

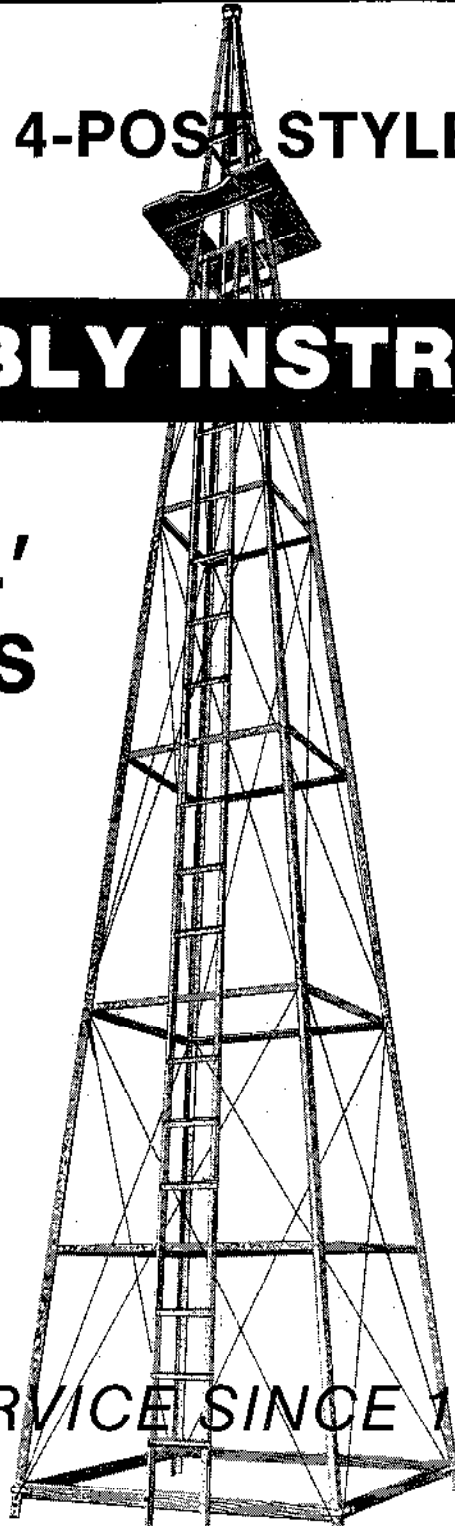


**4-POST STYLE "A" TOWERS**

**3" ANGLE**

# **ASSEMBLY INSTRUCTIONS**

**FOR  
12' & 14'  
WINDMILLS**



**30'**

**40'**

*SERVICE SINCE 1878*

**PLEASE REMOVE THIS MANUAL AND STUDY THOROUGHLY**

# **BEFORE**

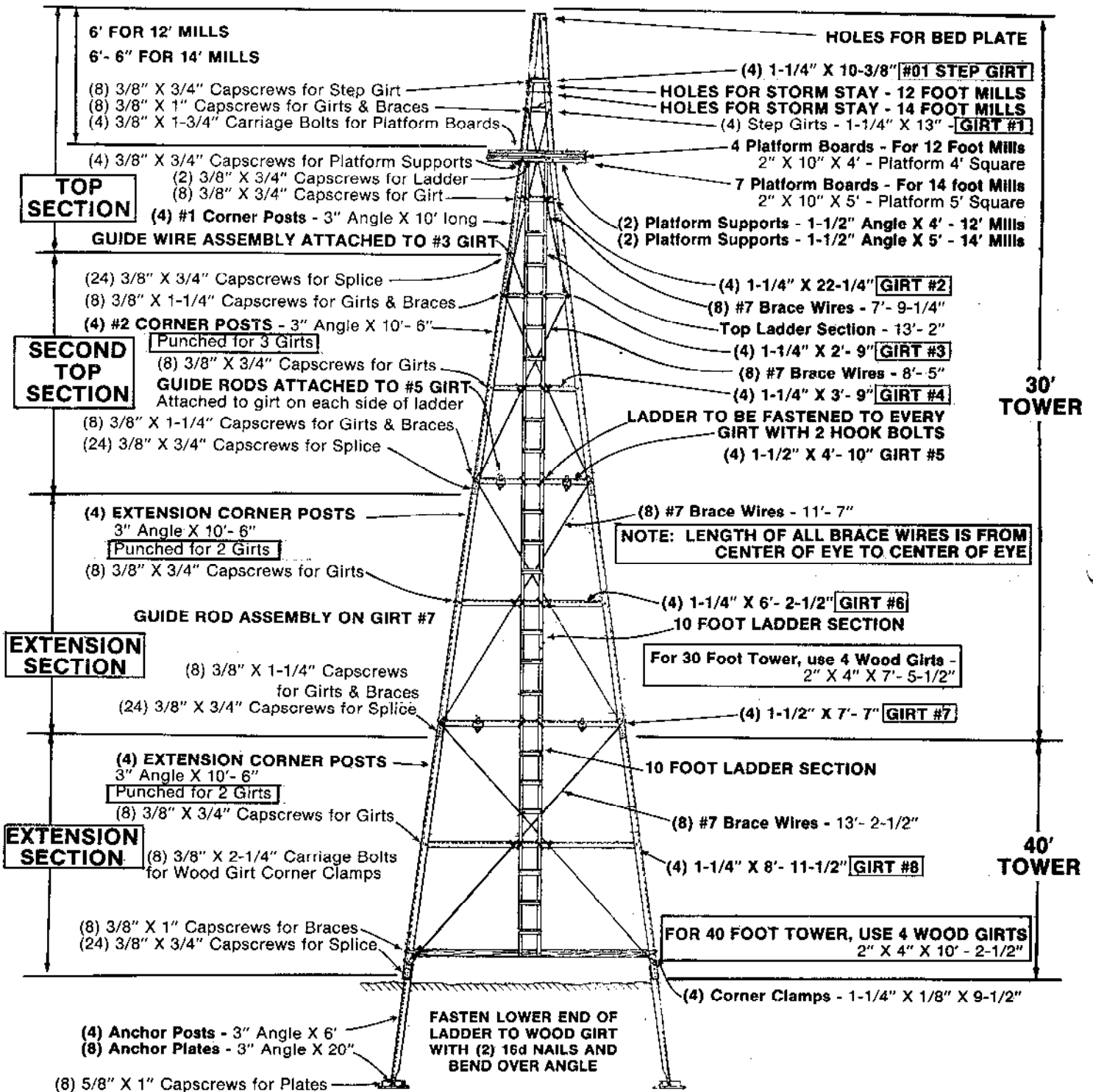
**PROCEEDING TO ASSEMBLE AND ERECT THE TOWER**

**DEMPSTER INDUSTRIES INC., Beatrice, Nebraska 68310 (402) 223-4026**

Form 662, Rev. 1 - 5/80

# 4-POST STYLE "A" 3-INCH TOWER

NOTE: For 14 foot mills, storm stay holes are 3" lower than for 12 foot and platform holes are 6" lower.



**ECCENTRIC WASHERS USED ON LOWER END OF ALL BRACE WIRES FOR TIGHTENING**

Slant 6 foot Anchor Posts 14" toward center of tower. Set Anchor Posts so distance between outside corners of top of anchor posts is 2" less than length of wood girt.

FIGURE 1

**ALL BRACES ARE TO BE FASTENED TO GIRTS WITH HOOK BOLTS AND WASHERS**

## GENERAL INFORMATION

The Dempster 3" Style "A" Steel Tower is used for the 12' & 14' Windmills only. Although originally designed for installation of the smaller sizes also - 6', 8' and 10' - the bed plates and storm stays required for these windmills are no longer available. The corner holes in the top angles 27" from the end are not currently used.

## THE HEIGHT OF THE TOWER

Never place a windmill on too short a tower and expect satisfactory results. The safest and best place for a tower and windmill is where the wind can strike it fairly from every direction. The top of the tower must always be 15 to 20 feet higher than an obstruction to the wind, such as trees or buildings, within 400 feet of the mill. This guarantees it will run whenever there is wind enough to turn the mill.

## ERECTION METHODS

### 3" STYLE "A" TOWER FOR 12' & 14' WINDMILLS

One of two procedures may be employed to construct the tower and engine assembly.

#### 1. GROUND LEVEL ASSEMBLY BEFORE ERECTION:

Assemble the tower, engine, pullout and wood pole groups completely on the ground and erect it with lifting equipment. Due to the special "flare" feature described below, this procedure is recommended, as it provides increased leverage to spring the legs into position to install the girts and supports properly.

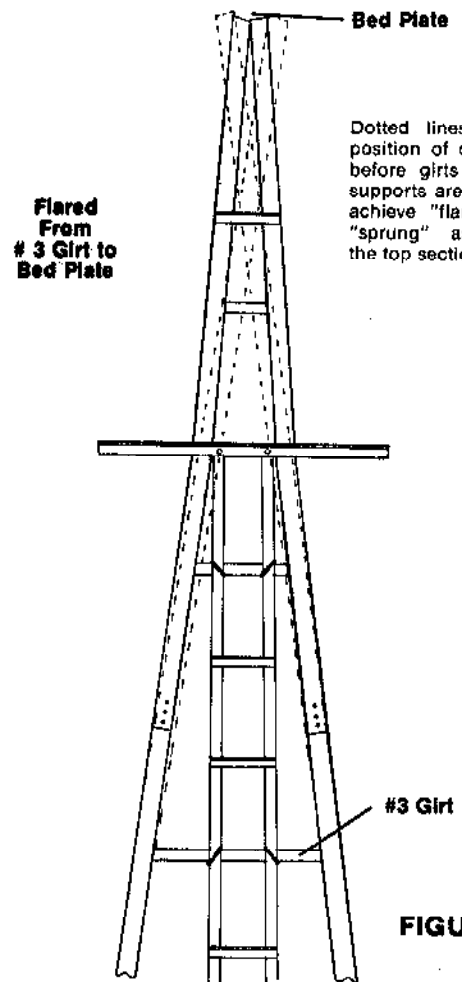
The greatest number of Dempster Steel Towers are assembled on the ground and then raised to the vertical position. This is considered to be the easiest and quickest way, plus it has this advantage--the mill can be assembled and installed on the tower before it is raised. However, due to working space limited by nearby trees or buildings, it is sometimes necessary to build from the ground up.

