

INSPECTION REQUIREMENTS

SWITCHES

324, 325 AND 328 (CROSSBAR) TYPES

GENERAL EQUIPMENT REQUIREMENTS

COMMON SYSTEMS

TABLE A - SWITCHES EXCLUSIVE OF OFF-NORMAL CONTACT SPRINGS

Lot Range		A	B	C	D	E	F	G	H	I	J	K
Lot Size	(Total Number of Switches in Lot - See Note 1)	75	100	150	250	350	500	750	1000	2000	3000	5000
Sample Size	(Switches - See Notes 1 and 2)	All	75	85	100	110	120	140	160	200	240	300
Inspection Item (See Note 3) (For Requirements, refer to BSP Section A438.678 and Sections of Division 800.)	Basis For Counting Defects	Allowable Defect Numbers										
		AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
1. Functional, Numerical and Group Designations	Switch	Record All Defects Found - See Note 5										
2. Mounting of Switch	Switch	-	1	1	1	1	1	1	2	3	4	5
3. Mounting of Switch Parts	Switch	-	2	2	2	2	3	4	4	6	8	10
Selecting Unit (Exclusive of Selecting Off-normal Contact Springs - For SON Springs, See Table B)												
4. Freedom of Movement of Selecting Bar	SI Bar	-	4	5	6	7	7	9	11	14	17	23
5. Clearance Between Armature Extension and Side of Switch Frame	Bar	-	4	5	6	7	7	9	11	14	17	23
6. Tightness of Selecting Bar Pivot Screw Locknuts	Bar	-	4	5	6	7	7	9	11	14	17	23
7. Straightness of Centering Springs	Magnet	-	4	5	6	7	7	9	11	14	17	23
8. Centering Spring Tension	Magnet	-	4	5	6	7	7	9	11	14	17	23
9. Clearance Between Selecting Armature Stud and Centering Spring	Bar	-	4	5	6	7	7	9	11	14	17	23
10. Armature Travel	Magnet	-	4	5	6	7	7	9	11	14	17	23
11. Straightness of Selecting Finger	Finger	-	10	11	14	16	17	21	25	31	39	51
12. Position of Selecting Finger (a) Clearance With Holding Armature and Operating Face of Operating Card. (Holding Armature With and Without Cones).	SI Finger	-	10	11	14	16	17	21	25	31	39	51
13. (b) Closed Crosspoint Shall Open and Opposite Crosspoint Shall Close When Selecting Armature Is Changed From One Fully Operated Position to the Other and the Holding Armature Is Released and Is Reoperated (Holding Armature With Cones).	Finger	-	10	11	14	16	17	21	25	31	39	51
14. (c) Touch Stop; Electrically Operated (Holding Armature With and Without Cones).	Finger	-	10	11	14	16	17	21	25	31	39	51
15. (d) Engage Nonoperating Faces, Partially Operated. (Holding Armature With and Without Cones).	Finger	-	10	11	14	16	17	21	25	31	39	51
16. Electrical Requirements (See Note 4)	Magnet	-	9	10	11	12	13	16	18	23	28	36
Vertical Unit (Exclusive of Holding-off-normal Contact Springs - For HON Springs, See Table B)												
17. Contact Alignment	Crosspoint	-	10	11	14	16	17	21	25	31	39	51
18. Operating Spring Pressure	Crosspoint	-	10	11	14	16	17	21	25	31	39	51
19. Contact Separation	Crosspoint	-	10	11	14	16	17	21	25	31	39	51
20. Front Contact Make	Crosspoint	-	10	11	14	16	17	21	25	31	39	51
21. Clearance Between Operating Springs and Adjacent Multiple Strips	Crosspoint	-	10	11	14	16	17	21	25	31	39	51
22. Straightness of Balancing Springs	Vertical Unit	-	4	5	6	7	7	9	11	14	17	23
23. Balancing Spring Tension	Vertical Unit	-	4	5	6	7	7	9	11	14	17	23
24. Freedom of Movement of Holding Armature	Vertical Unit	-	4	5	6	7	7	9	11	14	17	23
25. Armature Air Gap	Vertical Unit	-	4	5	6	7	7	9	11	14	17	23
26. Electrical Requirements (See Note 4)	Vertical Unit	-	9	10	11	12	13	16	18	23	28	36

AN = Allowable Number of Defects in Sample.

