

User Manual



SEMI-ELECTRIC HOMECARE BED Model: T2020 (Dual Motors), T2010 (Single Motor)



For more information regarding Tuffcare Products & Services, please visit www.tuffcare.com or call 800-367-6160.

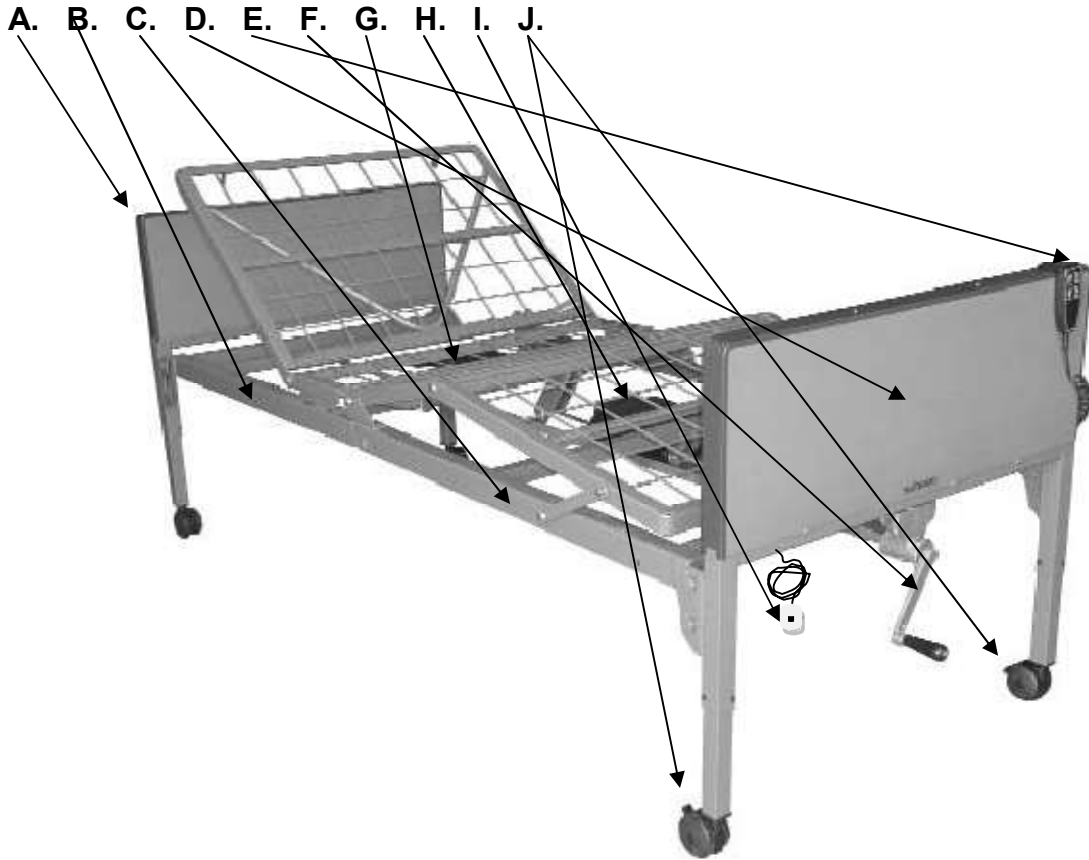
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Forward

Congratulations on your purchase of a Tuffcare® homedcare bed! Our homedcare bed is engineered and designed with durability & easy maintenance in mind. Read through this manual and get acquainted with your institutional bed. Follow the maintenance schedule to ensure proper function of your bed.



-
- 1.**  SINGLE MOTOR (For T2010)
- | | |
|---------------------------|------------------------------------|
| A. HEAD BOARD | F. HI-LO HAND CRANK |
| B. HEAD FRAME | G. HEAD MOTOR (For T2020) |
| C. FOOT FRAME | H. FOOT MOTOR (For T2020) |
| D. FOOT BOARD | I. POWER CORD |
| E. PENDANT CONTROL | J. CASTER BRAKE LEVER |

Safety Precautions

- Keep fingers and arms away when mechanism is moving. Rotating Parts.
- Pinch Point. Keep fingers and arms away when bed is in movement.
- Do not operate your institutional bed until you have read and fully understand this manual.
- Do not operate your institutional bed until the institutional bed is fully assembled and checked.
- Do not expose your institutional bed to weather or moisture.
- Do not leave loose clothing or self in between moving parts.
- Do not expose electrical components to any highly flammable items.
- Do not use your institutional bed with an improper mattress.
- Do not use if the power cord is cut, frayed or loosely connected to the device.
- Electrical hazard may occur if device is plugged into an inadequate electrical outlet. Make sure the bed is plugged into a grounded 110 volt outlet, to avoid electrical shock hazard.

