

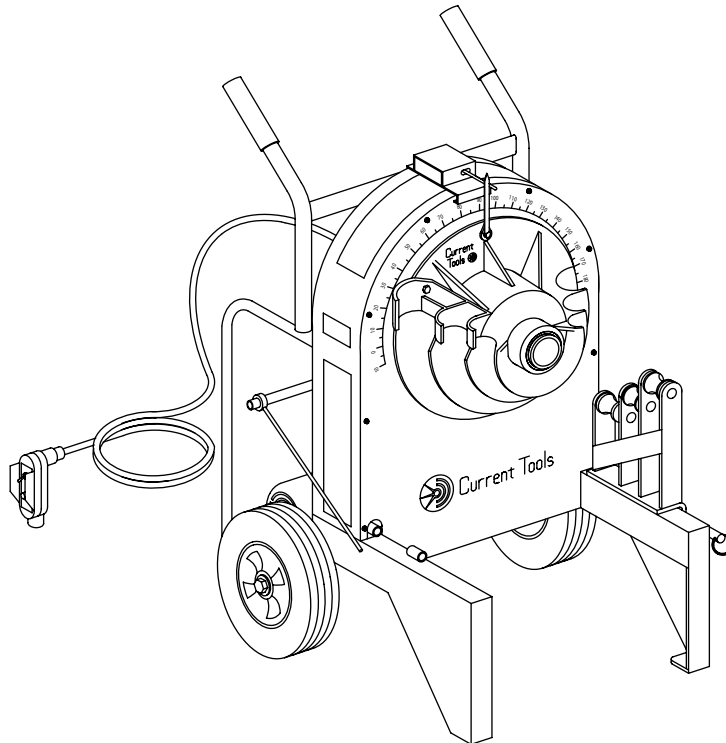


# ***Current Tools***

**FOR THE PROFESSIONAL ELECTRICIAN**

## **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**

11/14



**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.

**CURRENT TOOLS • P. O. BOX 17026 GREENVILLE, SC 29606  
800.230.5421 or 864.721.4230 • FAX 864.721.4232  
[www.currenttools.com](http://www.currenttools.com)**



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## 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.

## RETAIN SAFETY INFORMATION



This manual should be read and understood by all personnel who operate or service this bender. Failure to understand how to safely operate and service this unit could result in injury or death. This unit should only be operated and serviced by qualified personnel.



## IMPORTANT SAFETY INFORMATION

### **⚠ DANGER**

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.

## IMPORTANT SAFETY INFORMATION *continued . . .*

**▲ 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 |



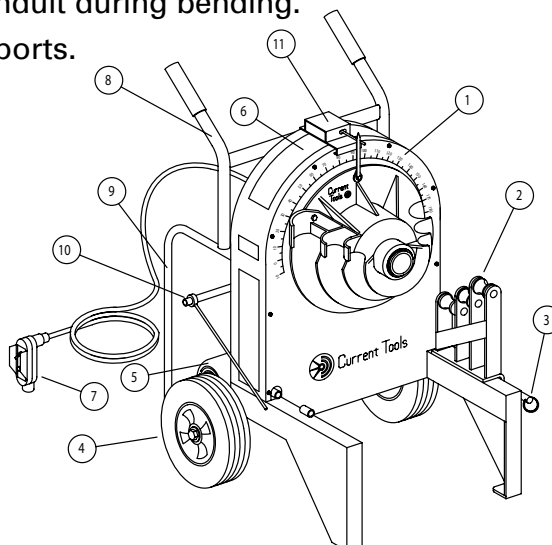
## MODEL DESCRIPTIONS

|                 |   |
|-----------------|---|
| <b>77DL</b>     | Electric Bender Power Unit only, without shoes and roller supports  |
| <b>77RIG-DL</b> | 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 |
| <b>77EMT-DL</b> | Electric Bender with shoes and roller supports for 1/2" thru 2" EMT conduit   |
| <b>77IMC-DL</b> | Electric Bender with shoes and roller supports for 1 1/2" and 2" IMC conduit  |
| <b>77PVC-DL</b> | Electric Bender with shoes and roller supports for 1/2" thru 2" PVC coated RIGID conduit  |



## FEATURES

- Bending Degree Scale** - easy to read for exact bends.
- Roller Supports** - for supporting the conduit during bending.
- Hinge Pin** - for securing the roller supports.
- 12 inch Wheels** - for easy mobility.
- D.C. Motor** - quiet and strong.
- Bending Instructions Decal** - easy to read for quick reference.
- Remote Pendant** - Includes magnet and 6 ft. cord. (Bend and unload from pendant.)
- Removable Handle** - may be removed for dog-leg bends
- Back Rails** - Protect the back of bender and enable the bender to be used horizontally
- Stub-up Length Stop** - Make multiple stub-ups of the same length.
- 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.*

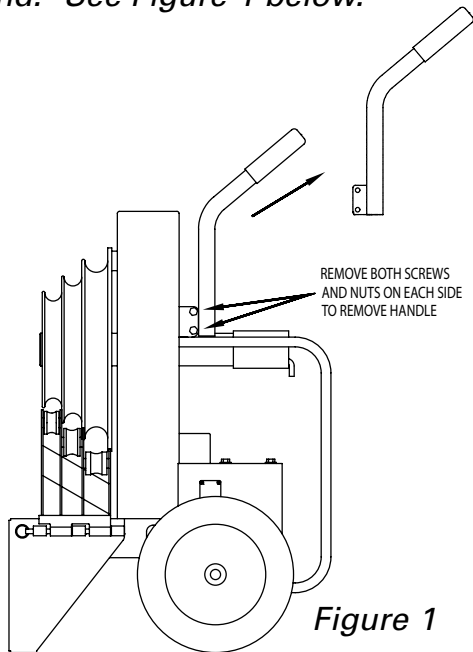


Figure 1

### **WARNING**

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

*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.*

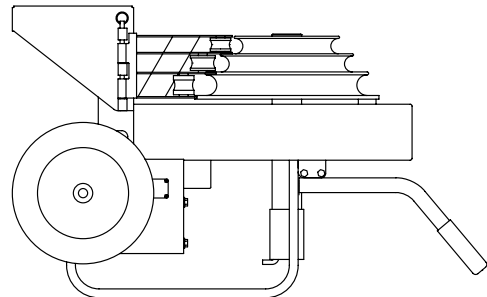
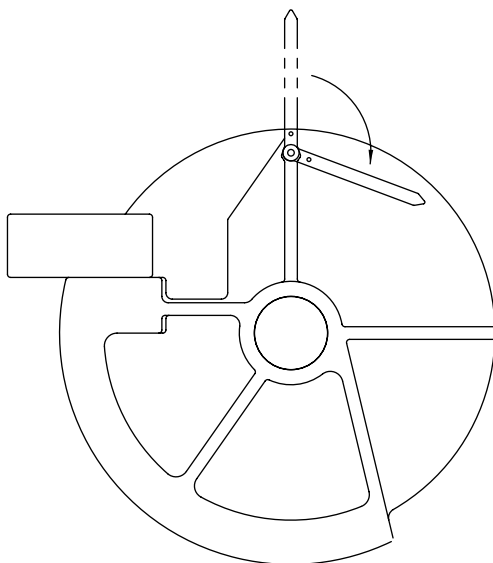


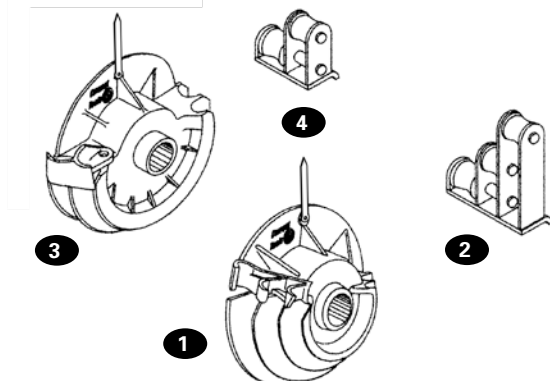
Figure 2



*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

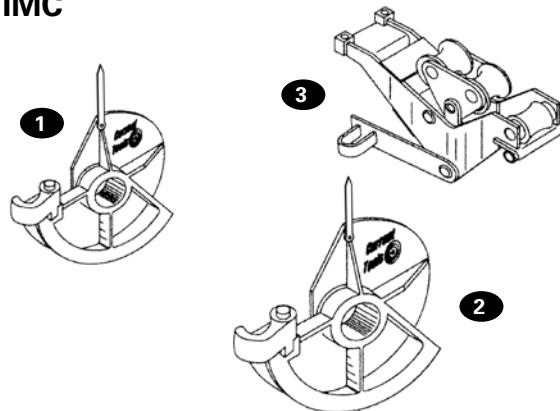
### RIGID



**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    |

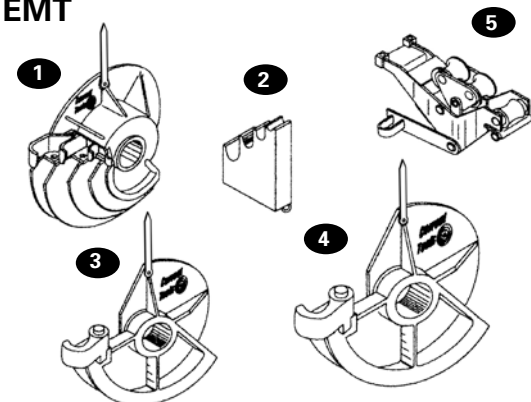
### IMC



**700 I-DL** - for bending 1 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 )        |

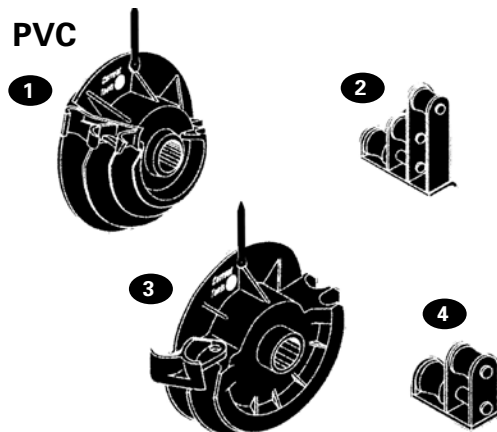
### EMT



**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   | 2-1003   | 1/2" thru 1 1/4" EMT support      |
| 3   | 2-1601DL | 1 1/2" bending shoe               |
| 4   | 2-1701DL | 2" bending shoe                   |
| 5   | 2-1100   | 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   | 2-1004   | 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 RADII

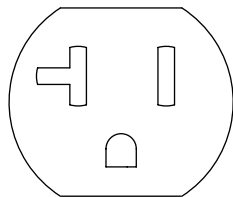
| size  | 1/2"   | 3/4"   | 1"     | 1 1/4" | 1 1/2"  | 2"      |
|-------|--------|--------|--------|--------|---------|---------|
| EMT   | 4 1/4" | 5 3/8" | 6 3/4" | 8 3/4" | 8 9/32" | 9 3/16" |
| IMC   | 4 3/8" | 4 1/2" | 5 3/4" | 7 1/4" | 8 9/32" | 9 3/16" |
| RIGID | 4 3/8" | 4 1/2" | 5 3/4" | 7 1/4" | 8 1/4"  | 9 1/2"  |



## **GROUNDING INSTRUCTIONS**

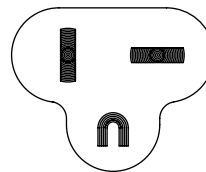
### **WARNING**

**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.



**RECEPTACLE**

*Figure 3*



**PLUG**

*Figure 4*

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.

