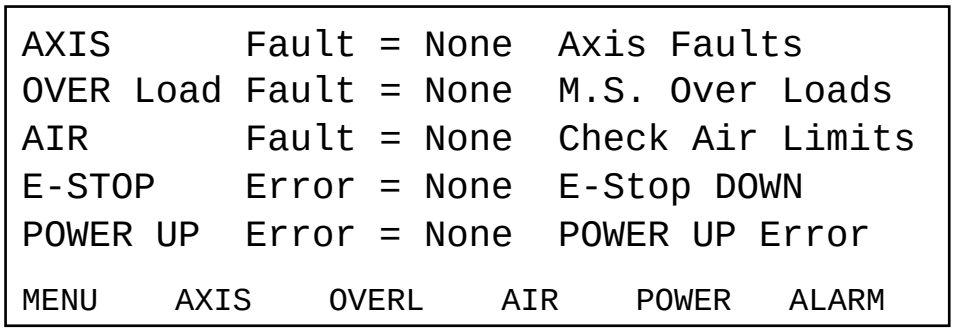
SCREEN #39 OPERATOR MODE - SPARE



SCREEN #40 OPERATOR MODE - SPARE



SCREEN #41 FAULTS - SCREENS



F1 : MENU --- Return to the Main Menu. (see page 2)

Fault status: [None] = No faults, take no action.

[Fault Type Flashing] = Fault active, select proper Key.

Fault status is in order of priority.

F2 : AXIS --- Select this Key when "Axis Faults" if flashing.

(see page 34)

F3 : OVERL -- Select this Key when "M.S. Over Loads" is flashing.

(see page 39)

F4 : AIR ---- Select this Key when "Check Air Limits" is flashing.

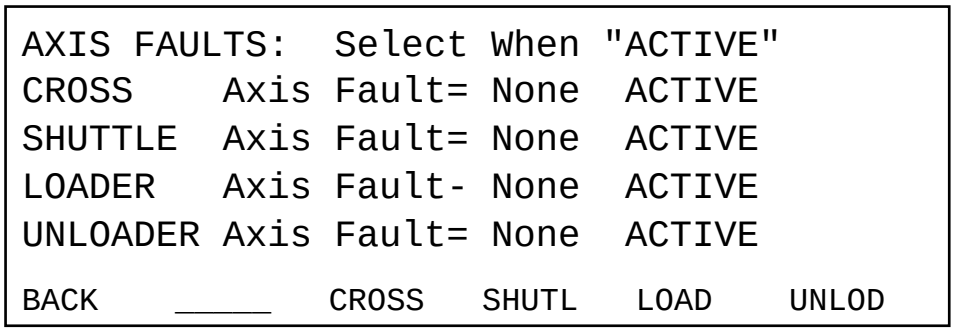
(see page 39)

F5 : POWER -- Select this Key when "POWER UP ERROR" is flashing.

F6 : ALARM -- Select this Key If Alarm Tag is Flashing in upper screen area.

TURN E-STOP -- When "E-Stop DOWN" is Flashing.

SCREEN #42 FAULTS - SCREENS



F1 : BACK --- Back to Main Fault Screen. (see page 33)

F2 : Not Used.

Status : None - No Fault, check Axis only if "Faults!!" flashing will not clear. Then check each Axis for Fault code number present.

ACTIVE - Select proper Key

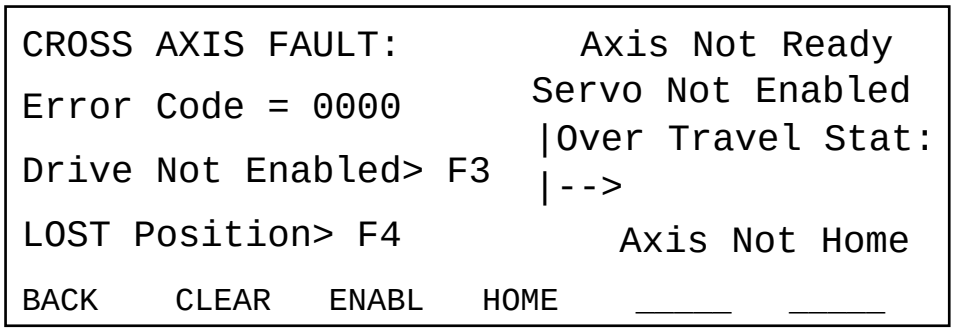
F3 : CROSS -- Select this Key is "ACTIVE" is flashing. (see page 35)

F4 : SHUTL -- Select this Key is "ACTIVE" is flashing. (see page 36)

F5 : LOAD --- Select this Key is "ACTIVE" is flashing. (see page 37)

F6 : UNLOD -- Select this Key is "ACTIVE" is flashing. (see page 38)

SCREEN #43 FAULTS - SCREENS



F1 : BACK -- Back to Axis Fault screen. (see page 34)

F2 : CLEAR - If number is not 0000, Clears any Error for this Axis.

F3 : ENABL - Select this Key if "Drive Not Enabled> F3" is flashing. "Drive Not Enabled> F3" changes to "None" when Key is accepted.

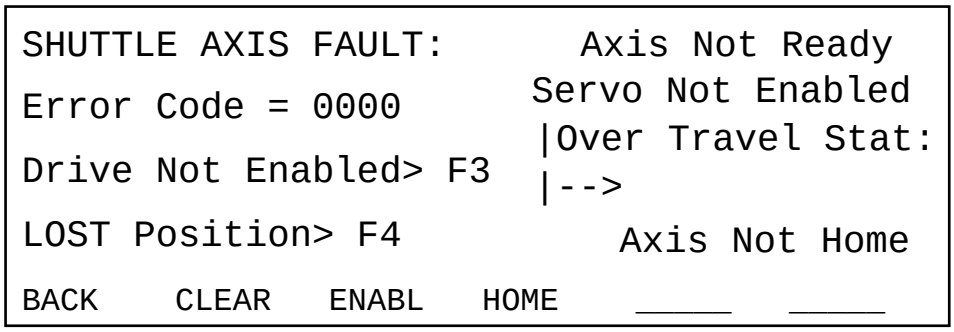
F4 : HOME -- Select this Key if "LOST POSITION> F4" is flashing. Causes Axis to Find Home Limit and Zero Axis Position. "LOST POSITION> F4" changes to "None" when Key is accepted.

F5 : Not Used.

F6 : Not Used.

[ERROR CODE = XXXX] Convert number base to HEX then see Section Error Codes.

SCREEN #44 FAULTS - SCREENS



F1 : BACK -- Back to Axis Fault screen. (see page 34)

F2 : CLEAR - If number is not 0000, Clears any Error for this Axis.

F3 : ENABL - Select this Key if "Drive Not Enabled> F3" is flashing. "Drive Not Enabled> F3" changes to "None" when Key is accepted.

