

BETTER RTTY WITH THE HX 10

John Huffman - W4IRE

RTTY JOURNAL

2. Add a stator contact to MS 2 at position 9; connect this added terminal to ground. (Most junk boxes should yield the extra stator contact from a discarded or broken wafer)

Item 1. connects the TONE OSC to the VOX AMPLIFIER and Item 2. turns the TONE OSC ON when the MODE switch is at FSK position.

B. Linear Amplifier "Shot" or "Diode" Noise. Anyone using an electronic T-R switch with the HX-10 will be subject to "shot" or "diode" noise from the Final Amplifier in both PTT-VOX and MANUAL the result of idle (AB-1) plate and screen current. This problem can be eliminated by removing the yellow jumper between terminals 4 and 6 on switch wafer FS1. Be sure the white-orange-lead remains connected to terminal 6. The Final Amplifier bias is now controlled by the VOX relay. -140v. when receiving and -52v. when transmitting.

A. Using VOX in the FSK Mode. The Heath HX-10 transmitter, the Marauder, has certain characteristics which make it cumbersome to use in FSK mode. To transmit, the FUNCTION switch must be turned from STANDBY or PPT-FOX to MANUAL and the key closed, then the reverse for receive. This procedure is required because the VOX circuit is disabled in the FSK mode. By enabling the VOX circuit, as described below, transmit-receive control is obtained at the key jack, the same as in CW mode, with the FUNCTION switch at PTT-VOX.

1. On switch wafer MS3 remove the ground to terminal 3; now connect terminal 3 to terminal 1 on MS3.

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EXCLUSIVELY AMATEUR RADIO TELETYPE

VOLUME 19 Number 2

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C.A.R.T.G. Sweepstakes-Top Winners-

Complete Results on page 2

1.	VK2FZ	Australia	3,470,536	Plaque
2.	I1KG	Italy	1,235,798	Plaque
3.	CR6CA	Angola	1,037,505	Plaque
4.	FO8BS	Tahiti	839,072	Plaque
5.	I1CGE	Italy	776,336	Plaque
6.	K3NSS	U.S.A.	689,660	Plaque
7.	9F3USA	Ethiopia	678,360	Plaque
8.	ON4BX	Belgium	676,062	Plaque
9.	VE2LO/W6	U.S.A.	664,010	Plaque
10.	W3KV	U.S.A.	651,335	Plaque
11.	K3NSS	U.S.A.	689,660	Gold Medallion & Ribbon High Score U.S.A.
12.	VE7UBC	Canada	518,170	Gold Medallion & Ribbon High Score - Canada
13.	FO8BS	Tahiti	839,072	High Score for "Green RTTYer"
14.	FG7XT	Guadeloupe	196,572	High Score - 10 Meters Bronze Medallion & Ribbon
15.	I1CLC	Italy	514,668	High Score for Low Power

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CARTG Sweepstake -- Comments and Results.

CONTEST SUMMARY

In summarizing the 10th World-wide RTTY DX "Manitoba Centennial" Sweepstakes of 1970, reports from all corners of the world give propagation as being very poor on the first day, though somewhat improved for the final day. Even the QRM was of a lower intensity! Regardless of how many stations took part in the contest, there was 121 Logs received, plus one from DM2BRN Germany scoring 272,700 points, which we are sorry arrived too late to be included in the statistics. This is an increase over last year, though in cross-checking the Logs we find that many participants did not turn in a Log at all.

There were 52 countries worked, an increase over the 39 last year. VU2KV, Venkat - India, and JA1ACB - JA1MP, Japan supplied the Asian contact on 10, 15 and 20 meters. So much Asian activity resulted in 28 stations making W.A.C. IICLC, Italy using no more than 25 watts also worked the six continents. 73 Logs recorded a ten meter score, and narrow shift was more in evidence than last year. FO8BS, Tahiti supplied a new country for many, as did WA2HVM/VO2 Labrador, who was narrow shift on 20 meters.

On checking the Logs, two interesting facts came to light --- SMØFO in Sweden was the youngest operator reported -- 16 years of age. And ZS6BBL South Africa on 20 meters was the only XYL operator in the contest.

Using separate sheets for each band worked made the Logs much easier to check, and most were very plainly written. Many did not give power input, though an award was given for high score under 100 watts, and 18 Logs designated low power. The "Green RTTYer's Award

was primarily to encourage the RTTY beginner, and 23 Logs were received under this category. There seemed to be an increase in multi-operated stations, Radio Clubs, etc., but the big majority were single-operated stations.

The Logs showed contacts with 21 different Canadian stations, and the collection of 100 bonus points per Canadian contact helped to bring the scores up into high figures.

"C.A.R.T.G." wishes to extend thanks to "RTTY JOURNAL", Noel B. Eaton, VE3CJ, Canadian Director A.R.R.L., "QST", "CQ", "B.A.R.T.G." England, "RTTY BULLETIN, Florida", "Edizioni C-D", Italy, "DARC" Germany, "SSB and RTTY Press", Como, Italy-- to all the Contest participants for their good operating manners and enthusiastic co-operation, and to the many others who assisted our "C.A.R.T.G." Manitoba Group of members who co-sponsored this very successful 1970 RTTY DX Sweepstakes, in honor of their Manitoba Centennial Year.

(Requests have been made for a complete summary and statistics of the Contest by many participants. If you would like to have this, please send a large envelope with mailing charges to "C.A.R.T.G." and these will be ready the end of January, for sending out.)

....."C.A.R.T.G.".....

* *

Editors Note - We can not give too much credit for the superb job done by Gwen, VE 3AYL, and her helpers in the job of checking logs and giving out the results of this contest. Sid would be proud of the way things were handled, but knowing Gwen he wouldn't have been surprised.

* *

COMPLETE RESULTS

No.	Station	Country	Cont.	Score	Points
1.	*VK2FZ	Australia	3,470,536	6	
2.	*1IKG	Italy	1,235,798	6	
3.	*CR6CA	Angola	1,037,505	5	
4.	*FO8BS	Tahiti	839,072	6	
5.	*1ICGE	Italy	776,336	6	
6.	*K3NSS	U.S.A.	689,660	5	
7.	*9F3USA	Ethiopia	678,360	5	
8.	*ON4BX	Belgium	676,062	6	
9.	*VE2LO/W6	U.S.A.	664,010	5	
10.	W3KV	U.S.A.	651,335	5	
11.	*SVØWO	Greece	636,238	6	
12.	*VU2VK	India	588,756	6	
13.	1ICAQ	Italy	576,776	6	
14.	*WA3HXR/YV	Venezuela	563,350	5	
15.	VK3DM	Australia	533,840	4	
16.	*W4YG	U.S.A.	529,080	5	
17.	*ZS6BBL	S. Africa	525,636	6	
18.	*VE7UBC	Canada	518,170	5	
19.	IICLC	Italy	514,668	6	
20.	*KZ5LF	Canal Zone	463,988	4	
21.	W4EGY	U.S.A.	446,200	5	
22.	ON4CK	Belgium	440,598	6	
23.	*W7TZL	U.S.A.	435,960	5	
24.	*DJ6JC	Germany	410,036	6	
25.	*W8CQ	U.S.A.	387,200	6	
26.	*OZ4FF	Denmark	370,620	6	
27.	YV5AS	Venezuela	354,590	6	
28.	*W1BZT	U.S.A.	341,695	5	
29.	*IT1ZWS	Sicily	324,674	6	

