77DL Series Electric Bender
for bending 1/2" thru 2" RIGID - EMT - IMC
and 40 mil PVC coated RIGID Conduit

Operating, Maintenance, Safety
and Parts Manual

Read and understand this material before
operating or servicing this Bender. Failure to
understand how to safely operate and service
this unit may result in serious injury or death.

This manual is free of charge. All personnel who operate this Bender should have a copy
of this manual and read and understand its contents. To request a copy, call or write to the
address below. All information, specifications and product designs may change due to design
improvements or updates and are subject to change without notice. Current Tools does not
assume any liability for damages resulting from misuse or incorrect application of its products.

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Alerts</td>
<td>3</td>
</tr>
<tr>
<td>Important Safety Information</td>
<td>4, 5</td>
</tr>
<tr>
<td>Specifications – 77DL Series Electric Bender</td>
<td>6</td>
</tr>
<tr>
<td>Model Descriptions</td>
<td>6</td>
</tr>
<tr>
<td>Features</td>
<td>6, 7</td>
</tr>
<tr>
<td>Shoe Groups</td>
<td>8</td>
</tr>
<tr>
<td>Conduit Centerline Bending Radii</td>
<td>8</td>
</tr>
<tr>
<td>Grounding Instructions</td>
<td>9</td>
</tr>
<tr>
<td>Mounting Bending Shoes</td>
<td>10</td>
</tr>
<tr>
<td>Mounting Roller Supports</td>
<td>11</td>
</tr>
<tr>
<td>Mounting Instructions for Greenlee® Shoes &amp; Attachments</td>
<td>11</td>
</tr>
<tr>
<td>General Bending Instructions</td>
<td>12, 13</td>
</tr>
<tr>
<td>Stub Up Length Stop Instructions</td>
<td>14</td>
</tr>
<tr>
<td>Bending Instructions for 1 1/2” and 2” EMT &amp; IMC Conduit</td>
<td>15-17</td>
</tr>
<tr>
<td>Squeeze Adjustment Procedure for 1 1/2” and 2” EMT &amp; IMC Roller Supports</td>
<td>18</td>
</tr>
<tr>
<td>Maintenance</td>
<td>19, 20</td>
</tr>
<tr>
<td>Stub-Up Bending Information and Charts</td>
<td>21, 22</td>
</tr>
<tr>
<td>Offset Bending Information and Charts</td>
<td>23, 24</td>
</tr>
<tr>
<td>Troubleshooting</td>
<td>25</td>
</tr>
<tr>
<td>Exploded Views</td>
<td>26-28</td>
</tr>
<tr>
<td>Parts List</td>
<td>29-31</td>
</tr>
<tr>
<td>Electrical System Diagram – 77DL Bender</td>
<td>32</td>
</tr>
<tr>
<td>Parts List – Bending Shoes &amp; Roller Supports</td>
<td>33-37</td>
</tr>
<tr>
<td>Exploded View – Roller Support</td>
<td>38</td>
</tr>
<tr>
<td>Parts List – Roller Support – EMT</td>
<td>39</td>
</tr>
<tr>
<td>Parts List – Roller Support - IMC</td>
<td>40</td>
</tr>
</tbody>
</table>
Safety Alert Symbol

THIS SAFETY SYMBOL is used to call your attention to instructions that concern your personal safety. It means: ATTENTION! BE AWARE! THIS IS AN IMPORTANT SAFETY INSTRUCTION!

Read, understand, and follow these safety instructions. Failure to follow these safety instructions may result in injury or death.

**DANGER**
Immediate hazards which, if not avoided, WILL result in serious personal injury or death.

**WARNING**
Hazards or unsafe practices which, if not avoided, COULD result in serious personal injury or death.

**CAUTION**
Hazards or unsafe practices which, if not avoided, COULD result in minor personal injury or property damage.
NEVER operate the bender in an explosive atmosphere.

**WARNING** NEVER operate the bender in wet or damp locations. Do NOT expose the bender to rain.

**WARNING** ALWAYS use 120 VAC, 20 AMP ground fault protected receptacle for power supply that is properly installed and meets all applicable electrical codes. See grounding instructions on page 9.

**WARNING** ALWAYS inspect power cord before using bender. Replace damaged or worn cords.

**WARNING** ALWAYS disconnect bender before servicing.

**WARNING** ALWAYS make sure switch is in the off position before plugging in. This will reduce the risk of unintentional starting.

**WARNING** Do NOT modify the plug provided with the bender.

**WARNING** ALWAYS use 12-gauge extension cords that have three prong grounding type plugs and three-hole receptacles that accept the bender’s plug. Do NOT use an adapter.