#### 2. ERECTION FROM THE GROUND UP:

Build the tower from the ground up, raise the assembled engine to the top of the standing tower and install the pullout & wood pole groups.

Less equipment is required to build the tower by this method than to raise the assembled tower and engine. A few wrenches, a hammer & punch, a rope as long as the height of the tower and a few planks of sufficient length to reach across the lower girts are all the equipment needed to build this tower. Lifting equipment will be required to install the engine.

#### "SPRUNG ASSEMBLY"



### STYLE "A" TOWER "FLARE" FEATURE

The 3" Style "A" Tower is designed with a slight outward flare from the #3 girt, in the second top section, to the bed plate. This provides added clearance at the tower corners for the larger wheel fans. Girts will seem too long above or below the #3 girt, depending on the assembly method, and springing the legs to install them creates the "flare". Below this girt, the tower legs are straight. Each erection method section details the appropriate procedure sequence necessary to perform this step. Due to this feature, the ground level method

# 4-POST STYLE "A" 3-INCH TOWER

## TOWER BRACE WIRES

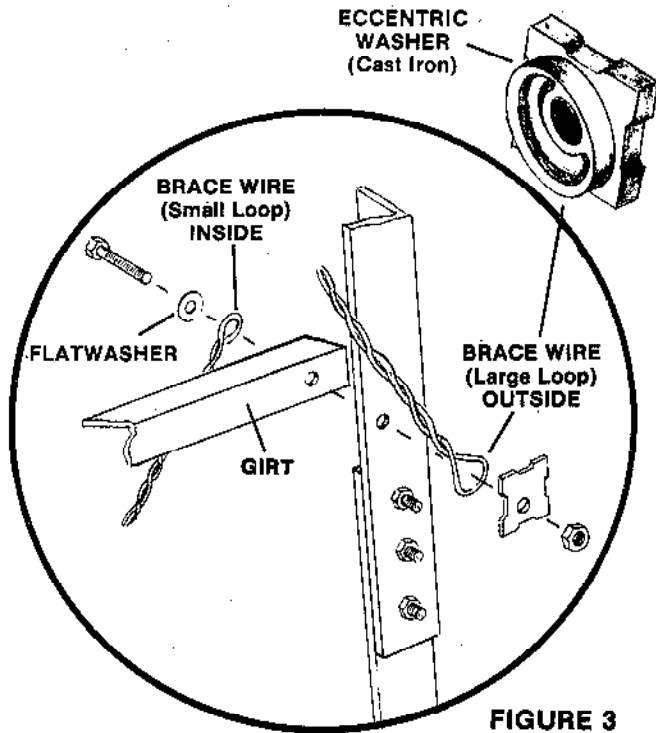


FIGURE 3

SPLICE/GIRT/BRACE WIRE ASSEMBLY

All Style "A" Towers have interconnecting sets of brace wires every 10 feet, crisscrossing the sections. Bolt the upper & lower ends of the brace wires to the corner posts, together with a set of girts. Attach the upper end (small loop) from the inside with a washer. Install the cast iron eccentric washer in the lower end (largest loop) in the brace wire on the outside of the tower leg. Use 3/8" X 1-1/4" capscrews and nuts. See Figure 3 for detailed drawing.

## TO TIGHTEN BRACE WIRES

Always leave eccentric washers in the loosest position, until the complete set of eight braces are in place, then tighten them evenly. Do not turn one completely around and the next one only partially. Never tighten braces any more than to take all slack out of them. Tightening the braces too much springs the girts and weakens the tower. The eccentric washer does not have to be turned completely around to hold the brace tight. Securing the bolt nut will keep them from turning backward and loosening the brace wire.

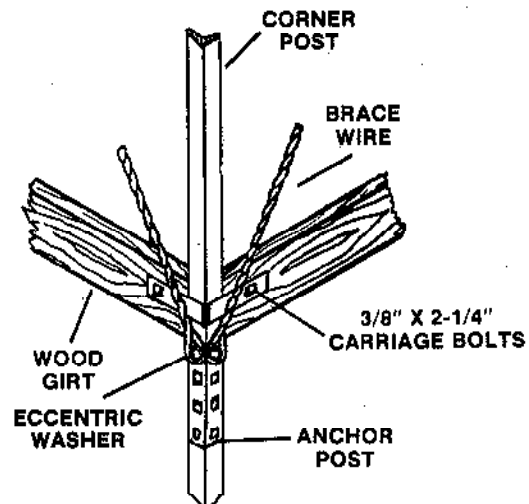
## LADDER

The top ladder section is 13' - 2" long and all others are 10'. The sides are flat strap with angle iron steps. The top end is attached to the platform supports in the appropriate holes. The section ends are riveted together and the lower end is nailed to the wood grit or stake set into the ground for concrete anchor installation. The ladder is attached to each girt with hook bolts and special washers.

*NOTE: By securing the ladder to the #7 or #5 girt and attaching hooks to the lower ladder section, it can be raised up to the next higher girt to discourage children from climbing the tower.*

## BOTTOM GIRTS

The bottom girt is a wood girt, which is placed with the beveled ends inside of the corner angle, just above the brace wire bolt. Bolt bent clip around the outside of the corner posts under braces and bolt to wood girts with 3/8" X 2-1/4" carriage bolts, as illustrated in Figure 4.



BOTTOM (WOOD) GIRTS

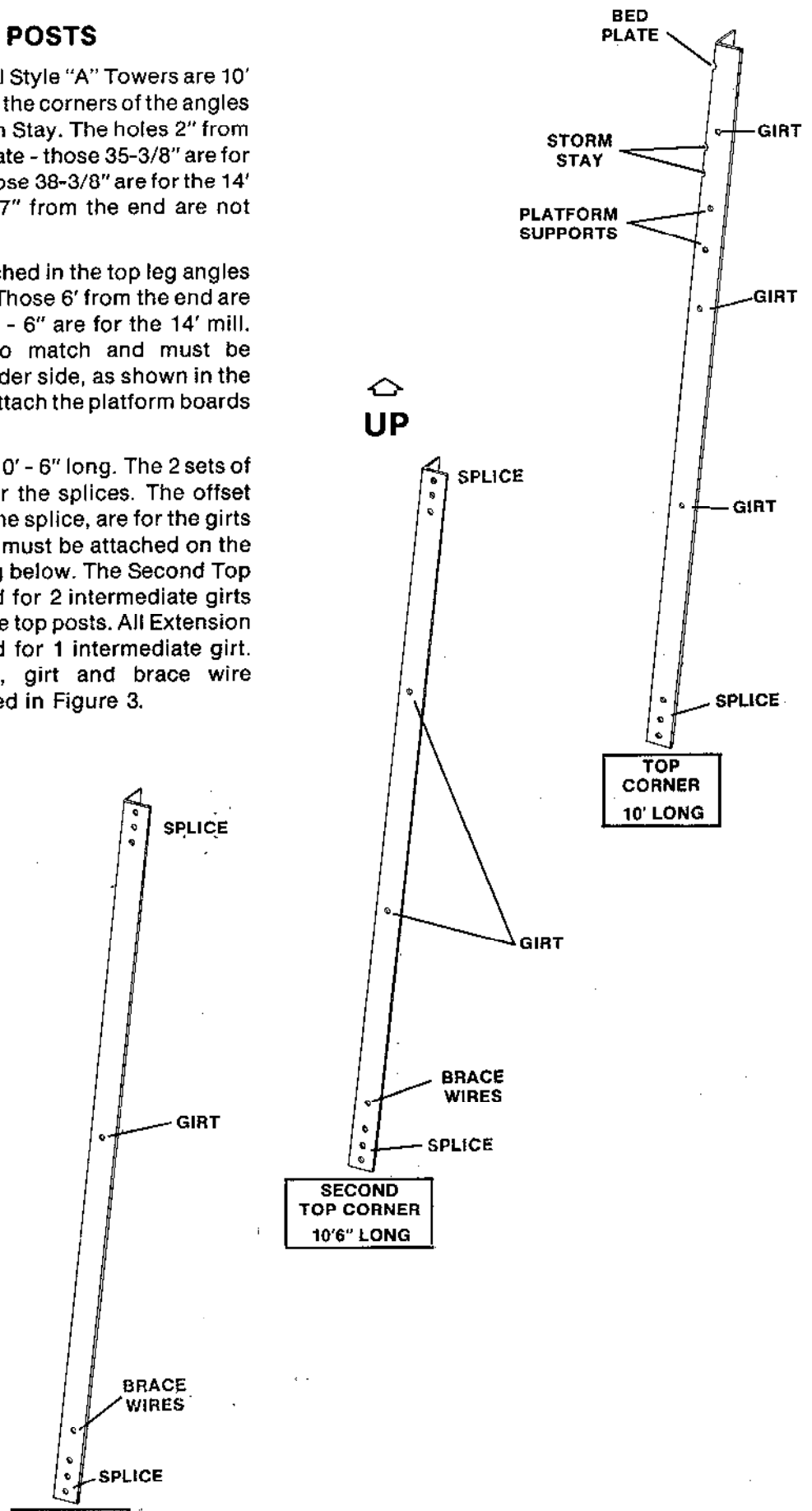
FIGURE 4

## CORNER POSTS

The Top Corner Posts of all Style "A" Towers are 10' long with holes punched in the corners of the angles for the Bed Plate and Storm Stay. The holes 2" from the ends are for the Bed Plate - those 35-3/8" are for the 12' mill Storm Stay - those 38-3/8" are for the 14' mill Storm Stay. (Those 27" from the end are not currently used.)

