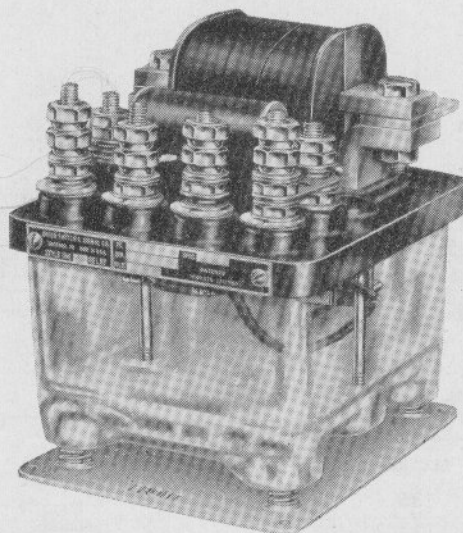


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Width $4\frac{1}{2}$ ", Depth 5", Height $5\frac{3}{8}$ "
(including shelf type shock absorber)

Style "DNL-46" Two-Rate Charge Relays

"DNL-46E" FOR EDISON ALKALINE CELLS

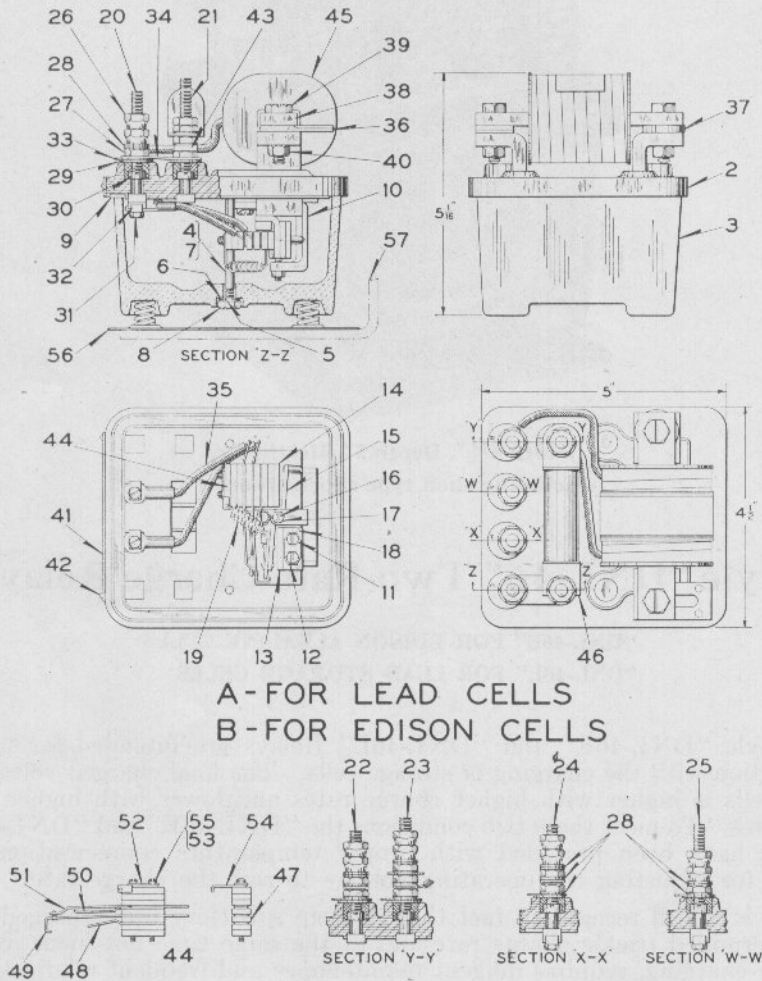
"DNL-46L" FOR LEAD STORAGE CELLS

Style "DNL-46E" and "DNL-46L" Relays are intended for use in connection with the charging of storage cells. The final charged voltage of such cells is higher with higher charge rates and lower with higher temperatures. To meet these two conditions the "DNL-46E" and "DNL-46L" Relays have been provided with proper temperature compensation and means for adjusting the operating voltage to suit the charge rate.

It is a well recognized fact that to keep a battery fully charged at a predetermined trickle charge rate and at the same time not incur danger of over-charging, requires diligent maintenance and frequent readjustment of the trickle charge rate. In the two-rate charge method, the battery is automatically trickle charged at a low rate sufficient to take care of the internal losses and the steady load on the battery, and each time the battery is called upon to deliver an additional load, the charge rate is increased to a higher value. This high rate is continued until the battery is substantially recharged, at which time the "DNL-46E" or "DNL-46L" Relay reduces the high rate to the low trickle charge rate.

