

SECTION II

CODE INFORMATION

General

This section contains code information for all AF, AG, AJ, AK, AL, and AM relays that have been coded on the date of issue. The information is arranged in a form to facilitate the selection of relays to meet particular circuit requirements.

The relay code information, ie, code number, spring combination, winding, and adjustment information, is listed in Tables II-1, II-2, II-3, and II-4 according to the number of contacts on each code. Each M, B, EM, EB, PM, and PB contact arrangement counts as one contact. Each EMB, BM, and EMB contact arrangement counts as two contacts.

To locate the design information for a particular coded relay, lists of codes in numerical order are provided preceding Table II-1. These show the table number and the number of contacts where this information may be found.

High-Operation Relays

Wire spring relays that are expected to operate several hundred million times in a 40-year life require the use of special long-life features to avoid the necessity of periodic readjustments to compensate for wear. These special features consist of heavy chromium plate on the armature, core, and core plate; No. 1 metal stop discs; and stainless steel wear pads on the core legs in the region where the armature pivots. The number of operations, in millions, for which relays with different coils are satisfactory without the use of the long-life features are:

Res	<u>1 to 6 Contacts</u>		<u>Over 6 Contacts</u>	
	<u>S Travel</u>	<u>I Travel</u>	<u>S Travel</u>	<u>I Travel</u>
16	150	100	200	150
270	250	200	300	250
400	300	200	300	300
700	350	300	400	350
Over				
700	400	350	400	350

Relays that operate in excess of these figures should be equipped with the long-life features. Relays with the long-life features are coded in a separate code series. These relays should not be used unnecessarily since the long-life features increase the cost of the relay by approximately 15 cents.

Code Numbers

The following blocks of code numbers have been established for the AF, AG, AJ, and AK relays. There is only one code series each for the AL and AM relays.

Ordinary Relays

<u>1 to 12</u>	
<u>Contact</u>	
<u>Positions</u>	<u>24 Makes</u>
AF1 to 499	None
AJ1 to 199	AJ200 to 299
AG1 to 199	None
AK1 to 499	None

Long-Life Relays

<u>1 to 12</u>	
<u>Contact</u>	
<u>Positions</u>	<u>24 Makes</u>
AF500 and up	None
AJ500 to 699	AJ700 to 799
AG	None Anticipated
AK500 and up	None

At the present time, there are 459 codes of wire spring relays being manufactured. This number includes all the basic types listed above and represents many combinations of winding resistances and contact arrangements. Special requirements, such as long-life features, or nonstandard adjustments, will result in a slight increase in price of the relay.

It is economical to use relays having spare contacts on the following basis before considering a new code with the exact number of contacts required.

<u>Demand per</u>	<u>Permissible</u>
<u>10,000 Lines</u>	<u>Spare Contacts</u>
800 - 400	1
400 - 200	2
200 - 100	3
100 - 80	5
80 - 60	6
60 - 50	8
Less than 50	10

Procedure

Count the total number of required contacts (M, B, EBM, etc). For AF and AJ relays, look in Table II-1 for single-wound or in Table II-2 for multiple-wound relays, starting with the total number of contacts required. For AG relays look in Table II-3, and for AK relays, Table II-4. AL relays are listed in Tables II-1A and II-2A and AM relays in Table II-4A. If the exact combination is not coded, then select the code available having the lowest number of contacts that will meet the requirements and determine if this design is economically satisfactory for the known demand.

If a satisfactory relay is not found in these tables, submit a wire spring relay request in duplicate to the relay requirements group (Form E-973A).

CODE INFORMATION

Adjustments

The Western Electric Company adjusts all U, UA, and Y relays furnished on wired equipments in the wiring shop, and uses the current flow values shown in the Circuit Requirements Table. With this program, the current flow values on the Circuit Requirements Table need not be the same as the M specification.

With the introduction of the wire spring relay, the Western Electric Company feels that it is more economical to adjust these relays in the relay assembly shop. This is due to the greater stability of the relay, the use of fewer adjustable features resulting from more preformed and pre-tensioned springs, the expectation of less adjusting effort, and the mass adjustment of the same code of relay. This program also permits the establishment of a single adjusting shop instead of one in the assembly shop and another in the wiring shop. The circuit requirements values must therefore be no more severe than the M specification values in order to avoid checking and readjusting effort in the wiring shop.

It will not be permissible to specify requirements on the Circuit Requirements Table that are not a part of the M specification. Where a relay requires current flow values different from those in the M specification, it will be necessary to change the M specification or to issue a new code with the new adjustment. The choice of which procedure is to be followed will be determined by the economics of the situation. If the M specification is changed, the more expensive adjustment must be applied in the shop to all relays of that code, which might be uneconomical if there existed a high demand for the relay without the additional requirements. On the other hand, a new code for a relay with a small use would result in an increased overall production cost by manufacturing more small-lot orders. The cost of the two methods must be compared to determine the most economical procedure. Section XI contains the data for making this comparison. On low-demand uses, a new code cannot be justified because the existing code has extra adjusting requirements.

Where a multiplicity of requirements is shown in Tables II-1, II-2, and II-4 for AF, AJ, and AK relays, all of them need not necessarily be shown on the Circuit Requirements Table for every circuit application. Those requirements that do not apply to a particular circuit condition may be omitted. For instance, a nonoperate requirement should not be shown if there is no nonoperate condition in the circuit. Check adjustments on other windings are not considered as additional requirements, and therefore may be used on the circuits without affecting the M specification. For example,

*TEST & READJUST
CURRENT REQUIREMENTS*

if a relay is adjusted with two windings series aiding, a check adjustment may be shown for either winding alone in a particular Circuit Requirements Table even though it is not specified in the M specification.

The current flow requirements for the coded relays in Tables II-1, II-2, and II-4 are readjust requirements. The test requirements are 105 percent of the operate and hold requirements and 95 percent of the nonoperate and release requirements.

Both test and readjust current flow requirements are shown for AG relays in Table II-3. The margin between release test and readjust for these relays is on an ampere turn rather than a percentage basis to provide margin for wear. The margin between test and readjust is 5 percent for operate, nonoperate, and hold requirements.

For AG relays, always specify the soak, operate, hold and release requirements.

Show "FS" in the "After Soak" column of the Circuit Requirements Table when soak currents are given, provided the full soak obtained under the test condition is equal to, or greater than, the specified value. If the full soak exceeds 0.7 ampere, the specified soak should be used.

Armature Back Tension

Armature back tension other than the standard (minimum 30 grams for AF, AJ, and AK relays; minimum 45 grams for relays with 24 makes or 24 breaks; minimum 20 grams for AG relays) must be shown in the Circuit Requirements Table.

Contact Gauging

Contact gauging values other than standard are shown in Tables II-1, II-2, II-3, and II-4 and must be shown in the Circuit Requirements Table.

A visual check, without gauges, will be made for all EBM, EMB, PBEM, and PMEB spring units. No check is made for any other sequence unless the sequence is specified in the Circuit Requirements Table.

Resistance Tolerances

Unless otherwise stated, the resistance variation of inductive windings is ± 10 percent and noninductive windings is ± 5 percent. All resistance values are based on 68° F.

Contacts

Only palladium (No. 2 metal) contacts of one size are used on AF, AG, AJ, AK, AL, and AM relays. The twin-wire contacts have a thin gold overlay.

Battery Connection to Springs

Battery and ground shall not be connected to springs in adjacent positions, since these springs may be shorted by the contact burnisher.

Contact Force

The AF, AG, AJ, AK, AL, and AM relays are generally designed to provide a nominal 12.5-gram contact force. The sensitive relays are designed to provide a nominal 8-gram force. A high contact force range is available that provides a minimum 15-gram force. Since the contact force is non-adjustable, no reference is made to it in the Circuit Requirements Table.

Armature Travel

The armature travel is nonadjustable and so should not be specified in the Circuit Requirements Table. The nominal armature travels, measured at the card, are:

	<u>Travel</u> <u>Inch</u>	<u>Contact</u> <u>Sequence</u>	<u>Spring</u> <u>Combination</u> <u>Number</u>
Short	0.026	1 Stage	1 to 199, 500,501
Intermediate	0.044	2 Stage	200 to 399
Long	0.060	3 Stage	400 to 499

X-75509

Operate and Release Times

The operate and release times for the AF, AG, AJ, and AK relays are shown in Table II-5, II-6, II-7, and II-8. These times are based on local circuit operation, 45 to 50 volts and no contact protection. The operate times are not shown for the relays that cannot be used in local circuit on 48 volts.

AL and AM relays are normally pulse operated and, hence, their operate and release times are circuit-dependent. For this reason, timing values are not generally listed; instead, they are specified as manufacturing requirements, where appropriate.

Circuit Preparation

Wire spring relays may be blocked in the operated or the unoperated position, and

their contacts may be insulated. When a make-contact on the relay under test is insulated, the margin between the readjust and test operate should be increased to 10 percent to compensate for the effect of the contact insulator on the operate current.

Winding terminals are extended to the front of the relay to provide connecting points for test purposes. The single-wire contacts may be used as connecting points for test purposes. This connection is made by a test prod that plugs into a 360 tool, as shown in Fig. VIII-1. The physical size of the 360 tools makes it impossible to pick up adjacent contacts without interference. At least two contact positions should be left between contacts to be picked up. As an exception, only one contact position need be left between connecting points straddling the center of the spring combination because of the wider space between contacts 6 and 7.

Maintenance Specifications

The following Bell System Practices cover the information for maintaining the wire spring relays.

<u>Section</u>	<u>Contents</u>
040-502-701	Maintenance and Adjustment - AF, AG, and AJ Relays
040-504-701	Maintenance and Adjustment - AK Relays
069-020-801	Blocking and Insulating
069-131-811	Test Connections
069-306-801	Contact Cleaning
069-310-803	Contact Replacement
040-502-801	Piece Parts and Replacement - AF, AG, and AJ Relays
040-504-801	Piece Parts and Replacement - AK Relays
005-120-103	Winding and Spring Designations
040-502-101	Educational Information - AF, AG, and AJ Relays
040-505-501	Timing and Latching Force Tests Using J94735 Test Set
040-505-701	Requirements and Adjusting Procedures - AL and AM Relays
040-505-801	Piece Parts and Replacement - AL and AM Relays

CODE INFORMATION

AF RELAY CODES

Code	Contacts	Table	Code	Contacts	Table	Code	Contacts	Table
AF1	MD		AF56	2	1	AF111	15	1
AF2	MD		AF57	8	1	AF112	13	1
AF3	10	1	AF58	None		AF113	12	1
AF4	6	1	AF59	4	1	AF114	7	1
AF5	10	1	AF60	7	1	AF115	7	1
AF6	11	1	AF61	5	1	AF116	14	1
AF7	None		AF62	Replaced by AF115		AF117	10	1
AF8	10	2	AF63	7	1	AF118	7	1
AF9	12	1	AF64	18	1	AF119	11	1
AF10	9	1	AF65	None		AF120	12	1
AF11	8	2	AF66	6	2	AF121	16	1
AF12	11	2	AF67	6	1	AF122	12	1
AF13	11	1	AF68	3	2	AF123	12	2
AF14	None		AF69	Replaced by AF526		AF124	7	1
AF15	4	1	AF70	6	2	AF125	13	1
AF16	11	1	AF71	5	2	AF126	7	1
AF17	4	1	AF72	4	2	AF127	11	2
AF18	4	2	AF73	8	2	AF128	16	2
AF19	4	1	AF74	Replaced by AF500		AF129	16	1
AF20	14	1	AF75	Replaced by AF501		AF130	8	2
AF21	11	2	AF76	Replaced by AF502		AF131	11	1
AF22	6	1	AF77	12	2	AF132	14	1
AF23	12	1	AF78	None		AF133	3	2
AF24	12	1	AF79	14	1	AF134	15	1
AF25	6	1	AF80	Replaced by AF503		AF135	9	1
AF26	6	1	AF81	Replaced by AF525		AF136	11	1
AF27	6	1	AF82	15	1	AF137	6	1
AF28	8	1	AF83	12	1	AF138	1	1
AF29	Replaced by AF114		AF84	12	1	AF139	11	1
AF30	12	1	AF85	7	1	AF140	13	1
AF31	Replaced by AF512		AF86	6	1	AF141	6	2
AF32	12	1	AF87	8	1	AF142	10	1
AF33	12	1	AF88	14	1	AF143	15	1
AF34	10	1	AF89	4	1	AF144	5	1
AF35	9	1	AF90	6	1	AF145	8	1
AF36	Replaced by AF514		AF91	6	1	AF146	6	1
AF37	12	1	AF92	11	1	AF147	12	1
AF38	Replaced by AF515		AF93	Replaced by AF504		AF148	11	1
AF39	Replaced by AF516		AF94	12	2	AF149	2	1
AF40	10	1	AF95	14	1	AF150	10	1
AF41	Replaced by AF517		AF96	3	2	AF151	14	1
AF42	16	1	AF97	3	2	AF152	18	1
AF43	3	1	AF98	13	1	AF153	13	1
AF44	4	1	AF99	6	2	AF154	11	1
AF45	Replaced by AF519		AF100	16	1	AF155	13	1
AF46	Replaced by AF520		AF101	4	2	AF156	8	1
AF47	Replaced by AF521		AF102	3	2	AF157	12	1
AF48	16	1	AF103	3	2	AF158	8	1
AF49	13	1	AF104	3	2	AF159	8	1
AF50	6	1	AF105	7	1	AF160	9	1
AF51	4	1	AF106	3	1	AF161	14	1
AF52	11	1	AF107	MD		AF162	12	1
AF53	13	1	AF108	MD		AF163	12	1
AF54	12	1	AF109	7	2	AF164	9	1
AF55	16	1	AF110	9	1	AF165	14	1

AF AND AJ RELAY CODES

Code	Contacts	Table	Code	Contacts	Table	Code	Contacts	Table
AF166	10	1	AJ16	20	1	AJ71	16	2
AF167	8	1	AJ17	Replaced by AJ25		AJ72	24	2
AF168	3	1	AJ18			AJ73	6	2
AF169	9	1	AJ19			AJ74	7	1
AF170	12	1	AJ20	16	2	AJ75	13	1
AF500	8	1				AJ76	7	1
AF501	18	1	AJ21	20	1	AJ77	9	2
AF502	16	1	AJ22	20	1	AJ78	19	2
AF503	MD		AJ23	1	2	AJ79	14	1
AF504	12	1	AJ24	2	2	AJ80	4	1
			AJ25	1	1			
AF505	6	1				AJ81	24	1
AF506	12	1	AJ26	5	2	AJ82	8	1
AF507	16	1	AJ27	12	1	AJ83	24	1
AF508	6	1	AJ28	16	2	AJ84	13	1
AF509	18	1	AJ29	3	2	AJ85	5	1
			AJ30	11	1	AJ86	5	2
AF510	1	2				AJ87	17	2
AF511	7	1	AJ31	8	1	AJ88	8	2
AF512	6	1	AJ32	16	1	AJ89	14	1
AF513	12	1	AJ33	6	1	AJ90	12	1
AF514	6	1	AJ34	3	2			
			AJ35	2	1	AJ91	15	1
AF515	16	1				AJ92	24	1
AF516	8	1	AJ36	11	1	AJ93	19	1
AF517	12	1	AJ37	20	1	AJ94	16	1
AF518	16	1	AJ38	7	2	AJ95	16	1
AF519	9	1	AJ39	24	1	AJ96	12	1
			AJ40	2	2	AJ97	13	2
x-75509 AF520	11	1				AJ98	5	1
AF521	15	1	AJ41	12	1	AJ99	11	2
AF522	6	1	AJ42	8	2	AJ100	3	1
AF523	11	1	AJ43	24	1			
AF524	8	1	AJ44	MD		AJ101	12	1
			AJ45	24	1	AJ102	3	2
AF525	10	2				AJ103	24	1
AF526	Replaced by AF524					AJ104	10	1
AF527	6	1	AJ46	11	1	AJ105	14	1
AF528	6	2	AJ47	1	1			
AF529	13	2	AJ48	4	2	AJ106	14	1
AF530	12	2	AJ49	7	2	AJ107	20	1
AF531	8	1	AJ50	3	2	AJ108	2	1
AF532	11	2				AJ109	16	2
AF533	9	2	AJ51	14	1	AJ110	9	2
AF534	4	2	AJ52	8	2			
			AJ53	16	1	AJ111	14	1
AF535	12	1	AJ54	16	1	AJ112	10	1
AF536	12	1	AJ55	13	2	AJ113	20	2
						AJ114	9	2
AJ1	2	2	AJ56	17	1	AJ115	3	2
AJ2	Replaced by AJ24		AJ57	6	2	AJ116	16	2
AJ3	20	1	AJ58	12	2	AJ117	3	1
AJ4	None		AJ59	3	2	AJ118	1	1
AJ5	24	1	AJ60	8	1	AJ119	1	1
						AJ120	16	2
AJ6	None		AJ61	14	1			
AJ7	1	1	AJ62	16	1	AJ121	Replaced by AJ129	
AJ8	1	2	AJ63	9	1	AJ122	24	2
AJ9	20	1	AJ64	17	1	AJ123	12	1
AJ10	5	2	AJ65	18	1	AJ124	18	1
						AJ125	24	1
AJ11	2	1	AJ66	5	2	AJ126	24	2
AJ12	24	1	AJ67	MD		AJ127	16	1
AJ13	Replaced by AJ503		AJ68	15	1	AJ128	14	1
AJ14	16	2	AJ69	19	1	AJ129	9	1
AJ15	24	1	AJ70	18	2	AJ130	15	1

