



**MANUAL**

# **HTC 650 RX**

Translation of manual in original language



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Always specify the model and serial number when asking questions about your product.

## Trademarks

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# EC Declaration of conformity

Manufacturer:	HTC Sweden AB Box 69 SE-614 22 Söderköping
Type of equipment:	Grinding Machine
Make:	HTC
Trademark:	HTC 650 RX
Year of manufacture:	See machine name plate
Serial number:	See machine name plate

As the manufacturer, we hereby declare under our sole responsibility that the above product with serial numbers from 2012 and onward conforms to the applicable regulations in directives MD 2006/42/EC, EMC 2004/108/EC as well as LVD 2006/95/EC. The following standards have been used as a basis: ISO 5349-1:2001, ISO 5349-2:2001, ISO 20643:2005, ISO 3741, ISO 11202.

The product was CE marked in 2009. The technical documentation is available from the manufacturer.

Original of the EC declaration of conformity (Swedish). Other languages are translations of the original of the EC declaration of conformity.

Söderköping 01.01.10



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<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	General .....	1
1.2	Liability .....	1
1.3	Manual .....	1
1.3.1	Safety explanations - explanation of symbols ....	1
1.4	Transportation .....	2
1.5	On delivery .....	3
1.6	Unpacking the equipment .....	3
1.7	Machine name plate .....	3
1.8	Handling and storage .....	4
1.9	Vibration and noise .....	4
1.9.1	Hand and arm vibrations .....	5
1.9.2	Sound power level .....	5
<b>2</b>	<b>Safety</b>	<b>6</b>
2.1	General .....	6
2.2	Warnings .....	6
2.3	Notes .....	7
<b>3</b>	<b>Machine description</b>	<b>9</b>
3.1	General machine description .....	9
3.2	Description of controls - control panel .....	11
3.3	Description of controls - Radio control unit .....	13

<b>4</b>	<b>Operation</b>	<b>15</b>
4.1	General .....	15
4.2	Handle setting .....	16
4.3	Locking the wheels .....	17
4.4	Handling weights .....	18
4.5	Access to grinding tools .....	20
4.6	Fitting and replacing grinding tools .....	21
4.6.1	Fitting grinding tools .....	22
4.6.2	Changing grinding tools .....	23
4.7	Preparations for dry grinding .....	24
4.8	Preparations before grinding with Mist-Cooler .....	24
4.9	Preparations for wet grinding .....	25
4.10	Manoeuvring via the control panel .....	25
4.10.1	Emergency stop switch .....	26
4.10.2	Start the machine - manual driving .....	26
4.10.3	Overload .....	26
4.11	Manoeuvring via the radio control panel .....	27
4.11.1	Preparation .....	27
4.11.2	Start the Machine - Radio Control .....	27
4.11.3	Stop the machine - Radio control .....	28
4.11.4	Changing the radio frequency .....	29
4.11.5	Interrupted radio communication .....	29
4.12	Making operation easier .....	29
<b>5</b>	<b>Maintenance and repairs</b>	<b>31</b>
5.1	General .....	31
5.2	Cleaning .....	31
5.3	Charging/replacing the radio control unit's batteries .....	31
5.4	Daily .....	32
5.5	Every week .....	32
5.6	Every month (or after 100 hours) .....	32
5.7	Repairs .....	33
5.8	Spare parts .....	33

<b>6</b>	<b>Troubleshooting</b>	<b>34</b>
6.1	General .....	34
6.2	The machine will not start .....	34
6.3	The machine vibrates or wears the tools unevenly .....	34
6.4	The machine is grinding at an angle .....	34
6.5	The machine stops immediately after starting .....	34
6.6	The machine stops - manual operation .....	35
6.7	The machine stops - radio control .....	35
6.8	The fuse trips frequently .....	35
6.9	The machine cannot cope .....	35
<b>7</b>	<b>Electronic error codes</b>	<b>36</b>
7.1	Error Codes .....	36
7.2	Schneider Electric .....	37
7.2.1	Resetting the frequency converter .....	37
7.2.2	Checking the last error code .....	37
<b>8</b>	<b>Technical data</b>	<b>38</b>
<b>9</b>	<b>Environment</b>	<b>41</b>
9.1	Chassis .....	41
9.2	Grinding head .....	41
9.3	Electrical system .....	41
9.4	Recycling .....	41
<b>10</b>	<b>Warranty and CE marking</b>	<b>42</b>
10.1	Warranty .....	42
10.2	CE marking .....	42





# 1 Introduction

## 1.1 General

HTC 650 RX (R = Radio control, X = Four grinding discs) is a grinder that can be used to grind, strip, clean and polish concrete, natural stone and terrazzo floors. The machine's area of application depends on the choice of tool. You can easily mount and replace the tool, thanks to the EZchange patented tool system.

The radio control means the operator is not affected by any vibrations from the machine. Moreover, the grinding work is more effective since, for instance, emptying the dust separator and handling the cables can be done while the machine is grinding.

Read the manual carefully, so you are totally familiar with the machine before you start to use it. Contact your local retailer for further information. For contact information, see Contact Information at the start of the manual.

## 1.2 Liability

Even though every effort has been made to make this manual as complete and accurate as possible, we bear no responsibility for incorrect or missing information. HTC reserves the right to change the descriptions contained in this manual without prior notice.

This manual is protected by the Copyright Act and no part of it may be copied or used in any other way without the written approval of HTC.

## 1.3 Manual

In addition to the general functions, this manual deals with the areas of application and the maintenance of the grinder.

### 1.3.1 Safety explanations - explanation of symbols

A number of symbols are used in the manual to highlight the most important sections, see below. It is important that you carefully read through the descriptions of the symbols in order to avoid the risk of both material damage and personal injury. There are also other symbols indicating practical tips. These are to help you use the machine in the easiest and most effective way.

The following symbols are used in the document to indicate where special attention is needed.

**Warning!**

This symbol means **Warning!** and indicates a risk of personal injury or material damage in the event of incorrect use of the machine. If you see this symbol next to a section of text, you must pay particular attention when reading through the text and not carry out any operations of which you are unsure. This is for your own and other users' safety and to avoid damage to the machine.

**Note!**

This symbol means **Note!** and indicates a potential risk of material damage in the event of incorrect use of the machine. If you see this symbol next to a section of text, you must pay particular attention when reading through the text and not carry out any operations of which you are unsure. This is to avoid damage to the machine.

**Tip!**

This symbol means **Tips!** and implies the inclusion of tips and advice on effective use of the machine or ways of reducing wear and tear to the machine. If you see this symbol next to a text, you should read through the text to make your work easier and to extend the service life of the machine.

## 1.4 Transportation

**Warning!**

Never deactivate the radio control function when you have stopped the machine on a sloping surface during loading, since the machine can start to roll.

**Note!**

The machine cannot be moved manually if the drive wheels are locked and the radio control activated.

Always make sure that the grinder is securely anchored to its surroundings and the grinding head is lowered against the surface. Make sure that the securing straps, or other equipment used for anchoring during transport, are tightened over non-moving parts, e.g. the grinder's chassis.

The machine can also be transported with other lifting equipment, for example truck or crane, using the lifting eyes provided, position 3, Figure 3-1, page [10](#). In which case, make sure that the weights are locked in the forward position and that the handle is in its back position, see Figure 4-5, page [19](#) and Figure 4-2, page [17](#).

When lifting the grinder, lifting straps must be used. These must be attached well-secured in the lifting eyes provided, position 3, Figure 3-1, page [10](#). Only use lifting straps approved for lifting equipment.

Do not transport the grinder on sloping surfaces, e.g. loading ramps, without securing it by the lifting eyes, position 3, Figure 3-1, page [10](#) for example with a winch. This is a safety measure in case the grinder starts to roll out of control. Also make sure that people (including operator) in the vicinity are at a safe distance in order to prevent personal injury, in the event that the grinder starts to roll out of control.

## 1.5 On delivery

The following items are included in the delivery. Contact your retailer if anything is missing.

- Grinding machine
- Manual disc
- Locking key for control cabinet
- Start key
- Hammer EZ system
- The radio control unit

## 1.6 Unpacking the equipment



### **Warning!**

Read carefully through the safety instructions and user manual before using the equipment.

- Check the packaging and equipment carefully on delivery for any possible transportation damage. If there is any sign of damage, contact your retailer and report it. Report packaging damage to the transport company as well.
- Check that the delivery matches the order. If there are any discrepancies, contact your retailer.
- When lifting the grinder, lifting straps must be used. These must be attached well-secured in the lifting eyes provided, position 3, Figure 3-1, page [10](#). Only use lifting straps approved for lifting equipment.

## 1.7 Machine name plate

The machine name plate provides the following information. The model and serial number must be specified when ordering spare parts for the machine.

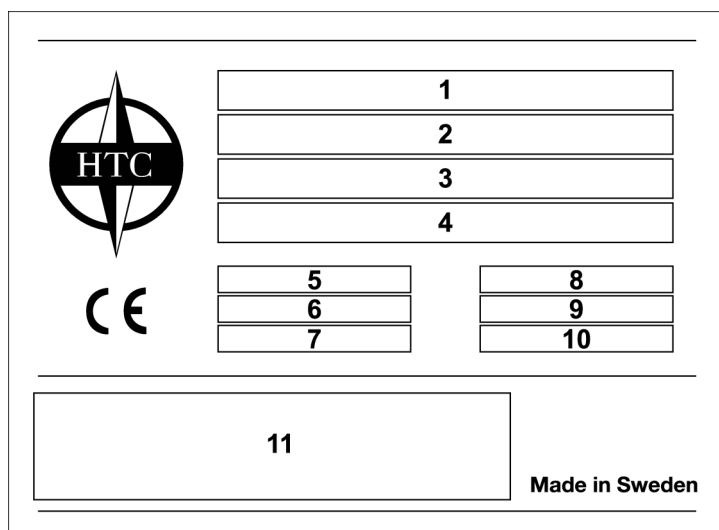


Figure 1-1. Machine name plate

1. Model
2. Model number
3. Serial number
4. Year of manufacture
5. Power (kW)
6. Voltage (V)
7. Current (A)
8. Frequency (Hz)
9. Rotational speed (r.p.m.)
10. Weight (kg)
11. Address field

## 1.8 Handling and storage

The equipment should be stored in a heated, dry area when not in use. Otherwise it may be damaged by condensation and cold.

