BOGEN

INTERNAL TELEPHONE INTERCOM SYSTEMS

MODELS TQ6-A AND TQ12-A

OPERATING INSTRUCTIONS

TO CALL ANOTHER STATION

1. Lift phone from base and depress selector button for desired station. This action will cause a buzzer to sound at the desired station. When called party answers identify yourself and start conversation. If called station is busy, the conversation may be heard.
2. Upon completion of call, replace phone on base. Be sure that phone is fully seated in cradle so that cradle switch is activated.

ANSWERING CALL

1. A buzzer tone heard from telephone unit indicates that you are being called. Lift phone from base and identify yourself and converse in standard telephone manner.

NOTE

Another station may break-in on your line if he wishes.

2. Upon completion of call, replace phone on base. Be sure that phone is fully seated in cradle so that cradle switch is activated.

CONFERENCE CALLS

Up to four master stations may participate in a conference call.

PUBLIC ADDRESS PAGING (MODEL TRA)

The BOGEN TQ-A system may be used in conjunction with a public address type paging system (using BOGEN Model TRA paging accessory). To page, depress and hold down station selector button designated as the paging station and speak into phone transmitter. Your message will be automatically distributed over paging system. Release the button when page is completed.

Upon completion of message, replace phone on base. Be sure that phone is fully seated in cradle so that cradle switch is fully activated. This must be done so that public address system is switched back to previous mode of operation (e.g. background music).

INSTALLATION AND OPERATING MANUAL

READ THOROUGHLY BEFORE OPERATING EQUIPMENT

INSTALLATION

INSTALLATION HINTS

DO NOT attempt to install these units until you have read and thoroughly understand the installation procedure. The warranty is cancelled if system is installed in a manner other than described in this manual. Also read OPERATING INSTRUCTIONS to fully understand operation of system and all features.

AVOID routing cables parallel to power lines, etc. When absolutely necessary to cross power lines, etc., it is best to do so at right angles. Keep cables away from heat (e.g. hot pipes, stoves, etc.). Where dampness is a problem, it is recommended that a conduit be used. When running cable outdoors, special weatherproof cable should be used; especially in severe climates. When running cable between buildings always provide support for cable.

MAKE a thorough determination of system requirements before attempting installation. Decide which offices, desks, etc. are to communicate with which others, which are to use TQ6-A and TQ12-A units. Consider the routing of cables. If possible draw a map of the cable routes and locations of all components. Errors can best be avoided in this way and future servicing is made easier if there is an accurate map of the system. It is recommended that an overage of wires be calculated into cables to provide for defective lines or later expansion.

USE ONLY recommended BOGEN cable or direct equivalents.

DO NOT USE twisted pairs when cables or conductors are specified, twisted pairs have a higher inter-wire capacitance and may cause crosstalk.

DO NOT reverse power supply connections. Damage due to incorrect connection of power supply is not covered by warranty.

DO NOT connect any wires, other than power supply AC power cord to an AC power source.

DO NOT drive staples, or tacks through cables. Do not excessively hammer on cables or they may become shorted or damaged.

DO NOT tamper with internal wiring of components. Do not short out the power supply fuse. If the fuse blows, replace it with a fuse of identical rating. If fuse continues to blow, a defect exists in the system which must first be removed. For assistance in servicing this equipment, call your Bogen dealer, contractor or Service Manager, Bogen Communications, Paramus, New Jersey.

WIRING REQUIREMENTS

The interconnecting cable between TQ6-A/TQ12-A phones should consist of unshielded, insulated conductors totalling 3 more than the total number of stations in system. Phones will operate over a total loop resistance of 150 ohms. Length of loop; 1½ times the distance between furthest stations in the system.

DISTANCE	AWG
750 Feet	No. 28
1250 Feet	No. 26
2000 Feet	No. 24
3000 Feet	No. 22

Cables available from Bogen are listed below:

7SC	No. 22 solid AWG	7 wire, unshielded
12SC		12 wire, unshielded
16SC		16 wire, unshielded
20SC		20 wire, unshielded

MOUNTING

PRS-1A Power Supply: Locate power supply as close to center of system as possible and near a phone junction box and convenient to a 117 volt 60 cycle outlet. Power supply may be connected anywhere in the system. However, a central location will minimize volume differences because of voltage drops in cable. The unit may be mounted in any position and on any convenient surface using four No. 6 screws through holes in bottom of PRS-1A. Remove PRS-1A cover, attach mounting screws and replace cover.

Mounting Telephones: The telephone units may be mounted on any convenient surface such as a wall or side of a desk, etc. The units have two key-way mounting holes, in the base plate, for this purpose. To mount phones, drive two No. 6 round head screws 7-1/16" apart into mounting surface, leaving about ½" of screws protruding. Align mounting screws with key-way holes on base plate, mount telephone unit over screw and push and press down to permanently secure unit in place.

Junction Box: Mount junction box at a point near telephone to suit the particular conditions. Secure unit to mounting surface using the four screws provided.

WIRING (use either method 1 or 2 as desired)

METHOD 1

1. Starting at one end of building, install interconnecting cable from first station to next nearest station. Leave approximately 1½ foot of extra cable length at each box, for ease of wiring and reserve in case a wire is broken. Continue to install interconnecting cable between remaining TQ6-A/TQ12-A stations. Assign a color to A, B, C lines and to each station; maintain that color at each station. If it is necessary to use more than one multiconductor cable, mark each one at both ends with tape or a tag for identification at each location before installing. At each junction box, remove approximately 9" of outer jacket from ends of interconnecting cable, to expose wires.

