1 INDICATIONS FOR USE & GENERAL SAFETY

1.1 Indications for use

The Medical Treatment Chair, T688 Series chair is intended for use in medical procedures such as the administration of renal dialysis to, and collecting blood from, patients in hospital departments, under the supervision of trained medical staff. The Medical Treatment Chair is also intended for use in day surgery. The T688 Series chair is designed so that the occupant is accommodated in a seated position with the hips moved back so that the occupant's back is against the backrest and the legs outstretched and supported by the seat and leg rests.

The T688 Series chair is also used to position patients for easy access by healthcare professionals.

The T688 Series chair is intended to be used by patients with a weight not exceeding 440 lbs. (200kg).

1.2 General Safety

The T688 Series chair shall only be used indoors on flat surfaces.

The patient should, at all times, be under the supervision of trained healthcare professionals who have been instructed in the safe operation of the chair. The chair should never be used in a manner for which it was not intended.

The chair is designed so that the occupant will be seated in a typical seated position - hips moved back so that the occupant's spine is against the backrest, with legs outstretched and supported by the seat and leg rest.

The chair is fitted with castors, which are specifically used to aid cleaning and/or positioning of the chair within the room. The T688 Series chair shall not be used to transport patients or any other items. Ensure that the backrest is fully elevated before moving the chair.

For models fitted with dual hand controls: the programmable unit (Nurse’s Hand Control) is for the use of the staff members only, and the dual recline unit (Patient’s Hand Control), where fitted, is to be used by the patient. This ensures that the chair is not raised or lowered, by the occupant. A staff member should ensure the area surrounding the chair is free from obstruction before adjusting it. The Nurse’s Hand Control should be kept out of reach of the patient at the rear of the chair.

It is the staff member's responsibility to ensure that prior to operating the chair, the surrounding walls or equipment will not come into contact with nor obstruct the free movement of the chair.

It is the staff members' responsibility to ensure the patient is briefed on the safe operation of the chair. If the staff member believes the patient cannot safely operate the chair, the staff member should remove the hand control from the patient's reach.

In an emergency, the chair can be lowered to the Trendelenburg position where CPR may be performed. It is the staff members' responsibility to ensure that the chair is in the correct position for CPR and that the resuscitation method used is in line with hospital policy. In addition, staff should ensure that the chair is adequate for those resuscitation methods, in line with hospital policy. Do not sit on the backrest or the leg rest of the chair.

The upholstery is applied parts. The upholstery has no electrical connection to other parts of the chairs, and is made of non-conducting material.

In general, no responsibility or liability can be accepted by the manufacturer for failure to adhere to the guidelines and instructions contained in this manual.
2 OPERATING THE MEDICAL TREATMENT CHAIR

1. **WARNING:** To avoid risk of an electric shock, this chair must only be connected to supply mains with protective earth.

2. When the chair is stationary and positioned to give minimum interference to staff, ensure that all four brakes are locked by depressing the pedal on top of each castor or depressing the centre locking pedals (if fitted) on both sides of chair.

3. The seat height may be raised to minimize bending during procedures. It is normal to cannulate whilst in this position, ensuring the patient’s legs are elevated.

4. The swing out arm (if fitted) is released by pushing the red latch (located below the side upholstery) forward.

5. The gas spring-assisted adjustable height armrests (if fitted) are positioned by loosening the lever and allowing the armrest to comfortably support the patient’s arm. When in the desired position, retighten the lever.

6. The swivel armrest (if fitted) is controlled by loosening the knob under the arm, rotating the arm to the desired position and retightening the knob.

7. Fold out tray arm (if fitted) is accessed by opening the upper section outwards.

8. The height of the ICU arm (if fitted) can be adjusted as per instruction 5. above.

9. Arms maybe swung out or lowered flat (depending on style) to seat level to facilitate side transfer of patient. Raise or lower the seat height to prevent unnecessary bending or lifting by staff members.

10. IV Pole (if fitted) can be removed or repositioned by loosening the knob at the lower end of the mounting bracket and retightening the knob.

