

CATALOG SECTION 62

Type B Relays

Plug-In Type

ZCG UTILITY SCRAP
UNION, MO 63084

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Parts lists are available on request



GENERAL RAILWAY SIGNAL COMPANY

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GENERAL INFORMATION

All Type B relays, unless otherwise described, have a 0.050" front contact opening and are equipped with metal-impregnated-carbon-to-metal front and metal-to-metal back contacts.

For more detailed descriptions, including circuit applications, see Handbook 33—or write your GRS sales office for such specific data as you may need.

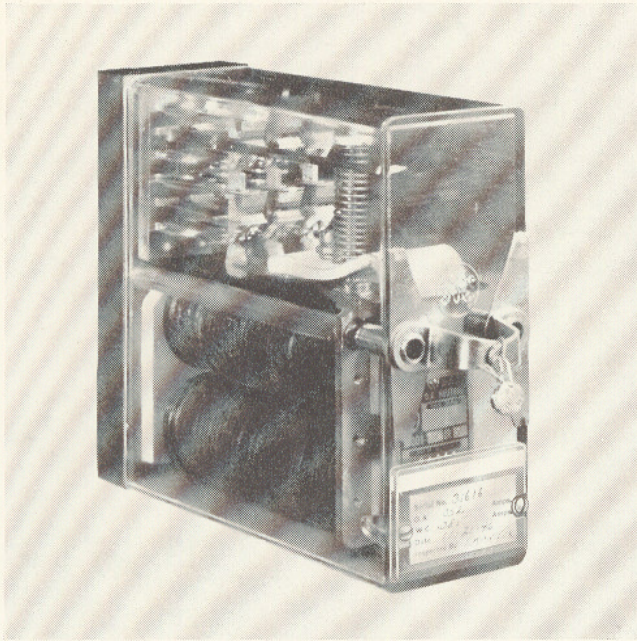
For Type B relays used with train control equipment and coded cab signal apparatus, see Handbooks 6, 16, or 22.

DIMENSIONS FOR TYPE B RELAYS			
SIZE	HEIGHT	WIDTH	DEPTH
1	6 5/16"	2 7/16"	8 9/16"
2	6 5/16"	4 15/16"	8 9/16"

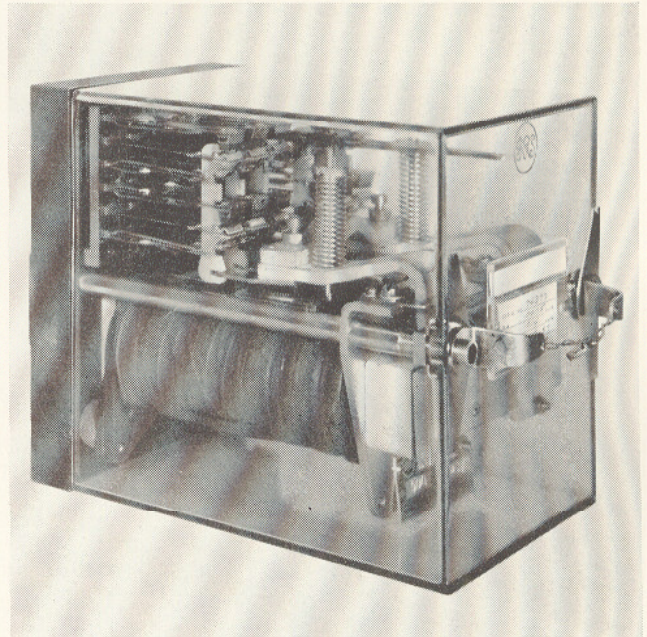
HOW TO ORDER

Order Type B relay and give catalog number and quantity.

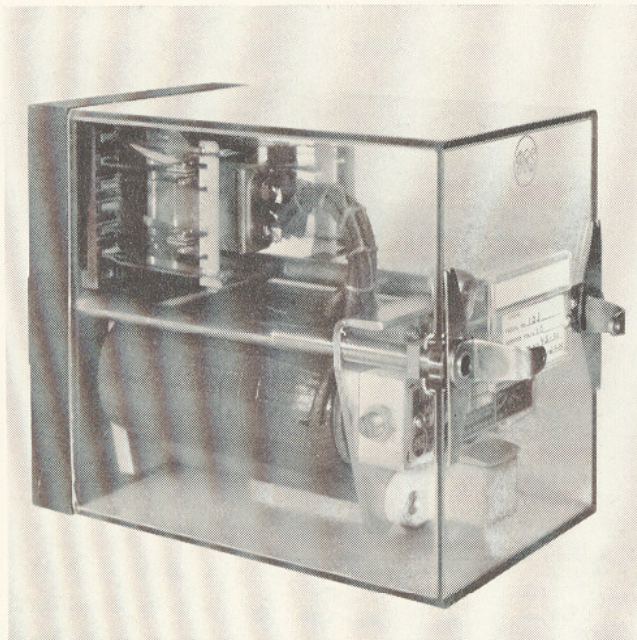
Plugboards must be ordered separately, see Page 19.