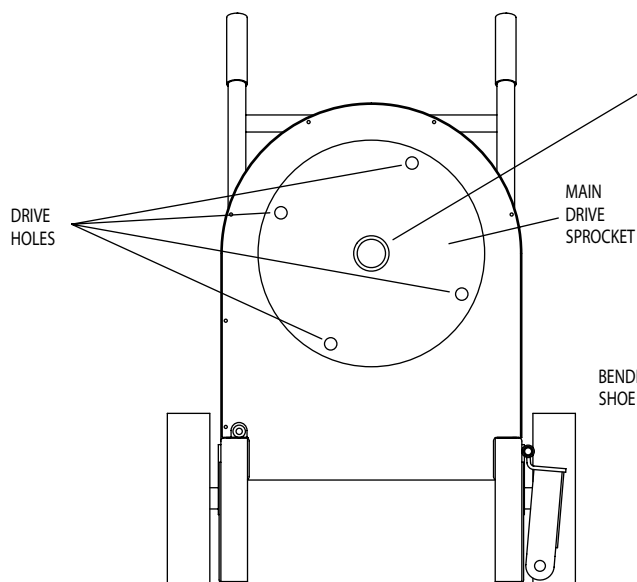
Repair or replace damaged or worn cord immediately.

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.

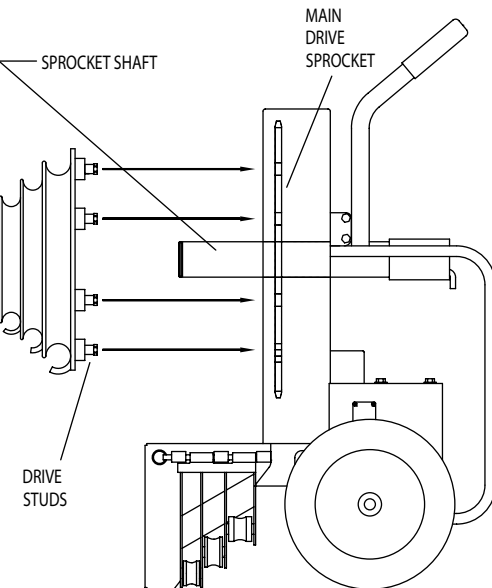


## MOUNTING BENDING SHOES

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.



*Figure 5*



*Figure 6*

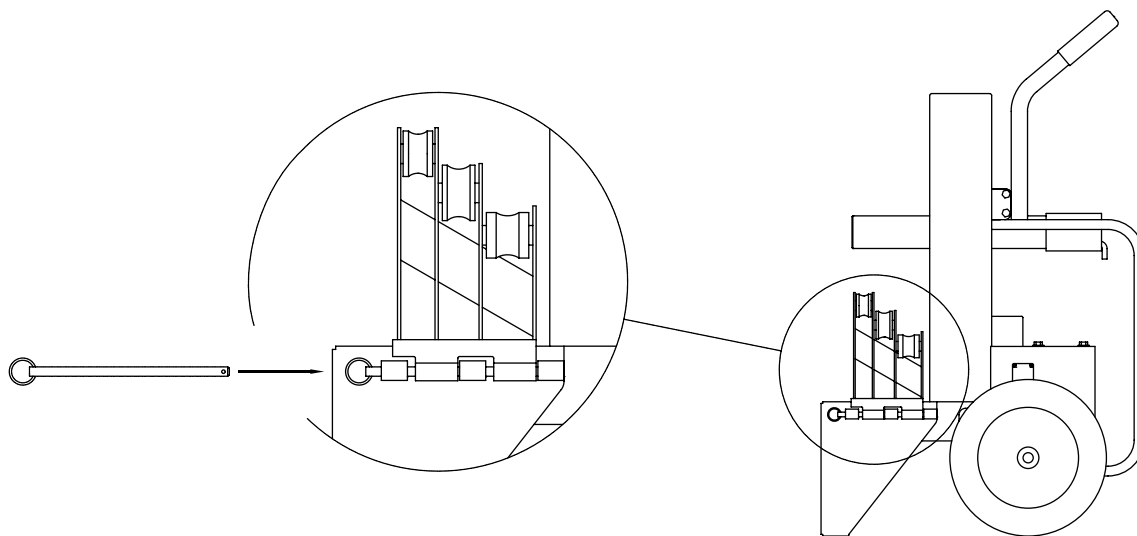
Next, align the four drive studs on the back of the shoe with the four drive holes in the main drive sprocket.

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*

## 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.

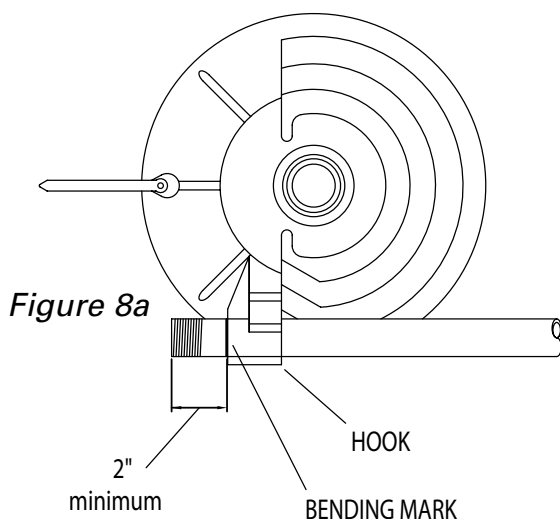
Be sure to match the appropriate shoe with its corresponding roller support.

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.

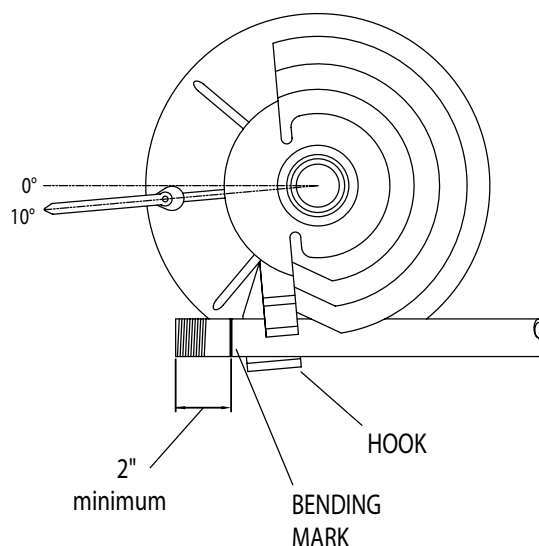
**NOTE:** The Model 77DL is equipped with a stub-up length stop feature which will allow you to easily make multiple stub-ups of the same length. See page 14 for complete instructions on using this feature.

2. Rotate the bending shoe to 10 degrees below the 0 ( zero ) degree setting, as shown in Figure 8b below.



*Figure 8a*

PLACE BENDING MARK IN LINE WITH  
FRONT (OUTSIDE) EDGE OF HOOK



*Figure 8b*

## GENERAL BENDING INSTRUCTIONS *continued . . .*

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.

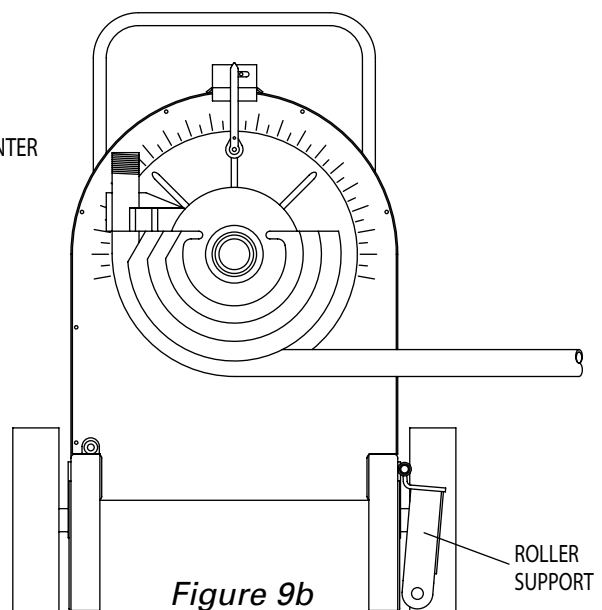
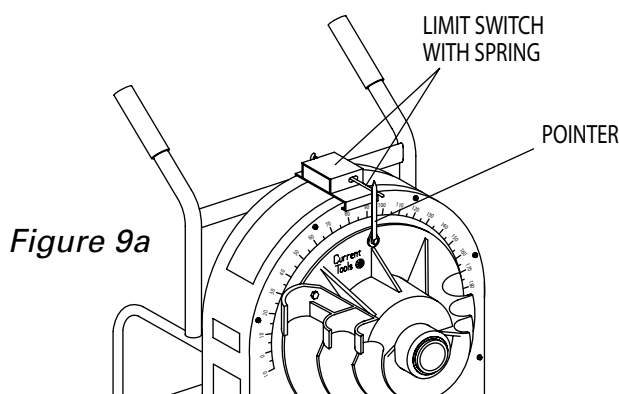
**NOTE:** The adjustable limit switch will only be activated in the bend (clockwise) direction.

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.



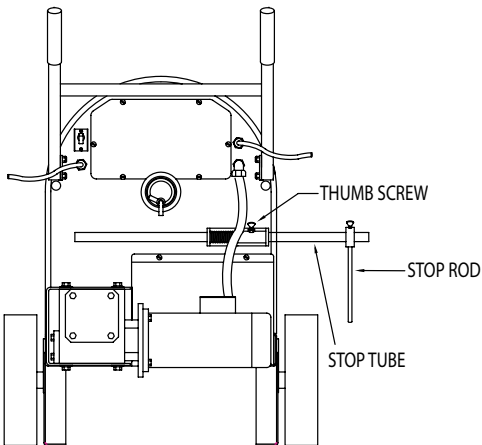
### **WARNING**

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



## STUB-UP LENGTH STOP INSTRUCTIONS

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.

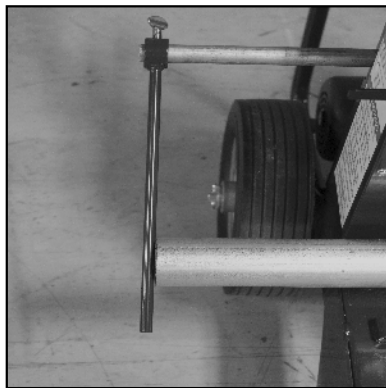


*Figure 18A*

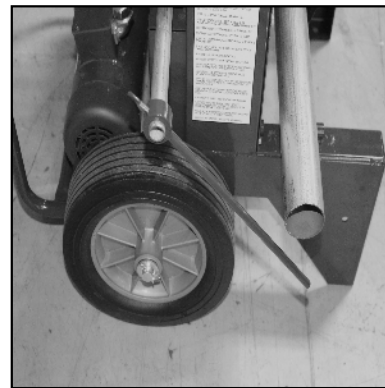
Next, loosen the thumb screw and slide the stop tube until the stop rod reaches the end of the conduit (see Figure 18A and 18B). Before bending, rotate the stop rod downward to avoid conduit hitting the stop rod (see Figure 18C).

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.



*Figure 18B*



*Figure 18C*

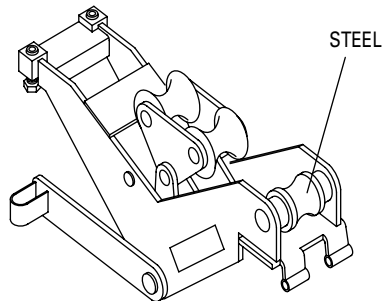
**NOTE:** If you do not want to use the stub-up feature, loosen the thumb screw and retract the stop tube until it is out of the way for bending conduit.



## BENDING INSTRUCTIONS FOR 1 1/2" AND 2" EMT & IMC CONDUIT

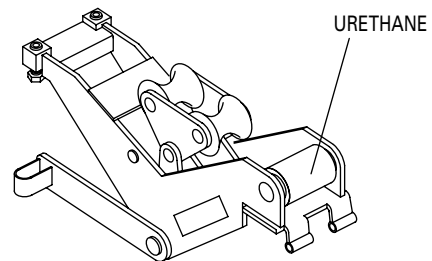
1. See pages 10 and 11 for mounting shoes and roller supports. Be sure to match the appropriate shoe with its corresponding roller support.

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.



