Figure 7-1. The Three Basic Sections of the Run/Programming Screen

SECTION 7.
RUN/PROGRAMMING SCREEN

The machine is operated from the Run/Programming Screen. This is also the screen which is used for programming purposes, so many of the information displays and touchbuttons are functional when programming as well as when operating the machine.

For the purpose of explaining the screen, it can be divided into the three sections described below.

HEADER SECTION

The Header Section of the Run/Programming Screen contains four types of information and control features. System access functions are available from the Run/Programming Screen. Certain overal machine functions are controlled from this portion of the screen. This portion of the screen also controls the appearance of the programming section, and acts as a parts counter during machine operation.

PROGRAMMING SECTION

The Programming Section of the screen provides an area for creating programs when graphic programming is not used. In addition, it provides program information for existing programs during machine operation. Because existing programs can be modified prior to running, it also functions as an area where such modifications can be made. Complete programming information is provided in Sections 10, Manual Programming, and Section 11, Graphic Programming.

OPERATION SECTION

The Operation Section of the screen provides detailed information required by the operator during machine operation. Complete information on machine operation is provided in Section 8, Operation.
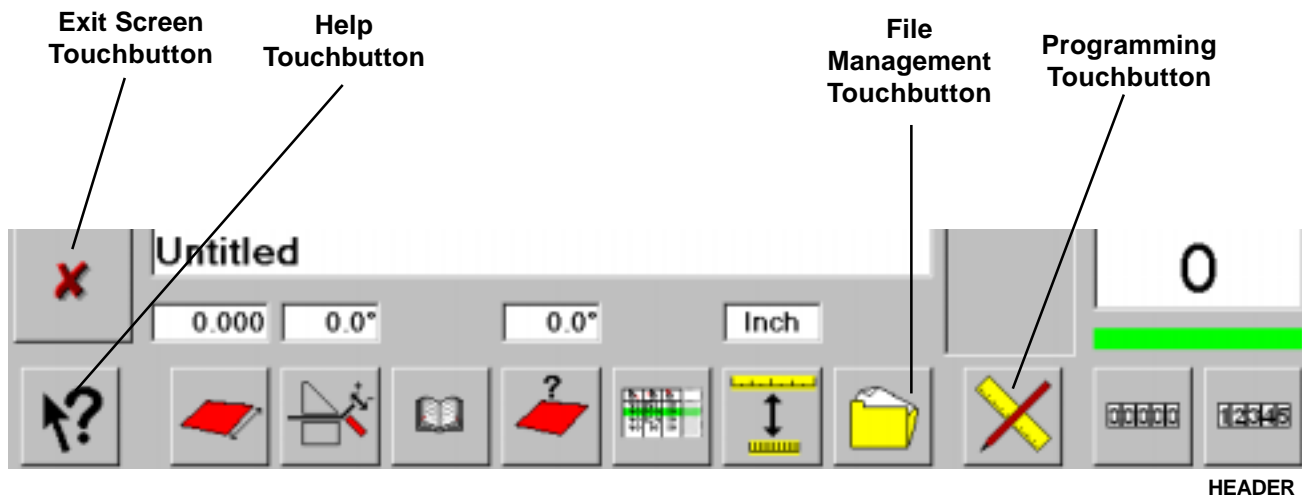
Figure 7-2.; The Header Section of the Run/Programming Screen and System Access Touchbuttons

SYSTEM FUNCTIONS

Touchbuttons for System Functions are contained in the Header Portion of the Run/Programming Screen. These are identified in Figure 7-2.

HELP TOUCHBUTTON

The Help Touchbutton is used to provide an explanation of the various touchbuttons on the screen. A complete explanation of use of this touchbutton is included with Figure 6-1 in Section 6, Main Screen.

FILE MANAGEMENT TOUCHBUTTON

Pressing the File Management Touchbutton opens a pop-up window for managing part programs. Through file management, directores can be created or deleted, and existing programs can be opened, or deleted. Section 12, File Management ,provides a complete explanation of these activities.

PROGRAMMING TOUCHBUTTON

Pressing the Programming Touchbutton puts the system in the programming mode. A complete explanation of programming procedures is given in Section 10, Manual Programming, and Section 11, Graphic Programming.

EXIT SCREEN TOUCHBUTTON

The Exit Screen Touchbutton closes the Programming and Operations screen when pressed, and returns the operator to the Main screen.