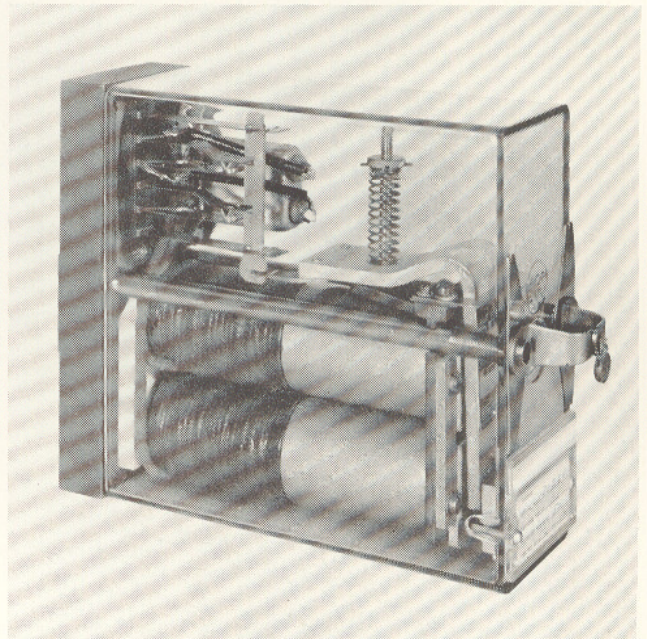
Neutral, Size 1



Neutral, Size 2



Highway Crossing Flasher, Size 2



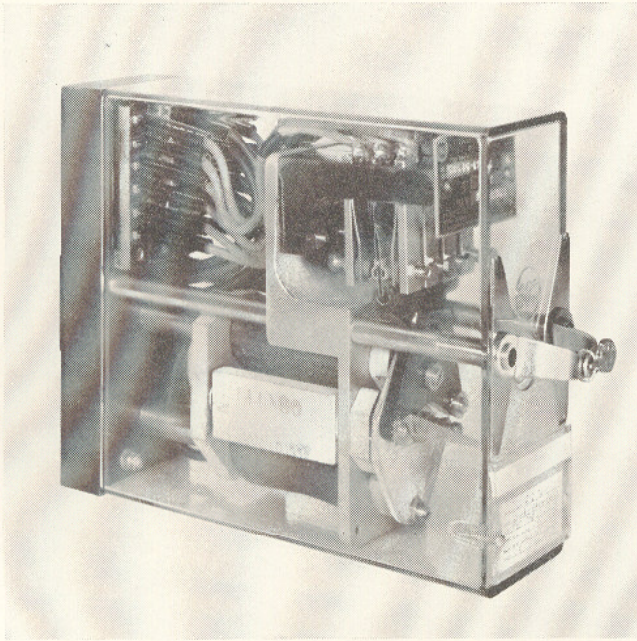
Signal Flasher, Size 1

Typical Type B Relays

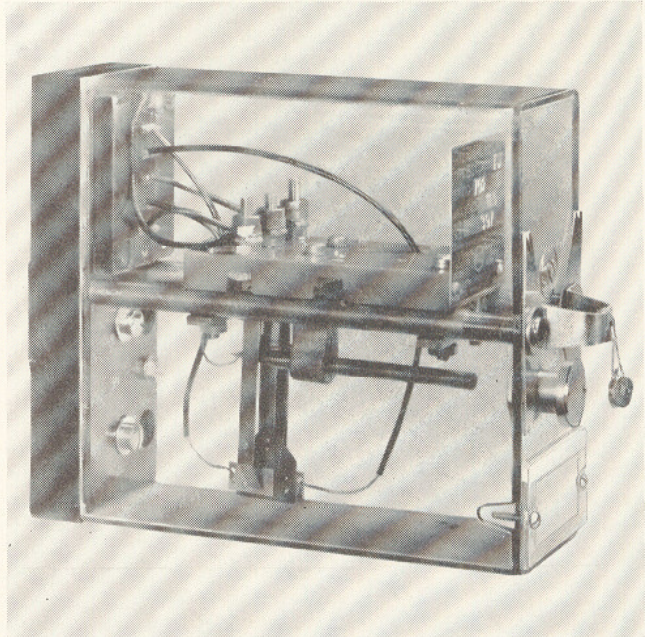
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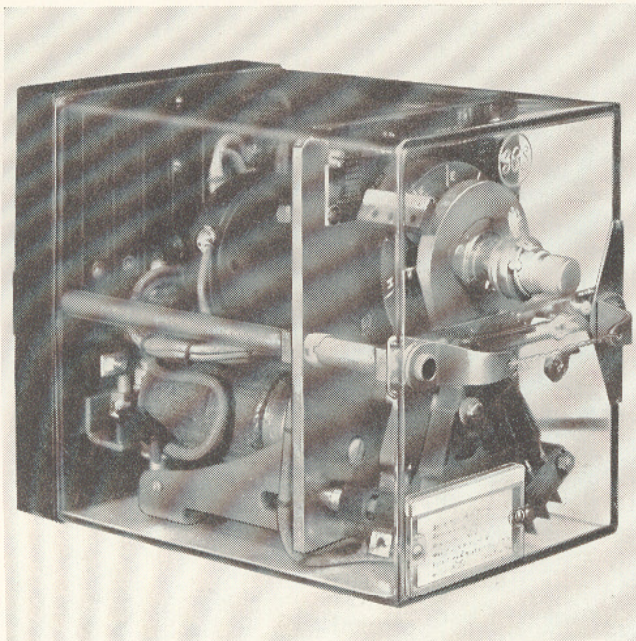
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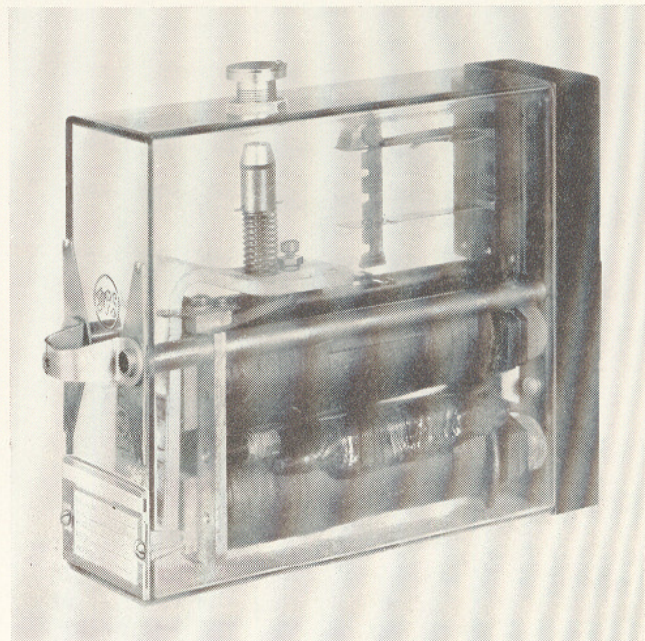
Magnetic-Stick, Size 1



