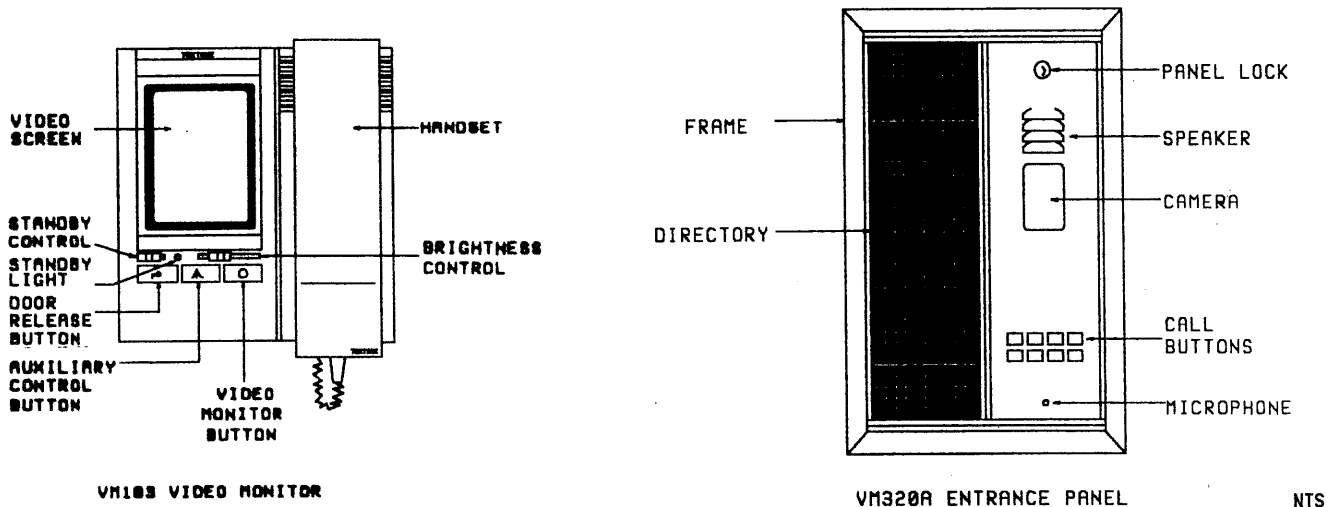


TekTone Sound & Signal Mfg., Inc.  
Tek-View Video Intercom System  
**INSTALLATION INSTRUCTIONS**  
**MODELS: VM320A, VM103**

**APPLICATION**

The Tek-View intercom system is a combination of an audio communication system with a video monitoring system. This provides not only audio communication with the caller by the resident, but also visual identification capability.

Audio communication is carried on by means of an amplified handset intercom system at the apartment and hands free loudspeaker convenience at the entrance panel. Controlled entry is permitted by means of a push button actuated electric door release.

Optional equipment is available to provide additional features, including delayed door lock operation, P.O. key door release and multiple monitors in the same suite. Contact your TekTone dealer for details.

**PROCEDURE**

1. Read installation instructions before proceeding.
2. Install housings and wiring.
3. Connect wires and install equipment.
4. Apply power and check operation.

**SYSTEM COMPONENTS**

<u>MODEL</u>	<u>DESCRIPTION</u>
CT090	Wire termination board. One required per VM103.
IH109	Housing (flush) for VM103.
SS250	Transformer. 250 VA 16 VAC. One required per control unit and power supply.
PK310A	Control Unit (Amplifier/Power Supply). One required per system.
PK311	Power Supply. (See system layout section for units required.)
PK417	Control unit. One required for each additional entrance panel.
VM103	Video monitor.
VM320A	Entrance panel.
VM200	Video distribution amplifier
IH109S	Housing (surface) for VM103

EQUIPMENT LOCATION AND HOUSING INSTALLATION

ENTRANCE PANEL (VM320A) ENCLOSURE:

- A. The entrance panel must not be located in areas of extreme heat or cold where the operating temperature range of 0-50 C might be exceeded or where it will be subjected to moisture or adverse weather conditions.
- B. The entrance panel must be located away from direct sun exposure. Sufficient light must be provided to illuminate the caller at night. A minimum of one 40 watt flourescent bulb should be installed above the entrance panel. (For best picture quality, source of light should be directed to illuminate subjects face.)
- C. The top of housing should be located approximately 66" above the finished floor surface to place the camera opening approximately 61" above the finished floor.
- D. Eight call buttons may be accomodated on the standard 2 gang VM320A entrance panel. If a P0202I Post Office lock panel is used, minimum panel size is 3 gang. For additional buttons, consult the ENTRANCE PANEL HOUSING CHART (FIG. 1) below.

