

## LINE MESSAGE REGISTERS 5-TYPE REQUIREMENTS AND ADJUSTING PROCEDURES

### 1. GENERAL

- 1.01 This section covers 5 type line message registers.
- 1.02 This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows have been omitted.
- 1.03 Reference shall be made to Section 020-010-711 covering General Requirements and Definitions for additional information necessary for the proper application of the requirements listed herein.
- \*1.04 **Asterisk:** Requirements are marked with an asterisk (\*) when to check for them would necessitate the dismantling or dismantling of apparatus, or would affect the adjustment involved or other adjustments. No check need be made for these requirements unless the apparatus or part is made accessible for other reasons or its performance indicates that such a check is advisable.
- 1.05 **Operate:** A register is said to operate if, when current is connected to its winding.
- (1) **Registers having no contacts, the** armature adjusting screw touches the front stop.
- (2) **Registers having contacts, the** operating spring touches the front contact.
- 1.06 **Non-Operate:** A register is said to non-operate, if when current is connected to its winding, the armature does not move away from the armature backstop rod.
- 1.07 **Release:** A register is said to release when the armature moves from its operated position to its normal position against the armature backstop rod.

- 1.08 **Hold:** A register is said to hold if, after it has operated and the current through its winding is reduced abruptly the armature does not move from its operated position.
- 1.09 This section contains no adjusting procedures for these registers. Requirements 2.01 to 2.12 inclusive specified herein apply only up to and including turnover to the Telephone Company.
- 1.10 The after turnover 100 operation tests covered in paragraph 2.13 shall be applied in accordance with the section covering the line message register for the specific type of office involved.

### 2. REQUIREMENTS

#### 2.01 *Operating Pawl Position*

- (a) Figs. 1(A) and 2(A): With the register electrically operated there shall be a slight clearance between the operating pawl and the overthrow stop. This will permit a slight backward and forward movement of the units wheel. This backward and forward movement shall not be sufficient to permit the top of any figure to lie above the top edge of the cap window or the bottom of any figure to lie below the bottom edge of the cap window. This requirement shall be met on every tooth of the ratchet wheel. Gauge by eye.

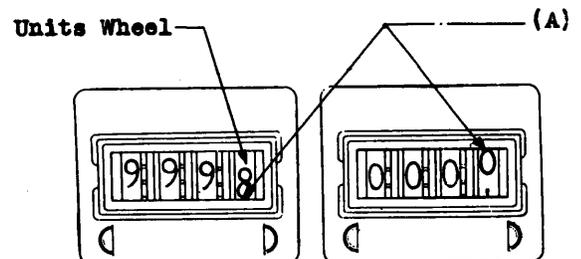


Fig. 1 - Alignment of Number Wheels

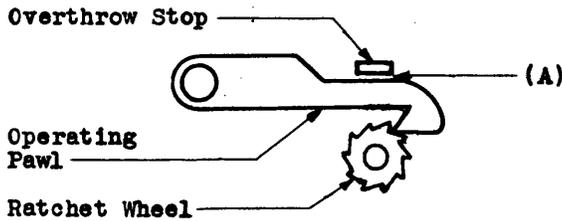


Fig. 2 - Operating Pawl Position

- (b) Fig. 3(A): With the register electrically operated and with the play in the operating pawl bearings taken up to the right, not more than 1/4 the width of the operating pawl shall extend beyond the right hand face of the ratchet wheel. This requirement shall be met on all teeth of the ratchet wheel. Gauge by eye.
- (c) Fig. 3(A) and (B) — With the armature released slowly by hand and with the clearance between a tooth on the ratchet wheel and the stop pawl taken up, the tip of the operating pawl shall drop into its normal position in front of a tooth on the ratchet wheel. This requirement shall be met on every tooth of the ratchet wheel.

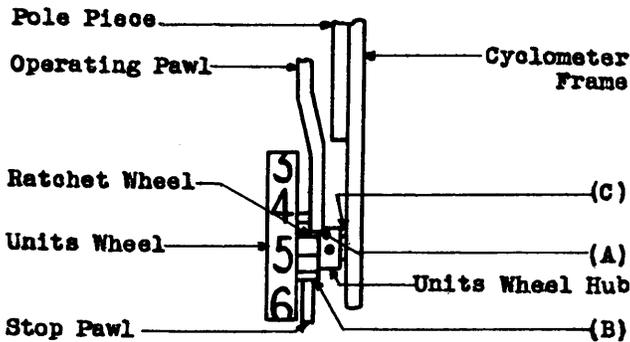


Fig. 3 - Position of Operating and Stop Pawls

**2.02 Stop Pawl Position** — Fig. 3(B): With the register electrically operated the stop pawl shall drop into its normal position behind the teeth of the ratchet wheel. This requirement shall be met on every tooth of the ratchet wheel. Gauge by eye.

