

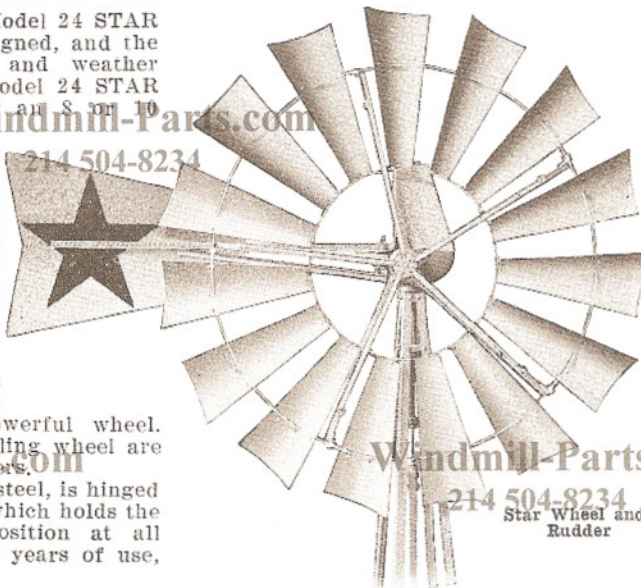
## Model 24 STAR WINDMILL

THE WHEEL of the Model 24 STAR is scientifically designed, and the curvature of the fans and weather angle is such that the Model 24 STAR gives great efficiency in an 8 or 10 mile wind. The wheel is securely attached to the shaft by left-hand thread in the hub, and this in turn is held by right-hand threaded castellated nut and cotter pin. Wheel hub is overhanging, placing the load of wheel directly over the outer bearing of drive shaft.

Wheel arms and braces are of angle steel, and provide a light and powerful wheel. Bolts used in assembling wheel are provided with lock washers.

Rudder stem, of angle steel, is hinged and braced in a manner which holds the rudder in horizontal position at all times. It will not, after years of use, droop.

All wheel parts are fully protected from the weather by our hot-dipped GALVAZINK finish. This coating, of pure zinc, is applied after all cutting and punching is finished, leaving no raw edges exposed, and consequently there is no opportunity for rust.



### IMPORTANT

In ordering or making inquiry about a Windmill outfit the following should be carefully observed:

The size and depth of well, and least depth of water in it, should always be clearly stated.

Quantity of water desired per hour.

Height water is to be elevated, and lateral distance to be conveyed.

The kind and size of windmill wanted; the height and kind of tower upon which the mill is to be erected.

Care should be taken to have mill placed at least fifteen feet above all buildings, trees or other obstructions in proximity to site of mill.

A rough sketch of the location where mill is to be erected and the conditions, sent us with your inquiry or order, will be of great service in fulfilling your requirements.

