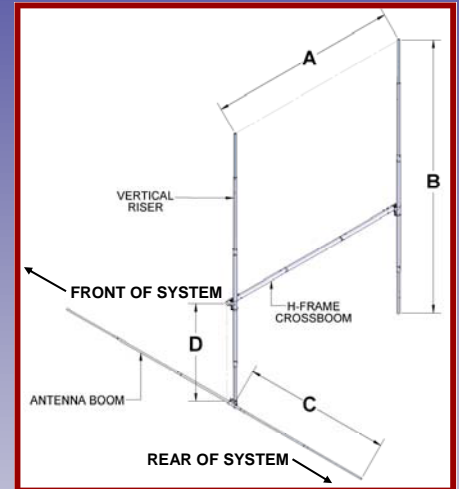
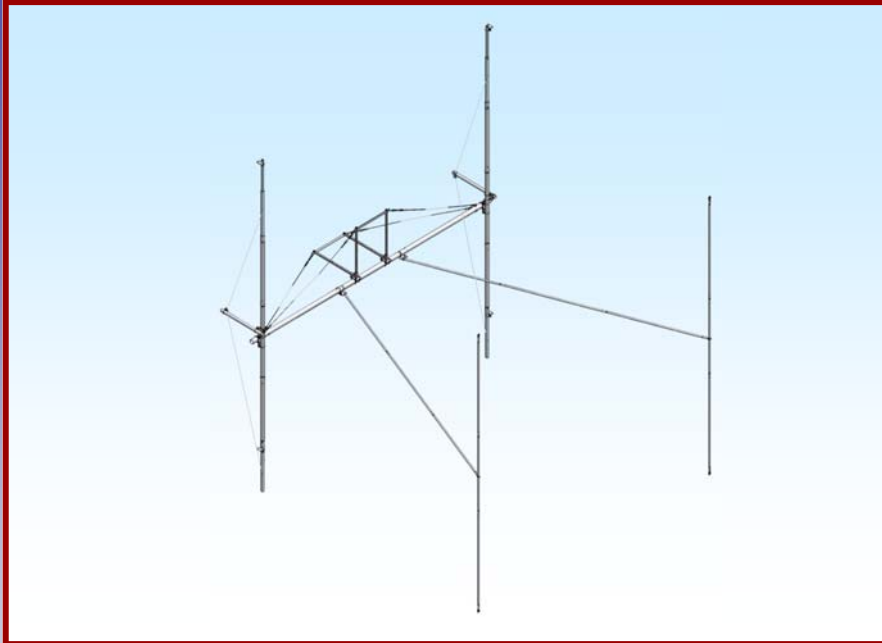




M2 Antenna Systems, Inc.

Model No: HFTB2MXP28-32-2X2-3K



SPECIFICATIONS:

Model	HFTB2MXP28-32-2X2-3K	Weight.....	110 LBS
Band	2M	A Dim	180" to 198"
Antenna	2MXP28-32	B Dim	238"
T-Brace.....	Y	C Dim	170"
Cross Boom Dia	3.0"	D Dim	126"
Wind Load w/o Ant..	10.46 SQ FT.		

FEATURES:

M2 has been a leader in high performance antennas since it started back in 1984. In addition to specialized antenna designs, we also developed a diverse line of multiple antenna support structures (loosely referred to as H frames) to maintain that high level of performance. Just like the antenna, the support structure becomes nearly as complex and varied. All antennas have a defined near field size and shape and in order to achieve maximum "array performance", the support structure must accommodate the careful coupling of these near fields.

In many cases the support structure, has to meet special customer requirements like size, weight, wind speed or area, and weather issues. Our standard H frames then are a composite of these features that should satisfy most customer needs. We enjoy discussing your needs and offering our opinion regarding what best can meet your situation.