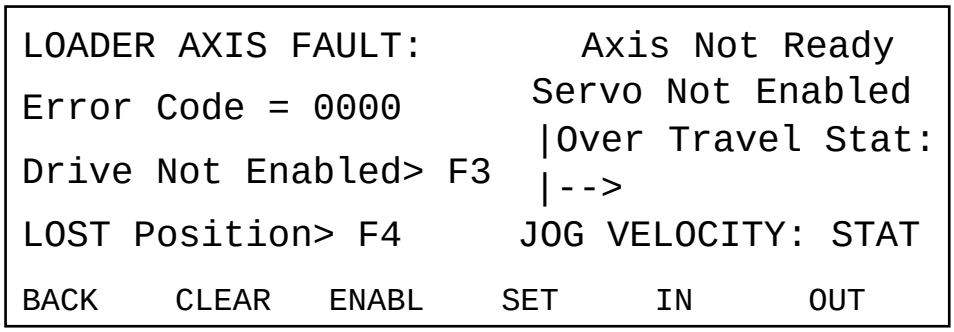
F4 : HOME -- Select this Key if "LOST POSITION> F4" is flashing. Causes Axis to Find Home Limit and Zero Axis Position. "LOST POSITION> F4" changes to "None" when Key is accepted.

F5 : Not Used.

F6 : Not Used.

[ERROR CODE = XXXX] Convert number base to HEX then see Section Error Codes.

SCREEN #45 FAULTS - SCREENS



F1 : BACK -- Back to Axis Fault screen. (see page 34)

F2 : CLEAR - If number is not 0000, Clears any Error for this Axis.

F3 : ENABL - Select this Key if "Drive Not Enabled> F3" is flashing. "Drive Not Enabled> F3" changes to "None" when Key is accepted.

F4 : SET --- Select this Key if "LOST POSITION> F4" is flashing.

IMPORTANT!! Jog Loader Axis IN until the Rod Wiper is at the Forward Edge of the Loader Table.

This will set the Axis Position to the Value of "LOAD+OT" in the Engineering section.

"LOST POSITION> F4" changes to "None" when Key is accepted.

F5 : IN ---- Jogs Axis IN; forward direction.

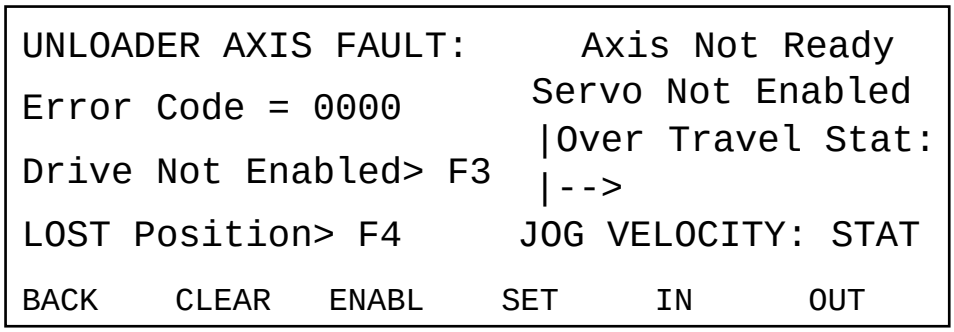
F6 : OUT --- Jogs Axis OUT; backward direction.

JOG VELOCITY:[STAT] -- Displays either **SLOW** or **RAPID**.

Important: Velocity changes <u>after every</u> release of the **IN** or **OUT** Key.

[ERROR CODE = XXXX] Convert number base to HEX then see Section Error Codes.

SCREEN #46 FAULTS - SCREENS



F1 : BACK -- Back to Axis Fault screen. (see page 34)

F2 : CLEAR - If number is not 0000, Clears any Error for this Axis.

F3 : ENABL - Select this Key if "Drive Not Enabled> F3" is flashing. "Drive Not Enabled> F3" changes to "None" when Key is accepted.

F4 : SET --- Select this Key if "LOST POSITION> F4" is flashing. IMPORTANT!! Jog Unloader Axis IN until the Rod Wiper is at the Forward Edge of the Unloader Table less 1-1/2" +/-1/16". This will set the Axis Position to the Value of "UNLOAD+OT" in the Engineering section. "LOST POSITION> F4" changes to "None" when Key is accepted.

F5 : IN ---- Jogs Axis IN; forward direction.

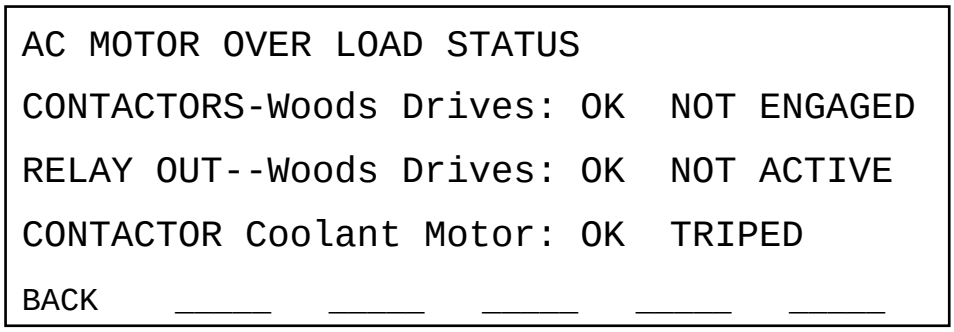
F6 : OUT --- Jogs Axis OUT; backward direction.

JOG VELOCITY:[STAT] -- Displays either **SLOW** or **RAPID**.

Important: Velocity changes after every release of the **IN** or **OUT** Key.

[ERROR CODE = XXXX] Convert number base to HEX then see Section Error Codes.

SCREEN #47 FAULTS - SCREENS Continued



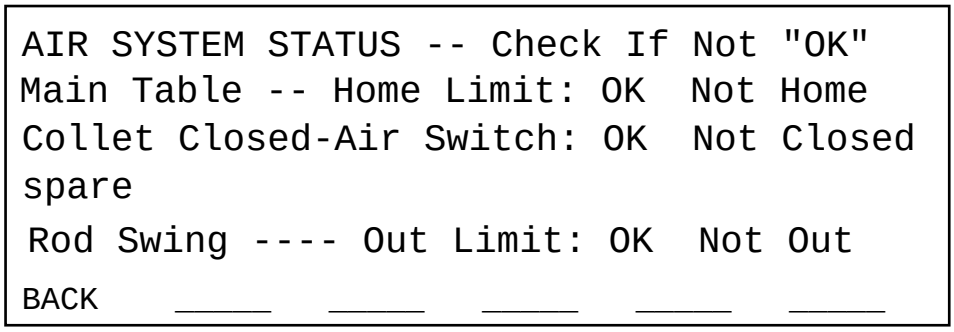
F1 : BACK -- Back to Main Fault screen. (see page 33)

CONTACTORS-Woods Drives: - "OK" or if "NOT ENGAGED" then check Drives.

RELAY OUT--Woods Drives: - "OK" or if "NOT ACTIVE" then check Drives.

CONTACTOR Coolant Motor: - "OK" or if "TRIPPED" then check Coolant Overload Relay.

