

Instructions for Erecting Samson Air Flow Windmills

These Windmills are fitted with combination Ball Bearing Self-Aligning turntables and will fit on 4 Post IDEAL Steel Towers. Special universal tower caps can be furnished to fit on 4 post steel towers of other makes.

To use on 4 post wood towers it will be necessary to purchase a short stub 4 post steel tower to be bolted to top of wood tower.

For 4 Post IDEAL Tower

When tower is in position and properly anchored, proceed as follows. Remove bolts which hold sheet metal hood on windmill head and remove hood. Then open fixture carton and remove bolts and parts, also remove parts which are tied on vane rail. Place these parts in a convenient place so they will be ready when needed.

Place ball bearing turntable on top of tower cap and bolt fast with 4 $\frac{3}{8}$ x1 $\frac{1}{4}$ " carriage bolts which are found in box. Insert guide ring or truing spider in place in tower and fasten with 4 $\frac{3}{8}$ x5 $\frac{1}{2}$ " bolts with long thread with cast corner washers on outside of posts. These bolts require two nuts for locking after mill has been plumbed on tower. The guide ring is located at holes $2\frac{1}{8}$ " from top of tower on 6 $\frac{1}{2}$ foot and 8 $\frac{1}{2}$ foot mills, 2 $\frac{5}{8}$ " on 10 $\frac{1}{2}$ foot mill, and 3 $\frac{1}{8}$ " on 12 $\frac{1}{2}$ foot mill. It may be necessary to make new holes when installing on old towers for 12 $\frac{1}{2}$ foot mills. This can be done by using a round file and filing across the corner of tower post until hole is through, then filing out hole. Leave off two of the short girts so that pullout straps will clear. The slots in guide ring for pullout rods should be placed as shown in Fig. 4 according to the corner post on which the pullout reel is to be installed.

Place balls in trough of turntable and see that balls are well lubricated with grease before installing upper turntable. Place upper turntable on top of balls and insert grease cup filled with grease in turntable casting.

Place pullout swivel on top of guide ring with chain up as shown in Fig. 4.

The two straps which are attached to outside pullout swivel should straddle one of the corner posts at right angles to the post on which the pullout reel is to be installed. Then pass the eyes on end of pullout rods up through slots in guide ring as shown and hook into ears on swivel casting as shown in Fig. 4. The wheel head can then be

raised and mast pipe inserted through hole in turntable down through pullout swivels and through guide ring. Be sure that lug on bottom of wheel head engages between lugs on turntable ring and that strap on mast pipe engages with slot in pullout swivel casting.

When raising mill head it is best to use a gin pole and tackle, see Fig. 2.

Use at least a 4x4 14 feet long, using good sound wood. A good wagon tongue with hounds down is sometimes used. Fasten tackle to end of gin pole about 4 inches from top of pole, and raise pole to top of tower. Lower end of gin pole should rest on top of platform with foot against tower, nail cleats on platform to hold pole in place. Set block of wood between tower and gin pole near top of tower to hold pole vertical and lash pole securely to tower.

The mill should then be plumbed on tower by means of the long threaded bolts, in guide ring. A level placed against the mast pipe or on top of the flange of wheel head can be used in plumbing the mill. After the mill is plumbed on the tower tighten the lock nuts on the guide ring bolts. The plunger rod can then be inserted up through the mast pipe by first removing the lock nut on upper end of plunger, then push plunger up through mast pipe, replacing lock nut before inserting into hole in crosshead. Screw plunger into hole in crosshead as far as it will go and tighten set screw, then lock set screw with wire and then tighten lock nut against crosshead. Lower plunger guides can then be clamped to lower end of mast pipe, as shown in Fig. 4.

The sheave pulley should then be bolted to wheel head. Then pass a weighted cord over sheave pulleys then down through turntable along side of mast pipe and tie to upper end of chain and pull chain up through turntable over sheave pulleys and tie fast until vane rail is installed. Be sure that chain comes up straight along side of mast pipe and that there are no kinks in chain.

The vane rail can then be installed. The governor spring swivel bracket should be bolted in place on top of wheel head as shown in Fig. 8.

Before raising the vane rail the vane sheet should be bolted to the rail. The vane sheet is fastened to rail at front with machine bolts and steel strap which is found at the proper place on rail. The rear end on 6 $\frac{1}{2}$ foot is fastened with two hook bolts which are found with bolts in fixture carton.

On the 8 $\frac{1}{2}$, 10 $\frac{1}{2}$ and 12 $\frac{1}{2}$ foot, the rear end is fastened with machine bolts with flat steel truss which is bolted to outer end of vane sheets, not shown in Fig. 8.