Two sets of holes are punched in the top leg angles for the platform supports. Those 6' from the end are for the 12' mills - those 6' - 6" are for the 14' mill. Supports are punched to match and must be installed relative to the ladder side, as shown in the assembly illustrations, to attach the platform boards correctly.

All other corner posts are 10' - 6" long. The 2 sets of 3 holes in the ends are for the splices. The offset holes in one end, next to the splice, are for the girts and brace wires. This end must be attached on the outside of the top of the leg below. The Second Top Corner Posts are punched for 2 intermediate girts and must be attached to the top posts. All Extension Corner Posts are punched for 1 intermediate girt. See corner post, splice, girt and brace wire connection detail illustrated in Figure 3.



# 4-POST STYLE "A" 3-INCH TOWER

## SETTING THE ANCHOR POSTS

One of two methods may be used to set the anchor posts, depending on the erecting method.

1. Dig holes and rest posts on solid footing.
2. Set the anchor posts in concrete to ground level. If the latter is followed, the tower can be set about one foot higher, allowing more head room under the tower girts for a person to walk under. Wood girts may be left off on this type of installation. However, they must not be left off unless the anchor posts are set in concrete.

(If Method 2 is employed, the ladder is fastened at the lower end to two stakes driven into the ground.)

## STEEL ANCHOR POSTS AND ANCHOR PLATES

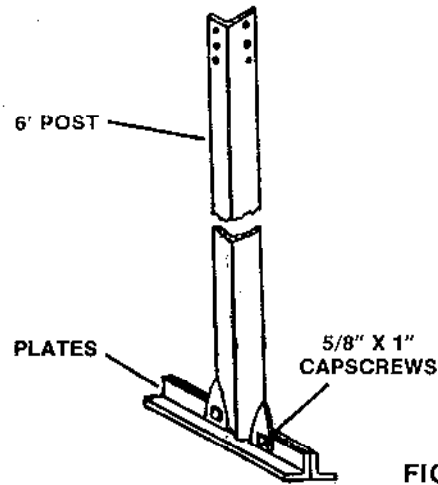


FIGURE 6

*Do not fill holes until lower section, or assembled tower, is erected and plumbed to the pump or well.*

### METHOD ONE

Lay off the center for the anchor post holes about 10" more than the length of the wood girts and an equal distance from the pump or well. Dig holes about 2-1/2 feet square and about 5-1/2 feet deep, if the ground is solid. If it is loose, dig a little deeper and place some tamped rock or concrete under the anchors. It is important that the tower have solid footing. Wood girts must be used with this installation.

### METHOD TWO

The more desirable method is to set the anchor posts in concrete. In this case, the tower may be set about one foot higher, allowing more head room under the tower girts. Wood girts may be left off and the ladder fastened to wood stakes driven into the ground, or hooked to a higher girt for safety.

Dig holes about 5-1/2 feet deep and enlarge the bottom for good footing. Run about one foot of concrete in the holes to set the top of the anchor posts about 18 inches above ground level. Do not fill holes to set anchors solid until lower section, or assembled tower, is erected and plumbed to pump or well.

### ASSEMBLE AND SET ANCHOR POSTS AS FOLLOWS:

Bolt two anchor plates to each anchor post with 5/8" X 1" cap screws and nuts (Figure 6). Set anchor posts in holes, so the upper outside corners of posts are about 2" further apart than the length of the wood girts. A 6' anchor post should slant 14" toward the center of the tower to give proper slope. They must be the same distance from each other and from the center of the well or pump. Level the top of the anchor posts with a spirit level. **DO NOT GUESS ABOUT THIS!!** Proceed to erect the lower section, or assemble the complete tower, and erect on anchor posts. Recheck level and plumb to pump or well. Fill holes by method originally determined. If Method 1 is used, be sure dirt is dampened and tamped thoroughly and solidly.

# 4-POST STYLE "A" 3-INCH TOWER

-7-

## GROUND LEVEL ASSEMBLY OF TOWER

### GROUND LEVEL ASSEMBLY

A 40' tower assembly is described. For the 30', the lower section will not be used - only the Top, Second Top and 1 Extension Section. Wood girts will be used in place of the #7 girt described.

The Top Section is shown in an upright position. In this ground level assembly, the tower will be laid out on the ground until the top end must be elevated slightly by cribbing or supports to install the engine. All of the assembly procedures described on the following four pages will be performed in this horizontal position.

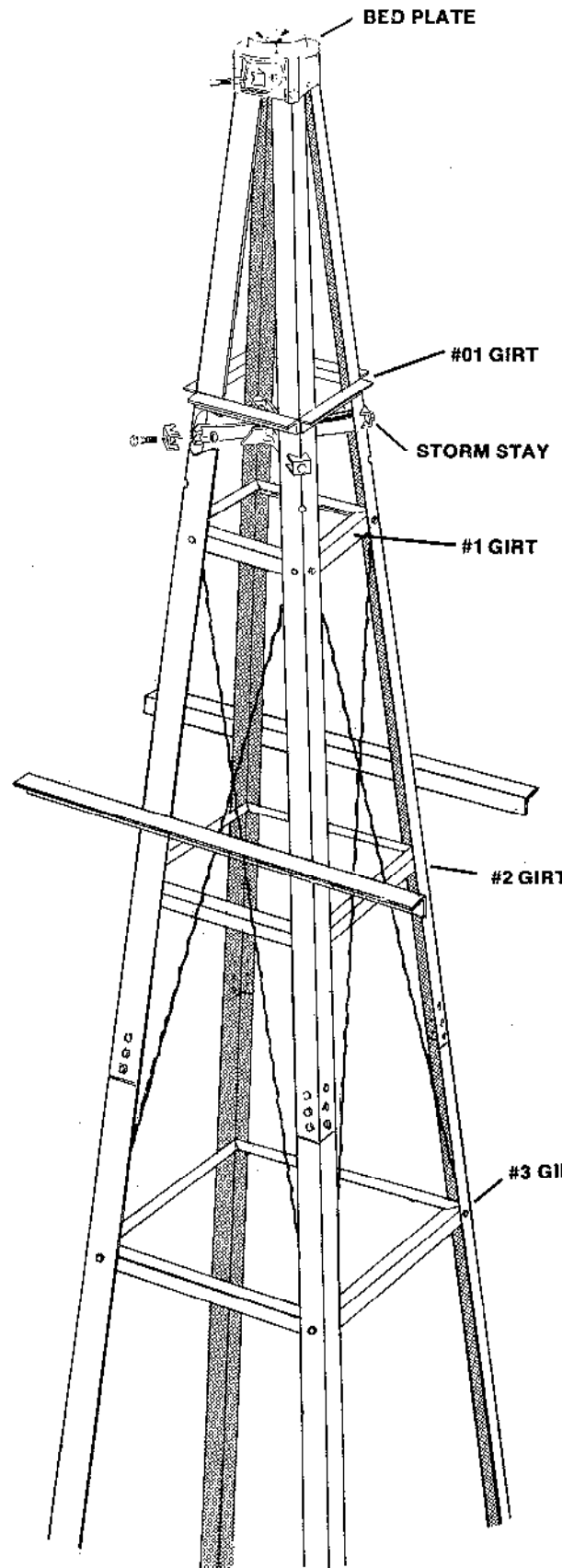
### ASSEMBLING THE TOWER

Every tower consists of 1 set of Top Corner Posts, 1 set of Second Top Corner Posts (3 girts), 1 or 2 sets of Extension Corner Posts (2 girts), depending on height of tower. Lay them out in the order listed above.

Bolt the Bed Plate to the Top Posts with 1/2" X 2-1/2" capscrews, cast iron corner washers and nuts inside the angles. Bolt the Storm Stay, with the flat side down, between the legs with 1/2" X 2-1/2" capscrews, outside corner washers and nuts outside the angles. **DO NOT DRAW ANY BOLTS TIGHT UNTIL 2 TOP SECTIONS ARE COMPLETELY ASSEMBLED.**

Next, attach the #01 short step girt (10-3/8" long) to the outside of the tower near the storm stay with 3/8" X 3/4" capscrews. Secure #1 girts (13" long) to inside of corner angles with 3/8" X 1" capscrews, which will also take the upper end of the shortest brace wires. Bolt these brace wires, with end having the small loop, inside of the girts. Use a 1/8" flatwasher under bolt head and nut on outside of corner posts. Attach #2 girt (22-1/4") to end of legs.

Attach upright #2 girts, the other two legs and last #2 girt, in that order. Attach the balance of #01 & #1 girts and all remaining hardware. Determine ladder side - one of the vertical sides preferably - and attach platform supports in appropriate position, see Figure 8.