SCREEN #48 FAULTS - SCREENS



F1 : BACK -- Back to Main Fault screen. (see page 33)

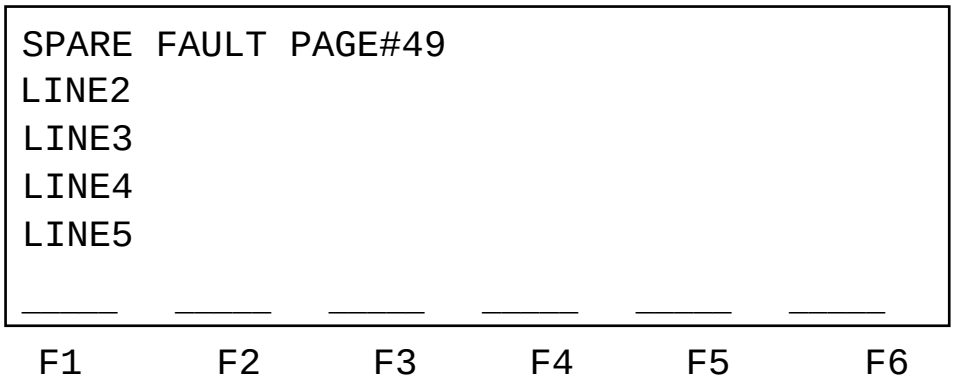
Main Table -- Home Limit: - If "NOT HOME" then check Main Table.

Collet Closed-Air Switch: - If "NOT CLOSED" then check Air Switch.

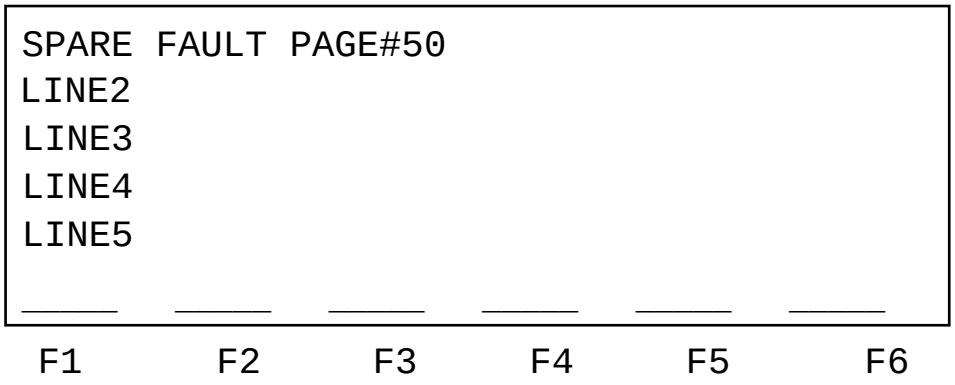
spare: -

Rod Swing ---- OUT Limit: - If "NOT OUT" then check Rod Swing or Limit Switch.

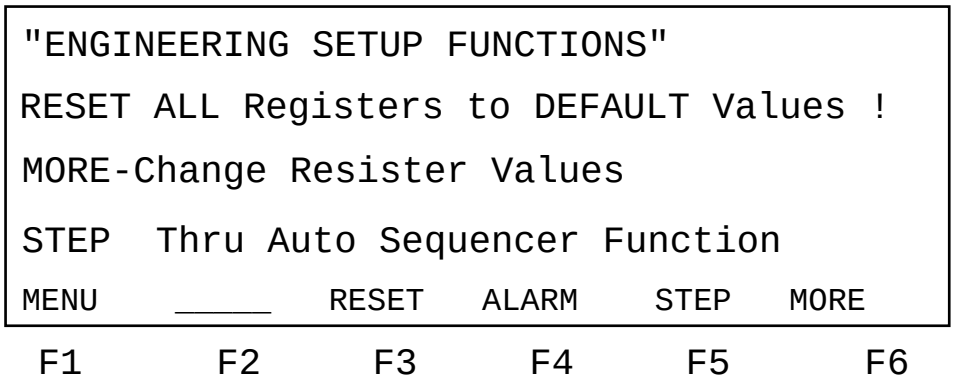
SCREEN #49 FAULTS - SCREENS



SCREEN #50 FAULTS - SCREENS



SCREEN #61 ENGINEERING SCREENS



This screen and the following screens are to be accessed by a SUPERVISOR or ENGINEERING ONLY!!

F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : Not Used.

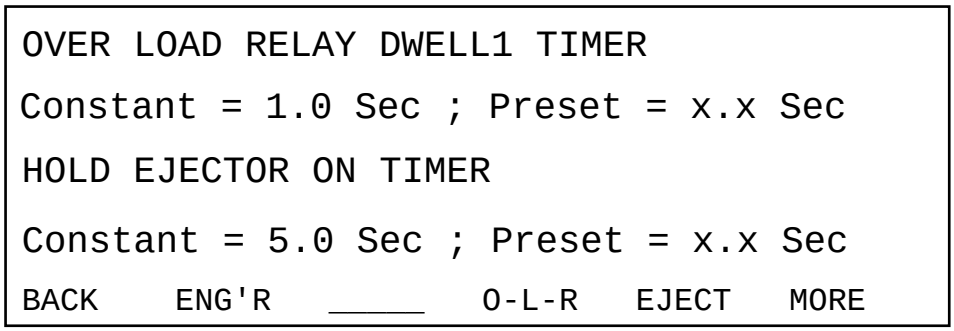
F3 : RESET -- Reset All Register Values to PLC CONSTANT (Default) Values.

F4 : ALARM -- Reset Any Alarm Tag that Exceeds an Over or Under Value.

F5 : STEP --- Engineering Step Thru Auto Cycle, one by one to check system.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 42)

SCREEN #62 ENGINEERING SCREENS



F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

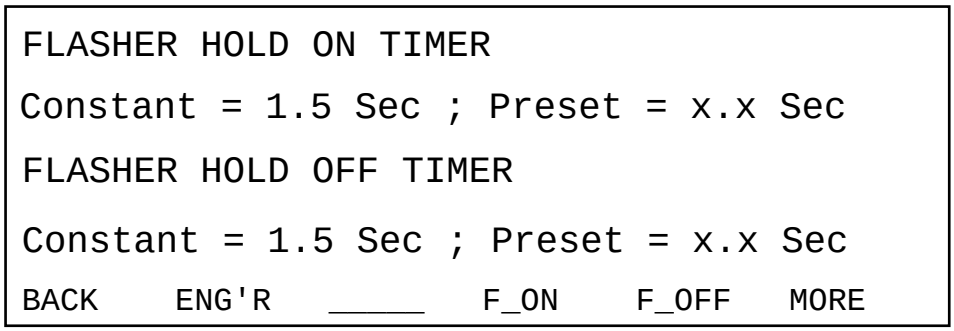
F3 : Not Used.

F4 : O-L-R -- Select to Write New Value.

F5 : EJECT -- Select to Write New Value.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 43)

SCREEN #63 ENGINEERING SCREENS



F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

F3 : Not Used.

F4 : F_ON --- Select to Write New Value.