CODE INFORMATION

AJ, AG, AK, AL AND AM RELAY CODES

<u>Code</u>	<u>Contacts</u>	<u>Table</u>	<u>Code</u>	<u>Contacts</u>	<u>Table</u>	<u>Code</u>	<u>Contacts</u>	<u>Table</u>
AJ131	24	1	AG11	8	3	AK6	20	4
AJ132	11	2	AG12	4	3	AK7	16	4
AJ133	5	2	AG13	5	3	AK8	14	4
AJ134	3	2	AG14	6	3	AK9	6	4
AJ135	2	2	AG15	8	3	AK10	15	4
AJ136	3	2	AG16	8	3	AK11	8	4
AJ137	15	1	AG17	15	3	AK12	4	4
AJ138	7	2	AG18	9	3	AK13	16	4
AJ139	24	1	AG19	4	3	AK14	14	4
AJ140	4	2	AG20	15	3	AK15	10	4
AJ141	8	2	AG21	7	3			
AJ142	11	2	AG22	7	3	AK16	14	4
AJ143	3	2	AG23	8	3	AK17	14	4
AJ200	24	1	AG24	6	3	AK18	7	4
AJ201	Replaced by AJ700		AG25	MD		AK19	12	4
AJ202		1	AG26	10	3	AK20	8	4
AJ203		1	AG27	6	3	AK21	12	4
AJ204		2	AG28	13	3	AK22	20	4
			AG29	17	3	AK23	8	4
AJ205	24	1	AG30	7	3	AK24	12	4
						AK25	6	4
AJ500	20	1	AG31	5	3			
AJ501	24	1	AG32	16	3			
AJ502	20	1	AG33	13	3	AK26	13	4
AJ503	24	1	AG34	13	3	AK27	10	4
AJ504	16	1	AG35	6	3	AK28	14	4
AJ505	8	1	AG36	8	3	AK29	10	4
AJ506	7	1	AG37	8	3	AK30	18	4
AJ507	15	1	AG38	12	3			
AJ508	11	1	AG39	13	3	AK31	13	4
AJ509	15	1	AG40	6	3	AK32	14	4
						AK33	13	4
AJ510	5	2	AG41	9	3	AK34	13	4
AJ511	12	2	AG42	10	3	AK35	18	4
AJ512	24	1	AG43	18	3			
AJ513	24	1	AG44	14	3	AK36	18	4
AJ514	18	2	AG45	11	3	AK37	13	4
AJ515	16	1	AG46	11	3	AK38	10	4
AJ516	24	1	AG47	8	3	AK39	15	4
AJ517	16	2	AG48	15	3	AK40	9	4
AJ518	24	2	AG49	12	3			
AJ519	3	2	AG50	18	3	AK41	18	4
						AK42	12	4
AJ520	24	1	AG51	8	3	AK43	9	4
AJ521	13	2	AG52	16	3	AK44	20	4
			AG53	24	3	AK45	14	4
AJ700	24	1	AG54	7	3			
AJ701	MD		AG55	9	3	AK46	10	4
AJ702	24	1	AG56	17	3	AK47	18	4
AJ703	24	2	AG57	21	3	AK48	14	4
AG1	12	3	AG58	4	3	AK49	18	4
AG2	8	3	AG59	16	3	AK50	20	4
AG3	8	3	AG60	14	3			
AG4	5	3				AK500	13	4
AG5	MD		AG61	18	3	AK501	20	4
						AL1	24	1a
AG6	14	3	AK1	13	4	AL2	24	2a
AG7	15	3	AK2	10	4	AM1	20	4a
AG8	5	3	AK3	8	4	AM2	20	4a
AG9	7	3	AK4	18	4	AM3	20	4a
AG10	12	3	AK5	8	4	AM4	20	4a

TABLE II-1
CODE INFORMATION
SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						Spg Comb.	WINDING			CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other		Code	Turns	Res	Oper	N.O.	Hold	Rls	
1 CONTACT														
1	-	-	-	-	-	1	AJ7	34900	9100	1.6			0.5	A, (AC), G, Z, (AY) D, X, N
-	1	-	-	-	-	53	AJ25	3710	220	24	22			
-	1	-	-	-	-	53	AJ47	3710	220	(after minus 50 soak)	23	21		D, X, N
-	1	-	-	-	-	53B	AF138	3900	100	(after minus 50 soak)	30	-	-	A
-	1	-	-	-	-	53	AJ118	3710	220	21	19		12.5	D, G, X
-	1	-	-	-	-	53	AJ119	3710	220	(after minus 50 soak)	18.5	16.5		D, G, X
										(after minus 50 soak)				
2 CONTACTS														
-	-	-	1	-	-	209	AF56	5150	700	25.5				
2	-	-	-	-	-	2	AJ11	5625	180	15			9.3	5.1 A, G, W
1	1	-	-	-	-	9	AJ35	1580	16	(after soak 45)	60	54		
-	-	-	1	-	-	209	AF149	2260	34	71	58			
2	-	-	-	-	-	2	AJ108	34900	9100	2.1				W, (AY)
3 CONTACTS														
1	-	1	-	-	-	17	AF43	2110	270	46.5				
2	1	-	-	-	-	37	AF106	13500	2000	7.1	4.6			D
3	-	-	-	-	-	46	AJ100	5625	180	10	5.3			G, W
3	-	-	-	-	-	46	AF168	5150	700	25	22			
2	1	-	-	-	-	37	AJ117	5625	180	11.8				W

Notes:

- A. Equipped with 0.014-inch stop discs.
D. Equipped with 0.091-inch copper sleeve.
G. Contact make 5, no make 8.5, readjust; make 3.5, no make 10, test.
N. Winding arrangement No. 5.
W. Armature back tension minimum 20-gram readjust, 15-gram test.
X. Equipped with one iron and two copper washers.
Z. Adjusted on light contact force.
(AC). Armature back tension minimum 18-gram readjust, 15-gram test.
(AY). The use of a protective network on the coil is required to limit the peak voltage to a safe value.

CODE INFORMATION

TABLE II-1 (Cont)
CODE INFORMATION
SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						Spg Comb.	Code	WINDING		CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other			Turns	Res	Oper	N.O.	Hold	Rls	
4 CONTACTS														
2	-	-	-	1	-	216	AF15	19400	2500	6.7				
4	-	-	-	-	-	3	AF19	1580	16	64				
4	-	-	-	-	-	3	AF44	2110	270	48				
4	-	-	-	-	-	3	AF51	5150	700	19.5				
4	-	-	-	-	-	3	AF59	19400	2500	5.2				
2	2	-	-	-	-	41B	AF89	2260	34	45	29.5		17.5	
											(after soak		130)	
-	-	-	1	1	-	211	AF17	2110	270	62	46			
3	1	-	-	-	-	38	AJ80	8250	1050	11	7.9			C
5 CONTACTS														
-	5	-	-	-	-	23	AF61	19400	2500	5.5	2.4			
1	-	-	-	2	-	258	AF144	5150	700	26				
4	1	-	-	-	-	71	AJ85	22200	3800	4.6	3			(AY)(RA)
1	-	2	-	-	-	74	AJ98	2260	34	70			30	B

Notes:

B. Equipped with 0.022-inch stop discs.

C. Equipped with 0.147-inch copper sleeve.

(AY). The use of a protective network on the coil is required to limit the peak voltage to a safe value.

(RA). Resistance ± 5 percent.

TABLE II-1 (Cont)

CODE INFORMATION

SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						Spg Comb.	WINDING			CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other		Code	Turns	Res	Oper	N.O.	Hold	Rls	
6 CONTACTS														
2	-	2	-	-	-	18	AF4	3330	400	34.5	13.2			
2	-	2	-	-	-	18	AF50	5150	700	22				
2	-	2	-	-	-	18	AF527	3330	400	34.5				
2	-	2	-	-	-	18	AF522	5150	700	22				
-	-	-	2	1	-	207	AF22	2110	270	62				
-	-	-	2	1	-	207	AF67	19400	2500	6.8				
-	-	-	2	1	-	207	AF512	5150	700	25				
-	-	-	2	1	-	207	AF505	19400	2500	8.5				T
5	1	-	-	-	-	11	AF25	1580	16	72				
5	1	-	-	-	-	11	AF27	3330	400	34.5				
5	1	-	-	-	-	11	AF508	1580	16	72				
6	-	-	-	-	-	5	AF26	11850	950	9.7				
6	-	-	-	-	-	5	AF514	2110	270	54.5				
2	-	-	2	-	-	237	AF86	8275	500	16	11.7		3.5	(RA)
2	2	-	1	-	-	242	AF90	2110	270	62				
2	4	-	-	-	-	43	AF91	2110	270	54				
-	-	-	-	-	-	5B	AJ33	5625	180	30	(soak 225)	18		A, G, (AP)
-	-	-	-	1	2PBEM	412	AF137	2110	270	85				T
-	-	-	2	1	-	207	AF146	19400	2500	8				T
7 CONTACTS														
2	1	2	-	-	-	54	AF114	5150	700	23	10.9			
2	1	2	-	-	-	32	AF511	5150	700	23				
6	1	-	-	-	-	12	AF60	19400	2500	6.2				
2	1	-	2	-	-	274	AF115	19400	2500	6.7	5			
2	3	-	-	1	-	229	AF63	19400	2500	6.7				
1	-	-	2	-	2PM	401	AF85	6450	1000	34	23.5		10.5	A, C, (RA)
1	-	-	2	1	-	253	AF105	2110	270	62			34.5	
1	-	-	2	-	2PM	401	AF118	11850	950	13.3				
1	-	-	3	-	-	267	AJ506	1580	16	75				
2	-	-	-	2	1EM	287	AF124	8275	500	16				
3	-	-	1	1	-	288	AF126	3330	400	39				
1	2	-	1	1	-	292	AJ76	19400	2500	6.5			2.6	
-	1	3	-	-	-	69	AJ74	19400	2500	4.9			1.1	

Notes:

- A. Equipped with 0.014-inch stop discs.
 C. Equipped with 0.147-inch copper sleeve.
 G. Contact make 5, no make 8.5, readjust; make 3.5, no make 10, test.
 T. Armature back tension, minimum 65-gram readjust, 60-gram test.
 (AP). Maximum buffer spring gauging waived.
 (RA). Resistance ± 5 percent.

CODE INFORMATION

TABLE II-1 (Cont)

CODE INFORMATION
SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGMENT						WINDING				CURRENT FLOW REQTS				See
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Oper	N.O.	Hold	Rls	Note
8 CONTACTS														
4	-	-	2	-	-	210	AF57	5150	700	25.5				
4	-	-	2	-	-	210	AF524	5150	700	25.5				
4	4	-	-	-	-	33	AF500	730	4.4	175				(RB)
1	2	-	1	1	1PM	400B	AF28	8275	500	26			10.9	A
-	-	-	1	2	1EM&1EB	240	AF87	10080	2550	13.6	9.5			C
3	-	-	1	1	1EM	221	AF516	2110	270	63				
5	3	-	-	-	-	36	AJ31	8275	500	13.7				
5	3	-	-	-	-	36	AJ505	1580	16	71				
-	-	-	4	-	-	203	AF531	5150	700	36			12.6	A
-	-	-	4	-	-	203	AJ60	8275	500	20			6	A, (RA)
3	-	-	-	2	1EM	269	AF145	8275	500	16				(RA)
2	-	-	3	-	-	300	AJ82	8275	500	21	13.9			A
4	2	-	-	1	-	295	AF156	5150	700	25.5				
4	2	-	-	1	-	295	AF159	3950	200	33.5				
5	3	-	-	-	-	36	AF158	5575	550	23	12.2			C
-	-	-	4	-	-	203	AJ121	28000	6000	3.9				W
9 CONTACTS														
3	1	-	1	1	1EM	214	AF10	19400	2500	7.2	4.5			
4	2	-	-	1	1EM	248	AF35	2110	270	66				
4	1	2	-	-	-	27	AF519	2110	270	69			17	
-	1	-	3	1	-	272	AF110	11850	950	15.5			5.6	A
1	3	-	1	1	1PM	409B	AF135	8275	500	26			10.9	A
6	3	-	-	-	-	68	AJ63	19400	2500	5.4				
6	1	1	-	-	-	73	AF160	3950	200	34				
5	-	-	1	1	-	319	AF164	5150	700	27				
1	-	-	4	-	-	335	AJ129	28000	6000	3.9				W
10 CONTACTS														
6	2	-	-	1	-	329	AJ112	11850	950	10.9		5.6		
10	-	-	-	-	-	6	AF3	3330	400	42				
10	-	-	-	-	-	6	AF5	2110	270	66				
9	1	-	-	-	-	14	AF34	5150	700	26.5				
4	1	-	1	1	1EM	222	AF40	2110	270	69.5				
4	1	-	1	1	1EM	222	AF117	5625	180	27	17		6	
3	5	-	-	-	1EM	310	AF142	5625	180	36.5	20	23.5	10.1	A, (AG)
					1EB									
7	-	-	-	-	3EM	289	AF150	5625	180	26	17		6.4	
1	3	-	1	1	1EM-1PM	421B	AF166	8275	500	28			10.9	A
-	-	-	4	1	-	324	AJ104	11850	950	12				

Notes:

- A. Equipped with 0.014-inch stop discs.
 C. Equipped with 0.147-inch copper sleeve.
 W. Armature back tension minimum 20-gram readjust; 15-gram test.
 (AG). Armature back tension, maximum 60-gram.
 (RA). Resistance ± 5 percent.
 (RB). Resistance ± 15 percent.

TABLE II-1 (Cont)

CODE INFORMATION

SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGMENT							WINDING		CURRENT FLOW REQTS					
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Oper	N.O.	Hold	Rls	See Note
1.1 CONTACTS														
7	2	1	-	-	-	29	AF6	1580	16	95				
4	2	-	1	1	1EM	215	AF13	19400	2500	12.4			4.2	A
4	1	-	3	-	-	204	AF16	5150	700	29	20.3V			
3	-	4	-	-	-	19	AF52	5150	700	28				
3	-	4	-	-	-	19	AF523	5150	700	28				
11	-	-	-	-	-	7	AF92	2110	270	69				
10	1	-	-	-	-	15	AF520	2110	270	69				
6	3	-	-	-	2EM	266	AF119	19400	2500	12	5.9		4.1	A
1	4	-	2	1	-	256	AJ30	5150	700	27	19			
3	-	4	-	-	-	19	AJ508	1580	16	71				
4	2	-	1	1	1EM	215	AJ36	2260	34	49				W
-	2	1	1	1	1EM	407	AF131	2110	270	80				
					1PBEM									
6	3	-	-	-	2EM	266	AJ46	11850	950	11.7				
3	1	-	1	1	1PB	410	AF136	5150	700	32				
					1PBEM									
1	4	-	2	1	-	256	AF139	19400	2500	7.9	20V		4.5	
3	2	-	3	-	-	280	AF148	5625	180	39	20	25.5	11.3	A
5	-	-	1	-	1EB, 1PM	417	AF154	6700	275	22	7.1V			W
					2PB									
5	-	-	2	-	2EB	331	AF169	6700	275	38				A, (AK)

X-75509

Notes:

A. Equipped with 0.014-inch stop discs.

W. Armature back tension minimum 20-gram readjust; 15-gram test.

(AK). Armature back tension, minimum 60-gram.

CODE INFORMATION

TABLE II-1 (Cont)

CODE INFORMATION

SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGMENT						WINDING				CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Oper	N.O.	Hold	Rls	
12 CONTACTS														
12	-	-	-	-	-	8	AF37	1580	16	135				A
12	-	-	-	-	-	8	AF24	5150	700	29				
12	-	-	-	-	-	8	AF83	19400	2500	7.8				
12	-	-	-	-	-	8	AF504	2110	270	72				
12	-	-	-	-	-	8	AF506	5150	700	29				
2	3	-	2	1	1EM	213	AF9	19400	2500	8.2				
5	-	-	2	1	1EM	206	AF23	3330	400	69.5				A
-	-	-	6	-	-	217	AF30	19400	2500	8.2	5		1.8	
-	-	-	4	2	-	208	AF32	5150	700	30.5				
-	-	-	4	2	-	208	AF513	5150	700	30.5				
10	2	-	-	-	-	16	AF33	11850	950	12.8				
2	2	4	-	-	-	25	AF54	5150	700	29				
4	3	1	1	-	1EM	236	AF84	19400	2500	8.2				
6	1	-	1	1	1EM	223	AF517	2110	270	80				
-	4	-	4	-	-	273	AF113	19400	2500	8.2	5			
2	3	-	2	1	1EM	213	AJ27	16050	2200	14.2	8.6			A, E
-	3	-	2	1	2EM 1PM	406	AF120	11850	950	19.5	14.5			
4	-	4	-	-	-	49	AF122	1580	16	95				
5	7	-	-	-	-	40	AJ41	19400	2500	5.6				
-	-	-	6	-	-	217	AF147	19400	2500	8.8				T
1	5	-	1	-	3EM, 1PM	420	AJ90	1580	16	100		53		
12	-	-	-	-	-	8	AF162	3950	200	38				
5	-	-	2	1	1EM	206	AF163	3950	200	40				
12	-	-	-	-	-	8	AJ96	2260	34	51				
3	5	-	2	-	-	317	AF157	5625	180	44.5	20	26	12	A, (AW), (AX)
4	-	-	3	1	-	323	AJ101	8275	500	17	8.5			
5	-	-	1	-	1EB, 1EM 1PM, 2PB	423	AF535	2110	270	80				
6	-	-	-	-	6EM	333	AK123	15800	1625	14	6.1		2.1	(BD)
12	-	-	-	-	-	8	AF536	2110	270	80				(BD), (AK) (BE)
5	-	-	2	1	1EM	206	AF170	3330	400	69.5	24			A, (AH)

Notes:

- A. Equipped with 0.014-inch stop discs.
 E. Equipped with 0.046-inch copper sleeve.
 T. Armature back tension minimum 65-gram readjust; 60-gram test.
 (AH). Armature back tension maximum 80-gram readjust; 85-gram test.
 (AK). Armature back tension minimum 60-gram.
 (AW). Conts 2, 4 & 10 make 8 readjust, 7 test;
 no make 12 readjust, 13.5 test.
 Conts 1, 3, 5, 7, 9 break 8 readjust, 7 test;
 no break 12 readjust, 13.5 test.
 (AX). Armature back tension minimum 55-gram readjust, 50-gram test.
 maximum 75-gram readjust, 80-gram test.
 (BD). Adjusted on heavy contact force.
 (BE). Contact make 4.5R, 3T; no make 8.5R, 10T (at S.D.).

