

OPERATOR'S MANUAL

AUTOMATIC CARBIDE ROD CUT OFF SAW **Version 8.0** **OPERATOR'S MANUAL**

By

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3/18/2003

Revised: 3/18/2003

Chapter 1 : General Information

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Chapter 2 : Operator Screens

GP #1, MAIN MENU

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AUTOMATIC CARBIDE CUT OFF SAW V 8.0
      ~ MAIN MENU ~
F2 = OPERATOR SETUP & MANUAL
F3 = AUTO MODES OF OPERATION      No Faults
F4 = FAULTS if Flashing-->      FAULTS !!
ALARM   SETUP   MODES   FAULT   _____   ENG'R
F1      F2      F3      F4      F5      F6
```

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 (F4) and follow the prompts from the **FAULT** Screen. 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: ALARM** - Press this key to 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.
- F2: SETUP** - Press this key to go to the Operator Setup screen. (Seepage 2-2)
- F3: MODES** - Press this key to go to the Modes of Operation menu screen.
(Seepage 2-14)
- F4: FAULT** - Press this key to view the faults menu and clear any faults.
(Seepage 2-21)
- F5:** Not used.
- F6: ENG'R** - Press this key to go to the Engineering screens. (Seepage 3-1)

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GP #2, Operator Setup Screen

OPERATOR SETUP FUNCTIONS					
F2 = Setup INFORMATION					
F3 = Manual WHEEL MOTOR & COOLANT					
F4 = Manual JOG Axis and CLAMPS					
F5 = HOME ALL AXIS					
MENU	INFO	WM+C	JOG	HOME	FAULT
F1	F2	F3	F4	F5	F6

F1: MENU - Press this key to return to Main Menu screen. (See page 2-1)

F2: INFO - Press this key to view the screens necessary to setup or revise the information to cut the carbide rods. (See page 2-3).

F3: WM+C - Press this key to view the screens necessary to Manually operate the Cutting Wheel Motor and Coolant Solenoid. (See page 2-12).

F4: JOG - Press this key to view the screens necessary to Manually Jog the Axis and operate the Vee Clamps. (See page 2-9)

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

F6: FAULT - Press this key if a "Faults!" is flashing. (See page 2-21)

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GP #3, Setup Information 1

OPERATOR SETUP INFORMATION					
F2 : TOGGLE Front Nip [NO / YES]					
F3 for NIP Amount = x.xxx In.					
F4 for Cutting Wheel WIDTH = x.xxx In.					
F5 for Rod DIAMETER = x.xxx In.					
SETUP	TOGGL	NIP	WIDTH	DIA	MORE
F1	F2	F3	F4	F5	F6

F1: SETUP - Press this key to return to Operator Setup. (Seepage 2-2)

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. *The Range is 0.062" to 0.200".*

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. *Note: Measure the Wheel thickness and add about 0.005".*

F5: DIA - Press this key to access the Rod Diameter value and then use the numeric keypad to input the needed diameter. Then press the [↵] key to accept the new value. *The Range is 0.062" to 1.062".*

F6: MORE - Press this key to go to the next operator setup screen. (Seepage 2-4)

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GP #4, Setup Information 2

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. (See page 2-3)

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. *The Range is 0.062" to 12.000"*.

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. After the number of primary cut lengths are done, then the secondary cut length value is used.

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. The default value is 14.000" if no secondary cut lengths are required. This allows the machine to eject the remaining portion of the rod and continue to the next rod. *The Range is 0.062" to 14.000"*.

F5: NOT USED.

F6: MORE - Press this key to go to the next operator setup screen. (See page 2-5)

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GP #5, Setup Information 3

OPERATOR SETUP INFORMATION					
F2 for MAJOR Cut Speed = xx.xx I.P.M.					
F3 : TOGGLE Break Thru Speed ? [Yes/No]					
F4 for Break Thru Rod PERCENT = xx %					
F5 for Break THRU Speed = xx.xx I.P.M.					
BACK	MAJOR	TOGGL	PCENT	THRU	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to go back 1 screen. (See page 2-4)

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. *The Range is 0.10 IPM to 4.00 IPM.*

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. *The Range is 25% to 95%.*

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. *The Range is 0.10 IPM to 4.00 IPM, but normally this value is less than the "Major Cut Speed" value.*

F6: MORE - Press this key to go to the next operator setup screen. (See page 2-6)

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GP #6, Setup Information 4

OPERATOR SETUP INFORMATION					
COMPENSATIONS -- See CHART for Settings					
+F2/-F3 for SENSOR to Wheel = x.xxx In					
If the First Cut Length is short, then					
increase Sensor value.					
BACK	+ SEN	- SEN	CHART	_____	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to go back 1 screen. (See page 2-5)

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 2-8)

F5: Not used.

F6: MORE - Press this key to go to the next operator setup screen. (See page 2-7)

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GP #7, Setup Information 5

OPERATOR SETUP INFORMATION					
+F3/-F4 for WHEEL Wear Comp = x.xxx In					
If the Wheel does not cut through the					
Rod, then increase Wheel Wear value.					
F5 : To Reset Value to Default					
BACK	MENU2	+ WHL	- WHL	RESET	_____
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to go back 1 screen. (Seepage 2-6)

F2: MENU2 - Press this key to return to the Operator Setup Functions Menu Screen. (Seepage 2-2)

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: Key not used.

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GP #8, Setup Information 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. (Seepage 2-6)

F2: Not used.

F3: Not used.

F4: Not used.

F5: Not used.

F6: Not used.

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GP #9, Setup Manual Jog Tool Bed axis

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 2-2).

F2: SPEED - Press this key to toggle the Axis speed to either 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. (See page 2-21)

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. (See page 2-10)

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GP #10, Setup Manual Jog Rod Pusher axis

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.

The Clamps must be open (up) to allow this axis to jog.

F1: BACK - Press this key to go back to the previous Axis screen. (See page 2-9)

F2: SPEED - Press this key to toggle the Axis speed to either 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. (See page 2-21)

F5: Not used.

F6: NEXT - Press this key for the next screen to operate the Wheel Head Axis. (See page 2-11)

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GP #11, Setup Manual Jog Wheel Head axis

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.

The Clamps must be closed (down) to allow this axis to jog.

F1: BACK - Press this key to go back to the previous Axis screen. (See page 2-10)

F2: SPEED - Press this key to toggle the Axis speed to either 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. (See page 2-21)

F5: Not used.

F6: JMENU - Press this key to go to the Tool Bed Axis screen. (See page 2-9)

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GP #12, Manual Motor & Coolant

