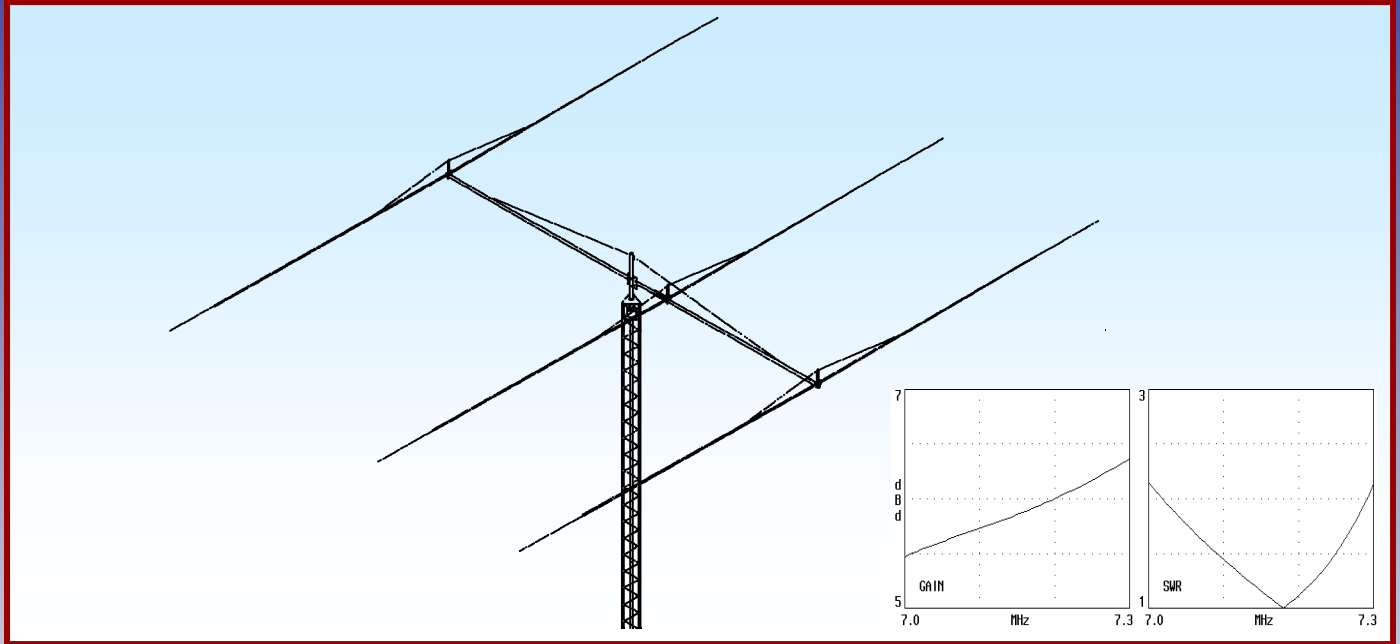




M2 Antenna Systems, Inc.

Model No: 40M3FS



SPECIFICATIONS:

Model	40M3FS	Power Handling	3 kW Others avl.
Frequency.....	7.0-7.3(200 kHz BW)	Boom Length / Dia.....	47' 6" / 3-1/2"
Gain	8.1 dBi	Element Dia.....	2-1/2" to 1/2"
Front to back.....	20 dBd Typical	Turning Radius:.....	44" Ft
Front to side.....	30 TO 45 dB x height	Stacking Distance.....	98' opt.
Beamwidth, AZ	60°	Mast Size.....	2" to 3" Nom.
Feed type.....	SO-239 ('N' Opt.)	Wind area / Survival	17.5 Sq. Ft./100 MPH
Feed Impedance.....	50 Ohms Unbalanced	Weight / Ship Wt.....	180Lbs. / 190Lbs.
VSWR.....	1.3:1 typ. 2:1 Max		

***Subtract 2.14 from dBi for dBd / FS = Free Space**

FEATURES

The 40M3FS is a full sized 40 meter Yagi designed for the various interests and band segments. We provide you the dimensions to optimize the antenna just for your needs. The result is a powerful package of clean mechanical design, quality materials, and outstanding performance that will deliver years of enjoyment on the 40 meter band. Note the pattern and gain of 10 dBd when the antenna is only 50 feet above ground! Gain increases with height above ground and can approach 6 dB more than the free space gain of 6 dBd.

