

HG-52SS

52 Foot Self-Supporting Tower

ORDER NO. 125-1

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TELEX® **hy-gain**®

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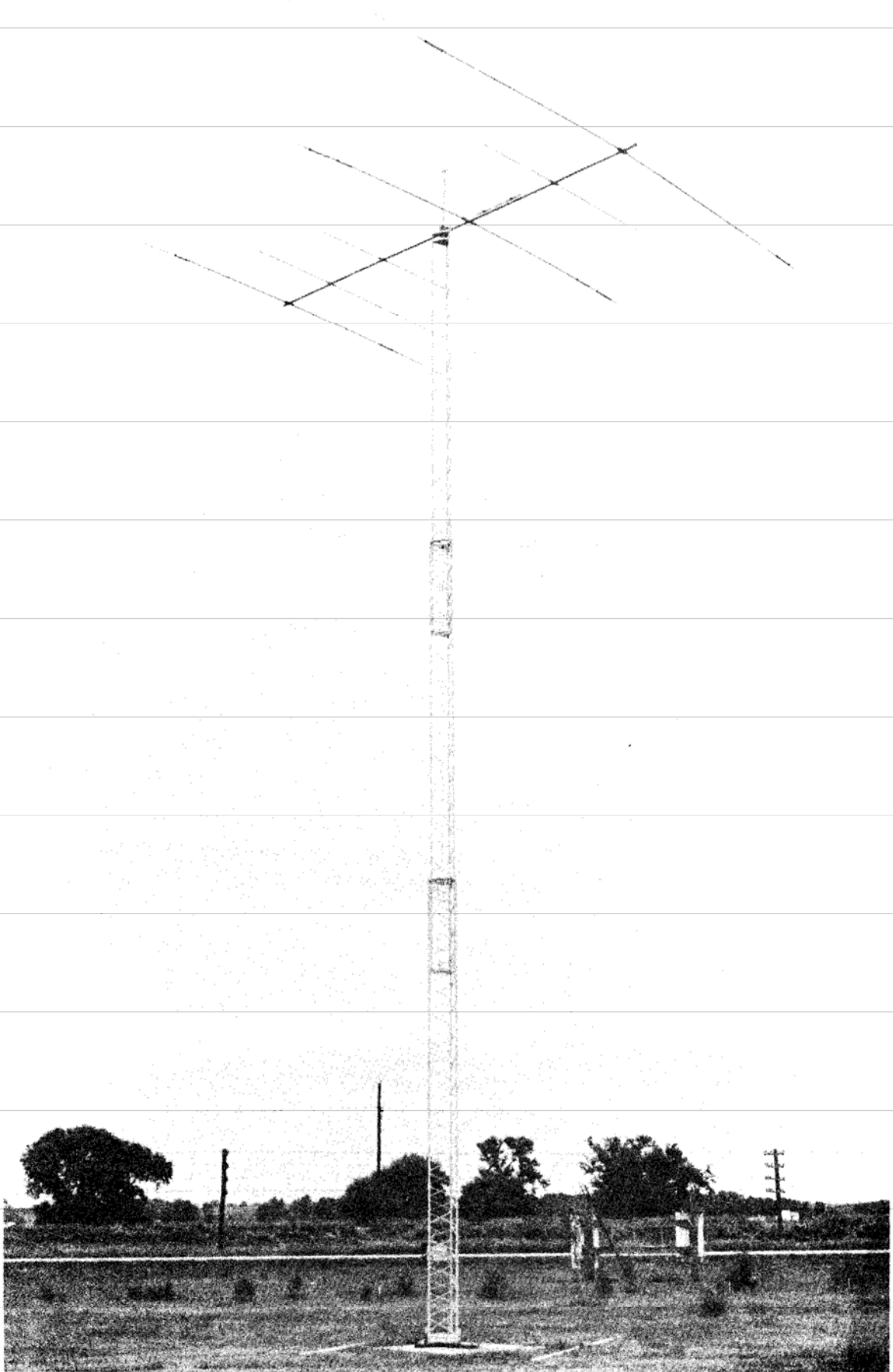


Figure 1
Overall View of HG-52SS Tower

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CHAPTER 1

GENERAL INFORMATION

WARNING

Installation of this product near power lines is dangerous. For your safety follow the instructions.

General Description

The HG-52SS is a 52 foot, self-supporting tower designed to support 9.5 square feet of antenna area with winds up to 50 mph. This all steel tower has a guide system that allows the tubing to be open at each end insuring complete galvanizing and total moisture drainage.

The tower can be extended from its nested position by manual crank or the use of an electric motor. A thrust bearing can be bolted to the top section allowing a 2" diameter mast.

Unpacking and Uncrating

Be sure to check your tower form any freight damage or missing parts. If you find damage, notify the trucking line that delivered the equipment immediately, and advise Hy-Gain of the damage. Send a copy of the freight damage claim to:

Hy-Gain
 Telex Communications, Inc.
 9600 Aldrich Avenue South
 Minneapolis, Minnesota 55420
 Attention: Traffic Department

Equipment Supplied

The HG-52SS tower is supplied complete, including reinforcing steel and base mount. The tower corresponds to the drawings contained in this manual. Refer to the Parts List section for a complete breakdown of parts.

Specifications

Height	
Extended	52 feet (15.85 m)
Nested.....	21 feet (6.40 m)
Guying	self-supporting
Construction	all welded construction with leg guides and "W" configuration torsion resistant bracing
Material	all steel
Plating.....	hot-dipped galvanized
Wind Survival (fully extended with max. load).....	50 mph (80.5 kmph)
Antenna Load Limits.....	9.5 square feet (0.883 sq. m)

The Parts List shows the standard commercial packaging. Any changes or modifications, if any, which may be incorporated as the result of special contractual agreements are covered under Contract Requirements, but only when applicable.

Equipment Required But Not Supplied

Qty	Description	Use
1	Tool Box with Common Hand Tools	Tower Assembly and Base Foundation
1	Measuring Tape, 12'	Base Foundation
1	Level	Base Foundation

WARNING DO NOT CLIMB

Do not attempt to climb this tower under any circumstances. **Serious injury or fatality** may result. Keep hands and feet outside of tower. Do not attempt to reach inside the structure unless the tower has been fully retracted against the lower stops.

CHAPTER 2

SAFETY PRECAUTIONS

WARNING

Before you start installation of your tower let us warn you of the danger of letting any part of your metal tower system touch electrical power lines – **YOU MAY BE KILLED!**

General Safety Rules

Hundreds of people are killed each year because they don't use common sense when they install their towers or antennas. It happens more often than you realize. Someone falls off a roof or gets electrocuted by touching a power line with an antenna tower or metal ladder.

There is no such thing as a good tower site if it is near electrical power lines. Unfortunately, most tower systems, and in many cases, the ladders used during an installation are metal. If any metal tower part or ladder touches a power line, it completes an electrical path from the power line through the metal tower and the installer (YOU!).

DON'TS

1. Don't install any tower near power lines.
2. Don't install a tower on a windy day.
3. Don't try to do the job by yourself.
4. Don't try to catch the tower if it starts to fall.
5. Don't try to remove any metal objects from the power lines.
6. Don't be afraid to call the power company for advice when picking a tower site or removing a fallen tower from the power lines.
7. Don't remove winch handle; use safety chain with lock to secure.

8. Don't climb tower; use separate ladder or lower tower with gin pole for antenna rotator servicing.
9. Don't overload. The design load limit is 9.5 square feet of antenna on a two foot mast for winds up to 50 MPH.

DO'S

1. Do install the tower away from power lines. Check the distance to the power lines before you start installing – we recommend you stay a minimum of twice the maximum length of the tower assembly away from all power lines.
2. Do install the tower on a calm day and assure yourself of having plenty of daylight to complete installation.
3. Do stay clear if the tower starts to fall or come in contact with power lines.
4. Do call the power company to remove fallen towers from power lines or to help pick out a safe antenna site.
5. Do crank tower down to retracted position when winds are anticipated to exceed 50 mph.

If someone is accidentally electrocuted, don't touch him or the tower if he is still in contact with the tower or downed power lines. Use a dry stick, like a broom handle or wooden ladder, etc., and in one sweep push the person free from the tower or knock the wire away and off the victim. Do not allow the wire to touch the victim again. Have someone call the power company and an ambulance.

