



# Owner Instructions

Original instructions

Warning! Read instructions before using the machine



## TRO 650 Ride-on Scrubber Dryer



*TRO 650*



[www.numatic.com](http://www.numatic.com)





Before continuing, please refer to Quick Set Up Guide on Page 8



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## Quick Set-up Guide

Page 8

### Machine set-up

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### Machine Operation

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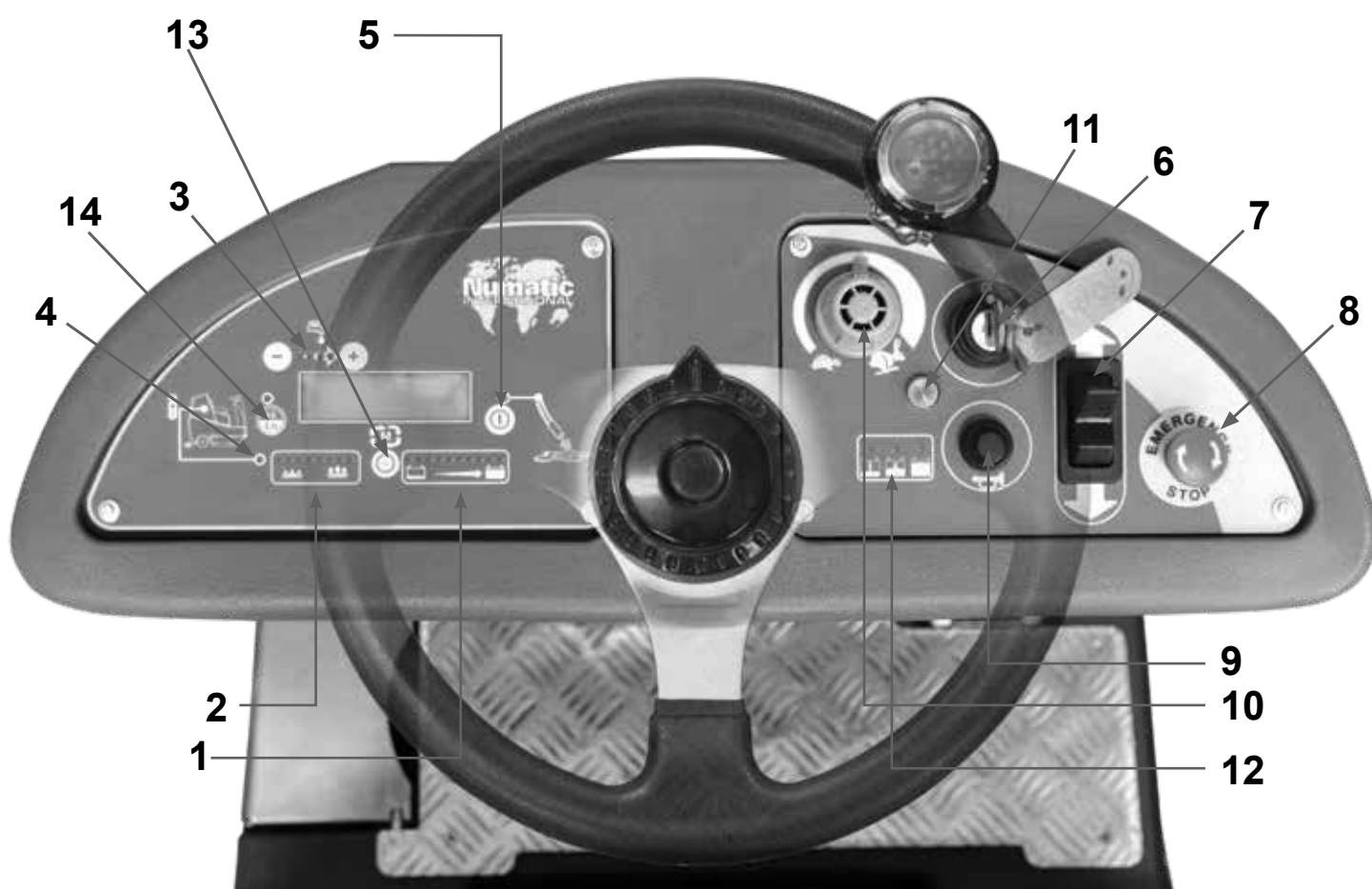
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# Machine Overview



|    |                                              |    |                                |
|----|----------------------------------------------|----|--------------------------------|
| 1  | Operator control panel ( see page 4 )        |    |                                |
| 2  | Brush load adjuster knob                     | 13 | Gel batteries                  |
| 3  | Brush deck release lever                     | 14 | Charger                        |
| 4  | Brush deck foot pedal                        | 15 | Accelerator pedal              |
| 5  | Clean-water tank fill point                  | 16 | Clean-water tank emptying hose |
| 6  | Side pod and skirt                           | 17 | Semi parabolic floor-tool      |
| 7  | Brush deck motors x 2                        | 18 | Vacuum hose                    |
| 8  | Side pod release lever                       | 19 | Waste-water emptying hose      |
| 9  | Floor-tool raise / lower lever               | 20 | Floor-tool vacuum hose         |
| 10 | Seat adjustment lever                        | 21 | Air separator assembly         |
| 11 | Separator release catches                    | 22 | Pedestrian warning light       |
| 12 | 40 Amp battery fuses x 2 (4 Battery Machine) | 23 | Water Pump                     |

## Control Panel Overview



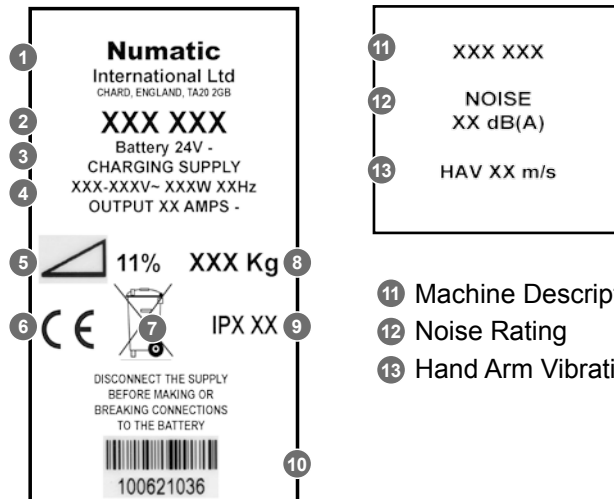
|          |                                  |           |                           |
|----------|----------------------------------|-----------|---------------------------|
| <b>1</b> | Battery Charge Level Meter       | <b>8</b>  | Emergency Stop            |
| <b>2</b> | Brush Operation / Load Indicator | <b>9</b>  | Horn Button               |
| <b>3</b> | Water Flow Rate Indicator        | <b>10</b> | Maximum speed control     |
| <b>4</b> | Waste-water 'Full' Indicator     | <b>11</b> | Traction Status Indicator |
| <b>5</b> | Off Aisle Vacuum Button          | <b>12</b> | Charging status light     |
| <b>6</b> | Main control On / Off key        | <b>13</b> | Hours Meter               |
| <b>7</b> | Forward / Reverse Switch         | <b>14</b> | Vacuum Hi / Lo Button     |

*For full easy to follow instructions on control panel set up and use, see machine operation page 14.*

## About the Machine

### Rating Label

- ① Company Name & Address
- ② Machine Description
- ③ Voltage Frequency
- ④ Power Rating
- ⑤ Max Gradient
- ⑥ CE Mark
- ⑦ WEEE Logo
- ⑧ Weight (ready to use)
- ⑨ Ingress Protection Rating
- ⑩ Machine year/week Serial number



- ⑪ Machine Description
- ⑫ Noise Rating
- ⑬ Hand Arm Vibration

### WEEE (Waste, Electrical and Electronic Equipment)

Scrubber dryer Accessories and packaging should be sorted for environmentally-friendly recycling.  
**Only for EU countries.**

Do not dispose of scrubber-dryer into household waste.

According to the European Directive 2002/96/EC on waste electrical electronic equipment and its incorporation into national law.

Scrubber-dryers that are no longer suitable for use must be separated, collected and sent for recovery in an environmentally-friendly manner.



