VLRB-1 GEAR BOX ASSEMBLY PROCEDURE

1. (a) Press bearing #3 into hole nearest edge of front gear plate #2.
   (b) Press bearings #4 into front plate #2 and rear plate #1.
   (c) Press bearings #61 into cam mounting brackets #25.
2. (a) Assemble spring #8 to lock slide #6 and yoke #7.
   (b) Then fasten entire assembly to front gear plate with two screws (ITEM 106) .
3. Press spring pin #10 into lock shaft yoke #9.
4. (a) Press spring #10 thru lock shaft #11 and assemble to lock shaft yoke #9.
   (b) Assemble adjustable strap #13 to mounting rod coupler #12 with screws #96 and insert set screws (ITEM 105) .
   (c) Slip washer (FW-10HBN) and preceding assembly 4b onto lock shaft #11. (REF Item 124)
5. Mount entire lock shaft assembly to front gear plate with two screws (Item 107) .
6. Mount four spacers #14 & #15 to front gear plate with screws (Item 107) keeping longer spacers #15 nearer edge of plate.
7. Mount panel bushing #16 from rear of plate. W/Nut & Item 125.
8. Mount stop pin #17 to front of plate above panel bushing, W/Items 91,110
9. Mount four hexagonal spacers #18 to rear of plate with screws #93.
10. Pin adjustable bar #19 to cam shaft #20 with taper pin #21.
11. Assemble worm wheel #22, cam #23 (flange away from worm wheel), and two collars #24 (with undercuts to end of shaft) to cam shaft.
12. Place camshaft into cam mounting brackets and mount entire assembly to rear of plate #1 with four screws (Item 107)
13. (a) Pin gear #26 to tuning shaft #27 with taper pin #28 and assemble two collars #24 & #29 (with undercuts toward ends of shaft).
    (b) Insert shaft through rear of bearing #3 in front plate.
14. Assemble plate #1 to hexagonal spacers on plate #2.
15. (a) From the rear of plate #1 insert shaft #30 with gear #31 attached through bearing directly below the worm wheel. As the shaft passes thru the bearing assemble collar #29 (with undercut toward plate #1), clutch assembly #32 (with locking collar toward plate #2), and gear #33 (with undercut toward plate #2) to the shaft.
    (b) Fully load gear #31 with gear #22.
16. Fully load gear #26 with gear #32 and tighten set screws on clutch assembly, collars, and gears.
17. (a) Install gear shaft #34 by inserting through rear of bearing in plate #1, through gear #35 (undercut toward plate #1), through gear #36 (undercut toward plate #2), and into bearing in plate #2.
    (b) Fully load gear #36 with gear #33 and tighten set screws on gears #35 and #36.
18. (a) Install dial pulley shaft #37 by inserting through bearing in plate #1, through gear #36 (undercut toward plate #1), through collar #38 (undercut toward plate #2) and through bearing in plate #2.
    (b) Fully load gear #36 with gear #35 and tighten set screws on gear #36 and collar #38.
19. Temporarily insert a 1/4" shaft into the panel bushing #16 in plate #2 and assemble the drum dial main pulley #39 to the shaft (hub away from plate #2).
20. Slip two slip-on rings #40 and bearing #41 onto the spacer #15 near the panel bushing #16.
21. (a) Assemble slip-on rings #40 and bearings #42 to each of the outer spacers #15 with screws #84.
    (b) Mount flywheel #43 on tuning shaft #27 spaced approximately 1/16" from plate #2.
22. (a) Mount slide indicator hook #44 to spacer #45 with screws #95 and slip this assembly onto dial slide #46.
    (b) Mount this assembly to spacers #14 with screws #97. Do not mount indicator #59 at this time.
23. (a) Mount slip-on ring #40 and bearing #42 to the dial drive-pulley tension bar #47 and mount this assembly to dial bracket #49.
    (b) This, in turn, is mounted to plate #1 with screws #87.
24. (a) Install the drum drive shaft #50 in the drum mounting bushing #51 (allowing shaft to extend 1/8" beyong the hub) and tighten the set screws.
    (b) Install this assembly in the left end of the drum dial #52 (with the hub inside the drum).
25. Install drum mounting bushing #53 in the right end of the drum dial.
26. (a) Insert nylon bushing #54 in the drum mounting bushing #51.
    (b) Similarly, insert bushing #55 into bushing #53.
27. Slip bushing #51 through the dial bracket #49 (which is already mounted on plate #1) and install the other dial bracket #56 with screws #87.
28. Mount drum dial top pulley #57 on the shaft #50.
29. Temporarily move the dial drive pulley tension bar as far foward as possible.