WARNING: To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth

**Check back-up batteries every 3 months and replace new back-up batteries yearly.
Remove back-up batteries out of battery pack within 72 hours when equipment won't be used.**

WARNING: Pre-installing the back-up batteries into the pack will only drain the batteries and corrode the contain points.

Do not to position THE BED to make it difficult to disconnect from supply mains

WARNING: Do not modify this equipment without authorization of the manufacturer

After finish reading the instruction, it should be put on the place where can be seen at any moment.

Warning: Do not modify this equipment without authorization of the manufacturer; the POWER SUPPLY CORD can only be replaceable by SERVICE PERSONNEL.











Warning: the MEDICAL BED should be left in its lowest position when the PATIENT is unattended in order to reduce RISK of injury due to falls.

Warning: POWER SUPPLY CORD may be damaged caused by inappropriate handling, e. g. by kinking, shearing or other mechanical damages

**Maximum Back Angle to horizontal is 65 degree. Maximum Knee Angle to horizontal is 43 degree.
Maximum Knee to Leg Angle is 120 degree.**

Precautions shall be taken to avoid squeezing when routing cables from other equipment.

In order to act immediately in the case of hazard, the emergency position(s) stop button is located on the side of hand pendent.

Symbols	Description
	Manufacture Name & Address
	Environmental Conditions of Temperature for Shipping & Storage
	Environmental Conditions of Humidity for Shipping & Storage
	Environmental Conditions of Atmospheric Pressure for Shipping & Storage
	Caution for shipping & storage package "Fragile", "Handle with Care", "Keep Dry"
	CE Certification Logo
	Attention
	Double Isolation
	"BF" Symbol, indicate this product is according to the degree of protection against electric shock for type BF equipment
	CAUTION, read the instruction before use
IPX4	Technical IP Rating
SN	Manufacture Serial Number

Main Components

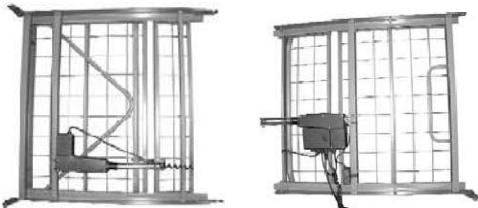
Before unpacking, inspect for any obvious damage to the carton and contents. If damage is found contact your dealer. The homecare bed comes packaged in two cartons. Carefully unpack the components. When removing the head and foot frame out of the box, do not separate the two as there's a motor cord attaching them. The Hi/Lo shaft is cable tied to the bottom part of foot frame. Detach it and remove all packing material. Semi electric homecare bed contains five main parts.

STANDARD COMPONENTS

1, Head /Foot Board



2, Head/Foot Frame with Motor (FOR 2020)



3, Single Motor (FOR 2010)



4, Hi-Lo Drive Shaft

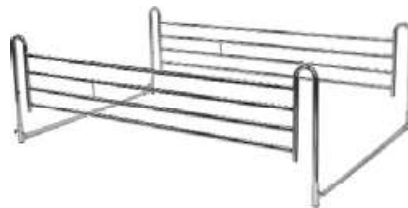


OPTIONAL COMPONENTS

5, Half Side Bed Rails



6, Full Side Bed Rails



7, Standard Mattress



8, Pressure Reduction Mattress



Assembly Instruction

1. First assemble the foot & head frame. It can be assembled with the foot section (A) upside down, flat on the floor with the metal rods facing the floor, or with the foot section on its side, whichever is easier. Motor or cranks should be on the left side.



Figure 1.1



Figure 1.2

2. Temporarily remove the 2 hex bolts and nuts located in the middle joint of the head frame. Pick up the head frame (B) and at a 75° angle fit the frame hooks onto the two shoulder rivets on the side rail of the foot frame. Rotate the head frame until it is lined up with the foot frame. Lock the hooks securely onto the shoulder rivets.



