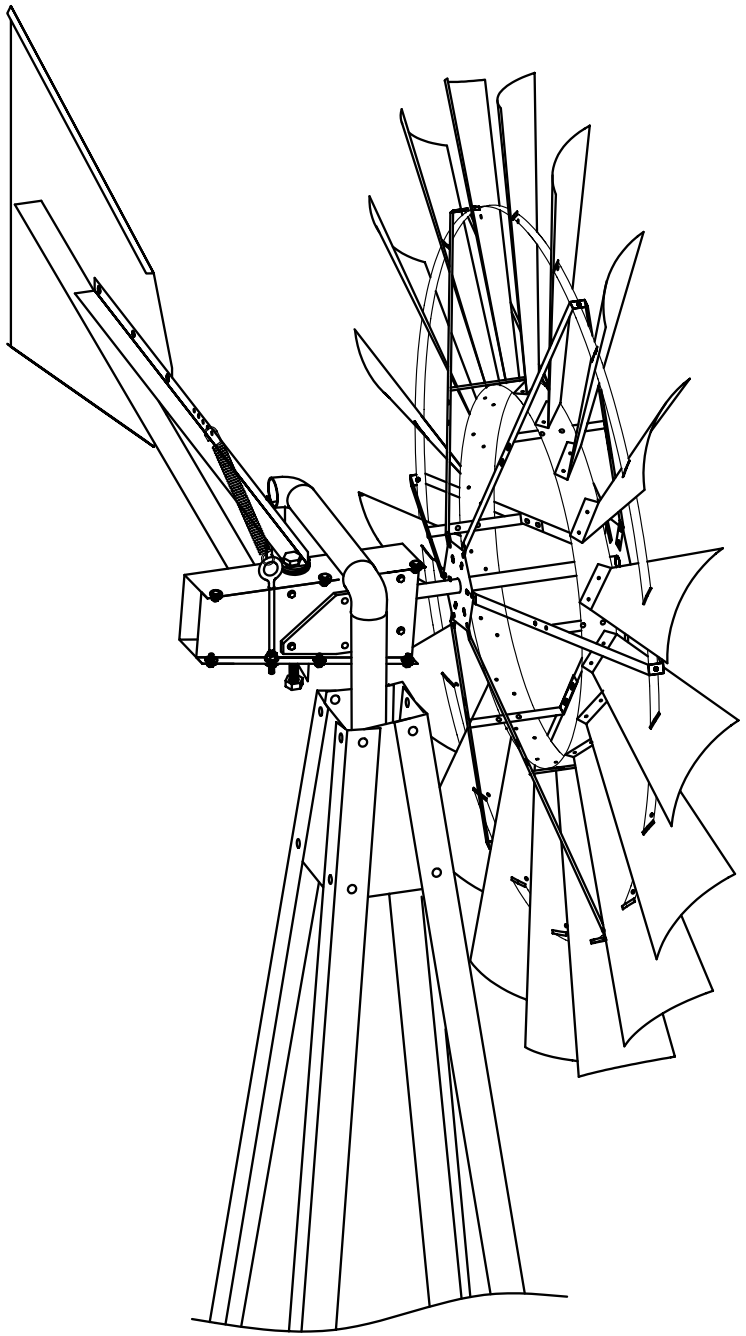
JEWELL
WINDMILLS

INSTRUCTION MANUAL

SEPT 2004



INTRODUCTION

Congratulations on your purchase of the Li'l Jewell windmill. The windmill will add charm and character to your property for years to come. Enclosed are detailed instructions on how to properly assemble your windmill. Please follow these instructions carefully for an easy and safe installation. Following the suggested procedure will help ensure there is no damage during assembly and usage. If you have any questions about the instructions, or plan to deviate from the suggested method contained within, please call the manufacturer for clarification and assistance.

WARNING

The windmill and tower have very sharp edges. Use leather work gloves when handling parts. The windmill is very heavy. The head section weighs nearly 150 pounds and the tower weighs nearly 300 pounds. You will require at least 2 people to assemble the fan head. It is recommended that 4 people assist in raising the tower. Do not attempt to stop the fan from rotating with body parts, simply turn the fan out of the wind until it stops turning.

MAINTANENCE

Regular maintanence is suggested for maximizing the windmill's life. Grease fittings are supplied on the bearings and on the support arm assembly (#5). Per the bearing manufactures recommendations, the bearings should be greases annually. The bearings are greased by the manufacturer and do not require geasing for the first year. Be careful not to overgrease the bearings. It is recommended that the support arm assembly rotating parts be greased when the bearings are being maintained.

WARRANTY

All parts are warrantied for 2 years of normal operation. Normal operation includes: Winds speeds not exceeding 90 MPH. Normal operation does not include: Damage from hail, lightening, earthquake, impinging objects, installation, improper ground support, and any other abnormal use. Damage during installation is not included in the warranty, even if this procedure is followed. It is therefor very important that the installer uses this installation guide for information only and take any additional safety precautions required. Photographs of the damaged parts with an explaination of the damage and cause shall be sent to the manufacturer at the purchaser's expense. If the Manufacturer judges the claim as legitimate, the manufacturer will send the parts to the purchaser at the manufacturer's expense. If the claim does not meet the requirements of the warranty, the customer may purchase parts separately from the manufacturer.

LIST OF PARTS

*** USE IN CONJUCTION WITH PARTS DIAGRAM**

Fan

Part Description	Part Number	Quantity	Package I.D.
Blade	1	18	A
Bridges	2	6	A
Frame Arches	3	6	A
Axle	4	1	A
Support Arm	5	1	A
Base Plate	6	1	A
Base Cover	7	1	A
Bearings	8	2	A
Tail Finn	9	1	A
Top Tail Arm	10	1	B
Bottom Tail Arm	11	1	B
Tail Clip	12	1	A
Spring	13	1	A
Inside Ring	14	2	A
Outside Ring	15	2	A
Clips	16	18	A
Vert suprt shaft	17	1	A
Fasteners			
3/8" x 1" Flanged Hex Bolts	*19*	*7*	A
3/8" Flanged Hex Nuts	*20*	*7*	A
1/4" x 1/2" Hex bolts - UNF	*21*	*78*	A
1/4" Nylock nuts - UNF	*22*	*78*	A
3/8" UNF Nylock Nuts	*23*	*7*	A
10-32 nylock nuts	*24*	*72*	A
3/8" x 1-1/4" Hex Bolts UNF	*26*	*7*	A
10-32 x3/8" truss machine screws	*27*	*72*	A
3/8 x 10" Eye Bolt	*28*	*1*	A
1/4" x 2" Eye Bolt	*29*	*1*	A
5/8" x 10" Hex Bolt	*30*	*1*	A
5/8" Hex Nut	*31*	*2*	A
1/8" Chain Coupling	*117*	*2*	A
No. 2 Machine Chain	*118*	*5*	A
Chain Swivel Coupling	*120*	*1*	A
1/4" Flat Washers	*123*	*162*	A
5/8" Flat Washers	*124*	*4*	A
1-3/8" Flat Washer	*128*	*1*	A
3/8" Flat Washers	*129*	*7*	A

16' Tower

Part Description	Part Number	Quantity	Package I.D.
Top Column	101	4	C
Bottom Column (16' pattern)	103	4	G
Upper Horz Brace	104	4	C
Lower Horz Brace	105	4	G
Upper Diag	107	8	C
Top Finishing Plates	109	4	F
Shut-off Lever Arm	126	1	G
Bottom Support Plt	127	1	F
Fasteners			
3/8" x 1" Flanged Hex Bolts	*19*	*68*	F (16')
3/8" Flanged Hex Nuts	*20*	*68*	F
Cable Saddle	*110*	*4*	F
1/2"x1-3/4" hex Bolts	*115*	*4*	F
1/2" Hex Nuts	*116*	*4*	F
1/8" Chain Coupling	*117*	*1*	A
1/8" Aircraft Cable	*119*	*9'*	F(16')
Chain Swivel Coupling	*120*	*1*	F
1/2" Flat Washers	*121*	*8*	F
3/4" Flat Washers	*122*	*8*	F
3/8" Flat Washers	*129*	*4*	F

Platform

Part Description	Part Number	Quantity	Package I.D.
Platform Wood	113	1	H
Platform Support Beams	112	2	H
Fasteners			
3/8" x 1-1/4" Hex Bolt	*25*	*4*	H
3/8" Hex Nuts & 3/8" x 1" Hex	*19 & 20*	*4*	H
2" Wood Screws	*125*	*16*	H

Earth Anchors

Earth Anchors	114	4	J

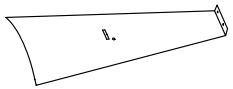
24' Tower

Part Description	Part Number	Quantity	Package I.D.
Top Column	101	4	C
Mid Column	102	4	D
Bottom Column (24' pattern)	103	4	E
Upper Horz Brace	104	4	C
Lower Horz Brace	105	4	D
Erection Brace	106	4	E
Upper Diag	107	8	C
Lower Diag	108	8	D
Top Finishing Plates	109	4	F
Shut-off Lever Arm	126	1	E
Bottom Support Plt	127	1	F
Fasteners			
3/8" x 1" Flanged Hex Bolts	*19*	*96*	F (24')
3/8" Flanged Hex Nuts	*20*	*96*	F
Cable Saddle	*110*	*4*	F
1/2"x1-3/4" hex Bolts	*115*	*4*	F
1/2" Hex Nuts	*116*	*4*	F
1/8" Chain Coupling	*117*	*1*	A
1/8" Aircraft Cable	*119*	*17'*	F(24')
Chain Swivel Coupling	*120*	*1*	F
1/2" Flat Washers	*121*	*8*	F
3/4" Flat Washers	*122*	*8*	F
3/8" Flat Washers	*129*	*4*	F

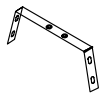
Package Identifier Description Key

Package I.D.	Package Description	Weight	Dimensions
A	*Windmill Head*	120	50x28x8
B	*Tail Arms*	9	54x2x2
C	*16' / 24' Tower Top Section*	73	102x3x4
D	*24' Tower Mid Section*	79	102x3x4
E	*24' Tower Bottom Section*	49	102x3x4
F	*16' / 24' Tower Fasteners*	20	14x8x6
G	*16' Tower Bottom Section*	30	102x3x4
H	*Platform*	30	50x12x8
J	*Earth Anchors*	18	38x12x4

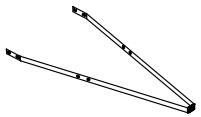
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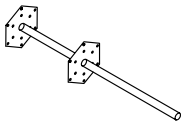
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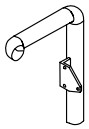
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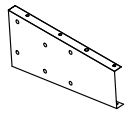
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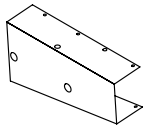
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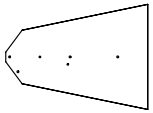
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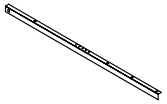
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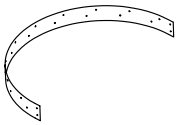


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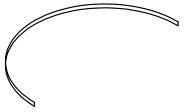
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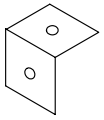
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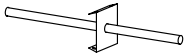
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21



22,23,24



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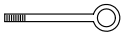
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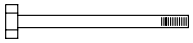
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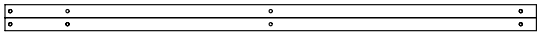
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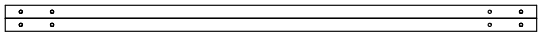
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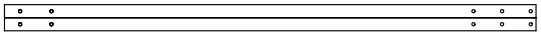
101



102



103



104



(28" LONG)

105



(51" LONG)

106



(73" LONG)