TOP SECTION  
Shown upright

# 4-POST STYLE "A" 3-INCH TOWER

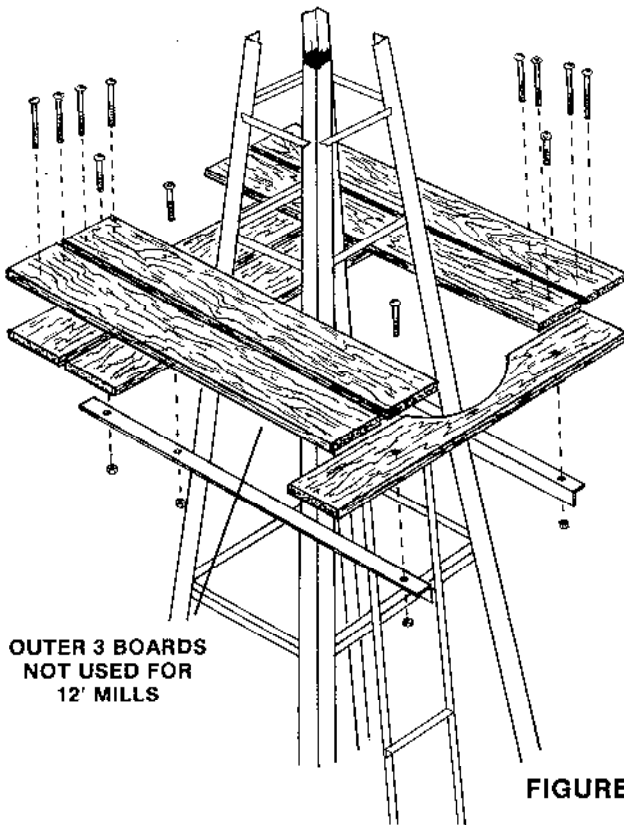
## PLATFORM BOARDS & SUPPORTS

Attach the 2 platform supports to the tower legs with 7/16" X 1" capscrews and nuts. For 12' mills, secure to holes 6' from the top end on & opposite the ladder side. For 14' mills, secure to holes 6' - 6" from the end.

The 12' mill 4-board platform is 4' square. The 14' mill 7-board platform is 5' square. Both use 2" X 10" platform boards. Holes are predrilled to bolt boards together with 3/8" X 3 1/2" carriage bolts, but must be drilled to attach platform to supports. Secure platform assembly to supports with 3/8" X 1-3/4" carriage bolts and hardware.

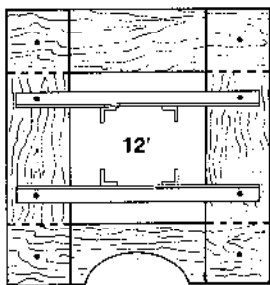
**PLATFORM BOARD SIZES**  
2" X 10" X 4' — For 10' & 12' Mills  
2" X 10" X 5' — For 14' Mills

4 BOARD PLATFORM - 12'  
7 BOARD PLATFORM - 14'

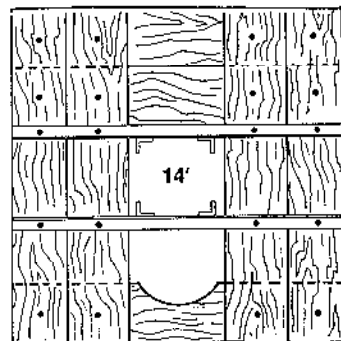


OUTER 3 BOARDS  
NOT USED FOR  
12' MILLS

FIGURE 8



- 4' Square -



- 5' Square -

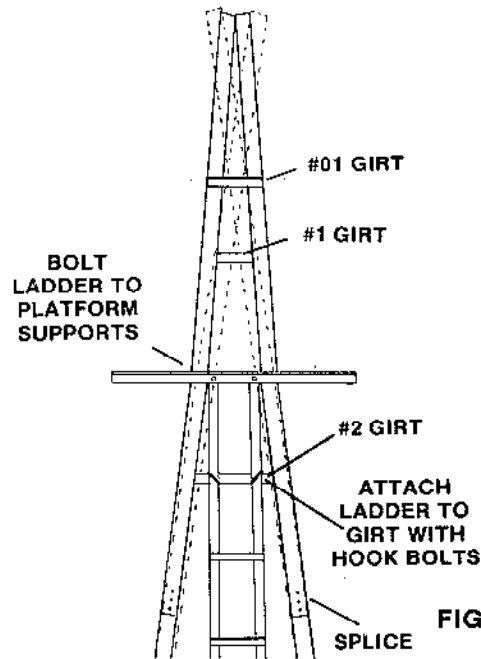


FIGURE 9

The #3, #4 & #5 girts will appear to be too long. Spring the legs outward to install each girt in order. This will achieve the built-in "flare" from #3 girt to the bed plate. Install lower set first, then the sides, the upper legs and the top set, in that order.

Attach one end of #3 girt (33" long) and brace wires with eccentric washers in their loosest position. See Figure 3. Spring opposite leg outward and attach girt with the second set of brace wire. Install #4 girt (45" long) & #5 girt (58" long) with brace wires. (If necessary, attach the next set of extension posts for better leverage.)

Attach upright #3 girts with brace wires, the second set of corner posts and the upright #4 girts to help support corner posts. Install top #3 & #4 girts.

Attach remaining #5 girts and brace wires. (If necessary, install #6 girts (74 1/2" long) and upper legs for increased leverage.) Corner posts below #5 are straight and will assemble easily.

Double check to see that all bolts are in place and that brace wires are properly aligned. Begin at the bed plate and tighten all hardware as you progress down the tower. Turn the eccentric washers until slack is just removed. (See special note on preceding page.) **DO NOT SECURE #5 GIRT HARDWARE UNTIL NEXT SECTION IS COMPLETED!**

Proceed with assembly of the third and fourth sections with #6 girts (74 1/2" long), #7 girts (91" long) and brace wires, #8 girts (107 1/2" long), brace wires to legs and wood girts. (For 30' tower, attach brace wires to legs and install wood girts (89 1/2" long) in place of #7 steel girt.) Remove slack from braces and tighten bolts securely.



## LADDER

The top ladder section is 13'-2" long and all others are 10'. The sides are flat strap with angle iron steps. The top end is attached to the platform supports with 3/8" X 3/4" capscrews and nuts. The section ends are riveted together and the lower end is nailed to the wood girt. The ladder is attached to each girt with hook bolts and special washers.

*NOTE: By securing the ladder to the #7 girt and attaching hooks to the lower ladder section, it can be hooked up to the next higher girt to keep children from climbing the tower.*

**For 12' mill** - Bolt end of top section (13'-2") to the platform supports and secure to each girt with hook bolts & special washers.

**For 14' mill** - Attach holes 7" from end to support (upper end will extend past platform opening). Bend ends inward slightly for safety. Nail the bottom of the ladder to the wood girt or stakes, or modify for safety as noted on page 4.

Attach all brace wires to girts with hook bolts & special washers. Fasten one set of pump rod guides to tower on #5 & #7 girts on ladder side for convenient adjustment. See the following page for detailed information.

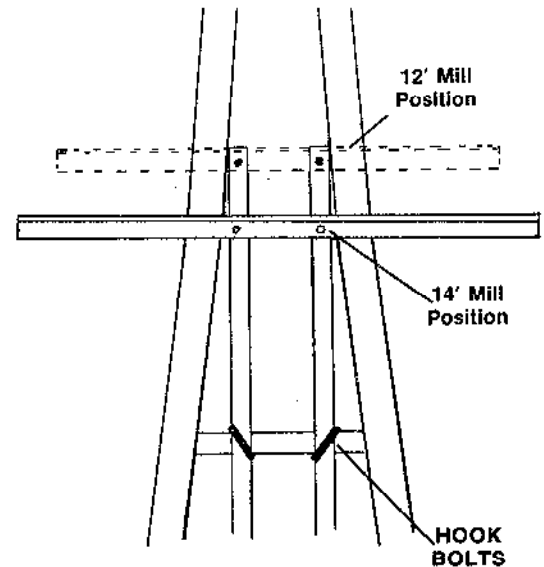
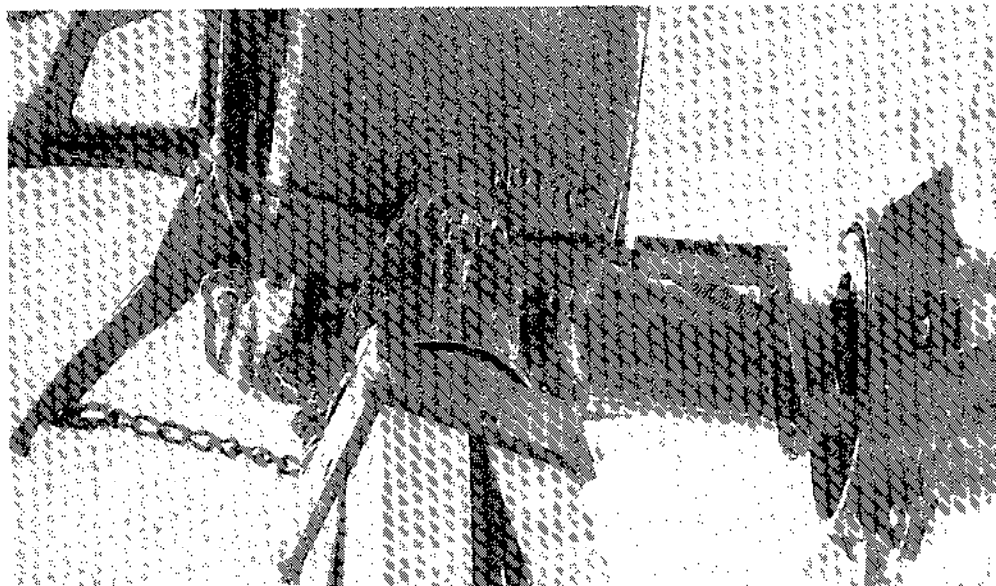


FIGURE 10

## INSTALLING THE WINDMILL

The 12' & 14' mill engine weighs approximately 450 pounds. The complete assembly will weigh approximately 1200-1300 pounds. Be sure tower is securely supported. See the Windmill Assembly Instruction Manual for detailed information about this phase of the procedure. See following pages for Wood Pump Pole Group and Throwout Assembly information.