30. Install bandswitch dial indicator wire (WL-105-18) as follows:
    With stop pin #17 engaged in slot of pulley #39 the 1/4" hole in the pulley should be to the right of the shaft. Knot one end of wire and pass the other end through the uppermost small hole (inside the 1/4" dia. hole) pulling wire through until knot jams inside of 1/4" hole.
    Position pulley #57 so that the blind 3/16" dia. hole faces downward. With slot in pulley #39 centered laterally on pin #17, bring wire over top of large pulley, around rearmost nylon pulley (attached to spacer #17) over the tension pulley, to front of pulley #57, approximately 270° to first small hole in pulley. Pass wire through this hole, into blind hole, and through other small hole.
    Continue bringing wire clockwise around pulley #57, around rear of tension pulley, over the other nylon pulley (spacer #17) and under the large pulley #39. Pass the wire through the other small hole in the large pulley.
    Install safety screw #94 in the tapped hole of the large pulley and install lock nut on the far side of pulley. Pass wire through hole in head of safety screw and through a ferrule (CU-101-11). Double back through the ferrule and crimp after pulling entire wire snug. Add tension to the entire assembly by sliding tension bar #47 towards rear and tightening mounting screws.
31. (a) Loosen set screws on small pulley #57 after first positioning the pulley so that the 3/16" hole is facing downwards.
    (b) Rotate down dial #52 until the 100---180 band faces forward. Retighten set screws.
32. Install pulley #58 (with hub toward plate #2) on shaft #37.
33. Install wire (WL105-18) as follows:
    Knot one end of a piece of wire. Position pulley #58 with 1/4" dia. hole directly above the shaft. Pass the unknotted end of the wire through the left small hole from inside the 1/4" dia. hole. Pull the wire through until the knot jams inside the indicator slide hook #44 at the extreme right end of the dial slide #46 lay the dial wire in its groove one full turn counter clockwise. Bring it around the nylon pulley at the left of the gear box, through a ferrule (CU-101-11), through the left eye in the slide hook, back through the ferrule, and crimp the ferrule.
34. Start another wire (knotted at one end) through the other small hole in pulley #58 in the same fashion as before. Hook one end of the extension spring (SP148) through the right eye of the slide hook. With the slide hook at the extreme left of the dial slide, lay the wire in its groove one full turn clockwise. Bring it around the nylon pulley at the right of the gear box, through a ferrule, through the other end of the extension spring, back through the ferrule, tension the wire approximately 1/8" and crimp the ferrule.
35. Mount the channel indicator #59 to the spacer #45 with screws #96.
36. (a) With the slide indicator approximately 1/4" from the left end of travel loosen the set screws on the worm wheel and cam. Position the cam shaft so that the adjustable stop #19 is vertical and facing downwards. Put a screw #86 with a nut (NTH0440BN8) into either tapped hole of the adjustable stop so that it bears lightly against the back of plate #1. Then lock the screw by tightening the nut. Next tighten the set screws on the worm wheel securely.
    (b) With the slide indicator still in the same position adjust the cam so that the flat edge (with set screw hole) is horizontal and above the shaft. Tighten the set screw.
37. Turn the tuning shaft until the slide indicator is approximately 1/4" from the right end of travel. Put another screw and nut (same as mentioned in step 36a) through the remaining hole in the adjustable stop until it bears lightly against the rear of plate #1 and lock the nut.
38. Install the dial lamp assembly #60 through the hole in the nylon bushing on the right side of the drum dial. Line up 1/8" hole on the lamp holder with shaft #50. Face the lamps toward the gear box and tighten the set screw on the dial bracket #56.
39. Check all screws, set screws, and nuts for tightness. Lubricate all gears lightly and check for any binding throughout the full range of travel. Make adjustments if necessary.
    The Unit is now ready to be assembled to the main unit. (Chassis #64)