The rugged aluminum boom is 3-1/2 O.D. .23" wall in the middle with 3" x .125 wall tips. Elements diameters start at 2-1/2" x .125 wall 6061-T6 are and are mounted to the boom using machined saddles and stainless hardware. All three elements are supported by a phillystran overhead guy system. The element sections have been computer optimized for at least 100 MPH winds. An overhead guy system is supplied for the boom as well. All hardware except for the U-Bolts is stainless steel. A hairpin type match couples the 5 kW 1:1 balun to the feedline. The antenna is completely DC grounded. Compare performance, construction and durability....you'll agree that this 40 meter Yagi is tops in its class!

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Rev.01

40M3FS ASSEMBLY MANUAL

Tool required: 7/16", 1/2 and 9/16" end wrenches or sockets, #2 Phillip screwdriver and 11/32 nut driver or equivalent.

THE FOLLOWING ARE SIMPLIFIED INSTRUCTIONS. YOU WILL NEED THIS WRITTEN SECTION TO HELP SET THE ORDER OF ASSEMBLY AND TO COVER THE MOST IMPORTANT POINTS.

We have provided Penetrox (zinc paste / anti seize compound) that you should put on the tubes at every joint prior to assembly. It also serves as an antiseize lubricant for all the hardware. Also put just a tiny dab on every thread just before assembly and you should have no trouble with sections binding or bolts seizing during assembly.

1. IF SPACE IS A PROBLEM, we suggest you build just the tips of the elements first. Start with the 1-1/2" sections. If the 1-3/8 sleeves are separate, insert them into the butt of each 1-1/2 inch section, align the holes and insert an eyebolt and nut loosely just to keep things aligned. Now add the 1-1/4" section and its sleeve. Bolt and screw sizes are noted on the element assembly sheet. Continue adding sections until you get the 1/2 inch sections. The REFLECTOR element requires slightly more length so 3/8" diameter tips are required.

2. It may be convenient at this time to determine just what part of the band you want to optimize. NOTE the DIMENSION SHEET has 4 choices of tip dimensions. These match up with 3 choices of spacing which will come later in the assembly. Adjust EXPOSED TIP LENGTH (SEE COMPRESSION CLAMP DETAIL SHEET) for your band segment choice. This will allow for band change later, should you find it desirable.

3. Build the center sections of the REFLECTOR AND DIRECTOR next. Mark the center of the 2-1/2" x 158 inch sections and attach the elements to the 8 x 1/4" plate using 2-1/2 saddles and 3/8-16 x 4" bolts and locknuts. Align the element holes perpendicular to the plate and tighten. Add the 3" saddle clamps that connect the plates to the antenna boom. Leave the nuts finger tight as this will allow the element to just slide on over the end of the boom. You can also install the welded vertical riser element supports at this time using 1/4-20 x 1" bolts and locknuts, put the bolts in from the bottom of the assembly and tighten securely.

4. Now assemble the DRIVEN ELEMENT center section. Mount the 2" X 36" FIBERGLASS center insulator on the remaining 8 x 8 x 1/4" element mounting plate using two sets of 2" saddles. Use 3/8-16 bolts and locknuts. Center the insulator, rotate the insulator so the element mounting holes are perpendicular to the plate and tighten the hardware. Install the welded vertical riser element support at this time using 1/4-20 x 1" bolts and locknuts. Put the bolts in from the bottom of the assembly and tighten securely. Slide each MARKED element half over the insulator, align the holes and add the bolts as shown on the element assembly sheet.

