
SERVICE MANUAL

Simpro Dumpmaster





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For reasons of standards compliance and international conformity, this document uses Système international (SI) units. These may be converted to their Imperial equivalents as follows:

1 kilogram (kg) = 2.2 pounds (lb)

1 metre (m) = 1000 millimeters (mm) = 1.09 yards (yd) = 39.37 inches (in)

The following textual conventions are used throughout this document:

 Text in GREEN indicates a point of particular interest or importance.

 Text in RED indicates a point of warning, or a safety hazard.

Any errors in this document should be reported by email to info@simpro.world.

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1 Dumpmaster Overview

Dumpmaster bin tippers use hydraulic force to safely raise and invert bins. The hydraulic oil pressure is supplied by a 'powerpack', which may be powered either by batteries, 1-phase or 3-phase mains electricity, or compressed air (for hazardous environments).

When the 'Raise' button is pressed, a motor drives a pump which forces hydraulic oil under pressure into the lift ram, causing it to extend. The ram has two chain rollers on one end; as it extends, two chains are pulled evenly around the rollers. These chains go up to the top of the machine; one goes around a roller and down inside the 'near' mast, and the other goes across the top and down inside the 'far' mast. The chains are attached to plates that run inside the masts; these plates lift the main axle of the bin cradle.

When the 'Down' button is pressed, a valve opens and the oil passes back into the tank at a controlled rate. The bin and cradle are not powered down – they come down by gravity alone. A track and roller arrangement at the top of the cradle guides the bin straight up until it reaches the correct height, then gently rolls it forward. The whole action is smooth and efficient, and can handle very heavy bins continuously with little or no maintenance.

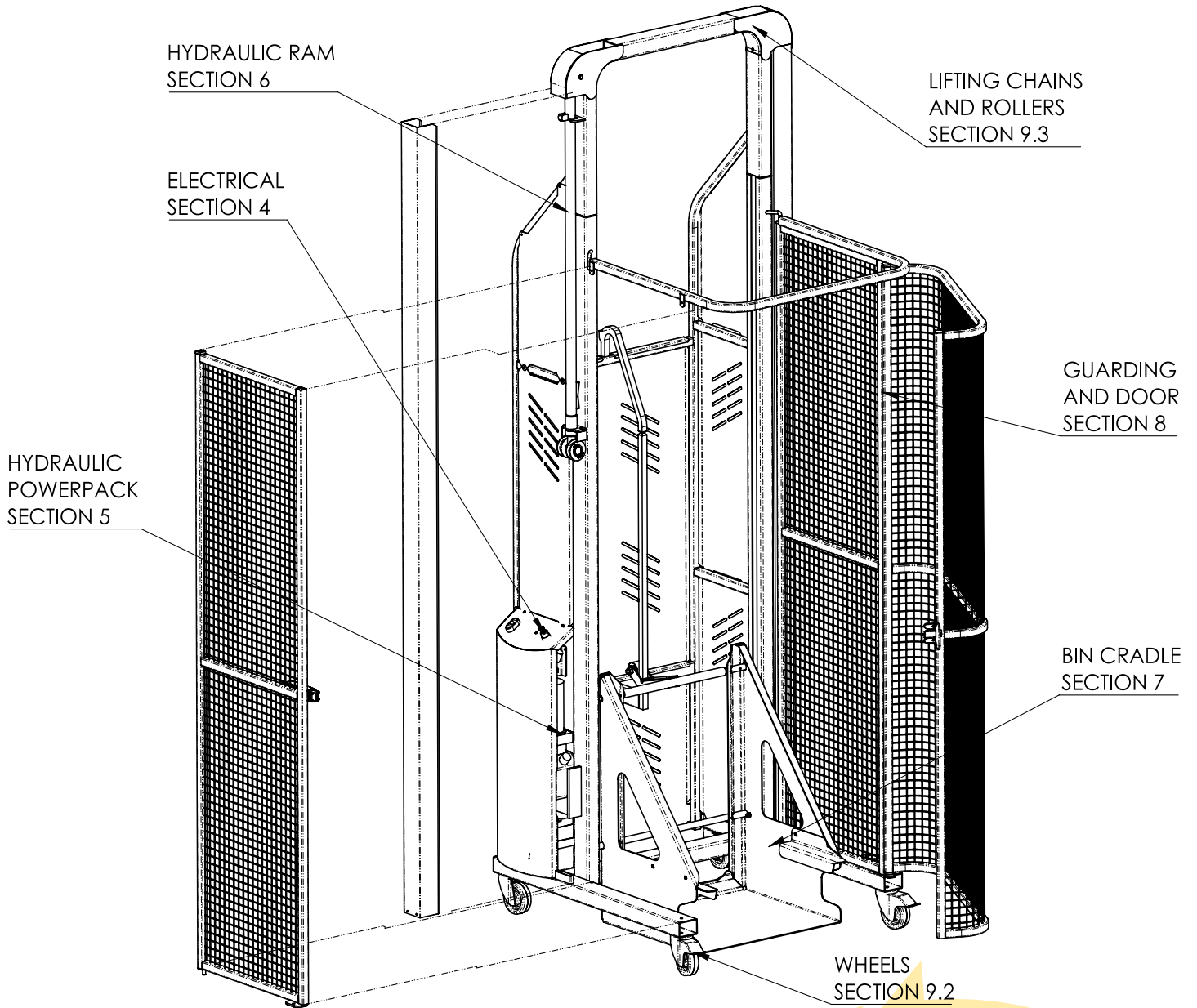
By default, there is no limit switch fitted to shut the motor off at the top of the cycle. The operator simply releases the 'Raise' button once the cradle has stopped moving; because the system is hydraulic this does not damage the machine. A limit switch may be fitted on request.