IMC ROLLER SUPPORT

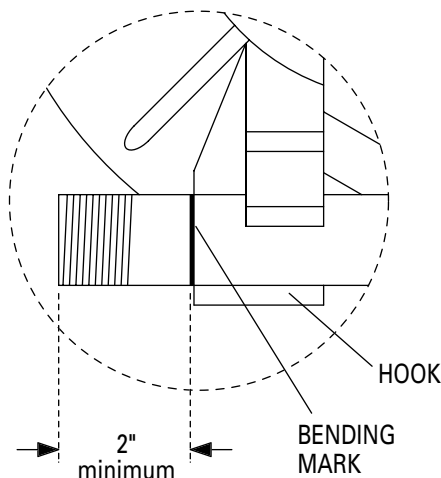
*Figure 10*



EMT ROLLER SUPPORT

*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.



*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.

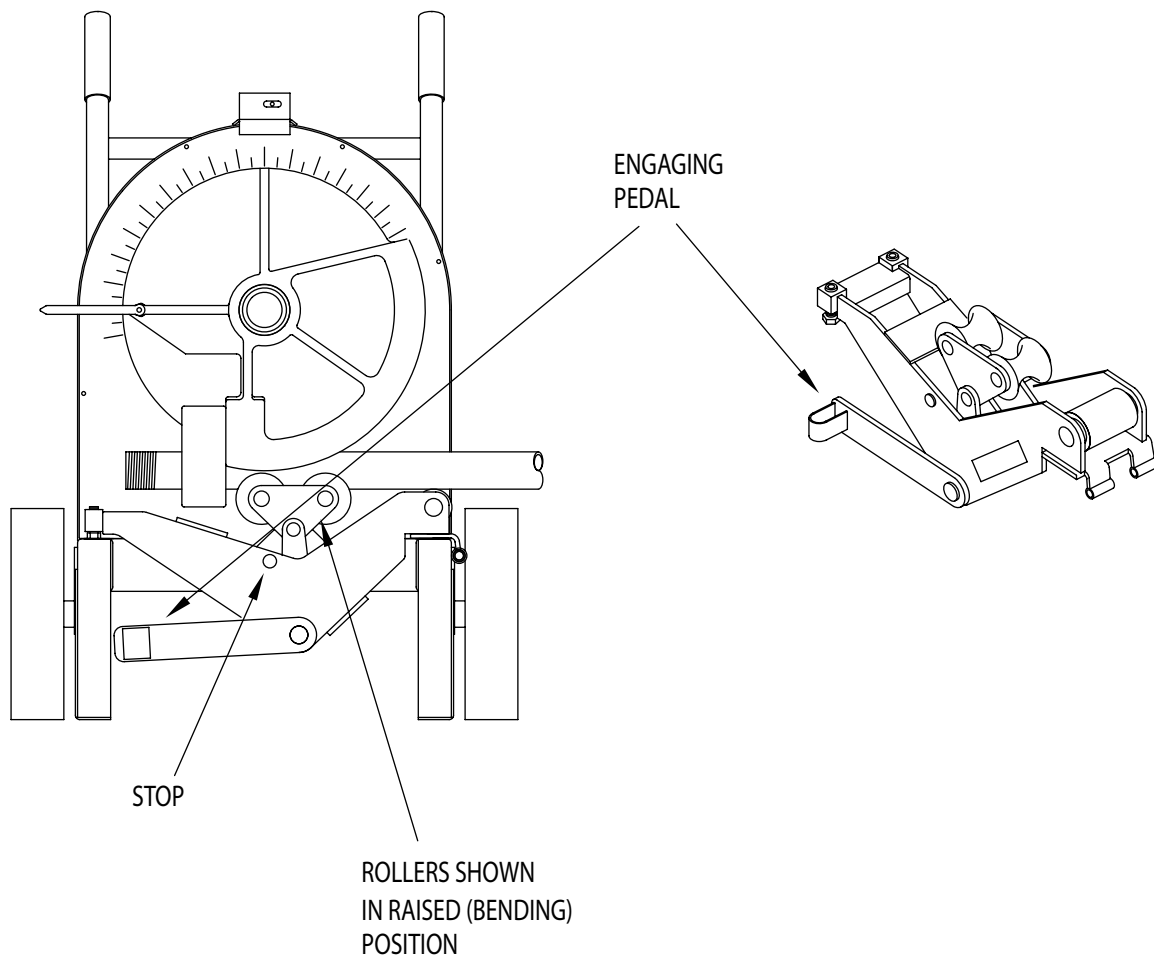
## BENDING INSTRUCTIONS FOR 1 1/2" AND 2" EMT & IMC CONDUIT *continued . . .*

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.



*Figure 13*



## **BENDING INSTRUCTIONS FOR 1 1/2" AND 2" EMT & IMC CONDUIT** *continued . . .*

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.



### **WARNING**

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

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.

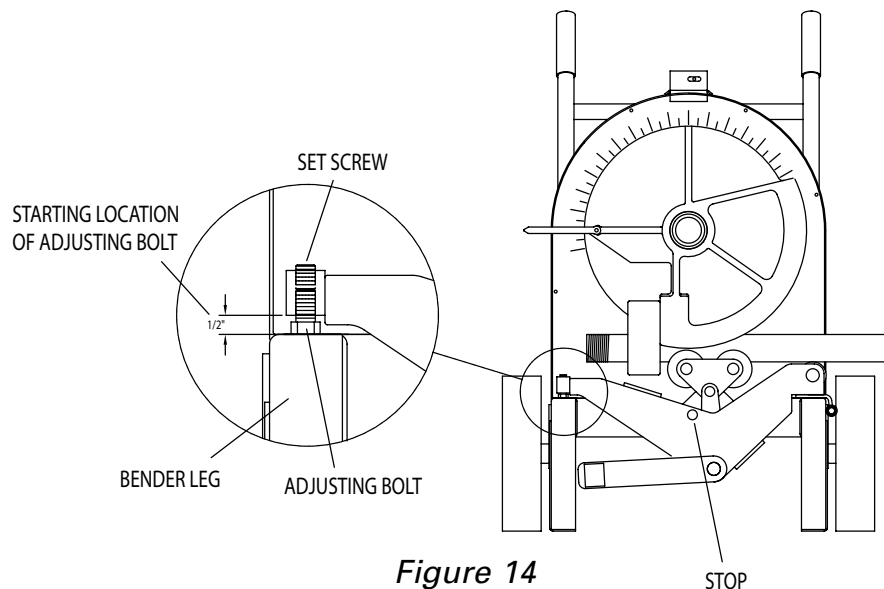


## SQUEEZE ADJUSTMENT PROCEDURE FOR 1 1/2" AND 2" EMT & IMC ROLLER SUPPORTS

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.

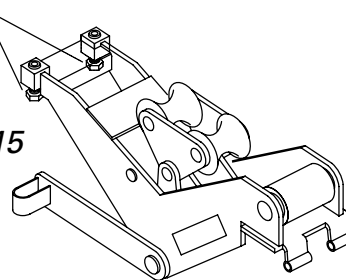
**NOTE:** Both adjusting bolts **MUST** be in contact with the bender leg. See Figure 15.



**Figure 14**

BOTH ADJUSTING BOLTS  
MUST CONTACT BENDER  
LEG

**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.

## WARNING

**ALWAYS** disconnect power supply before removing any guards or covers and before servicing this bender. Failure to do so may result in serious injury or death.

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.

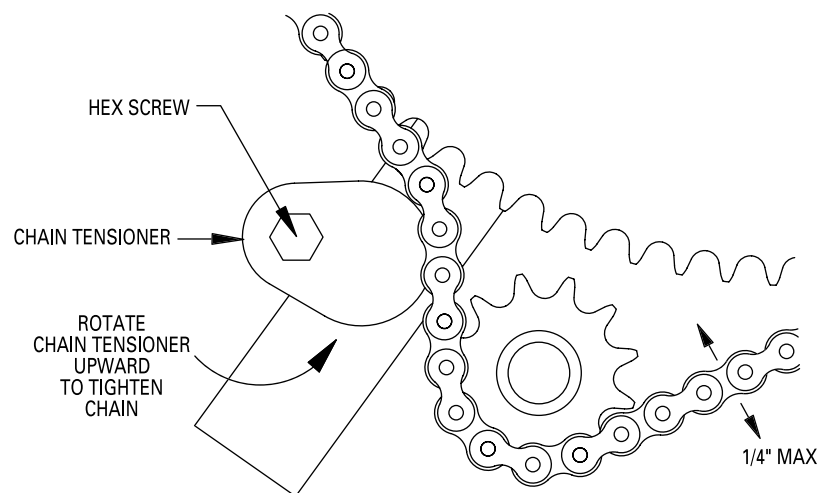


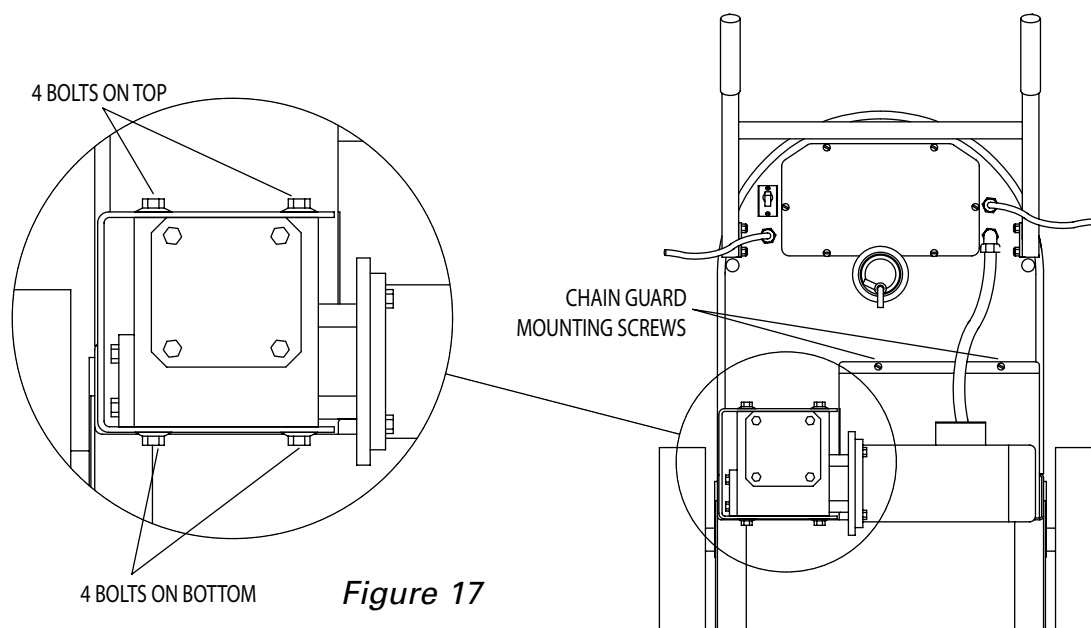
Figure 16

### 3. To inspect REAR #40 chain tension:

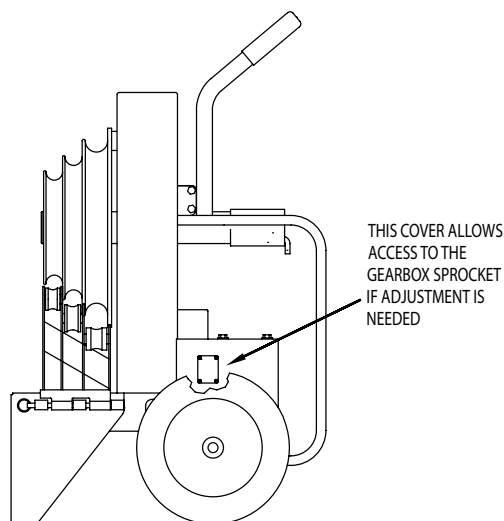
- Check chain tension after an initial break-in period of 2 - 3 hours of use and tighten per the instructions below. See Figure 17. Thereafter, inspect monthly.
- Remove the chain guard by taking out the 2 mounting screws.
- Loosen 8 bolts ( 4 on top and 4 on bottom ) that hold the gear box in position.
- 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.



- Access to the gearbox sprocket is possible by removing access door as shown.





## STUB-UP BENDING INFORMATION AND CHARTS

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.