When lifting the grinder, lifting straps must be used. These must be attached well-secured in the lifting eyes provided, position 3, Figure 3-1, page [10](#). Only use lifting straps approved for lifting equipment.

## 1.9 Vibration and noise



### Warning!

Always use hearing protection when using the machine.

### 1.9.1 Hand and arm vibrations

Hand and arm-weighted vibration level [ $\text{m/s}^2$ ] for HTC 650 RX have been measured using equipment approved in accordance with ISO 5349-1:2001. Measurement uncertainty for the measuring equipment is given as  $\pm 2\%$ .

The machine has been tested in accordance with ISO 5349-2:2001 and ISO 20643:2005 in order to identify the operations that contribute to the most frequent vibration exposures. At vibration levels  $> 2.5 \text{ m/s}^2$ , the exposure time should be limited in accordance with the table below. For vibration levels  $> 5 \text{ m/s}^2$ , immediate measures must be taken by the employer to ensure that the exposure time does not exceed the time specified in the table below.

Identified work conditions	Measured values [ $\text{m/s}^2$ ]	Daily permitted exposure (number of hours)
Grinding/polishing	5,45	6,74
Floor preparation (T-rex)	5,49	6,63

### 1.9.2 Sound power level

This machine is tested for noise in accordance with ISO 3741 and ISO 11202. For information on the sound power level and sound pressure level for each model, see the table in chapter Technical data, page [38](#).

## 2 Safety

### 2.1 General

This chapter contains all of the warnings and observations that should be taken into consideration for HTC 650 RX.

### 2.2 Warnings

**Warning!**

The machine may only be used or repaired by personnel who have received the appropriate theoretical and practical training and who have read this manual.

**Warning!**

Never use the machine in an environment where there is a risk of explosion or fire. Familiarise yourself with the fire-protection instructions for the working area and follow them.

**Warning!**

Secure the area around the machine. No unauthorised persons should be within a 15-metre radius of the machine. If loose objects get under the grinding head, these may be flung out and cause personal injury.

**Warning!**

Use safety equipment such as safety shoes, safety glasses, protective gloves, respiratory protection and hearing protection.

**Warning!**

Always make sure that a dust extractor is connected to the grinder during dry grinding to prevent, as far as possible, exposing the operator, people in the vicinity, the grinder and other equipment to dust particles. Exposure to dust particles can cause personal injury and also damage to physical equipment.

**Warning!**

Only start the machine with the grinding head lowered.

**Warning!**

Read through the safety instructions and the manual carefully before use.

**Warning!**

Always use hearing protection when using the machine.

**Warning!**

During grinding, the tools become very hot. Tip the machine back and allow it to stand for a short while. Use protective gloves when removing the tools.

**Warning!**

Disconnect the electrical supply when cleaning, changing tools or repairing the machine.

**Warning!**

The machine may only be used and moved on horizontal surfaces. There is a risk of crush injuries if the machine starts to roll.

**Warning!**

The machine must be connected to a residual current device.

**Warning!**

Do not clean the machine using a high-pressure washer. Otherwise, moisture may penetrate electrical elements and damage the machine's drive system.

**Warning!**

The operator must never leave the machine unattended.

**Warning!**

When working on an elevated surface where there is a risk of falling, the edges of the surface must be secured. The values for the machine's thrust and load capacity as well as the driving speed are given in the table for the machine's technical data in the chapter "Technical Data".

## 2.3 Notes

**Note!**

The machine may only be used to grind and polish natural stone, terrazzo, concrete, or other materials stated in this manual or that are approved by HTC.

**Note!**

Only original tools and spare parts from HTC may be used for the machine. Otherwise, neither the CE marking nor the warranty will be valid.

**Note!**

For the CE marking to be valid, the instructions in this manual must be followed.

**Note!**

The machine must only be lifted using the lifting eye intended for the purpose in accordance with the relevant instructions.

**Note!**

The machine should be stored in a dry, warm (plus degrees) location when not in use.

**Note!**

If the machine is stored in a cold area (below zero), it must be kept in a warm area (above zero) for at least two hours before use.

**Note!**

When dry grinding, a suitable dust extractor should be used. For available models of dust extractors, go to HTC's website [www.htc-floorsystems.com](http://www.htc-floorsystems.com) for more information.

**Note!**

The dust extractor's suction hose must be connected to the appropriate socket on the machine. Adjust the dust extractor to match the grinder's capacity.

**Note!**

Do not use the emergency stop switch to stop the machine, except in emergencies.

**Note!**

As long as the emergency stop switch is pressed in, the machine cannot be started. Reset by turning the switch 45° clockwise so that it pops out again. The machine can then be restarted.

**Note!**

After removing glue and wet grinding, always lift up the grinding heads so that they do not stick to the floor and damage machine components and the floor when restarting.



## 3 Machine description

### 3.1 General machine description

HTC 650 RX are designed for grinding in large spaces. It is used to grind, coarse grind, prepare and polish concrete, natural stone and terrazzo floors or other materials specified in this manual or material recommended by HTC. The machine is a perfect choice for removing coverings and grinding concrete floors according to the HTC Superfloor method, which is an environmentally-friendly method for grinding and polishing concrete floors.

Thanks to the fact the machine can be operated with the help of radio control, the work is significantly simplified and the grinding time lengthened. Furthermore, the work is more effective, since the dust extractor can be emptied while the machine is radio controlled.

The machine is constructed from a number of main components, see Figure 3-1, page [10](#) and Figure 3-2, page [11](#). Since it is equipped with four grinding discs, the machine is balanced and easy to use, which results in more efficient stripping and better grinding results. It also has an integrated weight system for adjusting the grinding pressure, which makes the machine perfect for those with high demands for flexibility.

The handle can be set in a number of different tilt positions. Choose a position that suits you best, when you want to operate the machinery manually.

The machine's grinding head is covered by a floating grinding cover to guarantee that the operator will not come into contact with rotating machine parts, and also that exposure to dust is minimised. The cover together with the connected vacuum system constitute the preconditions for a good work environment. The cover has a moveable overlap section with the purpose of optimising the dust uptake, since the cover is always in contact with the surface.

Always make sure that a dust extractor is connected to the grinder during dry grinding to prevent as far as possible exposure to dust particles of operators, people in the vicinity, the grinder and other equipment.

The machine can be easily equipped with a large number of tools, depending on the floor material to be ground. For other tools available, go to HTC's website [www.htc-floorsystems.com](http://www.htc-floorsystems.com) for more information.

HTC 650 RX is equipped with the Mist Cooler system for effective cooling of the grinding tools. This system enables a very fine water mist to be diffused through a nozzle onto the floor surface, which cools the tools, making the grinding more effective.

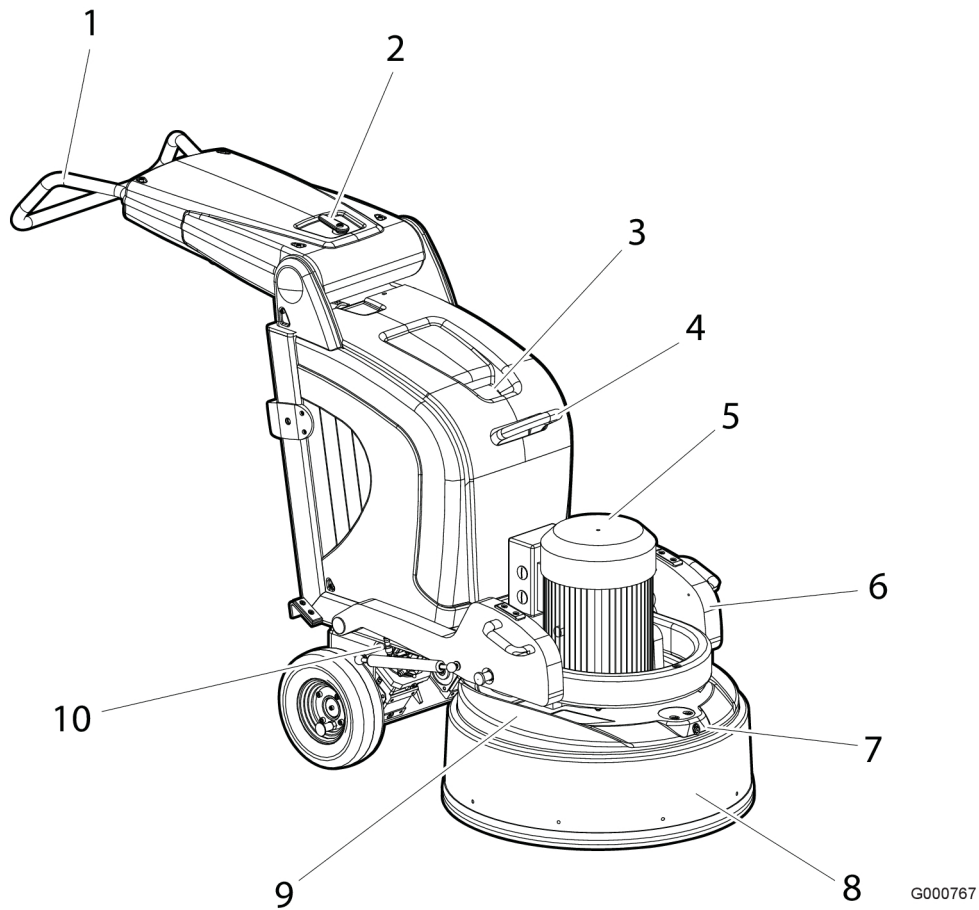
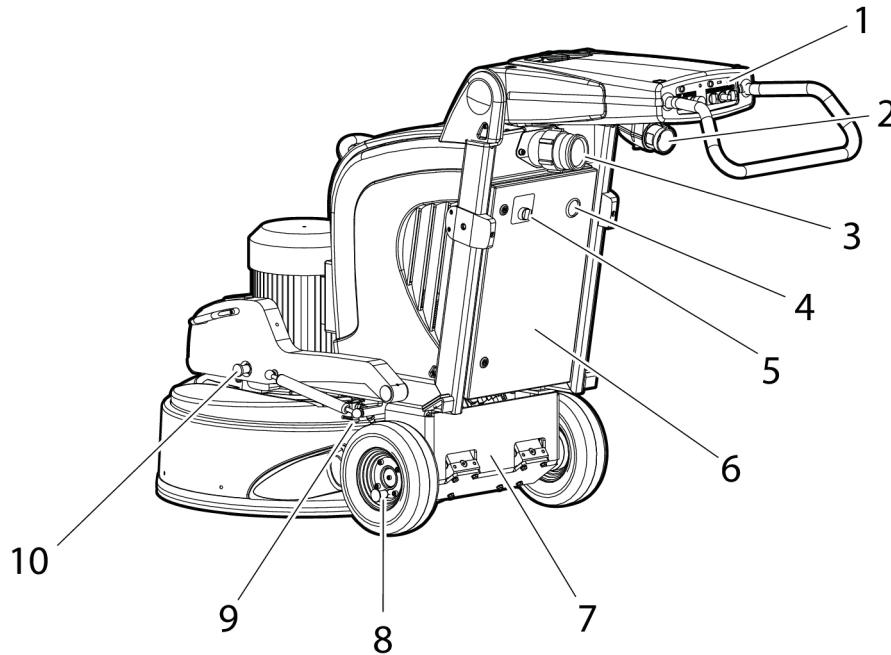