Figure 2.1



Figure 2.2

3-1. For T2020 - Then rotate the bed to have the top setting facing up. Line up the two holes on both ends of the frame, and re-secure the hex bolts in middle of frame on both sides.

3-2. For T2020 - Connect both the head and foot motor drive shafts to the lifting arms. Start with the drive shafts on head frame A, and work your way to the one on foot frame B.

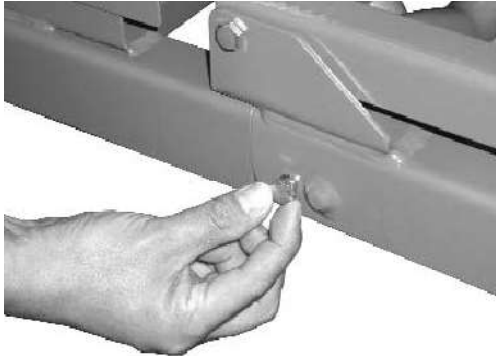


Figure 3-1

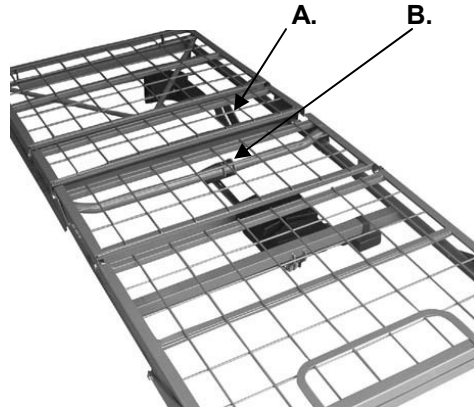


Figure 3-2

3-3. For T2020 - Pull to release the cotter pin from the clevis holding pin. Align the drive shaft hole with the oval holes on the lifting plate. Re-secure the holding pin on both sides of the left plate. Then reattach the cotter pin to lock.

Continued on Step 5



Figure 3-3



Figure 3-3

4-1, For T2010 – Continued from Step 2, pull to release the cotter pin from the clevis holding pin. Align the drive shaft hole with the holes on the lifting plate. Re-secure the holding pin on both sides of the left plate. Then reattach the cotter pin to lock.

Repeat on Head Section.



Figure 4 -1



Figure 4-1

4-2, For T2010 – Installation of Motor and Hand Pen with bed frame:

A1, Slide locking covers (Foot and head section) out of motor.

A2, Align the opening on the head end of the motor with the flange on the head section of the bed and insert the flange into the motor compartment. Then, with the palm of your hand, snap the motor flush to the actuator bar.

Repeat on Foot Section.

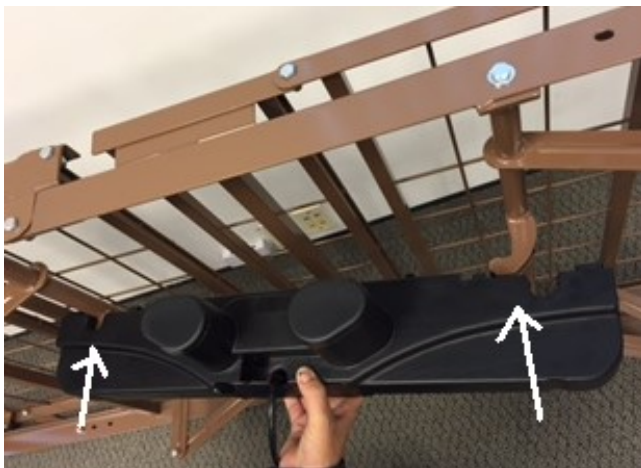


Figure A-2



Figure A-3

A3, After the motor is installed, slide locking covers back on motor.

A4, Plug hand pendant into motor.



