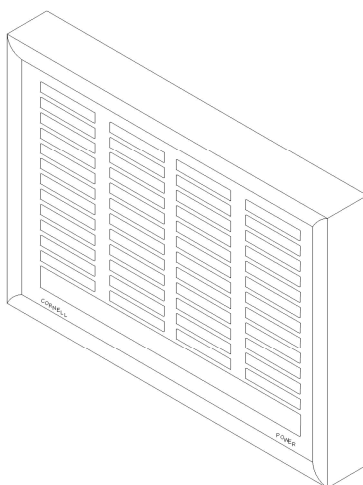


Installation Guide



Series A-4400 Annunciators

For use with the following:

- *Cornell 4000-Series Nurse Call – Single Status*
- *Cornell 4000-Series Nurse Call – Multi-Status*
- *Cornell 2000-Series Clinic Status indication*

CAUTION

**This system operates at 24 VDC
Insure that the Power Supply
Is set to this voltage**

CORNELL PART NUMBER = D-4400-I

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A. OVERVIEW:

A1. GENERAL:

The A-4400 Series Annunciators are tabular, Tone/Visual-type indicator units.

Audible indication is provided via an internal sounder, in conjunction with an appropriate plug-in sounder control board.

Visual indication is provided via a tabular array of LEDs, which may be factory configured in a variety of arrangements and/or colors.

Electrically, the A-4400 Series Annunciators utilize 24 Volt DC, Common Positive circuitry.

Each A-4400 Series Annunciator may be configured to work in one of three ways:

- As a Single-Status Nurse Call Annunciator
- As a Multi-Status Nurse Call Annunciator
- As an LED-type Clinic-Status Annunciator

The A-4400 Series was intended to functionally replace the following Cornell products:

- 4000-Series Nurse Call Annunciators (Both Single and Multi-Status versions)
- 2000-Series Clinic Status Annunciators (replaces single and multi-color LED models)

A2. DESIGN GOALS:

The design goals for the A-4400 Series included, but were not limited to the following:

- Compatibility with existing 4000-Series Nurse Call Systems – the A-4400 Series Annunciators can be added to existing systems and combined with existing “old-style” annunciator equipment (both Single-Status and Multi-Status versions).
- Compatibility with existing 2000 Clinic Status Systems – Where indication, without control is required the A-4400 Series Annunciators can be added to existing systems and combined with existing “old-style” LED-type annunciator equipment. (However, please note that A-4400 Annunciators do not contain control switches / pushbuttons.)
- Improved aesthetics – Cornell wanted the A-4400 Series to have a clean, modern look, with sufficient room to label each unit in a neat, professional manner. The mounting system leaves no visible fasteners
- Flexible – The A-4400 product line can be factory-configured in a variety of ways, and has several field-configurable options. Creating a versatile product that does many things well allows Cornell to control our internal costs – a “win-win” for both you and us.
- Ease of installation – like its predecessors, the A-4400 product was designed to be simple to install and to configure in the field. Personnel who are familiar with our previous-generation Cornell annunciators should have little to no trouble adapting to the A-4400 Series.
- Reliability – like its predecessors, the A-4400 Series incorporates simple yet rugged circuitry.
- Competitive pricing – while meeting all of the other goals above, we wanted to keep it affordable.
- Secure Mounting – The mounting system utilized requires a special “key” for removal from the mounting surface, plus the fasteners are hidden. This results in a secure, tamper-resistant installation.
- User-customizable labeling – the A-4400 Series utilizes laser or inkjet-printable slipsheets, which can be replaced from the front of the unit without removing it from the wall. The slipsheets are also designed on a standard, readily-available 8.5 X 11-inch format, and can be printed from most standard office PC equipment and printers. This allows simple editing/customization by the installer and the end-user.

A3. AVAILABLE SIZES / STANDARD FACTORY CONFIGURATIONS:

The A-4400 Series Annunciators are all built on the same 8.7” X 12.2” frame and circuit board assembly. When assembled at the Cornell factory, each A-4400 Annunciator may be arranged in one of the following standard factory configurations:

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MODEL NUMBER:	ZONES X LEDs PER ZONE:	NUMBER OF RECTANGLES (1 Rectangle = 1 Zone)			NUMBER OF LEDS PER RECTANGLE:	
		TOTAL:	HORIZ.:	VERT.:	RECTANGLE:	TOTAL:
A-4448-1	(48 X 1)	48	4	12	1 (RED)	48
A-4424-1	(24 X 1)	24	4	6	1 (RED)	24
A-4424-2	(24 X 2)	24	4	6	2 (RED)	48
A-4416-1	(16 X 1)	16	4	4	1 (RED)	16
A-4416-2	(16 X 2)	16	4	4	2 (RED)	32
A-4416-3	(16 X 3)	16	4	4	3 (RED)	48
A-4412-1	(12 X 1)	12	3	4	1 (RED)	12
A-4412-2	(12 X 2)	12	3	4	2 (RED)	24
A-4412-3	(12 X 3)	12	3	4	3 (RED)	36
A-4412-4	(12 X 4)	12	3	4	4 (RED)	48
A-4408-1	(8 X 1)	8	2	4	1 (RED)	8
A-4408-2	(8 X 2)	8	2	4	2 (RED)	16
A-4408-3	(8 X 3)	8	2	4	3 (RED)	24
A-4408-4	(8 X 4)	8	2	4	4 (RED)	32
A-4408-5	(8 X 5)	8	2	4	5 (RED)	40
A-4408-6	(8 X 6)	8	2	4	6 (RED)	48

Consult the Cornell A-4400 Series Slipsheet Layout Templates (available on-line at www.cornell.com) for illustrated examples of the configurations listed above.

A4. ACCESSORY ITEMS FOR CORNELL A-4400 SERIES ANNUNCIATORS:

- A-4450 Tone Card for A-4400 Series (1 needed per annunciator location, except for silent operation)
- A-4460 Custom Slipsheet – (Select when you want Cornell to create a Custom Slipsheet to your requirements – use form “D-4400-G” to show layout)
- A-4461 Slipsheet Kit – Includes:
- 6 Blank Velum Sheets
 - 2 replacement Overlay Sheets
 - D-4400-CD CD-ROM (See below)
- A-4462 Mounting Hardware Kit (1 needed per annunciator) – includes:
- Mounting Hardware (bracket and lock set)
 - D-4400-MT Mounting Template

A5. CUSTOM ANNUNCIATOR PART NUMBERS / CONFIGURATION:

To order a Custom Configured A-4400 Series Annunciator, please order and note the following:

PART NO:	QUANTITY:	DESCRIPTION		:
A-4400-O	1 per Annunc.	Base Annunciator Assembly (Without LEDs and Frame)		
A-4450	(optional)	Tone Card	(1 required per location, unless silent operation is desired)	
3010-040	(As Needed)	LED – Red	(Use D-4400-G Design Guide sheet to show layout)	
3010-041	(As Needed)	LED – Amber	(Use D-4400-G Design Guide sheet to show layout)	
3010-042	(As Needed)	LED – Green	(Use D-4400-G Design Guide sheet to show layout)	
3010-043	(As Needed)	LED – Blue	(Use D-4400-G Design Guide sheet to show layout)	
7360-001	(Pick 1 Frame)	Frame – Graphite (Standard Color – Metallic Grey)		
7360-002	(Pick 1 Frame)	Frame – Silver [Chrome - Similar to US26 & ANSI/BHMA 672]		
7360-003	(Pick 1 Frame)	Frame – German Silver [Satin Anodized - Similar to US28 & ANSI/BHMA 628]		
7360-004	(Pick 1 Frame)	Frame – Pale Gold [Bright Brass Anodized - Similar to US3 & ANSI/BHMA 666]		

Note: All Frames have a smooth, rounded front face and brushed textured edges.

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A6. DOCUMENTATION AVAILABLE FOR A-4400 SERIES ANNUNCIATORS:

D-4400	Sales Cut Sheet for A-4400 Series Annunciators
D-4400-I	Technical Manual (this manual that you are presently reading)
D-4400-CD	CD-ROM containing Slipsheet Templates, Install Manual & Other Literature
D-4400-G	Planning Guide (used for layout of Custom Annunciator)
D-4400-MT	Mounting Template (full-scale, printed on 11" X 17" stock)

A7. VISUAL ORIENTATION "AT A GLANCE":

Refer to the following diagrams, and the text that follows, for a visual overview of a typical Cornell A-4400 Series Annunciator, and the features and options associated with it:

- Diagram #A1 (typical front & side views) – points out features, switches, etc. that are accessible from the front and provides nomenclature reference
- Diagram #A2 (typical rear view) – points-out features, sockets, terminal strips, jumpers etc. that are accessible from the rear and provides nomenclature reference

