

FIELD SERVICE NOTE

F/S/N Number 140-040303-0

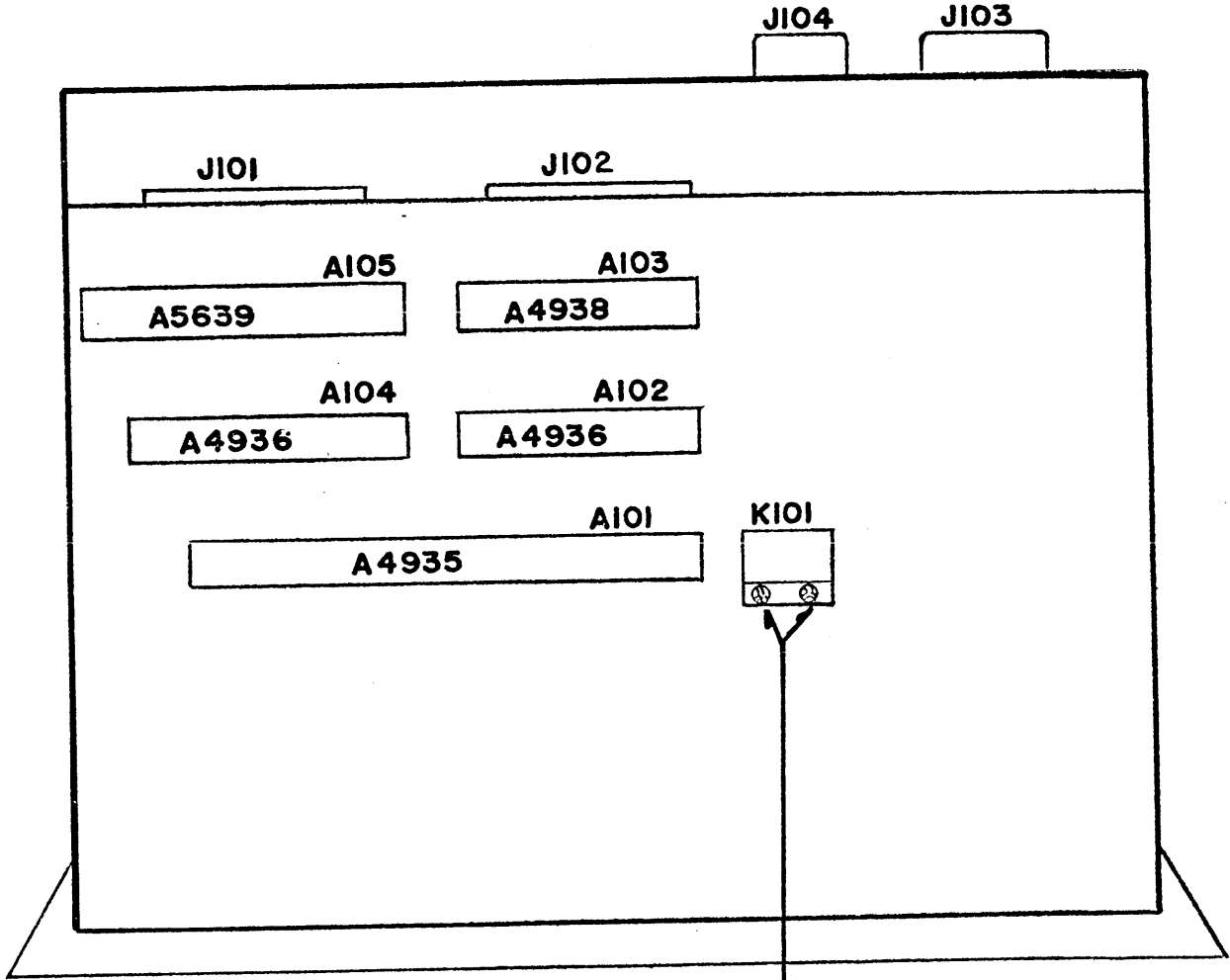
Date 1 OCT 1978

ATS-3 RETROFIT KIT

KIT-426

AX5175

(TOP VIEW)



DRILL TWO(2) HOLES 5/32 DIA.
IN APPROX AREA FOR RELAY BRACKET
(MS6795)

TMC SPECIFICATION

NO.

REV:

COMPILED:

CHECKED:

APPD:

SHEET

3

OF 12

TITLE:

PURPOSE:

TO UP-DATE THE (AUTOMATED ANTENNA TUNER) ATSA-3 THE FOLLOWING MODIFICATIONS MUST BE PERFORMED.

A, AX5175 (CONTROL)

A4936 (A102/A104)

1. Printed circuit board A4936
REF CK2054-C, REF DRAWING A4936

CK2054 must be used to perform the electrical modifications on this printed circuit board.

The following components must be ADDED, DELETED or CHANGED.

<u>ADD</u>	R29	RC07GF471J
	R30	RC07GF332J
	R31	RC07GF242J
	R32	RC07GF223J
	Q7	2N2222
	C15	CC131-48
	C16	CC131-48

Add a wire from the junction of R31 and R32 to the junction of R16 and R19.

Add a wire from C15 (2.2uf) to the junction of CR8 and R26.

Add a wire from connector Pin (B) to the junction of CR8 and R26.