# 4-POST STYLE "A" 3-INCH TOWER

## GUIDE RODS & WOOD PUMP POLE

Attach the shorter guide rod to #5 girt and the longer guide rod to #7 girt, as shown in the illustration. Bolt the hinge casting to the underside of girt with hook bolt. Adjust along girt so pump pole will be in center of the tower. Bolt guide rods to pump pole so they will be in a horizontal position when mill is in center of stroke. Bore hole through wood pole and install a 5/16" X 2-3/4" or 3-1/2" carriage bolt through the steel plate and pump rod casting, with the ends of the guide rods placed in the two grooves. Secure with double nuts, locked together tightly.

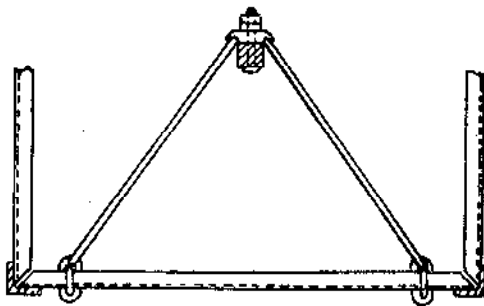


FIGURE 11

GUIDE RODS, USED ON #5 & #7 GIRTS  
(Assembly viewed from above)

### NOTE:

Bolt the hinge casting to the underside of girt with hook bolt and adjust along girt so pump pole will be in center of tower. Bolt guide rods to pump pole so they will be in a horizontal position when mill is in center of stroke. Bore hole through wood pole and install a 5/16" X 2-3/4" or 3-1/2" carriage bolt through the steel plate and pump rod casting, with the ends of the guide rods placed in the two grooves. Secure with two nuts, locked together tightly.

All items illustrated at right are furnished with the Tower Assembly, except the Pump Rod Assembly, Pump Connection and Adapter — they are supplied with the Windmill Engine assembly.

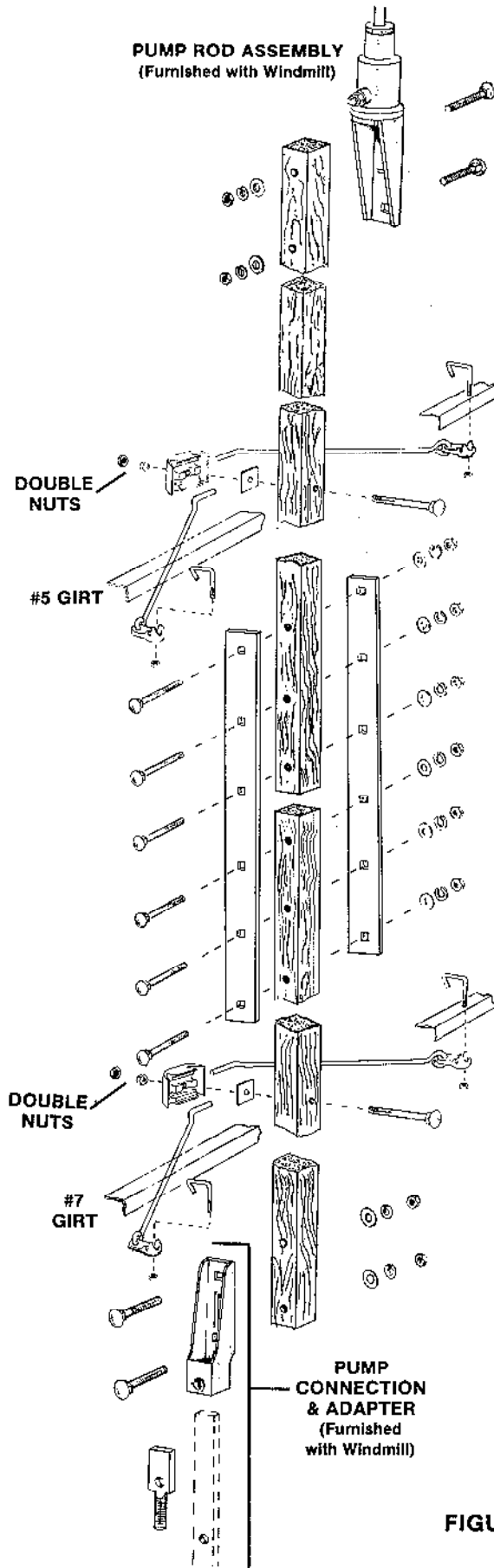


FIGURE 12

## ATTACH PULLOUT LEVER TO THE TOWER

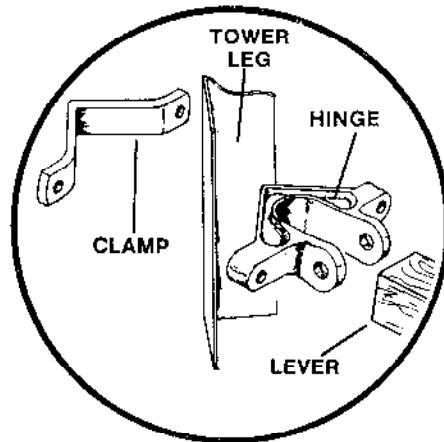
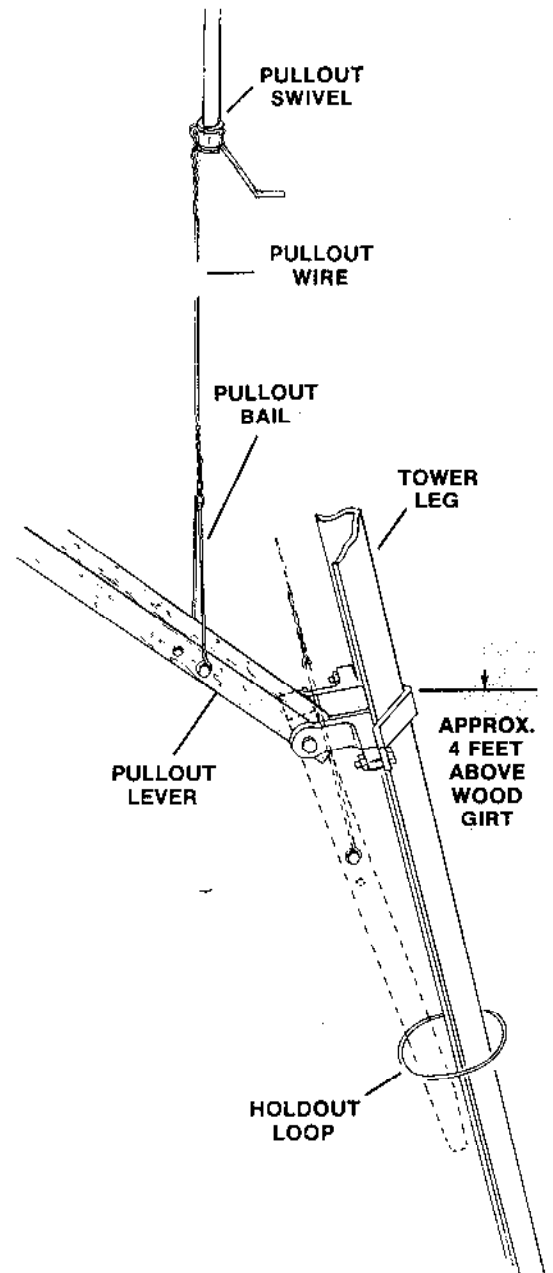


FIGURE 13

## PULLOUT LEVER HINGE MOUNTING

**NOTE:** The Pullout Lever is furnished with the Engine. The Hinge, Clamp & Pullout Wire are furnished with the Tower.

1. Attach one end of the pullout wire to the lug on the pullout swivel of the engine. Wrap the free end tightly 6 - 8 turns. Trim excess.
2. Clamp the pullout lever hinge casting (to corner post previously determined), about 4 foot above the wood girt, with 3/8" X 3-1/2" capscrews.
3. Fasten the pullout lever to the hinge casting with the 3/8" X 3" hinge bolt (with offset hole in the lever UP).
4. Attach the pullout bail to the hole 8-3/16" from the hinge end of the lever for the 12' or 11" for the 14'. Raise the lever slightly above the horizontal and secure pullout wire loosely to the bail. Wrap 2-3 turns only. Fold the lever down. There should be slightly added resistance just before the bail goes "over-center". (This is when the brake is set.) Adjust pullout wire to achieve this. Wrap free end tightly 6-8 turns and trim excess wire.
5. Use the extra wire to form a holdout loop for the lower end of the lever to prevent accidentally turning the mill into the wind.



