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1/14/99

AUTOMATIC CARBIDE ROD CUT OFF SAW Version #6
OPERATOR'S MANUAL

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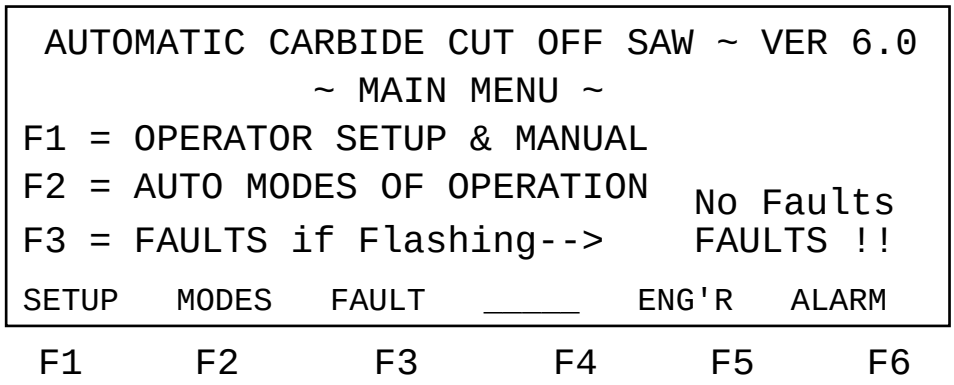
SCREEN #1, HOME SCREEN



This is the **Main Menu** Screen for the **Automatic Carbide Cut Off 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 21. 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 15)

F3: FAULT -- VIEW AND CLEAR ANY FAULTS (See page 22)

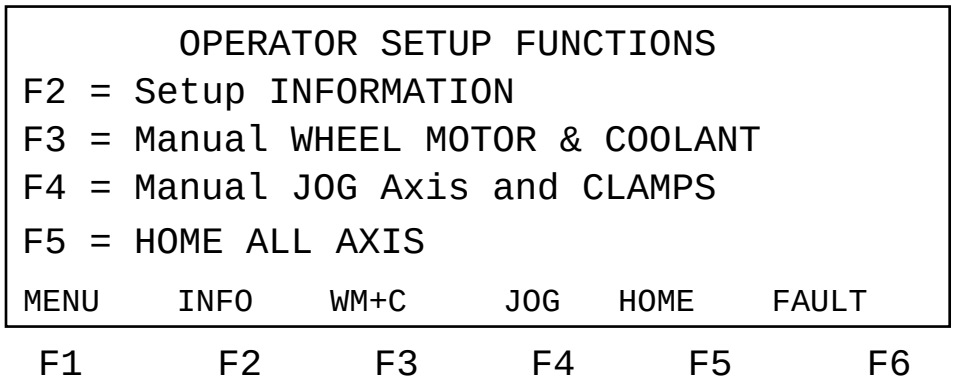
F4: MASKED -- Special Engineering Setup (See page 30)

F5: Not used.

F6: ALARM -- Clear any Input over limit values 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



F1: MENU -- Return to Main Menu.

F2: INFO –- Press this key to view the screens necessary to setup or revise the information to cut the carbide rods. (See page 4).

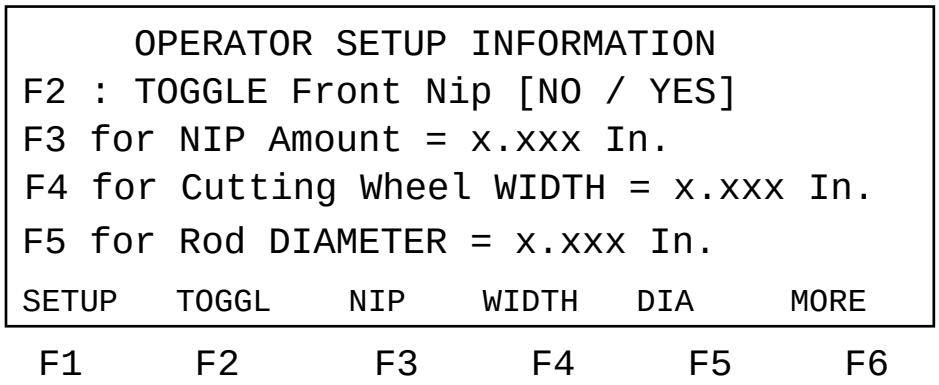
F3: WM+C –- Press this key to view the screens necessary to Manually operate the Cutting Wheel Motor and Coolant Solenoid. (See page 13).

F4: JOG --- Press this key to view the screens necessary to Manually Jog the Axis and operate the Vee Clamps. (See page 10).

F5: **HOME** –- Press this key to Home the Rod Pusher and Wheel Head Axis.

F6: FAULT – Press this key if a “Faults!” is flashing.

SCREEN #3, SETUP INFORMATION, F2 FROM OPERATOR SETUP SCREEN



F1: SETUP – Press this key to return to Operator Setup. (See page 3).

F2: TOGGL – Press this key to toggle the Front Nip option (No or Yes).

F3: NIP --- Press this key to access the Nip Amount value and then use the numeric key pad to input the needed value. Then press the [↵] key to accept the new value.

F4: WIDTH -- Press this key to access the Cutting Wheel Width value and then use the numeric key pad to input the needed thickness. Then press the [↵] key to accept the new value.

F5: **DIA** –- Press this key to access the Rod Diameter value and then use the numeric key pad to input the needed diameter. Then press the [↵] key to accept the new value.

F6: MORE – Press this key to go to the next set of operator screens.

SCREEN #4, SETUP INFORMATION, F6 FROM SETUP SCREEN #3

```
     OPERATOR SETUP INFORMATION
F2 for PRIMARY Cut Length = x.xxx In.
F3 for Number of Primary CUTS = xx Cuts
F4 for SECONDARY Cut Length = x.xxx In.


BACK    PRI     CUTS    SEC     _____   MORE
```

F1 F2 F3 F4 F5 F6

F1: BACK –- Press this key to go back 1 screen.

F2: PRI –-- Press this key to access the Primary Cut Length value and then use the numeric key pad to input the needed value. Then press the [↵] key to accept the new value.

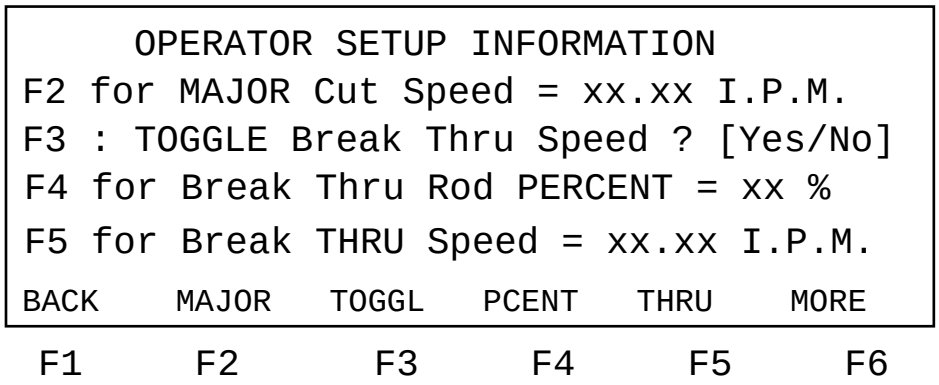
F3: CUTS -- Press this key to access the Number of Primary Cuts value and then use the numeric key pad to input the needed value. Then press the [↵] key to accept the new value.

F4: SEC -- Press this key to access the Secondary Cut Length value and then use the numeric key pad to input the needed thickness. Then press the [↵] key to accept the new value.

F5: NOT USED.

F6: MORE – Press this key to go to the next set of operator screens.

SCREEN #5, SETUP INFORMATION, F6 FROM SETUP SCREEN #4



F1: BACK –- Press this key to go back 1 screen.

F2: MAJOR –-- Press this key to access the Major Cut Speed value and then use the numeric key pad to input the needed speed in IPM. Then press the [↵] key to accept the new value.

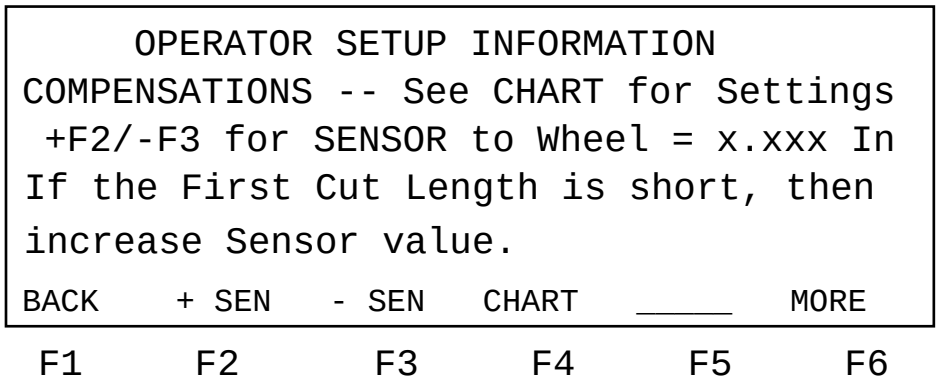
F3: TOGGL - Press this key to toggle the Break Through Speed option “No or Yes”.

