

V-2920

ADVANCED 20 ZONE TALKBACK INTERCOM SYSTEM

INTRODUCTION

The V-2920, Advanced 20 Zone Talkback Intercom System, is a communications system which provides voice paging with handsfree reply for up to 20 zones. The V-2920 is for use with any electronic or 1A2 key system, or PABX loop start trunk port.

These instructions contain the specifications and information necessary to install, operate, and maintain the Advanced 20 Zone Talkback Intercom System.

"WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture."

"WARNING: Shock Hazard - Do Not Open."

"AVIS: Risqué de Choc Electrique ne pas Ouvrir."

"PELIGRO: Corriente Electrica - No Abres."

SPECIFICATIONS

Purpose

The V-2920 provides 20 zones of paging with handsfree reply. The system also provides the ability for a remote speaker location equipped with a call button to call the attendant location.

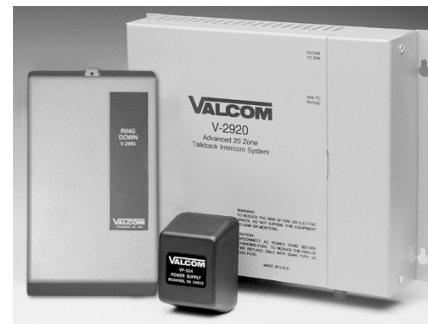
Components

The V-2920 system consists of three components: A V-2920 Control, a V-2990 Ring Down Device, and a VP-324 Power Supply.

Access

- PABX Loop Start Trunk Port
- E-Key C.O. line position
- 1A2 Key line position equipped with line card
- Dedicated single line phone

Refer to Figure 1 for a block diagram of a typical installation.



Features

- 20 zones of handsfree communication
- Built-in handsfree amplifier
- Background music input
- Built-in all call with "meet me" capability
- "Ring in" from speaker locations
- Calls placed in queue
- Override capability from speaker locations
- Dial tone (optional)
- Alert/ringback tone (optional)
- Repeated alert tone (optional)
- Auxiliary contact closures for zones 26, 27, 28, 29
- Lamp contact closure
- Ring contact closure
- Inhibit input
- Control unit is battery backup compatible

Capacity

- The capacity of the V-2920 is 20 zones plus all call.
- The V-2920 is a single talkpath unit.
- The maximum number of speakers per zone are two, 45 Ohm speakers and 40 one-way amplified speakers.

