MOBILE RADIO

MAINTENANCE MANUAL FOR ELECTRONIC DIGITAL CLOCK 19D429761G1-G7

LBI-30791A (DF8411)

CONTENTS

OPTION NUMBER	PRODUCT LINE
8593-8596	MASTR Controller
8637-8642	Local MASTR Controller
9930-9936	MASTR® Executive II Station
Part of Comb.	GE-MARC V Desk Top Station

DESCRIPTION

The General Electric Electronic Digital Clock is designed to operate from either 121 VAC or 242 VAC, 50 or 60 Hertz with a 12 hour or 24 hour readout. Selecting the desired modes of operation is accomplished by removing jumpers from the printed board to TB1 and/or changing connections at the power transformer primary windings. The readout consists of four digit positions. Each digit position is composed of a seven-segment LED display.

Two time setting switches are provided on the clock: FAST SET and SLOW SET. The FAST SET switch is operated to allow setting the time close to, but not past, the desired time. The SLOW SET switch is operated to bring the clock slowly up to the desired time.

INSTALLATION

The Electronic Digital Clock may be installed in existing radio equipment or control equipment in the field. Refer to the proper Installation Instructions. See Table of Contents.

The clock is wired at the factory for 24 hour, 50 Hertz, 121 VAC operation. The following instructions should be used when modifying the clock for the various modes of operation.

60 HERTZ OPERATION

1. Remove the Red wire between TB1-3 and A1-H10.

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12 HOUR OPERATION

1. Remove the Brown wire between TB1-3 and A1-H11.

242 VAC OPERATION

Refer to Wiring Diagram.

CIRCUIT ANALYSIS

The Electronic Digital Clock is composed of a Digital Clock Module (A1), two switches (S1 and S2), transformer (T1), capacitor (C1), and terminal board (TB1).

Power Supply

The line voltage (121 VAC or 242 VAC) is stepped down by transformer T1 and the resulting 9 VAC is applied at A1-H4 to the rectifier inside the clock module. The rectified output for the clock module is filtered by C1. The charge on C1 is sufficient to keep the clock module active for about one second after the line voltage is removed.

The other stepped-down voltage (7 VAC center-tapped) provides the voltage for the LED readouts at A1-H1 and H2.

Digital Clock Module A1

The internal input signal applied to the clock circuit is divided by either 50 or 60, depending on the 50/60 Hz SELECT input (determined by whether the Red jumper wire between TB1-3 and A1-H10 is present). Three counter stages in the clock module complete the division to 12 or 24 hours, depending on the 12/24 hour select input (determined by whether the Brown jumper wire between TB1-3 and A1-H11 is present). Logic gates between the counters allow time-setting at the rate of one hour-digit per second or one minute-digit per second (controlled by the SLOW SET and FAST SET Switches S1 and S2).

TROUBLESHOOTING PROCEDURE

SYMPTOM	PROBABLE CAUSE	TEST
1. No display	No AC input or H6 grounded	Check AC input, remove ground on H6
2. Time-Keeping erratic	Wrong power frequency selected	Check for jumper between TB1-3 and A1-H10
3. Display Flickers but Time-Keeping correct	Loose connection from LED supply voltage	Check transformer connections
4. One digit not turned on	Bad multiplex driver in clock IC	Replace clock module
5. One segment of display not turned on	Bad multiplex driver in clock IC	Replace clock module
6. FAST SET/SLOW SET do not operate	Bad switch or incorrect connection to hole 14 of clock module	Check connections and switches

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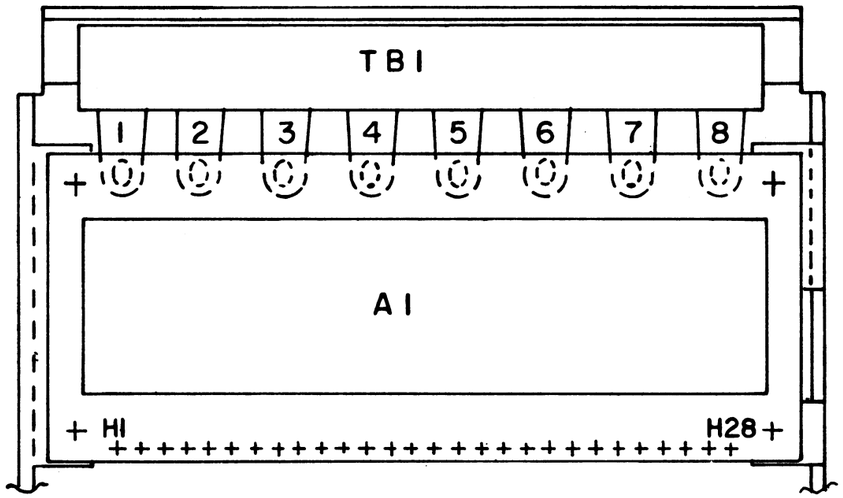
WORLD HEADQUARTERS • LYNCHBURG, VIRGINIA 24502 U.S.A.

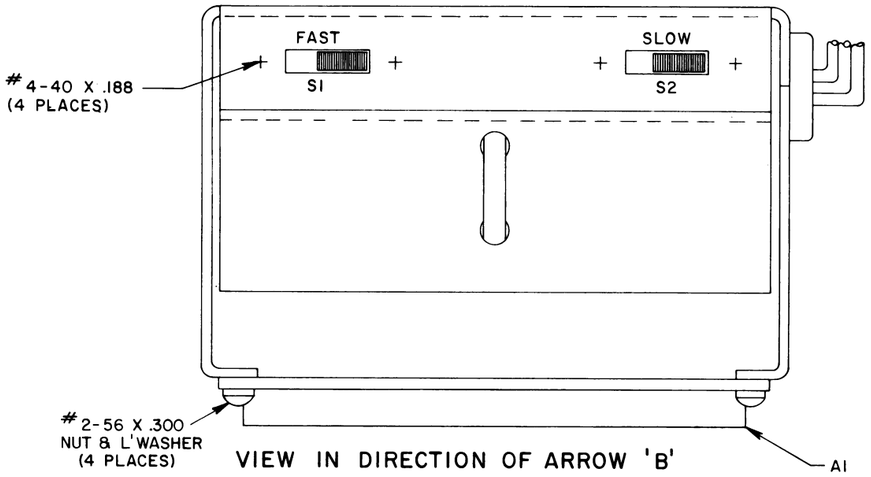
GENERAL ELECTRIC*
U.S.A.