Figure 3-1. The front of the machine

1. Handle
2. Handle lock
3. Water tank
4. Lifting eye
5. Motor
6. Weights (grinding pressure)
7. Mouthpiece Mist Cooler
8. Floating grinding cover outer moveable section
9. Floating grinding cover inner fixed section
10. Water tap, Mist Cooler



G000768

Figure 3-2. The machine's rear

1. Control panel
2. Electrical connection
3. Extraction connection
4. Hour counter
5. Mist-Cooler On/Off
6. Control cabinet
7. Drive motor box
8. Locking pin, Driving
9. Water tap, wet spraying
10. Locking pin, weights (grinding pressure)

## 3.2 Description of controls - control panel

The picture below shows the machine's control panel:

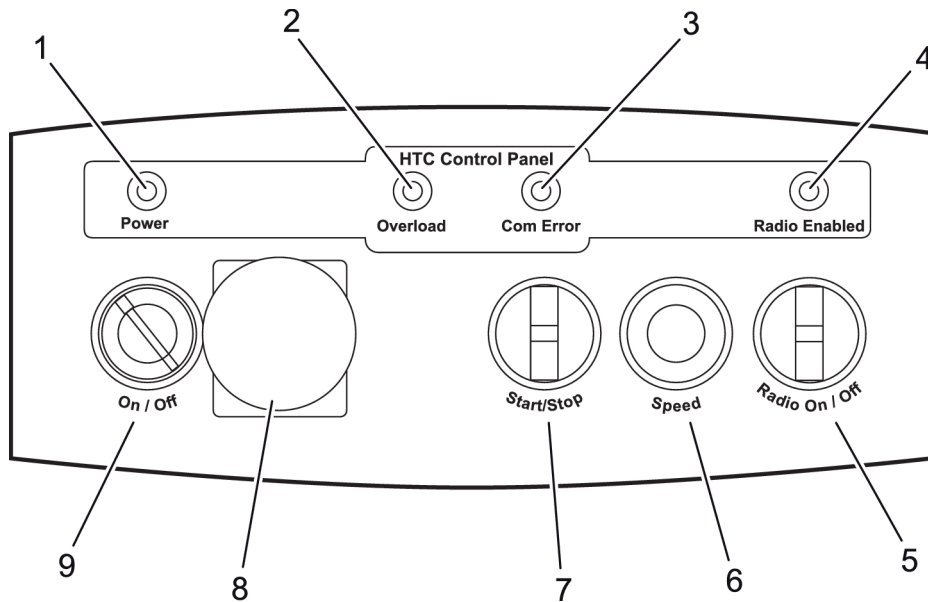


Figure 3-3. Description of controls - Control panel

1. **Power** - Standby indicator: Indicates that the machine's functions have been activated. Shines with a green glow when the start key (9) is turned to the right (On).
2. **Overload** - Overload indicator: Lights up to indicate that the machine is using too much power. If this is ignored, the power supply to the motor will be interrupted and an error code generated.
3. **Com Error** - Communication error indicator: Lights when there is a communication error between the grinding machine and the radio control unit.
4. **Radio Enabled** - Radio control indicator: Lights when the knob "Radio On/Off" is turned to the right (On).
5. **Radio On/Off** - Turn the knob to the right when the grinding machine is to be manoeuvred via radio control.
6. **Speed** - Rotation speed: Regulates the rotational speed of the machine's grinding discs. This is only possible when the grinding discs rotation is started via the "Start/Stop" knob.
7. **Start/Stop**- Start/stop the grinding discs' rotation. Turn the knob to "Start" to start the rotation, turn the knob to "Stop" to switch off the rotation.
8. **EM-Stop** - Emergency stop switch: In an emergency, press the switch to cut the power to the machine.
9. **On/Off** - Start key to start/stop the machine's functions: Turn the key to the right (On) to activate the machine's functions and prepare for starting. Turn the knob to the left (Off) to switch off the machine's functions.

When the machine is not to be used, the knob "Start/Stop" (7) must always be turned to the Stop position and the knob "Radio On/Off" (5) must always be turned to the Off position. The knob (5) being in the Off position is indicated by the "Radio Enabled" (4) indicator going out.



**Note!**

Press the emergency stop switch (EM-Stop), if the machine accidentally starts to move to avoid personal injury and/or damage to the machine.

### 3.3 Description of controls - Radio control unit

The picture below shows the machine's radio control unit:

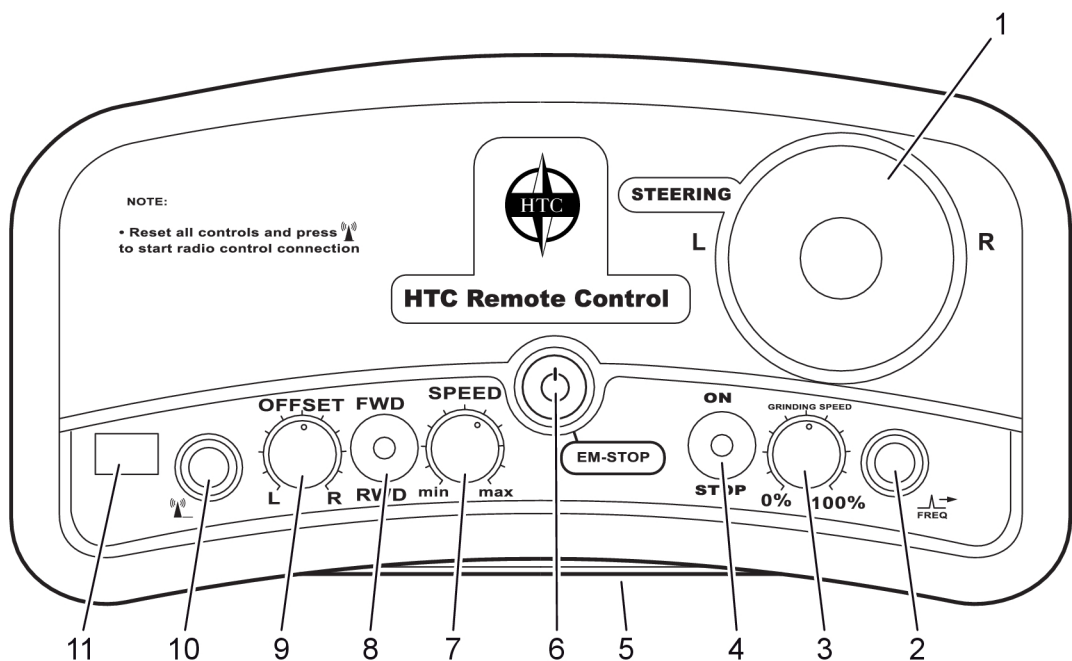


Figure 3-4. The radio control unit

1. **STEERING** - Control for steering the machine to the right (R) and left (L).
2. **FREQ** - Frequency button: Push the button to change the frequency of the radio control.
3. **GRINDING SPEED (0 - 100%)** - Grinding speed: Regulates the rotational speed of the machine's grinding discs.
4. **ON/STOP** - Start/stop the grinding discs' rotation. Move the control to ON to start the rotation, move the control to STOP to switch off the rotation.
5. **Battery compartment** - Holds the batteries that power the radio control unit.
6. **EM-STOP** - Breaks the radio contact between the radio control unit and the machine's receiver, which results in the machine stopping immediately. The radio control unit should be switched off when it is not in use. Can also be used to start/stop the radio control unit. It is used together with the button "Start radio communication".
7. **SPEED (min - max)** - Turn to adjust the machine's speed in the direction of movement.

