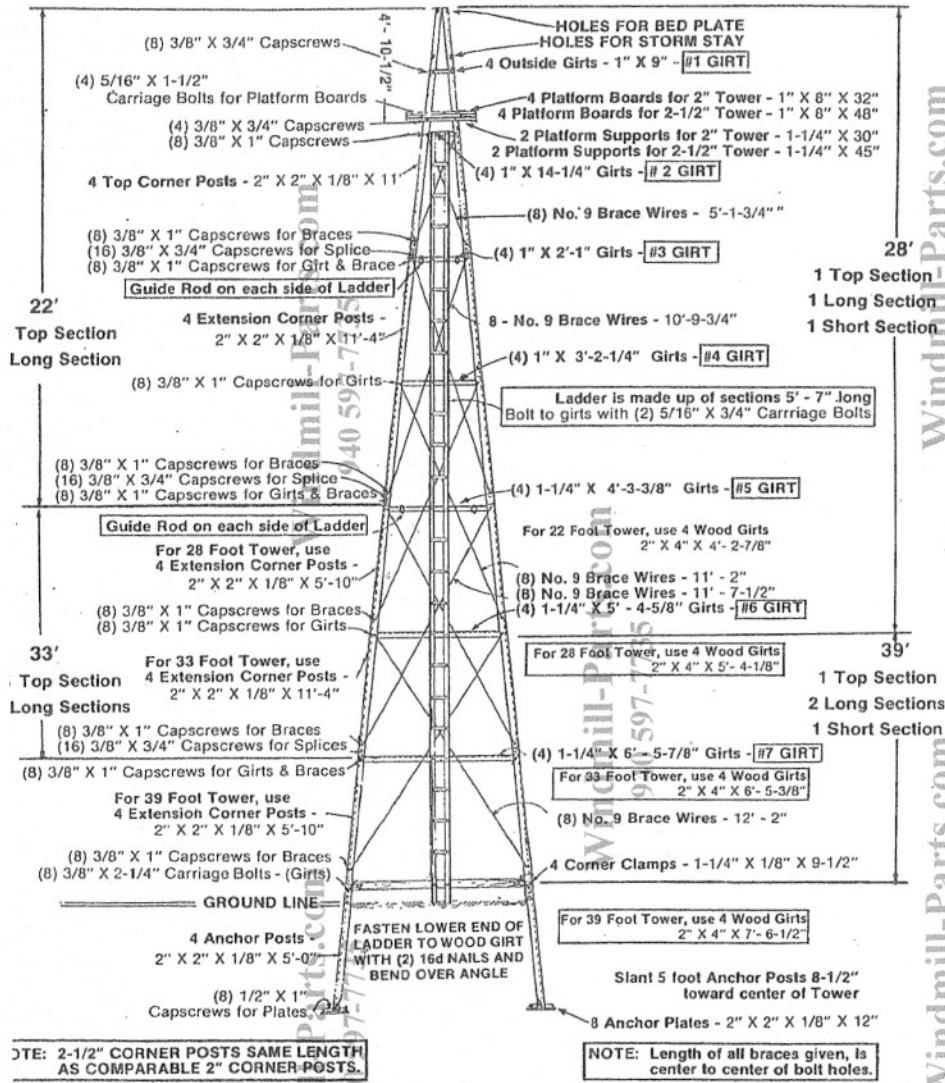


4-POST STYLE "B" TOWERS

2" & 2-1/2" ANGLE - 22', 28', 33', 39' TOWERS



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DEMPSTER 4-POST STYLE "B" TOWERS