PULLOUT LEVER ASSEMBLY

FIGURE 14



**CAUTION: ALWAYS USE PERSONAL & EQUIPMENT SAFETY PRECAUTIONS WHEN WORKING ON WINDMILLS AND TOWERS.**



## 4-POST STYLE "A" 3-INCH TOWER

### GROUND LEVEL ASSEMBLY OF TOWER

#### LIFT METHOD OF ERECTION

The combined weight range of the 12' & 14' mills, assembled on the "A" towers, is approximately 1870 to 2745 pounds. A lifting unit of the appropriate height and capacity is the most efficient means of erecting this assembly. A capable, experienced crane operator can easily determine the best lifting point for a particular mill/tower assembly. Use guy ropes to steady the tower and guide it into place on the anchor posts.

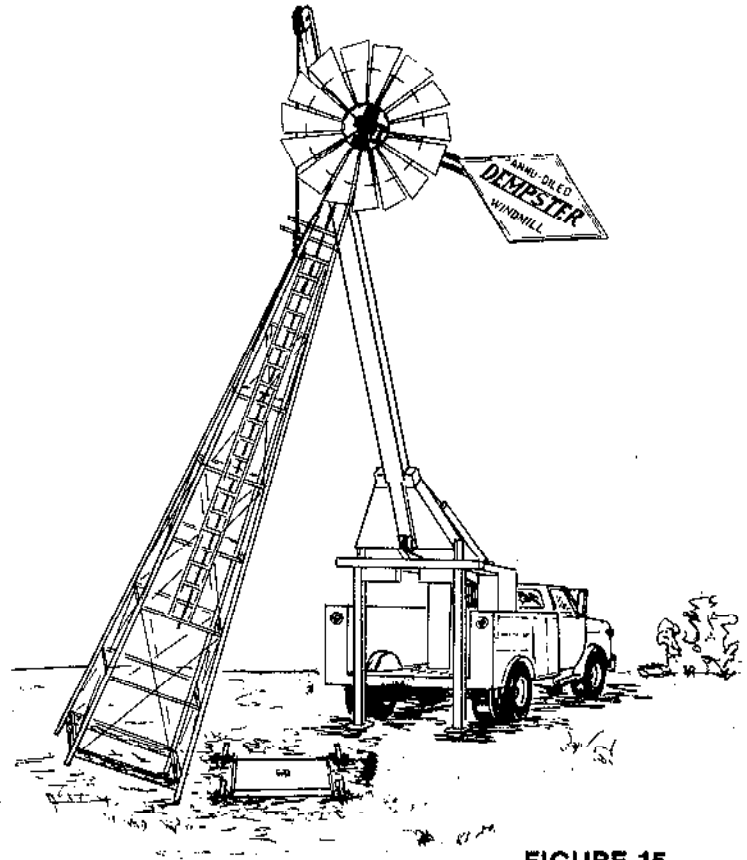


FIGURE 15

#### LIFTING TOWER WITH CRANE EQUIPMENT

#### COMPLETING THE INSTALLATION

After the tower is securely spliced to the anchor posts, release tension on lift line and double check level across several girts. Use plumb line to check alignment to the well or pump. If necessary, use lift unit to help move posts slightly or adjust to level by placing material under the anchor posts. Release lift tension and fill anchor post holes with material determined originally. Remove lift line.

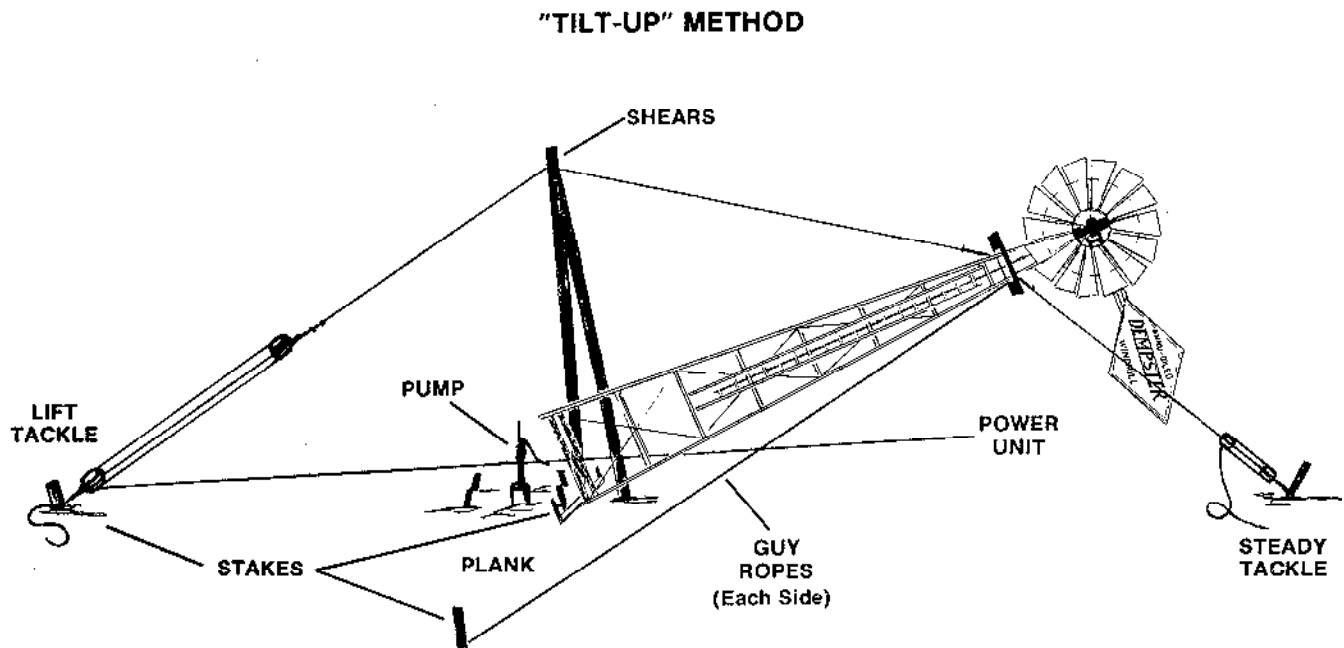
Cut wood pump pole to length and attach to pump flatbar or stuffing box head. Fill the windmill engine with specified amount of windmill oil and initiate operation as outlined in the Windmill Installation Manual.



**CAUTION: ALWAYS USE PERSONAL & EQUIPMENT SAFETY PRECAUTIONS WHEN WORKING ON WINDMILLS AND TOWERS.**



## RAISING THE TOWER/WINDMILL ASSEMBLY



**TO RAISE TOWER/WINDMILL ASSEMBLY**

**FIGURE 16**

Bolt a plank 2" X 6" X 16 feet long across the bottom end of the tower. Drive stakes firmly at each end of the plank, so plank will not slide while the tower is being raised. Level the plank by blocking under the ends solidly.

Use a pair of shears made of 4" X 4" lumber about 16' long, with bolt through top ends about 1' from end. Fasten block and tackle to post securely set in ground some distance away from bottom end of tower and in line with center of tower. Fasten rope to tower just below platform, pass it over shears and attach to tackle blocks. Fasten rope to shears so they will not drop out as the tower comes up.

Fasten another rope to the other side of the tower below platform and to small tackle block attached to a stake driven in ground close to top of tower. This line will keep tower from being pulled over.

Attach side guy ropes to each side of tower and to stakes set in ground, in line with plank bolted to bottom of tower. This will insure against accident, especially in windy weather.

Before raising the tower, make sure all bolts are tight in tower and mill, all ropes securely tied, all stakes set firmly and wheel secured. The tower may be raised with a truck or tractor. At least two men are required — one to drive the power unit and the other to play out the blocks from behind.

When tower is in a vertical position, align the holes in the two free corner posts with the holes in the anchor posts and put in the bolts. Then, pull tower over just a little, take out the plank and fasten the other two corner posts. If anchor posts have been set properly, the tower will be plumb and centered over the pump.

If anchor posts have not been set before raising tower, raise tower to vertical position. Then bolt two anchor posts to the two free corner posts and let tower down, so anchor plates will rest on bottom of holes. Pull tower over a little, take out the plank, bolt on the other two anchor posts and let tower down. Now, see that tower sets plumb. Use a spirit level on lower girts, or a plumb line from top of tower to pump, and tamp dirt or rock under anchor plates that are too low. If tower is not centered over pump, move it over until it does. Fill holes and tamp dirt firmly and thoroughly.

Remove the ropes from tower and connect the wood pump pole to the pump. Remove the lifting gear.

**SEE WINDMILL ASSEMBLY INSTRUCTIONS FOR COMPLETE DETAILS OF THE FINAL STEP IN INSPECTION, OILING AND THE ADJUSTMENT PROCEDURE PRIOR TO PUTTING THE MILL INTO OPERATION.**

# 4-POST STYLE "A" 3-INCH TOWER

## BUILDING TOWER FROM THE GROUND UP

The greatest number of Dempster Steel Towers are assembled on the ground and then raised to the vertical position. This is considered to be the easiest and quickest way and has this advantage — the mill can be assembled and installed on the tower before the tower is raised. However, with a very high tower, it becomes difficult to assemble on the ground, if there are nearby trees or buildings to interfere. This sometimes makes it necessary to build the tower from the ground up.

The Dempster Tower is made up of ten-foot sections, can be built up to the desired height any place there is room for the anchor posts.

### EQUIPMENT REQUIRED

Less equipment is required to build a tower from the ground up than to raise the assembled tower and engine. A few wrenches, a hammer, a punch, a rope as long as the height of the tower and a few planks of sufficient length to reach across the lower girts are all the equipment needed.

