

**BELL SYSTEM PRACTICES**  
**Private Branch Exchange**  
**Installation and Maintenance**

**SECTION B490.642**  
**Issue 2, April, 1954**  
**AT&T Co Standard**

## **RELAYS**

### **B AND G TYPES**

**(Reference Section for B461.002)**

#### **1. GENERAL**

1.01 When operating relay manually, apply pressure to armature directly opposite the lowest part of the core, except on relays having removable metal stops in which case apply pressure directly opposite upper flanges of the stop. Use sufficient pressure to hold armature against gauge or core but not enough to distort armature.

1.02 When readjusting, keep front contact make and contact separation near minimum values to obtain armature travel as small as possible.

#### **2. REQUIREMENTS**

2.01 **Cover Clearance:** 1/64 inch between cover and adjacent apparatus including relay covers.

2.02 **Removable Metal Armature Stop Position:** Flanges shall be flat against pole face. Armature stop pin shall not strike removable stop.

2.03 **Contact Follow:** (Figs. 13 and 14 only)

(a) Approximately 0.005 inch at tip of flexible front contact spring. Requirement is met if clearance between flexible spring and stop spring opposite contact with the relay unoperated does not exceed 0.010 inch and if there is a slight movement of flexible contact spring as relay is operated manually.

(b) Flexible contact spring shall touch stop spring before the armature stop pin touches core—relay operated manually.

2.04 **Flexible Front Contact Spring Position:** (Figs. 13 and 14 only)—Rest against shoulder of stop spring—relay unoperated.

**2.05 Minimum Front Contact Make:** Values are tabulated in figures shown on page 4. Value used shall correspond to figure number and armature travel specified on circuit requirement table. With armature held against a gauge of thickness specified inserted between armature and core as indicated below, armature or traveling front contact spring shall touch front contact or stop.

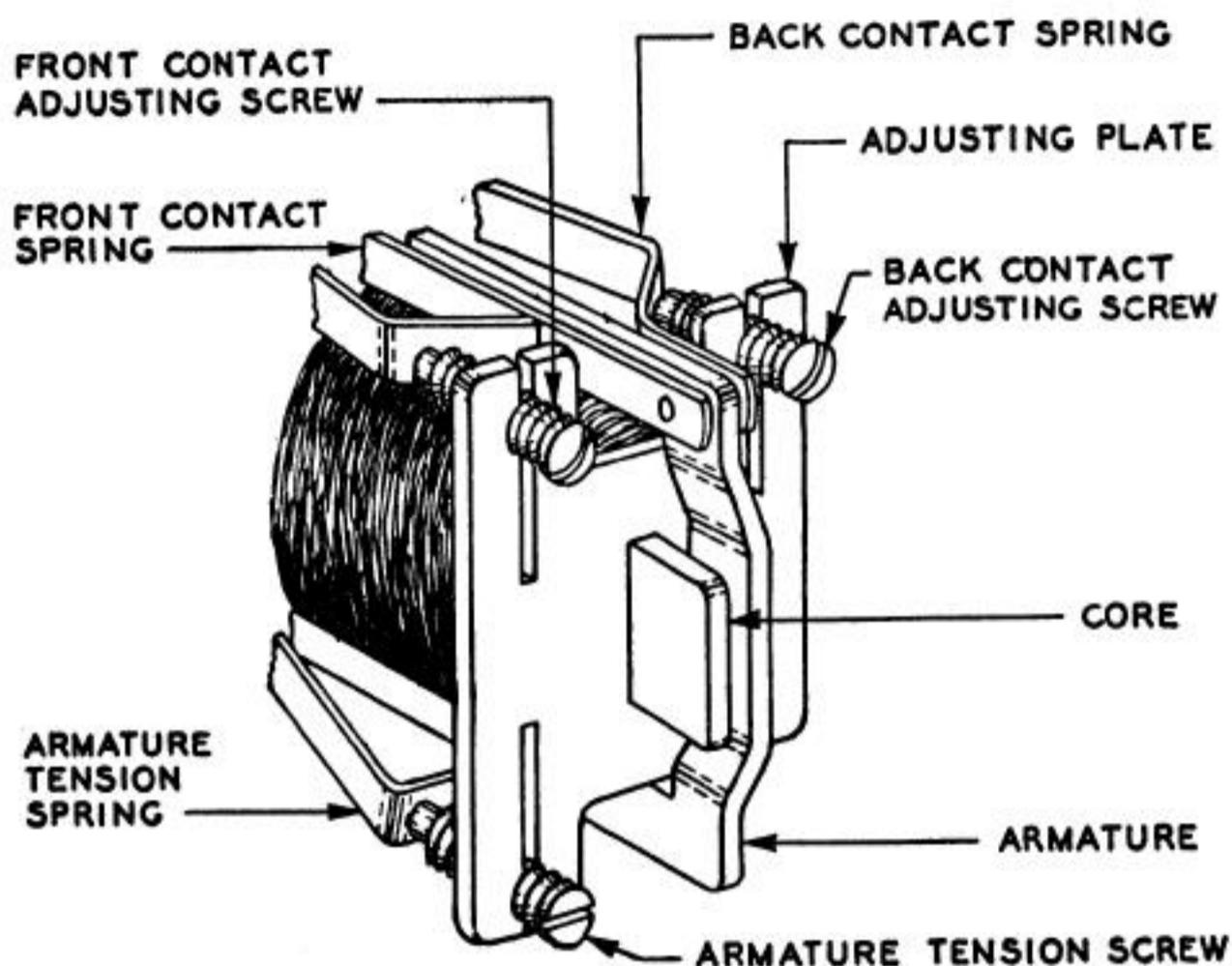
<u>Class of Relay</u>	<u>Type and Position of Gauge</u>
(a) Not equipped with removable armature stops	100-type gauge between stop pin and core
(b) Equipped with removable metal armature stop	No. 74D gauge between armature and upper flanges of removable stop
(c) Equipped with removable paper armature stop—Front contact make 0.005 inch	0.007-inch blade of No. 74D gauge between stop pin and core — paper stop removed from relay
(d) Equipped with removable paper armature stop—Front contact make greater than 0.005 inch	100-type gauge between stop pin and core—stop removed from relay
(e) Equipped with separator wound around core	100-type gauge with clip bent back between stop pin and core

