

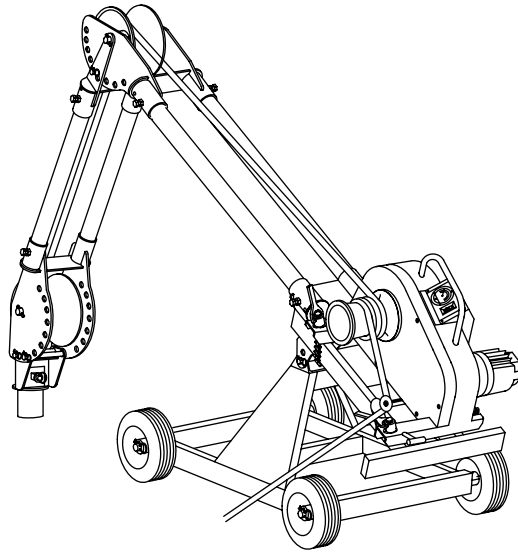


# ***Current Tools***

**FOR THE PROFESSIONAL ELECTRICIAN**

Current Tools™ 8885/8890 Series – The Mantis™  
Mobile Cable Pulling Packages

Current Tools™ Model 8085 and Model 8090  
Mobile Cable Pulling Carriage



## **Operating, Maintenance, Safety and Parts Manual**

02/10 - REV. 4



**Read and understand this material before operating or servicing the Cable Puller or any component of the Mantis™ Cable Pulling Package. Failure to understand how to safely operate and service these units may result in serious injury or death.**

This manual is free of charge. All personnel who operate the Cable Puller or any component of the Mantis™ Cable Pulling Package should have a copy of this manual and read and understand its contents. To request a copy of this manual or replacement safety decals, or for technical assistance, call or write to the address below.

CURRENTTOOLS • P. O. BOX 17026 GREENVILLE, SC 29606  
800.230.5421 or 864.244.1201 • FAX 864.244.5860  
[www.currenttools.com](http://www.currenttools.com)



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## **MODEL 88 CABLE PULLER**

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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 Cable Puller or any component of the Cable Pulling Package. Failure to understand how to operate and service this equipment could result in serious injury or death. This equipment should only be operated and serviced by qualified personnel.



## IMPORTANT SAFETY INFORMATION

### **⚠ DANGER**

DO NOT operate cable puller in wet or damp locations. DO NOT expose to rain.

### **⚠ DANGER**

DO NOT operate in an explosive atmosphere.

### **⚠ WARNING**

DO NOT use cable puller as a hoist or for lifting, supporting or transporting people or loads. Use only for its intended purpose as a cable puller.

### **⚠ WARNING**

DO NOT wrap rope around any body parts. DO NOT wrap rope around wrists.

### **⚠ WARNING**

ALWAYS keep rope away from operator's feet.

### **⚠ WARNING**

DO NOT exceed load rating of cable puller, rope, or accessories.

### **⚠ WARNING**

ALWAYS inspect rope before each use.

### **⚠ WARNING**

ALWAYS disconnect cable puller before servicing.

### **⚠ WARNING**

ALWAYS plug the Model 88 Cable Puller into a grounded receptacle with a 15 amp GFCI protected circuit. DO NOT modify the plug provided with the Model 88 Cable Puller.

### **⚠ WARNING**

ALWAYS inspect the structural integrity of any supports, conduit, anchoring system etc. that will hold the cable puller during the pull. These supports should be able to withstand the maximum pulling force of the cable puller plus a safety factor of 3:1. *Example: 8,000 lb. puller should be anchored to a support that can withstand 24,000 lbs. of pull.*

### **⚠ WARNING**

ALWAYS insure cable puller is properly secured before operating. ALWAYS attach to supports that are at least 2" and not more than the 10" wide. *See figure 4 below.*

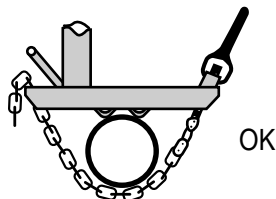


figure 4

## IMPORTANT SAFETY INFORMATION *continued . . .*

### ▲ WARNING

Pulling Rope should be the only thing to contact the capstan. NEVER let swivels, grips, etc. come in contact with the capstan.

### ▲ WARNING

Keep as much rope confined in conduit as possible. This will help prevent injury should the rope break and whip violently.

### ▲ WARNING

Rope must ALWAYS be pulled over a rotating sheave. If a sheave does not rotate, turn cable puller off immediately and determine problem before continuing the pull.

### ▲ WARNING

This cable puller is equipped with an anti-reversing pawl. The pawl will make a clicking sound when the capstan is rotating. If you can not hear the clicking sound as the capstan rotates, immediately turn the cable puller off and do not use until repaired.

### ▲ WARNING

ONLY use 3/4" or larger double-braided composite pulling rope with an average breaking strength of 26,000 lbs.

### ▲ WARNING

NEVER allow the rope to slip on a rotating capstan for more than a couple of seconds. The rope will wear in that spot and the rope could break under pressure. If you need to stop the pull, turn the cable puller off and tie the rope off to hold it in place until you restart your pull.

### ▲ WARNING

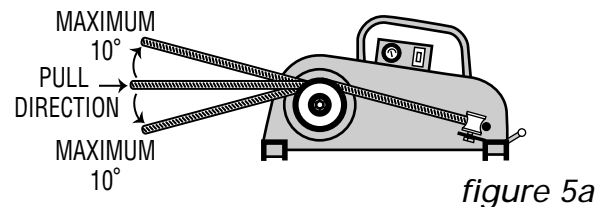
Keep all body parts, hair, loose clothing, etc. away from rotating parts and pinch points. Keep hands away from capstan.

### ▲ WARNING

NEVER allow the rope to overlap on the capstan. If this condition begins to occur, immediately release the tailing force on the rope so that the rope can feed back toward the conduit or cable tray. If this does not remedy the overlap, turn off the cable puller immediately. **There is no known solution for rope overlap.**

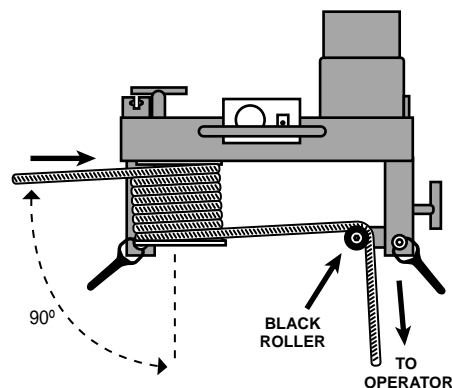
### ▲ WARNING

Rope should approach capstan as shown in *figure 5a*.



### ▲ WARNING

ALWAYS use black roller to guide rope so that operator stands at 90° angle to the cable puller and out of the direct line of tight pulling rope. See *figure 5b*.



### ▲ WARNING

ALWAYS wrap rope beginning at housing end of capstan as shown in *figure 5b*.

### ▲ WARNING

To help avoid rope overlap, rope should approach capstan at a 90° angle. See *figure 5b*.

## IMPORTANT SAFETY INFORMATION *continued . . .*

**▲ WARNING**

Some components of the mobile cable pulling package exceed 50 lbs. and will require more than one person to lift, transport, and assemble.

**▲ WARNING**

ALWAYS inspect pins to be sure they are the correct part number for the assembly and are fully inserted through holes and have spring clips properly attached. Do NOT substitute any other object for factory supplied pins.

**▲ WARNING**

ALWAYS check sight holes to insure boom tubes are fully inserted into receiver tubes. Tighten all hex bolts to hold boom tubes in place.

**▲ WARNING**

The pulling rope must come in contact with ALL the sheaves used in the boom system. This includes the elbow unit sheave when the elbow unit is installed.

**▲ WARNING**

DO NOT mount the Model 88 Cable Puller to square columns or I-beams. The mounting chains will not tighten properly on these structures.

**▲ WARNING**

The ONLY approved method to secure the Model 88 Cable Puller is with the 2 mounting chains provided. Do NOT attempt to use any other object to secure the cable puller.

**▲ WARNING**

Inspect mounting chains for wear before each installation. NEVER alter the mounting chains or handle.

**▲ WARNING**

DO NOT use screw-on couplings when pulling in PVC conduit. Screw-on couplings may detach and cause serious injury or death. When pulling in PVC conduit, ONLY use slip-in couplings.

**▲ WARNING**

Thread screw-on couplings onto conduit a minimum of four full turns. Inspect the conduit threads to make sure they are in good condition.

**▲ WARNING**

The sides of the coupling adapter must both be inside the nose unit side plates.

**▲ WARNING**

Keep hands out of elbow unit adjustment holes. Fingers can be severed by pivoting parts. Use the pin provided (8093-5) to lock the elbow unit. Remove pin only for adjustment.

**▲ WARNING**

When making a vertical cable pull, keep the area underneath the cable pull clear of all personnel.

## **! WARNING**

Never tighten chain as shown in Figure A. This causes side loading of the chain and can result in failure of the chain or screw causing components to come loose and possibly cause serious injury or death. Figure B shows the proper alignment of screw and chain for tightening.

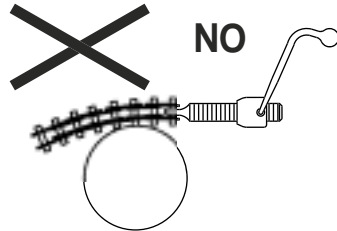


FIGURE A

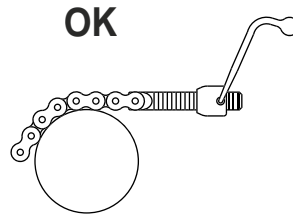
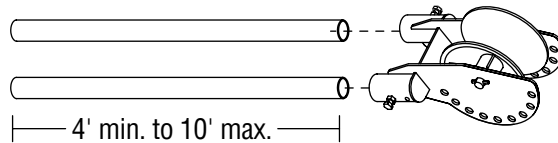


FIGURE B

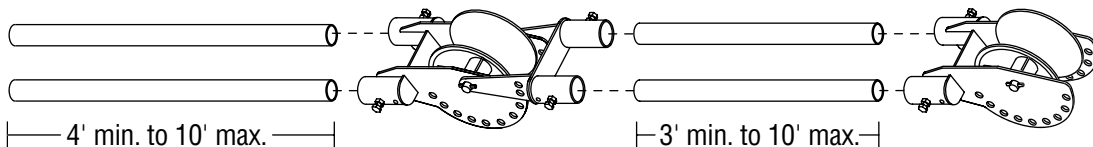
## **! WARNING**

When using one set of boom tubes and nose unit, factory supplied boom tubes may be replaced but must meet the following specifications:



- 4' minimum to 10' maximum
- only use 2" schedule 40 pipe or 2" rigid conduit
- these two tubes must be equal in length

When using elbow unit, nose unit and both sets of boom tubes, factory supplied boom tubes may be replaced but must meet the following specifications:



- |                                                                                                                                                                                              |                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• 4' minimum to 10' maximum</li> <li>• only use 2" schedule 40 pipe or 2" rigid conduit</li> <li>• these two tubes must be equal in length</li> </ul> | <ul style="list-style-type: none"> <li>• 3' minimum to 10' maximum</li> <li>• only use 2" schedule 40 pipe or 2" rigid conduit</li> <li>• these two tubes must be equal in length</li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## IMPORTANT SAFETY INFORMATION *continued . . .*

**▲ CAUTION**

DO NOT alter this cable puller. Doing so will void the warranty. Guards and safety features are provided for your protection.

**▲ CAUTION**

DO NOT use an extension cord longer than 100 ft. Extension cord should be a minimum of 12 gauge wire with ground.

**▲ CAUTION**

Wear eye protection when operating cable puller.

**▲ CAUTION**

When Transporting:

- DO NOT lean mobile carriage more than 10°.
- DO NOT transport with boom tubes longer than the standard 3 ft. and 4 ft. sections.
- Only transport on firm, smooth surface.
- Keep unit under control when transporting.

**▲ CAUTION**

DO NOT allow the puller and boom to hang from slip-in or screw-on couplings. The couplings may break causing injury. The mobile carriage or T-stand should support the weight of the cable puller.

**▲ CAUTION**

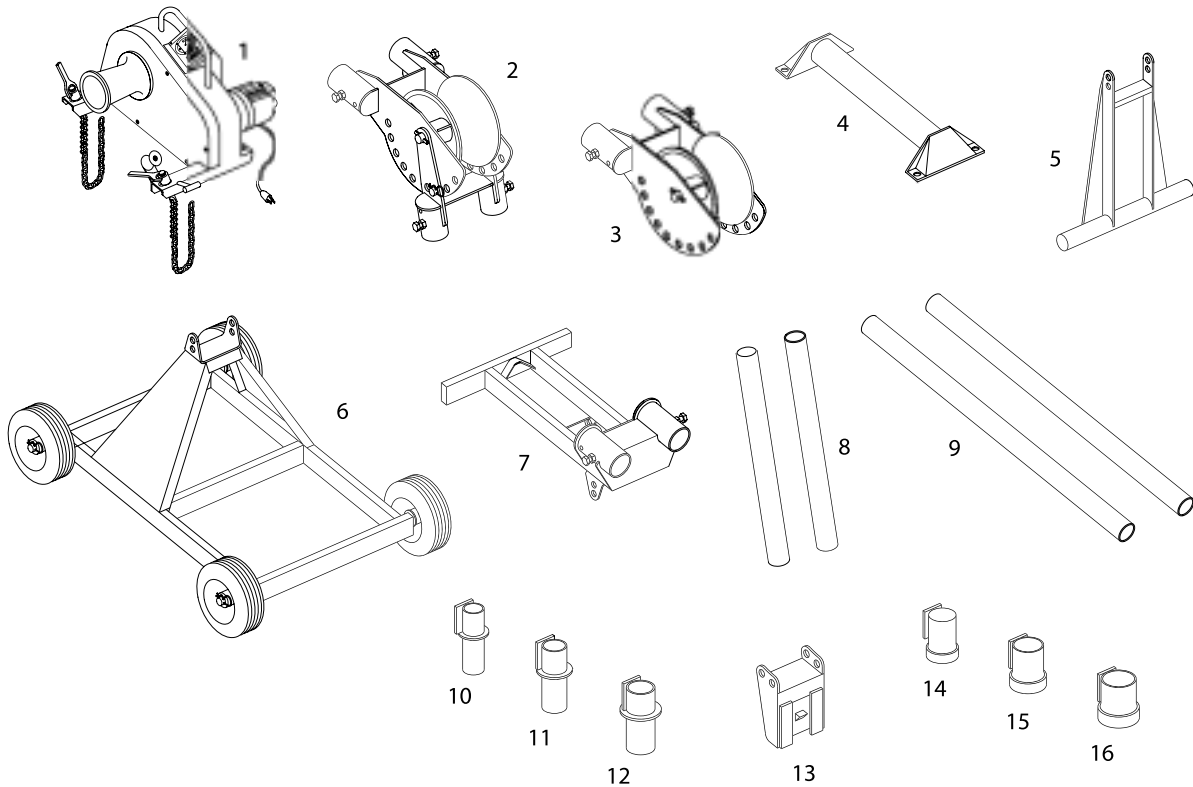
Inspect all components of the pulling system before beginning any cable pull. This includes the pulling system ( cable puller, boom, etc. ) and any accessories ( sheaves, swivels, pins, etc. ) Replace any worn or defective components.

**▲ CAUTION**

Be careful during assembly and disassembly of the boom components. Keep pins in place to avoid uncontrolled movement of boom components. Have control of boom components before removing any pins.



