

DETAILED INSPECTION PROCEDURE
CENTRAL OFFICE EQUIPMENT
GENERAL EQUIPMENT REQUIREMENTS
TOLL AND TELEGRAPH SYSTEMS

1. GENERAL

1.01 This section supplements the General Procedure Section 800-668-180 covering the inspection of central office equipment and specifies the detailed procedure applying to toll and telegraph systems.

1.02 This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows have been omitted.

1.03 The provisions of Section 800-668-180 and of this section shall be applied:

(a) To all new installations or additions of No. 6 Toll Switchboard, of New No. 1 and No. 3 toll and toll tandem equipment, including No. 3CL in any usage, of No. 4 toll switching equipment, of telegraph systems equipment including 81 type teletypewriter equipment, of carrier and repeater telephone equipment, and of radio telephone equipment.

(b) To toll positions and their associated intertoll trunk equipment when Nos. 1, 3, or 11 toll positions are included with local manual switchboard positions in local central office installations.

2. EQUIPMENT GROUPS AND DETERMINATION OF LOTS

2.01 *Equipment Groups:* The equipment groups into which the equipment of an installation shall be divided for use in determining lots for inspection purposes are indicated in Table I for Toll Switchboard and Toll Transmission equipment, Table III for Teletypewriter equipment, and Table V for No. A4A, 4A and 4M Crossbar Toll equipment.

2.02 *Inspection Lot-Apparatus*

Requirements: The following paragraphs indicate the method of determining lots for each general type of apparatus in the respective types of equipment. Each general type of apparatus for which sampling is not provided may be considered as a single lot for report purposes. Except in the case of 263 and 264 type relays, job wired apparatus shall not be combined with shop wired in the formation of lots.

(a) *Toll Switchboards and Toll Transmission Equipment, and Teletypewriter*

Equipment: The equipment of the office will be considered as comprised of the following general groups for determination of lots in the inspection of apparatus adjustments:

Switchboards	(S)
Frame Equipment	(F)
Relay Rack and Similarly Mounted Equipment	(R)
Equipment Requiring Complete Inspection for Apparatus Adjustments	(C)

The letters in the column on the right of Table I and Table III indicate the respective classifications of the equipment groups listed therein. Apparatus of a single general type in each of the groups designated by the same letter may be combined to form a single lot.

(b) *A4A, 4A, and Crossbar Toll*

Equipment: The apparatus of a single general type in each numbered equipment group will constitute a separate lot except for those cases where merging of such lots is permitted. This merging is determined from the vertical columns of the right side of Table V. The apparatus of a designated general type in those equipment groups having the same letter may be combined to form a single inspection lot.

(c) *On Relay Racks and Switchboards:* Where less than 10 circuits of a given kind occur all the relays of any general type occurring in such circuits in an inspection lot shall be included in the inspection sample. As an alternative to this distribution, circuits of a given kind having a frequency of occurrence of less than 10 in the above specified groups may be treated as a separate group in the formation of lots for the inspection of apparatus adjustments.

2.03 Inspection Lots—General Equipment Requirements—Connecting and Soldering: The minimum number of inspection lots into which the equipment of the respective types of installation may be divided is indicated in Tables as follows:

For Toll Switchboard and Toll Transmission Equipment	Table II
For Teletypewriter Equipment	Table IV
For No. A4A, No. 4A and No. 4M Crossbar Toll Equipment	Table VI

2.04 Inspection Lots—General Equipment Requirements—Other Than Connecting and Soldering: Except for those equipment groups for which complete inspection is required, the entire equipment of the installation may be considered as a single lot.

2.05 Subdivision of Lots: Where advantageous any individual lot selected in accordance with the specified procedure may be subdivided prior to the start of the inspection and the resulting subdivisions treated as independent lots.

3. DISTRIBUTION OF THE SAMPLE SELECTED FROM LOTS

3.01 In addition to the general distribution requirements covered in Section 800-668-180 General Procedure—Local and Toll Systems, the following specific requirements shall apply in the selection of the sample.