TABLE II-1 (Cont)

CODE INFORMATION

SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						WINDING				CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Oper	N.O.	Hold	Rls	
13 CONTACTS														
3	1	-	3	1	1EM	212	AF49	3330	400	50.5	29			
1	4	4	-	-	-	24	AF53	5150	700	30				
1	4	-	3	1	-	245	AF98	11850	950	14.1				
4	1	-	4	-	-	263	AJ18	5625	180	26.5				
7	-	-	3	-	-	268	AF112	5150	700	33.5				
1	4	-	3	1	-	245	AF125	8275	500	20				
5	4	1	-	-	2EM	304	AF140	19400	2500	8.6				
7	2	-	2	-	-	261	AF153	6700	275	38			10	A
1	-	2	2	-	3EM, 1PM	418	AF155	19400	2500	9.3				
1	2	1	3	1	-	291	AJ75	19400	2500	6.5				
5	-	-	4	-	-	301	AJ84	10450	800	12.2	6.5			
14 CONTACTS														
2	-	-	4	2	-	205	AF20	5150	700	34				
2	-	-	4	2	-	205	AF79	19400	2500	9.2	4.5			
4	6	2	-	-	-	42	AF88	5150	700	31.5	12.9			
7	2	-	1	1	1EM	244	AF95	1580	16	115	43			
7	3	-	2	-	-	285	AF116	3330	400	55.5				
10	-	2	-	-	-	61	AF132	5150	700	32.5				
-	3	2	2	-	2EM, 1PM	411	AJ51	385	375	48.5	37.5		8.5 C, (RA	
-	-	2	1	4	-	238	AJ61	5150	700	30.5			(AM)	
-	-	2	2	1	2PBEM	415	AF151	2110	270	90				
2	2	-	2	1	1PBEM	419	AJ79	15800	1625	8.7			W	
1PMEB														
x-75509	-	-	2	1	4	-	238	AJ89	2110	270	75	45		(AM)
-	-	2	1	4	-	-	238	AJ106	1580	16	100			(AM)
10	-	2	-	-	-	-	61	AF161	3950	200	41.5			
10	-	2	-	-	-	-	61	AF165	11850	950	14.2			
1	5	-	1	-	3EM, 1PM	422	AJ105	1580	16	105	58			
4	-	-	4	1	1PMEB	328	AJ111	8275	500	18.5				
6	2	-	2	1	-	334	AJ128	15800	1625	11.1			3.6	

Notes:

A. Equipped with 0.014-inch stop discs.

C. Equipped with 0.147-inch copper sleeve.

W. Armature back tension minimum 20-gram readjust, 15-gram test.

(AM). Frame of relay grounded by mounting screws. Not recommended for general use.

(RA). Resistance ± 5 percent.

CODE INFORMATION

TABLE II-1 (Cont)

CODE INFORMATION

SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						WINDING				CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Oper	N.O.	Hold	Rls	
15 CONTACTS														
8	-	-	2	1	1EM	235	AF82	5150	700	40.5				
9	-	3	-	-	-	21	AF521	2110	270	85				
7	1	-	2	1	1EM	270	AF111	5150	700	40.5				
9	-	3	-	-	-	21	AJ507	2110	270	95				A
8	-	-	2	1	1EM	235	AJ509	5150	700	31.5	13.6			
4	3	-	4	-	-	230	AF134	19400	2500	9.8	4.9			
1	1	-	5	1	1EB	311	AF143	6925	860	27	14	14.5	5.7	
3	5	1	1	1	1EM	277	AJ68	5150	700	27	19			
2	1	-	4	2	-	271	AJ91	3950	200	40				
1	2	1	2	1	1PBEM	424	AJ130	15800	1625	8.7				W
					1PMEB									
6	1	2	2	-	-	338	AJ137	3950	200	61.5				A
16 CONTACTS														
4	1	-	2	2	3EB	313	AJ62	6450	1000	36	22.5			A,C
3	1	-	4	2	-	224	AF42	2110	270	95				
3	1	-	4	2	-	224	AF518	2110	270	95				
2	6	4	-	-	-	28	AF48	2110	270	90				
7	1	4	-	-	-	26	AF55	5150	700	35				
7	1	4	-	-	-	26	AF507	5150	700	35				
6	2	-	4	-	-	231	AF502	2760	395	72		46.5		
4	-	-	4	2	-	252	AF100	5150	700	39.5				
3	1	6	-	-	-	31	AF515	2110	270	90				
3	1	6	-	-	-	31	AF121	1580	16	120				
3	1	6	-	-	-	57	AJ504	16050	2200	11.2	7.1			F
2	6	4	-	-	-	28	AF129	19400	2500	9.5				
-	-	-	6	2	-	254	AJ32	730	4.4	230	90			(RB)
8	-	-	4	-	-	298	AJ53	6450	1000	37	22.5			A,C,(RA)
3	4	-	3	1	1EM	306	AJ54	6450	1000	36	22.5			A,C,(RA)
8	-	4	-	-	-	63	AJ515	6700	275	35				A
3	3	1	3	-	2EM	320	AJ94	5150	700	32				
8	-	4	-	-	-	63	AJ95	11850	950	13.2				
4	-	-	4	2	-	252	AJ127	15800	1625	12.4			4.1	

Notes:

- A. Equipped with 0.014-inch stop discs.
 C. Equipped with 0.147-inch copper sleeve.
 F. Equipped with 0.046-inch aluminum sleeve.
 W. Armature back tension minimum 20-gram readjust; 15-gram test.
 (RA). Resistance ± 5 percent.
 (RB). Resistance ± 15 percent.

TABLE II-1 (Cont)

CODE INFORMATION

SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENTS						Spg Comb.	WINDING			CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other		Code	Turns	Res	Oper	N.O.	Hold	Rls	
<u>17 CONTACTS</u>														
4	2	1	-	1	1EM 2PMEB 1PBEM	413	AJ56	3330	400	54.5				
1	-	-	6	1	2EB	275	AJ64	6925	860	27	14	12.2	5.2	
<u>18 CONTACTS</u>														
6	-	6	-	-	-	34	AF501	2760	395	75		47		
6	-	4	-	2	-	219	AF64	19400	2500	10.6				
6	-	4	-	2	-	219	AF509	19400	2500	10.6			2.2	
-	6	6	-	-	-	59	AJ65	11850	950	14.2				
6	-	6	-	-	-	34	AF152	15800	1625	13				
6	-	4	-	2	-	219	AJ124	730	4.4	200	110			(RB)
<u>19 CONTACTS</u>														
2	2	-	6	1	1EB	278	AJ69	5150	700	30.5	13.6			
2	2	-	6	1	1EB	278	AJ93	3950	200	45.5				
<u>20 CONTACTS</u>														
X-75509	2	-	3	4	2	-	226	AJ3	11850	950	17	8.1		
	2	-	3	4	2	-	226	AJ500	11850	950	17			
	2	-	3	4	2	-	226	AJ16	8275	500	36			A
	-	-	-	8	2	-	234	AJ9	5150	700	38			
	-	-	-	8	2	-	234	AJ502	5150	700	38			
	-	-	-	8	2	-	234	AJ22	5150	700	38	13.4		
	-	-	-	8	1	2EM	259	AJ21	2110	270	95			
	-	-	-	8	2	-	234	AJ37	1580	16	125			

Notes:

A. Equipped with 0.014-inch stop discs.

W. Armature back tension minimum 20-gram readjust; 15-gram test.

(RB). Resistance ± 15 percent.

CODE INFORMATION

TABLE II-1 (Cont)

CODE INFORMATION

SINGLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						Spg Comb.	WINDING			CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other		Code	Turns	Res	Oper	N.O.	Hold	Rls	
24 CONTACTS														
24	-	-	-	-	-	500	AJ202	5150	700	40.5				
24	-	-	-	-	-	500	AJ200	8275	500	28.5				
24	-	-	-	-	-	500	AJ203	6700	275	35				
24	-	-	-	-	-	500	AJ700	2110	270	85				
24	-	-	-	-	-	500	AJ702	5150	700	40.5				
-	-	-	12	-	-	220	AJ5	19400	2500	12.6				
-	-	-	12	-	-	220	AJ12	5150	700	40.5				
-	-	-	9	3	-	249	AJ15	5150	700	40.5				
-	-	-	9	3	-	249	AJ503	2110	270	90				
-	-	-	9	3	-	249	AJ501	5150	700	40.5				
-	-	12	-	-	-	64	AJ512	2110	270	85				
-	-	-	12	-	-	220	AJ39	11850	950	17.5	8.1			
-	-	-	9	3	-	249	AJ43	8275	500	23				
-	-	-	9	3	-	249	AJ45	1580	16	120				
-	-	5	2	1	2PBEM 2PMEB	414	AJ513	2110	270	100				
-	-	-	12	-	-	220	AJ81	8275	500	23				
-	-	-	9	3	-	249	AJ83	19400	2500	12.6				
-	-	2	6	4	-	299	AJ516	5150	700	39				
-	-	-	12	-	-	220	AJ92	3950	200	48				
-	-	2	6	4	-	299	AJ103	8250	1050	23.5	11.6			C
-	24	-	-	-	-	501	AJ205	5150	700	45				
-	-	2	6	4	-	299	AJ125	19400	2500	10.3				
-	-	-	6	6	-	336	AJ131	5150	700	42				
-	-	-	6	6	-	336	AJ520	2670	395	75				
-	-	-	9	3	-	249	AJ139	8275	500	23		13.5	4.4	

Notes:

C. Equipped with 0.147-inch copper sleeve.

TABLE II-1A

CODE INFORMATION

SINGLE-WOUND AL RELAYS

<u>CONTACT ARRANGEMENTS</u>							<u>WINDING</u>		<u>CURRENT FLOW REQTS</u>							
<u>M</u>	<u>B</u>	<u>BM</u>	<u>EBM</u>	<u>EMB</u>	<u>Other</u>	<u>Spg Comb.</u>	<u>Code</u>	<u>Turns</u>	<u>Res</u>	<u>Soak</u>	<u>Oper</u>	<u>N.O.</u>	<u>Rls</u>	<u>Non- Rls</u>	<u>No Flux Rls</u>	<u>See Note</u>
<u>24 CONTACTS</u>																
-	-	2	6	4	-	299B	AL1	3900	100	-300	-80	-	+23	-	+43.5	BJ,BM BN,BO

Notes:

BJ. Winding arrangement No. 13.

BM. Soak current shall not flow for more than 5 seconds.

BN. Operate and nonoperate test after soak and no flux release.

BO. Release and nonrelease test after soak.

TABLE II-2

CODE INFORMATION

MULTIPLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT							WINDING			CURRENT FLOW REQTS					See Note
<u>M</u>	<u>B</u>	<u>BM</u>	<u>EBM</u>	<u>EMB</u>	<u>Other</u>	<u>Spg Comb.</u>	<u>Code</u>	<u>Turns</u>	<u>Res</u>	<u>Test Wdg</u>	<u>Oper</u>	<u>N.O.</u>	<u>Hold</u>	<u>Rls</u>	
<u>1 CONTACT</u>															
1	-	-	-	-	-	1	AJ8	P.L5200 S.L5200	400 400	P/S (soak 20)	6			1.8	Z A,R,G, L,(AB) L
1	-	-	-	-	-	1	AF510	P.L5200 S.L5200	400 400	P S	19 19.5				
1	-	-	-	-	-	1B	AJ23	P.L3235 S.L3235	200 200	P/S	13.5	10		6.5	B,Y,R, H,L,W, Z
<u>2 CONTACTS</u>															
X-75509	2	-	-	-	-	2B	AJ1	P.L3235 S.L3235	200 200	P/S (soak 31)	19			10.8	B,Y,R, H,L
	1	1	-	-	-	52B	AJ24	P.L3235 S.L3235	200 200	P/S (soak 31)	19			9.3	B,Y,R, L
	1	1	-	-	-	52	AJ40	P.L2070 S.L2070	61 61	P/S	16.5			0.2	G,L,R, W,(AJ)
	1	1	-	-	-	52L	AJ135	P.L5200 S.L5200	400 400	P/S (soak 20)	6			1.8	A,L,Z, G,(AJ)

Notes:

- A. Equipped with 0.014-inch stop discs.
 B. Equipped with 0.022-inch stop discs.
 G. Contact make 5, no make 8.5, readjust; make 3.5, no make 10, test.
 H. Contact make 10, no make 14.5, readjust; make 8.5, no make 16, test.
 L. Winding arrangement No. 3.
 R. P/S primary and secondary in series aiding.
 W. Armature back tension, minimum 20-gram readjust, 15-gram test.
 Y. Laminations next to core.
 Z. Adjusted on light contact force.
 (AB). Armature back tension minimum 23-gram readjust, 20-gram test.
 (AJ). Contact break 5, no break 8.5, readjust; break 3.5, no break 10, test.

CODE INFORMATION

TABLE II-2 (Cont)

CODE INFORMATION

MULTIPLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT							WINDING			CURRENT FLOW REQTS					See Note
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Test Wdg	Oper	N.O.	Hold	Rls	
3 CONTACTS															
1	2	-	-	-	-	10	AF68	P.7975	1000	P	12.3				K
								S.13950	2700	S	7.4				
3	-	-	-	-	-	46	AF96	P.1050	8	P	95	85			K,Z,(RC)
								S.3770	850	S	28				
3	-	-	-	-	-	46	AF97	P.560	2.7	P	215	190			K,Z,(RB)
								S.3020	690	S	42				
3	-	-	-	-	-	46	AF102	P.790	10	P	165	145			K,Z
								S.2950	400	S	46.5				
3	-	-	-	-	-	46	AF104	P.560	2.7	P	205	180			K,Z,(RB)
								S.3020	690	S	40				
3	-	-	-	-	-	46	AF103	P.1050	8	P	115	100			K,Z,(RC)
								S.3770	850	S	34				
3	-	-	-	-	-	46B	AJ29	P.L5520	425	P/S	7.5			3.8	A,L,R,Z,
								S.L5520	425		(soak 27)				W,G,(AG)
3	-	-	-	-	-	46B	AJ34	P.L3235	200	P/S	14.3		9.6	6.6	A,L,W,G,
								S.L3235	200		(soak 100)				Y,Z,R,
															(AG)(AN)
3	-	-	-	-	-	46	AJ50	P.2660	100	P/S	10	5.5			G,L,R,W
								S.2660	100						
2	1	-	-	-	-	37	AF133	P.9125	1175	P	10.8	7.3		1.9	K
								S.9125	1075	S	11.4				
2	1	-	-	-	-	37	AJ59	P.L5200	400	P/S	9.9			4.3	B,L,R,W
								S.L5200	400						
2	1	-	-	-	-	75	AJ102	P(L)3235	200	P/S	14	-	-	6.1	A,G,L,R,
								S(L)3235	200						W,Y,(AZ)
3	-	-	-	-	-	46	AJ115	P(L)5520	425	P/S	7.5	6.4	-	3.8	A,G,L,R,
								S(L)5520			(soak 27)				W,Z
1	2	-	-	-	-	10	AJ519	P.1010	16	P	90				K
								S.1100	16	S	90				
2	1	-	-	-	-	75	AJ134	P(L)2660	100	P/S	13.7				L,R,W
								S(L)2660	100						
3	-	-	-	-	-	46	AJ136	P(L)3235	200	P/S	14.2(R)	12.1(R)		6.6(R)	A,G,L,Y,
								S(L)3235	200						Z,R,(AN)
2	1	-	-	-	-	75	AJ143	P(L)2660	100	P/S	13.7				G,L,R,W
								S(L)2660	100						

Notes:

- A. Equipped with 0.014-inch stop discs.
 B. Equipped with 0.022-inch stop discs.
 G. Contact make 5, no make 8.5, readjust; make 3.5, no make 10, test.
 K. Winding arrangement No. 2.
 L. Winding arrangement No. 3.
 P/S. Primary and secondary in series aiding.
 W. Armature back tension minimum 20-gram readjust, 15-gram test.
 Y. Laminations next to core.
 Z. Adjusted to light contact force.
 (AG). Armature back tension maximum 60-gram readjust, 65-gram test.
 (AN). With 4.5 gauge inserted between armature and backstop and the relay not energized, no contact shall make.
 (AZ). Contact break 13 readjust, 11.5 test, no break 16.5, readjust, 18 test.
 (RB). Resistance ± 15 percent.
 (RC). Secondary winding resistance ± 15 percent.