8. **FWD/RWD** - Control for moving the machine forward (FWD) or backwards (RWD).
  9. **OFFSET (L - R)** - Turn the control to the left (L) or the right (R) to adjust for any tendency to veer.
  10. **Start of radio communication** - Button to start the radio communication between the radio control unit and the machine's receiver. It is used together with the EM-STOP button.
  11. **Display/Channel Info** - Two points blink alternately with a red light when the radio control unit is activated. The displays also shows information on the radio channel and any error messages. The letter "L" appears and blinks rapidly, when the batteries need to be recharged/replaced. The radio control unit functions for about 30 min after the "L" appears for the first time.
- Take the radio control unit to a safe place when the "L" appears in the display and switch off the unit. Install two charged AA batteries 1.2 V NiMH, or alternatively two normal, non-rechargeable 1.5 V AA. For instruction on charging/replacement, see under Charging/replacing the radio control unit's batteries, page [31](#).

## 4 Operation

### 4.1 General

The following section describes how to change tools and how to operate the grinding machine. This section does not deal with the technical aspects of grinding, such as selection of grinding tools, etc.

For choice of tool, go to HTC's website [www.htc-floorsystems.com](http://www.htc-floorsystems.com) for more information.

**Warning!**

The machine may only be used or repaired by personnel who have received the appropriate theoretical and practical training and who have read this manual.

**Warning!**

Never use the machine in an environment where there is a risk of explosion or fire. Familiarise yourself with and follow the relevant fire safety regulations when using the machine.

**Warning!**

Secure the area around the machine. No unauthorised persons should be within a 15-metre radius of the machine. If loose objects get under the grinding head, these may be flung out and cause personal injury.

**Warning!**

Use protective equipment such as safety shoes, safety goggles, protective gloves, mouth mask and hearing protection.

**Warning!**

Only start the machine with the grinding head lowered.

**Warning!**

The machine must only be used and moved on level surfaces. There is a risk of crush injuries if the machine starts to roll.

**Warning!**

The operator must never leave the machine unattended.

**Tip!**

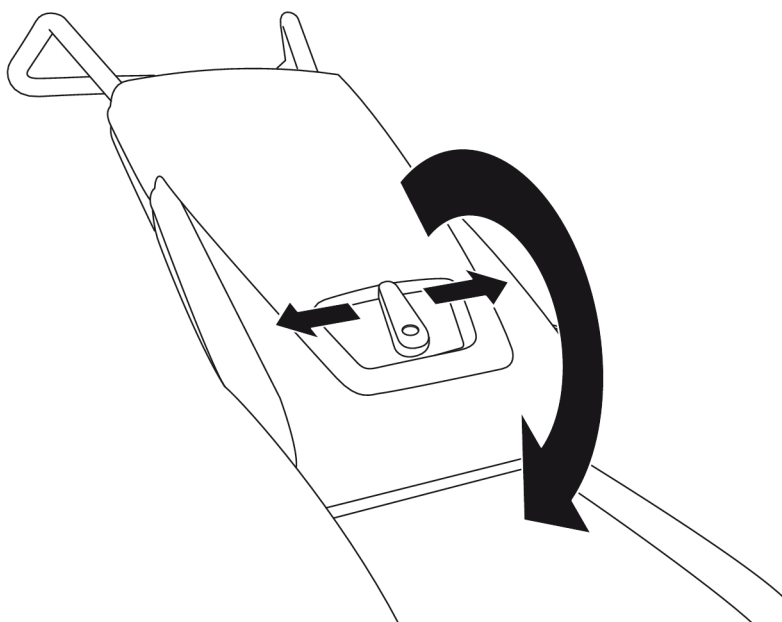
Check the minimum recommended cable area before using an extension cord. You will find the recommended cable area under Technical Data.

## 4.2 Handle setting

**Warning!**

There is a risk of crush injuries when adjusting the handle into the desired position. Make sure the handle lock locks properly in the desired position.

The appropriate working height is set with the help of the adjustable handle. The handle is locked with the handle lock on the handle cover, see Figure 4-1, page [16](#).



*Figure 4-1. Locking the handle*

1. Loosen the handle by turning the handle lock to the left or the right.
2. Move the handle to the desired position, the handle locks automatically in the desired position.



3. Make sure that the handle lock returns to the original position to guarantee that the handle is locked properly.

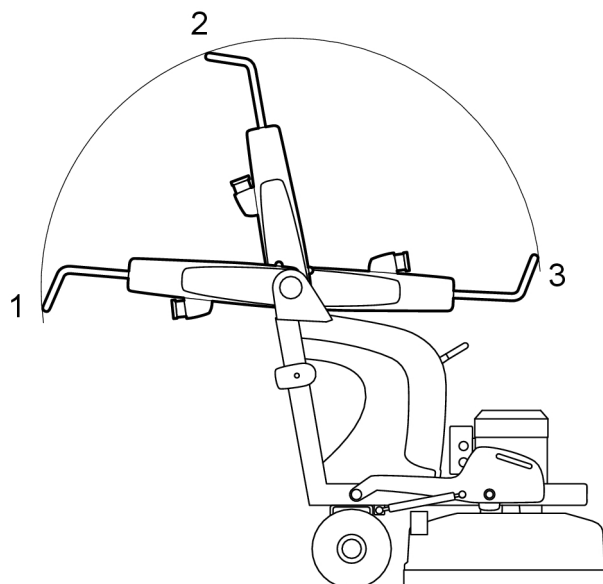


Figure 4-2. The handle's position

1. **Working position** - the working height can be adjusted to two positions using the machine's adjustable handle.
2. **Rear position** - used for tipping the machine to make tool replacement easier.
3. **Forward position** - used during transport, as the machine takes up significantly less space.

## 4.3 Locking the wheels

The machine is equipped with a locking mechanism on each wheel, see the driving lock in Figure 3-2, page [11](#). The driving lock is used to release and decouple the machine's wheels from their drive motors, which are located in the drive motor box, see Figure 3-2, page [11](#). In the locked position, the drive motors are connected to the wheels, this means that the machine can only be moved by using the drive motors via the operating panel or the radio control unit

1. Decouple the wheels by pulling the locking pin straight out, see Figure 4-3, page 18.

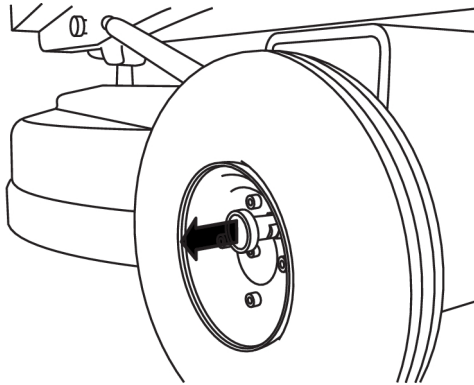


Figure 4-3. Decouple the wheels

2. Turn the locking pin 90 and release it for the secured position, see Figure 4-4, page 18.

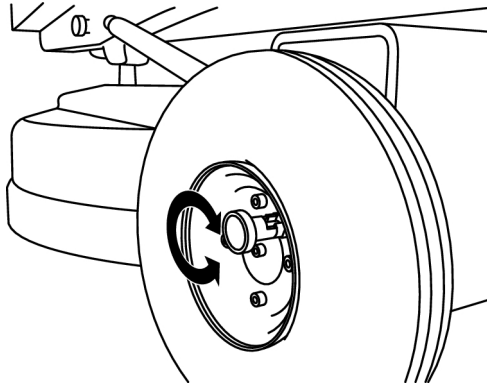


Figure 4-4. Turn 90 degrees

In order to couple the wheels to the drive motors, the same steps as above are carried out.



**Tip!**

During troubleshooting, the wheels can be decoupled from the motors and test driven without the machine moving.

## 4.4 Handling weights

The machine is equipped with two weights to make it easy to move the machine's centre of gravity. Each weight is provided with two locking pins with which the weights can be lowered and locked in three positions; forward, up (normal position) and backwards.

- Pull each pin out and lock in the extracted position by turning in the direction of the arrow, see Figure 4-5, page 19.



**Warning!**

There is a risk of crush injuries when the weights are folded back, since these are not locked in this position.



**Warning!**

Always make sure that the locking pins lock properly when the weights are placed in the desired position.



**Tip!**

We recommend that the weights are folded up during grinding, since if the grinding pressure is too high and the tool is wrong, it can cause damage to the machine and the floor.

To obtain a greater grinding pressure, and thereby increased grinding effect, the weights are lowered forwards, see Figure 4-5, page 19.

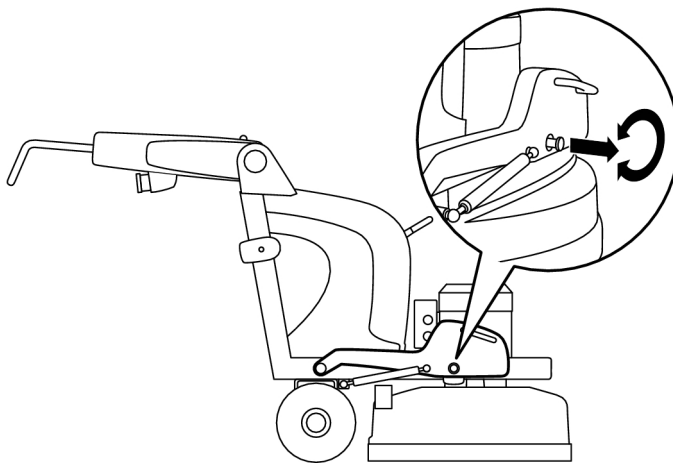


Figure 4-5. Weights lowered forwards

During normal grinding as well as during transport of the machine, the weights should be placed in the up position, see Figure 4-6, page 19.

