

ACURAY

MODEL-071A


DENTAL X-RAY

OPERATOR'S MANUAL

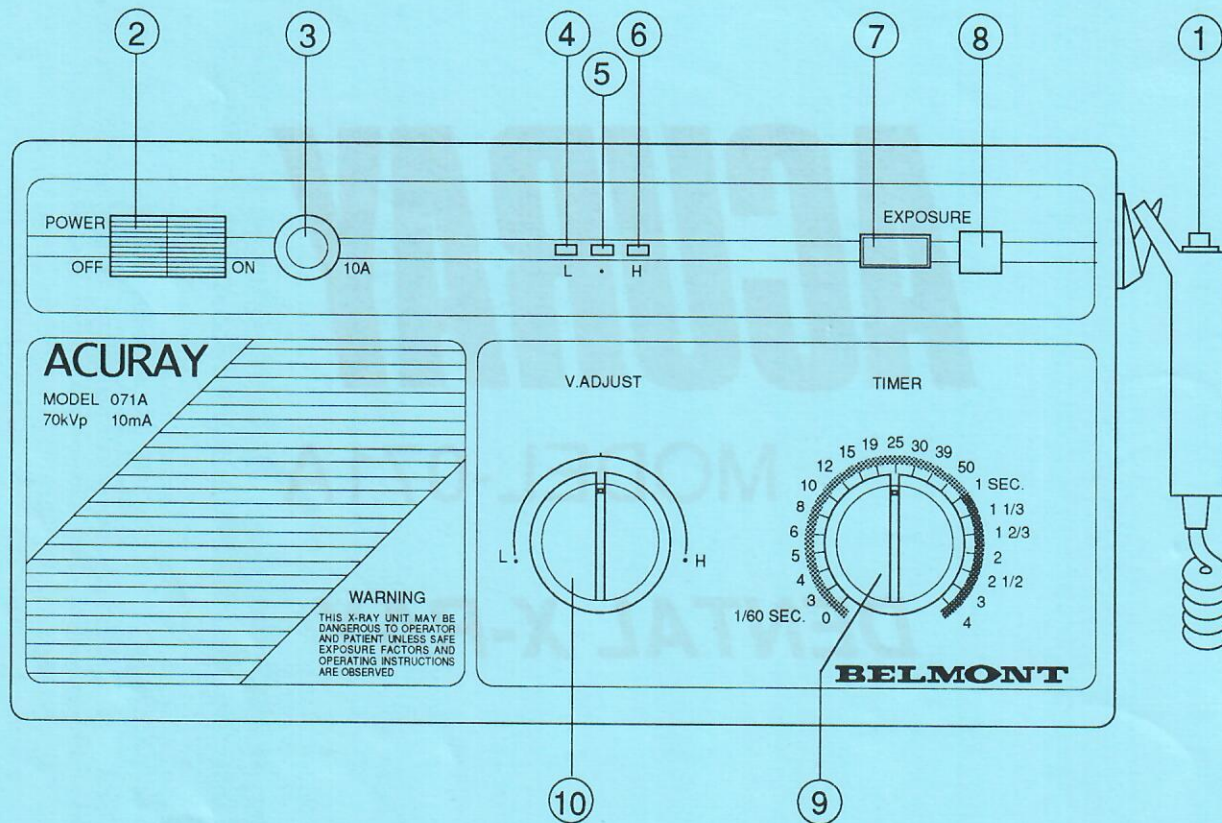
REV.005

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 **Belmont**

LAYOUT OF CONTROL BOX



- ① Hand Exposure Switch
- ② Main Power Switch
- ③ Fuse (10A)
- ④ Low Operating Voltage Indicating Lamp
- ⑤ Correct Operating Voltage Indicating Lamp
- ⑥ High Operating Voltage Indicating Lamp
- ⑦ Exposure Warning Lamp
- ⑧ Exposure Switch
- ⑨ Exposure Time Selection Knob
- ⑩ Operating Voltage Adjustment Knob

FUNCTION OF CONTROLS

Hand Exposure Switch ①

Deadman type exposure switch. When making an exposure, depress this switch and keep the switch depressed until both the exposure warning lamp ⑦ and the audible warning terminate. Failure to keep the switch depressed will result in premature termination of the exposure.