TABLE II-2 (Cont)

CODE INFORMATION

MULTIPLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT							WINDING			CURRENT FLOW REQTS					See
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Test Wdg	Oper	N.O.	Hold	Rls	Note
4 CONTACTS															
-	-	-	2	-	-	201	AF18	P.2590	100	P	50.5				K
-	-	-	2	-	-	201	AF534	S.9625	1100	S	14.3				A,K
-	-	-	2	-	-	201	AF534	P.7975	1000	P	20				A,K
2	2	-	-	-	-	41	AF101	S.13950	2700	S	10.8		6.6		
2	2	-	-	-	-	41	AF101	P.3200	300	P	41.5	30	18.5		K
2	2	-	-	-	-	41	AJ19	S.3550	300	S	37				K
2	2	-	-	-	-	41	AJ19	P.3200	300	P	28		12.6		K
4	-	-	-	-	-	3	AJ48	S.3550	300	S	26		11.7		K
4	-	-	-	-	-	3	AJ48	P.9400	1500	P	8	6.5			K,W
-	-	-	2	-	-	201	AF72	S.15400	2950	S	5.1				K
-	-	-	2	-	-	201	AF72	P.9125	1175	P	14.3				K
4	-	-	-	-	-	3	AJ140	S.9125	1075	S	15				K
4	-	-	-	-	-	3	AJ140	P.3235	200	P/S	16.5	-	-	5.0	A,L
4	-	-	-	-	-	3	AJ140	S.3235	200						A,L
5 CONTACTS															
5	-	-	-	-	-	4	AF71	P.9125	1175	P	11.8				K
3	2	-	-	-	-	39	AJ10	S.9125	1075	S	12.4				K
3	2	-	-	-	-	39	AJ10	P.10900	1800	P	6.8	4.3			W,K,S,Z
2	1	1	-	-	-	55B	AJ26	S.2770	85	P/S	25.5				(RA)
2	1	1	-	-	-	55B	AJ26	P.L3235	200	P/S	15.5				6.8 A,L,R,W
3	2	-	-	-	-	39	AJ510	S.L3235	200						Y,Z
3	2	-	-	-	-	39	AJ510	P.560	2.7	P	240	215			K,Z,(RB)
1	2	1	-	-	-	58	AJ66	S.3020	690	S	47				K
1	2	1	-	-	-	58	AJ66	P.L3235	200	P/S	15.5				6.8 A,L,R,W
-	3	-	1	-	-	315	AJ86	S.L3235	200						Y,Z
-	3	-	1	-	-	315	AJ86	P.L3235	200	P/S	19.5				2.4 L,R,Y
3	2	-	-	-	-	39	AJ133	S.L3235	200						(after soak 31)
3	2	-	-	-	-	39	AJ133	P(L)5520	425	P/S	7.8	6.4	-	3.8	A,L,R,W
3	2	-	-	-	-	39	AJ133	S(L)5520	425						Z,G,(AJ)

Notes:

- A. Equipped with 0.014-inch stop discs.
 G. Contact make 5, no make 8.5 (R), make 3.5, no make 10 (T).
 K. Winding arrangement No. 2.
 L. Winding arrangement No. 3.
 R. P/S primary and secondary in series aiding.
 S. P/S primary and secondary in parallel aiding.
 W. Armature back tension minimum 20-gram readjust, 15-gram test.
 Y. Laminations next to core.
 Z. Adjusted on light contact force.
 (AJ). Contact break 5, no break 8.5 (R), break 3.5, no break 10 (T).
 (RA). Resistance ± 5 percent.
 (RB). Resistance ± 15 percent

CODE INFORMATION

TABLE II-2 (Cont)

CODE INFORMATION

MULTIPLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						WINDING				CURRENT FLOW REQTS					See Note
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Test Wdg	Oper	N.O.	Hold	Rls	
6 CONTACTS															
2	-	-	1	1	-	225	AF66	P.2590	100	P	61.5	46			K
								S.9625	1100	S	17				
1	1	-	1	1	-	202	AF70	P.7975	1000	P	16.5				K
								S.13950	2700	S	9.9				
-	2	-	1	1	-	251	AF99	P.7975	1000	P	16.5				K
								S.13950	2700	S	9.9				
2	2	-	1	-	-	284	AF528	P.2590	100	P	62	36		21	A,K,(AG)
								S.9625	1100	S	17.5				
2	-	-	1	1	-	225	AF141	P.4550	540	P/S	16	11.6			K,R
								S.3750	540						
2	-	-	2	-	-	237	AJ57	P.L3235	200	P/S	19	10(soak 31)		2.7	L,R,Y
								S.L3235	200						
6	-	-	-	-	-	5	AJ73	P.4800	360	P	26			6.6	A,K,R
								S.13150	1900	P/S	7				
7 CONTACTS															
2	1	-	2	-	-	218	AF109	P.2590	100	P	50.5		27		K
								S.9625	1100	S	14.5				
3	-	-	2	-	-	294B	AJ38	P.2800	170	P	45	18.5		11.4	K
								S.3850	140	S	34.5			(soak 90)	
-	-	3	-	-	LEM	302	AJ49	P.4400	220	P	26.5	21.5			E,K
								S.6775	1150	S	18				
2	3	1	-	-	-	56	AJ138	P(L)5200	400	P/S	12	-	-	5.5	A,L,R
								S(L)5200	400						

Notes:

- A. Equipped with 0.014-inch stop discs.
 E. Equipped with 0.046-inch copper sleeve.
 K. Winding arrangement No. 2.
 L. Winding arrangement No. 3.
 R. P/S primary and secondary in series aiding.
 Y. Laminations next to core.
 (AG). Armature back tension maximum 60-gram readjust, 65-gram test.

TABLE II-2 (Cont)

CODE INFORMATION

MULTIPLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						WINDING			CURRENT FLOW REQTS						
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Test Wdg	Oper	N.O.	Hold	Rls	See Note
8 CONTACTS															
2	-	-	1	2	-	303	AJ52	P.L5200	400	P/S	12.6	-	-	3.3	L,R
7	1	-	-	-	-	66	AJ42	S.L5200	400						
								P.2070	61	P/S	27.5				L,R
								S.2070	61						
6	2	-	-	-	-	13	AF11	P.2590	100	P	61	25.5			R,K
								S.9625	1100	P/S	13.5				
4	-	-	2	-	-	210	AF130	P.2590	100	P	54	30.5			(AG),K
								S.9625	1100	S	15.5				
-	-	-	4	-	-	203	AF73	P.9125	1175	P	14.5				K
								S.9125	1075	S	15.5				
2	-	-	1	2	-	303	AJ88	P.L3235	200	P/S	25	17	-	7.1	A,L,R,Y
								S.L3235	200						
5	-	-	-	1	1EM	327	AF167	P.10500	950	P	13.1				K
								S.3450	450	S	38	-	-	8.4	
3	1	1	-	1	-	339	AJ141	P.4100	210	P	32.5	20			A,K
								S.8375	1000	P/S	10.8				
9 CONTACTS															
8	1	-	-	-	-	48	AF533	P.3200	300	P	44.5	24			K
								S.3550	300	S	41.5				
1	4	-	2	-	-	293	AJ77	P.L3235	200	P/S	27	17.5			A,L,R,Y
								S.L3235	200						
5	-	-	1	1	-	319	AJ110	P.L3235	200	P/S	19.5	(soak 31)		3.2	L,R,Y
								S.L3235	200						
1	4	-	2	-	-	293	AJ114	P.560	2.7	P	225	175			K,(RB),(RC)
								S.3020	690	S	47				
10 CONTACTS															
2	2	-	2	1	-	200	AF8	P.7975	1000	P	18.5	12			K
								S.13950	2700	S	11.1				
10	-	-	-	-	-	6	AF525	P.7100	700	P	20				K
								S.7150	700	S	21				

Notes:

- A. Equipped with 0.014-inch stop discs.
 K. Winding arrangement No. 2.
 L. Winding arrangement No. 3.
 R. P/S primary and secondary in series aiding.
 Y. Laminations next to the core.
 (AG). Armature back tension maximum 60-gram readjust, 65-gram test.
 (RB). Resistance variation ± 15 percent.
 (RC). Resistance variation on secondary winding ± 15 percent.

CODE INFORMATION

TABLE II-2 (Cont)

CODE INFORMATION

MULTIPLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT							WINDING			CURRENT FLOW REQTS				See Note	
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Test Wdg	Oper	N.O.	Hold		Rls
11 CONTACTS															
2	1	-	2	1	1EPMB	425	AJ142	P.9100	800	P	22	-	14.3	6.7	A,K, (RA)
								S.5350	880	S	37.5				
3	4	-	1	1	-	228	AF21	P.9125	1175	P	19.5	8.9			K
								S.9125	1075	S	20.5				
7	-	2	-	-	-	20	AF12	P.7975	1000	P	18.5		10		K
								S.13950	2700	S	11.1				
4	2	-	1	1	1EM	215	AF127	P.L3930	335	P/S	27.5	14.5		8.1	A,L,R, (RA)
								S.L3930	335						
4	1	-	3	-	-	204	AF532	P.7975	1000	P	20				K
								S.13950	2700	S	10.9	6.9			
2	4	-	-	2	1EB	322	AJ99	P(L)3235	200	P/S	25.5			8	A,L,R,W,Y
								S(L)3235	200						
2	1	-	2	2	-	337	AJ132	P(L)4550	415	P/S	21.5	12.7	12	6.1	A,R, (BF)
								S(L)4550	415						(RD)
								Ter.U 5350	900	T	37	-	-	9.8	
12 CONTACTS															
12	-	-	-	-	-	8	AF77	P.3200	300	P	46.5				K
								S.3550	300	S	41.5				
4	1	-	2	1	1EM	243	AF94	P.7975	1000	P	20				K
								S.13950	2700	S	12				
-	-	-	6	-	-	217	AF530	P.3200	300	P	49.5				K
								S.3550	300	S	46				
-	-	-	6	-	-	217	AF123	P.9125	1175	P/S	8.8				K,R, (AM)
								S.9125	1075						
5	-	-	2	1	1EM	206	AJ511	P.7100	700	P	20		11		K
								S.7150	700	S	21				
4	3	2	-	-	1EM	308	AJ58	P.4400	220	P	26.5	21.5			E,K, (AL)
								S.6775	1150	P	28				
										S	18				
13 CONTACTS															
6	1	-	3	-	-	247	AF529	P.3620	550	P	46.5				AS
								S.3620	550	S	49				
								T.3620	525	T	49				
5	-	4	-	-	-	62	AJ55	P.22600	5000	P	6.2				K
								S.6140	1000	S	24				
6	3	-	2	-	-	321	AJ97	P.4100	210	P/S	26				K,S,W
								S.8375	1000	S	14.2				
7	-	-	3	-	-	26	AJ521	P.3170	390	P	47				K
								S.3120	390	S	49.5				

Notes:

A. Equipped with 0.014-inch stop discs.

E. Equipped with 0.046-inch copper sleeve.

K. Winding arrangement No. 2.

L. Winding arrangement No. 3.

R. P/S primary and secondary in series aiding.

S. P/S primary and secondary in parallel aiding.

W. Armature back tension minimum 20-gram readjust, 15-gram test.

Y. Laminations next to core

(AL). Only contacts in position 12 need make on 26.5 primary operate.

(AM). Frame of relay grounded by mounting screws. Not recommended for general use.

AS. Winding arrangement No. 7.

(RA). Resistance ± 5 percent.

(BF). Winding arrangement No. 10.

(RD). Primary and secondary resistance ± 5 percent; tertiary resistance ± 10 percent.

TABLE II-2 (Cont)

CODE INFORMATION

MULTIPLE-WOUND AF AND AJ RELAYS

CONTACT ARRANGEMENT						WINDING					CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Test Wdg	Oper	N.O.	Hold	Rls	
16 CONTACTS															
7	-	-	3	1	1EM	330	AJ116	P.7975	1000	P	22	11.6			K
								S.13950	2700	S	11.8	6.9			
2	5	-	3	1	1EM	250	AJ14	P.7975	1000	P	21				K
								S.13950	2700	S	12.6				
5	-	-	4	1	1EM	257	AJ28	P.7975	1000	P	22	11.6			K
								S.13950	2700	S	11.8	6.9	7.1	2	
-	5	-	4	1	1EM	265	AJ20	P.7975	1000	P	21				K
								S.13950	2700	S	12.6				
-	-	-	6	2	-	254	AF128	P.9125	1175	P	22				K
								S.9125	1075	S	23.5				
2	5	-	3	1	1EM	250	AJ71	P.7975	1000	P	21	12			K
								S.13950	2700	S	12.6				
-	-	2	2	4	-	318	AJ517	P.5750	700	P	28.5				K
								S.17400	3300	S	9.7				
2	5	-	3	1	1EM	250	AJ109	P.2590	100	P	63.5	27			K
								S.9625	1100	S	18				
5	1	-	2	2	2EB	332	AJ120	P.7975	1000	P	17.5	12			K
								S.13950	2700	S	10.5				
17 CONTACTS															
4	-	-	4	2	1EB	316	AJ87	P.7550	1200	P/S	5.2		3.7		R,AA,AE
								S.19666	6000	P	19				
18 CONTACTS															
5	1	-	6	-	-	227	AJ514	P.7100	700	P	25.5				K
								S.7150	700	S	26.5				
6	-	3	3	-	-	283	AJ70	P.7975	1000	P	19.5				K
								S.13950	2700	S	10.6				
19 CONTACTS															
2	2	-	6	1	1EB	278	AJ78	P.7975	1000	P	19.5	12			K
								S.13950	2700	S	11.7				
20 CONTACTS															
4	-	8	-	-	-	77	AJ113	P.22600	5000	P	6.7				K
								S.6140	1000	S	26				
24 CONTACTS															
-	-	12	-	-	-	64	AJ72	P.7100	700	P	32				K
								S.7150	700	S	33.5				
24	-	-	-	-	-	500	AJ204	P.7100	700	P	29.5				K
								S.7150	700	S	31				
24	-	-	-	-	-	500	AJ703	P.3170	390	P	71				K,BD
								S.3120	390	S	75				
-	-	-	9	3	-	249	AJ122	P.7100	700	P	29.5	-	-	5	K
								S.7150	700	S	31				
-	-	-	9	3	-	249	AJ126	P.3200	300	P	65				K
								S.3550	300	S	62.5				
-	-	-	9	3	-	249	AJ518	P.7100	700	P	33.5				K
								S.7150	700	S	33.5				

Notes:

K. Winding arrangement No. 2.

R. P/S primary and secondary series aiding.

W. Armature back tension minimum 20-gram readjust, 15-gram test.

AA. Winding arrangements No. 9.

AE. Resistance variation ± 3 percent on secondary winding.

BD. Adjusted on heavy contact force.

CODE INFORMATION

TABLE II-2A
CODE INFORMATION
MULTIPLE-WOUND AL RELAYS

<u>CONTACT ARRANGEMENT</u>								<u>WINDING</u>			<u>CURRENT FLOW REQTS</u>							See Note
<u>M</u>	<u>B</u>	<u>BM</u>	<u>EBM</u>	<u>EMB</u>	<u>Other</u>	<u>Spg Comb.</u>	<u>Code</u>	<u>Turns</u>	<u>Res</u>	<u>Test Wdg</u>	<u>Soak</u>	<u>Oper</u>	<u>N.O.</u>	<u>Rls</u>	<u>Non- Rls</u>	<u>No Flux Rls</u>		
<u>24 CONTACTS</u>																		
-	-	-	6	6	-	336B	AL2	P.5250	510	P	-75	-57.5	-36	-	-	+32	K, BN, BO	
								S.2950	910	S	-	-	-	+32	+19	-		

Notes:

K. Winding arrangement No. 2.
BN. Operate and nonoperate test after soak and no flux release.
BO. Release and nonrelease test after soak.

