

DENTAL X-RAY

SEARCHER 70

DX-073

- Wall Mount TypeWK
- Ceiling Mount Type.....CK
- Floor Mount TypeFK1/2
- Mobil Mount TypeFM
- Room Mount TypeRKII

OPERATOR'S INSTRUCTIONS



⚠ WARNING :

This X-ray equipment may be dangerous to patients and operators unless safe exposure factors and operating instructions are observed.

Belmont®

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Intended Use of the Product

This product is an active device intended to emit ionizing radiation for the exclusive use for diagnoses of dentistry, and must be operated or handled by the qualified personnel only.

Such qualified personnel should instruct and/or assist the patient to approach to and leave from the product.

Patients should not be allowed to operate or handle the product.

It is always recommended that both operator and patient use the proper protective means for radiographing.

[1] INTRODUCTION

1. GENERAL

SEARCHER70 DX-073 is a extraoral source dental radiographic x-ray unit. This unit works as a diagnostic purpose x-ray source for human teeth with resultant image recorded on intraoral dental x-ray film or image receptor.

This manual provides information for the operation and maintenance procedures and technical specifications for SEARCHER70 DX-073 dental x-ray. The instructions contained in this book should be thoroughly read and understood before operation.

SEARCHER70 DX-073 has no user serviceable items. Maintenance and repair should be performed by qualified dealer service personnel.

2. PARTS IDENTIFICATION OF X-RAY SYSTEM “SEARCHER70 DX-073”

- a. Tube housing assembly : 073-H
- b. X-ray controls : 073-C
- c. Cones : 073-R
- d. Balance arm : 073-A
- e. RK stand : 073-RK

3. COMPLIANCE WITH STANDARD

BELMONT SEARCHER70 DX-073 x-ray unit complies with the following standard.

EN60601-1 : 1990 including A1:93, A2:95 and A13:96 , EN60601-1-3 : 1994,
EN60601-2-7 : 1998, EN60601-2-28 : 1993, EN60601-2-32 : 1994.

4. CLASSIFICATION

According to EN60601-1, BELMONT SEARCHER70 DX-073 is classified as follows.

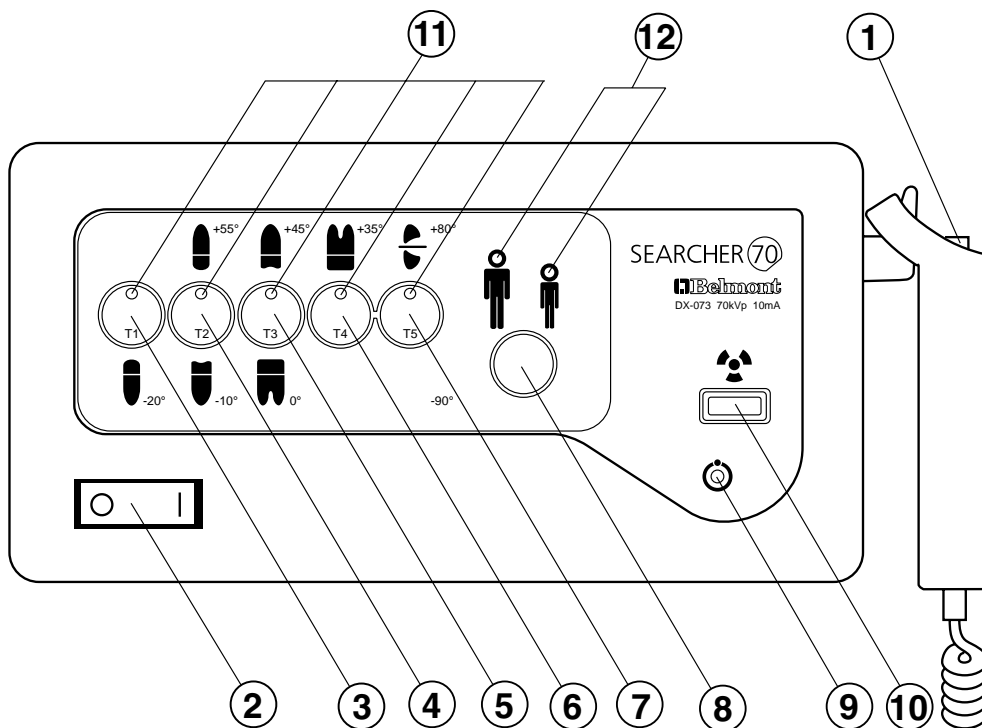
- a. Protection against electric shock : Class I Equipment, Type B Applied Parts
- b. Protection against ingress of water : Ordinary
- c. Mode of operation : Continuous Operation with Intermittent Loading
(Duty Cycle = 1 : 60)
- d. Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