5. Next add the 5/16" TURNBUCKLES to the top plates of the risers. Add the black Philistran HTPG 1200 x 19 ft. cords at this time. Use a 3/6" thimble and two wire clips (small u-bolts to secure cable).

40M3FS ASSEMBLY MANUAL

6. Assemble the boom using 3/8-16 x 4" bolts, lock washers and nuts. Install the eyebolts with the 1/8" wire rope attached. Using the correct spacing mark the driven element position. Mount the 12 x 12 x 3/8" boom to mast plate on the DIRECTOR end loosely using 3-1/2" saddles.

7. If a temporary 2" mast can be installed at this time, you can set up the overhead turnbuckle plate with two (2) 2" u-bolts and , two (2) 3/8" forged turnbuckles. Install 4 heavy duty 2" u-bolts on the plate and add the mast. Place the turnbuckle plate 6 to 7 feet above the boom and loosely install the overhead cable.

8. Mount the inner sections of each element on the boom and align elements perpendicular with the plane of the 3/8" forged eyebolts. You can determine the CENTER OF BALANCE at this point since the element tips are very close to the same weight. Mount the BOOM TO MAST (BMP) at this point using 3-1/2" saddles and 3/8-16 x 5" bolts and locknuts. Align the plate and tighten. Then the cables can be final tensioned and the temporary mast removed, readying the antenna for final installation

9. Attach the 1-1/2" and smaller element tips. Note the rear hole is enlarged so a 1/4" u-bolt can be installed at this joint. Also install the 8-32 x 1-3/4" screw and locknut and tighten securely. Align the eyebolt in the plane of the element and tighten securely.

10. With the antenna laying on flat ground, connect the outer end of each of the element support cables using a 3/16" thimble or cable eye and two clips (small cable u-bolts). remove all the slack and tighten the clips. Final tensioning can be done from the center with the other eyebolts and locknuts.

Before installing the antenna on a tower, go over all the hardware connections and be sure each has been tightened. No movement should be detected in the element joints. Be careful during installation and be sure you are clear of all power lines and other high obstructions. C U on 40! 73, Mike, K6MYC

CAREFULLY DESIGNED AND MANUFACTURED BY:

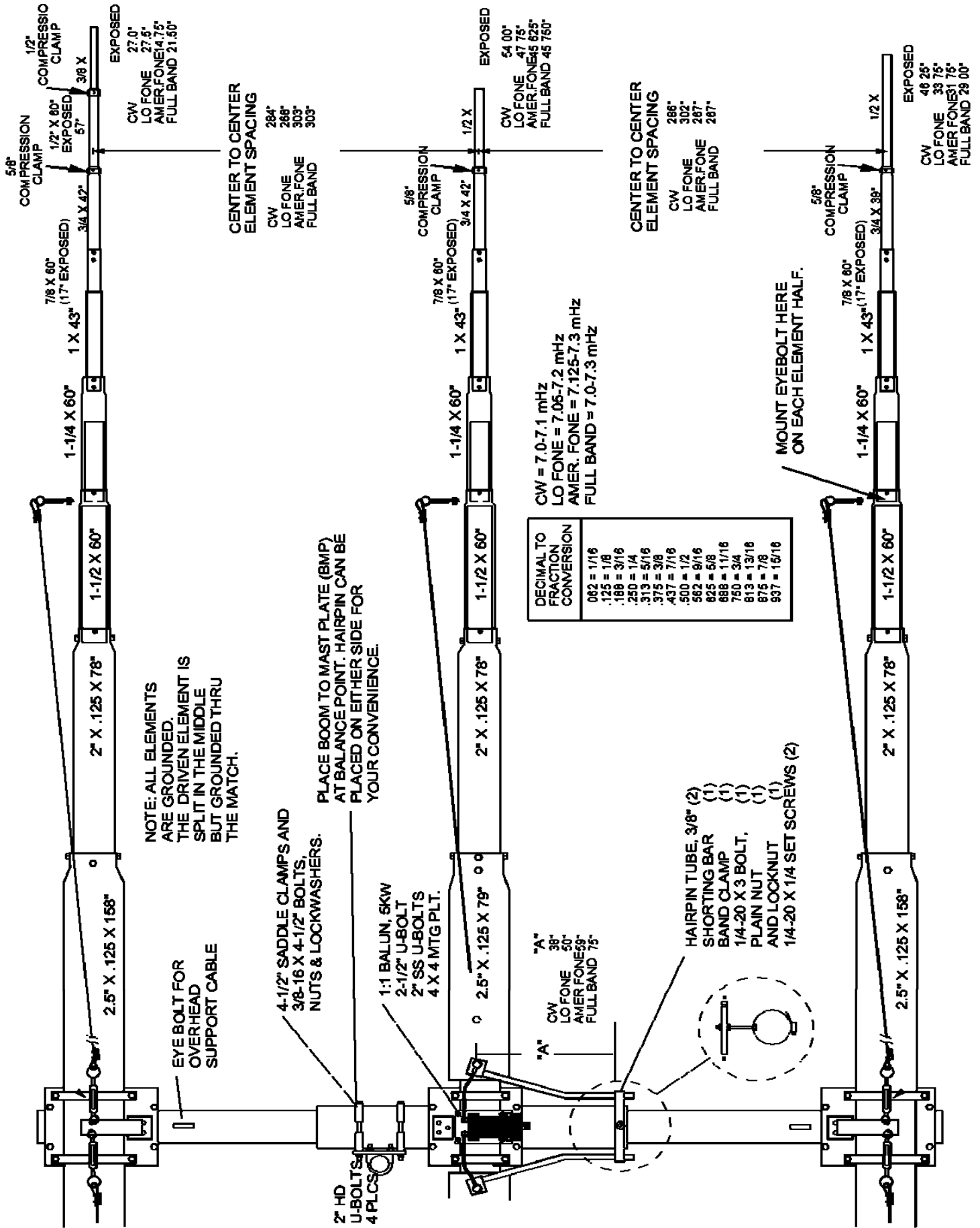
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