### PPE (Personal protective equipment) that may be required for certain operations.

|                           |                 |                     |               |                        |
|---------------------------|-----------------|---------------------|---------------|------------------------|
|                           |                 |                     |               |                        |
| Ear Protection            | Safety Footwear | Head Protection     | Safety Gloves |                        |
|                           |                 |                     |               |                        |
| Dust/Allergens Protection | Eye Protection  | Protective Clothing | Hi-Vis Jacket | Caution Wet Floor Sign |

#### Note:

*A risk assessment should be conducted to determine which PPE should be worn.*

### Safety Critical Component

Charging Lead: H05VV-F x 1.0 mm<sup>2</sup> x 3 core

Motor Wheel & modified brake lead assembly (321450)

Battery Charger: 98A/H Stud Terminal Gel Type Battery

*In the event of a breakdown contact your Numatic dealer or the  
Numatic Technical help line +44 (0)1460 269268*

# Information for Scrubber Dryer



## ORIGINAL INSTRUCTIONS READ MANUAL BEFORE USE

| Component      | Interval        | Inspect for                                  |
|----------------|-----------------|----------------------------------------------|
| Mains Lead     | DAILY           | Scuffing, cracks, splits, conductors showing |
| Brushes        | DAILY           | Bristle damage, wear, drive collar wear      |
| Squeegee Blade | BEFORE EACH USE | Wear, cracks, splits                         |
| Filters        | BEFORE EACH USE | Clogging and debris retention                |
| Tanks          | AFTER EACH USE  | Rinse dirty water tank after use             |



### WARNING

As with all electrical equipment care and attention must be exercised at all times during its use, in addition to ensuring that routine and preventative maintenance is carried out periodically in order to ensure its safe operation.

Failure to carry out maintenance as necessary, including the replacement of parts to the correct standard could render this equipment unsafe and the manufacturer can accept no responsibility or liability in this respect. When ordering spare parts always quote the Model Number / Serial Number specified on the Rating Plate. Warning do not use on slopes exceeding 11%.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

When detergents or other liquids are used, read the manufacturer's instructions.



### CAUTION

This machine is not suitable for picking-up hazardous dust.

Do not use on surfaces having a gradient exceeding that marked on the appliance.

The machine is not to be stored outdoors in wet conditions.

This machine is for indoor use only.

Read the instruction manual before using the appliance.

This product meets the requirements of IEC 60335-2-72 Sub Clause 20.1.

## NOTES

This machine is also suitable for commercial use, for example in hotels, schools, hospitals, factories, shops and offices for other than normal housekeeping purposes.



### DO

- Ensure only competent persons unpack/assemble the machine.
- Keep your machine clean.
- Keep your brushes in good condition.
- Replace any worn or damaged parts immediately.
- Regularly examine the charger lead for damage, such as cracking or ageing. If damage is found, replace the lead before further use.
- Only replace the charger lead with the correct Numatic approved replacement parts.
- Ensure that the work area is clear of obstructions and / or people.
- Ensure that the working area is well illuminated.
- Pre-sweep the area to be cleaned.



### DON'T

- Use steam cleaners or pressure washers to clean the machine or use in the rain.
- Attempt machine maintenance or cleaning unless the power plug has been removed from the supply outlet, if the machine is in charge mode or remove the key if in normal use.
- Allow any inexperienced repairs. Call the experts.
- Strain charger lead or try to unplug by pulling on charger lead.
- Leave the brush deck in the lowered position when not in use.
- Allow the machine to be used by inexperienced or unauthorised operators or without appropriate training.
- Expect the machine to provide trouble-free, reliable operation unless maintained correctly.
- Run the machine over power cable during operation.



Only use brushes provided with the appliance or those specified in the instruction manual.  
The use of other brushes may impair safety.  
A full range of brushes and accessories are available for this product.  
Only use brushes or pads which are suitable for the correct operation of the machine for the specific task being performed.

It is essential that this equipment is correctly assembled and operated in accordance with current safety regulations.  
When using the equipment always ensure that all necessary precautions are taken to guarantee the safety of the operator and any other persons who may be affected.  
Wear non-slip footwear when Scrubbing.  
Use a respiratory mask in dusty environments.

The machine, while charging, must be positioned so that the mains plug is easily accessible.  
Remove the key from the ignition when cleaning and carrying out routine maintenance.  
When replacing major components the ignition key and battery fuses **MUST** be removed.

In order to prevent unauthorized use of the machine, the power source shall be switched off or locked, for example by removing the ignition key.

When detergents or other liquids are used, read the manufacturer's instructions.  
Operators shall be adequately instructed as to the correct use of the machine.  
If this product does not have a factory installed Numatic battery charger, then it is the responsibility of the owner and user of the product to ensure that the charging system and battery combination are compatible, fit for purpose and safe to use.

## Precautions when working with batteries

1. Always wear protective clothing e.g. face visor, gloves and overalls when working with batteries.
2. Whenever possible always use a properly designated and well-ventilated area for charging.  
Do not smoke or bring naked flames into the charging area.
3. Remove any metallic items from hands, wrists and neck i.e. rings, chains etc. before working on a battery.
4. Never rest tools or metallic objects on top of the battery.
5. When charging is complete disconnect from the mains supply.
6. The machine must be disconnected from the supply when removing the battery.
7. To remove the batteries:- Disconnect machine from the mains supply (if charging), raise waste water tank and ensure batteries are isolated by removing fuses. Disconnect hoses from separator and tanks, Undo battery terminals and remove batteries.
8. Only use genuine Numatic replacement batteries.
9. Do not allow the batteries to become fully discharged, it may not be possible to recharge them.
10. Do not allow one battery to be discharged separately to the other.
11. Do not mix batteries from different machines.
12. The batteries fitted to this product are Valve Regulated Lead Acid (VRLA) gel electrolyte type. The fitting of any other type of battery may cause a safety hazard.
13. The batteries must be removed from the machine before it is scrapped.
14. Dispose of the batteries safely in accordance with local government regulations.

## Battery care

1. Always recharge the batteries after use. This can be done at any time – it is not necessary to wait until they are fully discharged; they do not develop a “memory”.
2. Leaving the charger to operate for a minimum of 4 hours after the green light has come on, at least weekly, will prolong battery life.
3. Do not store the machine with the batteries discharged.

### Daily

Keep the machine clean.  
Ensure brushes/ pads/ squeegee/ filters are in good condition.  
Check for any worn or damaged parts and replace immediately.  
Drain and rinse dirty water tank after every use.  
Store machine with brush deck secured in tilted position.

### Weekly – as daily and –

Check brush or pad and skirt and rinse.  
Check floor tool blades for wear and wipe clean.  
Clean separator assembly including filter and check condition of seal.  
Flush out system with clean water and clean filters.  
Do not steam clean or pressure wash.

### Batteries

Always recharge the batteries after use.  
Charge for a minimum of 4 hours after the green light has come on, this will prolong battery life.

**TwinTec  
Maintenance**

# Quick Set-Up Guide

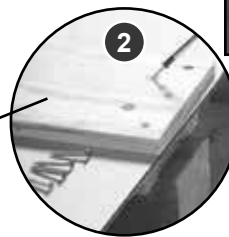
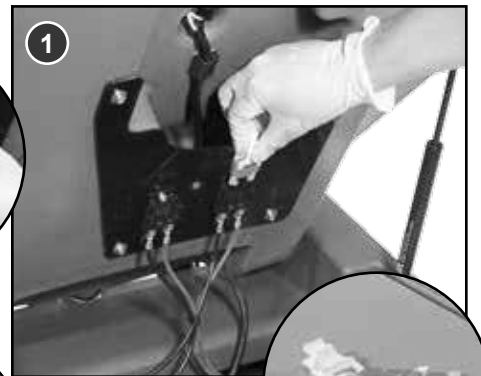
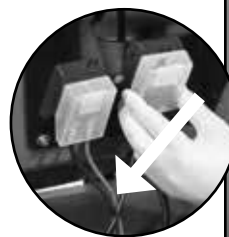
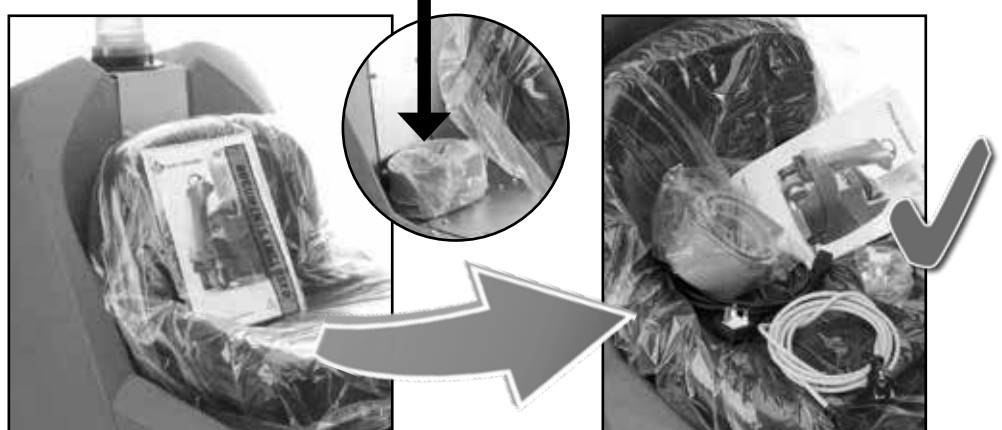


