Rauland

MODEL 2412
DIGITAL CLOCK AND SPEAKER ASSEMBLY
INSTALLATION

This baffle assembly is hung with the hanger bracket supplied with the unit. The bracket can be attached to a standard single-gang electrical box or to a flat surface.

Mounting the Baffle to an Electrical Box

Parts needed:

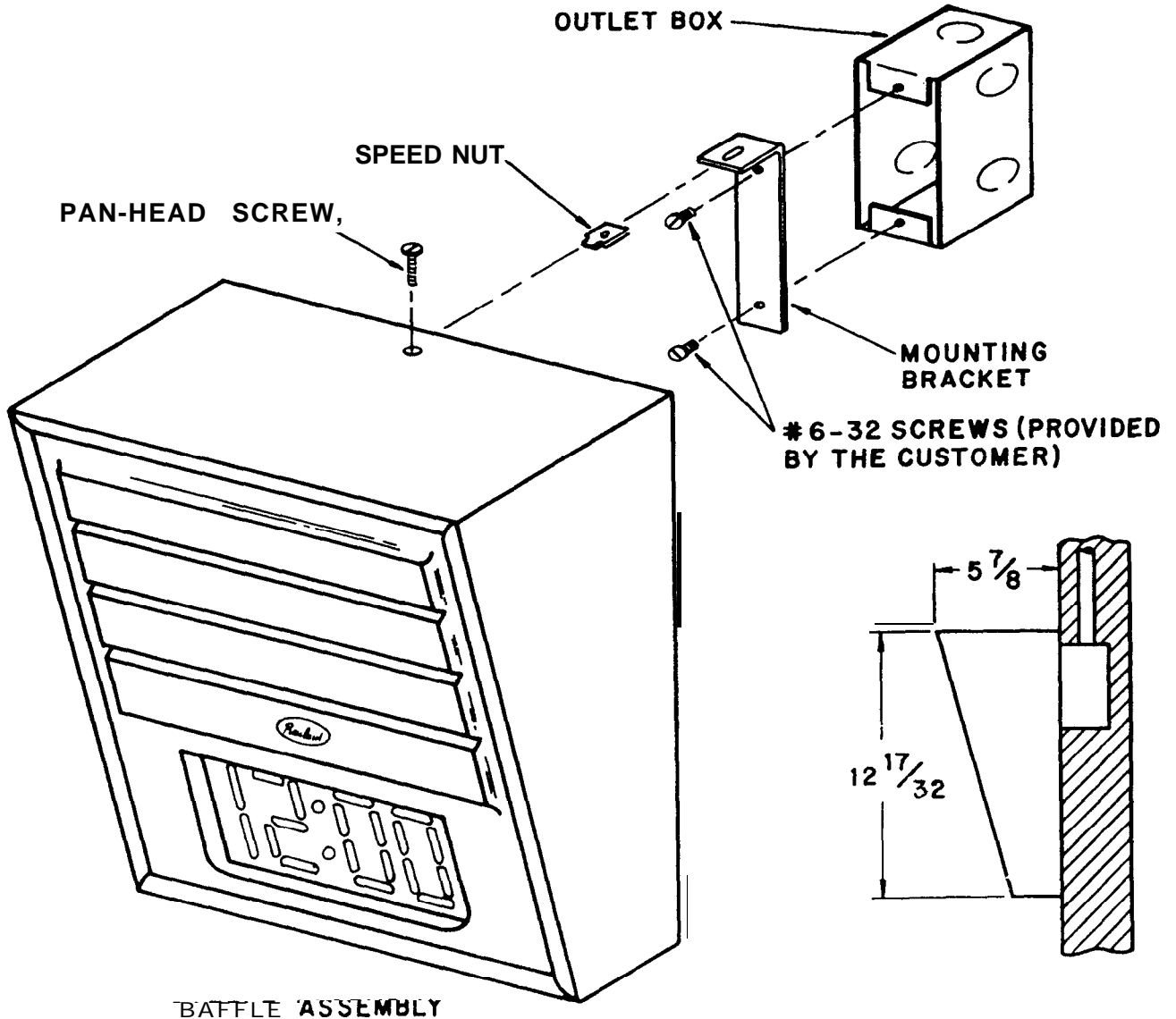| Qty.	Description	
1	hanger bracket (AB1813)	(Supplied with
1	#8-32 x 3/4" pan-head metal screw (WA72)	baffle assembly)
1	#8-32 "U" type speed nut (AB1818)	
1	Standard single-gang electrical box	(Supplied by
2	#6-32 machine screws of a suitable length	customer.)
	Wiring from the control console to the baffle assembly:	
	(See the applicable Rauland amplifier and 2400 Series master clock manuals.)	