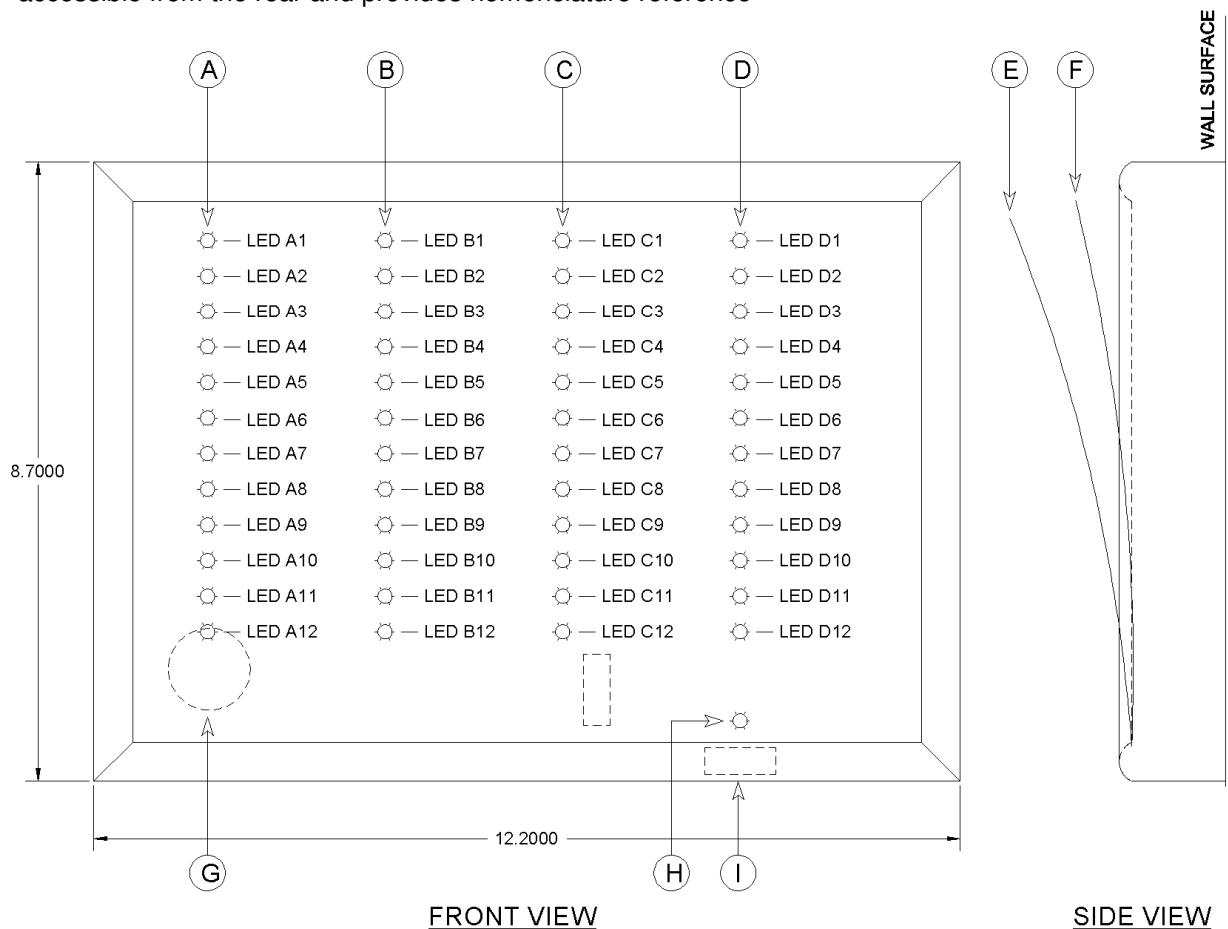


Figure A1 – Typical A-4400 Series Annunciator – Front & Side View

- A** Column "A" LEDs - Qty = 12 [RED, unless ordered in special color scheme] (Depending upon the annunciator configuration, some may have been omitted.)
- B** Column "B" LEDs - Qty = 12 [RED, unless ordered in special color scheme] (Depending upon the annunciator configuration, some may have been omitted.)
- C** Column "C" LEDs - Qty = 12 [RED, unless ordered in special color scheme] (Depending upon the annunciator configuration, some may have been omitted.)

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- (D)** **Column “D” LEDs** - Qty = 12 [RED, unless ordered in special color scheme]
(Depending upon the annunciator configuration, some may have been omitted.)
- (E)** **Overlay Sheet** – Clear, textured polycarbonate plastic with non-glare surface
(Replaceable from front – protects and holds printed slipsheet in place)
- (F)** **Printed Velum Slipsheet** – This sheet contains the text associated with the unit.
The slipsheet is printed on fade-resistant velum, using a standard ink-jet or laser printer.
(Refer to “Slipsheet Printing Instructions” for more information.)
- (G)** **Sounder** - [Hidden behind faceplate] (See Fig. A2 Item “T” for more info.)
- (H)** **Power Indicator LED** – Color = Green
Illuminated = Annunciator is receiving 24-Volt DC Power
- (I)** **Magnetic Lamp Test Switch** – [Hidden behind frame] – Temporarily holding a magnet near this location will illuminate all LEDs, allowing proper operation of all LEDs to be verified. (When configured for single-status mode, the sounder will also be actuated)

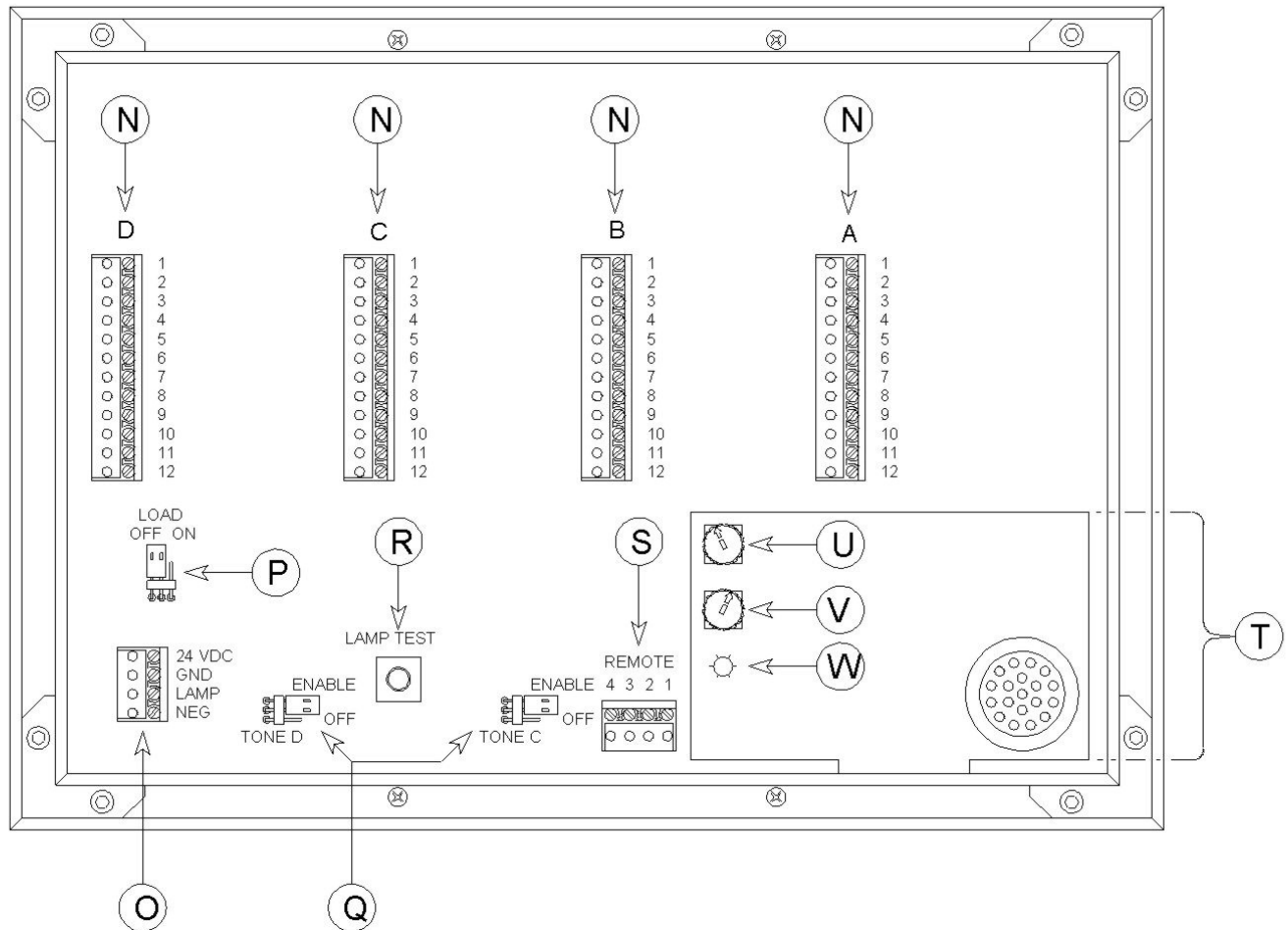


Figure A2 – Typical A-4400 Series Annunciator – Rear View

- (N)** **LED Connections** – Removable terminal strips (qty = 4) 12 positions per strip:
Each LED Input = Switched Negative from corresponding field device(s). (Depending upon the configuration ordered, some terminals may be non-operational)

NOTE: Columns appear in reversed order when viewed from the rear, since they are oriented as viewed from the front of the Annunciator.

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O

Power Connection – Removable Terminal Strip:

- 24 VDC = Positive 24-Volts DC (from Power Supply “+”)
- GND = Earth Ground Connection (for ESD protection)
- LAMP = External “Lamp Test” Switch Connection (optional)
One side of switch goes to this terminal
Other side of switch goes to “NEG” terminal
- NEG = Negative 24-Volts DC (from Power Supply “-“)

P

Load Resistor Jumper – (For Multi-Status Systems without Dome Lamps):

Default position = “OFF”

If the A-4400 Series Annunciator is being used in a Multi-Status Nurse Call System, without Corridor Dome Lights (assisted living, etc.), place this jumper into the “ON” position.

(The “ON” position causes increased current-draw whenever a station is actuated. This may be required for the Controller to properly recognize calls.)

If System = Single-status or Clinic-Status, place this jumper in “OFF” position.

Q

Tone Enable Jumpers (qty = 4) – Default Position = “ENABLE”

[“TONE B” & “TONE A” are hidden behind the Sounder Card.]

When used in Single-Status Mode – Each jumper corresponds to a column of LEDs, and functions as follows:

- ENABLE = All LEDs in column provide voltage at “TG” Terminal
- OFF = Sounder will be silent when LEDs in column are lit

R

Lamp Test Switch – Press and hold this switch to illuminate ALL LEDs (Also see “O” above, and Figure A1 – “Magnetic Test Switch”)

S

Sounder Connections (Removable Terminal Strip):

- 1 = “TG” – Tone Generator Input
(Jumper to terminal 4/“Tone” for single-status operation)
- 2 = “AT” – Multi-Status Input
(Tie to “HI” Output of Controller when used in Multi-Status Mode)
- 3 = “PLC” - Input, for 2000-Series Clinic Status Systems, where a Designated PLC or Relay Board Output will control pulse patterns
- 4 = “Tone” Output [Linked to “Tone Enable Jumpers” – See “Q” above]
Provides a negative voltage, whenever any LED in an Enabled column illuminates.

T

Tone Card – (Plugs into socket on main circuit board)

U

Sounder Volume Control (Potentiometer “P1”)

Controls the sound level in all modes where the internal sounder is used

V

“TG Rate” Control (Potentiometer “P2”) – only functions when the Annunciator is used in Single Status Mode. Controls Beep Rate (slow to fast) from:

- Slowest = Approximately 3 Beeps per minute (one every 20 seconds)
- Fastest = Approximately 2 Beeps per second

W

“Power” LED (Green) Lit = Sounder Board is receiving 24-Volt DC Power

B. OPERATION:

B1. SINGLE-STATUS NURSE CALL OPERATION

When configured for Single-Status Operation – The A-4400 Series Annunciator provides IDENTICAL Audible and Visual indication for ALL associated field points, as follows:

When an Alarm is actuated at an associated Remote Station or Monitor Point:

- The Alarm is Visually indicated by a corresponding LED, which will illuminate in a Steady manner.
Each such LED shall remain lit until the associated station or point is reset / cleared.
- The Alarm is Audibly indicated by via a pulsing tone (beep, pause, beep, pause ...)
The pulsing tone shall continue until ALL LEDs at the Annunciator are cleared.