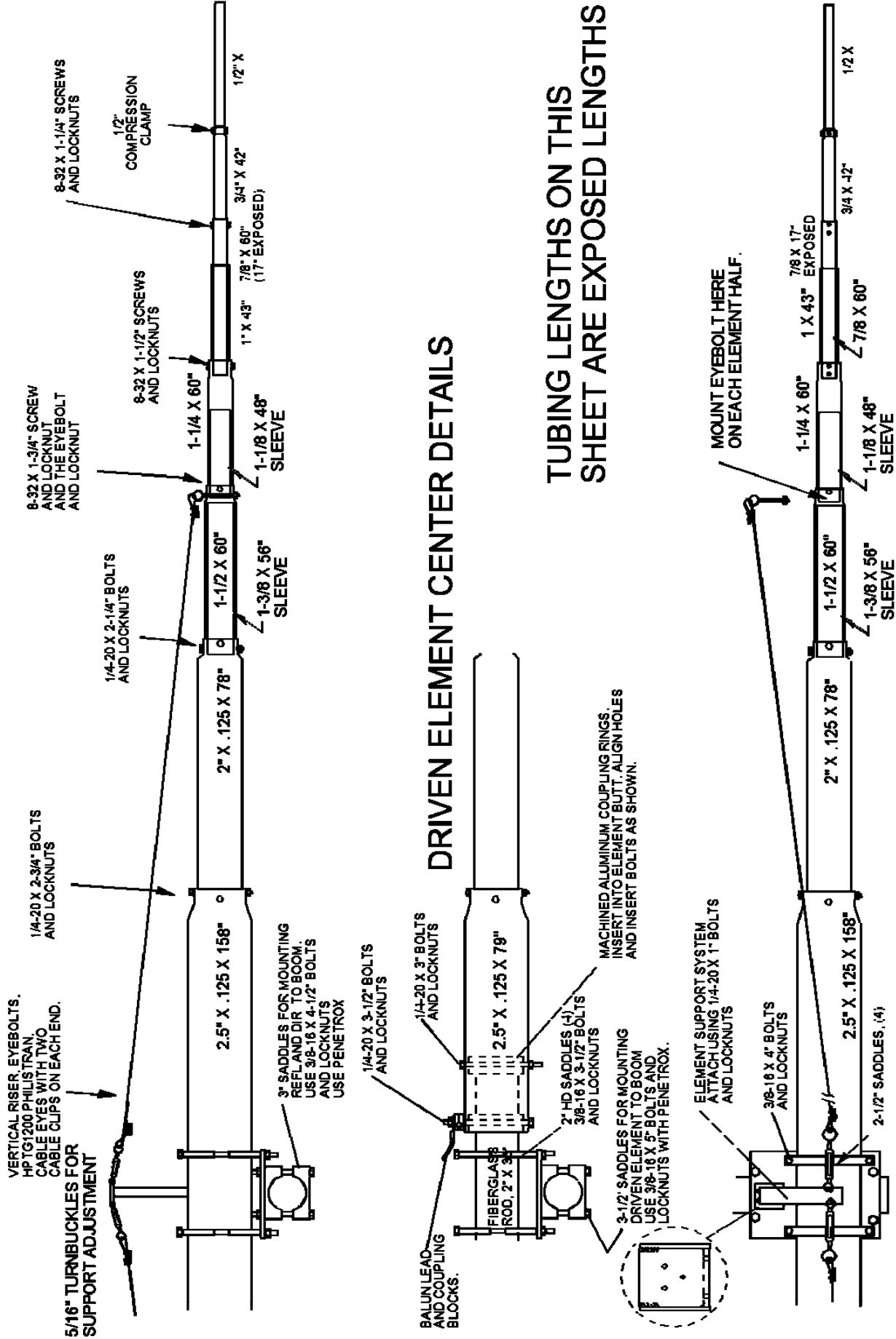
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40M3FS DIMENSION SHEET