Thermal, Size 1

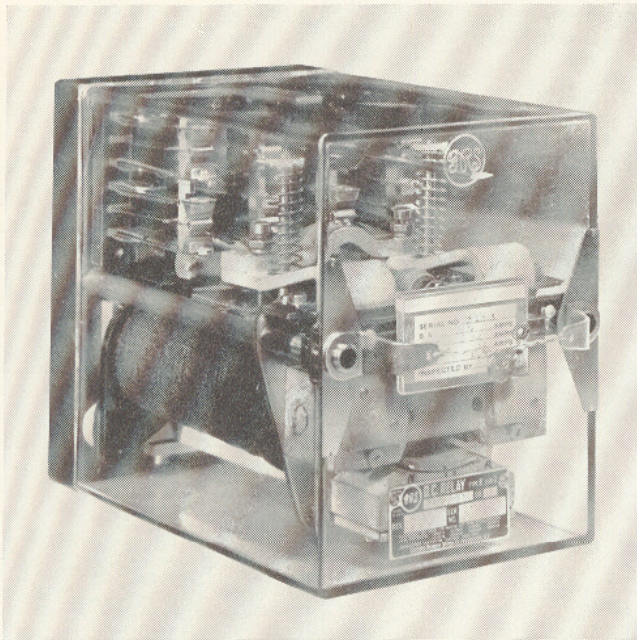


Timing, Motor-Operated, Size 2

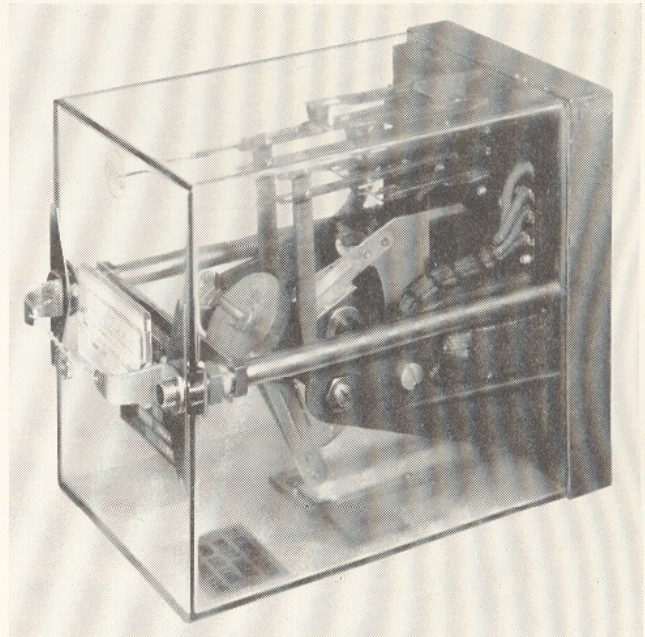


Two-Rate Charge Control, Size 1

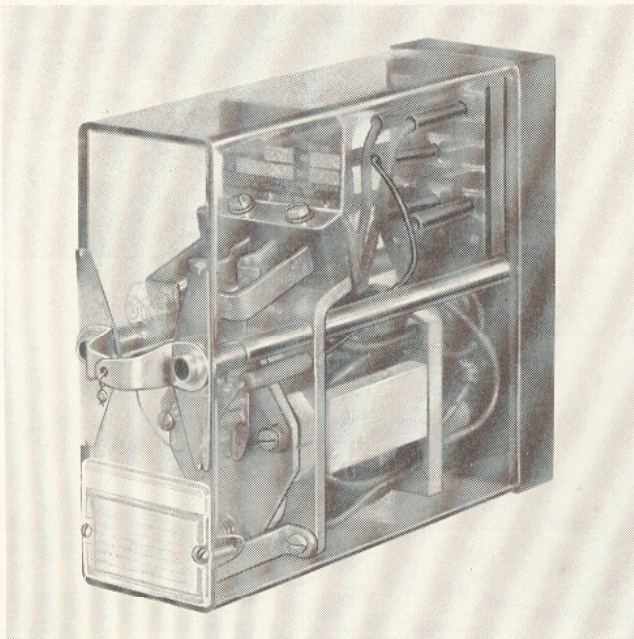
Typical Type B Relays



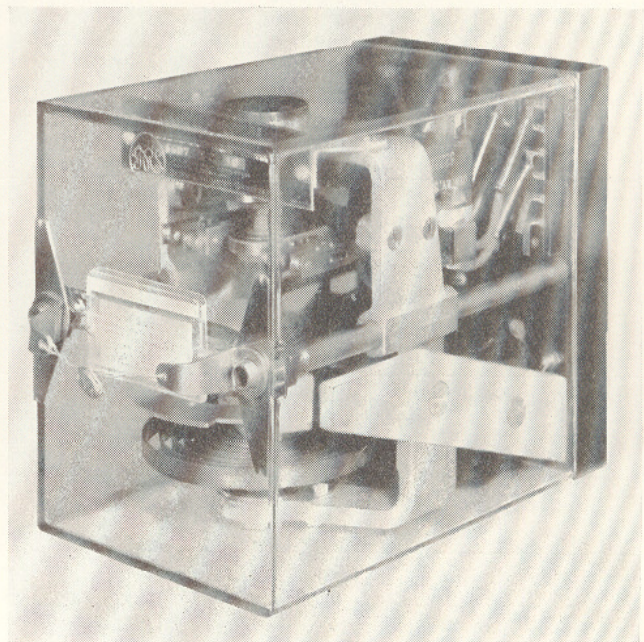
Polarized, Size 2



Vane, Size 2



Code-Responsive, Size 1



Code Transmitter, Size 2

Typical Type B Relays

APPROACH RELAY

Type B Size 1, Direct-Current, Track

Designed for connection, as specified below, either in series or in multiple with the track feed, this relay operates to provide a means to light signal lamps, operate directional stick, etc. as the train approaches the feed end of the track circuit. Contacts are metal-to-metal. An adjustable core provides a means to vary the operating values to suit the particular track circuit conditions. This relay cannot be equipped with a registration plate. It requires a special plugboard, shown on page 19, Ref. G1.

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES*	TYPE	CATALOG NUMBER
2F	.24	.285	Series	A62-100
1F-2B	4	.065	Multiple	A62-105
"	1.8	.095	"	A62-106
"	10.4	.042	"	A62-107

*Values shown are for adjustable core turned entirely in, to increase values turn core counter-clockwise.

BIASED-NEUTRAL RELAY

Type B Size 1, Direct-Current

This relay is biased to pick up on one polarity only. It will not pick up when the polarity is reversed. The magnitude of reverse voltage as well as the time it is applied, will not affect the operating characteristics of this relay.

STANDARD RELAYS

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	CATALOG NUMBER
4FB	500	.011	A62-115
4FB-2F-1B	2	.149	A62-120
"	500	.0115	A62-122
6FB	500	.0115	A62-125

SPECIFIC APPLICATION RELAYS

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	NOTES	CATALOG NUMBER
4FB-2F-1B	63	.029	Trakode	A62-130
"	330	.012		A62-131
"	750	.008		A62-132
6FB	63	.029		A62-140

BIASED-NEUTRAL RELAY

Type B Size 2, Direct-Current

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	CATALOG NUMBER
8FB-4F-2B	350	.016	A62-145
12FB	"	"	A62-150

CODE-RESPONSIVE RELAY (CR)

Type B Size 1, Direct-Current