<u>DELETE</u>	C3	220uuf
	C9	220uuf
	C4	.01uf
	C11	470uuf
	R5	3.3K
	R13	1.5K
	R27	560 ohms

Delete at Z2, from Pin 5 C3, 220uf

Delete at Z2, from Pin 8 R5, 3.3K

Delete at Z2, from Pin 1 C4, .01uf

Delete at Z1, from Pin 5 C9, 220uuf

Delete at Z1, from Pin 8 R13, 1.5K

Delete at Z1, from Pin 1 C11, 470uuf

Delete at the junction of CR8 and R26, R27 560 ohms

CHANGE

Change R26 from a 1K Resistor to RC07GF103J

Change R9 from a 1K Resistor to RC07GF562J

Change R28 from a 56 ohm Resistor to RC32GF101J

Change Z1 from NW156 (UA709) to UA741

Change Z2 from NW156 (UA709) to UA741

Change R8 from a 47K Resistor to RC07GF823J

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TITLE:

A5639 (A105)

2. Printed circuit board A5639
Ref. CK2128-A, Ref. Drawing A5639

Remove A4937 (A105) and replaced directly with A5639.

A4935 (A101)

3. Printed circuit board A4935
Ref. CK2052-D, Ref. Drawing A4935

CK2052 must be used to perform the electrical modifications on this printed circuit board.

The following components must be DELETED or CHANGED.

DELETE

R20	1.5K
R19	27K
R18	5K
R17	12K
C7	.001uf
C8	.001uf

Delete at Z1, from Pin 5 C8, .001uf

Delete at Z1, from Pin 1 C7, .001uf

Delete at Z1, from Pin 8 R20, 1.5K

Delete at Z1, from Pin 1 R18, 5K (VAR) R19, 27K

Delete at Z1, form Pin 7 R17, 12K

CHANGE

Change Z1 from NW156 (UA709) to UA741

A4938 (A103)

4. Printed circuit board A5639
Ref. CK2055-D, Ref. Drawing A4938.

CK2055 must be used to perform the electrical modifications on this printed circuit board.

The following components must be ADDED, DELETED, or CHANGED.

<u>ADD</u>	C17	CE105-50-25
	CR14	1N645
	R56	RC07GF105J

Add C17, (50uf at 25V) at the junction of Q11 (2) and R35 to the junction of Q11 (1) and CR4

Add CR14 (1N645) and R56 (1 meg) parallel at the junction of Q7

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OF 12

TITLE:

and C6 to the junction of R43, and Q13 (3).

DELETE

R14	1.5K
C4	.001 <i>uf</i>
R15	12K
R51	5K (VAR)
R16	27K
C12	.001uf
R25	250K (VAR)

Delete at Z2, from Pin 5 C12 .001uf
 Delete at Z2, from Pin 8 R14 1.5K
 Delete at Z2, from Pin 1 C4 .001uf
 Delete at Z2, from Pin 7 R15 12K, R51 5K (VAR), R16 27K
 Delete at the junctions of CR12 and Q7, R25 250K (VAR)

CHANGE

R28 from a 1K Resistor to RC07GF222J
 R42 from a 2.2K Resistor to RC07GF472J
 R48 from a 3.3K, 1W Resistor to RC42GF152J
 R46 from a 2.2K Resistor to RC07GF472J
 R47 from a 1K Resistor to RC07GF392J
 Z2 from NW156 (UA709) to UA741

A4939 (MOTHER BOARD)

Printed circuit board A4939
 REF. CK2056-C, REF. DRAWING A4939

CK2056 must be used to perform the electrical modifications on this printed circuit board.
 The following components must be ADDED.

ADD

C19	.1uf
C20	.1uf
C21	5.5 uf (NP)

Add C19 (CC131-39) from connector J101 Pin 14 to ground.
 Add C20 (CC131-39) from connector J102 Pin 9 to ground.
 Add C21 (5.5uf Approx) CX118P5R5N30C1 from XA102 connector socket Pin (H) to ground.
 Add a wire LWC26(7)U1 from connector socket J102 Pin 8 to connector socket XA103 Pin K.
 Add a wire LWC26(7)U1 from connector J101 Pin (H) to socket XA105 Pin (6).

TMC SPECIFICATION

NO.

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TITLE:

A4946 (A106)

5. Printed circuit board A4946
REF. CK2051-E, REF. DRAWING A4946

A4946 printed circuit board's schematic is part of CK2051-E.

CHANGE R1 1.5K to RC32GF332J

A4945 (A107)

6. Printed circuit board A4945
REF. DWG. CK2051-E, REF. DRAWING A4945

A4945 printed circuit board's schematic part of CK2051-E.

CHANGE R1 1.5K to RC42GF272J

7. AX5175 (CONTROL UNIT)

CK2051-E must be used to perform the electrical modifications.

ADD K101 RL156-14 With Socket/Bracket
CR104 1N645
R114 RC32GF821J

REMOVE the wire from connector J103 Pin X to terminal 5 of T103.

ADD a No. 24 gauge (LWC24(7)U2) wire from J103 Pin X to K101 terminal 8

ADD a No. 24 gauge (LWC24(7)U3) wire from K101 terminal 9 to T103 terminal 5.

ADD a Resistor (RC32GF821J) from K101 terminal 10 to ground.

ADD a Diode (1N645) across K101 terminals 1 and 4.

ADD a No. 24 gauge (LWC24(7)U4) wire from K101 terminal 4 to connector socket J102 Pin 8.

Add a No. 24 gauge (LWC24(7)U5) wire from connector J104 - Pin Z to J102 Pin 15.