**2.06 Contact Separation:** 0.005 inch except for contact (a) in Fig. 5 which shall be min 0.010 inch. This also applies to contact (a) in Fig. 7 for B136 relay—No. 74D gauge.

**2.07 Maximum Armature Travel:** As specified on circuit requirement table—gauge as indicated below.

<u>Class of Relay</u>	<u>Type and Position of Gauge</u>
(a) Equipped with one stop pin or without stop pins	Gauge between armature and core. No stop pin—100-type gauge. One stop pin—101-type gauge. ↗ ↘
(b) Equipped with two stop pins	100-type gauge between stop pins and core
(c) Equipped with removable metal armature stops	101-type gauge with clip bent back between armature and core—shall not touch removable stop or armature stop pin

<u>Class of Relay</u>	<u>Type and Position of Gauge</u>
(d) Equipped with removable paper stop	Remove paper stop and check as in (a) or (b)
(e) Equipped with separator wound around core	As covered in (a) or (b)—clip on gauge bent back



**Fig. 101—B-type Relay—Cover Removed**

2.08 **Spring Sequence:** Where different values of front contact make are specified for front contacts (a) and (b) in Figs. 5, 7, and 15, contact (b) shall make before contact (a) ← makes.

2.09 **Clearance Between Armature and Flexible Contact Spring:** (Figs. 4, 7, 9, and 10)—Min 0.005 inch between the front end of the No. 2 spring and the armature—relay operated on soak current or on test operate if no soak is specified.

2.10 **Armature Tension Spring Position:** On relays with armature tension spring which extends in front of the adjusting plate, there shall be a clearance between armature and spring and between spring and adjusted plate—relay operated or unoperated.