CAUTION: Keep cables away from electric or telephone lines.

2. Starting with first station in system, label each station with a number, beginning with No. 1 and assign a wire color. Make a master directory of station number, location and wire color. This should be retained as a permanent record of the installation.

3. Starting at station No. 1 connect the wires assigned to terminals A, B, C and all other wire colors; except the wires assigned to station 1 and to the end station (station 7 in TQ6-A, station 13 in TQ12-A), to the numbered terminals corresponding to the station number assigned. In systems employing less than maximum number of stations, omit connections to unused stations.

4. Connect the color wire assigned to station 1 to the "O" terminal at station 1 and the end station's wire to terminal No. 1 at station No. 1.
NOTE; In systems employing less than the maximum number of stations ignore reference to end station.

5. Proceed on to remaining stations in system, in numerical order and repeat steps 3 and 4 above. with the exception that e.g., the color assigned to station 2 is wired to terminal O at station No. 2 location; and at each station a similar substitution is made.

Each color wire assigned to a specific station should be connected to the specific station's O terminal. (**NOTE:** Terminal O is the incoming receiver line.)

6. It is recommended that the power supply be connected to the A, B and C terminals at a convenient junction box and that a test be made between each station; for ringing and talking between each station. As the installation is made retest between each station.

7. In systems having the maximum number of stations (7 TQ6-A or 13 TQ12-A units) wires at last (end) station are connected to all numbered terminals according to color assignment. Wire color assigned to end station is wired throughout system (at each station) to terminal corresponding to each station's terminal number (e.g. at station No. 2, terminal No. 2 is wired to color representing end station; at station 3, terminal No. 3 is wired to color representing end station). At end station this wire is connected to terminal O.

METHOD 2 (CHART METHOD)

The Wiring Chart may be used for wiring in place of the procedure previously given. To use this chart, fill in the color coding of your interconnecting cable in the column at the left. Then at each station connect the color shown to the terminal indicated in the appropriate right-hand column. In systems employing less than the maximum number of stations, eliminate right-hand columns (starting on right and going left) and the bottom columns (starting at bottom and going up). Terminal O is the call-in line and this terminal is used at all stations. The colors will be the same at all A, B and C terminals. Connect PRS-1A power supply as shown in interconnecting diagram.

Example: A system is to be wired consisting of 7 TQ6-A phones, using method 2. The chart is shown in figure 1. Vertical columns for stations 8 and up have been blanked out. At station No. 3, the wires would be connected to junction box terminals as follows: black – A, brown – B, red – C, orange – 1, green – 2, pink – 0, blue – 4, violet – 5, grey – 6, white – 3; terminals 8 thru 12 would not be used.

For a TQ6-A/TQ12-A system using the maximum number of stations the end station wiring is connected to all numbered terminals according to color assignment. Wire color assigned to end station is wired throughout system to terminal corresponding to each station's terminal number (e.g. at station No. 3 terminal No. 3 is wired to color representing end station, etc., at each station). At end station this wire is connected to terminal O, as shown in interconnecting diagram.

TQ6-A/TQ12-A phones may be interconnected with previous TQ6/TQ12 models, see figure 6 for junction box connections.

INTERCONNECTING CABLE WIRE COLORS (fill in)	STATIONS 1	2	3	4	5	6	7	8	9	10	11	12	13
black	A	A	A	A	A	A	A	A	A	A	A	A	A
brown	B	B	B	B	B	B	B	B	B	B	B	B	B
red	C	C	C	C	C	C	C	C	C	C	C	C	C
orange	0	1	1	1	1	1	1	1	1	1	1	1	1
green	2	0	2	2	2	2	2	2	2	2	2	2	2
pink	3	3	0	3	3	3	3	3	3	3	3	3	3
blue	4	4	4	0	4	4	4	4	4	4	4	4	4
violet	5	5	5	5	0	5	5	5	5	5	5	5	5
grey	6	6	6	6	6	0	6	6	6	6	6	6	6
white *	7 1	7 2	7 3	7 4	7 5	7 6	0 7	7 8	7 9	7 10	7 11	7 12	7 13
	8	8	8	8	8	8	8	0	8	8	8	8	8
	9	9	9	9	9	9	9	9	0	9	9	9	9
	10	10	10	10	10	10	10	10	10	0	10	10	10
	11	11	11	11	11	11	11	11	11	11	0	11	11
	12	12	12	12	12	12	12	12	12	12	12	0	12
	1	2	3	4	5	6	7	8	9	10	11	12	0

* For TQ6-A system using 7 stations, use wiring numbers in bottom row.
For TQ12-A use No. 7 terminals.

Figure 1 – Sample of Chart Method

TELEPHONE DIRECTORY

A telephone directory label is furnished with each TQ6-A/TQ12-A phone. This directory is designed so that it can be mounted in the handset well on the phone base. The directory should be filled out as follows:

In the space corresponding to each station's number put the location of the end station (station No. 7 or 13). In systems employing less than maximum number of stations, this space will be empty. Fill in remaining spaces according to the master directory prepared in step No. 2 of the "Wiring" section.

OPTIONAL PAGING ACCESSORIES

Any station may be used as a "paging" station. The TQ6-A/TQ12-A system can be adapted to a plant-wide paging or public address system through the use of Bogen Model TRA Phone-Page Accessory or Bogen Model PRS-5 Multi-Mix Power Adapter.