ITEM NO.	MODEL & ASS'Y NO.	
	VLRB-1, A4279	VLRC-1, A4279-2
52	LD1637/PX856	LD2227/PX856
66	MS4075	PM1340-1
67	LD1649/MS4074	LD2228/M91340-2
64	MS4068	MS5121
79	CA945	CA1346
65	PM1120	LD2234/MS5115
83	17 REQ.	12 REQ.
39	PM 1137	PM 1365

Req'd	Item	Part Number	Description	Symbol
1	125	LWI37LRN	WASHER, LK, INTERNAL	
2	124	FW10HBN	WASHER, FLAT	
3	123	FW06HBN	WASHER, FLAT	
3	122	EY102-3J	GROM, RUB.	
3	121	CU101-11	FERRULE, RF CABLE, GRD.	
40	120	WL-105-18	WIRE, DIAL	
1	119	SP148	SPRING, EXTENSION	
4	118	NTH0632BN8	NUT, PLAIN, HEX	
2	117	NTH0440BN8	NUT, PLAIN, HEX	
13	116	NTH0440BN6	NUT, PLAIN, HEX	
15	115	LWS06MRN	WASHER, LK, SPLIT	
32	114	LWS04MRN	WASHER, LK, SPLIT	
	113	DELETED		
	112	DELETED		
4	111	LWE06MRN	WASHER, LK, EXTERNAL	
8	110	LWE04MRN	WASHER, LK, EXTERNAL	
2	109	FW08HBN	WASHER, FLAT	
6	108	FW04HBN	WASHER, FLAT	
10	107	SCFP0632BN6	SCREW, MACHINE	
2	106	SCFP0256BN6		
3	105	SLHC0440SP4		
27	104	SLHC0440SP3		
21	103	SLHC0632SP3		
14	102	SCBP0632BN6		
4	101	SCBP0632BN4		
8	100	SC155-0440SS12	SCREW, MACHINE	
	99	DELETED		
3	98	SCBP0632BN7	SCREW, MACHINE	
2	97	SCFP0440BN4		
4	96	SCBP0256BN3		
2	95	SCBP0256BN4		
1	94	SC163-0440-6		
8	93	SCFP0632BN8		
1	92	SCBP0440BN10	SCREW, MACHINE	
	91	DELETED		
3	90	SCFP0256BN3	SCREW, MACHINE	
3	89	SCFP0256BN5		
8	88	SC155-0440SS8	SCREW, MACHINE	
	87	DELETED		
2	86	SCBP0440BN16	SCREW, MACHINE	
2	85	SCHH0632SS8	SCREW, MACHINE	
13	84	SCBP0440BN6	SCREW, MACHINE	
SEE CHART	83	C1138-1	CORE (COIL SLUG)	
2	82	BB126-13	BEARING, BALL ANNL	
2	81	TE117-60	SPACER, SLY	
2	80	SC162-1	SCREW, MACHINE	
1	79	SEE CHART	WIRING HARNESS BRANCHED	
1	78	MS4097	PLATE, RETAINING	
2	77	SP153	SPRING, SLIDE	
1	76	PM1135	SLIDE, CAM FOLLOWER	
1	75	PM1140	FOLLOWER, CAM	
3	74	MS4093	PLATE, FOOT	
1	73	SW363	SWITCH, WAFFER TYPE	
2	72	PM1124	BRACKET, GUIDE SHAFT SUPPORT	
2	71	PM1123	BRACKET, GUIDE SHAFT SUPPORT	
8	70	WA143-1	WASHER, FELT	
4	69	PM1121-1	SHAFT, GUIDE	
4	68	PM1122	RETAINER, GUIDE SHAFT BEARING	
1	67	SEE CHART	PLATE, SLUG, MTG.	
1	66	SEE CHART	PLATE, "CAN" MTG	
1	65	SEE CHART	BRACKET, "L", PLUG	
1	64	SEE CHART	CHASSIS, MODULE, TUNING	
1	63	CU104-4	STRAP, RET.	
	62	DELETED		
2	61	BB126-15	BEARING, BALL ANNL	
1	60	A4018	ASSEMBLY, DIAL LAMP	
1	59	PX851	INDICATOR, FREQ. CHANNEL	
1	58	PM1142	PULLEY, DIAL	
1	57	PM1136	PULLEY, TOP, DRUM DIAL	
1	56	PM1143	BRACKET, DIAL, RT.	
1	55	PX850-1	BUSHING, NYLON, RT.	
1	54	PX850-2	BUSHING, NYLON, LEFT	
1	53	PM1131	BUSHING, DRUM MTG., RT.	
1	52	SEE CHART	DIAL, DRUM	
1	51	PM1099	BUSHING, DRUM MTG. LEFT	
1	50	PM1049RF-1.750	SHAFT, DRUM DRIVE	
1	49	PM1100	BRACKET, DIAL, LEFT	
1	48	TE117-59	SPACER, SLY.	
1	47	PM1134	BAR, PULLEY TENSION	
1	46	PM1094	SLIDE, DIAL	
1	45	PM1102	SPACER, SLIDE INDICATOR	
1	44	PM1105	HOOK, SLIDE INDICATOR	
1	43	PM1125	FLYWHEEL	
3	42	BB126-3	BEARING, BALL ANNL	
2	41	BB126-14	BEARING, BALL ANNL	
5	40	PX665	RING, SLIP-ON	
1	39	SEE CHART	PULLEY, MAIN, DRUM DIAL	
1	38	PM1062-6	COLLAR, SHAFT	
1	37	PM1050RF-2.937	SHAFT, DIAL PULLEY	
2	36	GR213-1	GEAR, AB, 100T	
1	35	GR205-11	GEAR, SPUR, 20T	
1	34	PM1050RF-1.562	SHAFT, GEAR, COMPOUND	
1	33	GR205-12	GEAR, SPUR, 25T	
1	32	CZ101	ASSEMBLY, CLUTCH	
1	31	GR215	GEAR, WORM	
1	30	PM1050RF-2.562	SHAFT, WORM GEAR	
2	29	PM1062-2	COLLAR, SHAFT	
2	28	PN121-2	PIN, TAPER	
1	27	PM1132	SHAFT, TUNING	
1	26	GR-213-2	GEAR, AB, 20T	
2	25	PM1104	BRACKET, CAM MOUNTING	
3	24	PM1062-5	COLLAR, SHAFT	
1	23	PM1141	CAM	
1	22	GR214	WHEEL, WORM	
1	21	PN121-1	PIN, TAPER	
1	20	PM1051RF-4.062	SHAFT, CAM	
1	19	PM1138	BAR, ADJUSTABLE	
4	18	TE0632AE89H	SPACERS, HEXAGONAL	
1	17	PM1139	PIN, STOP	
1	16	BB101	BUSHING, PANEL	
2	15	PM1095-2	SPACER, CYLINDRICAL	
2	14	PM1095-1	SPACER, CYLINDRICAL	
1	13	MS2997	STRAP, ADJUSTABLE	
1	12	PM801	COUPLER, MTG. ROD	
1	11	PM1133	SHAFT, LOCK	
3	10	PN79-062-8	PIN, SPRING	
1	9	PM1103	YOKE, LOCK SHAFT	
1	8	SP152	SPRING, TENSION	
1	7	PM1106	LOCK, YOKE	
1	6	PM1101	SLIDE, LOCK	
1	5	RY156	CUSHION, RUBBER	
7	4	BB126-10	BEARING, BALL ANNL	
1	3	BB126-9	BEARING, BALL ANNL	
1	2	MS4012	PLATE, GEAR, FRONT	
1	1	MS4011	PLATE, GEAR, REAR	