Main Power Switch ②

Fuse ③

An over-current protection device rated for 10 amperes. When turning ON, if none of three operating voltage indicating lamps ④ ~ ⑥ illuminates, or when an exposure terminates prematurely while an exposure switch ① or ⑧ is depressed, this fuse may have blown. If this should occur : Turn main power switch ② OFF. Remove the fuse from the unit by unscrewing the fuse holder cap, the fuse will be removed with the cap. Inspect the fuse, if it has blown; REPLACE. Turn main power switch ② ON and attempt a two second exposure. If the fuse blows out, call an authorized service technician to diagnose the cause.

Low Operating Voltage Indicating Lamp ④

Correct Operating Voltage Indicating Lamp ⑤

High Operating Voltage Indicating Lamp ⑥

These three lamps function to ensure that the voltage supplied to the x-ray unit is within the manufacturer's specifications. After turning the unit ON, inspect the operating voltage indicating lamps. If the high operating voltage indicating lamp (red lamp marked "H") ⑥ is illuminated, the voltage is too high to operate the unit. Correct this condition by turning the operating voltage adjustment knob ⑩ counterclockwise until the correct operating voltage indicating lamp (green lamp) ⑤ is illuminated. If the low operating voltage indicating lamp (red lamp marked "L") ④ is illuminated, the voltage is too low. Correct by turning the adjustment knob ⑩ clockwise until the green lamp ⑤ is illuminated.

NOTE; The x-ray unit will not make an exposure unless the green lamp ⑤ is illuminated.

Exposure Warning Lamp ⑦

Illumination of this lamp indicates the unit is producing x-radiation.

NOTE; There is a second exposure "WARNING" lamp located on the x-ray head yoke assembly, and audible warning within the control box. If exposure indicator lamp on yoke does not illuminate during exposure, call an authorized service technician.

Exposure Switch ⑧

Deadman type exposure switch. When making an exposure, depress this switch and keep the switch depressed until both the exposure warning lamp ⑦ and the audible warning terminate. Failure to keep the switch depressed will result in premature termination of the exposure.

Exposure Time Selection Knob ⑨

Use to select the desired exposure time. Timing for radiographs depends on whether the patient is an adult or a child, the type of film used and the degree of contrast desired by the doctor. Representative examples based on the use of Kodak Ultra-Speed D are given in TABLE 1.

Operating Voltage Adjustment Knob ⑩

Operating voltage can be adjusted by this knob. If the high operating voltage indicating lamp (red lamp marked "H") ⑥ is illuminated, turn this knob counterclockwise. If the low operating voltage indicating lamp (red lamp marked "L") ④ is illuminated, turn this knob clockwise until the correct operating voltage indicating lamp (green lamp) ⑤ is illuminated.