# MAJOR COMPONENTS — MANTIS™



## MAJOR COMPONENTS LIST

Item Number	Catalog Number	Description	8890A PACKAGE	8890AS PACKAGE	8090 CARRIAGE	8085 BASIC CARRIAGE	8885 BASIC PACKAGE	8885S BASIC PACKAGE	Weight
1	88	Cable Puller w/chains	1	1			1	1	101 lbs.
2	8093	Elbow Unit	1	1	1				53 lbs.
3	8094	Nose Unit	1	1	1	1	1	1	38 lbs.
4	8045	Floor Mount	1	1			1	1	20 lbs.
5	8100	T - Stand	1	1					12 lbs.
6	8091	Mobile Carriage	1	1	1	1	1	1	85 lbs.
7	8092	Puller Mount	1	1	1	1	1	1	39 lbs.
8	8095	3' Boom Tubes	2	2	2				11 lbs.
9	8096	4' Boom Tubes	2	2	2	2	2	2	15 lbs.
not shown	8097-2.5	Slip-In Coupling - 2 1/2"	( optional )	( optional )	( optional )	1	1	1	4.5 lbs.
10	8097-3	Slip-In Coupling - 3"	1	1	1	1	1	1	5.5 lbs.
11	8097-3.5	Slip-In Coupling - 3 1/2"	1	1	1	( optional )	1	1	6.5 lbs.
12	8097-4	Slip-In Coupling - 4"	1	1	1	1	1	1	8 lbs.
not shown	8097-5	Slip-In Coupling - 5"	( optional )	( optional )	( optional )	( optional )	( optional )	( optional )	9 lbs.
13	8099	Coupling Adapter	1	1	1	1	1	1	8 lbs.
not shown	8098-2	Screw-On Coupling - 2"	( optional )	( optional )	( optional )	1	( optional )	( optional )	4 lbs.
not shown	8098-2.5	Screw-On Coupling - 2 1/2"	( optional )	( optional )	( optional )	( optional )	1	1	4.5 lbs.
14	8098-3	Screw-On Coupling - 3"	1	1	1	1	1	1	5 lbs.
15	8098-3.5	Screw-On Coupling - 3 1/2"	1	1	1	( optional )	1	1	6 lbs.
16	8098-4	Screw-On Coupling - 4"	1	1	1	1	1	1	6.5 lbs.
not shown	101	Storage Box		1				1	177 lbs.
not shown	506	Caster Set - 6" (2 swivel, 2 fixed)		1				1	20 lbs.

## ASSEMBLY INSTRUCTIONS

### Planning the Pull

#### **! WARNING**

Some components weigh more than 50 lbs. and will require more than one person to lift, transport, and assemble.

1. Remove the contents from the storage box and identify all the components referring to the decal inside the storage box lid or in the instruction manual.
2. Plan the pull to determine which components you will need.

### Coupling Selection

There are three means of connecting the boom to the conduit using Current Tools screw-on or slip-in couplings. From the information in this section, choose and install a coupling that will meet your pulling requirements.

#### Screw-On Couplings

Screw-On Couplings, which thread onto the end of rigid or IMC conduit, are provided for conduit sizes 3", 3 1/2" and 4". Screw-On couplings are the only approved coupling when making a pull from overhead because they will support the weight of the boom.

#### *Screw-On Couplings Procedure:*

1. Match the coupling to the conduit size.
2. Thread coupling onto the conduit until tight. Then, slightly back off coupling until the coupling receiver plate faces the direction where the puller will be positioned. See Figure 10.

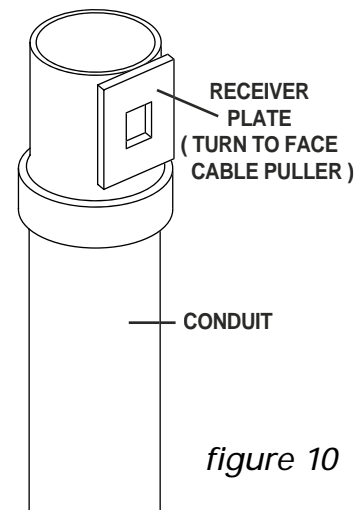


figure 10

#### **! WARNING**

Thread Screw-On Coupling onto conduit a minimum of 4 full turns. Inspect the conduit threads to make sure they are in good condition.

#### **! WARNING**

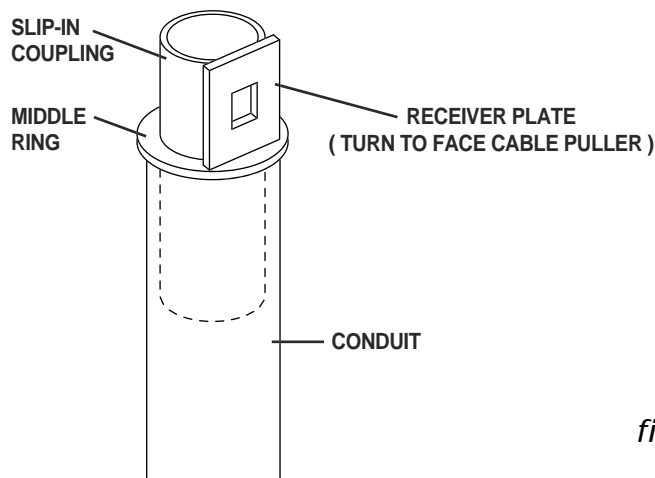
DO NOT use screw-on couplings when pulling in PVC conduit. Screw-on couplings may detach and cause serious injury or death. When pulling in PVC conduit, ONLY use slip-in couplings.

Slip-In Couplings

Slip-In Couplings are provided for conduit sizes 3", 3 1/2", and 4". Slip-In Couplings must not be used to pull down from overhead because they will not support the weight of the boom.

*Slip-In Couplings Procedure:*

1. Match the coupling to the conduit size.
2. Place the Slip-In Coupling into the conduit until the middle ring rests against the end of the conduit. Then, turn the coupling until the receiver plate faces the direction where the puller will be positioned. ( See Figure 11. )



*figure 11*

**⚠ WARNING**

When pulling in PVC conduit, **ONLY** use slip-in couplings. **DO NOT** use screw-on couplings when pulling in PVC conduit. Screw-on couplings may detach and cause serious injury or death.

Slip-In Couplings Used to Straddle Conduit

Slip-In Couplings can be used to straddle the conduit. One advantage of this is the couplings can be straddled on conduit sizes smaller than 2 1/2". However, the largest conduit you can straddle using a slip-in coupling is 4" ( *by using the 5" optional slip-in coupling.* ) Also, when straddling conduit with a slip-in coupling, you can **NOT** pull down from overhead because it will **NOT** support the weight of the boom. When using a slip-in coupling to straddle the conduit, the coupling must seat against a concrete floor or similar structure capable of supporting 8,000 lbs. of force.

*Slip-In Couplings Used to Straddle Conduit Procedure:*

1. Choose a coupling that is at least 1" larger than the conduit.
2. Place the coupling over the conduit. The conduit must NOT extend past the end of the coupling. ( See Figure 12a. )

**⚠ WARNING**

Bottom of coupling must be seated against a structure capable of supporting 8,000 lbs.

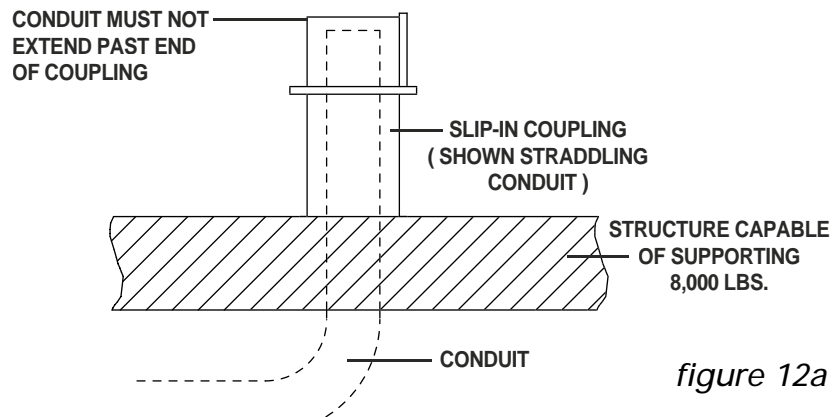


figure 12a

**Coupling Adapter**

The Coupling Adapter is designed to attach to all the couplings. The Coupling Adapter is the means of connecting the nose unit to the coupling.

*To Install:*

1. Be sure the receiver plate faces the direction where the puller will be positioned.
2. Slide the Coupling Adapter onto the coupling receiver plate until the spring loaded pawl "snaps" into place. ( See Figure 12b. )

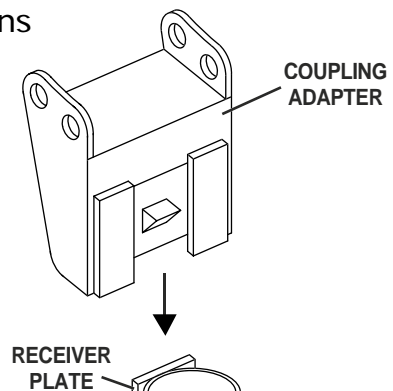
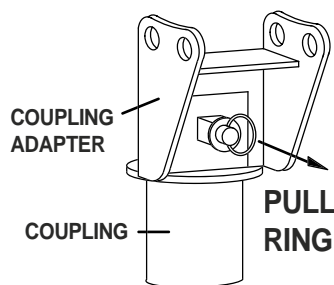


figure 12b

figure 12c



**NOTE:** To disassemble couplings from coupling adapter, pull the ring on the back of the coupling adapter. This will retract the spring loaded pawl and release the coupling.

( See Figure 12c. )

### ***Cable Puller Mounting Options***

Three mounting options for using the cable puller are included in this package. They are:

- Mobile Carriage
- T-Stand
- Floor Mount

Determine which of these is best for the pull. For instructions on using the floor mount, refer to pages 27 and 28. *Mobile Carriage and T-Stand instructions continue below.*

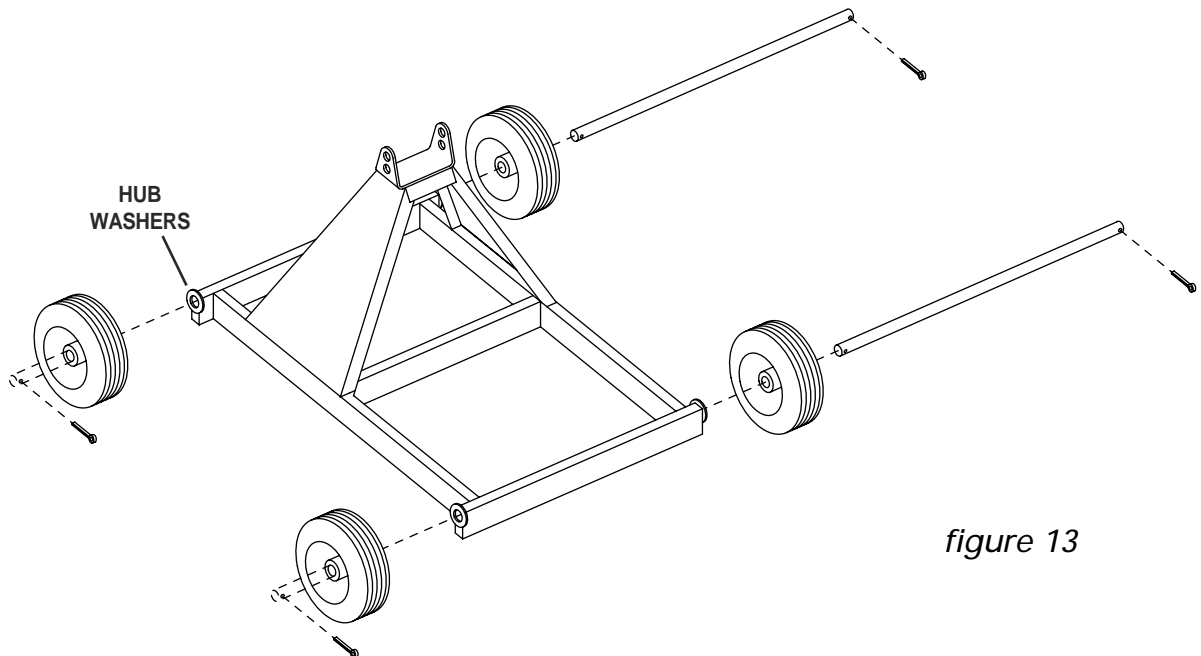
## **! WARNING**

Some components weigh more than 50 lbs. and will require more than one person to lift, transport, and assemble.

### ***Mobile Carriage***

For added convenience and mobility, a mobile carriage is included in the package.

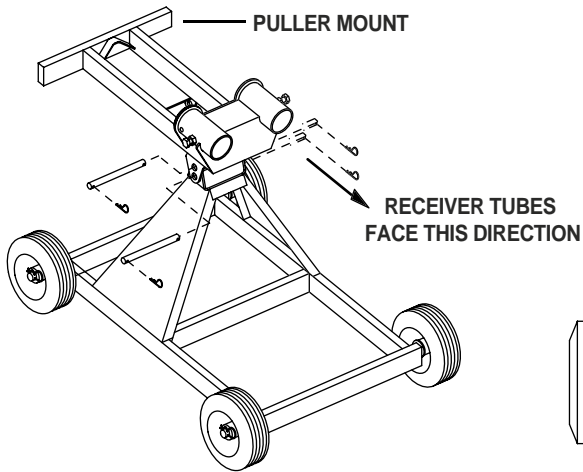
1. Locate the mobile carriage frame and the 2 axles. Insert the axles through the hub washers on the mobile carriage frame. Slide the four pneumatic tires onto the axles and secure with four cotter pins. ( See Figure 13. )



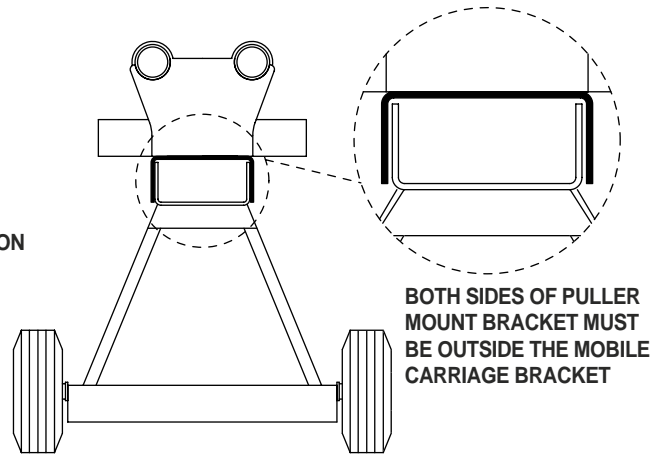
*figure 13*

ASSEMBLY INSTRUCTIONS *continued . . .*

2. Position the puller mount on top of the mobile carriage with the puller mount facing the direction shown in Figure 14a. Insert 2 pins ( 8091-5 ) and secure with spring clips. *See Figure 14a.* The bracket on the bottom of the puller mount should be on the outside of the bracket on the mobile carriage. ( *See Figure 14b.* )

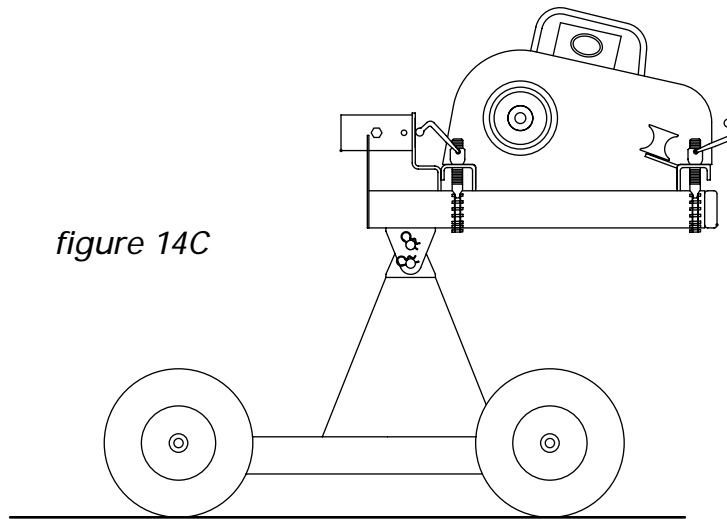


*figure 14a*



*figure 14b*

3. Next, attach the Model 88 Cable Puller to the puller mount using the chains provided. ( *See Figure 14C.* ) Refer to the mounting chains installation instructions on pages 31 - 33 .



*figure 14C*

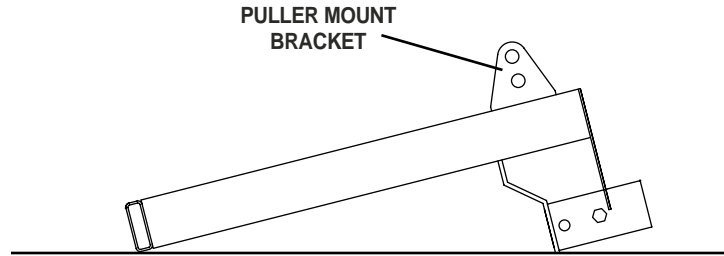
4. You are now ready for the Boom Assembly beginning on page 17.

**T-Stand**

A T-Stand is included when the mobile carriage can not be used or when it is not practical.