F4: PCENT - Press this key to access the Break Through Rod Percentage value of total rod diameter and then use the numeric key pad to input the needed percent. Then press the [↵] key to accept the new value.

F5: THRU -- Press this key to access the Break Through Speed value and then use the numeric key pad to input the needed speed in IPM. Then press the [↵] key to accept the new value.

F6: MORE – Press this key to go to the next set of operator screens.

SCREEN #6, SETUP INFORMATION, F6 FROM SETUP SCREEN #5



F1: BACK –- Press this key to go back 1 screen.

F2: + SEN – Press this key to increase the Sensor to Wheel distance.

F3: - SEN - Press this key to decrease the Sensor to Wheel distance.

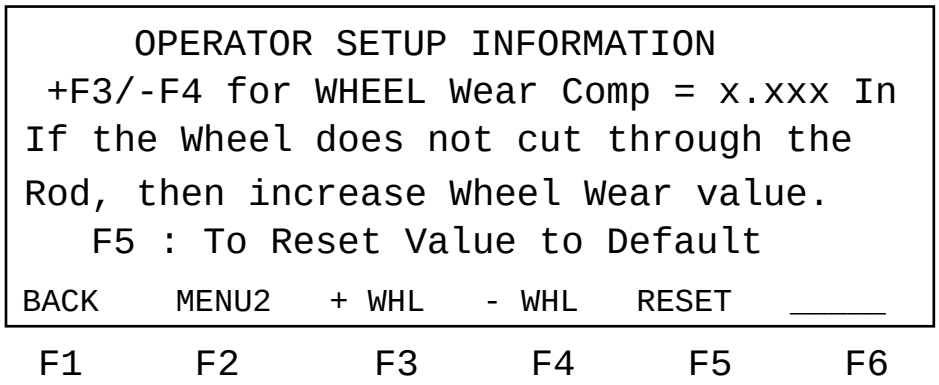
The Sensor to Wheel distance determines whether the first rod cut length is the correct amount. If the first rod cut length is short, then increase the Wheel to Sensor amount.

F4: CHART - Press this key to view the chart for the approximate offset distance factor from the mean sensing distance for each diameter listed. (See page 9).

F5: Not used.

F6: MORE – Press this key to go to the next set of operator screens.

SCREEN #7, SETUP INFORMATION, F6 FROM SETUP SCREEN #6



F1: BACK –- Press this key to go back 1 screen.

F2: MENU2 – Press this key to return to the Operator Setup Functions Menu Screen. (See page 3).

F3: + WHL -- Press this key to increase the amount of Wheel Wear.

F4: - WHL -- Press this key to decrease the amount of Wheel Wear.

The Wheel Wear amount determines whether the cutting wheel passes through the rod. If the rod has not been cut through, then increase the wheel wear amount.

F5: RESET – Press this key to reset the Wheel Wear Compensation to its default value.

F6: MORE – Press this key to go to the next set of operator screens.

SCREEN #8, SETUP INFORMATION, F4 FROM SETUP SCREEN #6

```
Sensor to Wheel OFFSET Comp.  Per O.D.
 Distance Ref. =x.xxx  3/8" OD = xx.xxx
1/16" OD = xx.xxx      1/2" OD = xx.xxx
1/8"  OD = xx.xxx      3/4" OD = xx.xxx
1/4"  OD = xx.xxx        1" OD = xx.xxx
BACK    _____   _____   _____   _____   _____
 F1      F2      F3      F4      F5      F6
```

This is a chart with the approximate offset values to be added or subtracted, check sign (-), from the reference distance. The Supervisor or Engineer sets these values in the Engineering section.

F1: BACK –- Press this key to go to screen #6. (See page 7).

F2: Not used.

F3: Not used.

F4: Not used.

F5: Not used.

F6: Not used.

SCREEN #9, MANUAL JOG SETUP, F3 FROM SETUP SCREEN #2

```
Manual Jog: TOOL BED Axis     [FAULTS!!]
POSITION = xx.xxx In  SPEED =[Fast/Slow]
Note: Jog Axis Up/Back to Fill with Rods
 Then Jog Axis UP until Rod falls in VEE
F3: Toggle Rod Vee CLAMPS =[CLOSED/OPEN]
MENU2   SPEED   CLAMP   FAULT   _____   NEXT
  F1      F2      F3      F4      F5      F6
```

This screen is used to allow the Operator to jog the Tool Bed Axis up or back to make room to load the rods to be cut on the flat bed. After filling the flat bed, then the Operator needs to jog the axis up until the rods falls onto the Pusher Vee. This will set the Tool Bed Axis starting position and the index timing.

F1: MENU2 – Press this key to return to the Operator Setup Functions Menu Screen. (See page 3).

F2: SPEED – Press this key to toggle the Axis speed Fast or Slow.

F3: CLAMP – Press this key to toggle the Rod Vee Clamps state of either closed or open.

F4: FAULT – Press this key if “Faults!” is flashing.

F5: Not used.

F6: NEXT – Press this key for the next screen to operate the Rod Pusher Axis, or next again for the Wheel Head Axis.

SCREEN #10, MANUAL JOG SETUP, F6 FROM SETUP SCREEN #9

```
Manual Jog: ROD PUSHER Axis   [FAULTS!!]
POSITION = xx.xxx In  SPEED =[Fast/Slow]
Note: Use to Jog and Set Rear Limit
  Switch and to Test Axis Movement.
F3: Toggle Rod Vee CLAMPS =[CLOSED/OPEN]
BACK    SPEED   CLAMP   FAULT   _____   NEXT
 F1      F2      F3      F4      F5      F6
```

This screen is used to allow the Operator to jog the Rod Pusher Axis forward or backward to make adjustments and set the Rear limit switch for the length of rods used. The Jog function is also used to test the axis for trouble shooting problems. The Forward limit switch has been set by the manufacturer and should not be moved.

F1: BACK –- Press this key to go back to the previous Axis screen.

F2: SPEED – Press this key to toggle the Axis speed Fast or Slow.

F3: CLAMP – Press this key to toggle the Rod Vee Clamps state of either closed or open.

F4: FAULT – Press this key if “Faults!” is flashing.

F5: Not used.

F6: NEXT – Press this key for the next screen to operate the Wheel Head Axis.

SCREEN #11, MANUAL JOG SETUP, F6 FROM SETUP SCREEN #10

```
Manual Jog: WHEEL HEAD Axis   [FAULTS!!]
POSITION = xx.xxx In  SPEED =[Fast/Slow]
  Note: Use to Jog, change Cut Off Wheel
  and to Test Axis Movement.
F3: Toggle Rod Vee CLAMPS =[CLOSED/OPEN]
BACK    SPEED   CLAMP   FAULT   _____   JMENU
 F1      F2      F3      F4      F5      F6
```

This screen is used to allow the Operator to jog the Wheel Head Axis forward or backward to change the Cut Off Wheel, to clear a jamb, or view the maximum forward travel distance to set the software over travel. The Jog function is also used to test the axis for trouble shooting problems. The limit switches have been set by the manufacturer and should not be moved.

F1: BACK –- Press this key to go back to the previous Axis screen.

F2: SPEED – Press this key to toggle the Axis speed Fast or Slow.

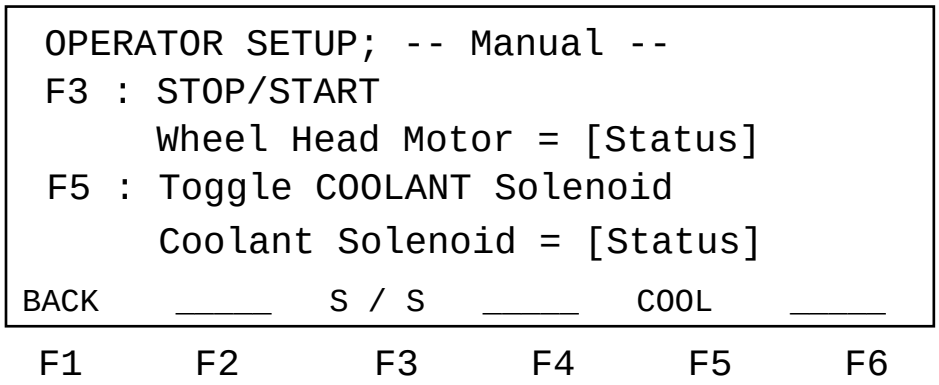
F3: CLAMP – Press this key to toggle the Rod Vee Clamps state of either closed or open.