Figure 18a

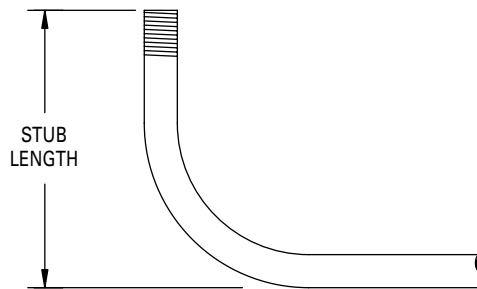


Figure 18b

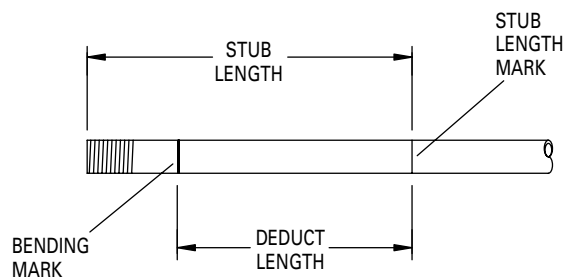
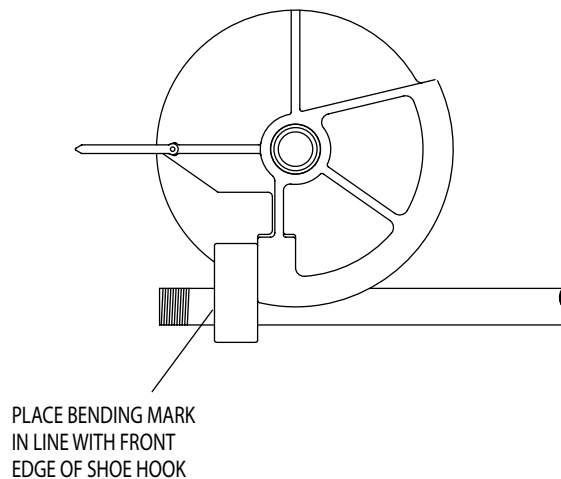


Figure 18c



## STUB-UP BENDING INFORMATION AND CHARTS *continued . . .*

### Chart A – RIGID Conduit/Schedule 40 Pipe

| Conduit Size | Deduct Length | Springback |        |        |        |        |
|--------------|---------------|------------|--------|--------|--------|--------|
|              |               | 15°        | 30°    | 45°    | 60°    | 90°    |
| 1/2"         | 8 1/2"        | 20         | 36 1/4 | 51 1/4 | 67 1/2 | 97 1/2 |
| 3/4"         | 8 1/2"        | 16 1/4     | 31 1/4 | 46 1/4 | 61 1/4 | 92 1/2 |
| 1"           | 10"           | 17 1/2     | 32 1/2 | 47 1/2 | 63 3/4 | 93 3/4 |
| 1 1/4"       | 12 3/4"       | 17 1/2     | 32 1/2 | 47 1/2 | 63 3/4 | 95     |
| 1 1/2"       | 14 1/4"       | 18 3/4     | 33 3/4 | 48 3/4 | 65     | 95     |
| 2"           | 16 1/8"       | 20         | 35     | 48 3/4 | 63 3/4 | 96 1/4 |

### Chart B – EMT Conduit

| Conduit Size | Deduct Length | Springback |        |        |        |        |
|--------------|---------------|------------|--------|--------|--------|--------|
|              |               | 15°        | 30°    | 45°    | 60°    | 90°    |
| 1/2"         | 7"            | 16 1/4     | 32 1/2 | 47 1/2 | 63 3/4 | 95     |
| 3/4"         | 8 7/8"        | 17 1/2     | 33 3/4 | 48 3/4 | 63 3/4 | 95     |
| 1"           | 10 3/4"       | 17 1/2     | 32 1/2 | 48 3/4 | 65     | 95     |
| 1 1/4"       | 13 1/8"       | 17 1/2     | 33 3/4 | 48 3/4 | 65     | 95     |
| 1 1/2"       | 13 7/8"       | 16 1/4     | 31 1/4 | 46 1/4 | 61 1/4 | 92 1/2 |
| 2"           | 15 3/8"       | 17 1/2     | 33 3/4 | 48 3/4 | 63 3/4 | 95     |

### Chart C – IMC Conduit

| Conduit Size | Deduct Length | Springback |        |        |        |        |
|--------------|---------------|------------|--------|--------|--------|--------|
|              |               | 15°        | 30°    | 45°    | 60°    | 90°    |
| 1/2"         | 8 1/2"        | 21 1/4     | 37 1/2 | 52 1/2 | 68 3/4 | 98 3/4 |
| 3/4"         | 8 1/2"        | 17 1/2     | 32 1/2 | 47 1/2 | 63 3/4 | 93 3/4 |
| 1"           | 10"           | 17 1/2     | 32 1/2 | 47 1/2 | 63 3/4 | 95     |
| 1 1/4"       | 12 3/4"       | 18 3/4     | 33 3/4 | 48 3/4 | 65     | 96 1/4 |
| 1 1/2"       | 13 3/4"       | 17 1/2     | 33 3/4 | 48 3/4 | 63 3/4 | 95     |
| 2"           | 15 1/4"       | 20         | 35     | 50     | 65     | 96 1/4 |

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

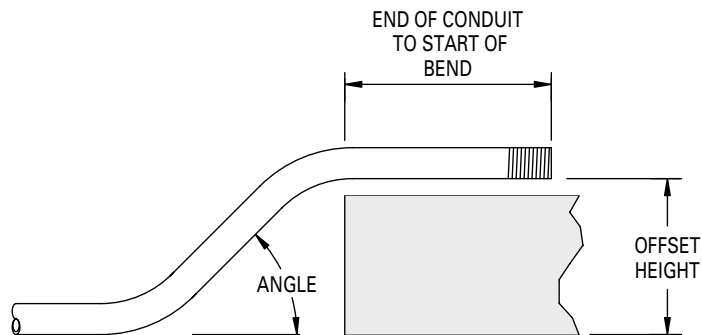


Figure 19b

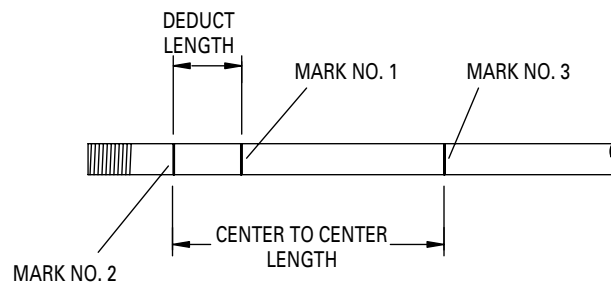
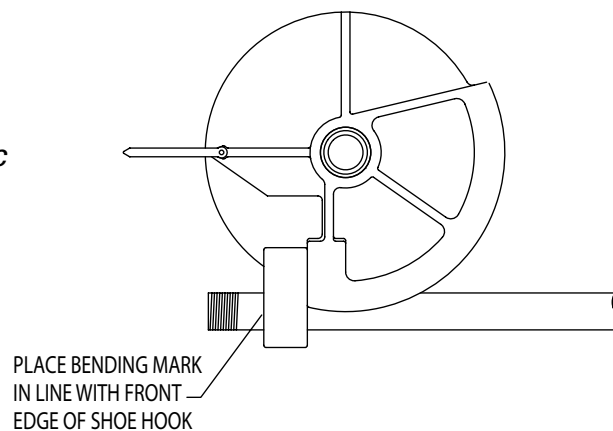


Figure 19c



## OFFSET BENDING INFORMATION AND CHARTS *continued . . .*

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

| Offset Height |                  | 2      | 4        | 6        | 8              | 10      | 12             | 14        | 16             | 18       | 20      | 22      |
|---------------|------------------|--------|----------|----------|----------------|---------|----------------|-----------|----------------|----------|---------|---------|
| 15°           | Max Conduit Size | 3/4"   | 1 1/2"   | 2"       | 2" and smaller |         |                |           |                |          |         |         |
|               | Center-to-Center | 7 3/4" | 15 7/16" | 23 3/16" | 30 15/16"      | 38 5/8" | 46 3/8"        | 54 1/16"  | 61 13/16"      | 69 9/16" | 77 1/4" | 85"     |
| 30°           | Max Conduit Size |        | 3/4"     | 1"       | 1 1/2"         | 2"      | 2" and smaller |           |                |          |         |         |
|               | Center-to-Center |        | 8"       | 12"      | 16"            | 20"     | 24"            | 28"       | 32"            | 36"      | 40"     | 44"     |
| 45°           | Max Conduit Size |        |          | 1/2"     | 1"             | 1 1/4"  | 1 1/2"         | 2"        | 2" and smaller |          |         |         |
|               | Center-to-Center |        |          | 8 1/2"   | 11 5/16"       | 14 1/8" | 16 15/16"      | 19 13/16" | 22 5/8"        | 25 7/16" | 28 1/4" | 31 1/8" |

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.*

| Conduit Size | 1/2     | 3/4     | 1       | 1 1/4 | 1 1/2  | 2      |
|--------------|---------|---------|---------|-------|--------|--------|
| "X"          | 3 1/16" | 3 1/16" | 3 3/16" | 4"    | 4 1/4" | 4 1/2" |