*Procedure:*

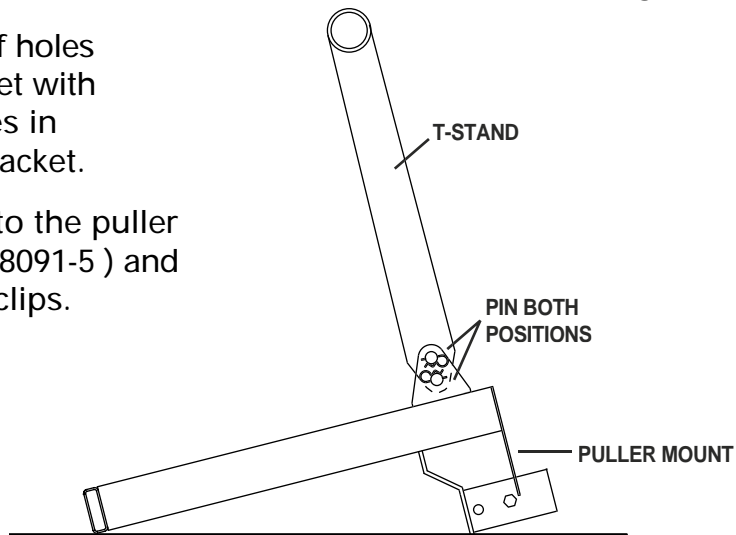
1. Place the puller mount on the floor with the puller mount bracket facing upward.  
( See Figure 15a. )



*figure 15a*

2. Align the two sets of holes in the T-Stand bracket with the two sets of holes in the puller mount bracket.

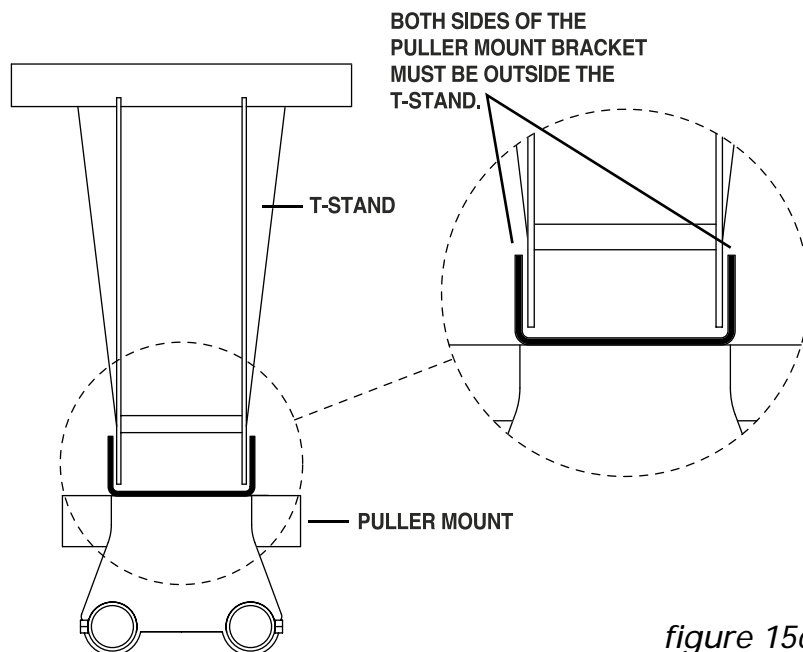
Attach the T-Stand to the puller mount with 2 pins ( 8091-5 ) and secure with spring clips.  
( See Figure 15b. )



*figure 15b*

**NOTE:** Both sides of the T-Stand bracket must be inside the puller mount bracket.

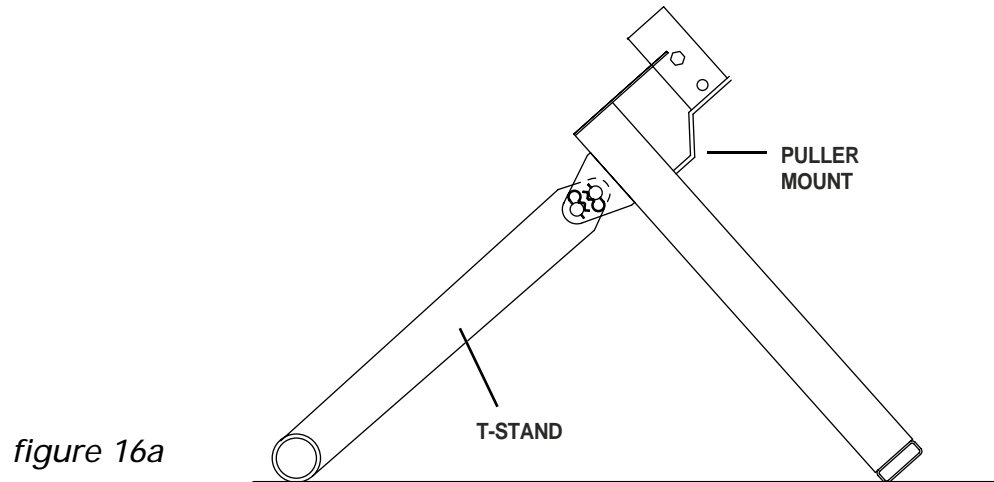
( See Figure 15c. )



*figure 15c*

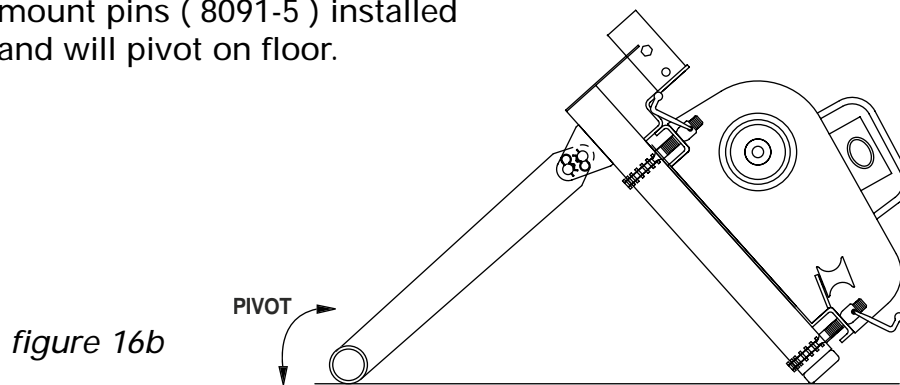
ASSEMBLY INSTRUCTIONS *continued . . .*

3. Place the puller mount and T-Stand Assembly on the floor as shown in *Figure 16a*.



4. Attach the Model 88 Cable Puller to the puller mount using the chains provided. See Figure 16b. For mounting chains installation instructions, refer to pages 31 – 33 of this manual.

NOTE: T-Stand ALWAYS has both puller mount pins ( 8091-5 ) installed and will pivot on floor.



5. You are now ready for Boom Assembly beginning on page 17.



**Boom Assembly**

**! WARNING**

ALWAYS inspect pins to be sure they are fully inserted through holes and have spring clips properly attached. DO NOT substitute any other object for factory supplied pins.

**! WARNING**

ALWAYS check sight holes to insure boom tubes are fully inserted into receiver tubes. Tighten all hex bolts to hold boom tubes in place.

**! WARNING**

Some components weigh more than 50 lbs. and will require more than one person to lift, transport, and assemble.

**! CAUTION**

Be careful during assembly and disassembly of the boom components. Keep pins in place to avoid uncontrolled movement of boom components. Have control of boom components before removing any pins.

*Procedure:*

1. Slide the two 4' long boom tubes into the puller mount receiver tubes. Boom tubes must be completely inserted into the receiver tubes. After checking the sight holes to insure the boom tubes are completely inserted, tighten the hex bolt on each side of the puller mount. ( See Figure 17a. )

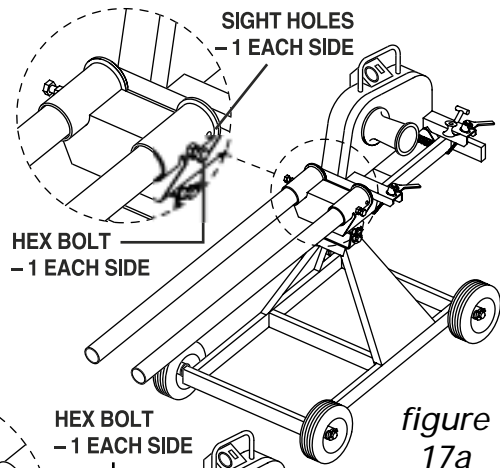


figure 17a

2. Slide the nose unit onto the ends of the 4' boom tubes. Check the sight holes to insure the boom tubes are completely inserted and tighten the hex bolts on each side of the nose unit. ( See Figure 17b. )

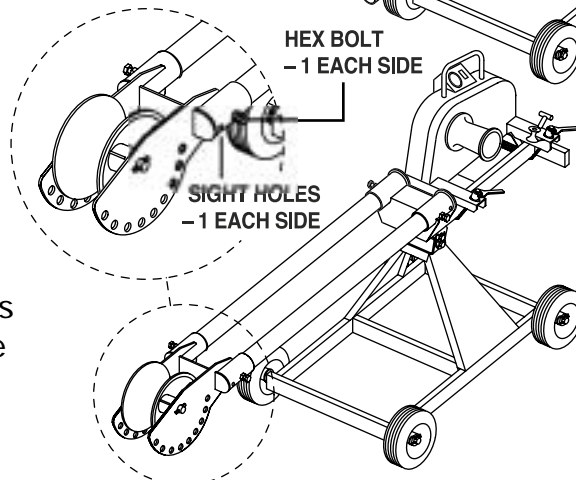


figure 17b

## ASSEMBLY INSTRUCTIONS *continued . . .*

3. Remove the top puller mount pin ( 8091-5 ). This will allow the cable puller and boom assembly to pivot on the mobile carriage.

Next, with the coupling and coupling adapter in place ( See pages 10 – 12 ), the mobile carriage and Boom Assembly may now be positioned so that any 2 sets of holes in the nose unit align with the 2 sets of holes on the coupling adapter. Using 2 pins ( 333-6 ), attach the nose unit to the coupling adapter and secure pins with four spring clips.

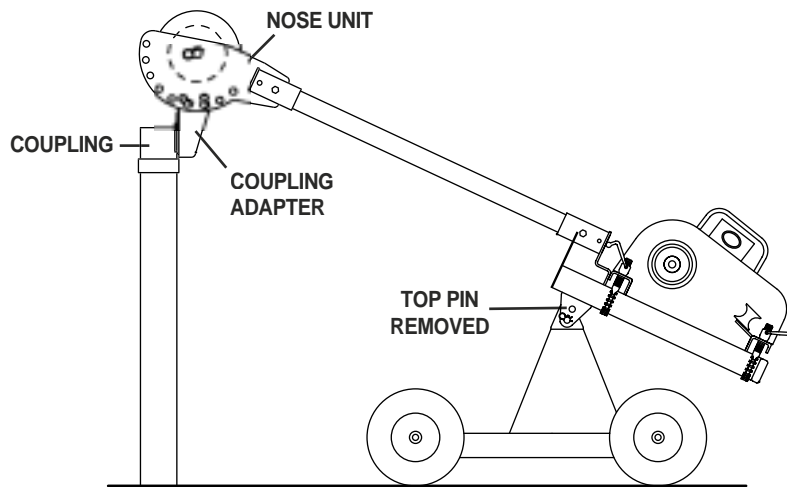
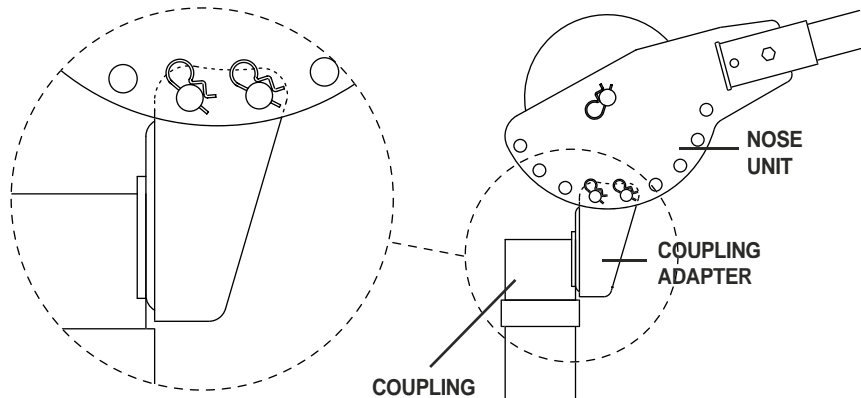


figure 18

### **! WARNING**

The sides of the coupling adapter must both be inside the nose unit side plates.



### **! CAUTION**

DO NOT allow the puller and boom to hang from slip-in or screw-on couplings. The couplings may break causing injury. The mobile carriage or T-stand should support the weight of the cable puller.

If more reach is needed, an extra set of 3' boom tubes is provided.  
To install, continue Assembly instructions as follows:

4. Remove the nose unit from the 4' boom tubes. Pin the elbow unit with pin #8093-5 at an appropriate angle for the pull and slide the elbow unit onto the 4' boom tubes as shown in Figure 19. Be sure the elbow unit remains pinned at all times except to adjust the boom angle. *See Warning below.* Check the sight holes to insure the boom tubes are completely inserted and tighten the hex bolts on each side of the elbow unit. *See Figure 19.*

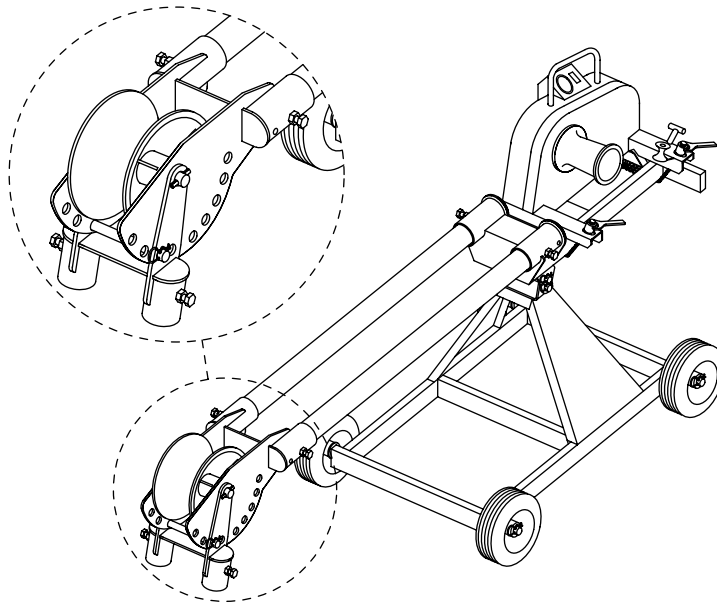
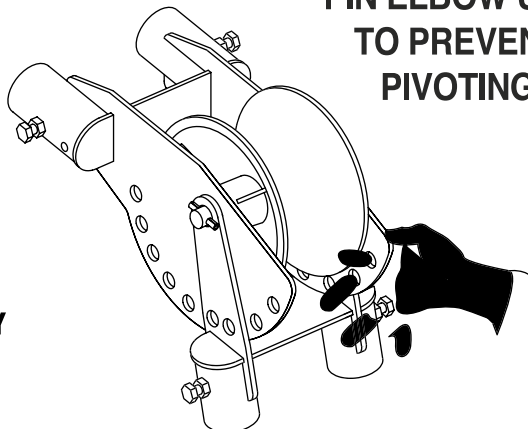


figure 19

## **WARNING**

Keep fingers out of elbow unit adjustment holes. Fingers can be severed by pivoting parts. Use the pin provided ( 8093-5 ) to lock elbow unit.

Remove pin **ONLY** for adjustment.