Bolt buffer case assembly under upper rail with large hole in line with hole in vane rail. Bolt is found in place in buffer block. Raise vane and vane rail into place by tying rope to lower rail at a point which will cause the vane and rail to balance, passing rope around upper rail before fastening to lower rail, this will cause the vane to hang in proper position for fastening to mill head. Insert vane rod

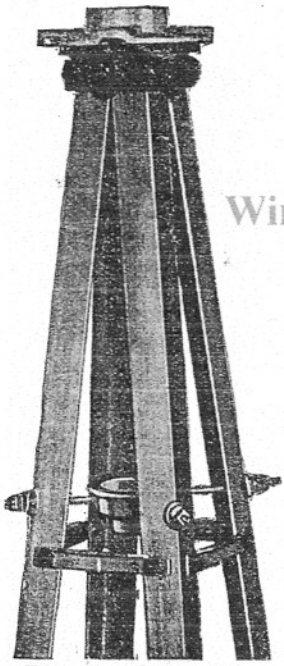


Fig. 1. Steel Tower

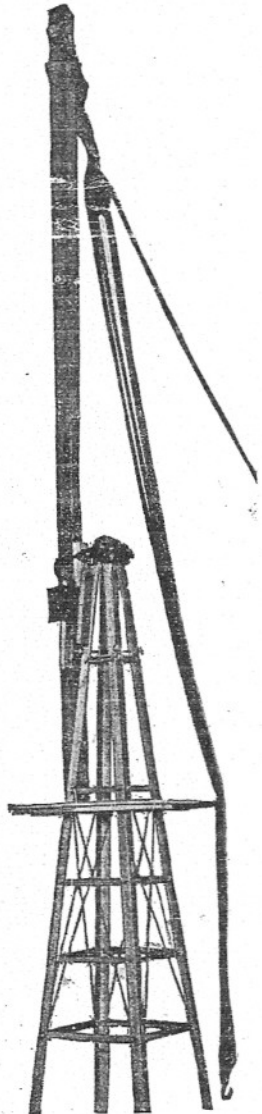


Fig. 2



Fig. 3

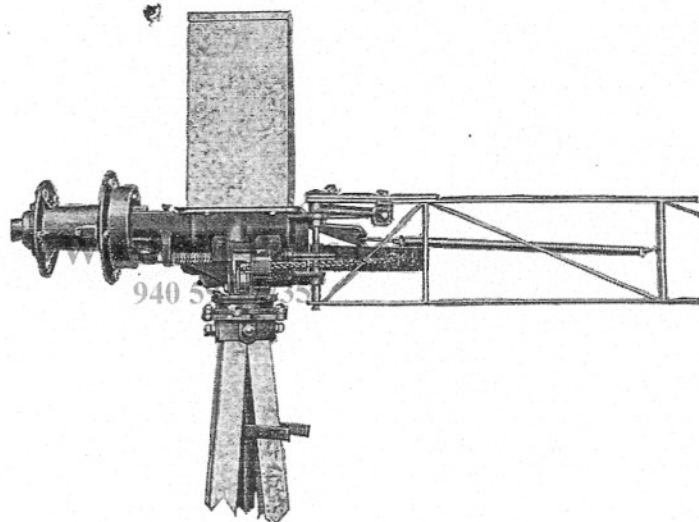
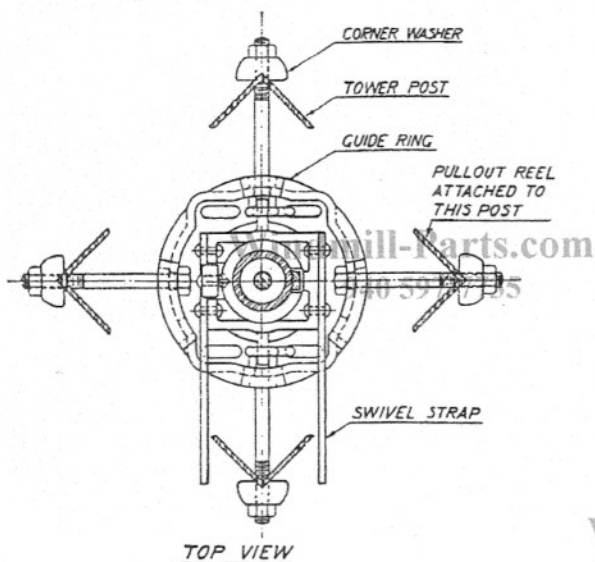
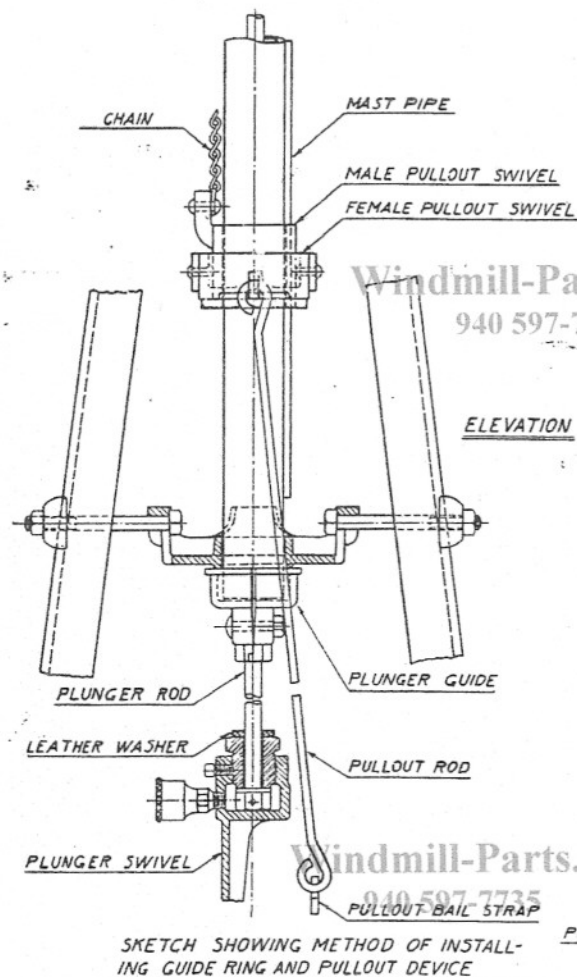