2" & 2-1/2" ANGLE

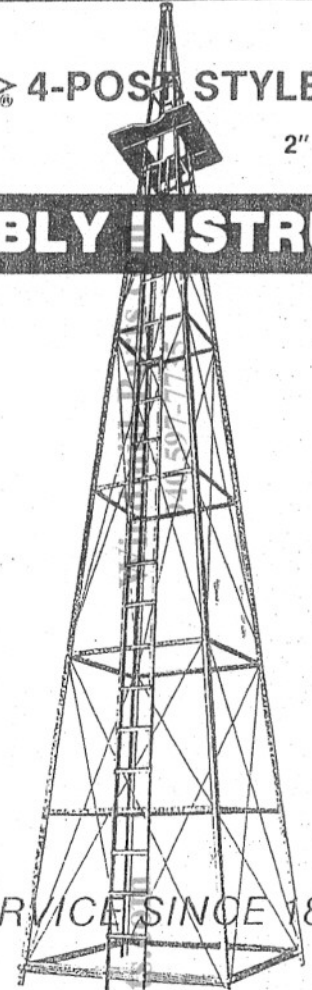
ASSEMBLY INSTRUCTIONS

22'

28'

33'

39'



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PLEASE REMOVE THIS MANUAL AND STUDY THOROUGHLY
BEFORE
 PROCEEDING TO ASSEMBLE AND ERECT THE TOWER

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Form 763, Rev. 1 - 3/80

FIGURE 1

HEIGHT OF THE TOWER	
22'	28'
33'	39'
4' - 3-3/4"	5' - 5"
6' - 6-1/4"	7' - 7-1/4"

4-POST STYLE "B" TOWERS

BUILDING TOWER FROM THE GROUND UP

CORNER POSTS

The top corner posts for all Style "B" towers are 11' long and have the two upper holes for the bed plate and storm stay punched in the corner of the angles. The 22 & 33 ft. towers are made up by the use of extension corner posts 11'-4" long. The 28 & 39 ft. towers have a short bottom section with corner posts 5'-10" long.

The two sets of end holes of corner posts are for the splice. The next set of holes above the bottom splice is for the braces above. The next set of holes below the upper splice is for the girt and braces below. See corner post splice, girt and brace connection details illustrated in Figure 3.

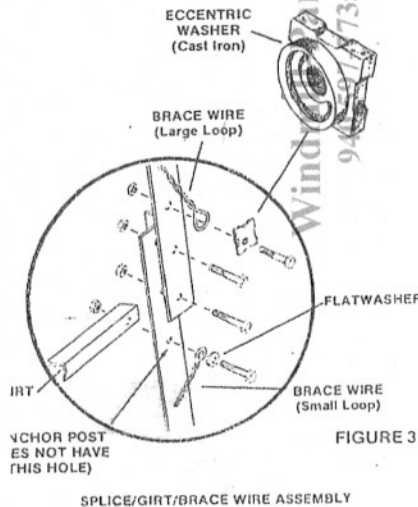


FIGURE 3

SPLICE/GIRT/BRACE WIRE ASSEMBLY

TOWER BRACES

All towers have a set of braces every 5-1/2 feet.

Bolt the upper ends of the braces to the corner posts together with a set of girts. Bolt the lower ends to the top of holes above the splice bolts, or to the holes above the intermediate girts. Install the eccentric washers in the largest loop in the brace. (The brace may be placed with the large loop in either the upper or lower position.) Use 3/8" X 1" capscrews and nuts for each end and a steel washer over wire on the end having the small loop. Refer to Figure 3.

TO TIGHTEN BRACES

Always leave eccentric washers in the loosest position, until the whole set of eight braces is in place, then tighten them evenly. Do not turn one clear 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 brace.

LADDER

One girt in every set of four has two holes to attach the ladder. Be sure to place this girt on the side ladder is to be. Use two carriage bolts (5/16" X 3/4") for the end of the ladder, which may be placed either end up. It is best to place the bolt head outside of ladder and the nut inside the girt. In making the lap, always place one of the side bars above and one below the next section. The lower end of the ladder may be fastened to wood girt with two 16d nails. Drive one on each side of ladder close to angle and bend over.

NOTE: By attaching hooks to the lower ladder section, this section can be hooked up to the next higher girt to keep children from climbing the tower.

