New Operating Instructions for the 855 Smart Bender™
with 500 1733.0 Microprocessor Board.
Serial Code ZW

Read and understand this material before operating or servicing this bender. This material should be used in conjunction with Smart Bender™ Instruction Manual and Service Bulletin. Refer to IM-1187 and SB250 for Serial Numbers ZW0001 - ZW1999 or IM-1238 and SB264 for Serial Numbers ZW2000 and up. Failure to understand how to safely operate the bender could result in an accident causing serious injury or death. This tool should only be operated by qualified personnel.
SAVE THESE INSTRUCTIONS!

**Introduction**

The new 500 1733.0 Microprocessor Board replaces the 503 8312.4 Microprocessor Board. For Microprocessor board replacement procedures, see Smart Bender™ Service Bulletin SB250 for Serial Numbers ZW0001 - ZW1999 or SB264 for Serial Numbers ZW2000 and up.

The new Microprocessor has many new features:

- The bending shoes will rotate a restricted amount in the bend direction, to prevent accidentally running a hook into the conduit. When the maximum has been reached, BEND and JOG keys will not function. Use the UNLOAD key to rotate the shoes to the desired position.

- The Bender will not operate when the 1-1/2" and 2" roller system is engaged for Rigid steel conduit. For 1-1/2" & 2" Rigid aluminum conduit, bend as IMC conduit with the squeeze reduced two positions (clockwise), and the conduit type selector switch set to IMC.

- Programmable bend angle adjustments to compensate for over and under bending conduit.

- Standard pendant will display H. and the deluxe pendant screen will show SET HOME POSITION to remind you when the home position switch has not been set for the selected size and type of conduit.

- Aluminum Rigid “ALM” conduit type setting and programming will be available with the deluxe pendant control. To select aluminum rigid conduit, press the conduit type key until ALM is displayed. Each press on the conduit type key will cycle through the conduit types in order of EMT, IMC, RIG, ALM, etc.

New operating instructions are described separately for the Standard Pendant and the Deluxe Pendant. These instructions should be used in conjunction with the Smart Bender Instruction Manual (IM 1187 for serial numbers ZW0001 - ZW1999, and IM 1238 for serial numbers ZW2000 and up).

**Standard Pendant Operation**

Bender set-up and pendant functions have not changed. When power to the bender is turned on, the pendant will display H.. This indicates that the home position must be initialized for the selected size and type of conduit.

Before installing conduit, press UNLOAD until the shoe hook for the size and type of conduit selected is at the bottom (5 o’clock position). Press BEND until the pendant display changes from H. and starts counting. Then press UNLOAD until the shoe rotates backwards and stops. This is the proper load position for the selected size and type of conduit and home position is now set. The display will show H. each time there is a change in conduit type setting, a change in conduit size to the other shoe, and when power to the bender has been interrupted.

ANGLE SELECT UP and ANGLE SELECT DOWN keys will not function when the pendant displays H.. To program a bend, first initialize home position. Initializing home position for a different type or size of conduit will not erase a programmed bend angle. A bend angle will remain in memory until the CLEAR key is pressed, a new angle is programmed, or power to the bender is interrupted. A programmed bend will be erased if the CLEAR key is pressed while the pendant display shows H..

**New Accuracy Adjust Feature:** Due to variations in conduit, you may notice the bender consistently over or under bending a particular size and type of conduit. Programmed adjustments can be made to compensate for over and under bending conduit. Minus 9 to plus 9 degree adjustments can be made for each size and type of conduit. To program a bend angle adjustment, press and hold CLEAR, then press and hold BEND until Pr is displayed. Release both keys. Pr will be displayed approximately two seconds, followed by a blinking display to indicate programming Adjust mode. Adjust the degrees of bend by pressing the ANGLE SELECT up and down controls. ANGLE SELECT UP will increase and ANGLE SELECT DOWN will decrease the bend angle for the size and type of conduit selected by the
rotary selector switches. CLEAR will reset the adjust angle to zero, which is the factory setting. Any adjust angle may be displayed while in the programming Adjust mode by setting the rotary selector switches to the desired size and type of conduit. Press BEND to save the adjust angle and exit the Adjust mode. Only changes to the last displayed value will be saved. Changes saved are to permanent memory in the bender and can only be changed by reprogramming. The pendant will display \textbf{OP} for two seconds when the bender returns to the normal operating mode.

A programmed bend will be erased when you enter the Accuracy Adjust Mode.

**Deluxe Pendant Operation**

A new selection for aluminum Rigid conduit has been added to the conduit type key. To select aluminum Rigid conduit, press the conduit type key until \textbf{ALM} is displayed. Each press on the conduit type key will cycle through the conduit types in order of \textbf{EMT}, \textbf{IMC}, \textbf{RIG}, \textbf{ALM}, and then repeats the sequence. For 1-1/2" & 2" Rigid aluminum conduit sizes, bend as IMC conduit with the squeeze reduced two positions (clockwise).

The pendant screen will now display \textbf{SET HOME POSITION} when BEND, JOG, or UNLOAD key is pressed and until the home switch has been initialized for the size and type of conduit selected. Before installing conduit, press UNLOAD until the shoe hook for the size and type of conduit selected is at the bottom (5 o’clock position). Press BEND until the pendant display changes from \textbf{SET HOME POSITION} and starts counting. Then press UNLOAD until the shoe rotates backwards and stops.

This is the proper load position for the selected size and type of conduit and home position is now set. The display will show \textbf{SET HOME POSITION} each time BEND, JOG, or UNLOAD is pressed after there is a change to conduit type, conduit size change to the other shoe, after pressing RESET, and when power to the bender has been interrupted. \textbf{SET HOME POSITION} prompt will be skipped if the home switch was previously tripped.

**New Accuracy Adjust Feature:** Due to variations in conduit, you may notice the bender consistently over or under bending a particular size and type of conduit. Programmed adjustments can be made to compensate for over and under bending conduit. Minus 9 to plus 9 degree adjustments can be made for each size and type of conduit. To program a bend angle adjustment, press RESET and then press 0 three times. \textbf{PROGRAMMING MODE} will appear on the third line of the display. Enter the desired size and type of conduit. The screen will show the current adjust angle for the selected size and type of conduit and display \textbf{ENTER NUMBER OF DEGREES TO CHANGE} (USE \textbf{.} FOR NEGATIVE). Use the numerical keys and enter the desired change in absolute value to the current adjust angle. The \textbf{.} (decimal) key toggles the negative sign on and off. Pressing the CLEAR NUMBER key changes the adjust angle to 0, which is the factory setting. Any adjust angle may be displayed by pressing the keys for the desired size and type of conduit while in the Accuracy Adjust programming mode. Press \textbf{ENTER} to save the adjust angle and exit the Accuracy Adjust programming mode. Only the change to the last displayed value will be saved. Press \textbf{RESET} to exit the Accuracy Adjust programming mode without saving a program change. Changes saved are to permanent memory in the bender and can only be changed by reprogramming.

**Improvements**

- After completing a fully programmed bend, the deluxe pendant display will now return to the bend layout screen (\textbf{MARK} 1 = … etc.) for repeat bends.
- On a programmed offset or saddle bend, the deluxe pendant display will now proceed to the next bend only after the first bend is complete.