**2.03 Stop Pawl Stop Spring Position:** On message registers equipped with a stop pawl stop spring there shall be sufficient clearance between the stop pawl and the stop spring, with the armature and the stop pawl in their normal positions, to permit a slight rotary movement of the units wheel from its normal position for each digit, but this movement in the "0" position shall not exceed

Max. 1/16" (one third the height of the figure "0")

gauged by eye on the periphery of the units wheel. Hold the armature in the non-operated position and rock the units wheel back and forth by means of an orange stick pressed against the teeth of the ratchet wheel.

**2.04 Freedom of Operation** — Figs. 4(A) and (B) and 5(A) and (B): With the register electrically operated, the operating pawl shall not bind on its bearing or against the pole-piece or the side of the units wheel. If the pawl touches the units wheel due to side play in the pawl, but can be made to stand away from the wheel, it shall not be considered as binding against the wheel. This requirement shall be met on every tooth of the ratchet wheel. Gauge by eye and by feel.

**2.05 End Play** — Fig. 3(C): There shall be a perceptible amount of end play between the units wheel hub and the frame. Gauge by feel.

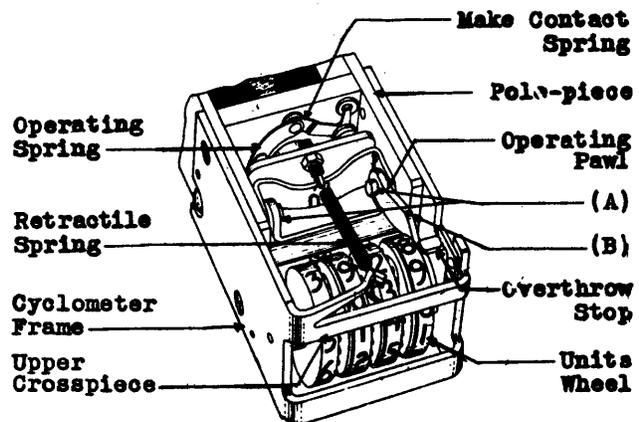
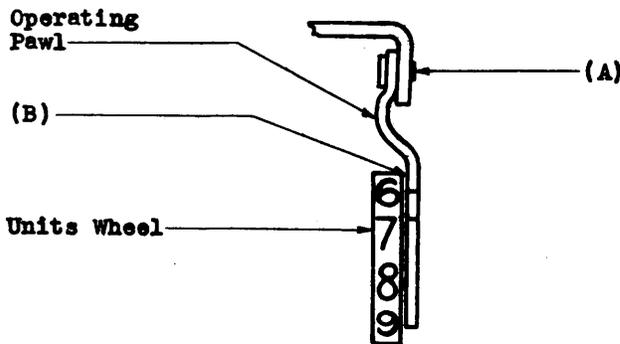


Fig. 4 - Register Equipped With Balanced Pawl Armature

**2.06 Register Mounting and Alignment** — Fig. 6(A)

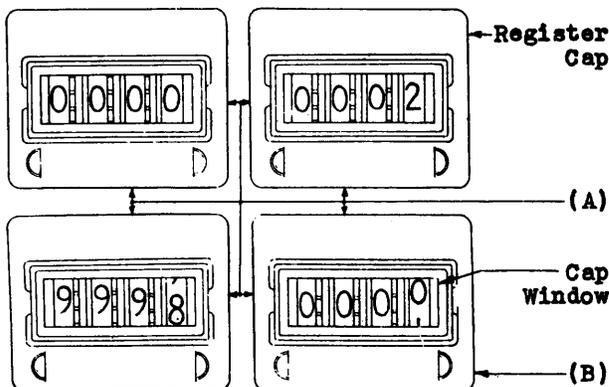
(a) Registers shall be mounted approximately level and shall be fastened securely to the mounting plate. This shall be checked for by attempting to move the register horizontally and vertically and not by attempting to turn it. Gauge by eye and by feel.

(b) Registers shall be mounted so that the No. 90 cap remover can be inserted between the register caps. The vertical spacing between rows of registers shall be approximately equal. Gauge by eye.



**Fig. 5 — Earlier Type Operating Pawl and Units Wheel**

**2.07 Register Cap Fit** — Fig. 6(B): The register cap shall be tight with not more than perceptible side play but shall be readily removable with the No. 90 cap remover.



**Fig. 6 — Register Mounting and Alignment**

**\*2.08 Contact Separation and Spring Clearance**

(a) Fig. 7(A): The separation between normally open contacts shall be

Min .010"

Max .020"