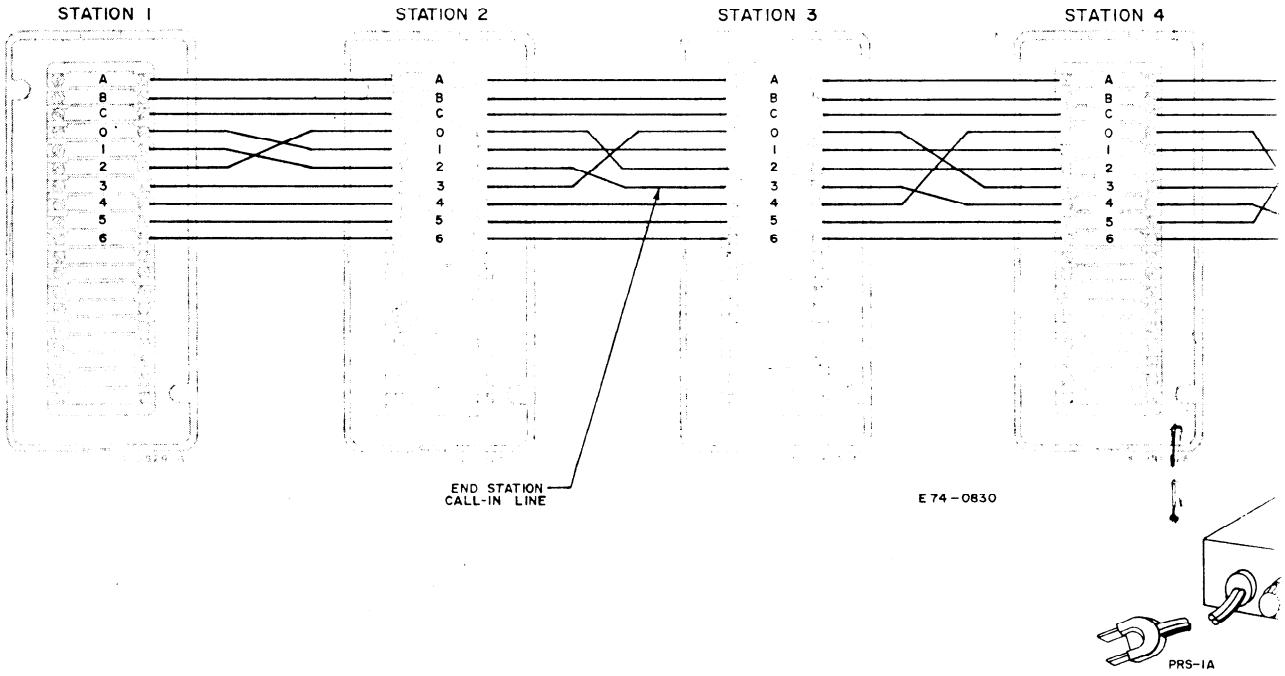

Figure 2 – TQ-6A Interconnect

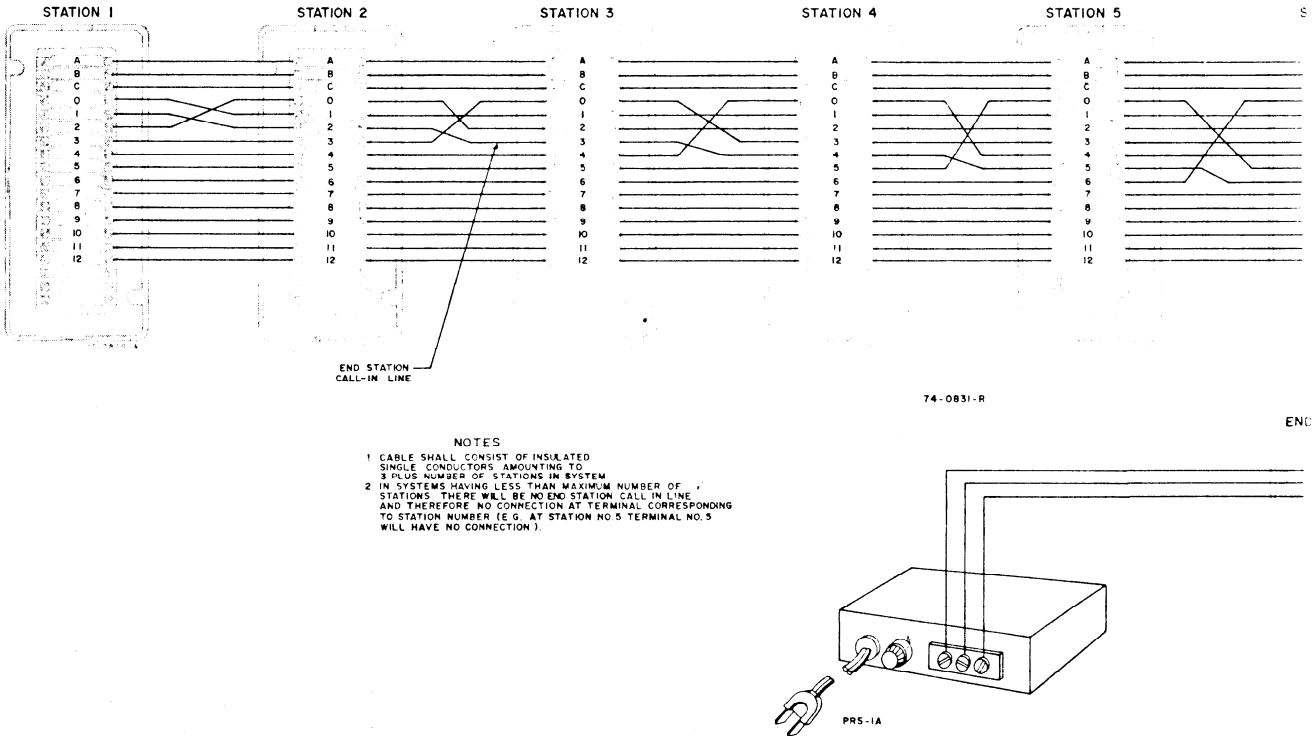

Figure 3 – TQ12-A Interconnect

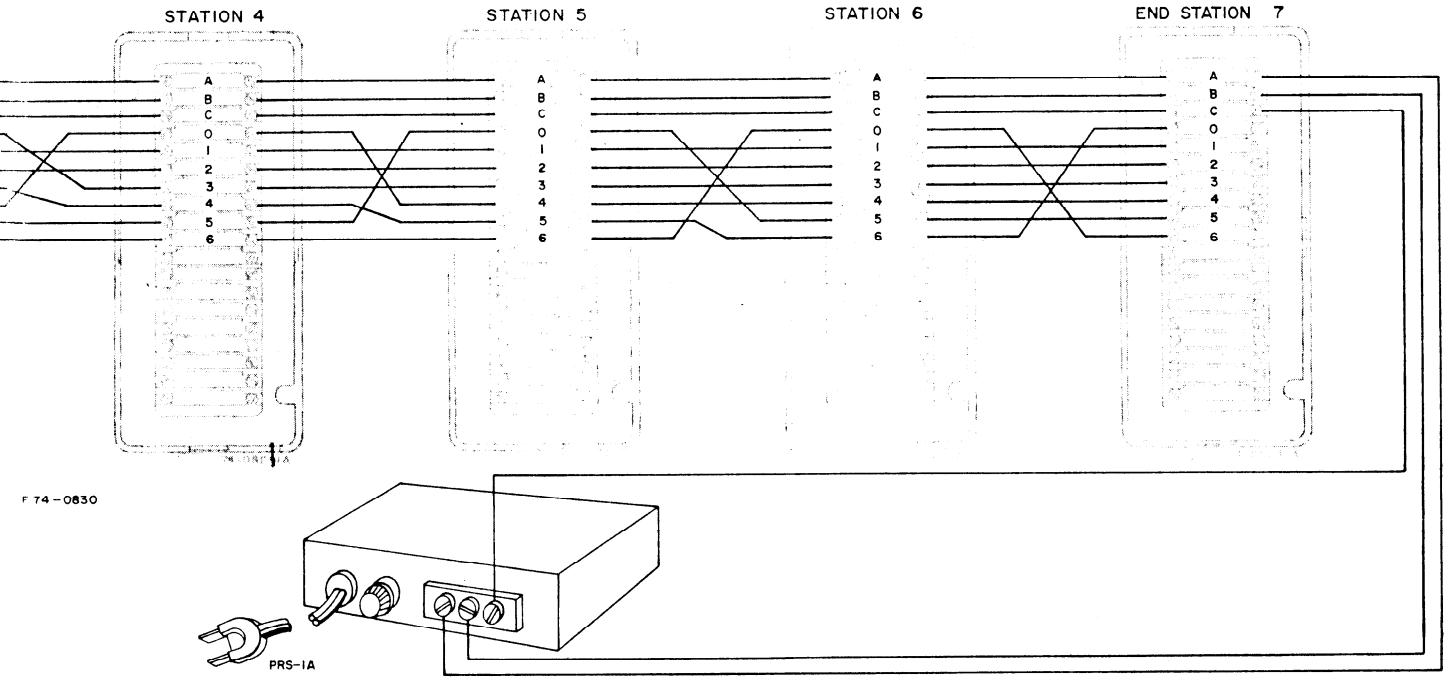

Figure 2 – TQ-6A Interconnecting Wiring Diagram

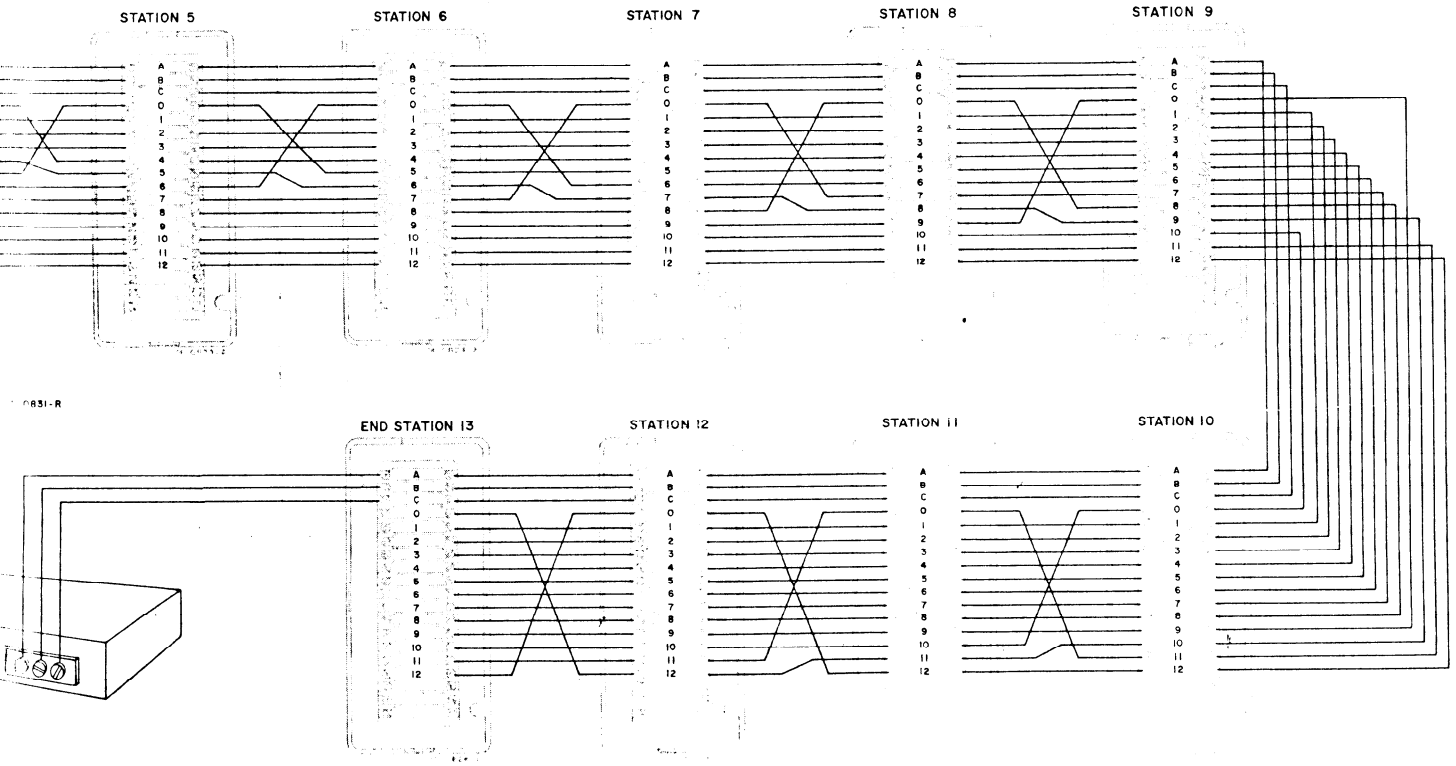

Figure 3 – TQ12-A Interconnecting Wiring Diagram

INTERCONNECTING CABLE WIRE COLORS (fill in)	STATIONS												
	1	2	3	4	5	6	7	8	9	10	11	12	13
	A	A	A	A	A	A	A	A	A	A	A	A	A
	B	B	B	B	B	B	B	B	B	B	B	B	B
	C	C	C	C	C	C	C	C	C	C	C	C	C
	0	1	1	1	1	1	1	1	1	1	1	1	1
	2	0	2	2	2	2	2	2	2	2	2	2	2
	3	3	0	3	3	3	3	3	3	3	3	3	3
	4	4	4	0	4	4	4	4	4	4	4	4	4
	5	5	5	5	0	5	5	5	5	5	5	5	5
	6	6	6	6	6	0	6	6	6	6	6	6	6
*	7 1	7 2	7 3	7 4	7 5	7 6	0 0	7	7	7	7	7	7
	8	8	8	8	8	8	8	0	8	8	8	8	8
	9	9	9	9	9	9	9	9	0	9	9	9	9
	10	10	10	10	10	10	10	10	10	0	10	10	10
	11	11	11	11	11	11	11	11	11	11	0	11	11
	12	12	12	12	12	12	12	12	12	12	12	0	12
