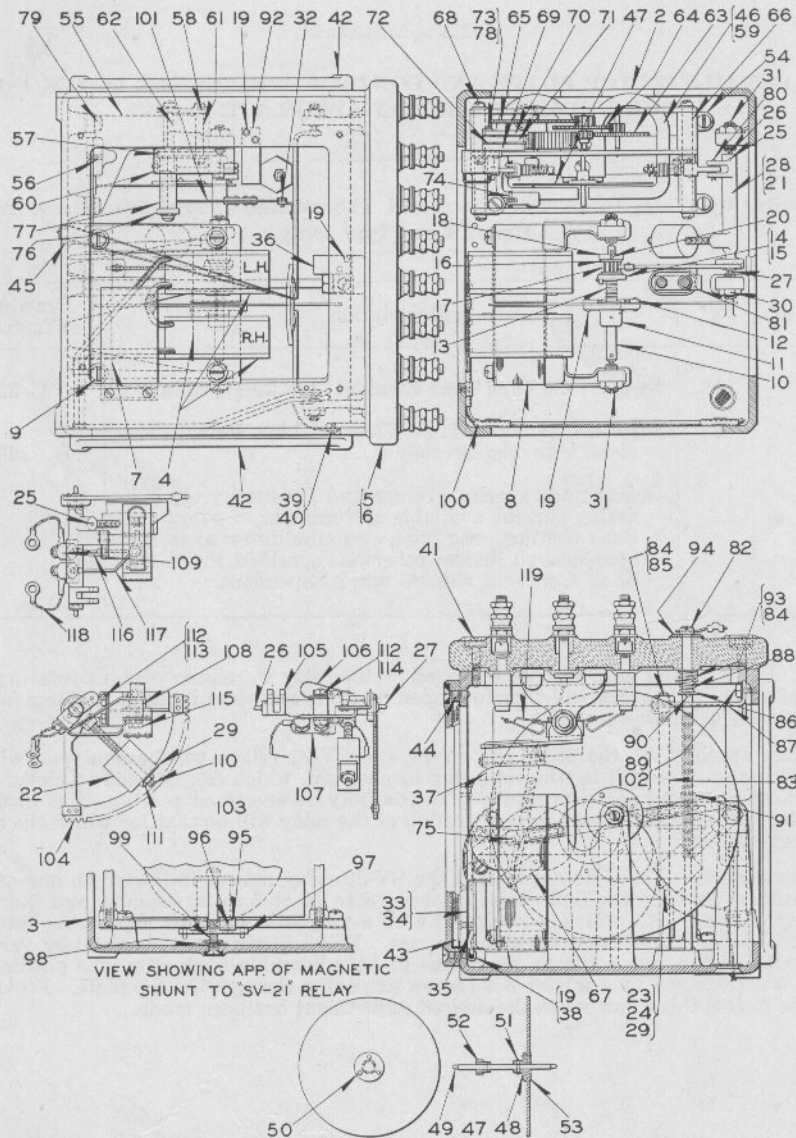


UNION SWITCH & SIGNAL CO.

Zachary C. Gillihan 2008



STYLE SV-20 AND SV-21 VANE TIME ELEMENT RELAYS (DETAIL PARTS)

UNION SWITCH & SIGNAL CO.
Zachary C. Gillihan 2008

VANE TIME ELEMENT RELAYS
SV-20 and SV-21

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Description	Drawing Reference
117962	2	Case complete, for SV-20 Time Element Relay.....	C-8299-1
121157	3	Case complete, for SV-21 Time Element Relay.....	C-8299-1
	4	Coils and Core complete (Orders should specify voltage and frequency).	

Top Plate, complete with Brackets, Terminal Posts and Contact Springs

Piece	Ref.	Contacts		Remarks	Drawing Reference
		Front	Back		
165616	5	2F. L.V. Ind.	2B. L.V. Ind.	Silver Springs—Graphite Posts	C-8300-2
166468	5a	4F. L.V. Non. Ind.	2B. L.V. Non. Ind.	Graphite Springs—Silver Posts, Arranged for one checking Contact	C-8300-2
126194	5b	4F. L.V. Non. Ind.	2B. L.V. Non. Ind.	Graphite Springs—Silver Posts	C-8300-2
121617	5c	4F. L.V. Non. Ind.	2B. L.V. Non. Ind.	Silver Springs—Graphite Posts	C-8300-2
140502	5d	4F. L.V. Ind.	2B. L.V. Ind.	Silver Springs—Graphite Posts	C-8300-2
142854	5e	4F. L.V. Non. Ind.	4B. L.V. Non. Ind.	Silver Springs—Graphite Posts	C-8300-2
157460	5f	4F. L.V. Non. Ind.	4B. L.V. Non. Ind.	Graphite Springs—Silver Posts	C-8300-2
125232	5g	4F. L.V. Ind.	4B. L.V. Ind.	Silver Springs—Graphite Posts	C-8300-2