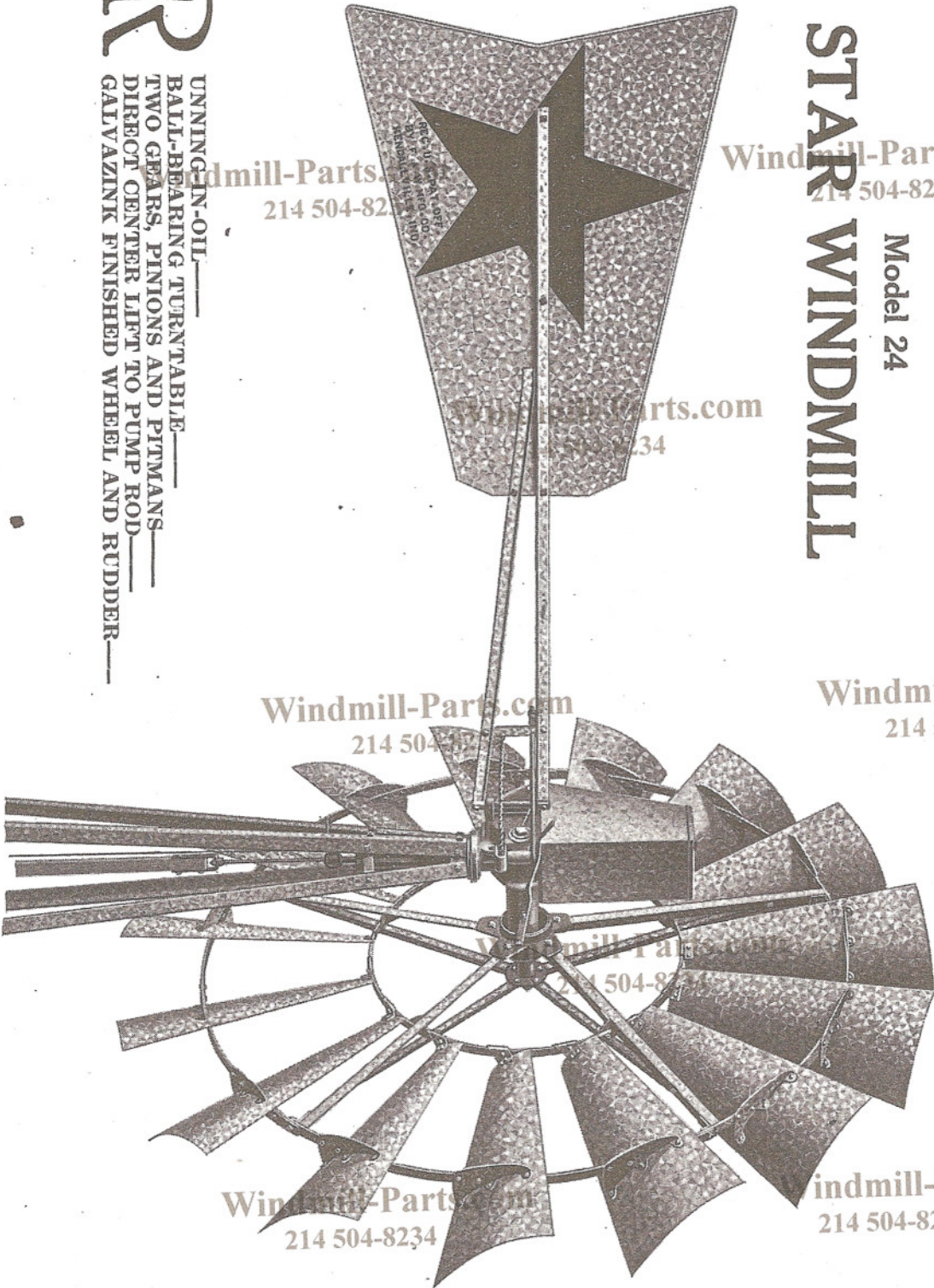
### Model 24 Running-in-Oil, Galvanized Steel Windmill Back-Gear'd, Complete with Ball-Bearing Turntable, Tower, Cap, Spider and Reefing Gear

Size, Feet	Strokes, Inches	Gear Ratio	Weight Pounds	Price with No-Oil-Em Bearings	Price with Timken Tapered Roller Bearings
7	6	3½ to 1	275	\$46.50	\$52.50
8	6, 8	3¼ to 1	357	\$55.50	\$62.25
10	8, 10	3 to 1	507	\$80.25	\$99.25

Stub Angles for attaching to wood tower, \$2.00 extra.  
 Pump pole, splices and pull-out wire, and windmill coupler, extra.  
 For repairs, see pages 244 and 245.

# CR

UNNING-IN-OIL——  
 BALL-BEARING TURNTABLE——  
 TWO GEARS, PINIONS AND PITMANS——  
 DIRECT CENTER LIFT TO PUMP ROD——  
 GALVANIZK FINISHED WHEEL AND RUDDER——