Step 1. If necessary, rough the outlet box into the wall.

Step 2. Pull through the wiring you need from the control console.

Step 3. Fasten the hanger bracket to the "ears" of the outlet box, using two #6-32 screws.

Step 4. Snap the speed nut, with the larger hole facing up, into the slotted hole of the bracket.

Step 5. Connect the system wires to the Digital Module and the speaker transformer (the connections are shown on the label inside the baffle).

Step 6. Hang the baffle on the bracket and fasten them together with the pan-head screw.

Mounting the Baffle to a Flat Surface

Parts needed: Same as page 1 except: <u>Qty.</u>   <u>Description</u>

<u>No</u> electrical box or #6 screws.

Qty.	Description
2	#8 screws that (a) are appropriate for the mounting surface (wood, sheet metal, plaster, etc.) and (b) will hold 5½ pounds.

Step 1.   Route the wiring from the control console to the place where you want the baffle.

Step 2.   Fasten the hanger bracket to the mounting surface, using appropriate screws (see the Parts List above).

Follow Steps 4 through 6 on page 1.

OUTLET BOX

SPEED NUT

PAN-HEAD SCREW,

MOUNTING BRACKET

#6-32 SCREWS (PROVIDED BY THE CUSTOMER)

$5\frac{7}{8}$

$12\frac{17}{32}$

BAFFLE ASSEMBLY

2421 FLUSH-MOUNT DIGITAL CLOCK
INSTALLATION MANUAL

RAULAND-BORG CORPORATION • *3450* West Oakton Street, Skokie, Illinois 60076-2951 • (708) 679-0900

PRELIMINARY INFORMATION

DESCRIPTION

The 242 1 consists of a 2420 **Timer-Clock module plus a flush-mounting kit. As supplied, it is ready to be used as a secondary clock with the Model 2424, 2450, or 2490 series Master Clocks. With the 2423 Switch Kit, it can also be used as an elapsed timer (see** KI-1462). **With other appropriate switches, it can be used as a stand-alone clock, a countdown timer, or a combination clock and timer (see the secondary-clock applications manual,** KI-1470).

The mounting kit includes a black dress panel and the hardware to attach the clock module and the panel to a standard five-gang masonry box. The supplied wire nuts will take care of all of the electrical connections to the clock. A list of the parts supplied with the 2421 is given on this page.

CUSTOMER-SUPPLIED PARTS

Whatever the configuration, the customer will have to supply a standard five-gang *masonry box (e.g.,* Raco 694, Steel City GW-525-C).

If **the** 2421 is to be installed as a **stand-alone** clock or timer, **the customer** will have to supply the appropriate *switches,* an *AC power source,* **and** the *wiring* to the clock.

If the 2421 is **to be installed as part of a system, the customer will have to supply the** *system and the wiring* from it *to* **the 2421.**

For most applications, the *power* source can **be a standard 120-VAC circuit or a Rauland 2415 24-VAC or 2416 120-VAC power supply; for hospital applications, Rauland recommends the use of a customer-provided 24-VAC power supply that provides electrical isolation.**

PARTS SUPPLIED WITH THE 2421

Qty.	Description	Rauland Part No.
1	Secondary clock-timer.	2420
1	Nine-pin pigtail	- - -
1	Black front dress panel.	AN0943
2	Mounting brackets.	AB3357
4	#6-32 "U" nuts, to fasten the clock transformer and the front panel to the mounting brackets.	AB2904
6	#6-32 x ¼" pan-head machine screws, to fasten the clock module and the transformer to the mounting brackets.	WA57
4	#6-32 x ¾" pan-head machine screws, to fasten the mounting brackets to the masonry box	WA6 1

Qty.	Description	Rauland Part No.
2	#6-32 X ⅜" black Phillips pan-head machine screws, to fasten the front panel to the mounting brackets.	WA137
2	Flat washers, for the panel-mounting screws.	WJ0074
2	large wire nuts, for connecting the transformer wires to the power-supply or system wiring.	QP0488
1	Small wire nut, for insulating the unused transformer wire.	QP0489

RELATED MANUALS

INSTALLATION

Refer as necessary to IL0157 (page 3) for the following steps.