Dumpmasters are fully guarded and have a locking door. Various door styles are used, depending on the application. The most common type on the Dumpmaster is side-hinged with a single door lock. Some machines have a 'Lift-up' door which is supported on 4 arms and balanced by gas struts.

The door lock serves two functions – it keeps the door locked at all times except when the cradle is fully lowered, and prevents the cradle from being raised unless the door is closed. The locking and control systems may be monitored to a Category 3/PLd or Category 4/PLe level if required for additional safety.

Standard Dumpmasters have a hot-dip galvanised main frame, with zinc-plated guarding panels and powder-coated covers. The bin cradle is normally made from pre-galvanised sheet. Where required for hygiene or corrosion-resistance, they may be made partially or entirely from stainless-steel.

2 Layout of Parts



3 Troubleshooting Guide

Faults generally fall into one of three broad categories - Electrical, Hydraulic, or Mechanical. The first step in troubleshooting should be to determine which category the fault comes under.

Issue	Possible Cause	Category	Action / Reference
Lift motor does not run when the Raise button is pressed	Battery Discharged (battery machines only)	E	Refer to Section 4.3 or 4.4
	Faulty door lock or wiring	E	Refer to Section 4.8
	Door not closed properly or lock actuator damaged	M	Refer to Section 4.8
	Motor relay/contactor faulty	E	Refer to Section 4.5 (battery) or 4.11 (mains)
	Key switch or Raise/Lower switch faulty	E	Refer to Section 4.7
	Faulty motor	E	Refer to Section 4.9 (mains) or 4.13 (battery)
	Blown control-circuit fuse or circuit-breaker	E	Refer to Section 4.10
Lift motor runs but the cradle does not lift	Motor running wrong direction (3-phase machines only)	E	Refer to Section 4.9.4
	'Lower' button stuck on	E	Refer to Section 4.7
	Foreign matter in lowering valve	H	Refer to Section 5.4
	Bin too heavy or pressure-relief valve set too low	H	Refer to Section 5.6
The cradle won't come down from the raised position	Oil level too low	H	Identify source of oil leak, and rectify before topping up oil reservoir. Refer to Section 5.3
	Chain not in correct grooves on roller or wear strip	M	Refer to Section 9.1
	Cradle spacer washers tight between masts	M	Refer to Section 7.3
	Lack of lubrication	M	Refer to Section 7.3
	Lift Ram binding	M/H	Refer to Section 6.4
	Lifting chains rusty or seized	M	Refer to Section 9.1
	Faulty lowering valve	H	Refer to Section 5.4
	Faulty lowering valve solenoid	E	Refer to Section 4.6
	Faulty 'Lower' switch or wiring	E	Refer to Section 4.7
	'Hose-burst valve' activated	H	Refer to Section 6.6
Another problem	E/H/M	Refer to Section 7.3.1	