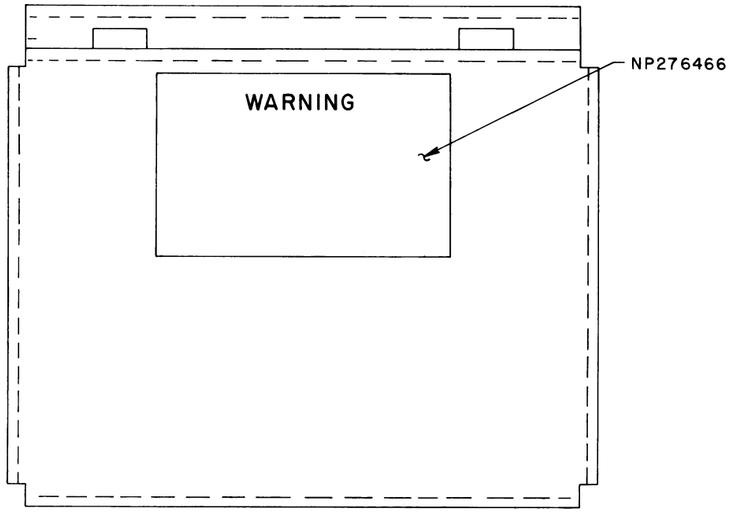
RC-3783

OUTLINE DIAGRAM

NUMBERING OF A1 AND TB1

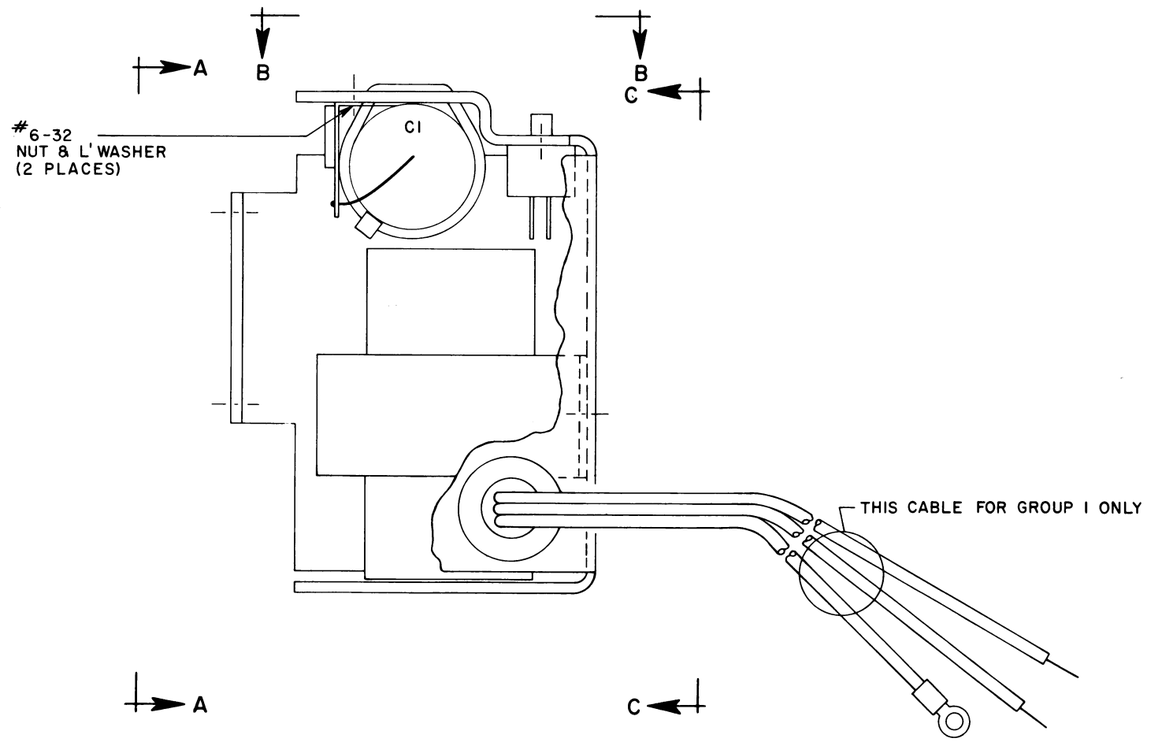


VIEW IN DIRECTION OF ARROW 'B'



VIEW IN DIRECTION OF ARROW 'C'

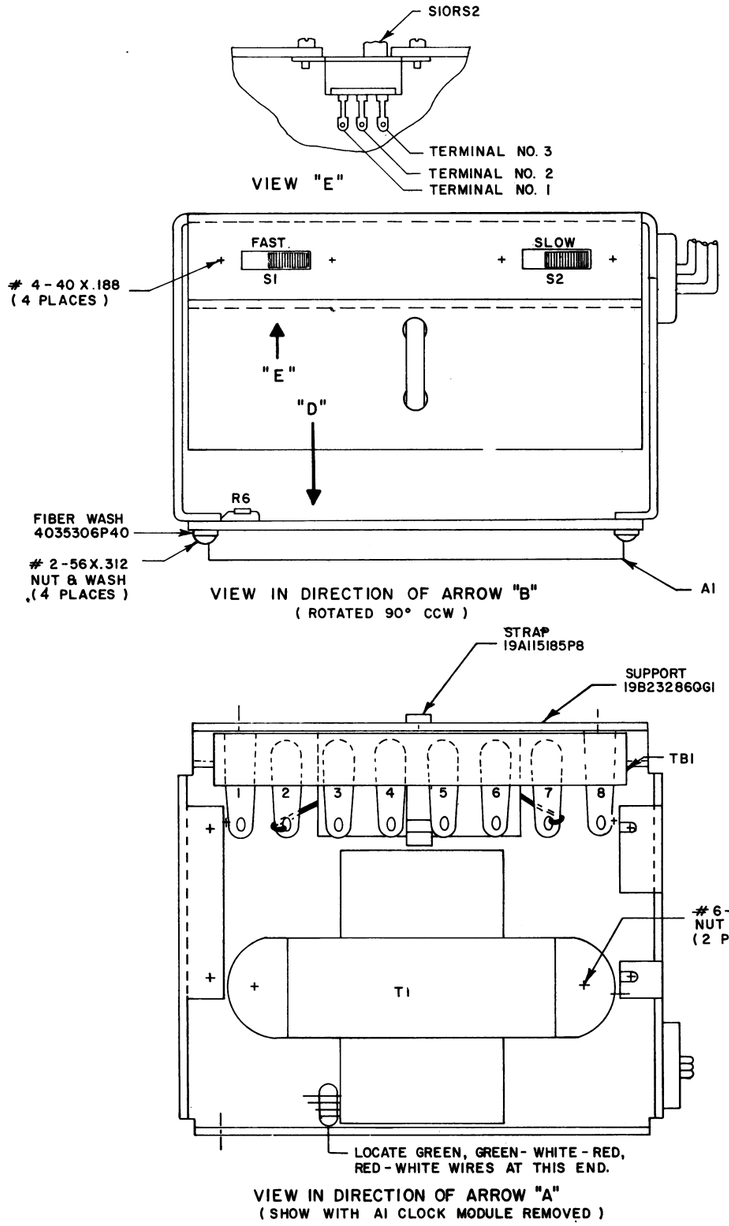
VIEW IN DIRECTION OF ARROW 'A'
(SHOW WITH A1 CLOCK MODULE REMOVED)

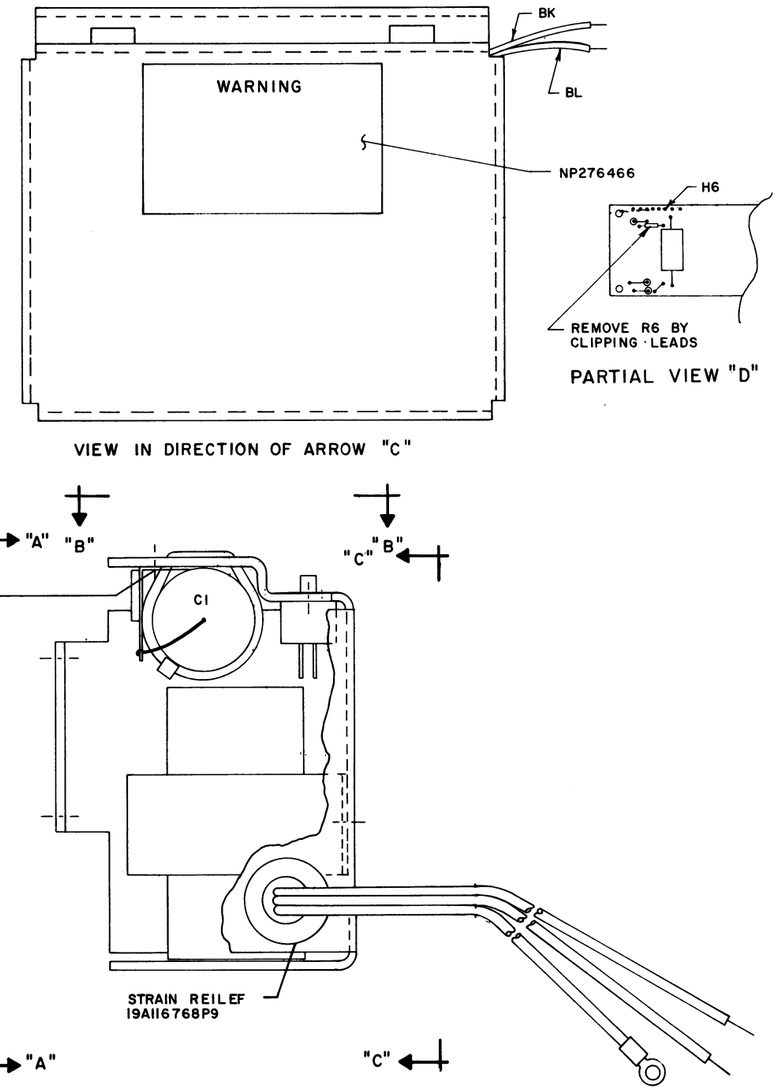


(19D430581, Rev. 0)