FIG. 1

No. of buttons per system	No. of panels			Housing	Wall Opening Width (A)*
	DIR	CAM	BTN		
1 - 8	1	1	0	OH192	8-1/2"
12 - 60	1	1	1	OH193	12-1/2"
64 - 88	2	1	1	OH194	16-1/2"
92 - 120	2	1	2	OH195	20-1/2"
124 - 168	3	1	2	OH196	24-1/2"

- 1. For postal option (P0202I), additional panel required.
- 2. Wall opening height of OH190 series housing is 17-1/4".
- 3. For systems larger than 168 buttons, contact factory.
- 4. Wall opening width (A)\*, see FIG. 2.

CONTROL UNIT:

The Control Unit (PK-310A Amplifier/Power Supply) should be installed inside the Entrance Panel and will normally be shipped that way. If the Control Unit must be installed away from the Entrance Panel for some reason, observe notes regarding wiring and do not locate where the operating temperatures of 0 - 40 C will be exceeded.

TRANSFORMER:

The transformer must be located in an accessible area near a source of 117 VAC and away from extreme heat. The transformer should be kept at least 3' (but preferably not more than 50') away from the PK310A. Observe all local electrical codes.

VIDEO MONITOR:

The video monitor must not be located in an area where the operating temperature of 0 - 40 C may be exceeded or in an environment with high humidity. The top of the VM103 housing (IH109) should be located approximately 66" above the finished floor.

Refer to FIG. 3 and VM103 equipment installation notes (page 7) for installation of IH109 housing.

FIG. 2 OH-Series Entrance Panel Housing

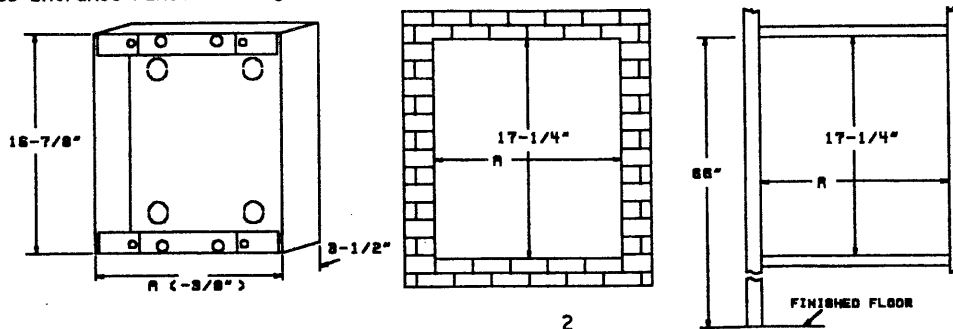
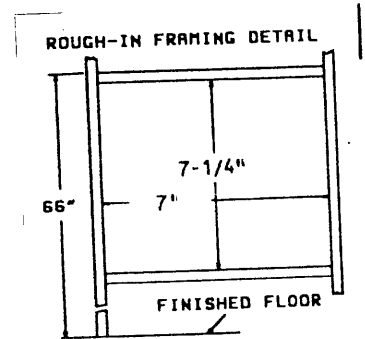
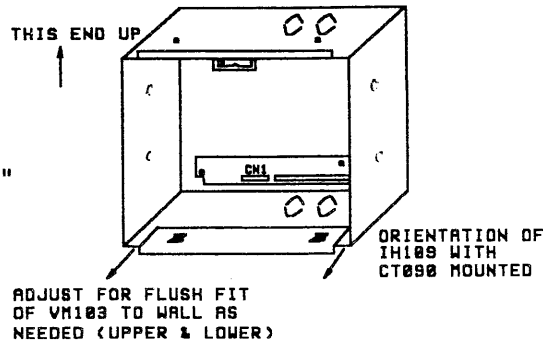


FIG. 3

IH-109 Video Monitor Housing

OVERALL DIM: H: 7-1/2"; W: 7"; D: 3-1/2"



SYSTEM LAYOUT

Each VM103 video monitor is equipped with a preheat, instant on feature which provides for an immediate picture at the selected monitor. Use of this feature places some restrictions on the number of monitors per control unit and required number of control units. Plan system layout in conjunction with the following notes:

- A. Maximum number of VM103 monitors without instant on feature per PK310A is 50 units. Maximum number of VM103 monitors with instant on feature per PK310A is 20 units. Only one PK310A control unit used per system.
- B. Each additional 80 VM103 monitors WITHOUT instant on feature require a PK311 control unit and SS250 transformer. Each additional 40 VM103 monitors WITH instant on feature require a PK311 control unit and SS250 transformer. (See IL416 for PK311 wiring and installation instructions.)
- C. Up to three separate VM320A entrance panels may be used per system, following the above guidelines for each entrance panel used. (See IL417 for wiring instructions, 3 entrance panels.)

WIRING INSTRUCTIONS

Run wires according to WIRING LAYOUT DIAGRAM (FIG. 4) in conjunction with the following notes.

- A. Each VM103 housing (IH109) is supplied with a wire termination board (CT090) which includes a 75 ohm, 1/2 watt, noninductive end of line resistor. Resistor MUST BE cut if unit is not end of line. DO NOT cut resistor on unit at end of line.
- B. The maximum number of VM103 monitors per riser is 20. The maximum length of each riser is 200 feet.
- C. The WIRE TERMINATION BOARD (CT090) provides connecting terminals for the VM103. Terminal functions are as follows:
  - 1 and 2 : Microphone for handset connects to 1,2 on PK310A.
  - 3 and 6 : Receiver for handset connects to 3,6 on PK310A.
  - 4 (L.L) : Ring terminal. (Selective wire which connects to individual push button at entrance for ringing unit 1 KHz tone signal. Also detects tone and turns monitor control circuits on for 1 minute.)
  - C.T. : Control terminal. (When terminal 4 or L.L. detects a tone, C.T. also goes high [approx. 10-12 VDC]. This system common connects to C.T. at PK310A which turns power on to camera via CP and CN.
  - S.T. : Preheat terminal. (When this terminal is jumpered to +, it will Preheat picture tube to instant-on feature. This increases standby current from 20 MA to 100 MA.)
  - L.E. : Lighting terminal. (Used for optional lighting at entrance panel. Requires additional control unit and additional system common.)
  - + : +17 VDC for connection to PK310A terminal P.
  - : Ground for connection to PK310A terminal N.
- D. The CONTROL UNIT (PK310A) provides connecting terminals with the following functions:
  - 1 and 2 : Input from microphone of VM103 handset. Balance input.
  - 3 and 6 : Audio output to receiver on VM103 handset.
  - M and G : Microphone input located at entrance panel (VM320A). Polarity sensitive.
  - Z : 1 KHz OCS tone output for ringing monitors.
  - W : Reset terminal for power supply. Shorting this terminal to - will interrupt +17 VDC for approx. 2 seconds.
  - S and C : Audio output to speaker at entrance panel (VM320A).
  - E : Post office key lock input. Shorting to C terminal will give door strike output on L.
  - L : Door strike output 16 VAC 1 AMP.
  - N : - Neg. for +17 VDC.
  - P : +17 VDC output for monitors @ 3 amp maximum regulated.
  - T1 and T2 : 16 VAC input 250 VA
  - C.T. : Control terminal common voltage coming from monitors C.T. terminal. Energizes relay for camera output voltage CP and CN.
  - CP : +15 VDC output for camera. Voltage is only present when C.T. terminal has approximately 10-12 VDC.
  - CN : Ground for camera voltage.