TABLE 1 Representative Examples of Exposure Time

ADULT

with regular cone

TEETH	TIME
\1. 2	30 Pulse
\3. 4. 5	39 Pulse
\6. 7. 8	50 Pulse

with long cone

TEETH	TIME
\1. 2	1.0 Sec
\3. 4. 5	1 1/3 Sec
\6. 7. 8	1 2/3 Sec

/1. 2	19 Pulse
/3. 4. 5	30 Pulse
/6. 7. 8	39 Pulse

/1. 2	39 Pulse
/3. 4. 5	1.0 Sec
/6. 7. 8	1 1/3 Sec

CHILD

with regular cone

TEETH	TIME
\1. 2	19 Pulse
\3. 4. 5	25 Pulse
\6. 7. 8	30 Pulse

with long cone

TEETH	TIME
\1. 2	36 Pulse
\3. 4. 5	50 Pulse
\6. 7. 8	1.0 Sec

/1. 2	12 Pulse
/3. 4. 5	19 Pulse
/6. 7. 8	25 Pulse

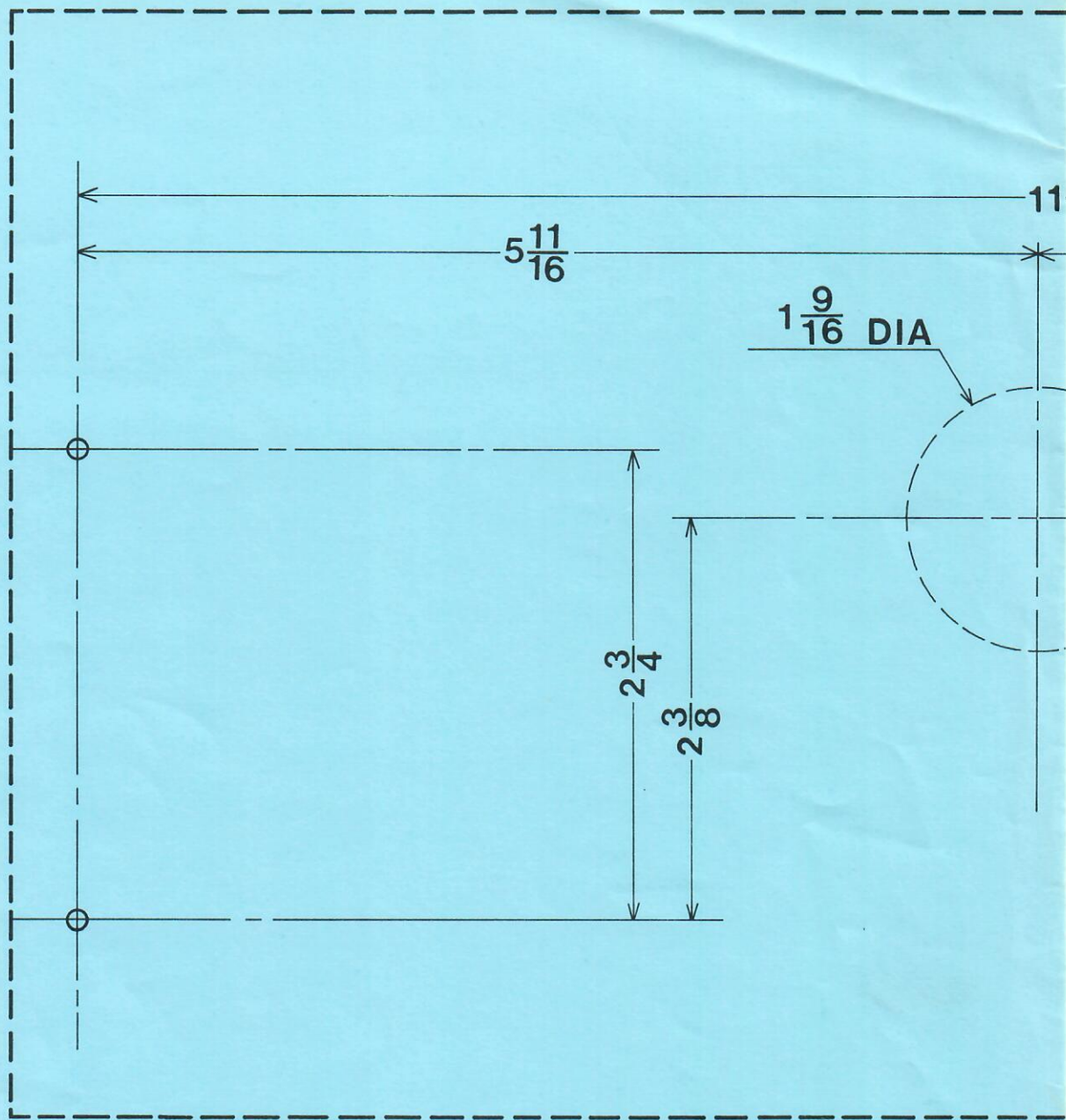
/1. 2	25 Pulse
/3. 4. 5	39 Pulse
/6. 7. 8	50 Pulse

NOTE 1; Exposure time on TABLE 1 is based on Kodak Ultra-Speed D film or equivalent.

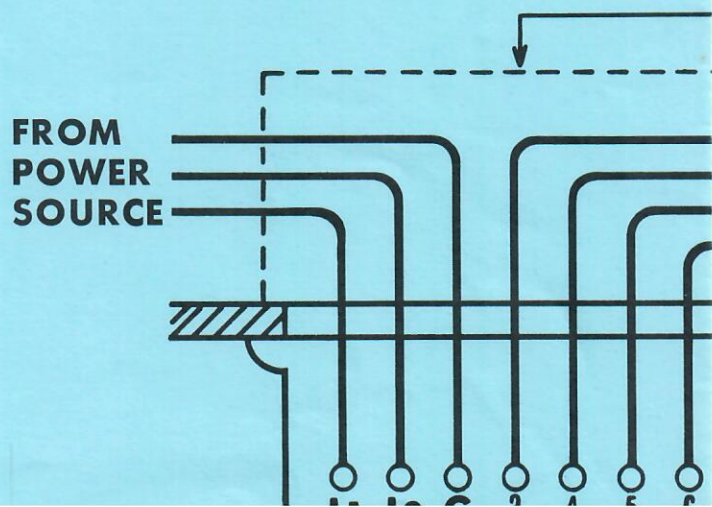
NOTE 2; Exposure time on TABLE 1 is calculated as cone end is touching the skin of patient. If film holder is used and cone end is not touching the skin of patient, the adequate exposure time becomes longer than TABLE 1.