If the Run/Programming Screen contains program information from a run operation or a programming operation, the operator must make a decision to save the screen information or discard it before he is returned to the Main Screen. Complete details are given in Section 8, Operation, Section 10, Manual Programming, and Section 11, Graphic Programming.
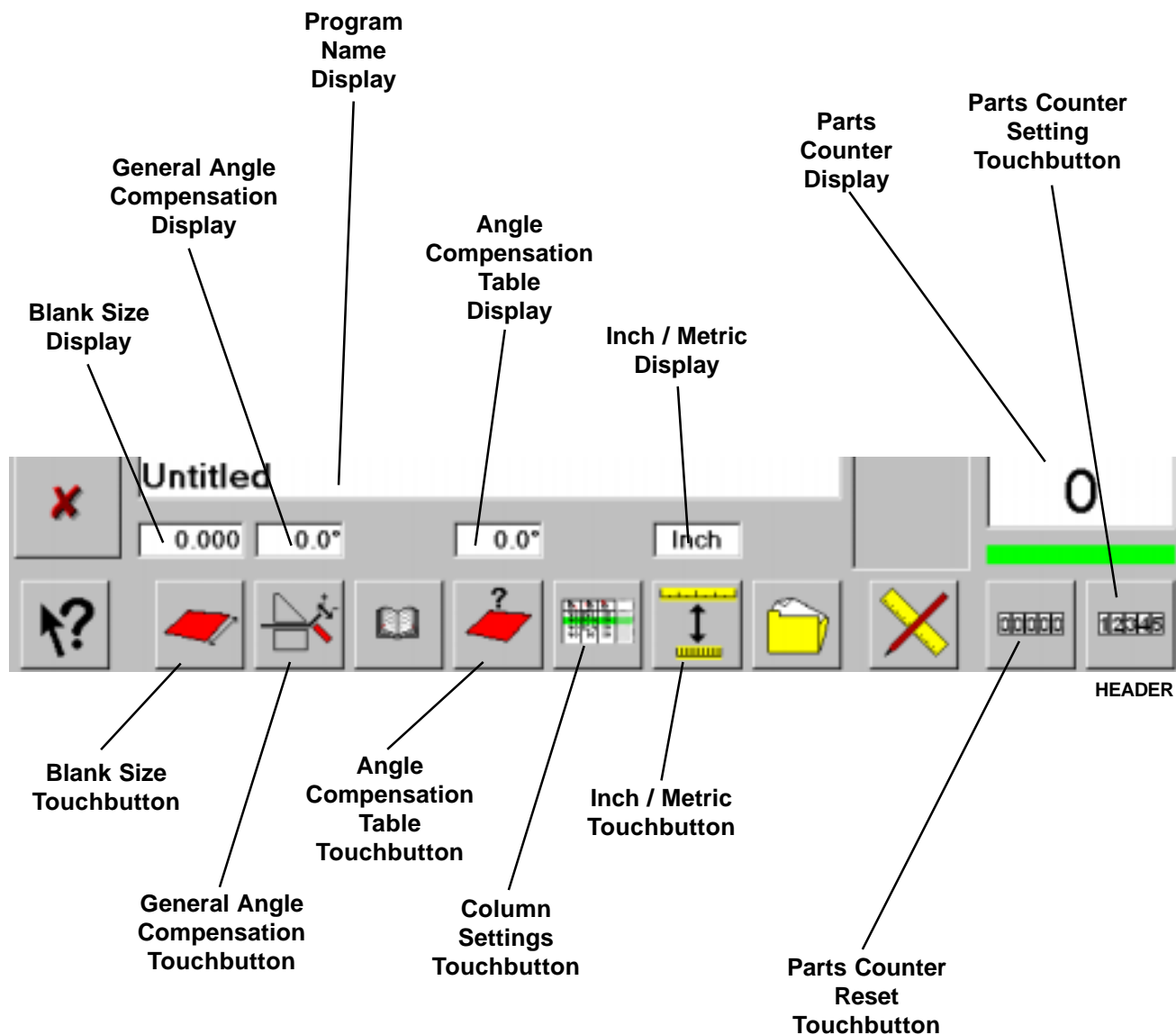
Figure 7-3. The Header Section of the Run/Programming Screen Showing General performance Touchbuttons

GENERAL MACHINE FUNCTION TOUCHBUTTONS

The General Machine Performance Touchbuttons control certain areas of machine performance. These areas pertain to overall performance, regardless of the operation being performed. Some of them are calculated by the system, and others can be overridden for individual operations by special programming.

PROGRAM NAME DISPLAY

The Program Name Display shows the name of the program being run, or modified. If the program is being prepared, the word "Untitled" appears in this display until the program is assigned a name and saved.

BLANK SIZE DISPLAY

The Blank Size Display shows the blank size used for the part being produced by the program being run. This value may be an entered value, or it may be a calculated value produced when the program was produced by the graphic programming method.

BLANK SIZE TOUCHBUTTON

The Blank Size Touchbutton allows entry of the blank size if none exists. See Figure 10-8 in Section 10, Manual Programming, for an explanation of the method used to enter a blank size.

GENERAL ANGLE COMPENSATION DISPLAY

The General Angle Compensation Display shows the amount of general angle compensation applied to machine operation. Compensation can be either a positive or a negative value. The compensation pertains to all bending operations for the program being performed.

GENERAL ANGLE COMPENSATION TOUCHBUTTON

The General Angle Compensation Touchbutton allows entry of general angle compensation. See Figure 10-8 in Section 10, Manual Programming, for an explanation of the method used to enter general angle compensation.

INCH / METRIC DISPLAY

The Inch/Metric Display shows which units of measure are being used by the machine for the operation at hand.