This relay is built in Size 1 only. It is made with a light armature and contact structure so that it will respond quickly to coded pulses of energy. Contacts are metal-to-metal.

It is polar-biased, and the armature is spring-returned to the normal position.

STANDARD RELAYS

NOMINAL SYSTEM VOLTAGE	CONTACTS	RESISTANCE OHMS	NOTES	CATALOG NUMBER
—	2FB	.14	Track Line code repeater " " "	A62-155
10	"	200		A62-156
"	4FB	80		A62-157

SPECIFIC APPLICATION RELAYS

NOMINAL SYSTEM VOLTAGE	CONTACTS	RESISTANCE OHMS	NOTES	CATALOG NUMBER
—	2FB	10	Operates from output of resonant track unit. Impulse relay for inverse code. Line code repeater to obtain delayed release. Line code repeater to obtain delayed pickup.	A62-160
10	"	40		A62-161
"	"	60		A62-162
"	"	1400		A62-163

CODE TRANSMITTER

Type B Size 2, Direct-Current

Type B code transmitters are built in Size 2 only. These transmitters have oscillating armatures carried on vertical shafts. Contacts are metal-to-metal and are actuated by cams on the vertical shaft.

When driving coil is deenergized, all contacts used to control external circuits are open. When energized, contacts open and close at code rate.

STANDARD TRANSMITTERS (Non-Locking Type)

CODE RATE	CONTACTS	RESISTANCE OHMS	NOMINAL SYSTEM VOLTAGE	CATALOG NUMBER
WITH CONTACTS FOR UP TO 30 VOLTS				
75	2F-2B	150	10	A62-170
120	"	"	"	A62-171
180	"	"	"	A62-172
WITH CONTACTS FOR 30 VOLTS AND UP				
75	2F-2B	150	10	A62-175
120	"	"	"	A62-176
180	"	"	"	A62-177

SPECIFIC APPLICATION TRANSMITTERS (Locking Type)

This type is used to provide a limited number of pulses at a predetermined rate. Construction is similar to non-locking type above except that when energized the rotary pendulum spring is held "wound up." When energy is removed, the pendulum oscillates to actuate the contacts to provide the desired pulses. (Used for Syncroscan and Syncrostep.)

CODE RATE	CONTACTS	RESISTANCE OHMS	NOMINAL SYSTEM VOLTAGE	CATALOG NUMBER
270	2F-2B	150	28	A62-185
333 $\frac{1}{3}$	"	"	"	A62-186

FLASHER RELAY, HIGHWAY CROSSING

Type B Size 2, Direct-Current, Tractive-Armature

This relay is furnished with four sets of metal-to-metal, lamp-control contacts and one set of coil-control contacts. It always stops with the same contacts closed when deenergized.

