

DETAILED INSPECTION PROCEDURES
CENTRAL OFFICE EQUIPMENT
GENERAL EQUIPMENT REQUIREMENTS
PANEL SYSTEMS

1. GENERAL

1.01 This section supplements the General Procedure Section AA668.002 covering the inspection of Central Office Equipment and specifies the detailed procedures applying to central office installations of panel type.

1.02 The provision of Section AA668.002 and of this section shall be applied:

(a) To all initial installations or additions of new central office and sender tandem office equipment comprising more than 1200 selectors (district, office, incoming, and final) or 50 subscribers senders.

(b) To the following apparatus appearing in any initial installation or addition regardless of size:

- (1) Dials - 2, 4, and 5 Types
- (2) Line Message Registers
- (3) Coin Control Circuits - Relay Equipment
- (4) District Timing Frame - Relay and Timer Equipment
- (5) All apparatus to the extent to which special provisions for complete inspection are specified in notes on the Detailed Information sections.

(c) To specific installations designated from time to time by the Bell Telephone Laboratories.

Note: For those installations of panel type equipment other than those defined in (a) and (c) above and for apparatus and equipment other than that defined in (b) above, a simplified inspection procedure suitable to the character and amount of equipment in each installation may be used unless otherwise agreed upon between the Operating Company and the supplier prior to the start of installation.

2. EQUIPMENT GROUPS AND DETERMINATION OF LOTS

2.01 Equipment Groups: The equipment groups into which the equipment of an installation will be divided for use in determining lots for inspection purposes are indicated in Table 1.

TABLE 1
EQUIPMENT GROUPS AND INSPECTION LOTS

INSPECTION LOTS (See Note)			
Elevator Apparatus, Commutators and Sequence Switches			
Relay Equipment - Other than 229, 230 and 232 Types			
Relay Equipment - 229, 230 and 232 Types			
Clutches			
EQUIPMENT GROUPS			
1	Line Finder Frames (Line Circuit Relays Only)		
2	Line Finder and Trunk Finder Frames (Exclusive of Groups 1, 20, and 27)	A	
3	District Frames (Coin Control Circuits Only)		
4	District Frames (Exclusive of Groups 3, 19, 20, and 27)	A	A A
5	Office Frames (Exclusive of Groups 19, 20, and 27)	A	A
6	Incoming Frames (Exclusive of Groups 19, 20, and 27)	A	A A
7	Final Frames (Exclusive of Groups 19, 20, and 27)		A
8	Subscribers Link Frames (Exclusive of Groups 19, 20, and 27)	A	
9	Subscribers Sender Frames (Including Key Pulsing Senders and Exclusive of Groups 18, 19, 20, and 27)		
10	Decoder Connector Frames (Exclusive of Group 27)		A
11	Decoder Frames and Supplementary Route Relay Bays		A
12	Call Distributing B Link Frames (Exclusive of Groups 20 and 27)	A	
13	Call Distributing B Sender and Terminating Sender Frames (Exclusive of Groups 19 and 27)		

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TABLE 1 (CONTINUED)
EQUIPMENT GROUPS AND INSPECTION LOTS

INSPECTION LOTS (See Note)	
Elevator Apparatus, Commutators and Sequence Switches	
Relay Equipment - Other than 229, 230 and 232 Types	
Relay Equipment - 229, 230 and 232 Types	
Clutches	
EQUIPMENT GROUPS	
14 District Timing Frames	
15 Message Register Connector Frames	A
16 Interrupter Frames	
17 Key Pulsing Sender Selector Equipment	
18 Trunk and Sender Make Busy Frames (Exclusive of Group 20)	B
19 Test Frames Including Out- going Trunk Test Board, Lo- cal Test Desk Selector Frame and Trouble Indicator Frames (Exclusive of Group 20)	A B
20 Drives and Associated Motors and Motor Brackets	
21 Message Register Racks	
22 Traffic Register Racks	
23 DSA Switchboard	
24 Call Distributing B Switchboard	
25 Desks (Sectional) - Separately	
26 Desks (Nonsectional) - Separately	
27 Floor Alarm Boards and Frame Alarm Relays	
28 Alarm Cabinets	
29 Emergency Alarm Equipment	
30 Fuse Boards (Excepting Fuse Panels on Selector Frames)	
31 Relay Racks - Shop Wired (Exclusive of Group 17)	
32 Relay Rack - Job Wired	
33 Distributing Frames (Separately)	
34 Rolling Ladders and Ladder Tracks	
35 Cabling Between Equipment Groups	
36 Cable Racks - Ironwork Only	
37 Superstructure Ironwork	
38 Power Plant Equipment	
Note: For each general type of apparatus the inspection lots will be determined as indicated in paragraphs 2.02, 2.03, and 2.06.	