INCH/METRIC TOUCHBUTTON

The Inch/Metric button toggles the Inch/Metric Display between inches and millimeters. Internally, the entire memory is converted to display all length measurements in the chosen form: backgauge position, blank size, and hem offsets. The part program is not affected in any way.
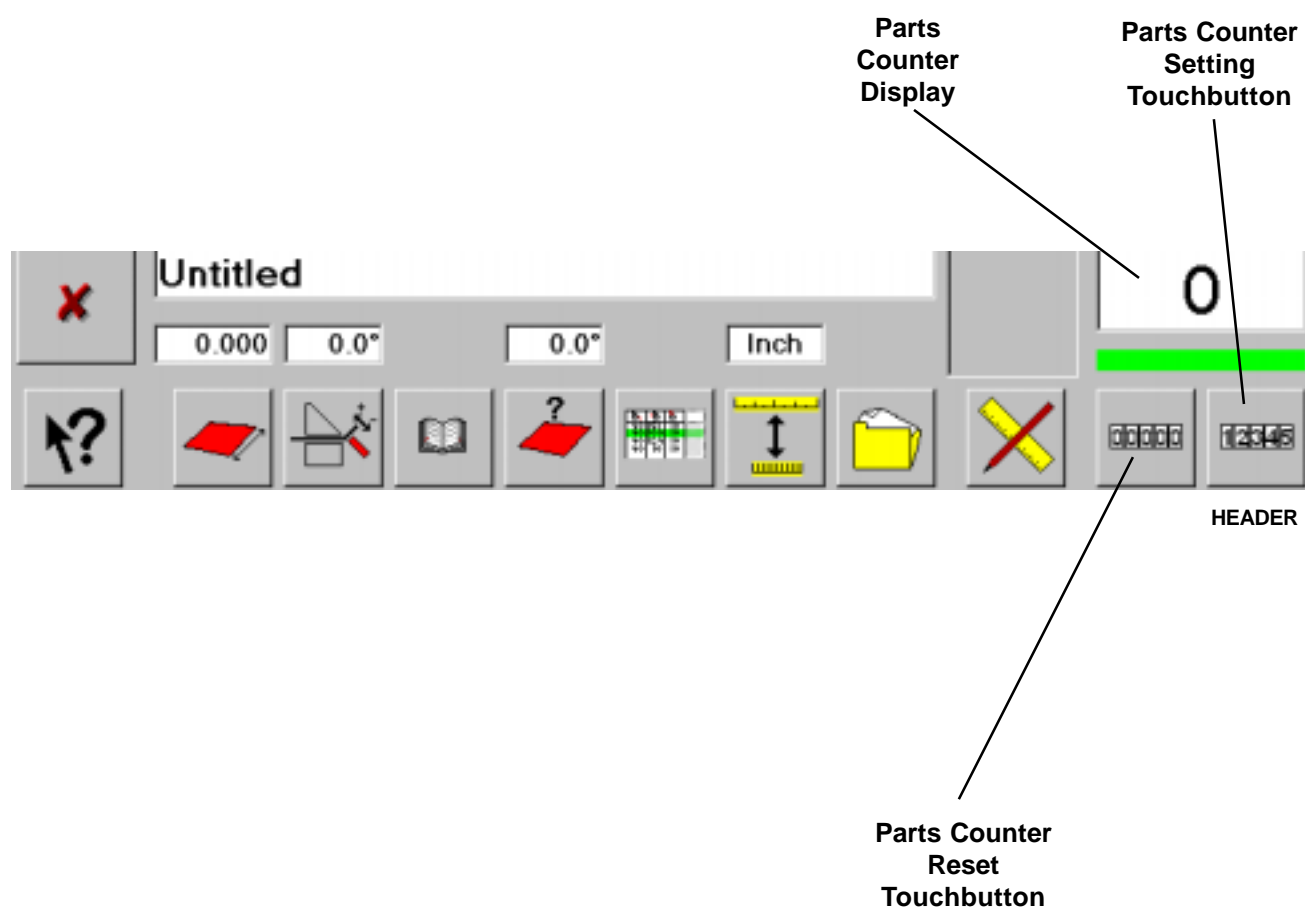
Parts
Counter
Display

Parts Counter
Setting
Touchbutton

HEADER

Parts Counter
Reset
Touchbutton

Figure 7-4. The Header Section of the Run/Programming Screen Showing Parts Counter Touchbuttons

HEADER OPERATION COMPONENTS

The Header Section of the Run/Programming Screen contains part counting and count setting components. These items function only when the machine is running a bending program.

PARTS COUNTER DISPLAY

The Parts Counter Display shows the number of parts being run. It displays the number in one of two ways. If the Setting Touchbutton was used to set the numbr of parts wanted, the Display counts backward from the total wanted to "Zero". When "Zero" is reached, the part program has ben completed. If the Reset Touchbutton was used, the machine is set to "Zero", and the machine counts upward as parts are run.

PARTS COUNTDOWN SETTING TOUCHBUTTON

The Parts Counter Setting Touchbutton sets the number of parts to be run. See Section 8 and Figure 8-4.