TABLE B — OFF-NORMAL CONTACT SPRING ASSEMBLIES OF CROSSBAR SWITCHES (See Note 9)

SELECTING OFF-NORMAL CONTACT SPRING ASSEMBLIES

Lot Range	A	B	C	D	E	F	G	H	I	J	K	L	
Lot Size (Number of Switches with Selecting) (Off-normal Units in Lot)	1	61	91	121	161	201	301	501	701	1001	1501	2001	
Sample Size (Switches, See Note 6)	All	60	68	74	80	88	100	110	120	140	160	180	
Inspection Item (See Note 3) (For requirements, refer to Section A438.678)	Basis For Counting Defects	Allowable Defect Numbers											
		AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
27. SON Cover Spring Tension	Cover	-	3	4	4	4	5	6	7	7	9	11	12
28. Contact Alignment	Bar	-	3	4	4	4	5	6	7	7	9	11	12
29. Stationary Stud Clearance	Bar	-	3	4	4	4	5	6	7	7	9	11	12
30. Straightness of Spring (See Note 8)	Bar	-	5	6	7	8	9	10	11	12	15	17	20
31. Contact Spring Clearance	Bar	-	3	4	4	4	5	6	7	7	9	11	12
32. Contact Spring Tension	Bar	-	3	4	4	4	5	6	7	7	9	11	12
33. Contact Separation	Bar	-	3	4	4	4	5	6	7	7	9	11	12
34. Operating Stud Gap	Bar	-	3	4	4	4	5	6	7	7	9	11	12
35. Front Contact Make	Bar	-	3	4	4	4	5	6	7	7	9	11	12

HOLDING OFF-NORMAL CONTACT SPRING ASSEMBLIES

Lot Range	A	B	C	D	E	F	G	H	I	J	K	L	
Lot Size (Number of Switches with Holding) (Off-normal Units in Lot)	1	61	91	121	161	201	301	501	701	1001	1501	2001	
Sample Size (Switches, See Note 7)	All	60	68	74	80	88	100	110	120	140	160	180	
Inspection Item (See Note 3) (For requirements refer to Section A438.678)	Basis For Counting Defects	Allowable Defect Numbers											
		AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN	AN
36. Contact Alignment	Vertical Unit	-	3	4	4	4	5	6	7	7	9	11	12
37. Operating Stud Clearance	Vertical Unit	-	3	4	4	4	5	6	7	7	9	11	12
38. Straightness of Spring (See Note 8)	Vertical Unit	-	5	6	7	8	9	10	11	12	15	17	20
39. Spring Clearance	Vertical Unit	-	3	4	4	4	5	6	7	7	9	11	12
40. Spring Tension	Vertical Unit	-	3	4	4	4	5	6	7	7	9	11	12
41. Contact Separation	Vertical Unit	-	3	4	4	4	5	6	7	7	9	11	12
42. Operating Stud Gap	Vertical Unit	-	5	6	7	8	9	10	11	12	15	17	20
43. Front Contact Make	Vertical Unit	-	3	4	4	4	5	6	7	7	9	11	12

AN = Allowable Number of Defects in Sample.

SPOTTINESS TABLE

Size of Subsample	3	26	71	126	176	201	251	301	351	401	451	501	551	601	651	701	751	801	851	901	951
SN	2	3	4	6	7	8	10	11	12	13	14	16	17	19	20	22	23	24	25	26	28

SN = Spottiness Number (Applying to Subsample).