107



108



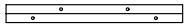
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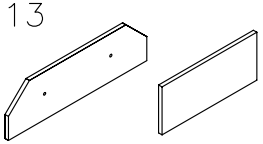
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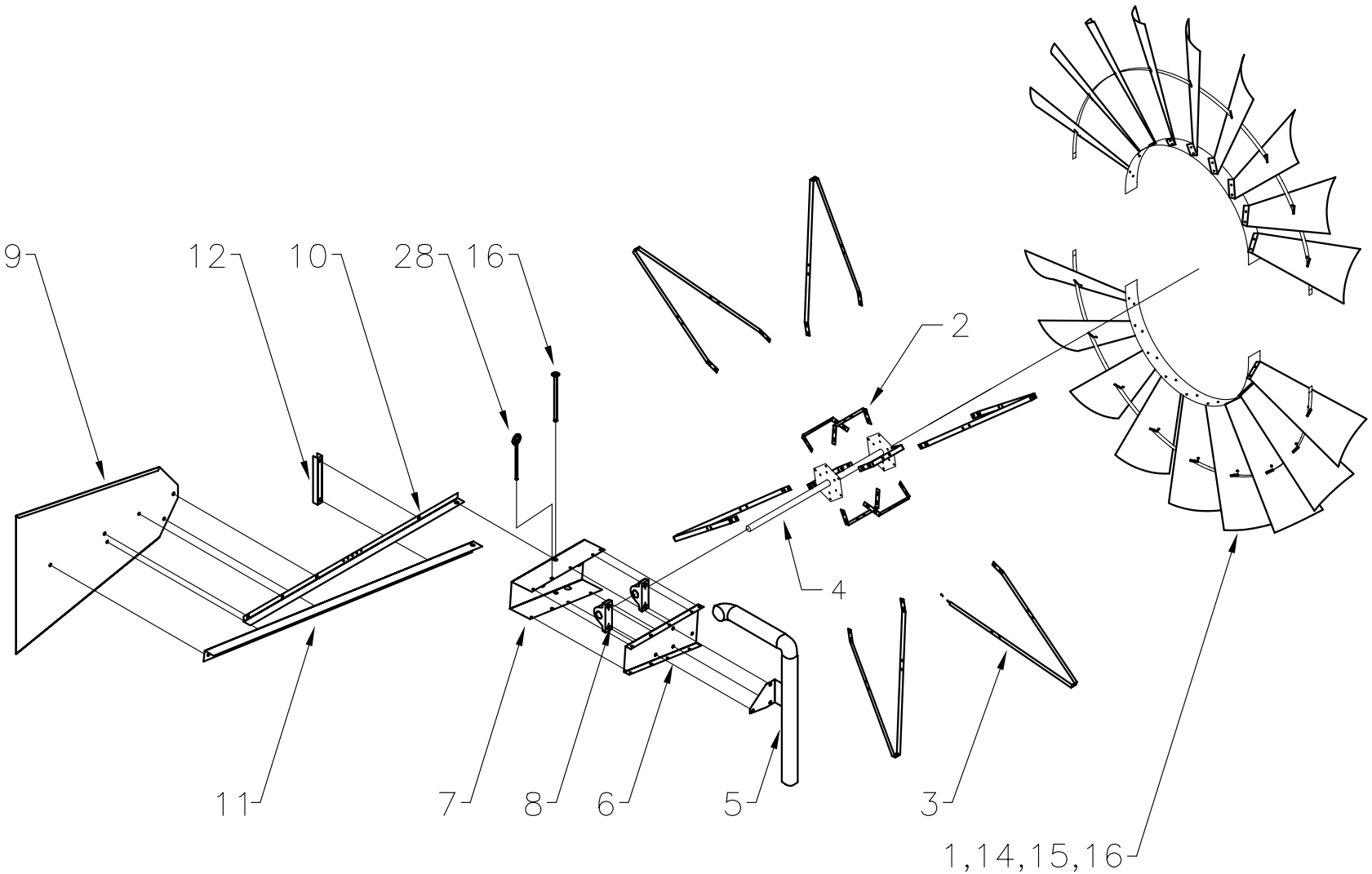
127

PARTS DIAGRAM

USE IN CONJUCTION WITH 'LIST OF PARTS'

.

FAN ASSEMBLY OVERVIEW



STEP 1: OUTSIDE RING

(1) PLACE THE LONG SLENDER 'OUTSIDE SEMI–CIRCULAR RING' (PART 15) ON A FLAT SURFACE.
(2) THE DIAGRAM BELOW LABELS THE HOLES 1 THROUGH 16. HOLES WITH AN 'A' DESIGNATE A HOLE FOR A FRAME ARCH (PART 3)WHICH WILL BE USED IN STEP 7. HOLES LABELLED WITH A 'B' ARE FOR THE BLADES (PART 1). HOLES WITH AN 'E' ARE THE END CONNECTING HOLES.
(3) IF STANDING IN THE CENTER OF THE ARCH, ENSURE THAT THE OVAL HOLES (15E AND 16E) ARE TO THE RIGHT AND THE ROUND HOLES (1E AND 2E) ARE TO YOUR LEFT.
(4) SLIDE NINE BLADES ON FROM EITHER SIDE WITH THE CONCAVE SIDE FACING COUNTER CLOCK WISE, AND THE TABS AT THE BLADE BOTTOM POINTING CLOCKWISE. MOVE THE BLADES SO THAT THEY ARE EVENLY SPACED AND ARE NEAR THE HOLES LABELLED WITH A 'B'.

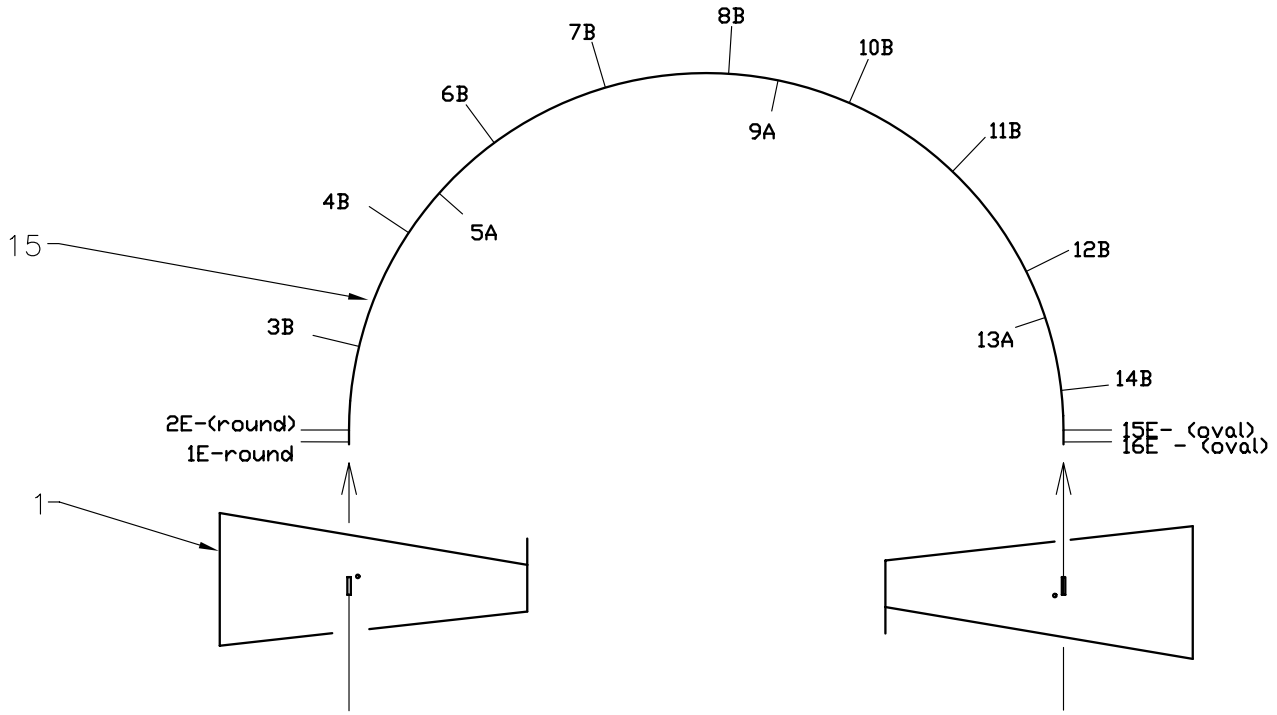
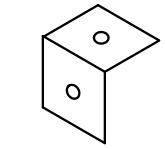


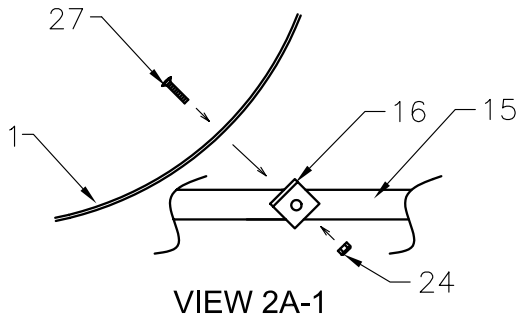
FIGURE 1 Layout of holes around Outside ring (Part 15) Semi–Circular Ring (OSCR)

STEP 2: ATTACH FAN BLADES

(1) BOLT THE CONNECTING TABS (PART 16) TO THE BACK SIDE (CONVEX SIDE) OF THE BLADES (PART 1) USING THE SMALL HOLE NEAR THE SLOT IN THE BLADES. INSERT THE BOLT (PART 27) FROM THE BLADE CONCAVE SIDE THEN THOUGH THE CONNECTING TAB. BOLTS SHALL FACE THE UNUSED TAB LEG 'OUTWARD' TOWARDS THE OUTSIDE RING.
(2) BOLT THE UNUSED LEG OF THE CONNECTOR TABS TO THE OUTSIDE RING (PART 15). INSURE THE CORRECT HOLES ARE USED ON THE OUTSIDE RING. BOLT 'TOWARD' THE CENTER OF THE RING.



CONNECTOR TABS
(PART 16)



VIEW 2A-1

FIGURE 2B

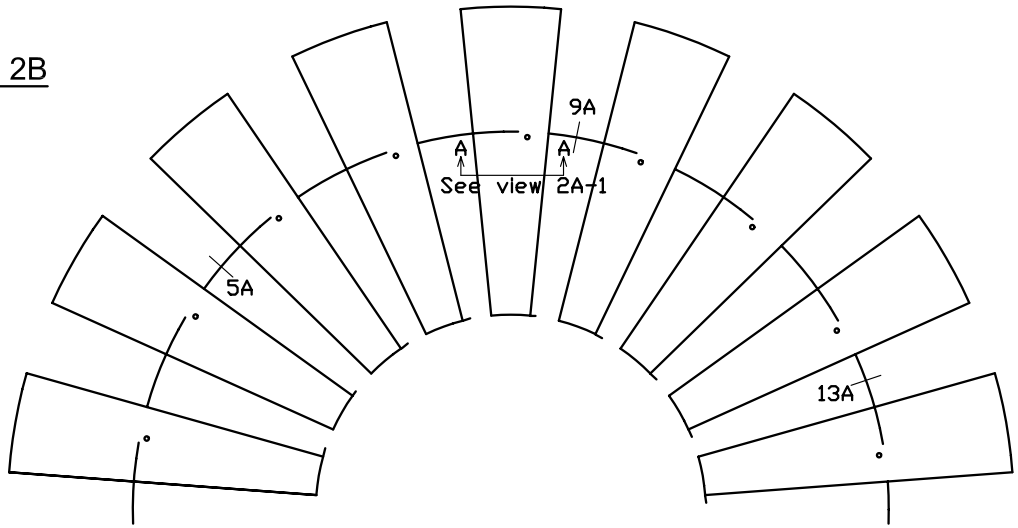


FIGURE 2A

STEP 3: INSIDE RING

(1) PLACE THE INSIDE RING (PART 14) AT THE BASE OF THE BLADES WITH THE OVAL HOLES AT THE RIGHT SIDE. HOLES ON THE INSIDE RING WILL CORRESPOND TO THE HOLES ON THE OUTSIDE RING AND TO THE BASE OF THE BLADES. BOLT THE INSIDE RING TO THE BASE OF THE BLADES FROM THE CENTER OF THE CIRCLE. THE BLADES MAY HAVE TO BE TWISTED SOMEWHAT TO INSERT THE MACHINE SCREWS.

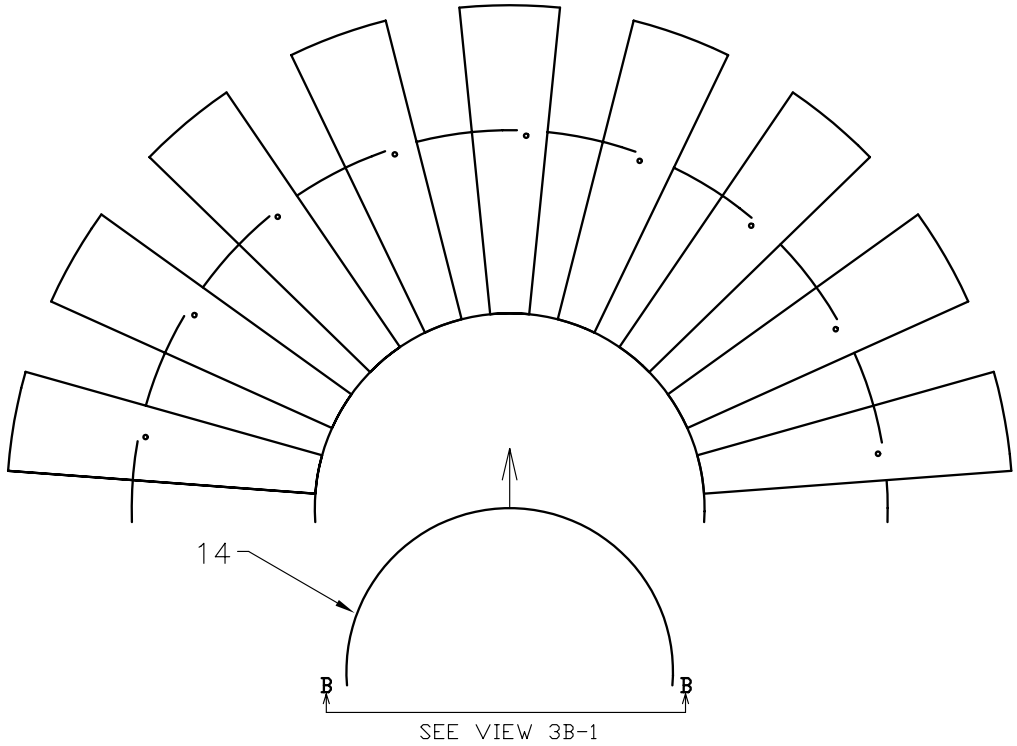
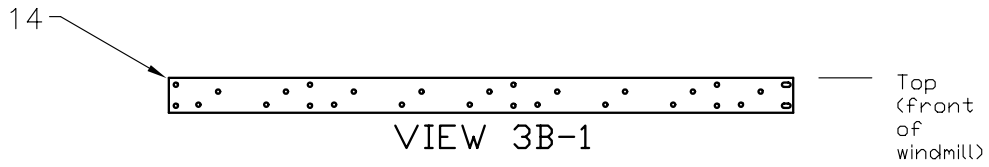


FIGURE 3



STEP 4: FAN HALVES

(A) PLACE FAN HALVES ON LARGE FLAT SURFACE AS SHOWN IN FIGURE 4A.
(B) ATTACH INSIDE RINGS BY INSERTING BOLTS FROM THE CENTER OF THE FAN AS SHOWN IN FIGURE 4B.
(C) ATTACH OUTSIDE RINGS BY INSERTING BOLTS TOWARD THE RING CENTER AS SHOWN IN FIGURE 4C.
(D) FORCE RINGS TO BE PARALLEL AND TIGHTEN ALL NUTS AND BOLTS BEFORE PROCEEDING TO STEP 5.