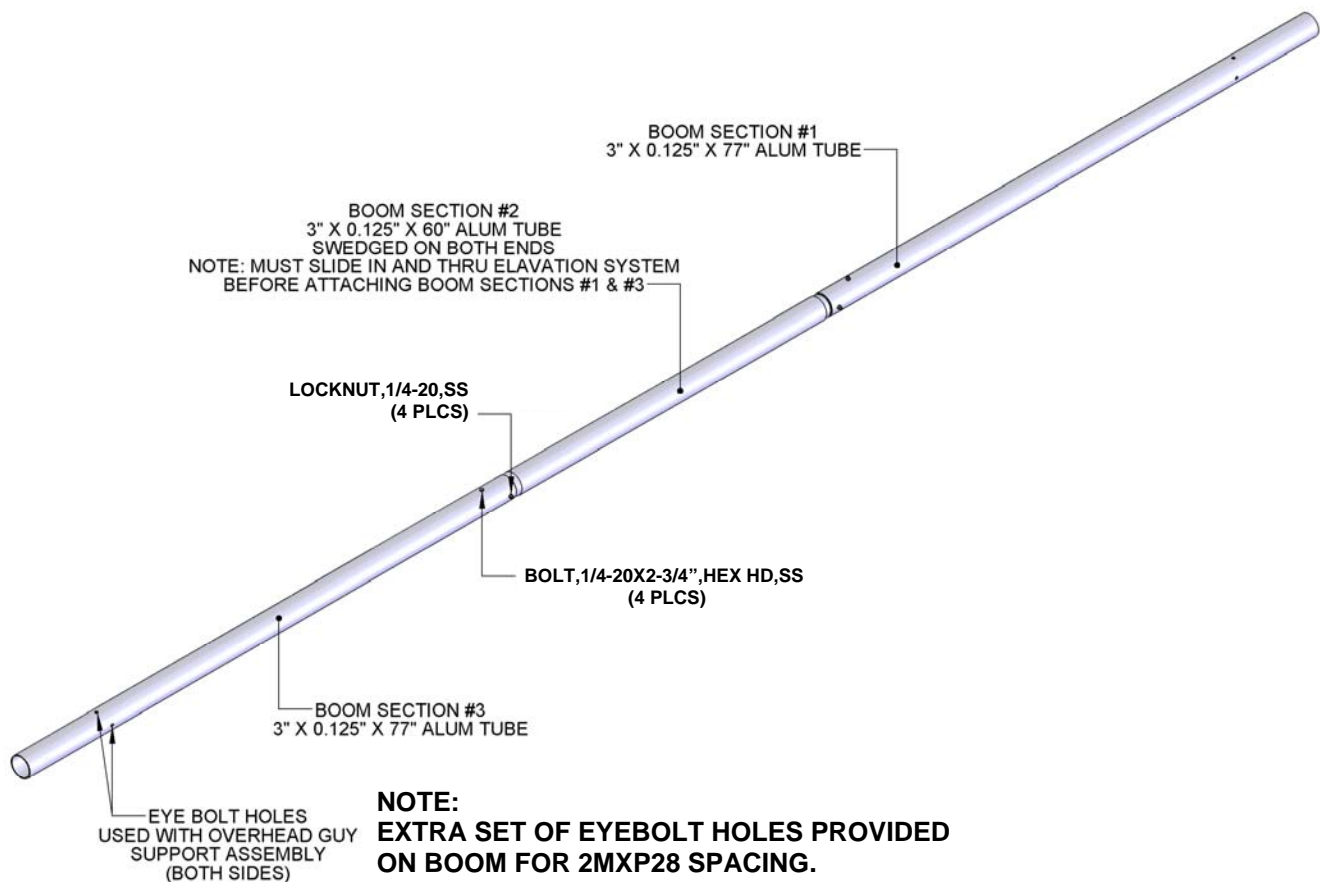
CROSSBOOM ASSEMBLY MANUAL

All installations are unique in some way, which means it's OK to preassemble certain hardware, or rearrange the assembly process to meet specific site requirements. A quick review of the assembly notes and drawings should help firm up the appropriate strategy. Please remember to double-check all hardware for tightness BEFORE it becomes inaccessible.

These notes assume an assembled cross boom of adequate dimensions and U-bolts of the same size for attaching H-frame plates. Unless you ordered a COMPLETE M2 'H' FRAME. If you just ordered the vertical booms and specified a cross boom U-bolt size when ordering, some drilling or other fabrication may be necessary. Stainless locknuts or nuts and lock washers are supplied for all kit U-bolts. All other assembly hardware is stainless steel unless otherwise noted. Forged steel parts are galvanized.

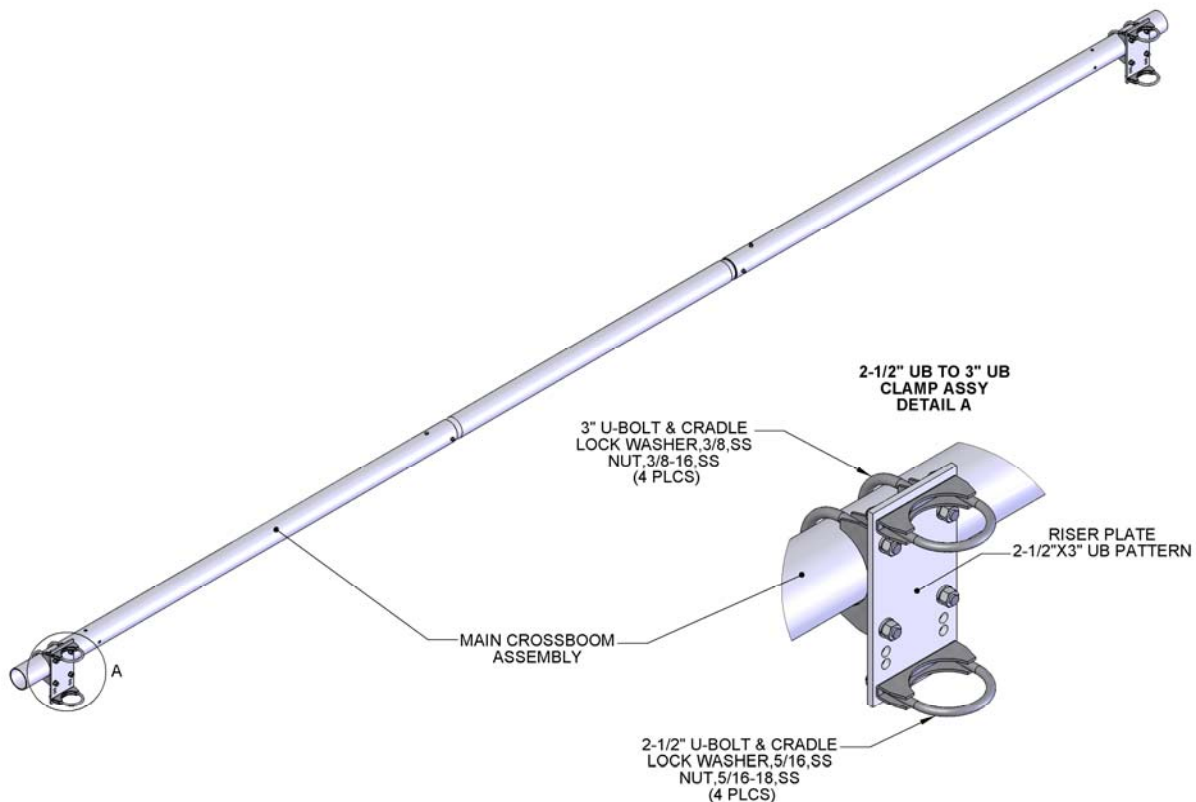
Two containers of zinc paste (Penetrox, Noalox, or equiv.) has been provided to enhance assembly. Apply a thin coat wherever two pieces of aluminum come in contact or any other electrical connections are made. It is also useful on screw and bolt threads as an ANTI SEIZE compound.