For ordering references, see next page; for typical circuit, see last page of this plate.

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Style "DNL-46E" and "DNL-46L"
Two-Rate Charge Relays

Style "DNL-46E" and "DNL-46L" Two-Rate Charge Relays

Shelf Type Shock Absorber Base (Ref. 56) or Wall Type Shock Absorber Base (Ref. 57) are always furnished for use with each relay and are shipped separately. Shelf Type is furnished unless otherwise called for on order.

Relays for combinations of cells other than those listed below can be furnished upon request. In ordering state number of cells used and whether Lead Acid or Edison-Alkaline Type.

Order by Plate, Piece, Reference and Abbreviated
Description Given in Heavy Face Type Only

Style "DNL-46L" Two-Rate Charge Relay for Charging Lead Storage Batteries.						
Piece	Ref.	Number of Cells	Can also be adjusted for number of Cells	Coil Ref.	Resistor Ref.	Drawing Reference
208764	A	4	5	45b	46b	C-9393-7
211234	Aa	5	6	45c	46c	C-9393-7
192576	Ab	6	7	45d	46d	C-9393-7
215536	Ac	8	9	45e	46e	C-9393-7
199757	Ad	10	11 and 12	45f	46f	C-9393-7
216024	Ae	15	16 to 20 inclusive	45g	46g	C-9393-7
215563	Af	50	51 to 60 inclusive	45f	46h	C-9393-7
Style "DNL-46E" Two-Rate Charge Relay for Charging Edison Storage Batteries.						
Piece	Ref.	Number of Cells	Can also be adjusted for number of Cells	Coil Ref.	Resistor Ref.	Drawing Reference
213559	B	7	8	45	46	C-9393-7
214415	Ba	9	10	45a	46a	C-9393-7
Piece	Ref.	Description				Drawing Reference
192481	2	Top Plate				9968-1121
179436	3	Glass Case with Ventilator				8163-213
157612	3a	Ventilator for Ref. 3				7318-78
	4	Machine Screw, No. 10-30x2 $\frac{5}{8}$ " Fil. Hd. Br. (N.P.) with Nut and Washers (Inc. 1-5, 1-6, 1-7 and 1-8)				
83	5	Washer				7828-3

PLATE **E-5078**

UNION SWITCH & SIGNAL CO.

Style "DNL-46E" and "DNL-46L" Two-Rate Charge Relays

(Continued)

Order by Plate, Piece, Reference and Abbreviated
Description Given in Heavy Face Type Only

Piece	Ref.	Description	Drawing Reference
176217	6	Washer	8078-1407
15577	7	Washer	7828-67
26545	8	Nut	8109-181
179431	9	Gasket	8078-1545
194790	10	Armature Bracket Complete	8303-129
162010	11	Screw	8098-1300
179443	12	Bolt Lock	8486-399
194792	13	Pole Piece	8250-104
194793	14	Pole Piece	8250-104
192491	15	Armature Complete	8157-426
	16	Pivot Screw with Nut Ref. 17	12471-
194797	16a	Pivot Screw Only	8378-382
32498	17	Nut	8109-223
128260	18	Pin	8097-872
192526	19	Spring	8124-166
	20	Terminal Post with Nuts and Washers (Inc. 1-20a, 2-26, 1-27, 2-28, 1-29 and 1-30)	12451-
130200	20a	Terminal Post Only for Refs. 20, 21 and 22	8094-1192
	21	Terminal Post with Nuts and Washers (Inc. 1-20a, 4-27, 2-28, 1-29, 1-30 and 1-43)	12451-
	22	Terminal Post with Nuts and Washers (Inc. 1-20a, 2-26, 2-27, 4-28, 1-29 and 1-30)	12451-
	23	Terminal Post with Nuts and Washers (Inc. 1-23a, 2-26, 3-27, 5-28, 1-29 and 1-30)	12451-
112417	23a	Terminal Post Only, for Ref. 23	8094-1192

Style "DNL-46E" and "DNL-46L" Two-Rate Charge Relays

(Continued)

Order by Plate, Piece, Reference and Abbreviated
Description Given in Heavy Face Type Only