FIGURE 4A

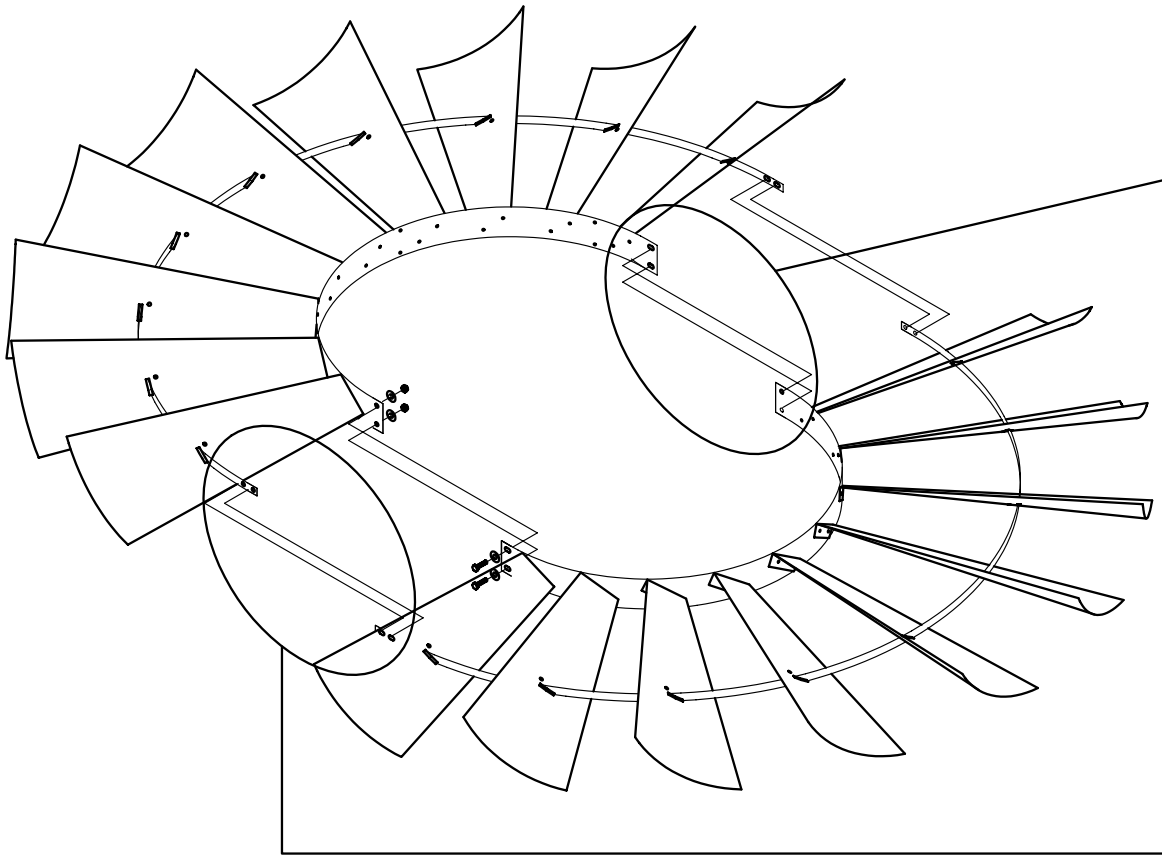


FIGURE 4B

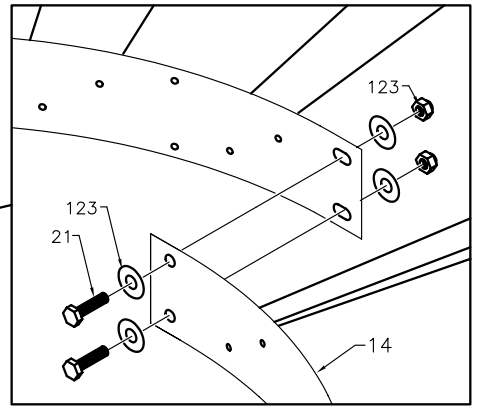
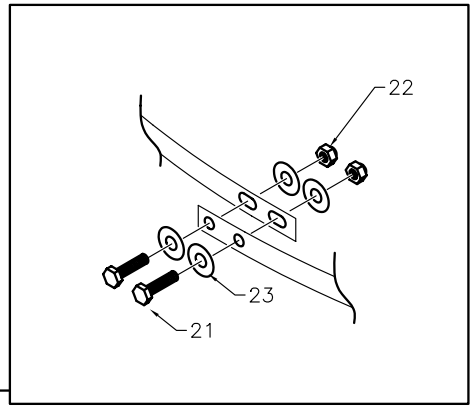


FIGURE 4C



STEP 5: SUPPORT ARM

(9) THE TOWER STAND WILL ALSO HAVE TO BE CONNECTED TO THE BASE PLATE WITH 3/8" NUTS AND BOLTS AS SHOWN BELOW. TIGHTEN THE BOLTS ARE TIGHT AS POSSIBLE.

FIGURE 5A - UNASSEMBLED

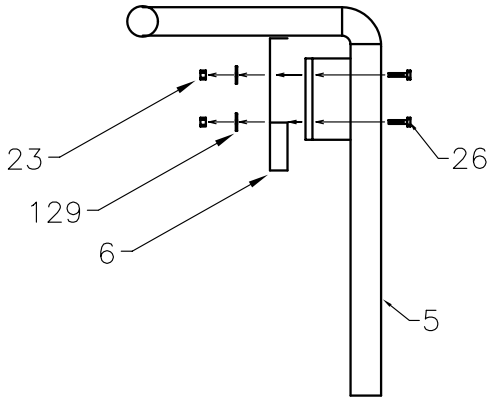
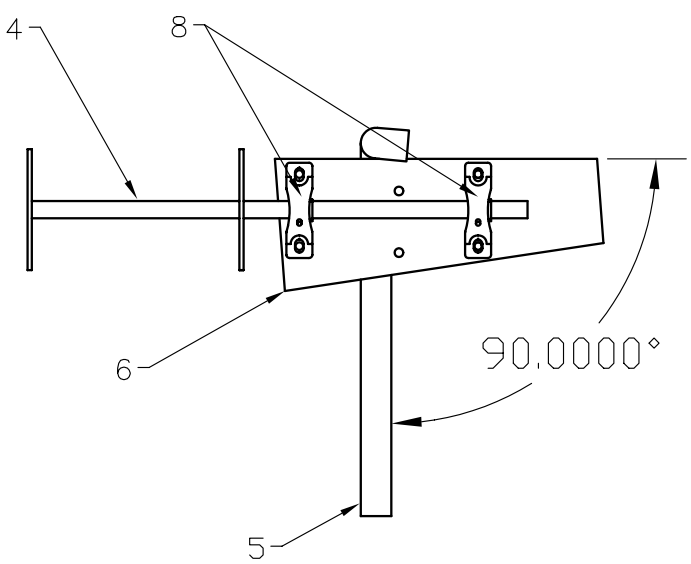


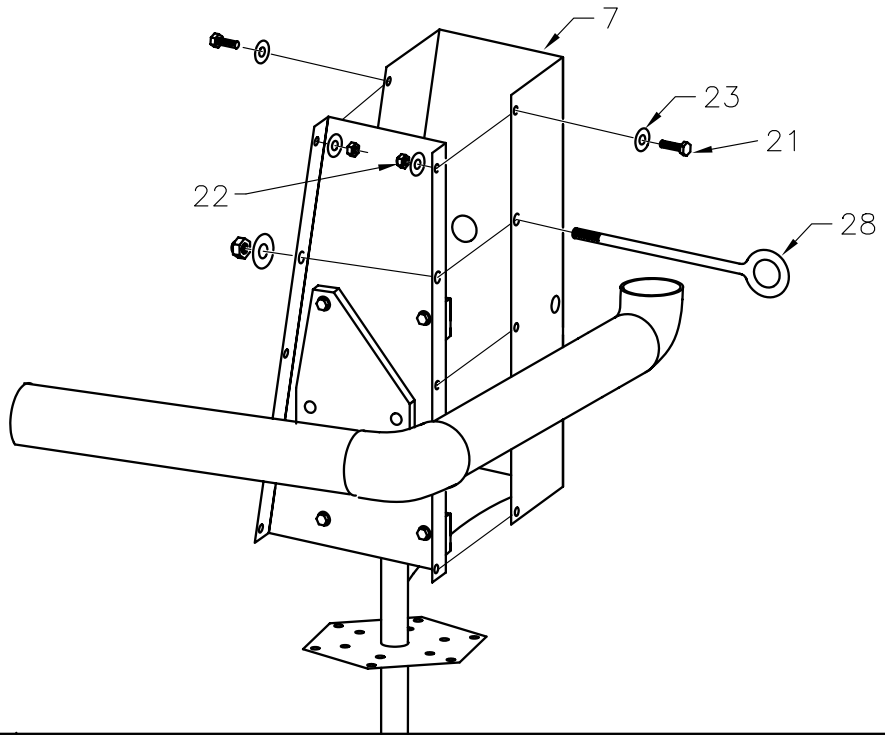
FIGURE 5B - ASSEMBLED



STEP 6: BASE COVER

(A) BOLT COVER (#7) UP TO BASE PLATE (#6) AS SHOWN IN FIGURE 6.
(B) TIGHTEN 1/4" NUTS (#21) AND BOLTS (#22) AND INSTALL 3/8"x8" EYE BOLT (#28) WHICH WILL LATER SUPPORT THE TAIL SPRING (#13).
(C) TIGHTEN BOLTS BEFORE PROCEEDING TO THE NEXT SECTION.

FIGURE 6



STEP 7: FRAME ASSEMBLY

(A) STAND ASSEMBLED FAN HALVES VERTICALLY. SECURE FAN AGAINST A SOLID OBJECT.
(B) ATTACH ALL 6 FRAME BRIDGES (#2) BY INSERTING 1/4" BOLTS (#21) FROM THE CENTER OF THE FAN AS SHOWN IN FIGURE 7B AND 7C. ENSURE LONG SIDE IS FACING FRONT SIDE OF FAN.
(C) ATTACH ALL 6 FRAME ARCHES AS SHOWN IN FIGURE 7B AND 7C. INSERT 1/4" BOLTS (#21) FROM THE OUTSIDE SURFACE AS TO HIDE NUTS (#22) FROM VEIW AND SHOW THE BOLT HEADS.
(D) BOLT ON FAN AXLE (#4) AS SHOWN IN FIGURE 7B.
(E) EACH OF THE 6 ASSEMBLED FRAME LEGS APPEAR AS SHOWN IN DETAIL 7C.
(F) TIGHTEN ALL NUTS AND BOLTS.