- E. The DISTRIBUTION AMPLIFIER (VM200) provides connecting terminals with the following functions:
- 1 : Input terminal for connection from camera output.
  - 2 : Video output terminal for one riser.
  - 3 : Common connection for turning system on. (Connects to PK310A control unit terminal C.T.)
  - 4 : Common connection for turning on VM200. (Connects to all VM103 monitors receiving video feed from VM200.)
  - 5 : Video output terminal to other VM200's. (Comes directly from camera output. Cut jumper wire beside terminal 5 if used.)
  - 6,7,8 : Video output terminals for one riser each.
- F. Wire gauge sizes for common wires only are as follows:
- +, -, CT : Minimum 18 gauge for up to 50 monitors. Minimum 16 gauge for up to 100 monitors.
  - 1,2,3,6 : Two twisted pair 22 gauge. Must be shielded pairs if not in metal conduit.
- Intercom communication common wires must be routed away from fluorescent lights and AC lines. For distances of greater than 500 feet use 20 gauge wire. Maximum distance from amplifier for communication wires is 1000 feet.
- G. Wire gauge size for selective wire (4 [L.L.]): 22 gauge. Wire gauge size for camera wires (CP,CN): 18 gauge. Unless specified, all other wires: 22 gauge.
- H. Use 16 gauge wire to connect control unit to the transformer. If wire length is greater than 50 feet, use 14 gauge wire.
- I. For wire length of more than 100 feet, run all power supply wires (+ and -) directly to the control unit location (usually the entrance panel location). For wire length greater than 200 feet, use 16 gauge wire.
- J. Use 2 cond., #18 cable for door release wiring. If release is located more than 50' from the control unit, use #16 wire.
- K. The control unit (PK310A) is rated for 3 amps at 17 VDC and may be used to supply power for up to 50 VM103 (without instant on feature). See SYSTEM LAYOUT section for additional information. Microphone wiring must be shielded cable and the shield must be connected to terminal G.