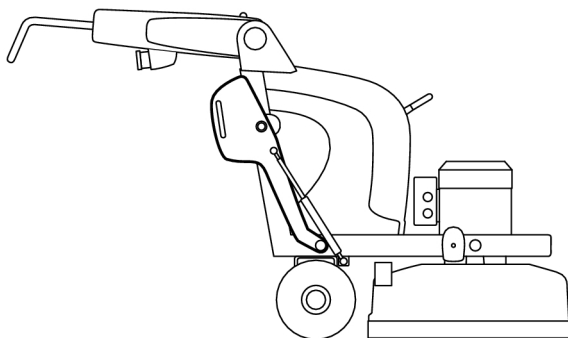


Figure 4-6. Weights in the up position

When changing tools and when using tools with a high removal rate (T-Rex™), the weights should be folded back, see Figure 4-7, page 20.

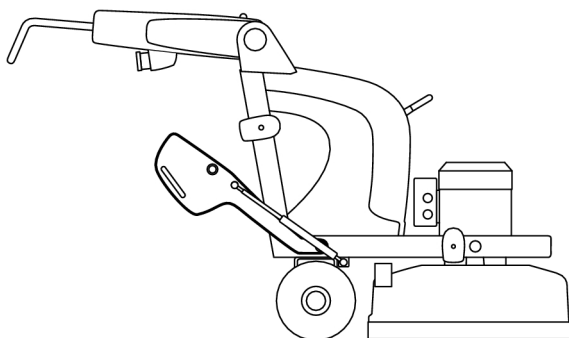


Figure 4-7. Weights folded back

## 4.5 Access to grinding tools



### Warning!

During grinding, the tools become very hot. Tip the machine back and allow it to stand for a short while. Use protective gloves when removing the tools.



### Warning!

Disconnect the electrical supply when cleaning, carrying out maintenance, changing tools or repairing the machine.

1. Set the handle to the rear position - see Figure 4-2, page [17](#)
2. Fold the weights back and place a foot on one of the weights, see Figure 4-8, page [20](#).

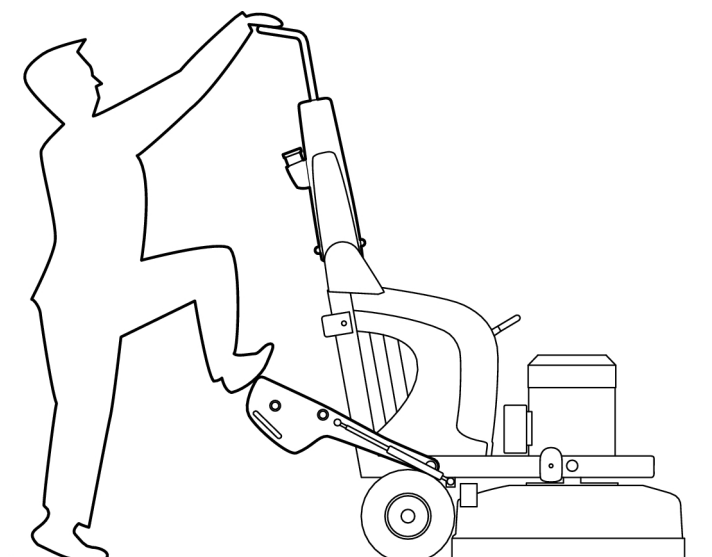


Figure 4-8. Foot on weight

3. Tip the machine backwards carefully, until the weights reach the floor, see Figure 4-9, page 21.

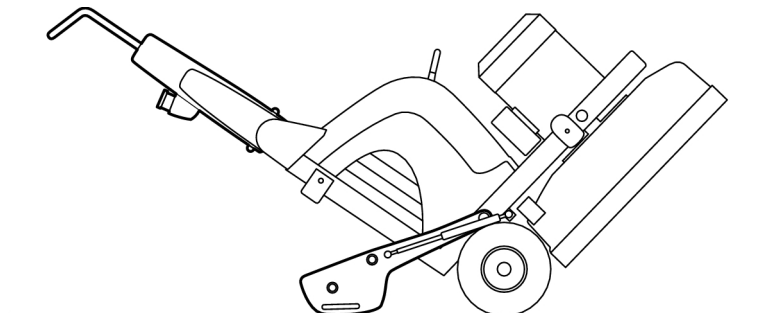


Figure 4-9. Fold back

4. Tip the machine further back, until all of the machine reaches the floor, see Figure 4-10, page 21.

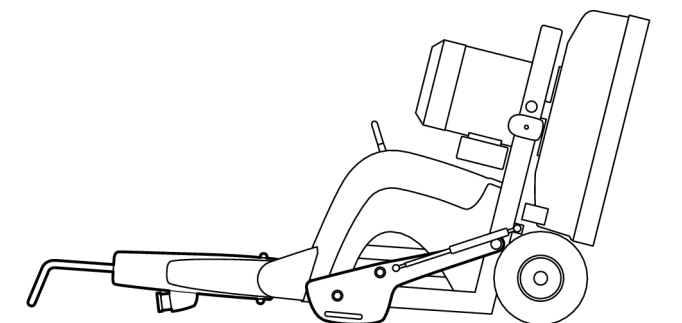


Figure 4-10.

## 4.6 Fitting and replacing grinding tools

As the machine is equipped with the patented EZchange tool system, fitting and replacing grinding tools is quick and easy. The tool system consists of wings on which diamond grinding tools are fitted without the need for screws.



### **Warning!**

Disconnect the electrical supply when cleaning, carrying out maintenance, changing tools or repairing the machine.



### **Warning!**

During grinding, the tools become very hot. Tip the machine back and allow it to stand for a short while. Use protective gloves when removing the tools.

### 4.6.1 Fitting grinding tools

1. Slide the grinding tool diagonally, from above, down into the appropriate guide slot on the tool holder, see Figure 4-11, page 22. Then push the tool fully into the guide slot.

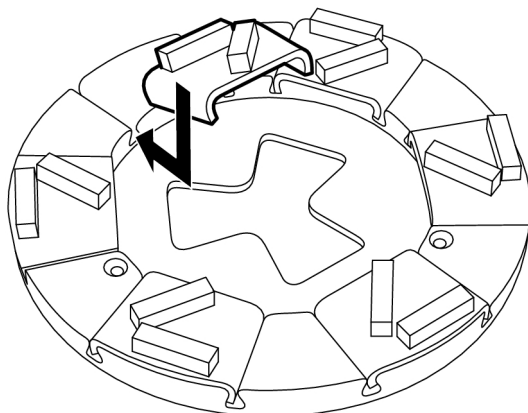


Figure 4-11. Fitting grinding tools

2. Lock the grinding tool into the tool holder by giving it a few light taps with a rubber hammer - see Figure 4-12, page 22.

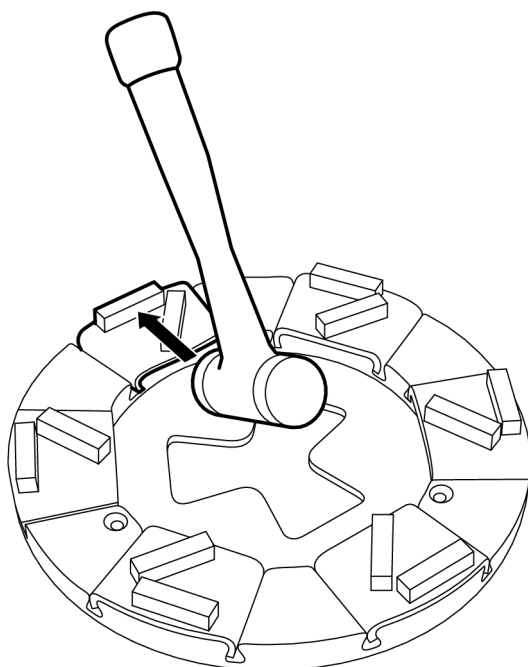
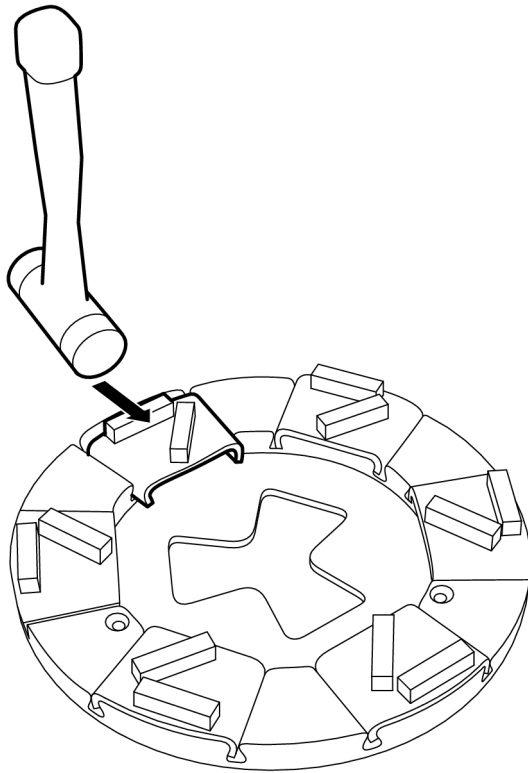


Figure 4-12. Removing grinding tools

### 4.6.2 Changing grinding tools

1. Remove the grinding tool by giving it a few light taps with a rubber hammer so the locking mechanism releases, see Figure 4-13, page 23. Then draw the tool up out of the guide slot.