B2. MULTI-STATUS NURSE CALL OPERATION

When configured for Multi-Status Operation – A Cornell 4000-Series Controller is also required (Cornell Model NC-101, NC-102A, or NC-102D).

(Refer to Manual / Documentation for associated Controller, and to field wiring drawings for Cornell 4000-Series Dual and Triple-Status Nurse Call Systems for more information.)

When the proper combination of equipment is provided, the A-4400 Series Annunciator provides Audible and Visual signaling, which differentiates between up to three different status conditions as follows:

MULTI-STATUS VISUAL INDICATION:

When configured for Multi-Status Operation, the LED flash rate (Steady, Slow Flash, or Fast Flash) operates independently for each LED, based upon the priority of the associated Remote Station or Monitor Point.

- Steady LED (“S”) = Low Priority (Example: Bed Station Call)
- 1 Flash per second (“F”) = Mid Priority (Example: Bathroom Station Call)
- 2 Flashes per sec. (“P”) = High Priority (Example: Code Blue Station)

Where multiple Remote Stations are installed within the same room, the corresponding LED will indicate the highest priority call that exists within such rooms (provided that the stations are wired together properly).

Where multiple stations or points are being indicated simultaneously; different flash rates may be seen concurrently for different LEDs: some steady, some flashing slowly, some flashing rapidly. It operates in this manner because the human eye can distinguish between multiple simultaneous conditions, and the rapidly flashing LEDs will stand-out as being more “urgent”.

MULTI-STATUS AUDIBLE INDICATION:

When configured for Multi-Status Operation, the Sounder Pulse rate is controlled by the “HI” Output of the Controller.

- 1 Beep every 6 seconds = Low Priority (Example: Routine or Bed Station Call)
- 1 Beep per second = Mid Priority (Example: Bathroom Station Call)
- 2 Beeps per second = High Priority (Example: Code Blue Station)

When multiple points are being indicated simultaneously; the Controller only trigger the Pulse Rate for the Highest Priority Condition that currently exists

As higher-priority conditions are indicated, the Controller will cause audible indication to escalate accordingly.

Whenever all stations / points of a particular priority are reset or cleared, the controller will cause audible indication to de-escalate or silence accordingly.

It operates in this manner because the human ear can only effectively recognize one sound at a time, and more rapid pulsing will stand-out as sounding more “urgent”.

B3. CLINIC STATUS OPERATION

Cornell A-4400 Series Annunciators may be used for Display-Only or for Tone / Visual Indication, when used within a 2000-Series Clinic Status System.

It is important to note that since the A-4400 Series does not incorporate switches, it cannot be used for systems where lamps or other indicator need to be turned on/off from the annunciator - (In such cases, utilize the A-2100 Series).

It is also important to note that stations and components within a Clinic Status System may be arranged in very many different combinations, in order to meet the unique needs of each facility.

Because of this, there really is no “standard” operation scheme for Clinic Status - the contractor needs to carefully coordinate AND DOCUMENT the desired operation of the system with the end-user. Such documentation needs to be provided to the installer, and to Cornell, for the following purposes:

- For coordination of equipment selection and configuration
- For coordination of required wiring
- For proper labeling and programming of the equipment

(Refer to 2000-Series Design Guide – which may be obtained from www.Cornell.com .) Cornell also recommends reviewing the instructions for printing slip-sheets, as found elsewhere within this manual, prior to design discussions with the system end-user. Such background information may prove useful in discussing / designing the system.

The following information and features are applicable to many Clinic Status installations, and may be used as a general “guide”. However, all options that apply to each project may not have been included, and of the options listed here, many may not actually be utilized:

CLINIC STATUS OPERATION - LED COLORS:

Within most Clinic Status Systems, different color LEDs will be utilized. Each color is used to indicate a particular condition for the Examination Room etc., to which it corresponds. In most cases, if color-coded lamps are utilized outside each Exam Room, the LED colors selected and/or printed color-bands will correspond to such lamps.

In order to utilize such color schemes, the scheme needs to be carefully coordinated with the owner, and the A-4400 Annunciator needs to be ordered in the corresponding configuration. Custom configuration may be required – in such cases, contact your Cornell Sales Representative for assistance and/or a quote.

Example B3-1 – Dental Office:

- White = Patient waiting in room
- Yellow = X-ray needed
- Green = Room ready to be cleaned / re-set for next patient
- Blue = Dentist in Room
- Red = Hygienist in Room

Example B3-2 – Multi-Doctor Family Practice Clinic:

- White = Room Ready Status (also see Example B3-3 Flash Rates)
- Yellow = Nurse / Aide Status (also see Example B3-3 Flash Rates)
- Amber = Parent needed – bring them to the room
- Green = Doctor “A” Status (also see Example B3-3 Flash Rates)
- Blue = Doctor “B” Status (also see Example B3-3 Flash Rates)
- Red = Emergency in Room

CLINIC STATUS OPERATION – FLASH RATES:

Lamp & LED Flash Rates are sometimes used within Clinic Status Systems. Cornell utilizes Programmable Logic Controllers (IOC-Series PLCs), and sometimes P5000F Flasher Modules to provide such features.

As with Lamp Color Schemes, Flash Rates / Patterns produced at the A-4400 Annunciator LEDs will usually match the Flash Rates / Patterns utilized for any Corridor Lamps used outside of Examination Rooms, etc.

In order to utilize such Flash Rate Schemes, the scheme needs to be carefully coordinated with the owner, and the appropriate flasher and/or PLC equipment needs to be configured and ordered. In most cases where

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Flash Rates / Patterns will be used, Cornell suggests that you should contact your Cornell Sales Representative for assistance and/or a quote.

Example B3-3 – Multi-Doctor Family Practice Clinic (Example B3-2 Expanded):

- White = Room Ready Status
 - Off = Room Prepared for next patient
 - On = Room Dirty – needs to be cleaned
 - Flashing = Housekeeping in room
- Yellow = Nurse / Aide Status (also see Example B3-3 Flash Rates)
 - On = Nurse in Room
 - Slow Flash = Nurse Needed
 - Fast Flash = Nurse Needed (Urgent)
- Amber = Parent needed – bring them to the room (Simple On/Off)
- Green = Doctor “A” Status (Sequencing Option utilized)
 - On = Patient Waiting – (System remembers order, in which Patients were “Loaded” into the Exam Rooms)
 - Flash = Doctor Present (When Doctor leaves, presses Green button – this turns Lamp & LED Off - “Next” Green Lamp & LED flashes, indicating where this Doctor should go next.)
- Blue = Doctor “B” Status (Same as Green, but sequences separately)
- Red = Emergency in Room (Always flashes whenever actuated)

CLINIC STATUS OPERATION – SOUNDER OPERATION:

Sounder schemes utilized within Clinic Status Systems vary widely.

In some cases, where simple Sounder Operation is utilized – a simple, single-status tone scheme may work – even if some indications will be silent.

Example B3-4 (Simple System – no flashing or IOC Controllers):

Clinic with ten Exam Rooms

Four Status Conditions per Room (Green, Yellow, Red and Blue)
Sounder Operation only wanted for Red and Blue

In this particular case, the A-4400 Annunciator would be arranged with:

Each Exam Room = 1 horizontal Row of LEDs (There will be 2 “spare” rows)

Column A LEDs = GRN	-	Tone “A” Enable Jumper = Set to “OFF”
Column B LEDs = YEL	-	Tone “B” Enable Jumper = Set to “OFF”
Column C LEDs = RED	-	Tone “C” Enable Jumper = Set to “ENABLE”
Column D LEDs = BLU	-	Tone “D” Enable Jumper = Set to “ENABLE”

The Annunciator would be configured for Single-Status operation

In some cases, when a more complex Sounder Operation Scheme is required, the Sounder may be controlled via one or more IOC-Series PLC Outputs, wired to Sounder Input #3 on the Annunciator.

Examples of such Sounder Operation Schemes include, but are not limited to the following:

- “One-Shot” Operation - produces a single beep any time a switch is pressed
- Pulsing Tone Patterns - Different pulsing patterns for different status conditions

C. INSTALLATION:

C1. PLANNING - ROUGH-IN REQUIREMENTS

When preparing to install A-4400 Series Annunciators, be aware of the following:

- **Required Wall Space** – (Also refer to the Mounting Template, which is shipped with each Annunciator and is also available from the Cornell Website www.Cornell.com.)

In order to permit proper installation, A-4400 Annunciators require the following space, on the surface to which they will be mounted:
 - Space for Annunciator = 12.25 inches (311 mm) Horizontal X 8.25 inches (210 mm) Vertical
 - Free space at top, to allow unit to be placed on mounting brackets
 - = 5/8-inch (16 mm) Vertical, minimum, above top of frame
 - Free space at bottom, to allow use of removal tool
 - = 2-11/16 inches (68 mm) Vertical, minimum, below bottom of frame
 - Free space at sides = (none required – frame may butt against nearby surface)
- **Mounting Style** – A-4400 Series Annunciators are designed to be mounted in a semi-flush configuration. (Refer to “Figure C1 – Section View”, on the next page)
 - The Annunciator itself mounts on the wall surface, suspended via (3) brackets, which are included within the Mounting Kit (Cornell Model A-4462)
 - A Junction Box and/or plaster ring needs to be installed within the wall cavity, behind the Annunciator. (2-Gang minimum, 4-Gang maximum recommended size)
 - The Junction Box / Wall Cavity provides a place to coil a few feet of extra cable. A service loop of cable is required, in order for the Annunciator to be mounted and removed while terminated – permitting service & installation access.
 - CURRENTLY, NO SURFACE-MOUNT ADAPTER / BACK BOX EXISTS. If surface-mount is required, use of a standard A-4000 Series Annunciator is recommended.

C2. PLANNING – RECOMMENDED WIRE TYPES & METHODS

Limited space is available between the Annunciator Main Circuit Board and the mounting surface. Because of this, care must be exercised in planning and installing the wiring.

Cornell suggests the following:

- **Avoid (minimize) wire splices of any type behind the Annunciator:**
First, bring any “home-run” field wiring, or significant quantities of annunciator wire to a separate Junction Box, located in an accessible space. This way, any required splices can be made within this Junction Box. (Refer to “Figure C2 – Recommended Wiring”)

Next, run multi-conductor cables between this junction box and the box/ring located behind the annunciator.