TABLE II-3
CODE INFORMATION
AG RELAYS

*Readjust
Test*

CONTACT ARRANGEMENT							WINDING				CURRENT FLOW REQTS				RELEASE TIME		See Note
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Sleeve	Soak	Oper	Hold	Rls	Min msec	Max msec	
4 CONTACTS																	
3	1	-	-	-	-	38B	AG12	15800	1625	-	19	R 6.4	0.8	0.6	250 500	(AF) K	
-	-	-	1	-	PBEM	405B	AG19	8250	1050	0.147	36	T 6.8	0.9	0.4			
-	-	-	-	-	-	-	-	-	-	-	-	R 20	1.8	1.3			
3	1	-	-	-	-	38B	AG58	P.7100	700	-	42	T 21	2.0	1.0			
								S.7150	700			P(R) 13.8	2.0	1.5			
												P(T) 14.5	2.1	1.2			
												PNO(R) 7.3					
												PNO(T) 6.9					
												S(R) 14.5					
												S(T) 15.5					

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											<u>5 CONTACTS</u>									
3	2	-	-	-	-	39B	AG4	8250	1050	0.147	36	R 11.8	1.6	1.2	295	540				
												T 12.4	1.7	0.9						
2	1	1	-	-	-	44B	AG8	13500	2000	0.091	20	R 7.3	1.0	0.7	190	390				
												T 7.7	1.1	0.5						
-	-	-	2	-	1PM	402B	AG13	16050	2200	0.046CU	18	R 7.8	1.0	0.7	90	235				
												T 8.2	1.1	0.5						
5	-	-	-	-	-	4B	AG31	P.3000	450	-	90	P.R 35	4.6	3.6	95	160	(AD), (AE), (AR)			
												P.T 37	4.9	3.2						
												S.R 32								
												S.T 34								

Notes:

K. Winding arrangement No. 2.

(AD). Requirements apply to primary winding with secondary winding short-circuited.

(AE). Resistance variation ± 3 percent on secondary winding.

(AF). Armature back tension minimum 45-gram readjust, 40-gram test.

(AR). Winding arrangement No. 6.

CODE INFORMATION

TABLE II-3 (Cont)

CODE INFORMATION

AG RELAYS

CONTACT ARRANGEMENT							WINDING			CURRENT FLOW REQTS				RELEASE TIME		See Note	
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Sleeve	Soak	Oper	Hold	Rls	Min msec		Max msec
6 CONTACTS																	
3	3	-	-	-	-	45B	AG14	P.3330 S.3440	400 210	-	90	P.R 30 P.T 31.5 S.R 30.5 S.T 32.5	4.4 4.7	3.6 3.3	85	137	(AD), (AE), (AH), (AR)
2	-	2	-	-	-	18B	AG24	8250	1050	0.147	36	R 13 T 13.7	1.5 1.6	1.0 0.7	300	620	Z
3	3	-	-	-	-	45B	AG27	P.3250 S.2430	198 80	-	95	P.R 32 P.T 34 S.R 45 S.T 47.5	4.5 4.8	3.4 2.7	103	206	K, (AD)
4	2	-	-	-	-	67B	AG35	P.3330 S.3440	400 210	-	90	P.R 30 P.T 31.5 S.R 30.5 S.T 32.5	4.4 4.7	3.6 3.3	85	137	(AD), (AE), (AH), (AR)
-	-	3	-	-	-	50	AG40	19400	2500	-	6.3	R 4.4 T 4.7	0.8 0.9	0.5 0.4			
7 CONTACTS																	
1	2	-	2	-	-	246B	AG9	15800	1625	-	19	R 8.9 T 9.4	1.1 1.2	0.9 0.8			
3	-	-	-	2	-	282B	AG21	P.3000 S.2540	450 57	-	100	P.R 46 P.T 48.5 S.R 57.5 S.T 60.5	5.7 6.0	4.6 3.9	136	267	K, (AD) (AH)
2	3	1	-	-	-	56B	AG22	P.3000 S.2540	450 57	-	100	P.R 34 P.T 36 S.R 42.5 S.T 45	5.3 5.6	4.2 3.5	144	288	K, (AD) (AH)
1	-	-	3	-	-	267B	AG30	8275	500	-	36	R 17 T 18	2.0 2.1	1.6 1.3	7.2	17	
2	-	-	2	-	1EM	325B	AG54	P.4800 S.13150	360 1900	-	65	P.R 29 P.T 30.5 S.R 11 S.T 11.7	3.6 3.8	2.6 2.2			K

Notes:

K. Winding arrangement No. 2.

Z. Adjusted on light contact force.

(AD). Requirements apply to primary winding with secondary winding short-circuited.

(AE). Resistance variation ± 3 percent on secondary winding.

(AH). Armature back tension maximum 80-gram readjust, 85-gram test.

(AR). Winding arrangement No. 6.

TABLE II-3 (Cont)

CODE INFORMATION

AG RELAYS

CONTACT ARRANGEMENT						Spg Comb.	Code	WINDING			CURRENT FLOW REQTS				RELEASE TIME		See Note		
M	B	BM	EBM	EMB	Other			Turns	Res	Sleeve	Soak	Oper	Hold	Rls	Min msec	Max			
8 CONTACTS																			
5	3	-	-	-	-	36B	AG2	8250	1050	0.147	36	R 11.8	2.0	1.4	245	475	T		
											T 12.4	2.1	1.1						
2	2	-	2	-	-	233B	AG3	8250	1050	0.147	36	R 16.5	2.4	1.4	195	475			
											T 17.5	2.6	1.1						
2	2	-	2	-	-	233B	AG16	8250	1050	0.147	36	R 16.5	2.1	1.4	225	475			
											T 17.5	2.3	1.1						
2	2	-	2	-	-	233	AG11	8250	1050	0.147	36	R 16.5	2.1	0.7	225	830			
											T 17.5	2.3	0.4						
3	-	-	1	1	1EM	221	AG15	7800	600	0.091	38	R 17.5	2.3	0.8	147	512			
											T 18.5	2.5	0.5						
2	2	-	2	-	-	286B	AG23	15800	1625	-	19	R 6.4	1.1	0.8	130	275	K,AD		
											T 6.8	1.2	0.6						
1	-	-	1	2	1EB	297B	AG37	P.3000	450	-	100	P.R46	5.9	4.6					
								S.2540	57			P.T48.5	6.3	3.9					
												S.R57.5							
												S.T60.5							
3	3	-	-	1	-	296B	AG36	7800	600	0.091	38	R 14.7	2.3	1.8	150	280	(AG)		
											T 15.5	2.5	1.5						
-	-	-	1	2	2EB	290B	AG47	P.3000	450	-	100	P.R46	5.9	4.6	130	275	K,AD		
								S.2540				P.T48.5	6.3	3.9					
												S.R57.5							
												S.T60.5							
4	2	1	-	-	-	72B	AG51	23600	4000	-	10	R 4.2	0.7	0.5			(AY)		
												T 4.5	0.8	0.4					
9 CONTACTS																			
8	1	-	-	-	-	48B	AG18	13500	2000	0.091	20	R 7.6	1.4	0.9	142	320			
												T 8.0	1.5	0.7					
2	3	-	2	-	-	264B	AG41	13500	2000	0.091	20	R 10.2	1.7	1.3	120	235			
												T 10.8	1.8	1.1					
3	2	2	-	-	-	76B	AG55	P.6525	1000	-	46	P.R15	2.7	1.9	136	307	K,AD		
								S.2260	42			P.T16	2.9	1.6					
												S.R45.5							
												S.T48							

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Notes:

K. Winding arrangement No. 2.

T. Armature back tension minimum 65-gram readjust, 60-gram test.

(AD). Requirements apply to primary winding with secondary winding short-circuited.

(AG). Armature back tension maximum 60-gram readjust, 65-gram test.

(AY). The use of a protective network on the coil is required to limit the peak voltage to a safe value.

CODE INFORMATION

TABLE II-3 (Cont)

CODE INFORMATION

AG RELAYS

CONTACT ARRANGEMENT							WINDING			CURRENT FLOW REQTS				RELEASE TIME		See Note	
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Sleeve	Soak	Oper	Hold	Rls	Min msec		Max msec
10 CONTACTS																	
4	1	-	1	1	1EM	222B	AG26	5575	550	0.147	33	R 25	3.9	2.5			
												T 26.5	4.1	2.1	187	402	
3	3	-	-	2	-	279B	AG42	10050	875	0.046AL	30	R 14	1.9	0.7			
												T 14.7	2.1	0.5	46	175	
11 CONTACTS																	
7	-	2	-	-	-	20B	AG45	16050	2200	0.046AL	18	R 6.6	1.3	1.1			
												T 7	1.4	0.9	40	85	
7	-	2	-	-	-	20B	AG46	7975	1000	-	P38	PR12.8	2.7	1.7			K
								13950	2700			PT13.5	2.9	1.4	5	16	
												SR 7.7					
												ST 8.1					
12 CONTACTS																	
8	4	-	-	-	-	35B	AG1	8250	1050	0.147	36	R 12.1	2.5	1.6			
												T 12.8	2.7	1.3	190	425	
8	4	-	-	-	-	35B	AG10	10050	875	0.046AL	30	R 10.2	2.1	1.4			
												T 10.8	2.3	1.2	42	100	
2	3	-	2	1	1EM	213B	AG38	P.3000	450	-	100	P.R47	7.9	6.0			
								S.2540	57			P.T49.5	8.4	5.2	96	210	K, (AD)
												S.R58.5					
												S.T61.5					
												P NO 26.5R, 25T					
2	2	-	2	1	1EM	416B	AG49	P.3000	450	-	100	P.R56	8.0	6.6			K, (AD)
					1PM			S.2540	57			P.T59	8.4	5.9	95	195	
												S.R70					
												S.T74					
13 CONTACTS																	
7	-	-	3	-	-	268B	AG28	10050	875	0.046CU	20	R 14.5	2.3	1.3			
												T 15.5	2.5	1.1	61	145	
3	3	-	2	1	1EM	305B	AG33	10050	875	0.046AL	30	R 14	2.3	1.5			
												T 14.7	2.5	1.3	40	95	
3	-	-	5	-	-	307B	AG34	8250	1050	0.147	36	R 17	2.8	1.8			
												T 18	3.0	1.5	175	395	
7	-	-	3	-	-	268B	AG39	P.7975	1000	-	38	P.R17.5	3.0	1.9			
								S.13950	2700			P.T18.5	3.2	1.6	4.5	14	K
												S.R10.5					
												S.T11.1					

Notes:

K. Winding arrangement No. 2.

(AD). Requirements apply to primary winding with secondary winding short-circuited.

TABLE II-3 (Cont)

CODE INFORMATION

AG RELAYS

CONTACT ARRANGEMENT								WINDING			CURRENT FLOW REQTS				RELEASE TIME		See Note
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Sleeve	Soak	Oper	Hold	Rls	Min msec	Max msec	
14 CONTACTS																	
1	1	-	4	2	-	239B	AG6	16050	2200	0.046AL	18	R 8.8	1.5	1.0			
5	-	4	-	-	1EM	281B	AG44	6525	1000	-	46	T 9.3	1.6	0.8	37	95	
								2260	42			P.R21.5	3.8	2.4			K
												P.T23	4.0	2.1	95	250	(AD)
												S.R65					
												S.T70					
2	2	-	2	1	1PBEM	419B	AG60	8250	1050	0.147	36	R 20.5	3.1	2.0	156	355	
					1PMEB							T 21.5	3.3	1.7			
15 CONTACTS																	
7	-	-	4	-	-	241B	AG7	8250	1050	0.147	36	R 16.5	3.0	1.9			
												T 17.5	3.2	1.6	155	365	
2	1	-	4	2	-	271B	AG17	16050	2200	0.046CU	18	R 8.8	1.6	1.0			
												T 9.3	1.7	0.8	55	150	
5	-	-	3	2	-	262B	AG20	13500	2000	0.091	20	R 10.2	1.9	1.1			
												T 10.7	2.0	0.9	103	260	
4	3	-	4	-	-	230B	AG48	13500	2000	0.091	20	R 10.2	1.9	1.2			
												T 10.8	2.0	1.0	105	250	
16 CONTACTS																	
3	1	-	4	2	-	224B	AG32	P.7975	1000	-	38	P.R17.5	3.5	2.0			K,R
								S.13950	2700			P.T18.5	3.7	1.7	3.7	13.5	
												P/SR6.6	1.4				
												P/ST7.0	1.5				
												PNO R9.2					
												PNO T8.7					
-	-	2	2	4	-	318B	AG52	P.5750	700		50	P.R24	4.5	2.8			K
								S.17400	3300			P.T25.5	4.8	2.5	4.0	13.0	
												S.R 8.3					
												S.T 8.9					
-	-	8	-	-	-	70B	AG59	P.4350	450	0.091CU	FS	P.R28	5.8	4.7	115	180	K
								S.4600	500			P.T29.5	6.1	4.3			
												S.R28					
												S.T29.5					

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Notes:

K. Winding arrangement No. 2.

R. P/S primary and secondary in series aiding.

(AD). Requirements apply to primary winding with secondary winding short-circuited.

CODE INFORMATION

TABLE II-3 (Cont)

CODE INFORMATION

AG RELAYS

CONTACT ARRANGEMENT						WINDING					CURRENT FLOW REQTS				RELEASE TIME		See Note	
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Sleeve	Soak	Oper	Hold	Rls	Min msec	Max		
17 CONTACTS																		
-	-	3	2	1	1EM 2PMEB	408B	AG29	7800	600	0.091CU	39	R 22 T 23.5	3.7 3.9	2.2 1.9	90	235	K,(AD)	
4	2	1	-	1	1EM 1PBEM 2PMEB	413B	AG56	P.3000 S.2540	450 57	-	100 100	P.R57 P.T60 S.R71 S.T75	9.7 10.2	6 5.3	74	205		
18 CONTACTS																		
6	-	6	-	-	-	34B	AG43	8250	1050	0.147CU	36	R 15.5 T 16.5 R 8.8 T 9.3	3.3 3.5 1.8 1.9	2.0 1.7 1.3 1.1	145	360		
2	-	3	5	-	-	314B	AG50	16050	2200	0.046CU	18	T 9.3 R 17 T 18	1.9 3.5 3.7	1.1 2.1 1.9	45	115		
6	-	-	6	-	-	343B	AG61	8250	1050	0.147CU	36				135	330		
21 CONTACTS																		
3	-	3	6	-	-	326	AG57	16050	2200	0.046CU	18	R 9.4 T 9.9	2.0 2.1	1.1 0.9	40	100		
24 CONTACTS																		
-	-	-	9	3	-	249B	AG53	3000 2540	450 57	-	100 100	P.R62 P.T65 S.R80 S.T85	11.4 12	6.6 5.9	57	195	K,(AD)	

Notes:

K. Winding arrangement No. 2.

(AD). Requirements apply to primary winding with secondary winding short-circuited.

TABLE II-4
CODE INFORMATION
AK RELAYS

<u>CONTACT ARRANGEMENT</u>						Spg Comb.	<u>WINDING</u>			<u>CURRENT FLOW REQTS</u>				See Note
<u>M</u>	<u>B</u>	<u>BM</u>	<u>EBM</u>	<u>EMB</u>	<u>Other</u>		<u>Code</u>	<u>Turns</u>	<u>Res</u>	<u>Oper</u>	<u>N.O.</u>	<u>Hold</u>	<u>Rls</u>	
<u>4 CONTACTS</u>														
2	-	-	-	-	-	8	AK12	T 12300	1500	9.5				(AV)
2	-	-	-	-	-			B 12300	1500	9.5				

<u>6 CONTACTS</u>														
2	-	-	-	-	-	11	AK25	T 8600	640	13.5			2.	(AV)
4	-	-	-	-	-			B 8600	640	13.5			2.6	
1	1	1	-	-	-	5	AK9	T 15750	2450	7.3				(AV)
1	1	-	-	-	-			B 4000	145	24	12.5			

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<u>7 CONTACTS</u>														
3	-	-	-	-	-	213	AK18	T 4000	210	41				(AV)
-	1	-	1	-	1EM			B 4000	210	41				

Notes:

(AV). Winding arrangement No. 8.