Site Selection

The tower requires a concrete base approximately 42" x 42" x 5'6" deep. Among the factors to be evaluated in selecting a tower site are the types of earth at the installation site and the nearness of power lines or overhanging tree limbs.

Soil conditions around the tower foundation should allow access to the tower during all weather conditions.

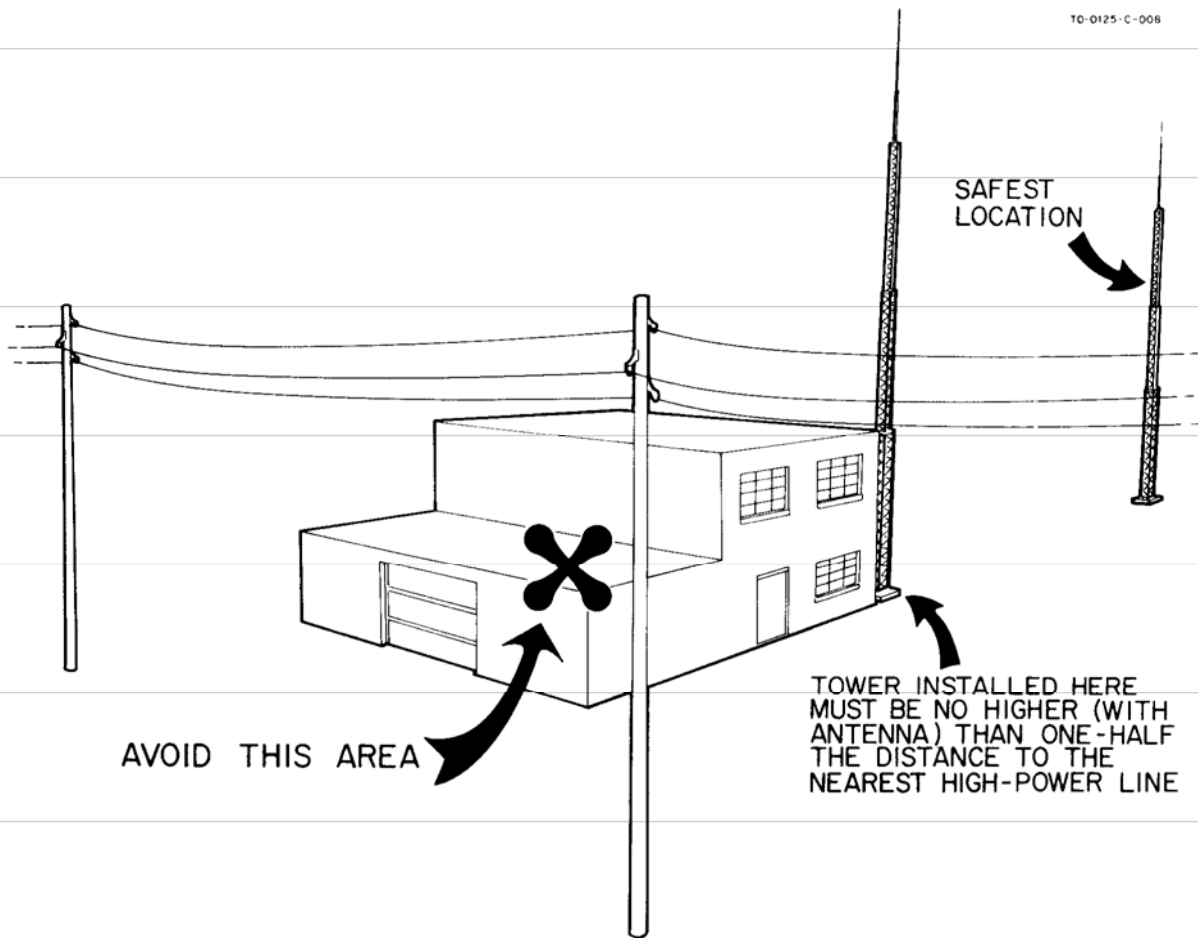


Figure 2
Safe Location of Tower

CHAPTER 3

INSTALLATION PROCEDURES

Checking Base Foundation Assembly

IMPORTANT:

For proper alignment, the tabs on the tower base foundation assembly must correspond with the tabs on the tower.

During shipment or while in storage, damage may have resulted to the tabs on the tower base foundation assembly.

Before installation of this tower, check proper alignment of the tabs. To do this, set the tower horizontally on two supports. Attach the base foundation assembly to the tower using the 3/4" hardware, as shown below.

If the tabs on the base foundation assembly are out of alignment, use a large hammer to realign.

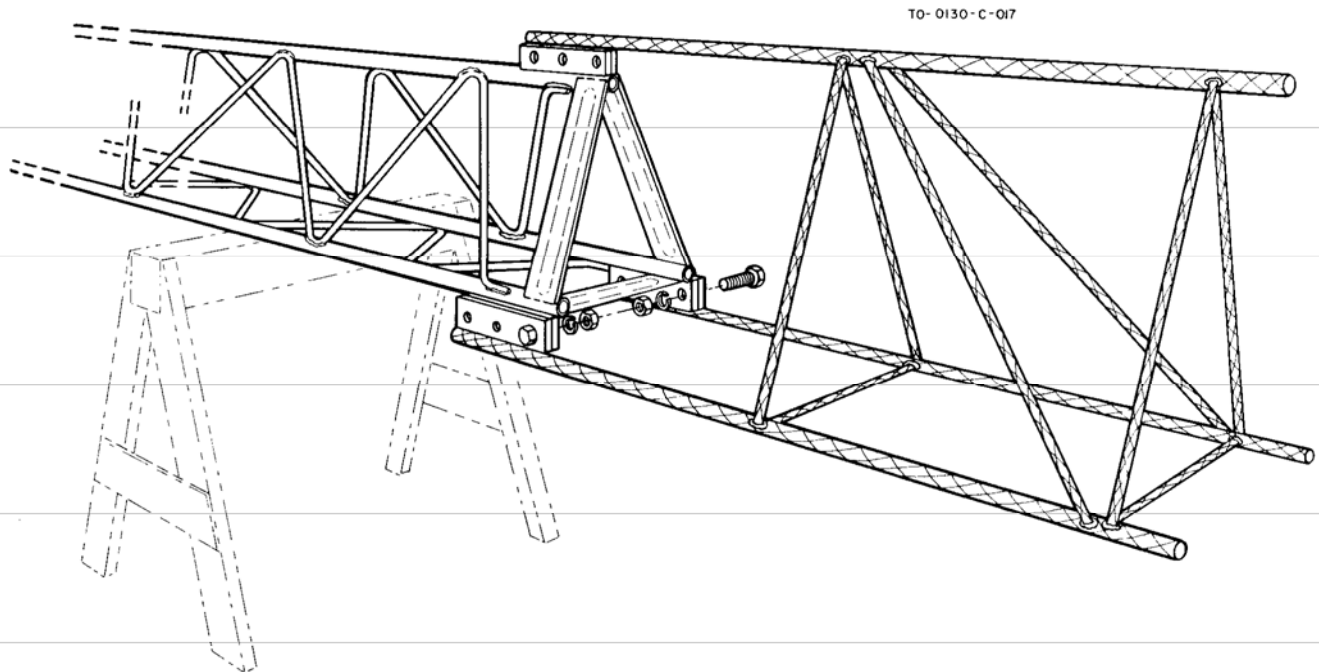


Figure 3
Checking Base Foundation Assembly

Planning Your Procedure

Good planning is a key to a successful and safe tower installation. If you're not sure about a careful, safe installation, do not try to do it yourself. Call for professional help (Yellow Pages under Towers or your local power company).

The tower should be as close as possible to its related equipment. Determine the best possible site while thinking about power lines, but also think about overhanging tree limbs that may be blown into the tower during high winds.

Foundation

Dig a hole 42" square by 5'6" deep, as shown in Figure 4.