**PIN ELBOW UNIT  
TO PREVENT  
PIVOTING**

ASSEMBLY INSTRUCTIONS *continued . . .*

5. Remove the top puller mount pin ( 8091-5 ) and pivot the entire assembly so the elbow unit is lowered to the floor. ( See Figure 20a. )

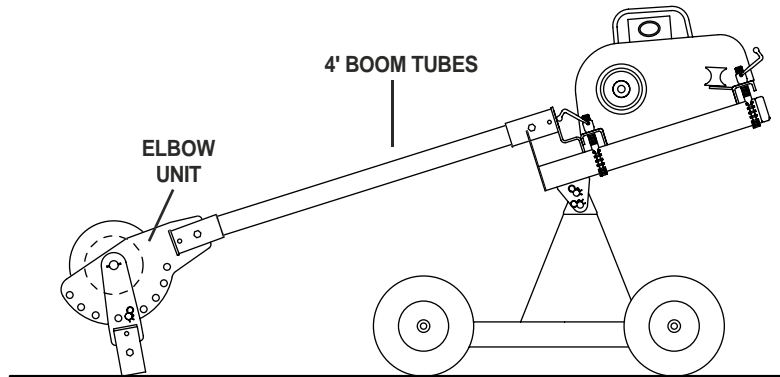


figure  
20a

6. Next, insert the two 3' boom tubes into the pivoting section of the elbow unit. Check the sight holes to ensure the boom tubes are completely inserted and tighten the hex bolt on each side of the elbow unit. ( See Figure 20b. )

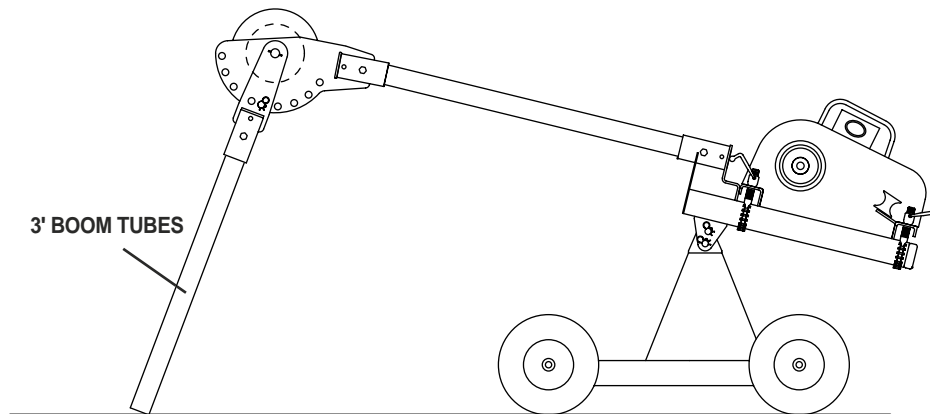


figure  
20b

7. The nose unit may now be mounted to the end of the 3' boom tubes. Check the sight holes to ensure the boom tubes are completely inserted and tighten the hex bolt on each side of the nose unit. ( See Figure 20c. )

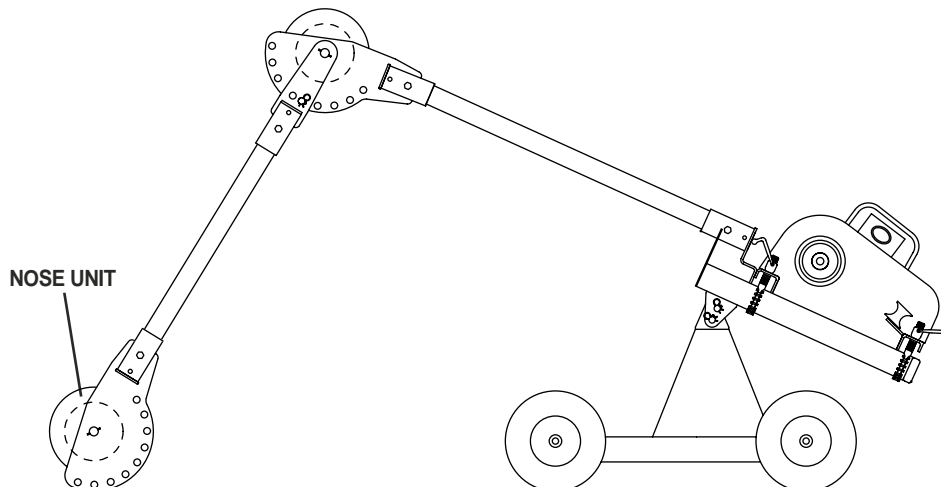
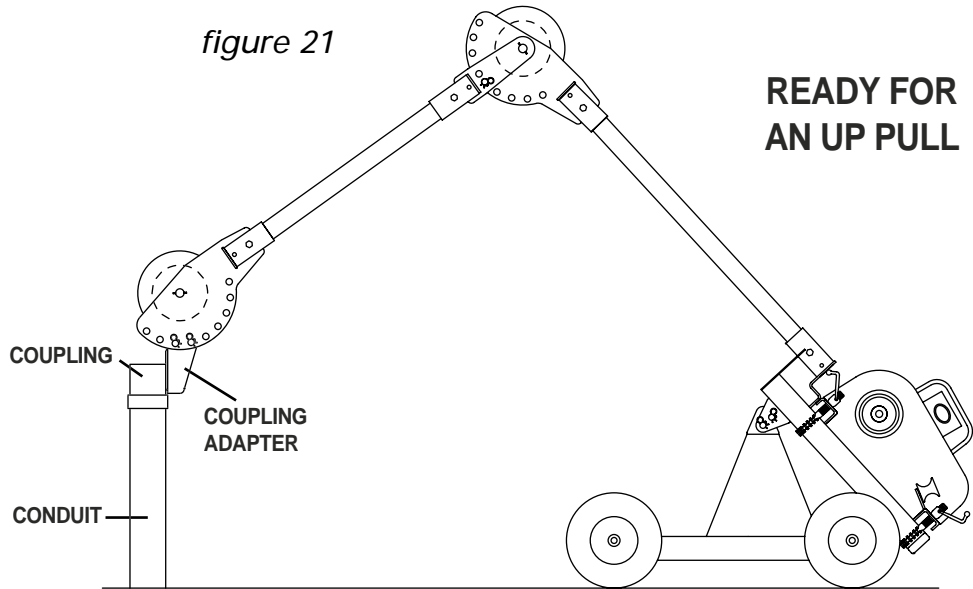


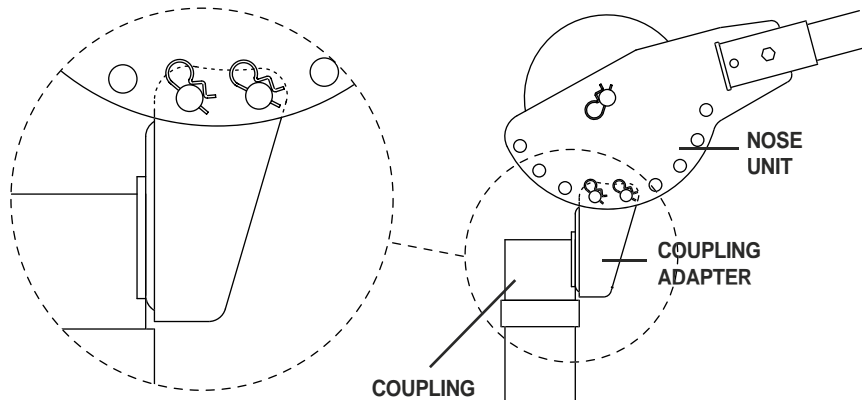
figure  
20c

8. With the coupling and coupling adapter in place the mobile carriage and Boom Assembly may now be positioned so that any 2 sets of holes in the nose unit align with the 2 sets of holes on the coupling adapter. Using 2 pins ( 333-6 ), attach the nose unit to the coupling adapter and secure pins with four spring clips.



## **! WARNING**

The sides of the coupling adapter must both be inside the nose unit side plates.



## **! WARNING**

When using the elbow unit, the pulling rope must contact both the sheaves in the boom. Boom may collapse if this warning is not observed.

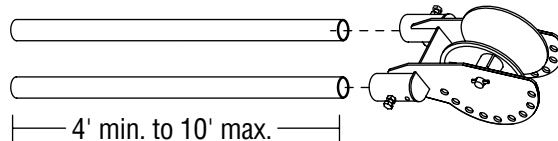
## CAUTION

DO NOT allow the cable puller and boom to hang from slip-in or screw-on couplings. The couplings may break causing injury. The mobile carriage or T-stand should support the weight of the cable puller.

9. You are now ready to pull cable. Refer to Model 88 Cable Puller instructions on pages 30 – 39.
10. If more reach is required, both sets of factory supplied boom tubes may be replaced with up to 10' lengths of 2" rigid conduit or 2" schedule 40 Pipe. **Only** use 2" rigid conduit or 2" schedule 40 pipe for boom tubes. Never substitute any other size or type of conduit or pipe for boom tubes. Never replace factory supplied boom tubes with shorter boom tubes. Boom tubes in each set must be of equal length. See *WARNING* below.

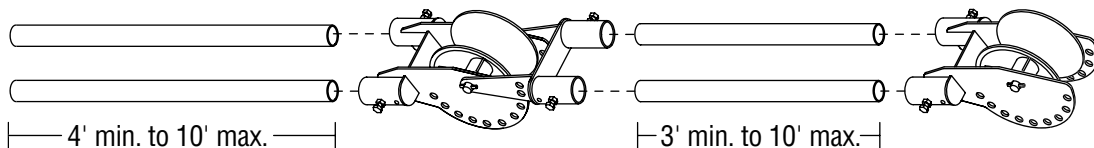
## WARNING

When using one set of boom tubes and nose unit, factory supplied boom tubes may be replaced but must meet the following specifications:



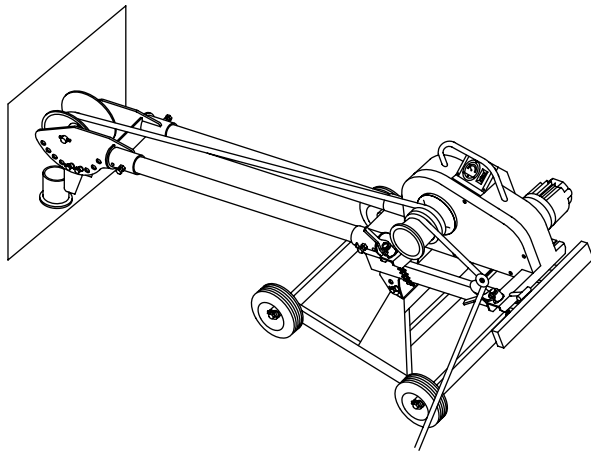
- 4' minimum to 10' maximum
- only use 2" schedule 40 pipe or 2" rigid conduit
- these two tubes must be equal in length

When using elbow unit, nose unit and both sets of boom tubes, factory supplied boom tubes may be replaced but must meet the following specifications:

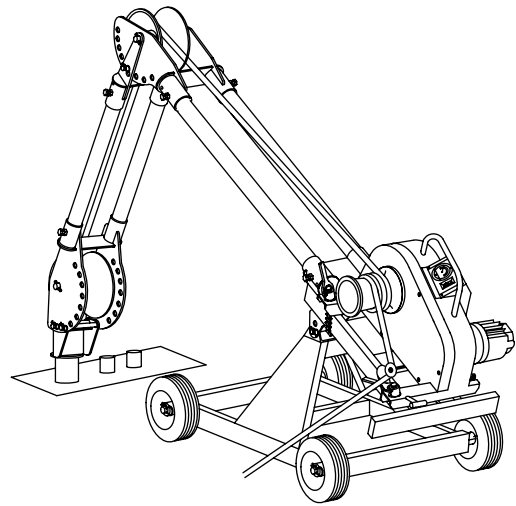


- |                                                                                                                                                                                              |                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• 4' minimum to 10' maximum</li> <li>• only use 2" schedule 40 pipe or 2" rigid conduit</li> <li>• these two tubes must be equal in length</li> </ul> | <ul style="list-style-type: none"> <li>• 3' minimum to 10' maximum</li> <li>• only use 2" schedule 40 pipe or 2" rigid conduit</li> <li>• these two tubes must be equal in length</li> </ul> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

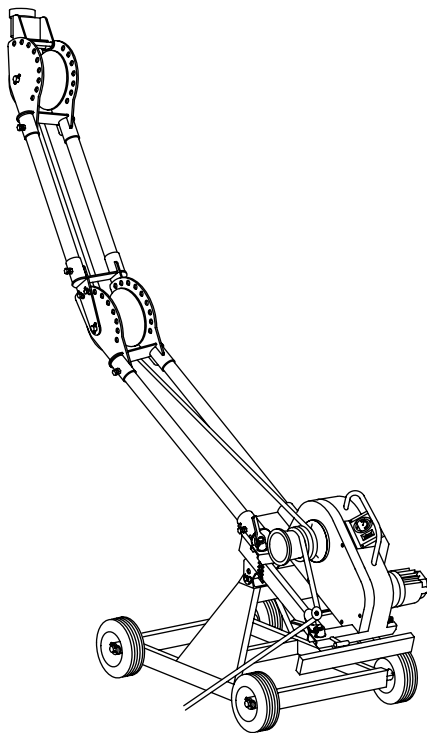
## COMMON SET UPS



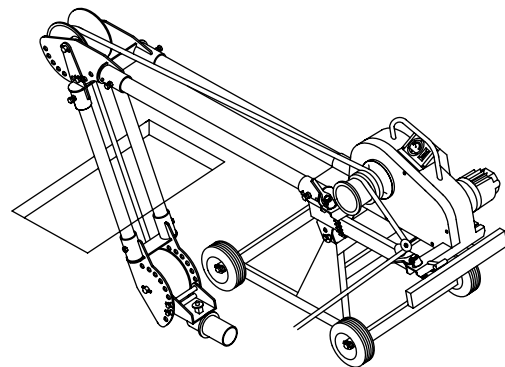
**Up Pull** — using Mobile Carriage, one Boom Section and Slip-In Coupling



**Up Pull** — using Mobile Carriage, both Boom Sections and Slip-In Coupling ( *straddling conduit* )

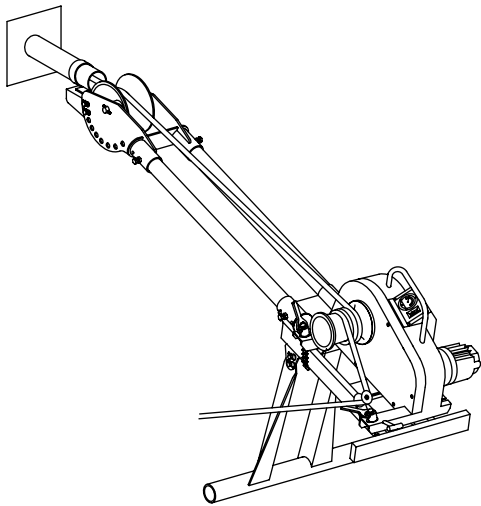
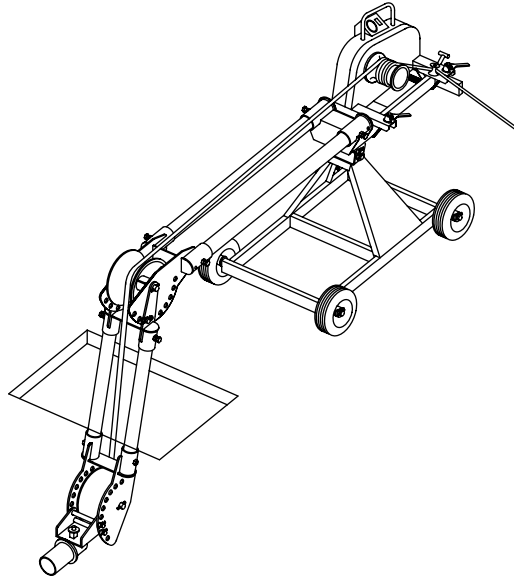