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30.	W6LDF	U.S.A.	306,600	5	
31.	DK3CU	Germany	303,246	6	
32.	WA6WGL	U.S.A.	298,400	5	
33.	*ZM2ALW	New Zealand	295,670	5	
34.	*WA2YVK	U.S.A.	288,515	5	
35.	*W9BT	U.S.A.	286,464	6	
36.	W9AE	U.S.A.	279,880	5	
37.	WB4FPK	U.S.A.	268,600	5	
38.	W1KJL	U.S.A.	235,290	5	
39.	*HB9AKA	Switzerland	233,956	6	
40.	K4VDM	U.S.A.	226,600	5	
41.	HB9P	Switzerland	223,200	6	
42.	*GB2SM	England	212,104	6	
43.	*FG7XT	Guadeloupe	196,572	6	
44.	WA2BYJ	U.S.A.	193,720	5	
45.	WA8ENN	U.S.A.	190,780	5	
46.	*KP4JM	Puerto Rico	185,000	5	
47.	K6YUI	U.S.A.	170,785	5	
48.	**VE3RTT	Canada	162,860	5	
49.	K8ILL	U.S.A.	162,765	5	
50.	*H18XRM	Dominican R	158,250	5	
51.	WB6RXM	U.S.A.	157,984	4	
52.	K4AGC	U.S.A.	152,800	5	
53.	DJ8BT	Germany	147,408	6	
54.	W6JOX	U.S.A.	145,040	5	
55.	*F9RC	France	141,192	6	
56.	*K5ARH	U.S.A.	136,935	5	
57.	*WAØWST	U.S.A.	133,295	5	
58.	DL1VR	Germany	128,360	6	
59.	WØITU	U.S.A.	118,988	4	
60.	*PY2CBS	Brazil	113,620	5	
61.	W3ABT	U.S.A.	108,250	5	
62.	DL9VD	Germany	101,775	5	
63.	WB2JBH	U.S.A.	82,145	5	
64.	WA4VYL	U.S.A.	80,550	5	
65.	W5EUN	U.S.A.	73,400	4	
65.A	WB6QFE	U.S.A.	70,140	4	
66.	VK2EG	Australia	68,840	5	
67.	*VE5LG	Canada	64,356	4	
68.	WA5LJZ	U.S.A.	63,700	5	
69.	*KL7GPS	Alaska	63,076	4	
70.	WØMT	U.S.A.	62,160	5	
71.	*PJ2CR	Netherland Ar	60,590	5	
72.	WB4RKA	U.S.A.	59,900	5	
73.	W3BIP	U.S.A.	59,425	5	
74.	*CE3EX	Chile	59,034	6	
75.	WA6LWB	U.S.A.	55,624	4	
76.	I1KFL	Italy	46,850	5	
77.	*JA1ACB	Japan	43,972	6	
78.	WAØTLT	U.S.A.	43,400	5	
79.	I1THB	Italy	42,665	5	
80.	*OK1MP	Czechoslovaki	42,300	5	
81.	WAØJCE	U.S.A.	39,032	4	
82.	DL8KS	Germany	38,400	6	
83.	*SMØFO	Sweden	35,190	5	
84.	K2CY	U.S.A.	34,160	5	
85.	WB6HZH	U.S.A.	32,720	4	
86.	K4AT	U.S.A.	30,660	5	
87.	DLØEL	Germany	28,770	5	
88.	WA8GVK	U.S.A.	26,784	4	
89.	PY2BXV	Brazil	26,596	4	
90.	W6MTJ	U.S.A.	25,252	2	
91.	*E15BH	Ireland	24,273	3	
92.	K8JTT	U.S.A.	23,152	4	
93.	W2VAQ	U.S.A.	22,800	4	
94.	W1BFS	U.S.A.	20,140	4	
95.	SM3AVQ	Sweden	19,530	5	
96.	K2RYI	U.S.A.	16,040	4	
97.	KØIBB	U.S.A.	15,488	4	
98.	K7BJM	U.S.A.	14,700	4	
99.	WA4FHY	U.S.A.	13,084	4	
100.	*LA6VC	Norway	12,244	4	
101.	*VE6MM	Canada	11,440	4	
102.	KL7FLR	Alaska	10,748	4	
103.	W3ZPZ	U.S.A.	9,744	4	
104.	F5KD	France	9,600	4	
105.	K8KAG	U.S.A.	9,160	4	
106.	ON5WG	Belgium	7,923	3	
107.	DJ1XT	Germany	6,260	4	
108.	VE7AFJ	Canada	5,692	3	
109.	K4GJW	U.S.A.	4,302	2	
110.	W1CKD	U.S.A.	3,964	3	
111.	SK5AA	Sweden	3,910	3	
112.	W7RPV	U.S.A.	2,250	2	
113.	KZ5GO	Canal Zone	2,235	3	
114.	H1AMP	Italy	1,606	2	
115.	*VE4FG	Canada	1,490	2	
116.	SM4CMG	Sweden	1,220	2	
117.	WA1HOL	U.S.A.	768	2	
118.	*WA2HVM/V	Labrador	480	2	
119.	K9WJB	U.S.A.	345	1	
120.	VE4XD	Canada	216	2	
121.	W8TCO	U.S.A.	54	1	

Total Logs Received 121

* "C.A.R.T.G." Certificates for high score in each U.S.A. and Canadian District and each country.

** VE3RTT listed for record purposes only, and not eligible for any award.

SOME CONTEST COMMENTS:

SVØVO - Propagation was not especially smashing in that the bands went out early in the evening, except for 40 meters which is virtually useless over here anyway. Worked three new countries.

FO8BS - Contest was good opportunity to work some good DX. Afraid it will be my first and also my last CARTG Contest with this call sign as I leave Tahiti for some time next year in July.

VU2KV - Heard some rare ones. Band conditions were excellent right throughout Saturday, but Sunday bands went dead with nothing coming through, not even noise. Thanks for nice contest.

ZS6BBL - This was my first contest and really enjoyed it very much. Thank you for the well organized contest.

VE5LG - It was a great contest this year, and Mr. Murphy did not show up here this year. Thanks to the Manitoba Gang!

H18XRM - I learned quite a bit about operating and also found the weaknesses in the equipment and it's set up. Had an enjoyable time!

WB6RXM - Another FB SS. Although no Europe or Asia Heard this time, there was enough "local" activity to make up for it. CU next year.

W1BZT - Thanks for running a very successful contest. How about considering for next year's contest the exchange of first names instead of RST and Time. Would help to get to know each other better.

JA1ACB - Thanks for the Contest. Will continue activity for this contest.

SM3AVQ - Completed my WAC on RTTY. Worked a lot of new countries.

* *

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NON-OVERLINE for the MITE--

RICHARD J. BOURGEOIS

P.O. Box 2746
Lafayette, La.

Here is an easy way to add automatic carriage return on line feed to a MITE Corporation teleprinter and avoid annoying overlining which so often results during marginal copy due to missed line feeds. This system of non-overlining is more suited for amateur use of these teleprinters than the system found on some machines because it causes carriage return on line feed whereas the system generally found on the MITE causes line feed on carriage return and results in triple spacing during normal copy.

This modification is suitable for the TT-298B/UG & both versions of the TT-299B/UG or any model MITE equipped with the off-line function assembly and the one-half inch extensions on the line feed and carriage return sensing finger levers. The off-line function assembly is a stainless steel mechanism located on the bottom right of the machine near the front (see figure 1). Beneath this assembly are located the sensing finger levers. The double sets of levers in positions 3 and 9 from the left are respectively the line feed and carriage return sensing finger levers. These levers should have one-half inch extensions protruding above the plane of the off-line function assembly. If an accessory linkage from the carriage return off-line function assembly slide to pivot points on the off-line function assembly



The Author, W4SEVH, at a MITE..

is present, it should be removed in order to allow installation of carriage return on line feed. This accessory linkage is the line feed on carriage return linkage mentioned earlier as undesirable for amateur work.

The carriage return on line feed modification consists of the installation of the lever shown in figure 2. This lever should be constructed out of a light gauge steel. Using the template provided in figure 2, rough cut the lever with metal snips. Then bring the dimensions down to those provided by the template with hand filing. Drill the two holes and mount the lever as shown in figure 1, by slipping the larger hole in the lever over the pivot post in the lower right of the off-line function assembly and securing with a small retaining ring. Align the lever between the extensions on the carriage

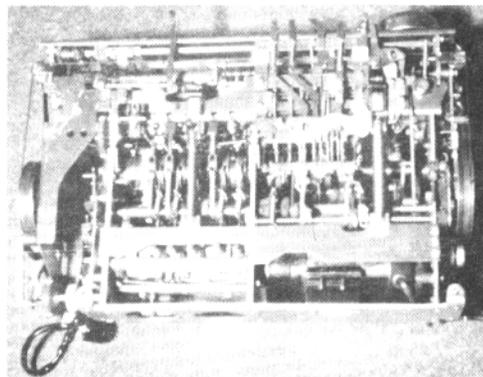


FIGURE 1
Mite teleprinter, bottom view. Non-Overline modification lever installed shown in white. Off-line function assembly in upper right of machine...

return and line feed function sensing finger levers so that the extensions are at the points indicated in figure 2. Hook a light spring from the smaller hole in the lever to the pivot post located on the function assembly just above the lever when installed. This lever will provide carriage return everytime the line feed function occurs.

cannot be confused with another letter or numeral. The advantages of non-overline quickly outweigh the disadvantage of this extra character once the modification is made and the improved copy is realized.

For a full appreciation of the MITE printer, figure 3 has been included. It shows just how small a teleprinter can

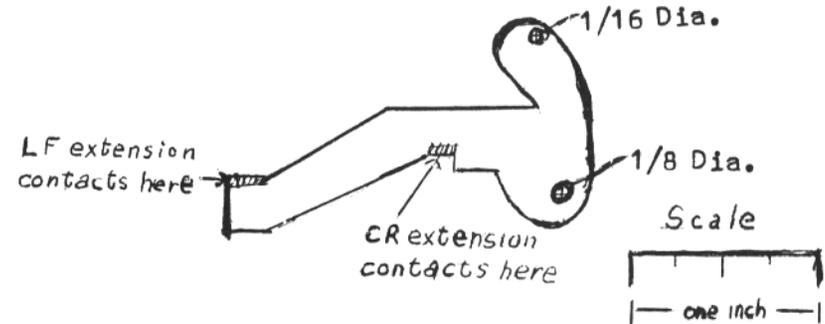


FIGURE 2.
Non-Overline modification lever. Cross hatch indicates area where extensions should contact. Drawing same size.....

It is necessary to disable the carriage return function to prevent carriage return on the receipt of the carriage return character. This is easily done by inserting a piece of 18 AWG wire through the holes where the spring attaches in both of the carriage return sensing levers and bending the ends of the wire up to form a "U". This will prevent the carriage return sensing finger lever from dropping down during the receipt of a carriage return character and thus prevents the carriage return function from taking place. Only the line feed finger lever has control over a carriage return function.

The machine will now not respond to a carriage return character. Instead, it will carriage return with the receipt of a line feed character or, if the line feed character is missed, the machine will carriage return and line feed at the end of the line as provided by the automatic carriage return and line feed found on nearly all MITE machines.