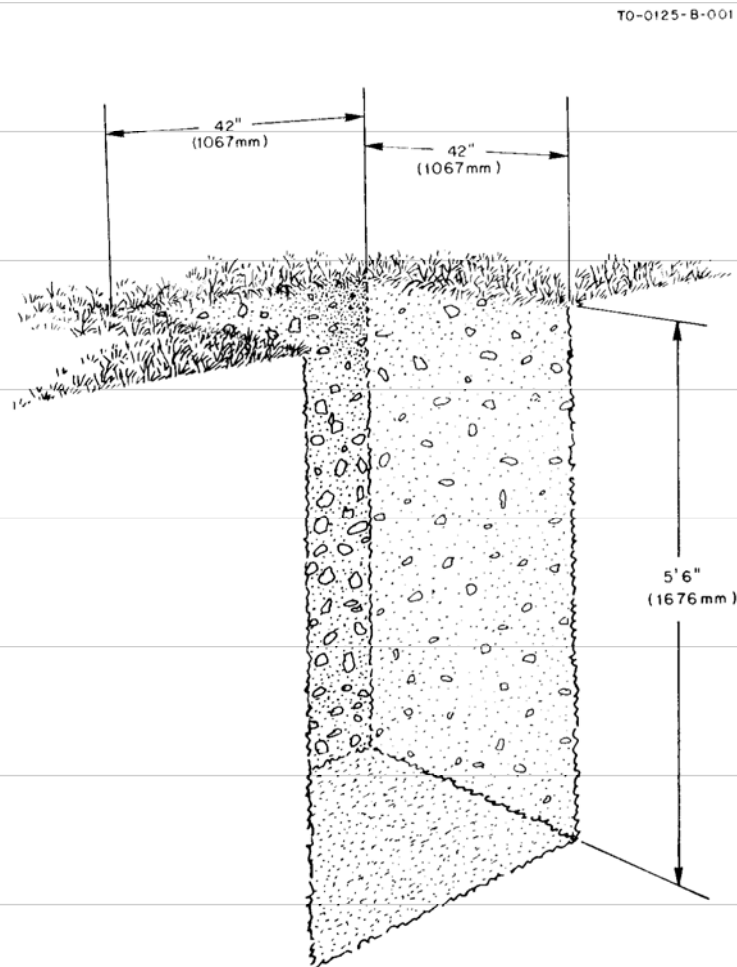


Figure 4
Digging Hole for Foundation

Wood Forms Construction

Construct a wooden frame around the hole to support the base assembly as shown in Figure 5.

In the U.S.A. the dimensions of lumber are listed, and referred to, as the size after is rough-cut at the sawmill; prior to being dried planed and sold on the market.

A sample would be the 2"x4", which after being dried and planed will measure 1 1/2" x 3 1/2" (3.81 x 8.89 cm), or a 2"x 6", which will measure 1 1/2"x 5 1/2" (3.81 x 13.97 cm).

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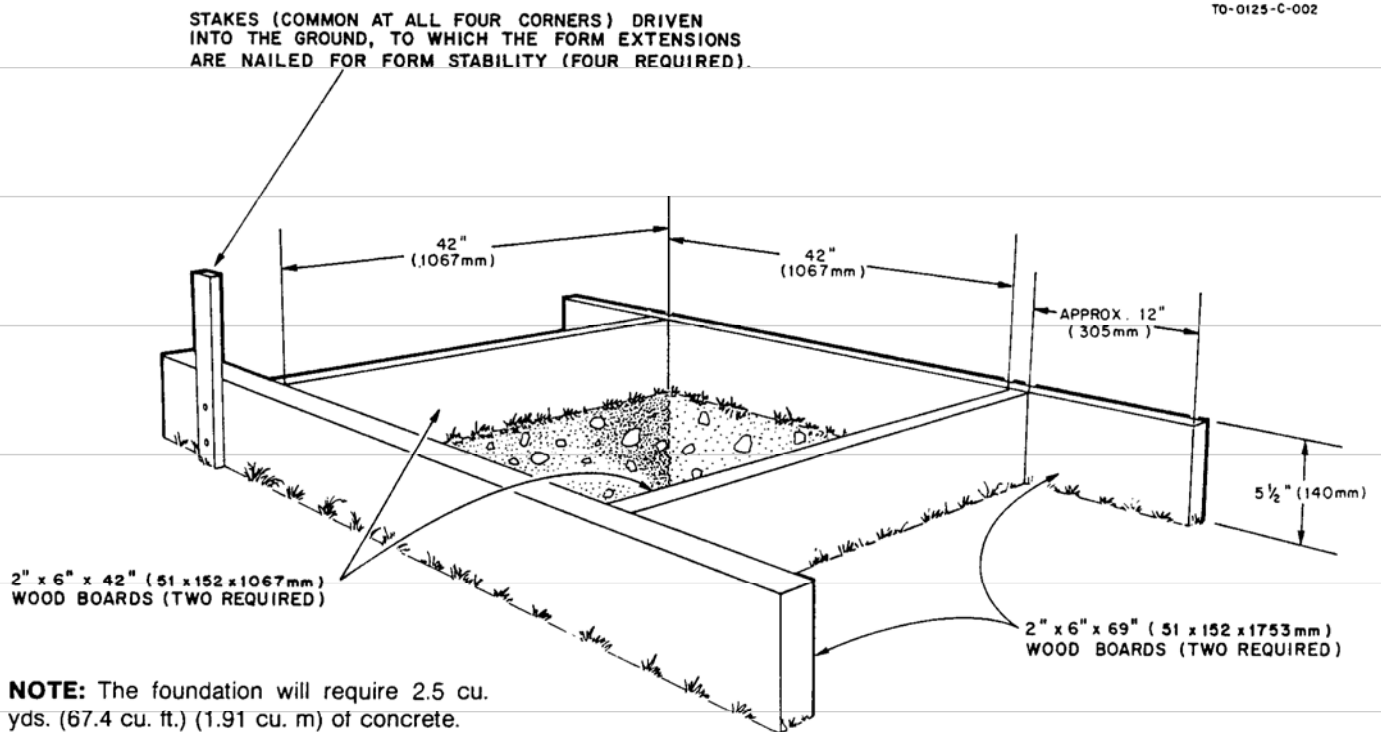


Figure 5
Constructing Frame for Concrete Base

Orient your tower base in the direction your tower will be raised. The two parallel ears of the base assembly will be the hinged side.

IMPORTANT: THE TABS ON THE BASE ASSEMBLY MUST MATCH THE SPACING DIMENSIONS CALLED OUT IN FIGURE 6.

The tabs on the tower base assembly may have been knocked out of alignment during shipment or while in storage.

Check and realign the tabs, using a large hammer, so they will agree with the dimensions given in Figure 6.

Drill a 3/4" hole in each cross member in line with the lower holes in the base assembly as shown in Figure 7.