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## STAR WINDMILL

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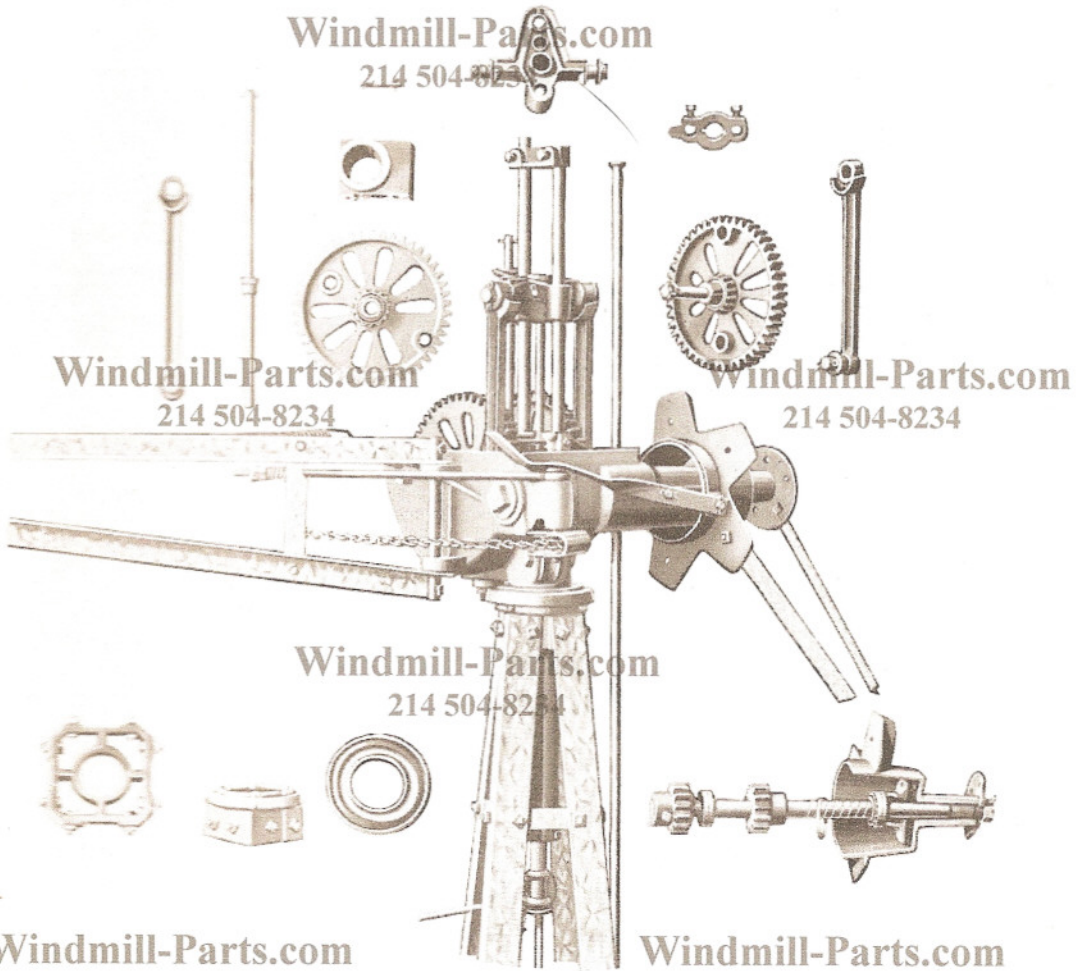
GALVAZINK 34 ★

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Timken  
Tapered  
Roller  
Bearing

THIS illustration shows engine of the Model 24 STAR with hood removed. It also shows the various parts which are used in assembling the engine, and points at which bearings are used.

The Model 24 STAR is furnished with either of two kinds of bearings—TIMKEN Tapered Roller Bearings, or NO-OIL-EM Bearings.



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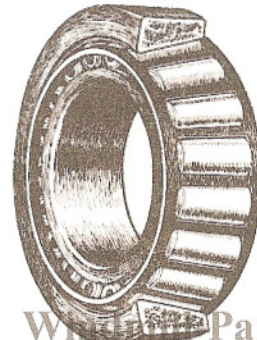
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Model 24

STAR WINDMILL

**T**HE MODEL 24 STAR WINDMILL is furnished with either of two kinds of bearings—TIMKEN Tapered Roller Bearings, or NO-OIL-EM Bearings. With either style of bearings, the Model 24 is a light-running and efficient windmill. Two bearings support the drive shaft and two support the crank shaft. In addition to carrying the load of drive shaft, the two bearings also care for the end thrust as developed by the wheel. The crank case of the mill is partially filled with oil. The two large gears dip into this oil and carry it to the pinions. In addition, a small plunger displaces oil from the crank case, delivering it to the top of the cross-head. The crosshead has a number of oil-carrying rods which are pumped to flow down onto the guide rods, upper pitman bearings, and the pump rod which runs down the guide rods. The oil is diverted and carried to the outer bearing of drive shaft, which supports the wheel end of this shaft.



Timken Tapered Roller Bearing

To prevent oil following down pump rod and escaping, an umbrella-shaped casting drains the surplus oil back into the crank case. All parts of the mill within crank case are constantly flooded with oil, providing positive lubrication for bearings, guides, gears and pinions. Drain plug in bottom of crank case is provided, that oil supply may be renewed when occasion demands. Bumper rod, with spring, allows the mill to be thrown into the wind without severe shocks. The brake lever is operated by the upper angle of rudder stem, which engages the curved end of brake lever, and this in turn applies the brake. Ample leverage is thus secured, so that when mill is blown out of gear, the wheel is held rigidly. The brake lever also serves as a buffer in heavy and shifting winds. When rudder is blown out of gear this spring lever takes the shock, at the same time partially applying the brake and governing the mill.

**Guaranty**

We absolutely and fully guarantee each and every Model 24 Star Windmill against all defects in material and workmanship. If properly erected and oiled at that time, according to our printed instructions which accompany the mill, to run for one year, without further oiling. We will furnish, free of charge at our factory, any parts and accessories in connection with the windmill within one year from the time of purchase, in the event of excessive wear or damage by excessive winds or tornado being expected.