Step 1. If necessary, rough the masonry box into the wall.

Step 2. Consult the appropriate manuals from the above list and pull through the wiring from the power supply or the clock system and any switches that are to be used with the unit. Do not apply power to these lines until it is time to test the installation.

Step 3. Orient the mounting brackets as shown in IL0157. Place a "U" nut over the small center tab on the front of each bracket; the flat side of the nut should face the front.

Step 4. Place the clock module and its attached transformer on a suitable work surface. Orient a "U" nut so that its flat side faces the same way as the mounting base of the transformer, then push the "U" nut onto one of the narrow ends of the base. In like manner, install a second "U" nut on the opposite end of the base.

Step 5. Orient the transformer so that the side with the wires attached to the clock module faces you and its mounting base faces to the left.

Step 6. Place the transformer inside the left mounting bracket, align its "U" nuts with the holes in the bracket's large flange, and secure the transformer to the bracket with two #6 x ¼" screws

Step 7. Orient the clock module so that its LED display faces you and the electrical connections between the display and the circuit board are at the bottom. Use four #6 x ¼" screws to secure the clock module to the threaded standoffs on the front of the mounting brackets.

Step 8. Maintaining this orientation, align the assembly with the masonry box. Pull the wiring from the box so it will be accessible, then loosely fasten the assembly to the masonry box with one or more #6 x ¾ screws; make sure that there is enough space between the back of the assembly and the box for you to work on the wiring and stuff it back inside the box.

Step 9. Using the large wire nuts, attach the power-supply wires to the appropriate transformer wires of the clock:

24 VAC	120 VAC
Brown	Brown
Black	*Blue*

Note: For hospital installations, Rauland recommends the use of a customer-supplied isolating 24-VAC power supply that can furnish 300 mA to each clock.

Step 10. Cover the end of the unused transformer wire with the small wire nut.
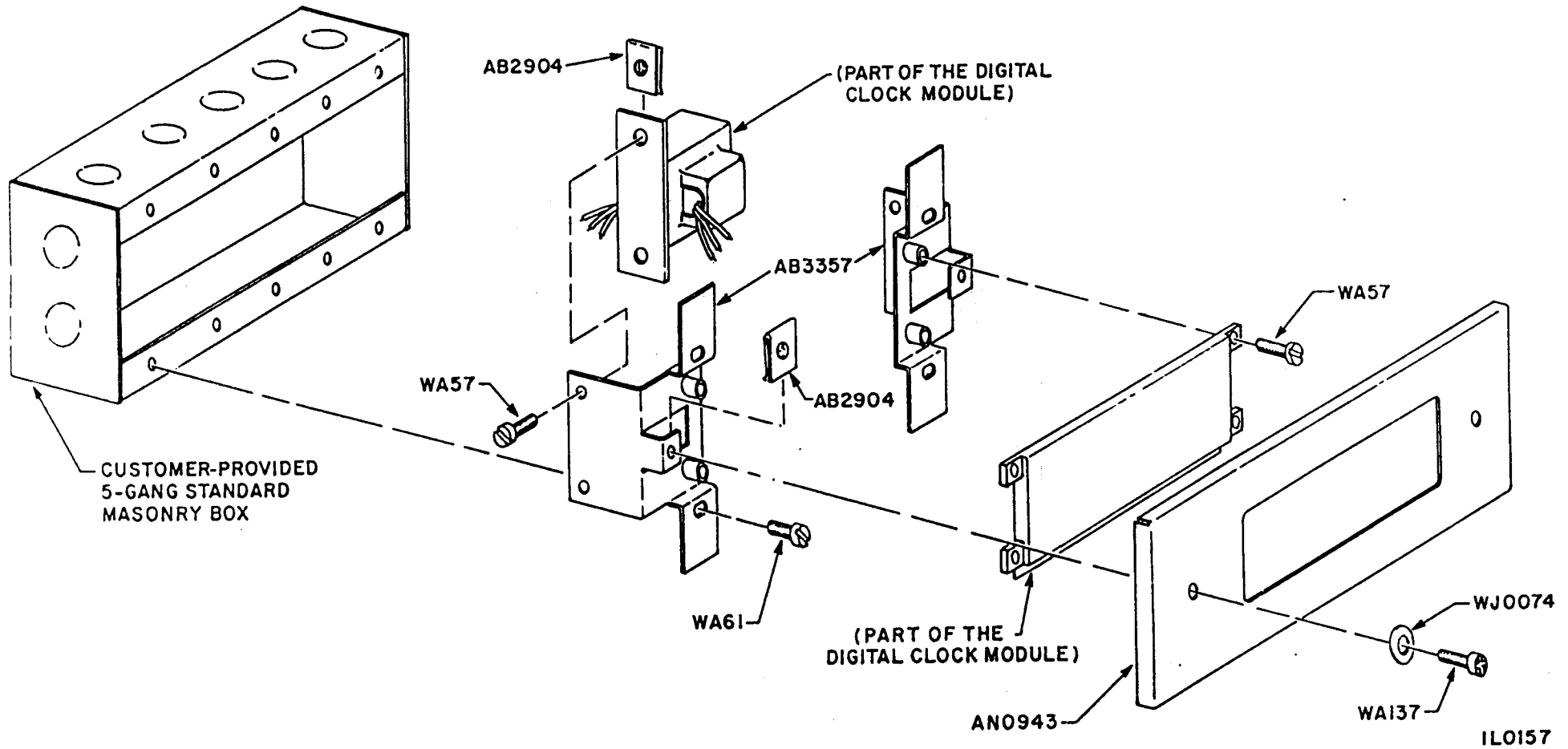
> **CAUTION**
>
> Never connect the *black* transformer wire to a *120-VAC* power supply; such a connection will damage the module. Refer to the applicable power-supply installation manual for additional information and instructions.