If splices MUST be made behind the annunciator - minimize the quantity, and use secure fasteners (Scotch-Locks, B-connectors, etc.), to prevent them from pulling apart when moved.
- **Use multi-conductor cables, corresponding to each LED column** - If all (12) LEDs are present, use 12-conductor cables for each terminal strip. This minimizes wires that cross-over from one terminal strip to another. If your annunciator only contains (6) or (4) LEDs in each column, then use a 6 or 4-conductor cable for each such column.
- **Minimize cable diameter** - The current required by an illuminated LED is approximately 40 milli-amps. For such small currents, #22 AWG wire is usually sufficient between the Annunciator and the suggested Junction Box. Also, for Power wiring, which is common to all LEDs and the sounder, there is usually no reason to go any larger than #18 AWG.

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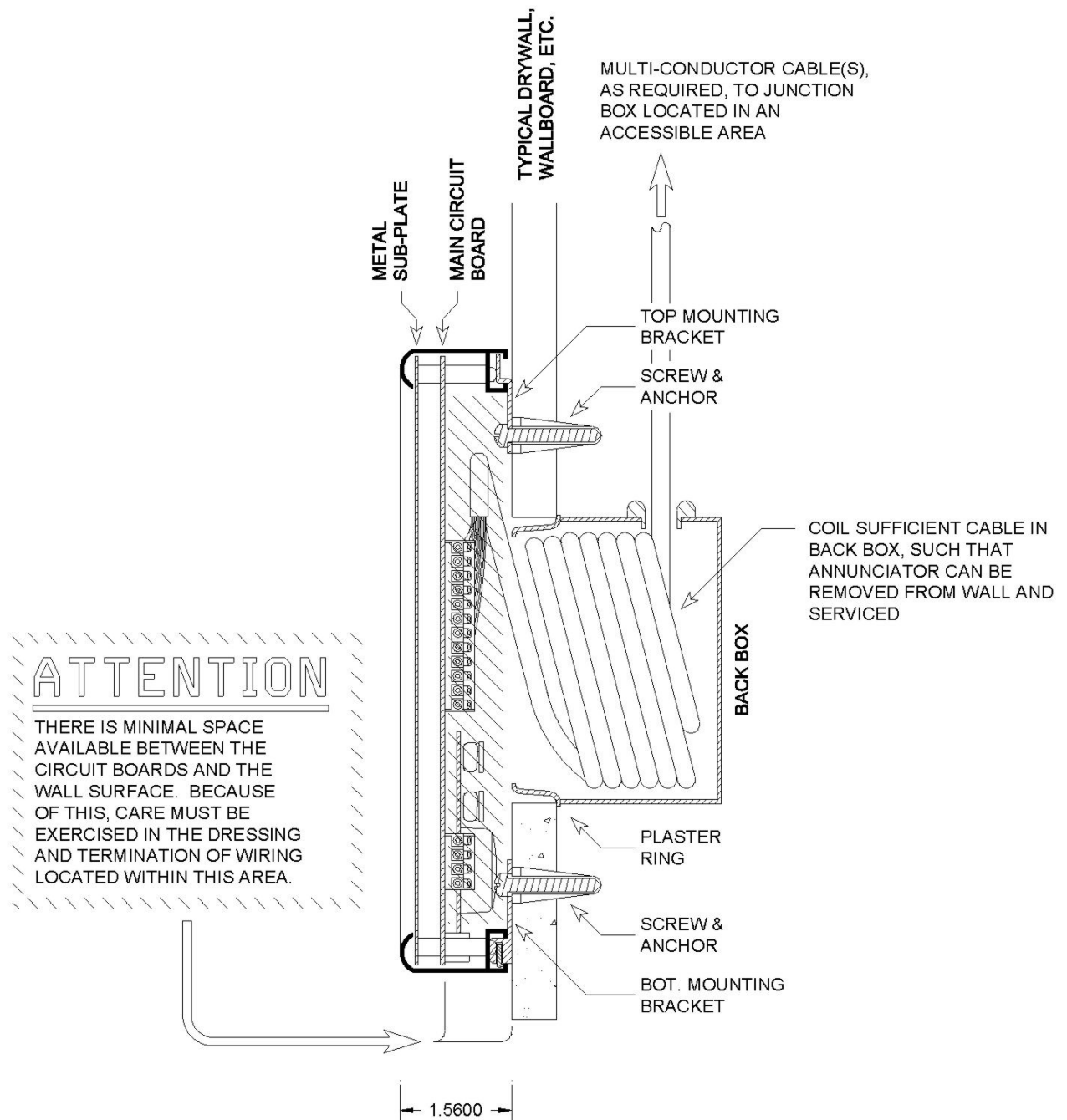


Figure C1 – Typical A-4400 Series Annunciator – Section View

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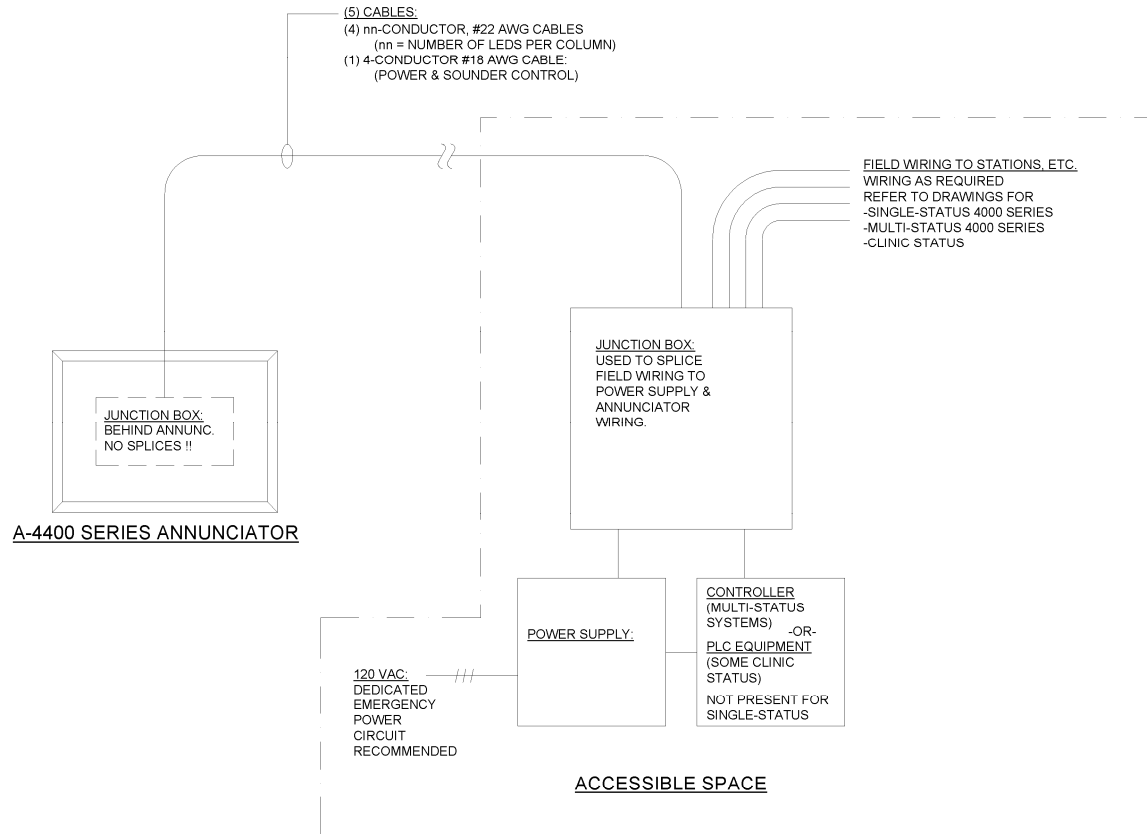


Figure C2 – Typical A-4400 Series Annunciator – Recommended Wiring Method

C3. INSTALLATION – MOUNTING

C3-A. Mounting – Required Equipment:

Securing an A-4400 Series Annunciators requires the Cornell Model A-4462 Mounting Hardware Kit. This kit consists of the following items:

Qty = 3 Special Mounting Brackets, as follows:

- (2) Hangers - These metal brackets attach to the wall via anchors, and engage into the top section of the annunciator frame.
- (1) Lock - This extruded aluminum bracket contains a spring-loaded pawl, which engages into a groove on the bottom section of the annunciator frame.

Qty = 1 Cornell Model D-4400-MT Mounting Template – this 11 X 17-inch paper template is printed to full-scale, and shows where to drill the holes for installation of the brackets described above.

Qty = 1 Key – this metal tool is used when the annunciator needs to be removed from the mounting surface. The “key” slips under the frame, and is used to release the pawl on the Lock bracket

The Template reduces the need to make measurements when installing the brackets. It also incorporates reference marks, which will:

- Show required clearance dimensions, above and below the annunciator
- Show the recommended location for the rough-in junction box or plaster ring, behind the annunciator
- Allows the edges of the annunciator to be centered on or aligned with the mounting surface, or architectural features located near to the annunciator.

In addition to the Cornell Equipment listed above, the following items will be needed:

Drill & bits, Wall Anchors / screws suitable for the mounting surface, & Level

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C3-B. Mounting – Securing the Annunciator to the Mounting Surface:

The recommended procedure for mounting an A-4400 Annunciator is as follows:

- **DETERMINE ANNUNCIATOR LOCATION** – Determine exactly where the Annunciator will be located. If the unit needs to be aligned with certain architectural features, or if it needs to be centered within a particular area, the Cornell D-4400-MT Mounting Template incorporates reference marks that may aid in accomplishing such tasks.

Be sure to refer to Section “C1” of this manual for clearance requirements above and below the Annunciator. (The Mounting Template will aid you in this task.)

