



M2 Antenna Systems, Inc.

Model No: KT34XA TO KT36XA UPGRADE KIT



SPECIFICATIONS:

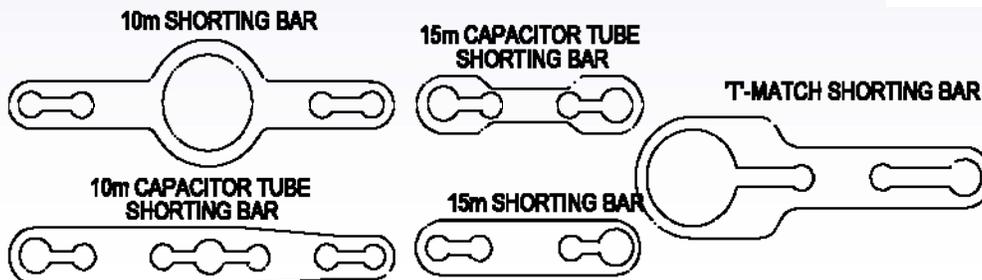
SPECIFICATIONS for the KT34-6XA

MODEL NUMBER.....	KT36XA
FREQ. RANGE	14.0 - 14.35 MHz 21.0 - 21.45 MHz 28.0 - 29.0 MHz
GAIN (Free Space).....	SEE CHARTS
FRONT TO BACK.....	SEE CHARTS
FEED IMPEDANCE / CONNECTOR	50Ω / SO-239
VSWR.....	<1.5:1
KIT WEIGHT / UPS SHIPPING WEIGHT	14 lb. / 16 lb. 2 boxes

10m	f, MHz	G, dBi	G, dbd	F/B
	28.0	9.8	7.7	25
	28.2	10.1	8.0	28
	28.4	10.4	8.3	29
15m	f, MHz	G, dBi	G, dbd	F/B
	21.0	9.2	7.1	19
	21.1	9.3	7.2	22
	21.2	9.4	7.3	24
20m	f, MHz	G, dBi	G,dbd	F/B
	14.0	9.1	7.0	17
	14.1	9.2	7.1	26
	14.2	9.3	7.2	21
	14.3	9.4	7.3	23

FEATURES:

The M² KT34-36XA UPGRADE KIT provides all the parts to bring up your old KT34XA to current '36XA specifications and keep it that way. Over the years it has become evident that the original sheet metal straps loosen with time and the connections becomes intermittent and / or lossy. The new close tolerance, CNC machined shorting BARS produce solid, low loss connections for years. The machined bars also add mechanical stiffness to the element. In addition, all new hardware has been supplied as well as new UV stabilized Capacitor Caps and misc tubes needed for the new dimensions and the fresh 'T' match. The '36XA is the hottest performing tribander on the market producing more than 1 dB more gain and better F/B on all three bands than your original '34XA! Why not upgrade today and see what M² can do for you.



KLM KT34XA TO KT36XA UPGRADE KIT PARTS & HARDWARE

DESCRIPTION	QTY
Capacitor Tube, 3/4"x .049" x 8" alum tube STR	10
Capacitor Tube, 3/4 x .049 " x 10" alum tube STR	2
Capacitor Tube, 3/4 x .049" x 16" alum tube STR	10
20M element tip, 1/2 x .049 x 44"	2
Matching Tube, 1/2" x .049" x 23.5"	2
Linear Loading Tube, 3/8" x .049" x 80"	4
Match Insulator, 3/8" x 10"	1
Capacitor Cap.....	40
Shorting Bar, 15M.....	10
Shorting Bar, 15M capacitor tube	10
Shorting Bar, 10M capacitor tube	10
Shorting Bar, 10M.....	10
"T" Match Shorting Bar, 1/4" x 1-1/4" x 3-13/16"	2
Shorting Bar Insulator, Delrin 1-1/2" Dia.	10
Clamp Block, 3/8"	8
Phasing Line Insulator	1
Screw, 8-32 x 1-1/2" S.S.....	2
Screw, 8-32 x 1-1/4" S.S.....	50
Screw, 8-32 x 1" S.S.....	52
Nut, 8-32 Locking S.S.....	104
Bolt, 1/4-20 x 3" S.S.....	4
Nut, 1/4-20 Locking S.S.....	4
Nylon Tie, 14"	1
Zinc oxide paste Cup	1
KT34XA to KT36XA Upgrade Assembly Manual	1
KT36XA Manual	1

Note: This UPGRADE KIT does not include:

1. New style element to boom clamps. These are available as an option.
2. Linear loading 5/8" fiberglass rod insulators. Yours may have sun damage but are not effected structurally. Avoid rubbing the exposed fibers with your fingers. Black 3M or equivalent electricians tape over the sun damaged area will protect you and can be left on the part to protect it from further deterioration.
3. A new 4:1 broad band ferrite balun. Yours is probably OK. We can provide a new and higher power 4:1 balun as an option.
4. Any other parts that are not basically required to convert a KT34XA to a KT36XA