*Figure 4-13. Removing grinding tools*

2. Slide the grinding tool diagonally, from above, down into the appropriate guide slot on the tool holder, see Figure 4-11, page 22. Then push the tool fully into the guide slot.
3. Lock the grinding tool into the tool holder by giving it a few light taps with a rubber hammer - see Figure 4-12, page 22.

## 4.7 Preparations for dry grinding

**Note!**

The dust extractor's suction hose must be connected to the appropriate socket on the machine. Adjust the dust extractor to match the grinder's capacity.

1. Connect a dust extractor to the machine. For available models of dust extractors, go to HTC's website [www.htc-floorsystems.com](http://www.htc-floorsystems.com) for more information.

**Note!**

The dust extractor's suction hose must be connected to the appropriate socket on the machine. Adjust the dust extractor to match the grinder's capacity.

**Note!**

The dust extractor can be connected to both sockets found on the protective cover for the machine. If you only use one of the sockets, the socket not in use should be covered. Adjust the dust extractor to match the grinder's capacity.

2. Inspect the floor carefully and remove any objects sticking up, such as reinforcement rods or bolts, and any debris that could get caught in the machine.
3. Attach the appropriate tool to the machine, see under Fitting grinding tools, page [22](#)
4. Set the handle to the working position, see Figure 4-2, page [17](#).

## 4.8 Preparations before grinding with Mist-Cooler

HTC 650 RX is equipped with the Mist Cooler system for effective cooling of the grinding tools. The system involves dispersing a very finely divided water mist onto the floor surface through a mouthpiece. This cools the tools and makes grinding more effective.

**Note!**

The dust extractor's suction hose must be connected to the appropriate socket on the machine. Adjust the dust extractor to match the grinder's capacity.

1. Connect a dust extractor to the machine. For available models of dust extractors, go to HTC's website for more information.
2. Inspect the floor carefully and remove any objects sticking up, such as reinforcement rods or bolts, and any debris that could get caught in the machine.
3. Attach the appropriate tool to the machine, see Figure 4-11, page [22](#)



4. Set the handle to the working position, see Figure 4-2, page 17.
5. Fill the tank with cold water.
6. Turn the water tap (position 10 Figure 3-1, page 10) on the right side of the machine to the open position.
7. Turn on the Mist-Cooler by turning the control (position 5 Figure 3-2, page 11) to "ON".
8. Switch off the Mist-Cooler by turning the control (position 5 Figure 3-2, page 11) to "OFF" when grinding is finished.
9. Turn the tap to the closed position when grinding is finished.

## 4.9 Preparations for wet grinding



### Tip!

Never use a dust extractor, as it may cause blockages in the dust extractor's suction hose.

1. Always use liquid suction when wet grinding.
2. Inspect the floor carefully and remove any objects sticking up, such as reinforcement rods or bolts, and any debris that could get caught in the machine.
3. Attach the appropriate tool to the machine, see under Fitting grinding tools, page 22
4. Set the handle to the working position, see Figure 4-2, page 17.



### Warning!

Only use cold water with no chemical additives.

5. Fill the tank with cold water.
6. Turn the tap on the machine's left side to the open position, position 9 Figure 3-2, page 11.
7. Turn the tap to the closed position when wet grinding is finished, position 9 Figure 3-2, page 11.

## 4.10 Manoeuvring via the control panel

During manual driving, the operator pushes the machine forwards across the floor surface and manoeuvres it via the control panel, see Figure 3-3, page 12.



### Tip!

Drive the machine manually in difficult to navigate spaces.

### 4.10.1 Emergency stop switch

The emergency stop switch, (EM-Stop) must only be used in an emergency, because it shortens the service life of the machine's electrical components.

When the switch is pressed, all electrically-powered equipment on the machine are turned off.

**Note!**

Do not use the emergency stop switch to stop the machine, except in emergencies.

**Note!**

As long as the emergency stop switch is pressed in, the machine cannot be started. Reset by turning the switch 45° clockwise so that it pops out again. The machine can then be restarted.

### 4.10.2 Start the machine - manual driving

For a description of the control panel, see Figure 3-3, page [12](#).

1. Make sure the emergency stop switch has not been activated.
2. Check that the wheel lock is decoupled from the wheel before operating, see Figure 4-3, page [18](#).
3. Insert the cable.
4. Start the dust extractor if dry grinding is to be done.
5. Turn the start key to the right; "On".
6. Start the grinding discs' rotation by turning the knob to "Start".
7. Set the speed for the grinding discs using the Speed knob.
8. The machine has now started.

### 4.10.3 Overload

If the machine is using too much power, the Overload indicator on the control panel goes off. The machine switches off automatically after a while if this is ignored. Reduce the speed of the grinding discs to see if the Overload indicator goes out. If this does not help, follow the procedure for troubleshooting.

**Tip!**

If the machine is heavy to operate, it can be due to the placing of the weights. Fold the weights up or back to unload the grinding head.

## 4.11 Manoeuvring via the radio control panel

During radio control, the machine is manoeuvred via the radio control unit, see Figure 3-4, page [13](#).

When operating via the radio control unit, the machine is driven forwards with the help of the motors in the drive motor box. From a work environment perspective, operation via the radio control unit is recommended.

**Warning!**

The operator must never leave the machine unattended.

### 4.11.1 Preparation

1. Loosen the battery cover on the radio control unit by screwing loose the screws on the cover.
2. Place two charged AA batteries 1.2 V NiMH, or alternatively two normal, non-rechargeable 1.5 V AA batteries in the battery space.

**Note!**

Rechargeable batteries must be fully charged before they are used for the same time.

**Warning!**

Never attempt to charge standard, non-rechargeable 1.5 AA batteries.

3. Close the cover and fasten it in place with the screws.

Check that the wheel lock is secured between the wheel and the drive motor, see Figure 4-3, page [18](#).

### 4.11.2 Start the Machine - Radio Control

**Note!**

To save energy, the radio control unit automatically switches off if a button is not activated within a given time. in which case, the blinking points in the display are extinguished.

1. Turn the knob "Radio On/Off" on the control panel to the right, to prepare the machine for manoeuvring via the radio control unit, the indicator "Radio Enables" on the control panel lights up.

2. Press the button "EM-STOP" and then press the button to start the radio communication on the radio control unit to activate the radio control. The buttons can be activated in any order, but after you have pressed the first button the second must be pressed within 5 seconds. When the radio control is activated, the two points start blinking alternately with a red light on the control unit's display.
3. Zero the radio control unit by doing the following:
  - Turn the knob for speed (SPEED) to "min".
  - Set the control for driving forwards/backwards (FWD/RWD) in the middle position.
  - Turn the knob for the rotational speed (GRINDING SPEED) to 0%.
  - Move the control for starting and stopping the grinding discs' rotation (ON/STOP) to STOP.
4. Press the button to start radio communication. The communication error indication (ComError) on the machine's control panel should then go out.
5. Start the grinding discs' rotation by moving the control "ON/STOP" to ON. Adjust the rotational speed with the knob "GRINDING SPEED".
6. Start the machine's drive motors by moving the control "FWD/RWD" to FWD. Adjust the speed with the knob "SPEED".

Check that the wheel lock is secured between the wheel and the drive motor, see Figure 4-3, page [18](#).


#### **4.11.3 Stop the machine - Radio control**

1. Turn the knob for speed (SPEED) to "min".
2. Set the control for driving forwards/backwards (FWD/RWD) in the middle position so the machine stops.
3. Turn the knob for the rotational speed (GRINDING SPEED) to 0%.
4. Move the control for starting and stopping the grinding discs' rotation (ON/STOP) to STOP.
5. Press in the button "EM-STOP", to switch off the radio control unit.

#### 4.11.4 Changing the radio frequency

If several machines are used in the same workplace, there can be interference with the radio communication, which means that it is necessary to change the frequency on a machine. It may also be necessary to change the radio frequency, if there is other equipment used in the workplace that causes interference with the radio communication.

Change the frequency by doing the following:

1. Stop the machine, for how this is done see under Stop the machine - Radio control, page [28](#).
  2. Press and hold in the button to start radio communication.
  3. Press on the frequency button "FREQ". The machine's radio receiver automatically searches for the new frequency, the number of the selected frequency channel is shown briefly on the radio control unit's display. Press on the frequency button "FREQ" to see the selected frequency channel while operating.
- 
- Note!**  
If the error code "Jt" is shown on the display, immediately contact the HTC Service Centre for instructions.
4. Release the button to start radio communication.
  5. Start the machine, for how this is done see under Start the Machine - Radio Control, page [27](#).

#### 4.11.5 Interrupted radio communication

If the distance between the machine and the radio control unit becomes too great, the radio communication will be broken and the machine stops. In order to restart operation via the radio control unit, follow the instructions under Start the Machine - Radio Control, page [27](#).

#### 4.12 Making operation easier

In order to keep the suction hose for the dust extractor and the power cable out of the working area and/or path of the machine, the hose and cable can be arranged as shown in the picture below.