- **TEMPORARILY MOUNT THE TEMPLATE TO THE SURFACE** - Use masking tape, or if using tacks / pins – place them inside the outline of the annunciator, in order to avoid marring exposed surfaces. (If a template is not readily available, go to “Frame Mounting Instructions” drawing, found at the end of this manual)
- **MARK AND DRILL (3) MOUNTING HOLES** – If using the template, you may simply drill through the hole locations shown on the template. Otherwise, mark the locations and then drill at the marked locations. (2) holes at the top for the Hanger Brackets, and (1) hole at the bottom for the Lock Bracket.
- **FASTEN THE HANGERS AND LOCK TO THE WALL** – Install anchors and/or screws, and securely tighten the (3) Brackets to the wall as shown on the template. Proper alignment can be achieved easily by installing the hardware on top of the Template (align the Brackets with the outlines, as printed on the Template).
- **TEST-FIT THE ANNUNCIATOR** – (Refer to “Frame Mounting Instructions” – found near the end of this manual) First, insert the offset ends of the Hanger Brackets into the slot on the back surface of the annunciator frame, then pivot the bottom edge into position. With gentle pressure, the Lock Bracket should engage into the slot on the back side of the bottom frame edge, and should “click” into place.
- **ADJUST THE LOCK BRACKET** – If the Annunciator does not readily click into place, the Lock Bracket may need to be adjusted up or down slightly (the mounting hole in this bracket is elongated to allow this). Simply loosen the mounting screw slightly, move the bracket up or down slightly, as needed, and test-fit again.
- **REMOVE THE TEMPLATE** – If you have not already done so, remove the template from the wall. You may need to tear it, around the Mounting Brackets.

C3-C. Mounting – Removing the Annunciator from the Mounting Surface:

The recommended procedure for removing an A-4400 Annunciator is as follows:

(Refer to “Frame Removal Instructions” drawing, located at the end of this manual)

Performing this procedure will require the “Key”, which is included with the A-4462 Mounting Kit. The key is divided into three sections, as follows:

- **SHORT END** – The short end is bent at a 90-degree angle to the mid-section, and has a small protruding tab on the Right side, which is used to engage the Pawl on the Lock Bracket.
- **MID-SECTION** – This section is the flat portion located in the middle of the Key.
- **HANDLE** – This section is used as a “grip”, and has a hole in it for hanging it in a secure location.

HOW TO USE THE KEY – Use the following procedure to release the frame from the Lock Bracket

- **INSERT THE “KEY” UNDER THE BOTTOM EDGE OF THE FRAME** – Start with short end. Insert this end under the bottom edge of the frame, slightly to the left of the center. The mid-section of the Key should be flat against the bottom edge of the frame.
- **ROTATE THE KEY AGAINST THE WALL** – Rotate the “Key”, such that the mid section is flat against the wall, with the short end standing perpendicular to the mounting surface, inside the slot at the bottom of the frame. It should now be possible to slide the key up and down, but only by about ¼-inch.
- **SLIDE THE KEY TO THE RIGHT, TO ENGAGE THE LOCK** – Keeping the mid-section of the key flat to the mounting surface, slide it to the right. It will stop when the short end contacts the Lock Bracket.
- **RELEASE THE LOCK** – Push the Key Up and to the Right. This will cause the Tab on the short end of the key to engage into a slot on the left side of the Lock Bracket. If this is done correctly, you should feel the pressure of the Pawl Spring when you pull downward on the Key Handle.

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- REMOVE THE ANNUNCIATOR – While pulling downward on the Key, gently lift the bottom edge of the annunciator away from the mounting surface. Once it is released, you may release the Key, and slide the entire annunciator upward, which will disengage it from the Hanger Brackets.

C4. INSTALLATION – CONFIGURATION

C4-A. Configuration (Jumper Settings / Terminations) - for Single-Status Operation:

Where Single-Status Operation will be utilized, please verify that the following items are set and/or connected as described:

LOAD RESISTOR JUMPER (Figure A2 – Item “P”) = Set to “OFF”

TONE ENABLE JUMPERS (Figure A2 – Item “Q”) = Set ALL (4 of them) to “ENABLE”

SOUNDER CONNECTIONS (Figure A2 – Item “S”):

Connect Terminal #1 (TG) to Terminal #4 (Tone) via a Jumper Wire – This will cause the Sounder to be actuated in response to ANY illuminated LED.

If multiple Annunciator Panels are to be installed at a location, (because more than 48 LEDs are needed, etc.), Connect Terminal #1 (TG) to Terminal #4 of each “linked” Annunciator. When this is done, only one of the A-4400 Units at each location requires a Sounder Card (Fig. A2 – Item “T”).

SOUNDER VOLUME CONTROL (Fig. A2 – Item “U”) = Start at mid-scale, then adjust as needed.

TG RATE CONTROL (Fig. A2 – Item “V”) = Set to mid-scale to start, then adjust to end-user’s satisfaction after completion of testing (adjusts delay between “beeps”).

C4-B. Configuration (Jumper Settings / Terminations) - for Multi-Status Operation:

Where Multi-Status Operation will be utilized, please verify that the following items are set and/or connected as described:

LOAD RESISTOR JUMPER (Figure A2 – Item “P”):

If Corridor Dome Lamps will be utilized for each Patient Room, etc = Set to “OFF”

If Corridor Dome Lamps will not be utilized = Set to “ON”.

Doing so will increase current-flow when any station is actuated, ensuring that the Controller (NC-102, NC-101, etc.) will detect calls and trigger the appropriate tone at the annunciator. (may also ensure tone operation on bulb failure)

TONE ENABLE JUMPERS (Figure A2 – Item “Q”) = Set ALL (4 of them) to “OFF”

For Multi-Status Operation, the Sounder is triggered via the “HI” Output of the Controller, rather than via voltage from the LEDs – which is used for Single-Status

SOUNDER CONNECTIONS (Figure A2 – Item “S”):

Connect Terminal #2 (AT) to a conductor tied to the “HI” Output Terminal of the Controller (Model NC-102D, NC-102A, NC-101, etc.). DO NOT connect any other terminals on this strip.

If multiple Annunciator Panels are to be installed at a location, (because more than 48 LEDs are needed, etc.), Only the panel with the Sounder Card needs to be connected to the Controller.

SOUNDER VOLUME CONTROL (Fig. A2 – Item “U”) = Set to mid-scale to start, then adjust as needed.

TG RATE CONTROL (Fig. A2 – Item “V”) = (No Effect – Rate varies via Controller)

C4-C. Configuration (Jumper Settings / Terminations) - for Clinic Status Operation:

As stated within Section “B” of this Manual - Stations and components within a Clinic Status System may be arranged in very many different combinations, in order to meet the unique needs of each facility.

Because of this, there really is no “standard” operation scheme for Clinic Status.

In such cases, the contractor needs to carefully coordinate AND DOCUMENT the desired operation of the system with the end-user. Such documentation needs to be provided to the installer, and to Cornell, for the following purposes:

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- For coordination of equipment selection and configuration
- For coordination of required wiring
- For proper labeling and programming of the equipment

Because of this, the following information should only be used as a “guide”. It is important to actually understand which features are required / will be utilized for each Clinic Status installation and which features are not required / will not be utilized.

LOAD RESISTOR JUMPER (Figure A2 – Item “P”):

Set to “OFF”, unless a 4000-Series Controller (NC-102D, NC-102A, NC-101, etc.) is utilized within the Clinic Status System, and this is rarely the case.

tone enable jumpers (Figure A2 – Item “Q”):

Use of these Jumpers only applies if a modified version of Single-Status Operation will be utilized.

Where different LED Colors are arranged by Vertical Column (Each Exam Room, etc. utilizing a Horizontal Rows of Multiple LEDs), these jumpers may be utilized as follows:

Jumper in “Enable” position	=	Illuminated LEDs in column will actuate Tone
Jumper in “OFF” position	=	Silent operation of LEDs in column

Where the Annunciator Sounder will be controlled via a PLC or Relay Board Output, set ALL of these Jumpers to “OFF”, and refer to “Sounder Connections” (below).

SOUNDER CONNECTIONS (Figure A2 – Item “S”):

Where Single-Status Operation will be utilized:

Make connections as described previously within “C3-A Single-Status Operation”.

Where Multi-Status Operation will be utilized (this is rarely the case for Clinic Status):

Make connections as described previously within “C3-B Multi-Status Operation”.

Where a PLC or Relay Board will be utilized to control the Sounder (One-Shot beeps, and/or particular pulse patterns):

Connect Terminal #3 (PLC Input) to the designated “Sounder” Output of the associated PLC or Relay Board. DO NOT connect any other terminals on this strip.

If multiple Annunciator Panels are to be installed at a location, (because more than 48 LEDs are needed, etc.), Only the panel with the Sounder Card needs to be connected to the Controller.

SOUNDER VOLUME CONTROL (Fig. A2 – Item “U”) = Set to mid-scale to start, then adjust as needed.

TG RATE CONTROL (Fig. A2 – Item “V”) = This control only works if Single-Status Operation will be utilized. In such cases, start at mid-scale, and adjust to the satisfaction of the end-user (adjusts beep rate, from slow to rapid).

C5. INSTALLATION – WIRING

Field wiring should be extended from the field devices, power supply(s) and/or controller(s) as follows:

C5-A. LED Connections (Refer to Figure A2 – Items “N”):

Each LED Connection is designed to accept a switched-negative, 24-Volt DC signal. Such signals are usually routed to each Annunciator via multi-conductor, #22 AWG cables, as follows:

- SINGLE STATUS SYSTEMS - Single conductor (usually #22 AWG) from corresponding station
- MULTI-STATUS SYSTEMS - Single conductor (usually #22 AWG) from Output of Highest Priority Station within the designated room or area.
- CLINIC STATUS SYSTEMS - Single conductor (usually #22 AWG) from:
 - Corresponding switch station (in most cases, Color of switch at switch station corresponds to LED color and/or to color-band printed on Slipsheet)

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- Corresponding PLC Output, where PLCs are used to turn the lamps & LEDs on / off, or to generate flash patterns (where applicable - refer to wiring diagrams for associated PLC equipment)

C5-B. Power Connections (Refer to Figure A2 – Items “O”):

Each Series A-4400 Annunciator requires 24 Volts DC for proper operation, plus a proper Earth Ground connection for electrical safety / ESD protection, as follows:

The Power Connection to each A-4400 Series Annunciator consists of a 3 or 4-conductor, #18 AWG cable, terminated as follows:

- 24 VDC = Positive 24 VDC from Power Supply / Controller (usually, RED conductor)
- GND = Earth Ground from Power Supply / Controller (usually, GRN conductor)
- LAMP = (No Connection in most cases, unless external Lamp Test switch is used)
- NEG = Negative 24 VDC from Power Supply / Controller (usually, BLK conductor)

C5-C. Sounder Connections (Refer to Figure A2 – Items “S”):

Most Series A-4400 Annunciators will require wiring for some sort of sounder operation, as follows:

- Terminal #1 (TG): For Single-Status & Single-Status type Clinic Status only:
 - For Single-Status Operation = Jumper to Terminal #4 with (1) #22 AWG wire
 - For Multi-Status Operation = (no connection)
 - For Clinic Status Operation = Use only for single-status type operation
- Terminal #2 (AT) = Only used for Multi-Status Operation:
Tie to Controller “HI” Terminal via (1) #18 AWG conductor
- Terminal #3 (PLC) = Only used for Clinic Status Operation
Where PLC / Relay Board is used to trigger Tone, connect the designated Output to this terminal via (1) #18 AWG wire
- Terminal #4 (TONE): For Single-Status and Single-Status type Clinic Status only:
 - For Single-Status Operation = Jumper to Terminal #1 with (1) #22 AWG wire
 - For Multi-Status Operation = (no connection)
 - For Clinic Status Operation = Use only for single-status type operation
Jumper to Terminal #1 with (1) #22 AWG wire

D. PRINTING SLIPSHEETS FOR A-4400 ANNUNCIATORS:

Printing Slipsheets for the A-4400 Series Annunciators is a relatively easy process.