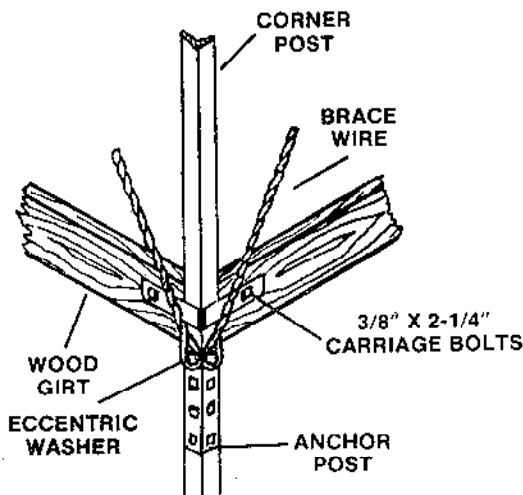
The 40' tower assembly is described. For a 30' tower, the lower section is not used - only the second, second top and top. A wood girt (89 1/2") will be used in place of #7 girt.

### LOWER SECTION OF TOWER

#### Posts punched for 1 intermediate girt

*Do not try to walk on the girts until after the braces are clamped to them with the hook bolts.*

Set the anchor posts, as shown in the first part of the directions for erecting towers. It is a good plan not to fill the anchor post holes completely until after the lower corner posts and girts have been bolted into place. This insures the proper slope for the posts.



Attach 1 set of extension corner posts to the anchor posts and the #8 girts (107 1/2") to the corner posts with 3/8" X 3/4" capscrews and nuts. Fasten wood girts (124 1/2") to the tower by placing them inside of corner posts above splice and secure corner clamps over the outside of the corner posts with 3/8" X 2-1/2" carriage bolts. Tighten all bolts securely.

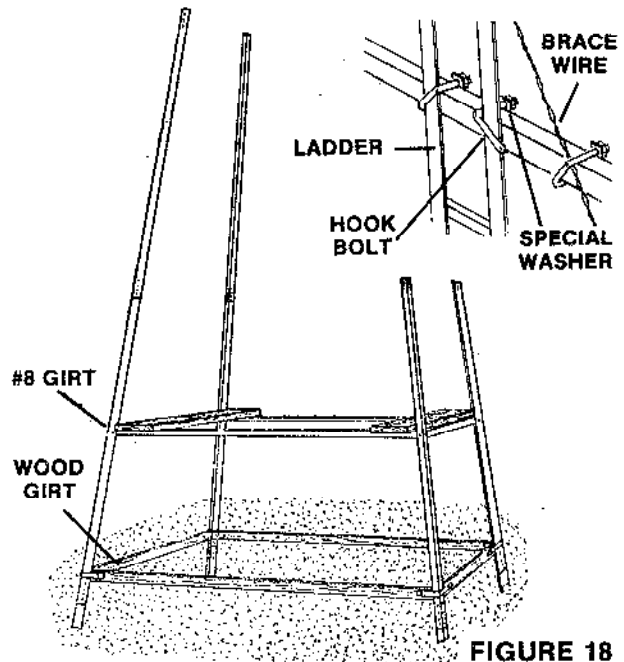


FIGURE 18

Lay planks across the steel girts, close to the corner posts, then bolt the next set of extension corner posts in place with 3/8" X 3/4" capscrews. (Be sure to have the correct end up. The offset holes for the brace wires must be just above the splice.) In raising the post, slide it up on the outside of the tower corner post and install the bolts as soon as the splice holes align. Tighten all splice bolts securely.

# 4-POST STYLE "A" 3-INCH TOWER

## BUILDING TOWER FROM THE GROUND UP

Secure #7 girts (91") and the longest set of brace wires (158 1/2") to inside of corner posts just above splice with 3/8" X 1-1/4" capscrews. Place a 3/8" flatwasher under the bolt head, then slip the small loop of the lower (longest) set of braces on bolt and secure braces inside of girts and corner posts. Put large loop of next shorter length of brace wire and cast iron eccentric washer over bolt on outside of corner post. Install nut and leave braces hang down. Tighten nut just enough so eccentric washer can be turned with wrench, after brace is fastened above.

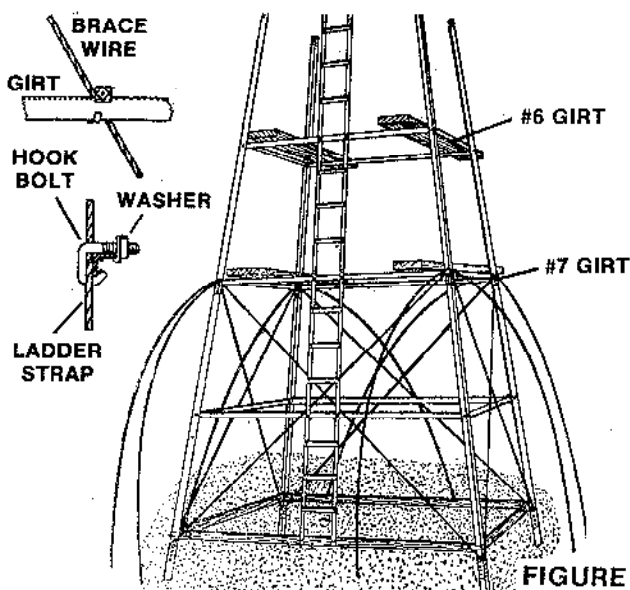


FIGURE 19

Bolt lower end of longest brace wire and eccentric washer to first hole above lower splice on anchor post with 3/8" X 1" capscrew. Tighten braces by turning eccentric washer with wrench just enough to remove the slack and tighten nut. Be very careful not to tighten braces too much, as this has a tendency to buckle the girts. See note on page 4.

Fasten each brace with one hook bolt to #8 girt. Fasten one 10-foot section of ladder to #7 girt, so rivet hole in upper end will be about 3/4" above girt. Insert a nail or small bolt in the holes so the ladder cannot slip down. Clamp ladder to lower steel girt. This completes the lower 10-foot section.

## TOWER BRACE WIRES

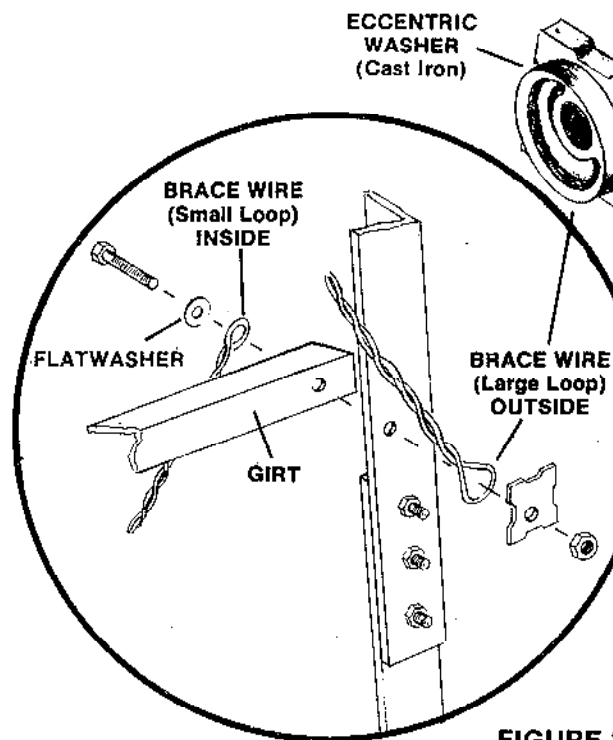


FIGURE 18

SPLICE/GIRT/BRACE WIRE ASSEMBLY

## SECOND SECTION

### Posts punched for 1 intermediate girt

Raise planks to #7 girts, close to tower legs, and attach #6 girts (74 1/2") with 3/8" X 3/4" bolts. Clamp another section of ladder to #6 girt and rivet it to the upper end of the lower section with 1/4" X 1/2" rivets. Place plank on #6 girts and attach Second Top Corner Posts (punched for 2 intermediate girts). Attach #5 girts (58") & brace wires (139") with 3/8" X 1-1/4" bolts. Place upper end of last set of braces inside of girts and corner posts and use eccentric washers outside for next set of braces as before. Now, tighten the second set of braces and clamp to #6 girts with hook bolts. This completes the second section.

# 4-POST STYLE "A" 3-INCH TOWER

## BUILDING TOWER FROM THE GROUND UP

### SECOND TOP SECTION

#### Posts punched for 2 intermediate girts

Place planks on #5 girts and install #4 girts (45"). Tighten bolts securely. Place planks on this girt. Attach #3 girts (33") and both sets of brace wires with eccentric washers. Allow top wires (105") to hang down and tighten all hardware in this section securely. Turn eccentric washers on #5 girt just enough to remove slack in brace wires and tighten bolts. Secure brace wires to #4 girt with hook bolts. Do not attach top ladder section yet. Place short planks on #3 girt.

Assume a secure kneeling or sitting position on #3 girt planks and raise the 10' top corner posts into position and insert splice bolts. (The legs will tend to cross, so splice bolts must be very loose.) Attach #2 girts (22 1/4") and platform supports as determined by mill/platform size. Tighten the splice, #2 girt and support bolts.

Install the top ladder section at this time. Attach to platform support by end holes for 12' mill and holes 7" from end for 14' mill installation. (It may be necessary to reposition lower sections downward slightly to straighten ladder). Rivet to top end of section below.

On the 14' tower, it will extend above the support through opening in platform. You might want to bend ends slightly inward to clear this area. Secure ladder and brace wires to #2 girt with same hook bolts. Nail the lower end of the ladder to the wood girt or stakes if lower section is not made removable for safety - see page 4.