Carefully manufactured by

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OVERVIEW INSTRUCTIONS FOR KT34XA TO KT36XA

1. To do this conversion properly, requires complete dis-assembly and cleaning of the element tip sections of the five multiband elements. The environment your KT34XA has been in will determine how extensive the cleaning process may be. Certainly all oxidation in the areas of connections must be cleaned to shiny metal. Usually the most effective for removing oxidation are the green or brown colored scrub or pot scouring pads. Brillo Pads and steel wool are other options. Sandpaper or a file may be required in some stubborn cases.
 2. Prior to cleaning everything, look over the parts in the kit. The sheet metal shorting straps parts need not be cleaned.
 3. As you will see from the main KT36XA ASSEMBLY MANUAL, each element has its own assembly and dimension page, with only its specific dimensions on that page. These dimensions have worked well to date. This is a result of converting to close tolerance, rugged machined, shorting straps and bars. Each joint now is stronger with extremely low resistance.
 4. You will end up with four long 3/8" tubes. Two can be used to make your new phasing lines between the two driven elements or other needed 3/8 tubes.
 5. You will remove all the 3/8" tube pieces that have the 90 degree bend. These bent sections will be cut off and do the same job as before. The bend has been replaced by one end of a machined bar. Your part may be less than 30" but should be long enough to make all the 10M dimensions. If any are damaged or too short, you still have two more long 3/8" pieces to use as necessary.
 6. We have provided a complete set of new 8-32 hardware for the re-assembly. Yours may be in great shape but we couldn't be sure you won't snap a few screws off during disassembly.
 7. The part list included in the main KT36XA ASSEMBLY MANUAL will provide the lengths of some of the tubes you will be required to cut.
 8. We are here to help. If you are confused or just feel you need clarification, if we made a "mistake" or left something out of the text or drawings, call or better yet FAX us, but do us a favor first. Read everything carefully and make sure you didn't just miss something. Several of these upgrades have already been done without this section.; without the kit part list and without any phone calls. The only calls we received originally were those telling us "it's up and working great"! BOY, DO WE LIKE THAT!
- GOOD LUCK AND WATCH FOR MIKE K6MYC ON 10, 15 OR 20M USING HIS KT36XA FROM HIS NEW QTH.

KT34XA TO KT36XA UP GRADE INSTRUCTIONS

If your old KT34XA is fully assembled , first remove the 10 tip sections from the 1" x 72 inner element sections. Nothing changes on the inner sections except in the 'T' match section. Most of your work will be done on the tips.

Once you have removed the tip sections, begin disassembly of each tip section. Removal of aluminum oxidation will probably be necessary to even disassemble the parts. Use steel wool, sand paper, or PREFERABLY "pot scrubber" type pads. A flat, smooth file may even be necessary in some cases where oxidation is heavy.

Remove and discard all the SHEET METAL shorting straps. Remove all capacitor caps and discard.

CAPACITOR TUBES

Set aside your old CAPACITOR tubes. New tube are supplied in your kit. Inspect the new 3/4" diameter CAPACITOR tubes carefully inside and out. Remove any chips or dust from the inside.

LINEAR LOADING TUBES

Clean the 3/8" diameter tube OUTSIDE carefully and check each tube for two small 1/8" holes on just one side a few inches apart. If your tubes have these holes you have the latest version for venting the capacitors. No modification is necessary. If your tubes have no holes, using a hand drill or a drill press, it will be necessary to drill these two small holes THROUGH ONE WALL ONLY and mark the hole orientation near the end of the tube. These holes must be UP when the element is completely assembled and mounted. You will read more about this in the standard assembly manual. After drilling, touch the hole with a smooth file to knock off any burr or high point. Your kit includes 4 new 3/8 x 80" tubes to replace 4 that are now too short. You can use these new tubes as a guide for VENT HOLE location.

3/8 X 30" "L" BENT TUBES

The original 3/8 x 30" tubes with the 90 degree bend will be replaced with straight tube sections that you will cut from either the original bent piece and or from the other left over 3/8" tubes that are about 6 feet long. Cut the bent ends off so you loose no straight length. Deburr the ends. You will need 10 pieces.

3/4 TUBES

The 3/4 diameter element sections that were hose clamped to the inner 1" sections can still be attached the same way but may have slightly different exposed dimensions. In the original KT34XA manual this was called the 'D' dimension. The following are the NEW exposed lengths:

REFLECTOR:	18" SHOWING
REAR DRIVEN	20" SHOWING
FRONT DRIVEN	18" SHOWING
D1	20" SHOWING
D3	20" SHOWING

If you want to be sure that the 1" to 3/4" junction will hold in all climates, use a .173 (#17) drill bit or equivalent and drill one or two holes through the joint and secure with 8-32 hardware. We drill our holes back 1/2" and 1-1/2" from the joint.