F4: FAULT – Press this key if “Faults!” is flashing.

F5: Not used.

F6: JMENU – Press this key to go to the Tool Bed Axis screen #9. (See page 10).

SCREEN #12, MANUAL Motor & Coolant, F4 FROM SETUP SCREEN #2



This screen is used to allow the Operator to manually stop or start the Wheel Head Motor to check the status of the Cut Off Wheel or to check the motor for noise.

Also, a new Vee Clamp assembly may need to be checked for clearance to allow the cut off wheel to move through the slot between the carbide wear strips. Use this and Manual Jog Axis function to check for clearance, left/right alignment, and parallel to slot.

F1: BACK –- Press this key to return to the Operator Setup screen. (See page 3).

F2: Not used.

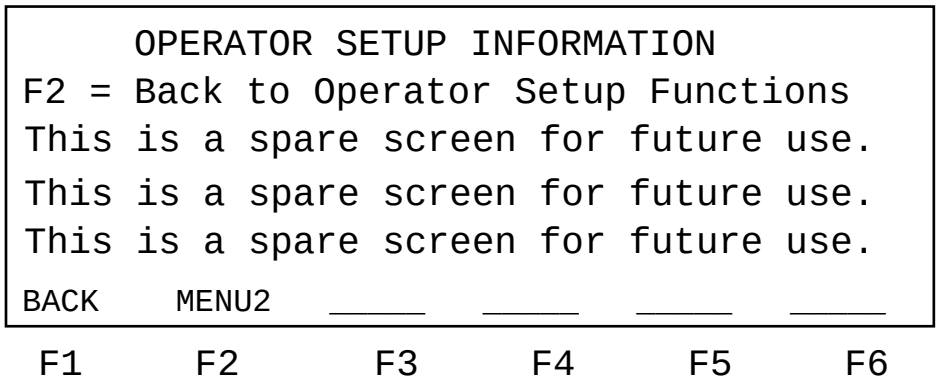
F3: S / S – Press this key to stop or start the Wheel Head Motor. [Status] will show active state of [Off] or [On].

F4: Not used.

F5: Not used.

F6: COOL –- Press this key to toggle the Coolant Solenoid off or on. [Status] will show active state of [Off] or [On].

SCREEN #13, SETUP, Spare Screen



This is a spare screen set up for future use.

F1: BACK –- Press this key to go back 1 screen.

F2: MENU2 – Press this key to return to the Operator Setup Functions Menu Screen.

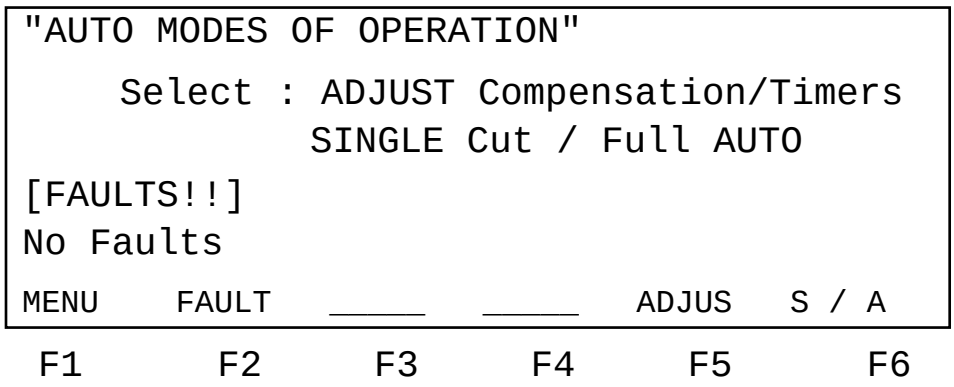
F3: Not used.

F4: Not used.

F5: Not used.

F6: Not used.

SCREEN #14, OPERATOR MODES



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

F2: FAULT -- Select this Key if the "FAULTS!" prompt is flashing. (See page 22)

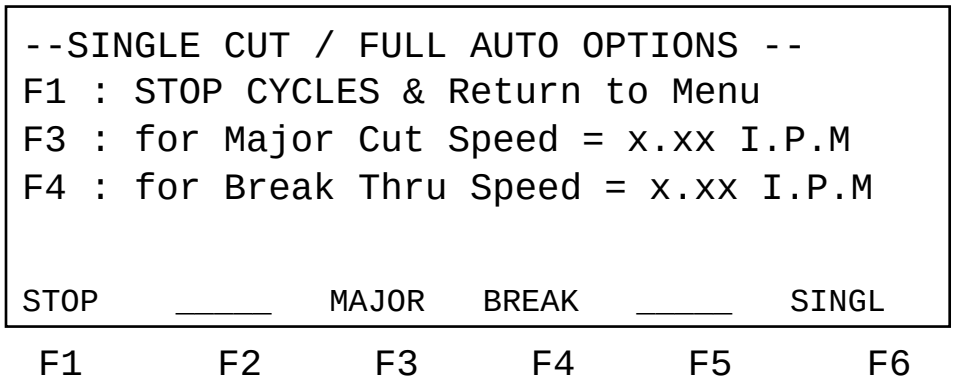
F3: Not Used.

F4: Not used.

F5: ADJUS – Press this key to access the screens to adjust the Wheel Wear compensation, Sensor to Cut Off Wheel, and Timers and Machine Oiler. (See page 19).

F6: S / A - Select this Key to access the Single Cut and Full Auto Cut Options and the select Single or Full Auto. (See page 16)

SCREEN #15, OPERATOR MODE - SINGLE CUT



F1: STOP --- STOP all cutting cycle and return to Auto Modes of Operation Menu. See page 15.

F2: Not used.

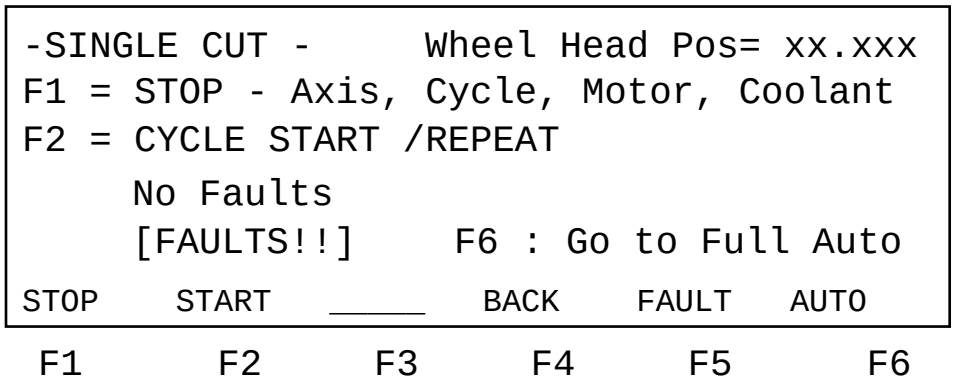
F3: MAJOR – Press this key to access the Major Cut Speed value to modify it.

F4: BREAK - Press this key to access the Break Through Speed value to modify it.

F6: Not used.

F6: SINGL – Press this key to access the Single Cut operation screen. See page 17.

SCREEN #16, OPERATOR MODE - SINGLE CUT



F1: STOP -- STOP Single Cut Cycle, axis movement, wheel motor, and coolant. Then return to the Auto Modes of Operation screen. (See page 15).

F2: START - START Single Cut Cycle and repeat single cut cycle.

F3: Not used.