REFER TO THE 'H' FRAME DRAWINGS AND 'T' BRACE KIT DRAWINGS FOR PLACEMENT AND HARDWARE CALLOUT.



VERTICAL RISER PLATE DETAIL

ASSEMBLE AND INSTALL VERTICAL BOOM CLAMPS (SEE PICTURE BELOW)



ASSEMBLE VERTICAL BOOMS and MOUNT ANTENNAS

Attach the VERTICAL BOOM assemblies to each end of the MAIN BOOM, noting the correct spacing for the antennas in the array.

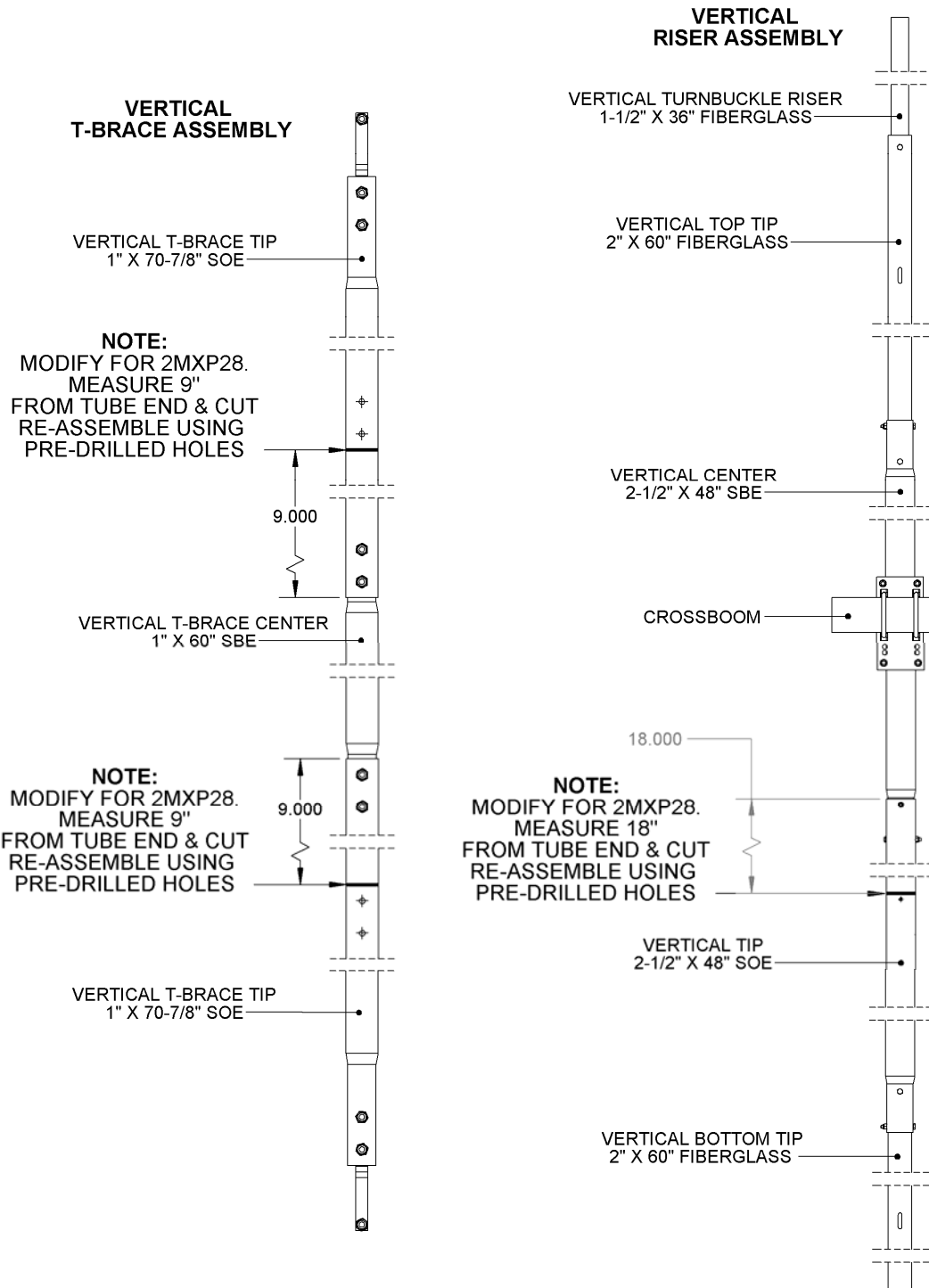
Make sure that each vertical boom is aligned with the other so when all antennas are mounted, the left side of the array will point at the same point as the right side.