Fig. 5

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wheel head, then through pipe spacer, and finally through lower rail as shown in Fig. 8. Fastening top strap of vane rod to upper rail with bolt found in place. Insert governor spring eye bolt through slot in governor spring swivel bracket and through small ball washer and place two nuts on eye bolt. Then hook governor spring in S hook in vane rail and other end in eye of eye bolt. Proper tension can be given governor spring by screwing up nuts on eye bolt. By turning up nut, tension on the spring is increased and holds the wheel stronger into the wind. If the nut is turned up too much the wheel working in high winds will operate the pump too fast. We recommend as light tension as possible on the spring according to the work the mill has to do. The upper end of pullout chain should be bolted to the brake lever. The brake lever will come in contact with the end of brake rod when the mill is pulled out of gear and set the brake. The brake is adjusted at the factory but in case it fails to stop the wheel when mill is pulled out of gear, the necessary adjustment can be made by loosening lock nut on brake rod and screwing brake rod out of wedge until proper adjustment is made, be sure to lock nut against wedge after adjusting.



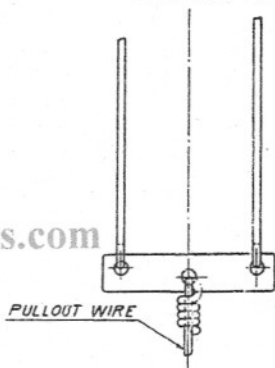
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SKETCH SHOWING METHOD OF INSTALLING GUIDE RING AND PULLOUT DEVICE

Fig. 4

The pullout reel should be installed on corner post of tower near bottom and the pullout wire connected between chain on reel and pullout rod bail. Attach the wire to pullout rod bail at top of tower first and allow the wire to drop down straight to the ground stretching the wire out until it is straight, then attach the wire to the chain which should be unreel from the reel, leaving just enough slack to allow the mill to go full into the wind when reel is unwound. The mill can then be pulled out of gear and the brake adjusted if necessary.

Pump rod can then be installed, by bolting to plunger swivel and properly attached to rod guides of tower as shown in tower instructions, be sure that grease cup is installed on plunger swivel and that plunger swivel is properly lubricated, and that leather washer is on top as shown in Fig. 4.

Also see that swivel is adjusted so that it has no end play and still turns freely. The grease cup should be towards corner post on opposite corner of tower from the post on which the pullout reel is installed, see Fig. 4.

TO ERECT WHEEL

Bolt wheel arms in place on spider leaving bolts slightly loose until wheel sections are installed. Lock washers are used on all wheel bolts, see chart Fig. 7. for proper size and location of bolts. Place wheel sections in place one at a time, convex sides of sails go towards tower, see Fig. 7.

through hole in upper rail, then through hole in buffer case, then through hole in top lug of wheel head then through brake lever casting being sure that this casting is on proper side of vane rail and right side up as shown in Fig. 8; then pass vane rod through lower lug of

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Fasten each section temporary until all sections are in place, observing the rule to lap rims one way. Bolts used on outside rim project towards outside while inside rim bolts project towards the inside. Outside rims have three oblong holes on one end and three round holes at the other end, center holes are for arm bolts and outside holes for splicing rims. The round holes go to the outside with lock washers next to round holes. After all sections are in place tighten nuts against lock washers. Turn each nut up slightly one after the other continuing around the wheel until all nuts are drawn up tight against lock washer. Be sure that all nuts are tight. Wheel bolts should be inspected and again tightened after mill has been erected one month. If this is done a wrecked wheel will seldom occur.