**Note 1:** The lot and sample sizes for the inspection of the crossbar switch, exclusive of the off-normal contact springs, are stated in terms of the switch as indicated. The sample, however, will include from each switch, only five vertical units, five selecting magnets and associated centering springs, and the five selecting bars, exclusive of selecting fingers. For the sample of selecting magnets and centering springs, select either the upper or lower centering springs and selecting magnet associated with the individual selecting bar including an approximately equal number of "upper" and "lower" selections in the sample. For requirements applying to crosspoints, a total of ten crosspoints in the vertical units selected on each switch will be

included in the sample, a maximum of three crosspoints being taken from a single vertical unit. Ten selecting fingers associated with vertical units of the sample will also be included from each switch, a maximum of four being selected from a single selecting bar. The sample of switches selected from the lot should be distributed in such a manner as to be fully representative of the lot. A minimum equipment group subsample of three switches shall be included from each equipment group subplot of six or more switches. Where the number of switches in any equipment group included in the lot is less than three, include all switches of such equipment groups in the sample.

*Note 2:* For Lot Range A include all switches of the lot in the sample, selecting the same number of parts per switch as indicated in Note 1. In addition to spottiness tests for the sample quantities inspected, the following tests shall also be applied in determining whether additional inspection shall be required for a lot in Lot Range A. Where the lot comprises more than five switches, if the total number of defects found for any inspection item is in excess of  $1/2$  the spottiness number corresponding to the sample quantity inspected (in terms of the "Basis for Counting Defects"), the uninspected portion of the lot shall be inspected completely for that inspection item. For lots of five switches or less, the individual switch shall be considered "spotty" for any inspection item if more than two defects are found on it for that item and the balance of the switch shall be inspected for that item.

*Note 3:* Except for switches mounted and wired during installation, inspection for the crossbar switch may be limited to the items designated "SI" (Selected Item). Extension of inspection to the remaining items for lots in Lot Range A including those applying to the off-normal features shall be made only where more than  $1/2$  the SN (dropping fractional parts and in no case in excess of the AN in Lot Range B) corresponding to the number of parts inspected is exceeded for each of the respective selected items. For lots in Lot Ranges B to K, inclusive, the extension shall be made only where the AN is exceeded for both of the selected items.

*Note 4:* No inspection need be made for items 16 and 26 unless the testing results indicate that the switches do not satisfactorily meet the electrical requirements. Allowable defect numbers are provided for items 16 and 26 for use in case such inspection is required.

*Note 5:* For each type of defect recorded, sufficient additional inspection shall be made to insure the elimination of the irregularity in the equipment involved.

*Note 6:* From each switch of the sample the selecting off-normal contact springs associated with either the upper or lower selecting magnet of each selecting bar will be included in the sample, an approximately equal distribution being maintained between "upper" and "lower" contact springs.

*Note 7:* From each switch of the sample only five holding off-normal units exclusive of balancing springs will be included in the sample.

*Note 8:* Where the allowable defect number for inspection items 30 and 38, "Straightness of Spring," is not exceeded, correction of defects for these items may be omitted. Where the allowable defect number is exceeded, the case shall be reviewed with the operating company to determine the corrective measure to be taken.

*Note 9:* The holding and selecting off-normal units of the crossbar switches, exclusive of centering and balancing springs, will be treated separately from the other switch features and from each other for inspection purposes. For the determination of sample sizes, the lot sizes will be considered as the total number of switches in the office equipped with holding off-normal units and the total number equipped with selecting off-normal units, respectively. The samples shall be selected from the lots so that each equipment group subsample is proportional to the size of the corresponding subplot, except that a minimum of five switches (or all switches where the equipment group subplot contains less than five) from each equipment group subplot will be included in the sample.

For detailed explanation and use of tables, refer to Section 800-668-180.

#### REASONS FOR REISSUE

1. To add inspection item 13(b) and to change the lot tolerance per cent defective for electrical requirement from 2 to 3 per cent to agree with other apparatus tolerances.