```
OPERATOR SETUP; -- Manual --
F3 : STOP/START
      Wheel Head Motor = [Status]
F5 : Toggle COOLANT Solenoid
      Coolant Solenoid = [Status]
BACK  _____  S/S  _____  COOL  _____
F1      F2      F3      F4      F5      F6
```

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 2-2)

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].

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GP #13, Setup, Spare Screen

OPERATOR SETUP INFORMATION					
F2 = Back to Operator Setup Functions					
This is a spare screen for future use.					
This is a spare screen for future use.					
This is a spare screen for future use.					
BACK	MENU2	_____	_____	_____	_____
F1	F2	F3	F4	F5	F6

This is a spare screen set up for future use.

F1: BACK - Press this key to go back 1 screen. (See page 2-1)

F2: MENU2 - Press this key to return to the Operator Setup Functions Menu Screen. (See page 2-1)

F3: Not used.

F4: Not used.

F5: Not used.

F6: Not used.

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GP #14, Operator Modes

```
"AUTO MODES OF OPERATION"  
  
      Select : ADJUST Compensation/Timers  
              SINGLE Cut / Full AUTO  
  
[FAULTS!!]  
No Faults  
  
MENU      FAULT      _____      _____      ADJUS      S / A  
  
F1         F2         F3         F4         F5         F6
```

F1: MENU - Press this key to return to Main Menu. (See page 2-1)

F2: FAULT - Select this Key if the "FAULTS!" prompt is flashing to go to the main Faults screen. (See page 2-21)

F3: Key not used.

F4: Key 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 2-18)

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 2-15)

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GP #15, Operator Mode Options

--SINGLE CUT / FULL AUTO OPTIONS --					
F1 : STOP CYCLES & Return to Menu					
F2 : for Major Cut Speed = x.xx I.P.M					
F3 : for Break Thru Speed = x.xx I.P.M					
F4 : SENSOR-WHEEL Distance = x.xxx In					
STOP	MAJOR	BREAK	SEN-W	_____	SINGL
F1	F2	F3	F4	F5	F6

F1: STOP - STOP all cutting cycle and return to Auto Modes of Operation Menu. (Seepage 2-14)

F2: MAJOR - Press this key to access the Major Cut Speed value to modify it. *The Range is 0.10 IPM to 4.00 IPM.*

F3: BREAK - Press this key to access the Break Through Speed value to modify it. *The Range is 0.10 IPM to 4.00 IPM, but normally this value is less than the "Major Cut Speed" value.*

F4: SEN-W - Press this key to revise the value for the "Rod End Sensor" to Cutting 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.

F5: Not used.

F6: SINGL - Press this key to access the Single Cut operation screen. (Seepage 2-16)

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GP #16, Operator Mode, Single Cut

-SINGLE CUT - Wheel Head Pos= xx.xxx					
F1 = STOP - Axis, Cycle, Motor, Coolant					
F2 = CYCLE START /REPEAT					
No Faults					
[FAULTS!!] F6 : Go to Full Auto					
STOP	START	_____	BACK	FAULT	AUTO
F1	F2	F3	F4	F5	F6

F1: STOP - STOP Single Cut Cycle, axis movement, wheel motor, and coolant. Then return to the Auto Modes of Operation screen. (Seepage 2-14)

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

F3: Key not used.

F4: BACK - Press this key to go back to Options. (Seepage 2-15)

F5: FAULT - Press this key if "Faults!" is flashing. This will return to the Auto Modes of Operation screen. (Seepage 2-14)

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. (Seepage 2-17)

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

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GP #17, Operator Mode, Full Auto