A minor disadvantage of this system is that the carriage return symbol " " will be printed with each carriage return character received. This is because carriage return print prevent was disabled along with carriage return sensing. This printing is of little consequence in amateur work as it occurs at the end of the line and is distinctive enough that it

be made out of a MITE. The unit on the right is a MITE printer in a homebrew portable case. It was RO but with the accessory I.C. keyboard that has been constructed for it the whole KSR unit is smaller than the typewriter used to type this article. Being small, light and very forgiving, the MITE machine is worth the effort required in acquiring one.



FIGURE 3
Left- Standard TT-299B/UG teleprinter
Right-"compact" version in homebrew case, Acc. keyboard not shown.....

Modifying the Model 28 Teletype

PART 7

Irvin M. Hoff, W6FFC
12130 Foothill Lane
Los Altos Hills, Calif. 94022

PROJECT MOUSE - ARTICLE 7

Most of you (about 75-80%) owning Mouse machines (28KSR'S obtained through NCARTS in the fall of 1969) should now have auto CR-LF and all other standard amateur communications features. However, there is a small group who did not have the "Zero" code bar or bellcrank installed in their machine. Articles 7 and 8 are exclusively for them, although some of the information (such as removing the front plate) may be of limited interest to others.

WHAT HAS TO BE DONE?

For those who do not have the "Zero" code bar (review Article 1, Feb. 1970 RTTY JOURNAL) it will be necessary to do the following things:

1. Remove the front plate
2. Remove and dismantle the code bar assembly
3. Install the new "Zero" code bar
4. Reassemble the code bar assembly
5. Remove the spacing drum from the front plate
6. Install the bellcrank
7. Replace the "rear ring" on the spacing drum with a new one
8. Replace the spacing drum in the front plate
9. Replace the front plate

This assumes of course you have already installed the parts in the stunt box ala Article 6.

This will probably sound like a lot of work, and indeed it is a bit of bother, but not "too hard" at all, particularly if you have some adequate instructions. Everything mentioned in Articles 7 and 8 can easily be done in one evening. One man in his mid-seventies (Florida) accomplished this readily -- another retired Naval Officer said it was "rather simple" with the preliminary instructions we sent him. This is mentioned only to illustrate the fact that it should be possible for you to do this also, rather than say: "It sounds like too much work, I'll do without auto CR-LF."

By the way, neither of those gentlemen had an instruction book or parts manual to help them -- only the instructions we sent. This is not to indicate that a parts manual would not have been

helpful, however -- just not a requirement. For those of you having a parts manual, we shall put in parts numbers as we go along. You can look them up in the index of the manual for the "typing unit" section, and it will refer you to a page number. We do that for several reasons, the most important being the various revisions throughout the years makes it difficult to suggest a page number unless you have a "brand-new" parts manual. By the way, the latest is dated May 1969, Change 17.

REMOVING THE FRONT PLATE

This is actually a much easier job than taking off the stunt box. There are three basic things to do:

1. Unhook the bail arm from the type-box
2. Take out four large corner bolts
3. Take out two smaller bolts underneath

First, we want to disconnect the type box. This is pulled along by the wire that runs directly in front of the type-box. Attached to this wire directly in front of the middle of the type-box is a bail arm (154356) which goes through a hole in the bottom right side of the type-box carrier plate (153530) and is held there by a "C" type retaining ring on the backside. Now to disconnect that bail arm.

Type a "LTRS" character and then turn the motor off. If using the line shunt relay, you will automatically revert to "blank" as the motor runs down, no matter. Now reach up to the left side of the "printing carriage frame" (153820) -- another descriptive term would be the type-hammer carriage directly in front of the type box -- and just push it to the right as far as it conveniently wants to go. You can return it to the left via the red button on the top row called "LOC CR" if you want to try it several times.

At any rate, this should move the type-box assembly to the right far enough that the bottom right side where the end of the bail arm is connected can be seen, and the "C" retaining ring can be removed from the rear. Then pry the arm out of the hole and now the type-box is free to slide around. While holding this bail arm so it won't catch on anything, and holding tension on the left side of the print-hammer carriage, depress the red button "LOC CR" and slowly allow the carriage to return to the left margin stop.

Next we want to remove the two "underneath bolts". These are attached to the main rocker shaft (150365). This is a square "rod" about 3/8" square. It is located directly behind (2") the "take-up" wheel (pulley) (150758) for the front wire going between the two large circular drums. This pulley is 1" in diameter and is located 3 5/8" from the center of the left spring drum, in a 4:00 position. When you locate the square shaft 2" behind that pulley, you will find a bolt on the bottom side of the rod about 1 1/4" left of the take-up pulley and another about 1 1/4" right of the pulley. Remove both of those, releasing the bracket (150245) which is part of the front plate assembly.

Now finish removing the front plate. This involves four large bolts one of which is about 2" from the center of the left-hand spring drum in a 10:30 position, another is about 2 1/4" in a 7:30 position, a third is about 2" from the center of the right-hand spacing drum in a 1:30 position, the fourth is about 2 1/4" in a 4:30 position.

Now you can lift off the entire front plate assembly. Before you do, however, note the right-hand spacing drum. On its left side there are two feed pawls ("fingers") (150678) which advance the spring drum. At the bottom of these feed pawls you will see a circular piece of metal called a "retainer" (150203). This has two parallel lines drawn on it which should line up with a small line on the end of the front feed pawl. Keep this in mind for when you replace the front plate you will want this situation to again exist.



Figure 17...Showing the rear ring needed on the spacing drum for auto CR-LF. The new 154626 is on the left, the old 154625 on the right. Note the new one has an extra tab, which engages the bellcrank to move the "Zero" code bar.

NOW THE FRONT PLATE IS OFF

1. Remove the dash-pot cylinder (15-0538) from the front bottom right-hand corner of the front plate. This involves removing two very large "c" retaining rings and two springs from the post at the left end of the slide that goes into the dash-pot cylinder. This post is 7:00

position from the center of the right-hand spacing drum about 2 1/8".

2. Remove the three bolts on the rear of the dash-pot cylinder. Now the cylinder can be removed from the post (stud) by wiggling it off, at an angle. Nothing else need be removed to allow this.

3. Note about there is a wire going between the spacing drum and the left-hand spring drum. It goes over the take-up pulley wheel we mentioned earlier when removing the front plate. Push down on this take-up pulley and slip the wire off its top. This removes the tension on the wire.

4. Assuming that the print-hammer carriage is at the left margin stop (to make certain, hold the right-hand spacing drum tightly with one hand while lifting the ratchet fingers (feed pawls) from contact with the spacing drum and then see if that right-hand drum wishes to rotate counter-clockwise at all, if so, you were not on the left-margin stop, and let it slowly rotate until you are.) When at the left margin, you will see that lower wire we just mentioned (3 above) is attached to the left-hand spring drum by a bolt. Remove this bolt and now the wire is loose. Pull the wire free from the spring drum and note how the wire is "threaded" in the vicinity of the spacing drum, so you can eventually pull it back in a similar manner. **DO NOT REMOVE THE RIGHT END OF THE WIRE FROM THE SPRING DRUM, IT IS NOT NECESSARY.**

5. Now rotate the spring drum clockwise with your fingers until the bolt hole where the lower wire had been attached is now about the 10:30 position.

6. Take a screwdriver and drop through the 6:00 position of the spring drum, down through the front plate frame. This will hold the spring drum from unwinding" and losing its tension, when we soon lift the feed pawls from the spacing drum.

7. Now do just that -- while holding the right-hand spacing drum, "pick-off" the feed pawls (ratchet arms) with a screwdriver or your fingers. Then allow the spacing drum to rotate counter-clockwise slowly to where the left-hand spring drum is now resting entirely on the screwdriver you have stuck in it.

8. Remove the pulley wheel (150224) from the rear side of the top front track (152579). There are two pulley wheels in that vicinity, it is the front one of the two. Before removing it, take a pencil and mark the position of the washer, and that wheel can be positioned in a slot to vary the spring tension, and you will want to replace it in its present position.

9. Directly below this top right-hand corner of the track, about 1 1/2" are two other nuts in the lower plate (150554). Remove both nuts, which hold two guide plates in position -- one in front and one in the rear. Note carefully that on the front side is another small spacer shim (150805) between the front guide plate and the main frame plate. You may want to draw yourself a picture of how these parts were removed before you continue.

10. Now remove the nut and washer from the center of the right-hand spacing drum, both on the front and rear sides of the drum.

11. The spacing drum may now be removed by pulling up on the front frame plate (150554) at the bottom right-hand corner (near where the serial number of the typing unit is located) enough to allow the spring drum to be removed.

12. Now remove the spacing drum, and you will still have several wires dangling from it, but this will not prohibit your doing everything that is necessary to it.

13. Note that there are five bolts on the front about 5/8" from the center and in a circular arrangement. Remove the 1st, 2nd, 3rd and 5th (clockwise from left to right) being certain to leave the 4th (hex-headed bolt) tightly fastened. This keeps the left-margin stop (front ring) in its original position, which is fairly important.