UNION SWITCH & SIGNAL CO.
Zachary C. Gillihan 2008

VANE TIME ELEMENT RELAYS

SV-20 and SV-21

(Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
 FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Contacts		Remarks	Drawing Reference
		Front	Back		
134083	5h	5F. L.V. Non. Ind.	3B. L.V. Non. Ind.	Silver Springs—Graphite Posts	C-8300-2
171290	5j	5F. L.V. Non. Ind.	3B. L.V. Non. Ind.	Silver Springs—Graphite Posts Arranged for one checking Contact	C-8300-2
163485	5k	6F. L.V. Ind.	2B. L.V. Ind.	Silver Springs—Graphite Posts Arranged for one checking Contact	C-8300-2
173282	5m	6F. L.V. Non. Ind.	4B. L.V. Non. Ind.	Silver Springs—Graphite Posts Arranged for one checking Contact	C-8300-2
117961	5n	6F. L.V. Non. Ind.	4B. L.V. Non. Ind.	Silver Springs—Graphite Posts	C-8300-2
121094	5p	6F. L.V. Non. Ind.	4B. L.V. Non. Ind.	Graphite Springs—Silver Posts	C-8300-2
155282	5q	2F. L.V. Non. Ind. 4F. H.V. Non. Ind.	2B. L.V. Non. Ind. 4B. H.V. Non. Ind.	Silver Springs—Silver Posts Graphite Springs—Graphite Posts	C-8300-2
174054	5r	6F. L.V. Non. Ind.	6B. L.V. Non. Ind.	Silver Springs—Silver Posts	C-8300-2
Piece	Ref.	Description			Drawing Reference
76151	6	Top Plate complete with Brackets only, for Relays having a maximum of 6 Front and 6 Back non-independent contacts (For details see Plate E-1035)			C-8814-10

UNION SWITCH & SIGNAL CO.
Zachary C. Gillihan 2008

VANE TIME ELEMENT RELAYS
SV-20 and SV-21
(Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Description	Drawing Reference
76150	6a	Top Plate complete with Brackets only, for Relays having a maximum of 12 Front or Back independent contacts (For details see Plate E-1035).....	C-8814-10
116256	7	Lamination.....	8358-371
116286	8	Lamination.....	8358-372
116258	9	Screw with Washer Ref. 9a.....	8098-909
	9a	Washer $\frac{1}{4} \times \frac{9}{16}$ " S. (Cad. Pl.) for Ref. 9.	
117879	10	Vane complete (Inc. 1-10a, 1-11, 1-12, 1-13, 1-14, 2-15, 1-16, 9-17, 1-18, 3-19 and 1-20).....	10985-35
118774	10a	Vane only, for Ref. 10.....	10985-33
117872	11	Vane Hub.....	C-8299-3
116226	12	Washer.....	7828-342
130282	13	Spring.....	7770-355
116200	14	Collar.....	8350-576
35162	15	Washer, used on top of Refs. 14 and 18.....	8078-549
31607	16	Pinion.....	8424-111
116355	17	Pin.....	8097-264
35156	18	Washer.....	8112-59
54921	19	Rivet.....	10301-1
59429	20	Rivet.....	10301-21
117960	21	Segment complete (Inc. 1-21a, 1-22, 1-23, 1-24, 1-25, 1-26, 1-27, 1-28 and 1-29).....	C-8299-3