PARTS COUNTER RESET TOUCHBUTTON

The Parts Counter Reset Touchbutton resets the Parts Counter Display to Zero.
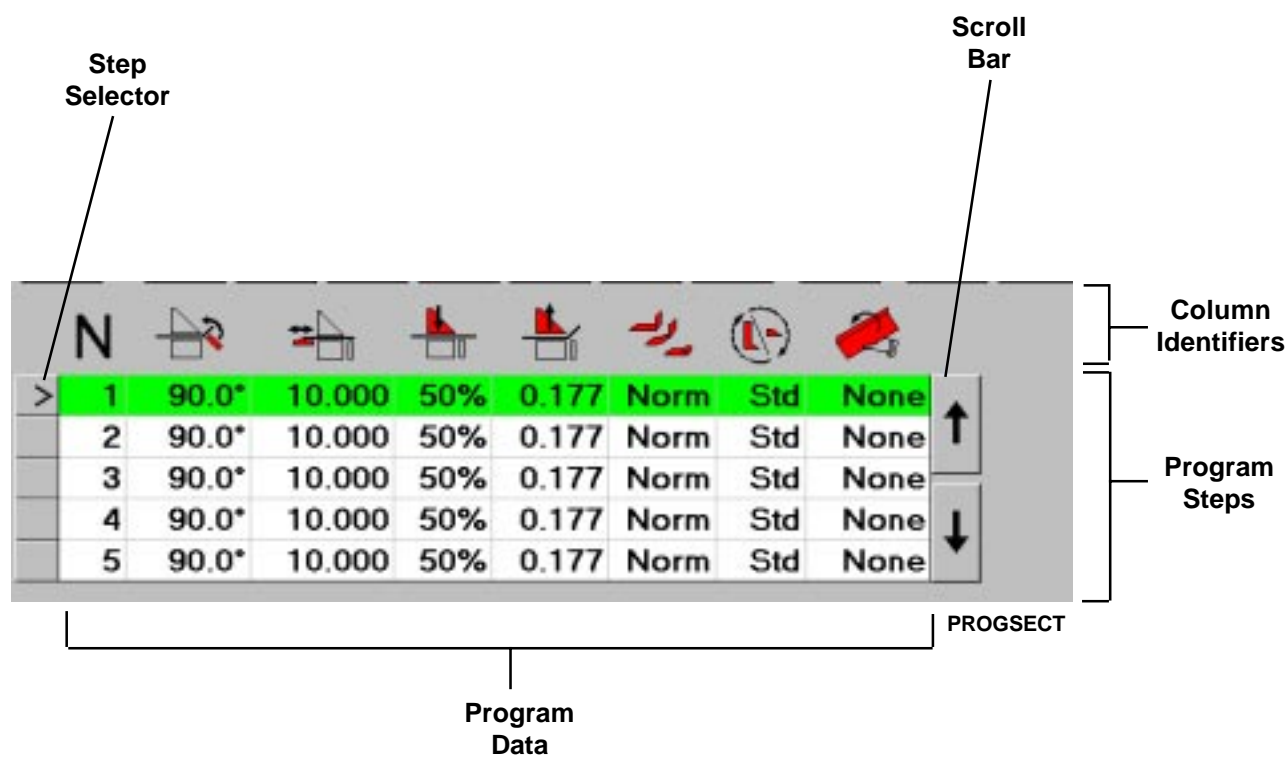
Figure 7-5. The Part Program Section of the Run/Programming Screen

PART PROGRAM SECTION

The Part Program Section of the Run/Programming Screen is shown in Figure 7-5. It contains the programmed information for forming the work material. It is the portion of the screen used to create new programs. Complete Programming procedures are provided in Section 10, Manual Programming, and Section 11, Graphic Programming.

It is also the portion of the screen which contains program data during operation, where operator interaction is necessary. Complete instructions are provided in Section 8, Operation.

Because existing programs can be modified before they are run, this portion of the screen also provides a location for modifying program data. Modification instructions are also provided in Section 8, Operation.

PROGRAM DATA

Program Data is provided in table format in the Program Data portion of the screen. Data for each step, or operation, is contained in a horizontal row across the program data area.

PROGRAM STEPS

Each step is listed in order, starting with Step 1. The information is arranged in a series of columns, starting with the operation number.

COLUMN IDENTIFIERS

The Column Identifiers are presented in a row across the top of the Program Data area. Because there are more columns available than the screen can hold, some columns can be removed from the screen. An explanation of these identifiers is provided with Figure 6-6.

SCROLL BAR

The arrows located to the right of the display scroll up or down through the program, one operation at a time.
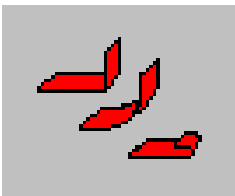
STEP SELECTOR

Any of the operations currently shown on the screen can be accessed directly by pressing the Step Selector immediately to the left of the operation: the selected operation is always highlighted in green.