Some tweaking of alignment and balancing will probably be necessary once the whole array is assembled and in place on the main boom.

(SEE PICTURES ON THE FOURTH PAGE)

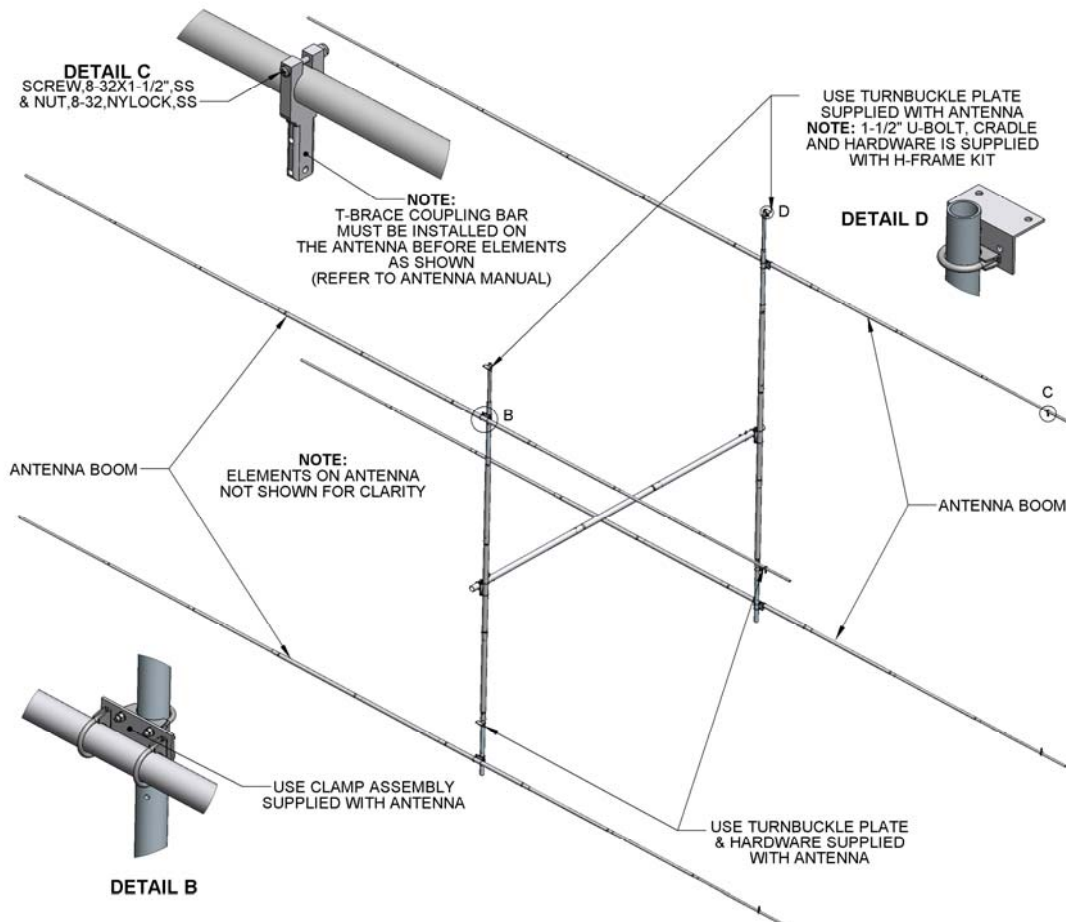
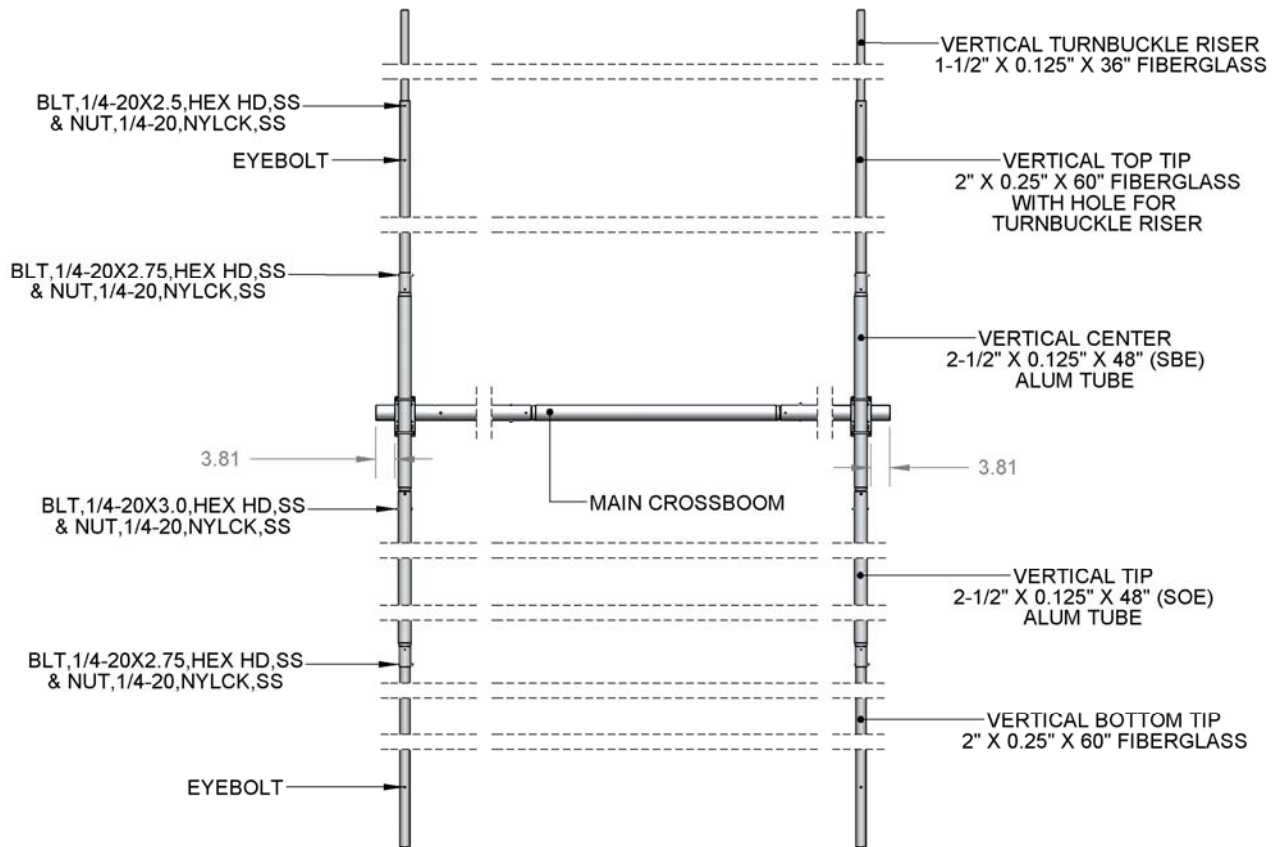
**NOTE: IF BUILDING 2MXP28 H-FRAME;
PLEASE SEE NEXT PAGE BEFORE YOU PROCCEED.**