**WARNING** NEVER use an extension cord longer than 100 feet.

**WARNING** ALWAYS replace damaged extension cords.

**WARNING** ALWAYS disconnect the bender before servicing or changing shoes, attachments or roller supports, and when not in use.

**WARNING** ALWAYS inspect the bender before operating. Replace any damaged, missing or worn parts.

**WARNING** NEVER alter this equipment. Doing so will void this warranty.

**WARNING** NEVER remove guards, they are installed for your protection.

**WARNING** ALWAYS check for damaged or worn parts. Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced.
WARNING
ALWAYS use recommended accessories. Consult this manual for recommended accessories. The use of improper accessories may cause risk of injury.

WARNING
ALWAYS keep hands and feet away from pinch points such as bending shoes, roller supports and conduit when bender is in use.

WARNING
Operator must ALWAYS face the front of the bender with the bending degree scale visible and maintain a minimum of 3 feet distance while the conduit is being bent. All other personnel must remain out of the area while the bender is in operation.

WARNING
ALWAYS use appropriate shoe groove and roller support for the type and size conduit to be bent.

WARNING
If bending shoe will not turn, STOP unit and unplug before checking for any obstructions.

WARNING
Do NOT use bender or attachment to do a job for which it was not designed.

WARNING
ALWAYS keep conduit under control when unloading.

WARNING
ALWAYS keep the path of the bending conduit clear of obstructions. Make sure all obstacles are clear of the bending path BEFORE you bend the conduit.

WARNING
Be sure handle is bolted securely to the bender frame before moving or transporting the bender.

WARNING
NEVER stand on bender. Serious injury could occur if the bender is tipped or if the bending shoe is unintentionally contacted.

WARNING
ALWAYS wear approved safety glasses when the bender is in operation.

WARNING
ALWAYS wear proper apparel. Do not wear loose clothing, gloves, neckties, rings, bracelets, or other jewelry which may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.

WARNING
ALWAYS keep children away. All visitors should be kept a safe distance from work area.

WARNING
ALWAYS make bender childproof with lockouts, master switches or by unplugging unit.

CAUTION
The bender and some accessories exceed 50 lbs. and will require more than one person to lift, transport and assemble.

CAUTION
Only use the bender for its intended purpose as specified in this manual.

CAUTION
ALWAYS use this bender in a dry, well lighted area.

CAUTION
ALWAYS maintain bender with care. Keep bender clean for best and safest performance.
SPECIFICATIONS - 77DL SERIES ELECTRIC BENDER

1/2” thru 2” RIGID conduit
1/2” thru 2” EMT conduit
1/2” thru 2” IMC conduit
1/2” thru 2” 40 mil PVC coated RIGID conduit
1/2” thru 2” schedule 40 steel pipe

No modification to the 77DL POWER UNIT is required to accommodate these shoes or roller supports.
No tools are required to install or remove these shoes and roller supports.

The 77DL Series Electric Bender is NOT to be used for bending any conduit or pipe wall thickness above schedule 40 pipe.

| width     | 29 1/2” |
| length    | 24 3/4” |
| height    | 39”     |
| weight    | 258 lbs. Power Unit Only - without shoes |

MODEL DESCRIPTIONS

| 77DL     | Electric Bender Power Unit only, without shoes and roller supports |
| 77RIG-DL | Electric Bender with shoes and roller supports for 1/2” thru 2” RIGID conduit and schedule 40 pipe and 1/2” thru 1 1/4” IMC conduit |
| 77EMT-DL | Electric Bender with shoes and roller supports for 1/2” thru 2” EMT conduit |
| 77IMC-DL | Electric Bender with shoes and roller supports for 1 1/2” and 2” IMC conduit |
| 77PVC-DL | Electric Bender with shoes and roller supports for 1/2” thru 2” PVC coated RIGID conduit |

FEATURES

1. **Bending Degree Scale** - easy to read for exact bends.
2. **Roller Supports** - for supporting the conduit during bending.
3. **Hinge Pin** - for securing the roller supports.
4. **12 inch Wheels** - for easy mobility.
5. **D.C. Motor** - quiet and strong.
6. **Bending Instructions Decal** - easy to read for quick reference.
7. **Remote Pendant** - Includes magnet and 6 ft. cord. (Bend and unload from pendant.)
8. **Removable Handle** - may be removed for dog-leg bends
9. **Back Rails** - Protect the back of bender and enable the bender to be used horizontally
10. **Stub-up Length Stop** - Make multiple stub-ups of the same length.
11. **Adjustable Limit Switch** - Automatically stops bend. (Shoes have pointer to activate limit switch)
Special Features

The 77DL Series Electric Benders have a unique feature to remove the handles during a “Dog-Leg Bend.” See Figure 1 below.