**Down Pull** — using Mobile Carriage, both Boom Sections and Screw-On Coupling

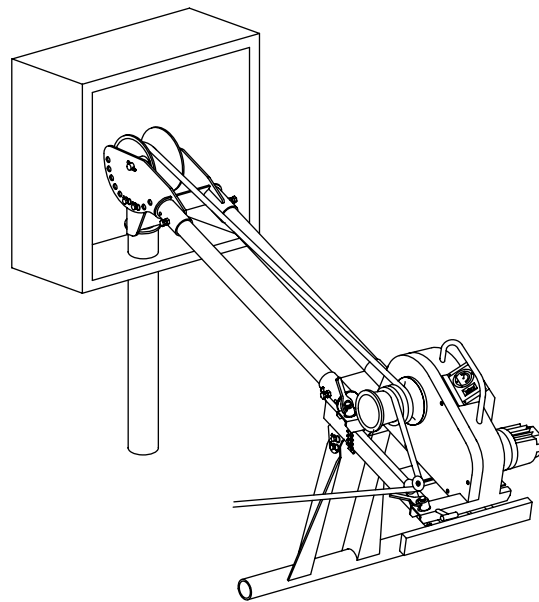


**Horizontal Pull** — from manhole with both Boom Sections and Slip-In Coupling

**Horizontal Pull** —  
from manhole using  
Mobile Carriage, both  
Boom Sections and  
Slip-In Coupling

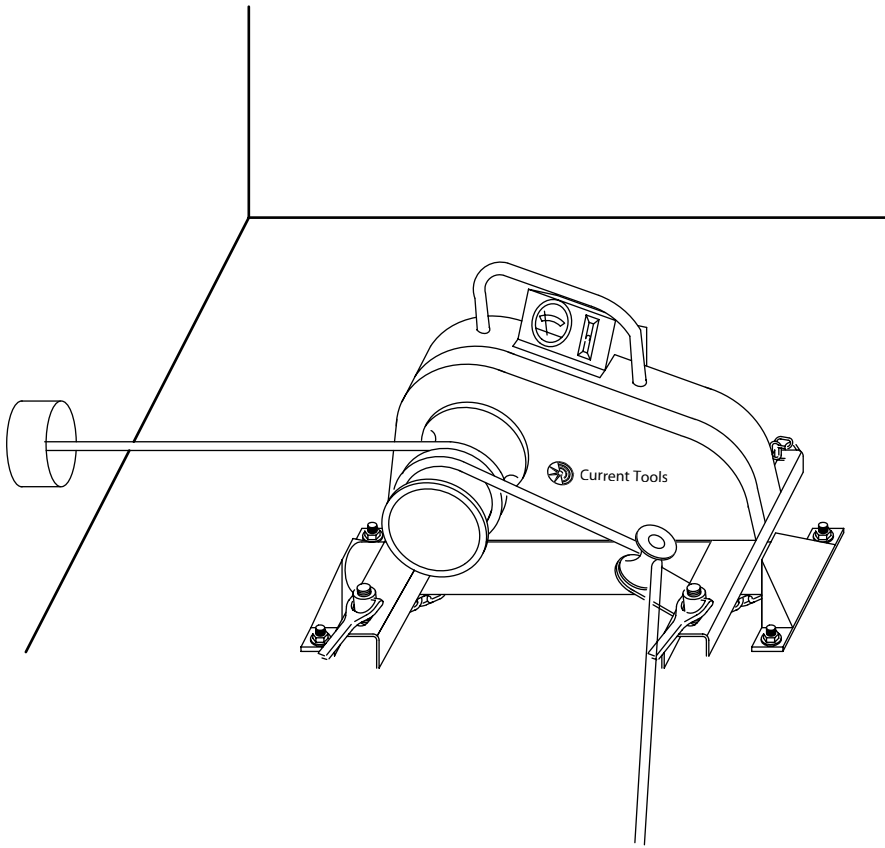


**Horizontal Pull** — using  
T-Stand, one Boom Section,  
and Screw-On Coupling



**Up Pull** — using T-Stand, one  
Boom Section, and Slip-In  
Coupling





***Horizontal Pull*** — using floor mount

## TRANSPORT INFORMATION

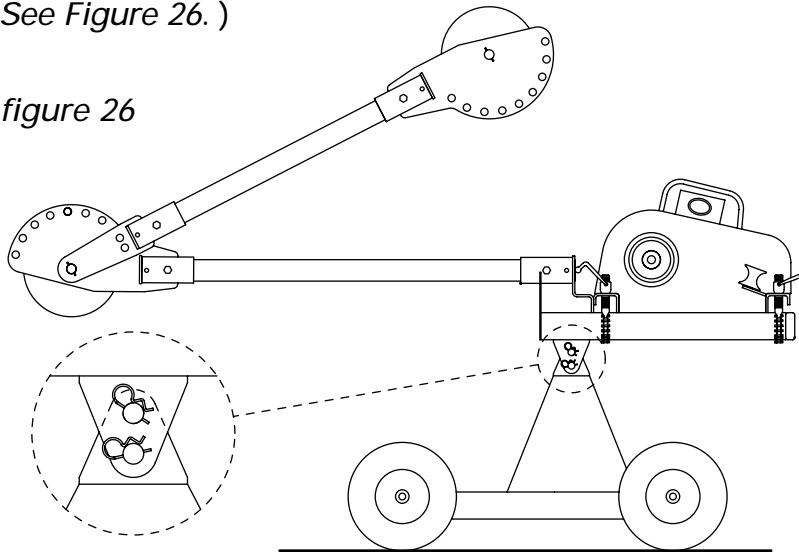
The Mobile Carriage is designed to easily move the Pulling Assembly from location to location.

### ***To Prepare for Transport***

Before moving, you must lock the puller mount to the Mobile Carriage.

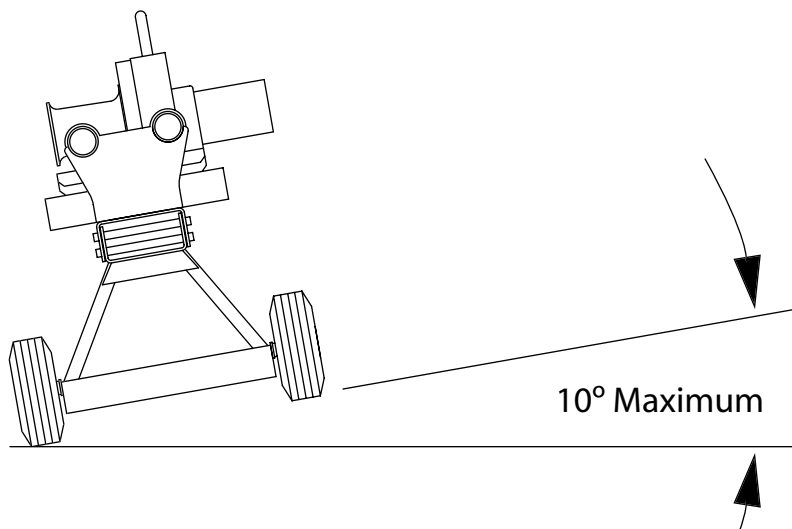
**To Lock** — align both sets of holes on the puller mount with both sets of holes on the Mobile Carriage. Insert pins ( 8091-5 ) and secure with spring clips. If both sections of standard boom tubes are used, fold forward section back as shown. ( See Figure 26. )

figure 26



## **! WARNING**

- Tip Hazard — DO NOT lean unit more than 10°.
- DO NOT transport with boom tubes longer than the factory supplied 3' and 4' sections.
- Only transport on firm, smooth surfaces.
- Keep unit under control when transporting.



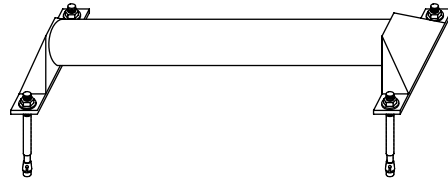


## FLOOR MOUNT

The Model 8045 Floor Mount is made to fit the Current Tools Model 88 Cable Puller. The floor mount is to be mounted only to a concrete floor using the method described below.

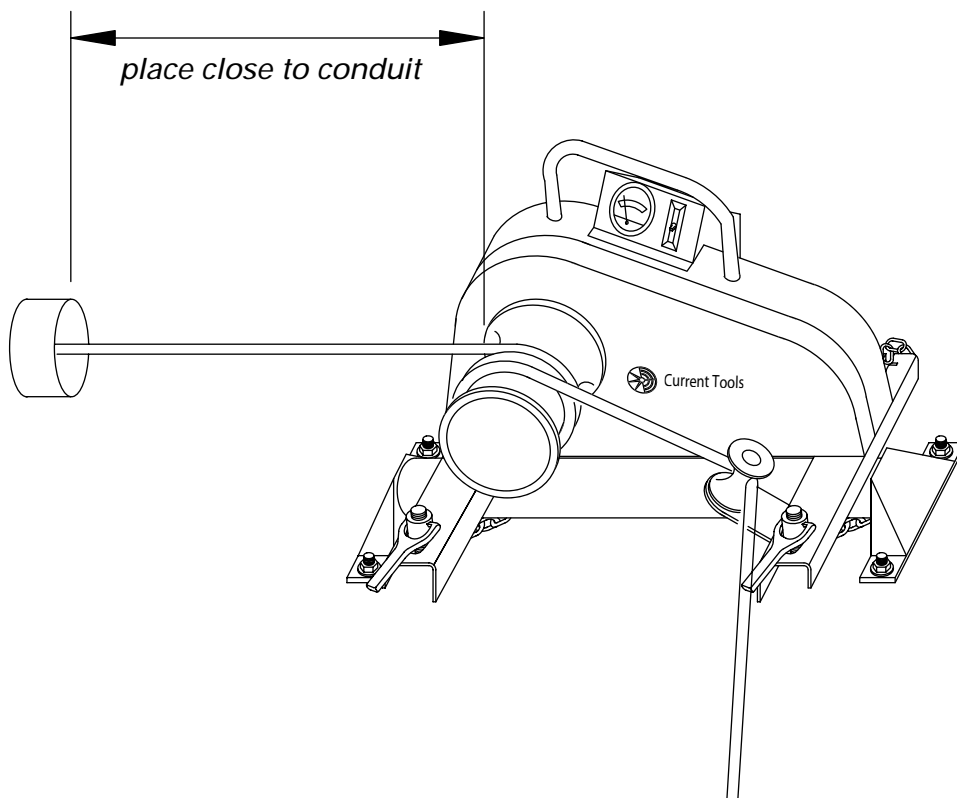
### **Safety Information**

1. ALWAYS mount to a smooth, flat concrete floor with a minimum 3000 psi rating.
2. Mount only to a concrete floor. **NEVER** mount to cinder blocks, brick, etc.
3. Wedge anchors must be at least 12" away from edge of concrete.
4. ALWAYS use new anchors. **NEVER REUSE ANCHORS.**
5. Use only 5/8" x 6" wedge anchors or equivalent with a tension and shear rating of 2,500 lbs. (Current Tools part #8045-3)
6. **CAUTION** ALWAYS wear eye protection when installing anchors.



## **WARNING**

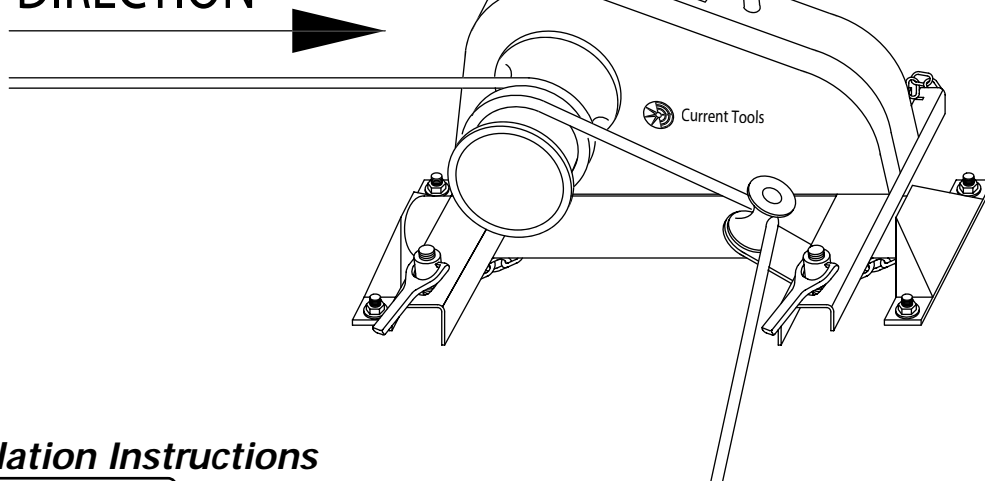
**ALWAYS** place the floor mount close to the conduit. This will reduce the possibility of injury should the rope break.



## **! CAUTION**

The pulling direction should **ALWAYS** be parallel to the base of the floor mount.

CORRECT  
PULLING  
DIRECTION



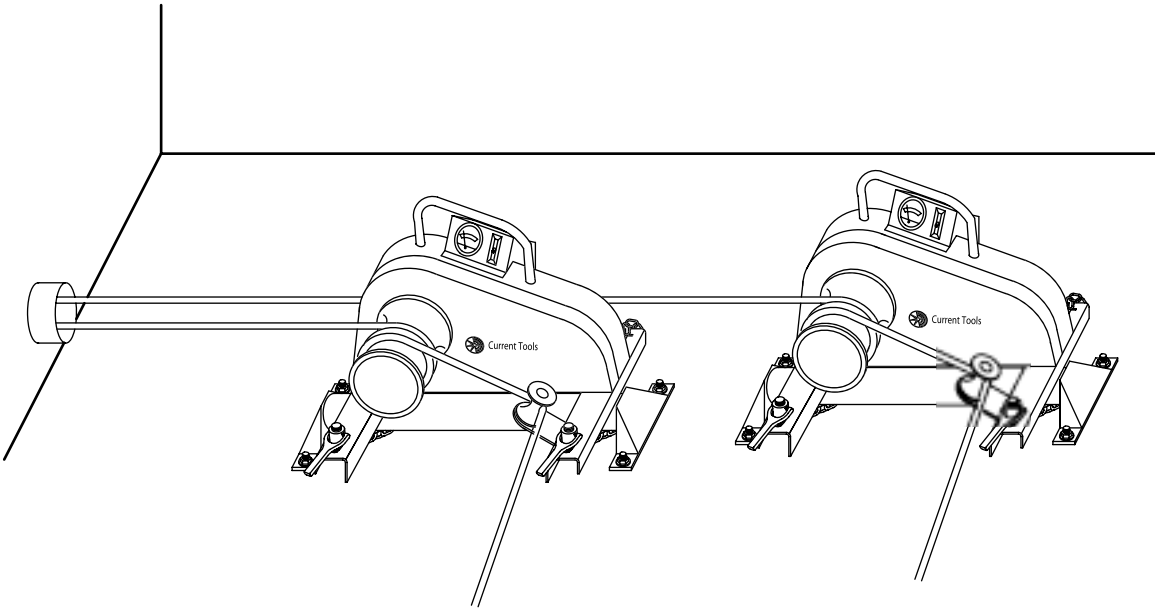
### ***Installation Instructions***

1. **! CAUTION** Wear safety glasses.
2. Follow the safety instructions provided by the drill manufacturer.
3. Use only 5/8" diameter solid carbide tipped bits that meet ANSI B94-12.
4. Using the floor mount as a template, drill four 5/8" holes a minimum of 6" deep but not closer than 1 1/4" to the bottom (opposite surface) of the concrete. Be sure to drill the holes perpendicular to the work surface and do not ream the holes or let the drill bit wobble.
5. Clean the holes with compressed air and a wire brush. Clean holes are necessary for proper performance.
6. Assemble the washer and nut on the anchor so the top of the nut is flush with the top of the anchor.
7. Next, drive the 4 wedge anchors through the 4 floor mount holes and into the concrete holes making sure the nut and washer rests solidly against the floor mount.
8. Tighten the anchors with a torque wrench to 75–90 ft. lbs.  
Note: If anchor spins, pull up on the anchor using the claw end of hammer and then torque. If spinning still occurs, DO NOT use this location; reposition the floor mount and repeat this installation procedure.
9. Place the Model 88 Cable Puller so that the "V" positioning units on the bottom of the puller legs straddle the floor mount. Mount puller to the floor mount using the mounting chain installation procedure found on pages 31 & 32 of this manual.



## TANDEM PULLING

If the amount of pulling force required to make a pull exceeds the load rating for a single cable puller, two cable pullers may be used in tandem to make the pull. See *figure 29* below. Be sure to use a separate rope and set of accessories for each cable puller. Each set of rope and accessories should meet or exceed each cable pullers maximum pulling force.



*figure 29*

## CABLE PULLING BASICS

### ***Model 88 Cable Puller and Accessories***

The Model 88 Cable Puller has a maximum pulling force of 8,000 lbs. Therefore, all of the accessories used to make a cable pull with this unit must be rated to meet or exceed the forces generated. This includes, but is not limited to pulling rope, sheaves, swivels, grips, etc. Be aware that the pulling force on a sheave and its anchoring system can be as great as twice the pulling force generated by the cable puller.

### **WARNING**

DO NOT exceed load rating of cable puller, rope, or accessories.

### **CAUTION**

Inspect all components of the pulling system before beginning any cable pulling. This includes the pulling system ( cable puller, boom, etc. ) and any accessories ( sheaves, swivels, pins, etc. ) Replace any worn or defective components.