5. SYMBOL

In this book, on the labels or on the control panel of SEARCHER70 DX- 073, following symbols are used. Confirm the meaning of each symbols.

	Consult written Instructions in Manuals		Protection against electric shock : Type B		ON (POWER)		OFF (POWER)
	Protection Grounding		Separate Collection for Electrical and Electronic Equipment		X-ray Emission		Ready
	Upper Incisor		Upper Cuspid & Pre Molar		Upper Molar		Occlusal
	Lower Incisor		Lower Cuspid & Pre Molar		Lower Molar		Manufacturer
SN	Serial Number		Patient Child		Patient Normal		Authorized Representative in The European Community
	Non-ionizing Radiation		Date of Manufacture				

[2] OVERALL VIEW AND MAJOR COMPONENTS



- | | |
|------------------------------------|------------------------------------|
| ① Hand exposure switch | ⑦ Tooth selection switch T5 |
| ② Main power switch | ⑧ Patient selection switch |
| ③ Tooth selection switch T1 | ⑨ V. ready lamp |
| ④ Tooth selection switch T2 | ⑩ Exposure warning lamp |
| ⑤ Tooth selection switch T3 | ⑪ Tooth selection indicating lamps |
| ⑥ Tooth selection switch T4 | ⑫ Patient type indicating lamps |

[3] FUNCTION OF CONTROLS

① HAND EXPOSURE SWITCH

Deadman type exposure switch. When making an exposure, depress this switch until both the exposure warning lamp ⑩ and the audible warning terminate. Failure to keep the switch depressed will result in premature termination of the exposure.

② MAIN POWER SWITCH

When this power switch is turned on, V.ready lamp ⑨ and one of patient type indicating lamps ⑫ should come on.

③ TOOTH SELECTION SWITCH **T1** (Incisor of mandible or bitewing of premolars)

④ TOOTH SELECTION SWITCH **T2** (Incisor of maxilla or cuspid and premolars of mandible)

⑤ TOOTH SELECTION SWITCH **T3** (Cuspid and premolar of maxilla, molars of mandible or bitewing of molars)

⑥ TOOTH SELECTION SWITCH **T4** (Molars of maxilla)

⑦ TOOTH SELECTION SWITCH **T5** (Occlusal)

NOTE : Angles indicated beside the pictographs of teeth are the standard head angle with bisecting technic when the occlusal plane of patient is horizontal.

⑧ PATIENT TYPE SELECTION SWITCH

⑨ V. READY LAMP

V. ready lamp indicates that the line voltage is within the rated voltage $\pm 10\%$. DX-073 control box is designed as exposure cannot be made, if the line voltage is higher than this range. If the line voltage exceeds this range, compensate the voltage by an additional transformer.

⑩ EXPOSURE WARNING LAMP

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

⑪ PATIENT TYPE INDICATING LAMP

This lamp indicates whether adult or child is selected as patient type. When power switch is turned on, adult is selected automatically.

