INSTALLATION • OPERATION • MAINTENANCE

INSTRUCTIONS

TYPE AV RELAYS

Adjustable Voltage—Direct Current

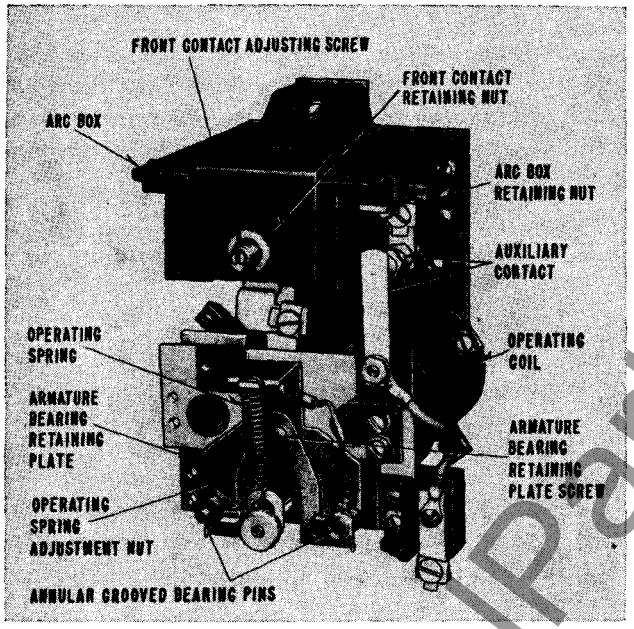

FIG. 1. Type AV Relay with One Auxiliary Contact

TYPE AV RELAYS are for general use where it is desired to open or close electrical circuits after a relatively small change in current or voltage in the relay circuit. The relays will respond to current or voltage changes as low as ten percent depending upon the setting of the individual relay.

The ratings of the main and auxiliary contacts are shown in Table No. 1. The main contact is of the single pole transfer type. The auxiliary contacts may be normally open or normally closed, as desired.

The magnet is designed for operating on direct current only. The operating coils are rated for continuous duty at the currents or voltages indicated in Table No. 3.

Mounting. The relay may be mounted on insulating panels only, using the two mounting holes in the base plate. The relay must be mounted in the vertical position with the arc box at the top.

OPERATION

The armature is supported by a bearing plate resting on two annular grooved pins which provide a frictionless knife-edge bearing and armature air gap adjustment. The operating spring is arranged so that the spring movement rather than the spring tension is varied by turning the adjusting nut.

The arc box is adjustable so that it may be moved to conform to the armature adjustment. The front contact may be adjusted to provide a contact gap of 1/16 to 5/16 of an inch.

Two ceramic permanent magnets provide the blowout for the main contacts. Since the contacts are of the transfer type, the ratings shown in Table No. 1 can only be applied to the contact on which the arc is blown upward.

The auxiliary contacts may be converted from normally open to normally closed by dismounting and reassembling the stationary contact (see Fig. 2); adjust the stationary contact accordingly. The moving contact must be reversed so that the silver contact buttons mate.

Table No. 1. CONTACT RATINGS

APPLICATION	INTERRUPTING RATING MAIN CONTACTS (Direct Current)		NOTE:
CONTACT — LINE E	230 V.	600 V.	Main contact wiring must be connected so that arc is blown upward. Normal polarity of rear contact is positive.
	5 Amps.	2 Amps.	
CONTACT — Rp — R — LINE E	230 V.	600 V.	
	10 Amps.	4 Amps.	
	FRONT CONTACT		BACK CONTACT
LINE E	230 V.	600 V.	230 V. 600 V.
	5 Amps.	2 Amps.	1 Amp. .4 Amp.

INTERRUPTING RATING—AUXILIARY CONTACTS (Direct Current)	
230 Volts—.5 Amp.	600 Volts—.15 Amp.

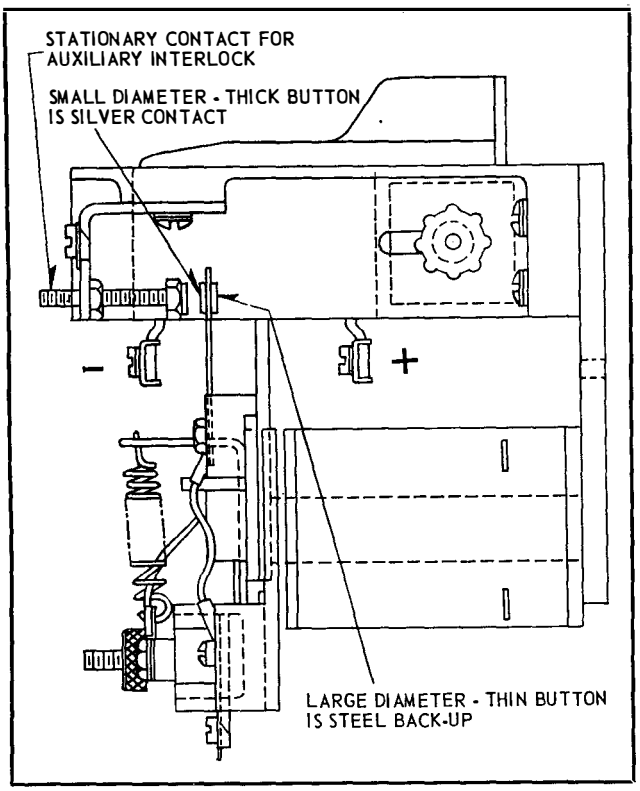

FIG. 2. Type AV Relay with Stationary Contact Assembled for Normally-Closed Position

ADJUSTMENT

To adjust the relay to pick-up and drop-out at given current or voltage values, proceed as follows:

1. Select the coil or coil combinations which will produce the pick-up and drop-out ampere turn values for the application (see Table No. 3).