-FULL AUTO - Wheel Head Pos= xx.xxx					
F1 = CYCLE STOP After Cut Complete					
F2 = CYCLE START					
F3 : Finish Rod & Stop			No Faults		
F6 : Back to Single Cut			[FAULTS!!]		
STOP	START	FINI	_____	FAULT	SINGL
F1	F2	F3	F4	F5	F6

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 then stop cycle.
This will cause cycle stop and shut down the machine.

F3: Key not used.

F5: FAULT - Press this key if "Faults!" is flashing. This will return to the Auto Modes of Operation screen. (See page 2-14)

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 2-16)

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

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GP #18, Adjustments and Compensations

Auto Modes of Operation					
"COMPENSATIONS and TIMERS"					
+F2/-F3 for SENSOR to WHEEL = x.xxx In.					
If the First Cut Length is short, then					
increase SENSOR to WHEEL value.					
MENU2	+ SEN	- SEN	_____	_____	MORE
F1	F2	F3	F4	F5	F6

F1: MENU2 - Press this key to return to the Auto Modes of Operation Menu Screen. (See page 2-14)

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: Key not used.

F5: Key not used.

F6: MORE - Press this key to go to the next set of operator screens. (See page 2-19)

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GP #19, Adjustments and Compensations

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. (See page 2-18)

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: Key not used.

F5: Key not used.

F6: MORE - Press this key to go to the next set of operator screens.
(See page 2-20)

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GP #20, Adjustments and Compensations

TIMER/COUNTER-- Auto Modes of Operation					
F3 No Rod Found Timer Preset = xx.x Sec					
F4 : OIL After ?(10 to 100) = xxx 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. (Seepage 2-19)

F2: MENU2 - Press this key to return to the Auto Modes of Operation Menu Screen. (Seepage 2-14)

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: Key not used.

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GP #21, Faults Menu Screen

GENERAL FALUTS: F6 for detailed Errors					
Axis = OK [Message]					
[Reserved For Exclusive Fault Messages]					
POWER UP Error = None [POWER UP Error]					
E-STOP Error = None [E-Stop DOWN]					
MENU	HOME	CLEAR	POWER	_____	DTAIL
F1	F2	F3	F4	F5	F6

F1: MENU - Press this key to return to the Main Menu screen. (Seepage 2-1)

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 the 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: Key not used.

F6: DTAIL - Press this key for detailed screens of errors if needed.
(Seepage 2-22)

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

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GP #22, Fault Details Screen

AXIS	Fault = None	[Axis Faults]
OVER	Load Fault = None	[M.S. Over Loads]
Clamp Closed Pressure Sw.	=	[Status]
	Rod End Sensor	= [Status]
	Pusher Jamb Prox. Sw.	= [Status]
BACK	AXIS	OVERL

F1 F2 F3 F4 F5 F6

F1: BACK - Press this key to return to the Fault Menu screen. (See page 2-21)

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

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

F2: AXIS - Select this Key when "Axis Faults" is flashing to go to the screens to correct the fault. (See page 2-23)

F3: OVERL - Select this Key when "M.S. Over Loads" is flashing to view the type of fault. (See page 2-27)

F4: Key not used.

F5: Key not used.

F6: Key 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".

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GP #23, Faults - Select Axis