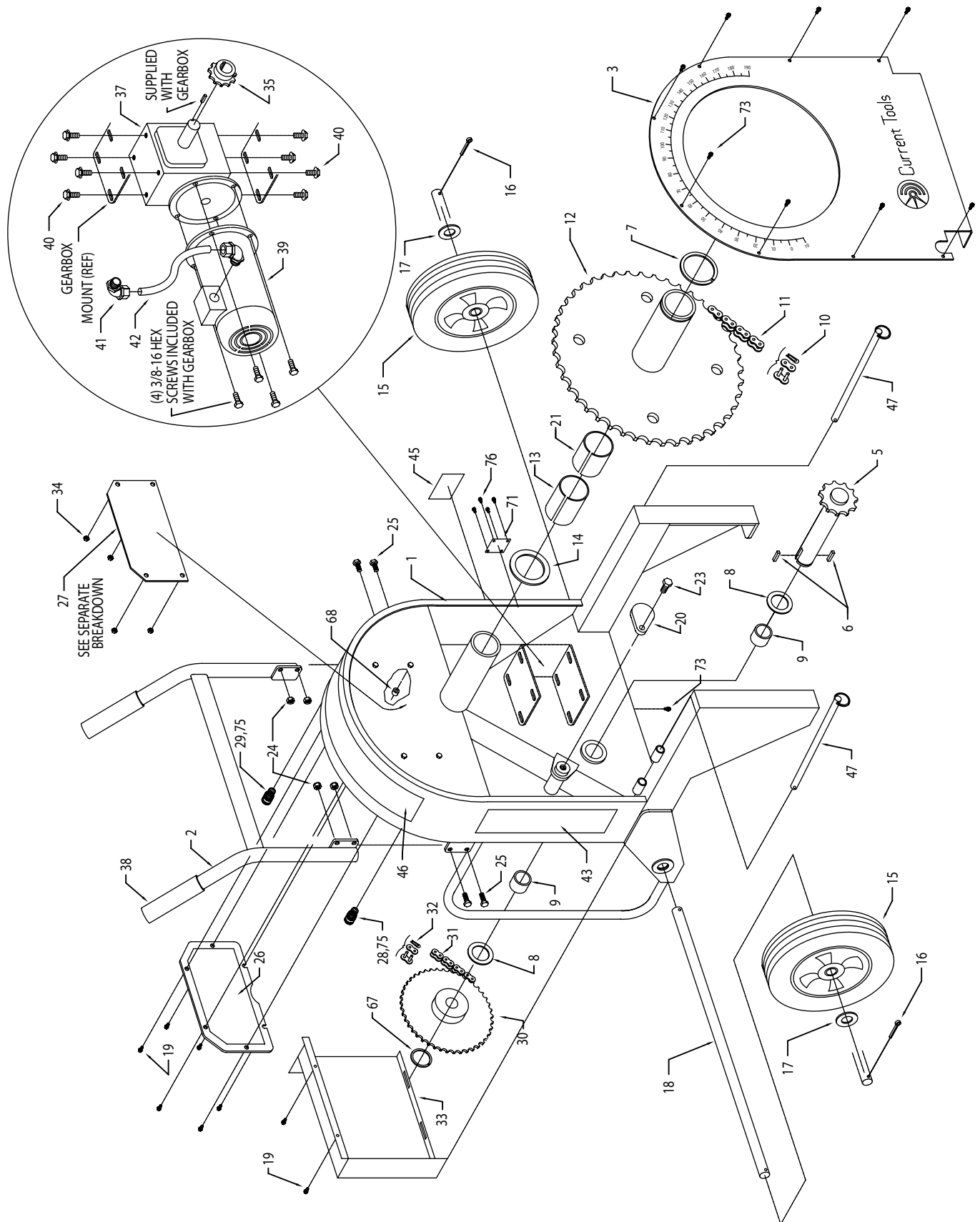
## TROUBLESHOOTING

### **WARNING**

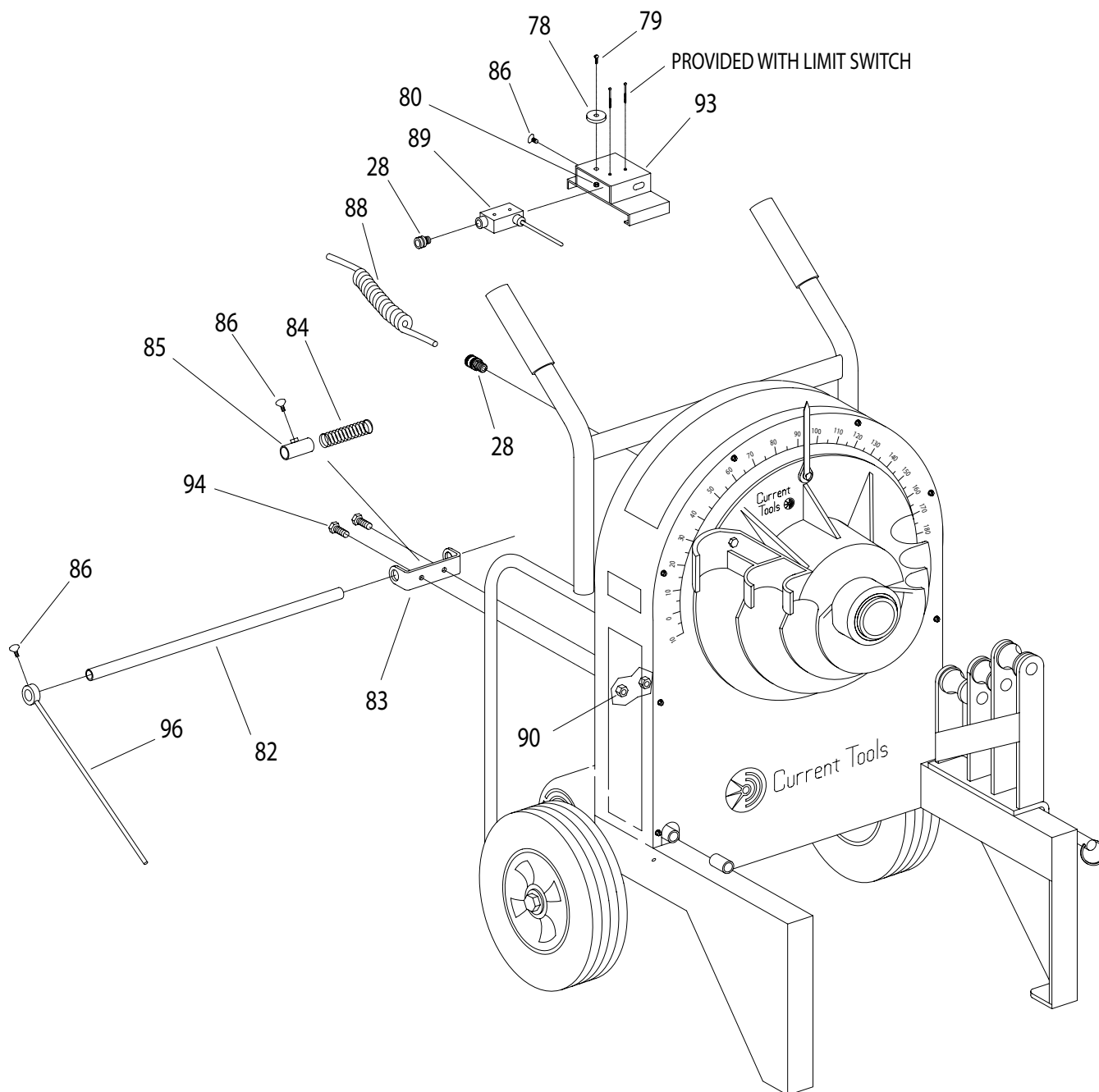
**ALWAYS** disconnect power supply before removing any guards or covers and before servicing this bender. Failure to do so may result in serious injury or death.

| Problem  | Cause  | Diagnosis   | Cure   |
|--|--|---|--|
| 1. Bender will not operate                                       | Power source                                       | Check for voltage at power source   | If power is on, go to ( #3 )   |
| 2. No power at bender  | Bad power cord                                     | Ohm cord for broken wire  | Replace cord   |
| 3. Power to bender but will not operate                          | Circuit breaker / power switch in the off position | Check power on load side of breaker to neutral with volt meter                        | Turn circuit breaker on. If on, go to next step.                                   |
|  | Fuse #1 blown                                      | Ohm circuit for short   | Replace  |
|  | Control Transformer bad                            | Check voltage in and out, if input but no output                                      | Replace  |
|  | Contactor bad                                      | Check contacts and ohm coil for open circuit  | Replace  |
|  | Bridge rectifier bad                               | Check with ohm meter  | Replace  |
|  | Switch bad   | Check with ohm meter  | Replace  |
| 4. Motor runs but will not bend                                  | Motor bad  | Check brushes and ohm for open or short armature                                      | Replace  |
|  | Chain from gear box to jack shaft broken           | Remove cover and visually check for broken parts                                      | Replace  |
|  | Bad gear box                                       | Motor running but no output through gear box  | Replace  |
|  | Chain from jack shaft to shoe sprocket broken      | Remove cover and visually check for broken parts                                      | Replace  |
| 5. Bender operates in one direction only                         | Key between motor and gear box missing             | Remove motor from gear box  | Replace key  |
|  | Bad FWD / REV switch                               | Ohm switch for open contact or shorted contacts                                       | Replace  |
|  | Bad pendant cord                                   | Ohm for broken wire   | Replace  |
| 6. Contactors chatter  | Bad contactor                                      | Check contacts and ohm coil for open circuit  | Replace  |
|  | Low power to bender                                | Check with amp meter  | Do not use long drop cords   |
| 7. Pointer passes bend angle limit switch in clockwise direction | Bend angle limit switch failed                     | Check contacts in the bend angle limit switch contactor and ohm coil for open circuit | Replace contactor if bad. If contactor tests good, replace bend angle limit switch |