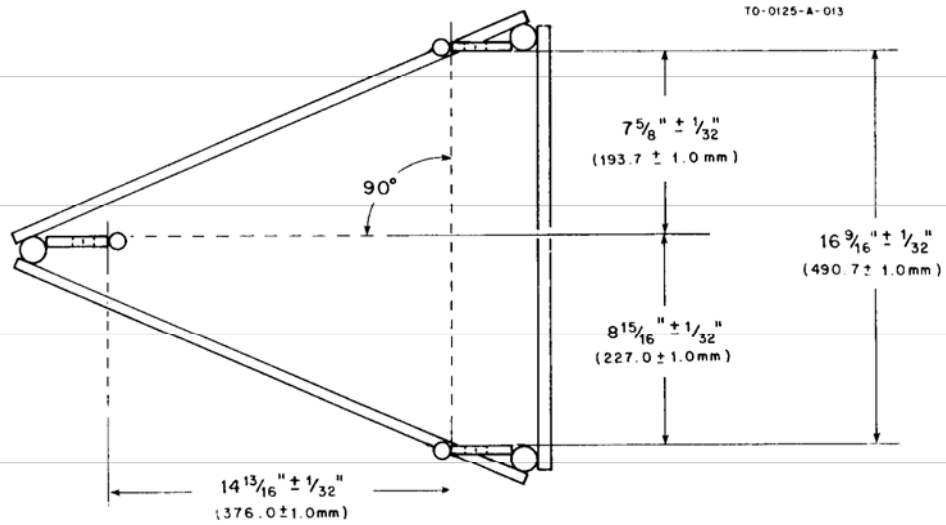


Figure 6
Top View of Foundation Structure Assembly

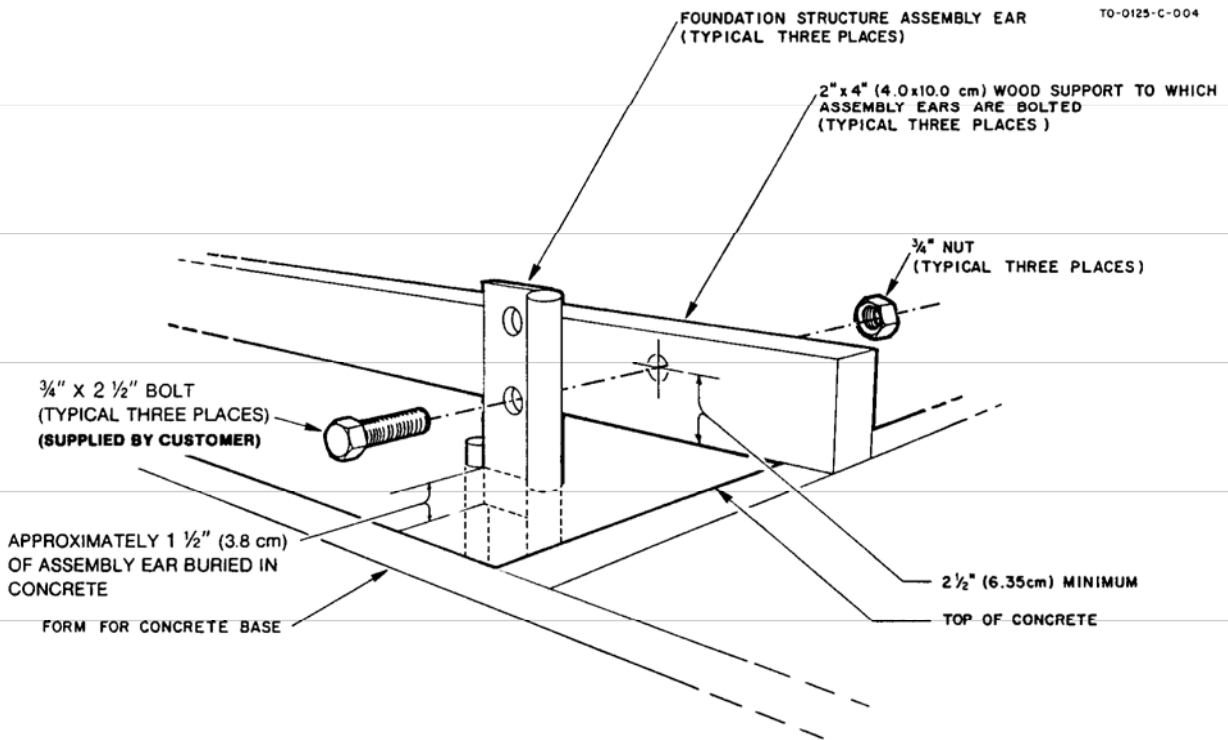


Figure 7
Hanging Base Foundation from Forms

Attach the base assembly to the wood frame using 3/4" bolts.

IMPORTANT: Base frame must be level for tower to raise and lower properly.

Using a carpenter's level check all points to make sure base frame is level.

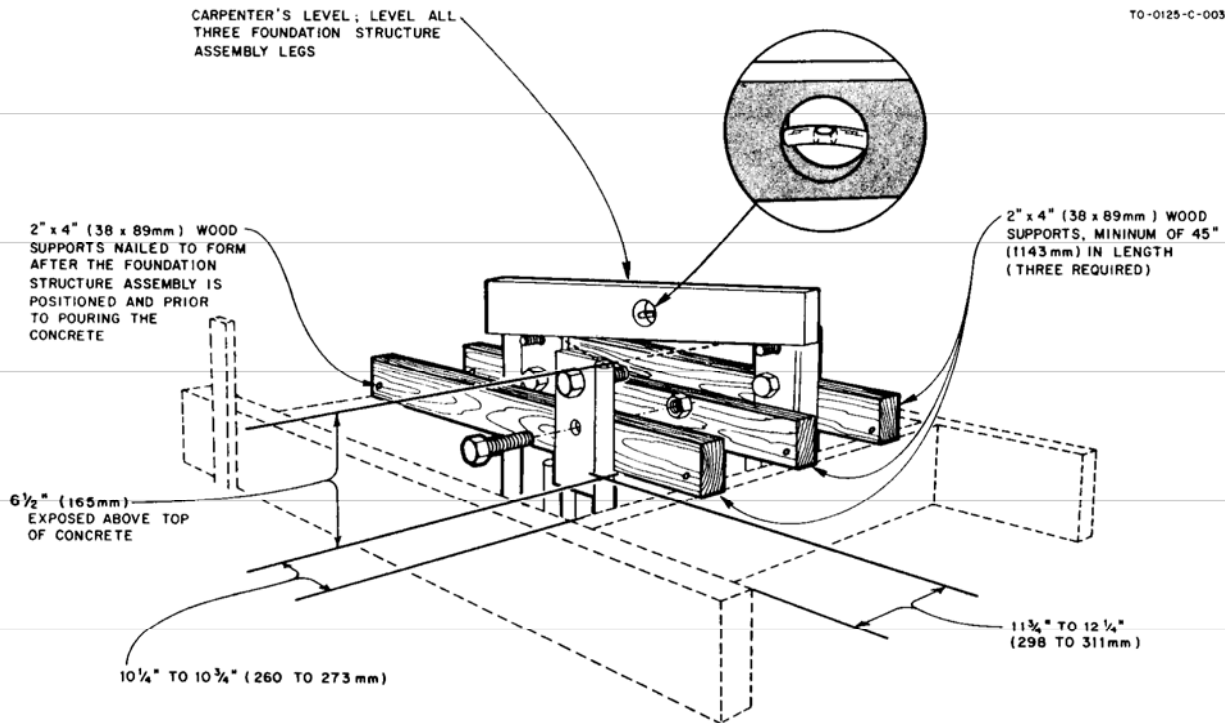


Figure 8
Attaching and Leveling Base Frame to Wood Forms

Pour concrete carefully into hole. Make certain base assembly maintains the proper clearance from the outside edges of the hole. Refer to Figure 9.

The concrete shall be designed to provide a minimum 28 day strength of 2000 PSI and shall contain not more than 7 1/2 gallons of water per sack of cement.

After concrete is poured, check base assembly making sure it is level and it hasn't shifted during the pour.

If the base is not level, tape the ears of the base with the hammer to level.

Let the base cure for at least one week before setting tower!

Attaching Tower to Base Plate

Set your tower on the hinged side of the base, align the bottom holes of the tower with the bottom holes in the base assembly. Install a single 3/4" bolt in each of the two parallel base ears. See Figure 10.