Step 11. If there are switches, connect their wires to the clock module now.

Step 12. *Carefully* push the wires inside the masonry box and secure the brackets to the box with the four #6 x ¾" screws.

Step 13. Before installing the dress panel, you may wish to test the clock by powering it up and running the operations listed in the applicable manuals. However, if this is part of a partially completed system, you may prefer installing the panel first, to prevent damage to, or loss of, these parts.

Step 14. Place a stainless-steel washer on each of the two #6 x ⅜" black screws, then place these parts within easy reach. Align the screw holes of the dress panel with the "U" nuts previously installed on the mounting brackets. Secure the panel to the brackets with the screws.

AB2904

(PART OF THE DIGITAL
CLOCK MODULE)

AB3357

WA57

WA57

AB2904

CUSTOMER-PROVIDED
5-GANG STANDARD
MASONRY BOX

WA61

(PART OF THE
DIGITAL CLOCK MODULE)

WJ0074

AN0943

WA137

IL0157

A	IDENTIFIED D9 & D10. SB2 WAS F/S-ENABLED. F/S-F/S-ENABLED. 2-26-86
B	ADDED 2422A & REFERENCE NOTES 5 & 6. H4 WAS R3. VR1 WAS R4. 6-16-87
C	C1 WAS 16V. MODEL 2422 WAS 2422A. 12-1-48