A. Apparatus Adjustments

3.02 Switchboard Positions and Relay Racks (Exclusive of Relays on 197 Type Switch Mountings): For any general type of apparatus the

sample shall be distributed so as to include relays from at least 1/3 of the positions or bays. In addition to the provisions of paragraph 2.05, the proportion of the respective codes for any general type of relay should be approximately the same in both the sample and the lot.

3.03 In a similar manner the sample for keys in keyshelves will be distributed on a position basis. The position apparatus, other than relays and keys in keyshelves, will be considered in the inspection of wiring, framework construction and cabling. (See 3.10.)

3.04 Intertoll Selector Switch Equipment—Step-By-Step Type: For the intertoll selector switch equipment, the shelf will serve as the unit in the distribution of the sample. In the inspection of the switch motor mechanism, five switches shall when available, be inspected on each shelf and a sufficient number of shelves shall be selected (sample size divided by 5) to provide the number of switches for the required sample size. For those cases where the number of shelves is not sufficient to permit the selection of the required number of switches by the foregoing method, a sufficient number of additional switches per shelf shall be selected for inspection to satisfy the sample size requirement. In the inspection of the switch relay equipment a similar scheme of distribution shall be used but the number of switches to be selected per shelf is specified in the Detailed Information section.

3.05 The shelves selected shall be distributed in a manner to insure that the sample is representative of the lot. Where the equipment group is composed of more than one coded switch, the sample shall be selected so that the proportion for the various codes of switches will be approximately the same in both the lot and the sample.

3.06 Other Equipment Groups: For other equipment groups permitting samples, distribution of the type indicated above may be used or any other arrangement which will reasonably insure a representative sample. The facts to be considered are those which insure a representation of apparatus codes, types of circuits, and adequate distribution among equipment mounting units.

B. General Equipment Requirements—Connecting and Soldering

3.07 Soldered connections on the switchboard multiple are relatively inaccessible when the multiple is completely installed. The inspection of multiple soldering either shop or job wired will consequently be made as the layers are being installed. Individual multiple layers, when selected, shall be inspected completely and a sufficient number of layers shall be selected to satisfy the sample size requirements. The distribution of the layers shall be such as to insure that the sample is representative of the lot.

3.08 For soldered connections on other equipment the sample shall be distributed uniformly through the lot and shall include connections from each type of apparatus (including connecting blocks) and equipment included in the lot.

C. General Equipment Requirements—Wiring, Framework Construction, Cabling, and Numbering and Lettering

3.09 A general inspection only is specified for those requirements applying to Wiring, Framework Construction, Cabling, and Numbering and Lettering except for those equipment groups where complete inspection is specified in the General Procedure section. This inspection will not involve a determination of lots based on equipment groups. Where informal sampling is used in this type of inspection the portion of the equipment treated as the sample should be so selected as to be representative of the lot both with respect to the type of features and to the extent of the equipment involved.

3.10 Switchboard position apparatus such as keys, plugs, jacks, etc., not included in the inspection of apparatus shall be included in the inspection of Wiring, Framework Construction and Cabling, and Numbering and Lettering for the respective equipment groups. The inspection of this apparatus shall consist of a general examination for conditions that will adversely affect operation, appearance or maintenance.

4. TYPES OF APPARATUS REQUIRING COMPLETE INSPECTION

4.01 *Apparatus Adjustments*: In addition to apparatus appearing in equipment groups

for the respective types of equipment for which complete inspection is indicated in Tables I, III, and V, the following apparatus shall be inspected completely for the requirements indicated:

- (a) Toll Line Busy Signals (42A): Visibility and Electrical Requirements only.
- (b) 275 and 276 Type Relays: Relays shipped loose—Electrical Requirements provided a J94725A Test Set is furnished by the Telephone Company. Relays mounted in equipment when received by the installer will not be verified.

4.02 *General Equipment Requirements*: Section 800-668-180 together with Tables II, IV, and VI of this section specify those cases where complete inspection is required for General Equipment Requirements.