ADD a No. 24 gauge (LWC24(7)U6) wire from J104 Pin X to J101 Pin F.

ADD a No. 24 gauge (LWC24(7)U7) wire from J104 Pin Y to J101 Pin H.

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SHEET 7 OF 12

TITLE:

B, AX5176 (TUNER)

1, CAPACITOR ASSEMBLY (DRAWING AX5189)

Items 37, 43 and 45 must be removed and holes must be drilled and taped for a second set screw. This set screw must seat 45° apart from the existing set screw.

The 1K resistor (pot) which is seated on one of the gears and it's associated assembly must be removed. This is accomplished by removing (MS6464) the plate that holds this assembly in place. This will leave a 1¼ inch hole and the two threaded nuts.

At the worm gear compartment a shaft extends (approx) 3/4 inch with a sleeve and two (2) set screws that act as a stop against two ½ inch terminals. Remove the sleeve and the two terminal stops, leaving a bare 3/4 inch shaft.

The gear stop assembly is to be assembled as per drawing AX5179 Detail "C". This assembly will seat in the vacated 1¼ inch hole and fastened via two threaded nuts which were left vacated with the removal of the 1K resistor (pot) assembly. (All parts are supplied)

When Detail "C" is seated correctly and tightened, align the three (3) gears, tighten six (6) set screws two per gear and seal.

Important! Use "Glyptal" to seal (supplied).

At the worm gear compartment, assemble a RV4NAYSA102 pot as per AX5179 Detail "D" (drawing and parts supplied)

2, COIL ASSEMBLY (DRAWING AX5178)

Items 29, 30 and 9 must be removed and holes must be drilled and taped for a second set screw. This set screw must seat 45° apart from the existing set screw.

The 1K Resistor (pot) which is seated on one of the gears and it's associated assembly must be removed. This is accomplished by removing (MS6464) the plate that holds this assembly in place. This will leave a 1¼ inch hole and two threaded nuts. It may be necessary to remove the two (2) nuts if they seat on the inside of the metal work (facing the coil).

RV117-2-102 must now be re-assembled on MS6585, a detailed drawing of the entire assembly is supplied. Using AX5178, the parts supplied and the detailed drawing the assembly now can be completed and mounted in place. When the assembly is fastened securely, align the three (3) existing gears, tighten and seal with (Glyptal supplied).

TMC SPECIFICATION

NO.

REV:

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SHEET 8 OF 12

TITLE:

C,

MMX() REF. CK2067

If an MMX() Exciter is used in conjunction with an antenna tuning system (ATSA-3). The MMX() switching must be modified. Refer to CK2067 Sheet 2 of 2.

A note appears on CK2067 Sheet 2 of 2 defining the procedure that must be used for each series of transmitters (GPT) or (HFTA) series.

A wire may exist at pin Z of J119 this wire must be removed and soldered to pin P of J119. This operation is performed internal to the MMX() and will free pin Z.

A minimum amount of external wiring must be performed external to the units to ensure a proper systems operation. The following paragraph will deal with wiring on (HFTA) series transmitter and a (GPT) series transmitter.

(HFTA) SERIES TRANSMITTER

a, Two wires must be added to the HFTA system to facilitate the ATSA-3 Modifications.

1, a wire LWC24(7)U4 from the connector that mates with J104 of the ATSA-3. (ATSA-3) J104-X to (MMX) J119-X (2.-2.999)

2, a wire LWC24(7)U5 from the connector that mates with J104 of the ATSA-3. (ATSA-3) J104-Y to (MMX) J119-Z (2.3-2.5999)

b, (GPT) SERIES TRANSMITTER

Four wires must be added to the GPT system to facilitate the ATSA-3 Modifications. (Reference CA 1828 supplied)

1, a wire LWC24(7)U2 from the connector that mates with J104 of the ATSA-3.

(ATSA-3) J104-J to (TMA) Term 3 (RF Trig Monitor)

2, a wire LWC24(7)U3 from the connector that mates with J104 of the ATSA-3.