Figure A-4

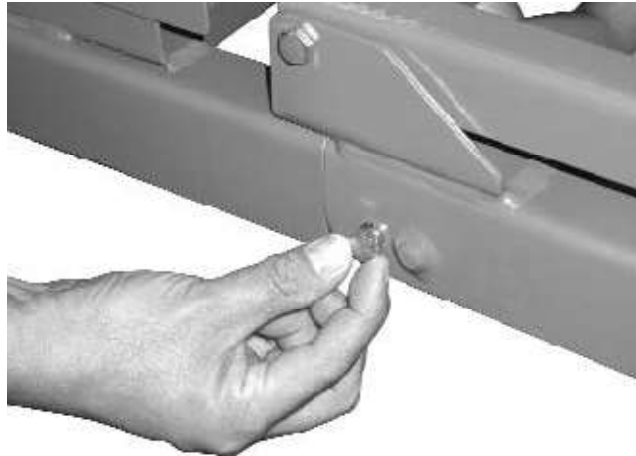


Figure 4-3

4-3. For T2010 - Then rotate the bed to have the top setting facing up. Line up the two holes on both ends of the frame, and re-secure the hex bolts in middle of frame on both sides.
Continued on Step 5

5. With the two frames connected and spring section of the frames facing up, slide the head board and the foot board onto the frame corner plate rivets. All head boards are taller than the foot boards.



Figure 5.1

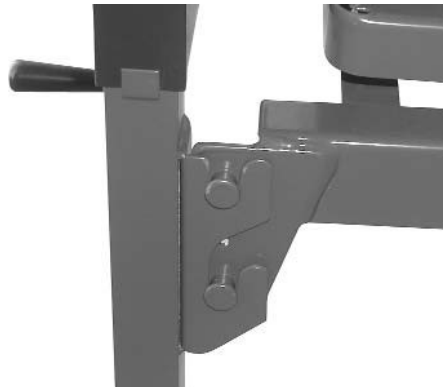


Figure 5.2

6. The Hi/Lo shaft has 4 hole positioning adjustment on it. It's designed to be a universal fit with other style beds. For semi electric beds use the 2nd hole on the outer tube to line up with the locking pin on the inner tube.



Figure 6

7. The hi/lo shaft has one end with a short shaft that is spring-loaded. Connect the spring-loaded end of the long drive shaft onto the hand crank shaft located on the foot board, pull the shaft towards bed end, and connect the other end of the drive onto the shaft, on the T-shape gear box of the head board end.



Figure 7

8. A spare battery backup pack is outfitted in case of power failure.

For T2020 - It is located near the main control unit on the foot frame.

For T2010 - It is located on motor next to power cord.

The power packup is designed to raise and lower the bed up for emergencies use only.

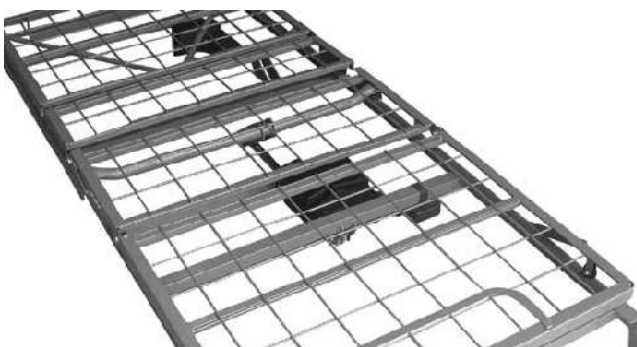


Figure 8.1 (T2020)



Figure 8.2 (T2010)

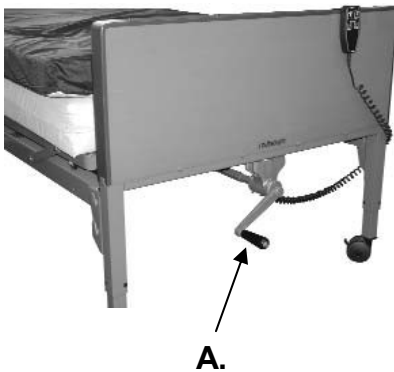
9. For T2020 The battery pack uses three household 9 volt batteries (**not supplied**).
For T2010 The battery pack uses one household 9 volt batteries (**not supplied**).
It is important to keep the battery pack vacant until the bed is needed. Pre-installing the batteries into the pack will only drain the batteries and corrode the contact points.



Figure 9 (T2020)

Operation Instructions

1. Make sure the bed power cord is plugged into a grounded 110 Volt AC outlet.
 - Operating this device with any part of the body in the frame can result in injury. Do not place arm or head into the frame while operating. Stand clear of device frame before operating.
 - Rotating Parts. Keep fingers and arms away when mechanism is moving.
 - Pinch Point. Keep fingers and arms away when bed is in movement.
 - Electric Powered Mechanism. Electrical hazard may occur if device is plugged into an inadequate electrical outlet. To avoid electrical shock hazard, make sure the bed is plugged into a grounded 110 Volt outlet.
2. Before operating, make sure casters are in their proper operating position. Hand Controller Functions, press button indicated to move bed.
3. To install and raise/lower optional side rails: Slide rails into brackets using pin lock adjustment.
4. The bed is operated by hand crank and standard 4 function pendant.