To Change Stroke of Mill. Remove cotter pins from end of crosshead pin and split ring from pitman pin. This can be done by prying split ring out with screw driver. Being sure that you do not drop them into head without recovering them. Then slide pitman arms out of place and turn gears around until the other holes in gear are up, then replace pitman arms and cotters and split rings. The split rings can be driven over slot in pitman pins with hammer. Be sure to draw the bolts in hood down tight against the gasket and see that gasket is in place. This will prevent the leakage of any oil or the entry of water or dust.

In case it becomes necessary for any reason to remove gears or gear bearings it is an easy matter to remove these parts without removing the wheel from the mill. Loosen set screw on oil thrower on wheel shaft in front of double pinion, and then remove nuts from studs on spider hub. The wheel shaft can then be pulled out from spider. The two nuts on gear bearing studs can then be removed and the complete gear and bearing assembly lifted out after the plunger is removed from crosshead.

Be careful when replacing any parts, that they are returned to their proper position and all set screws and bolts are tight.

LUBRICATION

The wheel spider is filled with sufficient grease to last for several years of use. A small amount can be added each year if desired by removing plug from spider and filling with grease gun. Use only Superla No. 57 Grease. This is important.

After the mill has been erected and all adjustments made pour enough of the oil which comes with the mill into the head until it runs out of the top of the filler elbow on the side of the head. Also pour some oil in trough between gears so that oil lifter has a supply of oil before starting mill. It is a good plan to pour a small amount in on top of oil wiper at top of crosshead when starting to

allow the wick to soak, also see that ends of wicks are in the trough, on top of crosshead, and be sure that mill starts with all working parts well lubricated. Once a year drain all old oil out of head and replace with clean oil, this can be done without removing the hood, also when re-oiling mill fill grease cups at turntable and plunger swivel and turn up until these parts are well lubricated. Use only light Zero or Polar windmill oil in head. Do not use heavy oil as it gets stiff in winter.

When oiling mill inspect all bolts and see that they are tight.

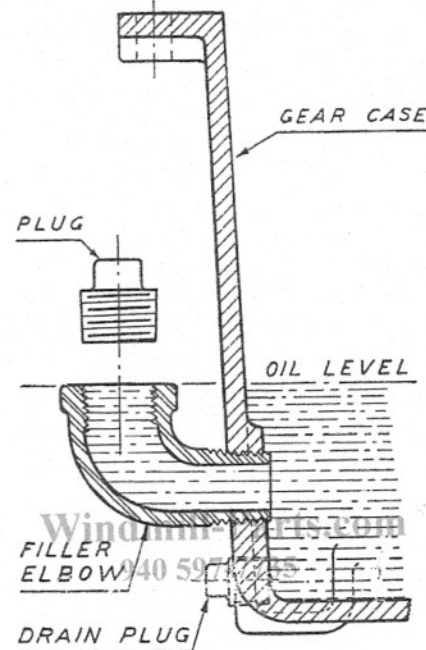


Fig. 6

The quantity required for the various sizes of windmills is listed below:

- 6½ foot 1 quart
- 8½ foot 1½ quarts
- 10½ foot 2 quarts
- 12½ foot 1 gallon

Remove plug from top of filler elbow and pour in a sufficient amount of oil to bring the oil level even with the filler elbow as shown in the accompanying illustration.

OIL RECOMMENDATION. Light S. A. E. No. 10 to withstand a cold test of 25 degrees below zero.

Wheel Arm and Bolt Dimensions as Shown on Fig. 7.

Size of Mill	DIMENSIONS			BOLTS											
	A	B	C	D	E	F	G	H		J		K		L	
								Dia.	Length	Dia.	Length	Dia.	Length	Dia.	Length
6½ ft.	26 ¹⁵ / ₁₆	16	3¾	4 ¹ / ₁₆	1¾	1¾	3 ⁵ / ₁₆	¾	1	5/16	1	5/16	1	5/16	¾
8½ ft.	36 ¹¹ / ₁₆	19 ⁵ / ₈	2½	5¼	1¾	1½	4	¾	1¼	¾	1	¾	1	5/16	¾
10½ ft.	45 ¹³ / ₁₆	23 ⁷ / ₁₆	2½	5 ¹¹ / ₁₆	1¾	1½	4 ⁷ / ₁₆	¾	1¼	¾	1¼	¾	1¼	5/16	¾
12½ ft.	55 ¹ / ₈	27 ⁷ / ₁₆	2½	6 ¹ / ₁₆	1¾	1½	4 ³ / ₄	¾	1½	¾	1	7/16	1½	¾	1