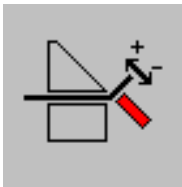**Needed for Each Operation Always Visible on Screen**
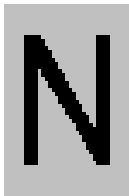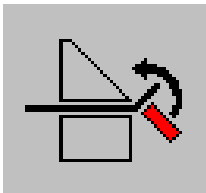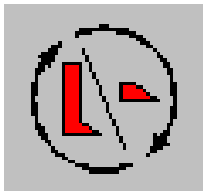
Needed for Each Operation May Be hidden

Special Values Not Required Usually hidden
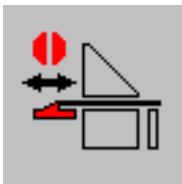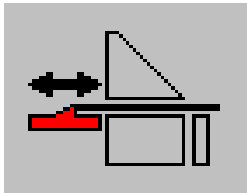
Operation Number

Bend Type

Angle Compensation

Bend Angle

Tooling Position

Backgauge Pause

Backgauge Position
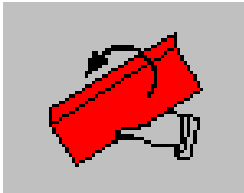
Material Handling
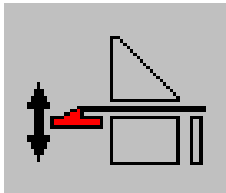
Backgauge Height Position
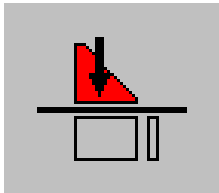
Clamping Pressure
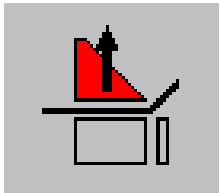
Open Height

ARTNOS		
ENN	BENDTYPE	ANGCOMP
BENDANG	TOOLPOS	BACKPSE
BACKGAGE	MATLHAND	BACKHT
CLAMPPSI		
OPENHT		

Figure 7-6. Column Symbols

COLUMN SYMBOLS

The Column Identifiers which appear in a row across the top of the Program Data area are shown in Figure 7-6. They are presented as symbols to avoid the need for translation into languages other than English.

Because there are more columns available than the screen can hold, some columns and their Identifiers are usually hidden. Procedures for hiding columns are given in both Section 8, Operation, and Sections 10, Manual Programming; and Section 11, Graphic Programming.

Five of the column Identifiers cannot be hidden, and the columns always appear on the screen. Three of the the Identifiers can be hidden, but the information contained in the columns is required for operation. Hiding a column does not remove that data from the program. Three Identifiers are usually hidden; they identify columns whose data is not required, or is required only for certain specially equipped machines.

OPERATION NUMBER

The Operation Number column identifies each operation of the part program in the order the part is to be formed.

BEND ANGLE

The Bend Angle column lists the programmed bend angle for each operation.

BACKGAUGE POSITION

The Backgauge Position column lists the programmed location of the backgauge stop as measured from the nose of the upper tooling.

CLAMPING PRESSURE

The Clamping Pressure column lists the clamp pressure the upper tooling places against the work material. The pressure is expressed as a percentage of the maximum available, and applies to the current operation only. Therefore, each operation may have a different clamping pressure if desired.

OPEN HEIGHT

The Open Height column lists the distance the upper beam will move upward after the current operation is complete.

The upper jaw will also move to this height prior to flattening a hem. If the Open Height in the first operation is greater than the upper jaw's starting position, the upper jaw will open until it reaches the designated position.
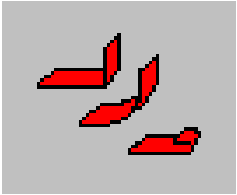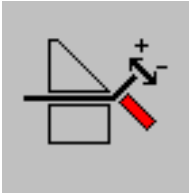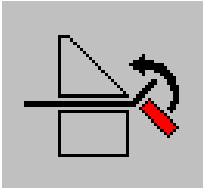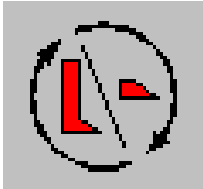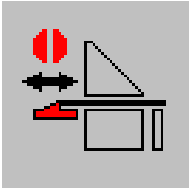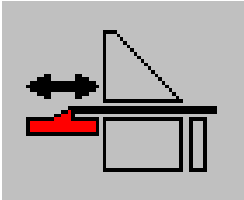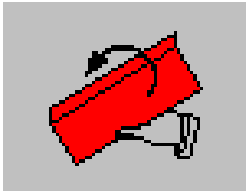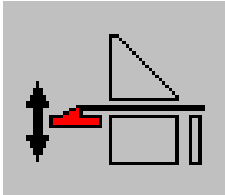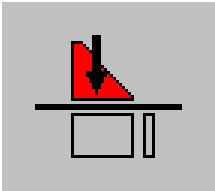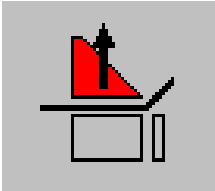
Needed for Each Operation Always Visible on Screen	Needed for Each Operation May Be hidden	Used With Special Equipment Usually hidden
Operation Number	**Bend Type**	**Angle Compensation**
Bend Angle	**Tooling Position**	**Backgauge Pause**
Backgauge Position	**Material Handling**	**Backgauge Height Position**
Clamping Pressure		
Open Height		

ARTNOS		
ENN	BENDTYPE	ANGCOMP
BENDANG	TOOLPOS	BACKPSE
BACKGAGE	MATLHAND	BACKHT
CLAMPPSI		
OPENHT		

Figure 7-6.   Column Identifiers (continued)

BEND TYPE The Bend Type column lists the type of bend programmed. Complete information on bend types is given in both Section 8, Operation, Section 10, Manual Programming, and Section 11, Graphic Programming.