The 77DL Series Electric Benders may also be used in a horizontal position. The bender can operate in this position as efficiently as it does in the upright position. See Figure 2 below.

![Figure 1](image1)

**WARNING**

When replacing handle, be sure to replace screws and nuts and also to tighten securely before moving or transporting.

![Figure 2](image2)

To protect the pointer on the shoes, the pointer may be rotated out of the way. Loosen the thumb screw and rotate the pointer as shown. Then retighten the thumb screw.
SHOE GROUPS

RIGID

700 R-DL - for bending 1/2" thru 2" RIGID conduit, 1/2" thru 1 1/4" IMC conduit and 1/2" thru 2" schedule 40 pipe
includes the following four items.

Key | Catalog | Description
--- | --- | ---
1 | 2-1301DL | 1/2" thru 1 1/4" bending shoe
2 | 2-1001 | 1/2" thru 1 1/4" roller support
3 | 2-1401DL | 1 1/2" and 2" bending shoe
4 | 2-1002 | 1 1/2" and 2" roller support

IMC

700 I-DL - for bending 1/2" and 2" IMC
includes the following four items.

Key | Catalog | Description
--- | --- | ---
1 | 2-1801DL | 1 1/2" bending shoe
2 | 2-1901DL | 2" bending shoe
3 | 2-1200 | 1 1/2" thru 2" IMC roller support unit
4 | 8-0501 | metal storage box (not shown)

EMT

700 E-DL - for bending 1/2" thru 2" EMT (Thinwall)
includes the following six items.

Key | Catalog | Description
--- | --- | ---
1 | 2-1501DL | 1/2" thru 1 1/4" bending shoe
2 | 2-1601DL | 1 1/2" bending shoe
3 | 2-1701DL | 2" bending shoe
4 | 2-1100 | 1 1/2" thru 2" EMT roller support
5 | 2-1200 | 1 1/2" thru 2" EMT roller support
6 | 8-0501 | metal storage box (not shown)

PVC

700 P-DL - for bending 1/2" thru 2" 40 mil PVC coated RIGID
includes the following five items.

Key | Catalog | Description
--- | --- | ---
1 | 2-2001DL | 1/2" thru 1 1/4" bending shoe
2 | 2-1000 | 1/2" thru 1 1/4" roller support
3 | 2-2101DL | 1 1/2" and 2" bending shoe
4 | 2-1005 | 1 1/2" and 2" roller support
5 | 8-0501 | metal storage box (not shown)

CONDUIT CENTERLINE BENDING RADIUS

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</tbody>
</table>
GROUNDING INSTRUCTIONS

In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. The bender is equipped with an electric cord having an equipment grounding conductor and a grounding plug. Only connect the bender to a 20 AMP GFCI protected receptacle which is properly installed and grounded to meet all applicable electrical codes. Do NOT use an adapter.

Do NOT modify the plug provided. If it will not fit the receptacle, have the proper receptacle installed by a qualified electrician.

Improper connection of the equipment grounding conductor can result in risk of electric shock. The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment grounding conductor to a live terminal.

Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the bender is properly grounded.

Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the bender’s plug.

Repair or replace damaged or worn cord immediately.

This bender is intended for use on a circuit that has a receptacle that looks like the one illustrated in Figure 3 above. The bender has a grounding plug that looks like the plug illustrated in Figure 4 above.

[WARNING]

ELECTRIC SHOCK HAZARD! Only connect the bender to a 20 AMP GFCI protected circuit. Do NOT modify the plug which is provided with the unit. Failure to follow these warnings can result in serious injury or death.

Figure 3

Figure 4
Choose desired shoe size and type (RIGID, IMC, EMT, or 40 mil PVC coated RIGID) and slide shoe onto the main drive sprocket shaft. See Figure 5 below.

Next, align the four drive studs on the back of the shoe with the four drive holes in the main drive sprocket.

Push the shoe onto the main drive sprocket shaft. See Figure 6.
MOUNTING ROLLER SUPPORTS

Choose the desired roller support for the corresponding shoe size and type (RIGID, IMC, EMT, or 40 mil PVC coated RIGID). The appropriate size and type of roller support MUST be used with the corresponding shoe size and type.

Mount the roller support on the right leg of the bender as you face the bender. Secure the roller support with the quick release hinge pin. See Figure 7.

![Figure 7](image)

MOUNTING INSTRUCTIONS FOR GREENLEE® SHOES AND ROLLER SUPPORTS

Bending shoes and roller supports from Greenlee® 555®, R, E, I (RIGID, EMT, IMC) and 40 mil PVC coated RIGID benders with serial number PL and AAJ will fit the 77DL bender. The Greenlee® 555® shoes do not utilize a pointer or limit switch, therefore when using them on the 77DL bender you will operate the bender in the manual mode. All 77DL bending shoes and roller supports will fit Greenlee® 555® R, E, I benders with PL and AAJ serial numbers.