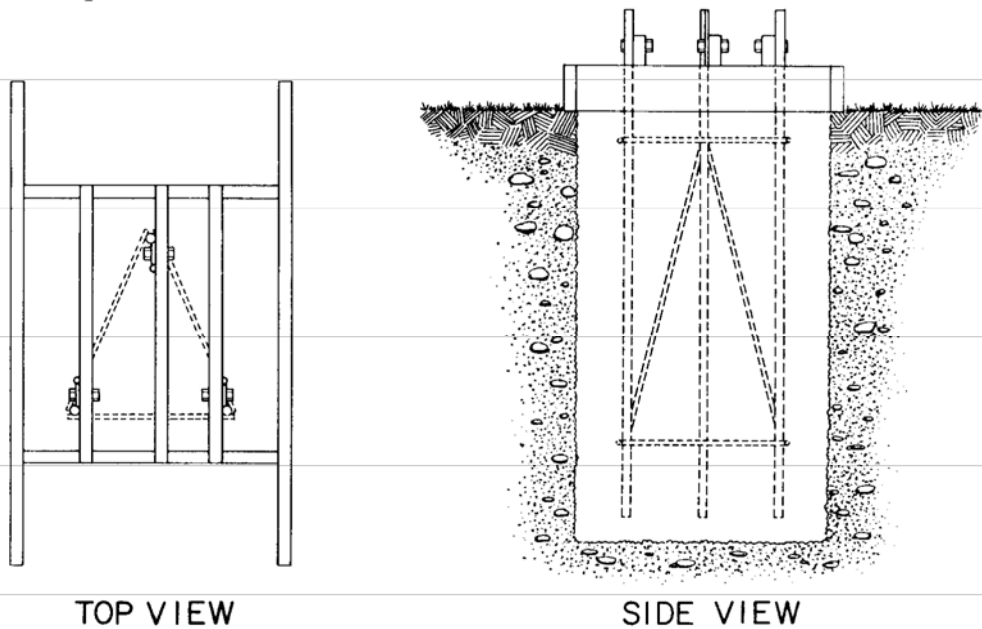


Figure 9
Tower Foundation

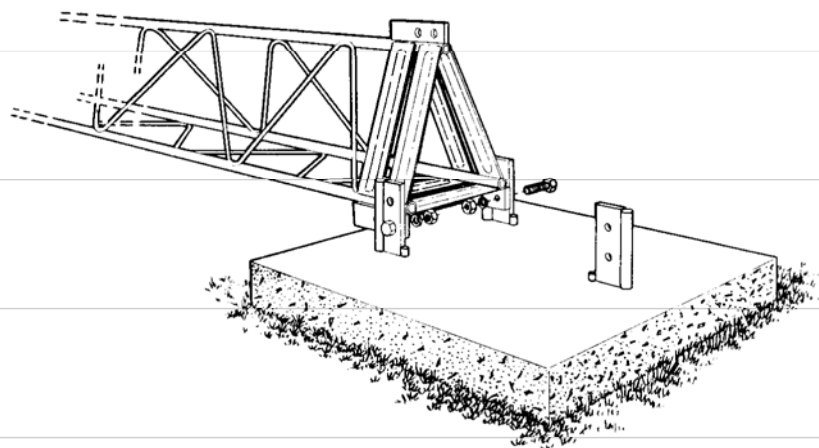


Figure 10
Attaching Tower to Base Tabs

Support the tower on a support, like a sawhorse, and attach your antenna and/or rotator to the tower before raising the tower as shown in Figure 11. The support should not have any sharp edges that may come into contact with the winch cable.

The use of a thrust bearing, HG-TBT, Order No. 121-B, is recommended for use on this tower if the combined weight of the antenna, mast, and rotator is greater than 150 pounds. The use of this thrust bearing is also recommended on all systems used in areas where ice loading may be experienced.

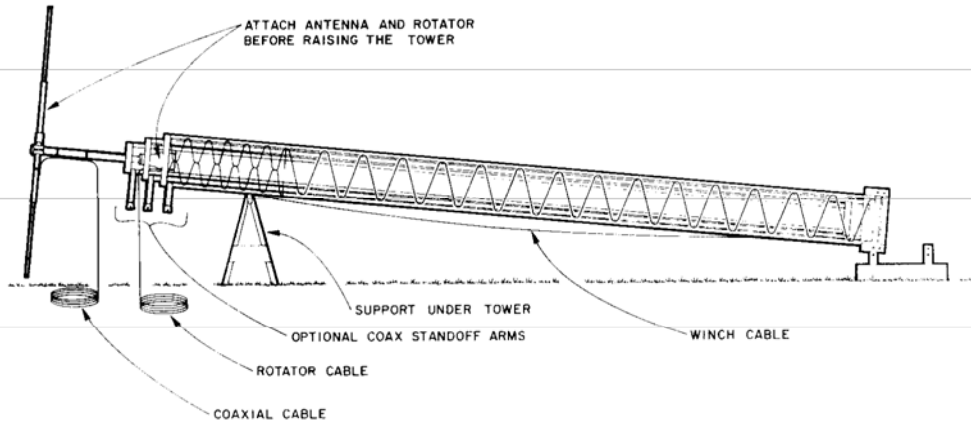


Figure 11
Supporting Tower While Attaching Related Products

Lift tower into place with gin pole, block and tackle as shown in Figure 12.

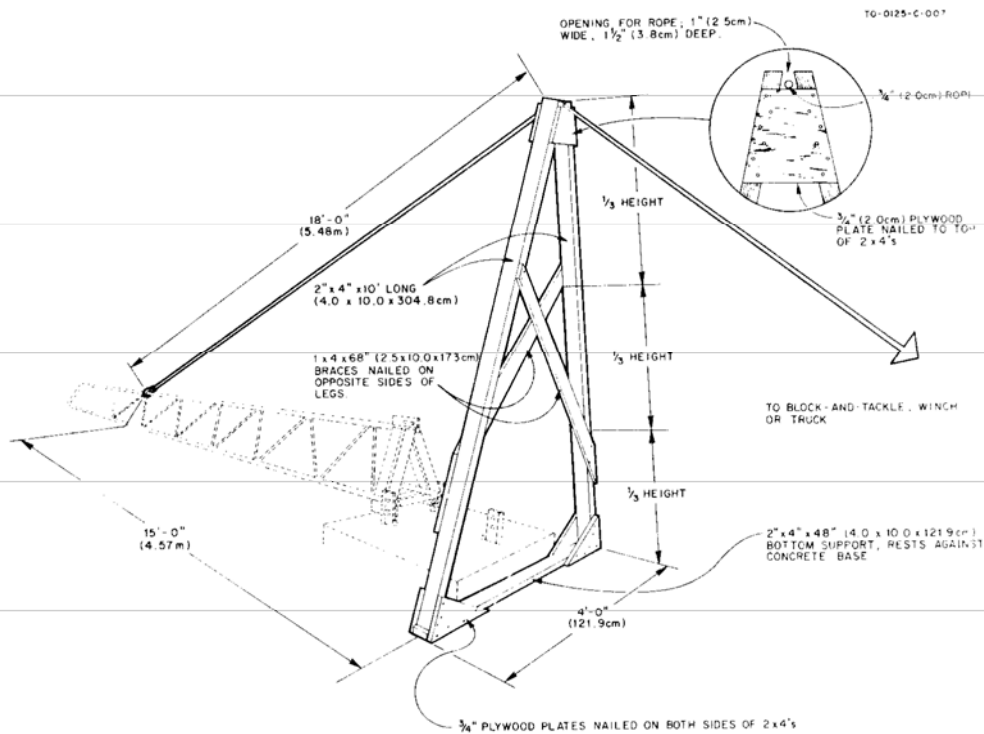


Figure 12
Constructing Gin Pole

After tower is up, put all base bolts in place and secure tower in vertical position.

Attach winch assembly to tower winch plate as shown in Figure 13.

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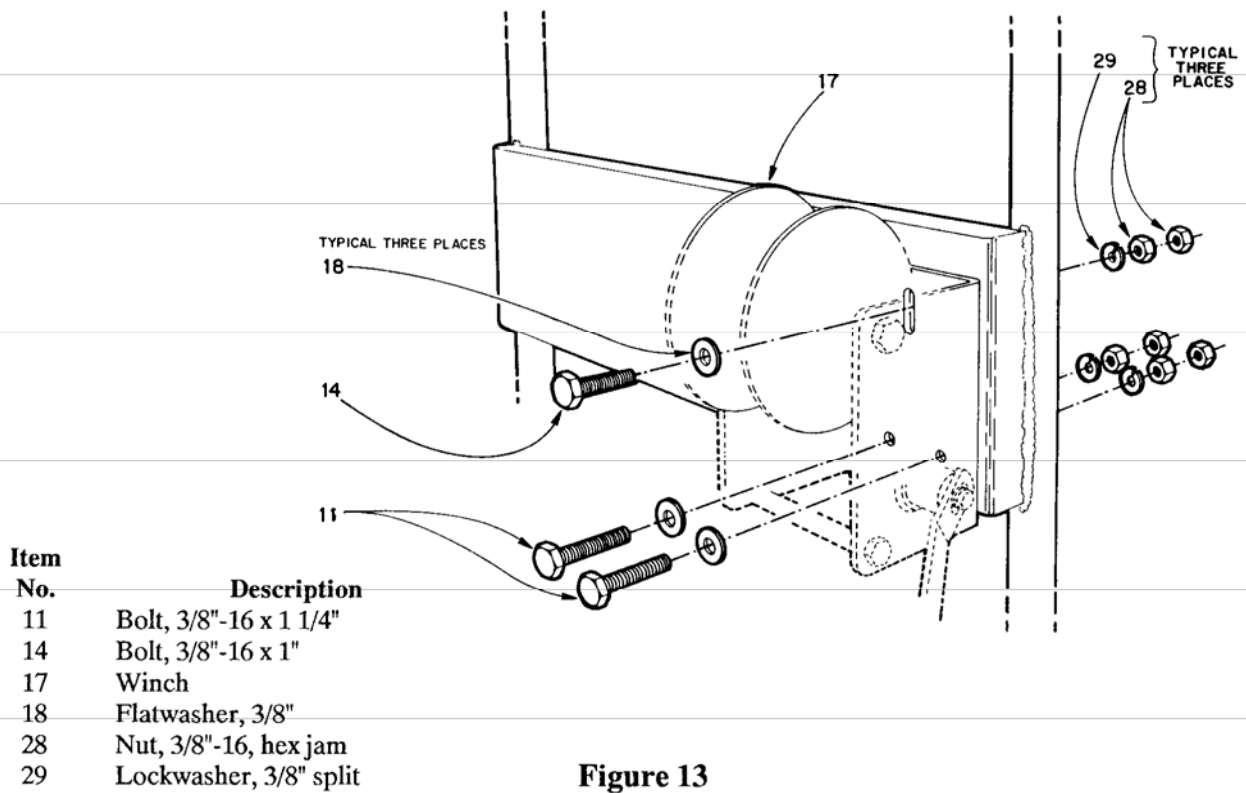