FIG. 4 WIRING LAYOUT DIAGRAM

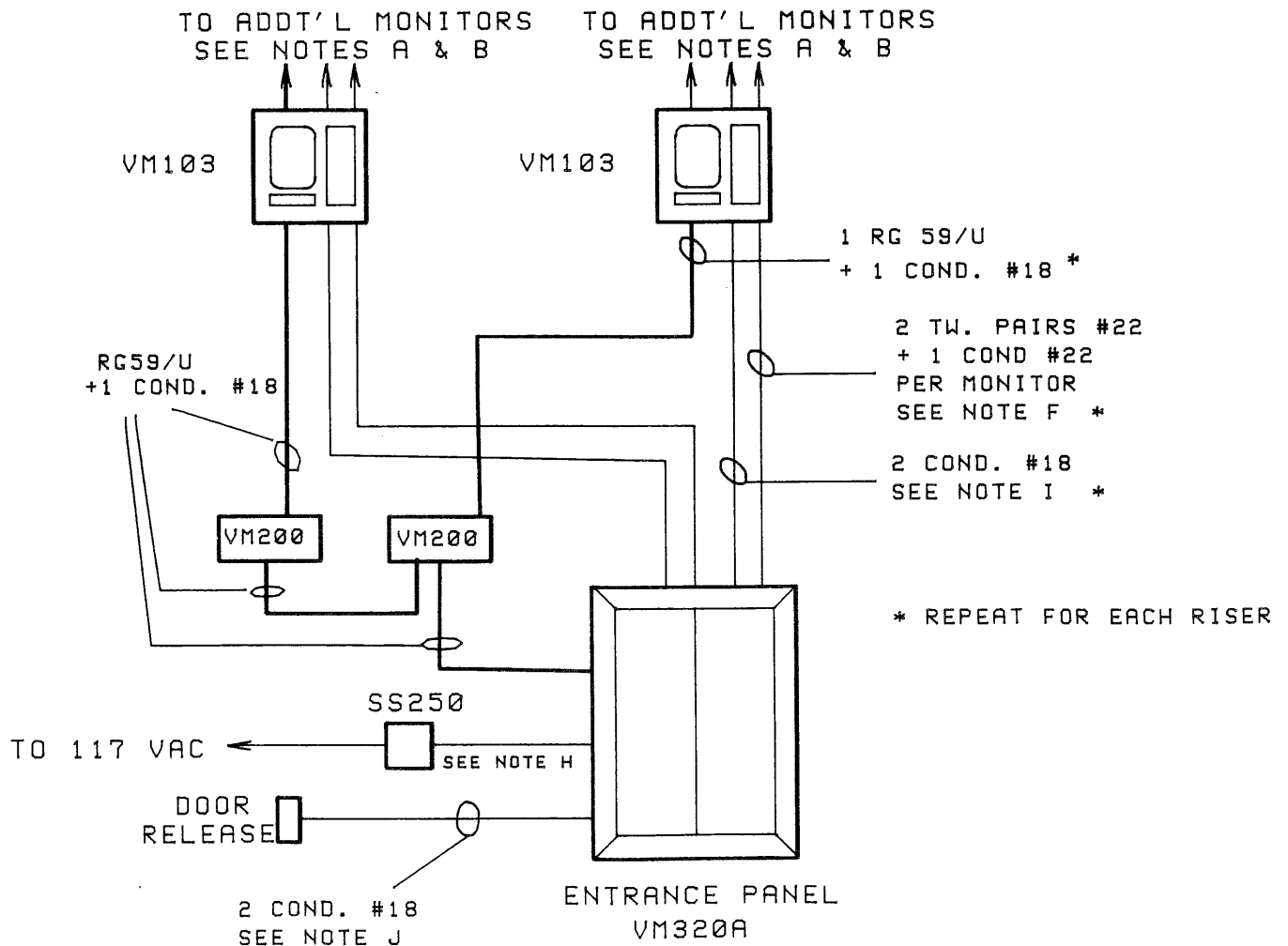
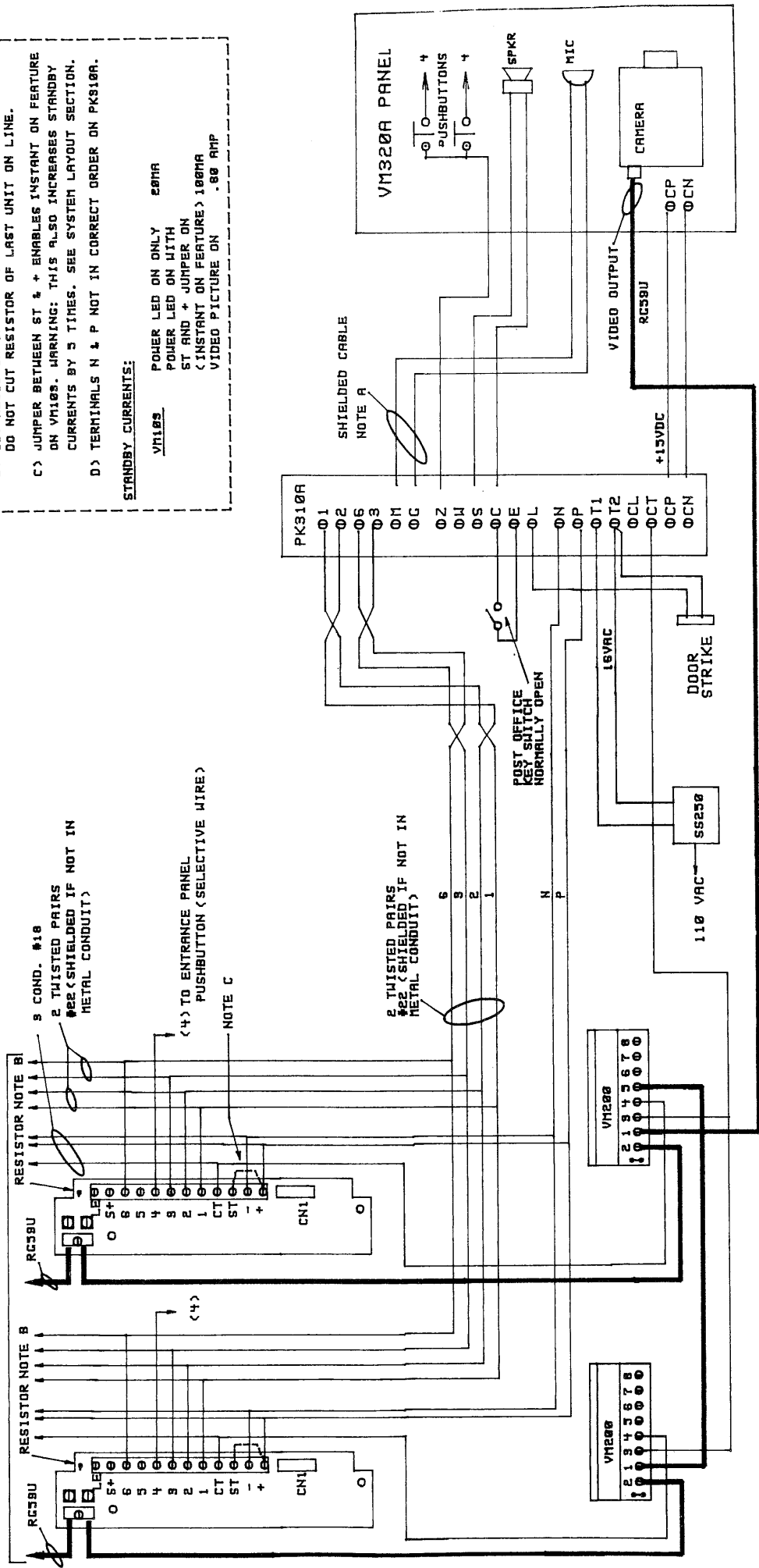


FIG. 5 CONNECTING DIAGRAM

TO ADDITIONAL VM109 UNITS (MAX. 10)  
 MAX. DISTANCE: 100 FT.