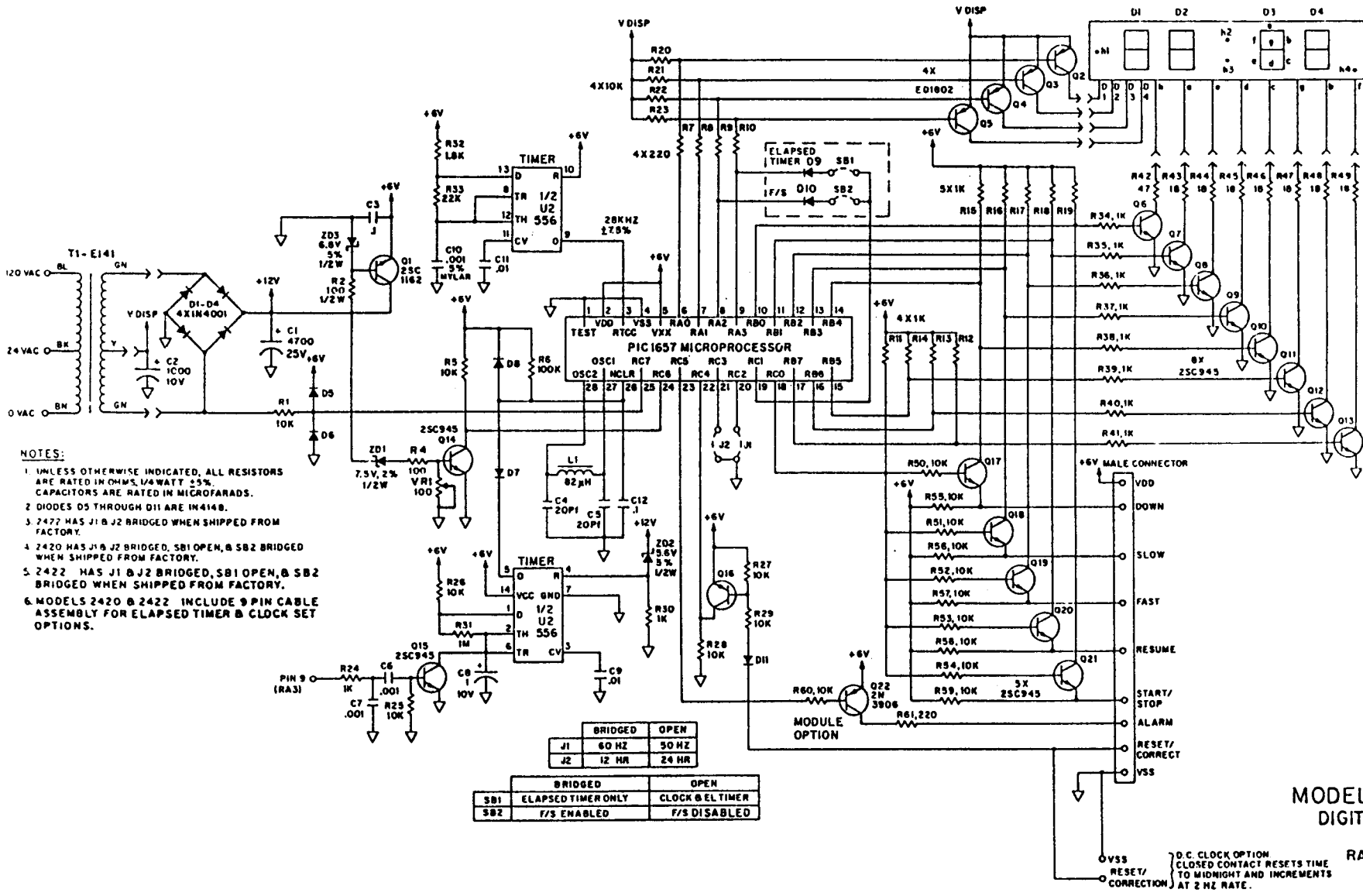
NOTES:

1. UNLESS OTHERWISE INDICATED, ALL RESISTORS ARE RATED IN OHMS, 1/4 WATT ±5%. CAPACITORS ARE RATED IN MICROFARADS.
2. DIODES D5 THROUGH D11 ARE IN4148.
3. 2477 HAS J1 & J2 BRIDGED WHEN SHIPPED FROM FACTORY.
4. 2420 HAS J1 & J2 BRIDGED, SB1 OPEN, & SB2 BRIDGED WHEN SHIPPED FROM FACTORY.
5. 2422 HAS J1 & J2 BRIDGED, SB1 OPEN, & SB2 BRIDGED WHEN SHIPPED FROM FACTORY.
6. MODELS 2420 & 2422 INCLUDE 9 PIN CABLE ASSEMBLY FOR ELAPSED TIMER & CLOCK SET OPTIONS.

	BRIDGED	OPEN
J1	60 HZ	50 HZ
J2	12 HR	24 HR

	BRIDGED	OPEN
SB1	ELAPSED TIMER ONLY	CLOCK & EL TIMER
SB2	F/S ENABLED	F/S DISABLED

PIC1657 MICROPROCESSOR

VDD RTCC VSS VXX RA0 RA1 RA2 RA3 RB0 RB1 RB2 RB4
TEST
OSC1 NCLR RC7 RC6 RC5 RC4 RC3 RC2 RC1 RC0 RB7 RB6 RB5
OSC2

TIMER 1/2 U2 556
TIMER 1/2 U2 556

T1- E141
120 VAC 24 VAC 0 VAC
D1-D4 4X1N4001

ELAPSED TIMER D9 SB1
F/S D10 SB2

D.C. CLOCK OPTION
CLOSED CONTACT RESETS TIME TO MIDNIGHT AND INCREMENTS AT 2 HZ RATE.

+6V MALE CONNECTOR
VDD
DOWN
SLOW
FAST
RESUME
START/STOP
ALARM
RESET/CORRECT
VSS

MODULE OPTION

MODEL 2420/2422
DIGITAL SECONDARY CLOCK
RAULAND-BORG CORP.
SKOKIE, ILL.
MADE IN U.S.A.
KC1477 C