**PLEASE READ BEFORE COMMENCING ANY OPERATION.  
AFTER THE REMOVAL OF ALL THE PACKAGING,  
CAREFULLY OPEN AND CHECK THE CONTENTS OF THE START UP PACK.**



## Contents:

- 1 x Operator Manual
- 2 x Battery charging lead
- 2 x Keys
- 3 x 40 amp fuses (1 x spare)
- 2 x Side pod skirts
- 1 x Brake disengage key
- 1 x Maxi fuse-puller



Lift top tank assembly to reveal battery compartment.

Always lift between points as illustrated to ensure personal safety.

Fit battery fuses (contained in start-up pack) into the battery fuse holders as illustrated (Fig.1).

Remove transit block from pallet (Fig.2).

**Note:** Ensure that no metal objects come into contact with battery terminals while the batteries are exposed.  
When inserting the first fuse you may notice a spark, this is normal.



Insert key into main control (on / off) and turn quarter-turn clockwise to position (1) 'On' (Fig.3).

Ensure that the forward / reverse switch is set to forward (Fig.4).

Depress accelerator pedal with right foot and slowly drive machine off of the pallet using the ramp provided (Fig.5).

**Note:** The seat is fitted with a pressure sensor that disables the machine until an operator is seated.

When the machine is removed and in a safe position, turn key back to the position (0) 'OFF' (Fig.6).



## Machine Set-Up



**ALWAYS ENSURE THAT THE MACHINE IS SWITCHED OFF  
BEFORE MAKING ANY ADJUSTMENTS**



To fit the side pod skirts, first remove the steel retaining strip already fitted to the pod (Fig.7). Align the steel retaining strip within the locating grooves of the rubber skirt and refit using existing screws (Fig.8). Periodically the side skirts should be examined and checked for wear and damage. Replace as shown above.

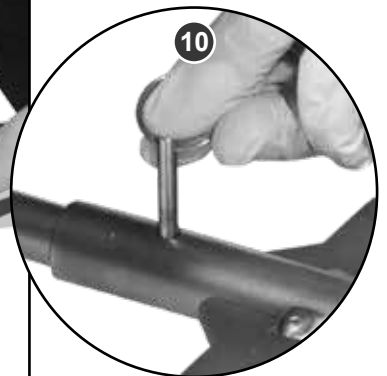
### Fitting the Floor-tool

Lower the floor-tool arm by moving the release lever to the upper position (Fig.9).

Push floor-tool onto the holder and secure with the easy-fit securing pin (Fig.10).

Push waste collection pipe onto the floor-tool; ensure a tight fit (Fig.11).

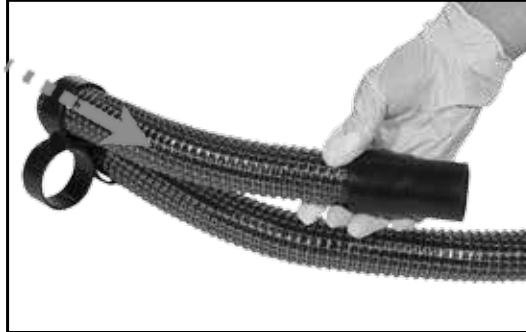
**Note: Raise floor-tool again before driving to the cleaning area (Fig.12).**



## Machine Operation

### Fitting the Hose Guide

The vacuum hose has a U-bend clip which creates a U-bend in the hose preventing water spillage when the vacuum is switched off. If you need to remove the U-bend clip for any reason always ensure it is refitted correctly before you resume operation.



Refit vacuum hose to the Floor-tool when finished.

#### **Note:**

*DO NOT push the vacuum hose onto the Floor-tool with the Floor-tool in the raised position.*



### Breakaway Floor-tool

The floor-tool design incorporates a safety knock-off feature.

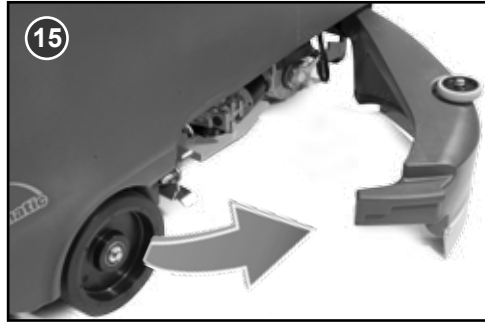
Allowing it to safely disengage from its mounting should it become caught on an obstruction, during forward machine movement.

To re-attach the floor-tool blade to its holder. First loosen the retaining knobs on the floor-tool body and slide onto the holding bracket.

Tighten retaining knobs to finger tight. (See Fig.13).

## Machine Set-Up

### Fitting the Brushes



**Featuring the OBS (Octagonal Brush System); the brushes simply push-fit up onto the chucks making fitting and removal a simple process.**

Pull the side pod adjustment lever and set to the top position (Fig.14).

The side pod will now pull open (Fig.15).

Fit outer brush next on both sides (Fig.16).

Close side pod.

**Safety gloves are recommended for the changing of used brushes.**

### Filling the Clean-water Tank

The TRO 650 is equipped with a large capacity 120 litre clean-water tank allowing, for large areas to be covered in a single fill.



To fill the clean-water tank, lift the cover flap (Fig.17) to expose the filler cap.

Unscrew the filler cap (Fig.18) and fill the tank using a hose (Fig.19) or preferred method.

**Note:** Great care must be taken to ensure that contaminants (leaves, hair, dirt, etc.) are not allowed to enter the clean-water tank during the filling process. If using a bucket or similar, ensure it is always clean and free from debris.



#### Fill-level indicator

The water level in the clean-water tank can be measured using the scale on the rear of the machine (Fig.20).

**Note:** always ensure that the waste-water tank is empty before lifting.

## Machine Set-Up



**IMPORTANT**  
*Do not operate machine unless the Operator Manual has been read and fully understood.*



### Maximum Speed Control



Use the maximum speed control knob and set desired traction speed as required, depending on floor type and level of soiling.

Middle speed is the optimum cleaning speed for most types of floors.

Once the Max speed has been set using the control knob on the control panel, fine adjustments can be made using the variable control speed pedal located on the right side of the footplate.



### Emergency Stop Button and Horn



The TRO 650 is equipped with an **electronic braking system**. Simply lift your foot from the accelerator and the machine will stop. In an emergency, strike the emergency-stop isolator button. The machine will be disabled.

To reset, turn isolator button clockwise (see Fig.21).

After resetting the emergency stop button, to restart the machine, turn the ignition key to (0) 'OFF' then to position (1) 'ON' again.

The **horn** is located on the right-hand side of the operator control panel (see Fig.22).



### Adjusting the Seat



Sitting in the driving position, adjust the seat forwards or backwards as necessary by using the lever found on the left-hand side (see Fig.23).

**Note: The seat is fitted with a pressure sensor that disables the machine until an operator is seated.**

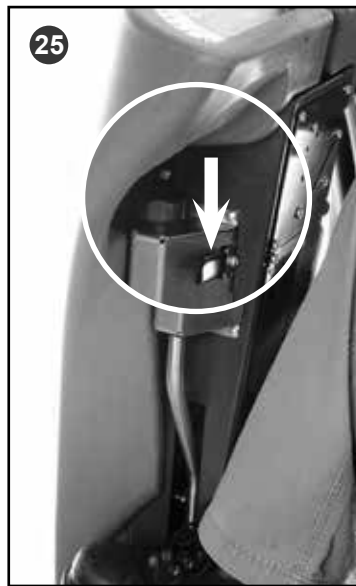
The machine is now ready to be driven to the cleaning site.