CONTACTS	NOMINAL SYSTEM VOLTAGE	FLASHES PER MINUTE	CATALOG NUMBER
4FB	8	40 - 45	A62-190
"	10	"	A62-191
"	12	"	A62-192

FLASHER RELAY, SIGNAL

Type B Size 1, Direct-Current

This relay is used for controlling the flashing aspect of a wayside signal. It is equipped with one back contact for use in outside circuits. The remaining back contact is required for relay operation.

CONTACTS	NOMINAL SYSTEM VOLTAGE	FLASHES PER MINUTE	CATALOG NUMBER
1B	10 or 12	approx. 60	A62-200

LAMP-CONTROL RELAY

Type B Size 1, Direct-Current

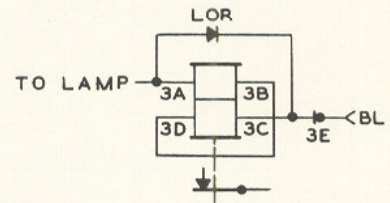
This relay has two regular front-back contacts and two back contacts especially designed to control the heavy surge current in lighting the highway crossing lamps. These back contacts are rated at 15 amperes at 12 volts a.c. or d.c.

CONTACTS	RESISTANCE OHMS	NOMINAL SYSTEM VOLTAGE	CATALOG NUMBER
2FB-2B	210	10	A62-205

LIGHT-OUT NEUTRAL RELAY

Type B Size 1, A-c or D-c

This relay is used to detect failures of signal lamps. It operates on direct current or on alternating current. The relays with low-resistance windings are used for hot filament checks. Relays with both low- and high-resistance windings are used for hot and cold filament checks. External rectifier is required for operation; see connection diagram.



CONTACTS	RESISTANCE OHMS	FOR USE WITH LAMP		WORKING AMPERES A.C.	WITH RECTIFIER	CATALOG NUMBER
		VOLTS	WATTS			
4FB	.24	10	5 + 3.5	.650	*Yes	A62-210
"	"	"	"	"	*No	A62-211
"	.4	"	13 + 3.5	.280	**Yes	A62-212
"	"	"	"	"	**No	A62-213
"	450 - .45	"	5	.365	Yes	A62-214
"	"	"	"	"	No	A62-215
"	450 - .069	"	18 + 3.5	1.6	*Yes	A62-216
"	"	"	"	"	*No	A62-217
"	.45	"	5	.365	Yes	A62-218
"	"	"	"	"	No	A62-219
"	450 - .12	12 - 16	21(C.P.)	1.1	Yes	A62-220
"	"	"	"	"	No	A62-221
"	450 - .046	10	40 Watts	2.9	Yes	A62-222
"	"	"	"	"	No	A62-223
6FB	450 - .2	"	10	.860	Yes	A62-230
"	"	"	"	"	No	A62-231
4F-2B	450 - .61	"	18 + 3.5	.300	**Yes	A62-235
"	"	"	"	"	**No	A62-236

*Drops when major filament burns out.

**Picks up on minor filament.

MAGNETIC-STICK RELAY

Type B Size 1, Direct-Current

This relay operates in response to a change in the direction of current flow through the coils. The armature stays in its last-operated position when energy is cut off. Contacts are carbon-to-metal.

CONTACTS	RESISTANCE OHMS	OPERATING AMPERES	CATALOG NUMBER
4NR	7	.089	A62-245
"	34	.033	A62-246
"	500	.011	A26-247

NEUTRAL RELAY, REGULAR-RELEASE

Type B Size 1, Direct-Current, Line and Track

STANDARD RELAYS

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	NOTES	CATALOG NUMBER
4FB	500	.0096		A62-255
6FB	1.8	.124		A62-260
"	4	.085		A62-261
"	500	.0115		A62-262
4F-2B	1.8	.101		A62-270
"	4	.070		A62-271
4FB-2F-1B	1.8	.124		A62-275
"	4	.085		A62-276
"	500	.0115		A62-277

SPECIFIC APPLICATION RELAYS

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	NOTES	CATALOG NUMBER
4FB	4	.065		A62-290
6FB	84	.0185		A62-295
"	900	.008		A62-296
4F-2B	350	.0082		A62-300
4FB-2F-1B	84	.0185		A62-305
"	350	.013		A62-306
"	500	.0145	.090" front contact opening	A62-307
"	900	.008		A62-308
"	350	.013	Heavy-duty contacts	A62-309
"	500	.0115	" " "	A62-310
"	900	.008	" " "	A62-311
4FB-1F-2B	1800	.004	For Trakode	A62-320

NEUTRAL RELAY, REGULAR-RELEASE

Type B Size 2, Direct-Current, Line

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	NOTES	CATALOG NUMBER
12FB	500	.014		A62-330

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SLOW AND QUICK-ACTING RELAYS

Time of release is the time required to open front contacts after energy is removed from the relay. Time of pickup is the time required to make front contacts after energy is applied to the relay. Operating values shown are based on 70° F.