OUTLINE DIAGRAM

DIGITAL CLOCK 19D429761G1-G5



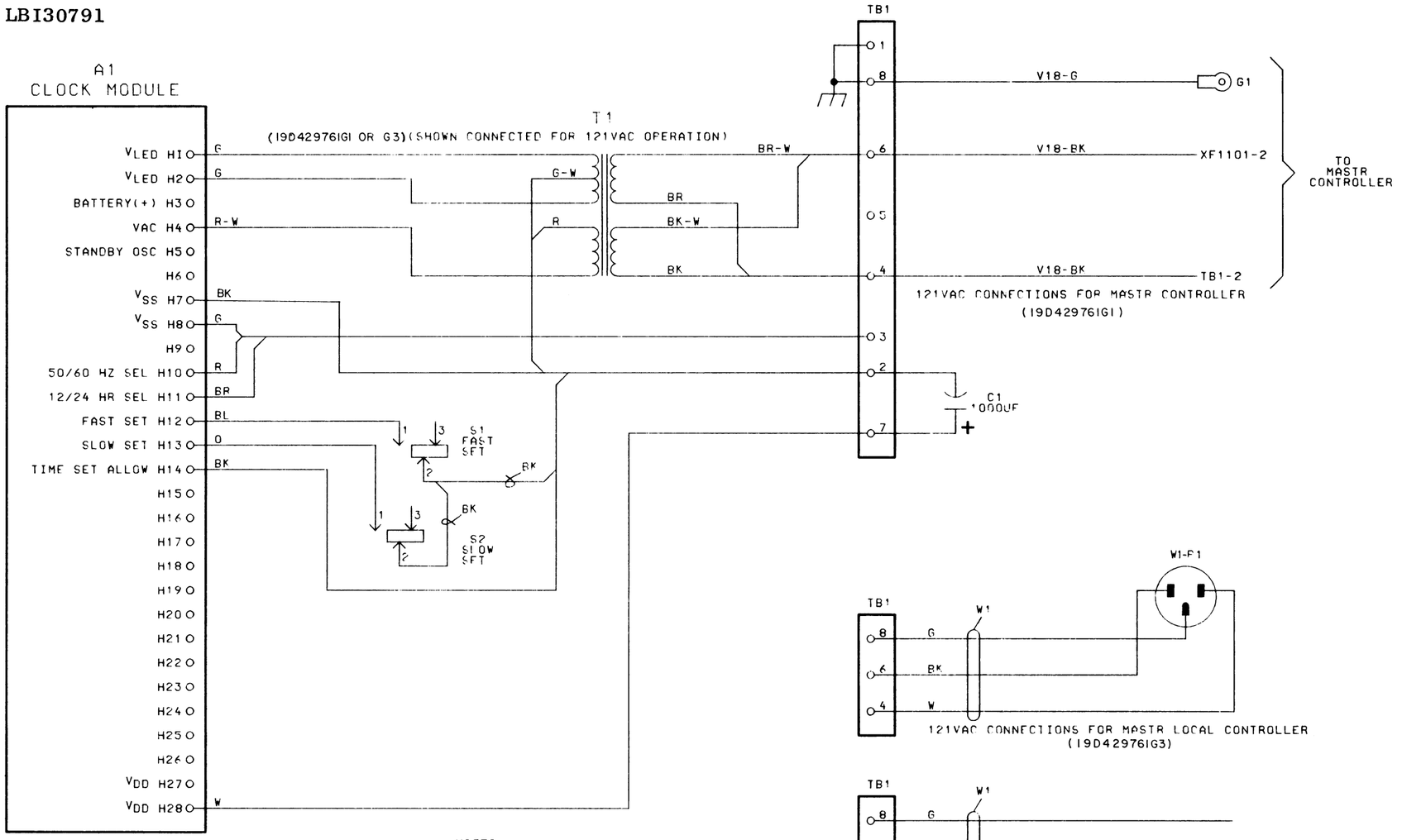


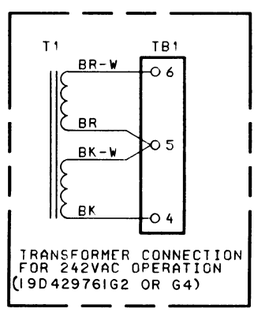
(19D432338, Rev. 0)

OUTLINE DIAGRAM

DIGITAL CLOCK 19D429761G6 & G7

Issue 1





NOTES:

1. ALL WIRES ARE SF22 UNLESS OTHERWISE SPECIFIED.
2. FOR 60 HZ OPERATION, REMOVE OR CUT RED WIRE FROM TB1-3 TO A1-H10.
3. FOR 12 HOUR OPERATION, REMOVE OR CUT BROWN WIRE FROM TB1-3 TO A1-H11.

MODEL NO	REV LETTER
PL19D429761G1 PL19D429761G2 PL19D429761G3 PL19D429761G4	

(19D429758, Rev. 3)

SCHEMATIC DIAGRAM

DIGITAL CLOCK 19D429761G1-G5

PARTS LIST

ELECTRONIC DIGITAL CLOCK
19D429761G1 121 VAC MASTR CONT. & MASTR EXEC. II STATION
19D429761G2 242 VAC MASTER EXECUTIVE II STATION
19D429761G3 121 VAC LOCAL CONTROLLER
19D429761G4 242 VAC LOCAL CONTROLLER
19D429761G5 HARNESS ASSEMBLY
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
A1	19A134623P1	Clock, digital. AM/PM Indicator, power failure indicator; sim to National Semi-Conductor MA1022-GLR.
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1	5493132P18	Electrolytic: 1000 µf +150-10%, 20 VDCW.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1 and S2	19B209040P7	Slide: SPDT, 0.5 amp at 125 v; sim to Continental-Wirt Type G132.
		- - - - - - - - - - TRANSFORMERS - - - - - - - -
T1	19A134773P1	Power, step-down: Pri: 121/242 VRMS, 50/60 Hz, Sec: 7.2 VRMS at 250 mA.
		- - - - - - - - - TERMINAL BOARDS - - - - - - - - -
TB11	7775500P18	Phen: 8 terminals.
		- - - - - - - - - - CABLES - - - - - - - - - -
W1B	19A129871G3	Power: 3 conductor, approx 6 feet long. HARDWARE KIT 19A138369G1-G4
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1	19A115882P4	Terminal: sim to AMP 61725-2.
		- - - - - - - - - - CABLES - - - - - - - - - -
W1A	19A129871G2	Power: 3 conductor, approx 15 feet long.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	19A136735G1	Grommet. (Used with W1B).
	19A116768P9	Bushing, strain relief. (Used with W1A).
	19A122059P2	Pad. (Located on edge of printed board).
	19A137760G1	Clock window.
	19B201074P306	Tap screw, Phillips POZIDRIV®: No. 6-32 x 3/8. (Secures 4029851P26 cable clamp & clock).
	19B205288P1	Support. (Digital clock- for MASTR II EXEC. STATION).
	4029851P26	Clip loop. (Used with power cord).
	7141225P3	Hex nut: No. 6-32. (Secures cable clamps).
	N402P37C6	Flatwasher: No. 6. (Used with tap screw that secures clock).
	N404P13C6	Lockwasher, internal tooth: No. 6. (Secures cable clamps).
	NP276466	Nameplate. (WARNING).
	4035306P40	Washer, fiber. (Located under screws that secure A1).