2.02 Inspection Lots - Apparatus Adjustments - For each general type of apparatus the minimum number of inspection lots into which such apparatus in the installation may be divided is indicated in Table 1. The individual inspection lot shall comprise all apparatus of a particular general type occurring in a single equipment group except for those cases where inclusion of such apparatus from more than one equipment group is indicated in the table. Those cases where such combinations may be made are indicated in the vertical columns of the table and each respective type of apparatus in all equipment groups designated by the same letter may be combined to form a single inspection lot. For example, in the case of clutches all clutches in those equipment groups opposite which the letter A appears in the vertical column applying to clutches may be combined to form a single inspection lot.

2.03 For types of apparatus not covered by Table 1 each general type appearing in the individual equipment group shall be considered a lot for inspection purposes.

2.04 Inspection Lots - Connecting and Soldering: The inspection of connecting and soldering will, in general, be limited to accessible wiring except as noted below. The following will be considered as "inaccessible wiring"; 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 the dismantling or removal of apparatus parts. Except for those equipment groups for which complete inspection is indicated in all cases (paragraph 4.01) the soldered connections of an installation will be considered as comprising a minimum of four lots as follows:

Lot 1 - Inaccessible wiring.

Lot 2 - Connections completed prior to the installation period exclusive of inaccessible wiring.

Lot 3 - Connections completed during the installation period exclusive of inaccessible wiring and switchboard multiple.

Lot 4 - Switchboard multiple - connections completed during installation period.

Unless testing results or other evidence indicates an unsatisfactory condition, Lots 1 and 2 noted above will not be included with those to which the inspection procedure of this section applies.

2.05 Inspection Lots - General Equipment Requirements: Except for those equipment groups for which complete inspection is required (paragraph 4.01) the entire equipment of the installation may be considered as a single lot.

2.06 Subdivision of Lots: Where advantageous, any individual inspection 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 INSPECTION LOTS

(A) Apparatus Adjustments

3.01 In addition to the general distribution requirements covered in Section AA668.002, General Procedure - Local Systems, the following specific requirements shall apply to the respective types of equipment.

3.02 Selector Frame Equipment: For apparatus mounted on selector frames the "equipped circuit" shall be used as the fundamental unit in establishing the distribution of the sample. An equal number of equipped circuits shall in general be selected for inspection from each frame in a group and all the apparatus in those circuits will be inspected. If more advantageous, the sample for each of the different lots in the same group may be selected from different circuits. Thus for example, if there are 1500 clutches mounted in 1500 selector circuits on 27 frames, the required sample is 280 clutches (Detailed Information Section) which are associated in turn with 280 selector circuits. Distributing the selection of these 280 circuits uniformly over 27 frames, the clutches shall be inspected in ten circuits (nearest whole number) selected from each frame plus an additional ten circuits to be selected as indicated below (paragraph 3.04).

3.03 The portion of the sample selected from the particular frame shall be selected from the front and rear of the frames in as nearly equal proportions as possible. The circuits selected from each side of the frame may be a single group of adjacent circuits, several groups of adjacent circuits, or entirely non-adjacent circuits. If the portion of the sample selected from one side of a frame is a single group of adjacent circuits, the relative position of such groups of adjacent circuits shall be varied from frame to frame. Thus, if circuits 2, 4, 6, 8, and 10 were selected on the even side of frame No. 1 then on frame No. 2 the corresponding group may be 6, 8, 10, 12, and 14 frame No. 3 - 10, 12, 14, 16, 18, etc. A corresponding arrangement will apply to the odd sides of the frames.

3.04 The circuits selected from one side of a frame constitute a subsample. In case the sample size for certain types of apparatus or for certain inspection items is not filled when "equipped circuits" have been selected on the above basis, the additional quantity of apparatus required shall be obtained by increasing the subsample size by one on a sufficient number of frames. In

the case of the above example ten of the subsamples will consist of six instead of five circuits.

3.05 Sender Frame Equipment: In general the sample required by the lot size for each general type of apparatus in the group shall be so distributed that a certain number of sender circuits can be inspected completely. In the case of sender units of two circuits each only one circuit of any one unit shall be included in the sample insofar as possible. The number of sender circuits to be inspected shall be determined as the nearest whole number obtained by dividing the sample size for flat type relays in the sender group by the number of flat type relays per sender circuit. The sender circuits selected for inspection shall be distributed uniformly throughout the group of sender frames and all apparatus in each sender circuit so selected will ordinarily be inspected. In case the sender circuits selected for inspection by the above method do not contain enough apparatus of a particular general type to make up a specified sample, additional circuits shall be selected for inspection for that type of apparatus so that the sample will be of the required size. Where the subscribers sender group includes key pulsing senders a sufficient number of the key pulsing sender circuits shall be included in the sample to make the proportion in the sample and lot approximately the same.