F5 : F_OFF -- Select to Write New Value.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 44)

SCREEN #64 ENGINEERING SCREENS

```
Timing Between Catcher Up & Eject Rod
Default = 2.0 Sec ; Preset =  x.x Sec
Range is 1.0 Sec to 3.0 Sec.
LINE4
BACK    ENG'R   _____   CU_ER   _____   MORE
```

F1 F2 F3 F4 F5 F6

F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

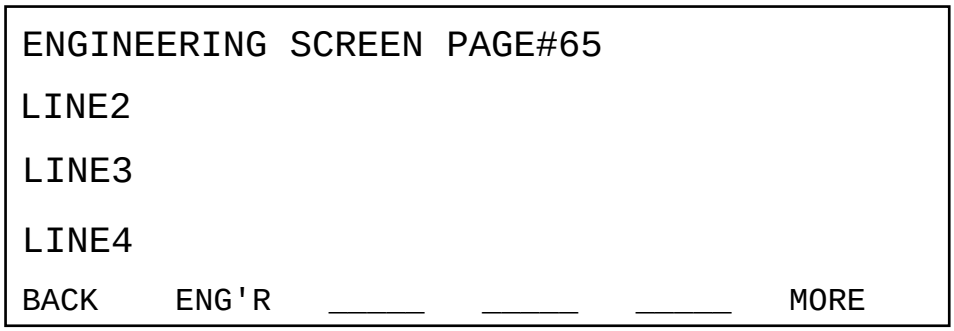
F3 : Not Used.

F4 : CU_ER -- Select to Write New Value for Time Delay between Catcher Up and Rod Ejector Extend. This replaces the Magnetic Switch.

F5 : SPARE -- Select to Write New Value.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 45)

SCREEN #65 ENGINEERING SCREENS



F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

F3 : Not Used.

F4 : SPARE -- Select to Write New Value.

F5 : SPARE -- Select to Write New Value.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 46)

SCREEN #66 ENGINEERING SCREENS

```
LOADER +Over Travel;  CONFIG= 26.750 In
Const= 26.625  >=  LOAD+OT =  xx.xxx In
UNLOADER +OverTravel; CONFIG= 26.000 In
Const= 25.437  >=  UNLOAD+OT= xx.xxx In
BACK    ENG'R   _____   LOAD    UNLOD   MORE
```

F1 F2 F3 F4 F5 F6

F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

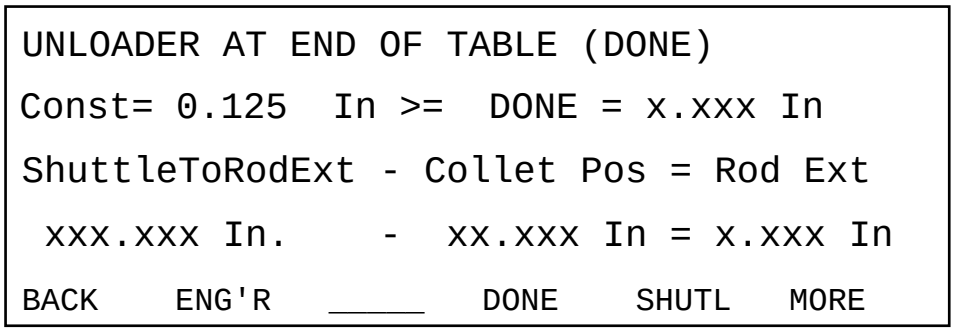
F3 : Not Used.

F4 : LOAD --- Select to Write New Value for the Loader +Over Travel. This Value Must be less than the CONFIG Value.

F5 : UNLOD -- Select to Write New Value for the Unloader +Over Travel. This Value Must be less than the CONFIG Value.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 47)

SCREEN #67 ENGINEERING SCREENS



F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

F3 : Not Used.

F4 : DONE --- Select to Write New Value for Unloader DONE Position when at lower End of Table.

F5 : SHUTL -- Select to Write New Value for Shuttle to Rod Extension Position to calculate Rod Extension of 0.875". This Value corrects the actual Rod extension value. This value is approximately 13.000". Adjust if needed.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 48)

SCREEN #68 ENGINEERING SCREENS

```
SHUTTLE +OverTravel;  CONFIG= 12.375 In
Const= 12.250  >=  SHUTTLE+OT= xx.xxx In
CROSS +Over Travel ;  CONFIG = 2.750 In
Const= 2.500   >=   UNLOAD+OT=  x.xxx In
BACK   ENG'R   _____   SHUTL   CROSS   MORE
```

F1 F2 F3 F4 F5 F6

F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

F3 : Not Used.

F4 : SHUTL -- Select to Write New Value for the Shuttle +Over Travel. This Value Must be less than the CONFIG Value.

F5 : CROSS -- Select to Write New Value for the Cross +Over Travel. This Value Must be less than the CONFIG Value.

This value will need to be revised when changing Wheel Diameters to provide over travel protection.

For an 8" Diameter Wheel, this value should be approximately 2.500".

For a 10" Diameter Wheel, this value should be approximately 1.500".

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 49)

SCREEN #69 ENGINEERING SCREENS

```
LOADER Calculated Start "POSITION":
PLC Calculates  LOADER +O.T.: xx.xxx In
        MINUS UNLOADER +O.T.: xx.xxx In
Calculated Minimum Position =  x.xxx In
BACK    ENG'R   _____   _____   _____   MORE
```

F1 F2 F3 F4 F5 F6

F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

F3 : Not Used.

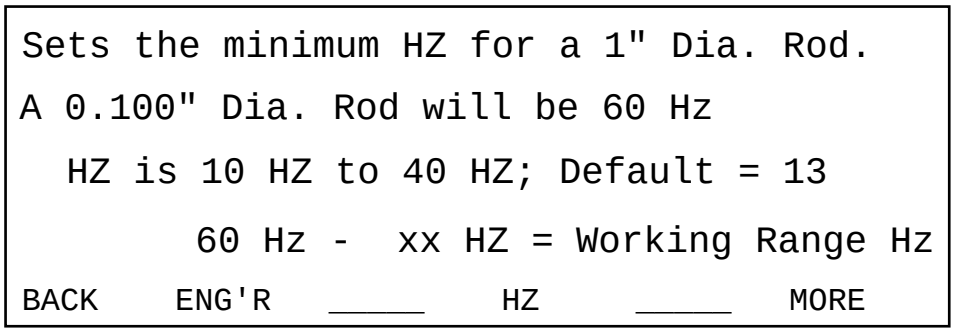
F4 : Not Used.

F5 : SPARE -- Select to Write New Value.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 50)

Calculated Minimum Position = x.xxx In; Represents the Minimum Value.