CODE INFORMATION

TABLE II-4 (Cont)

CODE INFORMATION

AK RELAYS

CONTACT ARRANGEMENT							WINDING			CURRENT FLOW REQTS				
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Oper	N.O.	Hold	Rls	See Note
8 CONTACTS														
1	1	-	-	1	-	206	AK11	T 10300	960	16.5				(AV)
1	1	-	-	1	-			B 10300	960	16.5				
1	3	-	-	-	-	4	AK5	T 8600	640	15				(AV)
1	3	-	-	-	-			B 8600	640	15				
3	-	-	-	-	-	217	AK20	T 8600	640	19.5				(AV)
1	-	-	2	-	-			B 8600	640	19.5				
-	-	2	-	-	-	3	AK3	T 4820	185	31				(AV)
-	-	2	-	-	-			B 5825	280	26				
-	-	2	-	-	-	3	AK23	T 15750	2450	7.4				(AV)
-	-	2	-	-	-			B 15750	2450	7.4				
9 CONTACTS														
2	3	-	-	-	-	17	AK40	T 4000	145	29			6.9	(AV)
2	3	-	-	-	-			B 8600	640	13.5				
2	1	1	-	-	-	20	AK43	T 10300	960	10				(AV), W
3	1	-	-	-	-			B 2800	65	37				W
10 CONTACTS														
2	1	-	-	-	-	9	AK15	T 8600	640	13.5		5.6		(AV)
1	-	3	-	-	-			B 10300	960	11.9				
3	-	-	-	-	-	218	AK27	T 8600	640	19.5				(AV)
1	1	-	-	1	1EB			B 15750	2450	10.5				
5	-	-	-	-	-	1	AK2	T 10300	960	11.5				(AV)
5	-	-	-	-	-			B 10300	960	11.5				
-	1	2	-	-	-	13	AK29	T 15750	2450	7.4	18.2V			(AV)
-	1	2	-	-	-			B 15750	2450	7.4				
-	1	2	-	-	-	13	AK38	T 10300	960	11.3	10.9V	5.1		(AV)
-	1	2	-	-	-			B 10300	960	11.3		5.1		
3	2	-	-	-	-	19	AK46	T 5000	630	25	21.5	(60 soak)	5	(AV)
3	2	-	-	-	-			B 5000	630	25	21.5	(60 soak)	5	

Notes:

W. Armature back tension minimum 20-gram readjust; 15-gram test.
 (AV). Winding arrangement No. 8.

TABLE II-4 (Cont)

CODE INFORMATION

AK RELAYS

CONTACT ARRANGEMENT							WINDING		CURRENT FLOW REQTS				See Note	
M	B	BM	EBM	EMB	Other	Spg Comb.	Code	Turns	Res	Oper	N.O.	Hold		Rls
12 CONTACTS														
2	-	2	-	-	-	12	AK24	T 15750	2450	7.4				(AV)
2	-	2	-	-	-			B 15750	2450	7.4				
3	-	-	-	1	1EM	215	AK21	T 8600	640	19.5				(AV)
3	-	-	-	1	1EM			B 8600	640	19.5				
-	-	-	3	-	-	214	AK19	T 4000	210	41				(AV)
-	-	-	3	-	-			B 4000	210	41				
2	-	-	1	1	-	223	AK42	T 12300	1500	10				W, (AV)
2	-	-	1	1	-			B 12300	1500	10				W
13 CONTACTS														
1	1	-	2	1	-	201	AK1	T 6900	410	24.5				(AT) (AV)
1	2	-	1	-	-			B 4380	315	36.5				
2	2	1	-	-	-	10	AK26	T 8600	640	13.8	(46 soak)	4.9		(AV)
2	1	2	-	-	-			B 8600	640	14.2				
2	1	5	-	-	-	14	AK31	T 8125	955	22.5				(AV)
2	1	-	-	-	-			B 4000	145	29				
3	2	-	-	-	-	209	AK33	T 15750	2450	10.4		3.5		(AV)
-	-	-	1	2	2EB			B 15750	2450	12.6		1.5		(BB)
1	3	1	-	-	-	15	AK34	T 8600	640	13.8				(AV)
2	1	2	-	-	-			B 8600	640	14.2				
1	1	-	2	1	-	201	AK37	T 12300	1500	13.5				(AV)
1	2	-	1	-	-			B 7600	1100	22	(35 soak)	2.5		(AT)
1	3	1	-	-	-	15	AK500	T 8600	640	13.8				(AV)
2	1	2	-	-	-			B 8600	640	14.2				

Notes:

- W. Armature back tension minimum 20-gram readjust; 15-gram test.
 (AT). Copper sleeve and domed armature on bottom unit.
 (AV). Winding arrangement No. 8.
 (BB). Domed armature on bottom unit.

CODE INFORMATION

TABLE II-4 (Cont)

CODE INFORMATION

AK RELAYS

CONTACT ARRANGEMENT						Spg Comb.	Code	WINDING		CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other			Turns	Res	Oper	N.O.	Hold	Rls	
14 CONTACTS														
2	-	-	1	1	1EM	204	AK8	T 15750	2450	8.7				(AV)
1	1	-	2	-	1EM			B 10300	960	16				
2	-	-	1	1	1EM	212	AK17	T 4000	210	41				(AV)
2	-	-	1	1	1EM			B 4000	210	41				
3	-	-	-	1	1EM	219	AK28	T 725	5.5	230	110			(AV) (RB)
1	-	-	2	1	1EM			B 12300	1500	13.7				
3	-	-	-	2	-	211	AK16	T 3400	100	48.5	33			(AV)
3	-	-	-	2	-			B 3400	100	48.5	33			
-	2	-	3	-	-	208	AK14	T 6900	410	24				(AV)
-	-	-	3	-	-			B 6900	410	24				
2	-	-	-	2	1EM	210	AK32	T 4000	210	41				(AV)
2	-	-	-	2	1EM			B 4000	210	41				
2	-	-	1	1	1EM	204	AK45	T 15750	2450	10.4				(AV)
1	1	-	2	-	1EM			B 3400	100	48	32.5	18	-	
2	-	-	1	1	1EM	204	AK48	T 15750	2450	8.8	6.2	-	-	W, (AV)
1	1	-	2	-	1EM			B 15750	2450	10.4				

15 CONTACTS

4	-	1	-	-	-	7	AK10	T 15750	2450	7.4		1.5		(AV) (AU)
1	-	4	-	-	-			B 10300	960	15.5		2.6		
-	-	-	2	2	-	221	AK39	T 15750	2450	10.7	-	4.2		(AV)
1	-	-	1	2	-			B 10300	960	16				

16 CONTACTS

-	-	-	3	-	2EM	203	AK13	T 8600	640	23				(AV)
-	-	-	3	-	2EM			B 8600	640	23				
-	-	-	3	-	2EM	203	AK7	T 8125	955	25.5	11			(AV)
-	-	-	3	-	2EM			B 8125	955	25.5	11			

Notes:

W. Armature back tension minimum 20-gram readjust; 15-gram test.

(AU). Domed armature on top and bottom units.

(AV). Winding arrangement No. 8.

(RB). Resistance variation on top winding ± 15 percent.

TABLE II-4 (Cont)

CODE INFORMATION

AK RELAYS

CONTACT ARRANGEMENT						Spg Comb.	Code	WINDING		CURRENT FLOW REQTS				See Note
M	B	BM	EBM	EMB	Other			Turns	Res	Oper	N.O.	Hold	Rls	
18 CONTACTS														
1	-	-	2	2	-	202	AK4	T 15750	2450	11.3	27.8V			(AV)
1	-	-	2	2	-			B 15750	2450	11.3				
1	-	-	2	2	-	202	AK30	T 8600	640	22	4V			(AV)
1	-	-	2	2	-			B 8600	640	22				
1	-	-	2	2	-	202	AK35	T 15750	2450	11.8				(AT)
1	-	-	2	2	-			B 6250	680	30	(48 soak)	4.2		(AV)
-	-	5	-	-	-	16	AK36	T 1390	16	135				(AV)
-	2	3	-	-	-			B 12300	1500	11				
1	-	-	2	2	-	202	AK41	T 6250	680	30	(48 soak)	4.2		(AV),(BC)
1	-	-	2	2	-			B 6250	680	30	(48 soak)	4.2		
1	-	-	2	2	-	202	AK47	T 12300	1500	12.5				W, (AV)
1	-	-	2	2	-			B 12300	1500	12.5	19V DONT USE ON 24V			
1	-	-	1	3	-	224	AK49	T 15750	2450	11.3				(AV)
1	-	-	1	3	-			B 15750	2450	11.3				
20 CONTACTS														
-	-	5	-	-	-	2	AK6	T 8600	640	27.5				(AV)
-	-	5	-	-	-			B 8600	640	27.5				
-	-	-	3	2	-	216	AK22	T 8600	640	26	17V			(AV)
-	-	-	3	2	-			B 8600	640	26				
-	-	-	5	-	-	222	AK44	T 8600	640	26				(AV)
-	-	-	5	-	-			B 8600	640	26				
-	-	5	-	-	-	2	AK501	T 8600	640	27.5				(AV)
-	-	5	-	-	-			B 8600	640	27.5				
-	-	-	3	2	-	216	AK50	T (P) 6282	820	36				
-	-	-	3	2	-			(S) 5024	682	45				(BH)
-	-	-	3	2	-			B (P) 6282	820	36				
-	-	-	3	2	-			(S) 5024	682	45				

Notes:

W. Armature back tension minimum 20-gram readjust; 15-gram test.

(AT). Copper sleeve and domed armature on bottom unit.

(AV). Winding arrangement No. 8.

(BC). Copper sleeve and domed armature on top and bottom units.

(BH). Winding arrangement No. 12.

TABLE II-4A

CODE INFORMATION

AM RELAYS

CONTACT ARRANGEMENT						Spg Comb.	Code	WINDING		CURRENT FLOW REQTS					See Note	
M	B	BM	EBM	EMB	Other			Turns	Res	Soak	Oper	N.O.	Rls	Non- Rls		No Flux Rls
20 CONTACTS																
-	-	-	3	2	-	216	AM1	T 3400	100	-300	-100	-	+27	-	+32	BG, BK, BL,
-	-	-	3	2	-			B 3400	100	-300	-100	-	+27	-	+32	BM, BN, BO
-	-	-	5	-	-	222	AM2	T 3400	100	-300	-100	-	+27	-	+32	BG, BK, BL,
-	-	-	5	-	-			B 3400	100	-300	-100	-	+27	-	+32	BM, BN, BO
-	-	-	3	2	-	216	AM3	T 3400	100	-300	-150	-	+16.5	+7.4	+32	BG, BD, BK,
-	-	-	3	2	-			B 3400	100	-300	-150	-	+16.5	+7.4	+32	BL, BM, BN, BO
-	-	-	5	-	-	222	AM4	T 3400	100	-300	-150	-	+16.5	+7.4	+32	BG, BD, BK,
-	-	-	5	-	-			B 3400	100	-300	-150	-	+16.5	+7.4	+32	BL, BM, BN, BO

Notes:

BD. Adjusted on heavy contact force.

BG. Winding arrangement No. 11.

BK. Armature back tension minimum 40-gram readjust; 35-gram test.

BL. Armature back tension maximum 110-gram readjust; 115-gram test.

BM. Soak current shall not flow for more than 5 seconds.

BN. Operate and nonoperate test after soak and no flux release.

BO. Release and nonrelease test after soak.

CODE INFORMATION

TABLE II-5
OPERATE AND RELEASE TIMES
AF RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AF 1								
2								
3	400	6	7.0	3.5	5.3	9.2	1.4	4.2
4	400	18	7.0	3.5	5.3	11.5	1.8	5.4
5	270	6	5.6	2.8	4.2	9.2	1.4	4.2
6	16*	29	4.4	2.2	3.3	8.8	1.4	4.1
7								
8	P-1000	200	20.5	10.0	13.7	9.3	1.3	4.1
	S-2700		48.0	16.0	27.5			
9	2500	213	48.0	13.0	29.0	8.5	1.2	3.4
10	2500	214	40.0	15.0	29.0	9.7	1.4	4.2
11	P-100	13						
	S-1100		23.7	7.9	11.0	10.2	1.6	4.8
12	P-1000	20	20.5	6.8	10.5	8.8	1.4	4.1
	S-2700		48.0	9.0	17.0			
13	2500	215	90.0	13.0	33.0	4.0	1.0	2.1
14								
15	2500	216	37.0	13.0	29.0	13.1	2.0	5.6
16	700	204	12.0	5.1	8.3	8.9	1.3	3.8
17	270	211	8.7	3.9	6.7	11.5	2.0	5.6
18	P-100	201						
	S-1100		21.5	9.0	16.0	13.1	2.0	5.6
19	16*	3	4.4	2.2	3.3	13.2	2.2	6.2
20	700	205	12.0	5.1	8.3	8.0	1.1	3.3
21	P-1175	228	25.8	9.2	15.0	8.9	1.3	3.8
	S-1075		25.0	8.7	15.0			
22	270	207	7.9	3.6	5.6	11.5	1.7	5.2
23	400	206	10.1	4.5	7.1	3.9	1.0	2.1
24	700	8	9.1	4.5	6.7	8.4	1.3	3.8
25	16*	11	4.4	2.2	3.3	11.5	1.8	5.4
26	950	5	19.0	8.0	12.0	11.5	1.8	5.4
27	400	11	7.0	3.5	5.3	11.5	1.8	5.4
28	500	400B	20.5	9.6	13.8	4.2	1.0	1.7
29								
30	2500	217	48.0	13.0	29.0	8.5	1.2	3.7
31								
32	700	208	12.0	5.1	8.3	8.5	1.2	3.7
33	950	16	26.0	8.0	12.0	8.4	1.3	3.8
34	700	14	9.1	4.5	6.7	9.2	1.4	4.2
35	270	248	7.9	3.6	5.6	9.7	1.4	4.2
36								
37	16*	8	4.7	2.4	3.5	4.0	1.0	2.3
38								
39								
40	270	222	7.9	3.6	5.6	9.3	1.3	4.1
41								
42	270	224	7.9	3.6	5.6	7.5	1.1	3.1
43	270	17	5.6	2.8	4.2	14.2	2.3	6.5
44	270	3	5.6	2.8	4.2	13.2	2.2	6.2
45								

* In series with 90-ohm noninductive resistance.

TABLE II-5 (Cont)
 OPERATE AND RELEASE TIMES
 AF RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AF46								
47								
48	270	28	5.6	2.8	4.2	7.2	1.1	3.2
49	400	212	10.5	4.5	7.3	8.3	1.1	3.3
50	700	18	10.0	4.9	7.3	11.5	1.8	5.4
51	700	3	9.1	4.5	6.7	13.2	2.2	6.2
52	700	19	9.1	4.5	6.7	8.8	1.4	4.1
53	700	24	9.1	4.5	6.7	8.1	1.2	3.7
54	700	25	9.1	4.5	6.7	8.4	1.3	3.8
55	700	26	9.1	4.5	6.7	7.2	1.1	3.2
56	700	209	12.0	5.1	8.3	15.5	2.4	6.9
57	700	210	12.0	5.1	8.3	10.2	1.5	4.5
58								
59	2500	3	29.0	10.0	20.0	13.2	2.2	6.2
60	2500	12	34.0	10.0	20.0	10.7	1.7	4.5
61	2500	23	31.0	10.0	20.0	12.5	2.0	5.7
62								
63	2500	229	39.0	13.0	29.0	10.9	1.5	4.8
64	2500	219	74.0	13.0	29.0	7.0	1.0	2.8
65								
66	P-100	225						
	S-1100		26.5	10.0	16.0	11.5	1.7	5.2
67	2500	207	40.0	13.0	29.0	11.5	1.7	5.2
68	P-1000	10	13.0	6.8	10.5			
	S-2700		26.0	9.0	17.0	14.2	2.3	6.5
69								
70	P-1000	202	18.7	8.2	14.0			
	S-2700		42.5	12.0	25.5	11.5	1.7	5.2
71	P-1175	4	17.8	6.7	11.5	12.5	2.0	5.7
	S-1075		17.5	6.8	11.5			
72	P-1175	201	19.5	8.6	15.0	13.1	2.0	5.6
	S-1075		21.4	8.2	15.0			
73	P-1175	203	19.5	8.6	15.0	10.9	1.5	4.5
	S-1075		21.4	8.2	15.0			
74								
75								
76								
77	P-300	8	6.6	3.5	5.1	8.4	1.3	3.8
	S-300		7.0	3.8	5.4			
78								
79	2500	205	60.0	13.0	29.0	8.0	1.1	3.3
80								
81								
82	700	235	12.0	5.1	8.3	7.7	1.1	3.2
83	2500	8	46.0	10.0	20	8.4	1.3	3.8
84	2500	236	48.0	13.0	29.0	8.5	1.2	3.4
85	1000	401	175.0	50.0	97.0	86.0	17.5	55.0
86	500	237	16.0	9.0	13.7	11.5	1.7	5.2
87	2550	240	270.0	55.0	98	210.0	38.0	113.0
88	700	42	10.0	4.9	7.3	7.8	1.2	3.6
89	34	41B				7.0	1.9	5.5
90	270	242	7.9	3.6	5.6	11.5	1.7	5.2

CODE INFORMATION

TABLE II-5 (Cont)
 OPERATE AND RELEASE TIMES
 AF RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AF91	270	43	5.6	2.8	4.2	11.5	1.8	5.4
92	270	7	5.6	2.8	4.2	8.8	1.4	4.1
93								
94	P-1000	243	22.0	8.2	14.0	8.5	1.2	3.4
	S-2700		60.0	12.0	25.0			
95	16*	244	6.1	2.7	4.3	8.0	1.1	3.3
96	P-8	46						
	S-850		8.5	4.5	6.5	14.0	2.0	6.0
97	P-2.7	46						
	S-690		7.6	4.0	5.8	14.0	2.0	6.0
98	950	245	28.0	10.0	17.5	8.3	1.1	3.3
99	P-1000	251	18.7	8.2	14.0			
	S-2700		42.5	12.0	25.0	11.5	1.7	5.2
100	700	252	12.0	5.1	8.3	7.5	1.1	3.1
101	P-300	41	7.4	3.5	5.6			
	S-300		7.7	3.8	6.0	13.2	2.2	6.2
102	P-10	46						
	S-400		10.5	4.4	6.7	14.0	2.0	6.0
103	P-8	46						
	S-850		15.7	5.0	8.4	14.0	2.0	6.0
104	P-2.7	46						
	S-690		12.5	4.0	8.6	14.0	2.0	6.0
105	270	253	7.9	3.6	5.6	10.9	1.5	4.8
106	2000	37	50.0	17.0	26.5	200.0	49.0	122
107								
108								
109	P-100	218						
	S-1100		21.5	9.0	16.0	10.9	1.5	4.8
110	950	272	32.0	10.5	14.5	4.2	1.0	1.6
111	700	270	12.0	5.1	8.3	7.7	1.1	3.2
112	700	268	12.0	5.1	8.3	8.3	1.1	3.3
113	2500	273	48.0	18.0	29.0	8.5	1.2	3.4
114	700	54	9.1	4.5	6.7	10.7	1.7	5.0
115	2500	274	39.0	13.0	29.0	10.9	1.5	4.8
116	400	285	9.6	4.2	6.7	8.0	1.1	3.3
117	180	222	10.4	5.6	8.0	9.3	1.3	4.1
118	950	401	26.5	12.0	18.0	10.4	1.3	4.0
119	2500	266	85.0	15.0	29.0	4.0	1.0	2.1
120	950	406	36.0	18.0	27.0	8.8	1.2	3.6
121	16*	31	4.4	2.2	3.3	7.2	1.1	3.2
122	16*	49	4.4	2.2	3.3	8.4	1.3	3.8
123	P-1175	217	24.5	8.6	15.0	8.5	1.2	3.4
	S-1075		25.0	8.2	15.0			
124	500	287	16.0	7.0	10.5	10.9	1.5	4.8
125	500	245	18.5	7.0	10.5	8.3	1.1	3.3
126	400	288	9.6	4.2	6.7	10.9	1.5	4.8
127	P-335	215	Supervisory Relay					
	S-335							
128	P-1175		32.5	8.6	15.0			
	S-1075	254	27.5	8.2	15.0	7.2	1.1	3.2
129	2500	28	61.0	10.0	20.0	7.5	1.1	3.1

* In series with 90-ohm noninductive resistance.