* Greenlee® 555® and 555 Classic® are registered trademarks of Greenlee/Textron.
GENERAL BENDING INSTRUCTIONS

Bending instructions for:

1/2" thru 2" RIGID conduit
1/2" thru 1 1/4" EMT conduit
1/2" thru 1 1/4" IMC conduit
1/2" thru 2" 40 mil PVC coated RIGID conduit
1/2" thru 2" schedule 40 pipe

DANGER

NEVER operate this bender in an explosive atmosphere. Injury or Death may occur.

See pages 10 and 11 for mounting shoes and roller supports. Be sure to match the appropriate shoe with its corresponding roller support.

1. Mark pipe/conduit to desired length. Note that a minimum of 2" from the end of the conduit to the front edge of the hook is required to eliminate flattening the end of the pipe/conduit. See Figure 8a.

NOTE: Stub-up and Offset Dimensions can be found on the Bending Charts on pages 21 thru 24 of this manual or on the bending instructions decal on top of each bender.

NOTE: The Model 77DL is equipped with a stub-up length stop feature which will allow you to easily make multiple stub-ups of the same length. See page 14 for complete instructions on using this feature.

2. Rotate the bending shoe to 10 degrees below the 0 (zero) degree setting, as shown in Figure 8b below.
3. After marking the pipe/conduit, place it into the bender. See Figure 8a. The pipe/conduit should slide over the correct size roller support, through the shoe groove and into the hook. The bending mark should be at the front (OUTSIDE) edge of the hook. See Figure 8a.

NOTE: The Model 77DL is equipped with an adjustable limit switch. Loosen the thumb screw and locate the limit switch to the desired degree of bend. The 77DL shoes are equipped with a pointer that will activate the limit switch and stop the bender when the pointer contacts the limit switch spring in the bending (clockwise) direction.

NOTE: The adjustable limit switch will only be activated in the bend (clockwise) direction.

4. Using the remote pendant, place the “Bend/Unload” switch in the “bend” position. Press the “Jog” button and advance the bender shoe. Be sure to check the alignment of the bending mark as the rotating shoe locks the pipe/conduit into position. Advance the bender shoe. When the pointer on the shoe reaches the limit switch, the bender will stop. See Figure 9A.

NOTE: If you do not want to use the adjustable limit switch, remove it from the top of the bender frame and attach it to the back of the bender frame using the magnet provided on the limit switch bracket.

NOTE: Due to springback in pipe/conduit, some over bending is necessary to achieve the desired degree of bend. See page 22 or the bending instruction decal on top of each bender for approximate springback compensation figures.

5. To release the pipe/conduit, place the “Bend/Unload” switch in the “Unload” position. Press the “Jog” button and reverse the shoe far enough to release the conduit. Then, rotate the roller support out of the way. See Figure 9B. The pipe/conduit can now be removed.
The Model 77DL is equipped with a stub-up length stop feature which will allow you to easily make multiple stub-ups of the same length. After you have measured and marked the conduit for the first stub-up, place the conduit into the shoe and locate the bending mark on the front (outside) edge of the hook.

Next, loosen the thumb screw and slide the stop tube until the stop rod reaches the end of the conduit (see Figure 18A and 18B). Before bending, rotate the stop rod downward to avoid conduit hitting the stop rod (see Figure 18C). After the bend is completed remove the conduit. Rotate the stop rod upward. Place the next piece of conduit into the bender until it touches the stop rod. Repeat the process above.

NOTE: You can replace the stop tube with a piece of 1/2" rigid conduit if you have stub-ups that are longer than the stop tube provided with the 77DL Bender.

NOTE: If you do not want to use the stub-up feature, loosen the thumb screw and retract the stop tube until it is out of the way for bending conduit.
BENDING INSTRUCTIONS FOR 1 1/2" AND 2" EMT & IMC CONDUIT

1. See pages 10 and 11 for mounting shoes and roller supports. Be sure to match the appropriate shoe with its corresponding roller support.

NOTE: The outside roller on the 1 1/2" thru 2" IMC roller support is steel. See Figure 10. The outside roller on the 1 1/2" thru 2" EMT roller support is urethane. See Figure 11.

2. Mark the conduit to the desired length. Note that a 2" minimum dimension is required to eliminate flattening the end of the conduit. See Figure 12.