Figure 13
Attaching Winch Assembly to Tower

Connect the cable to the winch as shown.

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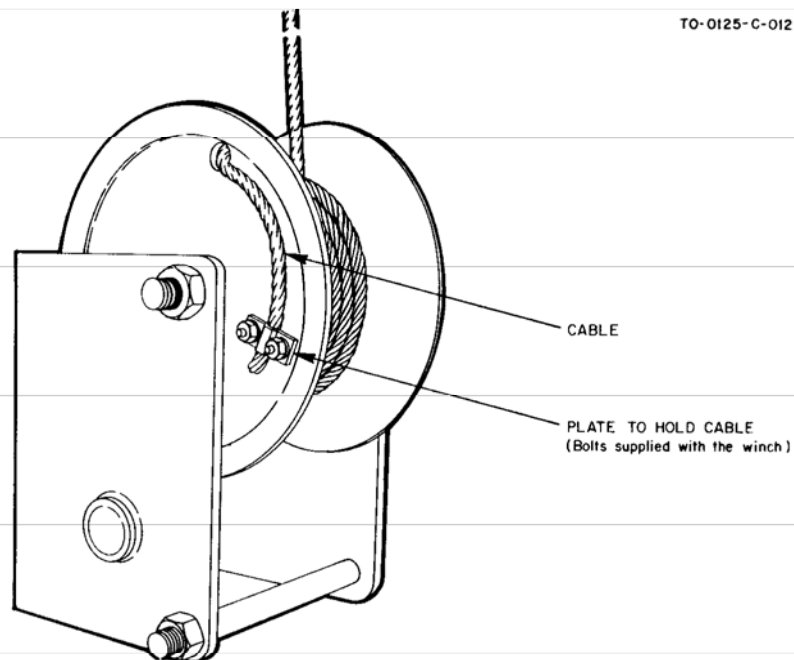


Figure 14
Connecting Cable to Winch

Lightning Protection

To protect your installation and your radio equipment, the tower system must be properly grounded. Drive a 4'-8' ground rod as close as possible to the tower structure. Then connect a #8 (or larger) copper or aluminum wire between the base of the tower and the ground rod.

Tower Maintenance

To maintain proper and safe operation inspect and lubricate your tower at least once a year; more often if subject to heavy or frequent use. Always be sure your tower is in the retracted position before attempting any maintenance procedures.

Inspect all bolts for tightness including cable termination, winch and base bolts.

Inspect raising cables and replace if excessively kinked or frayed.

Inspect pulleys and pins for excessive wear and replace as required.

Place a few drops of light machine oil on all pulley bearings.

Refer to winch manual for proper lubrication of winch.

Raising and Lowering Tower

Before cranking the winch to raise the tower, examine the raising cables to be certain that they are securely terminated and properly positioned in the cable sheave grooves.

The tower should raise with only moderate effort with the hand crank winch. If excessive force is required, check again for possible shipment damage. **DO NOT** force the tower up. It may become jammed in an extended position and won't retract under its own weight.

Turn the handle on the winch in a clockwise direction winding the cable onto the winch reel. When the tower is being raised, the winch will produce a loud clicking noise.

Releasing the winch handle, the tower sections will remain in position. Turning the handle in the counterclockwise position will lower the tower section(s). When lowering the tower section(s) the winch will not make a clicking sound.

To stop the sections at any height when lowering, turn the winch handle clockwise until you hear two clicks. This will add extra tension to the brake mechanism.

If the winch does not operate as described, see the section titled "Winch Maintenance."

To raise the tower to full height, continue turning the handle clockwise until your tower end stops. **DO NOT** try to crank the winch tighter if the end stops or any obstruction stops tower raising.

To prevent unauthorized use of the winch, reverse the winch handle and chain it to the tower. See additional instructions and safety measures in the winch manual.

Procedures for Freeing Binding Tower Sections

Some causes for the sections to bind can be:

1. Bent tower braces during shipment or installation.
2. A heavy object has been accidentally knocked into the tower bracing after installation is complete.
3. Excessive wind force can cause a tower section to bind up and not retract straight in line with the next larger tower section.
4. Unbalanced antenna or other equipment.
5. Foreign objects such as tree limbs, dirt or ice can reduce clearance between sections.

When lowering the tower, simply crank the winch in the opposite direction. Constantly check the upper section cables to make sure they remain taut as the tower is lowered.

CAUTION:
When cranking the tower down, make sure all sections lower simultaneously.

A second person should watch the lowering sequence carefully to make sure all sections of the tower lower together.

A good way to tell is by watching the raising cable. If any of the cables become slack at any location, **STOP**. The tower section is binding up and must be cleared before lowering continues.

To correct these problems, crank the tower back up until the cable is tight. A soft, rubber faced hammer can be used on the tower legs while lowering the tower to jar the obstruction free. If you use a rubber mallet, tap only on the tower leg where the bracing meets the leg and tap as far up on the bottom section as you can reach. **NEVER TAP ON ANY TOWER BRACING!** See Figure 15.

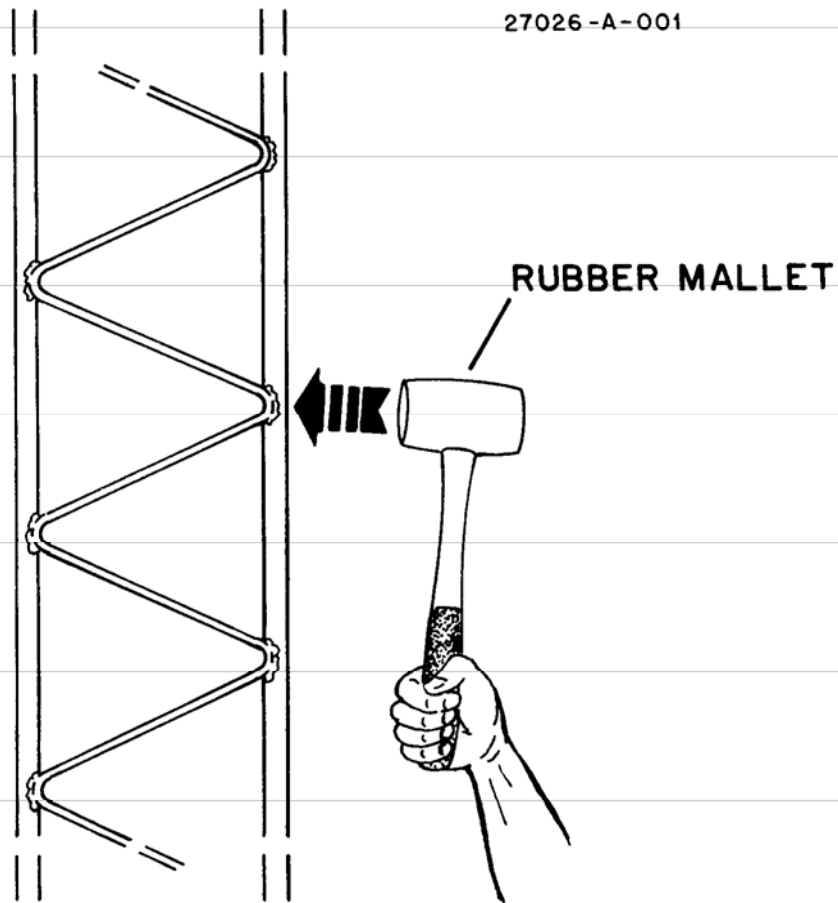


Figure 15
Freeing Binding Tower

If cable becomes slack again, raise the tower to tighten the cable and repeat the procedure.