The cradle jams partway down	Cradle not sitting level	M	Refer to Section 7.4
	Mast bent or damaged	M	The mast needs to be straightened/repared. Contact your agent for assistance.
	Insufficient weight on the main axles	M	Cradle may need additional ballast. Contact your agent for assistance.
	Lack of lubrication	M	Lubricate mast, cradle and guides with silicone spray.
	Another problem	E/H/M	Refer to Section 7.3.2
Insufficient tipping cycles per charge	Batteries faulty or too old	E	Refer to Section 4.3.2
	Faulty charger	E	Refer to Section 4.4.1
	Blown fuse or circuit breaker in mains supply	E	Refer to Section 4.10
	Faulty charging lead	E	Refer to Section 4.4.1
Powerpack noisy, cradle lifting slowly, or oil foaming	Worn shaft seal on pump	H	Contact Simpro to request replacement seal.
	Suction pipe leaking	H	Repair or replace suction pipe.
	Pump bolts loose, seal leaking	H	Check tightness of all bolts. If problem persists, seal may need to be replaced.
	Cracked housing	H	Contact Simpro to request replacement powerpack.

4 Electrical System

4.1 General Description

The standard Dumpmaster control circuit is 24v DC (however on certain older 3-phase machines it may be 24v AC).

On new machines the control buttons switch the negative side of the motor contactor/relay and lowering coil. The positive side of the circuit is switched off when the door is open.

In all cases, when the 'Raise' button is pressed, the motor runs and oil is forced into the lift ram under pressure, which makes the cradle go up. When the 'Lower' button is pressed, a solenoid coil is energized, which opens a valve and allows oil back into the tank. The cradle comes down by gravity alone – it does not power down.

Battery-powered Dumpmasters have a 24vdc/800W motor. All mains-powered machines have a 3-phase 0.75kW motor. 1-phase machines have a VSD (Variable Speed Drive) with 1-phase input/3-phase output, which gives better performance and reliability than using a 1-phase motor.

Some machines with VSD are fitted with a joystick controller instead of 'Raise' and 'Lower' buttons.

The Raise/Lower buttons, key switch and Emergency Stop are all rated to IP66. The motor is IP55 but as it is mounted inside the powerpack covers which are sealed to the frame at the top, the likelihood of water getting into the motor is very low.

4.2 Removal of outer cover

The outer cover must be removed to gain access to the powerpack and most electrical components. The procedure to remove it is:

1. On battery-powered machines, turn the main isolator switch to the Off position and remove the key.
2. Undo the two screws at the top of the cover
3. Pull the top of the cover out away from the frame, then lift so the pins at the bottom come out of the holes in the base frame.
4. The wires on the cover may be left connected, and the cover leant against the frame; alternatively the loom may be separated at the plug and socket, and the cover moved right out of the way. The control voltage is 24vdc as standard.
5. Refitting is a reversal of the steps above.

4.3 Batteries

Battery-powered machines normally have two sealed gel batteries in series, to give a 24-volt operating system. They are installed below the powerpack.

The useful life per charge is dependent on a number of factors including the age of the batteries, the condition of the charger, and the ambient temperature.