Tower cap has ball-bearing turntable on which windmill is carried, allowing the Model 24 STAR WINDMILL to turn easily. The mill in gear, is thus kept directly into the wind. This construction will be particularly desirable in shifting, gusty winds, as the windmill will avail itself of varying winds.

The lower end of crank case stem is pivoted in truing spider. This is of sufficient length that there is no strain on the stem or truing spider. At lower end of stem, just below truing spider, a bolt prevents windmill from raising in tower cap. Wheel bolts are provided with lock washers, to prevent nuts working off.

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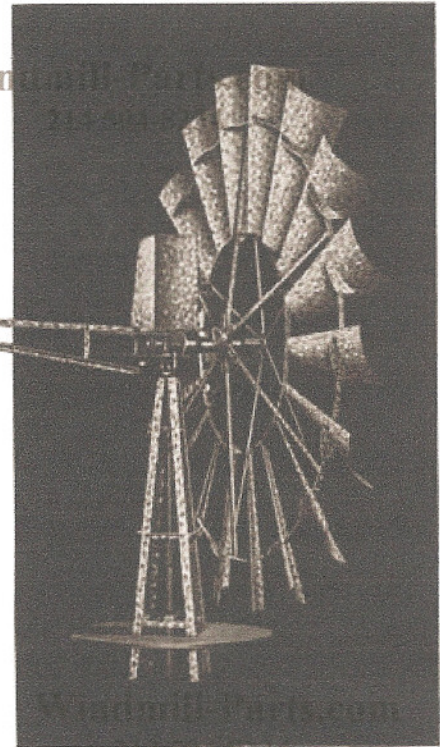
|| Place cover on crank case and fasten in place with washer and nut at top.

Model 24

STAR WINDMILL

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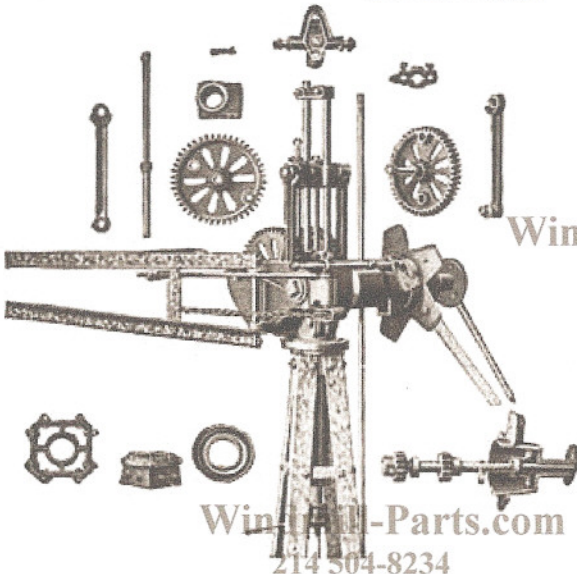
Running  
in  
Oil



WITH TIMKEN ROLLER BEARINGS

WE are still in position to furnish the well known Model 24 Star Windmill which has always enjoyed a fine acceptance from the trade. The Model 24 Star Windmill is superior in its class, having high efficiency, durability, minimum of operating attention and freedom from trouble.

To those desiring the Model 24 Star Windmill, these can be furnished in sizes and at prices as listed below.



Oil filled crankcase and automatic oiling system provide perfect lubrication which requires attention but once a year.

TIMKEN tapered roller bearings on drive shaft and crank shaft add to the efficiency of the Star Windmill.

Double set of gears and pinions and pitmans give a direct center lift that avoids all side strain and unnecessary friction.

Wheel, rudder and hood are weather proofed by a coat of zinc applied by our GALVAZINK process of dipping in molten metal after assembly.

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MODEL 24, RUNNING-IN-OIL, GALVANIZED STEEL WINDMILL

Back-Geared. Complete with Ball-Bearing Turntable, Tower Cap, Spider and Reefing Gear

Size, Feet	Strokes, Inches	Gear Ratio	Weight, Pounds	Price, with Plain Metal Bearings	Price, with Timken Tapered Roller Bearings
5	4 3/4	4 to 1	200	\$ 37.00	\$ 40.00
7	6	3 1/2 to 1	275	42.50	46.00
8	6, 8	3 1/2 to 1	357	49.00	53.00
10	8, 10	3 to 1	507	72.50	77.00
12	8, 10, 12	2 5/8 to 1	886	134.50	140.00
15	9, 12, 15	2 5/8 to 1	1700	253.00	260.00

Stub Angles for attaching to wood tower, 31 1/2 inches long, per set \$1.45; 46 1/2 inches long, per set \$2.00 extra. Pump pole, splices and pull-out wire, and windmill coupler, extra, see pages 42. For repairs, see page 110.