NOTE: "Stub-up" and "Offset" dimensions can be found on the bending charts on pages 21 thru 24 of this manual or on the bending instruction decal located on the top of each bender.
3. Rotate the bending shoe to 10 degrees below the 0 (zero) degree setting. See Figure 8b.

4. After marking the conduit, place it into the bender. The conduit should slide over the roller support and through the shoe groove and into the hook. The bending mark should be at the front (OUTSIDE) edge of the hook. See Figure 12.

   NOTE: The appropriate size and type of roller support MUST be used with the corresponding shoe size and type.

5. Step on the "Engaging Pedal" which will raise the rollers to come in contact with the conduit. See Figure 13. Be sure the correct rollers for the size conduit being bent are in position to engage the conduit.

   NOTE: See SQUEEZE ADJUSTMENT PROCEDURE on page 18.
6. Keep foot pressure on the engaging pedal and push the Bend/Unload switch to the *Bend* position. Then press the Jog button. The conduit will pull the roller support against the stop. Foot pressure can then be removed from the engaging pedal. Be sure to check the alignment of the bending mark as the rotating shoe locks the conduit into position.

**NOTE:** If the roller support will not pull against the stop, the squeeze adjustment is too tight and will need to be adjusted. See squeeze adjustment procedure on page 18.

Advance the bender shoe to the desired degree of bend. When the pointer on the shoe reaches the limit switch, the bender will stop.

**NOTE:** Due to springback in pipe/conduit, some over bending is necessary to achieve the desired degree of bend. See page 22 or the bending instructions decal located on the top of each bender for approximate springback compensation figures.

**NOTE:** Do NOT allow the rollers to come in contact with the bending shoe. The shoe and rollers squeeze the conduit but they should never touch each other.

7. To release the conduit, place the “Bend/Unload” switch in the “*Unload*” position. Press the “Jog” button and reverse the shoe. The rollers will then drop, allowing removal of the conduit.

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**WARNING**

The pipe/conduit should be under control when unloading. Failure to do this may result in injury or death.

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8. After removal of the conduit, inspect it for wrinkling or excessive side marks. If these conditions occur, refer to the SQUEEZE ADJUSTMENT PROCEDURE. See page 18.
SQUEEZE ADJUSTMENT PROCEDURE FOR 1 1/2" AND 2" EMT & IMC ROLLER SUPPORTS

The 77DL bender has a Squeeze Adjustment feature if wrinkling or side marking becomes a problem during the bending process. This feature allows you to increase or decrease the amount of pressure applied to the conduit during bending, thereby eliminating these problems. Begin with the 1/2" starting location of the adjusting bolts as shown in Figure 14.

1. If wrinkling occurs, pressure against the conduit during the bending process must increase. To increase the squeeze (pressure), loosen both set screws and turn both adjusting bolts one-half turn clockwise. Tighten both set screws and bend one piece of conduit to test the adjustment. If wrinkling still occurs, repeat the procedure.

   NOTE: Both adjusting bolts MUST be in contact with the bender leg. See Figure 15.

2. If side marking occurs, or loading IMC or EMT is a problem, pressure against the conduit during the bending process must be decreased. To decrease the squeeze (pressure), loosen both set screws and turn both adjusting bolts one-half turn counter-clockwise. Tighten both set screws and bend one piece of conduit to test the adjustment. If side marking still occurs, repeat the procedure.

   NOTE: Both adjusting bolts MUST be in contact with the bender leg.
1. The Gear Box is filled with oil at the factory and should not require periodic flushing. If the Gear Box is opened for repair, flush by filling the unit with an AGMA #7 oil. Next, run the unit with no load for 3 minutes. Then, drain and refill the unit with 28 fluid ounces of an AGMA #7 oil such as the ones listed below.

- Amoco – Amoco Worm Gear Oil
- Chevron – Cylinder Oil 460X
- Exxon – CYLESSTIC TK460
- Mobil – 600 W Cylinder Oil
- Shell – Sun Gear Oil 7C

2. To inspect FRONT #60 chain tension:
   - Remove front cover plate.
   - To adjust, loosen hex bolt with 3/4 wrench and rotate chain tensioner toward chain as shown until chain moves no more than a total of 1/4". See Figure 16 below.
   - Grease chain periodically with a good quality MP grease.

*Figure 16*
3. To inspect REAR #40 chain tension:
   - Check chain tension after an initial break-in period of 2 - 3 hours of use and tighten per the instructions below. See Figure 17. Thereafter, inspect monthly.
   - Remove the chain guard by taking out the 2 mounting screws.
   - Loosen 8 bolts (4 on top and 4 on bottom) that hold the gear box in position.
   - To tighten chain, move the gear box to the left and re-tighten bolts.
   - For correct tension, chain should deflect approximately 1/8".