	1	2	3	4	5	6	7	8	9	10	11	12	0

*** For TQ6-A system using 7 stations, use wiring numbers in bottom row. For TQ12-A use No. 7 terminals.**

LOUD EXTERNAL BELL

For a phone installation in a noisy area requiring a loud ringing bell, an external bell may be adapted to the TQ-A phone system installation. The individual loud bell installation requires the additional customer supplied equipment and circuitry shown in figure 5.

The additional components required are: a loud ringing bell, a bell transformer; a Sigma Relay, Type 11F, 1000Ω, Adjustment G, Material Sil or equivalent; a 270 Ω 1/2 watt resistor; and, a 25 mfd, 50 volt capacitor.

The proper circuit configuration for the loud ringing bell circuitry is shown in figure 5. This equipment should be installed at the time of the initial system installation.

If a more penetrating bell tone is desired, a diode may be added in series with the ringing circuit. This will cause an effective change in the bell tone.

LONG DISTANCE SYSTEMS

The information given in the paragraph on Wiring Requirements on page 1, for distances in excess of 1, 250 feet, may be used in wiring TQ6-A/TQ12-A systems.

The loudness of the respective phone bells, however, may be diminished as the resistance of the wire increases. To remedy this situation, a customer supplied step down transformer connected as shown in figure 6 may be employed. The increased current permits a louder ring from the bells. With the modified circuit, shown in figure 6, the recommended wire sizes which may be used are as follows:

DISTANCE	AWG
1,250	No. 28
2,000	No. 26
3,000	No. 24
5,000	No. 22

If a more penetrating bell tone is desired, a diode may be added in series with the ringing circuit. This will cause an effective change in the bell tone.

