"Cheap and Dirty" conversion for Military 28 machines

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Many military model 28's are showing up in amateur hands through various sources. Unfortunately, many of these machines (Mark III) are geared for the Navy 107 W.P.M. speed (75 Baud) and cannot be put on the "normal" (60, 75, or 100 W.P.M.) speeds by a simple change of the motor gear set, as would be the case if it had been originally geared for one of the "normal" speeds. The reason for this is that a different intermediate gear ("C" in Fig. 1) and mainshaft driven gear ("D") are used on these typing units. To make matters more confusing, the Teletype Corp. parts book identifies these two different intermediate gears ("C") as #163440 - "7.0 and 7.5 unit code", and #163440 - "7.42 unit code". This is extremely misleading, as the "7.0/7.5 unit code" gear is used only with three different speeds! (66 W.P.M. (50 baud) 7.5 unit; Navy 71 W.P.M. (50 baud) 7.0 unit; and Navy 107 W.P.M. (75 baud) 7.0 unit code.) First we will discuss the "normal" conversion method, and then "Craigs Special".

Table I lists the gear numbers that should be installed for the various indicated speeds. To convert the Navy machines requires that the mainshaft in the typing unit be removed from the machine and gear "D" be changed. You can of course replace gear "E", Gear "F", and Cam "G" if you wish at the same time, but it's not necessary and would be quite costly. The transmitting speed will be correct, but still 7.0 unit code rather than 7.42, or 7.5. If you type slower than the keyboard capability no one will know the difference anyway! As you can imagine, this could turn into quite a formidable job! Plan on spending a couple of hours if you've not done this before. You will require the parts book and the adjustment manual to do this job properly, unless you happen to be a Teletype repairman.

Now - you say you don't want to get this involved in the "innards" of the machine? Well, if all you are interested in is normal 60 W.P.M. amateur operation or European 66 W.P.M. (50 baud) speeds for that rare DX, then here's the "cheap and dirty" conversion:

To obtain 60 W.P.M. operation, in-

TABLE 1

WPM	Code Units	O.P.M.	Baud Rate	Receiving Shaft RPM	Gear Set (A+B)	Gear A	Gear D	Gear C	Gear D	Gear E	Gear F	Cam G	Notes
60	7.42	368	45.45	420	161293	159278 (14T)	159279 (90T)	163440 (48T)	163590 (60T)	150441 (21T)	154032 (24T)	154154	U.S. Commercial Speed
65	7.00	390	45.45	420	161293	159278 (14T)	159279 (96T)	163440 (48T)	163590 (60T)	163503 (26T)	163519 (28T)	163368	Former Western Union Speed
67	7.42	404	50.0	462.2	152766	152765 (13T)	152764 (81T)	163440 (48T)	163590 (60T)	150441 (21T)	154032 (24T)	154154	U.S. Commercial and inter-operation w/european Speed
66	7.50	400	50.0	461.5	163504	163461 (18T)	163462 (117T)	163460 (55T)	163459 (66T)	178764 (26T)	178787 (30T)	178795	European standard Speed
71	7.00	428	50.0	461.5	103504	163461 (18T)	163462 (117T)	163460 (55T)	163459 (66T)	163503 (26T)	163519 (28T)	163368	U.S. Navy Speed
75	7.42	460	56.88	526.5	161294	159281 (17T)	159282 (93T)	163440 (48T)	163590 (60T)	150441 (21T)	154032 (24T)	154154	U.S. Commercial Speed
100	7.42	600	74.2	685.7	161295	159284 (20T)	159285 (84T)	163440 (48T)	163590 (60T)	150441 (21T)	154032 (24T)	154154	U.S. Commercial Speed
107	7.00	643	75.0	692.3	163505	163463 (24T)	163464 (104T)	163460 (55T)	163459 (66T)	163503 (26T)	163519 (28T)	163368	U.S. Navy Speed