Before performing the cleaning operation, place out appropriate warning signs and sweep or dust-mop the floor.

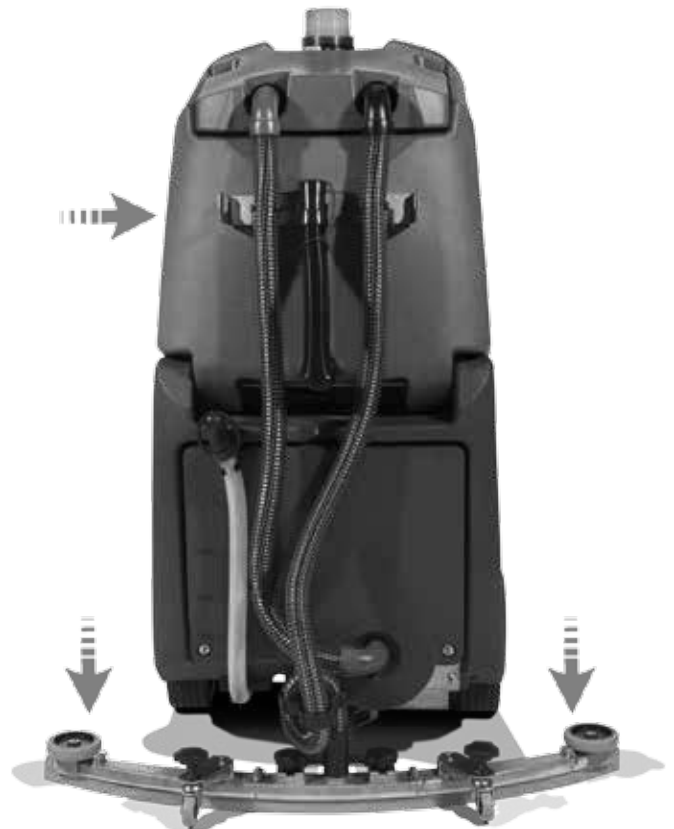
## Machine Set-Up

### Lowering the Brush Deck



After preparing the floor (see previous section), we are now ready to set the controls to suit the cleaning conditions. Before any settings can be applied, ensure the brush deck is lowered. While depressing left-hand foot pedal (see Fig.24), press down the release lever (see Fig.25) and gently release the foot pedal to lower the brush deck (see Fig.26).

### Lowering the Floor-tool



Lower the floor-tool by moving the release lever to the upper position (Fig.27).

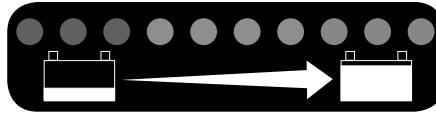
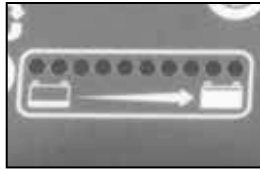
**Note:** The machine will not reverse while the floor-tool is in the lowered position - 'Causes the battery indicator to flash'.

# Machine Operation

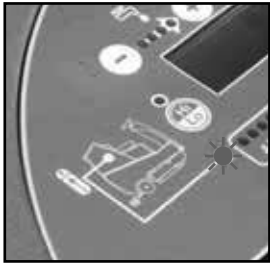
## Setting the Cleaning Controls



Insert the key into the ignition and quarter-turn it clockwise to position (1) 'ON'. The battery charge-level indicator will illuminate.



## Waste-water Tank Fill Level Warning Light

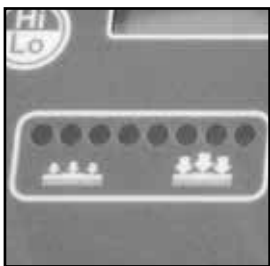


When the waste-water tank becomes full, a red warning light will illuminate on the operator control panel (as illustrated) and the vacuum motor will stop automatically.

The waste-water tank requires emptying (see page 16).



## Brush pressure / Load adjustment



The machine is equipped with a brush-pressure load-warning system. If the brush load increases due to changing floor types, the pressure can be adjusted manually by the operator using the adjuster knob found on the left hand side of the control column.



Turn it anti-clockwise to decrease load on the brushes and clockwise to increase load/pressure on the brushes (see Fig.28).

**Note:** The run-time of the machine may decrease if the load on the brushes is increased.

# Machine Operation



**ALWAYS ENSURE THAT THE FLOOR IS PRE-SWEPT  
AND RELEVANT SAFETY SIGNS ARE DISPLAYED**



## Machine In Use

To operate, select forward or reverse, press the accelerator pedal. Vacuum pick-up and water-flow will turn on if selected and the brush and floor tool are in the lowered position, the machine will move forward.

The clean water is dispersed evenly via 'THRU-FEED' scrubbing brushes.

The waste water is then retrieved by the suction floor-tool (see Fig.29). Overlap each scrubbing path by 10cm to ensure an even clean.

Do not operate the machine on inclines that exceed 11%.

**Note:** Care must be taken to reduce speed when cornering or when manoeuvring around obstacles..



If streaking occurs wipe floor-tool blades clean.

On heavily soiled floors use a 'double scrub' technique.

First pre-scrub the floor with the floor-tool in the raised position, allow the chemical time to work then scrub the area a second time with the floor-tool lowered.

## Hi / Lo Vacuum Mode Selection

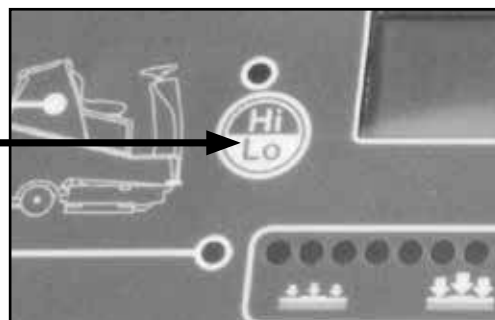


The TRO 650 has been fitted with a Hi - Lo function, this reduces the noise produced by the vacuum motor.

To operate the Hi - Lo mode start the machine in the normal way.

When the machine is running normally the Hi - Lo light will be illuminated Blue. This means the Vacuum motor is running at 100%. ●

With the machine running press the Hi - Lo button once the Vacuum motor will reduce its speed to 75% of capacity and the Hi - Lo light will NOT illuminate Blue.



## Machine Cleaning



**ALWAYS ENSURE THAT THE MACHINE IS SWITCHED OFF PRIOR TO ANY MAINTENANCE.**



After use, empty waste-water tank using emptying hose **(A)** and flush-out with clean-water.

Next remove floor-tool vacuum hose and flush out with clean-water. **(B)**

Next empty clean-water tank, using emptying hose **(C)** and again flush out with clean-water.



Before removing separator, first pull-off connected hoses. Whilst pressing in the separator toggles, remove hood and rinse using clean-water. The hood also has a sealing-rubber which should be examined at every clean-down.



Located in your waste-water (top) tank is a full tank switch, this stops your machine from working once the waste-water reaches its maximum limit. Sometimes the switch gets clogged and blocked, clean to ensure correct operation.



Remove white filter and rinse using clean-water, and refit.

### **IMPORTANT:**

Never use the machine without the recommended filter as it may cause damage to the machine.



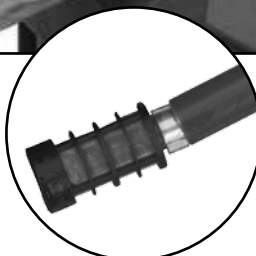
Remove debris basket filter and rinse using clean-water, and refit.

### **IMPORTANT:**

If the debris basket is allowed to become clogged, vacuum performance can deteriorate.



The clean debris basket filter is located under the filler cap. Remove debris basket filter and rinse using clean-water, and refit.



The secondary clean-water tank filter is located to the rear of the battery compartment, and should be checked at regular intervals. Lift white plug and remove the filter, rinse and refit. Ensure tank has been emptied and care is taken when working in the vicinity of batteries.