⑫ TOOTH SELECTION INDICATING LAMPS

[4] OPERATING PROCEDURE

⚠CAUTION: The operator must have full view of patient and control panel, and must avoid exposure to the primary beam.

1. Turn main power switch (2) ON and confirm following lamps are illuminated.
 - a. V. ready lamp (9)
 - b. Patient type indicating lamp (Adult) (12)If the film speed programmed in secondary mode is used, press **T4** and **T5** switches together for one seconds, and confirm that the indicating lamps flashed.
2. If the patient is a child, push the patient type selection switch (8) .
3. Select a suitable tooth switch (3) ~ (7) .
4. Set the x-ray head in the position. X-ray head can be rotated 600 degrees horizontally and 300 degree vertically.
5. Depress an hand exposure switch (1) . When the exposure switch is depressed, the exposure warning lamp (10) will illuminate, and the audible warning will sound. Do not release the exposure switch until the audible warning and warning lamp terminate. Failure to keep the switch depressed will result in the exposure being terminated prematurely.
6. After use turn the main power switch (2) OFF in order to prevent accidental exposure.

NOTE : 1. Control box calculates the mAs value according to the settings of switches for patient type and tooth type and film speed. This calculation is based on the condition that the cone end is touching to the skin of patient.

2. The operator should make exposures under the condition regarding the duty cycle 1 : 60 (1 sec. exposure with 60 sec. interval) in order to prevent the temperature of insulated oil inside x-ray head from rising over 80°C when the films are exposed continuousl .
3. DX-073 x-ray is designed with its technology of microprocessor controlled mAs system. The tube current is changed by the power supply voltage.

[5] MAINTENANCE

SEARCHER70 DX-073 x-ray unit requires the following periodic maintenance checks being performed to ensure the unit is functioning within manufacturer's specifications. It is the responsibility of the owner of the unit to see that these maintenance checks are done once every 6 months and that they are performed by a trained certified service technician.

- A. Inspection of arm and head movement
- B. Inspection of line voltage and line voltage regulation
- C. Inspection of tube current
- D. Mechanical safety (Wall Mounting Type)
 1. The wall plate should be checked to confirm that it is securely attached to the wall
 2. The arm mounting bracket should be checked to confirm that it is securely attached to the wall mounting plate. The arm mounting bracket must be level horizontally and vertically.
 3. Check and verify that the horizontal arm is not raising up and out of the arm mounting bracket. This should be verified routinely by treatment room personnel.

[6] FILM SPEED CHECKING AND SETTING

SEARCHER70 DX-073 Dental X-Ray System is normally factory set to program #8 to suit D speed film (equivalent to Kodak Ultra-Speed film).

When the main power switch is turned ON program #8 is automatically selected as the primary program. A secondary film density program is also usually set into the memory. To select the secondary program, press both tooth selection switches T4 and T5 at the same time for 1 second. The tooth selection lamp will flash indicating the secondary program is now selected.

Usually the secondary program will be factory set to #3 which is suitable for F/E speed film (equivalent to Kodak InSight film).

To turn OFF the secondary program and return to the primary program simply press T4 and T5 at the same time for 1 second or turn OFF the main power switch.

To verify which primary program has been set press T4 while turning on the main switch, compare the sequence of illuminated tooth lamps to the film speed lamp chart to find the selected program. (ie, program #8 has T1 lit only). If no program change is required simply turn the main switch OFF and back on, the system is ready to use.

To set new primary program into memory select the required T1 to T4 switches by the film speed & lamp chart and as they are pressed this will turn on or off each lamp to select a desired program. Touch the patient type switch to set the program into memory. Turn the main switch OFF and back on again, the system is now ready to use.

To verify and set the secondary program use the same procedures but press T5 while turning ON the main switch, the lamps will flash while illuminated indicating you are in the secondary program.

NOTE : The lamps of the patient type switch will flash alternately when the control is put in the verify/set mode.