ACURAY MODEL-071A

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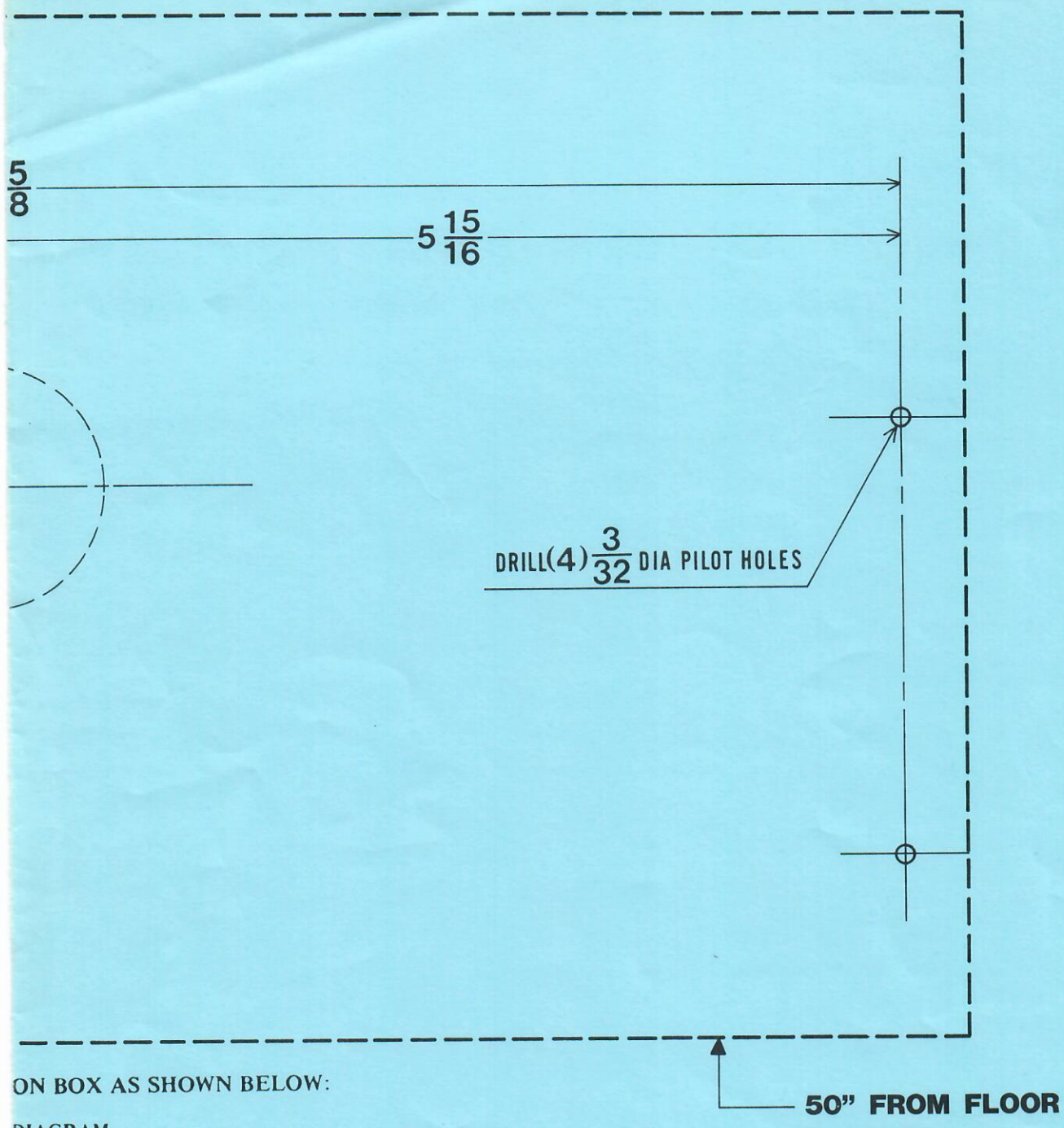