### ***Power Requirements***

*The Model 88 Cable Puller motor is rated at 120 volt – 60 hz – 15 amps.*

### **WARNING**

ALWAYS plug the Model 88 Cable Puller into a grounded receptacle with a 15 amp GFCI protected circuit.

DO NOT modify the plug provided with the Model 88 Cable Puller. If needed, have a 15 amp GFCI receptacle installed by a qualified electrician.

### **CAUTION**

If an extension cord is used, it should be a minimum of 12 gauge wire with ground and a maximum length of 100 ft.

**Force Gauge**

The Model 88 Cable Puller is equipped with an integral force gauge. To calibrate the force gauge, run the puller for 1 minute with no load. While the puller is running, use adjustment screw on face of force gauge to set needle to zero pounds of force. The operator should always monitor the force gauge throughout the entire cable pull. The force gauge has 3 color sections to help you identify operating conditions. These sections are:

<u>Color</u>	<u>Condition</u>
<b>Green</b>	Puller can be run continuously
<b>Yellow</b>	50% duty cycle; 15 minutes on / 15 minutes off
<b>Red</b>	Overload Condition – Do NOT operate puller Correct overload condition or set up a tandem pull (See page 29. )

**Mounting Chain Installation**

The Model 88 Cable Puller is designed to be mounted using the two mounting chains provided. The handles on the chains should provide sufficient leverage to tighten the chains securely. No other tools are needed. Be sure to check the mounting chains for kinks and twists before you tighten them.

**A- Loosen the mounting chain handle so that only 3 or 4 threads remain engaged.**

**B- Wrap the chain around the 8092 Puller Mount, 8045 floor mount, conduit or structural support which are capable of handling the pulling forces.**

**C- Pull the loose end of the mounting chain tight and hook the closest chain link into the recessed area.**

**D- Tighten the chain handle. Repeat this process for second mounting chain.**

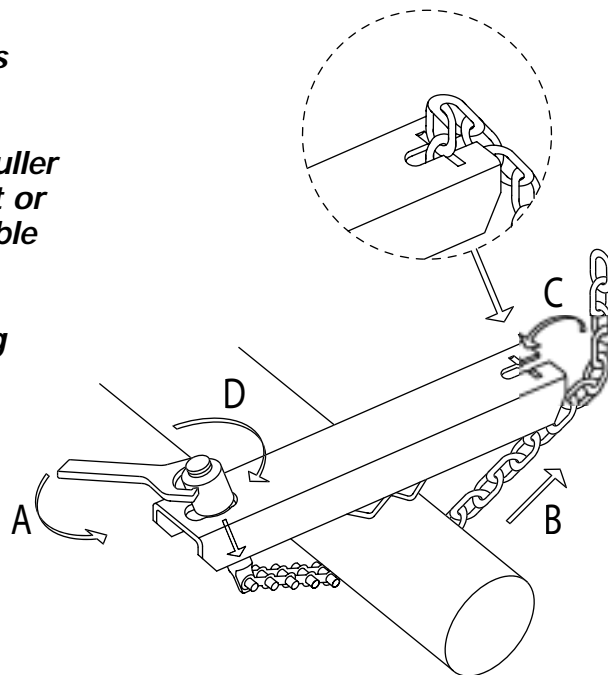


figure 31

**⚠ WARNING**

Be sure threads do not bottom out before chain becomes tight.

Model 88 Cable Puller — mounting to Model 8092 Puller Mount

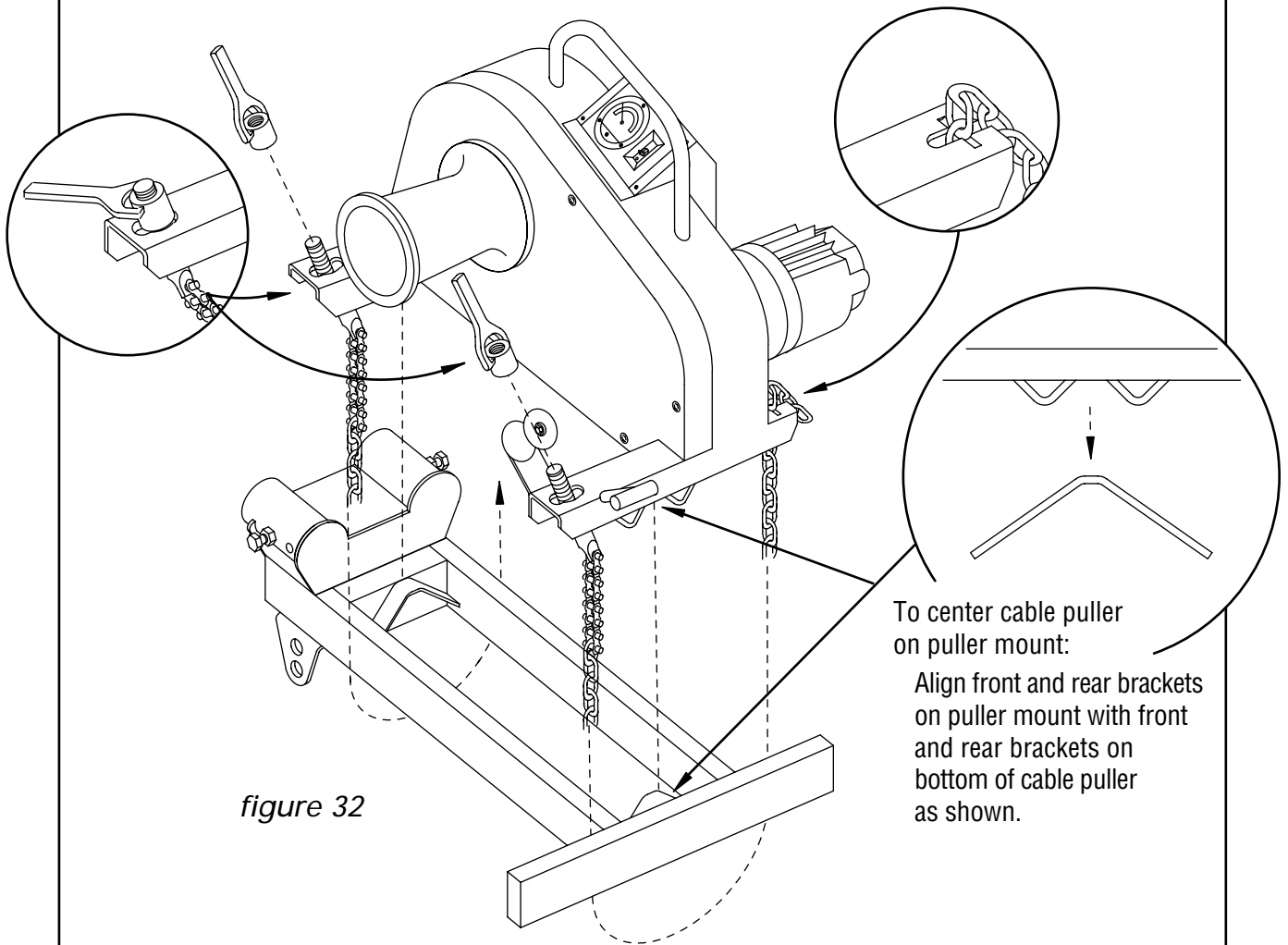


figure 32

To center cable puller on puller mount:

Align front and rear brackets on puller mount with front and rear brackets on bottom of cable puller as shown.

**! WARNING**

Never tighten chain as shown in Figure A. This causes side loading of the chain and can result in failure of the chain or screw causing components to come loose and possibly cause serious injury or death. Figure B shows the proper alignment of screw and chain for tightening.

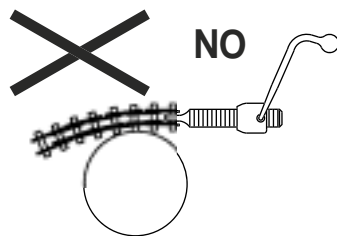


FIGURE A

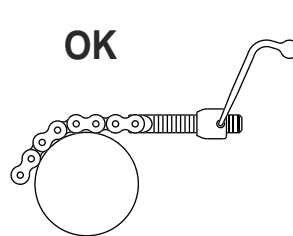


FIGURE B

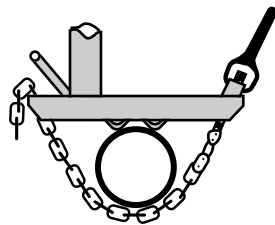


## **WARNING**

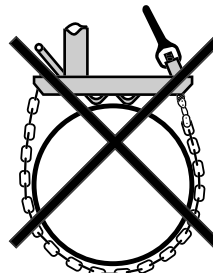
1. The only approved method to secure the Model 88 cable puller is with the 2 mounting chains provided with the Model 88 cable Puller. DO NOT attempt to use any other object to secure the puller.
2. Inspect mounting chains for wear before each installation.
3. NEVER alter the mounting chains or handle.

## **WARNING**

ALWAYS insure cable puller is properly secured before operating. ALWAYS attach to supports that are at least 2" and not more than the 10" wide.



OK



TOO WIDE

## **WARNING**

ALWAYS inspect the structural integrity of any supports, conduit, anchoring system etc. that will hold the cable puller during the pull. These supports should be able to withstand the maximum pulling force of the cable puller plus a safety factor of 3:1. Example: 8,000 lb. puller should be anchored to a support that can withstand 24,000 lbs. of pull.

## **WARNING**

DO NOT mount the Model 88 Cable Puller to square columns or I-Beams. The mounting chains will not tighten properly on these structures.



## SPECIFICATIONS — Model 88 Cable Puller

**Model No.** 88 Cable Puller  
**width** - 20 1/2"  
**length** - 24 3/4"  
**height** - 16"  
**weight** - 101 lbs. (includes two mounting chains)

maximum pulling force - 8,000 lbs.

speeds (approx.)	no load	-	16 ft/min.
	4,000 lbs.	-	9 ft/min.
	6,000 lbs.	-	7 ft/min.

motor - 120 volts AC, 60 hertz, 15 amps



## FEATURES

- Heavy duty all welded unitized steel frame
- Permanently mounted force gauge allows operator to monitor the pulling force
- Circuit breaker on/off switch — helps protect motor
- Safety pawl on capstan sprocket to prevent reverse rotation
- Tapered capstan to help avoid rope overlap
- Simple design provides for easy maintenance — only one guard covers all sprockets and chains
- Tailing rope safety roller for operator safety — lets operator stand out of the direct line of tight pulling rope
- Three handles for carrying or positioning puller
- Simple electrical system for easy maintenance

# FEATURES

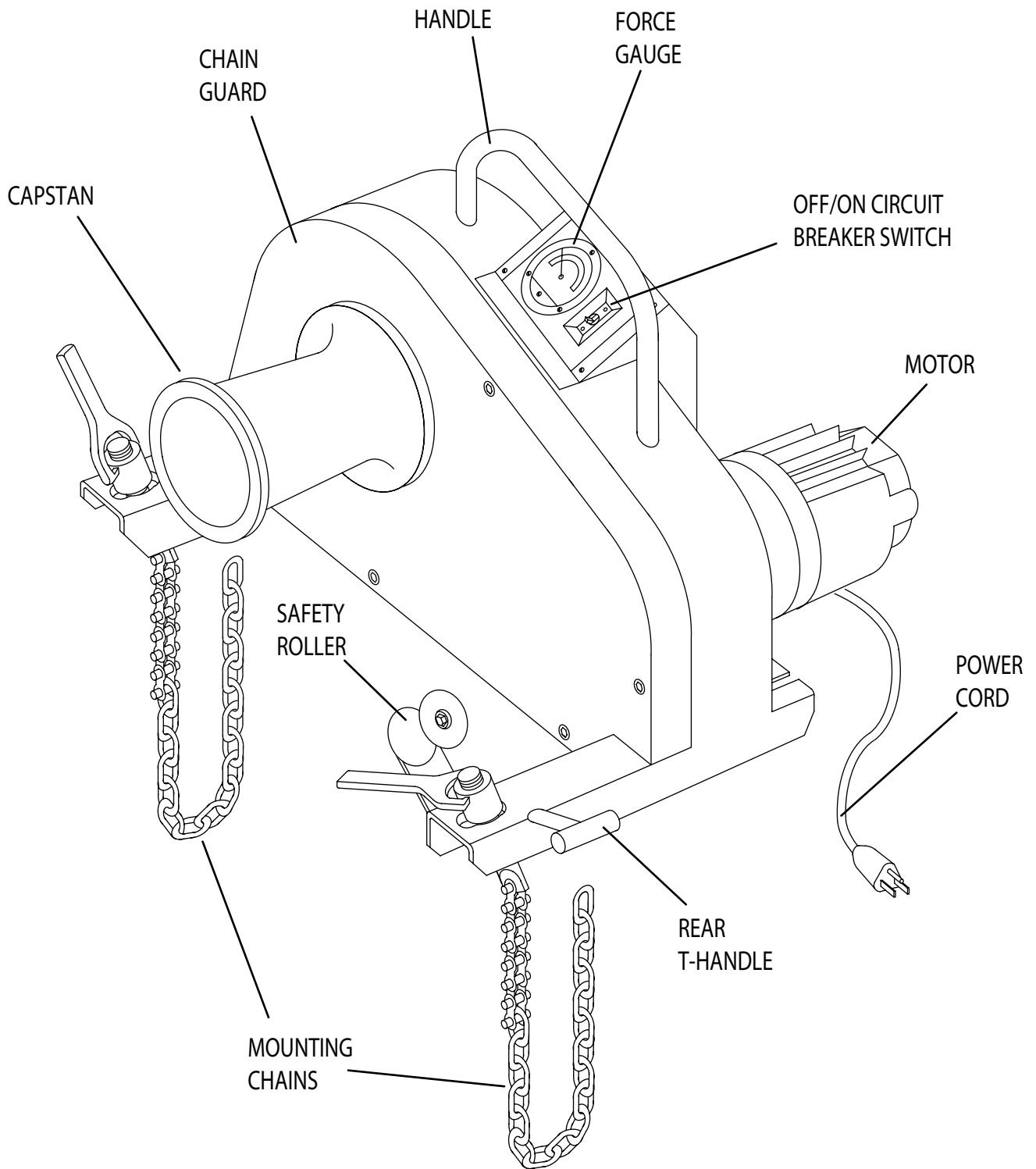


figure 35



## **! DANGER**

DO NOT operate cable puller in wet or damp locations. Do NOT expose to rain.

## **! DANGER**

DO NOT operate in an explosive atmosphere.

## **! WARNING**

DO NOT use cable puller as a hoist or for lifting, supporting or transporting people or loads. Use only for its intended purpose as a cable puller.

### **Rope Set-Up**

As shown in the overhead view, *figure 36b*, the pulling rope must approach the capstan at a 90° angle.

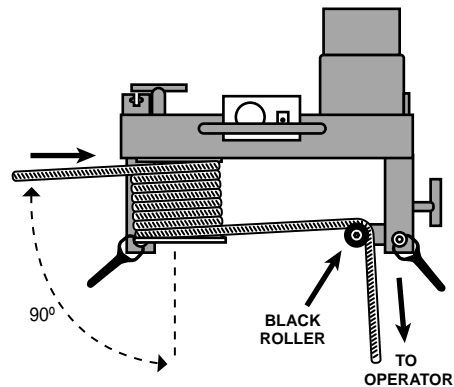
This will help avoid rope overlap.

Make several wraps of the pulling rope around the capstan, beginning at the housing end of the capstan.

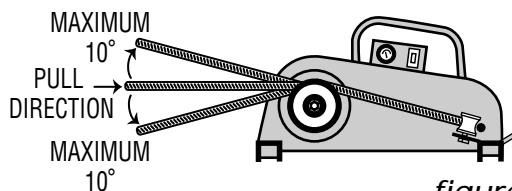
See *figure 36a*.

Next, guide the pulling rope around the black safety roller as shown in *figure 36a*. This will enable the operator to stand at a 90° angle to the cable puller and out of the direct line of tight pulling rope.

Also note the pulling rope should approach the capstan as indicated in *figure 36b*.



*figure 36a*



*figure 36b*

## **WARNING**

Rope should approach capstan as shown in figure 36b.

ALWAYS use black roller to guide rope so that operator stands at 90° angle to the cable puller and out of the direct line of tight pulling rope. See figure 36a.

ALWAYS wrap rope beginning at housing end of capstan as shown in figure 36a.

To help avoid rope overlap, rope must approach capstan at a 90° angle. See figure 36a.