Another procedure to free binding sections is to rotate the antenna to a different heading one or more times. Doing so can help solve the binding caused by steps 3 and 4 of this section.

If foreign objects must be removed to free the tower, **DO NOT CLIMB THE TOWER!** Be sure all cables are tight before doing so. If none of the previous methods work to free the tower, seek professional help. A snorkel or boom truck can be utilized to inspect, and correct the cause of the binding. Never leave the cable slack hoping the tower will free itself. If it does come free it could collapse completely, damaging both the tower and the antenna. All Hy-Gain towers are factory tested (fully extended and retracted) and inspected before being shipped, to insure proper condition.

Winch Maintenance

Routine inspection of the winch and performing preventive maintenance will insure maximum performance and unnecessary repairs.

Check the winch annually. In wet or dirty environments check more frequently.

To increase the life of the winch and for continued smooth performance, grease the gears, reel shaft and handle threads (Item N, BB, and F). Also place a drop of oil on the drive shaft bearings (Items B and L). Refer to the Winch Manual.

CAUTION:

DO NOT OIL OR GREASE THE BRAKE MECHANISM (PRESSURE PLATE).

Protecting the finish of the winch will provide longer service. Wash the winch with water, dry thoroughly, then wipe with light oil or wax.

CHAPTER 4

INSTALLATION INSTRUCTIONS FOR ROTATOR AND MOUNTING PLATE

General

This tower is designed to accept most any style rotator.

The smallest tower section has a removable brace to allow insertion of the rotator and rotator mounting plate.

CAUTION:

The tower must be cranked up high enough to expose the removable bracing. **DO NOT CLIMB THE TOWER!** Place a ladder next to the tower or lay the tower on the ground when installing the rotator.

Rotator Installation

Using the winch, crank the tower high enough to allow the removable brace to clear the top of the second tower section by about 3 feet. You can now either lay the tower down or leave it up in the vertical position. If you leave it in the vertical position, place two short pieces of 2"x 4" lumber in between the braces so the tower will not come down when you reach inside the bracing.

NOTE: If you are installing the Hy-Gain R-300 Rotator, you will not be able to nest your tower completely, doing so may damage the rotator.

- Refer to Figure 15. Loosen the two #10 x 3/4" bolts on each end of the removable brace. Loosen the two #10 locknuts then loosen the two #10 x 3/4" bolts.
 - Slide the brace up and out to remove.
 - For a rotator that installs below the mounting plate follow the steps below and refer to Figure 17.
1. Set the rotator in the tower with the shaft bearing pointing up. If the mast brackets or clamps are attached to the rotator shaft, they must be removed.
 2. Set the rotator mounting plate in the tower so it will set directly on the three stops welded to the inside of each tower leg.
 3. Bolt the rotator to the mounting plate using the mounting bolts supplied with the rotator.
 4. Assemble the rotator-to-mast, mast platform and mast as shown in Figure 17.
 5. Reconnect the removable brace to its original position on tower.

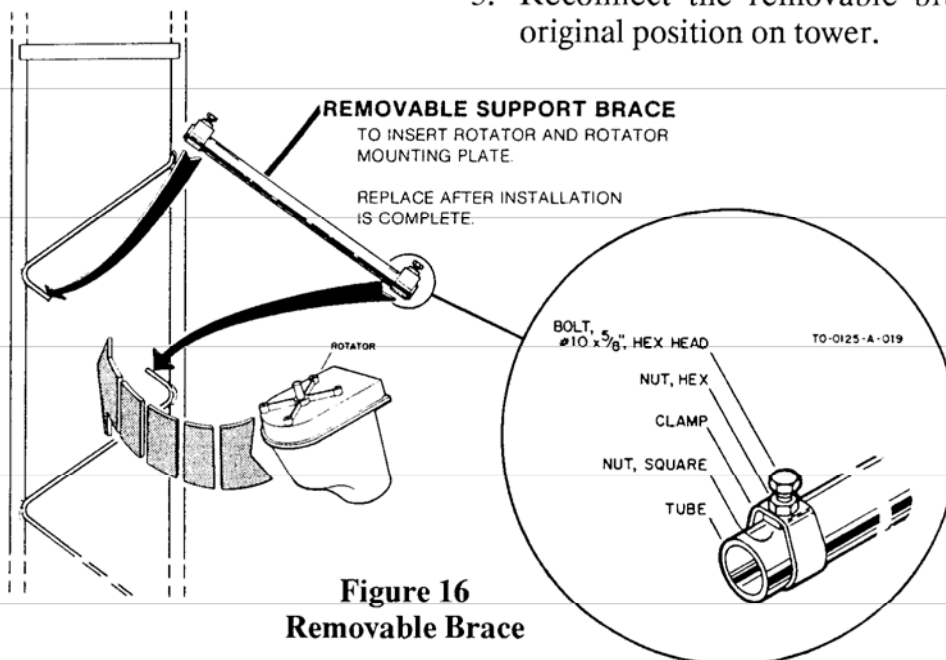


Figure 16
Removable Brace

NOTE: For rotators mounted above the rotator mounting plate, follow these instructions and refer to Figure 18.

1. Insert the rotator mounting plate in the tower so it rests on the mounting plate stops.
2. Install the rotator on the mounting plate. Use the mounting bolts supplied with the rotator.
3. Loosen the mast clamp so the mast can be inserted in the clamp.
4. Tighten the mast clamp around the mast.
5. Mount your antenna on the top of the mast. If you are using coax arms, tie your rotator coax to the coax arms.
6. Connect your coax to the radio equipment.
7. Reconnect the removable brace to its original position on the tower section. Tighten the #10 hardware securely. Tighten the #10 x 3/4" bolts and secure with the #10 hex locknuts.