SCREEN #70 ENGINEERING SCREENS



F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

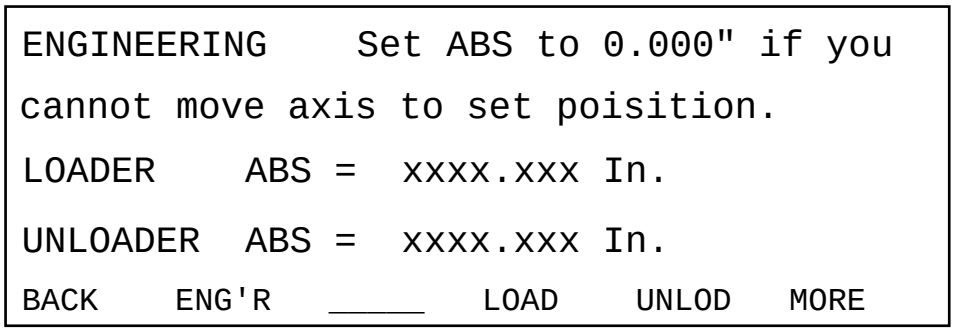
F3 : Not Used.

F4 : HZ ----- Select to Write New HZ Minimum Value for a 1" Dia Rod.

F5 : SPARE -- Select to Write New Value.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 51)

SCREEN #71 ENGINEERING SCREENS



F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

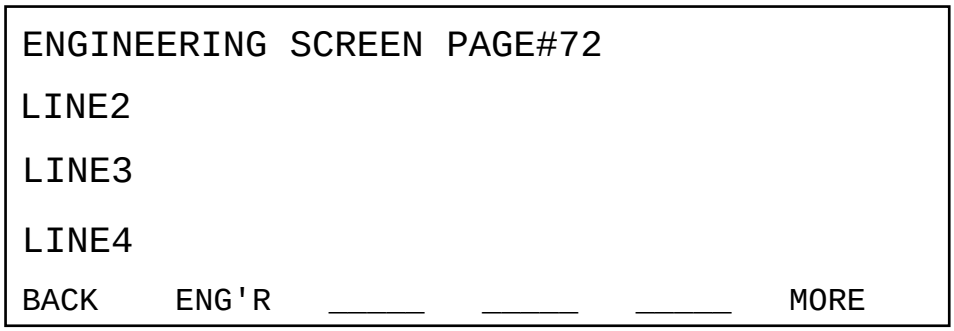
F3 : Not Used.

F4 : LOAD --- Select to Set Loader Position Value to Zero.

F5 : UNLOD -- Select to Set Unloader Position Value to Zero.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 52)

SCREEN #72 ENGINEERING SCREENS



F1 : MENU --- Return to the Main Menu. (see page 2)

F2 : ENG'R -- Back to Engineering Screen. (see page 41)

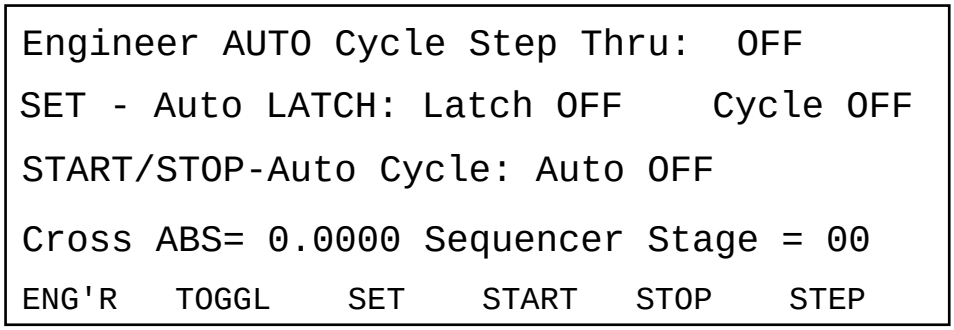
F3 : Not Used.

F4 : SPARE -- Select to Write New Value.

F5 : SPARE -- Select to Write New Value.

F6 : MORE --- Go to Change Register Values to customize for each Machine. (see page 53)

SCREEN #73 ENGINEERING SCREENS



This is used to check the Auto Cycle Sequence for errors in the PLC program.

F1 : ENG'R -- Back to Engineering Screen. (see page 41)

F2 : TOGGL -- Toggle "Step Thru" ON. [Status OFF, ON]

F3 : SET -----Set "Auto Latch" ON. [Status OFF, ON]

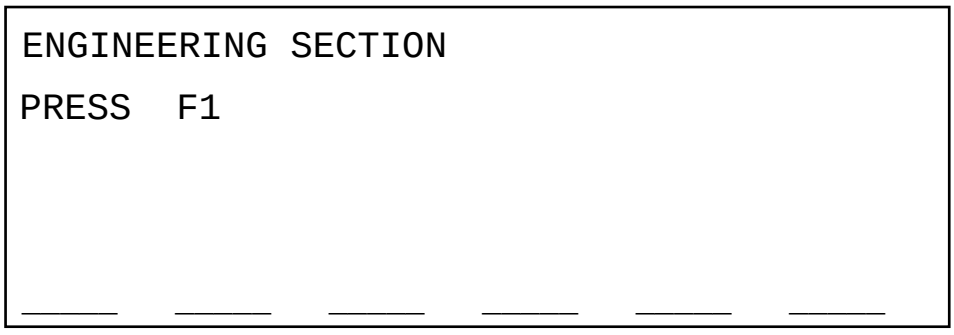
F4 : START -- START Cycle.

F5 : STOP --- STOP Cycle. [Status Cycle OFF, Cycle ON]

F6 : STEP --- STEP Thru Auto Cycle Sequence, Stage by Stage.

Sequencer Stage (numbers 1 to 16)= [Status ##]

SCREEN #74 ENGINEERING SCREENS



F1 : MASKED -- RETURN TO MAIN MENU

F4 : MASKED -- GOTO ENGINEERING (see page 41)

NEW ROD SETUP, DIAMETER OR ANGLE

A new Rod Diameter setup requires changing the collet and adjusting the Rod Catcher to just below the circumference of the new Rod.

The Rod Swing has been set by the manufacturer. If the Rod Swing needs adjusting, it needs to be parallel to the Rod in the Collet and also to be parallel the Unloader Table or slightly inward.

COLLET CHANGE

To Setup a new Rod Diameter the Operator will need to select the Modes Key to enter the Modes Menu, page 20. Next, from the Modes Menu select Manual and the first screen will contain manual control of the Collet and the Rod Pusher, page 21 of this manual.

1) Change the Collet if necessary by loosening the set screw located between the Collet Closer and the Work Head, but do not remove.

2) Next, Open the Collet, change Collet, and then adjust closing tension with a Rod in place by closing and opening the Collet.

3) Then position the Rod in the Collet with 3/4 of its length sticking out to setup the Rod Swing.

ROD SWING AND ROD CATCHER ADJUSTMENT

Next, push the NEXT Key to go to the screen containing the Rod Catcher and Rod Swing, page21 of this manual. Then move the Rod Swing IN and then Rod Catcher UP.

1) Now adjust the height of the Rod Catcher by loosening the two socket head cap screws, located just below the Rod Catcher Cylinder, and then snug them lightly.

2) Next, adjust the height adjustment socket head cap screw, located under the swing plate, to adjust the Rod Catcher for the proper fit under the Rod extending from the collet.

3) Then Tighten the two socket head cap screws and check the height to be sure that the Rod Catcher did not change do to tightening because of the angle involved.

4) If the clearance between the Rod Catcher and the Rod in the collet is proper, then lower the Rod Catcher DOWN and then the Rod Swing OUT.