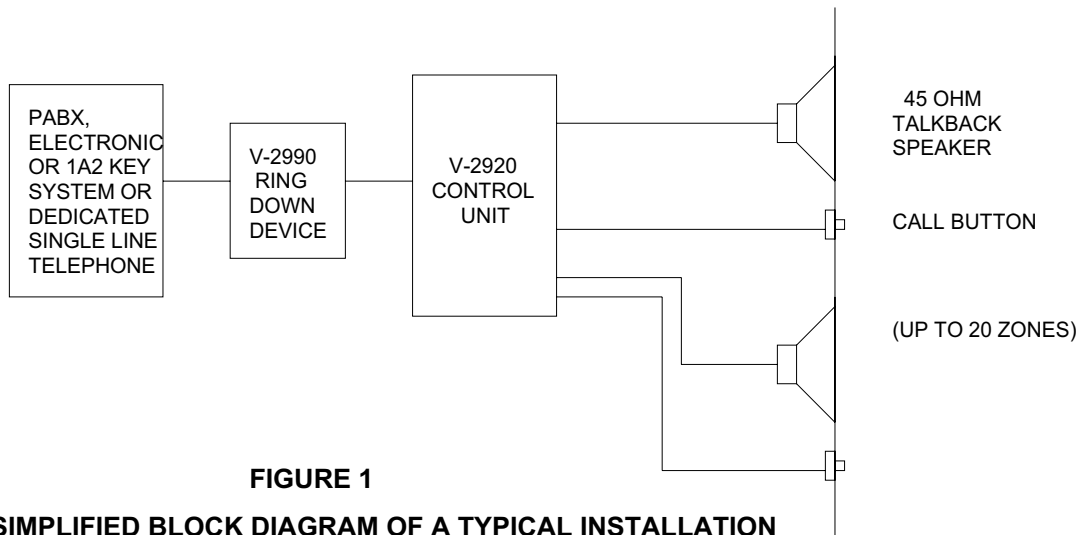


FIGURE 1
SIMPLIFIED BLOCK DIAGRAM OF A TYPICAL INSTALLATION

Dimensions/Weight

- Control Unit - 8.55" H x 11.0" W x 2.35" D (21.72cm H x 27.94cm W x 5.97cm D)
- 6.7 lbs. (3.04 kg)
- Ring Down Device – 8.2"H x 4.55"W x 2.3"D (20.83cm H x 11.56cm W x 5.84cm D)
- 1.25 lbs. (.57 kg)
- Power Supply – 3.0"H x 2.5"W x 2.0"D (7.62cm H x 6.35cm W x 5.08cm D)
- 0.8 lbs. (.36 kg)

Nominal Specifications

V-2920 - Control Unit

- Input Impedance: 600 Ohms
- Input Level: -10 dBm
- Output Impedance: 45 Ohms
- Aux/Music Input: 8-600 Ohm low level

V-2990 - Ring Down Device

- Input Impedance: 600 Ohms
- Output Voltage: 90 Vac ring generator

VP-324 - Power Supply

- - Output: 24 Vdc +/- 3 V "B" Battery (Unfiltered Signal Battery)

Numbering Plan

- The dialing codes are 10 to 29 and 0 for all call.

Auxiliary Contacts

The V-2920 is equipped with 6 sets of auxiliary contact closures. They are:

- Lamp Contact Operates on loop closure.
- Ring Contact Follows ringing cycle 2 seconds "ON", 4 seconds "OFF".

- Zone 26 Contact Operates when station 26 is dialed and the "*" key is pressed.
- Zone 27 Contact Operates when station 27 is dialed and the "*" key is pressed.
- Zone 28 Contact Operates when station 28 is dialed and the "*" key is pressed.
- Zone 29 Contact Operates when station 29 is dialed and the "*" key is pressed.

Volume Controls

The V-2920 is equipped with 5 volume controls.

- Phone to Speaker - Adjusts the transmit volume.
- Speaker to Phone - Adjusts the receive volume.
- Music 1 adjusts background music for zones 10-19.
- Music 2 adjusts background music for zones 20-29.
- All Call adjusts the one-way all call level.

Power Requirements

V-2920 - Control Unit

- Voltage: 115 Vac
- Power: 30 Watts

V-2990 - Ring Down Device

- Power: -21.5 to -26.0 Vdc, 200 mA

VP-324 - Power Supply

- Input: 105-120 Vac, 60 Hz, 18 watts

Environment

- Temperature: 0 to 40 Degrees C
- Humidity: 0 to 85% non-precipitating

DESIGN

General

The V-2920, Advanced 20 Zone Talkback Intercom System used with the Valcom talkback speakers, provides voice paging with handsfree reply for up to 20 zones.

The system can be accessed through a C. O. line position of a key system, loop start trunk port or single line telephone. Zones are selected by dialing a two digit number. The user can then page the area and anyone hearing the page can reply back handsfree. (By using one-way amplified speakers, a zone can be one-way).

The system can also be accessed from a talkback speaker location. When a call button at the speaker is pressed, the dedicated line or trunk port will begin to ring. A person hearing the incoming ring accesses the line or trunk. The person at the telephone can then talk with the person at the speaker location. (Valcom doorplate speakers are normally used in these applications).

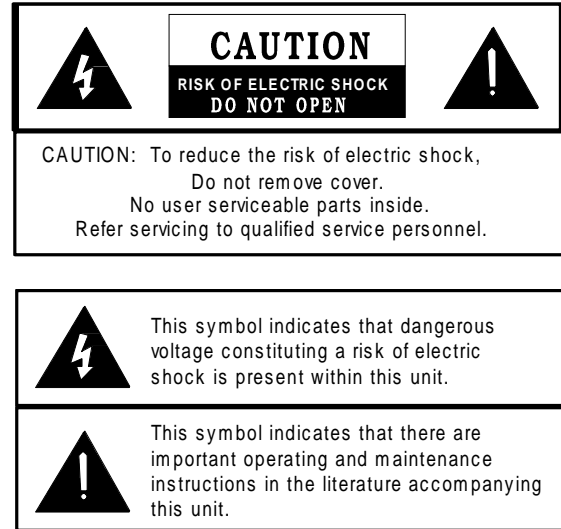
When the system is in use and another call is placed from a speaker location, the person on the telephone will hear 3 short tones and the call will be placed in queue. If the # key is pressed, the telephone user will be connected to the new calling location. The system will remember the order that calls come in and will switch to the next call in queue when the # is pressed. A person can override a call in progress by pressing the call button four (4) times within a four (4) second time period. The person at the telephone will be connected to the zone that originated the override and the call in progress will be placed in queue.