3.06 Switchboard Positions: In general the samples for the relay equipment, required by the lot sizes for the different types, shall be distributed equally among the positions. All relays of a given type shall be included from a circuit when any of that type are selected from the circuit. The portion of the sample from each position shall be selected in such a manner as to include the relays of the particular type from at least one of each type of circuit in the position containing them. In addition all relays of a lot occurring in circuits appearing singly in a section shall be included in the sample. When the sample size requirement is not satisfied when relays from one of each type of circuit per position (or section) are selected, additional relays shall in general be obtained by selecting the relays from one or more of the remaining circuits from each position.

3.07 In a similar manner the sample for cord circuit keys will be distributed on a position basis. The position apparatus other than relays and cord circuit keys will be considered in the inspection of wiring, framework construction and cabling, (paragraph 3.13).

3.08 Relay Racks and Line Finder Relay Bays: In general a satisfactory distribution will result when the proportions for the different types of circuits are approximately the same in both the sample and the lot.

All relays of the given type in an individual circuit shall be included in the sample when any of that type are selected from that circuit.

3.09 For the portion of the relay rack equipment comprising unit type mountings the sample will be distributed on a basis of the "Wired Units". In such case the distribution shall include relays from a sufficient number of units to be representative of the lot and shall be uniformly distributed among the units. For the portion of the relay rack equipment comprising miscellaneous circuits, the sample will be distributed on a "bay" basis. A satisfactory distribution will result when the general distribution requirements of Paragraph 3.08 are applied and relays from each type of circuit present in the lot or portion of the lot are included so far as possible in this sample. In the case of line circuit relay equipment, the sample shall in general be distributed equally among the relay bays. The subsamples shall include relays from not more than ten line circuits from any line subgroup.

(B) Connecting and Soldering

3.10 Soldered connections on switchboard multiple are relatively inaccessible when the multiple is completely installed. The inspection of multiple soldering when completed during the installation period and of soldered connections on the multiple tap will consequently be made as the layers are being installed. Individual multiple layers and the associated multiple tap, 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 and taps shall be such as to insure that the sample is representative of the lot.

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

(C) General Equipment Requirements

3.12 A general inspection only is specified for those requirements applying to Wiring, Framework Construction, Cabling, and Numbering and Lettering. 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 a sample should be so selected as to be representative of the lot both with respect to type of features and to the extent of the equipment involved.

3.13 Switchboard position apparatus such as plugs, jacks, miscellaneous keys, etc. not included in the inspection of ap-

paratus adjustments shall be included in the inspection of Wiring, Framework Construction, and Cabling for the respective equipment groups. The inspection of this apparatus shall consist of a general examination for conditions that will adversely affect operation, appearance, and maintenance.

4. EQUIPMENT GROUPS AND TYPES OF APPARATUS REQUIRING COMPLETE INSPECTION

4.01 In addition to those types of apparatus or equipment for which complete inspection is indicated in all cases in Section AA668.002, General Procedure - Local Systems, the following types of apparatus or equipment to which the requirements of this section apply shall be inspected completely.

4.02 Apparatus Adjustments: All apparatus appearing in the equipments indicated below shall be inspected completely for all nonasterisk adjustment requirements of the 040 division of the Bell System Practices.

- (1) Coin Control Circuits - Relay Equipment
- (2) District Timing Frames - Relay and Timer Equipment

5. SUBLOTS FOR APPLICATION OF SPOTTINESS PROCEDURE

5.01 General: Tests for spottiness will apply only to panel selector elevator apparatus and associated commutators, to clutches, to sequence switches, and to relay equipment. The following paragraphs indicate the particular equipments to which tests for spottiness will be applied together with the basis for determining the subplot.

5.02 Panel Selectors, Commutators, Clutches, and Sequence Switches: The subdivision of the lot will be on the basis of the frame "side". The spottiness number will apply to the portion of the sample selected from one side of a frame.

5.03 Relay Equipment: For each general type of relay, such as the U and Y type, B and G type, etc., selected from equipment groups indicated below, tests for spottiness may be made for subsamples selected on one of the bases under which the respective equipment is listed.

(a) Code Basis

Selector Frame Groups
Sender Frame Groups
Relay Rack Groups
Switchboards
Desks (Sectional)

(b) Circuit Basis

Line Finder Group - Trip and Start
Circuit Only
Relay Rack Groups
Switchboards

(c) Equipment Unit Basis

Subscribers and Key Pulsing Sender
Frames (Sender Basis)

Test Frames (Frame Basis)

Relay Racks - Shop Wired (Wired Unit
Basis)

Relay Racks - Job Wired (Bay Basis)
Switchboards (Position Basis)

(d) Equipment Group Basis

All inspection lots, where the re-
lays in the lot are taken from
more than one equipment group
(Equipment Group Basis).

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