UNION SWITCH & SIGNAL CO.
Zachary C. Gillihan 2008

VANE TIME ELEMENT RELAYS

SV-20 and SV-21

(Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
 FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Description	Drawing Reference
120136	21a	Segment only, for Ref. 21.....	8425-192
117901	22	Counterweight for Refs. 21 and 103.....	9672-178
26942	23	Counterweight Nut.....	8109-184
116182	24	Counterweight Screw.....	8098-540
54928	25	Rivet.....	10301-21
116183	26	Pivot.....	8378-265
116184	27	Pivot.....	8378-265
117957	28	Segment Crank only.....	C-8299-1
50111	29	Nut Lock for Ref. 23.....	8486-197
124889	30	Trunnion with Nut Ref. 31a.....	12471-5
124890	31	Trunnion with Nut Ref. 31a.....	12471-5
29577	31a	Nut for Refs. 30 and 31.....	8109-205
62223	32	Pin.....	8097-837
123173	33	Name Plate.....	8225-241
	34	Machine Screw No. 6-40x $\frac{1}{2}$ " Flat Hd. S. For Refs. 33 and 35.	
112932	35	Block.....	11893-200
116304	36	Stop Plate.....	11893-141
69827	37	Counterweight for Contact Spring.....	9672-162
116272	38	Clip.....	8735-580
20686	39	Washer.....	7828-108

Zachary C. Gillihan 2008

PLATE E-1055

UNION SWITCH & SIGNAL CO.

VANE TIME ELEMENT RELAYS

SV-20 and SV-21
(Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Description					Drawing Reference	
38448 65954 94596	40	Machine Screw No. 6-40x1¼" Rd. Hd. Br. (N. P.).					7826-98 C-8814-6 8163-282	
	41	Machine Screw No. 14-24x1" Fil. Hd. S. (Cad. Pl.) with Washer Ref. 41a.						
	41a	Washer for Ref. 41.....						
	42	Door.....						
	43	Glass Shield (Side and End).....						
	44	Machine Screw No. 10-30x5⁄8" Flat Hd. S. (Cad. Pl.) for Ref. 42.						
	45	Machine Screw No. 4-48x¼" Rd. Hd. S. (To plug up holes after twine is removed).						
Retarding Mechanism Complete								
Piece	Ref.	Vane Ref.	Magnet Ref.	Dial Ref.	Time Interval		Remarks	Drawing Reference
117958	46	47a	59	60	15 Sec. Max.			C-8299-2
118493	46a	47a	59	60	25 Sec. Max.		With checking contacts	C-8299-2
121152	46b	47a	59a	60a	15 Sec. Max.		With Magnetic Shunt	C-8299-2
124490	46c	47	59	60	45 Sec. Max.			C-8299-2
150032	46d	47a	59a	60	7½ Sec. Max.		With Magnetic Shunt and checking contact	C-8299-2
160370	46e	47	59a	60	45 Sec. Max.		With Magnetic Shunt	C-8299-2
166455	46f	47a	59a	60	25 Sec. Max.		With checking contacts	C-8299-2

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UNION SWITCH & SIGNAL CO.

VANE TIME ELEMENT RELAYS

SV-20 and SV-21

(Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050

FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Description	Drawing Reference
138493	47	Vane complete (Inc. 1-47b, 1-48, 1-49, 4-50, 1-51, 1-52 and 1-53).....	10985-42
138494	47a	Vane complete (Inc. 1-47b, 1-48, 1-49, 4-50, 1-51, 1-52a and 1-53).....	10985-42
64229	47b	Vane only, for Refs. 47 and 47a.....	10985-21
64230	48	Collar.....	8350-580
64232	49	Shaft.....	8160-130
37527	50	Rivet.....	10301-41
46018	51	Rivet.....	10301-41
64231	52	Pinion for Ref. 47.....	8424-181
66653	52a	Pinion for Ref. 47a.....	8424-184
66616	53	Washer.....	7828-316
117902	54	Bracket.....	C-8299-1
123133	55	Bracket.....	C-8299-1
	56	Machine Screw No. 10-30x1/2" Flat Hd. Br.	
117866	57	R. H. Side Plate for Refs. 46 and 46b.....	C-8299-2
66631	57a	R. H. Side Plate for Refs. 46a and 46f.....	C-8168-10
64266	57b	R. H. Side Plate for Refs. 46c and 46e.....	C-8168-9
150031	57c	R. H. Side Plate for Ref. 46d.....	C-8299-3
117865	58	L. H. Side Plate for Refs. 46 and 46b.....	C-8299-2
79732	58a	L. H. Side Plate for Refs. 46a and 46f.....	C-8168-10