NEUTRAL RELAY, QUICK-PICKUP (Syncroscan)

Type B Size 1, Direct-Current

CONTACTS	RESISTANCE OHMS	CATALOG NUMBER
4FB-2F-1B	135/65	A62-335

NEUTRAL RELAY, SLOW-PICKUP

Type B Size 1, Direct-Current, Line

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	TIME OF PICKUP	CATALOG NUMBER
4FB-2F-1B	230	.036	1.4 seconds at 11 volts	A62-340
"	300	.032	1.4 seconds at 13.2 volts	A62-341
6FB	230	.036	1.4 seconds at 11 volts	A62-345

NEUTRAL RELAY, SLOW-PICKUP and SLOW-RELEASE

Type B Size 1, Direct-Current, Line

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	TIME OF PICKUP AND RELEASE	CATALOG NUMBER
4FB-2F-1B	194	.042	1.1 seconds pickup and .9 second release at 10 volts	A62-350

NEUTRAL RELAY, SLOW-RELEASE

Type B Size 1, Direct-Current, Line

STANDARD RELAYS

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	TIME OF RELEASE	CATALOG NUMBER
4FB	450	.0125	.9 second at 10 volts	A62-355
4FB-2F-1B	470	.0153	1 second at 10 volts	A62-357
6FB	340	.019	1 second at 10 volts	A62-359

NEUTRAL RELAY, SLOW-RELEASE

Type B Size 1, Direct-Current, Line

SPECIFIC APPLICATION RELAYS

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	TIME OF RELEASE	NOTES	CATALOG NUMBER
2FB	24	.0215	.4 second at 2.5 volts	Primary Battery Auto. Sw.	A62-365
4FB-2F-1B	300	.027	1.7 seconds at 8.4 volts		A62-369
"	800	.0115	.9 second at 10 volts		A62-370
4FB-1F-2B	900	.016	.8 second at 21.6 volts		A62-375
2F-4B	80	.023	.1 second at 2 volts		A62-380

POLARIZED RELAY

Type B Size 2, Direct-Current

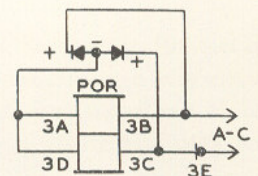
This relay has two armatures, one polar and one neutral. The polar armature operates either to the normal or reverse position, depending upon the polarity of the applied energy and remains in the last-operated position. The neutral armature drops momentarily during pole-changing.

CONTACTS		RESISTANCE OHMS	PICKUP AND WORKING AMPERES	CATALOG NUMBER
NEUTRAL	POLAR			
4FB	4NR	200	.0201	A62-390
"	"	500	.0132	A62-391

POWER-TRANSFER NEUTRAL RELAY

Type B Size 1

This relay is essentially a d-c neutral line relay operating on rectified a-c. If a-c energy fails, the relay armature drops and automatically transfers the circuits onto local battery. The ratio of release voltage to pickup voltage is about 75 percent to provide transfer before signal aspects are impaired. Contacts are metal-to-metal—capacity 15 amperes at 15 volts. External rectifier is required for operation; see connection diagram.



CONTACTS	RATED VOLTAGE A-C.	RESISTANCE EACH SIDE OHMS	WITH RECTIFIER	CATALOG NUMBER
2FB	10	50-50	Yes	A62-400
"	"	"	No	A62-401
6FB	"	100-100	Yes	A62-405
"	"	"	No	A62-406

PRIMARY-SECONDARY RELAY COMBINATION

Type B Size 1, Direct-Current

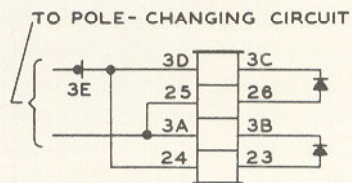
This combination of a track relay and a repeater is strongly recommended where extra high shunting sensitivity and protection against momentary loss of shunt are required. The repeater or secondary relay, when picked up, cuts out part of the winding of the track relay and inserts a corresponding amount of resistance. This, in effect, raises the value of current at which the track relay will release, yet does not affect the pickup current values. The secondary relay, in addition, is made slow in picking up to permit progressive and continuous track shunting as the train passes from one track section to another. Operating values shown are based on 70° F.

CONTACTS	RESISTANCE OHMS	PICKUP AND WORKING AMPERES	TIME OF PICKUP	CATALOG NUMBER
PRIMARY				
4F-2B	4	.065	—	A62-410
SECONDARY				
3FB-3B-1MB	230	—	1.3 seconds at 11 volts	A62-415

RETAINED-NEUTRAL RELAY

Type B Size 1, Direct-Current

This relay, operated through an associated rectifier, remains in the energized position during a change of line polarity. External rectifiers are required for operation; see diagram. Note each coil consists of two windings.



CONTACTS	RESISTANCE EACH COIL OHMS	PICKUP AND WORKING AMPERES	WITH RECTIFIERS	CATALOG NUMBER
4FB	180 - 180	.0226	Yes	A62-420
"	"	"	No	A62-421

SLOW-PICKUP, SLOW-RELEASE, QUICK-CROSSOVER NEUTRAL RELAY

Type B Size 1, Direct-Current

The slow pickup and slow-release features of this relay are slightly different from usual in that the relay maintains full contact pressure for the entire time of pickup and release and then operates very rapidly. This quick-crossover feature (both pickup and release) is desirable for relays used to pole-change circuits, especially when there are relays in the pole-changed circuit that must remain energized during the period that the circuit is open. Operating values shown are based on 70° F.