FIGURE 7A

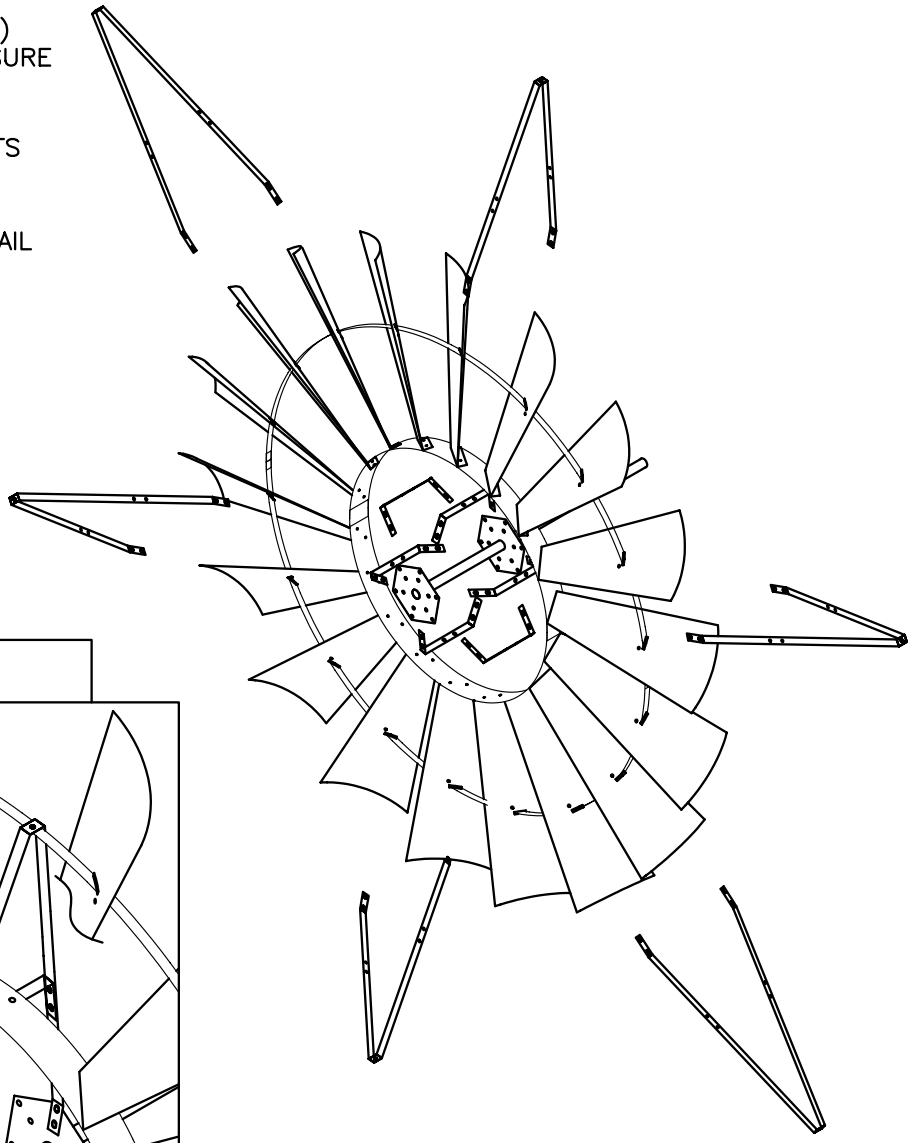


FIGURE 7B

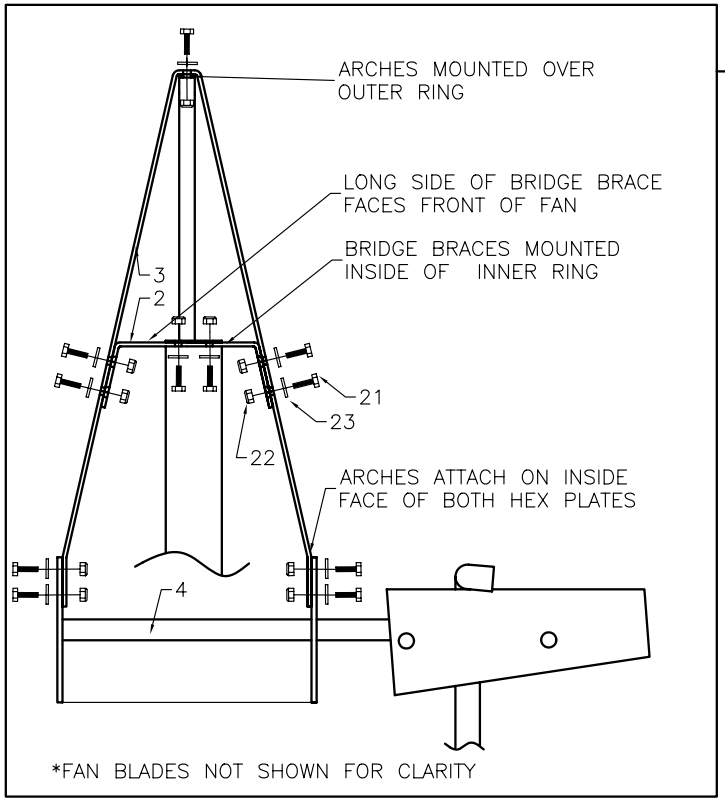
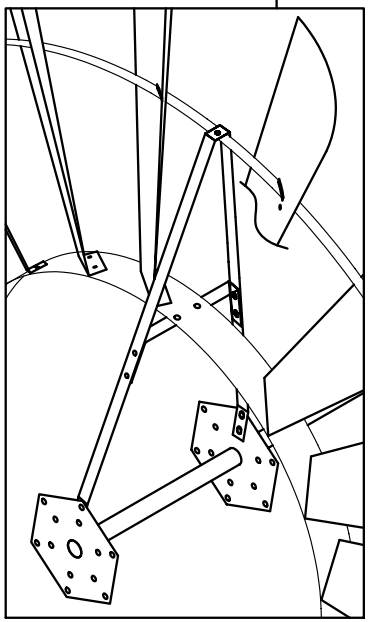


FIGURE 7C

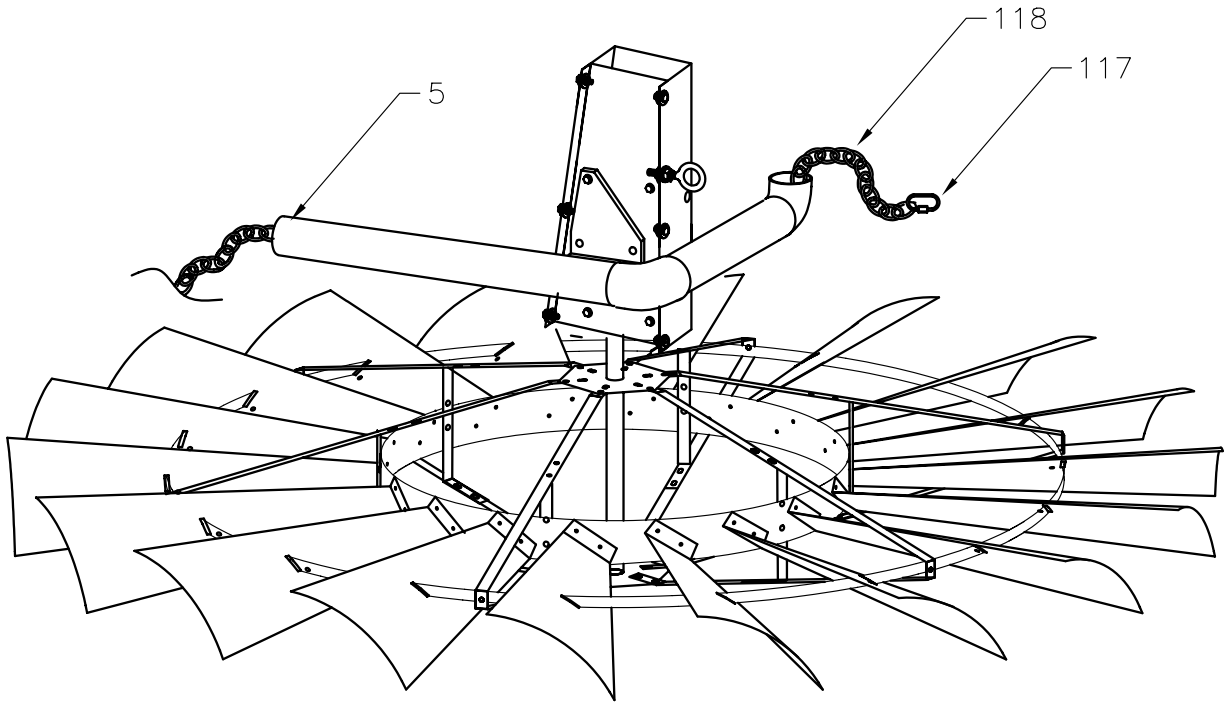


STEP 8: FEED CHAIN

(A) THIS IS A PERFECT OPPORTUNITY TO FEED THE CHAIN THROUGH THE SUPPORT BRACKET PIPE AS SHOWN IN FIGURE 8.

(B) TEMPORARILY CLIP THE END TO THE EYE–BOLT SO THAT THE CHAIN DOES NOT RUN OUT OF THE PIPE.

FIGURE 8



STEP 9A: 16' TOWER ASSEMBLY

(A) THE TOWER IS HEAVY (~200 POUNDS). ASSEMBLE THE TOWER AT THE LOCATION WHERE IT IS INTENDED TO BE ERECTED.

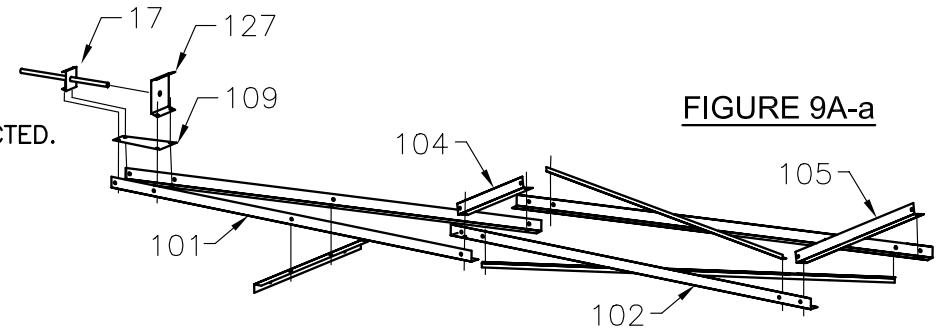


FIGURE 9A-a

(B) THE FOUR TOWER FACES ARE IDENTICAL. EACH FACE IS ASSEMBLED AS SHOWN ON FIGURE 9A–a AND 9A–b. INSERT BOLTS (#19) FROM THE OUTSIDE OF THE TOWER SO THAT THE NUTS (#20) ARE HIDDEN FOR ASTHETICS.

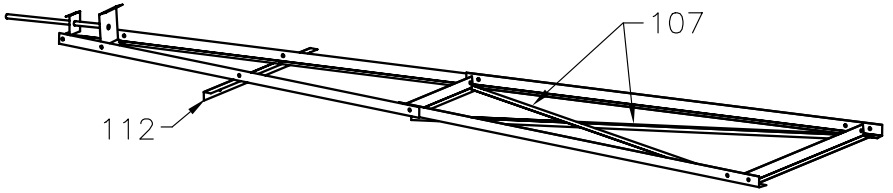


FIGURE 9A-b

(C) THE ASSEMBLED FACE SHOULD APPEAR AS FIGURE 9A–b. AFTER ONE FACE IS COMPLETED, CONTINUE TO ADD TO THE FIRST SECTION (FACED DOWN) UNTIL ALL SECTIONS ARE COMPLETED AS SHOWN IN FIGURE 9A–c.

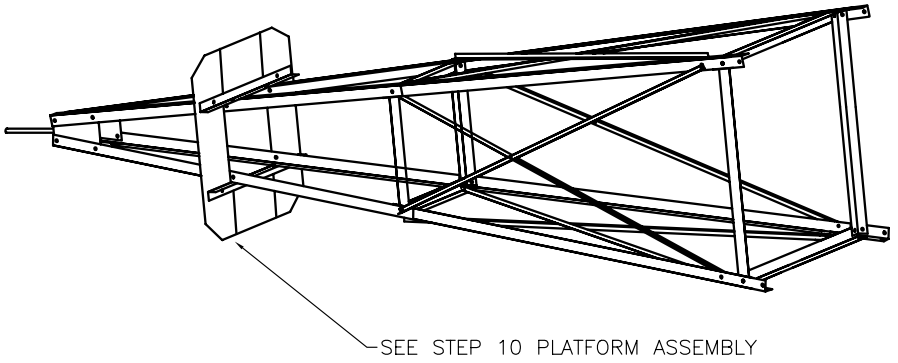


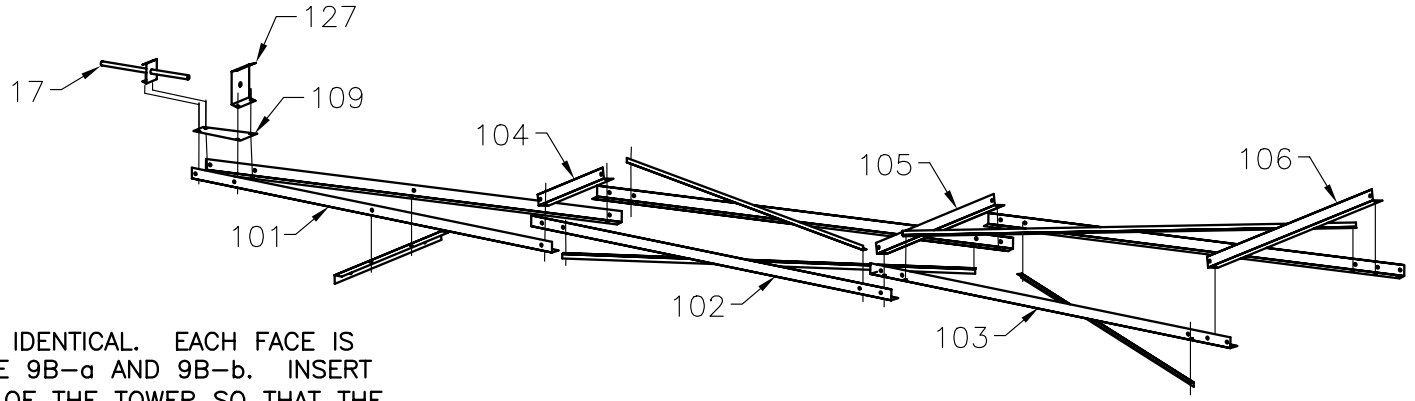
FIGURE 9A-c

(D) TIGHTEN BOLTS BEFORE PROCEEDING TO THE NEXT SECTION.