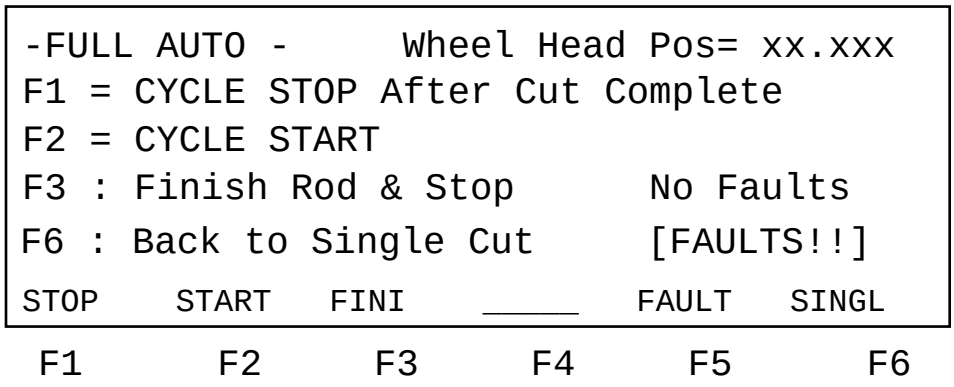
F4: BACK –- Press this key to go back to Options. (See page 16)

F5: FAULT – Press this key if “Faults!” is flashing. This will return to the Auto Modes of Operation screen. (See page 15)

F6: AUTO –- Press this key to go to the Full Auto Mode. If the Single Cut has been started, the Auto cycle will be active to make the next cut. (See page 18)

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

SCREEN #17, OPERATOR MODE – FULL AUTO



F1: STOP –- Cycle Stop after the rod cut is complete.

F2: START - START Auto Cycle or restart after a cycle stop.

F3: FINI –- Press this key to finish the Rod being Cut and Stop. This will cause cycle stop and shut down the machine.

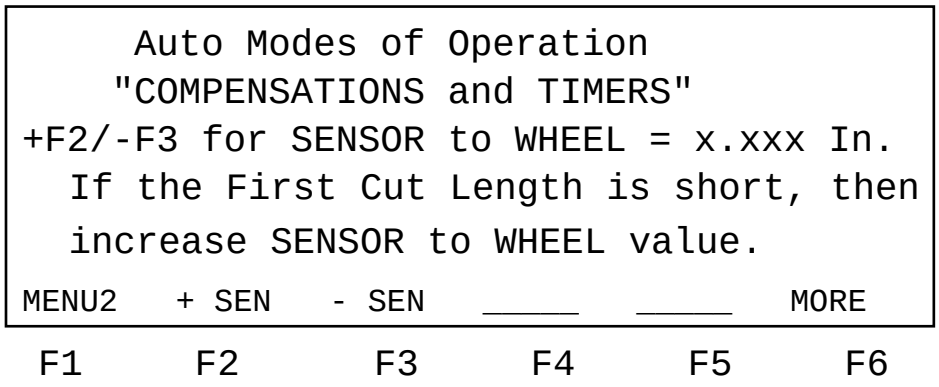
F3: Not used.

F5: FAULT – Press this key if “Faults!” is flashing. This will return to the Auto Modes of Operation screen. (See page 15)

F6: SINGL – Press this key to go to the Single Cut Mode. If a cut is in progress, it will finish and then be ready to restart or stop. (See page 17)

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

SCREEN #18, ADJUST COMPENSATION, F6 FROM SETUP SCREEN #14



F1: MENU2 – Press this key to return to the Auto Modes of Operation Menu Screen. (See page 15)

F2: + SEN –- Press this key to increase the Sensor to Wheel distance.

F3: - SEN -- Press this key to decrease the Sensor to Wheel distance.

The Sensor to Wheel distance determines whether the first rod cut length is the correct amount. If the first rod cut length is short, then increase the Wheel to Sensor amount.

F4: Not used.

F5: Not used.

F6: MORE – Press this key to go to the next set of operator screens.

SCREEN #19, ADJUST COMPENSATION, F6 FROM SETUP SCREEN #18

```
  COMPENSATION; Auto Modes of Operation
+F2/-F3 for WHEEL Wear Comp = x.xxx In
  If the Wheel does not cut through the
  rod, then increase Wheel Wear value.

BACK    + WHL   - WHL   ______  ______  MORE
```

F1 F2 F3 F4 F5 F6

F1: BACK –- Press this key to go back 1 screen.

F2: + WHL -- Press this key to increase the amount of Wheel Wear.

F3: - WHL -- Press this key to decrease the amount of Wheel Wear.

The Wheel Wear amount determines whether the cutting wheel passes through the rod. If the rod has not been cut through, then increase the wheel wear amount.

F4: Not used.

F5: Not used.

F6: MORE – Press this key to go to the next set of operator screens.

SCREEN #20, ADJUST COMPENSATION, F6 FROM SETUP SCREEN #19

```
TIMER/COUNTER-- Auto Modes of Operation
F3 No Rod Found Timer Preset = xx.x Sec
F4 : OIL After ?(0 to 1000): xxxx Cycles
F5 : SHOTS of Oil ? (1 to 5)= x Shots

BACK    MENU2   TIME     OIL    SHOTS   _____
 F1      F2      F3       F4     F5      F6
```

F1: BACK –- Press this key to go back 1 screen.

F2: MENU2 – Press this key to return to the Auto Modes of Operation Menu Screen. (See page 15)

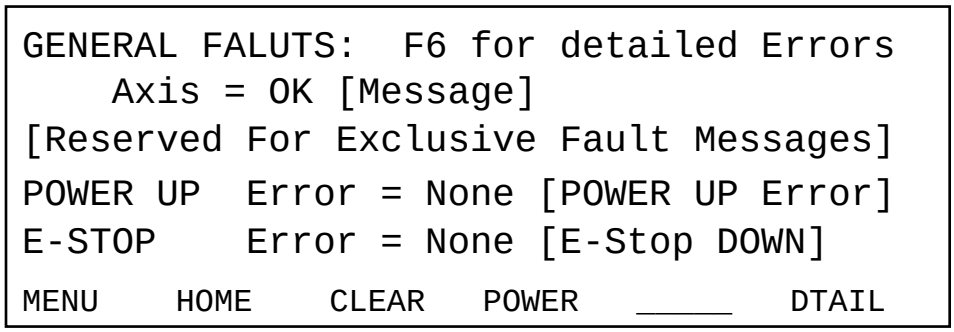
F3: TIME –- Press this key to revise the amount of time to allow the Rod Pusher to push the rod to the Sensor. The valid range is 3.0 Seconds to 15.0 Seconds.

F4: OIL --- Press this key to access the value of cycles for the machine to make before turning on the Machine Oiler.

F5: SHOTS – Press this key to access the value of shots of oil that the machine oiler will make. The run time for the oiler is set in the engineering section.

F6: Not used.

SCREEN #21, FAULTS - SCREENS



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

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

Reserved for exclusive fault messages: Perform action as stated. This area will prompt the operator for a key to press.

F2: HOME – Press This key to home all Axis if the “Home Required” status is flashing.

F3: ALARM -- Select this Key if Alarm Tag is flashing in upper screen area.

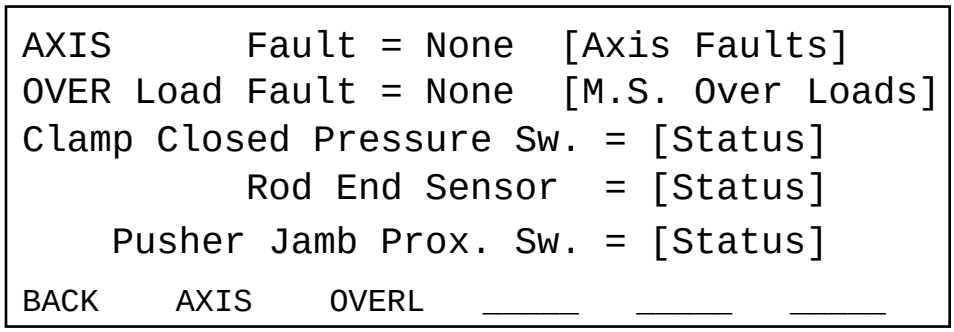
F4: POWER -- Select this Key when "POWER UP ERROR" is flashing.

F5: Not used.

F6: DTAIL – Press this key for detailed screens of errors if needed. (See page 23.)

When "E-Stop DOWN" is Flashing, **PULL E-STOP.**

SCREEN #22, FAULTS - SCREENS



F1: BACK -- Return to the Fault Menu. (See page 22)

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

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

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

(See page 24)

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

(See page 28)

F4: Not used.

F5: Not used.

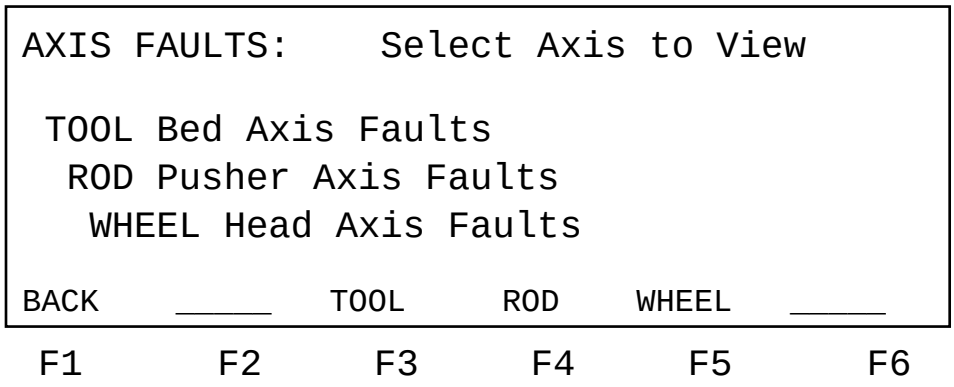
F6: Not used.