TABLE II-5 (Cont)
OPERATE AND RELEASE TIMES
AF RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AF130	P-100	210						
	S-1100		23.0	9.0	16.0	10.9	1.5	4.8
131	270	407	9.8	4.1	6.7	9.0	1.3	3.7
132	700	61	9.1	4.5	6.7	7.8	1.1	3.6
133	P-1175	37	15.0	6.7	11.5	14.0	2.3	6.5
	S-1075		16.0	6.8	11.5			
134	2500	230	65.0	15.0	29.0	7.7	1.1	3.2
135	500	409B	21.5	9.0	13.7	4.0	1.0	1.7
136	700	410	15.0	5.9	10.0	9.0	1.2	3.7
137	270	412	10.9	4.5	7.6	9.6	1.6	4.0
138	100	53B	-	-	-	5.5	1.7	4.0
139	2500	256	46.0	13.0	29.0	8.9	1.3	3.8
140	2500	304	55.0	13.0	29.0	8.3	1.1	3.3
141	P-540	225		Line Relay		11.5	1.7	5.2
	S-540							
142	180	310	11.0	6.1	8.6	4.2	1.0	1.7
143	860	311	23.0	9.0	14.0	8.0	1.1	3.3
144	700	258	12.0	5.1	8.3	13.1	2.0	5.6
145	500	269	16.0	7.0	10.5	10.2	1.5	4.5
146	2500	207	50.0	15.0	29.0	10.5	1.7	4.7
147	2500	217	55.0	15.0	29.0	8.5	1.2	3.4
148	180	280	11.5	6.1	8.6	4.2	1.0	1.7
149	34	209				15.5	2.4	6.9
X-75509	150	289	10.1	5.6	8.0	9.3	1.3	4.1
	151	415	9.8	4.1	6.7	8.7	1.1	3.5
	152	34	45.0	9.5	16.0	6.9	1.1	3.2
	153	261	20.0	7.0	10.4	3.9	1.0	2.1
	154	417	14.5	8.0	10.4	9.0	1.3	3.7
	155	418	60.0	15.0	33.0	7.9	1.1	3.3
	156	295	12.0	5.1	8.3	10.9	1.5	4.5
	157	317	11.5	6.1	8.6	3.9	1.0	2.1
	158	36	52.0	14.0	26.0	235.0	30.0	145.0
	159	295	20.0	3.8	12.4	10.2	1.5	4.5
	160	73	20.0	2.6	10.0	9.6	1.5	4.5
	161	61	26.5	2.6	10.0	7.8	1.1	3.6
	162	8	24.0	2.6	10.0	8.4	1.3	3.8
	163	206	25.0	3.8	12.4	8.5	1.2	3.4
	164	319	12.0	5.1	8.3	9.7	1.4	4.2
	165	61	28.0	8.0	12.0	7.8	1.1	3.6
	166	421B	22.0	9.0	13.7	4.0	1.0	1.7
	167	327	22.0	8.5	14.7	10.7	1.3	4.1
	S-450		10.8	4.8	7.6	-	-	-
168	700	46	13.2	5.6	9.1	14.5	2.1	6.5
169	275	331	18.0	6.0	11.0	4.0	1.0	2.1
170	400	206	9.8	4.2	6.8	5.1	1.6	2.3

* 24-volt operation

CODE INFORMATION

TABLE II-5 (Cont)
 OPERATE AND RELEASE TIMES
 AF RELAYS (500 SERIES)

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AF500	4.4	33				10.2	1.6	4.8
501	395	34	6.6	3.3	4.9	6.9	1.1	3.2
502	395	231	9.2	4.0	6.4	7.5	1.1	3.1
503								
504	270	8	5.6	2.8	4.2	8.4	1.3	3.8
505	2500	207	53.0	15.0	29.0	10.5	1.7	4.7
506	700	8	9.1	4.5	6.7	8.4	1.3	3.8
507	700	26	9.1	4.5	6.7	7.2	1.1	3.2
508	16*	11	4.4	2.2	3.3	11.5	1.8	5.4
509	2500	219	74.0	13.0	29.0	7.0	1.0	2.8
510	P-400	1	10.5	4.8	8.4	16.5	2.4	7.0
	S-400		11.0	4.8	8.4			
511	700	32	9.1	4.8	6.7	10.7	1.7	5.0
512	700	207	12.0	5.1	8.3	11.5	1.7	5.2
513	700	208	12.0	5.1	8.3	8.5	1.2	3.4
514	270	5	5.6	2.8	4.2	11.5	1.8	5.4
515	270	31	5.6	2.8	4.2	7.2	1.1	3.2
516	270	221	7.9	3.6	5.6	10.2	1.5	4.5
517	270	223	7.9	3.6	5.6	8.5	1.2	3.4
518	270	224	7.9	3.6	5.6	7.5	1.1	3.1
519	270	27	6.1	2.8	4.6	9.6	1.5	4.5
520	270	15	5.6	2.8	4.2	8.8	1.4	4.1
521	270	21	5.6	2.8	4.2	7.5	1.2	3.5
522	700	18	9.1	4.5	6.7	11.5	1.8	5.4
523	700	19	9.1	4.5	6.7	8.8	1.4	4.1
524	700	210	12.0	5.1	8.3	10.2	1.5	4.5
525	P-700	6	16.5	5.6	9.4	9.2	1.4	4.2
	S-700		17.5	5.6	9.4			
526								
527	400	18	7.0	3.5	5.3	11.5	1.8	5.4
528	P-100	284						
	S-1100		26.5	7.8	10.5	4.5	1.4	2.8
529	P-550	247	10.7	4.8	7.5	8.3	1.1	3.3
	S-550		10.7	4.8	7.5			
	T-525		10.7	4.8	7.5			
530	P-300	217	9.2	4.3	6.6	8.5	1.2	3.4
	S-300		9.7	4.5	6.9			
531	700	203	12.0	5.1	8.3	5.6	1.4	2.6
532	P-1000	204	22.0	10.0	15.0	8.9	1.3	3.8
	S-2700		48.0	16.0	27.5			
533	P-300	48	7.4	3.5	5.6	9.6	1.5	4.5
	S-300		7.7	3.8	6.0			
534	P-1000	201	22.0	8.2	14.0	6.9	1.2	2.7
	S-2700		48.0	12.0	25.5			
535	270	423	9.8	4.1	6.7	9.0	1.1	3.5
536	270	8	5.6	2.8	4.2	5.9	1.0	3.2

* In series with 90-ohm noninductive resistance.

TABLE II-6
OPERATE AND RELEASE TIMES
AJ RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AJ 1	P200 S200	2B	Supervisory Relay					
2								
3	950	226	40.0	10.0	18.0	9.1	1.3	4.2
4								
5	2500	220	99.0	13.5	31.0	8.5	1.0	3.5
6								
7	9100	1	37.5	14.0	23.5	11.0	2.3	5.5
8	P400 S400	1	Supervisory Relay					
9	700	234	12.0	5.1	8.3	9.1	1.3	4.2
10	P1800 S85	39	15.5	8.6	12.0	14.5	2.6	8.0
11	180	2	8.3	4.5	6.4	11.0	2.3	5.5
12	700	220	12.0	5.1	8.3	8.5	1.0	3.5
13								
14	P1000 S2700	250	24.0	8.0	11.5	10.1	1.4	4.6
15	700	249	54.5	12.0	26.5	8.5	1.0	3.5
16	500	226	12.0	5.1	8.3	8.5	1.0	3.5
17								
18	180	263	30.0	8.0	14.5	9.1	1.3	4.2
19	P300 S300	41	10.4	5.6	8.0	11.1	1.8	5.2
20	P1000 S2700	265	7.4	3.5	5.6	16.7	3.3	8.6
21	270	259	7.7	3.8	6.0			
22	700	234	24.0	8.0	11.5	10.1	1.1	4.6
23	P200 S200	1B	54.5	12.0	26.5			
24	P200 S200	52B	Supervisory Relay					
25	220	53	Ring Trip Relay					
26	P200 S200	55B	Supervisory Relay					
27	2200	213	84.0	28.0	50.0	56.0	7.8	30.0
28	P1000 S2700	257	24.0	8.2	12.0	10.1	1.4	4.6
29	P425 S425	46B	60.0	14.5	26.5			
30	700	256	Supervisory Relay					
31	500	36	13.2	5.6	9.1	12.0	1.9	5.7
32	4.4	254	11.0	5.5	8.2	14.1	2.4	6.7
33	180	5B	9.8	5.2	7.5	10.1	1.4	4.5
34	P200 S200	46B	Supervisory Relay					
35	16*	9	4.4	2.2	3.3	8.0	2.0	4.0
						18.0	3.8	8.6

* In series with 90-ohm noninductive resistance

TABLE II-6 (Cont)
 OPERATE AND RELEASE TIMES
 AJ RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AJ36	34	215				12.0	1.9	5.7
37	16*	234	6.1	2.7	4.3	9.1	1.3	4.2
38	P170	294B	Supervisory Relay					
	S140							
39	950	220	40.0	10.0	18.0	8.5	1.0	3.5
40	61	52	Supervisory Relay					
	61							
41	2500	40	36.0	10.0	21.0	11.3	1.9	5.4
42	P61	66	Supervisory Relay					
	S61							
43	500	249	25.0	7.0	11.0	8.5	1.0	3.5
44								
45	16*	249	6.1	2.7	4.3	8.5	1.0	3.5
46	950	266	27.0	10.0	18.0	12.0	1.9	5.7
47	220	53	Ring Trip Relay					
48	P1500	3	17.5	7.7	10.2	16.0	3.1	8.5
	S2950		23.0	11.0	18.5			
49	P220	302	Ring Trip Relay					
	S1150							
50	P100	46	Supervisory Relay					
	S100							
51	375	411	80.0	30.0	40.0	360.0	31.0	155.0
52	P400	303	Supervisory Relay					
	S400							
53	1000	298	215.0	50.0	75.0	95.0	16.0	70.0
54	1000	306	205.0	50.0	75.0	95.0	16.0	70.0
55	P5000	62	85.0	12.0	30.0	11.0	1.6	5.1
	S1000		21.5	5.6	10.0			
56	400	413	11.5	4.2	7.8	10.0	1.3	4.2
57	P200	237	Supervisory Relay					
	S200							
58	P220	308	Ring Trip Relay					
	S1150		49.0	10.0	22.0	115.0	17.5	55.0
59	P400	37	Supervisory Relay					
	S400							
60	500	203	19.5	10.0	14.5	6.0	1.7	3.2
61	700	238	12.0	5.1	8.3	11.1	1.8	5.2
62	1000	313	205.0	50.0	75.0	95.0	16.0	70.0
63	2500	68	29.0	10.0	20.0	9.2	1.4	4.2
64	860	275	26.0	9.0	14.0	9.1	1.3	4.2
65	950	59	35.0	8.0	12.0	10.5	1.5	4.8
66	P200	58	Supervisory Relay					
	S200							
67								
68	700	277	13.2	5.6	9.1	10.5	1.5	4.8
69	700	278	13.2	5.6	9.1	9.1	1.3	4.2
70	P1000	283	23.1	8.0	11.5	9.7	1.4	4.4
	S2700		50.5	12.0	26.5			
71	P1000	250	24.0	8.0	11.5	10.1	1.4	4.6
	S2700		54.5	12.0	26.5			
72	P700	64	11.1	5.6	8.2	8.1	1.0	3.4
	S700		11.1	5.6	8.2			

* In series with 90-ohm noninductive resistance

TABLE II-6 (Cont)
OPERATE AND RELEASE TIMES
AJ RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AJ 73	P360	5	8.3	4.2	6.2	8.0	2.0	4.0
	S1900		24.5	8.0	15.5			
74	2500	69	29.5	10.0	20.0	14.1	2.4	6.7
75	2500	291	40.0	13.0	29.0	11.1	1.8	5.2
76	2500	292	40.0	13.0	29.0	14.2	2.4	6.9
77	P200	293	Supervisory Relay					
	S200							
78	P1000	278	23.0	8.0	11.5	9.1	1.5	4.2
	S2700		60.0	12.0	26.5			
79	1625	419	33.0	13.0	27.0	10.5	1.7	4.7
80	1050	38	49.0	19.0	28.0	305.0	85.0	175.0
81	500	220	25.0	7.0	11.0	8.5	1.0	3.5
82	500	300	21.0	10.0	14.5	5.6	1.7	3.2
83	2500	249	99.0	13.0	29.0	8.5	1.0	3.5
84	800	301	18.0	8.0	14.0	10.7	1.7	5.2
85	3800	71	35.0	14.0	18.5	14.0	2.7	6.7
86	P200	315	Supervisory Relay					
	S200							
87	P1200	316	24.0	8.2	13.4	10.1	1.4	4.6
	S6000							
88	P200	303	Supervisory Relay					
	S200							
89	270	238	7.9	3.6	5.6	11.1	1.8	5.2
90	16*	420	7.9	3.3	5.4	11.5	1.2	7.0
91	200†	271	25.0	3.8	13.0	10.5	1.5	4.8
92	200†	220	30.5	3.8	13.0	8.5	1.0	3.5
93	200†	278	30.0	3.8	13.0	9.1	1.3	4.2
94	700	320	12.0	5.1	8.3	10.1	1.4	4.6
95	950	63	28.0	8.0	12.0	11.1	1.5	5.0
96	34	8				11.5	1.5	5.3
97	P210	321	P-	-	-			
	S1000		S18	4.0	10.0	11.1	1.8	5.2
98	34	74	-	-	-	5.3	1.8	3.0
99	P200	322	Supervisory Relay					
	S200							
100	180	46	8.3	4.5	6.4	19.0	3.1	8.9
101	500	323	19.0	7.0	11.0	12.0	1.9	5.7
102	P200	75	Supervisory Relay					
	S200							
103	1050	299	29.0	10.0	14.0	190.0	15.0	84.0
104	950	324	25.0	10.0	18.0	12.4	2.0	5.9
105	16*	422	7.9	3.3	5.4	10.5	1.7	4.7
106	16*	238	6.1	2.7	4.3	11.1	1.8	5.2
107	950	226	27.0	10.0	18.0	9.1	1.3	4.2

* In series with 90-ohm noninductive resistance

† 24-volt operation

CODE INFORMATION

TABLE II-6 (Cont)
OPERATE AND RELEASE TIMES
AJ RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AJ108	9100	2	44.0	13.0	33.0	19.5	2.9	8.8
109	P100	250	-	-	-	10.7	1.3	4.3
	S1100		27.0	8.4	15.5	-	-	-
110	P200	319	Supervisory Relay					
	S200							
111	500	328	20.0	4.2	13.0	11.5	1.4	4.6
112	950	329	24.0	6.2	17.5	13.0	1.7	5.5
113	P5000	77	95.0	11.5	27.0	9.4	1.1	4.1
	S1000		22.5	5.6	9.7	-	-	-
114	P2.7	293	-	-	-	13.5	1.9	5.7
	S690		8.2	4.0	6.0	-	-	-
115	P425	46	Supervisory Relay					
	S425							
116	P1000	330	26.0	9.2	13.7	10.5	1.5	4.8
	S2700		60.0	15.0	24.0	-	-	-
117	180	37	8.3	4.5	6.4	18.0	3.4	9.4
118	220	53	Ring Trip Relay					
119	220	53	Ring Trip Relay					
120	P1000	332	23.0	8.0	11.5	9.1	1.5	4.2
	S2700		60.0	12.0	26.5	-	-	-
121								
122	P700	249	14.6	6.4	10.2	7.1	1.0	3.5
	S700		14.8	6.6	10.4	-	-	-
123	1625	333	48.5	14.0	30.5	8.0	1.6	5.4
124	4.4	219	-	-	-	8.6	1.1	4.3
125	2500	299	61.0	13.0	33.0	7.4	1.0	3.5
126	P300	249	9.4	4.0	6.5	7.4	1.0	3.5
	S300		9.8	4.2	6.8	-	-	-
127	1625	252	40.4	13.0	26.4	5.7	1.6	2.4
128	1625	334	40.4	13.0	26.4	6.4	1.6	2.5
129	6000	335	69.0	15.0	29.0	12.5	1.7	6.2
130	1625	424	37.8	11.5	18.0	9.4	1.1	4.5
131	700	336	10.7	4.3	7.2	7.4	1.0	3.5
132	P415	337	Supervisory Relay					
	S415							
	T900							
133	P425	39	Supervisory Relay					
	S425							
134	P100	75	Supervisory Relay					
	S100							
135	P400	52	Supervisory Relay					
	S400							
136	P200	46	Supervisory Relay					
	S200							
137	200*	338	26.4	8.4	16.0	6.6	1.0	2.0
138	P400	56	Supervisory Relay					
	S400							
139	500	249	25.0	7.0	11.0	8.5	1.0	3.5
140	P200	3	Supervisory Relay					
	S200							
141	P210	339	-	-	-	7.6	1.6	3.3
	S1000		16.1	8.0	11.9	-	-	-
142	P800	425	24.5	15.0	21.0	6.5	1.6	2.8
	S880		23.6	12.0	16.5	-	-	-
143	P100	75	Supervisory Relay					
	S100							