Zones 26 to 29 can be in the normal queue or be programmed to have a lower priority than the rest of the zones. In the lower priority mode, the zones can be used for door locations or other areas not requiring immediate response from the attendant. These zones will be bumped from their place in queue and put at the end of the line if another zone calls in. There are also contact closures associated with zone 26-29. The contact closures can be operated by pressing the "*" key on the telephone key pad after the zone has been called. These contacts can be used to operate electric strike plates on doors.

The V-2920 provides a background music input, and is designed to automatically cut off the music during a page. If background music is to be installed, a low level music source such as the V-2952 FM Tuner will be required.

INSTALLATION

Precautionary Designations



Cabling

Two 25 pair cables with female connectors should be run from the Control Unit (V-2920) to each of the connecting blocks. The cables should be terminated on the connecting blocks in standard color code color. An opening is provided at the bottom of the Control Unit to allow exit of the cables. A "punch out" slot is designated at the top of this opening to be "punched out" to allow additional cabling exit space, if required.

Mounting

The V-2920 System was designed to be wall or table mounted. When wall mounting the V-2920 System, secure the units to wall studs or a suitable brace. (A plywood backboard 2' square and at least 1/2" thick attached to wall studs would be considered a suitable brace). Make certain the units are not mounted near heat sources or strong magnetic fields. Ascertain control and terminal strip accessibility.

Six 3/4" cross-tip round head wood screws are included for mounting the V-2920 and V-2990. Fasten two of these screws at the appropriate location on the mounting surface, allowing the screwheads to protrude 1/8" to 1/4". Place the chassis of the Control Unit (V-2920) onto the screwheads at the mounting slots. Position two screws through the remaining mounting slots and fasten. Complete mounting the Control Unit by tightening all screws. Using the two screws remaining, mount the Ring Down Device (V-2990) in a similar manner.

Connections

- ___ 1. Mount two 66B type punchdown blocks on the backboard near the Control Unit (V-2920) and Ring Down Device (V-2990) and label the blocks per Figure 2.
- ___ 2. Connect the control unit Tip and Ring (J1 - W/BL, BL/W) to screw terminals 3 and 4 of the ring down device.
- ___ 3. Connect the control unit Ring contact closure pair (J1 - W/GN, GN/W) to screw terminals 5 and 6 of the ring down device.
- ___ 4. Connect screw terminals 1 and 2 of the ring down device to the appropriate C. O. port of the telephone system.
- ___ 5. Connect screw terminals 7 and 8 of the ring unit to the VP-324 power supply "-" and "+" terminals respectively.

Refer to Figure 3 for Wiring Designations.

Door Plate Connections

The following connections are for zone 10 of the system. Other zones will connect in the same manner to their appropriate terminals.

- ___ 1. Connect Tip of the door plate speaker to W/BL of block J2.
- ___ 2. Connect Ring of the door plate speaker to BL/W of block J2.
- ___ 3. Connect one side of the door plate switch to R/BL of block J1.
- ___ 4. Connect the other side of the door plate switch to BL/R of block J1.

NOTE: Two pair twisted station cable is recommended for connections between the control unit and the door plate speakers. (Refer to Figure 4).

Music Connections

The output of a low level music source connects to W/OR,OR/W on block J1 of the control unit.

NOTE: Do not connect the output of a high power amplifier to this input.

AC Power

Connect AC power cord after all required connections have been accomplished.

Page and Music Level Set-Up

The control unit has volume controls for the following functions:

- Speaker to Phone
- Phone to Speaker
- All Call
- Music One - Zones 10-19
- Music Two - Zones 20-29

Refer to Figure 5 for user control locations.