- * Semi electric bed:
 - To raise the bed, crank clockwise on point A.
 - To lower the bed, crank counter clockwise on point A.
- * To raise or lower head section:
 - To raise head section, press head up button.
 - To lower head section, press head down button.
- * To raise or lower foot section:
 - To raise foot section, press foot up button.
 - To lower foot section, press foot down button.

Preventative Maintenance

1. Cleaning – Tuffcare recommends the following cleaning procedures be conducted between uses and at least one a year.

- 1.1, Unplug the power cord of electric beds before performing maintenance.
- 1.2, Wipe down with disinfectant. Allow to dry completely.

Caution: Avoid spraying water directly into the electric components. Otherwise, damage to electric components may occur.

2, Mechanical Inspection and Maintenance-

- 2.1, Inspect all bed components for damage or excessive wear.
- 2.2, Inspect pull tubes and mounting hardware for bending, damage or excessive wear.
- 2.3, Inspect all bolts and rivets to ensure that they are securely tightened and functioning properly.
- 2.4, Inspect sleep surfaces to ensure all links are intact.
- 2.5, Inspect caster wheels to ensure they look and roll properly.

3, Electrical Inspection and Maintenance –

- 3.1, Inspect all electrical components for damage or excessive wear.
- 3.2, Check pendant, power cord and motor cables for chafing, cuts or excessive wear.
- 3.3, Make sure all of plugs are fully attached and free of damage.
- 3.4, Check all functions working properly.
- 3.5, Unplug power cord for testing back-up power –
 - 3.5.1, Install three 9Volt household batteries (not supplied) into the back-up battery pack.
 - 3.5.2, Check all functions working properly with back-up power.
 - 3.5.3, Remove the back-up batteries out of battery pack immediately after testing and re-plug power cord for normal used.
- 3.6, Check all functions working properly after re-plug power cord.

4, To Maximize Services Life – To ensure maximum life of your bed, follow all of warning and cautions in the User Manual and maintain your bed with care – a thorough inspection should be conducted as follow:

- 4.1, Run the bed frame to either the highest or lowest position once a day.
- 4.2, Observe bed operation and report any discrepancies or problems to service personnel.
- 4.3, Check and tighten all tubes and mounting hardware monthly.
- 4.4, Check and tighten all electric wires and cables are properly connected monthly.
- 4.5, Lubricate pivot point, pins and bolts every 2 months.

WARNING: Possible Shock Hazard. All electric components only can be replaced by service personnel.

The Disposal of the Bed & Accessories

When the bed and accessories are broken or no longer be useable, the bed and accessories may be discarded for recycle. Please contact your provider or Tuffcare at 800-367-6160 for more detail.

Product Specification

Model & Standard Features	Century Semi Electric – T2020/T2010 36" x 80" Sleep Surface Overall Width: 36 inches : Overall Length: 88 inches
Max. patient weight	360 lbs
Safety working load	360 lbs
Rating	3.6 AMP(120V), 60 Hz
Classification	ClassII, Type B
Mode of Operation	10% Maximum Duty Cycle 2 Minutes on/18 Minutes off
Environmental Conditions of Operating	Ambient Temperature: 10 to 40 C. Relative Humidity: 30% to 75% Non-Condensing Atmospheric Pressure: 700 to 1060 hPa
Environmental Conditions of Shipping & Storage	Ambient Temperature: -4.4 to 70 C. Relative Relative Humidity: 10% to 95% Atmospheric Pressure: 500 to 1060 hPa
Application environment category according to IEC 60601-2-52	
Height adjustable range	Min 385 mm to Max 585 mm
Maximum mass (in kg) of the MEDICAL BED	25 Kg

We can make available on request circuit diagrams, component part lists, descriptions, calibration instructions, or other information that will assist SERVICE PERSONNEL to repair those parts, please contact the manufacturer, details see the contact information.

This product needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided, and this unit can be affected by portable and mobile RF communications equipment.