# EXPLODED VIEWS

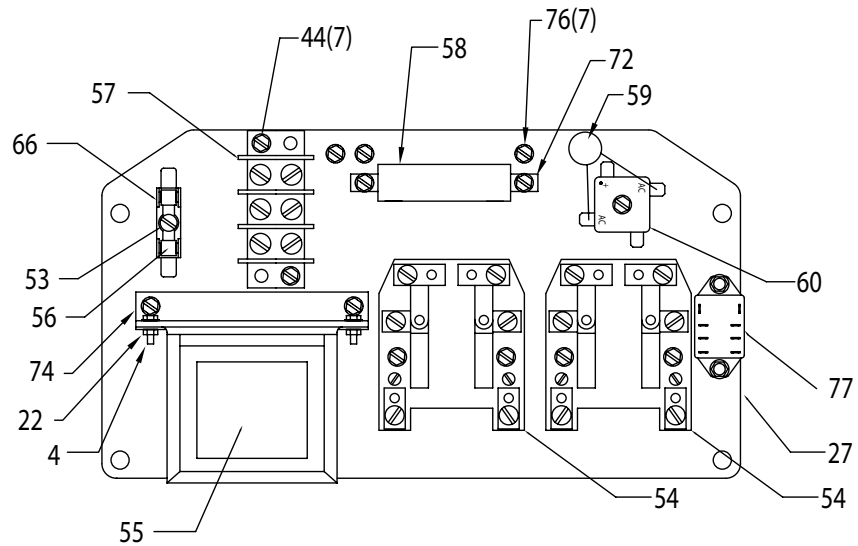


# EXPLODED VIEWS

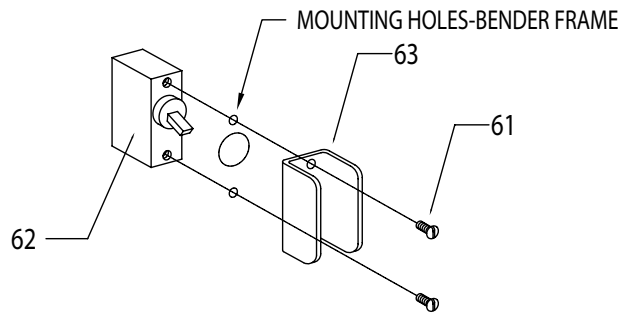


## EXPLODED VIEWS *continued . . .*

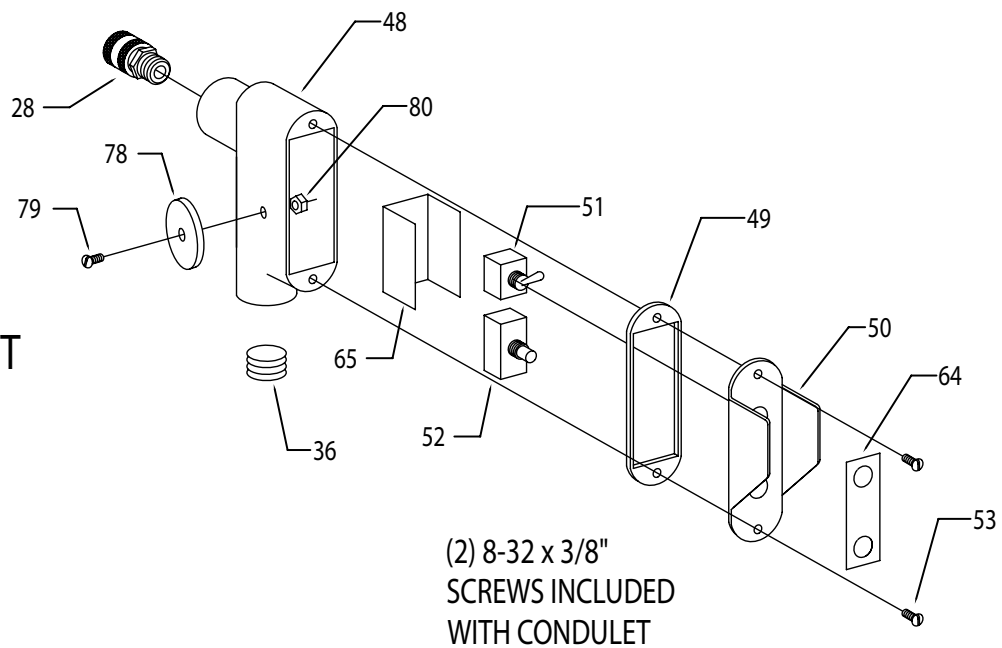
### ELECTRICAL PLATE



### CIRCUIT BREAKER SWITCH



### REMOTE PENDANT





## PARTS LIST — 77DL SERIES ELECTRIC BENDER

| ITEM # | PART #     | QTY | DESCRIPTION                        |
|--------|------------|-----|------------------------------------|
| 1      | 77-375     | 1   | FRAME                              |
| 2      | 77-346     | 1   | HANDLE                             |
| 3      | 77-004D    | 1   | COVER                              |
| 4      | 77-004     | 2   | SCREW - #8-32 X 1/2" THD CUTTER    |
| 5      | 77-343     | 1   | SPROCKET SHAFT                     |
| 6      | 77-006A    | 2   | KEY - SQUARE, 1/4" X 3/4" LONG     |
| 7      | 77-007     | 1   | RETAINING RING - EXT, 2 1/2"       |
| 8      | 77-008     | 2   | WASHER - PHENOLIC (JACKSHAFT)      |
| 9      | 77-009     | 2   | SLEEVE BEARING                     |
| 10     | 77-010     | 1   | #60 MASTER LINK                    |
| 11     | 77-011     | 1   | #60 CHAIN                          |
| 12     | 77-394     | 1   | SPROCKET - MAIN DRIVE #60          |
| 13     | 77-013B    | 1   | SLEEVE - PHENOLIC (LONG)           |
| 14     | 77-014     | 1   | WASHER - PHENOLIC (MAIN)           |
| 15     | 77-015     | 2   | WHEEL                              |
| 16     | 77-016     | 2   | PIN - COTTER, 3/16" X 1 1/4"       |
| 17     | 77-017     | 2   | WASHER - 3/4" USS                  |
| 18     | 77-429     | 1   | AXLE                               |
| 19     | 77-033A    | 8   | SCREW - HEX, 10 X 1/2, #2 TEKs     |
| 20     | 77-413     | 1   | CHAIN TENSIONER                    |
| 21     | 77-013A    | 1   | SLEEVE - PHENOLIC (SHORT)          |
| 22     | 453-16A    | 2   | NUT - HEX #8 - 32                  |
| 23     | 8092-2     | 1   | SCREW - HEX 1/2 - 13 X 1"          |
| 24     | 2-1301-4   | 4   | NUT - HEX, 5/16 - 18 (NYLON INS.)  |
| 25     | 77-002D1   | 4   | SCREW - HEX 5/16 - 18 X 3/4        |
| 26     | 77-026     | 1   | COVER - ELECTRICAL                 |
| 27     | 77-339     | 1   | PLATE - ELECTRICAL                 |
| 28     | 77-028A    | 3   | STRAIN RELIEF - PENDANT            |
| 29     | 77-028     | 1   | STRAIN RELIEF - POWER CORD         |
| 30     | 77-288     | 1   | SPROCKET - #40 B48                 |
| 31     | 77-031     | 1   | CHAIN - #40                        |
| 32     | 77-032     | 1   | MASTER LINK - #40                  |
| 33     | 77-468     | 1   | COVER - REAR CHAIN                 |
| 34     | .9518SR-12 | 4   | NUT - HEX, 1/4-20 (LOCK)           |
| 35     | 77-237     | 1   | SPROCKET - #40 B13                 |
| 36     | 77-3-1A    | 1   | PLUG - PLASTIC                     |
| 37     | 77-037     | 1   | GEAR BOX                           |
| 38     | .504-1     | 2   | GRIP                               |
| 39     | 77-039     | 1   | MOTOR                              |
| 40     | 77-040     | 8   | BOLT - FLANGE LOCK, 3/8 - 16 X 3/4 |

## PARTS LIST *continued . . .*

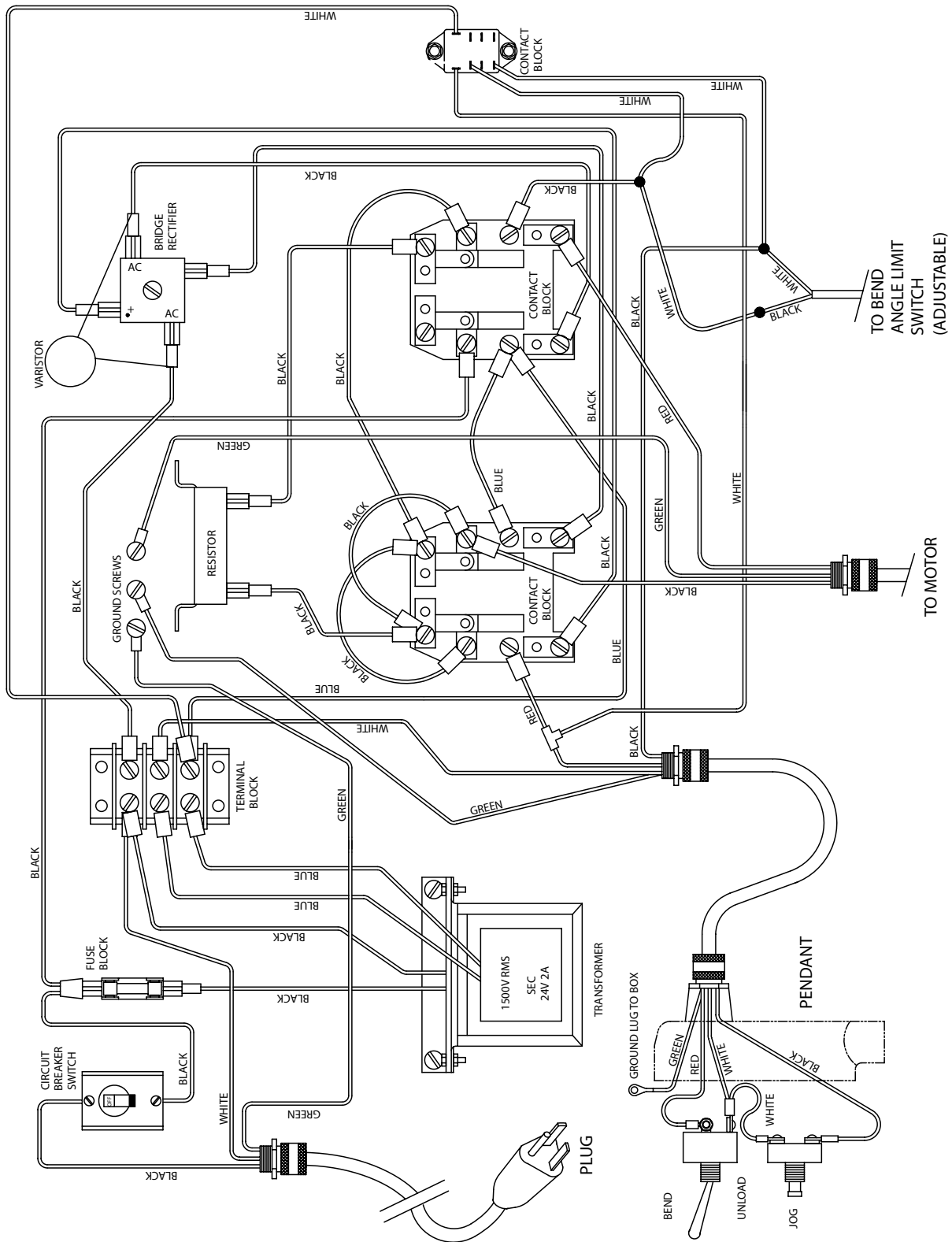
| ITEM #  | PART #       | QTY     | DESCRIPTION                           |
|---------|--------------|---------|---------------------------------------|
| 41..... | 77-041.....  | 2 ..... | FITTING - 90° LIQUITITE               |
| 42..... | 77-042A..... | 1 ..... | FLEX CONDUIT                          |
| 43..... | 77-043.....  | 1 ..... | DECAL - SAFETY INFORMATION            |
| 44..... | 77-004B..... | 7 ..... | SCREW - #8 - 32 X 5/8" THD CUTTER     |
| 45..... | 77-045.....  | 1 ..... | SERIAL NUMBER PLATE                   |
| 46..... | 77-046.....  | 1 ..... | DECAL - BENDING INSTRUCTIONS          |
| 47..... | 77-047.....  | 2 ..... | PIN - ROLLER SUPPORT                  |
| 48..... | 77-048.....  | 1 ..... | CONDULET - 1/2"                       |
| 49..... | 77-451.....  | 1 ..... | GASKET                                |
| 50..... | 77-128.....  | 1 ..... | GUARD - PENDANT SWITCH                |
| 51..... | 77-051.....  | 1 ..... | SWITCH - FORWARD / REVERSE            |
| 52..... | 77-052.....  | 1 ..... | SWITCH - JOG                          |
| 53..... | 77-053.....  | 3 ...   | SCREW - #8 - 32 X 3/8" PAN HEAD MACH. |
| 54..... | 77-054.....  | 2 ..... | CONTACTORS                            |
| 55..... | 77-055.....  | 1 ..... | TRANSFORMER - 24 VOLT                 |
| 56..... | 77-056.....  | 1 ..... | FUSE                                  |
| 57..... | 77-057.....  | 1 ..... | TERMINAL BLOCK                        |
| 58..... | 77-058.....  | 1 ..... | RESISTOR                              |
| 59..... | 77-508.....  | 1 ..... | VARISTOR WITH WIRES                   |
| 60..... | 77-060.....  | 1 ..... | BRIDGE RECTIFIER                      |
| 61..... | 77-061.....  | 2 ...   | SCREW - RD. HEAD MACH., #6 -32 X 3/8" |
| 62..... | 77-062.....  | 1 ..... | CIRCUIT BREAKER                       |
| 63..... | 77-063.....  | 1 ..... | COVER - CIRCUIT BREAKER               |
| 64..... | 77-064.....  | 1 ..... | DECAL - PENDANT                       |
| 65..... | 77-065.....  | 1 ..... | FISH PAPER - INSULATING               |
| 66..... | 77-066.....  | 1 ..... | FUSE HOLDER                           |
| 67..... | 77-067.....  | 1 ..... | RETAINING RING                        |
| 68..... | 450-20.....  | 4 ..... | SPACER                                |
| 69..... | 77-068.....  | 1 ..... | CORD - POWER (not shown)              |
| 70..... | 77-048A..... | 1 ..... | CORD - PENDANT (not shown)            |
| 71..... | 77-714.....  | 1 ..... | ACCESS COVER                          |
| 72..... | 77-058A..... | 2 ..... | BRACKET - RESISTOR                    |
| 73..... | 452-6A ..... | 9 ..... | SCREW #8 X 1/2" SELF DRILL            |
| 74..... | 77-387.....  | 1 ..... | BRACKET - TRANSFORMER                 |
| 75..... | 77-041A..... | 2 ..... | NUT - 1/2" LOCK                       |
| 76..... | 77-004A..... | 11....  | SCREW - #8 - 32 X 3/8" THD CUTTER     |
| 77..... | 747-7 .....  | 1 ..... | RELAY                                 |
| 78..... | 747-19.....  | 2 ..... | MAGNET                                |
| 79..... | 451-22.....  | 2 ..... | SCREW 10-32 X 3/8" RD HD SLOTTED      |
| 80..... | 451-21.....  | 2 ..... | NUT HEX 10-32 (NYLON INS)             |

**PARTS LIST** *continued . . .*

| <b>ITEM #</b> | <b>PART #</b>  | <b>QTY</b> | <b>DESCRIPTION</b>             |
|---------------|----------------|------------|--------------------------------|
| 82.....       | 77DL-968 ..... | 1 .....    | STOP TUBE                      |
| 83.....       | 77DL-964 ..... | 1 .....    | BRACKET — STOP TUBE            |
| 84.....       | 77DL-1 .....   | 1 .....    | SPRING                         |
| 85.....       | 77DL-969 ..... | 1 .....    | LOCKING TUBE                   |
| 86.....       | 77DL-2 .....   | 3 .....    | THUMB SCREW 5/16-18 X1/2       |
| 88.....       | 77DL-3 .....   | 1 .....    | CORD – COILED                  |
| 89.....       | 77DL-4 .....   | 1 .....    | LIMIT SWITCH                   |
| 90.....       | 2-1301-4.....  | 2 .....    | HEX NUT 5/16-18 (NYLON INSERT) |
| 93.....       | 77DL-970 ..... | 1 .....    | BRACKET – LIMIT SWITCH         |
| 94.....       | 77-002D1 ..... | 2 .....    | SCREW HEX HD 5/16-18 X 3/4"    |
| 96.....       | 77DL-971 ..... | 1 .....    | STOP ROD                       |