5. SUBLOTS FOR APPLICATION OF SPOTTINESS PROCEDURE

5.01 *General*: In addition to the requirements of Section 800-668-180, General Procedure, the following paragraphs indicate the basis for determining the subplot for the particular types of apparatus to which tests for spottiness are applicable.

5.02 *Intertoll Selectors—Motor Mechanisms*: The subdivision of the lot will be on the basis indicated below and where indications of spottiness are observed, tests for spottiness may be applied to the respective subsamples.

- (a) Shelf
- (b) Code of Switch

5.03 *Crossbar Switch and Multi Contact Relay Equipment in Table V*: For crossbar switch and 263 and 264 type relay equipment the subdivision of the lot will be on any of the bases indicated below and the spottiness criteria may be applied to the respective subsample.

- (a) Individual Switch or Relay (Multiple Parts)
- (b) Code of relay or switch
- (c) Bay-frame

SECTION 800-668-181

(d) Equipment Group

5.04 Relay Equipment—Exclusive of the Multi Contact Types—Table I, III and V: Where indications of spottiness are observed for any general type of relay such as the U and UA types, B and G types, etc, tests for spottiness may be applied to subsamples obtained on the following bases.

- (a) *Functional Designation*
- (b) *Relay Code Basis*
- (c) *Type of Circuit Basis*

(d) *Equipment Assembly Basis* (eg, Frame, Bay, Cabinet, etc)

(e) *Equipment Unit Basis*

Switchboard (position basis)
Relay Rack—Shop Wired Units

6. INSPECTION REPORTS

6.01 Unless otherwise specified (Section 800-668-180), reports covering complete or sampling inspection for apparatus adjustments and for connecting and soldering made under the provisions of this section are required in the case of new installations or additions as follows:

INSPECTION REPORTS

TYPE OF INSTALLATION	REPORT REQUIREMENTS
(a) No. 1 and No. 3 Toll and Toll Tandem Equipment— Exclusive of Call Distributing Equipment, Crossbar Type.	All installations of ten or more positions.
(b) No. 6 Toll and No. 11 Toll Positions and Associated Intertoll Trunk Equipment.	All installations of ten or more positions.
(c) No. A4A, 4A and 4M Toll Switching Equipment	101 or more frames.
(d) Call Distributing Equipment, Crossbar Type	} As requested by Director of Quality Assurance of the Bell Telephone Laboratories, Inc.
(e) Telephone Repeater Equipment	
(f) Carrier Telephone Systems Equipment	
(g) Telegraph and Teletypewriter Equipment	
(h) Program Transmission and Radio Telephone Equipment.	

TABLE I

TOLL SWITCHBOARD AND TOLL TRANSMISSION EQUIPMENT

	APPARATUS INSPECTION LOTS
SWITCHBOARDS—GROUPS 1 & 2	
1. Toll and toll tandem switchboard positions No. 1, No. 3 (including 3CL in any usage), No. 6, and No. 11	S
2. Service observing and operators training equipment—switchboard position	S
TOLL SWITCHING AND DIRECTLY ASSOCIATED EQUIPMENT—GROUPS 3-19 INC.	
3. Service observing and operators training equipment: rack or frame mounted	R
4. Intertoll (other than intertoll selectors)	R
5. Trunks (toll switching, coin control, recording completing, etc), other than intertoll	R
6. Relay rack other than trunks and relay rack mounted testing equipment	R
7. Intertoll selector equipment	F
8. Toll subscribers line equipment	R
9. Call distributing equipment—Crossbar type	F
10. Intertoll trunk concentrating units—Crossbar type	R
11. Key pulsing, link, sender and sender test equipment	F
12. Traffic registers (including register rack and cabinet)	F
13. Desks sectional—each type separately	C
14. Desks non-sectional—each type separately	C
15. Signaling equipment including line, composite, simplex, single frequency (1600 and 2000 cycle, etc)	R
16. Fuse boards or bays	R
17. Emergency alarm and maintenance alarm equipment	C
18. Ticket distributing systems	C
19. Distributing frames associated with equipment groups 1-18 inc.	R
TELEPHONE REPEATER (V TYPE) AND TELEGRAPH EQUIPMENT GROUPS 20-25 INC.	
20. Line balancing and terminating equipment including coil groups and composite sets	R
21. Telephone repeater bays	R
22. Telephotograph repeater and line equipment	R
23. Echo suppression equipment	R
24. Telegraph equipment—carrier and DC	R
25. Distributing frames associated with equipment groups 20-24 inc.	R
RADIO TELEPHONE AND PROGRAM TRANSMISSION EQUIPMENT GROUPS 26-30 INC.	
26. Radio telephone equipment TD 2 type (radio relay)	C
27. Radio telephone equipment other than TD 2 type	C
28. Program transmission equipment	C
29. Television equipment	C
30. Distributing frames associated with groups 26-29 inc.	C