2MXP28 VERTICAL RISER & T-BRACE



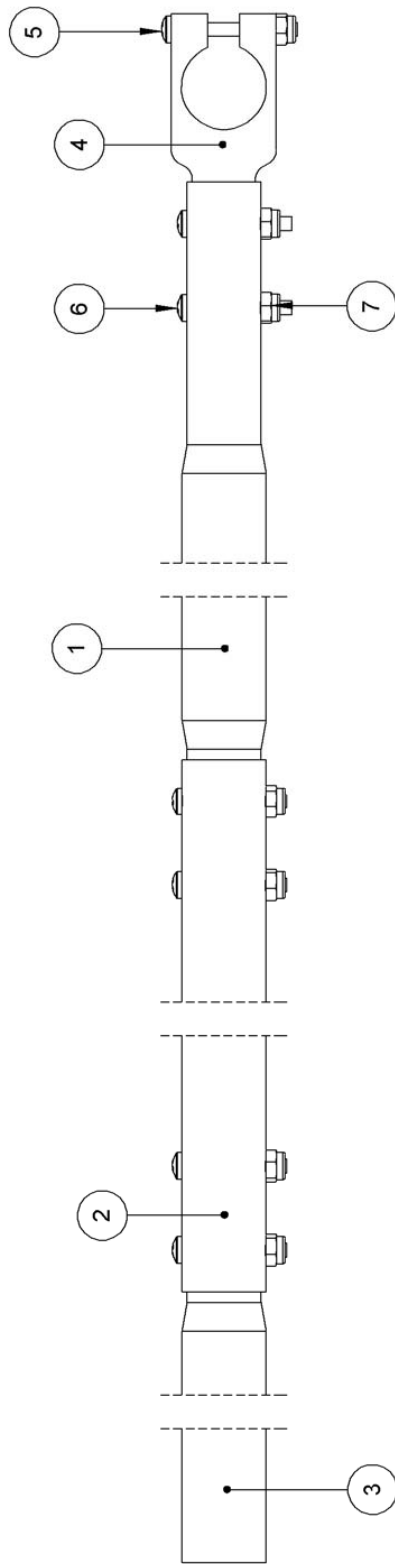
This H-Frame is built for the 2MXP32 spacing @ 198" X 198" or slide antennas 6" closer together for 192" X 192". If closer staking is desired or necessary, parts noted above are pre-drilled & must be cut as shown to allow for 180" X 180" spacing (optimal for 2MXP28). These mods keep the maximum amount of fiberglass length in the H-Frame to minimize the metallic interaction.