Install the platform at this point for work area for last step of the assembly. Boards are predrilled to be bolted together, but attaching holes must be drilled to final support spacing dimensions. See platform detail illustrations in Ground Level Section.

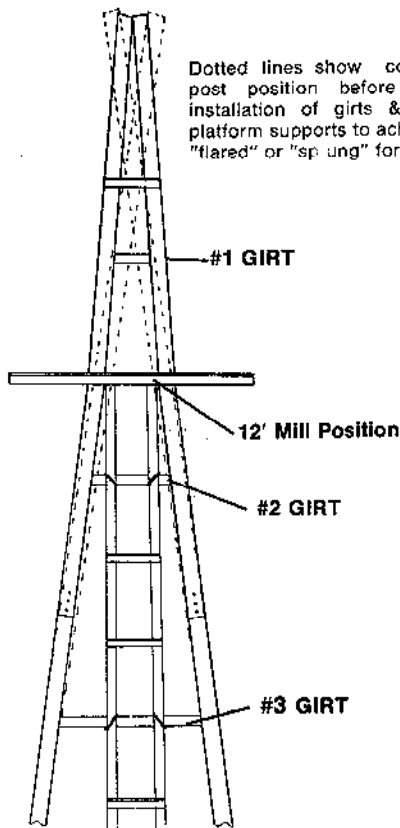


FIGURE 21

### TOP SECTION

#### 3 Girts - Platform Supports

#### "Sprung" Assembly

The flared effect designed into the "A" tower is achieved in this section as the legs are progressively forced outward as each girt or support is attached. Leave all bolts as loose as possible until bed plate is attached.



## BUILDING TOWER FROM THE GROUND UP

## BED PLATE AND STORM STAY INSTALLATION

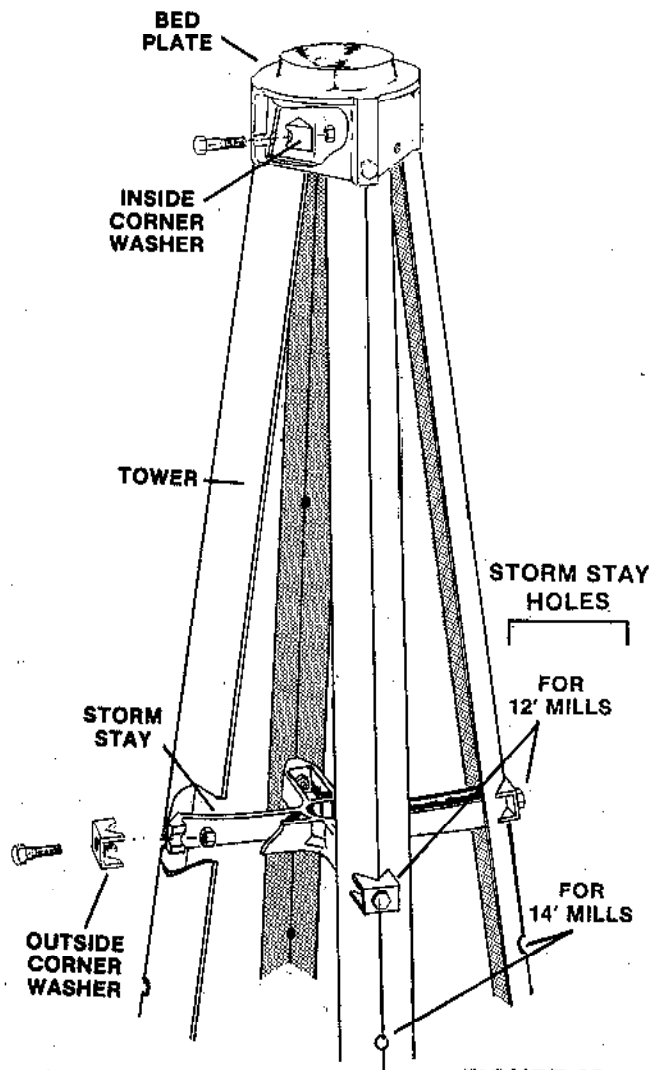


FIGURE 22

## BED PLATE &amp; STORM STAY ASSEMBLY

For the girts above the platform, use the storm stay (or a wood block approximately the same size) as a wedge. Drive it progressively higher to attach the #1 girt (13") & brace wires (93 1/4"), the #01 outside step girt (10 3/8") and the bed plate. Secure the storm stay (flat side down) to the appropriate holes just below the step girt.

Bolt the bed plate to the top of the tower legs & the cast iron corner washers inside the leg angle. Double check and tighten all hardware back down to the splices. Loosen bolts in #3 girt, tighten eccentric washers and tighten bolts securely.

Double check to see that all brace wires and lac sections are secured to girts with hook bolts that all hardware is tight.

The tower is now ready to install the windmill. detailed information in the Windmill Installation Manual. A condensed version is on the following page.

SEE WINDMILL ASSEMBLY INSTRUCTIONS FOR MORE COMPLETE DETAILS OF INSTALLATION PROCEDURE, PLUS THE FINAL INSPECTION, OILING AND ADJUSTMENT STEPS.

**CAUTION:**

ALWAYS USE PERSONAL & EQUIPMENT SAFETY PRECAUTIONS WHEN WORKING ON WINDMILLS AND TOWERS.

# 4-POST STYLE "A" 3-INCH TOWER

## BUILDING TOWER FROM THE GROUND UP

### ALTERNATE TOP SECTION INSTALLATION

It may be more convenient to assemble the top section on the ground and hoist it to the top of the completed framework. In this case, the bolts in the platform supports and the #2 girts should be left loose. It will be necessary to slightly spread the lower ends of the top posts to fit onto the top of the standing tower. Insert splice bolts and tighten securely. Install the brace wires from the #3 to the #5 girt, adjust with the eccentric washers and tighten bolts securely.

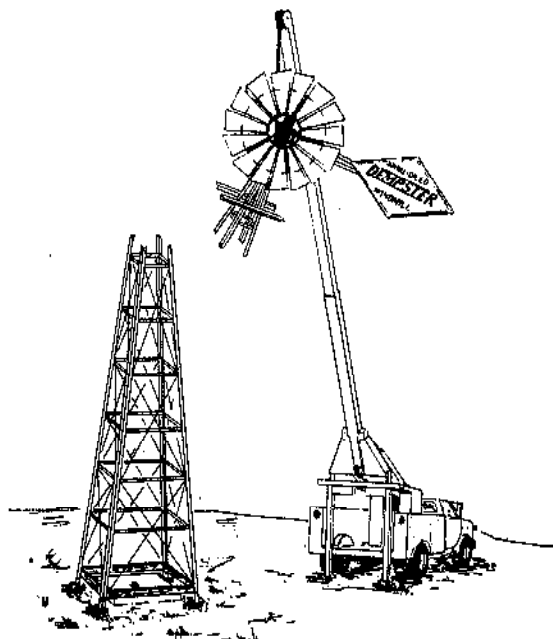


FIGURE 24

### INSTALL THE ENGINE ON STANDING TOWER

It is recommended that the lift equipment be securely attached to the main frame in such a manner that the hood, brake rod assembly, and platform are protected during the lifting operation.

**DO NOT LIFT BY THE VANE OR TAIL!!**

Tie the wheel securely, or fold vane to set brake and tie, before starting the hoisting operation.

It will be necessary to raise the engine assembly approximately 6 - 7 feet higher than the final position, for safe insertion of the pump rod and pipe stem.

Lower the pipe stem carefully into the bed plate and storm stay. The ball race assembly will rest in the bed plate and under the pipe stem head. Remove the bearing locating tape or wire before engine is lowered fully into position. **DO NOT REMOVE ASSEMBLY TAPE YET.** Locate the grease fitting opposite the brake linkage for easier service access.

Bolt the clamp collar around the pipe stem. Be sure collar studs are in the pipe stem holes. Complete pullout assembly as detailed in the windmill installation instructions.

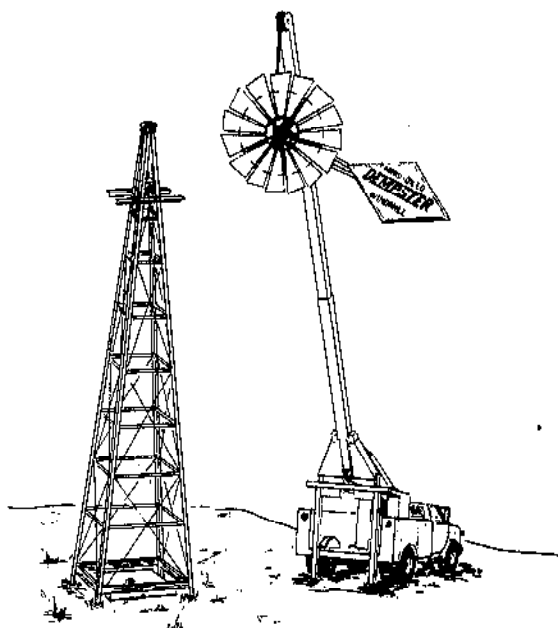


FIGURE 23

**DO NOT UNTIE THE WHEEL OR VANE ASSEMBLY AT THIS TIME. ENGINE MUST BE THOROUGHLY OILED BEFORE THE WHEEL IS ALLOWED TO ROTATE.**



**DO NOT USE TOO LARGE A CYLINDER. REMEMBER! A WINDMILL WITH A SMALL CYLINDER RUNNING, PUMPS MORE WATER THAN ONE WITH A LARGER CYLINDER STANDING STILL.**



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