TOOLING POSITION The Tooling Position column lists the type of tooling to be used in the current operation: the choices are Standard or Box. This feature is only functional on machines equipped with the Kombi rotating upper beam. Complete information on tooling positions is given in Section 8, Operation, Section 10, Manual Programming, and Section 11, Graphic Programming.

MATERIAL HANDLING The Material Handling column provides handling instructions to be used by the operator for the current operation. The type of handling is "abbreviated" in the column; it is also graphically represented in the lower right-hand corner of the Run/Programming Screen. Complete information on material handling is given in Section 8, Operation, Section 10, Manual Programming, and Section 11, Graphic Programming.

ANGLE COMPENSATION The Angle Compensation column lists an angle compensation value for the current operation only. This compensation is in addition to any general angle compensation and any included from angle correction tables. Angle compensation can be a positive or a negative number. (Negative numbers actually reduce the overall compensation applied to the bend.)

BACKGAUGE PAUSE The Backgauge Pause column provides a means to halt the motion of the backgauge and lower the backgauge fingers during any operation. If the Backgauge Pause is set to "Yes", then the backgauge will not move to the programmed position of the current operation until either the clamp or the unclamp foot pedal is pressed. This gives the operator time to position or rotate the work material on the backgauge table without scratching it on the backgauge fingers. Complete information on the backgauge pause feature is given in Section 8, Operation, Section 10, Manual Programming, and Section 11, Graphic Programming.

BACKGAUGE HEIGHT POSITION The Backgauge Height Position column lists the programmed vertical position of the backgauge table on those machines equipped with this feature.