IMPORTANT! - Although the process required to create a Slipsheet is relatively simple, it does require equipment that may not be available at the job site.

The process also requires knowledge of word-processing software.

Because of this, the installing contractor may want / need to perform this task at their office and/or may need to obtain the assistance of a local source skilled in the use of the appropriate word processor – some time prior to final acceptance testing of the system.

D1. REQUIRED EQUIPMENT AND SUPPLIES:

When preparing to print the “finalized” slipsheet for each annunciator, the installing contractor should be sure to have the following materials on-hand:

- LASER OR INK-JET PRINTABLE VELUM SHEETS:
(Standard US Letter size - 8.5 X 11 inches) – Velum is a special, translucent type of paper, which is less prone to discoloration and fading.

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- Several blank sheets are included with each A-4400 Series Annunciator
 - Additional sheets are available from Cornell as part of the A-4461 Legend Kit
 - Packages of Velum are available from some office-supply firms – make sure that what you purchase is compatible with the printer that you plan to use
- **SLIPSHEET TEMPLATE FILES:**
Ensure that the template file that you plan to use matches the layout / configuration of the particular A-4400 Series Annunciator that you are installing.

Slipsheet Template Files are available from the following sources:
 - On the Cornell A-4400 Series Installation CD-ROM (Cornell Model D-4400-CD). This CD is included with each A-4400 Series Annunciator shipment, and is available as part of the Cornell Model A-4461 Legend Kit
 - From the Cornell website (www.cornell.com)
 - If a custom Template is required, Cornell can design one for you for a nominal charge (order Cornell Model A-4460 “Custom Template for A-4400 Annunciator”)
 - **PC LOADED WITH SUITABLE “WORD-PROCESSOR” SOFTWARE** (Microsoft Word-2003 or higher) – The PC and software will be utilized to edit the Template Files and to print them to correct scale. (MS-Word was used to create these files. Cornell cannot guarantee the compatibility of any other word-processing software for editing & printing.)
 - **PRINTER** (Laserjet or Ink-Jet type) – once each applicable template file is edited for your particular installation, you will need to print it.
 - For Black & White or grey-scale print-outs, a Laser or Ink-Jet printer will usually suffice
 - If the Slipsheet will need to be printed in color, then either a Color Laser or Color Inkjet printer is recommended

D2. EDITING THE TEMPLATE FILE:

The Slipsheet Template Files have been created by Cornell using Microsoft-Word 2003, and have been saved as Word Template Files (file extension type “.dot”). The following instructions are based upon the use of Microsoft Word-2003 under Windows-XP:

- STEP 1. **PLACE A COPY OF THE APPROPRIATE TEMPLATE FILE ON YOUR PC:**
Once you have obtained and identified the correct Template File (or a set of them), place them on your PC – in a directory or folder where you can easily find them. Cornell recommends keeping the Templates in a separate directory/folder from where you will keep your edited files.
- STEP 2. **START THE WORD-PROCESSOR SOFTWARE;** which will be used to open, edit, print, and save the edited versions of the template file(s).
- STEP 3. **OPEN THE APPROPRIATE TEMPLATE FILE;** If you browse to the location where your file is located (per Step 1 above) and do not see it, be sure to select “Document Template File” under the “File Types” option.
- STEP 4. **SAVE THE FILE & GIVE IT A NEW NAME:**
Once the template file has been opened, and you are sure that it is the correct file, use the “Save As” option – for the following two purposes:
 - **File Type** – Change the file type to a MS-Word Document. If you get your edited files and templates mixed-up, you can later sort by file type to separate them.
 - **Name** – give your saved file a name, which clearly associates it with the current annunciator that you are working on. This way, if you need to re-print or correct it later, your difficulty in finding the correct file and your need to edit the file will be minimized.

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STEP 5. EDIT THE TEXT BOXES ASSOCIATED WITH EACH LED:

In most cases, the text placed in each box will be a room number and/or a room type – which will indicate to responding personnel where calls that illuminate each specific LED are originating from.

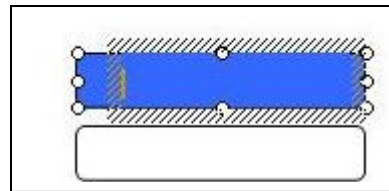
Be certain to coordinate the text placed here with the end-user of the system. (Suggestion - You may want to print a copy on plain paper for your records, and then have the end-user's designated representative sign it for approval and/or mark required changes.)

It is important to verify that any room numbers you are using are the actual room numbers being used by the end-user of the system. Particularly in new construction – where room numbers are sometimes arbitrarily assigned by the Architect, and will be changed

If the system is Clinic Status, then you may have multiple LEDs corresponding to most rooms, and may need to / want to indicate the status or condition that each LED color indicates.

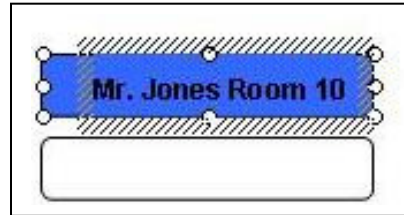
STEP 5A – SELECT THE CELL: Left click the mouse in the center of the field box that you want to add text to. The box should be highlighted as shown in figure 4.

Fig. D2-5A
(Step 5A)



STEP 5B – TYPE-IN & REQUIRED TEXT: Type in (and format) the required text. Continue the same process for each box. Upon completing the information for each box, save the document with a new file name.

Fig. D2-5B
(Step 5B)



STEP 6. EDIT THE "TITLE BAR" TEXT BOX:

On the standard templates, Cornell has included space for a "Title Bar". Some suggested uses for this space are as follows:

- Describe the type of system – so that in the future, when the facility owner calls for service, they can tell exactly what type of system it is – such as:
 - 4000 Series Single Status Nurse Call System
 - 4000 Series Triple-Status Nurse Call System
 - 2000 Series Nurse Call System (PLC located in East Telecom Room)
- Provide the name of your (the installing contractor) firm, and a telephone number to call for service
- Describe the area / department served by the system (this is particularly useful if a facility contains multiple separate systems).

STEP 7. (OPTIONAL – CLINIC STATUS) EDIT THE TEXT BOX COLOR BARS:

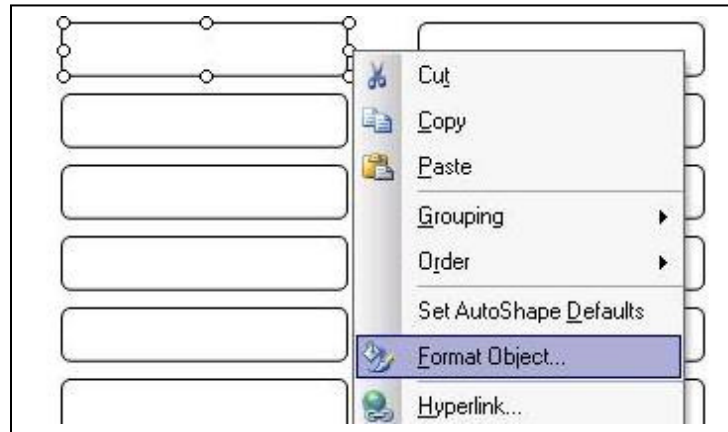
These Color Bars usually correspond to the colored switches located within / near to the exam rooms and/or to the colored lamps associated with each exam room.

Where the color bars on the standard templates are not suitable to your application, you may change them as follows:

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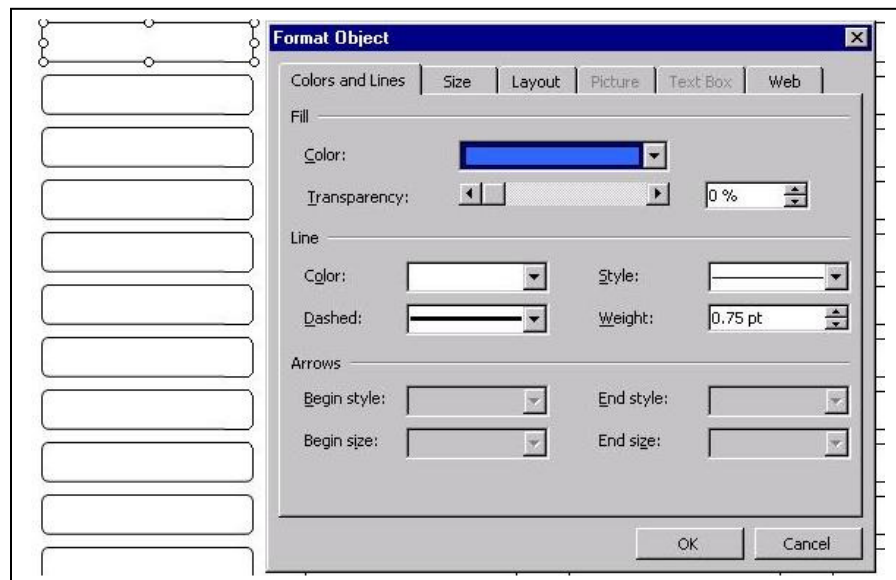
STEP 7A. Right click the mouse on the field box that you would like to add a color background to. The box should be highlighted as shown in figure D2-7A (below). A dropdown box appears with several options. Select "Format Object".

Fig. D2-7A
(Step 7A)



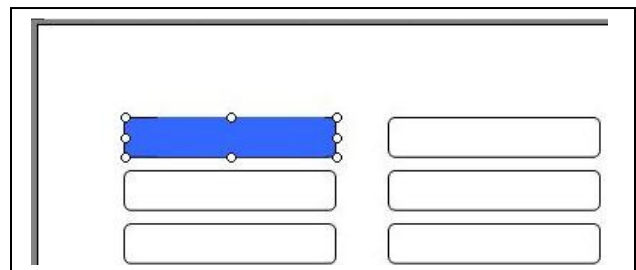
STEP 7B. The "Format Object" box will open. Select the "Colors and Lines" tab as shown in figure D2-7B. Select the dropdown arrow for the "Color" section, choose a color, and select the "OK" button.