CONNECT WIRES IN JUNCTION BOX
X-RAY INSTALLATION WIRING

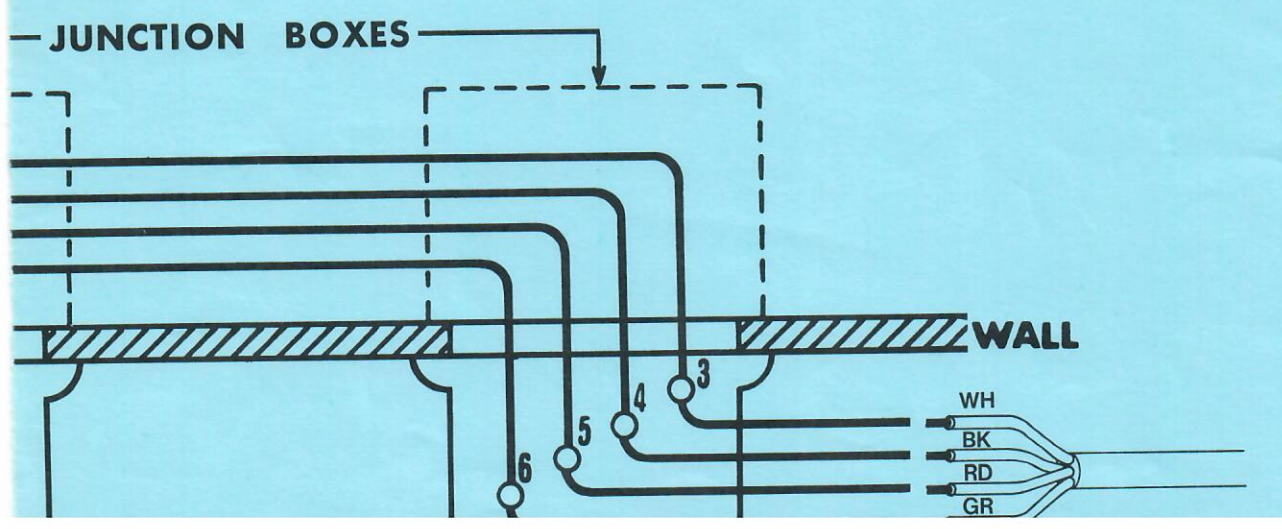


(See drawing UX-07002 for Arm Mounting Bracket Template)

MOUNTING TEMPLATE CONTROL BOX



ON BOX AS SHOWN BELOW:
DIAGRAM



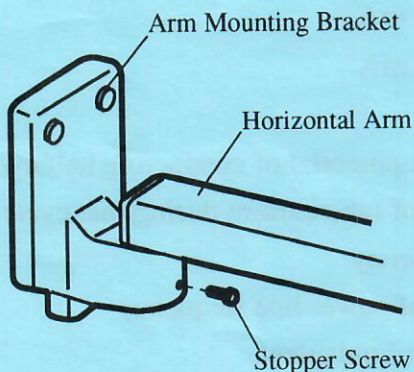
OPERATING PROCEDURES

1. Turn main power switch (2) ON.
2. Using the representative exposure setting given in TABLE 1 as a reference, set the desired exposure setting using the exposure time selection knob (9).
3. Inspect the operating voltage indicating lamps (4) ~ (6). If the high operating voltage indicating lamp (red lamp marked "H") (6) is illuminated, turn the operating voltage adjustment knob (10) counterclockwise until the correct voltage indicating lamp (green lamp) (5) is illuminated. If the low operating voltage indicating lamp (red lamp marked "L") (4) is illuminated, turn the adjustment knob 10 clockwise until the green lamp (5) is illuminated.
While turning the adjustment knob (10), clockwise or counterclockwise, verify if the green lamp (5) is illuminated from 3 positions.
If the green lamp (5) is illuminated from 3 positions, follow the NOTE 1 below.

NOTE 1; (IMPORTANT); DEPENDING ON EXACT LINE VOLTAGE IN YOUR BUILDING, THE OPERATING VOLTAGE ADJUSTMENT KNOB (10) WILL ILLUMINATE THE GREEN LAMP (5) FROM 3 POSITIONS. IN ORDER TO OPERATE THE X-RAY UNIT CORRECTLY, IN SUCH CASE, SELECT THE CENTER OF THE GREEN LAMP (5) ILLUMINATING POSITIONS.

NOTE 2; THE X-RAY UNIT WILL NOT MAKE AN EXPOSURE UNLESS THE GREEN LAMP (5) IS ILLUMINATED.

4. Depress either exposure switch (1) or (8). When an exposure switch is depressed, the exposure warning lamp (7) and a warning lamp located on the x-ray head will illuminate, and the audible warning will sound. Do not release the exposure switch until the audible warning and the warning lamps terminate. Failure to keep the switch depressed will result in the exposure being terminated prematurely.
5. After use turn the main power switch (2) OFF in order to prevent accidental exposures.