Control Set-Up:

1. Set up Talkback Controls
 - (a) The phone to speaker should be at a normal listening level.
 - (b) Speaker to Phone Level:
This is the most critical level; set the volume at the lowest practical level. (It is better to set it too low than too high).
 - (c) Individual volume controls of any one-way amplified speakers can then be adjusted for normal listening level.
2. All Call Level
The all call level should be set to produce the same audio level as the phone to speaker control.
3. Background Music Levels
There are two volume controls provided for background music adjustments: Zones 10-19 and 20-29.

It is important that these two background music controls be used to adjust music levels in the system. Adjust these controls after all other volume controls have been set.

Auxiliary Contacts

Refer to Table 1 for description of the various contact closures.

Setting of Program Dip Switches

Refer to Table 2 for dip switch functions.

Ring Input	26	W/BL
Tip Input	1	BL/W
Aux/Music Input	27	W/O
Aux/Music Input	2	O/W
Ring C. C.	28	W/GR
Ring C. C.	3	GR/W
HF Inhibit Input	29	W/BR
Not Used	4	BR/W
Not Used	30	W/S
Not Used	5	S/W
Sta 10 SW	31	R/BL
Sta 10 Gnd	6	BL/R
Sta 11 SW	32	R/O
Sta 11 Gnd	7	O/R
Sta 12 SW	33	R/G
Sta 12 Gnd	8	G/R
Sta 13 SW	34	R/BR
Sta 13 Gnd	9	BR/R
Sta 14 SW	35	R/S
Sta 14 Gnd	10	S/R
Sta 15 SW	36	BK/BL
Sta 15 Gnd	11	BL/BK
Sta 16 SW	37	BK/O
Sta 16 Gnd	12	O/BK
Sta 17 SW	38	BK/G
Sta 17 Gnd	13	G/BK
Sta 18 SW	39	BK/BR
Sta 18 Gnd	14	BR/BK
Sta 19 SW	40	BK/S
Sta 19 Gnd	15	S/BK
Sta 20 SW	41	Y/BL
Sta 20 Gnd	16	BL/Y
Sta 21 SW	42	Y/O
Sta 21 Gnd	17	O/Y
Sta 22 SW	43	Y/G
Sta 22 Gnd	18	G/Y
Sta 23 SW	44	Y/BR
Sta 23 Gnd	19	BR/Y
Sta 24 SW	45	Y/S
Sta 24 Gnd	20	S/Y
Sta 25 SW	46	V/BL
Sta 25 Gnd	21	BL/V
Sta 26 SW	47	V/O
Sta 26 Gnd	22	O/V
Sta 27 SW	48	V/G
Sta 27 Gnd	23	G/V
Sta 28 SW	49	V/BR
Sta 28 Gnd	24	BR/V
Sta 29 SW	50	V/S
Sta 29 Gnd	25	S/V

BLOCK J1

Zone 10 Spk	26	W/BL
Zone 10 Ret	1	BL/W
Zone 11 Spk	27	W/O
Zone 11 Ret	2	O/W
Zone 12 Spk	28	W/GR
Zone 12 Ret	3	GR/W
Zone 13 Spk	29	W/BR
Zone 13 Ret	4	BR/W
Zone 14 Spk	30	W/S
Zone 14 Ret	5	S/W
Zone 15 Spk	31	R/BL
Zone 15 Ret	6	BL/R
Zone 16 Spk	32	R/O
Zone 16 Ret	7	O/R
Zone 17 Spk	33	R/G
Zone 17 Ret	8	G/R
Zone 18 Spk	34	R/BR
Zone 18 Ret	9	BR/R
Zone 19 Spk	35	R/S
Zone 19 Ret	10	S/R
Zone 20 Spk	36	BK/BL
Zone 20 Ret	11	BL/BK
Zone 21 Spk	37	BK/O
Zone 21 Ret	12	O/BK
Zone 22 Spk	38	BK/G
Zone 22 Ret	13	G/BK
Zone 23 Spk	39	BK/BR
Zone 23 Ret	14	BR/BK
Zone 24 Spk	40	BK/S
Zone 24 Ret	15	S/BK
Zone 25 Spk	41	Y/BL
Zone 25 Ret	16	BL/Y
Zone 26 Spk	42	Y/O
Zone 26 Ret	17	O/Y
Zone 27 Spk	43	Y/G
Zone 27 Ret	18	G/Y
Zone 28 Spk	44	Y/BR
Zone 28 Ret	19	BR/Y
Zone 29 Spk	45	Y/S
Zone 29 Ret	20	S/Y
Zone 26 Relay Com	46	V/BL
Zone 26 Relay N.O.	21	BL/V
Zone 27 Relay Com	47	V/O
Zone 27 Relay N.O.	22	O/V
Zone 28 Relay Com	48	V/G
Zone 28 Relay N.O.	23	G/V
Zone 29 Relay Com	49	V/BR
Zone 29 Relay N.O.	24	BR/V
Lamp Supply	50	V/S
Lamp	25	S/V