NOTE: Be sure to keep the gear box and motor in line with the bender.
   - Grease chain periodically with a good quality MP grease.

Figure 17

- Access to the gearbox sprocket is possible by removing access door as shown.
To locate bending marks and springback of 15, 30, 45, 60, and 90 degree bends for a desired stub:

1. Check Chart A, B, or C for deduct length. Note that minimum stub length is deduct length plus 2".

2. Measure and mark desired stub length on conduit (stub length mark). Subtract “Deduct Length” from this mark and make a second mark (bending mark). See Fig 18a and 18b. Place bending mark at front edge of shoe hook. See Figure 18c. Check Chart A, B, or C for springback of desired degree of bend. Bender should be advanced to this degree to obtain desired degree of bend.
STUB-UP BENDING INFORMATION AND CHARTS

Chart A – RIGID Conduit/Schedule 40 Pipe

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Chart B – EMT Conduit

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<th>Conduit Size</th>
<th>Deduct Length</th>
<th>15°</th>
<th>30°</th>
<th>45°</th>
<th>60°</th>
<th>90°</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>7&quot;</td>
<td>16 1/4</td>
<td>32 1/2</td>
<td>47 1/2</td>
<td>63 3/4</td>
<td>95</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>8 7/8&quot;</td>
<td>17 1/2</td>
<td>33 3/4</td>
<td>48 3/4</td>
<td>63 3/4</td>
<td>95</td>
</tr>
<tr>
<td>1&quot;</td>
<td>10 3/4&quot;</td>
<td>17 1/2</td>
<td>32 1/2</td>
<td>48 3/4</td>
<td>65</td>
<td>95</td>
</tr>
<tr>
<td>1 1/4&quot;</td>
<td>13 1/8&quot;</td>
<td>17 1/2</td>
<td>33 3/4</td>
<td>48 3/4</td>
<td>65</td>
<td>95</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>13 7/8&quot;</td>
<td>16 1/4</td>
<td>31 1/4</td>
<td>46 1/4</td>
<td>61 1/4</td>
<td>92 1/2</td>
</tr>
<tr>
<td>2&quot;</td>
<td>15 3/8&quot;</td>
<td>17 1/2</td>
<td>33 3/4</td>
<td>48 3/4</td>
<td>63 3/4</td>
<td>95</td>
</tr>
</tbody>
</table>

Chart C – IMC Conduit

<table>
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<th>Conduit Size</th>
<th>Deduct Length</th>
<th>15°</th>
<th>30°</th>
<th>45°</th>
<th>60°</th>
<th>90°</th>
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</thead>
<tbody>
<tr>
<td>1/2&quot;</td>
<td>8 1/2&quot;</td>
<td>21 1/4</td>
<td>37 1/2</td>
<td>52 1/2</td>
<td>68 3/4</td>
<td>98 3/4</td>
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<td>3/4&quot;</td>
<td>8 1/2&quot;</td>
<td>17 1/2</td>
<td>32 1/2</td>
<td>47 1/2</td>
<td>63 3/4</td>
<td>93 3/4</td>
</tr>
<tr>
<td>1&quot;</td>
<td>10&quot;</td>
<td>17 1/2</td>
<td>32 1/2</td>
<td>47 1/2</td>
<td>63 3/4</td>
<td>95</td>
</tr>
<tr>
<td>1 1/4&quot;</td>
<td>12 3/4&quot;</td>
<td>18 3/4</td>
<td>33 3/4</td>
<td>48 3/4</td>
<td>65</td>
<td>96 1/4</td>
</tr>
<tr>
<td>1 1/2&quot;</td>
<td>13 3/4&quot;</td>
<td>17 1/2</td>
<td>33 3/4</td>
<td>48 3/4</td>
<td>63 3/4</td>
<td>95</td>
</tr>
<tr>
<td>2&quot;</td>
<td>15 1/4&quot;</td>
<td>20</td>
<td>35</td>
<td>50</td>
<td>65</td>
<td>96 1/4</td>
</tr>
</tbody>
</table>

NOTE: Springback figures are approximate.

Minimum Stub Length = Deduct Length plus 2"
OFFSET BENDING INFORMATION AND CHARTS

To locate bending marks for a desired offset:

1. Measure distance from end of conduit to start of bend and mark conduit. (Mark 1) See Figure 19b.

2. Refer to chart E for measurement "X" and deduct this distance from Mark 1 and place Mark 2 on conduit. See page 24.

3. Refer to chart D for center-to-center distance between marks. Measure this distance from Mark 2 and place Mark 3 on conduit.

4. Layout of bends is now complete. Next, place Mark 2 in line with front edge of shoe hook and make first bend. See Figure 19c.