2. Consult Table No. 2 to determine the armature gap and contact travel values.

3. Loosen the screw securing the armature bearing retaining plate and place armature bearing plate in the annular grooves in the bearing pins at the selected armature gap. Tighten the retaining plate screw.

4. Holding the armature in the closed position, adjust the arc box so that the armature plate is parallel to the pole faces. Tighten the arc box retaining nut with the fingers; do not use tools to tighten this nut.

5. Loosen the front contact retaining nut and adjust the front contact to obtain the contact travel desired. Use of a gauge, inserted from the under side of the arc box between the contacts, expedites this adjustment. Tighten the contact retaining nut.

6. Electrically operate the relay and adjust the operating spring adjustment screw accordingly.

7. Check to see that the moving contact is centrally located in and does not rub against the sides of the arc box.

MAINTENANCE

1. Failure of the armature to close may be caused by an open coil circuit, a power failure, mechanical interference or improper adjustment of the relay for the operating ampere turns applied to the coils. The operating spring specified must be used with this relay.

2. The one-piece molded arc box may be readily removed for inspection or servicing by removing the two screws at the top center of the arc box. The arc box may be lifted vertically from between the two molded supports. It may be advisable to

Table No. 2. OPERATING CHARACTERISTICS

ARMATURE GAP	CONTACT GAP (Inches)										ADJUSTING SCREW TURNS*
	1/16		1/8		3/16		1/4		5/16		
	Pick-up Ampere Turns	Drop-out Ampere Turns	Pick-up Ampere Turns	Drop-out Ampere Turns	Pick-up Ampere Turns	Drop-out Ampere Turns	Pick-up Ampere Turns	Drop-out Ampere Turns	Pick-up Ampere Turns	Drop-out Ampere Turns	
1/16	150-380	100-275	150-450	100-275	150-500	100-275	160-550	100-275	170-600	100-275	0-35
3/16	225-725	200-640	250-800	200-640	260-825	200-640	270-880	200-640	280-920	200-640	0-30
5/16	340-1000	300-900	350-1070	300-900	360-1100	300-900	370-1150	300-900	370-1220	300-900	0-26
7/16	550-1380	520-1250	560-1450	520-1250	570-1550	520-1250	580-1650	520-1250	600-1750	520-1250	0-20
9/16	660-1800	600-1600	670-1900	600-1600	680-2000	600-1600	690-2200	600-1600	710-2400	600-1600	0-17

* Adjusting nut is flush with end of screw at 0-turns (zero) setting.

loosen the arc box adjusting nut before proceeding as above.

3. The main contact may be replaced by first unhooking the operating spring from the bearing bracket. Remove the two binding head screws in the center of the armature plate. This frees the main contact. Reassemble the new main contact making sure the upper end is centrally located in the arc box before final tightening of the screws.

OPERATING COILS

A wide variety of shunt and series coils are available for the relay. Selection of coils is entirely dependent upon the application of the relay. (See Table No. 3).

Coil Replacement. In order to replace the coils, remove the two pole face mounting screws by inserting a screwdriver through the two holes provided in the armature plate. This permits removal of the pole face, bearings, armature, and moving contact assembly as a unit, without affecting any of the adjustments.

Remove and replace the coils; then reassemble the armature unit, making sure that the pole face screws are securely tightened. Check to see that the moving contact is centrally located in and does not rub against the sides of the arc box.

Table No. 3. OPERATING COILS

WIRE WOUND COILS			STRAP WOUND COILS			
Style Number	Coil Turns	Continuous Rating	Style Number	Coil Turns	Reference to Note	Continuous Rating
1419 532	46,500	310 Volts	1745 831	56	③	26 Amps.
1419 531	37,000	230 Volts	1745 832	36	③	41 Amps.
1419 530	24,100	150 Volts	1745 833	30	③	49 Amps.
1745 841	19,700	125 Volts	1745 834	26	③	58 Amps.
1745 842	9,760	62.5 Volts	1745 835	20	③	78 Amps.
1754 306	7,850	50 Volts				
1754 307	6,260	40 Volts	1600 861	18	③	90 Amps.
			1600 860	14	③	107 Amps.
1754 300	2,500	.72 Amps.	1600 859	12	③	125 Amps.
1754 301	2,000	.90 Amps.	1600 858	10	③	150 Amps.
1745 843	1,600	1.14 Amps.	1600 857	8	③	188 Amps.
1754 302	1,250	1.44 Amps.				
1754 303	1,150	1.56 Amps.	1600 856	6	③	250 Amps.
			1600 855	5	③	300 Amps.
1745 844	860	2.10 Amps.	1600 854	4	③	375 Amps.
1745 823	720	2.50 Amps.	1600 853	3	②	500 Amps.
1745 824	650	2.70 Amps.	1600 852	2	③	750 Amps.
1745 845	540	3.30 Amps.				
1745 825	480	3.80 Amps.	1600 850	1	④	375 Amps.
			1600 851	1	③	750 Amps.
1745 846	390	4.50 Amps.	1745 035	1	①	1,000 Amps.
1745 826	308	5.70 Amps.				
1745 847	280	6.30 Amps.				
1745 827	210	8.70 Amps.				
1745 848	176	10.20 Amps.				
1745 828	140	12.90 Amps.				
1745 849	112	16.20 Amps.				
1745 829	100	18.00 Amps.				
1745 830	88	21.00 Amps.				
1745 850	66	27.00 Amps.				

NOTE: Two studs are required for the above strap wound coils.

①S# 1170 460 Reg. 2

③S# 1600 867 Reg. 1
S# 1600 868 Reg. 1

③S# 1600 870 Reg. 1
S# 1600 871 Reg. 1

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