11. Lift up tray (if fitted) can be raised by lifting the tray up until it locks into place. To close the lift up tray, lift up the latch under the tray and lower the tray.

12. Over chair tray (if fitted) can be swiveled to the desired position by loosening the knob at the lower end of the mounting bracket, swiveling the tray to the desired the position and then retightening the knob.

13. When the optional patient hand control is fitted, controls of the seat/footrest and backrest positions are available to the patient. Allow the patient to position themselves using the 4 buttons to achieve maximum personal comfort, and to regularly alter this position.

14. For safety, only nursing staff should operate the HI/LO function.

The chair is supplied with the following pre-set memory positions:

15. In an EMERGENCY, press memory position #1 and hold and the backrest and leg rest will go to their flattest position and the chair will lower until the backrest is supported by the rear support bar. CPR may be performed in this position.

**NOTE:** It is not intended that these instructions override any Hospital instructions for emergency treatment.
16. To allow the patient to rise from the chair, lower the chair and return it to the upright position. (press and hold memory position #2 until in position)

17. Memory position #3 will be pre-set to a position suitable for renal dialysis, blood collection or similar procedures, for ICU and emergency wards, or to a position suitable for side transfer. Press and hold memory position button #3 until in position.

18. To reprogram the pre-set positions see Section: 3.3.2

19. **One Touch Memory Position function** (if fitted) allows the chair to move automatically to a memory position without holding the memory position buttons. To operate, briefly press the required memory position button (#1, #2, or #3) on the nurse hand control.

   **NOTE:** For emergency stop, press any button on either the nurse hand control or the patient hand control (if fitted).

20. USB charger (if fitted) can be used to charge a USB device, such as a mobile phone, a music player or a camera. Maximum output of the charger is 4 watt.

   **NOTE:** It may not charge all USB devices depending on the power input requirement of the USB devices.

   **NOTE:** To use the USB charger, ensure the chair is plugged in the mains power. The USB charger will NOT work when the chair is powered by backup battery.

21. Ensure procedural equipment is set up to avoid tubing and cords becoming trapped in the moving parts of the chair (e.g. arm rests). DISCONNECT procedural equipment prior to removing patient from chair.

22. The power cord should *always* be left in the power supply socket and switched on. The backup batteries (if fitted) will recharge automatically and slow to trickle charge when full.

23. The chair can be disconnected from the mains power by switching off the mains power supply socket or unplugging the power cord from the mains power.
3 Installing the Medical Treatment Chair

*Note:* Transport damage, if any, should be inspected and reported immediately after delivery. No claims for transport damage will be accepted 7 days after the delivery date.

At all times, when positioning the chair, care should be taken to ensure that no part of the chair comes into contact with any equipment or structures, particularly during emergency procedures.

It is important to ensure that any staff members who are operating the chair have been trained by the manufacturer or its agent prior to use.

The installation procedure is as follows:

1. Position the chair. Do not position the chair so that it is difficult to disconnect the chair from the mains power.
2. Remove any temporary ties or packaging.
3. Plug the power cord to an approved power supply for the relevant country as indicated by the label. **WARNING:** To avoid risk of an electric shock, this chair must only be connected to supply mains with protective earth.
4. Test the chair by taking it through its complete range of movements.

The power cord should be left in the power supply and switched on (Refer to section 3.2). The backup batteries (if fitted) will recharge automatically and slow to trickle charge when full.

It is important to charge the backup battery for a minimum of 24 hours before use the chair.