RISER & VERTICAL T-BRACE



HORIZONTAL T-BRACE ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	2MXP28-32 H TBRACE#1	1" X 0.058" X 70" (SBE) ALUM TUBE	1
2	2MXP28-32 H TBRACE#2	1" X 0.058" X 70" ALUM TUBE	1
3	2MXP28-32 H TBRACE#3	1" X 0.058" X 80" (SOE) ALUM TUBE	1
4	M2AMC0300	T-BRACE COUPLING ARM	1
5	HSC00830800	SCRW,8-32X1.50,PH PHL,SS	1
6	HSC00830700	SCRW,8-32X1.250,PHL PAN HD,SS	6
7	HNT00830150	NUT,8-32,NYLCK,SS	7

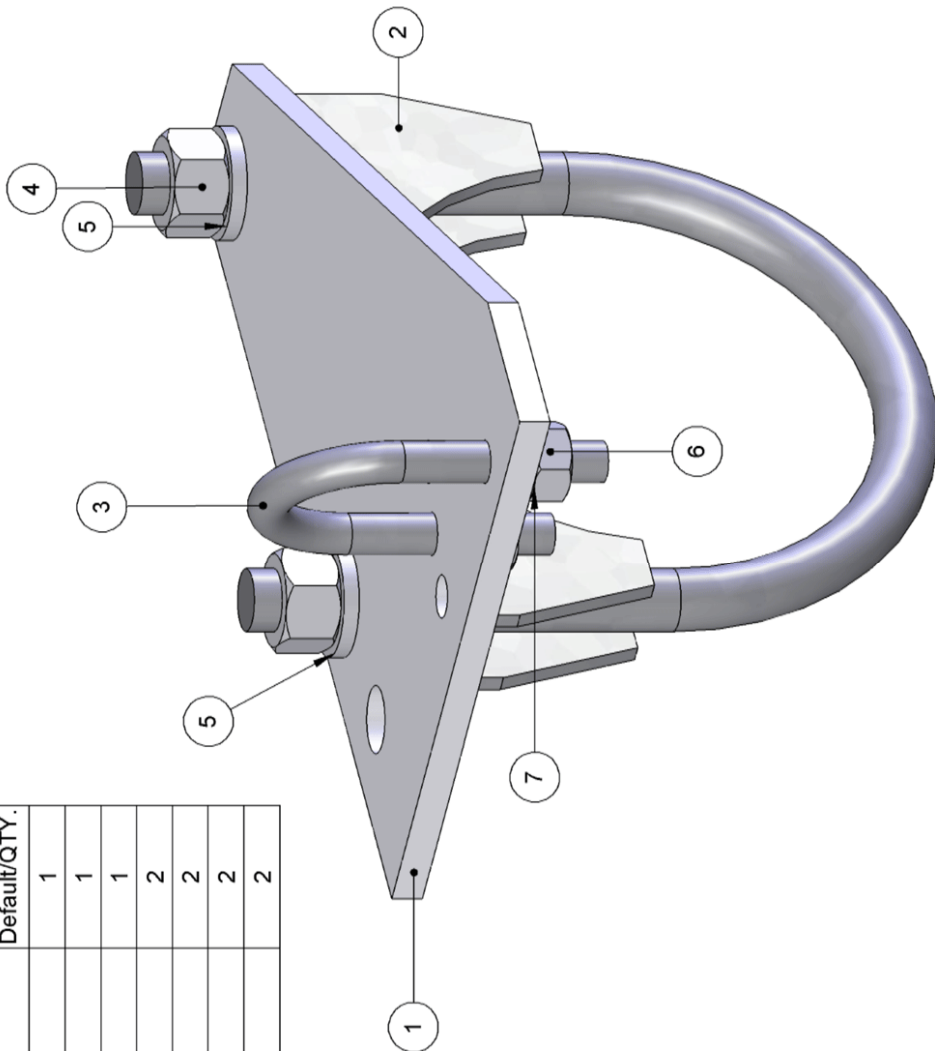


UNLESS OTHERWISE SPECIFIED:		NAME	DATE	M2 ANTENNA SYS. INC.	
DIMENSIONS ARE IN INCHES		JLS	2/13/2008	4402 N. SELLAND AVE. FRESNO CA. 93722 559-432-8873	
TOLERANCES:		JLS	2/13/2008	DESCRIPTION	
FRACTIONAL ± .030				2MXP28-32 H-FRAME	
ANGULAR ± .5°				HORIZONTAL T-BRACE ASSY	
TWO PLACE DECIMAL ± .015				SIZE	REV
THREE PLACE DECIMAL ± .005				A	
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS:		PART # HORIZONTAL T-BRACE ASSY	
/ MATERIAL				SHEET 1 OF 1	
FINISH					
NEXT ASSY USED ON					
APPLICATION					
DO NOT SCALE DRAWING					