BOTTOM GIRTS

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

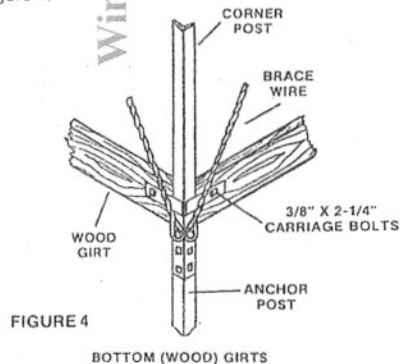


FIGURE 4

BOTTOM (WOOD) GIRTS

ASSEMBLY

The Dempster Style "B" Tower has been designed for easy erection. They are made in 11 & 5-1/2 foot sections that can be completely finished before the next section is started, since the girts are secured below the splice of the corner posts. Also, this tower with a spread of only one-fifth of the height, requires small space and can be erected between trees or buildings - wherever there is room for anchor posts.

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 any 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

One of two erection methods may be employed to install the tower.

1. Build the tower from the ground up and raise the engine to the top of the standing tower.
2. Assemble the tower and engine completely on the ground and erect with lifting equipment.

BUILDING TOWER FROM THE GROUND UP

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.

METHOD ONE

Lay off the center for the anchor post holes about 10" more than the length of the wood girts. Dig holes about 2-1/2 feet square and about 4" less in depth than the length of the anchor posts, if the ground is solid. If the ground is loose, dig a little deeper and place some rock or concrete under the anchors. It is important the tower have solid footing.

METHOD TWO

The more desirable method is to set the anchor posts in concrete. Use a large post hole digger and dig holes about 4-1/2 feet deep. With a spade or bar, widen the hole on two sides, enough to let down the anchor plates. Enlarge the hole at the bottom to give good footing. Run about one foot of concrete in the holes to set anchor posts one foot higher than Method One, so they will project above the ground level from 12" to 18".

Assemble and set anchor posts as follows:

Bolt two anchor plates to each anchor post with 1/2" X 1" capscrews and nuts (Figure 2). Set anchor posts in holes, so the upper outside corners of anchor posts are about 7/8" farther apart than the length of the wood girts. A 5 ft. anchor post should slant 8-1/2" toward the center of the tower to give the proper slope to the corner posts - 6 Ft. anchor post should slant about 10-1/4". Be sure the posts are all the same distance apart and the same distance from the center of the well or pump. Level top of anchor posts with spirit level. **DO NOT GUESS ABOUT THIS!** It is a good plan not to fill holes until the lower section of tower has been bolted together, as this gives the anchor posts the proper slope and distance. The exact distance for the anchor posts of the different towers is also given in Figure 1 on page 2.

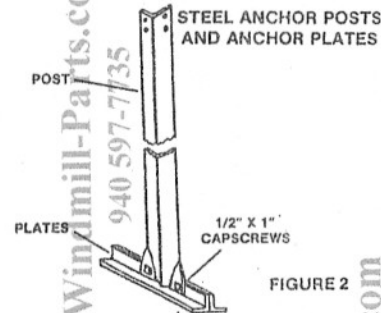


FIGURE 2

SETTING THE ANCHOR POSTS

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

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.)

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4-POST STYLE "B" TOWERS

BUILDING TOWER FROM THE GROUND UP

SECOND SECTION

the second section and any succeeding ones are always sets of four regular posts until the top section reached.

Use planks to top girts and proceed to bolt on other set of corner posts. This can easily be done one man sitting or standing on the upper plank sliding or raising the corner post along the inside of the lower corner post, while the second man, standing on the girts below, puts in the bolts as soon as corner post is raised high enough.

After the four extension corner posts are bolted on top, attach the next set of girts and another section of the ladder. Then, place plank across these girts (Figure 7). The top girts may now be bolted on, together with the braces as before, and another section of the ladder. Tighten all bolts and braces to finish the second section. If the tower is higher than 10 feet, build on one more section like this one.

TOP SECTION

Bolt the 11 foot corner posts for the top section the same way as the others. Bolt on the 14-1/4" girts, the shortest set of braces and the last section of ladder.

PLATFORM BOARDS & SUPPORTS

Attach the two platform supports with 3/8" X 3/4" capscrews and nuts, plus the four outside step girts (9" long) with the same size capscrews and nuts.

Tighten all bolts up to this point and finish the platform, as shown in Figure 8.