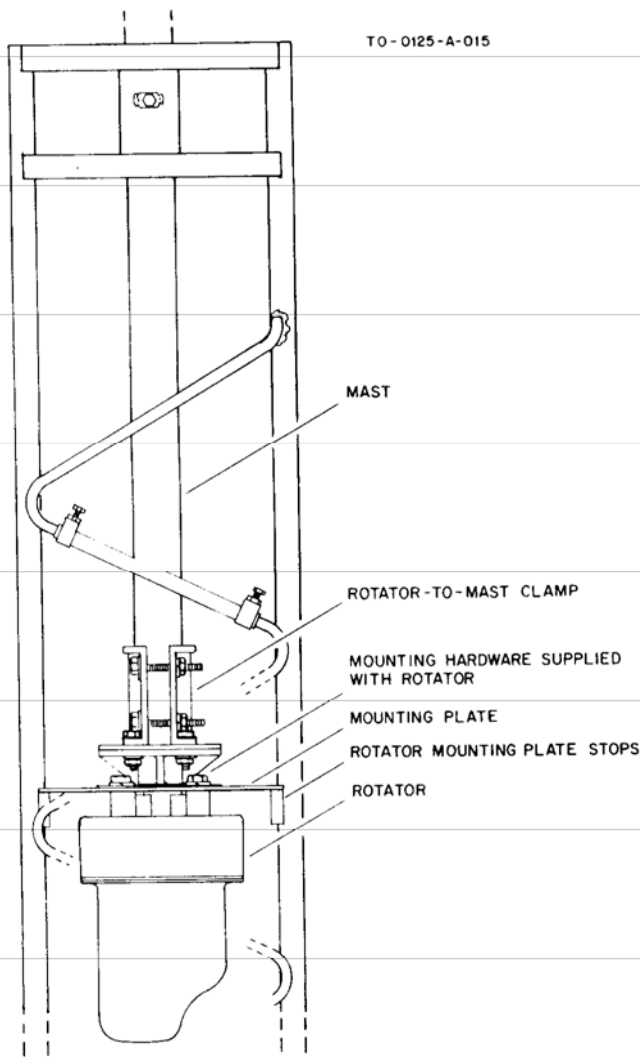


Figure 17
Typical Installation of Rotator mounted
Below Plate

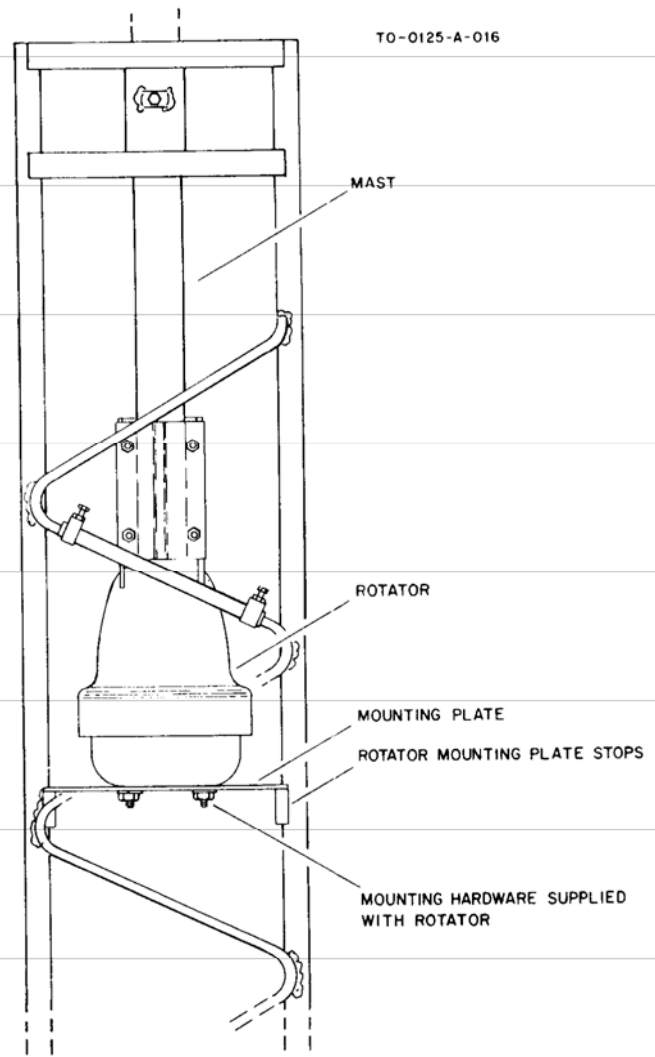


Figure 18
Typical Installation of Rotator Mounted
Above Plate

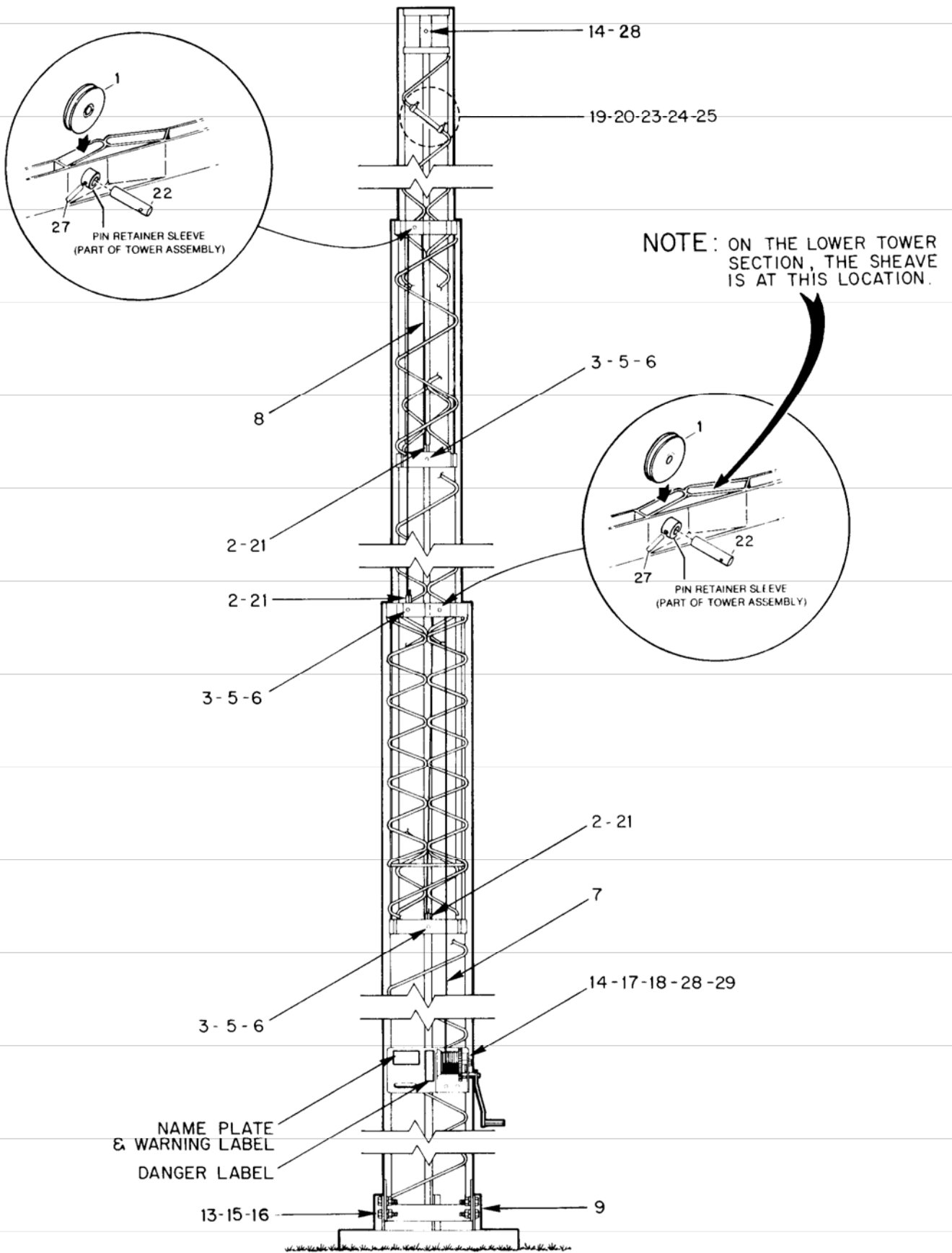


Figure 19
Tower with Call-Outs of All Parts

PARTS LIST

Item Numbers may not necessarily be in numerical sequence and may appear more than one time, depending on how often a part is used or identical parts being placed in different parts packs.

Item No.	Part No.	Description	Qty
1	880112	Tower Assembly, 52 ft., Sections 3, 4, & 5, plated	1
1	871154	Sheave, Cable, 1/2" x 3", with 1/2" oil bushing.....	2
2	350685	Sleeve, Nicopress®, 3/16"	6
3	506865	Bolt, hex head, 1/2"-13 x 1 1/2"	3
4		(Not Used)	
5	556920	Nut, hex, 1/2"-13.....	3
6	567055	Lockwasher, split, 1/2"	3
7	878508	Cable, 3/16" x 39 ft.	1
8	878507	Cable, 3/16" x 20 1/2 ft.	1
9	871094 ^{137.72}	Structure, Foundation.....	1
10	871892	Parts Pack, Product 125-1	1
11	500390	Bolt, 3/8"-16 x 1 1/4"	2
12	380396	Plate, Rotator Support.....	1
13	500116	Bolt, hex head, 3/4"-10 x 2"	6
14	509320	Bolt, hex head, 3/8"-16 x 1"	2
15	557628	Nut, hex, 3/4"-10.....	6
28	558137	Nut, hex jam, 3/8"-16.....	7
29	561295	Lockwasher, split, 3/8"	3
16	567626	Lockwasher, split, 3/4"	6
17	872064	Winch.....	1
18	567105	Flatwasher, 3/8"	3
19	170427	Tube, Brace, 1/2" x 9"	1
20	165123	Clamp, Compression, 1/2" I.D.....	2
21	356788	Thimble, Rope, 3/16"	3
22	380664	Pin, Pulley, 1/2" x 1 9/16", stainless steel.....	2
23	506465	Bolt, hex head, #10-24 x 5/8"	2
24	555362	Nut, square, #10-24.....	2
25	556970	Nut, hex, #10-24	2
26		(Not Used)	
27	590023	Retainer Pin, 5/32" x 7/8"	2