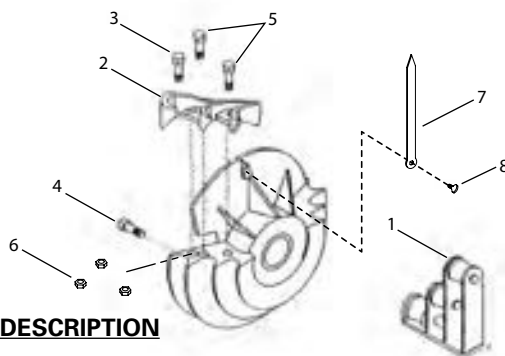
# ELECTRICAL SYSTEM DIAGRAM – 77DL BENDER





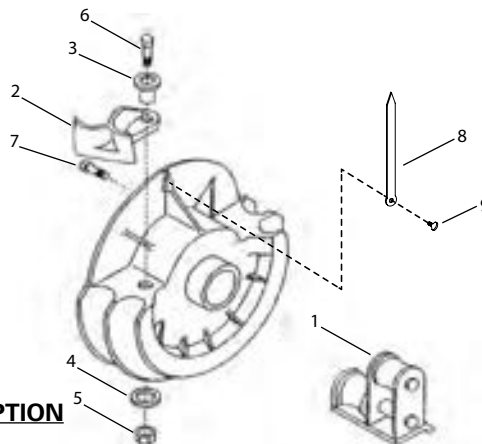
## PARTS LIST — BENDING SHOES & ROLLER SUPPORTS

### Bending Shoe & Roller Support — 1/2" to 1 1/4" RIGID & IMC Conduit



| ITEM # | PART #   | QTY | DESCRIPTION                                |
|--------|----------|-----|--|
| 1      | 2-1001   | 1   | ROLLER SUPPORT, 1/2" TO 1 1/4" RIGID & IMC |
|        | 2-1301DL |     | BENDING SHOE ASSEMBLY (INCLUDES 2-8)       |
| 2      | 2-1302   | 1   | HOOK                                       |
| 3      | 2-1501-5 | 1   | 3/8 - 16 X 1 1/4" SKT HD CAP SCREW         |
| 4      | 2-1304   | 4   | DRIVE STUD                                 |
| 5      | 2-1501-3 | 2   | 3/8"-16 X 1 1/2" SKT HD CAP SCREW          |
| 6      | 2-1501-4 | 3   | NUT – HEX 3/8"-16 NYLON INSERT             |
| 7      | 77DL-967 | 1   | POINTER – SHOE                             |
| 8      | 77DL-5   | 1   | THUMB SCREW 1/4-20 X 1/2"                  |

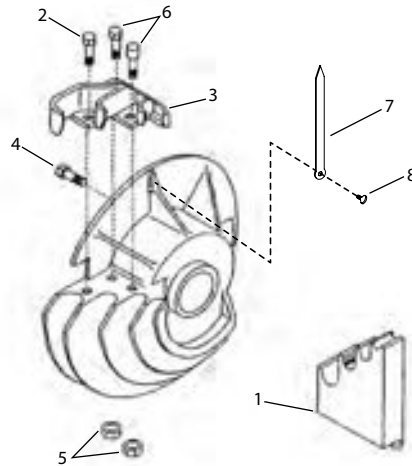
### Bending Shoe & Roller Support — 1 1/2" to 2" RIGID Conduit



| ITEM # | PART #   | QTY | DESCRIPTION   |
|--------|----------|-----|---|
| 1      | 2-1002   | 1   | ROLLER SUPPORT, 1 1/2" TO 2" RIGID CONDUIT              |
|        | 2-1401DL |     | BENDING SHOE ASSEMBLY 1 1/2" TO 2" RIGID (INCLUDES 2-9) |
| 2      | 2-1402   | 1   | HOOK  |
| 3      | 2-1403   | 1   | SPACER – PIVOT  |
| 4      | 2-1404   | 1   | FLAT WASHER   |
| 5      | 2-1401-4 | 1   | 5/8 - 11 HEX NUT, NYLON INSERT                          |
| 6      | 751-9    | 1   | 5/8 - 11 X 3" SKT HD CAP SCREW                          |
| 7      | 2-1304   | 4   | DRIVE STUD  |
| 8      | 77DL-967 | 1   | POINTER – SHOE  |
| 9      | 77DL-5   | 1   | THUMB SCREW 1/4-20 X 1/2"                               |

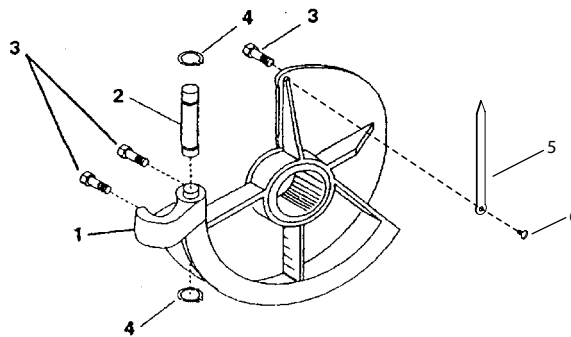
## PARTS LIST — BENDING SHOES & SUPPORTS *continued . . .*

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



| ITEM #      | PART #             | QTY         | DESCRIPTION  |
|-------------|--------------------|-------------|--|
| 1 . . . . . | 2-1003 . . . . .   | 1 . . . . . | EMT SUPPORT, 1/2" TO 1 1/4" EMT CONDUIT                          |
|             | 2-1501DL . . . . . |             | BENDING SHOE ASSEMBLY, 1/2" TO 1 1/4" EMT CONDUIT (INCLUDES 2-8) |
| 2 . . . . . | 2-1501-5 . . . . . | 1 . . . . . | 3/8 - 16 X 1/14" HEX HD CAP SCREW (GRADE 8)                      |
| 3 . . . . . | 2-1504 . . . . .   | 1 . . . . . | HOOK   |
| 4 . . . . . | 2-1304 . . . . .   | 4 . . . . . | DRIVE STUD   |
| 5 . . . . . | 2-1501-4 . . . . . | 2 . . . . . | 3/8 - 16 HEX NUT, NYLON INSERT                                   |
| 6 . . . . . | 2-1501-3 . . . . . | 2 . . . . . | 3/8 - 16 X 1 1/2" HEX HD SCREW (GRADE 8)                         |
| 7 . . . . . | 77DL-967 . . . . . | 1 . . . . . | POINTER – SHOE   |
| 8 . . . . . | 77DL-5 . . . . .   | 1 . . . . . | THUMB SCREW 1/4-20 X 1/2"  |

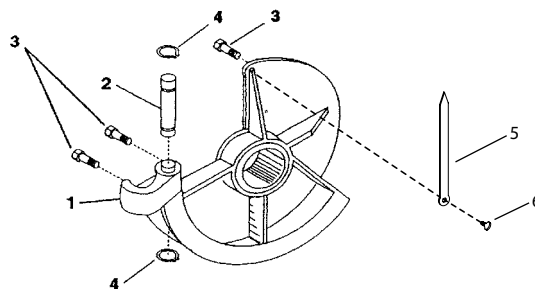
### Bending Shoe — 1 1/2" EMT Conduit



| ITEM #      | PART #             | QTY         | DESCRIPTION                          |
|-------------|--------------------|-------------|--------------------------------------|
|             | 2-1601DL . . . . . |             | SHOE UNIT, 1 1/2" EMT (INCLUDES 1-6) |
| 1 . . . . . | 2-1802 . . . . .   | 1 . . . . . | HOOK 1 1/2" EMT                      |
| 2 . . . . . | 2-1603 . . . . .   | 1 . . . . . | PIN, 1 1/2" EMT HOOK                 |
| 3 . . . . . | 2-1304 . . . . .   | 3 . . . . . | DRIVE STUD                           |
| 4 . . . . . | 2-1604 . . . . .   | 2 . . . . . | RETAINING RING                       |
| 5 . . . . . | 77DL-967 . . . . . | 1 . . . . . | POINTER – SHOE                       |
| 6 . . . . . | 77DL-5 . . . . .   | 1 . . . . . | THUMB SCREW 1/4-20 X 1/2"            |

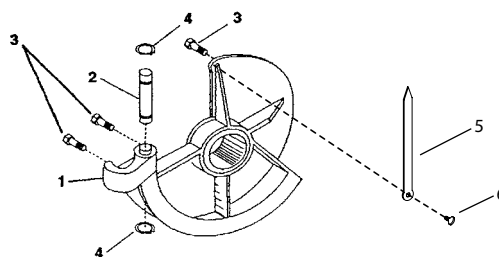
## PARTS LIST — BENDING SHOES & SUPPORTS *continued . . .*

### Bending Shoe — 2" EMT Conduit



| <u>ITEM #</u> | <u>PART #</u> | <u>QTY</u> | <u>DESCRIPTION</u>               |
|---------------|---------------|------------|----------------------------------|
|               | 2-1701DL      | 1          | SHOE UNIT, 2" EMT (INCLUDES 1-6) |
| 1             | 2-1702        | 1          | HOOK, 2" EMT                     |
| 2             | 2-1703        | 1          | PIN, 2" EMT HOOK                 |
| 3             | 2-1304        | 3          | DRIVE STUD                       |
| 4             | 2-1604        | 2          | RETAINING RING                   |
| 5             | 77DL-967      | 1          | POINTER – SHOE                   |
| 6             | 77DL-5        | 1          | THUMB SCREW 1/4-20 X 1/2"        |

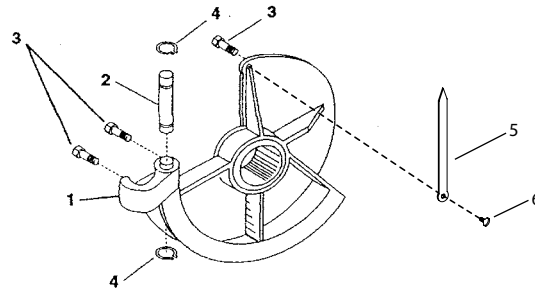
### Bending Shoe — 1 1/2" IMC Conduit



| <u>ITEM #</u> | <u>PART #</u> | <u>QTY</u> | <u>DESCRIPTION</u>                   |
|---------------|---------------|------------|--------------------------------------|
|               | 2-1801DL      | 1          | SHOE UNIT, 1 1/2" IMC (INCLUDES 1-6) |
| 1             | 2-1802        | 1          | HOOK, 1 1/2" IMC                     |
| 2             | 2-1603        | 1          | PIN, 1 1/2" IMC                      |
| 3             | 2-1304        | 3          | DRIVE STUD                           |
| 4             | 2-1604        | 2          | RETAINING RING                       |
| 5             | 77DL-967      | 1          | POINTER – SHOE                       |
| 6             | 77DL-5        | 1          | THUMB SCREW 1/4-20 X 1/2"            |

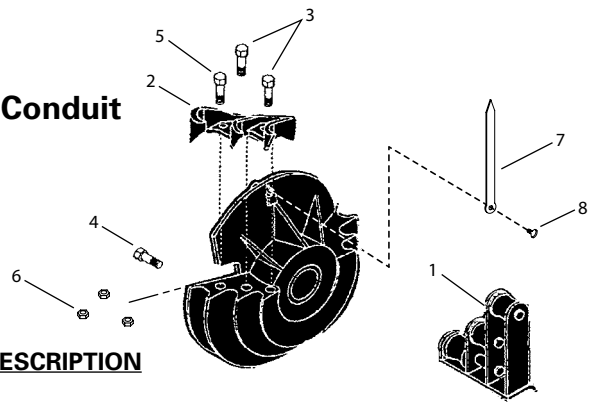
## PARTS LIST — BENDING SHOES & SUPPORTS *continued . . .*

### Bending Shoe — 2" IMC Conduit



| ITEM # | PART #   | QTY | DESCRIPTION                      |
|--------|----------|-----|----------------------------------|
|        | 2-1901DL | 1   | SHOE UNIT, 2" IMC (INCLUDES 1-6) |
| 1      | 2-1902   | 1   | HOOK, 2" IMC                     |
| 2      | 2-1703   | 1   | PIN, 2" IMC                      |
| 3      | 2-1304   | 3   | DRIVE STUD                       |
| 4      | 2-1604   | 2   | RETAINING RING                   |
| 5      | 77DL-967 | 1   | POINTER – SHOE                   |
| 6      | 77DL-5   | 1   | THUMB SCREW 1/4-20 X 1/2"        |