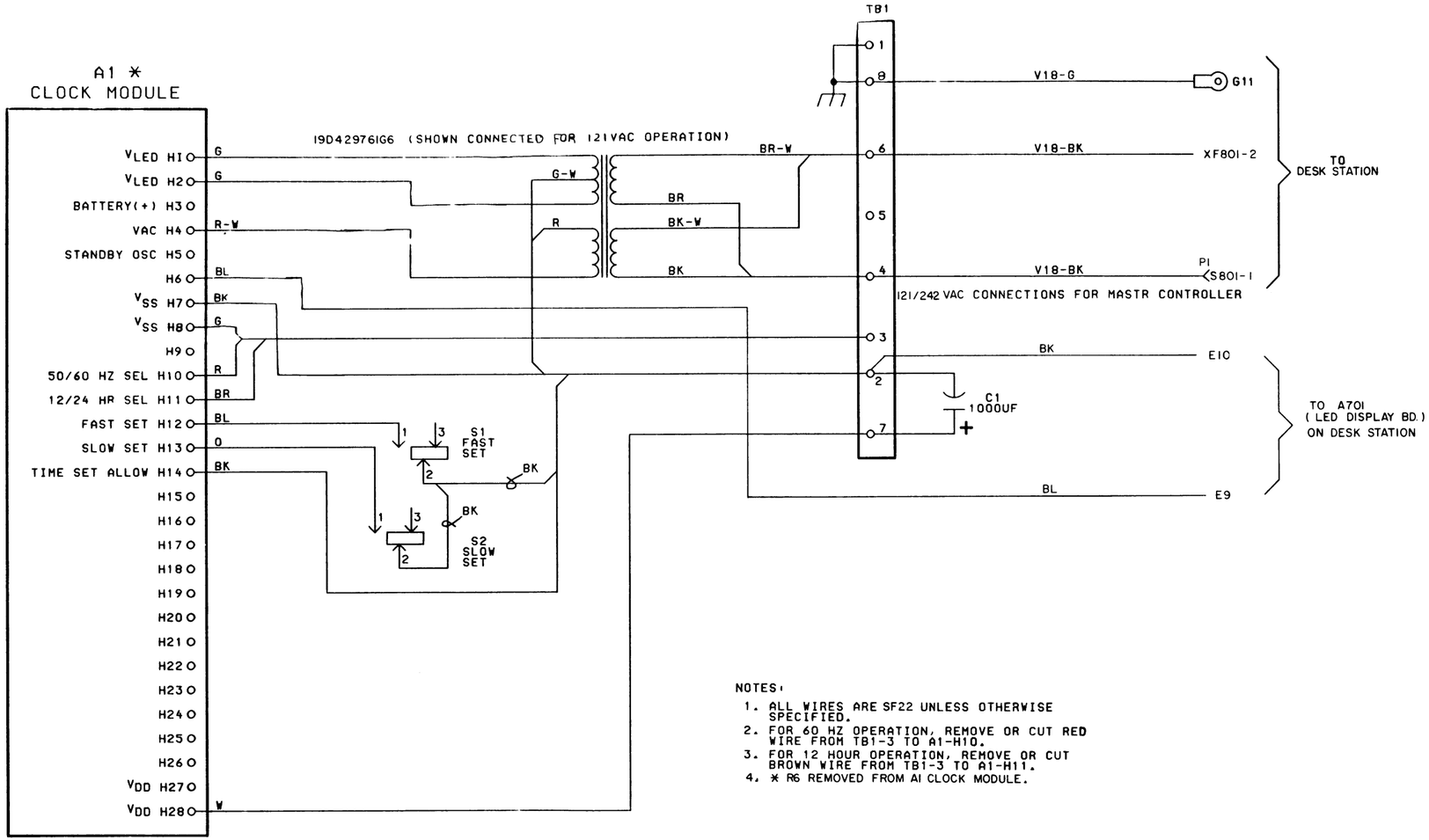
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

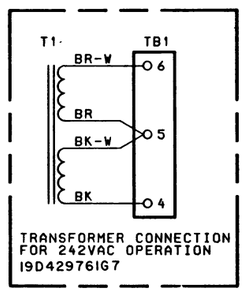
PARTS LIST

ELECTRONIC DIGITAL CLOCK
19D429761G6 121 VAC GE MARC V STATION
19D429761G7 241 VAC GE MARC V STATION
ISSUE 1

SYMBOL	GE PART NO.	DESCRIPTION
A1	19A134623P1	Clock, digital. AM/PM Indicator, power failure indicator; sim to National Semi-Conductor MA1022-GLR.
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	5493132P18	Electrolytic: 1000 µf +150-10%, 20 VDCW.
		- - - - - - - - - - SWITCHES - - - - - - - - - -
S1 and S2	19B209040P7	Slide: SPDT, 0.5 amp at 125 v; sim to Continental-Wirt Type G132.
		- - - - - - - - - - TRANSFORMERS - - - - - - - - -
T1	19A134773P1	Power, step-down: Pri input: 121/242 VRMS, 50/60 Hz, Sec output: 7.2 VRMS CT at 250 mA.
		- - - - - - - - - TERMINAL BOARDS - - - - - - - - - -
TB1	7775500P18	Phen: 8 terminals.
		HARNESS ASSEMBLY 19D429761G4 (Includes C1, S1, S2, TB1)
		ASSOCIATED PARTS
		HARDWARE KIT 19A138369G2
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P1	19A115882P4	Terminal: sim to AMP 61725-2.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1A	19A129871G1	Power: 3 conductor, approx 6 feet long.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - - -
	19A116768P9	Bushing, strain relief.
	19A122059P2	Pad. (Located on edge of printed board).
	19B201074P306	Tap screw, Phillips POZIDRIV®: No. 6-32 x 3/8. (Secures clock).
	19B205288P1	Support. (Digital clock- for MASTR II EXEC. STATION).
	NP276466	Nameplate. (WARNING).
	4035306P40	Washer, fiber. (Located under screws that secures A1).
	19B209268P101	Solderless terminal; sim to AMP 42035-1. (Hung in wiring).
	19A115185P8	Retaining strap; sim to Dennison BAR-LOK 08470. (Secures C1).
	N84P5005C6	Machine screw: No. 2-56 x 5/16. (Secures clock A1).
	N210P5C6	Hex nut: No. 2-56. (Secures clock A1).
	N404P8C6	Lockwasher, internal tooth: No. 2. (Secures clock A1).

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES





MODEL NO	REV LETTER
PLI9D429761G6 PLI9D429761G7	

NOTES:
1. ALL WIRES ARE SF22 UNLESS OTHERWISE SPECIFIED.
2. FOR 60 HZ OPERATION, REMOVE OR CUT RED WIRE FROM TB1-3 TO A1-H10.
3. FOR 12 HOUR OPERATION, REMOVE OR CUT BROWN WIRE FROM TB1-3 TO A1-H11.
4. * R6 REMOVED FROM A1 CLOCK MODULE.