KT34XA TO KT36XA UP GRADE INSTRUCTIONS

3/4 X 5" SWEDGED

Another part from your old KLM is slightly different from the M² KT36XA. The original short 3/4" section swaged to accept the 1/2" element tip was shorter than the current unit and was slit so a hose clamp could be used to hold the 1/2" piece in place. This hose clamp method can still be used but if you want to be sure it will hold in all climates, then it would be good idea to drill a .173 hole through the joint and use an 8-32 screw and lock nut for sure. We drill our holes at 1/2" and 1-1/2" back from the joint. The slight length difference between the old and the new 3/4" swaged pieces will have no effect on element tuning. Just set the "10M", "15M" and "20M" dimensions accurately as shown on the KT36XA ASSEMBLY MANUAL. You may have to cut the 1/2" tubes on two elements to achieve the correct '20M' dimension. Some KLM KT34XA vintages had 1/2" x 40-3/4" tubes in the front driven element. These are too short and we now provide (2) 1/2 x 44" replacements.

DIRECTOR 2, 10M ELEMENT

You will also have to modify your D2 slightly to match the electrical characteristics of the M2 design.. If you stay with your original KLM center insulators. D2 is the ten meter director and the new 1/2" tip length should be 22" or an overall TUBE half length of 94".

"T" MATCH FEED

We have provided the parts to replace your old 'T' match including new machined shorting bars. Remove your old 'T' match assembly. Clean the 1" element section from the center out at least 24" or to where the new shorting bars attach (at the ends of the 1/2" matching tubes). Your original #12 AWG wire leads can still be used to connect the balun to the 'T' match rods. Alternately you can use 1/2" strap material from your old straps to fabricate "strap leads" to do the connection as we do in the new KT36XA. Nothing is very critical in this area except that you create good, solid, low loss connections.

PHASING LINES

We have provided NEW STYLE PHASING LINE parts. We recommend using the new parts but the old straps work the same as the new tubes and clamps. If you use the new parts, you will have to open the inner hole at the butt of the FRONT AND REAR DRIVEN ELEMENT to accommodate the 1/4-20 x 3" bolts. We have found that the original balun clip of spring steel comes very close to the new 3/8" clamp blocks holding the new phasing tubes. A short spacer cut from some scrap 3/8 or 1/2" tubing will raise the clip above the 3/8" clamp blocks eliminating a possible short. If the old balun clip is rusted it can be painted or simply discarded. Use tape or equivalent to hold the balun in position if necessary.

ELEMENT INSULATOR "JUMPER STRAP"

We also recommend you remove the shorting strap across each center insulator and clean the connection on the strap and on the element butt thoroughly. Apply penetrox and re-assemble. THESE ARE CRITICAL JOINTS!!!! All the current in the element flows through these jumpers.

GUY SUPPORT

The overhead guy material was originally HPTG 1200 Phillistran and can still be used. It can be replaced, if necessary by the new version of HPTG 1200 available from Texas Towers or M². 5/16" Dacron or 1/8" steel cable can also be used with no effect on KT36XA tuning.

U-bolts, Boom to Mast plates, turnbuckles, even new boom sections are available as optional items from M². Finding what you can locally however should save you time and money.

COMMON ANSWERS TO COMMON QUESTIONS

QUES: When measuring tube or shorting bar position, “where do I measure from, inside to inside or outside to outside?”

ANSWER: Refer to your individual element dimension sheet. It is much easier to determine which side of the tube or shorting bar to reference. Note: M2 has used to two inner shorting bars as points to hook your tape measure onto for ease of measuring, so generally hook your tape measure on to a inner shorting bar and measure to the inner edge of the outer shorting bar or to the end of a tube.

QUES: Is the gap between the capacitor caps critical?

ANSWER: No, the gap can be 1/8”-1/2”. The reason for the gap is to prevent water from sitting in a location where water could over time “wick” into the capacitor tubes. Water in the capacitor tube can change the capacitance which can change the tuning of the antenna.

QUES: If I end up with some unacceptable VSWR on one or more bands can I adjust it out with the “T” match?

ANSWER: No, In fact this is not a true “T” match. We found in the early stage of the original design that only a small amount of VSWR improvement occurred when we adjust the “T” match. Just set it to the dimension sheet and forget it. Other factors are causing your VSWR problems. Recheck your dimensions

QUES: I have a good, but not perfect VSWR, Will it help to replace the balun?

ANSWER: Probably not. If your balun is broken inside your match will be poor (up to 4:1) on all bands. Save your money, recheck your dimensions.

QUES: How can I be sure I have the capacitor caps on the tube all the way?

ANSWER: The capacitor caps overlap the tubes by 3/8” (.375) so when both caps are fully engaged with the tube the dimension from the inside of each cap should be 3/4”(.750) less than the capacitor tube being measured.