SUPER PREPOINT & CHAMFER MACHINE SEQUENCE

AUTO/SINGLE CYCLE

Stage 1) %M0081--CHECK CONDITIONS TO START
Stage 2) %M0082--ROD CATCHER DOWN & INDEX LOADER TABLE IN
Stage 3) %M0083--OPEN COLLET & [IF AFTER TOOL IS GROUND] INDEX UNLOADER
Stage 4) %M0084--MOVE SHUTTLE IN TO COLLET POSITION
Stage 5) %M0085--ROD PUSHER IN & EJECTOR IN--LOW PRESSURE
Stage 6) %M0086--CLOSE COLLET & ROD CATCHER UP
Stage 7) %M0087--SHUTTLE TO HOME POSITION & ROD PUSHER OUT
Stage 8) %M0088--CROSS SLIDE TO START POSITION & WORK HEAD ON

Stage 9) %M0089--AUTO - GO TO GRIND SEQUENCER

Stage 10) %M0090--MAIN TABLE TO HOME LIMIT
Stage 11) %M0091--ROD SWING IN & ROD CATCHER DOWN & CROSS SLIDE HOME
Stage 12) %M0092--ROD CATCHER UP
Stage 13) %M0093--OPEN COLLET & ROD EJECTOR IN--HIGH PRESSURE & DWELL
Stage 14) %M0094--ROD SWING OUT
Stage 15) %M0095--SHUTTLE TO LOAD POSITION
Stage 16) %M0096--REPEAT AUTO SEQUENCE

HAND LOAD CYCLE--SEQUENCER

Stage 1) %M0105--CHECK CONDITIONS TO START, [THEN SINGLE SHOT TO ADVANCE]
Stage 2) %M0106--OPEN COLLET , [THEN SINGLE SHOT TO ADVANCE]
Stage 3) %M0107--CLOSE COLLET, [THEN SINGLE SHOT TO ADVANCE]
Stage 4) %M0108--CROSS SLIDE TO START POSITION & WORK HEAD ON

Stage 5) %M0109--HAND - GO TO GRIND SEQUENCER

Stage 6) %M0110--MAIN TABLE TO HOME LIMIT
Stage 7) %M0111--REPEAT HAND LOAD SEQUENCE & CROSS SLIDE HOME
Stage 8) %M0112--Hand Load Sequencer Stage8 (Spare)

GRIND SEQUENCER

Stage 1) %M0113--CHECK CONDITIONS TO GRIND
Stage 2) %M0114--MAIN TABLE TO END LIMIT SWITCH & CALCULATE CROSS SLIDE INDEX
Stage 3) %M0115--MAIN TABLE TO REVERSE LIMIT SWITCH, LOAD CROSS SLIDE INDEX PARAMETERS,
OR END IF DONE

Stage 4) %M0116--INDEX CROSS SLIDE
Stage 5) %M0117--UPDATE CROSS SLIDE INDEX CALCULATIONS
Stage 6) %M0118--REPEAT GRIND SEQUENCE IF NOT DONE
Stage 7) %M0119--Grind Sequencer Stage7 (Spare)
Stage 8) %M0120--Grind Sequencer Stage8 (Spare)

WOODS DRIVE SETUP

WORK HEAD - 2 HP

PROG: Parameter 21 MODE = 3

PROG: Parameter 31 FMIN = 00.0

PROG: Parameter 32 FMAX = 60.0

PROG: Parameter 42 ACC1 = 1.00

PROG: Parameter 43 DEC1 = 3.00

PROG: Parameter 65 SLIP = 7.10

PROG: Parameter 67 TOL = 58%

PROG: Parameter 75 STR = 1

WHEEL HEAD - 5 HP

PROG: Parameter 21 MODE = 3

PROG: Parameter 31 FMIN = 00.0

PROG: Parameter 32 FMAX = 120.0

PROG: Parameter 42 ACC1 = 2.00

PROG: Parameter 43 DEC1 = 3.00

PROG: Parameter 65 SLIP = 0.00

PROG: Parameter 67 TOL = 77%

PROG: Parameter 75 STR = 1

FLOW CHART OF OPERATOR INTERFACE SCREENS

MAIN MENU

F1 = OPERATOR SETUP

F2 = MODES OF OPERATION

F3 = FAULTS

OPERATOR SETUP

F2 = PREPOINT

F3 = 45 Deg. CHAMFERS ------> ***45 Deg CHAMFER FUNCTIONS***

F4 = LONG CHAMFER F6 = SHORT CHAMFER

F4 = MANUAL ENTRY

F6 = MORE ---> ***OPERATOR SETUP CONTINUED***

F3 = ROD Diameter / WHEEL Wear & Dia.

F4 = Count Down Function

F5 = COUNTERS; Production Counter & Oiler

F6 = AXIS - Set Positions --> ***OPERATOR SETUP AXIS FUNCTIONS***

F3 = CROSS AXIS - Set Touch Off

F4 = SHUTTLE AXIS - Rod Extension

F5 = LOADER AXIS - Start Position

F6 = UNLOADER AXIS - Start Position

FLOW CHART OF OPERATOR INTERFACE SCREENS CONTINUED

FROM F2 OF MAIN MENU

MODES OF OPERATION

F4 = MANUAL MODE --> Air System & Wheel Head & Work Head & Jog

F5 = JOG AXIS -----> ***JOG FUNCTIONS***

F1 = BACK --> Back to Modes of Operation

F3 = JOG CROSS SLIDE AXIS

F4 = JOG SHUTTLE AXIS

F5 = JOG LOADER AXIS

F6 = JOG UNLOADER AXIS

F6 = HAND/SINGLE/AUTO --> ***HAND & SINGLE/AUTO CYCLE Options***

F1 = Stop Cycle and Back to Modes of Operation

F5 = HAND LOAD CYCLE --> To Hand Load Cycle

HAND LOAD CYCLE

F5 = BACK --> Back to Options

F6 = SINGLE/AUTO CYCLE -> *Single/Auto Options*

Single / Auto Cycle Options

F1 = BACK --> Back to Options

F6 = MORE --> *Single/Auto Cycle Options*

Single / Auto Cycle Options

F1 = BACK --> Back to Options

F6 = SINGLE --> To Single Cycle

SINGLE CYCLE

F5 = BACK --> Back to Options

F4 = AUTO --> To Auto Cycle

AUTO CYCLE

F4 = SINGLE --> To SINGLE Cycle

FLOW CHART OF OPERATOR INTERFACE SCREENS CONTINUED

FAULTS

[Accessed by FAULT Key from several Operator Screens]

F1 = MENU --> Return to MAIN MENU

F2 = AXIS FAULTS --> **AXIS FAULTS**

F1 = BACK To Main Fault Screen

F3 = CROSS AXIS FAULTS

F4 = SHUTTLE AXIS FAULTS

F5 = LOADER AXIS FAULTS

F6 = UNLOADER AXIS FAULTS

F3 = OVER LOAD FAULTS --> **AC MOTOR OVER LOAD STATUS**

Check Status and Solve Problem

F1 = BACK To Main Fault Screen

F4 = AIR LIMIT FAULTS --> **AIR SYSTEM STATUS**

Check Status and Solve Problem

F1 = BACK To Main Fault Screen

F5 = POWER UP ERROR --> Press Key to Reset and Clear

F6 = ALARM TAGS --> Press IF any Inverted (dark) Message is Flashing at the very top of the Operator Screen.