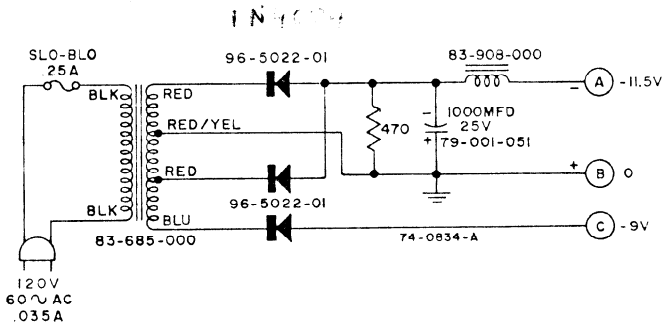

Figure 4 – PRS-1A Schematic

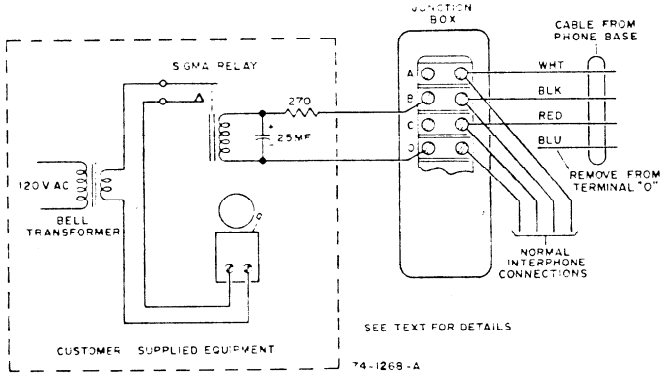

Figure 5 – Connections for External Bell

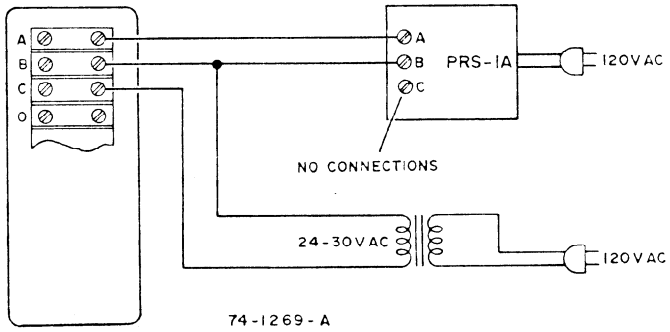

Figure 6 – Long Distance Modification

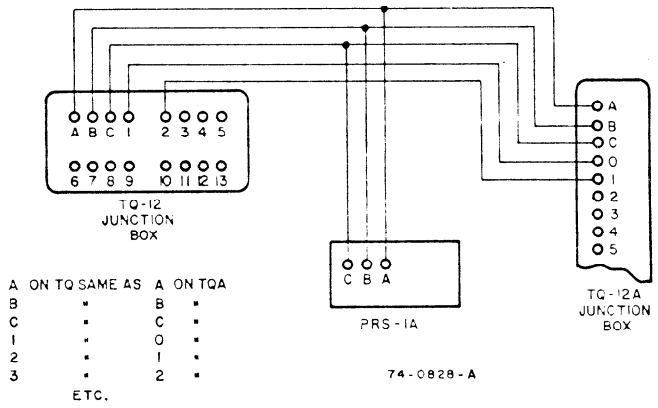

Figure 7 – TQ Junction Box VS TQ6-A/TQ12-A

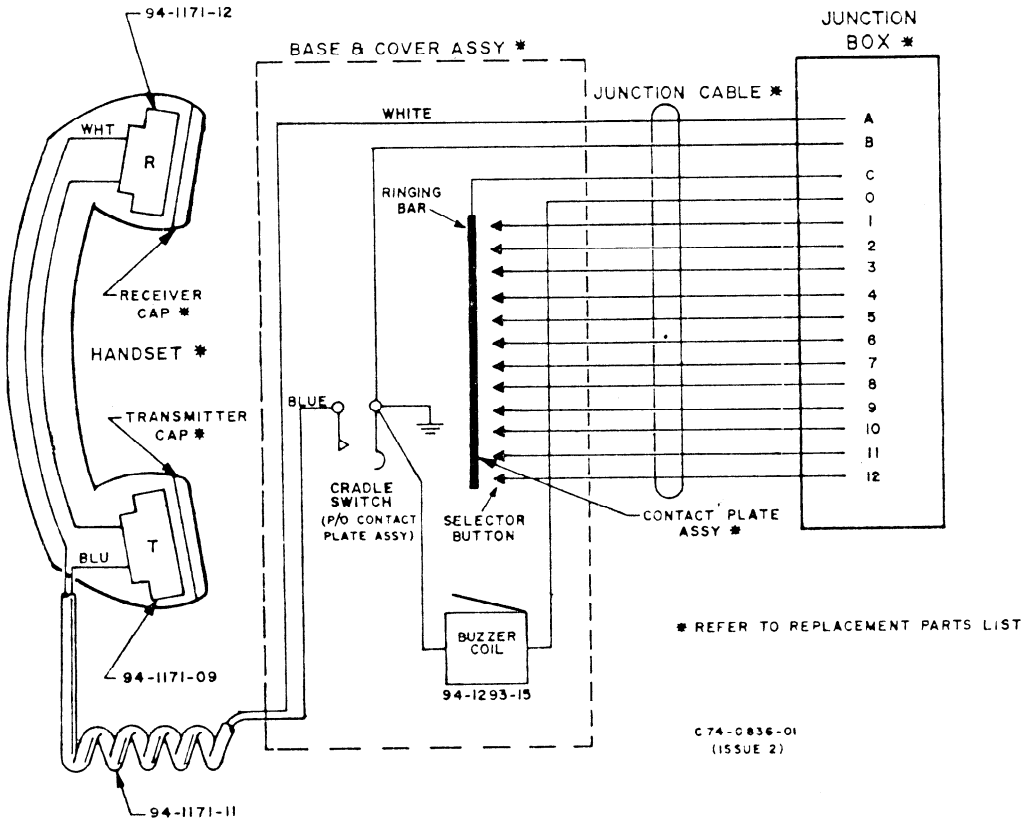

Figure 8 – Schematic Diagram TQ12-A Phone

MAINTENANCE

CLEANING UNITS

The units may be cleaned with a soft cloth dampened with water only, do not polish with a dry cloth. Rub marks or scratches can be removed from the plastic with a good paste cleaner (e.g., Simonize "Paste Kleener"). Apply the cleaner with a soft cloth, wipe off the cleaner.

FUSE REPLACEMENT

A 0.25 Ampere, fuse is provided on the PRS-1A power supply, to protect the entire system. Replace this fuse with a fuse of identical rating. If a second fuse blows do not attempt to further operate equipment before finding cause.

BOGEN SERVICE

We are interested in your Bogen unit for as long as you have it. If trouble ever develops with your unit, please do not hesitate to ask our advice or assistance. Information can be obtained by writing to: Service Department, Bogen Communications, P. O. Box 500, Paramus, New Jersey.

When communicating with us give the model number and series number of your unit. Completely describe the difficulty encountered.

Include details on electrical connections to associated equipment and list such equipment.

When we receive this information we will send you service information if the trouble appears to be simple (e.g. incorrect connections). If trouble requires servicing, we shall send you the name and address of the nearest Bogen authorized service agency to which you can send your unit for repair.

When shipping your unit, pack instrument well using an adequate shipping carton and filler material to prevent damage in transit. Send unit, fully insured and prepaid, via railway express. Do not ship via parcel post unless so instructed. The unit will be promptly repaired and returned to you.