**NOTE: ANY SPILLS SHOULD BE WIPED-UP BEFORE TANK IS LOWERED.**

## Changing the Floor Tool Blades

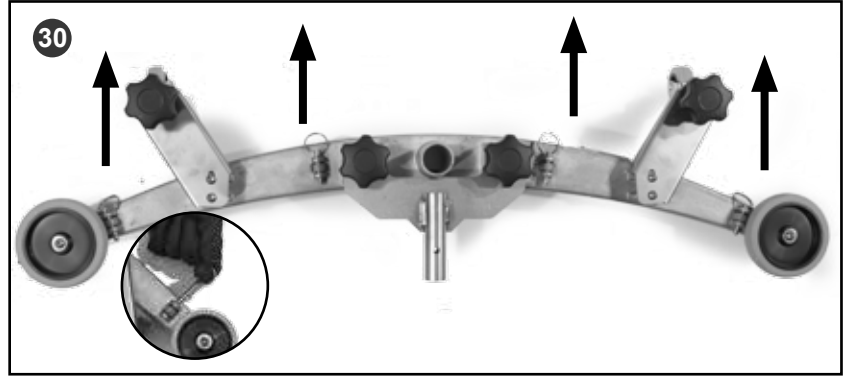


**ALWAYS ENSURE THAT THE BATTERY IS DISCONNECTED  
PRIOR TO ANY MAINTENANCE**



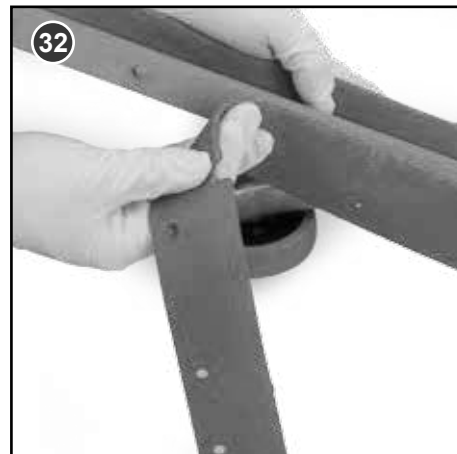
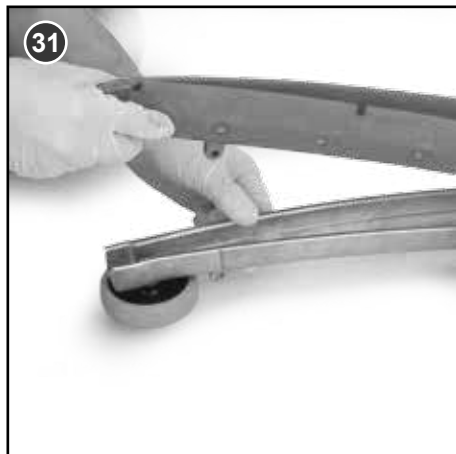
### The Floor Tool

The TRO 650 is provided with the aluminium floor-tool shown.



To clean the floor-tool, remove securing-pin and disconnect the lifting strap and remove the floor-tool securing pin pull-free the floor-tool from the rear of the machine.

Rinse the floor-tool assembly with clean water and refit.

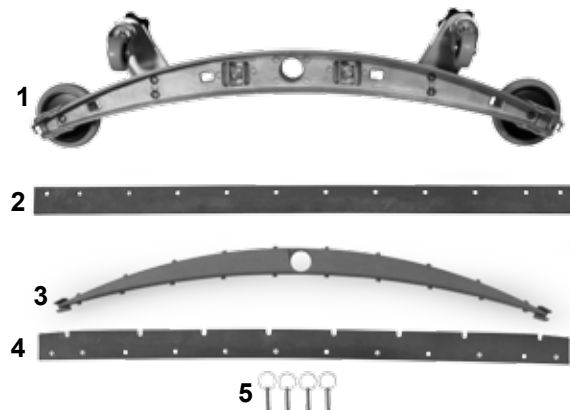


Periodically the floor-tool blades should be examined and checked for wear and damage.

The blade removal is easy. Simply start by removing the four retaining pins (see Fig.30), turn the floor-tool over and separate the blade carrier from the body (see Fig.31). Peel away the blades from their locating lugs (see Fig.32) and examine or renew as required. Replacement is a reversal of the removal process.

### Floor-tool overview

1. Floor-tool main body
2. Rear blade
3. Blade carrier
4. Front blade (slotted)
5. Retaining pins x 4



#### **Note:**

*Floor Tool adjusters are factory set for optimal performance.  
The blades are designed to be reversible, thus extending their useful working life.*

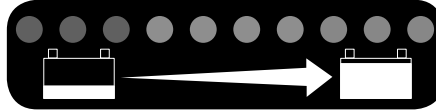
## Machine Charging



**ALWAYS ENSURE THAT THE MACHINE IS SWITCHED OFF PRIOR TO CHARGING.**



The battery meter displays the charge level of the batteries; when fully charged, all meter lights are illuminated (see Fig.33).



As the machine is used and the batteries are discharged, the meter lights will go out from right to left.



If the battery-charge level is allowed to discharge to the point that only the red light remains illuminated, the operator must consider charging the machine.



If the battery-charge level is allowed to discharge to the point that only one red light remains illuminated (and begins to flash), all cleaning functions will automatically be disabled and the operator should drive the machine straight to a suitable charge point.



The large capacity gel batteries are sealed for life and are totally maintenance free. The on-board charger automatically monitors the charging process and will switch off when the batteries are fully charged. The machine charging point is located under the top tank. (see Fig.34).



Insert the charging lead required for your country into the charging point and connect to a suitable power supply (see Fig.35).



Once the charging lead has been connected the red charging indicator will illuminate (fig.36) and the display panel will show 'INHIBITED' and the battery level display lights will flash in unison. The machine will not operate.

To ensure a full charge, the machine should be left for a period of 8 hrs.

Once fully charged, disconnect the charging lead from both the power supply and the machine.

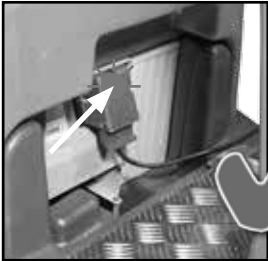
## Battery Care



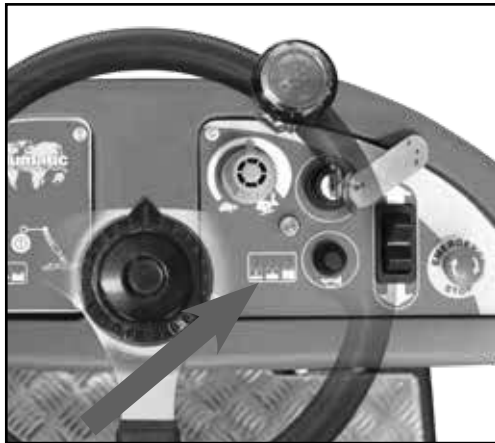
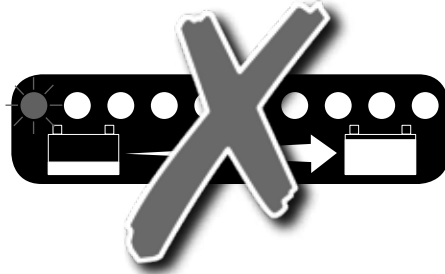
To ensure your machine remains at its maximum efficiency and prolong your battery life, please follow the simple steps below:

### Under normal daily usage:

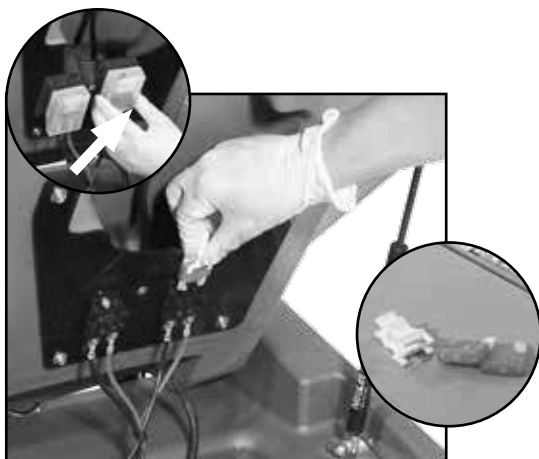
Recharge batteries after each use regardless of machine operation time.