UNION SWITCH & SIGNAL CO.
Zachary C. Gillihan 2008

VANE TIME ELEMENT RELAYS
SV-20 and SV-21
(Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Description	Drawing Reference
79582	58b	L. H. Side Plate for Refs. 46c and 46e.....	C-8168-9
150030	58c	L. H. Side Plate for Ref. 46d.....	C-8299-3
83036	59	Magnet complete.....	C-8168-11
121153	59a	Magnet complete (arranged for Magnetic Shunt)....	C-8299-2
120127	60	Dial with 10 Equal Spaces (Setting in seconds).....	11893-164
121088	60a	Dial with 12 Equal Spaces (Setting in seconds).....	11893-164
64248	61	Bushing.....	8350-582
64249	62	Bushing.....	8350-582
138487	63	Gear for Refs. 46, 46a, 46b, 46c, 46e and 46f.....	8424-215
150028	63a	Gear for Ref. 46d.....	8424-215
138489	64	Gear for Refs. 46, 46b and 46d.....	8424-210
138510	64a	Gear for Refs. 46a, 46c, 46e and 46f.....	8424-176
138492	65	Gear.....	8424-214
64273	66	Bushing.....	8350-513
138499	67	Crank.....	8233-127
	68	Machine Screw No. 10-30x $\frac{3}{8}$ " Fil. Hd. Br. (N. P.) with Washer Ref. 68a.	
44618	68a	Washer for Ref. 68.....	7828-184
144752	69	Ratchet Pawl.....	9121-82
144750	70	Ratchet Pawl.....	9121-82

UNION SWITCH & SIGNAL CO.
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VANE TIME ELEMENT RELAYS
SV-20 and SV-21
(Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Description	Drawing Reference
144751	71	Ratchet Pawl.....	9121-82
92954	72	Washer.....	7828-287
85711	73	Pin.....	8097-872
61151	74	Pin.....	8097-837
64272	75	Pin.....	8097-958
79588	76	Plate.....	C-8168-9
120133	77	Bushing.....	8350-513
144749	78	Washer for Ref. 73.....	7828-346
	79	Machine Screw No. 14-24x5/8" Fil. Hd. S.	
60532	80	Pin.....	8097-837
117910	81	Stop with Stud.....	C-8299-3
117943	82	Adjusting Screw.....	8098-1284
117947	83	Supporting Screw.....	8098-639
29103	84	Nut.....	8109-194
52010	85	Nut Lock.....	8486-267
29102	86	Washer.....	7828-139
117939	87	Stop Plate.....	11893-163
118152	88	Spring.....	7770-319
19409	89	Nut Lock.....	8486-68
	90	Cotter, 1/16"x1 1/2" S.	
173158	91	Separator.....	8350-790

UNION SWITCH & SIGNAL CO.
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 VANE TIME ELEMENT RELAYS
 SV-20 and SV-21
 (Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
 FOR DETAILS OF TOP PLATE AND CONTACT SPRINGS SEE PLATE E-1035

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

Piece	Ref.	Description	Drawing Reference
118051	92	Stop Bracket.....	11893-167
118172	93	Screw.....	8098-631
36088	94	Washer.....	7826-136
121159	95	Block.....	8250-68
	96	Machine Screw No. 6-40x1/4" Flat Hd. Br. (N. P.).	
121160	97	Support.....	12538-1
121161	98	Washer.....	7828-344
121162	99	Adjusting Screw with 1/16" x 3/8" Br. Cotter.....	8098-1287
	100	Flexible Black Tubing, 1/2" x 1/16" x 1".	
118005	101	Link.....	8232-178
118356	102	Screw.....	8098-850
163200	103	Segment and Checking Contact Assembly complete (Used only on relay with Checking Contact).....	C-8299-4
120136	104	Segment.....	8425-192
163249	105	Segment Crank.....	C-8299-4
163008	106	Contact Spring.....	8385-2229
163083	107	Contact Spring.....	8385-2233
62135	108	Contact Spring Board.....	9968-397
22621	109	Insulating Bushing.....	8095-199
116182	110	Screw.....	8098-540

UNION SWITCH & SIGNAL CO.
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VANE TIME ELEMENT RELAYS
SV-20 and SV-21
(Continued)

DETAIL PARTS

FOR COMPLETE RELAYS SEE PLATE E-1050
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Order by Plate, Piece, Reference and Abbreviated Description Given in
Heavy Face Type Only

Piece	Ref.	Description	Drawing Reference
26942	111	Nut for Ref. 37.....	8109-184
1515	112	Nut.....	8109-23
74798	113	Lock Washer.....	8486-155
19409	114	Lock Washer.....	8486-68
157891	115	Lock Washer.....	8486-368
163260	116	Connector.....	8064-690
163261	117	Connector.....	8064-690
163549	118	Flexible Connector.....	10934-73
	119	Contact Spring (For details refer to Plate E-1035).....	8385-
		For other details of Top Plate and Contact Springs, see Plate E-1035.	