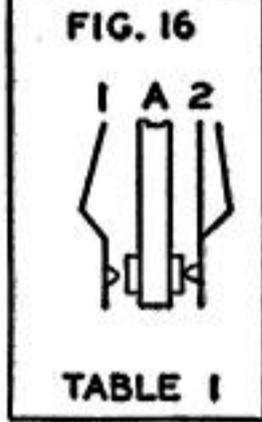
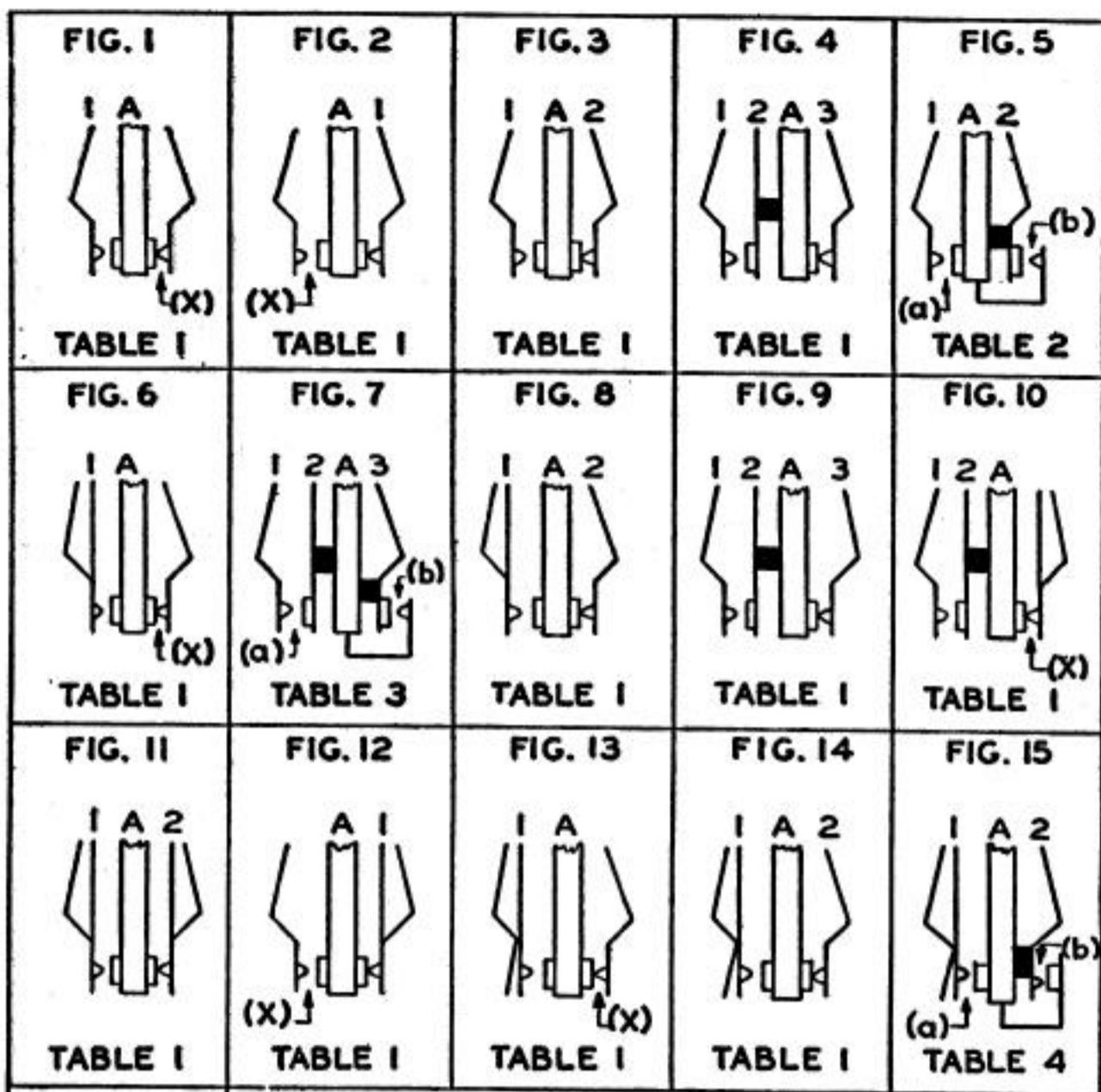


TABLE 2

ARM. TRVL.	FRONT CONT. MAKE	
	SPG. 1	SPG. 2
.030	.005	.010
.040	.010	.015
.050	.020	.025
.060	.030	.035

TABLE 3

ARM. TRVL.	FRONT CONT. MAKE	
	SPG. 1	SPG. 3
.025	.010	.010
.030	.005	.005
.035	.010	.010
.040	.015	.015
.050	.025	.025
.060	.035	.035
*060	.035	.040

TABLE 1

ARM. TRVL.	FRONT CONT. MAKE
.020	.005
.030	.005
.035	.010
.040	.015
.050	.025
.060	.035

TABLE 4

ARM. TRVL.	FRONT CONT. MAKE	
	SPG. 1	SPG. 2
.030	.005	.005
.035	.010	.010
.040	.015	.015
.050	.025	.025
.060	.035	.035

\*B136 RELAY ONLY  
 CONTACTS MARKED (X) ARE USED FOR ARMATURE STOP PURPOSES ONLY AND DO NOT FORM PART OF THE ELECTRICAL CIRCUIT