```
AXIS FAULTS:      Select Axis to View

TOOL Bed Axis Faults
  ROD Pusher Axis Faults
    WHEEL Head Axis Faults

BACK   _____  TOOL   ROD   WHEEL   _____
F1     F2           F3     F4     F5     F6
```

F1: BACK - Press this key to go back to the Detailed Fault Screen. (See page 2-22)

F2: Key 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 2-24)

F4: ROD - Select this Key to view the Rod Pusher axis fault screen. (See page 2-25)

F5: WHEEL - Select this Key to view the Wheel Head axis fault screen. (See page 2-26)

F6: Key not used.

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GP #24, Faults, Tool Bed Axis

TOOL BED Axis Position = xxxx.xxx In					
Back / Rear Limit = [Status]					
Forward / Done Limit = [Status]					
Current Position Valid = Ok [NOT VALID]					
Illegal Move Error = None [MOVE ERROR]					
BACK	_____	_____	CLEAR	_____	SET-P
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to go back to Axis Fault screen. (See page 2-23)

F2: Key not used.

F3: Key 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: Key not used.

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

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GP #25, Faults, Rod Pusher Axis

ROD PUSHER Axis Position = xxxx.xxx In					
Axis Home = Home [NOT HOME]					
Done Limit = Prox OFF [Prox ON]					
Current Position Valid = Ok [NOT VALID]					
Illegal Move Error = None [MOVE ERROR]					
BACK	_____	_____	CLEAR	_____	SET-P
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to go back to Axis Fault screen. (See page 2-23)

F2: Key not used.

F3: Key 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: Key not used.

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

OPERATOR'S MANUAL

GP #27, Faults - Motor Contactors

```
AC MOTOR OVER LOAD STATUS
CONTACTOR Wheel Motor: OK [TRIPED]
CONTACTOR Coolant Motor: OK [TRIPED]