(19D430748, Rev. 1)

SCHEMATIC DIAGRAM

DIGITAL CLOCK 19D429761G6 & G7

Issue 1

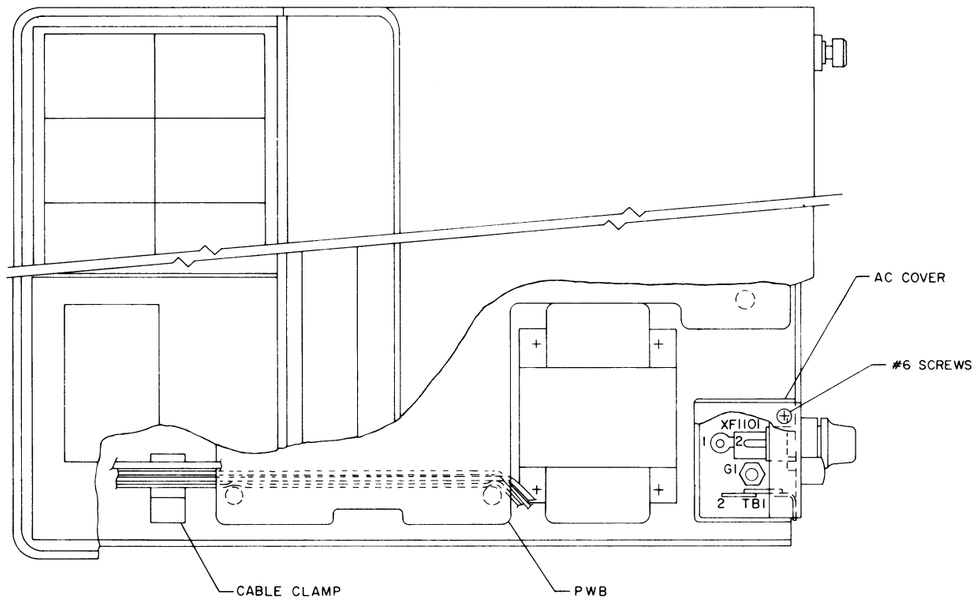


FIG. 2

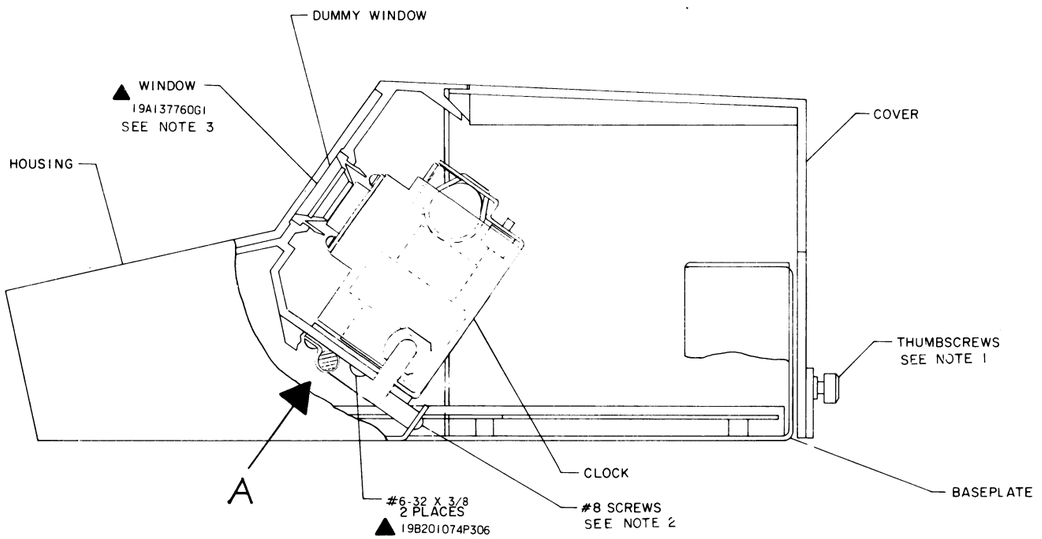


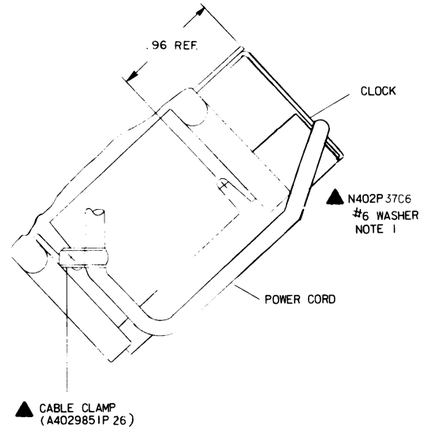
FIG. 1

THESE INSTRUCTIONS COVER THE INSTALLATION OF DIGITAL CLOCK PL19D429761G1 IN MASTR CONTROLLER.

INSTALLATION INSTRUCTIONS:

1. LOOSEN THUMBSCREWS ON REAR OF UNIT AND REMOVE COVER.
2. REMOVE 4- #8 SCREWS FROM BASE PLATE AND REMOVE HOUSING FROM BASEPLATE.
3. REMOVE DUMMY WINDOW IN CLOCK OPENING AND REPLACE WITH CLOCK WINDOW PL19A137760G1. RETURN DUMMY TO STOCK. HEAT STAKE WINDOW IN PLACE BY APPLYING SOLDER IRON OR SIMILAR TO 4 RETAINING TABS.
4. MOUNT CLOCK AS SHOWN IN FIG. 1 WITH 2- 19B201074P306 SCREWS (#6 X 3/8) AND .6 WASHER. N402P37C6. REMOVE PROTECTIVE FILM FROM LED READOUT. LOCATE CLOCK FLUSH AGAINST WINDOW WITHIN .06.
5. ROUTE WIRES FROM CLOCK UNDER PWB AS SHOWN IN FIG. 2 DO NOT ROUTE THRU CABLE CLAMP OR SPOT TIE TO OTHER WIRING.
6. REMOVE 2- #6 SCREWS AND AC COVER.
7. SOLDER ONE BLACK WIRE TO XF1101-2 AND THE OTHER BLACK WIRE TO TB1-2.
8. REMOVE NUT FROM G1. PLACE LUG FROM GREEN WIRE ON G1 FOLLOWED BY LWASH. THEN RE-ASSEMBLE NUT.
9. RE-ASSEMBLE UNIT.

NOTE:
▲ INCLUDED IN HARDWARE KIT PL19A138369G1.



VIEW AT "A"

INSTALLATION INSTRUCTIONS

MASTR CONTROLLER

(19D417774, Sh. 2, Rev. 1)