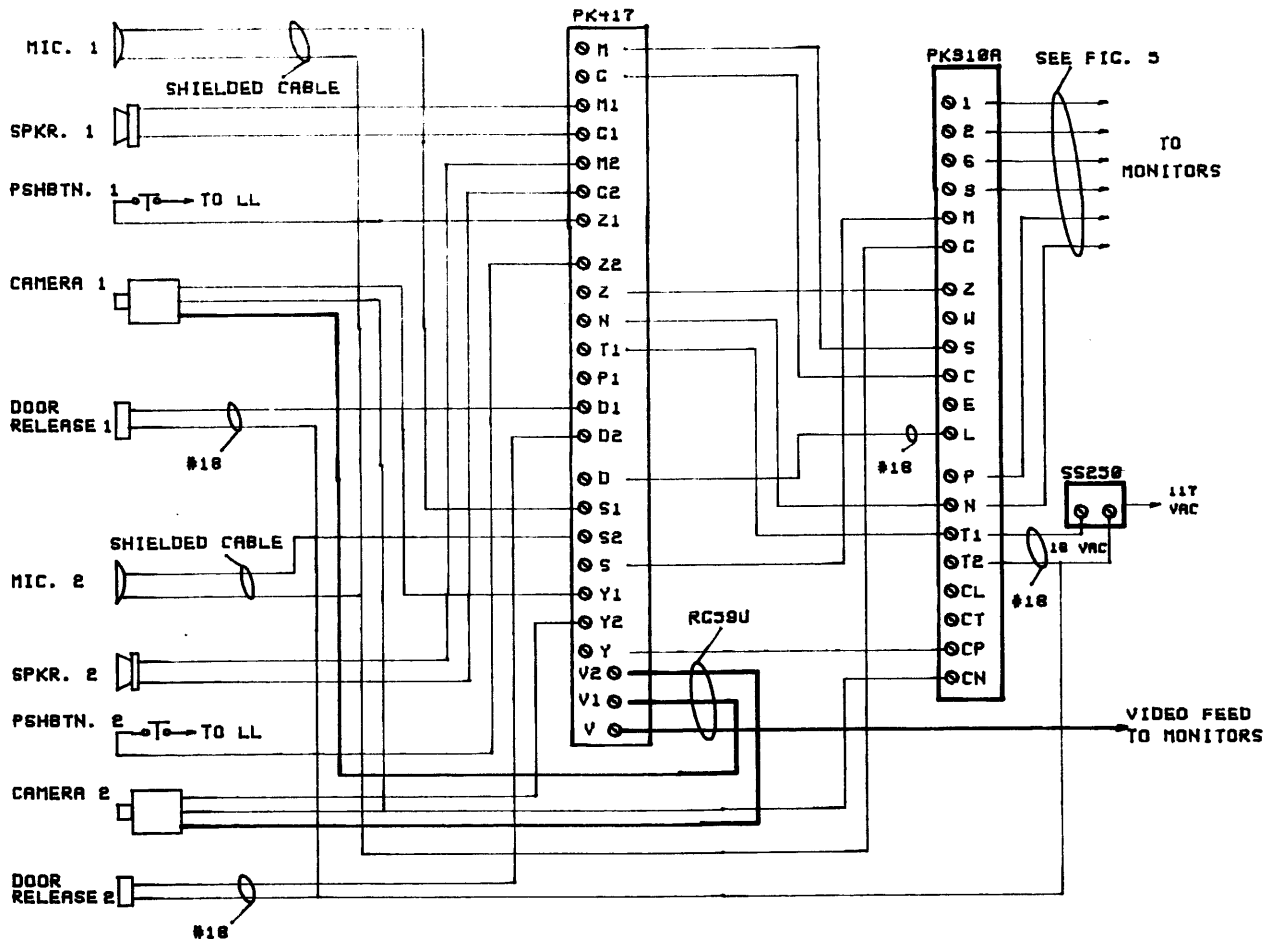
**NOTES:**

- A) SHIELDED CABLE MUST BE USED FOR MICROPHONE. CONNECT SHIELD TO C TERMINAL.
- B) CUT RESISTOR IF UNIT IS NOT END OF LINE. DO NOT CUT RESISTOR OF LAST UNIT ON LINE.
- C) JUMPER BETWEEN ST & + ENABLES INSTANT ON FEATURE ON VM109. WARNING: THIS ALSO INCREASES STANDBY CURRENTS BY 5 TIMES. SEE SYSTEM LAYOUT SECTION.
- D) TERMINALS N & P NOT IN CORRECT ORDER ON PK310A.