REQ'D.	ITEM	PART NUMBER	DESCRIPTION	SYMBOL

ZONE	SYM	DESCRIPTION	DATE	E.M.N. NO.	DRAFT	CHKD	APPD
	X1	ITEMS 122 THRU 125 ADDED. PICTORIAL & BUILD UP REVISED & UPDATED - SEE SHEET 1	8-24-66	X1	GDL		
	X2	-1 ADDED TO ITEMS 69 & 80, (-) ADDED TO ITEMS 88 & 100	2-2-67	—	JC		
	X3	ADD. CHART & MODEL VLRC-1 (SEE SH. 1)	8-4-67	—	RL		
	Ø	ORIGINAL RELEASE FOR PRODUCTION	10-6-67		R.G.		

NOTES

1	VLRC-1	AX677
1	VLRB-1	AX540
Q'TY./UNIT	MODEL USED ON	ASS'Y. NO.

SCALE — CODE

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A. MARTINENGO

LIST OF MATERIAL

MATERIAL

FINISH

THE TECHNICAL MATERIEL CORP.
MAMARONECK, NEW YORK

TITLE: GEAR/CHASSIS, ASS'Y, RF TUNER

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES AND INCLUDE CHEMICALLY APPLIED OR PLATED FINISHES
DECIMALS: X ± .05, .XX ± .01, .XXX ± .005
TOLERANCES
FRACTIONS ± 1/64
ANGLES ± 0° 30'

	DATE	FINAL APPROVAL	DATE
DRAWN		SPM	1-11-68
CHECKED	1-7-68		
ELECT. DES.			
MECH. DES.	1-11-68		

A4279 Ø

SHEET 2 OF 2 — REV. LTR.

TMC FORM 111 — REPROVEL NO. 440H