Recharge the machine fully after its last use. Do not leave the machine in a discharged state.



| Signal (LED) |                 | Meaning                                                                                                                                                                                                                                                                        |
|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Yellow          | Charging Normally, 23 hours MAX                                                                                                                                                                                                                                                |
|              | Yellow flashing | Charging Finished, (Trickle Charging)                                                                                                                                                                                                                                          |
|              | Green           | Fully Charged                                                                                                                                                                                                                                                                  |
|              | Red             | Remove Mains Supply<br>Failure of charger profile –<br>corrective action replace faulty battery<br><br>Charging stopped. Time out timer expired (27hrs)<br>- corrective action replace faulty batteries<br><br>Internal charger failure –<br>corrective action replace charger |

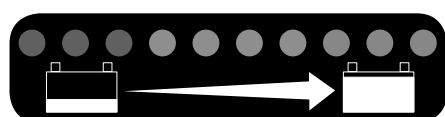


### Under abnormal use; i.e. leaving the machine without charging for a period of time, we advise that you follow these steps:

If the machine will be standing unused for a period of 30 days or more, then batteries must be fully charged and battery fuses removed using the Maxi fuse-puller provided, prior to this period.



Batteries should be recharged every three months.  
Charge fully the day before you start using the machine again.



## Free-wheel Function & Towing



**ALWAYS ENSURE THAT THE MACHINE IS ON LEVEL GROUND BEFORE DISENGAGING BRAKE ARM. NEVER DISENGAGE THE BRAKE WHEN THE MACHINE IS ON A SLOPE / GRADIENT. NEVER TOW THE MACHINE WITH THE BRAKE ENGAGED AND POWER PLUG CONNECTED! REMOVE BATTERY FUSES**



The TTV 678 is equipped with a free-wheel function that will enable the operator to move / tow the machine. The motor brake is disengaged by opening the brake arm on the side of the drive wheel (see Fig.41).

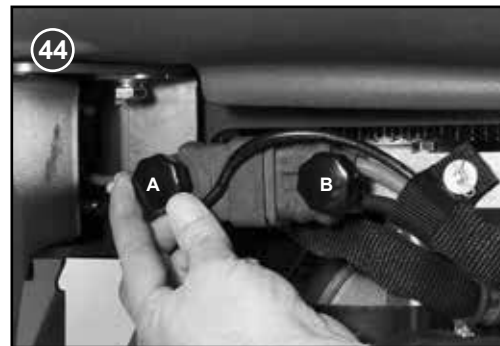


Your start-up kit includes a brake drive disengage key (329945, see Fig.42) which can be inserted between the brake arm and drive housing (see Fig.43).



Once the key has been inserted (see Fig.43) the motor brake will be fully disengaged.

**The machine will now be in full free-wheel mode.**

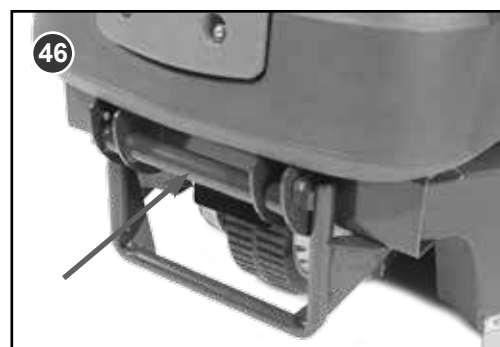


Undo and remove the two retaining knobs (fig.A&B).



Pull the power connector block apart and refit the two retaining knobs.

When destination place reached, remove brake disengage key, connect power plug, fit fuses



When towing the machine ensure that a suitable tow bar is used.

Care must be taken when towing; WHEN TOWING DO NOT EXCEED AVERAGE SPEED OF 3 KPH.

The machine can be towed from the front bar as indicated (see Fig.46).



**WARNING!**  
**WHEN THE BRAKE IS DISENGAGED AND POWER PLUG IS DISCONNECTED THE MACHINE IS IN FREE-WHEEL MODE AND HAS NO BRAKE FACILITY, WHEN TOWING THE MACHINE ENSURE THAT A SUITABLE TOW BAR IS USED.**

Remember to remove the brake disengage key when you reach your final destination / before using the machine. NOT FOLLOWING DESCRIBED METHOD COULD DAMAGE MAIN CONTROL UNIT AND VOID THE WARRANTY



## Off-Aisle Cleaning Kit (Optional Extra Accessory)

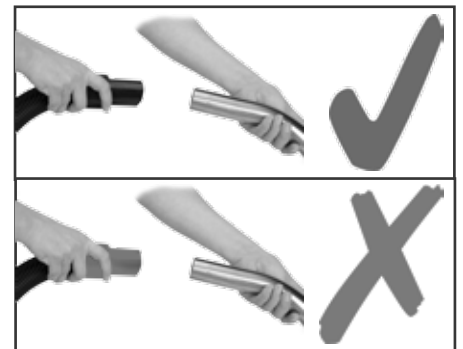
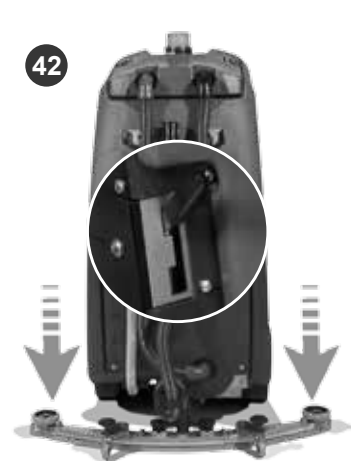


The optional off-aisle cleaning kit gives added flexibility to the operator. The kit can be used to clean hard to reach / inaccessible areas.

To operate the vacuum, press the off aisle vacuum button on the control panel (fig.41). Pressing the Off aisle Button again will switch the vacuum off.

The machine will need to be reset for normal use, when finished using the off-aisle kit.

Return the hose to the floor-tool once finished using the off-aisle facility (fig.42).



Off-Aisle Accessory Kit  
(Optional) (606182)



*In the event of a breakdown contact your Numatic dealer or the  
Numatic Technical helpline +44 (0)1460 269268  
(See back page for company addresses or dealers stamp)*



## Warning light flashes explained

○ Green Flashing Warning light.

| Green Status Indicator               | Fault                        | Possible Cause                                                                                                                                                                                                                                   | Effect on Product                                           | Investigate the Following                                                                                                                                                                                                                                                                                                           | Action Required                                                                                                                              | If fault persists     |
|--------------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| 1 Flash with pause<br>○              | Batteries voltage low        | Batteries not been charged<br>Possible bad connection between batteries, controller, charger or fuses caused by loose connections , damaged wiring , water ingress<br>Not accepting charge due to faulty battery/cell<br>Charger not functioning | Operating time severely reduced or machine will not operate | Check when machine last charged<br>Switch OFF the machine :<br>Remove Fuses<br>Check connections to batteries, charger and fuses for loose wires or screws<br>Check each battery Voltage individually to detect defect unit 10.5V min<br>Check battery voltage and charge current ensuring charger red fault light is extinguished. | Charge batteries immediately<br>Tighten loose connections and replace damaged components<br>Replace batteries as required<br>Replace charger |                       |
| 2 Flashes with pause<br>○○           | Traction motor disconnected  | The motor has a bad connection<br>Motor disconnected<br>TCO activated (Thermal cut Out)<br>Motor failed open circuit                                                                                                                             | Motor will not operate                                      | Check all connections and leads between the motor and controller                                                                                                                                                                                                                                                                    | Tighten loose connections and replace damaged components.                                                                                    |                       |
| 3 Flashes with pause<br>○○○          | Traction motor wiring Trip   | The motor has a short circuit to a battery                                                                                                                                                                                                       | Motor will not operate                                      | Check all connections and leads between the motor and controller                                                                                                                                                                                                                                                                    |                                                                                                                                              | Contact Service Agent |
| 4 Flashes with pause<br>○○○○         | Battery Lockout              | The battery charge level has fallen below the battery lockout level and the controller is inhibiting machine functions                                                                                                                           | Machine functions not working                               | Check battery voltage and charge current ensuring charger red fault light is extinguished.<br>Check each battery Voltage individually to detect defect unit 10.5V min                                                                                                                                                               | Charge batteries immediately                                                                                                                 |                       |
| 6 Flashes with pause<br>○○○○○○       | Charger Connected            | The controller is being inhibited from driving, This may be because the battery charger is connected                                                                                                                                             | Machine functions not working                               | Remove Charger to operate machine                                                                                                                                                                                                                                                                                                   |                                                                                                                                              |                       |
| 8 Flashes with pause<br>○○○○○○○      | Controller Trip              | A controller trip is indicated                                                                                                                                                                                                                   | Machine functions not working                               | Check all connections and leads                                                                                                                                                                                                                                                                                                     | Tighten loose connections and replace damaged components                                                                                     |                       |
| 9 Flashes with pause<br>○○○○○○○○○    | Brake Deactivated or Failed. | Poor brake connections.<br>Brake failure or deactivation.                                                                                                                                                                                        | Traction drive disabled.                                    | Check brake wiring and brake lever.                                                                                                                                                                                                                                                                                                 | Replace brake or wiring as necessary.<br>Reactivate brake by engaging brake lever.                                                           |                       |
| 10 Flashes with pause<br>○○○○○○○○○○○ | High Battery Voltage         | Poor connections between battery controller and traction motor                                                                                                                                                                                   | Machine functions not working                               | Check each battery Voltage individually to ensure voltage < 14 volts<br>Check connections on controller batteries and traction motor<br>Check combined battery pack voltage is < 28 volts                                                                                                                                           |                                                                                                                                              |                       |