## **WARNING**

Rope Requirements: Use only 3/4" or larger double braided composite pulling rope with an average breaking strength of 26,000 lbs.

Be sure to inspect rope for damage before each cable pull.

## **CAUTION**

Wear eye protection when operating cable puller.

### ***Pulling Operation***

1. Be sure the cable puller power switch is in the **off** position.
2. Operator should monitor the force gauge throughout the entire cable pull.
3. Hold the tailing end of the pulling rope and pull slightly. Turn the cable puller **on**.

*Note: The tailing rope is that portion of the pulling rope that has passed the capstan and is now excess to the pull. By pulling on the tailing rope the operator can control and vary the pulling force. It should require no more than 10 lbs. of tailing force by the operator to engage the pulling rope on the capstan. If the rope slips on the capstan, turn the puller off and add an additional wrap of rope around the capstan. Also note that with the tailing force at a constant pull, each additional wrap of rope around the capstan will approximately double the pulling force of the cable puller.*

## **WARNING**

NEVER allow the rope to slip on a rotating capstan for more than a couple of seconds. The rope will wear in that spot and the rope could break under pressure. If you need to stop the pull, turn the cable puller off and tie the rope off to hold it in place until you restart your pull.

## **WARNING**

This cable puller is equipped with an anti-reversing pawl. The pawl will make a clicking sound when the capstan is rotating. If you can not hear the clicking sound as the capstan rotates, immediately turn the cable puller off and do not use until repaired.

4. As the rope is tailed it should mound on the floor between the operator and the cable puller.

## **WARNING**

Keep all body parts, hair, loose clothing, etc. away from rotating parts and pinch points. Keep hands away from capstan.

DO NOT wrap rope around any body parts. DO NOT wrap rope around wrists.

ALWAYS keep the tailing rope away from the operator's feet.

5. Turn the cable puller switch to the **off** position when the pull is completed.

*NOTE: If for any reason you need to stop during a pull, turn the cable puller **off** and tie the tailing rope to the rear T-handle to hold it in place.*

*Note: The Model 88 Cable Puller is equipped with a circuit breaker switch. If the amperage rating of the breaker is exceeded the puller will stop. Before restarting the pull, allow the motor to cool and determine the cause for the overload condition. Correct before restarting the pull.*

 **WARNING**

Rope must ALWAYS be pulled over a **rotating** sheave. If a sheave does not rotate, turn cable puller off immediately and determine the problem before continuing the pull.

 **WARNING**

Pulling Rope should be the only thing to contact the capstan. NEVER let swivels, grips, etc. come in contact with the capstan.

 **WARNING**

NEVER allow the rope to overlap on the capstan. If this condition begins to occur, immediately release the tailing force on the rope so that the rope can feed back toward the conduit or cable tray. If this does not remedy the overlap, turn off the cable puller immediately. **There is no known solution for rope overlap.**

 **WARNING**

Keep as much rope confined in the conduit as possible. This will help prevent injury should the rope break and whip violently.

 **WARNING**

When making a vertical cable pull, keep the area underneath the cable pull clear of all personnel.



### **WARNING**

Unplug the cable puller before servicing.

### **CAUTION**

DO NOT alter this cable puller. Doing so will void the warranty. Guards and safety features are provided for your protection.

#### ***Capstan***

Replace the capstan if it is grooved more than 1/16" deep.

#### ***Lubrication***

Front and Rear Drive Chains — Lubricate the inside of both drive chains every 20 hours of operation with 90 wt. gear oil.

Capstan Shaft, Rear Drive Shaft and Ratchet Pawl — Grease every 10 hours with a good quality multi-purpose (M.P.) grease. These grease fittings are located on the side of the cable puller. See *item #39 on Model 88 Cable Puller exploded view*.

#### ***Inspection***

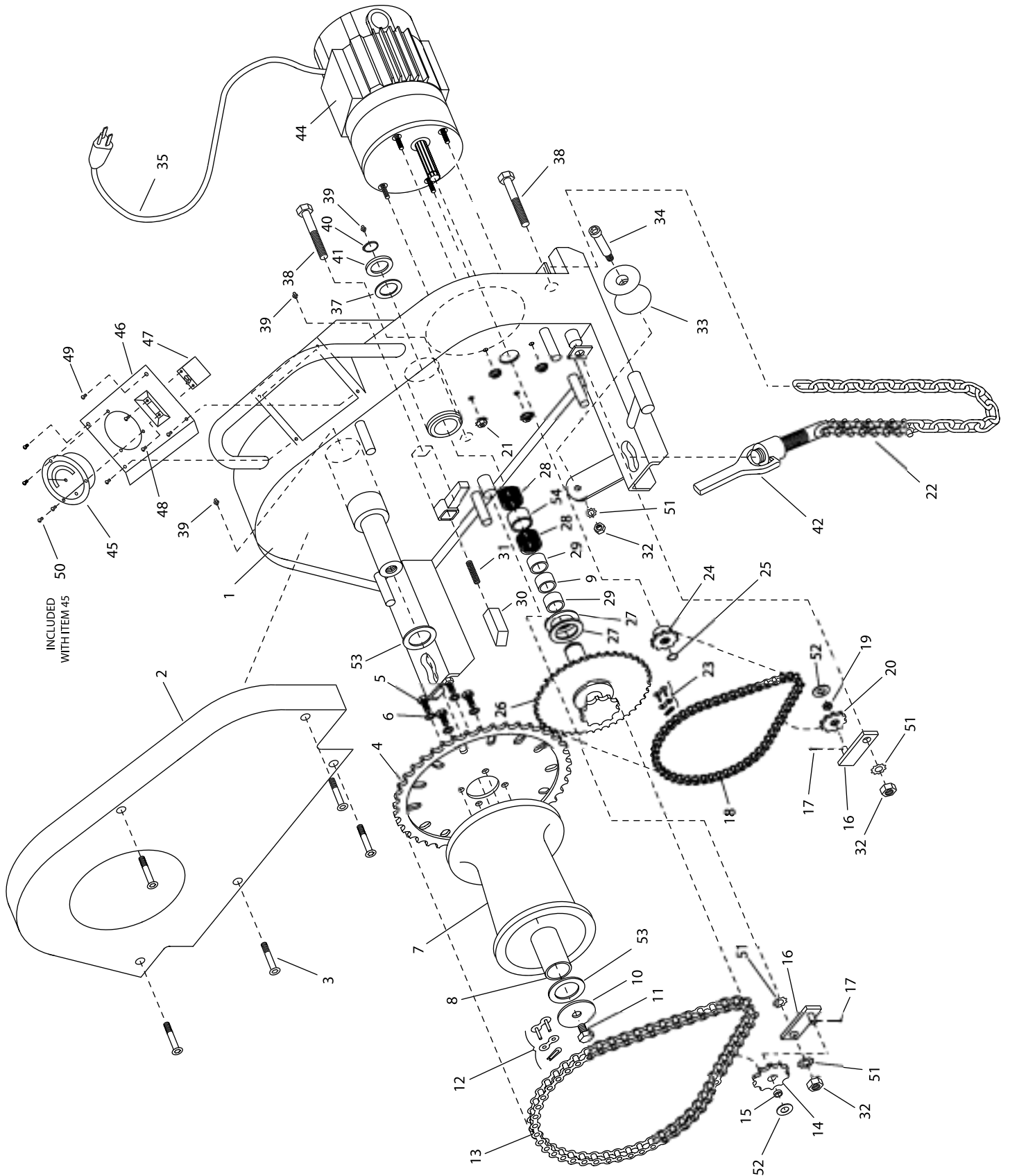
*Important: After the first 5 hours of operation remove the cover and inspect both chain tensioners. Adjust as needed.*

Front and Rear Chain Inspection — Every 40 hours of operation the front and rear drive chains should be removed and inspected for excessive wear or binding.

Motor Brushes – Inspect the two motor brushes every 30 hours. Replace if less than 3/8" long. Always replace both brushes at the same time.



# EXPLODED VIEW – MODEL 88 CABLE PULLER

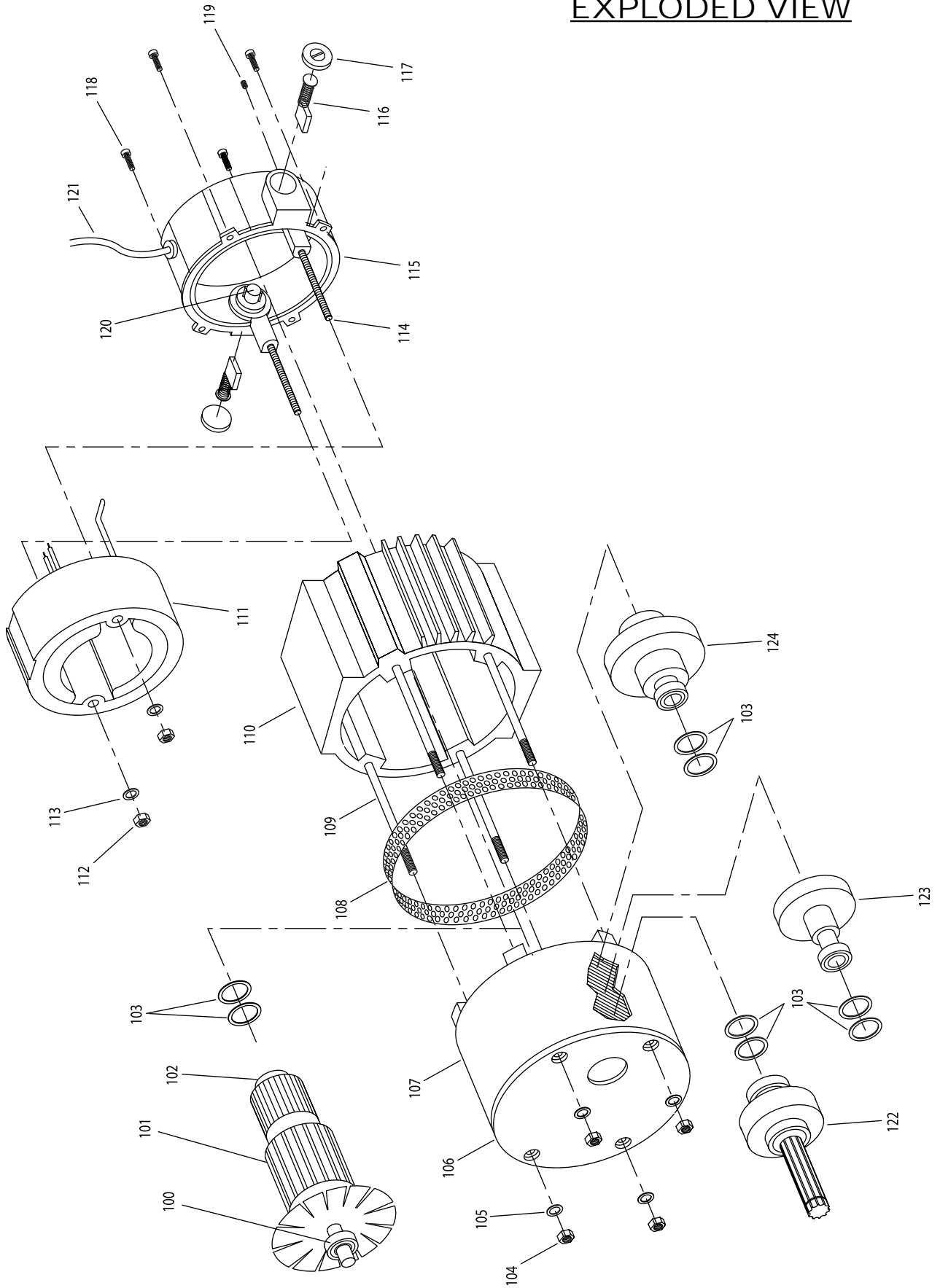




## PARTS LIST — MODEL 88 CABLE PULLER

Item #	Parts Description	Qty.	Part #
1	Puller Housing	1	88-53
2	Chain Guard	1	88-32
3	Flat Head Socket Cap Screw	5	88-1
4	#60 Sprocket	1	88-54
5	Capstan Sprocket Bolt	4	88-55
6	Star Lock Washer	4	88-56
7	Capstan	1	88-33
8	Capstan Bushing	1	88-57
9	Spacer – Jackshaft	1	88-58
10	Capstan Washer – Steel	1	88-59
11	Capstan Bolt	1	88-60
12	#60 Chain Master Link	1	77-010
13	#60 Chain	1	88-61
14	#60 Idler Sprocket	1	88-62
15	#60 Idler Sprocket Bushing	1	88-63
16	Chain Tensioner Arm	2	88-64
17	Tensioner Arm Cotter Pin	2	88-2
18	#40 Chain	1	88-65
19	#40 Idler Sprocket Bushing	1	88-66
20	#40 Idler Sprocket	1	88-67
21	Kep Nut	4	88-68
22	Mounting Chain Assembly	2	88-21 L
23	#40 Chain Master Link	1	77-032
24	#40 Sprocket – Motor	1	88-69
25	Motor Shaft Retaining Ring	1	88-25
26	Jackshaft & Sprocket Weldment	1	88-19
27	Jackshaft Phenolic Washer	2	88-70
28	Roller Bearing – Jackshaft	2	88-35
29	Inner Race – Jackshaft	2	88-36
30	Pawl	1	88-27
31	Pawl Spring	1	88-26
32	Hex Nut	3	88-71
33	Safety Roller	1	88-18
34	Socket Head Shoulder Bolt	1	88-72
35	Power Cord	1	450-4
37	Washer – Phenolic	1	88-37
38	Bolt	2	88-38
39	Grease Fitting	3	88-39
40	Heavy Duty Retaining Ring	1	88-40
41	Jackshaft Washer – Steel	1	88-41
42	Mounting Chain Handle Assembly	2	88-42
44	Puller Motor	1	88-44
45	Puller Force Gauge	1	88-17
46	Cover	1	88-46
47	Circuit Breaker Switch	1	88-47
48	Slotted Pan Head Mach. Screw	2	88-31
49	Cover Screw	4	88-49
50	Gauge Assembly Screw	3	88-50
51	Star Lock Washer	4	88-51
52	Flat Washer	2	88-52
53	Capstan Shaft Washer – Phenolic	2	88-48
54	Bearing Spacer	1	88-74

# MODEL 88 CABLE PULLER MOTOR EXPLODED VIEW



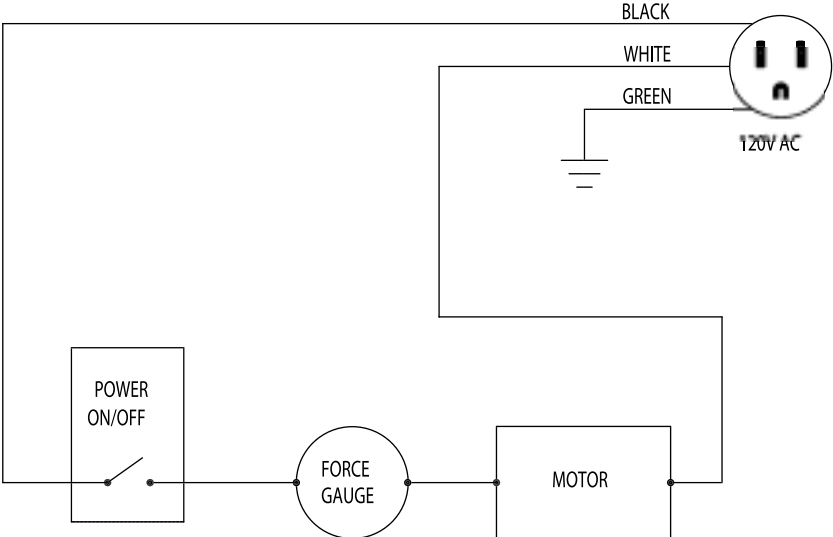


## PARTS LIST — PART #88-44 CABLE PULLER MOTOR

Item #	Parts Description	Qty.	Part #
100	Armature Bearing – Front	1	88-44A
101	Armature	1	88-44B
102	Armature Bearing – Rear	1	88-44C
103	Belleville Washer	8	88-44D
104	Nut	4	88-44E
105	Lock Washer	4	88-44F
106	Motor End Plate	1	88-44G
107	Gear Box Housing	1	88-44H
108	Fan Screen	1	88-44I
109	Threaded Stud	4	88-44J
110	Middle Motor Housing	1	88-44K
111	Field	1	88-44L
112	Nut	2	88-44M
113	Lock Washer	2	88-44N
114	Threaded Stud	2	88-44O
115	End Cap Housing	1	88-44P
116	Brush	2	88-44Q
117	Brush Cap	2	88-44R
118	Screw	4	88-44S
119	Set Screw	2	88-44T
120	Brush Holder	2	88-44U
121	Motor Cord	1	450-4
122	Output Shaft Gear Assembly	1	88-44W
123	2nd Gear Assembly	1	88-44X
124	1st Gear Assembly	1	88-44Y