CONTACTS	RESISTANCE OHMS	TIME OF PICKUP AND RELEASE	CATALOG NUMBER
4FB-2F-1B	124	1.25 seconds pickup and 1.5 seconds release at 11 volts	A62-425
"	230	1.2 seconds pickup and .75 second release at 13.2 volts	A62-426

SWITCH-OVERLOAD NEUTRAL RELAY

Type B Size 1, Direct-Current

This relay is used to cut off energy from a switch machine motor on overload because of an obstruction, and to provide for automatic resetting when polarity to the switch motor is reversed. The relay picks up on the overload current and remains stuck up as long as energy is present. The relay is made slow in picking up to prevent pickup on the heavy current surges through the switch machine motor when starting.

These relays have .125" front contact openings. Contacts are equipped with magnetic blowouts.

CONTACTS	RESISTANCE OHMS	SWITCH MACHINE OPERATING VOLTAGE	CURRENT SETTING AMPERES	CATALOG NUMBER
2B	.068 - 230	Low	10.75 to 11.25	A62-430
"	.068 - 1225	High	"	A62-431

TIMING RELAY, MOTOR-OPERATED

Type B Size 2, Direct-Current

This relay has an external time adjustment which can be sealed to prevent unauthorized adjustment. The relay is shipped adjusted to the maximum time, unsealed. All check contacts are metal-to-metal. Where one time contact is supplied, it is carbon-to-metal. Where two time contacts are supplied, they are metal-to-metal.

NOMINAL SYSTEM VOLTAGE	CONTACTS		TIME RANGE		CATALOG NUMBER
	CHECK	TIME	MIN.	MAX.	
10	1	1	4 seconds	64 seconds	A62-440
"	"	"	1 minute	8 minutes	A62-441
12	"	"	4 seconds	64 seconds	A62-442
"	"	"	1 minute	8 minutes	A62-443
10	2	2	4 seconds	64 seconds	A62-450
"	"	"	1 minute	8 minutes	A62-451
12	"	"	4 seconds	64 seconds	A62-452
"	"	"	1 minute	8 minutes	A62-453

TIMING RELAY, THERMAL

Type B Size 1, A-c or D-c

This relay has one normally closed check contact and a normally open time contact which are metal-to-metal. It has an external adjustment, which can be sealed to prevent unauthorized adjustment. The relay is shipped adjusted to the maximum time, unsealed. Time ranges indicated are for a complete cycle of heating and cooling.

STANDARD RELAYS

NOMINAL SYSTEM VOLTAGE	TIME RANGE—SECONDS		RESISTANCE OF HEATER—OHMS	CATALOG NUMBER
	MIN.	MAX.		
10	15	45	11.3	A62-460
12	"	"	18.6	A62-461
10	45	120	11.3	A62-462
12	"	"	18.6	A62-463

TIMING RELAY, THERMAL

Type B Size 1, A-c or D-c

SPECIFIC APPLICATION RELAYS

This relay has one normally open, metal-to-metal time contact. It has no check contact. Timing is pre-set and sealed at factory. Indicated time is for heating only.

NOMINAL SYSTEM VOLTAGE	TIME RANGE—SECONDS		RESISTANCE OF HEATER—OHMS	CATALOG NUMBER
	MIN.	MAX.		
10	9	11	11.3	A62-470
12	"	"	18.6	A62-471

TWO-RATE CHARGE-CONTROL NEUTRAL RELAY

Type B Size 1, Direct-Current

For Lead Cells

This relay (operated by another relay, which is actuated periodically) is used in battery charging circuits. When the battery reaches its full charge, the relay operates to transfer from a high to a continuous low charge rate to ensure a fully charged battery under varying load and temperature conditions.

CONTACTS	RESISTANCE OHMS	NUMBER CELLS LEAD BATTERY	CATALOG NUMBER
1B	710	4 to 7	A62-475
"	1575	10 to 14	A62-476
"	14215	50 to 60	A62-477