- 2) * Do not use a mobile phone or other devices that emit electromagnetic fields, near the unit. This may result in incorrect operation of the unit.
- 3) Caution: This unit has been thoroughly tested and inspected to assure proper performance and operation!
- 4) * Caution: this machine should not be used adjacent to or stacked with other equipment and that if adjacent or stacked use is necessary, this machine should be observed to verify normal operation in the configuration in which it will be used

Guidance and manufacture's declaration – electromagnetic emission		
The T4020 <i>is</i> intended for use in the electromagnetic environment specified below. The customer of the user of the T4020 should assure that it is used in such an environment.		
Emission test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The T4020 use 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 emission CISPR 11	Class B	The T4020 is suitable for use in all establishments, including domestic establishments 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

The T4020 is intended for use in the electromagnetic environment specified below. The customer or the user of T4020 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 tile. If floor 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	±2kV 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 line(s) to line(s) ± 2 kV line(s) to earth	±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 cycles 70% U_T (30% dip in U_T) for 25 cycles	<5% U_T (>95% dip in U_T) for 0.5 cycle 40% U_T (60% dip in U_T) for 5 cycles 70% U_T (30% dip in U_T) for 25 cycles	Mains power quality should be that of a typical commercial or hospital environment. If the user of the T4020 requires continued operation during power mains interruptions, it is recommended that the T4020 be powered from an uninterruptible power supply or a battery.

	<5% U_T (>95% dip in U_T) for 5 sec	<5% U_T (>95% dip in U_T) for 5 sec	
Power frequency (50Hz/60Hz) 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 U_T is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacture's declaration – electromagnetic immunity

The T4020 is intended for use in the electromagnetic environment specified below. The customer or the user of the T4020 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 V _{rms} 150 kHz to 80 MHz	3 V _{rms}	<p>Portable and mobile RF communications equipment should be used no closer to any part of the T4020, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p style="color: red;">Recommended separation distance</p> $d = 1,2\sqrt{P}$
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	$d = 1,2\sqrt{P} \quad 80 \text{ MHz to } 800 \text{ MHz}$ $d = 2,3\sqrt{P} \quad 800 \text{ MHz to } 2,5 \text{ GHz}$ <p>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).</p> <p>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</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p>



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.

- 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 T4020 is used exceeds the applicable RF compliance level above, the T4020 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the T4020.
- b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

**Recommended separation distances between
portable and mobile RF communications equipment and the T4020 .**

The T4020 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the T4020 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the T4020 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	80 MHz to 800 MHz	800 MHz to 2.5 GHz
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 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.

Limited Warranty

The warranty below has been drafted to comply with Federal Law applicable to products manufactured after July 4, 1975. This warranty is extended only to the original purchaser/consumer (or dealer non-consumer who does not buy for resale).

Tuffcare® warrants that its proprietary Institutional Beds will be free from defective workmanship and materials for a period of three (3) years following the date of original manufacture with the following exception: Electronics on the beds are warranted for six (6) months. The warranty period commences on the original manufacture date. If within such warranty period any such product proven to Tuffcare® satisfaction to be defective, such product will be repaired or replaced at Tuffcare® option.

Tuffcare® sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement. This warranty does not include any labor charges incurred in replacement parts installation. Freight charges to the factory are at the expense of the consumer or seller. Return freight charges will be prepaid by Tuffcare®. For warranty service, please contact the authorized dealer from whom you purchased your Tuffcare® products. In the event that you do not receive satisfactory warranty service, please write directly to Tuffcare®: PO Box 17848, Anaheim, California 92817-7848. DO NOT RETURN PRODUCTS WITHOUT PRIOR AUTHORIZATION.

LIMITATIONS AND EXCLUSIONS: The foregoing warranty shall not apply to products subjected to negligence, abuse, misuse, improper operation, improper maintenance, improper storage or damages beyond Tuffcare® control. The evaluation will be solely determined by Tuffcare®. The warranty shall not apply to problems arising from normal wear, or failure to follow instructions, or if parts are not manufactured by Tuffcare®, or do not comply with original equipment specifications that are added to Tuffcare® product.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND SHALL NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTY PROVIDED HEREIN. TUFFCARE® SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES WHATSOEVER.

This warranty gives you specific rights and you may also have other legal rights which vary from state to state. Some states do not allow the exclusion or limitations of incidental or consequential damage, or limitation on how long an implied warranty lasts, therefore, the above exclusion and limitation may not apply to you.