### 3.1 Warnings and Precautions

The following table shows potential hazards that have been identified and the steps that should be taken to avoid them:

<table>
<thead>
<tr>
<th>Identified Hazard</th>
<th>Cause</th>
<th>Preventative Action</th>
</tr>
</thead>
</table>
| Cushion support frame wear and tear | Operator handling error or misuse. Incorrect cleaning of upholstery  | • Service regularly.  
• Train all operators.  
• Check chairs regularly for upholstery cuts, cracks or damage. Inspect the frame for deformities or cracks |
| Chair stops responding to controls | Power cord damage, motor stops working, controls stop working.        | • Don’t push chair over power cords.  
• Don’t place stress on power cords.  
• Only use approved parts and motors.  
• Use only as directed in this instruction manual. |
| Contamination on upholstery         | Chair not cleaned effectively between treatments, damaged upholstery. | • Take care not to damage upholstery.  
• Damaged upholstery should be repaired or replaced immediately.  
• Clean and decontaminate chair with appropriate agents and procedures as described in this instruction manual. Section 4.2 |
| Instruction manual not read or understood. | Staff turnover, new staff. | • Provide training for all new staff using the chair.  
• We recommend that the operation manual stays with the chair. |
3.2 BATTERY BACKUP (if fitted)

The battery should only be used in the event of no power supply and should not be the main source of power. As such, the power cord should be left in the power supply and switched on while the chair is in use. The battery must be charged for at least 24 hours before it can be used. The battery will automatically trickle charge until fully charged and should not be unplugged. Refer to section 8.2.8 for battery charging indication and battery level indication.

⚠️ The battery is lead acid battery. Should the battery fail to charge, please contact Fresenius Medical Care or your local representative at the details provided in section 5. The battery is not user replaceable. The chair must be connected to the power supply to recharge at least every 5 days.

3.3 HAND CONTROLS & PROGRAMMING

Each T688 Series chair can be supplied with two hand controls. One nurse-operated hand control and one patient-operated hand control. The patient’s individual hand control allows operation of the seat/footrest and backrest position. Allow the patient to position themselves for maximum comfort, and to regularly alter this position. Only nursing staff should operate the HI/LO function and this control should be kept out of reach of the patient at the rear of the chair.

For an explanation of symbols on the hand controls, see section 8.2.8.

3.3.1 Hand Control

<table>
<thead>
<tr>
<th>Patient’s Hand Control</th>
<th>Nurse’s Hand Control</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Patient's Hand Control Diagram" /></td>
<td><img src="image2.png" alt="Nurse's Hand Control Diagram" /></td>
</tr>
</tbody>
</table>
3.3.2  Programming Instructions

This can only be done using the nurse’s hand control. A maximum of three positions may be programmed into the memory as follows:

1. Position the chair to the desired position using the up & down arrows for the backrest, whole chair and leg rest.

2. When the chair is in the desired position, hold down the S (store) button for five seconds until beep sounds.

3. Once the beep is sounding, select one of the numbers, 1, 2 or 3 and press it within two seconds to store the pre-programmed position. When completed the system will beep two times to confirm.

3.3.3  Recalibration

If there is a loss of feedback from any of the actuators, a ‘position lost’ beep will be heard from the control box when any button is pressed.

Recalibrate T688 Series Chair as follows using the nurse’s hand control:

1. Press both up and down arrows of the HI/LO function simultaneously and hold until the beeping stops (approximately five seconds). NOTE: both HI and LO buttons must be activated at exactly the same time.

2. Initialise the system by retracting the actuators (press and hold the buttons) until they stop moving.

3. Drive the HI/LO actuator into the fully retracted (down) position and hold button for one second after the actuators have stopped moving.

4. Drive the backrest actuator in the fully retracted (down) position and hold button for one second after the actuators have stopped moving.

5. Drive the leg rest actuator in to the fully retracted (down) position and hold button for one second after the actuators have stopped moving.

6. The system can now be reprogrammed using the instructions in section 3.3.2.
4 MAINTENANCE

4.1 INSPECTION & SERVICING

WARNING: No modification of this equipment is allowed. No part of the chair is user-serviceable. All servicing must be carried out by Fresenius Medical Care or authorised agent.

Routine servicing, at least annually, is highly recommended in order to maintain the safe operation of the chair. A regular visual inspection at least once a month is recommended to ensure that each chair operates safely and as intended by the manufacturer. The battery cannot be changed by the user. If this is required please contact Fresenius Medical Care or authorised agent. No liability can be accepted by the manufacturer if the chair is operated whilst faulty and further damage occurs.