BOARD LENGTHS	
32"	2" Tower
48"	2-1/2" Tower

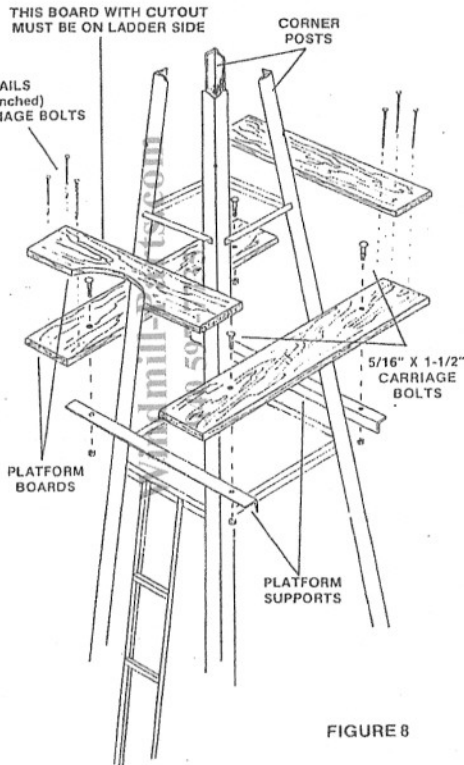


FIGURE 8

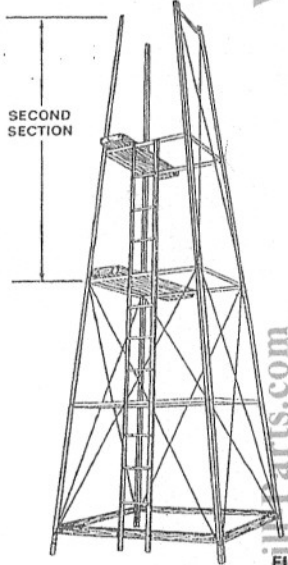


FIGURE 7

ATTACHING UPPER GIRTS & BRACES TO SECOND SECTION

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4-POST STYLE "B" TOWERS

BOTTOM SECTION
22 & 33 FOOT TOWERS

Bolt a 11'-4" extension corner post to each anchor post. Always lap the lower end of each corner post over the top end of the next lower post, using four 3/8" X 3/4" capscrews and nuts for each splice (see Figure 3). Bolt one of the longest steel girts to the center of each post as they are put in place. Use the 3/8" X 1" capscrews and nuts. Next, place the wood girts inside of the corner posts, just above the holes above the lower splice. Place a 3/8" X 1" cap screw and nut in this hole and allow wood girt to rest on the bolt head. Now, bolt corner clamps around the posts and attach to wood girts (Figure 4).

Temporarily bolt one section of the ladder, with either end up, to the steel girt. Use one 5/16" X 3/4" carriage bolt, with the bolt head outside of ladder and the nut inside the girt. Place a plank across the steel girts for the man to work on (Figure 5). Bolt the next longest set of steel girts & brace wires just below the next splice holes inside of upper end of corner posts (third hole below top end). Use 3/8" X 1" capscrews & nuts, plus an eccentric or flatwasher, as appropriate.

Bolt the lower end of the brace to the hole, just above the lower splice. Use 3/8" X 1" cap screw, appropriate washer and nut.

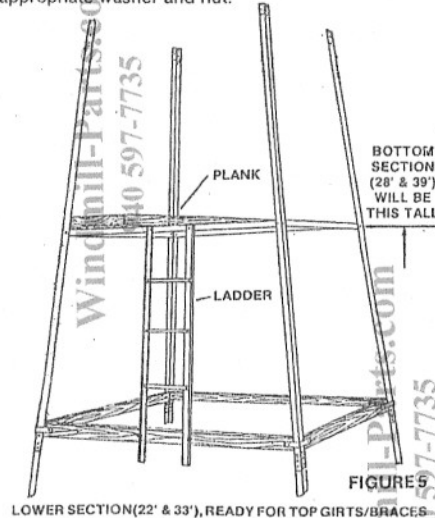


FIGURE 5

LOWER SECTION (22' & 33'), READY FOR TOP GIRTS/BRACES

After all of the four girts and the eight braces are bolted in place, turn the eccentric washers with a wrench to tighten the braces. Tighten all braces equally.