TABLE I (Cont)

CARRIER TELEPHONE EQUIPMENT—GROUPS 31-36 INC.	
31. C type carrier equipment	R
32. G and H type carrier equipment	R
33. Distributing frames associated with equipment groups 31 and 32	R
34. Broad band J, K, and L type equipment	C
35. N and O type equipment	C
36. Distributing frames associated with equipment groups 34 and 35	C
TESTING EQUIPMENT—GROUPS 37-40 INC.	
37. Toll test board equipment; including circuit and trunk patching bays	C
38. Telegraph test board and associated patching and testing jack bays	C
39. Test frames (exclusive of group 11)	C
40. Portable testing and transmission measuring equipment (Telephone Company sets) and relay rack mounted testing and transmission measuring equipment	C
COMMON EQUIPMENT—GROUPS 41-46 INC.	
41. Control, alarm, and auxiliary circuits associated with equipment groups 1-40 inc. and 46, but not covered by them	C
42. Protector frames	-
43. Cable racks (including cable)	-
44. Rolling ladders and ladder tracks	-
45. Superstructure ironwork	-
46. Power plant	C

*See paragraph 2.02(a)

TABLE II

CONNECTING AND SOLDERING

TOLL SWITCHBOARD AND TOLL TRANSMISSION EQUIPMENT

TYPE OF SOLDERED CONNECTION	INSPECTION LOT	OUTLINE OF PROCEDURE
<p>1. Inaccessible</p> <p>Multiple bank wiring on 200 and similar type selectors, wiring on keys in keyshelves, on jacks and keys in desks, on N and O type carrier channel units and other wiring which is not directly visible without dismounting or removing apparatus parts</p>	<p>Each numbered equipment group of Table I having such wiring</p>	<p>Sampling inspection but only of those groups in which testing results or other evidence indicate an unsatisfactory condition</p>
<p>2. On Switchboard Multiple (including multiple tap)</p>	<p>Equipment groups 1 and 2 of Table I (Multiple and multiple tap each a separate lot)</p>	<p>Sampling inspection—since these connections are relatively inaccessible after the multiple has been completely installed, inspection shall be made as layers are placed.</p>
<p>3. Horizontal strapping on Crossbar switches (Banjo Wiring)</p>	<p>Switches in equipment groups 9, 10, and 11 of Table I (one lot)</p>	<p>Complete inspection of lot but only if testing results or other evidence indicate an unsatisfactory condition.</p>
<p>4. Multiple strapping on 263 and 264 type relays and associated terminal strips (Shop and Job Wiring)</p>	<p>Multiple Strapping—All 263 and 264 type relays and associated terminal strips (Job soldering, one lot—Shop soldering, each equipment group a separate lot)</p>	<p>For shop soldering, complete inspection of lot affected but only if testing results or other evidence indicate an unsatisfactory condition. For job soldering, complete inspection.</p>
<p>5. Accessible—other than types 2, 3, and 4 above completed prior to installation (Shop Wiring)</p>	<p>Equipment groups 1-13 inc., 15, 16, 18-42 of Table I (Shop soldering each equipment group a separate lot)</p>	<p>Sampling inspection of groups affected but only if testing results or other evidence indicate an unsatisfactory condition.</p>
	<p>Equipment groups 14, 17, and 46 of Table I (Shop soldering one lot.)</p>	<p>Complete Inspection</p>