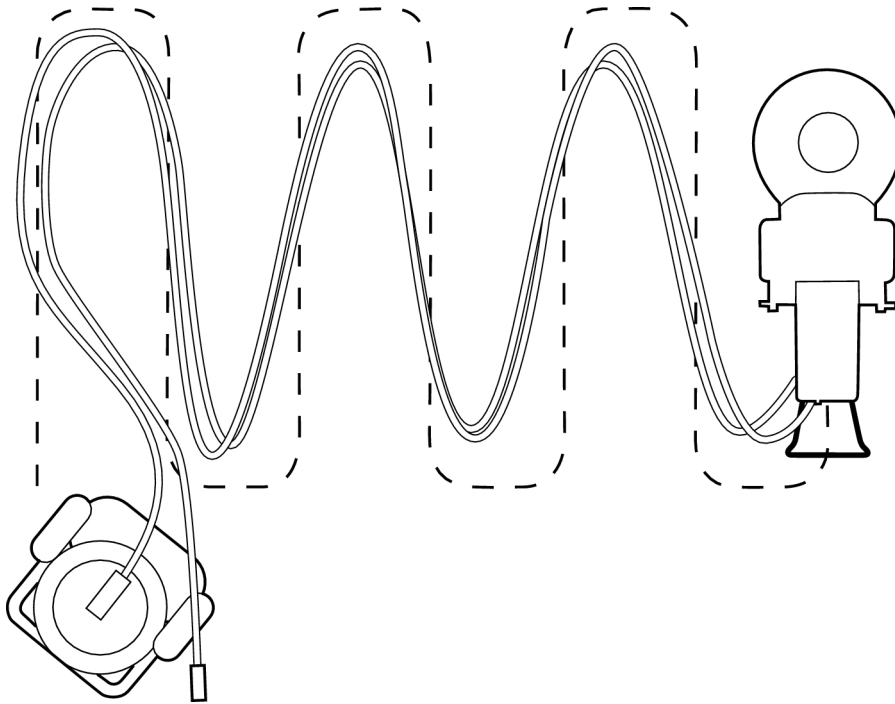


Figure 4-14. Making operation easier



**Tip!**

By arranging the hose and cable as shown in the picture, you avoid disruptive stoppages caused by having to re-position the cable and hose.

## 5 Maintenance and repairs

### 5.1 General

We recommend regular inspections of all seals.



**Warning!**

Disconnect the electrical supply when cleaning, carrying out maintenance, changing tools or repairing the machine.



**Warning!**

Use protective equipment such as safety shoes, safety goggles, protective gloves, mouth mask and hearing protection.



**Warning!**

During electro-welding work on the machine, the radio receiver must always be disconnected to avoid damage to the receiver's electrical system.

### 5.2 Cleaning



**Warning!**

Do not rinse off the machine using a high-pressure washer, as moisture can penetrate to the electrical parts and damage the drive system.

- Vacuum clean the control cabinet, if required.
- Always clean the machine after use with a damp sponge or cloth.

### 5.3 Charging/replacing the radio control unit's batteries



**Warning!**

During charging, oxyhydrogen gas always forms in the battery. An open flame or spark in the vicinity of the batteries could cause an explosion.

- Recharge/replace the batteries when L" appears in the display and blinks quick, see Figure 3-4, page [13](#).
1. Stop the machine, see under Stop the machine - Radio control, page [28](#).
  2. Loosen the battery cover by screwing the screws out on the cover
  3. Remove the old/flat batteries.
  4. Replace with the new/charged batteries.

5. Close the cover and fasten it in place with the screws.
6. Start the machine, see under Start the Machine - Radio Control, page [27](#).

## 5.4 Daily

- Wash the machine if it is used for wet grinding.
- Check for wear to the grinding tools – abnormal or uneven wear may indicate a damaged grinding holder.
- Check the tool holder and grinding holder to ensure that no damage or cracks have arisen. Replace the parts if there is any damage.
- Remove any residues of building material from the radio control unit.

## 5.5 Every week

- Wash the machine.
- Check the grinding holders. Remove the tools and run the machine in mid air at the slowest speed. If the grinding holders oscillate or wobble significantly, they are damaged.
- Check that the upper belt is whole, by turning the large disc in one direction or the other. If there is resistance the belt is whole, if the disc rotates freely the belt is broken.



### Tip!

Recondition all the grinding holders at the same time.

## 5.6 Every month (or after 100 hours)

- Tighten anything that may have vibrated loose.
- Check that the grinding cover is whole and undamaged.
- Check the upper belt and replace if necessary.
- Check the seals on the shafts on which the upper belt runs and replace if necessary.
- Scrape and vacuum-clean the parts shielded by the grinding cover.
- Test run and listen for any dissonance from the bearings.
- Clean or, if necessary, replace the filter to the electrical cabinet.



- Check the functioning of the radio control unit's ME-STOP button.
- Check the parts that wear on the radio control unit, e.g. the dust cover.

## 5.7 Repairs

Any repairs that may be required must be carried out by a HTC Service Centre that has trained service personnel and uses HTC original parts and accessories. Contact your retailer if your machine requires servicing. For contact information, see Contact Information at the start of the manual.

## 5.8 Spare parts

To ensure rapid delivery of spare parts, always specify the model, the machine's serial number and the spare part number when ordering. Information on the model and serial number can be found on the machine's name plate.

Information on spare part numbers can be found in the machine's spare parts list which is available to read or print out from the accompanying digital media.

Only original tools and spare parts from HTC may be used. Otherwise, neither the CE marking nor the warranty will be valid.

## 6 Troubleshooting

### 6.1 General

This chapter describes all the faults that may occur and how to deal with them. If the fault cannot be dealt with, or if there are other faults, contact your nearest retailer. See Contact Information at the front of the manual.

### 6.2 The machine will not start

- Check if the emergency stop switch have been pressed. Reset the switch by turning it 45°.
- Check that the machine is connected correctly to the mains supply. Check that there is full voltage on the motor's phase/phases.
- Check the fuses and contactors in the control cabinet.
- Check fuses in control cabinet and on batteries.
- Check whether the lamp for triggered start capacitor is lit. Normally, the lamp goes out automatically after 2 minutes.

### 6.3 The machine vibrates or wears the tools unevenly

- Check that there is movement between the chassis and grinding head. If necessary, loosen one of the two pins in order to increase the play between the chassis and the grinding head.
- Check the belts, replace if necessary.
- Check the condition of the grinding holders. If the grinder holders need reconditioning, contact HTC for information about spare parts.

### 6.4 The machine is grinding at an angle

- Recondition the grinding holder. See under The machine vibrates or wears the tools unevenly, page [34](#).
- Check that the upper belt is undamaged. Try to turn the large disc in one direction or the other, there should be resistance. If it turns freely, the belt is broken and must be replaced.

### 6.5 The machine stops immediately after starting

- Check the error code in the display on the frequency converter, see Electronic error codes, page [36](#).

## 6.6 The machine stops - manual operation

- Check the error code in the display on the frequency converter, see Electronic error codes, page [36](#).

## 6.7 The machine stops - radio control

Other equipment can interfere with the radio traffic between the machine and the radio control unit, which means that the communication error indicator (ComError) can start to blink on and off. When the contact between the machine and the radio control has been broken for too long the machine stops for safety reasons.

- Check if the communication error indicator (ComError) blinks.
- Restart the machine and switch off any interfering equipment.
- Check the error code in the display on the frequency converter, see Electronic error codes, page [36](#).

## 6.8 The fuse trips frequently

- The load is too high on the distribution box to which the machine is connected. Use a different socket or reduce the speed of the machine.
- Check the tools. Ensure that the correct tools are used, that they are in working order and that they are correctly fitted.

## 6.9 The machine cannot cope

- Heavy load. Press the handle down slightly so that the grinding head eases slightly away from the surface being ground..
- Sticky coating on the surface being ground. Run half of the machine on the surface to be cleaned and half on the clean surface. This removes any residue from the tools.
- Check the tools. Ensure that the correct tools are used, that they are in working order and that they are correctly fitted.
- Voltage drop. Check that the cable area meets HTC's recommendations.



### Tip!

Check the minimum recommended cable area before using an extension cord. You will find the recommended cable area under Technical Data.

## 7 Electronic error codes

### 7.1 Error Codes

Code	Cause	Action
0001	Excess current	Review tool selection. Reduce the grinding speed. Check that the grinding head/drive motor are moving freely. Check the motor cable and connector. Check the motor.
0002	Excess voltage	Check if the power supply is showing static or transient excess voltage.
0003	Excess temperature in the converter	Check the cabinet cooling system. Ensure that the cabinet is clean. Check the converter's cooling fan. Clean the filter.
0004	Short circuit in motor or motor cable	Check the motor cable and connector. Check the motor.
0006	Under-voltage	Check the feed fuse and the mains fuse. Check the cable dimension and length.
0009	Motor temperature too high due to overload	Check that the grinding head/drive motor are moving freely. Check the motor's cooling flanges and fan.
0010	Panel dropout	Check panel connection.
0012	Locked motor	Check that the grinding head is moving freely.
0016	Earth fault	Check the motor cable and connector. Check the motor.
0022	Phase failure on supply in	Check supply fuses. Check if there is a lack of symmetry in the mains supply.
0034	Phase failure in motor	Check the motor cable and connector. Check the motor.
2001	Output current limiter active	Check that the grinding head/drive motor are moving freely. Check the motor cable and connector. Check the motor.
2008	Communication fault, panel	Check panel connections.
2009	Excess temperature in the converter	Check the cabinet cooling system. Ensure that the cabinet is clean. Check the converter's cooling fan. Clean the filter.
2010	High motor temperature	Check that the grinding head/drive motor are moving freely. Check the motor's cooling flanges and fan.
2012	The motor is operating in the locking range	Check that the grinding head/drive motor are moving freely.

## 7.2 Schneider Electric

### 7.2.1 Resetting the frequency converter

1. Switch off the machine by turning the start key to "Off" and wait 10 seconds.
2. Start the machine by turning the start key to "On".

**Tip!**

The machine does not start if when switching on the power.

### 7.2.2 Checking the last error code

For the buttons and knobs described here, see Figure 7-1, page [37](#)

1. Press Enter. rEF is shown in the display.
2. Turn the knob counter-clockwise, until SUP is shown in the display.
3. Press Enter. FrH is shown in the display.
4. Turn the knob counter-clockwise, until LFt is shown in the display.
5. Press Enter. LIS1 is shown in the display.
6. Turn the knob counter-clockwise, until dP1 is shown in the display.
7. Press Enter. The last error code is shown in the display.