Bolt another section of the ladder in place, either end up. Be sure all bolts in this section are tightened to complete this section, which will now be rigid & secure to work on (Figure 6). If the anchor holes have not been completely filled, do so at this time. Double check level of girts & centering of tower over well. Tamp dirt firmly & thoroughly.

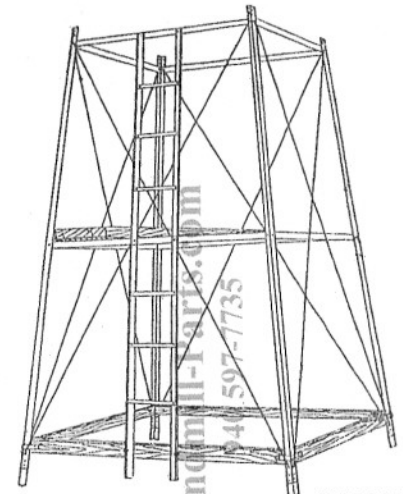


FIGURE 6

BOTTOM SECTION (22' & 33') COMPLETE

BOTTOM SECTION
28 & 39 FOOT TOWERS

The bottom section of these towers consists of 4 extension corner posts 5'-10" long. Bolt these to the upper ends of the anchor posts. Then attach the first set of steel girts. Next, bolt on the wood girts and corner clamps (as described on page 4), plus one ladder section. For 28' & 39' towers, the second section(s) — Figures 5 & 6 — will be assembled on this bottom section as shown in Figure 1.



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



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4-POST STYLE "B" TOWERS

BUILDING TOWER FROM THE GROUND UP

GUIDE RODS & WOOD PUMP POLE

Attach the shorter guide rod to Girt #3 and the longer guide rod to Girt #5, as described below.

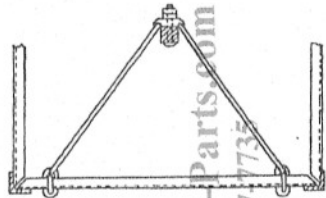


FIGURE 10

GUIDE RODS, USED ON #3 & #5-GIRTS
(Assembly viewed from above)

NOTE:

For long strokes (8 in. or more), the upper 20 foot guide rods (Girt #3) should be left off, as they give too much oscillation to the wood pump pole.

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.

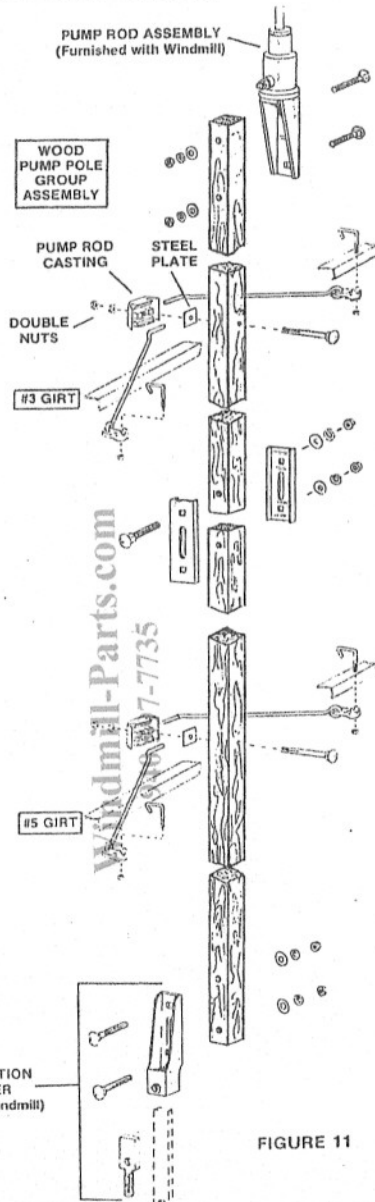


FIGURE 11

BED PLATE AND STORM STAY INSTALLATION

Insert the storm stay for the windmill between the corner posts from below. Push or drive it up until the 4 cap screws and nuts (3/8" X 2-1/4") can be put in place, with the steel corner washers outside.