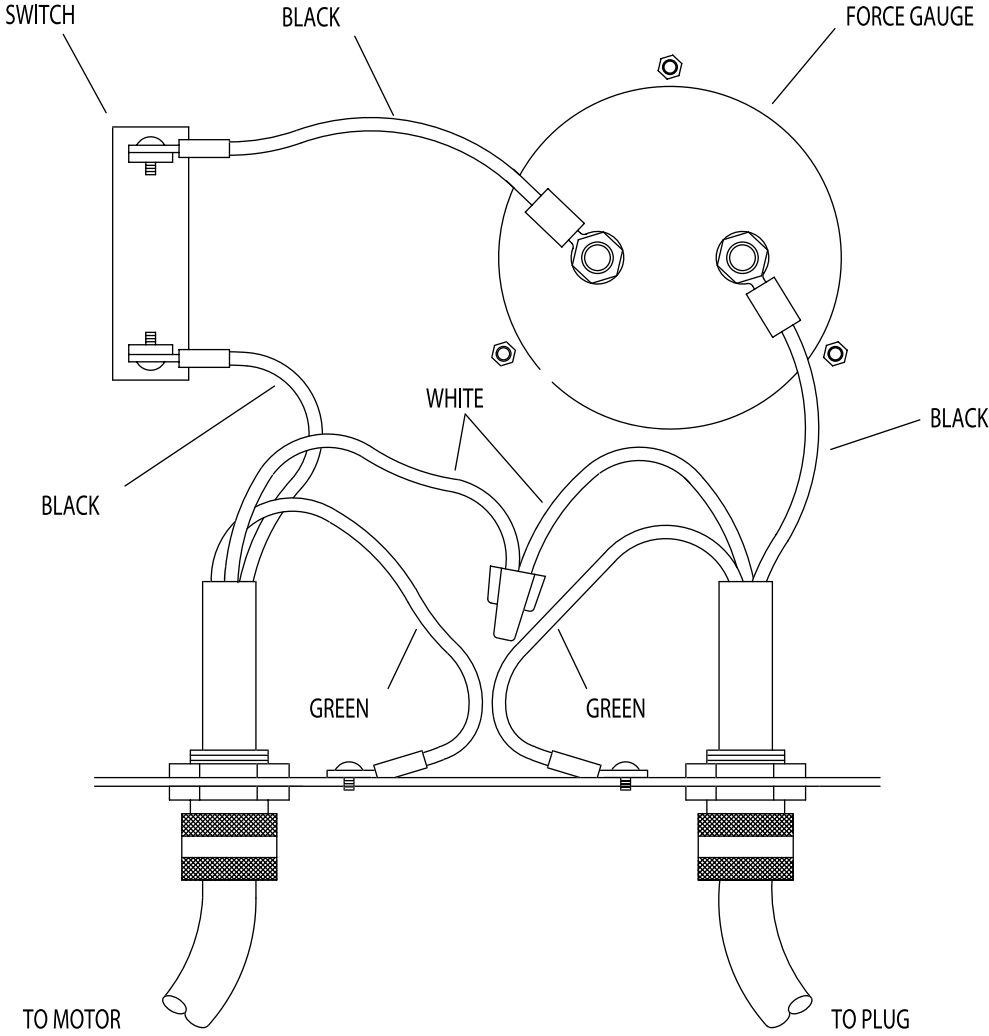
WIRING SCHEMATIC

# MODEL 88 CABLE PULLER



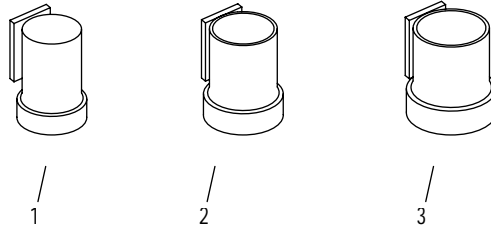
WIRING DRAWING

# MODEL 88 CABLE PULLER



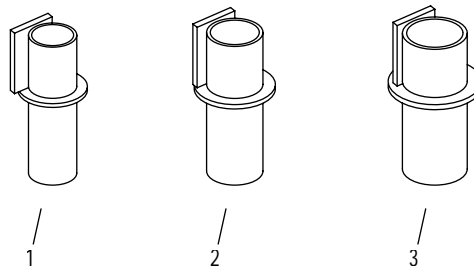
# COMPONENT PARTS LISTING

## SCREW-ON COUPLINGS



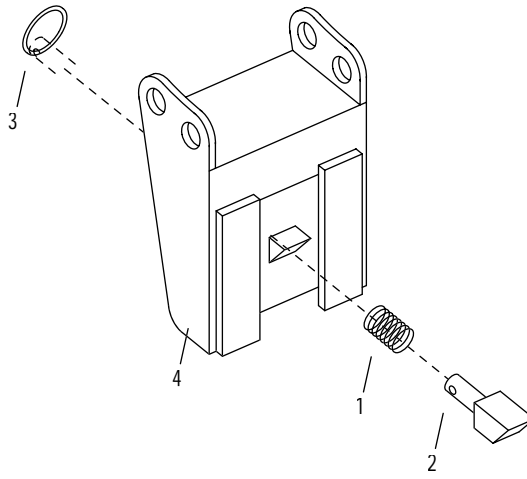
<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
<i>not shown</i>	8098-2	Screw-On Coupling for 2" IMC, Rigid Conduit	<i>optional</i>
<i>not shown</i>	8098-2.5	Screw-On Coupling for 2 1/2" IMC, Rigid Conduit	<i>optional</i>
1	8098-3	Screw-On Coupling for 3" IMC, Rigid Conduit	1
2	8098-3.5	Screw-On Coupling for 3 1/2" IMC, Rigid Conduit	1
3	8098-4	Screw-On Coupling for 4" IMC, Rigid Conduit	1

## SLIP-IN COUPLINGS



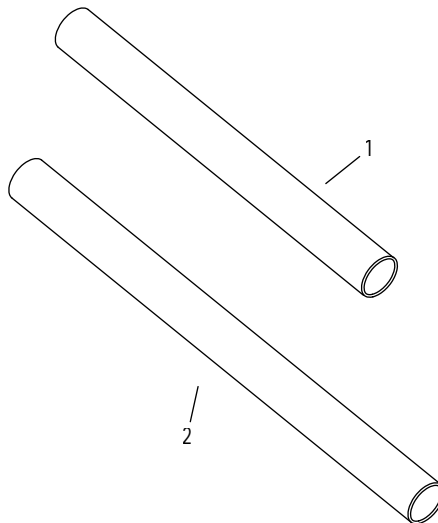
<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
<i>not shown</i>	8097-2.5	Slip-In Coupling for 2 1/2" EMT, IMC, Rigid Conduit	<i>optional</i>
1	8097-3	Slip-In Coupling for 3" EMT, IMC, Rigid Conduit	1
2	8097-3.5	Slip-In Coupling for 3 1/2" EMT, IMC, Rigid Conduit	1
3	8097-4	Slip-In Coupling for 4" EMT, IMC, Rigid Conduit	1
<i>not shown</i>	8097-5	Slip-In Coupling for 5" EMT, IMC, Rigid Conduit	<i>optional</i>

COUPLING ADAPTER - 8099



<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	8099-1	Spring	1
2	8099-2	Pawl	1
3	8099-3	Pull Ring	1
4	8099-4	coupling adapter weldment	1

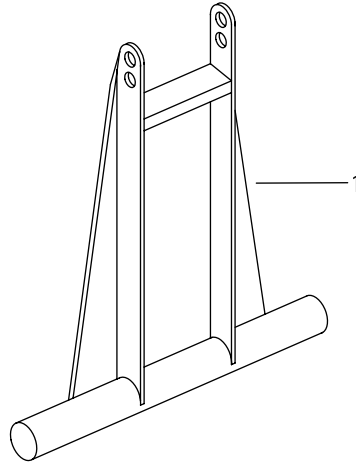
BOOM TUBES - 8095/8096



<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	8095	3' Boom Tube	2
2	8096	4' Boom Tube	2

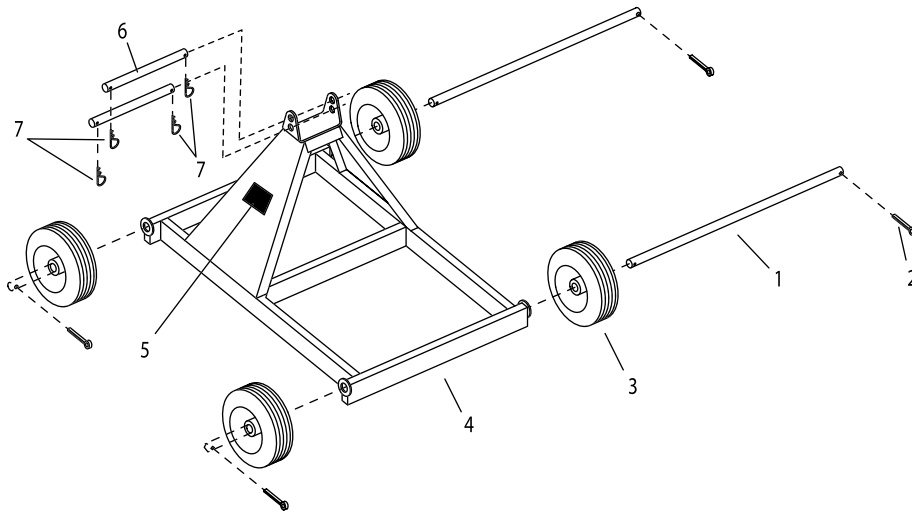
COMPONENT PARTS LISTING *continued . . .*

T-STAND - 8100



<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	8100	T-Stand	1

MOBILE CARRIAGE - 8091

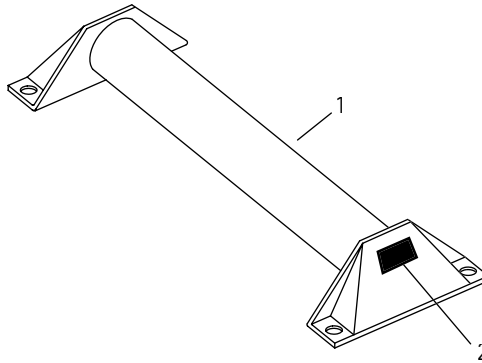


<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	8091-1	Axle	2
2	77-016	Pin, Cotter, 3/16" x 1.25"	4
3	8091-2	Pneumatic Tire	4
4	8091-3	Frame	1
5	8091-W	Decal Warning	1
6	8091-5	Pin, Sheave - 3/4" Dia. X 8 5/8"	2
7	406-3	Spring Clip	4



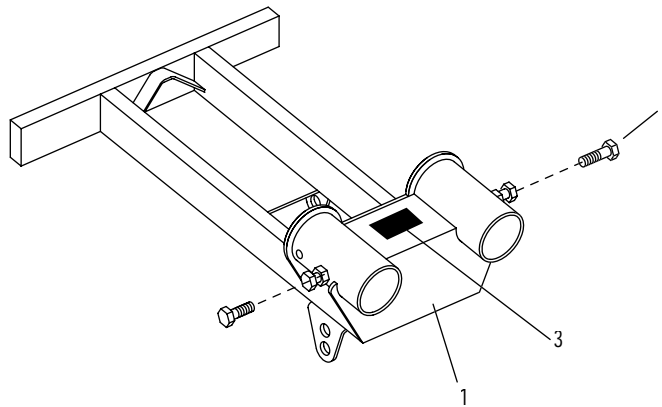
COMPONENT PARTS LISTING *continued . . .*

FLOOR MOUNT – 8045



<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1 .....	8045 .....	Floor Mount .....	1
2 .....	8045-W .....	Decal Warning .....	1
<i>not shown</i> .....	8045-3 .....	Anchor Bolt .....	4

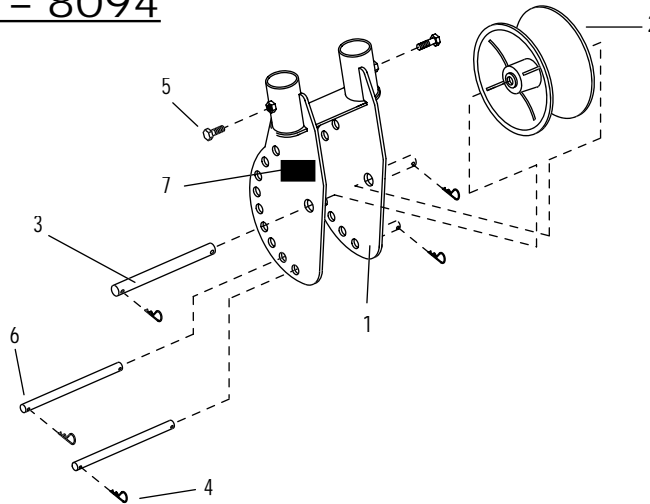
PULLER MOUNT – 8092



<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1 .....	8092-1 .....	Frame .....	1
2 .....	8092-2 .....	Cap Screw, 1/2 - 13 x 1 .....	2
3 .....	8092-W .....	Decal Warning .....	1

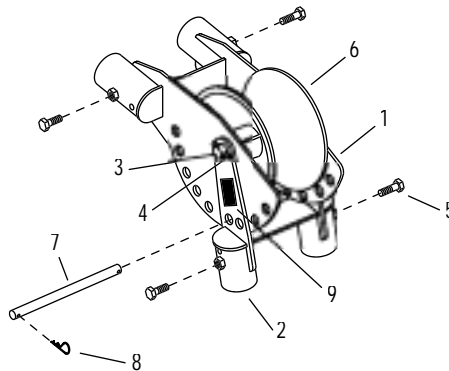
COMPONENT PARTS LISTING *continued . . .*

**NOSE UNIT - 8094**



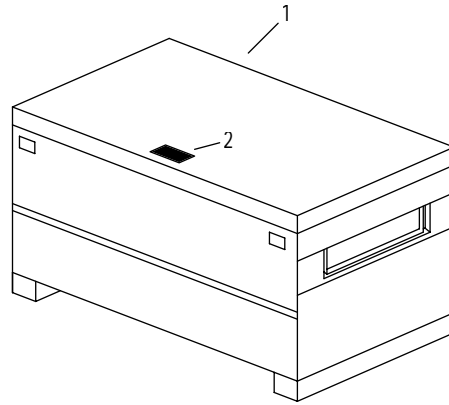
<b><u>ITEM#</u></b>	<b><u>CATALOG#</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>QTY</u></b>
1.....	8093-1.....	Elbow Weldment.....	1
2.....	812-1.....	Sheave 12".....	1
3.....	812-7.....	Pin, Sheave - 1" Dia. x 7 3/8".....	1
4.....	406-3.....	Spring Clip.....	6
5.....	8092-2.....	Cap Screw, 1/2 - 13 x 1".....	2
6.....	333-6.....	Pin, Adapter Coupling - 3/4" Dia. x 7 3/8".....	2
7.....	8094-W.....	Decal Warning.....	1

**ELBOW UNIT - 8093**



<b><u>ITEM#</u></b>	<b><u>CATALOG#</u></b>	<b><u>DESCRIPTION</u></b>	<b><u>QTY</u></b>
1.....	8093-1.....	Elbow Weldment.....	1
2.....	8093-2.....	Elbow Pivot.....	1
3.....	8093-3.....	Pin, Sheave - 1" Dia. x 8 1/8".....	1
4.....	8093-4.....	Roll Pin.....	2
5.....	8092-2.....	Cap Screw, 1/2 - 13 x 1".....	4
6.....	812-1.....	Sheave Unit, 12".....	1
7.....	8093-5.....	Pin, Elbow - 3/4" Dia. x 8 1/8".....	1
8.....	406-3.....	Spring Clip.....	2
9.....	8093-W.....	Decal Warning.....	1

STORAGE BOX



<u>ITEM#</u>	<u>CATALOG#</u>	<u>DESCRIPTION</u>	<u>QTY</u>
1	101	Metal Storage Box	1
<i>not shown</i>	506	Casters	1
2	8890-101-W	Decal Warning	1