STEP 9B: 24' TOWER ASSEMBLY

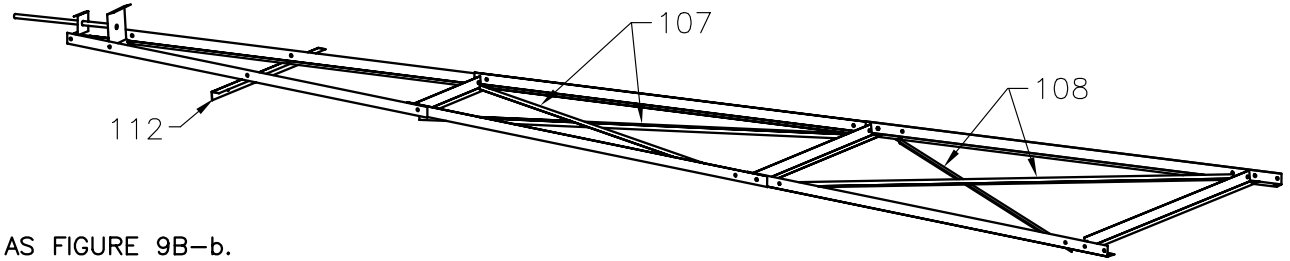
(A) THE TOWER IS HEAVY (~300 POUNDS). ASSEMBLE THE TOWER AT THE LOCATION WHERE IT IS INTENDED TO BE ERECTED.

FIGURE 9B-a



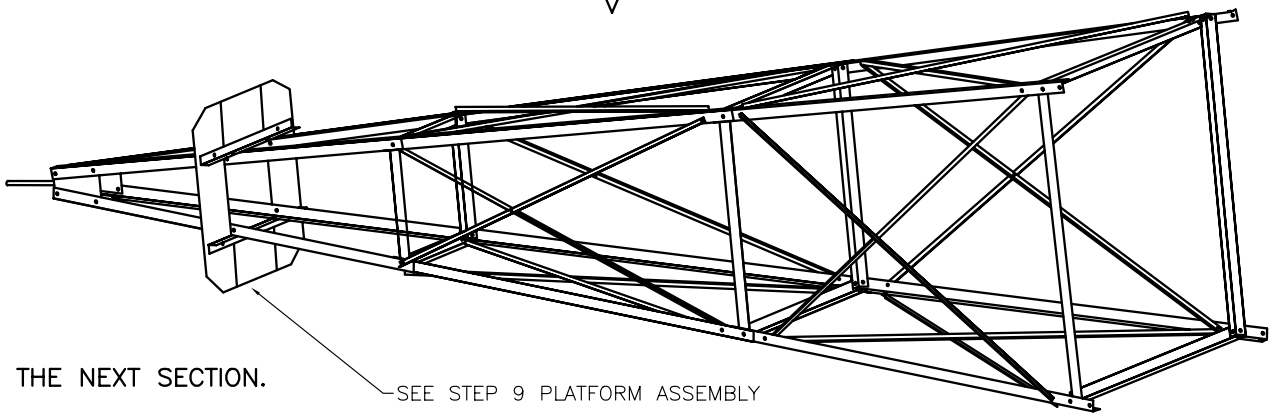
(B) THE FOUR TOWER FACES ARE IDENTICAL. EACH FACE IS ASSEMBLED AS SHOWN ON FIGURE 9B–a AND 9B–b. INSERT BOLTS (#19) FROM THE OUTSIDE OF THE TOWER SO THAT THE NUTS (#20) ARE HIDDEN FOR ASTHETICS.

FIGURE 9B-b



(C) THE ASSEMBLED FACE SHOULD APPEAR AS FIGURE 9B–b. AFTER ONE FACE IS COMPLETED, CONTINUED TO ADD TO THE FIRST SECTION (FACED DOWN) UNTIL ALL SECTIONS ARE COMPLETED AS SHOWN IN FIGURE 9B–c.

FIGURE 9B-c



(D) TIGHTEN BOLTS BEFORE PROCEEDING TO THE NEXT SECTION.

STEP 10: PLATFORM

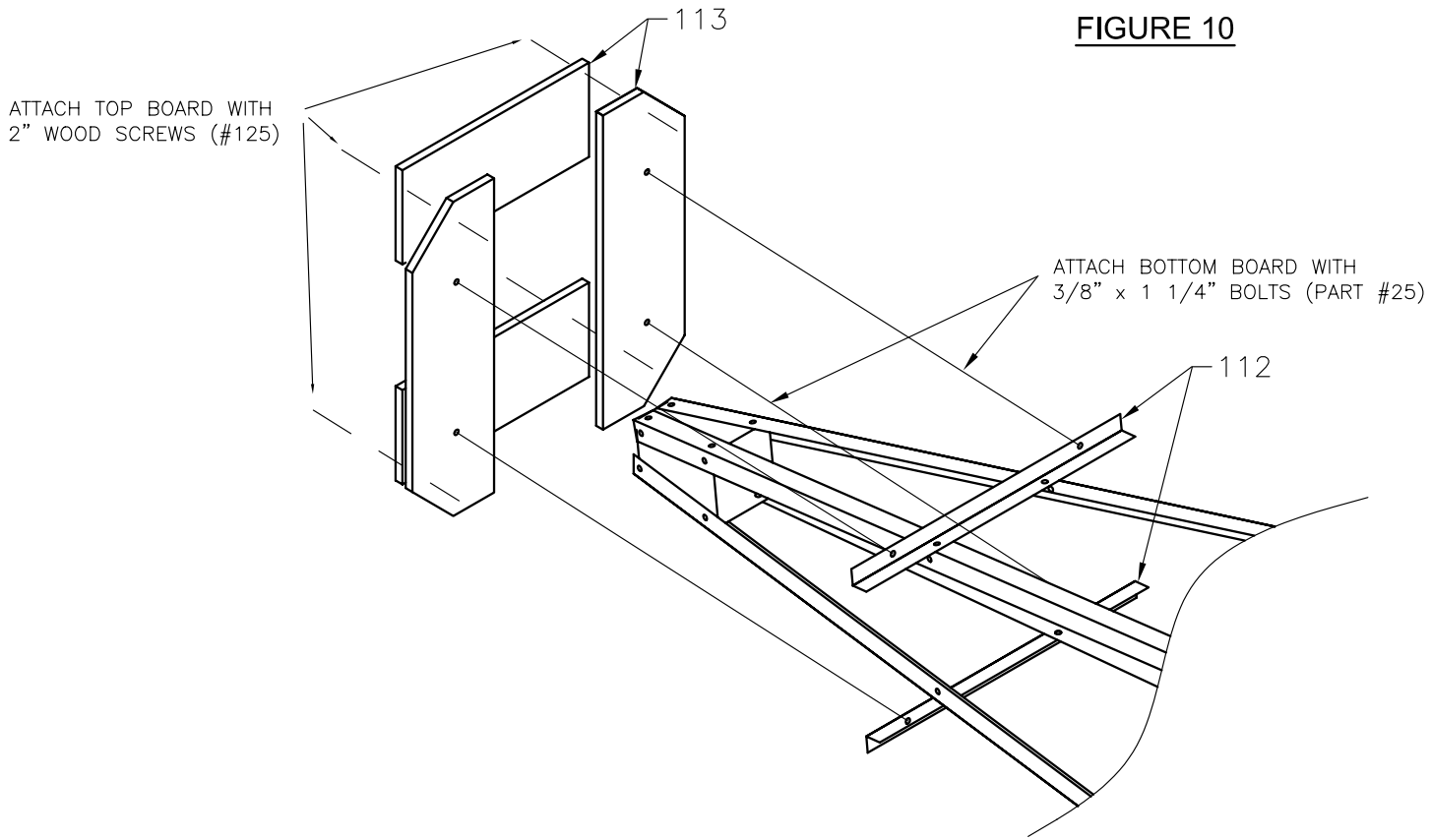
(A) THIS SECTION IS ONLY APPLICABLE FOR THOSE WHO PURCHASED THE OPTIONAL PLATFORM.

(B) PROP TOWER TOP END ON A SAW HORSE (NOT INCLUDED) TO ELEVATE PLATFORM AREA (SEE STEP 13, FIGURE 13 FOR ILLUSTRATION)..

(C) BOLT ON THE BOTTOM PLATFORM PLATES. INSERT BOLTS (#25) FROM THE TOP OF THE TOWER TO THE BOTTOM OF THE TOWER (THROUGH THE WOOD FIRST). TIGHTEN NUTS (#20) TO SINK THE BOLT HEAD INTO THE WOOD SO THAT THE TOPS ARE FLUSH WITH WOOD SURFACE.

(D) ATTACH THE TOP PLATES WITH 2" WOOD SCREWS (#125) ON THE TOP SIDE OF THE BOTTOM PLATES. INSERT THE SCREWS FROM TOP TO BOTTOM. BEFORE SCREWING, LINE UP THE CORNERS OF THE TOP AND BOTTOM PLATES. SEE FIGURE 10.

FIGURE 10



STEP 11: EARTH ANCHORS

(A) IF THE WINDMILL IS TO BE PLACED ON UNCOMPACTED SOIL, SAND, OR OTHER UNSUITABLE SURFACE. THE INSTALLER SHALL DETERMINE AN ALTERNATIVE ANCHORING METHOD—SEE STEP 12.

(B) MARK THE GROUND WHERE THE ANCHORS (#114) ARE TO BE EMBEDDED. MEASURE THE LOCATIONS AS PER FIGURES 11B AND 11C (WHICHEVER APPLIES). THE ANCHOR EYES SHALL JUST FIT INSIDE OF THE TOWER LEGS AS SHOWN IN FIG.11D. CHECK THE LOCATION AGAINST THE ACTUAL TOWER LEG SPANS.

(C) TURN THE EARTH ANCHORS IN THE GROUND (CLOCKWISE) WITH A POLE THROUGH THE EYE OF THE ANCHOR. UNTIL THE ONLY THE ANCHOR EYE EXTENDS OUT OF THE SOIL.

(D) TURN THE ANCHORS UNTIL THE HEIGHTS ARE LEVEL AND AS CLOSE TO THE GROUND AS POSSIBLE. USE A CARPENTERS LEVEL (NOT INCLUDED) FOR THIS TASK. DOUBLE CHECK SPACING. TIP: AN OBJECT PLACED IN THE MIDDLE AS A REFERENCE BASE HEIGHT IS HELPFUL.

(E) BOLT TWO TOWER LEGS THAT ARE ON THE GROUND TO THE ANCHOR EYES (FIGURE 11D).

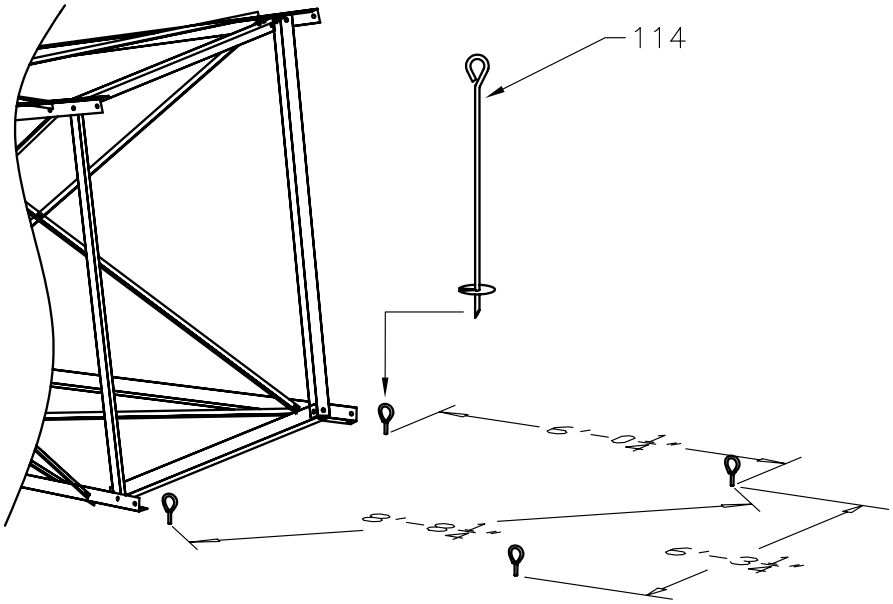


FIGURE 11A

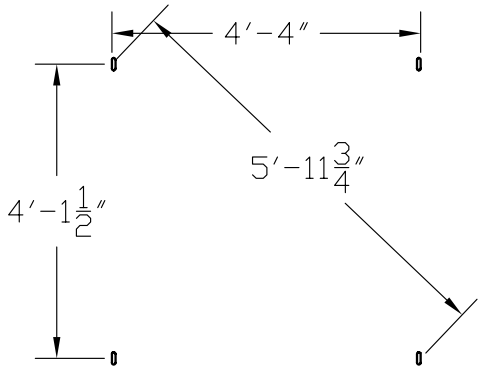


FIGURE 11B - 16' TOWER

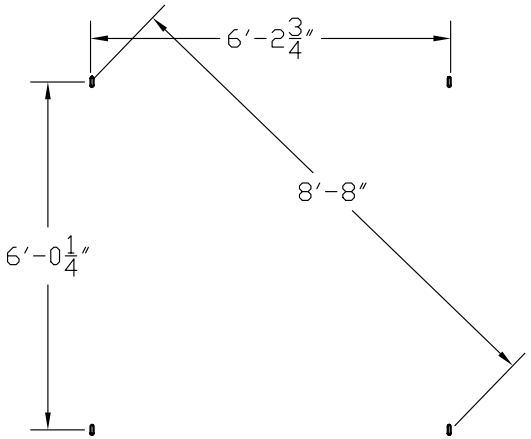
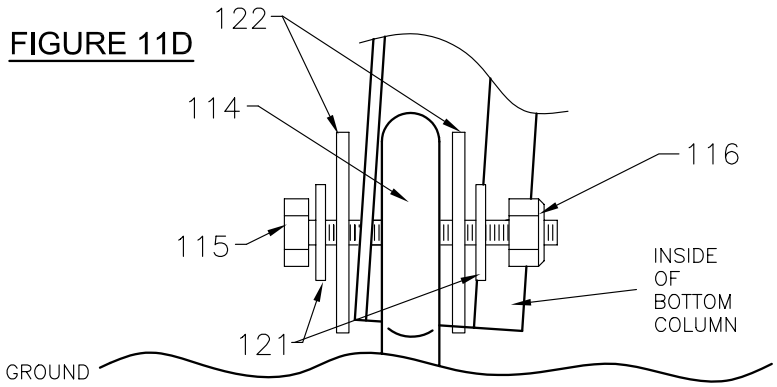