BLOCK J2

FIGURE 2 - 66 BLOCK DESIGNATIONS

OPERATION

General

Originating a Page

When the attendant accesses the intercom and dials the access code, dial tone is returned. The attendant can then select an area to be paged by dialing a two digit number (10 to 29). A tone is heard in the handset and at the speaker location. The attendant can then page the area and anyone hearing the page can reply back handsfree to the speaker.

Receiving a Call From a Door Box

When the button is pressed on the speaker, the dedicated line or trunk port will begin to ring. A tone is also heard at the speaker location. Hearing the incoming ring, the attendant accesses the trunk or C.O. line. The person at the speaker location can then talk handsfree to the attendant.

Auxiliary Contacts

The control unit provides a contact closure that follows the ringing cycle. Contact closures are provided for electric strike plate operation for zones 26 to 29. A lamp contact closure is provided.

For additional information on the various contact closures refer to Table 1.

Queue Operation

When the system is in use and another call is placed from a speaker location, the person on the telephone will hear 3 short tones and the call will be placed in queue. If the # key is pressed, the telephone user will be connected to the new calling location. The system will remember the order that calls come in and will switch to the next call in queue when the # key is pressed.

Queue Override

A person can override a call in progress by pressing the call button four (4) times within a four (4) second time period. The person at the telephone will be connected to the zone that originated the override and the call in progress will be placed in queue.

Special Programming Zones 26 to 29

Zones 26 to 29 can be in the normal queue or be programmed to have a lower priority than the rest of the zones. In the lower priority mode the zones can be used for door locations or other areas not requiring immediate response from the attendant. These zones will be bumped from their place in queue and put at the end of the line if another zone calls in.

There are also contact closures associated with zones 26 to 29. The contact closures can be operated by pressing the "*" key on the telephone key pad after the zone has been called. These contacts can be used to operate electric strikeplates on doors.

All Call with Meet Me

When the attendant accesses the All Call feature to locate a specific individual, the desired person can then respond from any speaker by pressing the push-button at the speaker four (4) times. When this is done, all other speakers are cut off and this individual speaker becomes talkback to allow two-way conversation.

Inhibit Option

If a single line telephone is desired for "meet me answer," a single line "A" lead control telephone and a 5.1K ohm resistor will be required. The T & R of the telephone connects to the W/BL pair, the "A1" lead connects to GND (BL/R), the "A" lead has the 5.1K ohm resistor placed in series, and the resistor terminates on inhibit (W/BR).

TECHNICAL ASSISTANCE

Troubleshooting Chart

Table 3 identifies some possible problems with solutions.

Factory Assistance

When trouble is reported, verify the unit is turned on and there are no broken connections leading to this system.

Assistance in troubleshooting is available from the factory. When calling, you should have a VOM and a telephone test set available and be calling from the job site. Call (540) 427-3900 and ask for Technical Support, or call (540) 427-6000 for Valcom 24-hour Automated Support or visit our website at <http://www.valcom.com>.