TABLE 1. FILM SPEED & LAMP COMBINATION CHART

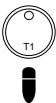
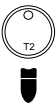


































































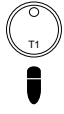
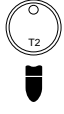
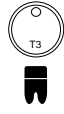

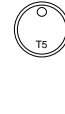


Film Density	Tooth Selection Indicating Lamp				Remark
	T1 	T2 	T3 	T4 	
#0					
#1				 	
#2			 		
#3			 	 	F/E speed film : Kodak InSight
#4		 			
#5		 		 	
#6		 	 		
#7		 	 	 	
#8	 				D speed film: Kodak Ultra-Speed
#9	 			 	
#10	 		 		
#11	 		 	 	
#12	 	 			
#13	 	 		 	
#14	 	 	 		
#15	 	 	 	 	

TABLE 2. STANDARD mAs VALUE

Patient Type	Film Density	Tooth Type				
		T1 	T2 	T3 	T4 	T5 
	#0	0.36	0.60	0.72	0.96	1.40
	#1	0.43	0.72	0.86	1.15	1.68
	#2	0.52	0.87	1.04	1.39	2.03
	#3	0.61	1.02	1.22	1.63	2.38
	#4	0.74	1.23	1.48	1.97	2.87
	#5	0.88	1.47	1.76	2.35	3.43
	#6	1.06	1.77	2.12	2.83	4.13
	#7	1.28	2.13	2.56	3.41	4.97
	#8	1.53	2.55	3.06	4.08	5.95
	#9	1.84	3.06	3.67	4.90	7.14
	#10	2.20	3.66	4.39	5.86	8.54
	#11	2.63	4.38	5.26	7.01	10.22
	#12	3.15	5.25	6.30	8.40	12.25
	#13	3.76	6.27	7.52	10.03	14.63
	#14	4.50	7.50	9.00	12.00	17.50
	#15	5.40	9.00	10.80	14.40	21.00
	#0	0.22	0.36	0.43	0.58	0.84
	#1	0.26	0.43	0.52	0.69	1.01
	#2	0.31	0.52	0.63	0.84	1.22
	#3	0.37	0.61	0.73	0.98	1.43
	#4	0.44	0.74	0.89	1.18	1.72
	#5	0.53	0.88	1.06	1.41	2.06
	#6	0.64	1.06	1.27	1.70	2.48
	#7	0.77	1.28	1.53	2.04	2.98
	#8	0.92	1.53	1.84	2.45	3.57
	#9	1.10	1.84	2.20	2.94	4.28
	#10	1.32	2.20	2.64	3.51	5.12
	#11	1.58	2.63	3.15	4.20	6.13
	#12	1.89	3.15	3.78	5.04	7.35
	#13	2.26	3.76	4.51	6.02	8.78
	#14	2.70	4.50	5.40	7.20	10.50
	#15	3.24	5.40	6.48	8.64	12.60

[unit : mAs]

NOTE 1 : mAs is the product of tube current in mA and exposure time in second.

NOTE 2 : The power is applied to x-ray head during the pre-heating time and the exposure time.
The buzzer in the control box beeps during the power is applied to the x-ray head.

[7] DIGITAL IMAGING SYSTEM

If electrical instruments such as a digital imaging system is used with SEARCHER70 DX-073 x-ray, the following points should be confirmed to keep electrical safety.

CAUTION

The use of ACCESSORY equipment not complying with the equivalent safety requirements of SEARCHER70 DX-073 may lead to a reduced level of safety of the resulting system.

Consideration relating to the choice shall include :

- **use of the accessory in the PATIENT VICINITY**
- **evidence that the safety certification of the ACCESSORY has been performed in accordance to the appropriate EN60601-1 and/or EN60601-1 harmonized national standard.**

[8] CLEANING AND DISINFECTION

In order to ensure proper hygiene and cleaning of the equipment, the following procedures must be followed :

WARNING

Before cleaning the unit, turn off the main power switch and breaker on the branch line. This is required because some internal parts remain connected to main voltage even when the main power switch has been turned off.