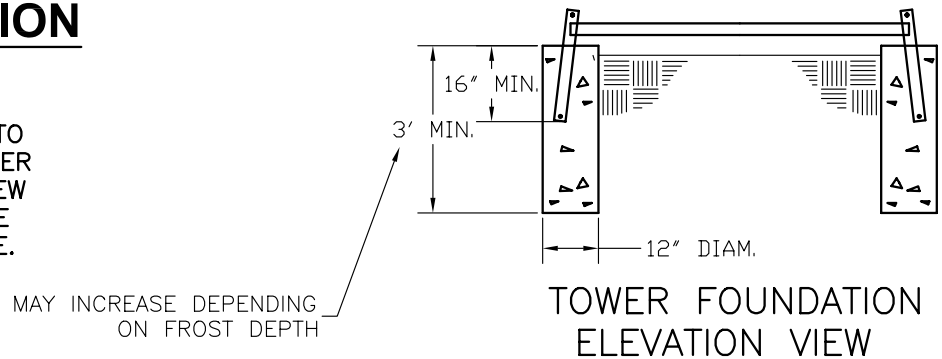
FIGURE 11C - 24' TOWER

FIGURE 11D



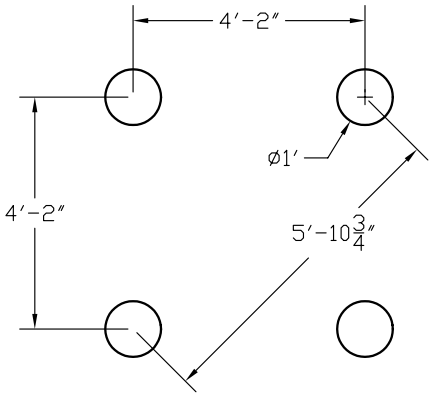
STEP 12: CONCRETE OPTION

(A) AN ALTERNATIVE TO EARTH ANCHORS IS TO BUILD THE BASE SHOWN BELOW TO THE TOWER BEFORE ERECTING, THEN JUST PLACE THE NEW BASE INTO THE CONCRETE. AFTER CONCRETE HARDENS, PLACE THE TOWER ONTO THE BASE.



TOWER FOUNDATION ELEVATION VIEW

FIGURE 12A - 16' TOWER



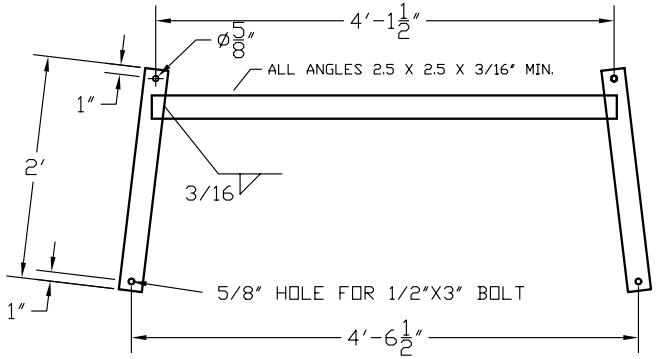
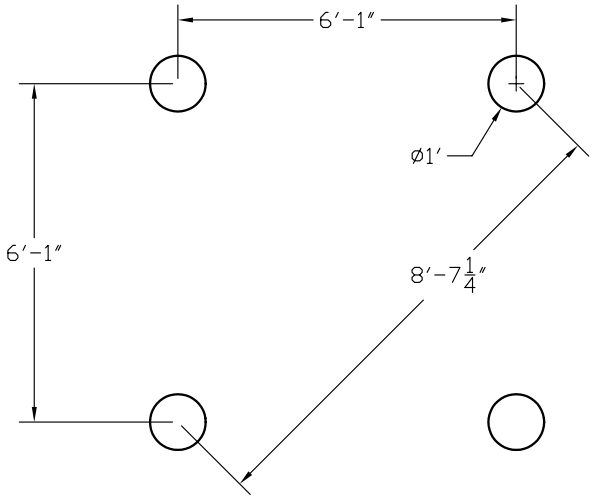
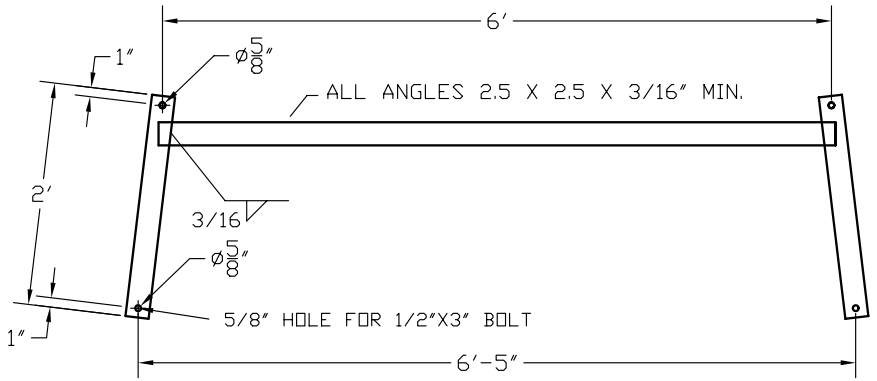


FIGURE 12B - 24' TOWER





TOWER FOUNDATION PLAN VIEW

TOWER FOUNDATION BASE FRAME DETAIL

STEP 13: PROPING TOWER

(A) PLACE THE SAW HORSE UNDERNEATH THE TOWER AS CLOSE TO A HORIZONAL BRACE AS POSSIBLE AS SHOWN IN FIGURE 13.

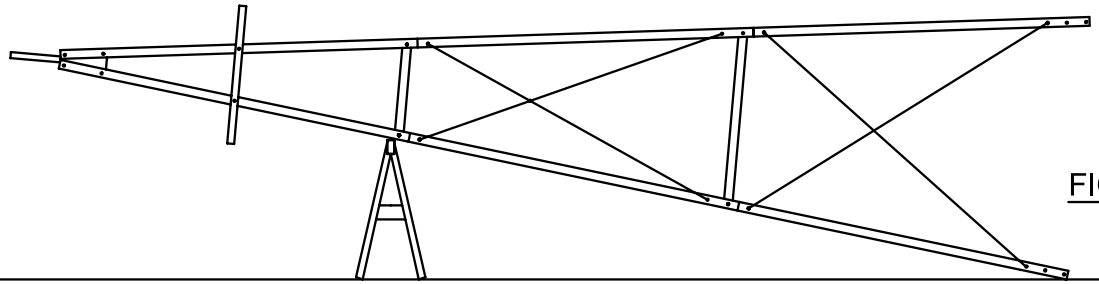


FIGURE 13

STEP 14: ERECTION STILT

(A) IN ORDER TO ERECT THE WINDMILL AND TOWER AS DESCRIBED IN STEP 13, AN 'ERECTION STILT' IS PROPOSED. THE STILT RECOMMENDED IS CONSTRUCTED FROM 2 SPRUCE 2"X4"X16' POSTS AND ONE 2"X4"X6 POST. THESE SECTIONS ARE DRILLED AND BOLTED TOGETHER (3/8" BOLTS AND WOOD NOT PROVIDED) AS SHOWN IN FIGURE 14. ALTERNATIVELY, A CRANE OR BOOM TRUCK CAN BE USED TO ERECT THE TOWER.

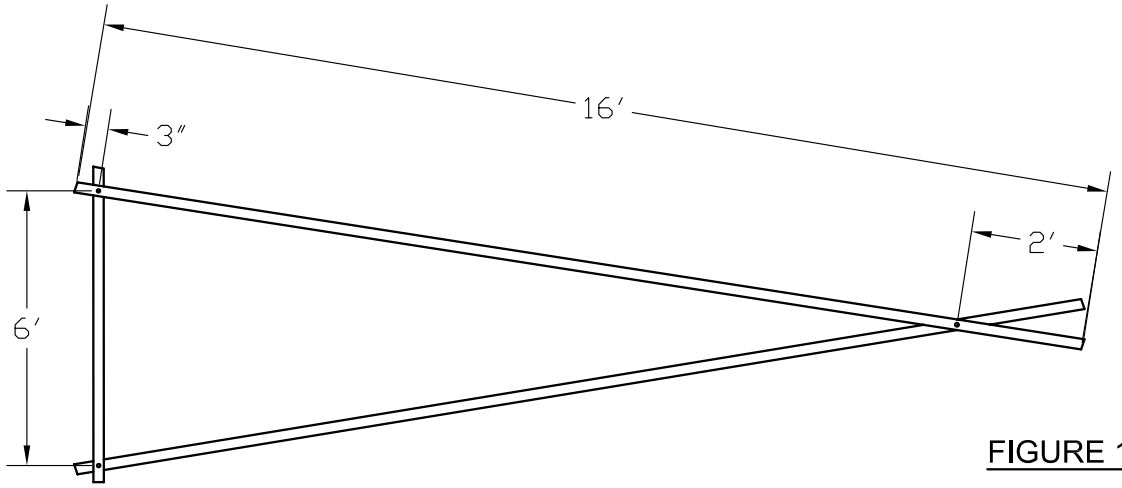
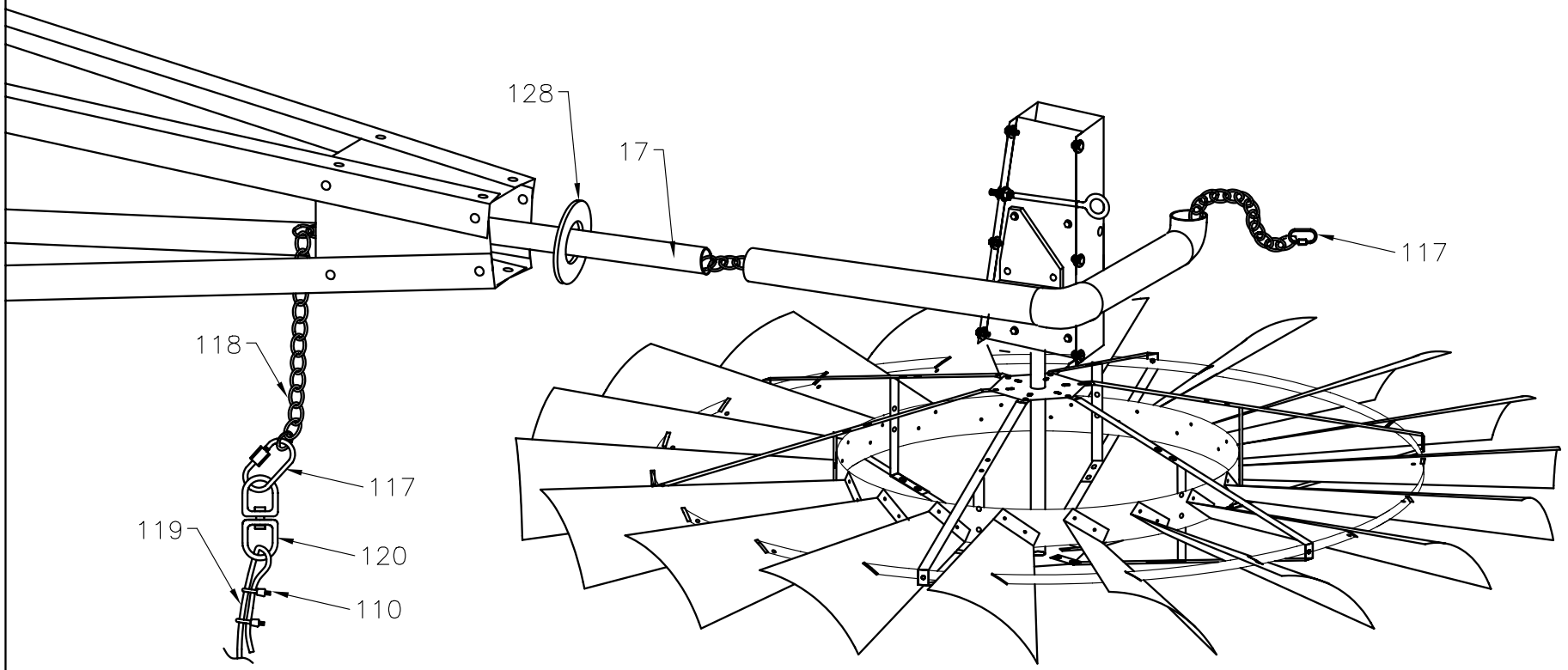