VANE RELAY

Type B Size 2, Alternating-Current

Two-Position, Track Relay

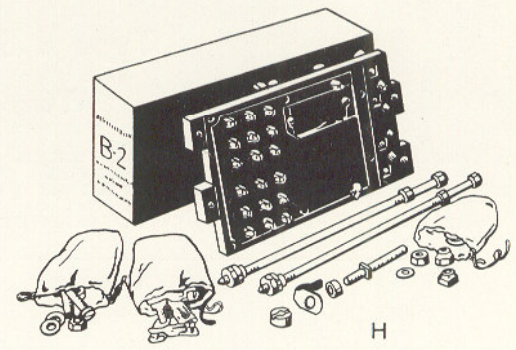
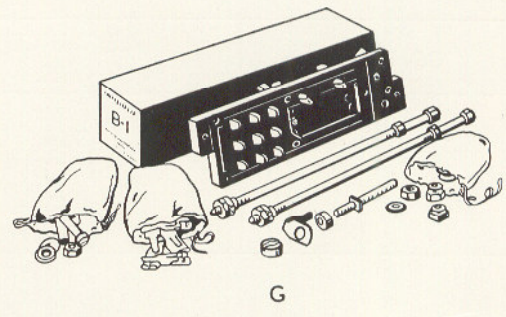
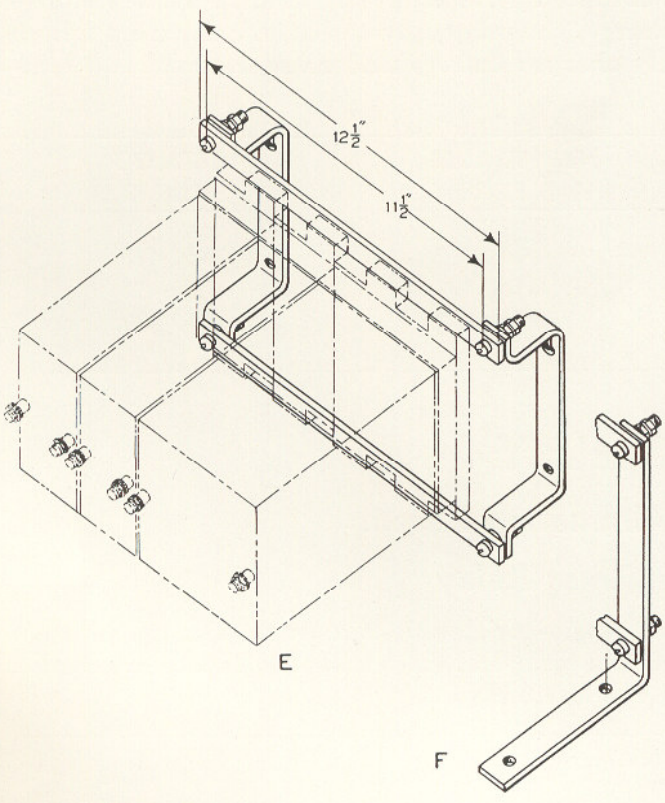
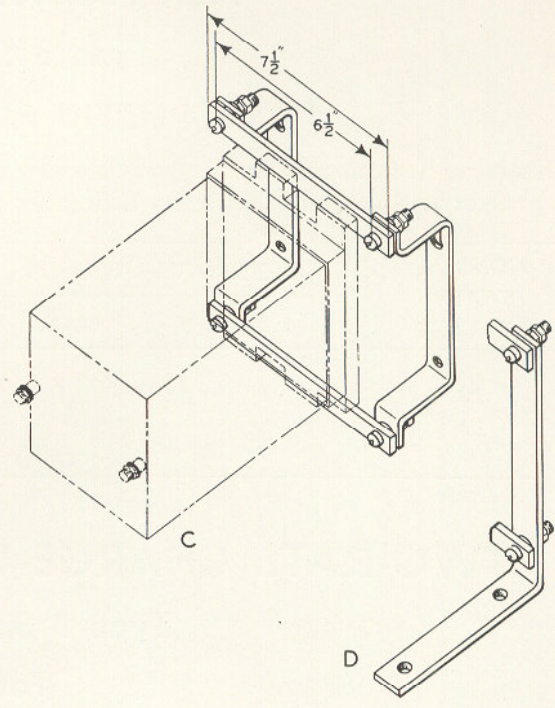
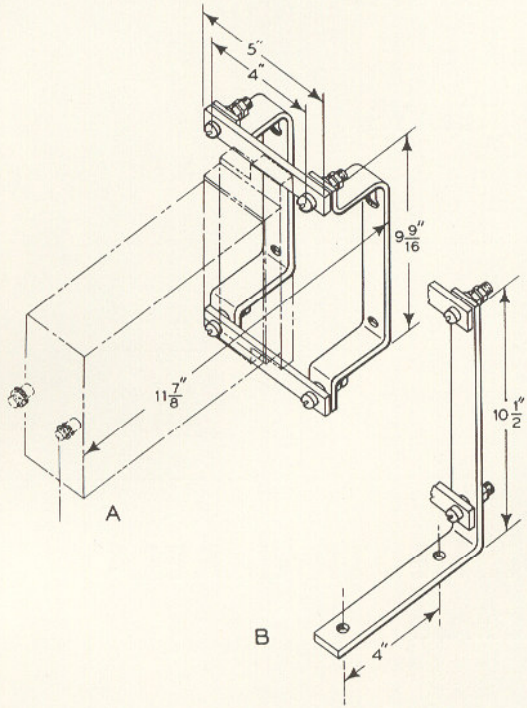
These two-position a-c track relays, for use on single- or double-rail track circuits, have an aluminum vane operating in an air gap between the local and track coils. Both coils are double wound to provide a choice of series or multiple connection.

CONTACTS	LOCAL WINDING VOLTS	TRACK WINDING VOLTS	CYCLES	CATALOG NUMBER
2F-2B	110/55	1.0/0.5	50	A62-485
"	"	"	60	A62-486

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ZCG UTILITY SCRAP
UNION, MO 63084



Individual relay mountings and plugboards.

Individual Relay Mountings and Plugboards For Type B Relays

To order rack mountings for installation in cases and housings, see catalog sections on cases and housings.

Order by catalog number and name shown in bold type

REF.	NAME	CATALOG NUMBER
A	Relay Mounting , for wall mounting one Size 1 relay. Does not include plug-board.....	A62-500
B	As above, except for shelf mounting.....	A62-501
C	Relay Mounting , for wall mounting two Size 1 relays or one Size 2 relay. Does not include plugboards.....	A62-502
D	As above, except for shelf mounting.....	A62-503
E	Relay Mounting , for wall mounting two Size 1 relays and one Size 2 relay; or two Size 2 relays; or four Size 1 relays. Does not include plugboards.....	A62-504
F	As above, except for shelf mounting.....	A62-505
G	Plugboard Kit , for all Size 1 relays, except approach relays, includes plugboard, two relay-mounting guide rods, terminals, clips, insulators, current test terminal, and mounting hardware.....	A62-506
G1	As above, except for approach relay.....	A62-507
H	Plugboard Kit , for all Size 2 relays except vane relays, includes plugboard, two relay-mounting guide rods, terminals, clips, insulators, current test terminal and mounting hardware.....	A62-508
H1	As above, except for vane relay.....	A62-509