NOTE: PRIOR TO REMOVING THESE BOLTS, TURN THE SPACING DRUM OVER AND WITH A PENCIL OUTLINE THE POSITION OF THE LARGE RIGHT - HAND MARGIN PROJECTION -- THEN OUTLINE THE EXACT POSITION ON THE FRAME, SO THE NEW RING CAN EASILY BE POSITIONED LIKEWISE.

14. Now the rear retaining ring (154623) may be removed and the rear margin ring (154625) may be removed. You will now put the new margin ring (154626) where you just removed the old ring. Replace the retaining ring and replace the bolts, remembering that the hex-headed bolt was no. 2, and the three round-headed ones were 1, 3 and 5.

NOTE: Fig. 17 although a poor photograph adequately shows the difference between the new (154626) ring on the left and the old (154625) ring on the right. The extra tab on the new ring operates the bellcrank for auto CR-LF when it approaches the right margin.

15. We are done with the spacing drum, but do not replace it as yet. Now install the bellcrank. This is part no. (150438) in the 152348 mod. kit you ordered origin-

ally which included the "Zero" code bar (153319) and the new rear margin ring (154626) you just installed.

16. You will find a bolt on the very rear of the back frame piece of the front plate. This bolt has a nut on the inside of that rear plate. You will find this nut in about the 12:30 position and 2 1/2" from the post (stud) that holds the dash-pot springs you removed earlier when you took the dash-pot cylinder off. The bellcrank fastens to that bolt, so remove the nut, put on the washer, then the bottom of the bellcrank so it will point up from there when finished, then the nut and tighten. The bellcrank should be free to rotate a little on that bolt when done. The spring now attaches from the left hand center side of the bellcrank downwards about 7:00 position and hooks to the small area of the rear plate about 3/4" down.

17. Now you have essentially finished everything and are ready to put it all back together. You still have the "Zero" code bar to install, but that is done on the typing unit itself and not on the front plate. It will be discussed in Article 8.

18. Turn the spacing drum right-side up, making sure that two overhead wires are not twisted. Slip the spacing drum back in place, raising the bottom corner of the front plate high enough to allow this.

19. Make certain the rear end of the spacing drum's "axle" is seated correctly as it has a flange on the rear that has to find a proper position in the rear hole before it will go fully into the hole. Then replace the rear washer and nut, and do likewise on the front end as well.

20. Replace the front guide plates with the shim plate also. Then replace the pulley wheel, making sure it is in the same position as it was originally by checking your pencil mark to center the wheel properly.

21. While holding tension by hand on the spacing drum position the various wires properly over the pulley wheels. Do the two first.

22. Now since you probably have tension on the feed pawls (ratchet fingers), hold the spacing drum while again "picking off" those feed pawls, and let the spacing drum rotate slowly counter-clockwise until the spring drum tension takes up the slack. Now while holding the spacing drum carefully, remove the screwdriver in the spring drum and let the both of them slowly rotate back to the left margin stop while holding the feed pawls free to allow this to happen. When on the left margin stop, you can let go of the spacing drum, and the left margin itself will hold things in a normal manner

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COMMERCIAL FREQUENCIES - Furnished Courtesy - YV5CIP

The following list of commercial stations is the most complete and up to date list we have published. Corrected to Nov., of 1970)) It was furnished to us, in a computer print out form by YV5CIP and we are printing it in the center spread so that it may be removed by opening the staples -- removing the list and then closing the staples leaving the other pages intact.

AGENCY	KHZ	CALL	SHIFT	WPM	TIME IN GMT
R	REVERSE SHIFT	N	NORMAL		
Weather Bu	3235	WBR70	850	N	Miami Contus
Weather Bu	3766		425	R	France
Weather Bu	4013	WBR70	850	N	Miami
Weather Bu	4061.5		425	R	France
Weather Bu	4488		425	R	Miami
Weather Bu	4610		425	R	Brazil
Weather	5125	FTF84	425	N	Le Vernet French
AFP - France	5842	WBR70	850	N	Miami Contus
Weather Bu	5937		425	R	Miami Contus
Weather	6835	ZNX29	850	R	Barbados English
Weather	6915	BGE65	425	R	Nanking Spanish After 24.00
HNA (Hsinhua)	6935	WFA36	425	R	N.Y.
AP Latin Am.	7127	JAQ	425	R	Tokio English
APR - Japan	7179	WFA36	425	R	N.Y.
Reuters	7280	WFI27	425	R	Tokio English
UPI Informex	7327.5	JAG	425	R	N.Y. Spanish/English
UPI W	7745	ZGZ47	425	N	Manila
UPI LA	7760	WFA67	850	N	N.Y. Spanish/English
UPI PR	7849.5	WFI57	850	R	N.Y.
UPI PR	7853	WFI67	850	R	N.Y.
Weather	7880		425	R	N.Y.
Weather	7910		425	R	N.Y.
Ansa-Italy	7974.5	CVI79	425	R	N.Y.
Weather Bu	8040	WBR70	850	N	Miami Contus
Weather Bu	8130		425	R	Miami
Weather Bu	8140	WBR70	850	N	Miami
Weather Bu	8163		425	R	France
UPI W	9327	WFI29	425	N	N.Y. English 16.00-23.00
HNA (Hsinhua)	9494		425	R	Radio Peking Voice Spanish 11.00
Weather	9886		425	R	Brazil
Weather	10225	DZG30	425	N	Miami
Weather	10362	WFP26	425	N	Miami
AP Far East	10562.5	DZP30	425	R	N.Y. Spanish/English
UPI Informex	10592.5	WFI30	425	R	N.Y. Un. Nat. Dipl. to Geneve 24.00 AP
UNDP	10647	4UX20	425	N	N.Y.
ARF - USA	10740	WFK60	850	N	N.Y.

PREWNY	10740	WFK60	850	R	N.Y. English/ Spanish
ANSA-Italy	10748.5	WFL60	425	R	N.Y.
Reuters	10753.5	WFK80	425	R	N.Y. Lonsam
ADN-East Germ.	10785	DMV43	425	R	Berlin Spanish 19.15-22.00
UPI-LA	10825	WFE20	850	N	N.Y. Spanish/English
AP Latin Am.	10890	WFE40	425	R	N.Y.
AFP-France	10940	FTK94	425	R	S Assise Spanish
Weather Bu	10950	WBR70	850	N	Miami Contus
MEF	10970		425	N	English from 23.00
HNA (Hsinhua)	10980	BAD40	425	R	Taiwan
Weather 2	11086.5		425	R	Pajas Blancas 10.30-11.30
Reuters	11456.5	CVM3	425	R	Manila
AP Far East	11639.5	DZP28	850	R	N.Y. Spanish/English
UPI U	11641.5	WFL71	850	R	N.Y. 11.00-12.00
EFF - Spain	11643.5	WFK41	425	R	Lima Spanish
AFP-France	13432		425	N	Germany Spanish
DPA - Germany	13438	DGN43	850	N	From 14.30
UPI To Ships	13480	WER73	425	R	Miami
HNA (Hsinhua)	13560	BAK63	425	R	Miami
Weather Bu	13624	WBR70	850	N	N.Y. Lonsam
Tass Urss	13760	RTU43	850	R	Pajas Blancas Spanish
Reuters	13770		425	R	N.Y.
Ansa-Italy	13815	CVM4	425	R	N.Y. Lonsam
Ansa - Italy	13838	WFK93	425	R	Pajas Blancas Spanish
AP - Far East	13884	DZP21	425	R	Manila
Tass Urss	13974.5	RCC78	850	R	R. Torrenova Via Radio Stampa to NY
Ansa-Italy	13974.5	ISX19	425	R	Pajas Blanc. 02.30-04.30
Reuters	14351.5	CVM5	425	R	N.Y. Continuous
Weather Bu	14395	WBR70	850	N	Miami Contus
Weather Bu	14499	RNKL0	850	N	Spanish/English 14.00
Tass Urss	14515	GNP34	170	R	London to Africa
Reuters	14515		850	R	Havana Spanish 17.00
Prensa Latina	14525	OLM2	425	R	Praha
Arf-USA	14585	WFK54	850	N	N.Y.
Prewiny	14635	WFK54	850	R	N.Y. English/Spanish
UPI U	14639	WFK54	425	R	N.Y. Spanish Latam
UPI U	14660	WFL44	850	R	N.Y. Spanish/English
Satellites	14660		425	R	N.Y. Spanish/English
UPI LA	14695	WFD24	850	N	N.Y.
AP Latin Am.	14710	WFD34	425	R	N.Y.
TASS URSS	14720	RWG	850	R	French 14.00
DPA - Germany	14725	WFD44	850	N	N.Y. Spanish 14.00-24.00
TASS URSS	14749	UXC4	850	N	From 14.30
UPI To Ships	14770	WER24	850	R	English after 09.30
UPI - India	14787.5	ATP65	850	R	Manila
AP - Far East	14812.5	DZP33	425	R	
Weather 2	14835		425	R	
HNA (Hsinhua)	14920	BAD44	425	R	
ANSA-Italy	15472	IRN24	425	R	Roma Spanish to Lima 01.30
ARF - USA	15480	WFD55	425	R	N.Y. From 16.00