40M3FS ELEMENT ASSEMBLIES

NOT TO SCALE



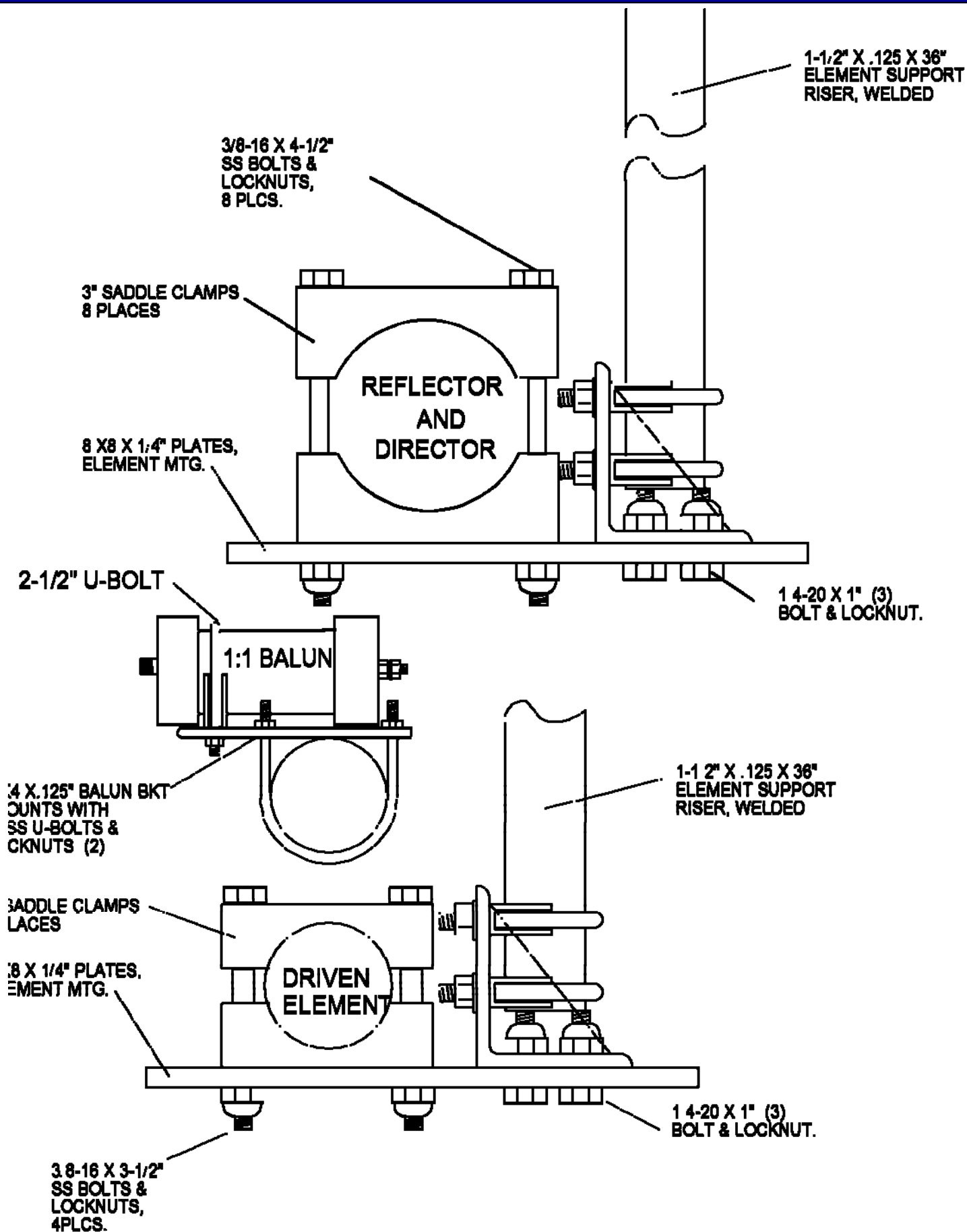
DRIVEN ELEMENT CENTER DETAILS

**TUBING LENGTHS ON THIS
SHEET ARE EXPOSED LENGTHS**

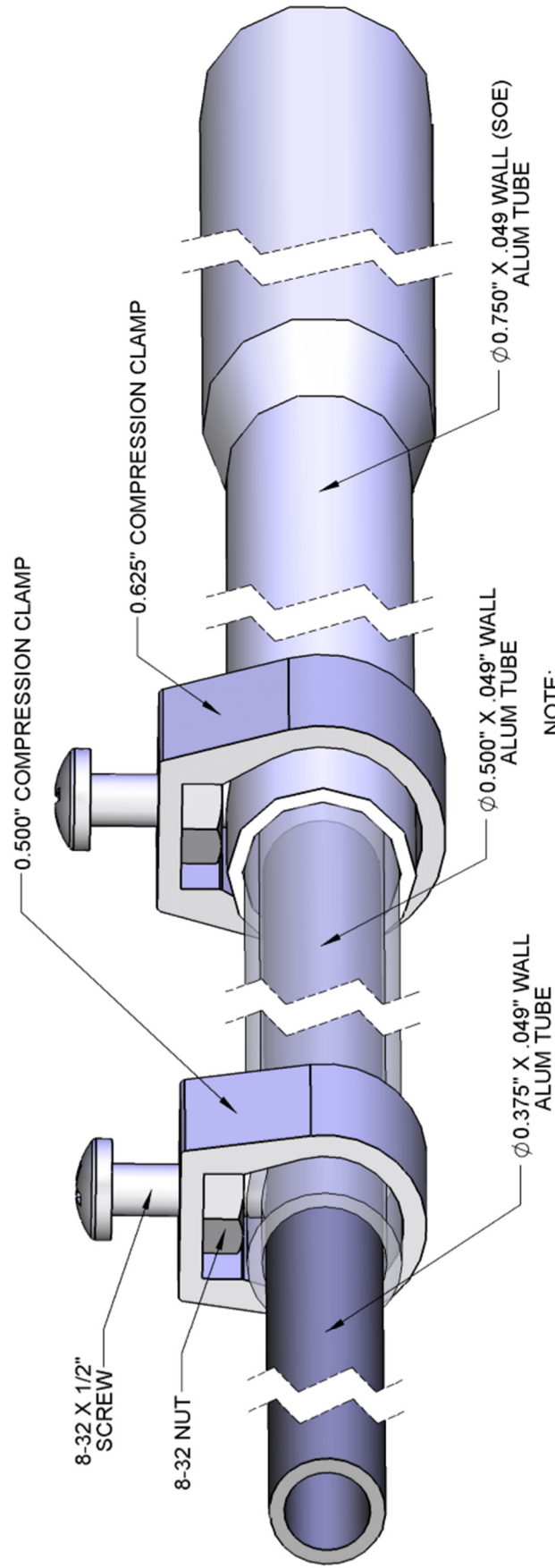
**MOUNT EYEBOLT HERE
ON EACH ELEMENT HALF.**

**CENTER THE 2-1/2 X 158"
SECTION ON THE 8 X 8"
MOUNTING PLATE.**

ELEMENT MOUNTING PLATE ASSEMBLY



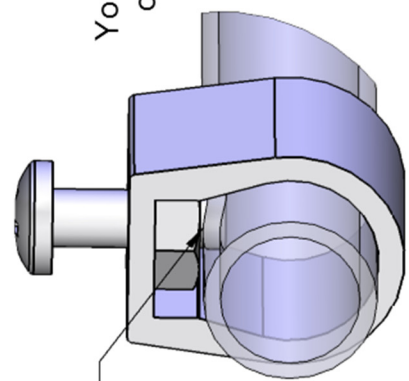
GENERIC COMPRESSION CLAMP DETAIL



NOTE:
TUBES SHOWN TRANSPARENT
TO SHOW MORE DETAIL

NOTE:

Generic layout to show
how compression clamps work.
Your antenna may have one or the other
or may even have both compression
clamp sizes.



NOTE:
8-32 X 1/2" SCREW
PRESSES ON INNER TUBE

NOTE: INSIDE TUBE NOT SHOWN FOR CLARITY

40M3FS PARTS & HARDWARE

DESCRIPTION	QTY