Overall battery life is also dependent on a number of factors, including the total number of discharge/charging cycles and the average depth of discharge.

4.3.1 Care

Keep the batteries clean and dry by wiping with a soft cloth. Ensure that both terminal clamps are securely tightened.


4.3.2 Testing

1. Remove the outer powerpack cover as described in Section 4.2, but leave the loom connected, and sit the cover to one side.
2. Measure the battery voltage with a multimeter, with the charger disconnected.
3. Plug the charger in, and measure the voltage again.
4. Disconnect the charger, and measure the voltage again.
5. Finally, measure the voltage while pressing the 'Raise' button.

If the voltage increases when the charger is connected, but drops back to below 24 volts when it is disconnected, the batteries probably need replacing.

If voltage does not increase when the charger is connected, check the charger as per [Section 4.4](#).

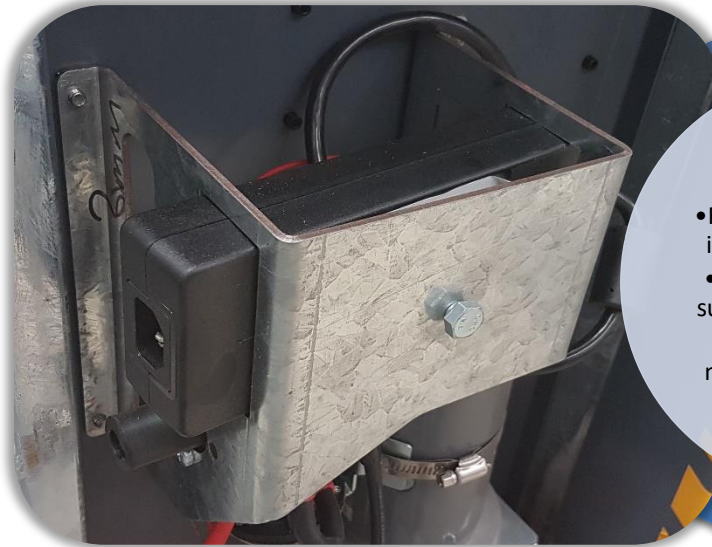
If the voltage drops by more than 1.5 volts when the 'Raise' button is pressed with no load on the cradle, the batteries probably need replacing.

 If you are unsure, or if the batteries are no more than a year old, return them to your battery supplier for testing.

4.3.3 Removal and Refitting

1. Remove the outer powerpack cover as described in Section 4.2.
2. Disconnect the cables and joining link from the battery terminals and slide the batteries out of the retaining brackets.
3. To avoid shorting across the positive and negative terminals (which are adjacent to each other), we recommend firstly removing the link plate connecting the two batteries on the right-hand side.
4. Undo the red cable from the outer battery and slide it out.
5. Undo the black cable and slide the 'inner' battery out.
6. Install in reverse order, ensuring all four terminal bolts are tight.

4.4 Battery Charger



Battery Charger

- Fitted into steel bracket in battery compartment
- Works with any mains supply between 110-240v
 - Digital battery management to prevent overcharging

4.4.1 Testing

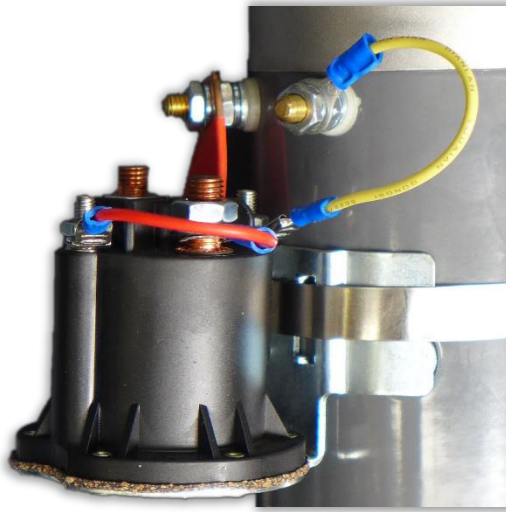
If the battery does not hold its charge, or will not accept a charge, the fault could be either the battery or the charger. Follow the steps below to determine the problem.