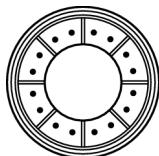


Figure 7-1. Enter button and knob - Schneider

## 8 Technical data

The table below shows the machine's technical data.

		<b>HTC 650 RX EU Mist</b>		<b>HTC 650 RX US Mist</b>
Part number	Article no.	112947	Item no.	112964
Motor power	kW	11	hp	15
Current	A	25	A	25
Frequency	Hz	50	Hz	60
Voltage	V	3 x 380-415	V	3 x 440-480
LEDs	V	24	V	24
Control voltage	V	24	V	24
Total machine weight	kg	448	lbs	988
Chassis weight (including weights)	kg	236	lbs	520
Weight, grinding head	kg	212	lbs	467
Weights	kg	2 x 32	lbs	2 x 71
Grinding diameter	etc.	680	in	27
Grinding pressure, weights lowered forwards	kg	248	lbs	547
Grinding pressure, weights in the up position	kg	172	lbs	379
Grinding pressure, weights folded backwards	kg	154	lbs	340
Rotational speed, grinding discs	rpm	373 - 1679	rpm	373 - 1679
Water tank	l	19	gal	2.64
Grinding discs	etc.	4 x 230	in	4 x 9
Recommended minimum cable area	mm <sup>2</sup>	6	sq in	0.0093
Storage temperature	°C	-30...+50	°F	-22...+122
Working temperature	°C	-5...+40	°F	23...+104
Humidity	%	5-90	%	5-90
Sound pressure level, according to ISO 11202, measured using class 1 instruments as sound level meters.	dBA	79,1	dBA	79.1
Sound power level, according to ISO 3741, measured using class 1 instruments as sound level meters.	dBA	96	dBA	96
Vibrations, grinding/polishing	m/s <sup>2</sup>	5,45	m/s <sup>2</sup>	5.45
Permitted daily exposure, grinding/polishing	h	6,63	h	6.63
Vibrations, Floor preparation (T-Rex)	m/s <sup>2</sup>	5,49	m/s <sup>2</sup>	5.49

		HTC 650 RX EU Mist		HTC 650 RX US Mist
Permitted daily exposure, Floor preparation (T-Rex)	h	6,63	h	6.63
Thrust/Load Capacity	N	1500	N	1500
Driving speed	m/s	<0,2	ft/s	<0,2
Frequency (Transmitter/Receiver)	MHz	433,100-434,750	MHz	433.100-434.750
Transmitter power (FM)	mW	≤10	mW	≤10

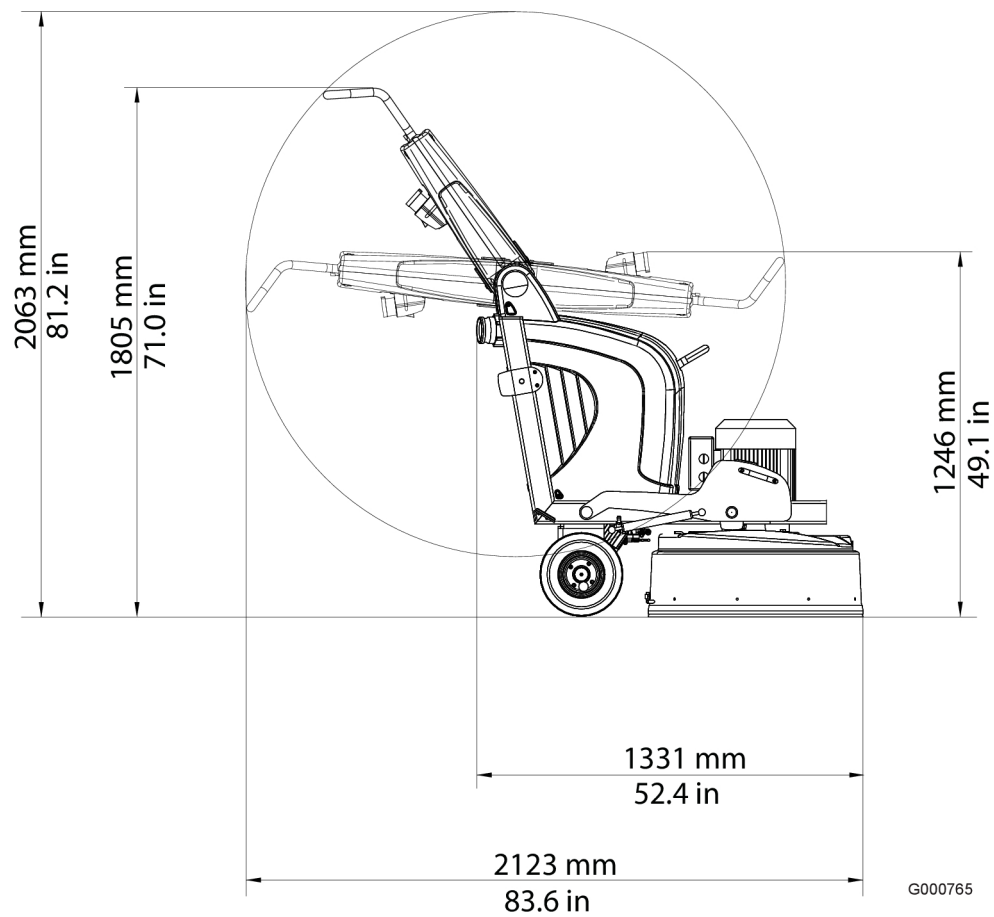
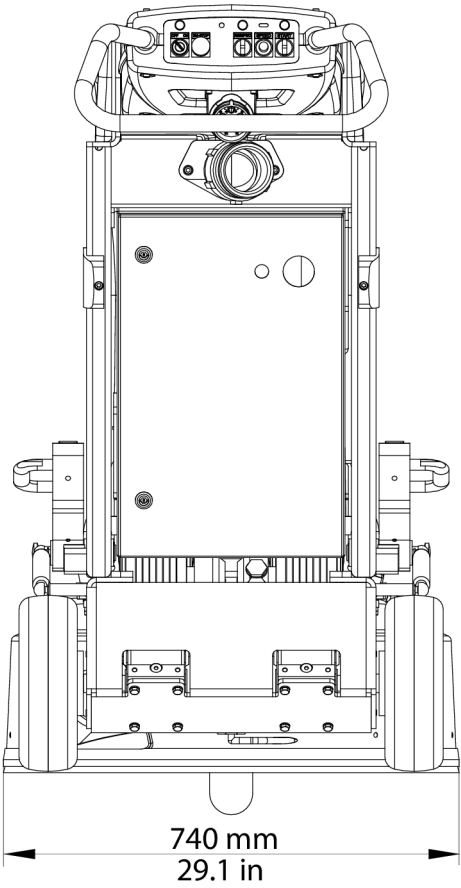


Figure 8-1. Technical data



G000766

Figure 8-2. Width of the machine



## 9 Environment

HTC products are constructed mainly of recyclable metal and plastic. The main materials used are listed below.



### **Warning!**

The dust that is sucked up is harmful if inhaled. Follow local regulations and use breathing protection.

### 9.1 Chassis

Machine part	Material	Waste management
Frame	Electro-galvanised steel	Metal recycling <sup>1)</sup>
Handle	Plastic covered steel	Metal recycling <sup>1)</sup>
Cover	Plastic, ABS	Plastic recycling/Combustible
Wheels	Metal, plastic and rubber	Metal recycling <sup>1)</sup>

<sup>1)</sup> If possible, different metals should be separated.

### 9.2 Grinding head

Machine part	Material	Waste management
Lower cover	Aluminium	Metal recycling <sup>1)</sup>
Cover	Plastic, ABS	Plastic recycling/Combustible
External plate and steel components	Electro-galvanised steel	Metal recycling <sup>1)</sup>
Other components	Steel	Metal recycling <sup>1)</sup>

<sup>1)</sup> If possible, different metals should be separated.

### 9.3 Electrical system

Control cabinet	Stainless steel
Cables	Copper conductors with PVC covering

### 9.4 Recycling

Plastic components can be recycled by sorting as hard plastics. Electronics can be deposited as electronic waste. The machine or machine components can also be returned to HTC Sweden AB. For recycling and scrapping of components, see the applicable national regulations for each country.

## **10 Warranty and CE marking**

### **10.1 Warranty**

This warranty only covers manufacturing defects. HTC bears no responsibility for damage that arises or occurs during transportation, unpacking or use. In no instance and under no circumstances shall the manufacturer be held responsible for damage and defects caused by incorrect use, corrosion or use outside the prescribed specifications. The manufacturer is not responsible for indirect damage or costs under any circumstances. For complete information on the manufacturer's warranty period, see HTC's current warranty terms.

Local distributors may have special warranty terms specified in their terms of sale, delivery and warranty. If there is any uncertainty regarding warranty terms, please contact your retailer.

### **10.2 CE marking**

CE marking of a product guarantees its free movement within the EU area in accordance with EU regulations. CE marking also guarantees that the product fulfils various directives (the EMC Directive and other possible requirements in so-called directives for new procedures in accordance with these regulations). This machine carries the CE mark in accordance with the Low Voltage Directive (LVD), the Machinery Directive and the EMC Directive. The EMC Directive states that electronic equipment must not disturb its surroundings with electromagnetic interference and also that it must be immune to electromagnetic interference in its surroundings.

This machine is classified for use in environments such as heavy industry, light industry and, for certain machine types, even in homes. See the Manufacturer's Declaration of Conformity, which shows that the machine is harmonised with the EMC Directive.



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**Head Office**

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**HTC Sweden AB**

Box 69  
614 22 Söderköping  
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## Visiting address:

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