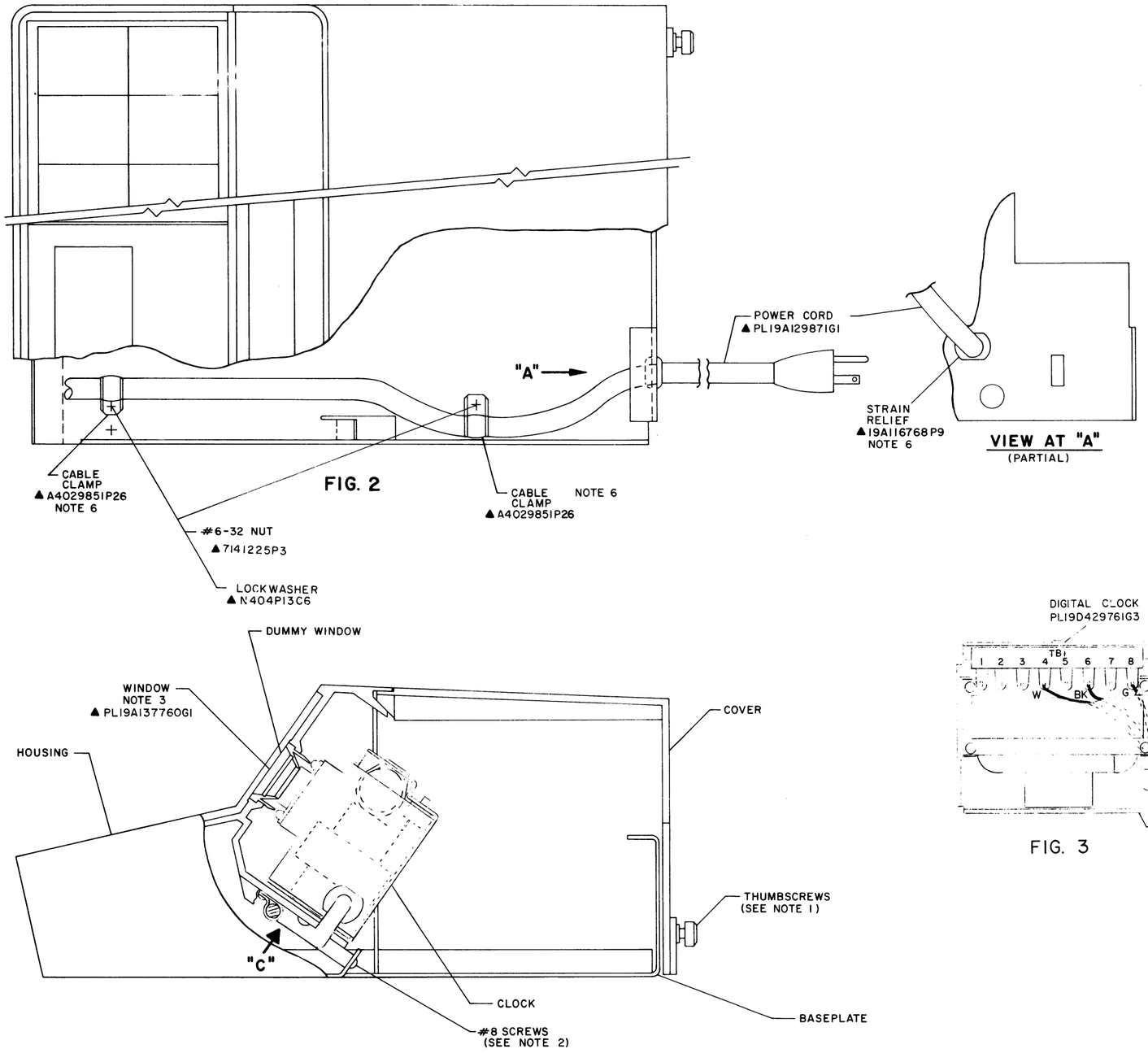


FIG. 1

FIG. 2

THESE INSTRUCTIONS COVER THE INSTALLATION OF DIGITAL CLOCK 19D429761G3 IN LOCAL MASTR CONTROLLER

INSTALLATION INSTRUCTIONS:

1. LOOSEN THUMB SCREWS ON REAR OF UNIT AND REMOVE COVER.
2. REMOVE 4 #8 SCREWS FROM BASE PLATE AND REMOVE HOUSING FROM BASEPLATE.
3. REMOVE DUMMY WINDOW IN CLOCK OPENING AND REPLACE WITH CLOCK WINDOW PL19A137760G1. RETURN DUMMY TO STOCK. HEAT STAKE WINDOW IN PLACE BY APPLYING SOLDER IRON OR SIMILAR TO 4 RETAINING TABS.
4. ROUTE POWER CABLE THROUGH HOLE IN CHASSIS AS SHOWN IN FIG. 2 AND VIEW "A". REMOVE 4 SCREWS AND NUTS HOLDING CLOCK MODULE TO DIGITAL CLOCK CHASSIS. ROUTE POWER CORD THRU CABLE CLAMP ON DIGITAL CLOCK CHASSIS. SOLDER WHITE WIRE TO TB1-4, BLACK WIRE TO TB1-6 AND GREEN WIRE TO TB1-8. REPLACE CLOCK MODULE.
5. MOUNT CLOCK AS SHOWN IN FIG 1 WITH 19B201074P306 SCREWS (#6 X 3/8) AND #6 WASHER, N402P3706. REMOVE PROTECTIVE FILM FROM LED READOUT. LOCATE CLOCK FLUSH AGAINST WINDOW WITHIN .06.
6. INSTALL CABLE CLAMPS AND INSTALL STRAIN RELEIF.
7. RE-ASSEMBLE UNIT.

Δ INCLUDED IN HARDWARE KIT PL19A138369G3.

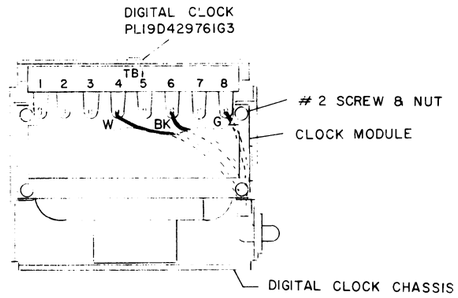
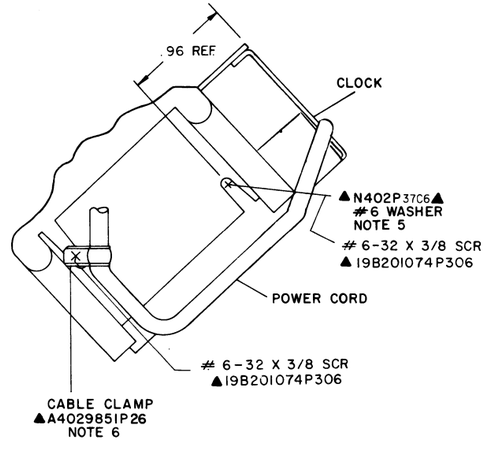


FIG. 3



VIEW AT "C"
(PARTIAL)

(19D417782, Sh. 3, Rev. 1)

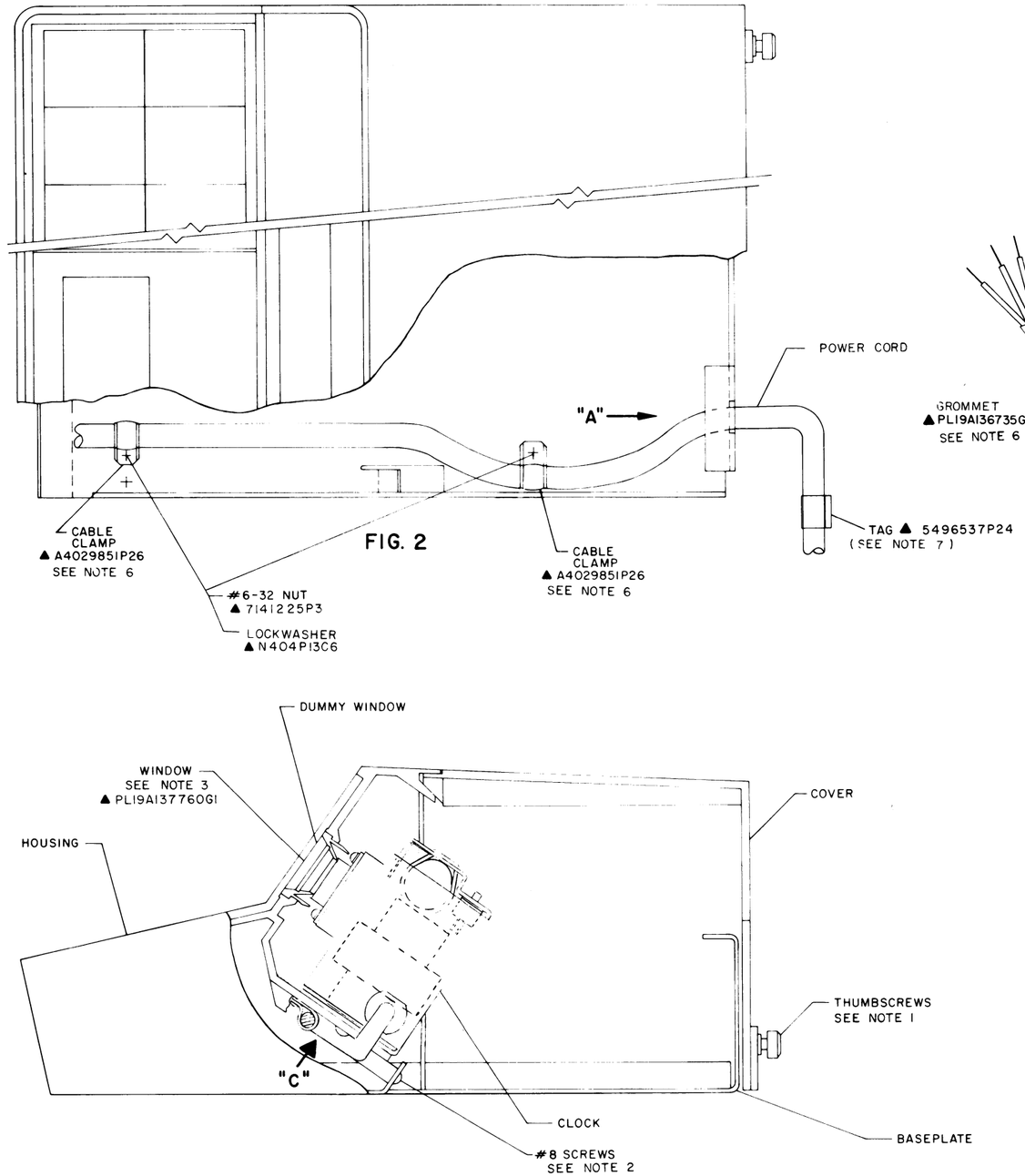
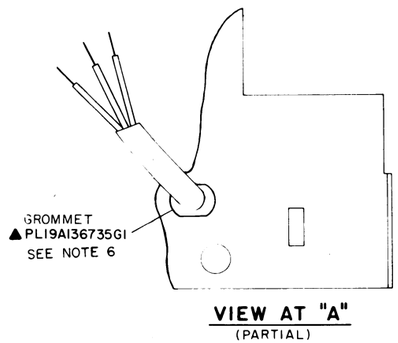