1. Check the charging lead and that the power point is live, by connecting another appliance or power tool.
2. If the supply voltage is OK, remove the outer cover. Using a good quality digital multimeter in DC range, measure the voltage across both batteries, with the charger disconnected.
3. Plug the charger in and measure the voltage again. If the voltage does not increase when the charger is plugged in, it is likely that the charger is faulty. If the voltage does increase, one or both batteries may be faulty.
4. Unplug the charger again, then measure the voltage of each battery separately while holding the Raise button. If the voltage drops by 2 or more volts, the battery should be replaced. Normally both batteries should be replaced together.

4.4.2 Removal and Refitting

1. Remove the outer powerpack cover as described in Section 4.2.
2. Disconnect the charger plug, loosen the bolt that holds the charger in the bracket, and slide the charger out.
3. To replace, slide the charger into the bracket, tighten the bolt and reconnect the plug. Do not over-tighten the bolt.
4. Reconnect the main loom plug and socket, and replace the outer cover.

4.5 Motor Relay (battery machines only)



Motor Relay

- Electromechanical solenoid switch
- Activates the motor when the 'Raise' button is pressed

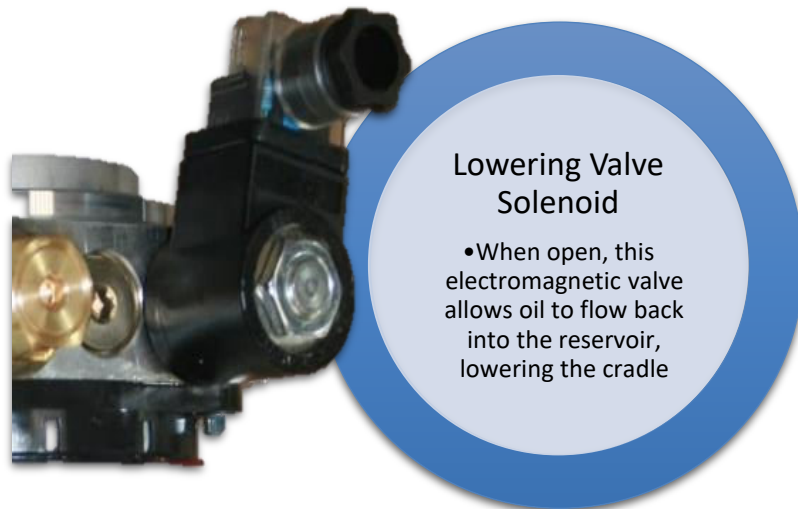
4.5.1 Testing

1. Remove the outer powerpack cover as described in [Section 4.2](#).
2. The relay is mounted on the side of the motor. It should 'click' when the 'Raise' switch is pressed. If there is no click, check that a signal is getting to the switching wires on the relay by connecting a multimeter to the small wires and pressing the 'Raise' switch. If a signal is present but the relay does not 'click', it may be faulty. If no signal is present, check the wiring and switch.
3. If the relay 'clicks' but the motor does not run, hold a screwdriver across the two large terminals on the relay. If the motor runs now, the relay is faulty and should be replaced. If it still does not run, the fault is probably either the battery or the motor itself.

4.5.2 Removal and Refitting

1. Disconnect the wires from the relay, noting their position for correct replacement.
2. Remove the screws or band clamp holding the relay on to the motor.
3. Replace the relay, reconnect the wires and test.