HNA (Hsinhua)	15515	BAK65	R 66	Peking	ANSA-Italy	7974.5	CV179	425	R 66	Pajas Blancas Spanish
UPI	15517	PKC45	425 N	Kootwijk le Hague/London before 12.00	ANSA-Italy	13815	CVM4	425 R	66	Pajas Blancas
Weather Bu	15530		850 R	Manila	ANSA-Italy	15950	CVN6	425 R	66	Pajas Blancas Spanish
AP - Far East	15537.5				ANSA-Italy	19140	CVM9	425 R	66	Pajas Blancas Spanish
TASS URSS	15580	REM58	850 R	Spanish	ANSA-Italy	20940	CVP20	425 R	66	Pajas Blancas Spanish
UPI Informex	15607	WFK45	425 R	N.Y. Spanish/English	AP Latin Am.	6935	WFA36	425 R	66	N.Y.
JTA-Israel	15613	WFK65	425 R	N.Y. English to London/Tel Aviv	AP Latin Am.	10890	WFE40	425 R	66	N.Y.
UPI	15640	WFK85	425 R	N.Y. English from 12.30	AP Latin Am.	14710	WFD34	425 R	66	N.Y.
AFP-France	15650	FTP65	425 N	-(FT) P65/FPQ8/OAA27/OACS1/FZG4/	AP Latin Am.	19620	WFD79	425 R	66	N.Y.
ANSA - Italy	15695	ISX56	425 N	R. Prato Smeraldo Radio Stampa to NY	AP Latin Am.	23775	WFG43	425 R	66	N.Y.
Prensa Latina	15696.5	CLW	850 R	Cardenas	AP	15480	WFD55	425 R	66	N.Y. From 16.00
Reuters	15706	WFM75	425 R	N.Y. Lonsam	AP	15914	WFD45	425 R	66	N.Y. English Caribbean from 20.30
EFE - Spain	15856	WFL85	425 R	N.Y. 11.00-12.00	AP	19567.5	WFD99	425 R	66	N.Y. English Caribbean from 20.30
TASS URSS	15908	RBK79	850 R	Moskva	AP	19560	WFD49	425 R	66	N.Y. English
Reuters	15908	WEX45	425 R	N.Y. Spanish/Latam	AP	23927.5	WFO43	425 R	66	N.Y. English
AP	15914			N.Y. English Caribbean from 20.30	AP					
TASS URSS	15930	RBH78	850 R	N.Y. English Caribbean from 20.30	AP					
ANSA - Italy	15950	CVN6	425 R	Pajas Blancas	AP - Far East	10562.5	DZP26	425 R	66	Manila
Prensa Latina	16117.5		850 R	Mexico to Cuba	AP - Far East	11639.5	DZP28	425 R	66	Manila
APE-France	16185	FPQ8	425 N	15.00	AP - Far East	13884	DZP21	425 R	66	Manila
TASS URSS	16190	RGW26	850 R	N.Y. UN. Dipl. to Geneva 13.00	AP - Far East	14812.5	DZP33	425 R	66	Manila
UNDP	16232	40Y54	425 N	Lima	AP - Far East	15537.5				
AFP-France	16250	OAG2	425 R	Spanish 13.30	AP Tokio	7327.5	JAG	425 R	66	Tokio English 24.00Z (JAE27)
TASS URSS	16260	OLF4	425 R	Praha	AP Tokio	18570	JAW48	425 R	66	Tokio English 24.00Z
CETEKA-CSR	16350.5	WFD86	425 N	N.Y.	AP Tokio					
UPI W	16372.5				APR - Japan	7127	JAQ	425 R	66	Tokio English
DIPLLO - Paris	16398	FTQ39	850 N	Paris Direction D'Information et press	ARF - USA	10740	WFK60	850 N	60	N.Y.
Weather Bu	16440	WBR70	850 N	Miami Contus	ARF - USA	14635	WFK54	850 N	60	N.Y.
ADN-East Germ.	17435	DMV37	850 N	Berlin Spanish 13.30-15.00 19.15-19.45	CETEKA CSR	14585	OLM2	425 R	66	Praha
Weather Bu	16440			Miami 11.55-05.00	CETEKA CSR	19525	OLF4	425 R	66	Praha
Prensa Latina	17452.5		425 N	English 12.00	CETEKA CSR					
Weather	17455			France	Diplo - Paris	16398	FTQ30	425 N	66	Paris Direction D'Information et Presse
TASS URSS	17570	ROU44	850 R	Spanish	DPA - Germany	13438	DGN43	850 N	66	Germany Spanish
ANSA-Italy	17750		425 N	S. Pedro Bauta	DPA - Germany	14725	WFD44	850 N	66	N.Y. Spanish 14.00-24.00
Prensa Latina	18195	CML	425 N	N.Y. Spanish Latam	DPA - Germany	20980	WFG40	850 N	66	N.Y. Spanish 14.00-24.00
Weather	18230	WFK78	425 R	12.00-24.00	EFE - Spain	11643.5	WFK41	425 R	66	N.Y. 11.00-12.00
Reuters	18270	WFL28	425 R	N.Y. Spanish/English	EFE	15856	WEL85	425 R	66	N.Y. 11.00-12.00
UPI	18484	WFK28	850 R	N.Y. Lonsam econ after 21.00	EFE	20803.5	WFN30	425 R	66	N.Y. 11.00-12.00
ANSA-Italy	18543.5	WFK48	425 R	San Franc. for Central News English	EFN					
UPI	18562.5	WMM78	850 R	Tokio 24.00Z	EFN					
PREWI-ITT	18570	JAW48	425 R	Pajas Blanc. 10.30-04.30	EFN					
AP TOKIO	18570			Miami	HNA (Hsinhua)	6915	BGE65	425 R	66	Nanking Spanish after 24.00
Reuters	18577.5		425 R	from 14.30	HNA (Hsinhua)	10980	BAD40	425 R	66	Taian
Satellites	18631	WBR70	850 R	Cardenas Spanish	HNA (Hsinhua)	13560	BAK63	425 R	66	
Weather Bu	18765	WER78	850 N	Pajas Blancas Spanish	HNA (Hsinhua)	14920	BAD44	425 R	66	
TASS URSS	18775	UFU1	850 R	15.00	HNA (Hsinhua)	15515	BAK65	425 R	66	Peking
UPI TO Ships	18885	WER78	850 R	S. Franc. to Mirror-Sidney Australia	HNA (Hsinhua)	9494				
Prensa Latina	18997.5	CML	425 N	Radio Peking Voice Spanish 11.00						
ANSA-Italy	19140	CVM9	425 R	Interpress Sr.						
TASS URSS	19235	WBR70	850 R	JTA-Israel						
TASS URSS	19235	RWW70	850 R	JTA-Israel						
TASS URSS	19470	WMM29	850 R	JTA-Israel						
Prewiny	19505	RKV	425 R	JTA-Israel						
TASS URSS	19525			JTA-Israel						
CETEKA-CSR	19537.5	WFD99	425 R	JTA-Israel						
AP	19538.5			JTA-Israel						
JTA-Israel	19538.5			JTA-Israel						
AP	19560	WFD49	425 R	JTA-Israel						
UPI LA	19580	WFD59	850 N	JTA-Israel						
AP LATIN AM.	19620	WFD79	425 R	JTA-Israel						
ADN-East Germ.	19723	WMM39	425 R	JTA-Israel						
Weather Bu	19735	WBR70	850 N	JTA-Israel						
TASS URSS	19830	RWW76	850 R	JTA-Israel						
TASS URSS	20420	DMV20	425 R	JTA-Israel						
ADN-East Germ.	20803.5	WFN30	425 R	JTA-Israel						
ADN-East Germ.	20807.5	WMM78	425 R	JTA-Israel						
ADN-East Germ.	20826			JTA-Israel						
Reuters	20915	OAC36	425 R	JTA-Israel						
ANSA-Italy	20940	CVP20	425 R	JTA-Israel						
TASS URSS	20965	RK70	425 R	JTA-Israel						
DPA-Germany	20980	WFG40	850 N	JTA-Israel						
Interpress Sr.	21765	CEC4P	850 N	JTA-Israel						
Weather	21829			JTA-Israel						
UPI TO Ships	21990	WEU52	425 R	JTA-Israel						
ADN-East Germ.	22885	DMV28	425 R	JTA-Israel						
TASS URSS	22890	RKB56	850 R	JTA-Israel						
UPI LA	22975	WFG42	425 R	JTA-Israel						
ANSA-Italy	23072.5	WFN53	425 R	JTA-Israel						
AIR-India	23130	ATR73	850 R	JTA-Israel						
Reuters	23391.5	WFN73	425 R	JTA-Israel						
Reuters	23450	WEN43	425 R	JTA-Israel						
AP Latin Am.	23775	WFG43	425 R	JTA-Israel						
AP	23927.5	WFG43	425 R	JTA-Israel						
ADN-East Germ.	10785	DMV43	425 R	JTA-Israel						
ADN-East Germ.	17435	DMV37	425 R	JTA-Israel						
ADN-East Germ.	19723	DMV39	425 R	JTA-Israel						
ADN-East Germ.	20420	DMV20	425 R	JTA-Israel						
ADN-East Germ.	22885	DMV28	425 R	JTA-Israel						
AFP-France	16250	OAG7	425 N	JTA-Israel						
AFP-France	13432			JTA-Israel						
AFP-France	5842	FTF84	425 N	JTA-Israel						
AFP-France	10940	FTK94	425 N	JTA-Israel						
AFP-France	15650	FTP65	425 N	JTA-Israel						
AFP-France	16185	FPQ8	425 N	JTA-Israel						
AIR-India	23130	ATR73	850 R	JTA-Israel						
AIR-India	14787.5	ATP65	850 R	JTA-Israel						
ANSA-Italy	13974	ISX19	425 N	JTA-Israel						
ANSA-Italy	15472	IRN24	425 R	JTA-Israel						
ANSA-Italy	15695	ISX56	425 R	JTA-Israel						
ANSA-Italy	17750			JTA-Israel						
ANSA-Italy	7910			JTA-Israel						
ANSA-Italy	10748.5	WFL60	425 R	JTA-Israel						
ANSA-Italy	13838	WFK93	425 R	JTA-Israel						
ANSA-Italy	18273	WFL28	425 R	JTA-Israel						
ANSA-Italy	23072.5	WFN53	425 R	JTA-Israel						