Areas to be checked include:
- Motors operate smoothly through cycle
- No broken welds
- Actuators connected properly
- Upholstery not worn or torn

4.2 CLEANING

Cleaning should conform to the standards set by the hospital. All materials used in the manufacture of the chairs have been found to be suitable to be cleaned with standard hospital cleaning products, however to ensure suitability, a test should be carried out on an inconspicuous piece of material, or a sample provided by the manufacturer.

The following should be used as a guideline only and no claims will be accepted for damage as a result of following these guidelines:

RECOMMENDED CLEANING PROCEDURE FOR MEDICAL TREATMENT CHAIRS

The following recommended procedure should only be used if it generally conforms to Infection Control guidelines of the hospital.

Step 1 Bodily fluids may carry infectious material. Ensure that protective garments and gloves are worn prior to commencing the cleaning operation.

Step 2 If required, remove the seat and backrest by gently pulling or lifting them off their clips.

Step 3 Remove as much of the spilt liquid as possible using a sponge type material with a dabbing motion.

Step 4 Make up a diluted bleach solution (e.g. Miltons) of 1 part bleach to 30 parts water.

Step 5 First test the solution on a small area of the vinyl. Then, pour onto spill area and wipe with a mopping action.

Step 6 Use a general purpose detergent cleaner with warm water on a cloth for a final clean

Step 7 Replace the seat and back rest by carefully clipping them back onto the frame.

CAUTIONARY NOTES ABOUT BLEACH:

1. Never allow bleach to mix with ammonia. If you have recently used ammonia on or near the area you are about to clean, do not use bleach.
2. Always take care when working with bleach and keep it away from children. Bleach is not only poisonous and corrosive, but it can damage clothes and materials.
3. Never use undiluted bleach
4.3 FABRIC STANDARDS

Unless otherwise stated, standard upholstery fabrics used on these chairs conform to the following Australian Standards:

- Flame Retardant tested to AS1530.3*
- UV Stable - tested to ISO 105-B02 Colour fastness to artificial light: Xenon arc fading lamp test*

*NOTE: This is for Fresenius Medical Care standard supply fabric. Customer specific fabric may not meet these standards.

4.4 TROUBLE-SHOOTING

In the event the chair fails to operate correctly please take the following steps prior to contacting Fresenius Medical Care or its authorised agent.

1. Check the power point is active.

2. Check that the power cord is not damaged or worn. Check that the chair is plugged in and switched on correctly as indicated by the green indicator light on the nurse’s hand control.

3. Ensure that the batteries have been on charge for 24 hours minimum. This should occur at least every 5 days.

4. Ensure there are no nicks or cuts in the hand control or actuator cables.

5. Determine what is not operating as follows:
   - **The seat motor** (vertically mounted under the seat)
     Depress the hand control button for the seat/footrest and the footrest should move.
   - **The back motor** (mounted behind the backrest)
     Depress the hand control button for the back and the back should raise or lower.
   - **The lift column** (mounted on top of the base)
     Depress the hand control button for the HI/LO control and the chair should raise or lower.

6. Take note of the serial number (SN) of the chair. This can be found on the Type Label attached to the chair. An example of the Type Label is in section 8.2.7.

7. If you are unsure about any aspect of the above steps, please contact Fresenius Medical Care Seating at the contact details provided in Section 5 of this manual.
5 ARRANGING A SERVICE

In the event that the chair fails to operate correctly or to arrange a service please contact your local representative or Fresenius Medical Care Office.

Note: Please quote the chair serial number (SN) which can be found on the Type Label attached to the chair. An example of the Type Label is in section 8.2.7.