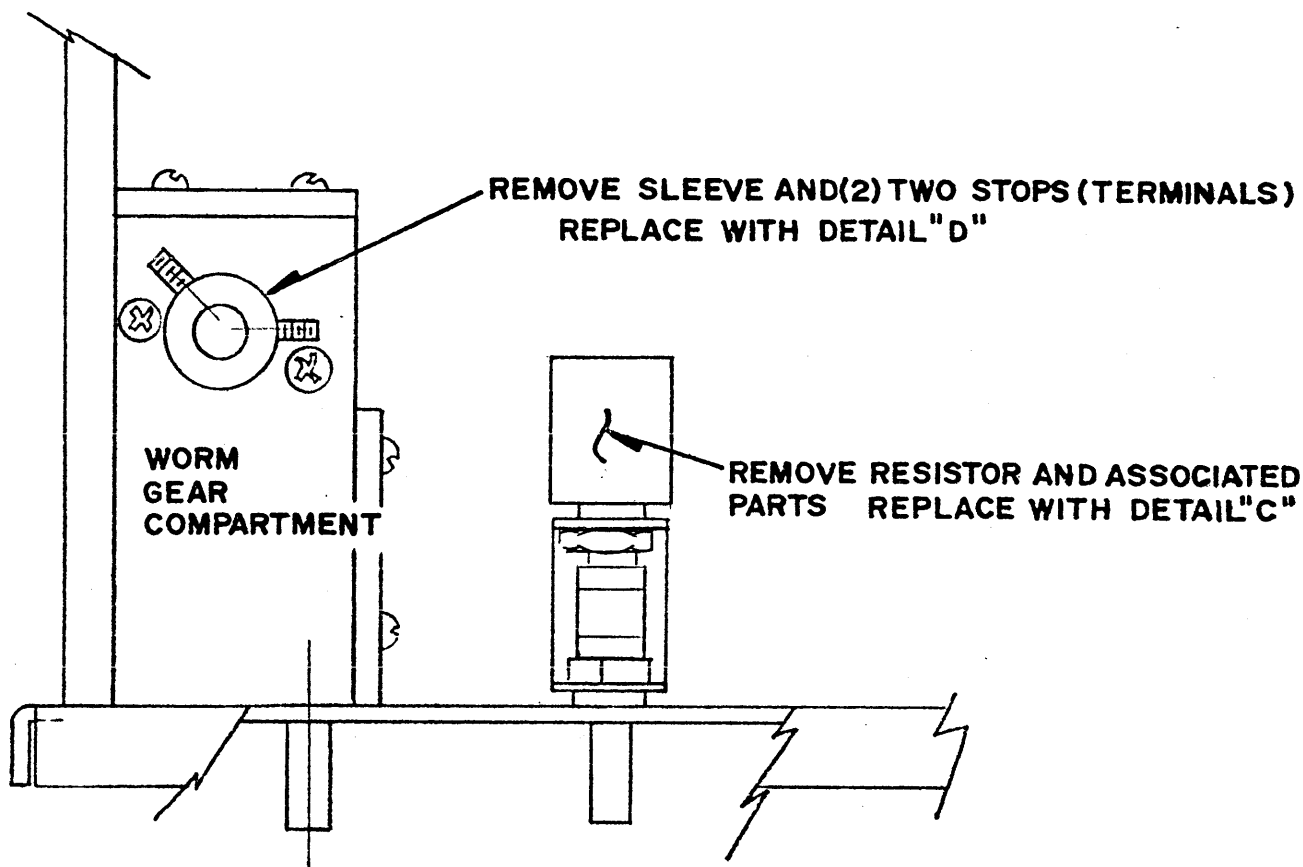
(ATSA-3) J104-Z to (TMA) Term 2 (FAULT)

3, a wire LWC24(7)U4 from the connector that mates with J104 of the ATSA-3.

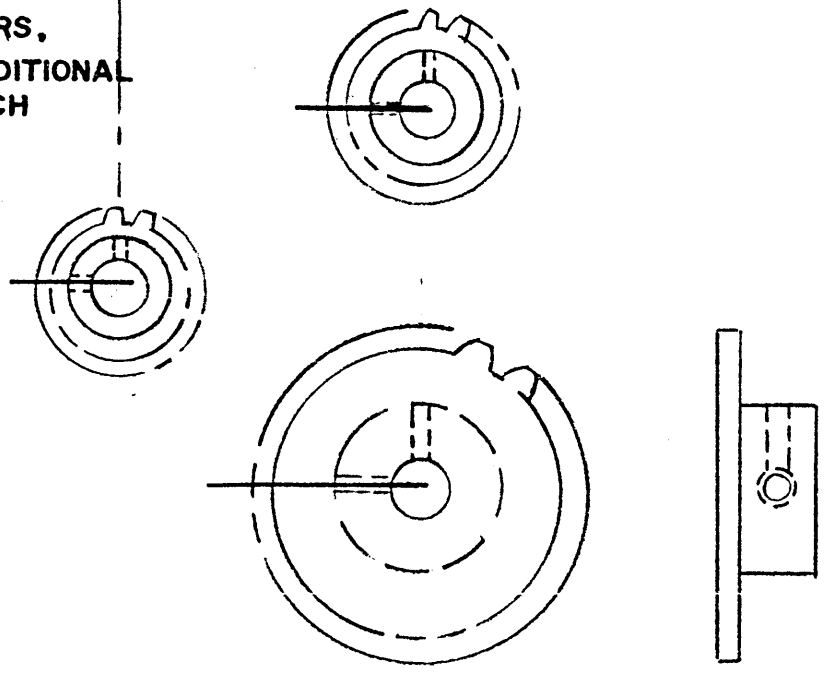
(ATSA-3) J104-X to (MMX) J119-X (2.-2.999)

4, a wire LWC24(7)U5 from the connector that mates with J104 of the ATSA-3.

(ATSA-3) J104-Y to (MMX) J119-Z (2.3 - 2.5999)