4.6 Lowering Valve Solenoid



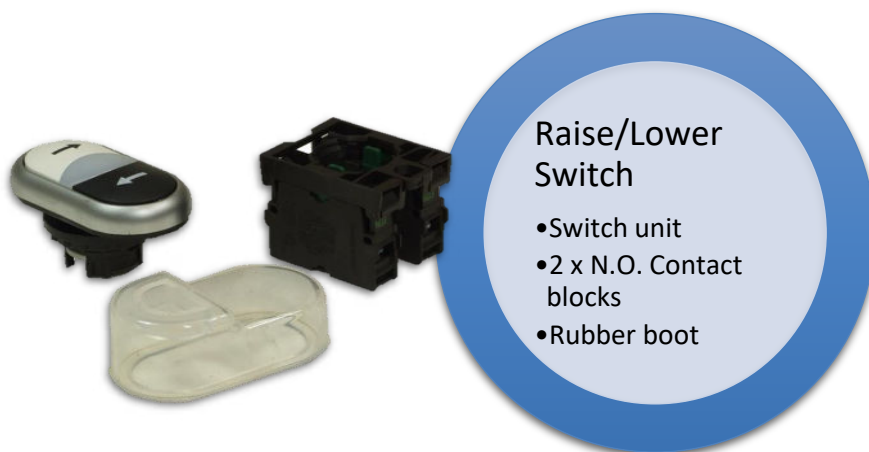
4.6.1 Testing

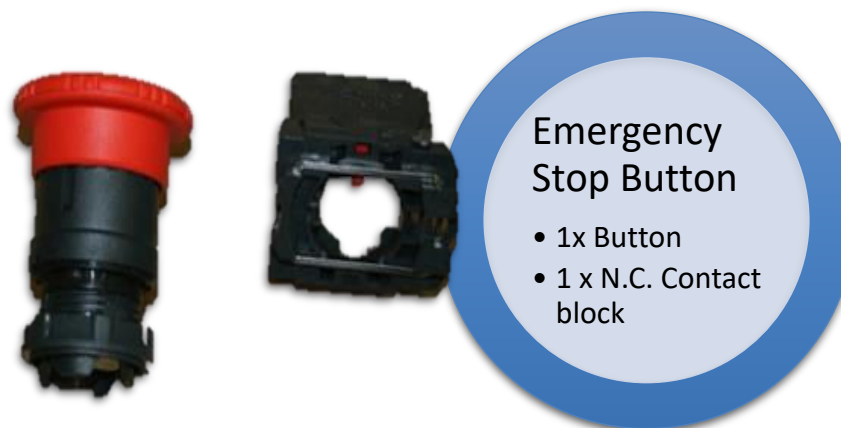
1. Remove the outer powerpack cover as described in [Section 4.2](#).
2. The solenoid should make a faint 'click' when the 'Lower' switch is pressed, and an LED in the plug should glow.
3. If no signal is present, check the Raise/Lower switch and wiring.
4. If a signal is present, the coil itself may be faulty, or the valve may be sticking. To check the coil, use a multimeter in 200 ohms range, and hold a probe on the two opposite terminals; it should give a reading of between 6 and 8 ohms. If this is OK, remove and check the valve as described in [Section 5.4](#). If not, replace the solenoid as described below.

4.6.2 Removal and Refitting

1. Undo the nut on the valve stem.
2. Remove the solenoid coil, noting the orientation.
3. Replace the correct way around, refit the O-ring and nut. The nut must be tightened finger-tight only.

4.7 Control buttons and switches





4.7.1 Testing

1. Check that the button unit is assembled correctly, is not sticking, and that the contact block is activated correctly.
2. Test the contact block with a multimeter.
3. If faulty, either the contact block or the complete button unit may need to be replaced.

4.7.2 Removal and Refitting

1. Remove the powerpack cover as described in [Section 4.2](#).
2. The coupler and contact block(s) can be unclipped from the actuator by turning the release clip.
3. The individual contact blocks can be unclipped from the coupler.
4. The actuator portion of the switch can be removed by unscrewing the nut under the control panel. When refitting, note that the small location lug on the Raise/Lower switch goes in the cut-out in the cover.
5. A rubber boot is normally fitted over the top portion of the Raise/Lower switch before it is screwed onto the cover.
6. To refit, first replace the top section in the cover, and then clip the lower section on. Note that these can only be fitted in the correct orientation.