5. Rotate conduit 180 degrees. Place Mark 3 in line with front edge of shoe hook and complete second bend.

---

**Figure 19a**

**Figure 19b**

**Figure 19c**
To locate center-to-center distance of offset bending marks other than those listed in Chart D, use the following multipliers. Multiply the height of offset desired by 3.86 on 15 degree bends, 2 on 30 degree bends, and 1.4 on 45 degree bends.

**Chart D – Offset Height**  
*Figures are approximate.*

<table>
<thead>
<tr>
<th>Offset Height</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
<th>16</th>
<th>18</th>
<th>20</th>
<th>22</th>
</tr>
</thead>
<tbody>
<tr>
<td>15° Max Conduit Size</td>
<td>3/4&quot;</td>
<td>1 1/2&quot;</td>
<td>2&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Center-to-Center</td>
<td>7 3/4&quot;</td>
<td>15 7/16&quot;</td>
<td>23 3/16&quot;</td>
<td>30 15/16&quot;</td>
<td>38 5/8&quot;</td>
<td>46 3/8&quot;</td>
<td>54 1/16&quot;</td>
<td>61 13/16&quot;</td>
<td>69 9/16&quot;</td>
<td>77 1/4&quot;</td>
<td>85&quot;</td>
</tr>
<tr>
<td>30° Max Conduit Size</td>
<td>3/4&quot;</td>
<td>1&quot;</td>
<td>1 1/2&quot;</td>
<td>2&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Center-to-Center</td>
<td>8&quot;</td>
<td>12&quot;</td>
<td>16&quot;</td>
<td>20&quot;</td>
<td>24&quot;</td>
<td>28&quot;</td>
<td>32&quot;</td>
<td>36&quot;</td>
<td>40&quot;</td>
<td>44&quot;</td>
<td></td>
</tr>
<tr>
<td>45° Max Conduit Size</td>
<td>1 1/2&quot;</td>
<td>1&quot;</td>
<td>1 1/4&quot;</td>
<td>1 1/2&quot;</td>
<td>2&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Center-to-Center</td>
<td>8 1/2&quot;</td>
<td>11 5/16&quot;</td>
<td>14 1/8&quot;</td>
<td>16 15/16&quot;</td>
<td>19 13/16&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

To locate center-to-center distance of offset bending marks other than those listed in Chart D, use the following multipliers. Multiply the height of offset desired by 3.86 on 15 degree bends, 2 on 30 degree bends, and 1.4 on 45 degree bends.

**Chart E**  
*Figures are approximate.*

<table>
<thead>
<tr>
<th>Conduit Size</th>
<th>1/2</th>
<th>3/4</th>
<th>1 1/4</th>
<th>1 1/2</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>“x”</td>
<td>3 1/16&quot;</td>
<td>3 1/16&quot;</td>
<td>3 3/16&quot;</td>
<td>4&quot;</td>
<td>4 1/4&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conduit Size</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>“x”</td>
<td>4 1/2&quot;</td>
</tr>
<tr>
<td>Problem</td>
<td>Cause</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>1. Bender will not operate</td>
<td>Power source</td>
</tr>
<tr>
<td>2. No power at bender</td>
<td>Bad power cord</td>
</tr>
<tr>
<td>3. Power to bender but will not operate</td>
<td>Circuit breaker / power switch in the off position</td>
</tr>
<tr>
<td></td>
<td>Fuse #1 blown</td>
</tr>
<tr>
<td></td>
<td>Control Transformer bad</td>
</tr>
<tr>
<td></td>
<td>Contactor bad</td>
</tr>
<tr>
<td></td>
<td>Bridge rectifier bad</td>
</tr>
<tr>
<td></td>
<td>Switch bad</td>
</tr>
<tr>
<td></td>
<td>Motor bad</td>
</tr>
<tr>
<td>4. Motor runs but will not bend</td>
<td>Chain from gear box to jack shaft broken</td>
</tr>
<tr>
<td></td>
<td>Bad gear box</td>
</tr>
<tr>
<td></td>
<td>Chain from jack shaft to shoe sprocket broken</td>
</tr>
<tr>
<td></td>
<td>Key between motor and gear box missing</td>
</tr>
<tr>
<td>5. Bender operates in one direction only</td>
<td>Bad FWD / REV switch</td>
</tr>
<tr>
<td></td>
<td>Bad pendant cord</td>
</tr>
<tr>
<td></td>
<td>Bad contactor</td>
</tr>
<tr>
<td>6. Contactors chatter</td>
<td>Low power to bender</td>
</tr>
<tr>
<td>7. Pointer passes bend angle limit switch in clockwise direction</td>
<td>Bend angle limit switch failed</td>
</tr>
</tbody>
</table>
PROVIDED WITH LIMIT SWITCH
EXPLODED VIEWS continued . . .