## LCD Display

| LCD Display    | Fault                                     | Possible Cause                                                                                          | Effect on Product                                                                                                                   | Investigate the Following                                               | Action Required                                           | Contact Service Agent |
|----------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------------|-----------------------|
| Blank          | * No power                                | * Key switched off<br>* Emergency stop pressed                                                          | * Machine will not operate                                                                                                          | * Key switched off<br>* Emergency stop pressed                          | * Switch key on<br>* Release emergency stop               |                       |
| 'OVER CURRENT' | * Brush over current                      | * Brush pressure too great.<br>* Brush current exceeds 32A<br>* Wrong type of brush for surface         | * Vac. Brush, water & Detergent motors / pump will not operate<br><br>* Brush LED's all flash in unison until the Pedal is released | * Release brush pressure<br>* Change type of brush<br>* Restart machine |                                                           |                       |
|                | 'UNDER VOLTS'                             | * Battery voltage dropped below 21 Volts<br>* Left most Battery LED flashes                             | * Batteries require recharging<br>* Faulty cell on battery                                                                          | * Battery leads and connections                                         | * Charge Batteries<br>* Replace battery (if cell damaged) |                       |
| 'TANK FULL'    | * Waste (Top) Tank full requires emptying | * Waste Tank Float switch activated whilst cleaning or off-aisle mode selected<br>* Faulty Float switch | * Vac, Brush, water & Detergent motors / pump will not operate                                                                      | * Waste (Top) Tank full LED illuminated<br>* Top waste tank full        | * Empty Waste (Top) Tank<br>* Replace float switch        |                       |
| 'INHIBITED'    |                                           |                                                                                                         | MACHINE INHIBITED - NO OPERATION                                                                                                    |                                                                         |                                                           |                       |



To view TRO 650 run-time information turn the key to position (1) 'ON'.

Press the run-time information button to cycle between the different modes.

T = Total run-time.

V = Vacuum total run-time.

B = Brush total run-time.

W= Water Pump total run-time.



## Trouble Shooting

| PROBLEM                              | CAUSE                                                                                                                                                                                                                                                                                               | SOLUTION                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Machine will not operate             | Missing or blown fuses<br>Key in the 'OFF' position<br>Low battery charge<br>Machine isolator button in 'OFF' mode<br>Machine is connected and charging<br>Waste tank full switch stuck or clogged                                                                                                  | Fit or replace fuse (page 8)<br>Turn key to 'ON' position (page 8)<br>Charge batteries (page 18)<br>Reset isolator (page 12)<br>Take off charge (page 18)<br>Inspect and clean switch (page 14 & 16)                                                                                                                       |
| Vacuum will not operate              | Floor tool in raised position<br>Waste water tank full                                                                                                                                                                                                                                              | Lower floor-tool (page 13)<br>Empty waste water tank (page 16)                                                                                                                                                                                                                                                             |
| Poor water pick-up                   | Waste-water tank full<br>Clogged / blocked vacuum hose<br>Loose hose connections<br>Debris basket filter clogged / blocked<br>Separator filter clogged / blocked<br>Poor separator seal<br>Damaged separator seal<br>Damaged / split vacuum hose<br>Damaged floor-tool blades<br>Low battery charge | Empty waste-water tank (page 16)<br>Remove and clean (page 16)<br>Push tight connections (page 9)<br>Remove and clean (page 16)<br>Remove and clean (Page 16)<br>Clean and refit (page 16)<br>Renew (contact service dept)<br>Renew (contact service dept)<br>Renew (contact service dept)<br>Recharge batteries (page 18) |
| No brush / scrub function            | No brushes fitted<br>Brush deck raised                                                                                                                                                                                                                                                              | Check and fit (page 11)<br>Lower brush deck (page 13)                                                                                                                                                                                                                                                                      |
| Little or no water flow              | Clean-water tank empty<br>Clean-water tank filter blocked/ clogged<br>Incorrect water flow setting<br>Brush deck raised                                                                                                                                                                             | Fill clean-water tank (page 11)<br>Remove and clean (16)<br>Adjust as desired (Page 14)<br>Lower brush deck (page 13)                                                                                                                                                                                                      |
| Machine just 'stops' while operating | Too much load on the brush system                                                                                                                                                                                                                                                                   | Reset the machine using the key and decrease the brush load to best suit the floor type (page 14)                                                                                                                                                                                                                          |

*In the event of a breakdown contact your Numatic dealer or the  
Numatic Technical helpline +44 (0)1460 269268  
(See back page for company addresses or dealers stamp)*

## Specifications

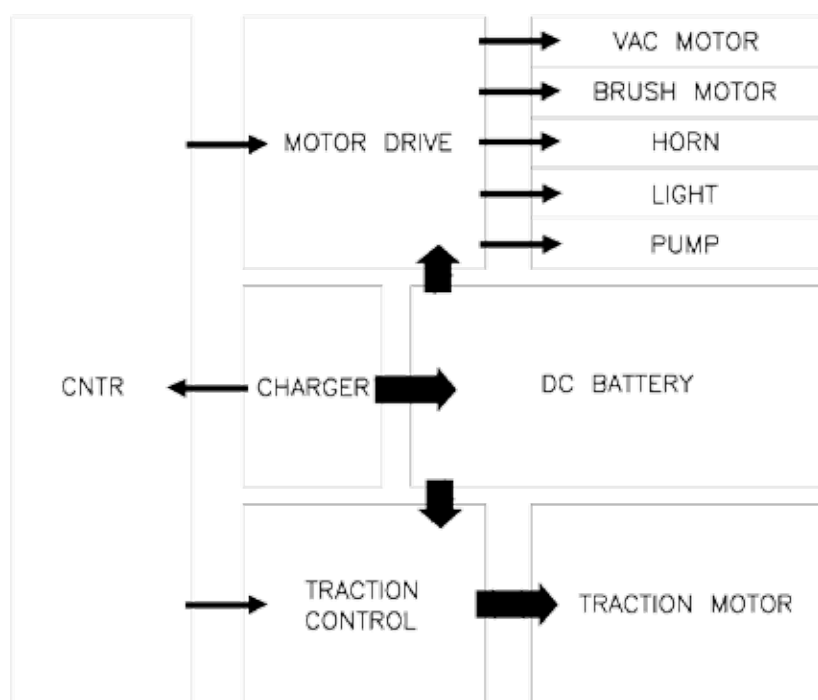
| Brush Motors      | Vac Motor                  | Power                 | Noise                                      | Run Time                                                   | Traction Drive | Transit Speed | Cleaning Speed                                           | Climbing Gradient                   | Scrub Widths | Protection Class                         |
|-------------------|----------------------------|-----------------------|--------------------------------------------|------------------------------------------------------------|----------------|---------------|----------------------------------------------------------|-------------------------------------|--------------|------------------------------------------|
| 2 x 24 V<br>400 W | 24 V<br>600 W              | 4 x 12 V =<br>200 Ahr | ≤ 70 dB(A)                                 | 3 hrs                                                      | 600 W          | 0-7.0<br>km/h | 0-3.5<br>km/h                                            | 11%                                 | 650 mm       | IPX4                                     |
| Charging Time     | Brush Speed                | Water Capacity        | Water Flow rate                            | Hand Arm Vibration Measurement                             |                |               | Whole Body Vibration Measurement                         |                                     |              | Dimensions                               |
| 8 hrs             | 200 rpm                    | 120 L                 | 1 L/min<br>1.5 L/min<br>2 L/min<br>3 L/min | 2.1 m/s <sup>2</sup><br>(BS EN ISO 5349)<br>Uncertainty 1% |                |               | 0.525 m/s <sup>2</sup><br>(ISO 2631-1)<br>Uncertainty 1% |                                     |              | H - 1425 mm<br>L - 1676 mm<br>W - 944 mm |
| RTU Weight        | RTU Weight + 75Kg Operator |                       | NET Weight                                 | NET Weight Less Batteries                                  |                |               | Battery Weight                                           | Battery Dimensions                  |              |                                          |
| 490 Kg            | 565 Kg                     |                       | 370 Kg                                     | 246.8 Kg                                                   |                |               | 30.8 Kg                                                  | H - 210mm<br>L - 330mm<br>W - 170mm |              |                                          |