4.8 Door Safety Interlock



All Dumpmasters are now fitted with a door interlock unit, which has contacts that are 'made' when the door is shut and/ locked. The door lock gets a signal to unlock only when the cradle is on the ground, and only allows the machine to be operated when the door is closed.

The door lock operates on a 'power to release' principle, which means the door cannot be opened if the power supply is disconnected or faulty. However, the door does need to be opened during the initial assembly process, before the power is connected. For this reason, Dumpmasters are shipped with the door lock disabled using a manual override key. The lock should be re-enabled using this key before use.

The door lock can be retrofitted to some older Dumpmaster models.

If required by a Hazard and Risk Assessment or the end-user's site policies, Dumpmasters may be fitted with a system which continuously monitors all electrical equipment including the door lock. Dumpmasters may be monitored up to a Category 4/PLe level if required.

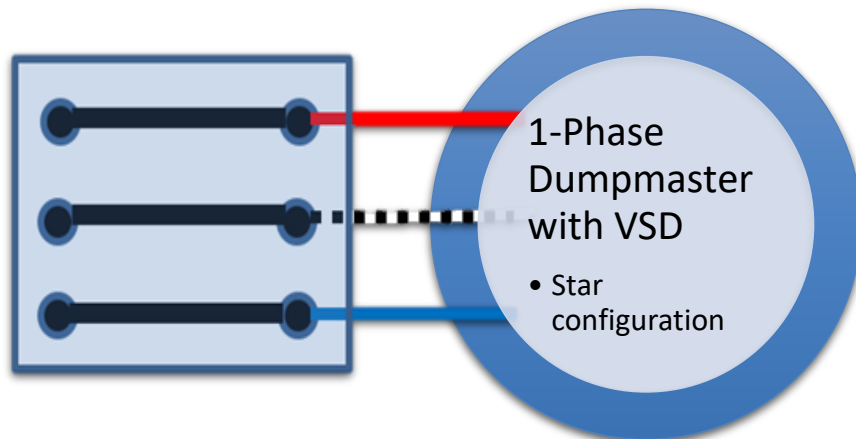
4.9 Mains Electric Motor

4.9.1 General Description

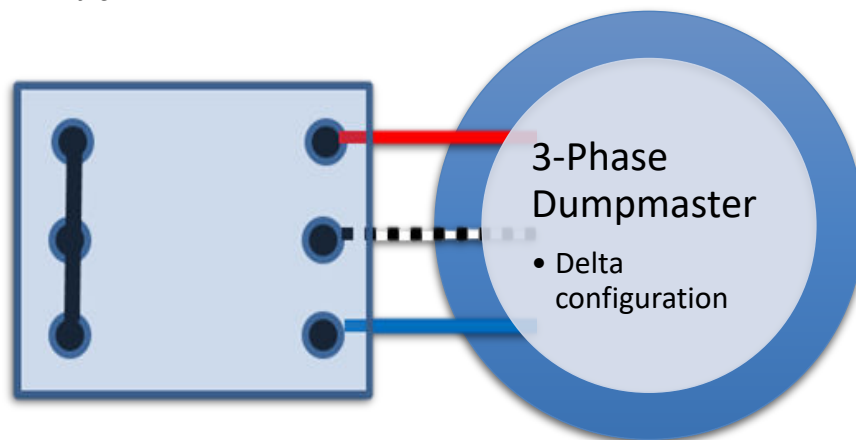
The motor fitted to 3-phase Dumpmasters is a two-pole type and generates 0.75kW. The motor only runs when the 'Raise' button is pressed; the cradle is lowered by gravity alone.

It is connected in 'star configuration' on machines with a 1-phase supply and VSD, and 'delta configuration' on 3-phase machines.