Attach the bed plate with 4 cap screws & nuts (1/2" X 2") and one set of cast iron angle washers inside. For the smaller sizes of bed plates, a pair of pliers may be needed to put in the bolts. The tower is now ready for the mill. See Step VI in Form 2593 or Form 647, Windmill Installation Manuals.

Install the engine and wood pump pole as described in Steps VI through VIII in manuals listed above.

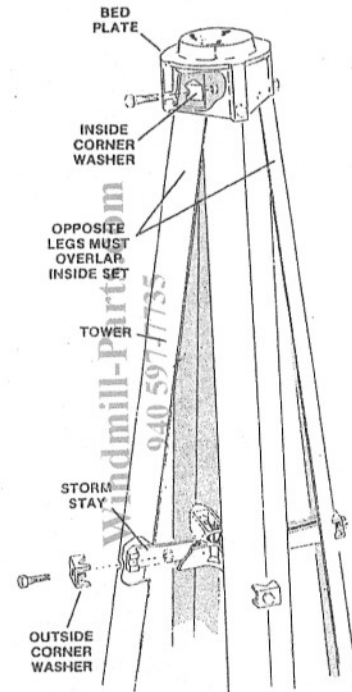


FIGURE 9

BED PLATE & STORM STAY ASSEMBLY

BUILDING TOWER FROM THE GROUND UP

INSTALL THE ENGINE ON A STANDING TOWER

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

DO NOT LIFT BY THE VANE OR TAIL.

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

It will be necessary to raise the engine assembly approximately 5 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 engine. Remove the bearing locating string or tape 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, snugly against the bottom of the storm stay. Cut the original assembly tape.

Bolt the pullout swivel casting around the end of the pullout tube, between the washers already assembled on the tube. Align the small arm (which keeps the pullout tube from following the engine rotation), next to the corner post on which the pullout lever will be installed.

Do not untie the wheel or vane assembly at this time. Engine must be thoroughly oiled before the wheel is allowed to rotate.

SEE FORM 2539 — WINDMILL ASSEMBLY INSTRUCTIONS — FOR MORE COMPLETE DETAILS OF THIS INSTALLATION PROCEDURE, PLUS THE FINAL INSPECTION, OILING AND ADJUSTMENT STEPS.



CAUTION:

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4-POST STYLE "B" TOWERS

RAISING THE TOWER/WINDMILL ASSEMBLY

While this tower is manufactured so it can be easily built from the ground up, it may also be assembled on the ground and raised to its vertical position. Many prefer this procedure and it has this advantage - the windmill and wood rod can be assembled and installed on the tower before the tower is raised. However, more equipment is required for this erection method.

SETTING ANCHOR POSTS

Follow directions given for this on page 3. Some prefer to set anchor posts after tower has been raised. In this case, assemble tower, after digging anchor holes, and follow instructions given further on in the assembly procedure.

ASSEMBLING TOWER

Lay out the corner posts the full length of the tower, the extension corner posts next to the anchor posts. Bolt the top corner posts to the next extension posts, using four 3/8" X 3/4" capscrews and nuts for each splice. Block the corner posts up at least one foot or more from the ground to allow for working underneath with a wrench.

Bolt bed plate to upper corner posts, using 1/2" X 2" capscrews & nuts and cast iron washers inside of angle. Bolt storm stay between angles with 3/8" X 2-1/4" capscrews & nuts and corner washers outside of angles. Next, bolt short step #1 girts to outside of corner posts near storm stay with 3/8" X 3/4" capscrews and nuts.

The next set of holes is for the platform supports. Attach with 3/8" X 3/4" capscrews and nuts. Attach the #2 girt (14-1/4" long) with 3/8" X 1" capscrews and nuts. These bolts also take the shortest set of braces on the outside of angles. Bolt #3 girts (25" long) to hole just below the splice, together with the second set of braces on the outside, using 3/8" X 1" capscrews and nuts. Fasten lower end of upper braces to holes above splice with 3/8" X 1" capscrews and nuts. Next, bolt #4 girts (38" long) to the corner posts, also the lower end of the second set of braces.