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 PROPERTY OF M2 ANTENNA
 SYS. INC.
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 OR AS A WHOLE WITHOUT THE
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 ANTENNA SYS. INC. IS
 PROHIBITED

T-BRACE CLAMP ASSEMBLY

ITEM NO.	PART NUMBER	DESCRIPTION	Default/QTY.
1	M2AHF0005	ANGLED T-BRACE PLATE	1
2	3.0 UB ASSY	3" U-BOLT & CRADLE	1
3	1.0 UB	1" U-BOLT	1
4	HNT03750100	NUT, 3/8-16, SS	2
5	HWS03750150	WSHR, 3/8, SPL RNG, SS	2
6	HNT02500500	NUT, 1/4-20, HEX, SS	2
7	HWS02500150	WSHR, 1/4, SPL RNG, SS	2



UNLESS OTHERWISE SPECIFIED:		DRAWN	JLS	DATE	2/26/2008	NAME	JLS	DESCRIPTION	M2 ANTENNA SYS. INC. 4402 N. SELLAND AVE. FRESNO CA. 93722 559-432-8873	
DIMENSIONS ARE IN INCHES FRACTIONS: 0/32 DECIMALS: .000 ANGULAR: 5° TWO PLACE DECIMAL ± .015 THREE PLACE DECIMAL ± .005		CHECKED	JLS	2/26/2008		ENG APPR.			H-FRAME PART T-BRACE CLAMP ASSY	
INTERPRET GEOMETRIC TOLERANCING PER:		MFG APPR.				Q.A.			SIZE	REV
MATERIAL		COMMENTS:							A	1
FINISH		NEXT ASSY		USED ON					SHEET 1 OF 1	
APPLICATION		DO NOT SCALE DRAWING								
1		2		3		4		5		

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MT-3000 & OVERHEAD SUPPORT

OVERHEAD CROSSBOOM
SUPPORT TUBE
2" X .125 X 48"

TURNBUCKLE 1.5
U-BOLT ASSEMBLY
REFER TO BOM DRAWING
(2 PLCS)

2" U-BOLT & CRADLE
5/16" HARDWARE

3" U-BOLT & CRADLE
3/8" HARDWARE

VERTICAL RISER PLATE
4" X 8" X .250"

MT-3000 OPTION

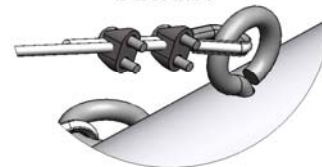
ANTENNA BOOM

NOTE:
OVERHEAD SUPPORT & ELEMENTS
FOR EACH ANTENNA ARE NOT SHOWN
FOR CLARITY. REFER TO ANTENNA
MANUAL FOR MORE INFORMATION

DETAIL E



DETAIL F



3/8" TURNBUCKLE
1/4" THIMBLE & CLIPS
REFER TO DETAIL E & F

EYEBOLT, 5/16" X 5", ZINC
AND 3/16" THIMBLE
(4 PLCS)
REFER TO DETAIL F

TURNBUCKLE 1.5 U-BOLT
ASSEMBLY
REFER TO DRAWING
TURNBUCKLE, 5/16", ZINC
PHILISTRAN HPTG1200 X 96"
AND 3/16" CABLE CLIPS
(4 PLCS)
REFER TO DETAIL E

H-FRAME
2" X 2.5" U-BOLT
CLAMP ASSEMBLY
REFER TO DRAWING

SUPPORT RISER
2" X .065 X 36"

HPTG4000
X 127"

HPTG4000 X 116"

3/8" EYEBOLTS
HPTG4000 X 127"