Valcom equipment is not field repairable. Valcom maintains service facilities in Roanoke, VA. Should repairs be necessary, attach a tag to the unit clearly stating your company name, address, phone number, contact person, and the nature of the problem. Send the unit to:

**Valcom, Inc.
Repair and Return Dept.
5614 Hollins Road
Roanoke, VA 24019-5056**

TABLE 1: AUXILIARY CONTACT OPERATION	
Contact	Operation
Lamp Contact	Operates on loop closure.
Ring Contact	Follows ringing cycle 2 seconds "ON", 4 seconds "OFF".
Zone 26 Contact	Operates when zone 26 is dialed and the "*" key is pressed.
Zone 27 Contact	Operates when zone 27 is dialed and the "*" key is pressed.
Zone 28 Contact	Operates when zone 28 is dialed and the "*" key is pressed.
Zone 29 Contact	Operates when zone 29 is dialed and the "*" key is pressed.

TABLE 2: DIPSWITCH FUNCTIONS		
SWITCH #	"OFF" POSITION	"ON" POSITION
1	Normal queue sequence on zone 26.	Bump zone 26 to end of queue.
2	Normal queue sequence on zone 27.	Bump zone 27 to end of queue.
3	Normal queue sequence on zone 28.	Bump zone 28 to end of queue.
4	Normal queue sequence on zone 29.	Bump zone 29 to end of queue.
5	Queue signal output to telephone and	No queue signal output.
6	speaker.	No repeated alert tone.
7	Repeated alert tone.	No alert tone/Ringback tone.
8	Alert tone/Ringback tone.	No dial tone.
	Dial tone.	