Tass Urss	14749	UXC4	850	R	66	Spanish		Weather Bu	10950	WBR70	850	N	60	Miami Contus
Tass Urss	15580	REM58	850	R	66	Moskva		Weather Bu	14395	WBR70	850	N	60	Miami Contus
Tass Urss	15865	RBK79	425	R	66	Spanish 13.30		Weather Bu	16440	WBR70	850	N	60	Miami Contus
Tass Urss	16260	ROU44	850	R	66	Spanish		Weather Bu	4061.5	WBR70	850	N	60	Miami
Tass Urss	18775	UFF1	850	R	66	13.00		Weather Bu	8140	WBR70	850	N	60	Miami
Tass Urss	19505	RKV	425	R	66	To Montevideo 12.00		Weather Bu	13624	WBR70	850	N	60	Miami
Tass Urss	20826	RRB70	850	R	66	Moskva Spanish same as 16260		Weather Bu	15530	WBR70	850	N	60	Miami
Tass Urss	20965	RRB56	850	R	66	Moskva English/French		Weather Bu	18765	WBR70	850	N	60	Miami
Tass Urss	22890	4UY20	425	N	60	N.Y. Un.Nat. Dipl. to Geneva va. 24.00		Weather Bu	19735	WBR70	850	N	60	Miami
UNDP	10647	4UY54	425	N	60	N.Y. Un. Nat. Dipl. to Geneva 13.00								
UNDP	16232	4UY54	425	N	60	N.Y. Un. Nat. Dipl. to Geneva 13.00								
UPI	15517	PCK45	425	N	66	Kootwijk le Hague/London before 12.00		Weather	4488		425	R	66	
UPI Informex	7280	WF197	425	R	66	N.Y. Spanish/English		Weather	6835		425	R	66	
UPI Informex	10592.5	WFL30	425	R	66	N.Y. Spanish/English		Weather	7880		425	R	66	
UPI Informex	15607	WFK45	425	R	66	N.Y. Spanish/English		Weather	9886		425	R	66	
UPI LA	7760	WFA67	850	N	60	N.Y. Spanish/English		Weather	18320		425	R	66	
UPI LA	10825	WFE20	850	N	60	N.Y. Spanish/English		Weather 2	3766		425	R	66	
UPI LA	14695	WFD24	850	N	60	N.Y. Spanish/English		Weather 2	4610		425	R	66	
UPI LA	19580	WFD59	850	N	60	N.Y. Spanish/English		Weather 2	8040		425	R	66	
UPI LA	22975	WFG42	850	N	60	N.Y. Spanish/English		Weather 2	11086.5		425	R	66	
UPI PR	7849.5	WFI57	850	R	60	N.Y.		Weather 2	14835.5		425	R	66	
UPI PR	7853	WF167	850	R	60	N.Y.		Weather	5125					Brazil
UPI Q	15640	WFK85	425	R	66	N.Y. English from 12.30		Weather	10225					Brazil
UPI U	11641.5	WEL71	850	R	60	N.Y. Spanish/English		Weather	4013					France
UPI U	14660	WFL44	850	R	60	N.Y. Spanish/English		Weather	8163					France
UPI U	18484	WFK28	850	R	60	N.Y. Spanish/English		Weather	17455					France
UPI W	7745	DZG47	425	N	60	Manila		Weather	21829					France
UPI W	9327	WFI29	425	N	60	N.Y. English 16.00-23.00								
UPI W	10362	DZG30	425	N	60	Manila								
UPI W	16372.5	WFD86	425	N	60	N.Y.								
UPI to Ships	13480	WER73			66	from 14.30								
UPI to Ships	14770	WER24			66	from 14.30								
UPI to Ships	18885	WER78			66	from 14.30								
UPI to Ships	22790	WEU52			66	from 14.30								
Weather Bu	3335	WBR70	850	N	60	Miami Contus								
Weather Bu	5937	WBR70	850	N	60	Miami Contus								
Weather Bu	8130	WBR79	850	N	60	Miami Contus								

RTTY JOURNAL

Note additional frequencies or information here-----

VHF RTTY NEWS



RON GUENTZLER, W8BBB Editor
Route 1, Box 30
Ada, Ohio 45810

This month we have two items of interest: The summary of the B.A.R.T.G. 1970 VHF RTTY CONTEST and some excerpts from a letter written by K5IQL.

Ted Double, G8CDW, B.A.R.T.G. Contests and Awards Manager, provided the following Contest Results:

70 MHz BAND. No logs received.
144 MHz BAND.
Fixed Stations

Call	Points	Contacts	Countries *
DJ8BT	840	9	3
PAQIJ	765	12	3
PAQIF	714	9	3
PAQOSI	438	6	2
DL8CX	432	2	2
G3UVZ	225	10	1
PAQNKD	211	7	1
PAO/HLA	208	3	1
G8AEL	208	4	1
G3YKB	204	4	1
G8COT	203	3	1
G3TDM	202	2	1
E15BH	201	1	1
HB9RG	201	1	1

Portable Stations	Points	Contacts	Countries *
IIGMF/P	223	5	1
IIVAK/P	223	5	1

432 MHz BAND.	Points	Contacts	Countries *
Fixed Stations			
HB9P	201	2	1
HB9RG	201	2	1

*Furthest Contact Distance in km.

The following stations were active during the Contest and were able to give scoring contacts with competing Stations

144 MHz Band: EI4AL, G3DY, G3AJS, G3IIR, G3LNN, G3OIW, G3OVZ, G3PZH, G3TWX/A, G3VZV, G8AGM, G8ATQ, G8BBB, G8CKF, G8CUO, G8DQB, I1FP, I1AGD, I1BUL, I1CLC, ON5FY, PAQAWH, PAQCRX, PAQDLC, PAQGKO, PAQPIM, PAOSMC, PAQTHT, DL3GK, and DLQOG.

432 MHz Band: HB9AMX.

"Band conditions very poor, so activity tended to be in localised pockets.

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PAQ stations very active. Two firsts: First contests logs for 432 MGz from HB9; First contest logs for portable RTTY from Itlay. Much more activity in this, the 2nd VHF RTTY "do". This year 50 stations active, last year 16!"

Many thanks to Ted Double, G8CDW, for the results. Remember, another B.A.R.T.G. VHF RTTY CONTEST will be coming next fall. Information can be obtained from Ted at 89, Linden Gardens, Enfield, Middlesex, England.

Frank Greene, K5IQL, in Yale, Oklahoma wrote a long letter giving his views on several VHF or VHF-related topics. Excerpts from his letter follow:

"Too many hams - both writers and readers alike - tend to take the possibilities and requirements of VHF too lightly. In a way, this is good. It does permit one to hook a "Benton Harbor Lunch Box" to a coat-hanger antenna and work locals. If there are enough locals, he is in business. If not, he soon decides that VHF is no good! With a little better start and some guidance in the proper direction, we might have had another VHF enthusiast.

"Meanwhile, the FM Repeater has reared its ugly head to hinder the progress of VHF activity. (I say this in spite of the fact that I held one of the pioneer repeater licenses in the country). The original role of the repeater was to aid Mobile operation; and mountain-top locations in the West which linked widespread communities. It has no place as a network of fixed stations in metropolitan areas!

"This, of course, is a matter of opinion. We'll leave it at that - except to point out that the same amount of time and money spent in improving the conventional station would give them a range greater than the repeater!

"Most of my advice will concern 2-meter operation. They apply to a lesser degree for six.

"The possibilities of AFSK/AM are surprising. AM is much more efficient than FM. (I am speaking of miles per

Swan Transceiver. With Gerard and Henri both QRV this makes about Five Percent of the total ham population of Tahiti on RTTY. QSL's can go to --

Gerard Pezy
P.O. Box 1254
Tahiti, French Polynesia

Pierre, FY7YQ is back on the bands again after several weeks spent in the rain forests of French Guiana as part of his job. Pierre's attempt to operate from Surinam as previously reported ran into some licensing snags but the possibilities are still good for later in this year.

Ron, editor of the VHF Column passed along a letter he received from W4ZLH/PYIZAC in which Yates indicates that Brazil is beginning to issue licenses to visitors under the reciprocal program. He does hope to create some activity using a Model 32, an ST-6, and a T4XB. Anyone planning to spend some time in Brazil might look into the possibilities offered.