Current Operation Display

Steps-in-Operation Display

Programmed Bend Angle Display

Backgauge Setting Display

OPERSECT

Total Operations Display

Information Display

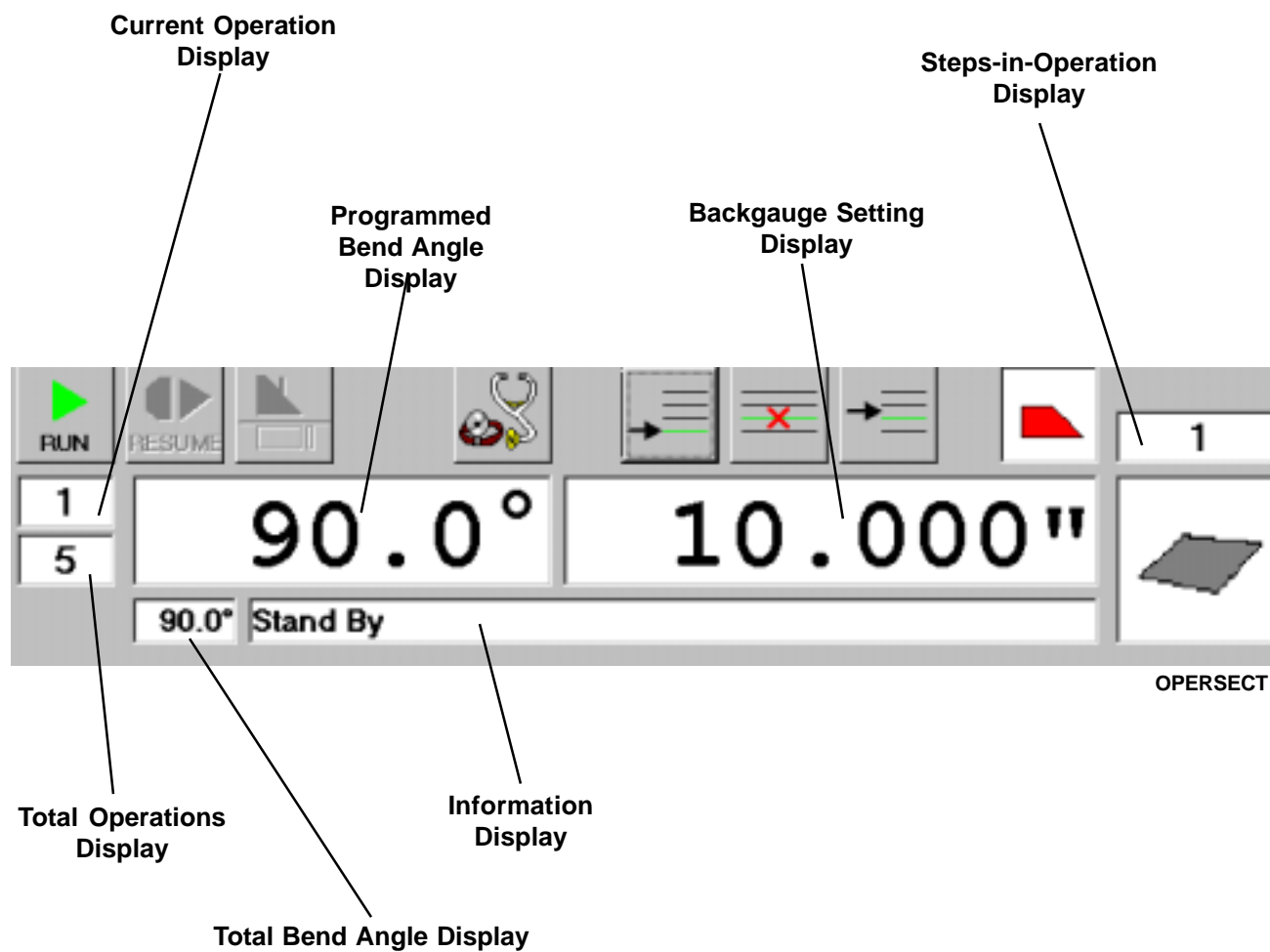**Total Bend Angle Display**

Figure 7-7. Current Operation Section of the Run/Programming Screen

CURRENT OPERATION SECTION

The Current Operation section of the Run/Programming Screen is the portion of the screen used to run existing programs. It contains touchbuttons which control the run cycle, and provides information on the program being run.

INFORMATION DISPLAY

The Information Display provides information regarding machine status or action required by the operator. When a portion of the machine is in motion, the message window will state what the machine is doing. If the machine requires operator action, the Information Display will prompt the operator. If there is a machine fault, the display will provide an appropriate warning. When the Emergency Stop is engaged the message will display that fact.

CURRENT OPERATION DISPLAY

The Current Operation Display provides the number of the operation being performed.

STEPS-IN-OPERATION DISPLAY

The Steps-in-Operation Display provides the current step being performed during the opration. For instance: a hemming operation will have two steps, while a radius bending operation may have many. The display counts down from the total number required to "Zero".

TOTAL OPERATIONS DISPLAY

The Total Operations Display provides the number of the final operation in the program.

PROGRAMMED BEND ANGLE DISPLAY

The Programmed Bend Angle Display provides the bend angle programmed for the opration being performed.

TOTAL BEND ANGLE DISPLAY

The Total Bend Angle Display provides the actual bend angle to which the machine will work when all the compensating factors have been taken into account. It may be more or less than the programmed bend angle.

BACKGAUGE SETTING DISPLAY

The backgauge Setting Display provides the programmed distance from the backgauge to the bend point between the machine jaws.

**Delete Operation
Touchbutton**

**Add Operation
Touchbutton**

**Insert Operation
Touchbutton**

ADDDEL
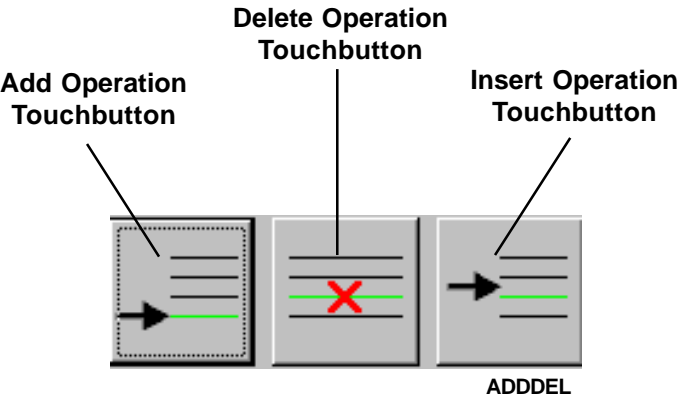
Figure 7-8. Operation Touchbuttons