Clamp Closed Pressure Switch displays the status of “Clamp Closed” or “Clamp Opened”.

Rod End Sensor displays the status of “Sensor Off” or “Sensor On”.

Pusher Jamb Proximity Switch displays the status of “Prox. Off” or “Prox. On”.

SCREEN #23; FAULTS - SCREENS



F1: BACK -- Back to Detailed Fault Screen. (See page 23)

F2: Not Used.

Status: There will be no status of active or none for the axis.

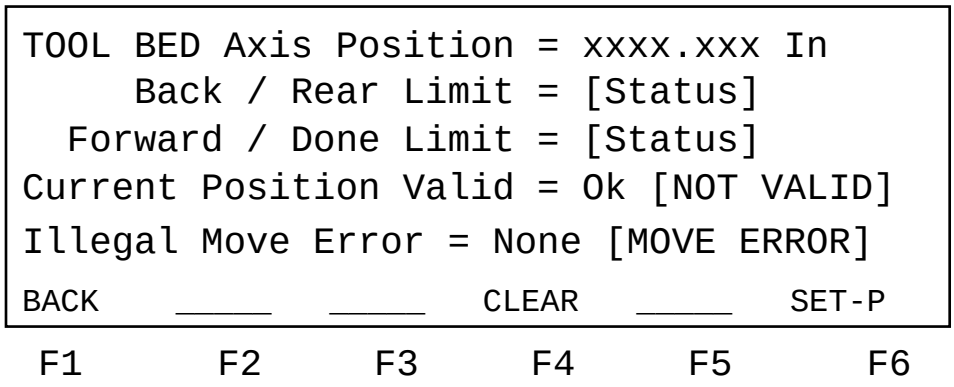
F3: TOOL -- Select this Key to view the Tool Bed axis fault screen. (See page 25)

F4: ROD --- Select this Key to view the Rod Pusher axis fault screen. (See page 26)

F5: WHEEL - Select this Key to view the Wheel Head axis fault screen. (See page 27)

F6: Not used.

SCREEN #24; FAULTS – SCREENS – Tool Bed Axis



F1: BACK -- Back to Axis Fault screen. (See page 24)

F2: Not used.

F3: Not used.

F4: CLEAR - Press this Key if “MOVE ERROR” is flashing. This will clear the error. Next, the “SET-P” should be pressed. This will set the axis position to Zero.

The axis normal status are shown below:

Back Limit = The status of “Limit ON” means cannot jog back.

Forward Limit = The status of “Limit ON” means cannot jog forward.

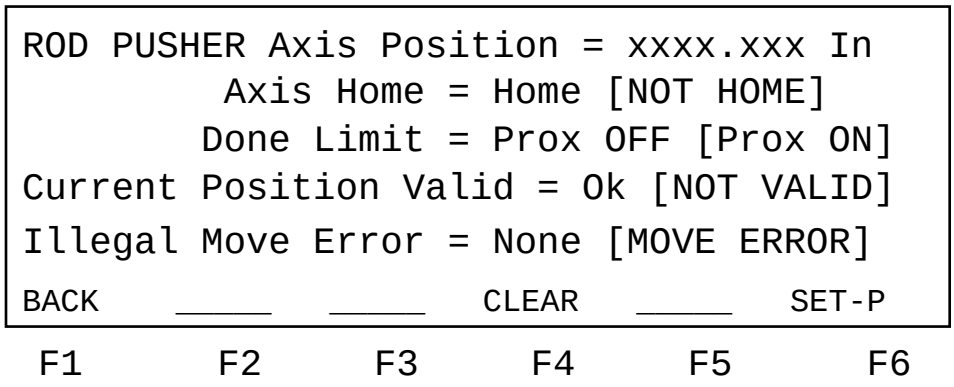
Current Position Valid = Ok

Illegal Move Error = Not Active

F5: Not Used.

F6: SET-P – Press this key to set the axis position to Zero.

SCREEN #25; FAULTS - SCREENS – Rod Pusher Axis



F1: BACK -- Back to Axis Fault screen. (See page 24)

F2: Not used.

F3: Not used.

F4: CLEAR - Press this Key if “MOVE ERROR” is flashing. This will clear the error. Next, the “SET-P” should be pressed. This will set the axis position to Zero.

The axis normal status are shown below:

Axis Home = Home

Done Limit = Prox OFF

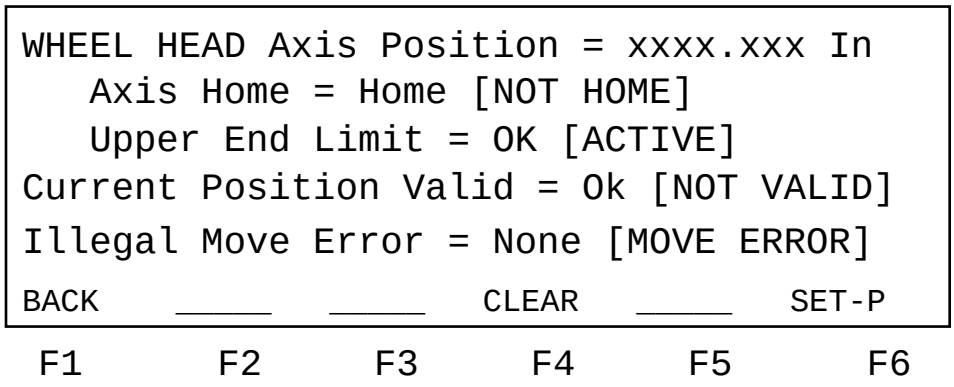
Current Position Valid = Ok

Illegal Move Error = Not Active

F5: Not Used.

F6: SET-P – Press this key to set the axis position to Zero.

SCREEN #26; FAULTS - SCREENS – Wheel Head Axis



F1: BACK -- Back to Axis Fault screen. (See page 24)

F2: Not used.

F3: Not used.

F4: CLEAR - Press this Key if “MOVE ERROR” or “Upper End Limit” is flashing. This will clear the error. Next, the “SET-P” should be pressed. This will set the axis position to Zero.

The axis normal status are shown below:

Tool Bed Axis Home = Home

Upper End Limit = Ok

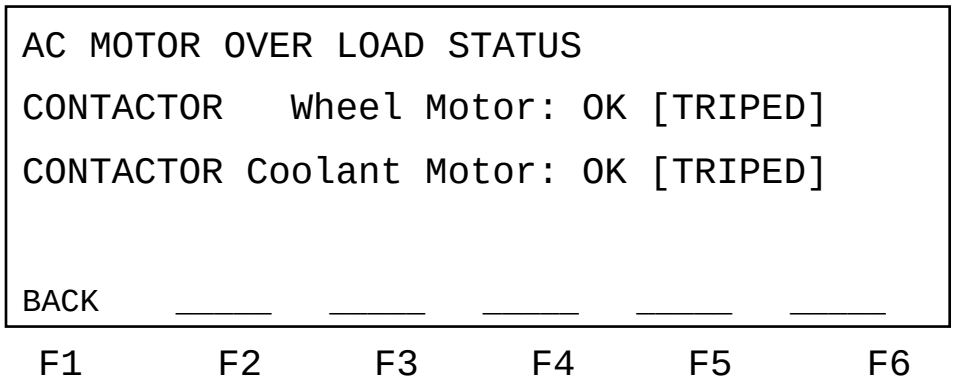
Current Position Valid = Ok

Illegal Move Error = Not Active

F5: Not Used.

F6: SET-P – Press this key to set the axis position to Zero.