BACK _____
F1          F2          F3          F4          F5          F6
```

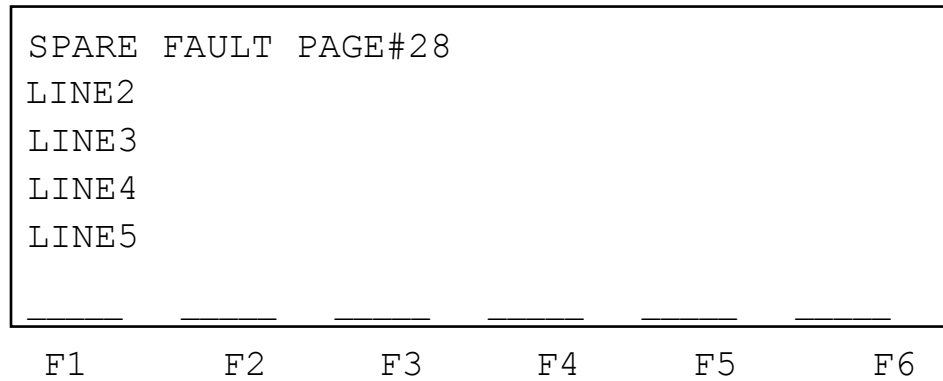
F1: BACK - Press this key to go back to the Detailed Fault Screen. (See page 2-22)

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

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

OPERATOR'S MANUAL

GP #28, Faults Spare screen



F1: Key not used. (See page 2-22)

F2: Key not used.

F3: Key not used.

F4: Key not used.

F5: Key not used.

F6: Key not used.

OPERATOR'S MANUAL

Chapter 3 : Engineering Section

GP #29, Engineering Menu Screen

```
ENGINEERING SECTION  
PRESS  F1  
  
Info: DataDesigner System Software:  
      v52016v.cmd  
  
_____
```

F1 F2 F3 F4 F5 F6

The Engineering section is for use by the "Programmer" or "Supervisor" or "head of Maintenance" only. The pages referring to the Engineering section should not be printed out for the operators.

F1: MASKED - Press this key to return to the MAIN MENU. (See page 2-1)

F4: MASKED - Press this key to go to the ENGINEERING screens. (See page 3-2)

OPERATOR'S MANUAL

GP #30, Engineering Setup Screen 1

```
"ENGINEERING SETUP FUNCTIONS"  
  