If tower is only 22 foot high, place the wood girts in position; but if higher, bolt on more extension corner posts and girts until tower is complete. Then tighten all bolts and all eccentric washers with a wrench on the square part. *Be careful not to tighten too much.* Bolt the ladder sections to tower and finish the platform. After mill is placed on tower, put in the wood rod and one guide rod on each side of the ladder on #3 and #5 girts below splices. Adjust these rods along girts so wood pole will be in line with mill and pump. Install pullout lever assembly as shown on page 9.

28 & 39 FOOT TOWERS

As stated before, the lower corner posts in these towers are only 5'-10" long and the lower 15' of these towers have two sets of braces, one set starting above the anchor posts splice and the next set above the next splice or 5'-6" above the lower one. The upper end of the bottom braces fasten to the intermediate girts.

Double check to see that the legs are straight, that all braces are adjusted, all bolts are tight and pullout lever is down to secure the wheel.

LIFT METHOD OF ERECTION

The combined weight range of the 6' & 8' mills, assembled on the "B" towers, is approximately 625 to 1425 pounds. A lifting unit of appropriate height and capacity is the most efficient means of erecting this assembly. A capable, experienced crane, or boom truck, 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.

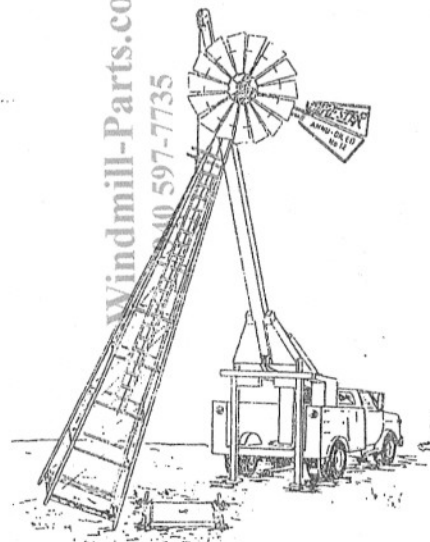


FIGURE 14

LIFTING TOWER WITH CRANE EQUIPMENT

4-POST STYLE "B" TOWERS

BUILDING TOWER FROM THE GROUND UP

ATTACH PULLOUT LEVER TO THE TOWER

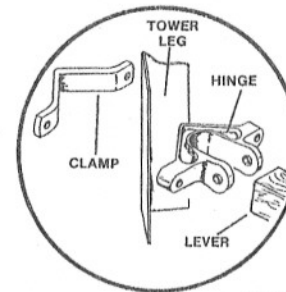


FIGURE 12

NOTE: The Pullout Lever is furnished with the Engine. The Hinge & Clamp 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 feet above the wood girt, with 3/8" X 2" capscrews (Tower Fittings).
3. Fasten the pullout lever to the hinge casting with the 3/8" X 3" hinge bolt (with offset hole in the lever UP). Hinge bolt is in Tower Fittings.
4. Attach the pullout bail to the hole 7" from the hinge end of the lever. 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". Adjust pullout wire to achieve this. Wrap free end tightly 6-8 turns and trim the excess wire.
5. Use this extra wire to form a holdout loop for the lower end of the lever to prevent accidentally turning the mill on.

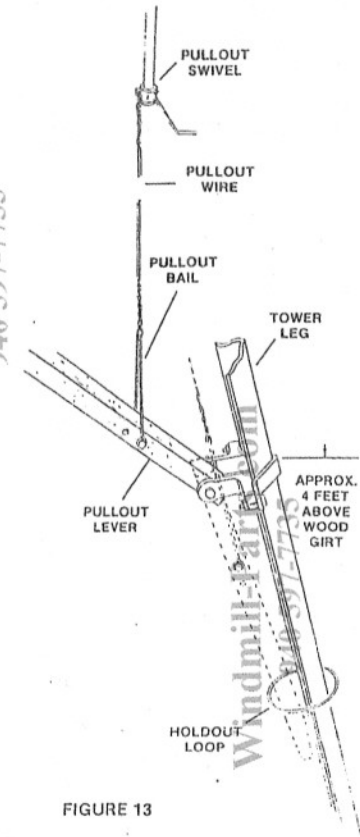


FIGURE 13

PULLOUT LEVER ASSEMBLY



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WARRANTIES



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Beatrice, Nebraska 68310
Toll-Free 1-800-777-0212
Phone (402) 223-4026