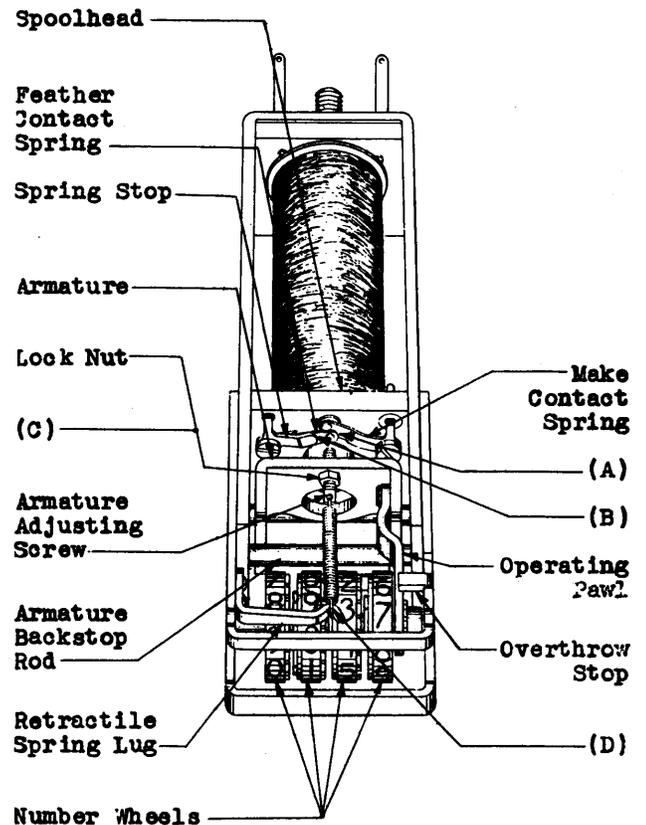
Gauge by eye.

(b) Fig. 7(B): On registers equipped with make contacts there shall be a slight clearance between the feather contact spring and the spring stop with the register unoperated. Gauge by eye.

**\*2.09 Tightness of Lock Nut** — Fig. 7 (C): The lock nut shall be sufficiently tight to hold the armature adjusting screw in the adjusted position. Gauge by feel.

**2.10 Retractable Spring Clearance** — Fig. 7(D):

The retractile spring shall not touch the register cap or the number wheels. Use a short straight edge (No. 132-Y gauge) across the top



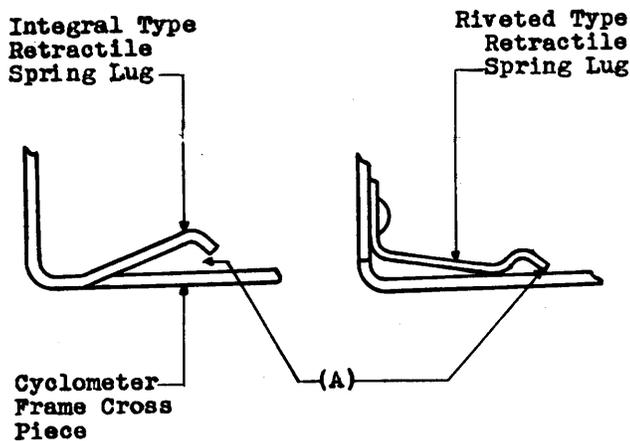
**Fig. 7 — 5 Type Register**

of the cyclometer frame to simulate the inside surface of the cover cap and gauge by eye.

**2.11 Retractable Spring Lug Position—Fig. 8(A)**

(a) The front tip of the retractile spring lug shall not extend forward further than the rear face of the cyclometer frame cross piece nor backward further than 5/32" from the same face. Gauge by eye.

(b) The lug shall be approximately straight except for the bend made at the tip for holding the retractile spring. Gauge by eye.



**Fig. 8 – Retractable Spring Lug Position**

**2.12 Electrical Requirements:** The register shall meet the electrical requirements specified on the circuit requirement table. The register shall meet the specified nonoperate requirement on three successive tests applied at intervals of one second or less.

**Note:** The electrical requirements shall be applied in the following order: operate, hold release, nonoperate. The 5AA register shall meet the nonoperate requirement immediately after release of the register. On all other registers it is satisfactory to allow a time interval or to stop the vibration of the armature spring between the release of the register and the nonoperate test.

**2.13 100 Operation Tests**

(a) **Other Than No. 5 Crossbar Offices:** (Applies before and after turnover) — The register shall operate 100 consecutive times on the electrical operate value specified on the circuit requirement table applied with the interruptions furnished by the test set provided for the office or an equivalent test set. This requirement shall be met with the register cap in place.

**Note:** Where no test equipment is available for making the 100 operation tests, it will be satisfactory to substitute for this test the application of the electrical operate value a sufficient number of times to cause three number wheels to turn. The number of applications shall not be less than ten.

(b) **No. 5 Crossbar Offices** (Applies before turnover only): The register shall non-operate 100 consecutive times on the non-operate test condition and shall operate 100 consecutive times on the operate test condition. The nonoperate test condition shall be met before the operate test condition is applied. These test conditions shall be met with the register cap in place.

**Note:** The test conditions shall be applied to the register in conjunction with the associated tube and shall be at least as severe as those provided by the Incoming Trunk Circuit SD-25834-01, for testing message registers or an equivalent test set. The message register power supply circuit provided in the office shall be used.

(c) **No. 5 Crossbar Offices** (Applies after turnover only): The register shall non-operate 100 consecutive times on the non-operate test condition and shall operate 100 consecutive times on the operate test condition furnished by the test circuit provided in the office. The non-operate test condition shall be met before the operate test condition is applied. These test conditions shall be met with the register cap in place.