FIGURE 14

STEP 15: TOWER MOUNT

(A) APPLY GREASE TO THE SUPPORT PIPE (#17).
(B) SLIDE WEAR WASHER (#128) OVER SUPPORT PIPE..
(C) LEADING WITH THE CHAIN, SLIDE SUPPORT ARM ASSEMBLY (#5) OVER THE TOWER SUPPORT PIPE (#17). SEE FIGURE 15 FOR ILLUSTRATION.
(D) ENSURE THAT THE FAN BLADES DO NOT INTERFERE WITH THE TOWER LEGS AT ALL ORIENTATIONS.
(E) ONCE THE 5' SECTION OF CHAIN IS FEED THROUGH, JOIN THE REMAINING LENGTH OF CHAIN WITH THE CHAIN LINK (PART 117), SWIVEL (PART 120), AND THE TOWER CABLE (PART 119).

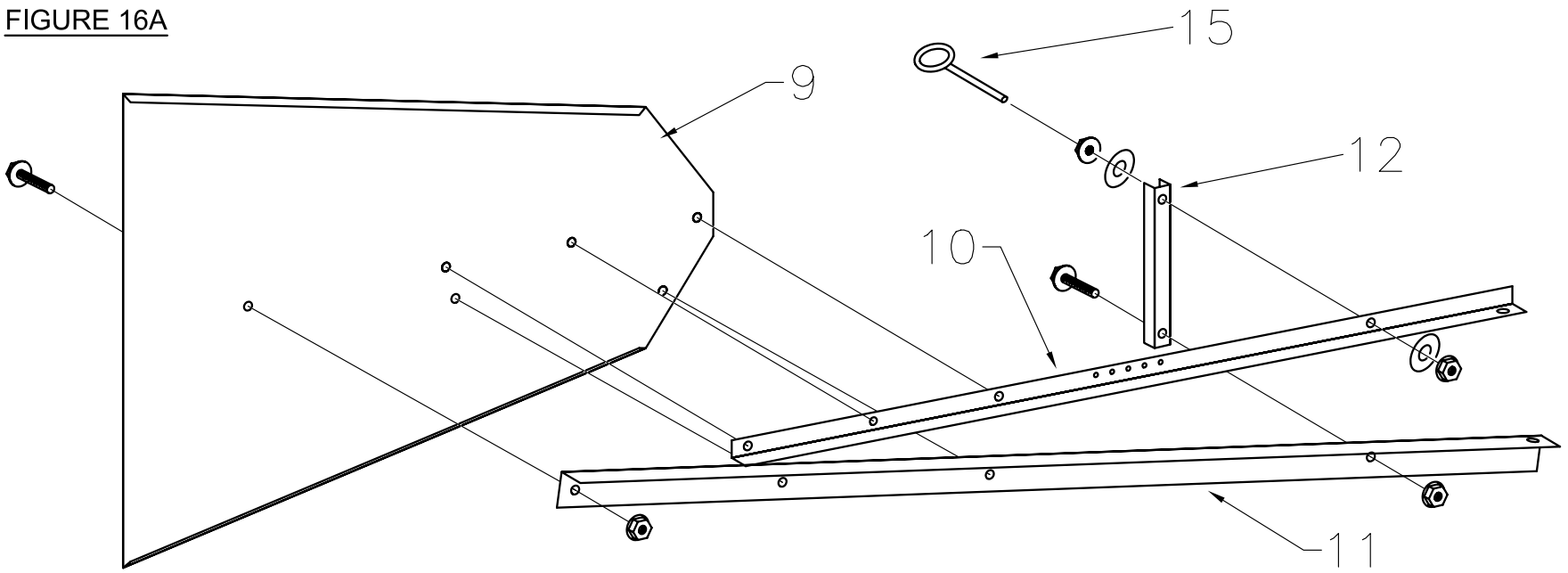
FIGURE 15



STEP 16: TAIL SECTION

(A) ATTACH PARTS 10 AND 11 (TAIL ARMS) TO THE TAIL FIN (#9) USING 3/8" NUTS (#20) AND BOLTS (#19). INSERT BOLTS IN FROM FRONT SIDE OF TAIL SKIN. SEE FIGURE 16A FOR ILLUSTRATION.
(B) ATTACH TAIL WEB (#12) USING A 3/8 NUT & BOLT (#20&19) ON THE BOTTOM END AND 1/4" x 2" EYE BOLT (#29) ON TOP (FIGURE 16A). FLAT WASHERS (PART 23) ARE REQUIRED ON BOTH SIDES OF THE ARM TO ACCOMODATE THE OVERSIZED HOLES.

FIGURE 16A



(C) THE ASSEMBLED TAIL SECTION SHOULD APPEAR AS SHOWN IN FIGURE 16B.
(D) FIRMLY TIGHTEN ALL NUTS AND BOLTS BEFORE PROCEEDING TO STEP 17.

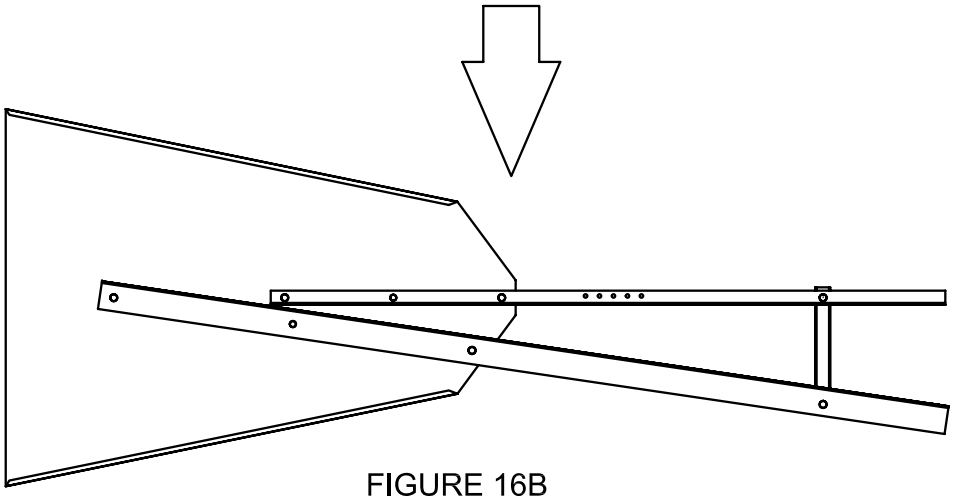
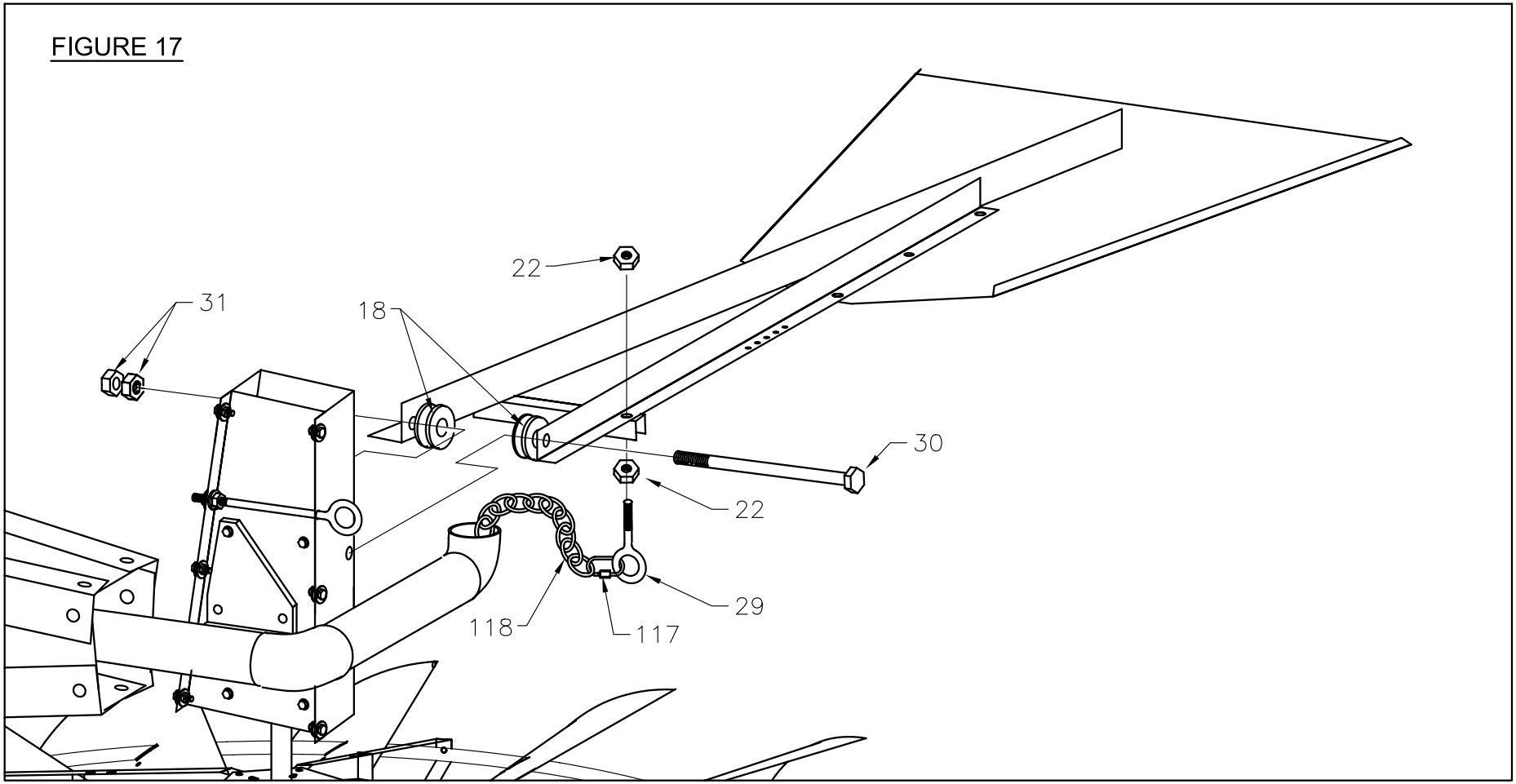