⚠ CAUTION

The stopper screw must not be removed from the arm mounting bracket; it acts to prevent the horizontal arm from moving vertically in the arm mounting bracket resulting in the x-ray falling from the arm mounting bracket.

TECHNICAL DATA

ELECTRICAL AND RADIATION DATA

1. Focal point measurement 0.8 mm x 0.8 mm
2. Rated peak tube potential 70 kVp
3. Rated tube current 10 mA
4. Maximum rated peak tube potential 70 kVp
5. Rated line voltage 115 V AC
6. Line voltage range 105 V AC ~ 130 V AC
7. Range of line voltage regulation 2 ~ 5%
8. Rated line current 10.5 A at 70 kVp 10 mA
9. Maximum line current 11.6 A at 70 kVp 10 mA
10. Exposure time 3 pulses ~ 4 sec.
(ON and OFF are zero crossed.)
11. Timer accuracy ± 1 pulse (1/60 sec.)
12. Inherent filtration 1.75 mmAl Equivalent
13. Added filtration 0.5 mmAl
14. Minimum filtration permanently in useful beam 2.25 mmAl Equivalent at 70 kVp
15. Nominal roentgen output
 - a. Distal end of regular cone 0.48 R/sec. +30%, -40%
 - b. Distal end of long cone 0.24 R/sec. +30%, -40%
16. Source to skin distance
 - a. Regular cone 258 mm
 - b. Long cone 364 mm
17. Leakage technique factor 70 kVp/0.32 mA
0.32 mA is maximum rated continuous current for 10 mA with a duty cycle 1:30
18. Duty cycle 1:30 (1 sec. exposure with 30 sec. interval)
19. Maximum deviation of tube potential and tube current

Pulse	Tube Potential	Tube Current
3rd ~ 5th	70 ⁺¹³ ₋₁₈ kVp	10 ⁺⁵ ₋₄ mA
6th ~ 11th	70 ⁺¹⁰ ₋₁₃ kVp	10 \pm 3 mA
12th & Up	70 ⁺⁹ ₋₁₃ kVp	10 \pm 2 mA
20. Measurement base of technique factors
 - a. Peak tube potential Peak tube potential of conducting half cycle
 - b. Tube current Average of tube current during one cycle of line frequency
 - c. Exposure time Impulse of power line frequency
21. Half value layer 1.5 mmAl Equivalent
22. Source to the base of cone distance 172 mm

MAINTENANCE

FOR YOUR 071A X-RAY AS RECOMMENDED BY THE MANUFACTURER

MODEL 071A X-RAY unit requires the following periodic maintenance checks being performed to ensure your x-ray will continue to function within the manufacturer's specifications.

It is the responsibility of the owner of the x-ray to see that these maintenance checks are done once every 6 months and that they are performed by a trained, certified service technician.

The specific instructions to perform these checks are located within the MODEL 071A Installation Manual.

- A. Operating Voltage Test
- B. Tube Current (mA) Calibration
- C. Pre-heat Time Adjustment
- D. Line Voltage Regulation Test
- E. Timer Accuracy Test
- F. Inspection of Arm and Head Movement

MAINTENANCE RECORD

Date of installation ____ / ____ / ____ By _____;

PERIOD	CHECKED DATE	CHECKED ITEMS						CHECKED BY
		A	B	C	D	E	F	
6-Month	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
1-Year	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
18-Month	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
2-Year	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
30-Month	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
3-Year	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
42-Month	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
4-Year	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
54-Month	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	
5-Year	____ / ____ / ____.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____.
		A	B	C	D	E	F	


MAINTENANCE

FOR YOUR DT1A X-RAY AS RECOMMENDED BY THE MANUFACTURER
MODEL DT1A X-RAY will require the following periodic maintenance checks being performed to
ensure your X-ray will continue to function within the manufacturer's specifications.
It is the responsibility of the owner of the X-ray to see that these maintenance checks are done once
every 6 months and that they are performed by a trained, certified service technician.
The specific instructions to perform these checks are located within the MODEL DT1A installation

- A. Operating Voltage Test
- B. Tube Current (mA) Calibration
- C. Pre-pulse Time Adjustment
- D. Line Voltage Regulation Test
- E. Timer Accuracy Test
- F. Inspection of AEC and Filter Movement

MAINTENANCE RECORD

Date of inspection	PERIOD CHECKED DATE	CHECK ITEMS	CHECKER
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____
_____	_____	A B C D E F	_____

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