LIMITED WARRANTY

On the Dempster No.12 Annu-Oiled Windmill
First 4 digits of Date Code = Month & Year of Manufacture

DEMPSTER warrants for twelve (12) months from date of installation or twenty-four (24) months from date of manufacture against defects in material and workmanship, and will repair or replace f.o.b. at an authorized DEMPSTER repair location, any defective parts of the DEMPSTER #12 Windmill, provided:

1. Installation instructions which accompany the windmill are followed precisely.
2. The oil is changed annually using wax-free oil, which pours at -35°F.
3. The hood of the mill engine is kept secured and in proper position.
4. The Windmill has been properly used and maintained.
5. The defective parts are returned to DEMPSTER INDUSTRIES INC.

In the event these provisions are not carried out, any resultant damage is not covered by this warranty. No allowance will be made for labor, transportation or other charges incurred in the replacement of the defective part. This warranty shall not apply when the Windmill has been subject to accident, negligence, alteration, abuse, misuse or acts of God. CONSEQUENTIAL DAMAGES, IF ANY, ARE SPECIFICALLY EXCLUDED FROM THIS WARRANTY. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

Any implied warranties which the purchaser may have are limited to the warranty period. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

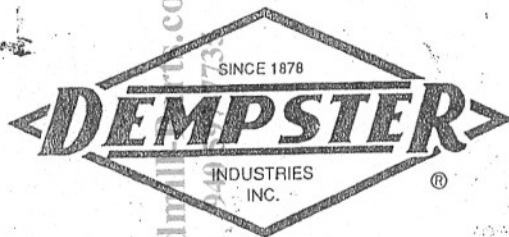
Contact DEMPSTER INDUSTRIES INC. at the address above if you have any questions about the coverage of this warranty or service under this warranty. This warranty gives you specific legal rights; you may also have other rights which vary from state to state.

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DEMPSTER INDUSTRIES INC.

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RAISING THE TOWER/WINDMILL ASSEMBLY

"TILT-UP" METHOD

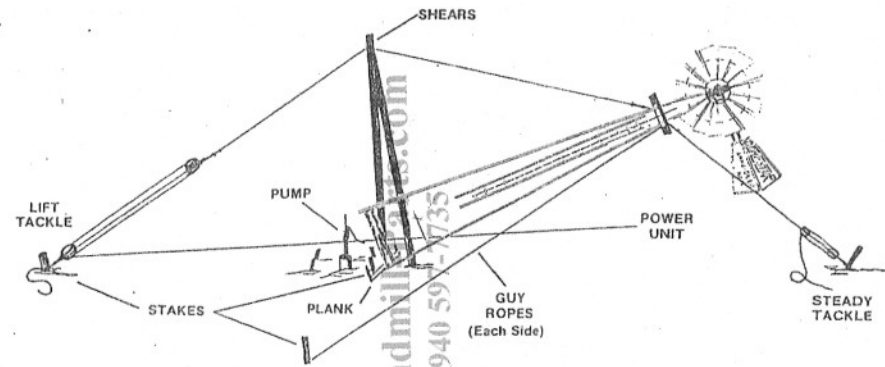


FIGURE 15

Uncrate sections and use crate to rest tower on, so mill will clear the ground when putting it on tower. Put mill on tower, including wood rod. Bolt a plank 2" X 6" X 16" across bottom end of tower. Drive stakes firmly at each end of plank, so plank will not slide while tower is being raised. Level the plank by blocking under ends.

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 FORM 2539 -- WINDMILL ASSEMBLY INSTRUCTIONS -- FOR COMPLETE DETAILS OF THE FINAL INSPECTION, OILING AND THE ADJUSTMENT PROCEDURE PRIOR TO PUTTING THE WINDMILL INTO OPERATION.

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