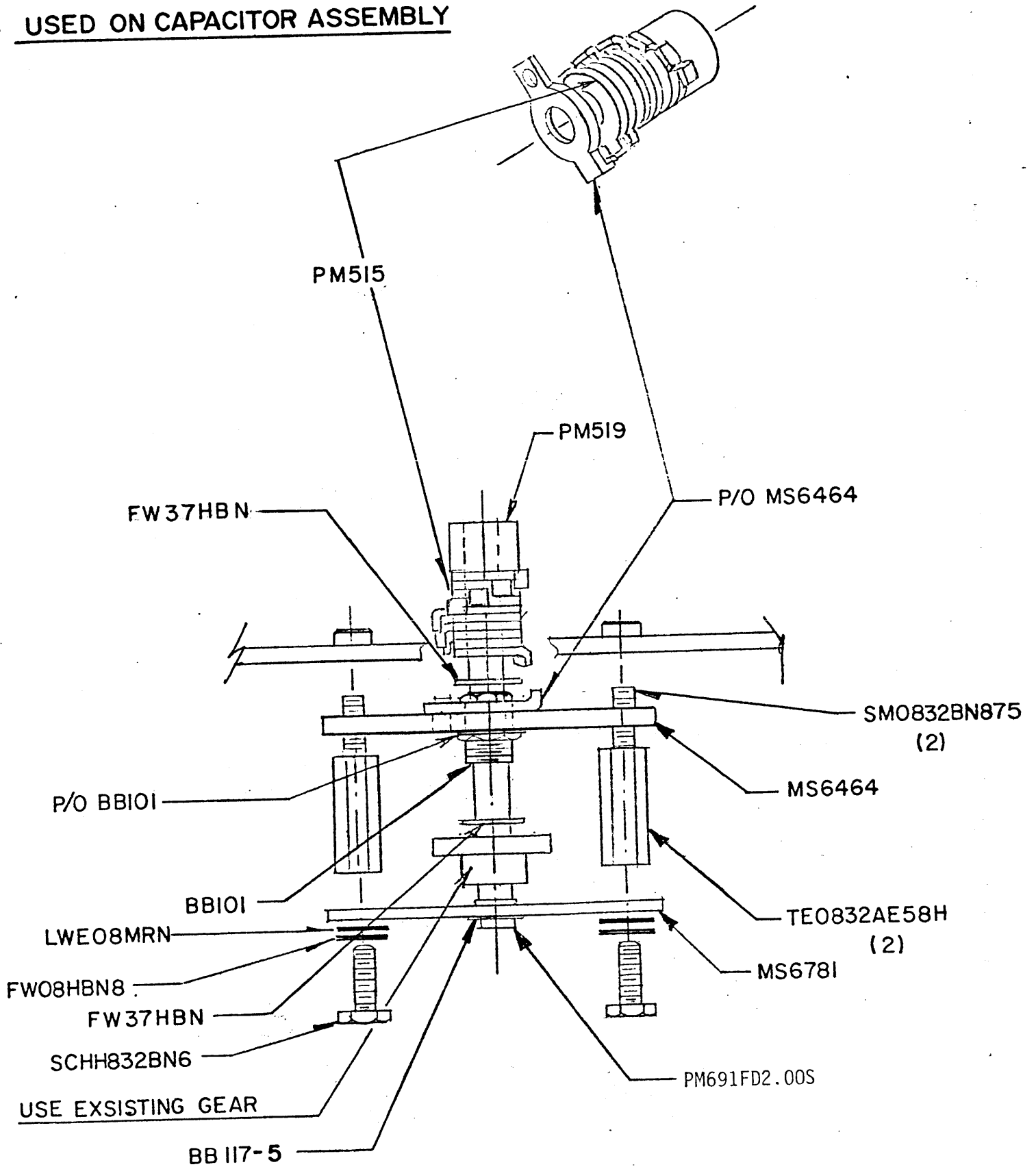


REMOVE THREE (3) GEARS,
DRILL AND TAP ONE (1) ADDITIONAL
SET SCREW HOLE ON EACH



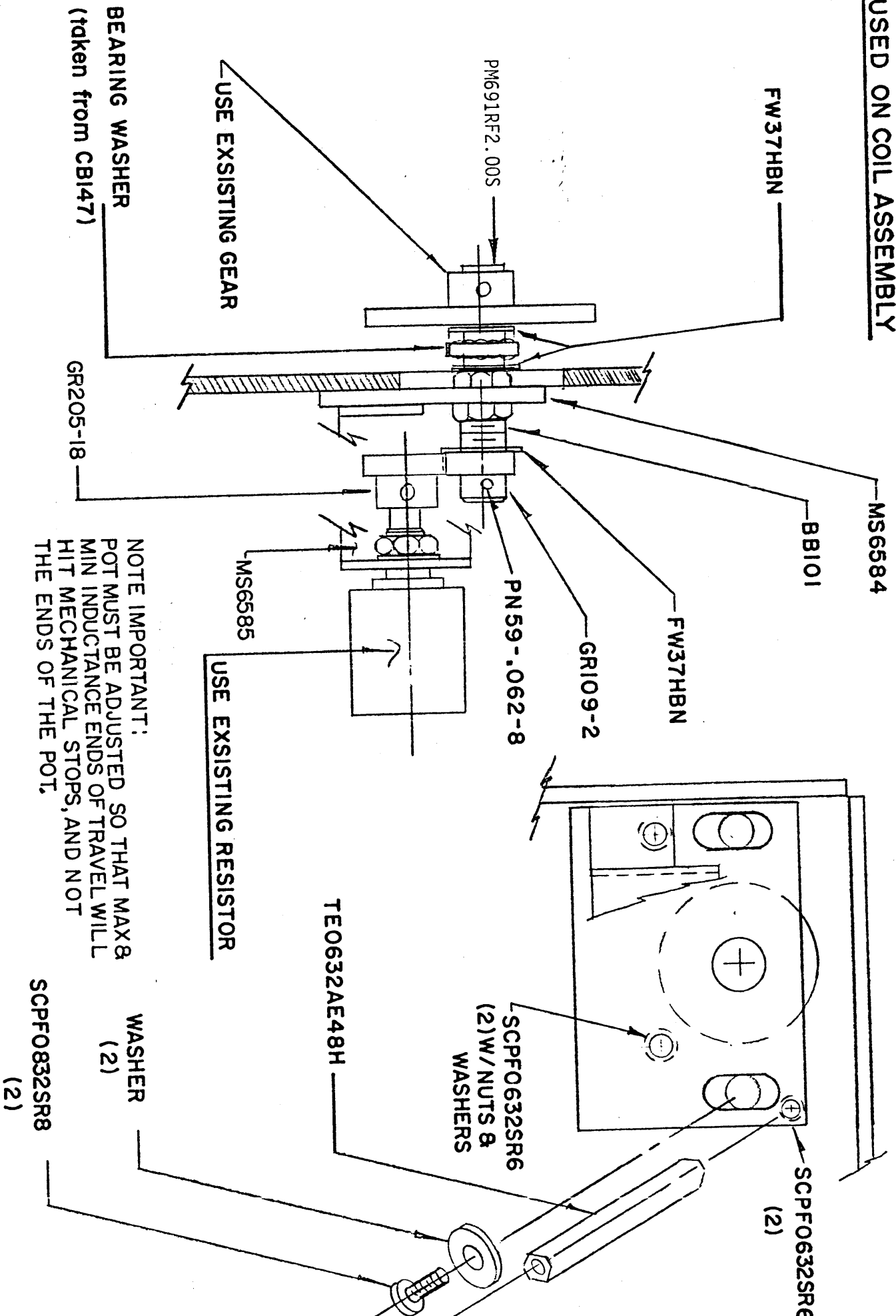
AX5176

USED ON CAPACITOR ASSEMBLY



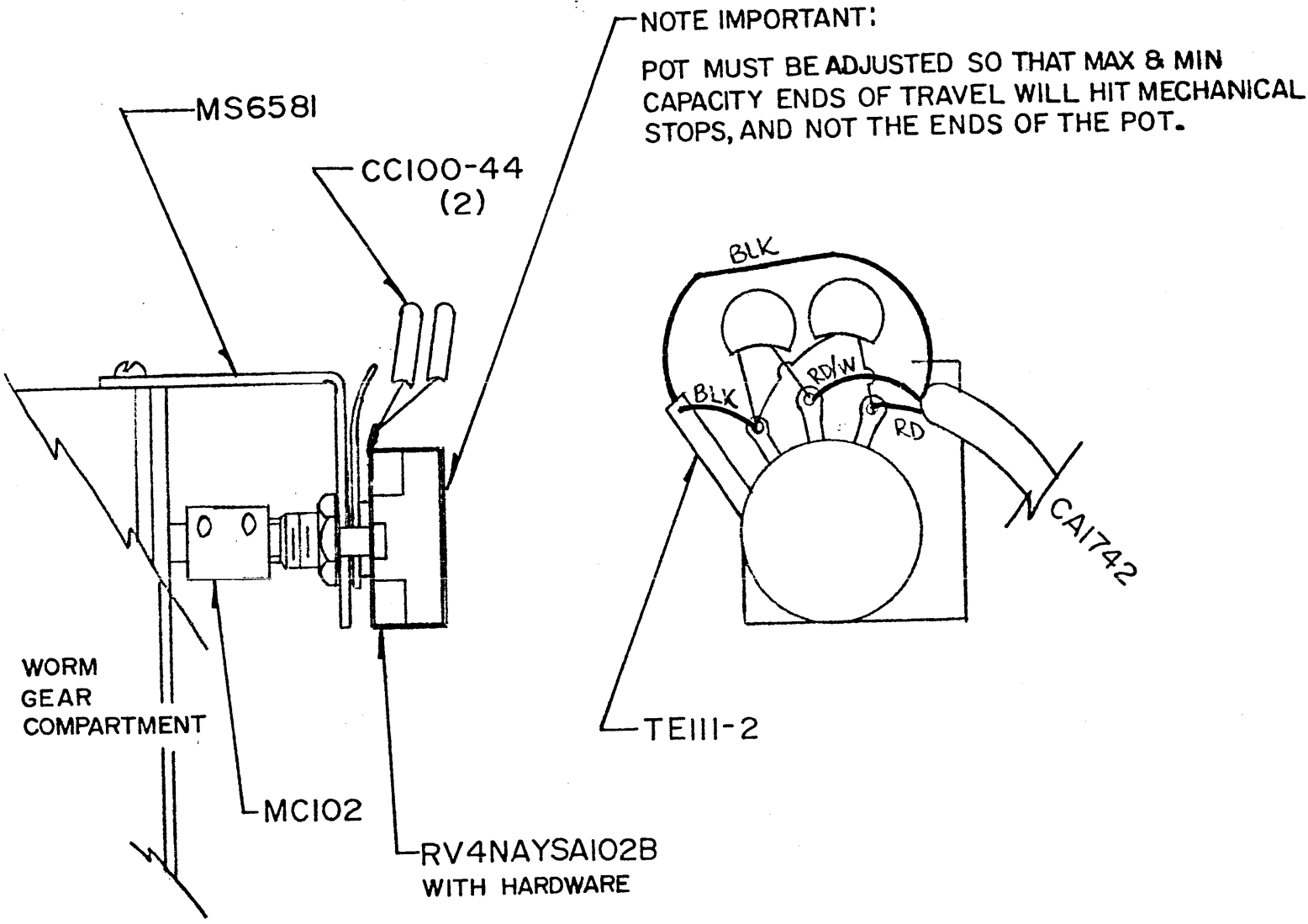
DETAIL "C"

AX5176 USED ON COIL ASSEMBLY



AX5176

USED ON CAP. ASSEMBLY



DETAIL "D"

TOTAL SHEETS-

USED ON
MODEL- AX5175
AX5176

FOR

MODEL KIT426

TITLE AUTOMATED ANTENNA TUNER

(ATSA-3) UP-DATING KIT

LAST SYMBOLS

CONSISTS OF
SUPPORTING LISTS

REVISIONS

REV.	SHEET(S)	DATE	APPR.