* 24-volt operation

TABLE II-6 (Cont)

CODE INFORMATION

AJ RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AJ200	500	500	11.3	5.8	8.5	8.1	1.0	3.4
201								
202	700	500	10.0	5.0	7.3	8.1	1.0	3.4
203	275	500	9.9	5.3	7.6	8.1	1.0	3.4
204	P700		11.1	5.6	8.2	-	-	-
	S700	500	11.1	5.6	8.2	8.1	1.0	3.4
205	700	501	22.0	5.1	11.5	11.0	1.0	3.7
500	950	226	40.0	10.0	18.0	9.1	1.3	4.2
501	700	249	12.0	5.1	8.3	8.5	1.0	3.5
502	700	234	12.0	5.1	8.3	9.1	1.3	4.2
503	270	249	7.9	3.6	5.6	8.5	1.0	3.5
504	2200	57	66.5	24.0	38.5	58.0	14.0	33.0
505	16*	36	4.4	2.2	3.3	14.1	2.4	6.7
506	16*	267	6.1	2.7	4.3	14.2	2.4	6.9
507	270	21	6.1	3.3	4.7	4.1	1.2	2.6
508	16*	19	4.4	2.2	3.3	12.4	2.0	5.9
509	700	235	13.2	5.6	9.1	10.5	1.5	4.8
510	P2.7	39						
	S690		19.2	4.8	8.6	11.5	1.8	5.2
511	P700	206	16.5	7.4	10.1	11.5	1.7	5.3
	S700		17.5	7.4	10.1	-	-	-
512	270	64	5.6	2.8	4.2	8.1	1.0	3.4
513	270	414	9.9	4.1	6.7	8.0	1.0	3.3
514	P700	227	23.0	5.6	9.4	9.0	1.2	4.0
	S700		24.0	5.6	9.4	-	-	-
515	275	63	9.9	5.3	7.6	4.1	1.2	2.6
516	700	299	12.0	5.1	8.3	8.5	1.0	3.5
517	P700	318	13.4	5.8	9.3	10.1	1.4	4.6
	S3300		53.0	13.0	34.0	-	-	-
518	P700	249	14.3	6.3	10.0	7.4	1.0	3.5
	S700		14.6	6.4	10.2	-	-	-
519	P16*	10	3.9	2.0	2.9	15.3	3.2	9.1
	S16*		4.0	2.0	3.0	-	-	-
520	395	336	21.5	5.2	8.4	8.5	1.0	3.6
521	P390	268	7.2	3.6	5.3	8.6	1.2	4.4
	S390		7.0	3.5	5.2	-	-	-
X-75509								
AJ700	270	500	6.2	3.1	4.6	8.1	1.0	3.4
701								
702	700	500	10.0	5.0	7.3	8.1	1.0	3.4
703	P390	500	7.2	3.6	5.3	5.6	1.0	2.8
	S390		7.0	3.5	5.2	-	-	-

* In series with 90-ohm noninductive resistance

CODE INFORMATION

TABLE II-7
OPERATE AND RELEASE TIMES
AG RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES	
			Max	Min	Avg	Max	Min
AG1	1050	35B	64.0	10.5	29.0	425	190
2	5M, 38	1050	62.0	10.5	29.0	475	245
3	1050	233B	84.5	18.0	45.5	475	195
4	1050	39B	62.0	10.5	29.0	540	295
5							
6	2200	239B	59.0	12.0	33.5	95	37
7	1050	241B	84.5	15.5	45.5	365	155
8	2000	44B	61.5	11.0	30.0	390	190
9	1625	246B	37.0	10.0	23.0	22	6.5
10	875	35B	26.5	6.2	14.5	100	42
11	1050	233	84.5	15.5	45.5	830	225
12	1625	38B	28.5	6.0	15.5	26	9
13	2200	402B	63.5	18.0	45.5	235	90
14	12V P-400 } 3M, 38	45B	9.8	3.5	6.8	137*	85*
15	600	221	40.0	10.0	23.0	512	147
16	1050	233B	84.5	15.5	44.5	475	225
17	2200	271B	68.0	13.5	43.5	150	55
18	2000	48B	62.5	10.0	32.5	320	142
19	1050	405B	100.0	19.0	57.5	500	250
20	2000	262B	95.0	15.0	50.0	260	103
21	12V P-450 } 3M, 210	282B	8.6	4.6	6.6	267*	136*
22	S-57 } 3M, 210	56B	6.7	3.5	5.1	288*	144*
23	P-450 } 1M, 30, 10M	286B	28.5	10.0	23.0	22	6.5
24	S-57 }	18B	68.0	10.5	29.0	620	300
25	1050						
26	550	222B	70.0	12.0	32.0	400	187
27	10V P-198 } 3M, 38	45B				206*	103*
28	S-80 }	268B	45.0	10.0	21.5	145	61
29	875	408B	47.0	12.0	28.5	235	90
30	600	267B	20.5	7.0	11.0	17	7
31	500	4B	7.0	3.5	5.3	160*	95*
32	17V P-450 } 5M	224B	23.0	7.8	12.0	13.5	3.7
33	S-200 }	305B	57.0	10.0	25.0	95	40
34	P-1000	307B	37.0	8.0	19.0	395	175
35	S-2700	67B	84.5	15.5	45.5	137*	85*
36	12V P-400 } 4M, 28	296B	9.8	3.5	6.8		
37	S-120 }	297B	39.5	10.0	23.0	280	150
38	600	213B	8.6	4.6	6.6	275*	130*
39	22V P-450 } 1M, 100M, 200M, 100B	268B	23.0	7.0	12.0	210*	96*
40	S-57 }	50	57.0	10.0	25.0	14	4.5
41	P-1000	264B	30.0	8.0	18.0	20	8
42	S-2700	279B	95.0	15.0	50.0	235	120
	2500		37.0	8.0	19.0	175	46

* With secondary winding short-circuited

TABLE II-7 (Cont)
 OPERATE AND RELEASE TIMES
 AG RELAYS

		OPERATE TIMES				RELEASE TIMES	
Code	Res	Spg Comb.	Max	Min	Avg	Max	Min
AG43		1050 34B	75.0	11.0	29.0	360	145
44	22V P-1000	281B	24.0	6.6	18.0	250*	95*
	S-42	5M, 45M, 1EM					
45		2200 20B	45.0	8.5	20.5	85	40
46	P-1000	20B	17.0	5.6	8.6		
	S-2700		34.0	7.2	16.8	16	4.9
47	22V P-450	290B	8.6	4.6	6.6	275*	130*
	S-57	1EM, 2EM, 2EM					
48		2000 230B	95.0	15.0	50.0	250	105
49	27V P-450	416B	10.5	5.7	8.0	195*	95*
	S-57	2M, 25, 2EM, 1EM, 1EM, 1EM					
50		2200 314B	68.0	13.5	43.5	115	45
51		4000 72B	45.5	9.0	35.0	19	6.5
52	P-700	318B	13.7	6.1	9.6	13	4
	S-3300		50.5	11.0	30.0		
53	43V P-450	249B	8.6	4.6	6.6	195*	57*
	S-57	9EM, 3EM					
54		P-360 325B	-	-	-	17	7
	S-1900		37.0	8.5	20.0		
55	16V P-1000	76B	15.0	5.0	9.3	307*	136*
	S-42	3M, 25, 1EM					
56	32V P-450	413B	12.9	5.2	8.7	205*	74*
	S-57	4M, 25, 1EM, 1EM, 1EM, 1EM, 2 PRIEM					
57		2200 326B	66.0	13.5	43.5	100	40
58	P-700	38B	12.1	6.0	9.0	17	11
	S-700		12.2	6.1	9.1		
59	P-450	70B	39.5	9.6	14.0	180	115
	S-500		45.5	10.7	16.0		
60		1050 419B	88.5	18.0	43.0	320	168
X-75509		1050 343B	85.5	16.8	32.0	330	135

* With secondary winding short-circuited

CODE INFORMATION

TABLE II-8
OPERATE AND RELEASE TIMES
AK RELAYS

				OPERATE TIMES			RELEASE TIMES		
Code	Res	Spg Comb.		Max	Min	Avg	Max	Min	Avg
AK1	T410 12V	201	-	-	-	-	8.7	1.0	3.6
	B315* 12V		-	-	-	-	175.0	60.0	-
2	T960	1	13.4	7.5	10.5	10.4	1.6	4.8	
	B960		13.4	7.5	10.5	10.4	1.6	4.8	
3	T185	3	-	-	-	-	11.0	1.8	5.4
	B280		-	-	-	-	11.0	1.8	5.4
4	T2450 24V	202	44.0	18.7	31.0	8.5	1.0	3.4	
	B2450		44.0	18.7	31.0	8.5	1.0	3.4	
5	T640	4	11.1	6.3	8.7	11.0	1.8	5.4	
	B640		11.1	6.3	8.7	11.0	1.0	5.4	
6	T640	2	11.1	6.3	8.7	8.5	1.0	3.4	
	B640		11.1	6.3	8.7	8.5	1.0	3.4	
7	T955	203	18.2	10.7	14.5	8.7	1.0	3.6	
	B955		18.2	10.7	14.5	8.7	1.0	3.6	
8	T2450	204	29.2	18.7	24.0	9.3	1.1	3.9	
	B960		18.8	11.6	14.5	9.3	1.1	3.9	
9	T2450	5	25.0	10.5	17.5	11.0	1.8	5.4	
	B145		-	-	-	14.0	2.6	6.6	
10	T2450+	7	25.0	10.5	17.5	22.5	4.5	16.5	
	B960+		13.4	7.5	10.5	17.0	3.8	12.0	
11	T960	206	18.8	11.6	14.5	11.3	1.7	5.0	
	B960		18.8	11.6	14.5	11.3	1.7	5.0	
12	T1500	8	18.2	8.2	13.0	14.0	2.6	6.6	
	B1500		18.2	8.2	13.0	14.0	2.6	6.6	
13	T640	203	16.2	10.5	13.4	8.7	1.0	3.6	
	B640		16.2	10.5	13.4	8.7	1.0	3.6	
14	T410	208	-	-	-	8.7	1.0	3.6	
	B410		-	-	-	10.0	1.2	4.2	
15	T640	9	11.1	6.3	8.7	11.6	2.1	5.9	
	B960		13.4	7.5	10.5	8.8	1.2	4.1	
16	T100	211	-	-	-	9.3	1.1	3.9	
	B100		-	-	-	9.3	1.1	3.9	
17	T210+	212	20.7	9.6	15.2	9.3	1.1	3.9	
	B210+		20.7	9.6	15.2	9.3	1.1	3.9	
18	T210+	213	20.7	9.6	15.2	12.5	2.0	5.6	
	B210+		20.7	9.6	15.2	11.3	1.7	5.0	
19	T210+	214	20.7	9.6	15.2	10.0	1.2	4.2	
	B210+		20.7	9.6	15.2	10.0	1.2	4.2	
20	T640	217	16.2	10.5	13.4	12.5	2.0	5.6	
	B640		16.2	10.5	13.4	10.5	1.4	4.5	
21	T640	215	16.2	10.5	13.4	10.0	1.2	4.2	
	B640		16.2	10.5	13.4	10.0	1.2	4.2	
22	T640 17V	216	16.2	10.5	13.4	8.7	1.0	3.6	
	B640		16.2	10.5	13.4	8.7	1.0	3.6	
23	T2450	3	25.0	9.1	15.2	11.0	1.8	5.4	
	B2450		25.0	9.1	15.2	11.0	1.8	5.4	
24	T2450	12	25.0	9.1	15.2	10.0	1.3	4.4	
	B2450		25.0	9.1	15.2	10.0	1.3	4.4	
25	T640	11	11.1	6.3	8.7	14.0	2.6	6.6	
	B640		11.1	6.3	8.7	11.0	1.8	5.4	

- * Has copper sleeve and domed armature.
- † Has domed armature.
- ‡ 24-volt operation.

TABLE II-8 (Cont)
 OPERATE AND RELEASE TIMES
 AK RELAYS

Code	Res	Spg Comb.	OPERATE TIMES			RELEASE TIMES		
			Max	Min	Avg	Max	Min	Avg
AK26	T640	10	11.1	6.3	8.7	10.0	1.3	4.4
	B640		11.1	6.3	8.7	8.8	1.2	4.1
27	T640	218	16.2	10.5	13.4	10.5	1.4	4.5
	B2450		40.0	18.7	29.0	10.5	1.4	4.5
28	T5.5	219	-	-	-	10.0	1.2	4.2
	B1500		28.0	15.0	21.5	8.7	1.0	3.6
29	T2450	13	25.0	9.1	15.2	10.4	1.6	4.8
	B2450		25.0	9.1	15.2	10.4	1.6	4.8
30	T640	202	16.2	10.5	13.4	8.5	1.0	3.4
	B640		16.2	10.5	13.4	8.5	1.0	3.4
31	T955	14	12.0	6.0	9.0	8.5	1.0	3.4
	B145		-	-	-	12.5	2.0	5.6
32	T210*	210	20.7	9.6	15.2	9.3	1.1	3.9
	B210*		20.7	9.6	15.2	9.3	1.1	3.9
33	T2450	209	40.0	18.7	29.0	7.0	2.1	4.5
	B2450		58.0	18.7	38.0	18.5	4.5	11.5
34	T640	15	11.1	6.3	8.7	10.0	1.3	4.4
	B640		11.1	6.3	8.7	8.8	1.2	4.1
35	T2450	202	49.0	18.7	33.9	8.5	1.0	3.4
	B680†		41.0	11.6	26.0	175.0	50.0	-
36	T16	16	-	-	-	8.0	1.0	3.4
	B1500		22.0	8.2	15.0	8.4	1.0	3.8
37	T1500	201	28.0	15.0	21.5	8.7	1.0	3.6
	B1100†		50.0	13.6	32.0	230.0	70.0	-
38	T960	13	13.4	7.5	10.5	10.4	1.6	4.8
	B960		13.4	7.5	10.5	10.4	1.6	4.8
39	T2450	221	40.0	18.7	29.0	8.7	1.0	3.6
	B960		18.8	11.6	14.5	9.3	1.1	3.9
40	T145	17	-	-	-	8.6	1.8	5.3
	B640		11.5	5.9	8.7	15.5	1.6	4.8
41	T680†	202	41.0	11.6	26.0	175.0	50.0	-
	B680†		41.0	11.6	26.0	175.0	50.0	-
42	T1500	223	21.6	13.0	17.3	8.7	1.0	3.6
	B1500		21.6	13.0	17.3	8.7	1.0	3.6
43	T960	20	13.4	7.5	10.5	10.4	1.6	4.8
	B65		-	-	-	18.0	1.8	5.3
44	T640	222	16.2	10.5	13.4	8.5	1.0	3.4
	B640		16.2	10.5	13.4	8.5	1.0	3.4
45	T2450	204	29.2	18.7	24.0	9.3	1.1	3.9
	B100		-	-	-	9.3	1.1	3.9
46	T630	19	8.0	5.0	6.5	9.5	1.6	4.9
	B630		8.0	5.0	6.5	9.5	1.6	4.9
47	T1500	202	26.8	13.0	18.0	7.1	1.0	3.7
	B1500		26.8	13.0	18.0	7.1	1.0	3.7
48	T2450	204	29.2	18.7	24.0	9.3	1.1	3.9
	B2450		-	-	-	-	-	-
49	T2450	224	44.0	18.7	31.0	8.5	1.0	3.4
	B2450		44.0	18.7	31.0	8.5	1.0	3.4
50	T(P)820	216	16.4	9.6	13.0	6.2	1.0	3.2
	(S)682		14.8	8.5	11.6	6.2	1.0	3.2
	B(P)820		16.4	9.6	13.0	6.2	1.0	3.2
	(S)682		14.8	8.5	11.6	6.2	1.0	3.2
500	T640	15	11.1	6.3	8.7	10.0	1.3	4.4
	B640		11.1	6.3	8.7	8.8	1.2	4.1
501	T640	2	11.1	6.3	8.7	8.5	1.0	3.4
	B640		11.1	6.3	8.7	8.5	1.0	3.4

* 24-volt operation.

† Has copper sleeve and domed armature.