BOOM, 3" X SCHD. 40 X 240"	1
BOOM 3.0 X .125 X 180"	2
ELEMENT SEC. 2-1/2 X .125 X 158" SBE	2
ELEMENT SEC. 2-1/2 X .125 X 79" SOE	2
ELEMENT SEC. 2.0 X .125 X 78" SOE.....	6
ELEMENT SEC. 1 1/2 X .058 X 60" SOE W/ SLEEVE	6
SLEEVE 1 3/8 X .058 X 56.00 INSTALLED IN 1-1/2"	6
ELEMENT SEC. 1 1/4 X .058 X 60.00 SOE W/SLEEVE.....	6
SLEEVE 1 1/8 X .058 X 48.00 INSTALLED in 1-1/4"	6
ELEMENT SEC. 1.0 X .058 X 43.00"	6
ELEMENT SEC, 7/8 X .058 X 60" (EXTENDED SLEEVE)	6
ELEMENT SEC. 3/4 X .049 X 42" SOE.....	6
ELEMENT SEC. 1/2 X .049 X 60"	2
ELEMENT TIPS 1/2 X .049 X 61"	2
ELEMENT TIP, 1/2 X .049 X 49.25"	2
ELEMENT TIP, 3/8" X 30-1/2"	2
BETA TUBE 3/8 X .049 X 76.00.....	2
CENTER INSULATOR 2" X 36" FG, W/ COUPLING RINGS, 4	1
ELEMENT SUPPORT RISER 1-1/2 X .125 X 36" (WELDED)	3