The newly formed German Group (GARTG), mentioned last month informs us that it heartily welcomes RTTY'ers from other countries into its membership. Dues are DM8 (or 16 IRC) per year and includes subscription to their RTTY publication of which there will be eight issues a year. Konnen sie Deutsch lesen? If so you will find this an interesting publication. Make application to --

Rupert Mohr, DL3NO
Box 1663
D-4140, Rheinhausen,
Germany

For you certificate hunters the Group also offers an RTTY Award, E U R D, and full rules on how to obtain it will appear in an early issue of this column. The RTTY W A E Contest is scheduled for April 24 and 25 so mark your calendar now.

73 de John

Faster Speeds for Ham RTTY

The following proposal is self explanatory. When the amendment was first proposed last spring we received various comments both for and against. Anyone wishing to comment to the FCC should write them direct as directed in paragraph 7. Anybody have three speed gears for sale?

NOTICE OF PROPOSED RULE MAKING

Adopted: December 16, 1970; Released: Dec. 17, 1970
By the Commission: Commissioner Johnson absent.

1. The Commission has under consideration two petitions for rule making in the above-entitled matter submitted by Mr. Keith B. Petersen, W8SDZ, and Mr. R. Bruce Peters, WB2LRS. Mr. Petersen requests that the rules be amended to allow the use of radio teleprinter speeds of 60, 75, and 100 words per minute (WPM) and Mr. Peters proposes the use of 60, 67 and 100 WPM.

2. In support of their requests the petitioners indicate that present commercial teleprinter standards include faster operating models as well as 60 wpm machines. In addition, it is indicated that the present maximum frequency shift of 90 Hz would not be exceeded in the use of the higher speed machines and compliance with present bandwidth limitations is possible. Further, it is pointed out that higher speed operation will stimulate the development of new amateur skills and techniques, and will enhance the ability to handle large volumes of communications in less time. Such ability would be especially important during emergencies.

3. The Commission believes that provision for the use of additional teleprinter speeds in the Amateur Service, in keeping with commercial equipment standards now in use, is desirable. Since increased speeds are attainable within limits of the present bandwidth requirements, additional interference from such operation is not anticipated. In addition, since the teleprinter speed of 67 wpm is only a slight variation from the 60 wpm rate, the proposed use of 60, 75 and 100 wpm is considered to offer the most desirable variety of choices for operation.

16 February 1971

4. Accordingly, it is proposed to amend Section 97.69 of the Commission's Rules to provide for the use of radio teleprinter speeds of 60, 75 and 100 words per minute on the amateur frequencies where radio teleprinter operation is now permitted.

5. The proposed amendments, which are to be found in the Appendix attached hereto, are issued under the authority contained in Sections 4(i) and 303 of the Communications Act of 1934, as amended.

6. Pursuant to the applicable procedures set forth in Section 1.415 of the Commission's Rules, interested persons may file comments on or before March 1, 1971, and reply comments on or before March 22, 1971. All relevant and timely comments and reply comments will be considered by the Commission before final action is taken in this proceeding. In reaching its decision in this proceeding, the Commission may also take into account other relevant information before it, in addition to the specific comments invited by this Notice.

7. In accordance with the provisions set forth in Section 1.419 of the Commission's Rules and Regulations, an original and 14 copies of all statements, briefs or comments shall be furnished the Commission.

FEDERAL COMMUNICATIONS COMMISSION

Attachment Ben F. Waple
March 1969, proposal. Secretary

APPENDIX

Part 97 of the Commission's Rules is amended as follows:

1. In Section 97.69, paragraph (b) is amended to read: 97.69 Radio teleprinter transmissions.
(b) The normal transmitting speed of the radio teleprinter signal keying equipment shall be adjusted as closely as possible to one of the standard teleprinter speeds, namely, 60 (45 bauds), 75 (56.25 bauds) or 100 (75 bauds) words per minute, and in any event, within the range of plus or minus five words per minute of the selected standard speed.

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The Dayton Hamvention is the week end of April 23-24th. This is one of the largest ham get-togethers in the country and RTTY is always well represented. We plan on having our suite again at the Dayton Sheraton and as usual everyone is invited. Plan on arriving Friday evening if possible, social greetings and Kool Ade until time for dinner, then more sociability and gabbing until the wee hours until the die hards end it with ham and eggs across the street. Mark the calendar now.

Some of you readers that are missing copies of the RTTY JOURNAL in your files may be interested in the classified ad from John Isaacs in this issue. He has a complete file from Vol 1, No. 1 and will duplicate any issues, look up his ad for details. We mention this here as we know many fellows are looking for specific issues that are no longer available.

With the possibility of faster legal speeds for amateur RTTY and with many commercial stations now using faster speeds many hams are stuck with equipment not capable of printing these various speeds. We have just received a possible answer in a good article by Larry Laitinen, WA6JYJ, of Felton, California-- An electronic speed converter. Using only 9 ICs and 7 transistors the unit is relatively simple and inexpensive. We hope to publish the article next issue.

A RTTY forum will be one of the many features of the Great Lakes ARRL Division Convention to be held in Muskegon, Mich. on March 27th. Full details from Henry Riekels, WA8GVK, PO Box 691, Muskegon, MI. 49440.

Information on 28 Teletypes--
From Sam Carroll, W7JLF, 907 S.E. 48th, Olympia, Wash. 98501. . . I have several manuals, Theory and Description, Parts and Adjustments, Lubrication, that if anyone is interested in they can have for the postage. I work for the FAA and have had considerable training and maintenance of M 28 printers.--

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The "DARC" have announced dates of their annual RTTY WAE DX contest as April 24 - 25th, 1971.

BACK ISSUES--

The back issue situation gets worse. Last month we published a list of back issues available but before the magazine was out - so were some of the issues. The list below should be current for a while. Copies are 30c each and we are sorry as you that we do not have a complete file of back issues, it seems that about half of the new subscribers want all or a great many of those available. The January Ham Radio, 75c from the publisher, has a very good article on the ST-6 which takes care of the popular demand we had for the September and October 1970 issues.

The following are the only issues we have in stock.

1967-August - September - October
-November - December - (5).
1968-February - March - May - June
-September - (5)
1969-January - February - April - May
-June - (July - August) - September
-October - November - December
-(10).
1970-January - February - March - April
-June - December (6).
1971-January - (1).

Be Broad Minded-
Use NARROW Shift-I

RTTY JOURNAL

P.O. Box 837 Royal Oak, Mich. 48068

DUSTY DUNN - W8CQ
Editor and Publisher

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Air Mail- Central- South America 5.00
Air Mail --Other Countries - - - - - 5.50

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BACK ISSUES, RTTY JOURNAL - Have all issues from Vol. 1 No. 1. Will reproduce any issues for \$1.00. Postpaid. John Isaacs, 3175 Val Verde Ave., Long Beach, CA. 90808

RTTY CLEANOUT: Model #14 typing reperfs, synch motor, will copy 60 or 67 wpm, guaranteed working, \$20; #15 KSRs, good, \$50.00. G. White, 5716 N. King's Highway, Alexandria, Va., 22303.

PARTS - ALL MACHINES - fast service on all machines from 14s thru 35s, SASE for list. Sell Fred your surplus TTY for highest cash or trade. Typetronics, Box 8873, Ft. Lauderdale, Fla. 33310 W4NYF

MOD 15 UNSHIFT ON SPACE mod kit 74816 \$1.00 ea. Have large stock of parts for newer machines. Service available on all machines. Looking for Mite keyboard. Al Danis W6HGF 701-6A Kings Row, San Jose, Ca. 95112 294-2465.

TELETYPE PICTURES FOR SALE: Volume 2, 6 pages containing 50 pictures \$2.00. Volume 3, coming \$1.50. Also audio and perforated tapes. W9DGV-a 2210 30th St., Rock Island, Ill. 61201.

SELL TDMS TRANSMITTER with AC power supply (see CQ, Jan. '70), sophisticated signal generator for TTY, with distortion measuring scope FOB Dallas, \$75.00 Schematic and synopsis of operating instructions included. K5BQA Jim Salter, 11040 Creekmere, Dallas, Tx. 75218.

SALE: WESTERN UNION "Telfax" facsimile transmitter. 5 inch drum, table model, used, good, \$11.00 each. Keyboard; Automatic "answer back" for model 15 or 19, teletypewriter. This is a device which when tripped will send a pre-coded signal of up to 21 characters. You can code in your own call, name or anything else. Used, good \$12. ea. FRXD: combination combining typing reperforator, a reader and distributor, on one base. The units can be used separately or together, synchronous motor. No tape retainer or cover, used, good \$22. ea. TT100/FG teletypewriter Kleinschmidt, model 150, send receive - 60-100 WPM, sprocket or friction feed as desired. Self contained power supply, carriage return, used, good, \$70. ea. With spindle and crank add \$5. Atlantic Surplus Sales, 580 3rd Ave., Brooklyn, N.Y. 11215

TOROIDS: LOWEST PRICE ANYWHERE. 40/\$10. POSTPAID, (\$5/\$2.00) 44 or 88 mhz center tapped. 32KSR Page printer, reconditioned, perfect; \$225. MITE UGC41KSR Page printer, perfect; \$250. Mod28 Sprocket to Friction Kit \$25. 28L BXD TD \$70. 28LPR reperf with gear shift; \$170. 33 parity Keyboard with cables, excellent; \$38. Model 15KSR, reconditioned; \$65. Matching RA87 P.S., Unused; \$7. Lorenz 15KSR, newest, many features; \$75. Sync motors \$7. GEARS for most machines: List for stamp. 14TD \$20. DPE tape punch \$14. HP200CD Audio Oscillator \$95. R390URR receiver \$550. 11/16" tape; 40rolls/\$10.00. 33ASR, complete, excellent; \$700. Stamp for complete listing. Van W2DLT 302R Passaic Stirling, N.J. 07980

WANTED: BACK ISSUES RTTY JOURNAL. Especially want November 1968 and entire year 1967. Kermit Slob, W9BT, 1605 Oakwood Rd., Northbrook, Ill. 60062

MODEL 14 Transmitter-Distributor, synchronous motor, 60 WPM, used, good, \$20.00 each. Model 14 reperforator, receive only, synchronous motor, 60 WPM. Receive only, used, good, \$30. each. Synchronous motor for model 14 TD, reperforator or model 15, used, good \$7.50 each. Atlantic Surplus Sales, 580 3rd Ave., Brooklyn, N.Y. 11215

WANTED TELETYPE: Models 28, 32, 33 and 35 and accessories, printers, etc. We pay freight and highest prices. Cash or trade. Call collect if you have COMPLETE sets to offer. AMBER INDUSTRIAL CORPORATION, P.O. Box 2129 South Station, Newark, N.J. Tel: 201-824-1244.