SCREEN #27; FAULTS - SCREENS Continued

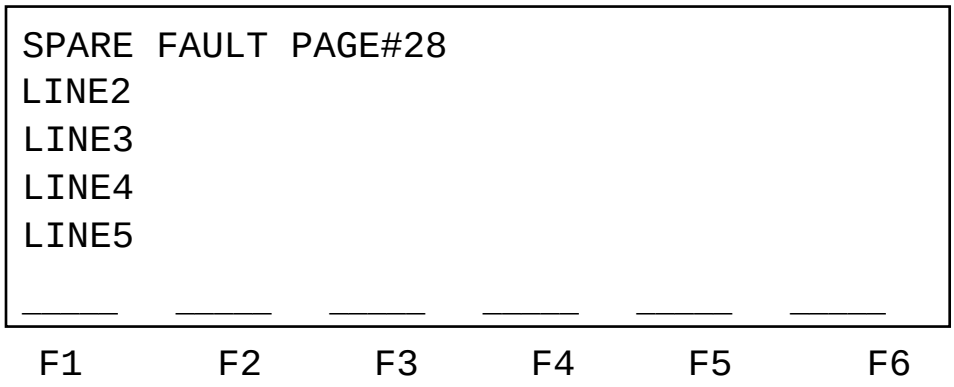


F1: BACK -- Back to Detailed Fault screen. (See page 23)

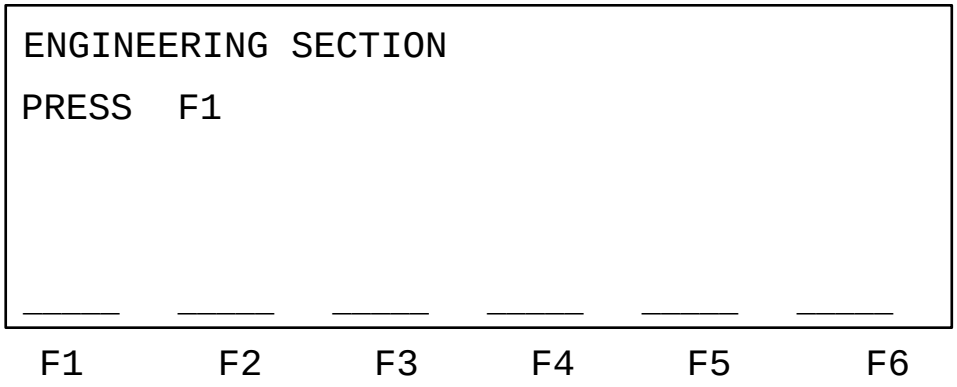
CONTACTOR Wheel Motor: - "OK" or if "TRIPPED" then check Coolant Overload Relay.

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

SCREEN #28; FAULTS - SCREENS Continued



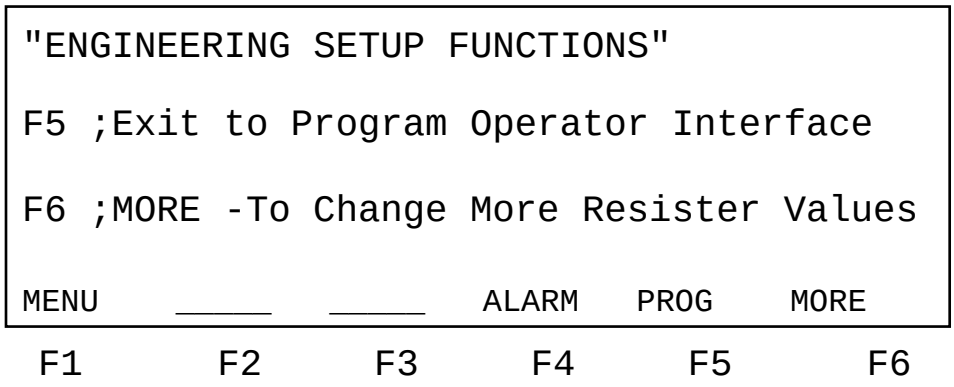
SCREEN #29; ENGINEERING SCREENS



F1: MASKED -- RETURN TO MAIN MENU. (See page 2)

F4: MASKED -- GOTO ENGINEERING (See page 31)

SCREEN #30; 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.

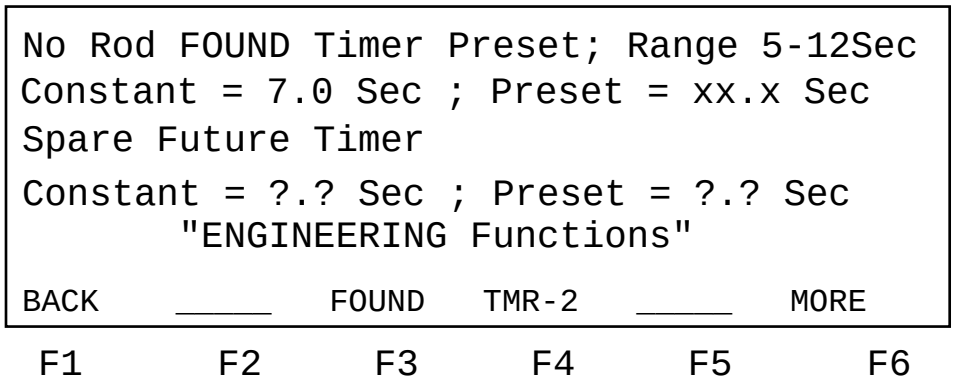
F3: Not used.

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

F5: PROG – Press this key to exit the run mode of the Operator Interface and enter the Setup/Program mode.

F6: MORE – Press this key to view more screens to change Register Values to customize for each Machine. (See page 32)

SCREEN #31; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 31)

F2: Not Used.

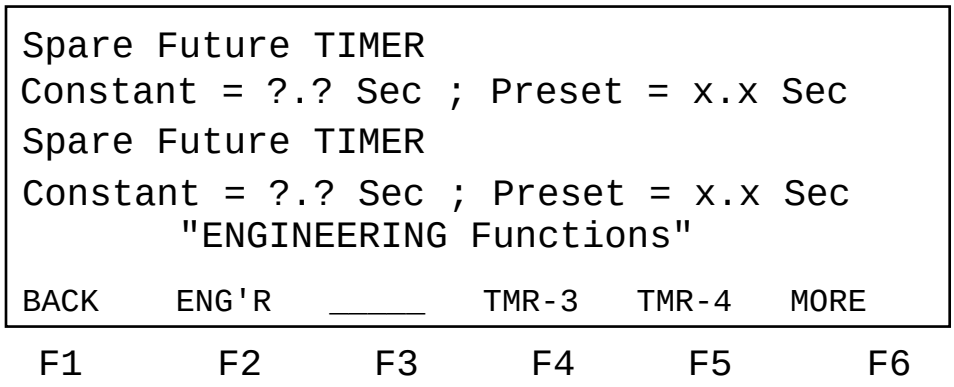
F3: FOUND - Press this key to access the register to write a New Value.

F4: TMR-2 – Future use, press to Write New Value.

F5: Not Used.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 33)

SCREEN #32; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 32)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

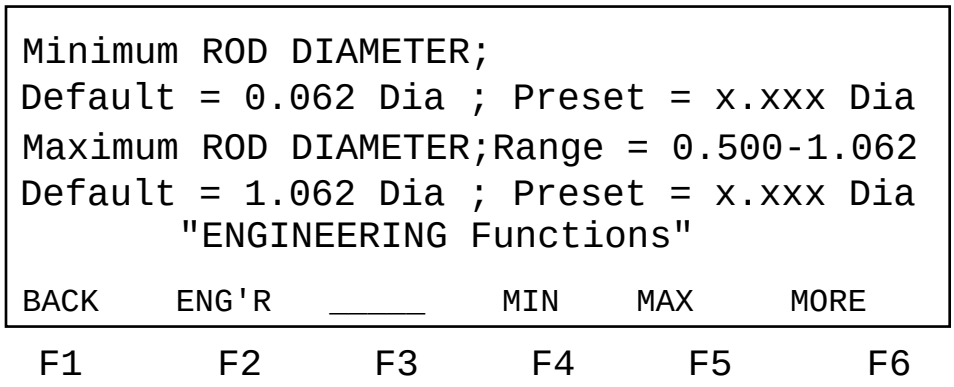
F3: Not Used.

F4: TMR-3 – Spare Timer: Select to Write New Value.

F5: TMR-4 – Spare Timer: Select to Write New Value.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 34)

SCREEN #33; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 33)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

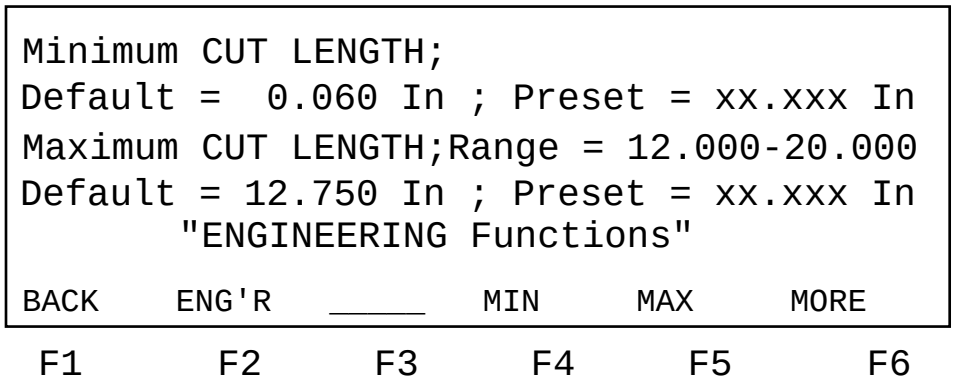
F3: Not Used.