Piece	Ref.	Description	Drawing Reference
	24	Terminal Post with Nuts and Washers (Inc. 1-24a, 2-26, 2-27, 4-28, 1-29, 1-30, 1-31 and 1-32).....	12451-
194798	24a	Terminal Post Only, for Refs. 24 and 25.....	8094-2235
	25	Terminal Post with Nuts and Washers (Inc. 1-24a, 2-26, 1-27, 3-28, 1-29, 1-30, 1-31 and 1-32).....	12451-
29101	26	Nut.....	8109-193
29103	27	Nut.....	8109-194
29102	28	Washer.....	7828-139
69705	29	Washer.....	7828-287
72948	30	Nut.....	8109-383
131239	31	Screw.....	8098-845
164349	32	Bolt Lock.....	8486-368
142777	33	Tag (Orders should specify marking desired).....	8988-75
47290	34	Terminal Connector.....	8064-305
194799	35	Lead Complete.....	B-9991-13
192522	36	Magnetic Gap Slider Complete.....	9999-1121
192523	37	Spacer.....	8072-798
179432	38	Back Strap.....	8162-245
	39	Bolt with Nut Ref. 40.....	12471-
179825	39a	Bolt Only.....	8190-361
112139	40	Nut.....	8109-70
192563	41	Name Plate.....	8225-476
	42	Screw, No. 4-40x $\frac{1}{4}$ " Rd. Hd. (Tin Pl.)	
31068	43	Spacer.....	7828-144

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PLATE **E-5078**

UNION SWITCH & SIGNAL CO.

Style "DNL-46E" and "DNL-46L" Two-Rate Charge Relays

(Continued)

Order by Plate, Piece, Reference and Abbreviated
Description Given in Heavy Face Type Only

Piece	Ref.	Description	Drawing Reference
108220	44	Contact Assembly Complete	B-12660-32
213558	45	Coil Complete, 9-Ohms	8133-457
214416	45a	Coil Complete, 13.4-Ohms	8133-457
208765	45b	Coil Complete, 19-Ohms	8133-457
211233	45c	Coil Complete, 29-Ohms	8133-457
192558	45d	Coil Complete, 44-Ohms	8133-457
215535	45e	Coil Complete, 73-Ohms	8133-457
199759	45f	Coil Complete, 120-Ohms	8133-457
216023	45g	Coil Complete, 260-Ohms	8133-457
213703	46	Resistor, 40-Ohms	9065-152
214418	46a	Resistor, 60-Ohms	9065-152
208767	46b	Resistor, 65-Ohms	9065-152
211232	46c	Resistor, 100-Ohms	9065-152
150987	46d	Resistor, 150-Ohms	9065-152
186165	46e	Resistor, 250-Ohms	9065-152
199760	46f	Resistor, 400-Ohms	9065-152
216022	46g	Resistor, 900-Ohms	9065-152
215999	46h	Resistor, 2400-Ohms	9065-152
174235	47	Insulation	8750-2503
187904	48	Stop Spring	8385-2429
192538	49	Contact Spring Complete	8385-2429
152726	50	Stop Spring	8385-2166
152725	51	Contact Spring Complete	8385-2166
152720	52	Washer	7828-275

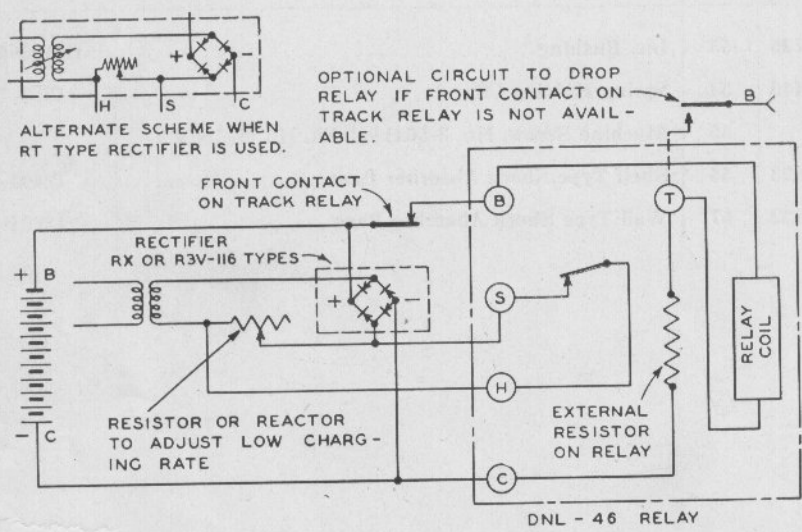
Style “DNL-46E” and “DNL-46L”
Two-Rate Charge Relays

(Continued)

Order by Plate, Piece, Reference and Abbreviated
Description Given in Heavy Face Type Only

Piece	Ref.	Description	Drawing Reference
152735	53	Ins. Bushing	B-10266-1
192445	54	Spring Holding Clip	11893-757
	55	Machine Screw, No. 3-56x1 1/8" Fil. Hd. S. (N.P.)	
182823	56	Shelf Type Shock Absorber Base	12404-27
182822	57	Wall Type Shock Absorber Base	12404-28

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Typical Circuit Application of
Style "DNL-46" Relay