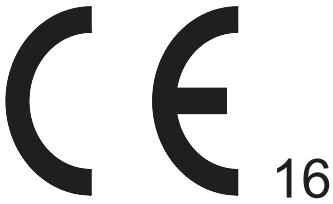
\*RTU = Ready To Work

## Spare Parts & Accessories

| <b>BRUSHES:</b>  |                                               | <b>GENERAL PARTS:</b>           |                            |
|------------------|-----------------------------------------------|---------------------------------|----------------------------|
| <b>606174</b>    | 330mm Octo Polyscrub Brush                    | <b>206953</b>                   | Detent Pin                 |
| <b>606172</b>    | 330mm Octo Nyloscrub Brush                    | <b>208167</b>                   | Spare Set of Keys (2 Keys) |
| <b>606253</b>    | 330mm Octo High Density Nyloscrub Brush       | <b>208165</b>                   | Bulb                       |
| <b>606176</b>    | 330mm Octo Longlife (Green) Brush             | <b>280001</b>                   | Seat Cover                 |
| <b>606407</b>    | 330mm Padloc Octo Drive Board                 | <b>206947</b>                   | Splash Skirt               |
| <b>SQUEEGEE:</b> |                                               | <b>206939</b>                   | Rear Wheel                 |
| <b>900522</b>    | Complete 750mm Squeegee Assembly              | <b>220386</b>                   | Charging Lead V17 - UK     |
| <b>900519</b>    | Squeegee 750mm Blade Set - Serilor PU FR & RR | <b>221079</b>                   | Charging Lead V34 - Euro   |
| <b>208497</b>    | Squeegee Castor                               | <b>221047</b>                   | 40 AMP Maxi Fuse           |
| <b>208796</b>    | Squeegee Buffer Wheel                         | <b>DRIVE MOTOR SPARE PARTS:</b> |                            |
| <b>FILTERS:</b>  |                                               | <b>321450</b>                   | Drive Wheel Unit           |
| <b>208360</b>    | Weighted Filter                               | <b>321506</b>                   | Brake                      |
| <b>208417</b>    | Filter Basket                                 | <b>208145</b>                   | Wheel                      |
| <b>206439</b>    | Basket Filter                                 | <b>208146</b>                   | Armature Brush             |
| <b>208790</b>    | Bottom Tank Filter                            | <b>208147</b>                   | Motor Brush                |
| <b>206265</b>    | Barrel Filter (Separator)                     | <b>208148</b>                   | Friction Disc              |
| <b>HOSES:</b>    |                                               | <b>208149</b>                   | Rubber Gasket              |
| <b>213059</b>    | Floor-tool Hose                               | <b>208151</b>                   | Pinion                     |
| <b>213060</b>    | Vac Hose                                      | <b>208152</b>                   | Steering Chain             |
| <b>280018</b>    | Top Tank Hose                                 | <b>208153</b>                   | Steering Chain Master Link |
| <b>213025</b>    | Bottom Tank Dump Hose                         |                                 |                            |
| <b>304439</b>    | Hose Closure (Bottom Tank)                    |                                 |                            |
| <b>900903</b>    | Hose Closure (Top Tank)                       |                                 |                            |
| <b>237718</b>    | Hose Guide                                    |                                 |                            |

## TRO 650 - Schematic Diagram





**EU DECLARATION  
OF  
CONFORMITY**

We hereby declare under our sole responsibility that the following equipment fulfils all the relevant provisions of the following EU Directives:

Machinery Directive 2006/42/EC

EMC Directive 2014/30/EU

RoHS Directive 2011/65/EU

**Machine Description:**  
**Type: TTV, TRO, CRO series**

**Scrubber Dryer**

**Manufactured by: Numatic International Limited**

Relevant standards upon which conformity is declared include:

IEC 60335-1 2001 + A1 2004 + A2 2006 + National  
Deviations

IEC 60335-2.72 Ed 2.0

EN 55014-1:2006

EN55014-2:1997+A1

EN61000-3-2:2006

EN61000-3-3:1995+A1+A2

BS EN 62233:2008

A technical construction file for this equipment is retained at the manufacturer's address under the authorisation of the following signatory:

**Name: Allyn Boyes**

**Position: Technical Manager**

Signed:

Date: 20/04/2016



Numatic International Limited,  
Chard, Somerset.  
TA20 2GB  
[www.numatic.co.uk](http://www.numatic.co.uk)

**GB**

# **Numatic International** *Warranty*

Numatic International Limited warrant to the original purchaser that its products are free of defects in both material or workmanship for the period shown below:-

|                                                      |                     |
|------------------------------------------------------|---------------------|
| Homecare and Cleancare Vacuum cleaners.....          | 2 Years             |
| Rotary Floor Machines.....                           | 2 Years             |
| Twintec Auto Scrubber Dryer.....                     | 1 Year              |
| Vario Ride-On Scrubber Dryer.....                    | 1 Year / 1500 hours |
| Mopping, Compacts, Combi and Servocare Products..... | 1 Year              |
| Individual Accessories and Spare Parts.....          | 6 Months            |

Note: This warranty expressly excludes consumable parts such as carbon brushes, floor brushes, mops, batteries etc, that are considered replaceable from time to time during the normal working life of the machine.

A. The warranty period commences from the date the goods are purchased.

B. All warranty claims must be processed through the Dealer from whom the equipment was purchased. The Dealer will co-operate with the purchaser throughout the warranty claims procedure and will arrange any necessary repairs using genuine Numatic parts.

C. If the original Dealer is no longer able to fulfil his obligations please contact Numatic International Limited with full details of the claim and proof of purchase so that this may be processed without delay.

D. Any warranty claim can only relate to the specific part that is proven to be at fault and for which a replacement will be supplied but cannot be extended to constitute a claim against the complete machine.

E. Numatic International will supply the Dealer with any warranty parts required, subject to the claim being validated, after return of the faulty items in accordance with Numatic International Limited's General Conditions of Sale.

F. Claims will not be accepted if they are the result of fair wear and tear, misuse or abuse of any kind.

G. No replacement will be given unless the appropriate evidence of the validity of the claim has been provided to the satisfaction of Numatic International Limited.

H. Numatic International Limited reserve the right to charge for any unnecessary work carried out as a result of an invalid claim.

I. No variation to this warranty may be made or implied by any member of Numatic International Limited or its Dealers unless such variation is in writing and authorised by the Company



Numatic International Limited. Chard, Somerset, TA20 2GB  
Telephone: 01460 68600 Fax: 01460 68458

© Numatic International Limited

|                                                 |
|-------------------------------------------------|
| This machine has been packed with the following |
| Charging Lead                                   |
| Fuses                                           |
| Break Disengage Key                             |
| Hose Hook                                       |
| 38 / 32 mm Adaptor                              |
| Signed                                          |

# TRO 650



Distributed by



Numatic International Limited  
 Chard, Somerset  
 TA20 2GB ENGLAND.  
 Telephone: 01460 68600 Fax: 01460 68458  
[www.numatic.co.uk](http://www.numatic.co.uk)

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