F4: MIN --- Select to key to write new value for the Minimum Rod Diameter.

F5: MAX --- Select to key to write new value for the Maximum Rod Diameter.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 35)

SCREEN #34; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 34)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

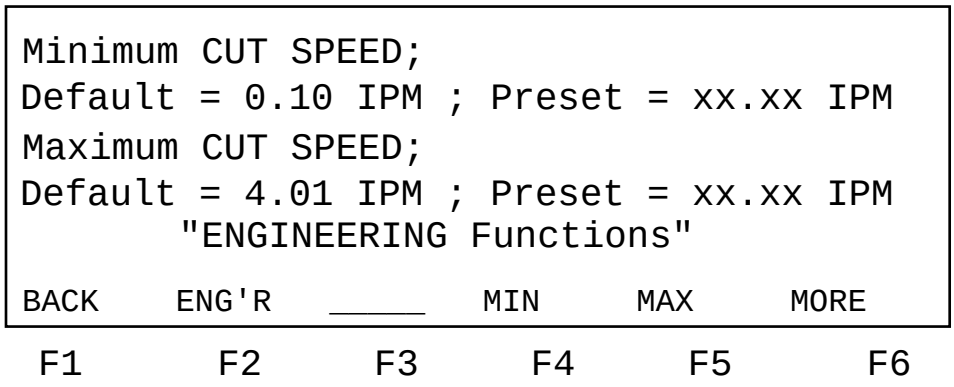
F3: Not Used.

F4: MIN --- Select to key to write new value for the Minimum Rod Cut Length.

F5: MAX --- Select to key to write new value for the Maximum Rod Cut Length.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 36)

SCREEN #35; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 35)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

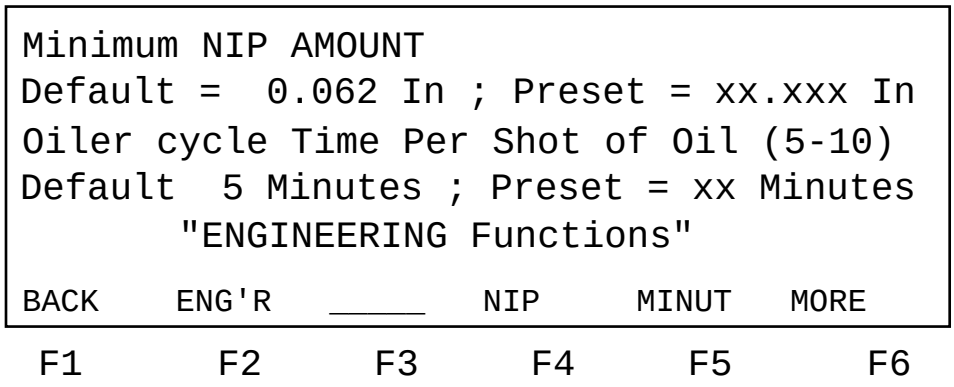
F3: Not Used.

F4: MIN --- Select to key to write new value for the Minimum Cut Speed.

F5: MAX --- Select to key to write new value for the Maximum Cut Speed.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 37)

SCREEN #36; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 36)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

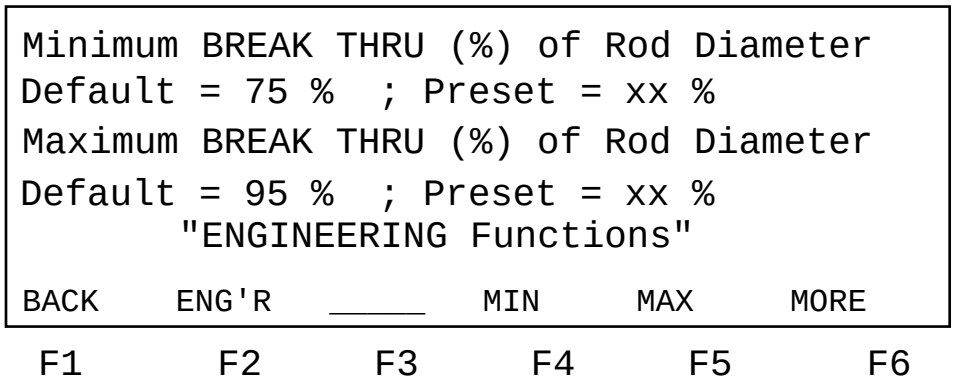
F3: Not Used.

F4: NIP -- Select this key to write a value for the Minimum Nip amount.

F5: MINUT – Press this key to write a value for the cycle time of the oiler motor from the specifications.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 38)

SCREEN #37; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 37)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

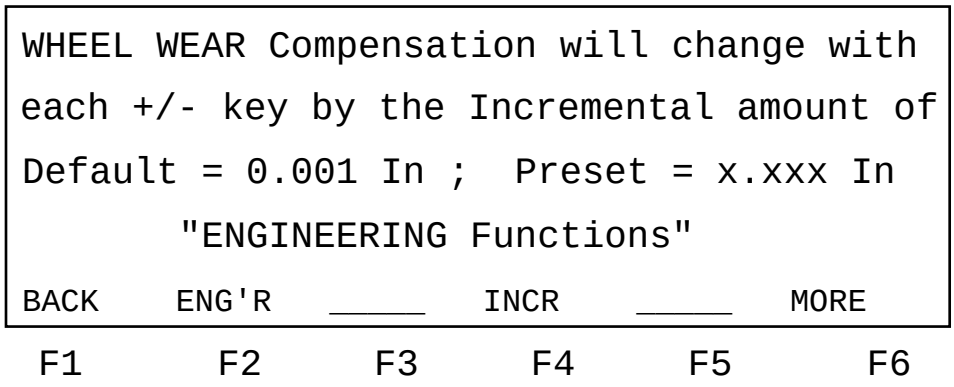
F3: Not Used.

F4: MIN --- Select to key to write a new value for the Minimum Break through percentage of the rod diameter. The valid range is 65% to 75%.

F5: MAX --- Select to key to write a new value for the Maximum Break through percentage of the rod diameter. The valid range is 80% to 95%.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 39)

SCREEN #38; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 38)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

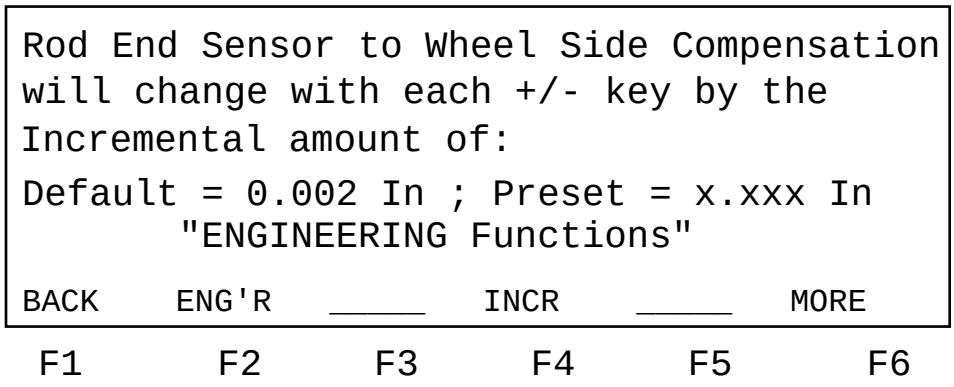
F3: Not Used.

F4: INCR – Press this key to access the register to change the *incremental* value for the Wheel Wear Compensation amount.

F5: Not Used.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 40)

SCREEN #39; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 39)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

F3: Not Used.

F3: Not Used.

F4: INCR – Press this key to access the register to change the *incremental* value for the Rod Edge Sensor to Wheel Side compensation amount.