CONTACT INFORMATION

FRESENIUS MEDICAL CARE
THE RENAL COMPANY

FRESENIUS MEDICAL CARE SEATING (AUSTRALIA) PTY. LTD.
786 Stud Road
Scoresby
VICTORIA 3179
AUSTRALIA

SERVICE TEL: +61 (0) 3 9780 9509
SALES TEL: +61 (0) 3 9780 9500
FAX: +61 (0) 3 9764 8800
ABN: 84 004 658 495

AGENT / DISTRIBUTOR:
6 WARRANTY INFORMATION

The following information outlines the warranty and Conditions of Sale for the Medical Treatment Chair

1. Fresenius Medical Care will repair or replace, at its discretion, any component or assembly, which exhibits failure or undue wear when subjected to normal use, and/or used in the manner which was intended at the time of sale.

2. The warranty is limited to the original purchaser at the original delivery address.

3. When sold by a reseller, this warranty covers costs at the premises of the reseller, and if required in approved situations, transport costs from the reseller to and from Melbourne, or to a third party specified by Fresenius Medical Care.

4. Use of non-recommended cleaning agents may void the warranty.

5. The T688 Series Medical Treatment Chair is covered by a 12 month warranty.

6. T688 Series Medical Treatment Chairs are not covered by warranty if used outdoors.

7. The use of unauthorised labour will void the warranty. Contact Fresenius Medical Care for approval prior to commencing work.

8. If you are unsure about any aspect of this warranty, please contact Fresenius Medical Care at the number given in Section 5 of this manual.

If you need to arrange a service, please see the instructions in section 5 of this manual.

7 WASTE DISPOSAL

Before disposal, the chair must be sufficiently disinfected by the responsible organisation and is to be rendered unusable, e.g. cutting the cables, and it must not be disposed of as unsorted municipal waste in accordance with local regulations.

The chair may be disposed of, possibly by dividing them into the following waste groups for recycling or combustion. The respective local regulations on recycling or safe destruction of these material groups should be observed.

<table>
<thead>
<tr>
<th>Chair component group</th>
<th>Recycling group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal frame</td>
<td>Scrap metal</td>
</tr>
<tr>
<td>Vinyl covers/upholsteries</td>
<td>Plastic</td>
</tr>
<tr>
<td>Motors, electrical boards</td>
<td>Misc. electrical scrap</td>
</tr>
<tr>
<td>Battery (contains lead)</td>
<td>Battery</td>
</tr>
</tbody>
</table>
8 PHYSICAL DESCRIPTION

8.1 DESCRIPTION OF DEVICE

T688 Series Medical Treatment Chair consists of:
- Electrically powered chair with
  - three (3) actuators;
  - one (1) or two (2) hand controls (one nurse control & one optional patient control)
  - pivoting or adjustable armrests
  - adjustable neck rest
  - 4 locking castors or central locking castors
  - leg rest
  - removable upholstery

8.2 TECHNICAL SPECIFICATIONS

8.2.1 Dimensions, Weight & Capacity

<table>
<thead>
<tr>
<th>T688 Series chair</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
</tr>
<tr>
<td>(depending on options)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Weight</strong></td>
</tr>
<tr>
<td>(depending on options)</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
</tr>
</tbody>
</table>

8.2.2 Electrical Safety

Classification according to IEC 60601-1:2005

Degree of protection against electric shock Type B

CB 6 (Control Box) Specifications

Degree of protection against ingress of solids/liquids IPX6

Battery Capacity 1.2 AH, 24 V

Mains voltage 120, 230V~ 50/60 Hz

Hand Control Specifications

Degree of protection against ingress of solids/liquids IP54 (Nurse Hand Control)

Degree of protection against ingress of solids/liquids IP54 (Patient Hand Control)

Actuator Specifications

Degree of protection against ingress of solids/liquids IPX6

8.2.3 Electrical Supply

Input voltage 120 V~ or 230 V ~
Nominal frequency 60 Hz or 50 Hz
Battery type Lead Acid battery
Capacity 1.2 Ah
Output voltage 24 V DC

8.2.4 Operating Conditions

Temperature range 5°C – 40°C (41°F - 104°F)
Relative humidity 20 – 90%
8.2.5 Transport & Storage Conditions
Temperature range 5°C – 40°C (41°F - 104°F)
Relative humidity 20 – 90%