Appendix B: Servo Axis Error Codes Section

Response Methods

1. **Status Only Errors:** Set the *Module Error Present* %I bit and *Module Status Code* or *Axis Error Code* %AI word, but do not affect motion.

Note

Unless otherwise noted, any command which causes a Status
Only Error is ignored.

2. **Stop Normal Errors:** Perform an internal abort of any current motion using current ***Jog Acceleration*** and ***Jog Acceleration Mode*** (LINEAR or S–CURVE). The *Drive Enabled* and *Axis Enabled* %I bits are turned OFF after the configured ***Drive Disable Dela***y.

3. **Stop Fast Errors:** Instantly abort all motion by setting the servo velocity command to zero. The *Drive Enabled* and *Axis Enabled %I* bits are turned OFF after the configured ***Drive Disable Dela***y.

Table B-1. DSM302 Error Codes

Error Number
(Hexadecimal)
Response Description Error Type
00 None No Error All
Configuration Errors
02 Status Only -- Scaled data too big, maximum value in range used -- Axis
03 Status Only -- Home Position > Positive EOT, Positive EOT used -- Axis
04 Status Only -- Home Position < Negative EOT, Negative EOT used -- Axis
Configuration Parameter Errors
10 Status Only -- Position Loop Time Constant too large, Immediate command ignored -- Axis
11 Status Only -- Position Loop Time Constant too small, Immediate command ignored -- Axis
12 Status Only -- Position Loop Time Constant computation overflow, reduced to non-overflow value -- Axis
1E Status Only -- Immediate command Jog Velocity out of range, command ignored -- Axis
1F Status Only -- Immediate command Jog Acceleration out of range, command ignored -- Axis
Program Errors
20 Status Only -- Program Acceleration overrange, defaults to 16.7 million cts/sec/sec -- Axis
21 Status Only -- Program Acceleration too small, defaulted to 32 cts/sec/sec -- Axis
22 Status Only -- Scaled Velocity greater than 1 million cts/sec, 1 million cts/sec is used -- Axis
23 Status Only -- Program Velocity is zero, defaulted to 1 count/sec used -- Axis
24 Stop Normal -- Program Position too large -- Axis
25 Stop Normal -- Unconditional Jump Destination not found -- Axis
26 Stop Normal -- Jump Mask error -- Axis
27 Stop Normal -- Wait Mask error -- Axis
28 Stop Normal -- Parameter Position too large -- Axis
29 Status Only -- Dwell time greater than 60 seconds, 5 seconds used -- Axis
Position Increment Errors
2C Status Only -- Position Increment Overrange error, increment ignored -- Axis
Find Home Errors
30 Status Only -- Find Home while Drive Not Enabled error -- Axis
31 Status Only -- Find Home while Program Selected error -- Axis
32 Status Only -- Find Home while Force Digital Servo Velocity error -- Axis
33 Status Only -- Find Home while Jog error -- Axis
34 Status Only -- Find Home while Move at Velocity error -- Axis
36 Status Only -- Find Home while Abort bit set error -- Axis
Move at Velocity Errors
39 Status Only -- Move at Velocity while Drive Not Enabled error -- Axis
3A Status Only -- Move at Velocity while Program Selected error -- Axis
3B Status Only -- Move at Velocity while Home Cycle active error -- Axis
3C Status Only -- Move at Velocity while Jog error -- Axis
3D Status Only -- Move at Velocity while Abort All Moves bit is set error -- Axis
3E Status Only -- Move at Velocity Data greater than 8,388,607 user units/sec -- Axis
3F Status Only -- Move at Velocity Data greater than 1 million cts/sec error -- Axis

Table B-1. - Continued - DSM302 Error Codes

Error Number
(Hexadecimal)
Response Description Error Type
Jog Errors
40 Status Only -- Jog while Find Home error -- Axis
41 Status Only -- Jog while Move at Velocity error -- Axis
42 Status Only -- Jog while Force Digital Servo Velocity error -- Axis
43 Status Only -- Jog while Program Selected and not Feedholding error -- Axis
Force Digital Servo Velocity Errors
47 Status Only -- Force Digital Servo Velocity while Jog error -- Axis
48 Status Only -- Force Digital Servo Velocity while Move at Velocity error -- Axis
49 Status Only -- Force Digital Servo Velocity while Program Selected error -- Axis
4A Status Only -- Force Digital Servo Velocity while Follower Enabled error -- Axis
Set Position Errors
50 Status Only -- Set Position while Program Selected error -- Axis
51 Status Only -- Set Position Data overrange error -- Axis
52 Status Only -- Servo Axis 1,2: Set Position while not In Zone error Aux Axis 3: Set Position while ENC3 Velocity > 128 error-- Axis
53 Status Only -- Attempt to initialize position before digital encoder passes reference point. -- Axis
54 Status Only -- Digital encoder position invalid, must use Find Home or Set Position. -- Axis
End of Travel and Count Limit Errors
56 Status Only -- Commanded Position > Positive End of Travel or High Count Limit -- Axis
57 Status Only -- Commanded Position < Negative End of Travel or Low Count Limit -- Axis
58 Status Only -- (Absolute Position + Position offset) > Positive End of Travel or High Count Limit -- Axis
59 Status Only -- (Absolute Position + Position offset) < Negative End of travel or Low Count Limit -- Axis
Drive Disable Errors
5B Stop Normal -- Drive Disabled while Moving -- Axis
5C Stop Normal -- Drive Disabled while Program Active -- Axis
Software Errors
5F Status Only -- Software Error (Call GE Fanuc Field Service) -- Axis
Program and Subroutine Errors
60 Status Only -- Absolute Encoder Rotary Position Computation error -- Axis
61 Stop Normal -- Subroutine not in list -- Axis
62 Stop Normal -- Call Error (subroutine already active) -- Axis
63 Stop Normal -- Subroutine End command found in Program -- Axis
64 Stop Normal -- Program End command found in Subroutine -- Axis
65 Stop Normal -- Sync subroutine encountered by non-sync program -- Axis
Program Execution Errors
71 Status Only -- Too many programs requested in same PLC sweep -- Module
72 Status Only -- Request Program 0-10 with multi-axis program active -- Module
73 Status Only -- Request two programs on same sweep with program active -- Module
74 Status Only -- Request two programs for same axis, lower number program executed -- Module
75 Status Only -- Empty or Invalid Program requested -- Module
76 Status Only -- AQ Move Command Position Out of Range -- Axis