SMALL PARTS BOX

BRACKET, RISER, 3 X 4 " WELDED (M2AVR0067)	3
EYEBOLT, 1/4 X 3, FORGED	6
TURNBUCKLE, 5/16, SS, HOOK AND EYE	6
ELEMENT MTG. PLT. 8 X 8 X .250	3
SADDLES, 3-1/2", HD (M2AMC0149).....	8
SADDLES, 3", HD (M2AMC0140).....	8
SADDLE CLAMP, 2-1/2", HD (M2AMC0150).....	8
SADDLE CLAMP, 2", HD (M2AMC0131).....	4
U-BOLT 3".....	6
U-BOLT 2" HEAVY DUTY	4
U-BOLT 2"	2
U-BOLT, 1-1/2".....	6
PHILLYSTRAN HTPG 1200 X 18'.....	6
BOOM TO MAST PLATE 12 X 12 X 3/8" ALUM.	1
TURN BUCKLE PLT., HD 4 X 6 X .250.....	1
TURNBUCKLE 3/8 FORGED EYE AND JAW	2
WIRE ROPE, 1/8" X 22' W/ 3/8X 5" EYE BOLT	2
WIRE CLIP, 1/8 GALV.	30
THIMBLE EYE 3/16, ZINC.	16
CABLE TIES, LARGE	6

40M3FS PARTS & HARDWARE

SHORTING BAR 1/2 X 1/2 X 5" ALUM. (M2ASB0262)	1
CLAMP BLOCKS 3/8" (M2AMC0261)	4
1:1 BALUN 5KW (FGBL0300)	1
BAND CLAMP W/ HOLE 2 1/2 -3-3/4" #52 WITH HOLE	1
PLATE, BALUN MTG. 4 X 4 X 1/8" (M2APT0011)	1
U-BOLT, 2" HINDLEY, SS	2
U-BOLT, 2-1/2	1
COMPRESSION CLAMP, 5/8"	6
COMPRESSION CLAMP, 1/2"	2
ANTI SEIZE COMPOUND	2
ASSEMBLY INSTRUCTIONS	1

HARDWARE

BOLT, 3/8-16 X 5" SS	8
BOLT, 3/8-16 X 4-1/2" SS	8
BOLT, 3/8-16 X 4" SS	12
BOLT, 3/8-16 X 3-1/2, SS	4
NUT, LOCKING, 3/8-16 SS	40
NUT, 5/16-18 SS	24
LOCKWASHER, SPLIT RING, 5/16 SS	18
BOLT, 1/4-20 X 3-1/2" SS	2
BOLT, 1/4-20 X 3", SS	3
BOLT, 1/4-20 X 2 3/4 SS	12
BOLT, 1/4-20 X 2-1/4" SS	12
BOLT, 1/4-20 X 1.0 SS	9
SET SCREW, 1/4-20 X 1/4", SS	2
NUT, NYLOC 1/4-20 SS	40
NUT, PLAIN, 1/4-20, SS	3
FLAT WASHER, 1/4", ss	2
SCREW, 8-32 X 1 3/4 SS	6
SCREW, 8-32 X 1.5 SS	12
SCREW, 8-32 X 1.25 SS	12
SCREW, 8-32 X 0.50 SS	16
NUT, 8-32 SS	16
NUT, NYLOC 8-32 SS	30
ALLEN WRENCH 1/8"	1

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