Fig. D2-7B
(Step 7B)



STEP 7C - The selected text box should be filled with the color that you selected (See fig. D2-7C)

Fig. D2-7C
(Step 7C)



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- STEP 8. (OPTIONAL – BUT RECOMMENDED) DO A TEST PRINT ON PLAIN PAPER
Particularly if this is your first experience with the A-4400 Series, printing a copy of your edited slipsheet on plain paper will let you check it, to see that it looks the way you intended it to look. You may also want such print-outs for review / pre-approval by the end-user.
- STEP 9. PRINT THE FINALIZED VELUM SLIPSHEET:
With most laser printers, you can either place the Blank Velum on top of the paper in the normal paper tray, or under “Printer Properties”, you may be able to select “Manual Feed Tray”.
With most inkjet printers, you will need to place the Blank Velum on top of the paper in the normal paper tray.
- STEP 10. SAVE A COPY OF THE EDITED FILE:
When you are finished editing, and have produced your final Slipsheet for a particular installation, save a copy. Be sure to save it in a directory / folder where you can find it again in the future (in case you need to edit it for changes to the facility). You may want to burn a copy of it to CD, and leave the CD in a place at the jobsite (in an envelope, taped inside the cover of the Power Supply?)

D3. INSERTING / REMOVING THE SLIPSHEET:

The Printed Velum Slipsheet (refer to Fig. A1 – Item “F”) may be inserted, removed, or replaced from the front of the annunciator, without removing the annunciator from the wall.

The Slipsheet is held in place by a clear, polycarbonate Cover Sheet.

Both sheets fit into slots between the metal sub-plate and the front edges of the frame, , which acts as a “backer” for the Slipsheet / Cover Sheet.

NOTE: When inserting or re-installing a Slipsheet, be sure to keep it “paired-up” with the Clear Cover Sheet. This minimizes chances of marring the Slipsheet, and should result in a clean, flat installation.

Refer to Drawing “Slipsheet Insertion and Removal”, located near the end of this manual.

E. SERVICE / TROUBLESHOOTING:

Most of the Service and Troubleshooting techniques that work with standard A-4000 Series Annunciators will also work with the A-4400 Series.

The following list does not include every possibility, but it should cover most of the more frequent problems, and methods that can be used to test or correct the problem:

• DEAD ANNUNCIATOR:

If your annunciator is completely inoperable, the "Power" LED (Fig. A1-H) should not be illuminated. If this is the case, check the following:

- CHECK POWER SOURCE – Check both the circuit-breaker feeding the power supply and the Output of the Power Supply. The Power Supply should be providing an output voltage of 24-Volts D.C. (Also check any fuses in the power supply.)
- CHECK POWER CONNECTIONS - between Power Supply & Annunciator

If you actuate the Lamp Test feature (via the magnetic test switch – Fig. A1-I, or via the rear-mounted "Lamp Test" Switch – Fig. A2-R) and ALL of the LEDs illuminate; go to "INOPERABLE LEDs".

• DEAD SOUNDER (BUT SOME / ALL LEDs ARE WORKING):

- MEASURE POWER SUPPLY OUTPUT - Check it with a Voltmeter - The most likely culprit in this case is the Power Supply Voltage. Newer Cornell Power Supplies are convertible between 12 and 24 Volts DC. A-4400 Series Annunciators (and ALL Cornell 2000-Series Clinic Status Systems and 4000-Series Nurse Call Systems) are designed to operate in the range of 24-28 Volts DC.
- TONE CARD - Make sure that you have a Tone Card (Fig. A2-T), and that it is properly seated - If the tone card is properly inserted, the Green "Power" LED on it should illuminate (Fig. A2-W)
- CHECK VOLUME SETTING – Check the Sounder Volume Control (Fig. A2-U) – if it is turned-down all the way, it may be inaudible.
- TEST TONE CARD – If operation of the Tone Card is in question, it can be triggered in Single Status Mode by temporarily touching a jumper wire between:
 - Negative Power Connection (Fig. A2-O "NEG") -and-
 - TG Sounder Input (Fig. A2-S, terminal #1)

When this is done, the sounder should operate in Single Status Mode – a series of repeating pulses should be produced by the sounder.

SINGLE-STATUS OPERATION - If the Annunciator is being used in Single-Status Mode, and if it passes the test above, double-check:

The jumper between Sounder Input #1 (Fig. A2-O, terminal #1) and the "Tone" Output (Fig. A2-O, terminal #4).

Make sure that all of the Tone Enable Jumpers (Fig. A2-Q) are in the "ENABLE" position.

MULTI-STATUS OPERATION - If the Annunciator is being used in Multi-Status Mode, and if it passes the test above, certain components may still be damaged on the Tone Card – make the following additional observations:

If the Nurse Call System contains other annunciators or Duty Stations and they are working properly, then the most likely culprit is a damaged Tone Card.

If all sounders on the system are not functioning, the most likely culprit is the "HI" Output of the Controller (check these connections before assuming that this is the case)

CLINIC STATUS OPERATION WITH PLC OR RELAY BOARD - If the Annunciator is being used in a Clinic Status System, and if the Tone Card passes the test above, certain components may still be damaged on the Tone Card – make the following additional observations:

Remove the first test jumper, (NEG to TG)

Touch a new jumper between:

- Negative Power Connection (Fig. A2-O "NEG") -and-

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- PLC Sounder Input (Fig. A2-S, terminal #3)

If this works, then the externally-triggered PLC Sounder Input and Tone Card are functioning properly. In this case, your problem likely lies in the wiring between the PLC or Relay Board and the Annunciator, or within the PLC or Relay Board itself.

- **INOPERABLE LEDs (Sounder is working):**

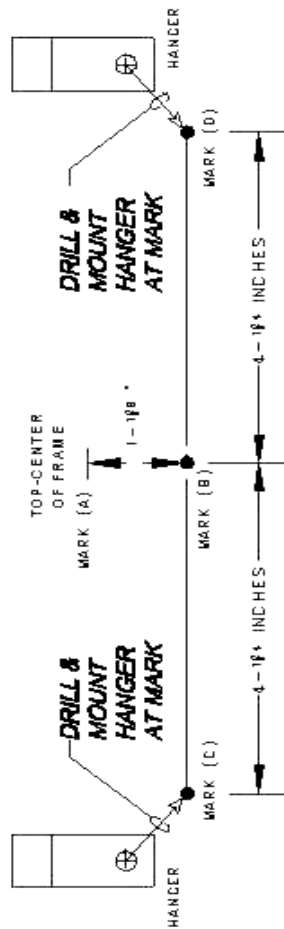
- ACTUATE "LAMP TEST" – try this first (See Fig. A1-I & Fig. A2-R). If the particular LED(s) still do not illuminate, Cornell recommends sending the annunciator in for service.
- CHECK CONNECTIONS TO ASSOCIATED STATION – If Lamp Test works, but the LED does not respond to the station, the problem most likely lies in the wiring to the associated station, or within the station itself.

IF YOU ARE UNABLE TO REMEDY THE PROBLEM BASED ON THE INFORMATION PROVIDED ABOVE, PLEASE CONTACT CORNELL TECHNICAL SUPPORT AT:

- Phone: (800) 558 – 8957
- Fax: (800) 541 – 9946
- E-mail: sales@cornell.com

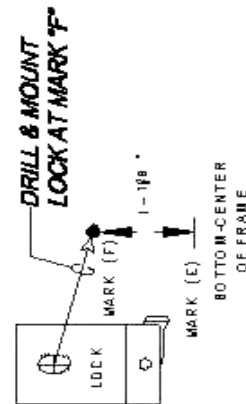
STEP 1 – MARK & INSTALL THE HANGER (TOP) BRACKETS:

- 1A. TEMPORARILY HOLD THE ANNUNCIATOR AT THE DESIRED LOCATION. MAKE A SMALL PENCIL MARK (A) ON THE WALL AT THE CENTER OF THE FRAME.
- 1B. FROM THAT CENTER MARK, MEASURE DOWN 1-1/8 INCHES, AND MAKE A SECOND MARK (B).
- 1C. MEASURE 1-1/4 INCHES TO THE LEFT AND RIGHT OF MARK (B). THESE ARE MARKS (C) & (D).
- 1D. CONFIRM THAT A LINE BETWEEN MARKS (C) & (D) IS LEVEL.
- 1E. DRILL HOLES FOR MOUNTING SCREWS OR SUITABLE ANCHORS CENTERED ON MARKS (C) & (D).
- 1F. SECURELY MOUNT THE HANGER BRACKETS TO THE WALL.



STEP 2 – MARK & INSTALL THE LOCK (BOTTOM) BRACKET:

- 2A. TEMPORARILY HANG THE ANNUNCIATOR FROM THE HANGERS (SEE 'STEP 3' DIAGRAM AT RIGHT).
- 2B. MAKE A PENCIL MARK (E) CENTERED AT THE BOTTOM OF THE FRAME.
- 2C. MEASURE 1-3/16 INCHES UP FROM MARK (E). THIS IS MARK (F).
- 2D. DRILL A HOLE FOR A MOUNTING SCREW OR SUITABLE ANCHOR CENTERED ON MARK (F).
- 2E. DRILL HOLES FOR MOUNTING SCREWS OR SUITABLE ANCHORS CENTERED ON MARKS (C) & (D).
- 2F. SECURELY MOUNT THE HANGER BRACKETS TO THE WALL.



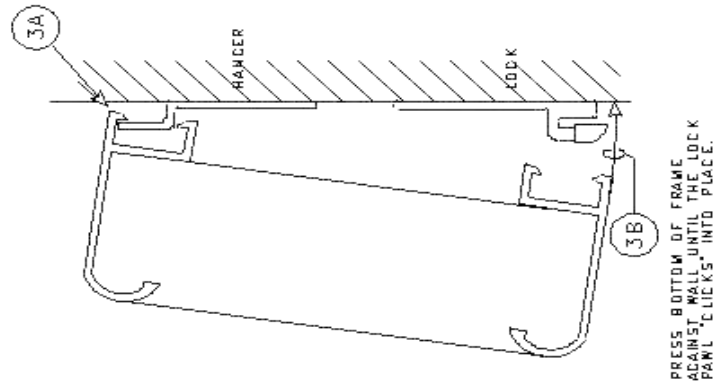
NOTE 1. USE OF CORNELL PART NUMBER D-4400-MT MOUNTING TEMPLATE MAY SIMPLIFY STEPS 1 & 2. IT IS PRE-MARKED AND MEASURED.