F5: Not Used.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 41)

SCREEN #40; ENGINEERING SCREENS

```
WHEEL HEAD Over Travel Software Limit:
Default = 1.625 In ; Preset = x.xxx In
WHEEL HEAD Backlash Compensator:
Default = 0.250 In ; Preset = x.xxx In
       "ENGINEERING Functions"
BACK    ENG'R   _____   WH-OT   WH-BL   MORE
```

F1 F2 F3 F4 F5 F6

F1: BACK -- Return to the previous screen. (See page 40)

F2: ENG'R - Back to Engineering Screen. (See page 31)

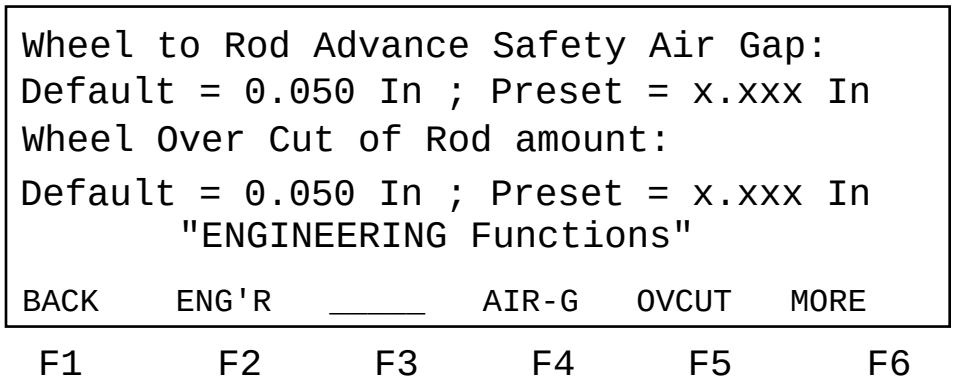
F3: Not Used.

F4: W-O-T - Press this key to access the register to change the Wheel Head Over Travel Software Limit. This distance should be the measured distance from a new wheel, with the Wheel Head axis at home, to the coolant nozzle less 1/16”.

F5: W-B-C - Press this key to access the register to change the Wheel Head Backlash Compensation.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 42)

SCREEN #41; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 41)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

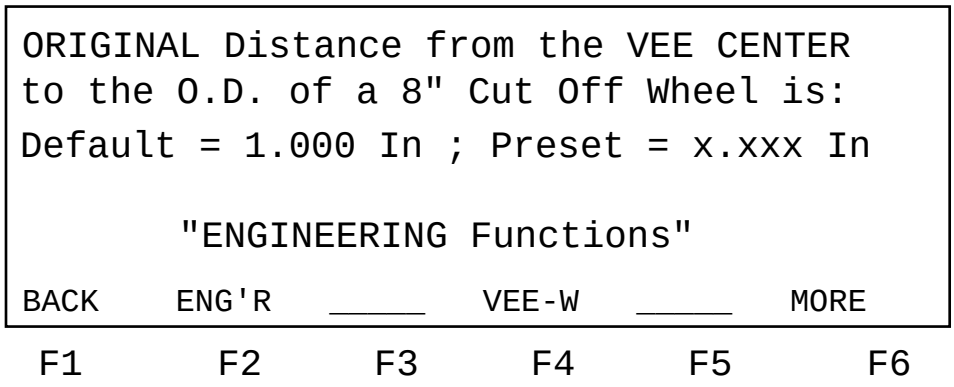
F3: Not Used.

F4: AIR-G - Press this key to access the register to change the Wheel to Rod Advance Safety Air Gap amount. This is the amount of gap that remains after the rapid travel toward the rod.

F5: OVCUT - Press this key to access the register to change the Wheel Over Cut amount. This is the extra amount of Wheel Head travel that will be applied to the rod diameter distance.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 43)

SCREEN #42; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 42)

F2: ENG'R -- Back to Engineering Screen. (See page 31)

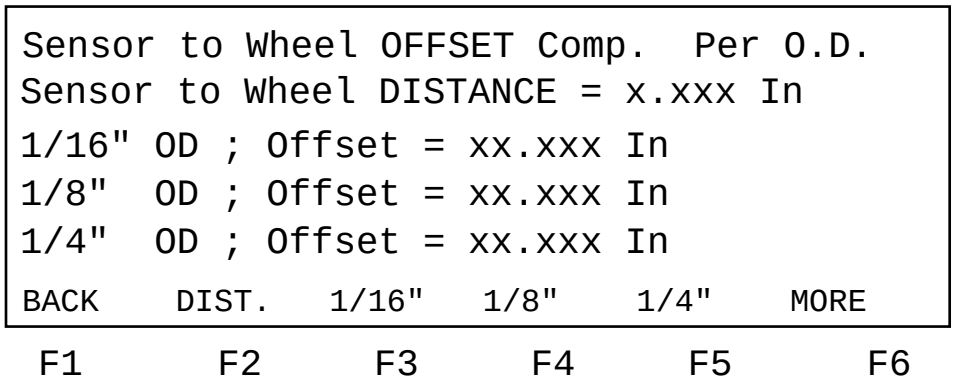
F3: Not Used.

F4: VEE/W - Press this key to access the register to change the Original Vee Center to New Wheel Outside Diameter amount. The PLC uses this dimension to calculate the moves to perform on the rods.

F5: Not Used.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 44)

SCREEN #43; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 42)

F2: DIST. – Press this key to write the value of Sensor to Wheel distance for a 1/16″ diameter rod. This will be the reference distance to apply the offset values to correct the deviation of the sensor. The operator will use these values from their chart screen.

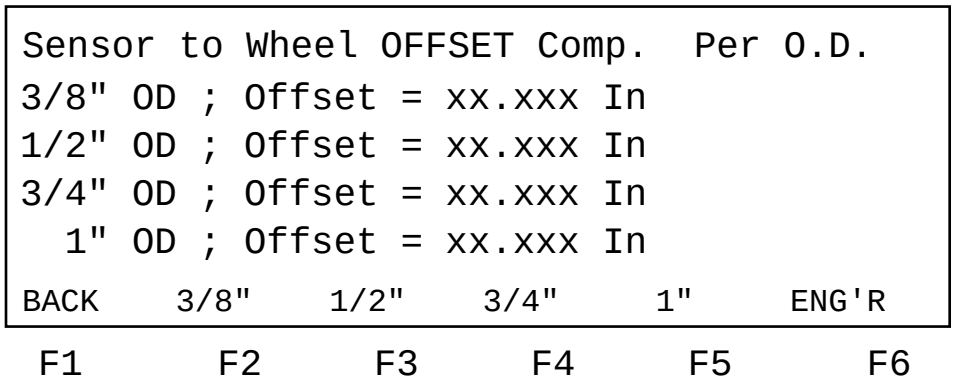
F3: 1/16″ – Press this key to write the value of the offset. This value should be Zero. The 1/16″ diameter rod is the reference.

F4: 1/8″ -- Press this key to write the value of the offset sensor distance that deviates from the 1/16″ reference distance.

F5: 1/4″ -- Press this key to write the value of the offset sensor distance that deviates from the 1/16″ reference distance.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 43)

SCREEN #44; ENGINEERING SCREENS



F1: BACK -- Return to the previous screen. (See page 42)

F3: 3/8” -- Press this key to write the value of the offset sensor distance that deviates from the 1/16” reference distance.

F4: 1/2” -- Press this key to write the value of the offset sensor distance that deviates from the 1/16” reference distance.

F5: 3/4” -- Press this key to write the value of the offset sensor distance that deviates from the 1/16” reference distance.

F6: 1” -- Press this key to write the value of the offset sensor distance that deviates from the 1/16” reference distance.

F6: ENG'R - Back to Engineering Screen. (See page 31)

AUTOMATIC CARBIDE ROD CUT OFF SAW Version 6

Addendum: Rod End Sensor to Wheel Calculations.

Proximity Switch

The distance from the Proximity Switch to the wheel was established as 3.250". This was done by carefully pushing a 1/16" diameter rod up to the sensor to find where the signal led activates. This is a static measurement to provide a starting distance.

The Rod End Sensor status can be observed by entering the Fault section of the Operator Interface Panel and then selecting F6 (DETAIL). This will allow the operator or technician to easily view the status of the sensor pickup.

The proximity switch sensing distance is proportional to the mass of the target (carbide rod diameter).

A trial run of different rod diameters was done to find the mean sensing distance for each diameter shown below.

The Distance Chart below may change from Machine to Machine because of the mechanical position of the Proximity Switch and the Amplifier Gain Adjustment.

Stock Dia.	Measured Diameter	Sensor 1/16"Ref.	Difference From Ref.	Mean Distance
1/16"	0.077"	3.250"	+0.000"	3.250"
1/8"	0.141"	3.250"	+0.062"	3.312"
1/4"	0.255"	3.250"	+0.145"	3.395"
3/8"	0.394"	3.250"	+0.135"	3.385"
1/2"	0.526"	3.250"	+0.105"	3.355"
3/4"	0.769"	3.250"	+0.085"	3.335"
1"	1.033"	3.250"	+0.020"	3.270"

Test Run: 1-14-99

Greg Maynard; EET