F5 ;Exit to Program Operator Interface  
  
F6 ;MORE -To Change More Resister Values  
  
MENU      _____      _____      ALARM      PROG      MORE  
F1         F2         F3         F4         F5         F6
```

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

- F1: MENU** - Press this key to return to the Main Menu screen. (See page 2-1)
- F2:** Key not used.
- F3:** Key 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 3-3)

OPERATOR'S MANUAL

GP #31, Engineering Setup Screen 2

No Rod FOUND Timer Preset; Range 5-12Sec Constant = 7.0 Sec ; Preset = xx.x Sec Spare Future Timer Constant = x.x Sec ; Preset = "ENGINEERING Functions"					
BACK	_____	FOUND	TMR-2	_____	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-2)

F2: Key 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: Key not used.

F6: MORE -- Press this key to view more screens to change Register Values to customize for each Machine. (See page 3-4)

OPERATOR'S MANUAL

GP #32, Engineering Setup Screen 3

Tool Bed -- "Index TIME" variable PLC Calcultes; ROD DIA/TIME= [Velocity] Range: 2.0 sec [Fast] to 6.0 sec [Slow] Default = 4.0 Sec ; Preset = x.x Sec "ENGINEERING Functions"					
BACK	ENG'R	_____	TIME	_____	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (Seepage 3-3)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(Seepage 3-2)

F3: Key not used.

F4: TIME - This value adjusts the Tool Bed time to index the next part.

F5: Key not used.

F6: MORE -- Press this key to view more screens to change Register Values to
customize for each Machine. (Seepage 3-5)

OPERATOR'S MANUAL

GP #33, Engineering Setup Screen 4

MAXIMUM Rod Diameter; Range= 0.062-0.125 Default = 0.062 Dia ; Preset = x.xxx Dia					
MAXIMUM Rod Diameter; Range = 0.500-1.062 Default = 1.062 Dia ; Preset = x.xxx Dia					
"ENGINEERING Functions"					
BACK	ENG'R	_____	MIN	MAX	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-4)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(See page 3-2)

F3: Key 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 3-6)

OPERATOR'S MANUAL

GP #34, Engineering Setup Screen 5

MIMIMUM Cut Length; Range= 0.062-0.125 Default = 0.060 In ; Preset = xx.xxx In					
MAXIMUM Cut Length; Range = 12.000-15.000 Default = 14.000 In ; Preset = xx.xxx In					
"ENGINEERING Functions"					
BACK	ENG'R	_____	MIN	MAX	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-5)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(See page 3-2)

F3: Key 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.
Range is dependent upon machine build.

F6: MORE - Press this key to view more screens to change Register Values to
customize for each Machine. (See page 3-7)

OPERATOR'S MANUAL

GP #35, Engineering Setup Screen 6

MIMIMUM Ctu Speed; Range= 0.10 - 0.20					
Default = 0.10 IPM ; Preset = xx.xx IPM					
MAXIMUM Cut Speed; Range= 3.00 - 5.00					
Default = 4.01 IPM ; Preset = xx.xx IPM					
"ENGINEERING Functions"					
BACK	ENG'R	_____	MIN	MAX	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (Seepage 3-6)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(Seepage 3-2)

F3: Key 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. (Seepage 3-8)

OPERATOR'S MANUAL

GP #36, Engineering Setup Screen 7

Minimum NIP AMOUNT; Range= 0.062-0.125 Default = 0.062 In ; Preset = xx.xxx In Oiler cycle Time Per Shot of Oil (5-10) Default 5 Minutes ; Preset = xx Minutes "ENGINEERING Functions"					
BACK	ENG'R	_____	NIP	MINUT	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-7)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(See page 3-2)

F3: Key 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 3-9)

OPERATOR'S MANUAL

GP #37, Engineering Setup Screen 8

Minimum BREAK THRU (%) of Rod Diameter Default = 25 % ; Preset = xx % Maximum BREAK THRU (%) of Rod Diameter Default = 95 % ; Preset = xx % "ENGINEERING Functions"					
BACK	ENG'R	_____	MIN	MAX	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-8)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(See page 3-2)

F3: Key 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 50% 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 3-10)

OPERATOR'S MANUAL

GP #38, Engineering Setup Screen 9

WHEEL WEAR Compensation will change with each +/- key by the Incremental amount of Default = 0.001 In ; Preset = x.xxx In Lead Screw Resoultion is 0.0003 Inch. "ENGINEERING Functions"					
BACK	ENG'R	_____	INCRE	_____	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (Seepage 3-9)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(Seepage 3-2)

F3: Key not used.

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

F5: Key not used.

F6: MORE -- Press this key to view more screens to change Register Values to
customize for each Machine. (Seepage 3-11)

OPERATOR'S MANUAL

GP #39, Engineering Setup Screen 10