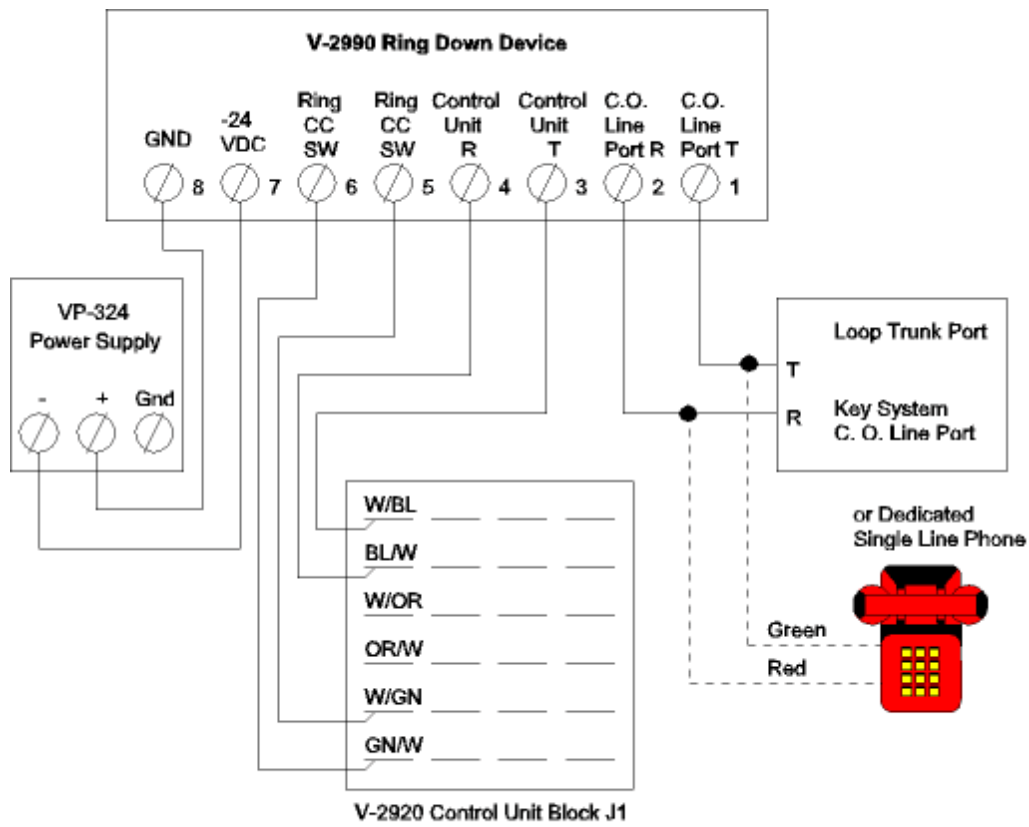


FIGURE 3

WIRING CONNECTIONS TO PABX, KEY SYSTEM OR SINGLE LINE TELEPHONE

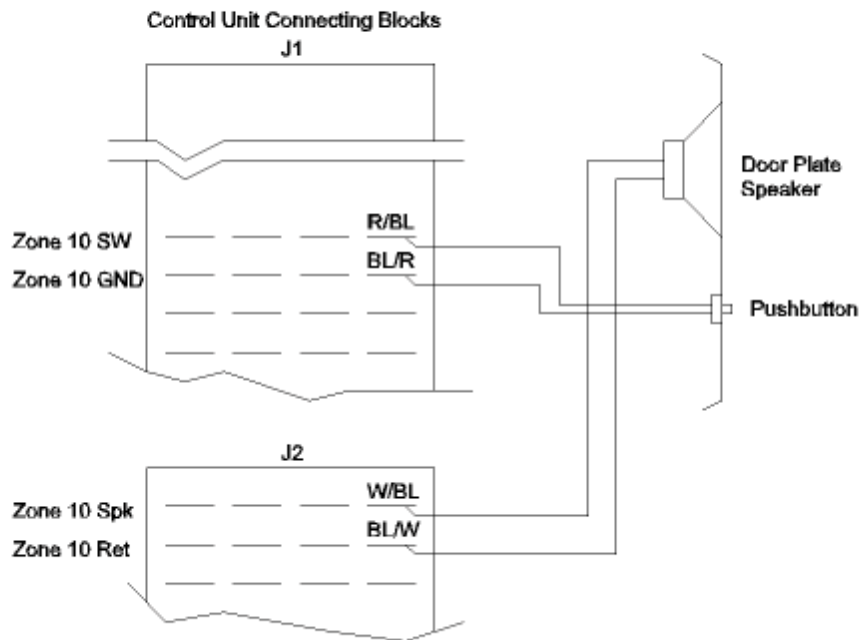


FIGURE 4 - CONNECTIONS TO DOOR PLATE SPEAKER

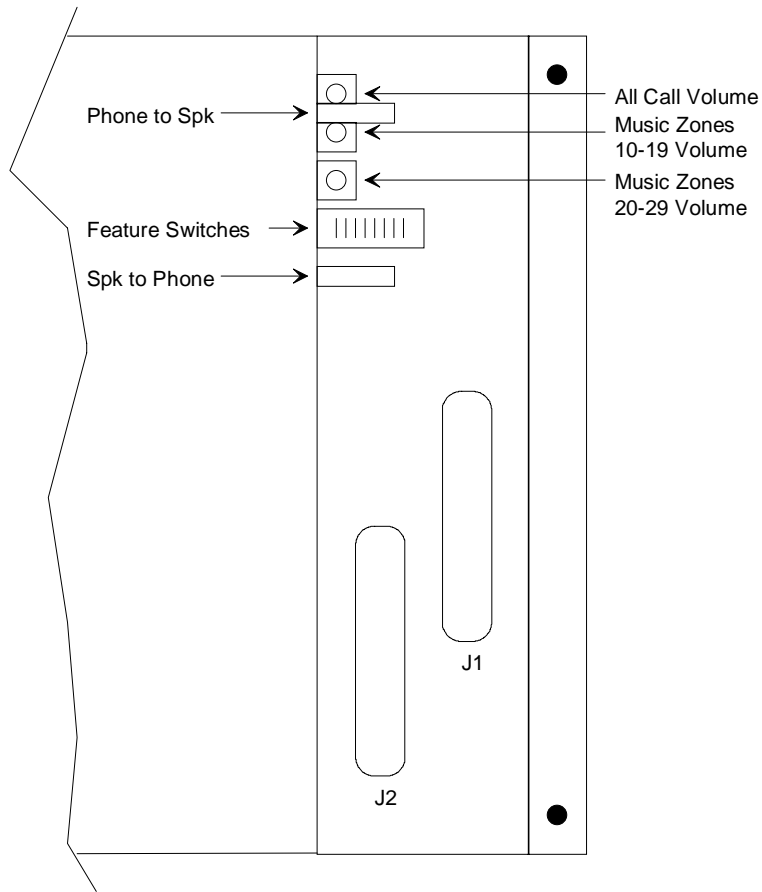


FIGURE 5 - CONTROL AND CONNECTOR LOCATIONS

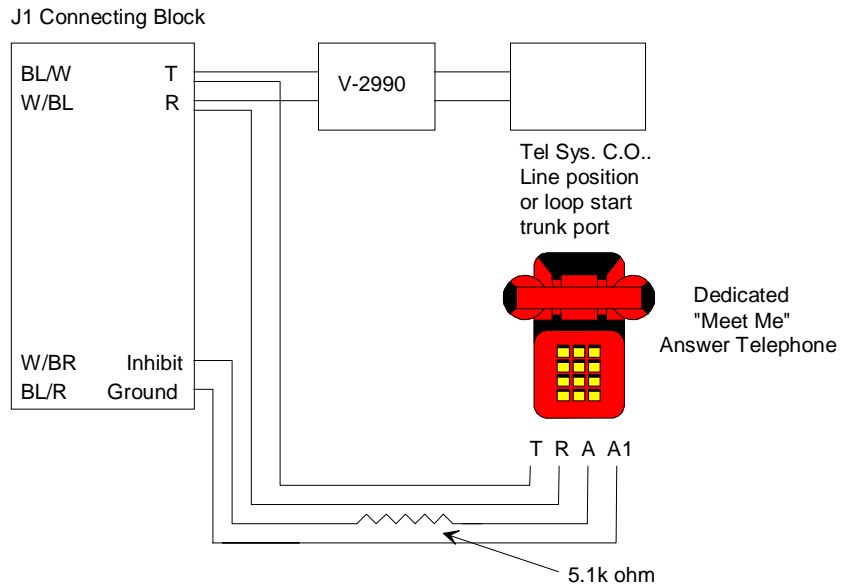


FIGURE 6 - INHIBIT OPTION

TABLE 3: TROUBLESHOOTING CHART	
PROBLEM	CORRECTIVE ACTION
1. No system operation.	1a. Verify AC voltage is present at the receptacle. 1b. Check the fuse located on the bottom of the unit. If blown replace with a .5amp, 250 Vac fuse. 1c. Verify that 25 pair cable connectors are completely plugged into circuit board connectors. 1d. Refer to Figure 2 and verify all connections.
2. No paging at speaker.	2a. Check door plate speaker connections.
3. Paging at speaker but no reply from speaker.	2b. Refer to Figure 5 and adjust Phone to Speaker volume.
4. No system ringing when the doorplate button is pressed.	3. Refer to Figure 5 and adjust Speaker to Phone volume.
5. Background music is not heard at speakers.	4. Refer to the Connection Sections and verify all connections.
6. No all call.	5. Refer to Music Connection and Setup sections.
7. No dial tone.	6. Refer to Page and Music Level Setup Section. 7. Refer to Table 2 for dipswitch settings.

VALCOM LIMITED WARRANTY

Valcom, Inc. warrants its products to be free from defects in materials and workmanship under conditions of normal use and service for a period of one year from the date of shipment. The obligation under this warranty shall be limited to the replacement, repair or refund of any such defective device within the warranty period, provided that:

- inspection by Valcom, Inc. indicates the validity of the claim,
- the defect is not the result of damage, misuse, or negligence after the original shipment.
- the product has not been altered in any way or repaired by others and that factory sealed units are unopened (A service charge plus parts and labor will be applied to units defaced or physically damaged),
- freight charges for the return of products to Valcom are prepaid,
- all units 'out of warranty' are subject to a service charge. The service charge will cover minor repairs (Major repairs will be subject to additional charges for parts and labor).

This warranty is in lieu of and excludes all other warranties, expressed or implied, and in no event shall Valcom, Inc. be liable for any anticipated profits, consequential damages, loss of time or other losses incurred by the buyer in connection with the purchase, operation, or use of the product.

This warranty specifically excludes damage incurred in shipment. In the event a product is received in damaged condition, the carrier should be notified immediately. Claims for such damage should be filed with the carrier involved in accordance with the F.O.B. point.

<p style="text-align: center;">Headquarters: Valcom, Inc. 1111 Industry Avenue Roanoke, VA 24013 Phone: (540) 427-3900 FAX: (540) 427-3517</p>	<p style="text-align: center;">In Canada CMX Corporation 35 Van Kirk Drive #11 and 12 Brampton, Ontario L7A1A5 Phone: (905) 456-1072 FAX: (905) 456-2269</p>
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