TABLE II (Cont)

TYPE OF SOLDERED CONNECTION	INSPECTION LOT	OUTLINE OF PROCEDURE
6. Accessible—other than types 2, 3, and 4 above completed during installation (Job Wiring)	Equipment groups 1-13 inc., 15, 16, 20-24 inc., 31, 32, 37, 38 and 39 of Table I (one lot) Equipment groups 19, 25, 33 and 42 (one lot)	Sampling inspection
	Equipment groups 14, 17, 26, 27, 28, 29, 30, 34, 35, 36, 40, and 46 of Table I (one lot)	Complete inspection

TABLE III

**NOS. 1, 3 AND 5 TYPE TELETYPEWRITER SWITCHBOARDS AND ASSOCIATED
EQUIPMENT AND 81 TYPE TELETYPEWRITER SWITCHING SYSTEMS**

EQUIPMENT GROUPS	APPARATUS INSPECTION LOTS *
1. Teletypewriter switchboards Nos. 1, 3, and 5	S
2. Switching equipment including line concentrating control equipment associated with switchboards Nos. 1, 3, and 5	R
3. 81 type system switching center	R
4. Control alarm and auxiliary circuits associated with equipment groups 2 and 3 but not covered by them	R
5. Emergency alarm and maintenance alarm equipment	C
6. Testing equipment including service boards (permanently mounted)	C
7. Portable testing equipment	C
8. Desks and tables	C
9. Distributing frames	C
10. Cable rack and cabling	-
11. Auxiliary framework and cabinets	-
12. Power plant	C

*See paragraph 2.02(a)

TABLE IV
CONNECTING AND SOLDERING
NOS. 1, 3 AND 5 TYPE SWITCHBOARD AND ASSOCIATED EQUIPMENT
AND 81 TYPE TWX

TYPE OF SOLDERED CONNECTION	INSPECTION LOT	OUTLINE OF PROCEDURE
<p>1. Inaccessible</p> <p>Multiple bank wiring on 200 and similar type selectors, wiring on keys in keyshelves and on jacks and keys in desks and other wiring which is not directly visible without dismounting or removing apparatus parts</p>	<p>Each numbered equipment group of Table III having such wiring</p>	<p>Sampling inspection but only of those groups in which testing results or other evidence indicate an unsatisfactory condition</p>
<p>2. On Switchboard Multiple (Including Multiple Tap)</p>	<p>Equipment group 1 of Table III</p>	<p>Sampling inspection—since these connections are relatively inaccessible after the multiple has been completely installed, inspection shall be made as layers are placed</p>
<p>3. Horizontal strapping on Crossbar switches (Banjo Wiring) and on Multi-contact relays</p>	<p>All switches—One Lot; All Multi-contact Relays—One Lot.</p>	<p>Complete inspection if testing results or other evidence indicate an unsatisfactory condition.</p>
<p>4. Accessible—other than types 2 and 3 above—completed prior to installation (Shop Wiring)</p>	<p>Equipment groups 1-4, 6, 7 and 9 of Table III</p>	<p>Sampling inspection of group affected if testing results or other evidence indicate an unsatisfactory condition</p>
<p>5. Accessible—other than types 2 and 3 above completed during installation (Job Wiring)</p>	<p>Equipment groups 1-4, and 6 (one lot) and 9 (one lot) of Table III</p>	<p>Sampling inspection</p>
	<p>Equipment groups 5, 8 and 12 of Table III</p>	<p>Complete inspection</p>