**STANDBY CURRENTS:**

VM109 POWER LED ON ONLY 20mA  
 POWER LED ON WITH ST AND + JUMPER ON (INSTANT ON FEATURE) 100mA  
 VIDEO PICTURE ON .00 AMP

FIG. 6 CONNECTING DIAGRAM  
DUAL ENTRANCE



- NOTES: 1. CONNECT PD LOCK (P0202) TO TERMINALS P1 AND N ON PK417.  
 2. USE 18 VAC TRANSFORMER CONNECTION.  
 3. CONNECT SHIELD FOR MIC. CABLE TO C TERMINAL ON PK910A.  
 4. FOR ADDITIONAL INSTRUCTIONS, SEE FIG. 5.

**WIRE CONNECTIONS AND EQUIPMENT INSTALLATION**

Check all wires for shorts to each other and for grounds. Connect all wires (EXCEPT 117 VAC CONNECTIONS TO TRANSFORMERS) as shown in the connecting diagram FIG. 5 and in accordance with the wiring instructions. Refer to FIG. 6 for dual entrance wiring.

**ENTRANCE PANEL (VM320A):**

- A. Install frame (OF190 series) into housing (OH190 series).
- B. Connect all wires necessary as shown in connecting diagram FIG. 5. Refer to FIG. 6 for dual entrance wiring.
- C. Connect coaxial video cable (RG59U) to the camera cable connector on the back of the camera. Connect the remaining wires from the cable connector to CN and CP to supply power.
- D. Install the front panels into frame following the directions included with the directory panel.

**VIDEO MONITOR (VM103):**

- A. Connect all necessary wires as shown in the connecting diagram FIG. 5. Refer to FIG. 6 for dual entrance wiring. IH109 housing includes four knock-out holes for cable inlet.
- B. Mount the VM103 to the IH109 housing using the following procedure:
  - 1. Plug the connector from the VM103 into the receptacle on the wire termination board (CT090) noting the correct polarity.

2. Interlock hook located at the bottom of VM103 unit with catch located at the bottom of IH109 housing. Push the top of the VM103 toward the top of the IH109 housing until the monitor chassis snaps into clip at top of IH109. If monitor has been installed properly, bottom of monitor can not be pulled away from housing.

NOTE: The IH109 is equipped with two slotted brackets located at the top and bottom of the housing. The brackets are secured to the housing with four screws. Screws may be loosened and brackets adjusted if necessary for a flush fit of the VM103 to the finished surface. See FIG. 3. Secure IH109 to stud using holes provided on housing sides.

4. Tighten screw located at bottom of VM103 unit.
5. Switch the standby control (small white switch just below lower left corner of video screen) to the OFF (left) position until ready to make initial tests on the system.

#### TRANSFORMER (SS250):

- A. Connect transformer 16 volt terminals to PK310A, terminals T1 and T2. Connect transformer primary to 117 VAC observing all applicable electrical codes.

#### SYSTEM CHECK-OUT


Check entire system according to the operating instructions, turning each monitor on individually so that if a problem exists it may be easily identified. If the system does not operate as indicated, refer to Trouble Shooting section.

#### OPERATING INSTRUCTIONS


##### A. AT ENTRANCE PANEL (VM320A):

1. Momentarily press button corresponding to desired suite.
2. Reply in a normal voice when spoken to. Reply is hands free.
3. When door release buzzes, enter through door.


##### B. AT SUITE STATION (VM103):

1. When call tone is heard, pick up intercom handset.
2. Adjust picture brightness as necessary using the slide control located just below lower right corner of video screen.
3. Identify caller on the video screen and converse with them.
4. The door may be opened by pressing the door release button marked  or by depressing completely the hook switch located underneath the handset.

Each monitor stays on for approximately 1 minute when called. If instant on feature as described in SYSTEM LAYOUT section is used, an immediate picture will appear. Without instant on feature, picture is delayed approximately 5 seconds. When the door release is activated or when a second caller rings another suite, the monitor will shut off.