FIG. 2



VIEW AT "A"
(PARTIAL)

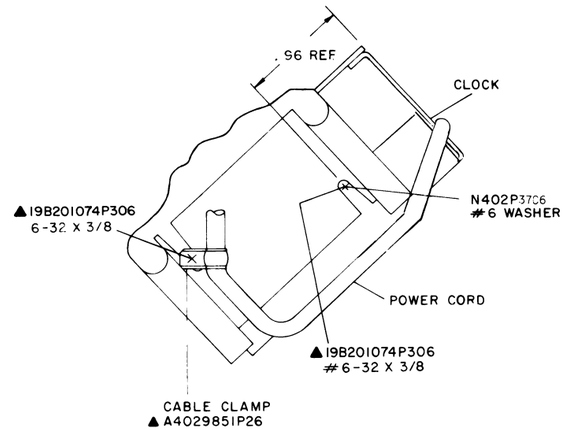
THESE INSTRUCTIONS COVER THE INSTALLATION OF DIGITAL CLOCK PL19D429761G4 IN LOCAL MASTR CONTROLLER FOR 220 VOLT OPERATION

INSTALLATION INSTRUCTIONS

1. LOOSEN THUMB SCREWS ON REAR OF UNIT AND REMOVE COVER.
2. REMOVE 4 #8 SCREWS FROM BASE PLATE AND REMOVE HOUSING FROM BASEPLATE.
3. REMOVE DUMMY WINDOW IN CLOCK OPENING AND REPLACE WITH CLOCK WINDOW PL19A137760G1. RETURN DUMMY TO STOCK. HEAT STAKE WINDOW IN PLACE BY APPLYING SOLDER IRON OR SIMILAR IC 4 RETAINING TABS.
4. ROUTE POWER CABLE THROUGH HOLE IN CHASSIS AS SHOWN IN FIG. 2 AND VIEW "A"
5. MOUNT CLOCK AS SHOWN IN VIEW "C" WITH 19B201074P306 SCREWS (.6 X 3/8) AND 6 WASHER N402P3706. REMOVE PROTECTIVE FILM FROM LED READOUT. LOCATE CLOCK FLUSH AGAINST WINDOW WITHIN .06
6. INSTALL CABLE CLAMPS AND GROMMET.
7. APPLY 5496537P24 TAG APPROXIMATELY 3 INCHES FROM STRIPPED END OF CABLE.
8. RE-ASSEMBLE UNIT.

Δ INCLUDED IN HARDWARE KIT PL19A138369G4.

FIG. 1



VIEW AT "C"
(PARTIAL)

(19D417782, Sh. 4, Rev. 1)

THIS INSTRUCTION COVERS INSTALLATION OF DIGITAL CLOCK 19D429761G1 OR G2 INTO MASTR EXEC II DESK TOP STATION.

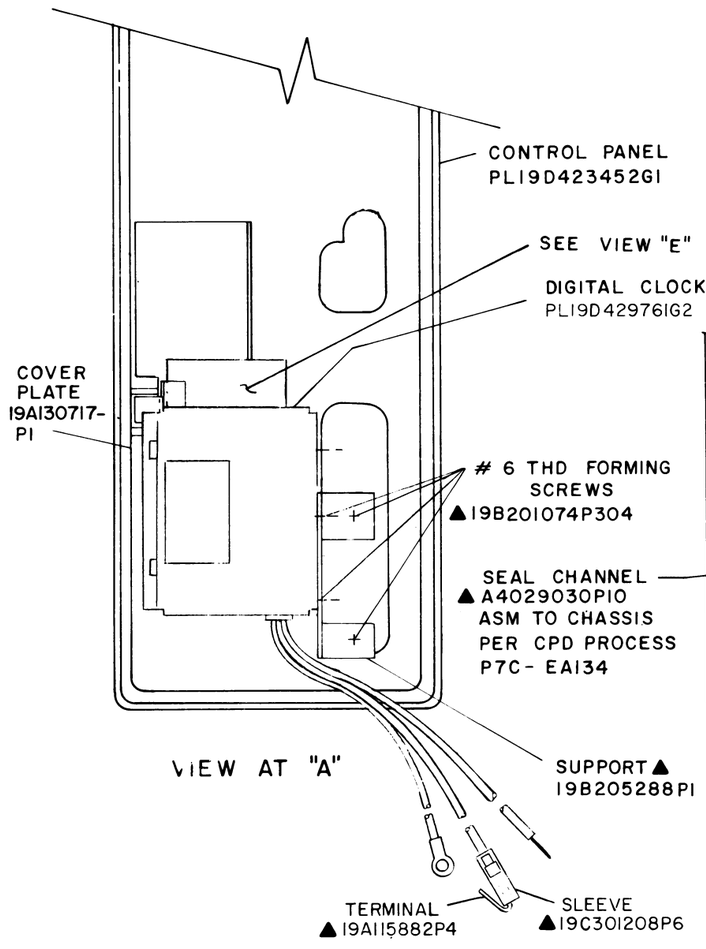
INSTRUCTIONS:

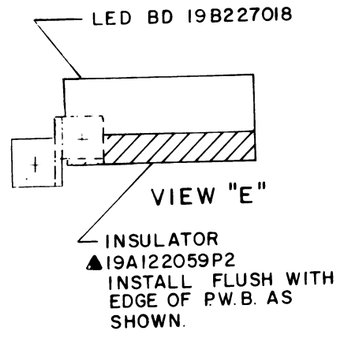
1. TERMINATE EITHER BLACK WIRE WITH(▲ 19A115882P4 AND SLEEVE WITH (▲19C301208P6).

INSTRUCTIONS: FOR FIG 2

1. REMOVE COVER PLATE 19A130717P1 AND RETURN TO STOCK.
2. MOUNT SUPPORT (▲19B205288P2) BY USING TWO #6 THD FORMING SCREWS (▲19B201074P304).
3. MOUNT DIGITAL CLOCK (PL19D429761) BY USING TWO #6 THD FORMING SCREWS (▲19B201074P304). REMOVE PROTECTIVE FILM FROM LED READOUT.
4. ROUTE WIRES FROM DIGITAL CLOCK THRU H6 TO BOTTOM OF CHASSIS AND CONNECT GR WIRE TO G11, ONE BK WIRE TO S801-1, SEE VIEW D AND SOLDER ONE BK WIRE TO XF801-1.

Δ INCLUDED IN HARDWARE KIT PL19A138369G2.