Never use the metal corrosive disinfectant, such as povidone iodine or sodium hypochlorite. Do not pour or spray solvent or liquid directly on the x-ray unit. Be careful not to allow solvents to run or drip into the x-ray unit.

Limitations on reprocessing : Repeated processing has minimal effect on these instruments. End of life is normally determined by wear and damage due to use.

Point of use : Remove excess soil with disposable cloth / paper wipe.

Preparation for cleaning : Turn off the main power switch and breaker on the branch line. Disassembly is not required.

Cleaning : Wipe the outside surface with a paper towel dampened with a disinfectant solution or household, non abrasive cleaner.

Disinfection : To ensure proper cleaning of the parts in contact with skin, periodic disinfection with a non corrosive surface disinfectant is recommended.

Recommended disinfectant : FD333 (Durr Dental GmbH)

Drying : Allow surface to air dry before turning breaker and main switch back on.

[9] DISPOSAL

1. Disposal of x-ray unit or components

The tube head of this x-ray unit contains the lead for x-ray shield and oil for the insulation.

When disposing the x-ray unit or components, appropriately dispose complying with all current applicable regulations and local codes. In EU area, EU directive 2002/96/EC on waste electrical and electronic equipment (WEEE) is applied on this product. In this directive, environment conscious recycling /abandonment is obligated.

2. Disposal of used film and CCD cover

Dispose of used film covers and CCD sensor covers appropriately, according to procedures indicated by each manufacturer and all current applicable regulations and local codes.

[10] ERROR INDICATION

When abnormal condition exists in the unit or malfunction occurs, the tooth selection indicating lamp blinks and the audible warning sounds. In that case, turn off the main power switch and wait for a while. Turn on the main power switch again and if same indication is displayed, call service personnel.

Blinking lamp of Teeth	Cause	Step to be taken	Possible solution
T1	Tube current is detected after the exposure time is over.	Turn OFF the main power switch and wait for a while. Turn ON the main power switch again.	If same error is displayed, call service personnel.
T2	Exposure switch is being depressed when power switch is turned ON.	Turn OFF the main power switch and wait for a while. Turn ON the main power switch again.	Wait a minimum 3 sec. after the main power switch is turned ON before pressing the exposure switch.
T3	Tube current is detected when main power switch is turned ON.	Turn OFF the main power switch and wait for a while. Turn ON the main power switch again.	If same error is displayed, call service personnel.
T4	During the exposure, tube current becomes less than 1 mA.		
T5	Memory data error.		

[11] ELECTRICAL AND RADIATION DATA

1. Focal point measurement	0.8 mm (IEC60336)
2. Rated peak tube potential	70 kV(peek)
3. Rated tube current	10 mA
4. Maximum rated peak tube potential	70 kV(peek)
5. Electrical ratings	
a) Rated line voltage	230 V
b) Minimum line voltage.....	207 V
c) Maximum line voltage.....	253 V
d) Rated line current.....	4.8 A
e) Maximum line current.....	5.9 A
f) Range of line voltage ragulation.....	0 ~ 3 %
6. Exposure time	0.22 ~ 21.0 mAs (ON and OFF are zero crossed.)
7. Timer accuracy	±1 Pulse (Less than 0.2 sec. at 10 mA) ±10 % (0.2 sec. or more at 10 mA)
8. Inherent filtration	1.3 mmAl Equivalent
9. Added filtration	0.8 mmAl Equivalent
10. Minimum filtration permanently in useful beam	2.1 mmAl Equivalent at 70 kV(peek)
11. Source to skin distance	200 mm
12. Source to the base of cone distance	63 mm
13. Cone length	148.5 mm
14. Field size	58 mm dia.
15. Leakage technique factor	70 kV(peek)/0.16 mA (0.16 mA is maximum rated continuous current for 10 mA with duty cycle 1:60)
16. Duty cycle	1:60 (1 sec. exposure with 60 sec. interval)
17. Environmental condition for storage.....	-20 ~ 70°C, 10 ~ 90%, 500 ~ 1060hPa
18. Environmental condition for operation.....	10 ~ 40°C, 30 ~ 75%, 700 ~ 1060hPa
19. Movable range of head.....	Horizontal 0 ~ 600° Vertical 0 ~ 300°