Calls may also be initiated from the VM103 by pressing the video monitor button marked . This activates the camera and may be used to re-initiate a call that has been canceled or to monitor the entrance panel. The monitor will stay on for approximately 1 minute. Only 1 monitor at a time should be on using video monitor button.

If standby control is switched ON, red LED will light and monitor will remain on standby, ready to operate when another call is placed from the entrance panel. Note: Performance may vary with large or small installations. If no video contact with the entrance is desired or if a tenant is leaving the suite, the standby switch may be turned OFF. Audio communication will still operate in the normal manner.

The auxiliary control button on the VM103 unit marked  is reserved for auxiliary devices. Contact TekTone or your factory representative for details.

## SYSTEM MAINTENANCE

### ENTRANCE PANEL (VM320A):

Directory panels are accessible by removing the self-tapping metal screw(s) located in the top L-channel just above each panel. After removing screws, lift L-channel away from frame. Panel can now be removed. Apply directory listings as desired and replace panels by reversing the above procedure.

### CONTROL UNIT (PK310A):

Each PK310A has a 5 amp, 3AG fuse as an overload protection. Replace this fuse with same type and rating only. If this fuse continually opens, check for wrong wiring or equipment failure.

### VIDEO MONITOR (VM103):

Refer to FIG. 7 for internal adjustment locations.

## TROUBLE SHOOTING

### SYSTEM:

Check for 15 - 18 VDC on PK310A terminals P and N. This voltage should also appear between the + and - terminals of all video monitors. NOTE: The PK310A has an electronic current limiter that will shut the unit off in the presence of a short circuit on the output terminals. When the short is removed, the output should appear again. The current limiter will also act in case of an overload (too many monitors), which will cause the output to switch on and off rapidly. This may be noticed only if all monitors are turned on.

If power supply function is satisfactory and if monitors turn on (screen lights up) but no picture is seen, the camera may be checked by connecting a monitor directly. If the camera does not turn on check for 15 VDC on camera terminals CP and CN, then check for 10 VDC on PK310A terminal CT (terminal N is negative). Terminal CT voltage comes from the video distribution system.

Problems with the video distribution system are usually due to wrong wiring. Check that CT terminal on each video monitor connects directly to the distribution amplifier (VM200) that is feeding the video signal to it. This is necessary because the VM200 is turned on by the connection from the CT terminal on the active monitor to VM200 terminal 4. Terminal 3 on the VM200 connects to PK310A terminal CT to turn on the camera.

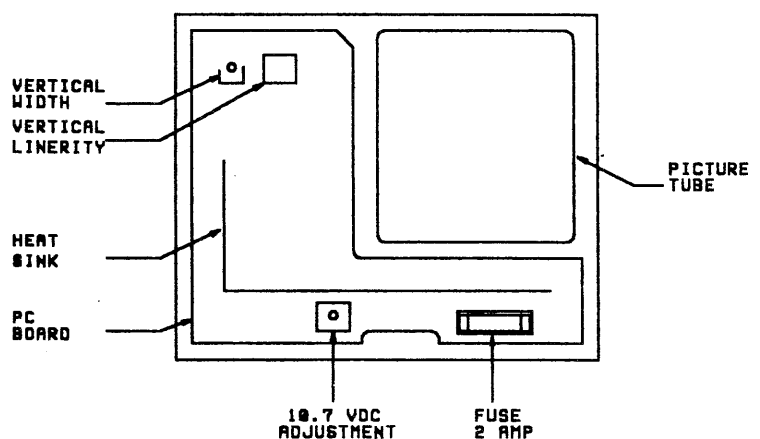
### INTERCOM:

Wrong wiring is the cause of most intercom problems. The PK310A may be checked by disconnecting the common wires and connecting a monitor directly to and then checking communication. The telephone operation is independent of the video section and should operate even if the video does not. The use of twisted pair wiring as shown on the connecting diagram FIG. 5 is essential for operation.

### VIDEO MONITORS:

Video monitors are best checked by substitution. Internal adjustments are available in the monitor to correct vertical linarity and vertical width problems. See FIG. 7 for adjustment locations. The 10.7 VDC control should not normally need adjustment. If red standby light is not illuminated when unit is turned on and if +17 VDC is present, check 2 amp fuse.

FIG. 7 VM103 Rear View



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