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CHECKED _____

KEY PUNCHED _____

*NOTE
ENCLOSED ARE COMPONENTS AND DRAWING NUMBERS
NEEDED FOR UP-DATING AN (ATSA-3).

MISSING SYMBOLS

ENGINEERING JOB ORDER
E _____

§ FOR SPECIAL NOTES,
REFER TO S1200.

MATERIAL LIST

AX5175

PART NUMBER	DESCRIPTION	USED ON	QTY.	QTY. PER UNIT	REFERENCE SYMBOLS	SPECIAL NOTES REFER TO S1200
A5639	ASS'Y, PRE-POSITION	AX5175	1	1	A105	
CC131-48	CAP, FXD	A4936	4	2	C15, C15 C16, C16	
CE105-50-25	CAP, FXD, ELEC	A4938	1	1	C17	
CX118P5R5N30C1	CAP, FXD, (NP)	A4939	1	1	C21	
CC100-43	CAP, FXD,	A4939	1	1	C19 C20	
MS6795	BRACKET, MTG RELAY	AX5175	1	1	XK101	
RC07GF471J	RES, FXD, COMP.	A4936	2	2	R29, R29	
RC07GF332J	RES, FXD, COMP.	A4936	2	2	R30, R30	
RC07GF242J	RES, FXD, COMP.	A4936	2	2	R31, R31	
RC07GF223J	RES, FXD, COMP.	A4936	2	2	R32, R32	
RC07GF103J	RES, FIX, COMP.	A4936	2	2	R26, R26	
RC07GF562J	RES, FIX, COMP.	A4936	2	2	R9, R9	
RC07GF101J	RES, FIX, COMP.	A4936	2	2	R28, R26	
RC07GF105J	RES, FIX, COMP.	A4938	1	1	R56	
RC07GF222J	RES, FIX, COMP.	A4938	1	1	R28	
RC07GF472J	RES, FIX, COMP.	A4938	2	1	R42 R46	

MATERIAL LIST

PART NUMBER	DESCRIPTION	USED ON	QTY.	QTY. PER UNIT	REFERENCE SYMBOLS	SPECIAL NOTES REFER TO S1200
RC076F152J	RES, FIX, COMP	A4938	1	1	R48	
RC076F392J	RES, FIX, COMP	A4938	1	1	R47	
RC326F332J	RES, FIX, COMP	A4946	1	1	R1	
RC426F272J	RES, FIX, COMP	A4945	1	1	R1	
RC326F821J	RES, FIX, COMP	AX5175	1	1	R114	
TS171-1 CU163	SOCKET RELAY RETAINER, RELAY	AX5175 AX5175	1 1	1 1	XK101	
SCBP0632SR	SCREW, 1/2 INCH LONG NUTS WASHERS, LOCK	AX5175 AX5175 AX5175	2 2 2	2 2 2		
RL156-14	RELAY,	AX5175	1	1	K101	
DRILL BIT FOR	13/64 DIA. HOLE					
2N2222	TRANSISTOR	A4936	2	2	Q7, Q7	
1N645	DIODE	A4938 AX5175	2	1 1	CR14 CR104	
MFG/PN UA741	NETWORK, OP AMP	A4936 A4936 A4935 A4938		2 2 1 1	Z1, Z1 Z2, Z2 Z1 Z2	
LWC24(7)U2	WIRE, INSUL 24 INCHS	AX5175				
LWC24(7)U3	WIRE, INSUL 24 INCHS	AX5175				

MATERIAL LIST

PART NUMBER	DESCRIPTION	USED ON	QTY.	QTY. PER UNIT	REFERENCE SYMBOLS	SPECIAL NOTES REFER TO S1200
LWC24(7)U4	WIRE, INSUL 24 INCHS	AX5175				
LWC24(7)U5	WIRE, INSUL 24 INCHS	AX5175				
LWC24(7)U6	WIRE, INSUL 24 INCHS	AX5175				
LWC24(7)U7	WIRE, INSUL 24 INCHS	AX5175				
LWC26(7)U1	WIRE, INSUL 24 INCHS	A4939				
IMPORTANT!						
LIST OF DRAWINGS NEEDED TO BE SENT TO COMPLETE MODIFICATIONS						
A4936	ASS'Y DRAWING					
A4938	ASS'Y DRAWING					
A5639	ASS'Y, DRAWING					
A4939	ASS'Y DRAWING					
A4935	ASS'Y DRAWING					
A4946	ASS'Y DRAWING					
A4945	ASS'Y DRAWING					
CK2054	SCHMATIC, (A102, A104)					
CK2128	SCHMATIC (A105)					
CK2052	SCHMATIC (A101)					
CK2055	SCHMATIC (A103)					
CK2056	SCHMATIC					
CK2051	SCHMATIC (OVERALL)					

TOTAL SHEETS - 2

USED ON
MODEL-

FOR

MODEL P/of KIT 426

TITLE _____

MODIFICATIONS FOR MMX () & SYSTEMS

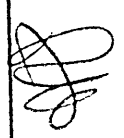
LAST SYMBOLS

CONSISTS OF
SUPPORTING LISTS

MISSING SYMBOLS

REVISIONS

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KEY PUNCHED _____

ENGINEERING JOB ORDER
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§ FOR SPECIAL NOTES,
REFER TO S1200.