[12] ELECTROMAGNETIC COMPATIBILITY


Medical electrical equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in this manual.

Portable and mobile RF communications equipment can affect medical electrical equipment.

The equipment or system should not be used adjacent to or stacked with other equipment. If adjacent or stacked use is necessary, the equipment or system should be observed to verify normal operation in the configuration in which it will be used.

Guidance and manufacture's declaration - electromagnetic emissions		
The SEARCHER70 DX-073 x-ray is intended for use in the electromagnetic environment specified below. The customer or the user of the SEARCHER70 DX-073 x-ray should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment - guidance
RF emissions CISPR 11	Group 1	The SEARCHER70 DX-073 x-ray uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions CISPR 11	Class A	The SEARCHER70 DX-073 x-ray is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/ Flicker emissions IEC 61000-3-3	Complies	

Guidance and manufacture's declaration - electromagnetic immunity			
SEARCHER70 DX-073 x-ray is intended for use in the electromagnetic environment specified below. The customer or the user of the SEARCHER70 DX-073 x-ray should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 kV air	Floors should be wood, concrete or ceramic file. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV differential mode ±2 kV common mode	±1 kV differential mode ±2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycle 70% U_T (30% dip in U_T) for 25cycle <5% U_T (>95% dip in U_T) for 5 s	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycle 70% U_T (30% dip in U_T) for 25cycle <5% U_T (>95% dip in U_T) for 5 s	Mains power quality should be that of a typical commercial or hospital environment. If the user of the SEARCHER70 DX-073 x-ray requires continued operation during power mains interruptions, it is recommended that the SEARCHER70 DX-073 x-ray be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	0.3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE U_T is the a.c. mains voltage prior to applications of the test level.			

Guidance and manufacture’s declaration – electromagnetic immunity			
The SEARCHER70 DX-073 x-ray is intended for use in the electromagnetic environment specified below. The customer or the user of the SEARCHER70 DX-073 x-ray should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz outside ISM bands ^a	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the SEARCHER70 DX-073 x-ray, including cables, than the recommended separation distance calculated from the equation applications to the Frequency of the transmitter. Recommended separation distance $d = 1.2\sqrt{P}$
Radiated RF IEC 61000-4-3	3V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1.2\sqrt{P}$ 80 MHz to 800 MHz $d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, ^a should be less than the compliance level in each frequency range. ^b Interference may occur in the vicinity of equipment marked with the following symbol: 
NOTE 1 At 80 MHz and 800MHz, the higher frequency range applies.			
NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by adsorption and reflection from structures, objects and people.			
a Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the SEARCHER70 DX-073 x-ray is used exceeds the applicable RF compliance level above, the SEARCHER70 DX-073 x-ray should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the SEARCHER70 DX-073 x-ray.			
b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3V/m.			

Essential performance (purpose of IMMUNITY testing)
Unless the exposure switch is pressed, x-ray is not exposed.

Recommended separation distances between

Portable and mobile RF communications equipment and the SEARCHER70 DX-073

The SEARCHER70 DX-073 x-ray is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the SEARCHER70 DX-073 x-ray can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the SEARCHER70 DX-073 x-ray as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1.2\sqrt{P}$	80 MHz to 800 MHz $d = 1.2\sqrt{P}$	800 MHz to 2.5 GHz $d = 2.3\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by adsorption and reflection from structures, objects and people.

NOTE

EC	REP
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