HPTG4000 X
116"
T-BRACE
CLAMP
ASSY

MT-3000
OPTION

HORIZONTAL T-BRACE
ASSEMBLY

NOTE:
HORIZONTAL T-BRACE MUST
SLIDE ON TO VERTICAL T-BRACE
BEFORE INSTALLING

VERTICAL T-BRACE
ASSEMBLY

HFTB2MXP28-32-2X2-3K PARTS & HARDWARE

<u>DESCRIPTION</u>	<u>QUANTITY</u>
3" MAIN CROSSBOOM	
CROSSBOOM TUBE 3" X .125 X 77" PLAIN	2
CROSSBOOM TUBE 3" X .125 X 60" SBE	1
VERTICAL BOOM RISER PLATE 1/4" X 4" X 8" (M2APT0209).....	2
U-BOLT & CRADLE, 3"	4
U-BOLT & CRADLE, 2-1/2"	4
HARDWARE	
BOLT, 1/4-20 X 3-1/2" SS.....	4
NUT, 1/4-20, NYLOCK SS.....	4
LOCKWASER, 3/8" SS.....	8
NUT, 3/8-16 SS	8
LOCKWASER, 5/16" SS.....	8
NUT, 5/16-18 SS	8
Zinc Paste (Penetrox, Noalox or equivalent) container.....	2
VERTICAL BOOM COMPONENTS	
VERTICAL BOOM RISER, 2-1/2" X 0.125 X 48" SBE	2
VERTICAL BOOM RISER, 2-1/2" X 0.125 X 48" SOE.....	2
VERTICAL BOOM RISER, 2" X 0.25 X 60" FIBERGLASS	2
VERTICAL BOTTOM RISER, 2" X 0.25 X 60" FIBERGLASS	2
VERTICAL TURNBUCKLE RISER, 1-1/2" X 0.125 X 36" FIBERGLASS	2
SUPPORT RISER, 2" X 0.065 X 36" PLAIN (ALUM TUBE)	2
H-FRAME PLATE, 4" X 6" X 0.188" (M2APT0023)	2
U-BOLT & CRADLE, 2"	6
U-BOLT & CRADLE, 2-1/2"	4
U-BOLT & CRADLE, 1-1/2"	2
TURNBUCKLE PLATE, 2" X 4" X 3/16", ALUM (M2APT0101).....	2
HARDWARE	
BOLT, 1/4-20 X 3" SS.....	4
BOLT, 1/4-20 X 2-3/4" SS.....	8
BOLT, 1/4-20 X 2-1/2" SS.....	2
NUT, 1/4-20, NYLOCK SS.....	14
LOCKWASER, 5/16" SS.....	28
NUT, 5/16-18 SS	28
EYE BOLT, 5/16-18 X 5.0, ZINC	4
THIMBLE EYE, 1/8" OR 3/16"	8
CABLE CLIP, 3/16".....	16
PHILISTRAN, HPTG1200, 384".....	1
TURNBUCKLE, 5/16", ZINC.....	4
T-BRACE COMPONENTS	
VERTICAL T-BRACE, 1" X .058 X 60" SBE	2
VERTICAL T-BRACE, 1" X .058 X 70-7/8" SOE.....	4
HORIZONTAL T-BRACE, 1" X .058 X 70" SBE.....	2
HORIZONTAL T-BRACE, 1" X .058 X 70" PLAIN	2
HORIZONTAL T-BRACE, 1" X .058 X 80" SOE	2
T-COUPLING, 1" X .375 X 3.75 (M2AMC0300).....	6
ANGLE PLATE, 4 X 6 X .188 (M2AHF0005)	2
U-BOLT & CRADLE, 3"	2
U-BOLT 1"	2
HARDWARE	
LOCKWASHER, 3/8" SS	4
NUT, 3/8-16 SS	4
LOCKWASHER, 1/4" SS	4
NUT, 1/4-20 SS	4
SCREW, 8-32 X 1-1/2" SS.....	22
SCREW, 8-32 X 1-1/4" SS.....	12
NUT, 8-32, NYLOCK, SS.....	34

HFTB2MXP28-32-2X2-3K PARTS & HARDWARE

MT-3000 OVERHEAD SUPPORT COMPONENTS

VERTICAL RISER BOOM SUPPORT TUBE 2" X .125 X 48" (PLAIN)	2
VERTICAL BOOM RISER PLATE, 4" X 8" X 1/4" (M2APT0200)	2
TURNBUCKLE PLATE, 2" X 4" X 3/16" (M2APT0101)	2
U-BOLT & CRADLE, 3"	4
U-BOLT & CRADLE, 2"	6

HARDWARE

LOCKWASHER, 3/8" SS	12
NUT, 3/8-16 SS	12
LOCKWASHER, 5/16" SS	12
NUT, 5/16-18 SS	12
EYE BOLT, 3/8-16 X 6.0, ZINC	4
THIMBLE EYE, 1/4" OR 5/16"	8
CABLE CLIP, 1/4"	16
PHILISTRAN, HPTG4000 X 480"	1
TURNBUCKLE, 3/8", ZINC	4

M² ANTENNA SYSTEMS, INC.

4402 N. Selland Ave.

Fresno, CA 93722

(559) 432-8873 Fax: 432-3059

www.m2inc.com Email: sales@m2inc.com

HFTB2MXP28-32-2X2-3K PHASING OPTION

4 BAY PHASING LINE OPTIONS.
PHASING LINE ARE OPTIONAL AND BUILT TO CUSTOMER SPECIFICATIONS.
OUR PHASE LINES ARE PHASE MATCHED AND CUT IN HALF WAVE MULTIPLES.

PHASE LINE OPTION #1

POWER DIVIDER, 2 PORT, VHF (1/4 WAVE)	6
PHASING LINE, LMR-400, 105", "N" MALE CONN.....	8
PHASELINE, LMR-400, TO CNTR 2 PORTS, 3WL, 280", "N" CONN.....	4
OR	
PHASELINE, LMR-600, TO CNTR 2 PORT, 3WL, 211", "N" CONN	4

PHASE LINE OPTION #2

POWER DIVIDER, 4 PORT, VHF (1/2 WAVE)	2
PHASE LINE, LMR-400, 5WL, 308", "N" MALE CONN.....	8

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