MATERIAL LIST

PART NUMBER	DESCRIPTION	USED ON	QTY.	QTY. PER UNIT	REFERENCE SYMBOLS	SPECIAL NOTES REFER TO S1200
CK2067 1N645 RC07GF511J RC07GF122J LWC24(7)U2 LWC24(7)U3 CA1828 (USE ONLY WITH GPT SERIES TRANSMITTER)	(DRAWING, SCHEMATIC) (2 SHEETS) DIODE, RESISTOR RESISTOR (6 FEET) (6 FEET) CABLE, HARNESS	MMX () MMX () MMX () MMX () (HFTA SERIES) (HFTA SERIES) (GPT SERIES)	1 8 1 1	1 8 1 1	CR213, CR212 R218 R219	

TOTAL SHEETS-

USED ON
MODEL-

CONSISTS OF
SUPPORTING LISTS

FOR

MODEL P/OE KIT 426
TITLE MODIFICATIONS FOR AX5176
CAPACITOR ASSEMBLY

LAST SYMBOLS

REVISIONS

REV.	SHEET(S)	DATE	APPR.

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ENGINEERING JOB ORDER
E _____

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MATERIAL LIST

AX5176 (TUNER)

PART NUMBER	DESCRIPTION	USED ON	QTY.	QTY. PER UNIT	REFERENCE SYMBOLS	SPECIAL NOTES REFER TO S1200
COMPONENTS	FOR (CAPACITOR ASSEMBLY)					
DRAWING	(AX5189 DRAWING)					
BB117-5	NYLON, BEARING	AX5176	1	1		
BB101	BUSHING, THREADED WITH HARDWARE.	AX5176	1	1		
FW37HBN	FLAT, WASHER	AX5176	2	2		
LWI25MRN	LOCK, WASHER	AX5176	1	1		
MS6781	PLATE, BEARING	AX5176	1	1		
MS6464-2	PLATE, SHAFT, SUPPORT	AX5176	1	1		
LWE08MRN	LOCK, WASHER	AX5176	2	2		
FW08HBN8	FLAT WASHER	AX5176	2	2		
PM519	CAP, SHAFT	AX5176	1	1		
PM691FF2.00S	SHAFT FLAT	AX5176	1	1		
SM08332BN875	THREADED STUD	AX5176	2	2		
TE08332AE58H	SPACER, THREADED	AX5176	2	2		
SLHC0632SP5	ALLEN SCREW	AX5176	6	6		
WR100-3	ALLEN WRENCH	AX5176	3	3		
DRILL NO. 36	DRILL FOR ALLEN SCREW	AX5176	1	1		

MATERIAL LIST

PART NUMBER	DESCRIPTION	USED ON	QTY.	QTY. PER UNIT	REFERENCE SYMBOLS	SPECIAL NOTES REFER TO S1200
TAP 6-32	TAP FOR ALLEN SCREW	AX5176	1	1		
GLYP TAL 1201 RED ENAMAL	(GENERAL ELEC)	AX5176	X	X		
CC100-44	CAP, FXD	AX5176	2	2		
MC102	COUPLER	AX5176	1	1		
RV4NAYS A102B WITH HARDWARE	RES, VAR COMP	AX5176	1	1		
TE111-2	GND, LUG	AX5176	1	1		
MS6581	BRACKET, RESISTOR	AX5176	1	1		

TOTAL SHEETS-

USED ON
MODEL-

CONSISTS OF
SUPPORTING LISTS

FOR

MODEL P/OF KIT 426
TITLE _____

MODIFICATIONS FOR AX5176 COIL ASSEMBLY

LAST SYMBOLS

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AX5176 (TUNER)

PART NUMBER	DESCRIPTION	USED ON	QTY.	QTY. PER UNIT	REFERENCE SYMBOLS	SPECIAL NOTES REFER TO S1200
COMPONENTS DRAWING BB101	FOR (COIL ASSEMBLY) (AX5178 DRAWING) BUSHING, THREADED WITH HARDWARE	AX5176 AX5176	1	1		
FW37HBN	WASHER FLAT	AX5176	3	3		
FW #8 SCREW	WASHER FLAT	AX5176	4	4		
FW #6 SCREW	WASHER FLAT	AX5176	8	8		
NTH #6 SCREW	NUT (6032 SCREW)	AX5176	4	4		
NTH #8 SCREW	NUT (8-32 SCREW)	AX5176	4	4		
GR109-2	GEAR	AX5176	1	1		
GR205-18	GEAR	AX5176	1	1		
MS6585	BRACKET, RES	AX5176	1	1		
MS6584	PLATE, GEAR	AX5176	1	1		
PM691FF2.005	SHAFT,	AX5176	1	1		
WASHER, BEARING	SEE P/OF CB147	AX5176	1	1		
PN59-.062-8	PIN,	AX5176	1	1		
TE0632AE48H	STANDOFF,	AX5176	1	1		
SLHC0632SPS	ALLEN SCREW	AX5176	6	6		
WR100-3	ALLEN WRENCH #6	AX5176	3	3		