NOTE 2. HANGER KIT = CORNELL PART NUMBER A-4452

STEP 3 – HANG THE FRAME:

- 3A. PLACE THE TOP OF THE FRAME ONTO THE HANGERS, AS SHOWN.
- 3B. GENTLY PRESS THE BOTTOM OF THE FRAME TOWARDS THE WALL, UNTIL THE LOCK PAWL "CLICKS" INTO PLACE.
- 3C. IF IT DOES NOT "CLICK" INTO PLACE, LOOSEN LOCK SCREW, ADJUST UP OR DOWN SLIGHTLY, RE-TIGHTEN, AND REPEAT STEP "3B".

CAUTION!
ENSURE THE FRAME IS CENTERED AND ENGAGES THE HANGERS PROPERLY PRIOR TO LOWERING THE FRAME TO THE WALL. IMPROPER ALIGNMENT WILL CAUSE DAMAGE TO THE HANGERS.



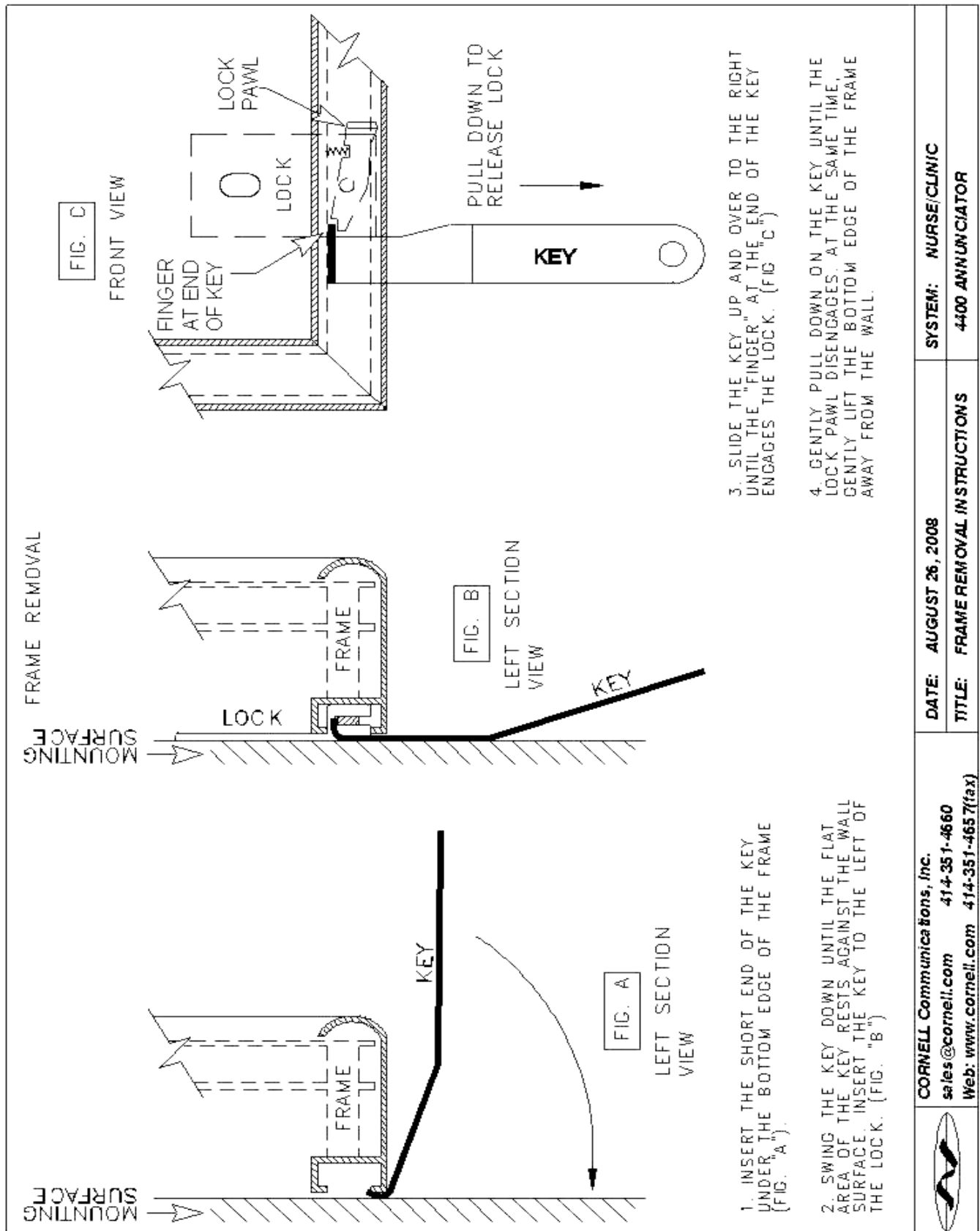
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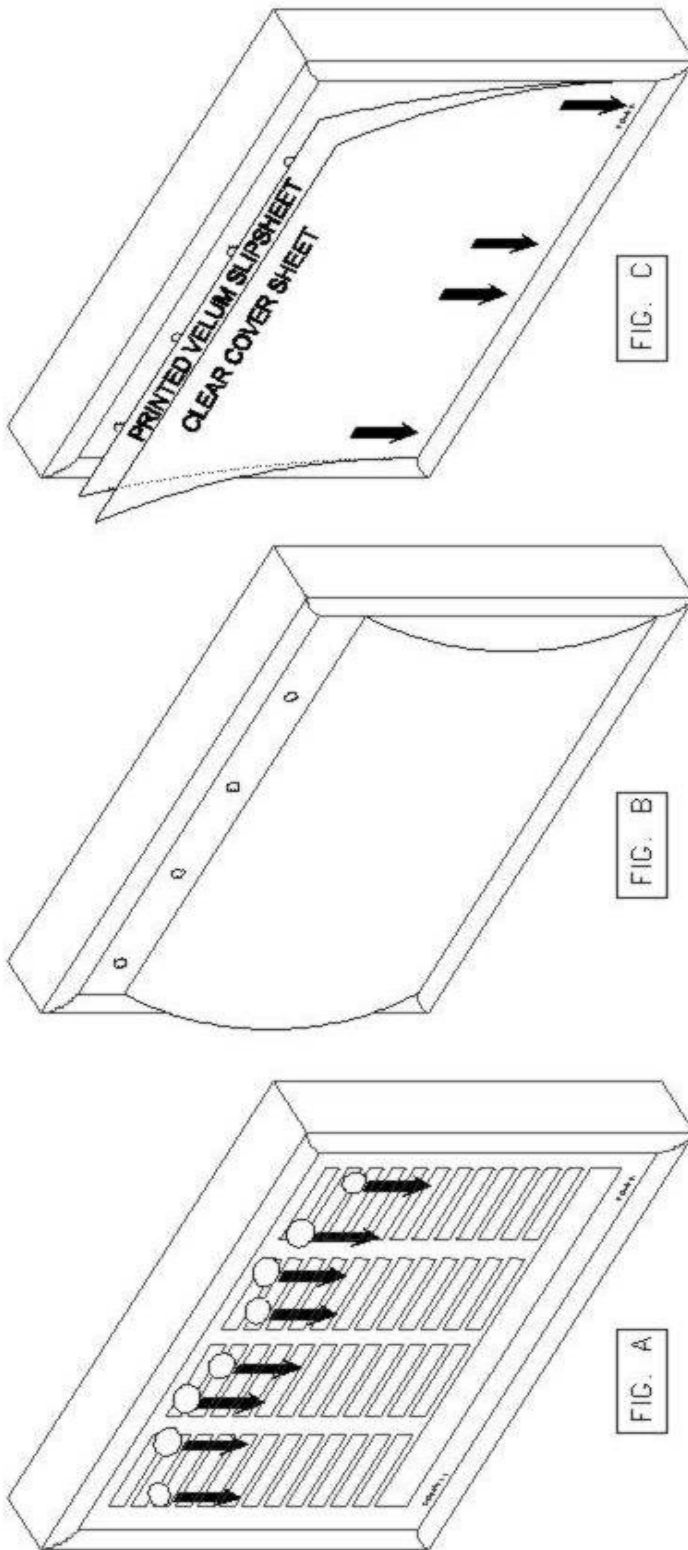
DATE: AUGUST 26, 2008

TITLE: FRAME MOUNTING INSTRUCTIONS

SYSTEM: NURSE/CLINIC

4400 ANNUNCIATOR





SLIPSHEET REMOVAL:

1. PLACE FINGERTIPS OF BOTH HANDS NEAR TOP OF OVERLAY SHEET, PRESS GENTLY TO SLIDE TOP OF OVERLAY DOWNWARD (FIG. "A").
2. OVERLAY SHEET WILL BOW OUTWARD AS SHOWN IN (FIG. "B").
3. SLIDE THE BOTTOM EDGE OF THE OVERLAY AND SLIPSHEET OUT FROM UNDER THE BOTTOM EDGE OF THE FRAME.

IMPORTANT – WHEN INSERTING THE SLIPSHEET, KEEP IT STACKED / ALIGNED WITH THE COVER SHEET (KEEP BOTH SHEETS TOGETHER & TREAT THEM AS A SINGLE PIECE).

SLIPSHEET INSERTION:

1. SLIDE BOTTOM EDGE OF SLIPSHEET AND OVERLAY INTO "SLOT" BETWEEN METAL FACEPLATE AND BOTTOM EDGE OF FRAME (FIG. "C" – ARROWS).
2. CATCH TOP EDGE OF OVERLAY SHEET AND SLIPSHEET WITH FINGERTIPS / FINGERNAILS. GENTLY PULL DOWNWARDS AT TOP EDGE. SHEETS SHOULD BOW OUTWARD, AS SHOWN IN (FIG. "B").
3. GENTLY PRESS TOP EDGE OF SHEETS FLAT AGAINST METAL FACEPLATE, AND ALLOW TOP EDGES OF BOTH SHEETS TO "SPRING" UPWARD, INTO SLOT BETWEEN METAL FACEPLATE AND TOP EDGE OF FRAME (FIG. "A" – OPPOSITE ARROWS). SMOOTH-DOWN IF NEEDED.



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DATE: DECEMBER 11, 2008

TITLE: SLIPSHEET REMOVAL / INSERTION

SYSTEM: NURSE/CLINIC

4400 ANNUNCIATOR