REPLACEMENT PARTS

The components used in Bogen equipment, with exception of items listed below, are standard parts available through all reputable parts jobbers. However, several parts should be replaced only with genuine Bogen parts. These parts are listed here and are available through Bogen distributors, service agencies or direct from the factory.

When ordering parts, specify part number and description as indicated below and give the model and series number of the equipment.

Part No.		Description
94-1293-01		Base & Cover Assy, TQ1-A, Grey
94-1293-41		Base & Cover Assy, TQ1-A, Beige
94-1293-21		Base & Cover Assy, TQ6-A, Grey
94-1293-51		Base & Cover Assy, TQ6-A, Beige
94-1293-31		Base & Cover Assy, TQ12-A, Grey
94-1293-61		Base & Cover Assy, TQ12-A, Beige
94-1293-15	$6.62	Buzzer Assy 94-1172-10
94-1171-11	$3.13	Cable Assy, Handset 82-2243-01
94-1293-17		Cable Assy, Junction, TQ1-A
94-1293-18		Cable Assy, Junction, TQ6-A
94-1293-19		Cable Assy, Junction, TQ12-A
94-1293-09		Contact Plate Assy, TQ1-A
94-1293-10		Contact Plate Assy, TQ6-A
94-1293-11		Contact Plate Assy, TQ12-A
83 695-000	$4.14	POWER TRANSFORMER
83 734-000	$3.59	CHOKE

Part No.		Description
94-1171-31		Handset, Complete, Grey
94-1171-41		Handset, Complete, Beige N.L.A.
94-1173-41		Junction Box Assy, TQ1-A, Grey
94-1173-71		Junction Box Assy, TQ1-A, Beige
94-1173-51		Junction Box Assy, TQ6-A, Grey
94-1173-81		Junction Box Assy, TQ6-A, Beige
94-1173-61		Junction Box Assy, TQ12-A, Grey
94-1173-91		Junction Box Assy, TQ12-A, Beige
94-1171-02		Receiver Cap, Grey
94-1171-15		Receiver Cap, Beige
94-1171-12	$7.22	Receiver Element 94-1171-01
94-1171-10		Transmitter Cap, Grey
94-1171-16		Transmitter Cap, Beige
94-1171-09		Transmitter Element N.L.A.

WARRANTY

Bogen equipment is guaranteed against all defects in material and workmanship for one year from date of sale to original purchaser (see Warranty card). The registration card enclosed with the equipment must be filled out and mailed to us within 5 days of purchase to place warranty in effect.