Table B-1. - Continued - DSM302 Error Codes

Error Number
(Hexadecimal)
Response Description Error Type
Program Execution Conditions Errors
80 Status Only -- Execute Program while Home Cycle active -- Axis
81 Status Only -- Execute Program while Jog -- Axis
82 Status Only -- Execute Program while Move at Velocity -- Axis
83 Status Only -- Execute Program while Force Digital Servo Velocity -- Axis
84 Status Only -- Execute Program while Program Selected -- Axis
85 Status Only -- Execute Program while Abort All Moves bit set -- Axis
86 Status Only -- Execute Program while Position Valid not set -- Axis
87 Status Only -- Execute Program while Drive Enabled not set -- Axis
88 Status Only -- Execute Program with active Error Stop (Axis Enabled off) -- Axis
Program Synchronous Block Errors
8C Status Only -- Sync Block Error during CMOVE -- Axis
8D Status Only -- Sync Block Error during Jump -- Axis
EEPROM Errors
90 Status Only -- Flash EEPROM memory programming failure -- Module
Hardware Limit Switch Errors
A0 Stop Fast -- Limit Switch (+) error -- Axis
A1 Stop Fast -- Limit Switch (–) error -- Axis
Hardware Errors
A8 Stop Fast -- Out of Sync error -- Axis
A9 Stop Fast -- Encoder Loss of Quadrature or Linear Feedback Loss of Signal error -- Axis
Digital Servo Alarms
B0 Stop Normal -- Main DC power supply overvoltage -- Axis
B1 Stop Normal -- Control power undervoltage -- Axis
B2 Stop Normal -- Dynamic brake failure Axis
B3 Stop Normal -- Main DC power supply undervoltage -- Axis
B4 Stop Normal -- CNV Overload -- Axis
B5 Stop Normal -- Cooling fan failure -- Axis
B6 Stop Normal -- Over current -- Axis
B7 Stop Normal -- Regenerative discharge energy error; resistor thermal switch open -- Axis
B9 Stop Normal -- Control power undervoltage -- Axis
BA Stop Normal -- Error detected by IPM circuit -- Axis
BB Stop Normal -- Main DC power supply undervoltage -- Axis
BD Stop Normal -- Cooling fan failure -- Axis
BE Stop Normal -- Over current -- Axis

Table B-1. - Continued - DSM302 Error Codes (Continued)

Error Number
(Hexadecimal)
Response Description Error Type
Encoder Alarms
C0 Stop Fast Servo not ready when MCON command is on - may be caused by E-STOP input to amplifier.
Axis
C1 Status Only -- Serial Encoder Battery Low -- Axis
C2 Stop Normal -- Serial Encoder Battery Failed -- Axis
C3 Stop Normal -- Servo Motor Over Temperature -- Axis
C4 Stop Fast -- Servo Motor Over Current -- Axis
C5 Stop Fast -- Loss of Encoder -- Axis
C6 Stop Fast -- Error in encoder pulse detection -- Axis
C7 Stop Fast -- Encoder counter error -- Axis
C8 Stop Fast -- -- Encoder LED is disconnected -- Axis
C9 Stop Fast -- Encoder CRC checksum failure -- Axis
CA Stop Fast -- Unsupported encoder, linear or Type A -- Axis
CB Stop Fast -- Unsupported encoder, Type C -- Axis
DSP Alarms
D1 Stop Fast -- Over current Detected -- Axis
D2 Stop Fast -- Loss of Analog Feedback -- Axis
D3 Stop Fast -- Over Acceleration Detected -- Axis
D4 Stop Fast -- Over Velocity Detected -- Axis
D5 Status Only -- KpVelFix Too Large -- Axis
D6 Status Only -- IntGainFix Too Large -- Axis
D7 Status Only -- Alpha Calculation Overflow -- Axis
D8 Status Only -- IntGain Calculation Overflow -- Axis
D9 Status Only -- Kp Calculation Overflow -- Axis
DA Stop Fast -- FPGA Error Detected -- Axis
Special Purpose Errors
E0 Status Only Custom Loop Type Mismatch Axis
E2 Stop Fast DSP Interrupt failure Module
Follower Errors
F1 Status Only -- Follower Position Error Limit Encountered -- Axis
F2 Status Only -- Follower Velocity Limit Condition Encountered -- Axis
F3 Status Only -- Follower Ratio B value = 0 -- Axis
F4 Status Only -- Follower Ratio B value < 0 -- Axis
F5 Status Only -- Follower Ratio A/B or B/A > 32 -- Axis
Winder Errors
F6 Status Only -- A/B Change Not Allowed in Winder Mode With Follower Enabled -- Axis
F7 Status Only -- Set Winder Position Immediate Command Out of Zone -- Axis
F8 Status Only -- Zone Length Out of Range or Zone Length Change Exceeded 25% -- Axis
F9 Status Only -- Zone Length Change Not Accepted; Previous Change Still in Effect -- Axis
Internal Errors
FD Stop Fast -- System software error -- Axis
FE Stop Fast -- Unrecognized encoder, not supported -- Axis

LED Indicators

There are seven LEDs on the DSM302 module which provide status indications. These LEDs are described below.

STAT Normally ON. FLASHES to provide an indication of operational errors. Flashes *slow* (four times/second) for Status-Only errors. Flashes *fast* (eight times/second) for errors which cause the servo to stop.

ON: When the LED is steady ON, the DSM302 is functioning properly. Normally, this LED should always be ON.

OFF: When the LED is OFF, the DSM302 is not functioning. This is the result of a hardware or software malfunction which will not allow the module to power up.

Flashing: When the LED is FLASHING, an error condition is being signaled.

*Constant, CFG LED O*N:

The LED flashes slow (four times / second for Status Only errors and fast (eight times / second for errors which cause the servo to stop. The operational error code will be placed in one of the first four %AI status words and the *Module Error Present* %I status bit will be ON.

*Constant, CFG LED Flashin*g:

If the STAT and CFG LEDs both flash **together** at a constant rate, the DSM302 module is in boot mode waiting for a new firmware download. If the STAT and CFG LEDs both flash **alternately** at a constant rate, the DSM302 firmware has detected a software watchdog timeout due to a hardware or software malfunction.

*Irregular, CFG LED OF*F:

If this occurs immediately at power-up then a hardware or software malfunction has been detected. The module will blink the STAT LED to display two error numbers separated by a brief delay. The numbers are determined by counting the blinks in both sequences. Record the numbers and contact GE Fanuc for information on correcting the problem.

OK The OK LED indicates the current status of the DSM302 module.

ON: When the LED is steady ON, the DSM302 is functioning properly. Normally, this LED should always be ON.

OFF: When the LED is OFF, the DSM302 is not functioning. This is the result of a hardware or software malfunction which will not allow the module to power up.

CFG This LED is ON when a valid module configuration has been received from the PLC. Flashes *slow* (four times/second) during the Motion Program Store function. Flashes *fast* (eight times/second) during the Write User RAM to EEPROM operation.

EN1 When this LED is ON, the servo drive for Servo Axis 1 is enabled.

EN2 When this LED is ON, the servo drive for Servo Axis 2 is enabled.

EN3 When this LED is ON, the *Force Analog Output* command for Aux Axis 3 is active.

EN4 When this LED is ON, the *Force Analog Output* command for Aux Axis 4 is active.