8.2.6 Electromagnetic or other interference
Switch off devices which can cause electromagnetic interference.

8.2.7 Type Label

Fresenius Medical Care
MEDICAL TREATMENT CHAIR

688Txxxxxxx
Model: T688

Fresenius Medical Care Seating (Australia) Pty. Ltd.
786 Stud Road Scoresby VIC 3179 Australia

No user serviceable parts
Power Supply: 230 V ~ 50 Hz 3 A
10% Duty Cycle 2 min. ON / 18 min. OFF

For Export Only

Fresenius Medical Care
MEDICAL TREATMENT CHAIR

688Txxxxxxx
Model: T688

Fresenius Medical Care Seating (Australia) Pty. Ltd.
786 Stud Road Scoresby VIC 3179 Australia

No user serviceable parts
Power Supply: 120 V ~ 60 Hz 4 A
10% Duty Cycle 2 min. ON / 18 min. OFF

For Export only
8.2.8 Key to Symbols

<table>
<thead>
<tr>
<th>SN</th>
<th>Serial Number</th>
<th>CE</th>
<th>CE mark</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Manufacturer</td>
<td></td>
<td>For indoor use only</td>
</tr>
<tr>
<td></td>
<td>Degree of protection against electrical shock: Type B</td>
<td></td>
<td>ATTENTION: Consult accompanying documents</td>
</tr>
<tr>
<td></td>
<td>Caution, warning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Storage and Handling Symbols**

<table>
<thead>
<tr>
<th>Keep Dry</th>
<th>This way up</th>
<th>Handle with Care</th>
<th>Handle with Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Hand Control Symbols**

<table>
<thead>
<tr>
<th>1</th>
<th>Memory Position 1</th>
<th></th>
<th>Backrest control</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Memory Position 2</td>
<td></td>
<td>Raise and lower the whole chair (HI/LO)</td>
</tr>
<tr>
<td>3</td>
<td>Memory Position 3</td>
<td></td>
<td>Leg rest control</td>
</tr>
<tr>
<td>S</td>
<td>Stores memory position</td>
<td></td>
<td>Moves indicated part of chair up</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Moves indicated part of chair down</td>
</tr>
</tbody>
</table>

**Hand Control Indication Lights** *

| LED “Amber” Off and LED “Green” On indicates Mains is on and Battery is fully charged |
| LED “Amber” On and LED “Green” Off indicates Battery is in normal use |
| LED “Amber” blinking and LED “Green” Off indicates Battery is in normal use and requires charging |
| LED “Amber” ON and LED “Green” ON indicates mains is on and battery is charging |
| LED “Amber” Off and LED “Green” Off indicates Mains is not on and battery requires charging. Chair will not operate. |
| LED “Amber” blinking and LED “Green” blinking and indicates a system error |

**Note:** When the chair is not connected to the mains, press any button on the nurse hand control to wake up the application and check the indication lights. Application will return to sleep condition after 2 minutes with no button pressed.

**Authorised Representative in the European Community**

Fresenius Medical Care Deutschland GmbH
61346 Bad Homburg - Germany
Telephone: +49 6172 609-0
9 Guidance and manufacturer's declaration

<table>
<thead>
<tr>
<th>Emissions test</th>
<th>Compliance</th>
<th>Electromagnetic environment - guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF emissions</td>
<td>Group 1</td>
<td>The T688 Series chair 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.</td>
</tr>
<tr>
<td>CISPR 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF emissions</td>
<td>Class B</td>
<td>The T688 Series chair 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.</td>
</tr>
<tr>
<td>CISPR 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmonic Emissions</td>
<td>class A</td>
<td></td>
</tr>
<tr>
<td>IEC 61000-3-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage Fluctuations/</td>
<td>Complies</td>
<td></td>
</tr>
<tr>
<td>flicker emissions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IEC 61000-3-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Guidance and MANUFACTURER’S declaration – electromagnetic IMMUNITY