LEAR SIEGLER, INC. / ISi / BOGEN COMMUNICATIONS DIVISION
P.O. BOX 500
PARAMUS, N.J. 07652

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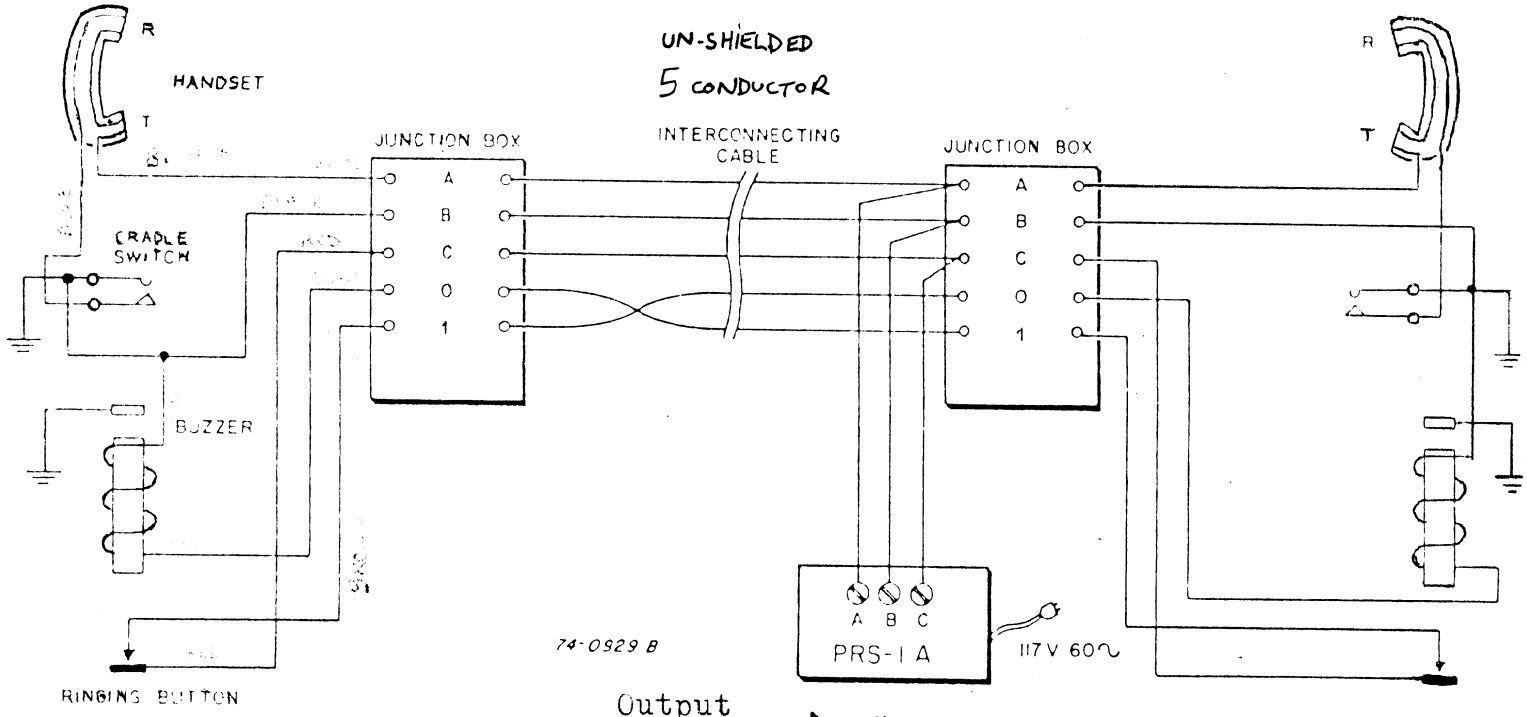
54-5295-04



Output Voltages: A: -11.5V
B: +0 (COMMON)
C: -9V

CIRCUITS:
A & B - Talk
B & C - Buzzer

SCHEMATIC DIAGRAM TQ-1A

BOGEN

INTERNAL TELEPHONE INTERCOM SYSTEM

MODEL

TQ1-A

OPERATING INSTRUCTIONS

TO CALL ANOTHER STATION

1. Lift phone from base and depress ring button. This action will cause buzzer to sound at the desired station. When called party answers identify yourself and start conversation. If called station is busy, the conversation may be heard.
2. Upon completion of call, replace phone on base. Be sure that phone is fully seated in cradle so that cradle switch is activated.

ANSWERING CALL

1. A buzzer tone heard from telephone unit indicates that you are being called. Lift phone from base and identify yourself and converse in standard telephone manner.
2. Upon completion of call, replace phone on base. Be sure that phone is fully seated in cradle so that cradle switch is activated.

WARRANTY

Bogen equipment is guaranteed against all defects in material and workmanship for one year from date of sale to the original purchaser. Any part of the equipment which, under normal installation and use, becomes defective will be repaired or replaced by us, provided it is returned for our examination, transportation prepaid, to our factory (or authorized service station). This warranty does not apply to equipment which has been subjected to abuse or accident, or which has been altered in any way.

The registration card enclosed with the equipment must be filled out and mailed to us within 5 days of purchase to place the warranty in effect.

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1-69

LEAR SIEGLER, INC. / LSi
BOGEN COMMUNICATIONS DIVISION
P.O. BOX 500

54-532-

BOGEN®
A DIVISION OF LEAR SIEGLER, INC.

DEC. 1 3 1982

Gentlemen:

Please be informed that the transmitter element (94-1171-09) and the original handset assembly (94-1171-21/41) for obsolete Bogen telephone models TQ6/12 - TQ1A/6A/12A - TSL8/16 - TSL1X/8X/16X and TCP-3 are no longer available.

We still stock a quantity of the TSL-X handsets which can be modified for use in any of the above models. For all models except the TSL-X and TCP-3, a switch in the handset would not be used.

The complete modified handset, Bogen part number 57-4082-11M, is available from stock at $27.20 each. I trust that this modification will enable you to satisfactorily utilize this intercom system for many years to come.

Very truly yours,

Lear Siegler, Inc.
Bogen Division

Allen A. Guthman
Service Manager

AAG:sos