**Clamp Presssure
Touchbutton**

**Resume
Touchbutton**

**Stop
Touchbutton**

**Run
Touchbutton**

RESUME

STOP

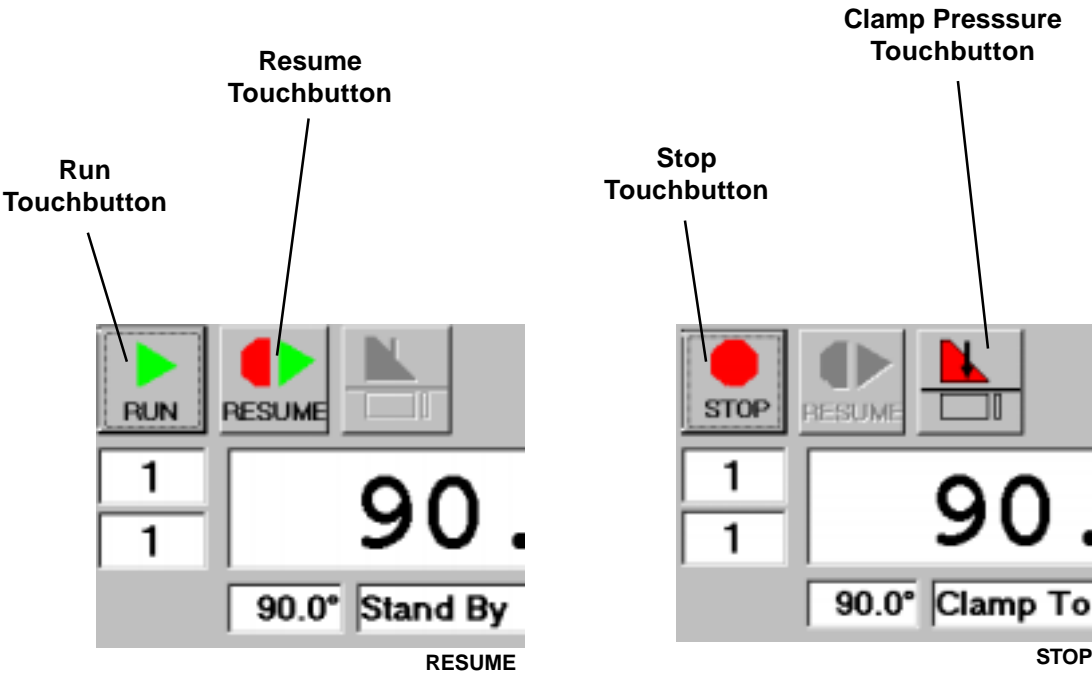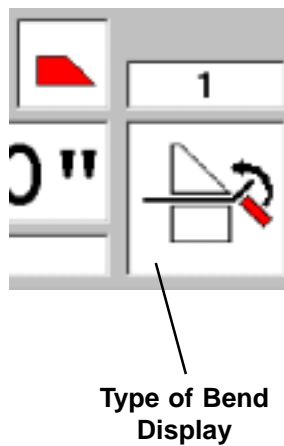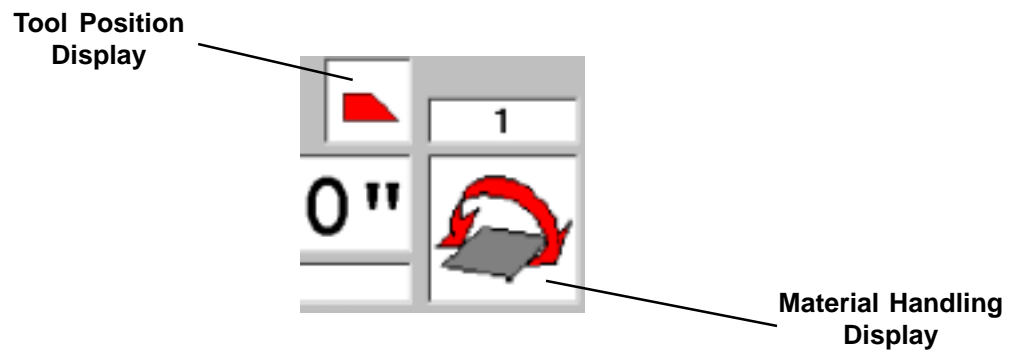**Figure 7-9. Operational Touchbuttons**

OPERATION TOUCHBUTTONS

The three buttons located in the center of the Current Operation Section of the Run/Programming Screen, and shown in Figure 7-8, enables the operator to create or modify existing programs. Complete modification instructions are contained in Section 8, Operation and Section 10, Manual Programming.

ADD OPERATION TOUCHBUTTON

The Add Operation Touchbutton creates a new operation at the end of the program.

DELETE OPERATION TOUCHBUTTON

The Delete Operation Touchbutton deletes the highlighted operation within the program.

INSERT OPERATION TOUCHBUTTON

The Insert Operation Touchbutton inserts an operation before the highlighted operation, and renumbers all following operations accordingly.

OPERATIONAL TOUCHBUTTONS

The Operational Touchbuttons are shown in Figure 7-9. They control starting, stopping, and emergency unclamping of the machine.

RUN TOUCHBUTTON

The Run Touchbutton starts machine operation. Whenever it is pressed, the machine starts the bending process from the first operation of the program. When the Run Touchbutton is pressed it is also replaced by the Stop Touchbutton.

STOP TOUCHBUTTON

The Stop Touchbutton halts machine operation at the end of the current operation. When the Stop Touchbutton is pressed it is also replaced by the Run Touchbutton.

RESUME TOUCHBUTTON

The Resume Touchbutton enables the machine operator to resume a program which has been stopped before it has been completed. When pressed, it starts the bending program at the operation following the operation during which the machine was stopped.

CLAMP PRESSURE TOUCHBUTTON

The Clamp Pressure Touchbutton unclamps the clamping beam after the machine has been stopped in the middle of a program.

The upper beam portion of the Clamp Pressure Touchbutton also signals when the machine is ready to begin operation. When the upper beam symbol is green, the machine is ready to bend the work material. The Information Display will also read "Ready to Bend".

Bending can be done when the mahine is not fully clamped. The clamping beam must be within 4 mm of the bending beam to do so. When this type of bending is done, the maximum bend angle is 90⁰.

**Tool Position
Display**

**Material Handling
Display**

Figure 7-10. Tooling and Material handling Displays

**Type of Bend
Display**

Figure 7-11. Type of Bend Display

TOOLING AND MATERIAL HANDLING DISPLAYS

The Tooling and Material Handling Displays are shown in Figure 7-10.

TOOL POSITION DISPLAY

The Tool Position Display shows which type of tooling is being used for the bend operation being performed. If the machine is not equipped with a Kombi Beam, this display does not change during operation.

MATERIAL HANDLING DISPLAY

The Material Handling Display is active while the machine is paused between bends. It shows the operator graphically how he should reposition the part for the next bending operation.

TYPE OF BEND DISPLAY

The Type of Bend Display is shown in Figure 7-11. It replaces the Material Handling Display during the bending operation, and after the Clamp Pressure Touchbutton turns green. It shows the type of bend being performed.