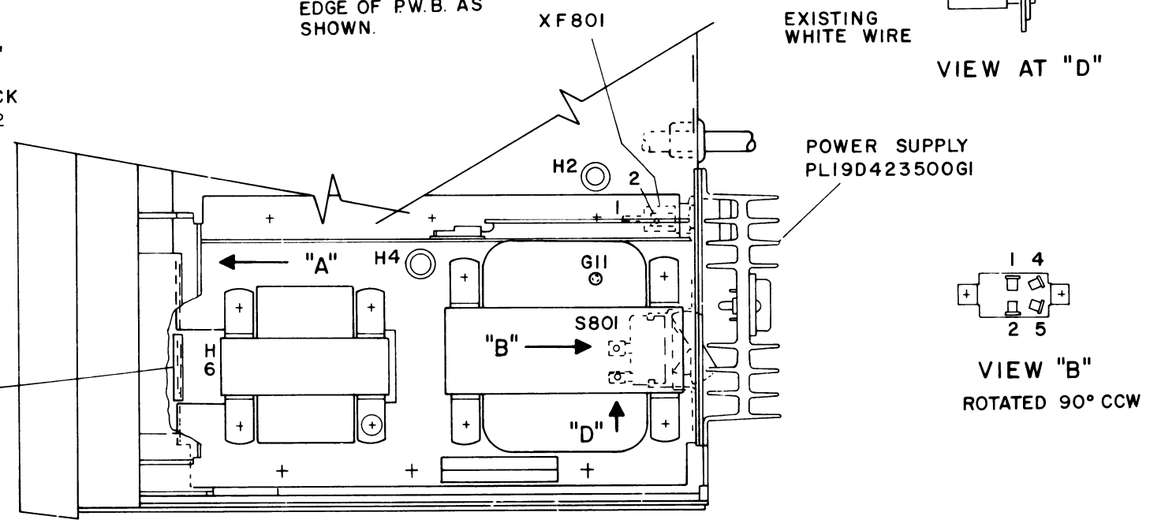
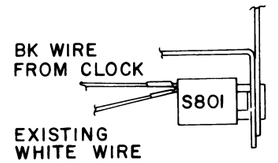


FIG.2



VIEW AT "D"

VIEW "B"
ROTATED 90° CCW

THIS INSTRUCTION COVERS INSTALLATION OF DIGITAL CLOCK 19D429761G6 OR G7 INTO MASTR EXEC II DESK TOP STATION. FOR GE MARC V APPLICATION.

3

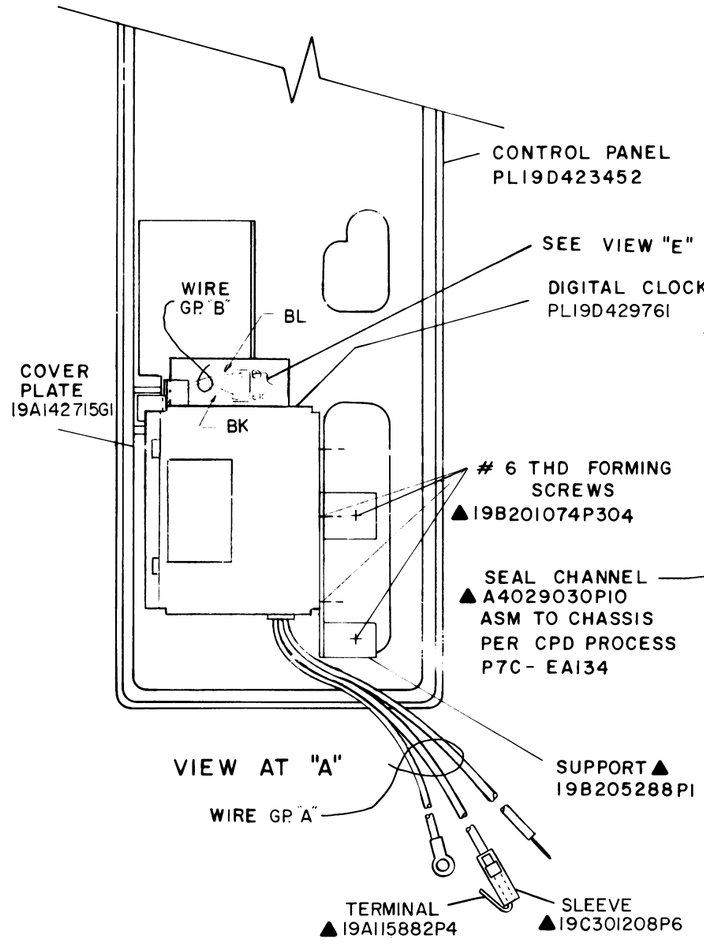
INSTRUCTIONS:

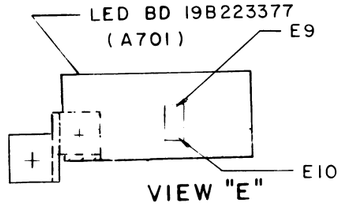
1. TERMINATE EITHER BLACK WIRE WITH(▲ 19A115882P4 AND SLEEVE WITH (▲19C301208P6).

INSTRUCTIONS: FOR FIG 2

1. REMOVE COVER PLATE 19A142715G1, REMOVE WIRES RUNNING FROM LED AT E9 & E10 ON LED BOARD AND RETURN TO STOCK.
2. MOUNT SUPPORT (▲19B205288P2) BY USING TWO #6 THD FORMING SCREWS (▲19B201074P304).
3. MOUNT DIGITAL CLOCK (PL19D429761) BY USING TWO #6 THD FORMING SCREWS (▲19B201074P304). REMOVE PROTECTIVE FILM FROM LED READOUT.
4. ROUTE WIRE GP "A" FROM DIGITAL CLOCK THRU H6 TO BOTTOM OF CHASSIS AND CONNECT GR WIRE TO G11, ONE BK WIRE TO S801-1, SEE VIEW D AND SOLDER ONE BK WIRE TO XF801-2. ROUTE WIRE GP "B" DIRECTLY TO A701 BD. SOLDER BLUE WIRE TO E9. SOLDER BLACK WIRE TO E10.

▲ INCLUDED IN HARDWARE KIT PL19A138369G2.





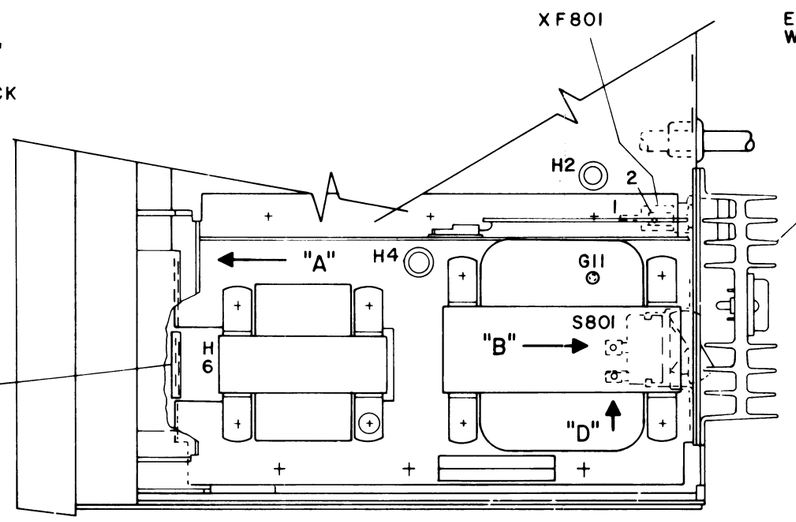
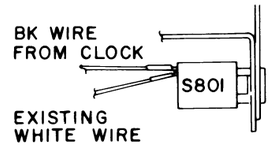
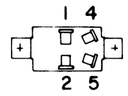


FIG.2



VIEW AT "D"



VIEW "B"
ROTATED 90° CCW
(S801)

(19C321825, Sh. 3, Rev. 1)

INSTALLATION DIAGRAM

DIGITAL CLOCK 19D429761G6 & G7
GE MARC V DESK TOP STATION