<table>
<thead>
<tr>
<th>IMMUNITY test</th>
<th>IEC 60601 test level</th>
<th>Compliance level</th>
<th>Electromagnetic environment – guidance</th>
</tr>
</thead>
</table>
| 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 tile. 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 not applicable | Mains power quality should be that of a typical commercial or hospital environment.

| Surge IEC 61000-4-5 | ± 1 kV line(s) to line(s) ± 2 kV line(s) to earth | ± 1 kV line(s) to line(s) ± 2 kV line(s) to earth | 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 % UT (>95 % dip in UT) for 0.5 cycle 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30 % dip in UT) for 25 cycles <5 % UT (>95 %) | <5 % UT (>95 % dip in UT) for 0.5 cycle 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30 % dip in UT) for 25 cycles <5 % UT (>95 %) | Mains power quality should be that of a typical commercial or hospital environment. If the user of the T688 Series chair requires continued operation during power mains interruptions, it is recommended that the T688 Series chair be powered from an uninterruptible power supply or a battery.

| Power frequency (50/60 Hz) magnetic field IEC 61000-4-8 | 3 A/m | 3 A/m | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

**NOTE** UT is the a.c. mains voltage prior to application of the test level.
### Guidance and MANUFACTURER'S declaration – electromagnetic IMMUNITY

The T688 Series chair is intended for use in the electromagnetic environment specified below. The customer or the user of the T688 Series chair should assure that it is used in such an environment.

<table>
<thead>
<tr>
<th>IMMUNITY test</th>
<th>IEC 60601 TEST LEVEL</th>
<th>Compliance level</th>
<th>Electromagnetic environment – guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conducted RF</td>
<td>IEC 61000-4-6</td>
<td>3 Vrms</td>
<td>Portable and mobile RF communications equipment should be used no closer to any part of the T688 Series chair, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</td>
</tr>
<tr>
<td></td>
<td>150 kHz to 80 MHz</td>
<td></td>
<td><strong>Recommended separation distance</strong></td>
</tr>
<tr>
<td>Radiated RF</td>
<td>IEC 61000-4-3</td>
<td>3 V/m</td>
<td><strong>d = \left[ \frac{3.5}{V_1} \right] \sqrt{P}</strong> 80 MHz to 800 MHz</td>
</tr>
<tr>
<td></td>
<td>80 MHz to 2,5 GHz</td>
<td>3 V/m</td>
<td><strong>d = \left[ \frac{3.5}{E_1} \right] \sqrt{P}</strong> 800 MHz to 2,5 GHz</td>
</tr>
</tbody>
</table>

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, should be less than the compliance level in each frequency range. Additionally, interference may occur in the vicinity of equipment marked with the following symbol:

![Interference symbol](image)

**NOTE 1** At 80 MHz and 800 MHz, the higher frequency range applies.

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

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 [ME EQUIPMENT or ME SYSTEM] is used exceeds the applicable RF compliance level above, the [ME EQUIPMENT or ME SYSTEM] should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the [ME EQUIPMENT or ME SYSTEM].

**NOTE 3** Over the frequency range 150 kHz to 80 MHz, field strengths should be less than $[V1]$ V/m.
**Guidance and MANUFACTURER’S declaration – electromagnetic IMMUNITY**

**Recommended separation distances between portable and mobile RF communications equipment and the T688 Series chair**

The T688 Series chair is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the [ME EQUIPMENT or ME SYSTEM] can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the T688 Series chair as recommended below, according to the maximum output power of the communications equipment.

<table>
<thead>
<tr>
<th>Rated maximum output power of transmitter W</th>
<th>Separation distance according to frequency of transmitter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150 kHz to 80 MHz</td>
</tr>
<tr>
<td>0.01</td>
<td>0.12</td>
</tr>
<tr>
<td>0.1</td>
<td>0.37</td>
</tr>
<tr>
<td>3.691</td>
<td>1.17</td>
</tr>
<tr>
<td>1011.67</td>
<td>3.69</td>
</tr>
<tr>
<td>100</td>
<td>11.67</td>
</tr>
</tbody>
</table>

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 800 MHz, the separation distance for the higher frequency range applies.

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