FM SCHEMATIC DIGEST: Extensive collection of Motorola FM Schematics, Crystal Alignment and servicing information. 136 pages 11 1/2 x 17. \$6.50 postpaid. S. Wolf, 1100 Tremont St., Boston, Mass. 02120.

RCA FSK CONVERTER-COMPARATOR group AN/URA-6 (Navy), excellent condition, includes CV-57/URR frequency shift converter, CM-14/URR comparator, Original instruction book. Requires 395 to 470 Khz receiver IF, \$70. Stanley Coutant, WB6WFI, 248 San Gabriel Ct., Sierra Madre, Ca. 91024

SALE: 80166 Pinion gear 60 WPM for model 14 transmitter-distrib. synchronous motor or 78510 pinion gear, 60WPM for model 14 reperforator synchronous motor. Unused \$5. ea. Quantities of five-\$4.50 each. 74151 gear helical, 60WPM for model 15, governed motor, new \$1.50 ea. 77036 gear helical, 60WPM for model 14 TD governed motor new \$1.50 ea. TTT76A/JGC reperf. Xmtr, TTY 60-100 WPM send-receive Kleinschmidt complete with tape printing and punching keyboard, TD and series, used, good, \$150. ea. Send us your requirements on teletype parts or equipment. Atlantic Surplus Sales, 580 3rd Ave. Brooklyn, N.Y. 11215

SPECIAL PROJECTS, TU's, kits, expertly built to order. Estimates without obligation. Of, by, and for hams. Applied Electronics Laboratories. (W6BD, ex-W6CQK), 1068 Eden Bower Lane, Redwood City, Calif. 94061.

TTL/2 PRINTED CIRCUIT BOARD (QST, May 69) also Two frequency Discriminator-Filter Circuit Board (QST June 69) 6x9 inches, highest quality material. Either board, \$6.00, postpaid, USA. Need CV-89 Discriminator parts, whole modules or cases for unit, with controls; need TDMS technical information, and power supplies. Sell TDMS Receiver \$40., Transmitter, \$50.00, no power supplies. Jim Salter, K5BQA, 11040 Creekmere, Dallas, Texas, 75218.

SALE: URR-13 UHF RECEIVING set, tunable 200-400 mHz, ideal for UHF ham bands and monitoring air force and astronaut frequencies, A2, A3 type of emission received. Provided with 115/230 v power supply for 60 cycle AC. Also provided with padanaptor jacks for an I.F. of 18.6 Mz allowing scanning of a 600 Kz bandwidth. Superheterodyne crystal controlled O/A dimensions 8x17x19, used good - \$45.00 each. Model 14 reperforator, synchronous motor, rec. only, used good, \$28.00 each. Catalog available no charge. Atlantic Surplus Sales, 580 3rd Ave., Brooklyn, N.Y. 11215

EPOXY DIODES - 1000 Volt PIV at 1.5 Amp, 24c each ppd. 88 Mhz Centertapped unpotted toroids, \$1.50 for 5 ppd. Send stamp for list. M. WEINSCHENKER BOX 353 IRWIN, PA 15642.

The **MAINLINE TT/L-2 CUSTOM-built** with special filters or low tone filters. Space-One solid state RTTY demodulator complete ready to go as low as \$124.95. J & J Electronics, Canterbury, Ct. 06331

WANTED - MODEL 15 TABLES and electrical service units. All types of NEW parts. Telemechanics, Inc., 85 Shields Avenue, Williston Park, L.I. 11596

Additional Classified on Page 19

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SALE NAVY MODEL CV-89URA-8A TU for 19" rack mounting. Photo copies of schematics. \$80.00. Or will trade for model 15 machine. Paul Rubenacker, WN9DBF, 1811 Sutton Lane, Schaumburg, Ill. 60172.

FOR SALE: TMC CFA/1 Dual diversity audio converter, 3 1/2" rack mount, Excellent condition with manual \$199.00. Lee Brody, 15-06 Radburn Rd., Fair Lawn, N.J. 07410.

NATIONAL HRO-500 RECEIVER and speaker for sale, in very good condition, \$800 or best offer. Will consider an ST-6 or MITE as payment in part. W1BRJ, 7 Pickwick Road, Marblehead, Mass. 01945.

WANTED: SOURCE OF SUPPLY for 8 1/2" sprocket feed paper, Rob, WA0WDD, 2802 N. 47th St., Pl. Kansas City, Kans. 66104

28 MODIFICATIONS--

Continued from Page 8

to keep the spring drum from unwinding any further.

23. Now rethread the bottom wire but do not as yet put it over the take-up pulley wheel. Instead, reconnect to the spring drum by putting the bolt back in place -- this should be in about the 8:00 position.

24. Depress the "take-up" wheel and put the wire over it, and release.

25. Replace the dash-pot cylinder, replace the springs on the post, replace the two large "C" retaining rings on the post.

26. You are finished with the front plate. We'll now put it back in position on the typing unit.

REPLACING THE FRONT PLATE

There are several things to watch for to make sure they engage properly.

1. The bellcrank to engage with the "Zero" code bar slot.

2. The Figs-Ltrs shift code bar engaged with the lever on the front plate.

3. The small horizontal "bellcranks" (150771) which might be called "transfer fingers" that are at the rear of the front plate and near the top, in the middle. These engage several of the code bars in the typing unit.

4. Finally be certain that the circular plate on the end of the feed pawl fingers that advance the spacing drum are lined up with the mark on the top pawl. If not, pull the front plate free far enough to rotate the gear (150202) on the other end of that shaft until it does line up properly.

If all these conditions are met, then reconnect the front plate, probably starting backwards, with the four large bolts, one in each corner, then reconnect the bracket to the main rocker shaft underneath via the two small bolts, and finally push the typing-box and typing-hammer carriage to the right end again and re-

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SELL TELETYPE CONVERTER CV57, \$55.00 Mechanical filter adaptor for Collins 75A1, 3Kc BW. \$30.00 R.A. Whiting 4316 Kinmount Ave. Lanham, Md. 20801. Tel. 301-459-4924 after 9 P.M.

WANTED: MODEL 31 Tape portable printers, 60 WPM - 110VAC, Model 32 and Model 28. Lee Brody, 15-06 Radburn Rd., Fair Lawn, N.J. 07410. Tel. 201-796-5414 evenings.

TTY, ONE MODEL 15, \$30.00; one model 19, \$45.00; both for \$60.00. No shipping. Carl Scidler, WA2YUL, 21 Park St., Staten Island, N.Y. 10306. Tel. 212-987-6880.

FOR SALE: COLLINS R390A Receiver - excellent operating condition, drift free, mechanical filters - GRT perfect, \$1,100.00. Will deliver to 150 miles. Lee Brody, 15-06 Radburn Rd., Fair Lawn, N.J. 07410.

* * * *

connect the bail arm, replacing the "C" retaining ring.

Do not worry as yet about adjusting the right-hand margin (Article 6) until after you get the "Zero" code bar installed.

SUMMARY

You have now learned how to easily remove and replace the front plate. You now have a bellcrank installed which will allow auto CR-LF action if you have the "Zero" code bar and the stunt box components installed. This particular bellcrank is not the same one that the "75-80%" will have, but that is no matter. Yours is the 150438, theirs is an "universal" 157972 to which you can (must for auto CR-LF) add the 157514 modkit, which then gives a bellcrank that does the same thing that your 150438 will do. Since you will most likely "always" want the advantages of auto CR-LF (and so will they), this is no further importance.

If you attempt to follow the instructions included in the 152348 mod kit, you will see they have you remove the spring tension from the left spring drum, etc. This is "one way", but it assumes you have a spring tension gauge in order to replace the proper spring tension once more. While 1-2 of you might have access to such a gauge, the rest won't and I think this system outlined in Article 7 is actually more simple even if you did have the spring gauge to start with.

I suggest you make no attempt to follow the instructions included in the 152348 mod kit, as our experience with other people has indicated those instructions will be most confusing to the typical amateur doing this for the first (and probably only) time.

* * * * *