FIGURE 16B

STEP 17: ATTACH TAIL SECTION

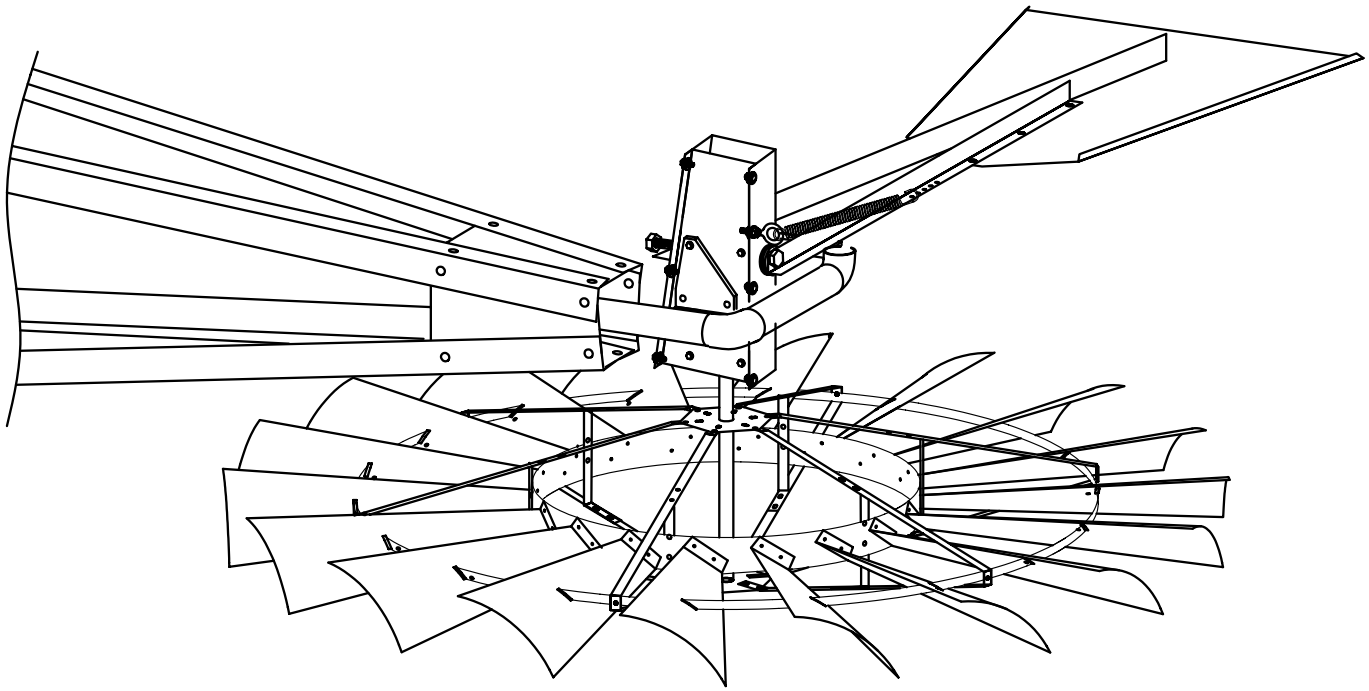
(A) SLIDE ASSEMBLED TAIL SECTION (AS COMPLETED IN STEP 16) OVER TOP OF BASE COVER (#7).
(B) INSERT 10"x5/8" BOLT (#30) THROUGH THE FOLLOWING ITEMS IN THE ORDER LISTED: TOP ARM, 1 OR 2 5/8" FLAT WASHERS, TOP OF BASE COVER, BOTTOM OF BASE COVER, 1 MORE FLAT WASHERS AND THEN BOTTOM TAIL SUPPORT ARM (SEE FIGURE 17).
(C) DOUBLE NUT BOTTOM OF 5/8" TAIL PIVOT BOLT. TIGHTEN TOGETHER, BUT NOT AGAINST THE BASE COVER BOX.
(D) ATTACH CHAIN TO THE TOP END OF THE TAIL SUPPORT WEB TO THE EYE BOLT (#29) WITH THE SAFETY CLIP.
(E) EXTEND TAIL STRAIGHT OUT AND ATTACH SPRING (#13). THE 'CLOSED' END OF THE SPRING ATTACHES TO THE 3/8" EYE BOLT AND THE OPEN END TO A HOLE ON THE UPPER TAIL ARM.
(F) ENSURE TAIL SWINGS FREELY WITHOUT INTERFERENCE WITH THE BASE COVER (#7).

FIGURE 17



STEP 18: COMPLETED HEAD

THIS IS HOW THE COMPLETED HEAD SHOULD LOOK BEFORE THE TOWER IS ERECTED:



STEP 19A: ERECTION (16' TOWER)

(A) BEFORE PROCEDING WITH STEP 19, ENSURE THAT ALL NUTS AND BOLTS ARE TIGHT. THE TOWER SHOULD BE PLACED ON SAW HORSES AS SHOWN BELOW. ALSO, THE TWO TOWER LEGS ON THE GROUND SHOULD BE LOOSELY ATTACHED. A CRANE CAN BE USED AS AN ALTERNATIVE TO THIS METHOD.

(B) TIE THE ROPE OR CHAIN TO ERECT THE TOWER AROUND THE LOWER TWO LEGS THE PLATFORM SUPPORT ANGLE AS SHOWN IN FIGURE 19A–1. TENSIONS REQUIRED TO SUCCESSFULLY HOIST THE TOWER FOR THE LAYOUT SHOWN. THE INSTALLER SHALL ENSURE THAT THE HARDWARE WORKING LOADS WILL BE ABLE TO SUPPORT THE LOADS GIVEN IN FIGURE 19A–1.

(C) ENSURE ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF THE TOWER BASE BY A 30' RADIUS FROM THE BASE.

(D) PULL THE ROPE OR CHAIN (NOT INCLUDED) WITH EQUIPMENT THAT IS CAPABLE OF PULLING WITH THE FORCE SPECIFIED (FIGURE 19A–1) IN A GENTLE MANNER. CONTINUE TO PULL AS THE TOWER GOES THROUGH THE MOTIONS SHOWN IN FIGURE 19A–1 THROUGH THE DIAGRAMS IN FIGURE 19A–2.

FIGURE 19A-1

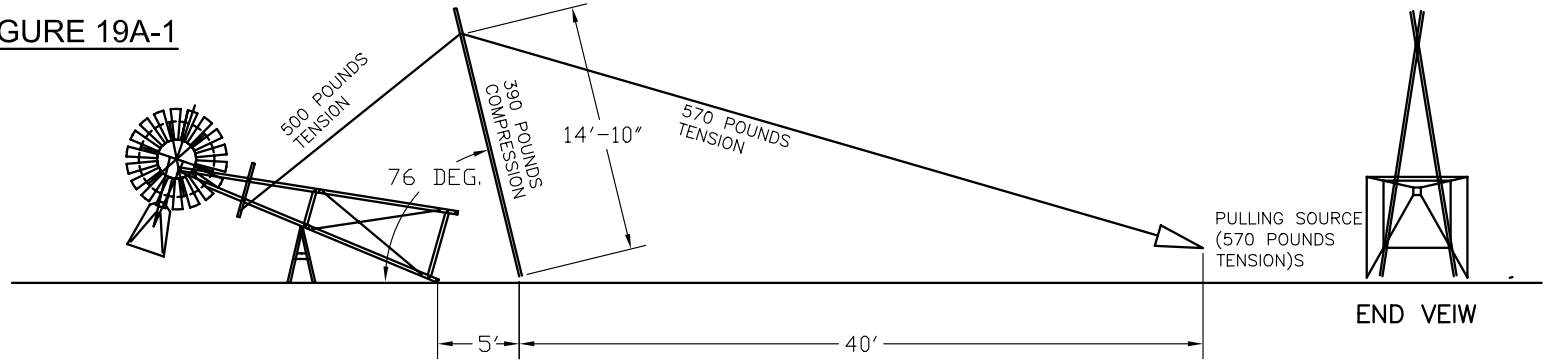
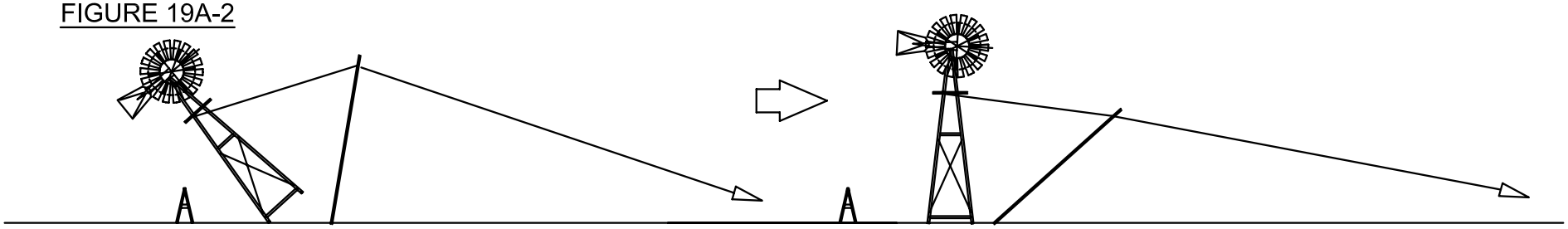


FIGURE 19A-2



(E) BOLT THE TWO REMAINING TOWER LEGS TO THE ANCHOR EYES AS SHOWN IN FIGURE 11D.

(F) TIGHTEN THE BOLTS TO THE EARTH ANCHORS.

STEP 19B: ERECTION (24' TOWER)

(A) BEFORE PROCEDING WITH STEP 19B, ENSURE THAT ALL NUTS AND BOLTS ARE TIGHT. THE TOWER SHOULD BE PLACED ON SAW HORSES AS SHOWN BELOW. ALSO, THE TWO TOWER LEGS ON THE GROUND SHOULD BE LOOSELY ATTACHED. A CRANE CAN BE USED AS AN ALTERNATIVE TO THIS PROCEDURE.

(B) TIE THE ROPE OR CHAIN TO ERECT THE TOWER AROUND THE LOWER TWO LEGS THE PLATFORM SUPPORT ANGLE AS SHOWN IN FIGURE 19B–1. TENSIONS REQUIRED TO SUCCESSFULLY HOIST THE TOWER FOR THE LAYOUT ARE SHOWN. THE INSTALLER SHALL ENSURE THAT THE HARDWARE WORKING LOADS WILL BE ABLE TO SUPPORT THE LOADS GIVEN IN FIGURE 13B–1.

(C) ENSURE ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF THE TOWER BASE BY A 30' RADIUS FROM THE BASE.

(D) PULL THE ROPE OR CHAIN (NOT INCLUDED) WITH EQUIPMENT THAT IS CAPABLE OF PULLING WITH THE FORCE SPECIFIED (FIGURE 19B–1) IN A GENTLE MANNER. CONTINUE PULLING AS THE TOWER GOES THROUGH THE MOTIONS SHOWN IN FIGURE 19B–1 THROUGH THE DIAGRAMS IN FIGURE 19B–2.

FIGURE 19B-1

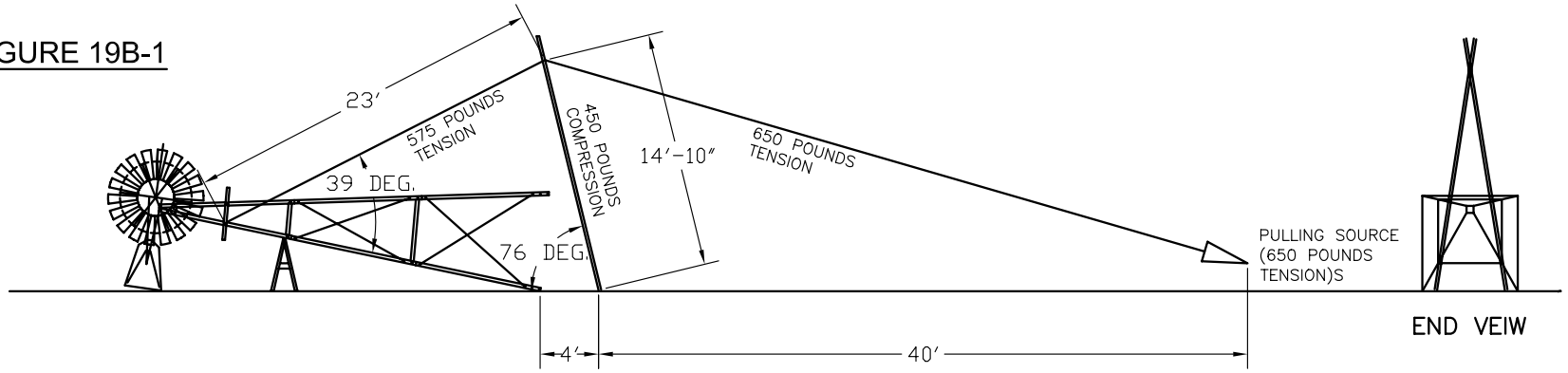
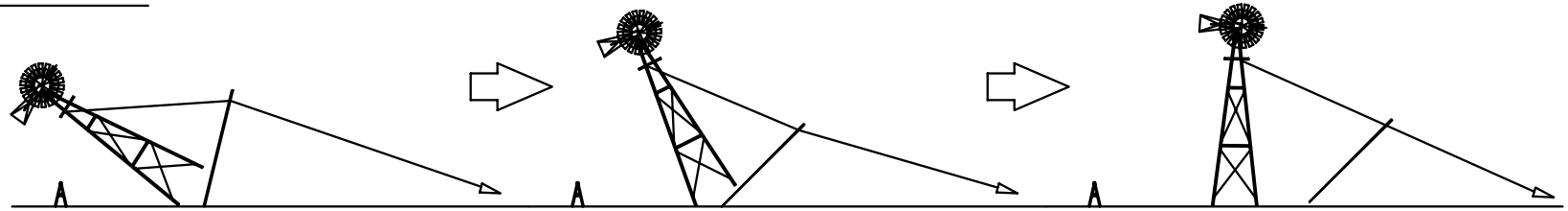


FIGURE 19B-2



(E) BOLT THE TWO REMAINING TOWER LEGS TO THE ANCHOR EYES AS SHOWN IN FIGURE 11D.

(F) TIGHTEN THE BOLTS TO THE EARTH ANCHORS.

STEP 20: OPERATING LEVER

(A) BOLT THE OPERATING LEVER TO THE TOWER AS SHOWN BELOW (FIGURE 20).

(B) WITH THE LEVER HELD HORIZONTAL, AND THE TAIL STRAIGHT OUT, ASSEMBLE THE CABLE HARDWARE TO THE LEVER ARM AS SHOWN IN FIGURE 20.

(C) PULL THE LEVER DOWN AND SLIDE THE LEVER ARM COLLAR OVER THE END TO HOLD THE LEVER ARM PARALLEL TO THE TOWER LEG. THIS TAIL SHOULD BE PULLED COMPLETELY TO THE SIDE WHEN THE ARM IS DOWN. ADJUST CABLE LENGTH ACCORDINGLY.

FIGURE 20