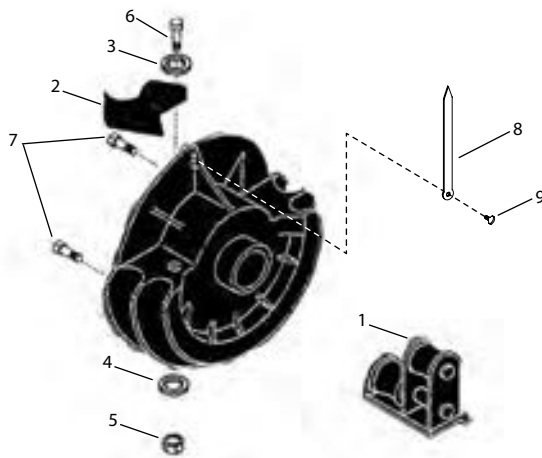
### Bending Shoe & Roller Support — 1/2" to 1 1/4" 40 mil PVC Coated RIGID Conduit



| ITEM # | PART #   | QTY | DESCRIPTION  |
|--------|----------|-----|--|
| 1      | 2-1004   | 1   | ROLLER SUPPORT, 1/2" TO 1 1/4" PVC COATED RIGID                      |
|        | 2-2001DL | 1   | BENDING SHOE ASSEMBLY, 1/2 TO 1 1/4" PVC COATED RIGID (INCLUDES 2-8) |
| 2      | 2-1302   | 1   | HOOK   |
| 3      | 2-1501-3 | 2   | 3/8" - 16 X 1 1/2" HEX HEAD CAP SCREW (GRADE 8)                      |
| 4      | 2-1304   | 4   | DRIVE STUD   |
| 5      | 2-1501-5 | 1   | 3/8" - 16 X 1 1/4" HEX HEAD CAP SCREW (GRADE 8)                      |
| 6      | 2-1501-4 | 2   | 3/8" - 16 HEX NUT, NYLON INSERT                                      |
| 7      | 77DL-967 | 1   | POINTER – SHOE   |
| 8      | 77DL-5   | 1   | THUMB SCREW 1/4-20 X 1/2"  |

## PARTS LIST — BENDING SHOES & SUPPORTS *continued . . .*

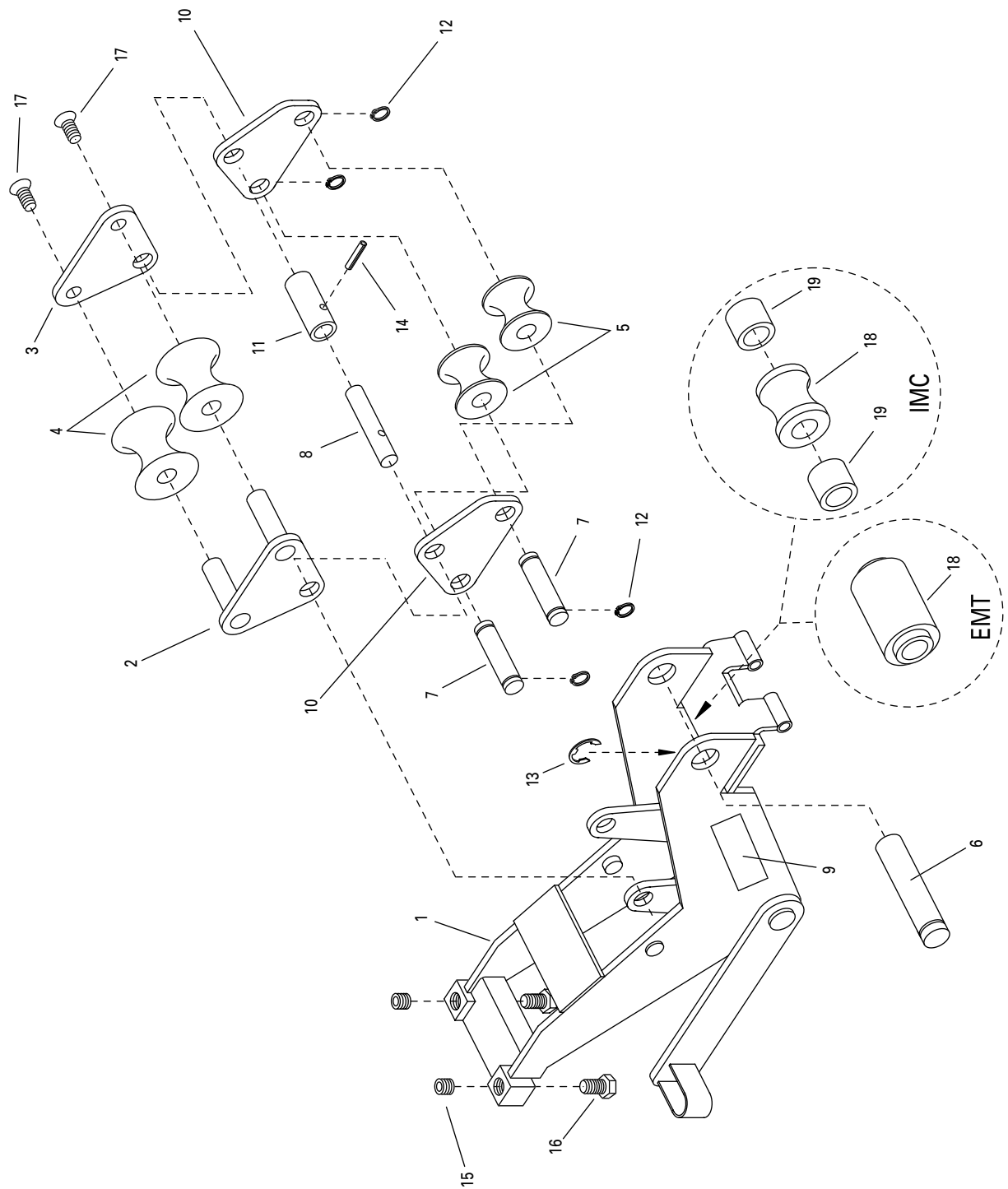
### Bending Shoe & Roller Support — 1 1/2" to 2" 40 mil PVC Coated RIGID Conduit



| ITEM #      | PART #             | QTY         | DESCRIPTION   |
|-------------|--------------------|-------------|---|
| 1 . . . . . | 2-1005 . . . . .   | 1 . . . . . | ROLLER SUPPORT, 1 1/2" TO 2" PVC COATED RIGID                       |
|             | 2-2101DL . . . . . |             | BENDING SHOE ASSEMBLY, 1 1/2" TO 2" PVC COATED RIGID (INCLUDES 2-9) |
| 2 . . . . . | 2-1402 . . . . .   | 1 . . . . . | HOOK  |
| 3 . . . . . | 2-1403 . . . . .   | 1 . . . . . | SPACER – PIVOT  |
| 4 . . . . . | 2-1404 . . . . .   | 1 . . . . . | FLAT WASHER   |
| 5 . . . . . | 2-1401-4 . . . . . | 1 . . . . . | 5/8 - 11 HEX NUT NYLON INSERT                                       |
| 6 . . . . . | 751-9 . . . . .    | 1 . . . . . | 5/8 - 11 X 3" SKT HD CAP SCREW                                      |
| 7 . . . . . | 2-1304 . . . . .   | 4 . . . . . | DRIVE STUD  |
| 8 . . . . . | 77DL-967 . . . . . | 1 . . . . . | POINTER – SHOE  |
| 9 . . . . . | 77DL-5 . . . . .   | 1 . . . . . | THUMB SCREW 1/4-20 X 1/2"   |



## EXPLODED VIEW — ROLLER SUPPORT





## PARTS LIST — ROLLER SUPPORT – EMT

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

| ITEM #  | EMT PART #    | QTY     | DESCRIPTION                              |
|---------|---------------|---------|--|
| 1.....  | 2-1102 .....  | 1 ..... | FRAME                                    |
| 2.....  | 2-1114 .....  | 1 ..... | 2" ROLLER SUPPORT WELDMENT               |
| 3.....  | 2-1115 .....  | 1 ..... | 2" ROLLER SUPPORT PLATE                  |
| 4.....  | 2-1116 .....  | 2 ..... | 2" EMT FRONT ROLLER                      |
| 5.....  | 2-1103 .....  | 2 ..... | 1 1/2" EMT ROLLER                        |
| 6.....  | 2-1104 .....  | 1 ..... | ROLLER PIN                               |
| 7.....  | 2-1105 .....  | 2 ..... | 1 1/2" ROLLER PIN                        |
| 8.....  | 2-1106 .....  | 1 ..... | ROLLER PIVOT PIN                         |
| 9.....  | 2-1100-1..... | 1 ..... | EMT DECAL                                |
| 10..... | 2-1107 .....  | 2 ..... | 1 1/2" PIVOT PLATE                       |
| 11..... | 2-1108 .....  | 1 ..... | SPACER                                   |
| 12..... | 2-1109 .....  | 4 ..... | RETAINING RING                           |
| 13..... | 2-1110 .....  | 1 ..... | RETAINING RING                           |
| 14..... | 2-1111 .....  | 1 ..... | ROLL PIN                                 |
| 15..... | 2-1112 .....  | 2 ..... | SCREW, 1/2-13 UNC X 3/4 CUP PT. SKT. SET |
| 16..... | 2-1113 .....  | 2 ..... | SCREW, 1/2-13 UNC X 1 HEX HD. CAP        |
| 17..... | 2-1118 .....  | 2 ..... | SCREW, 7/16-14 UNC X 1 FLAT HEAD         |
| 18..... | 2-1101 .....  | 1 ..... | ROLLER, URETHANE                         |



## PARTS LIST — ROLLER SUPPORT – IMC

### 2-1200 ROLLER SUPPORT UNIT, 1 1/2" & 2" IMC

| ITEM #  | IMC PART #    | QTY     | DESCRIPTION                              |
|---------|---------------|---------|--|
| 1.....  | 2-1203 .....  | 1 ..... | FRAME                                    |
| 2.....  | 2-1114 .....  | 1 ..... | 2" ROLLER SUPPORT WELDMENT               |
| 3.....  | 2-1115 .....  | 1 ..... | 2" ROLLER SUPPORT PLATE                  |
| 4.....  | 2-1205 .....  | 2 ..... | 2" IMC ROLLER                            |
| 5.....  | 2-1204 .....  | 2 ..... | 1 1/2" IMC ROLLER                        |
| 6.....  | 2-1104 .....  | 1 ..... | ROLLER PIN                               |
| 7.....  | 2-1105 .....  | 2 ..... | 1 1/2" ROLLER PIN                        |
| 8.....  | 2-1106 .....  | 1 ..... | ROLLER PIVOT PIN                         |
| 9.....  | 2-1200-1..... | 1 ..... | IMC DECAL                                |
| 10..... | 2-1107 .....  | 2 ..... | 1 1/2" PIVOT PLATE                       |
| 11..... | 2-1108 .....  | 1 ..... | SPACER                                   |
| 12..... | 2-1109 .....  | 4 ..... | RETAINING RING                           |
| 13..... | 2-1110 .....  | 1 ..... | RETAINING RING                           |
| 14..... | 2-1111 .....  | 1 ..... | ROLL PIN                                 |
| 15..... | 2-1112 .....  | 2 ..... | SCREW, 1/2-13 UNC X 3/4 CUP PT. SKT. SET |
| 16..... | 2-1113 .....  | 2 ..... | SCREW, 1/2-13 UNC X 1 HEX HD. CAP        |
| 17..... | 2-1118 .....  | 2 ..... | SCREW, 7/16-14 UNC X 1 FLAT HEAD         |
| 18..... | 2-1201 .....  | 1 ..... | ROLLER, STEEL                            |
| 19..... | 2-1202 .....  | 2 ..... | SPACER                                   |