ELECTRICAL PLATE

CIRCUIT BREAKER SWITCH

REMOTE PENDANT

(2) 8-32 x 3/8" SCREWS INCLUDED WITH CONDULET
<table>
<thead>
<tr>
<th>ITEM #</th>
<th>PART #</th>
<th>QTY</th>
<th>DESCRIPTION</th>
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<td>77-346</td>
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<td>HANDLE</td>
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<td>3</td>
<td>77-004D</td>
<td>1</td>
<td>COVER</td>
</tr>
<tr>
<td>4</td>
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<td>SCREW - #8-32 X 1/2&quot; THD CUTTER</td>
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<tr>
<td>5</td>
<td>77-343</td>
<td>1</td>
<td>SPROCKET SHAFT</td>
</tr>
<tr>
<td>6</td>
<td>77-006A</td>
<td>2</td>
<td>KEY - SQUARE, 1/4&quot; X 3/4&quot; LONG</td>
</tr>
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<td>77-007</td>
<td>1</td>
<td>RETAINING RING - EXT, 2 1/2&quot;</td>
</tr>
<tr>
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<td>77-008</td>
<td>2</td>
<td>WASHER - PHENOLIC (JACKSHAFT)</td>
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<td>9</td>
<td>77-009</td>
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<td>SLEEVE BEARING</td>
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<tr>
<td>10</td>
<td>77-010</td>
<td>1</td>
<td>#60 MASTER LINK</td>
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<tr>
<td>11</td>
<td>77-011</td>
<td>1</td>
<td>#60 CHAIN</td>
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<td>77-394</td>
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<td>SPROCKET - MAIN DRIVE #60</td>
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<td>SLEEVE - PHENOLIC</td>
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<td>WHEEL</td>
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<td>AXLE</td>
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<td>MASTER LINK - #40</td>
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<td>COVER - REAR CHAIN</td>
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<td>PART #</td>
<td>QTY</td>
<td>DESCRIPTION</td>
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<td>SWITCH - FORWARD / REVERSE</td>
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<td>SWITCH - JOG</td>
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<td>77-053</td>
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<td>2</td>
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<td>FUSE</td>
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<td>77-058</td>
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<td>77-060</td>
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<td>CIRCUIT BREAKER</td>
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<td>77-063</td>
<td>1</td>
<td>COVER - CIRCUIT BREAKER</td>
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<td>77-064</td>
<td>1</td>
<td>DECAL - PENDANT</td>
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<td>1</td>
<td>FUSE HOLDER</td>
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<td>450-20</td>
<td>4</td>
<td>SPACER</td>
</tr>
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<td>CORD - POWER (not shown)</td>
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<td>CORD - PENDANT (not shown)</td>
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<td>ACCESS COVER</td>
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<td>77-058A</td>
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<td>BRACKET - RESISTOR</td>
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<td>73</td>
<td>452-6A</td>
<td>9</td>
<td>SCREW #8 X ½&quot; SELF DRILL</td>
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<td>74</td>
<td>77-387</td>
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<td>BRACKET - TRANSFORMER</td>
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<td>75</td>
<td>77-041A</td>
<td>2</td>
<td>NUT - 1/2&quot; LOCK</td>
</tr>
<tr>
<td>76</td>
<td>77-004A</td>
<td>11</td>
<td>SCREW - #8 - 32 X 3/8&quot; THD CUTTER</td>
</tr>
<tr>
<td>77</td>
<td>747-7</td>
<td>1</td>
<td>RELAY</td>
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<td>2</td>
<td>MAGNET</td>
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### Bending Shoe & Roller Support — 1/2" to 1 1/4" RIGID & IMC Conduit

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### Bending Shoe & Roller Support — 1 1/2" to 2" RIGID Conduit

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## PARTS LIST — BENDING SHOES & SUPPORTS

### Bending Shoe & Roller Support — 1/2” to 1 1/4” EMT Conduit

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### Bending Shoe — 1 1/2” EMT Conduit

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## PARTS LIST — BENDING SHOES & SUPPORTS  

### Bending Shoe — 2" EMT Conduit

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### Bending Shoe & Roller Support — 1/2” to 1 1/4” 40 mil PVC Coated RIGID Conduit

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Bending Shoe & Roller Support —
1 1/2" to 2" 40 mil PVC Coated RIGID Conduit

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EXPLODED VIEW — ROLLER SUPPORT
## PARTS LIST — ROLLER SUPPORT – EMT

### 2-1100  ROLLER SUPPORT UNIT, 1 1/2" & 2" EMT

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