TABLE V

A4A, 4A AND 4M CROSSBAR TOLL EQUIPMENT

EQUIPMENT GROUPS	INSPECTION LOTS*			
	GROUP 1 APP.	GROUP 2 APP.	GROUP 3 APP.	GROUP 4 APP.
1. No. 5 switchboard equipment				
2. Incoming and outgoing link equipment	B			L
3. Marker equipment	A	E	N	L
4. Decoder equipment	A	E	N	L
5. Alternate route traffic control equipment	A	E		L
6. Incoming and outgoing sender equipment				L
7. Incoming and outgoing sender link equipment	B			L
8. Incoming and outgoing sender link controller and controller connector equipment	M		G	L
9. Marker connector equipment	M	E		L
10. Decoder connector equipment	M			L
11. Translator connector equipment	M			L
12. Block relay equipment	D			L
13. Overflow trunk equipment	D			L
14. Frame identification frequency control equipment	D	E		L
15. Frame identification frequency supply equipment	D	E		
16. Multi-frequency pulse receiving equipment	D	E		
17. Multi-frequency pulse receiving supply equipment	D	E	G	
18. Translator equipment				L
19. Traffic register equipment				
20. Intertoll, toll switching and miscellaneous trunks	H	J	K	
21. Relay rack equipment other than trunks (Group 20) and relay rack mounted testing equipment	H	J	K	
22. Maintenance center testing and trouble recorder equipment (frame mounted)**				L
23. Office interrupter, trouble tracing selector equipment				
24. Emergency alarm, floor alarm equipment and fuse bays	†	†	†	
25. Portable testing equipment and relay rack mounted testing equipment	†	†	†	
26. Non-sectional desks	†	†	†	
27. Distributing frames, protector frames and junctor grouping frames				
28. Cable racks and cabling				
29. Rolling ladders and ladder tracks				
30. Superstructure ironwork				
31. Power plant equipment	†	†	†	

- * Group 1 apparatus = U and UA type relays
 Group 2 apparatus = L, N and S type, 280 type and Y type relays
 Group 3 apparatus = E, EA, F, H, R and T type and B and G type relays
 Group 4 apparatus = Crossbar switches and 263 and 264 type relays

**It is assumed that the 17C test board and associated equipment will come under toll terminal room equipment (see Table I)

† Requires complete inspection
 See paragraph 2.02(a)

TABLE VI

CONNECTING AND SOLDERING

A4A, 4A AND 4M CROSSBAR TOLL EQUIPMENT (Table V)

TYPE OF SOLDERED CONNECTION	INSPECTION LOT	OUTLINE OF PROCEDURE
1. Inaccessible: Multiple bank wiring on step by step switches and on 200 and similar type selectors, wiring on keys in keyshelves and on jacks and keys in desks and other wiring which is not directly visible without dismounting or removing apparatus parts	Each equipment group having such wiring	Sampling inspection but only of a lot in which testing results or other evidence indicate an unsatisfactory condition
2. On switchboard Multiple Shop or Job (including Multiple tap)	Equipment group 1	Sampling inspection—since these connections are relatively inaccessible after the multiple has been completely installed, inspection shall be made as layers are placed
3. Horizontal strapping on Crossbar Switches (Banjo Wiring)	All switches—each equipment group having such wiring	Complete inspection but only of a lot in which testing results or other evidence indicate an unsatisfactory condition
4. Multiple strapping on 263 and 264 type relays and associated terminal strips	All 263 and 264 type relays and associated terminal strips with multiple strapping (Shop soldering—each equipment group one lot. Job soldering all equipment groups one lot.)	For Shop Soldering, sampling inspection of equipment group affected but only if testing results or other evidence indicate an unsatisfactory condition. For Job Soldering—complete inspection
5. Accessible—other than types 2, 3, and 4 above—completed prior to installation (Shop Wiring)	Equipment groups 1-23 inc., 25, and 27 (Each equipment group one lot)	Sampling inspection of groups affected but only if testing results or other evidence indicate an unsatisfactory condition
	Equipment groups 24, 26, and 31 (Shop soldering, one Lot).	Complete inspection

TABLE VI (Cont)

TYPE OF SOLDERED CONNECTION	INSPECTION LOT	OUTLINE OF PROCEDURE
6. Accessible—other than types 2, 3, and 4 above completed during installation (Job Wiring)	Equipment groups 1-23 inc. (one lot); Equipment group 27 (one lot)	Sampling inspection
	Equipment groups 24, 25, 26, and 31 (Job soldering, one lot)	Complete inspection