RINGING BRIDGE LIMITATIONS
MULTIPARTY LINES

1. GENERAL

1.01 This section may be used as a general **guide** as to the maximum number of ringing bridges which may be employed for various central office arrangements which provide:

(a) Four-party full selective and eight-party semiselective service.

(b) Ten-party divided code service.

1.02 Information contained herein is based upon many considerations which are covered in detail in Section AA460.100, Issue 1. Should there be any question as to how to apply the following recommendations, consult your local supervisor.

1.03 This section replaces Section C63.252 and Part 4 of Section C63.251, Issue 4.

1.04 Spaces have been provided so that the conditions which apply locally may be checked for ready reference.

☐ 2. FOUR-PARTY FULL SELECTIVE AND EIGHT-PARTY SEMISELECTIVE SERVICE (TUBE SETS)

☐ 2.01 Circuits arranged to supply ringing current through the trip relay.

Table 1

Maximum Number of Ringing Bridges

Ring (+)	Ring (−)	Tip (+)	Tip (−)	Total on Line
3	3	3	3	12

Note: 300 ohms minimum loop resistance is required if more than two ringers per polarity are used.

☐ 2.02 Circuits arranged to supply ringing current through a 220-ohm resistor (trip relay in ground return side).

Table 2

Maximum Number of Ringing Bridges

Ring (+)	Ring (−)	Tip (+)	Tip (−)	Total on Line
4	4	4	4	16

☐ 2.03 Circuits arranged to supply ringing current through a 13D lamp (trip relay in ground return side).

Table 3

Maximum Number of Ringing Bridges

Ring (+)	Ring (−)	Tip (+)	Tip (−)	Total on Line
6	6	6	6	24

☐ 2.04 Long line circuits arranged to repeat ringing through a 13G lamp (tripping during silent interval).

Table 4

Maximum Number of Ringing Bridges

Ring (+)	Ring (−)	Tip (+)	Tip (−)	Total on Line
6	6	6	6	24

Note: This is the same as Paragraph 2.03 except that the ringers will operate at greater distance from the central office.

☐ 3. DIVIDED CODE RINGING SERVICE (CAPACITOR RINGING BRIDGE)

☐ 3.01 Circuits arranged to supply ringing current through the trip relay.

Table 5

Maximum Number of Ringing Bridges

Ring	Tip	Total on Line
9	9	18

Note: 700 ohms minimum loop resistance is required to prevent pretrip.

☐ 3.02 Circuits arranged to supply ringing current through a 220-ohm resistor (trip relay in ground return side).

Table 6

Maximum Number of Ringing Bridges

Ring	Tip	Total on Line
10	10	20

☐ 3.03 Circuits arranged to supply ringing current through a 13D lamp (trip relay in ground return side).

Table 7

Maximum Number of Ringing Bridges

Ring	Tip	Total on Line
10	10	20

Note: Ringers will operate at greater distances from the central office than those shown in Paragraph 3.02.

☐ 3.04 Long line circuits arranged to repeat ringing through a 13G lamp (tripping during silent interval only).

Table 8

Maximum Number of Ringing Bridges

Ring	Tip	Total on Line
10	10	20

Note: The ringers in this case will operate at substantially greater distances from the central office than in the case of either Paragraph 3.02 or 3.03.

☐ 4. DIVIDED CODE RINGING SERVICE (TUBE RINGING BRIDGE)

☐ 4.01 Circuits arranged to supply ringing current through the trip relay.

Table 9

Maximum Number of Ringing Bridges

Ring	Tip	Total on Line
6	6	12

Note: 300 ohms minimum loop resistance is required if more than two ringers per side of the line are used.

☐ 4.02 Circuits arranged to supply ringing current through a 220-ohm resistor (trip relay in ground return).

Table 10

Maximum Number of Ringing Bridges

Ring	Tip	Total on Line
6	6	12

☐ 4.03 Circuits arranged to supply ringing current through a 13D lamp (trip relay in ground return side).

Table 11

Maximum Number of Ringing Bridges

Ring	Tip	Total on Line
6	6	12

Note: Ringers will operate at greater distances from the central office than those shown in Paragraph 4.02.

☐ 4.04 Long line circuits arranged to repeat ringing through a 13G lamp (tripping during silent interval only).

Table 12

Maximum Number of Ringing Bridges

Ring	Tip	Total on Line
6	6	12

Note: The ringers in this case will operate at substantially greater distances from the central office than in the case of either Paragraph 4.02 or 4.03.

5. LIMITATIONS USING 531C OR 687B SUBSCRIBER SETS (AUXILIARY SETS CONTAINING RELAYS) ON LINES USING TUBE SETS

5.01 **Application of 531C and 687B Sets.** This type of set has a cold cathode electron tube and, instead of a ringer, a relay with two make contacts. When operated by ringing voltage the signal contacts may be used, (a) to connect 1 or 2 capacitor type ringing bridges to the line, (b) control a signal or other apparatus energized from a local source of low voltage power or (c) to connect 1 capacitor type ringing bridge to the line as well as to control locally energized apparatus. On a four-party full selective or eight-party semiselective line, this type of set makes possible the use of as many as **16** ringing signals energized from the line, even though ringing power is supplied through the trip relay and no restriction is placed on minimum loop resistance. On divided code ringing lines equipped with tube sets the 531C or 687B set may be employed to control an auxiliary signal or apparatus operated on local low voltage power.

Four-Party Full Selective and Eight-Party Semiselective Service

5.02 If it is necessary to accommodate a greater total number of ringers on the line than those given in Paragraph 2.01 or if the minimum loop requirement can not be met, 531C or 687B sets may be employed to advantage. There is one important restriction to the use of these sets, however, when such a set is used at a given station and its relay contacts arranged to connect 1 or 2 capacitor ringing bridges (0.5 or 0.4 mf) to the line, a similar set must also be used at any other station of the same polarity on the same side of the line. The reason for this is that the tube and relay of the 531C or 687B set plus the capacitor bridge(s) under its control presents a lower impedance to the line than does a single tube and ringer bridge. On this account a regular tube and ringer bridge will be deprived of the current necessary for proper operation.

5.03 Using 531C or 687B sets with capacitor ringing bridges.

Table 13

Maximum Number of Capacitor Ringing Bridges

Ring (+)	Ring (−)	Tip (+)	Tip (−)	Total on Line
4	4	4	4	16

Note: No more than two 531C or 687B sets per polarity.

5.04 If specific circumstances require the use of a 531C or 687B set for controlling signals energized **only** from a source of local power (such as a 101G-L5 power plant), then other tube and ringer bridges of the same polarity on the same side of the line need not be changed. The ringing ranges permissible in this case, either from the point of view of the 531C or 687B set or from the point of view of the regular tube and ringer bridges are as given in Table 1, Paragraph 2.01.

Divided Code Ringing Service

5.05 If on a divided code ringing line equipped with tube type ringing bridges, it is necessary to provide for the control of a locally-powered auxiliary signal, the 531C or 687B set may be used and treated as a regular tube type ringer bridge. The ranges permissible in this case are those given in Tables 9, 10 and 11. In such cases, it would not be necessary to treat the other stations on the line with the 531C or 687B sets.