Rod End Sensor to Wheel Side Compensation will change with each +/- key by the Incremental amount of: Default = 0.002 In ; Preset = x.xxx In "ENGINEERING Functions"					
BACK	ENG'R	_____	INCRE	_____	MORE
F1	F2	F3	F4	F5	F6

F1: BACK -- Return to the previous screen. (See page 3-10)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(See page 3-2)

F3: Key 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: Key not used.

F6: MORE - Press this key to view more screens to change Register Values to
customize for each Machine. (See page 3-12)

OPERATOR'S MANUAL

GP #40, Engineering Setup Screen 11

WHEEL HEAD Over Travel Software Limit: Default = 2.062 In ; Preset = x.xxx In					
WHEEL HEAD Backlash Compensator: Default = 0.200 In ; Preset = x.xxx In					
"ENGINEERING Functions"					
BACK	ENG'R	_____	WH-OT	WH-BL	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-11)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(See page 3-2)

F3: Key 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 back of the clearance slot.

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 3-13)

OPERATOR'S MANUAL

GP #41, Engineering Setup Screen 12

Wheel to Rod Advance Safety Air Gap: Default = 0.050 In ; Preset = x.xxx In Wheel Over Cut of Rod amount: Default = 0.050 In ; Preset = x.xxx In "ENGINEERING Functions"					
BACK	ENG'R	_____	AIR-G	OVCUT	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-12)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(See page 3-2)

F3: Key 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 3-14)

OPERATOR'S MANUAL

GP #42, Engineering Setup Screen 13

ORIGINAL Distance from the VEE CENTER to the O.D. of a 8" Cut Off Wheel is: Default = 1.500 In ; Preset = x.xxx In Important: Please Measure this Distance "ENGINEERING Functions"					
BACK	ENG'R	_____	VEE-W	_____	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-13)

F2: ENG'R - Press this key to go back to the Engineering Screen #1.
(See page 3-2)

F3: Key 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: Key not used.

F6: MORE - Press this key to view more screens to change Register Values to customize for each Machine. (See page 3-15)

OPERATOR'S MANUAL

GP #43, Engineering Setup Screen 14

Sensor to Wheel OFFSET Comp. Per O.D.					
Sensor to Wheel Reference = x.xxx In					
1/16" OD ; Ref. = xx.xxx In					
1/8" OD ; Ref. = xx.xxx In					
1/4" OD ; Ref. = xx.xxx In					
BACK	REF.	1/16"	1/8"	1/4"	MORE
F1	F2	F3	F4	F5	F6

F1: BACK - Return to the previous screen. (See page 3-14)

F2: REF. - Press this key to write the value of Sensor to Wheel distance for Rod diameter to be used. The operator can change this value when they look up the references from their chart.

F3: 1/16" - Press this key to write the value of the Sensor to Wheel distance for a 1/16" diameter rod.

F4: 1/8" - Press this key to write the value of the Sensor to Wheel distance for a 1/8" diameter rod.

F5: 1/4" - Press this key to write the value of the Sensor to Wheel distance for a 1/4" diameter rod.

F6: MORE - Press this key to view more screens to change Register Values to customize for each Machine. (See page 3-16)

OPERATOR'S MANUAL

GP #44, Engineering Setup Screen 15

Sensor to Wheel Comp. Values Per O.D.					
3/8" OD ; Ref. = xx.xxx In					
1/2" OD ; Ref. = xx.xxx In					
3/4" OD ; Ref. = xx.xxx In					
1" OD ; Ref. = xx.xxx In					
BACK	3/8"	1/2"	3/4"	1"	ENG'R
F1	F2	F3	F4	F5	F6

F1: BACK - Press this key to return to the previous screen. (See page 3-15)

F3: 3/8" -- Press this key to write the value of the Sensor to Wheel distance for a 3/8" diameter rod.

F4: 1/2" -- Press this key to write the value of the Sensor to Wheel distance for a 1/2" diameter rod.

F5: 3/4" -- Press this key to write the value of the Sensor to Wheel distance for a 3/4" diameter rod.

F6: 1" -- Press this key to write the value of the Sensor to Wheel distance for a 1" diameter rod.

F6: ENG'R - Press this key to go back to the Engineering Screen #1. (See page 3-2)

OPERATOR'S MANUAL

Rod End Sensor to Wheel Calculations

The distance from the Proximity Switch to the wheel can be established by carefully pushing a selected diameter rod up to the sensor to find where the signal led activates.

First, adjust the sensor gain by placing the edge of a 1/16" diameter rod to the center of the sensor target.

The distances will vary with the sensor gain adjustment. This will be 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 the F6 key (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).

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 Diameter	Sensor 1/16"Ref.	Difference From Reference
1/16" (1.50 mm)	[2.312"]	+0.000" (0.00 mm)
1/8" (3.00 mm)		+0.062" (+3.00 mm)
1/4" (6.00 mm)		+0.145" (+3.68 mm)
3/8" (10.00 mm)		+0.135" (+3.43 mm)
1/2" (13.00 mm)		+0.105" (+2.67 mm)
3/4" (19.00 mm)		+0.085" (+2.16 mm)
1" (25.00 mm)		+0.020" +(0.51 mm)

Test Run: 1-14-99

Revised: 3/30/2002

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