4.9.2 1-Phase Configuration



4.9.3 3-Phase Configuration



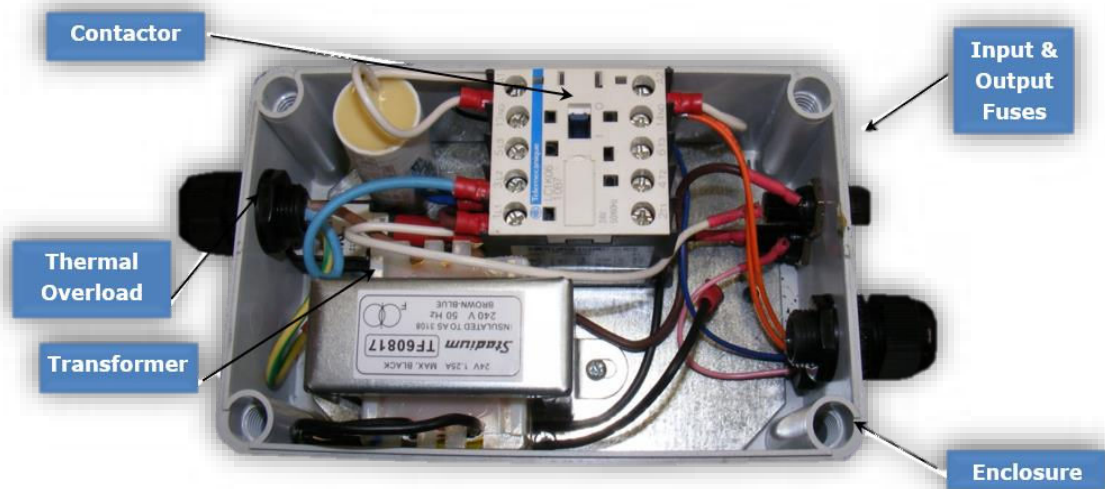
4.9.4 3-Phase Direction of Rotation

The motor must rotate anticlockwise when viewed from above, for the machine to operate. If rotation is incorrect, the motor will run but the cradle will not lift. To change the direction, swap any two phase wires over in the plug.

4.9.5 Removal and Refitting

1. Remove entire powerpack as described in [Section 5.2](#).
2. Undo the four screws holding the adaptor flange to the powerpack and lift the motor away.
3. If replacing with another motor, swap the adaptor flange and coupling over to the new motor.
4. When reassembling the powerpack, ensure the motor coupling lines up with the pump shaft.

4.10 Transformer



A 240-24v or 400-24v transformer is used on standard (non-monitored) mains-powered machines to provide the control voltage. The transformer is rated at 26VA, and has input and output fuses (both 1.25 amp) and/or a 1.5A circuit-breaker.

If there is no voltage in the control circuit, firstly check the fuses in the electrical enclosure. If the fuses are OK but there is still no current, the transformer may need to be replaced.

4.11 Contactor

The maximum current draw of the contactor coils is 1 amp.

- ⚠️ If replacement is necessary, ensure that the specifications match the original (preferably sourced from Simpro or your Simpro agent).

4.12 Variable Speed Drive (VSD)

The Variable-Speed Drive used on 1-phase Dumpmasters has 1-phase/230vac/50Hz input, with 220v/3-phase/<60Hz output and is suited for a 0.75kW motor.

There are dozens of parameters that can be set to suit specific applications. A list of settings is available from Simpro if needed. They can be connected to and calibrated by a PC that has the appropriate program and cable drivers loaded.

On some models the program can be simply downloaded from a small plug-in module.

- ⚠️ Residual voltages may be retained in the inverter after it has been disconnected from the power supply. Use extreme caution when the main supply or motor cables.

4.13 Battery Electric Motor

4.13.1 General Description

Battery-powered Dumpmasters are fitted with a series-wound 24V DC electric motor, which generates 0.8kW. The motor only runs when the 'Raise' button is pressed; the cradle is lowered by gravity alone.

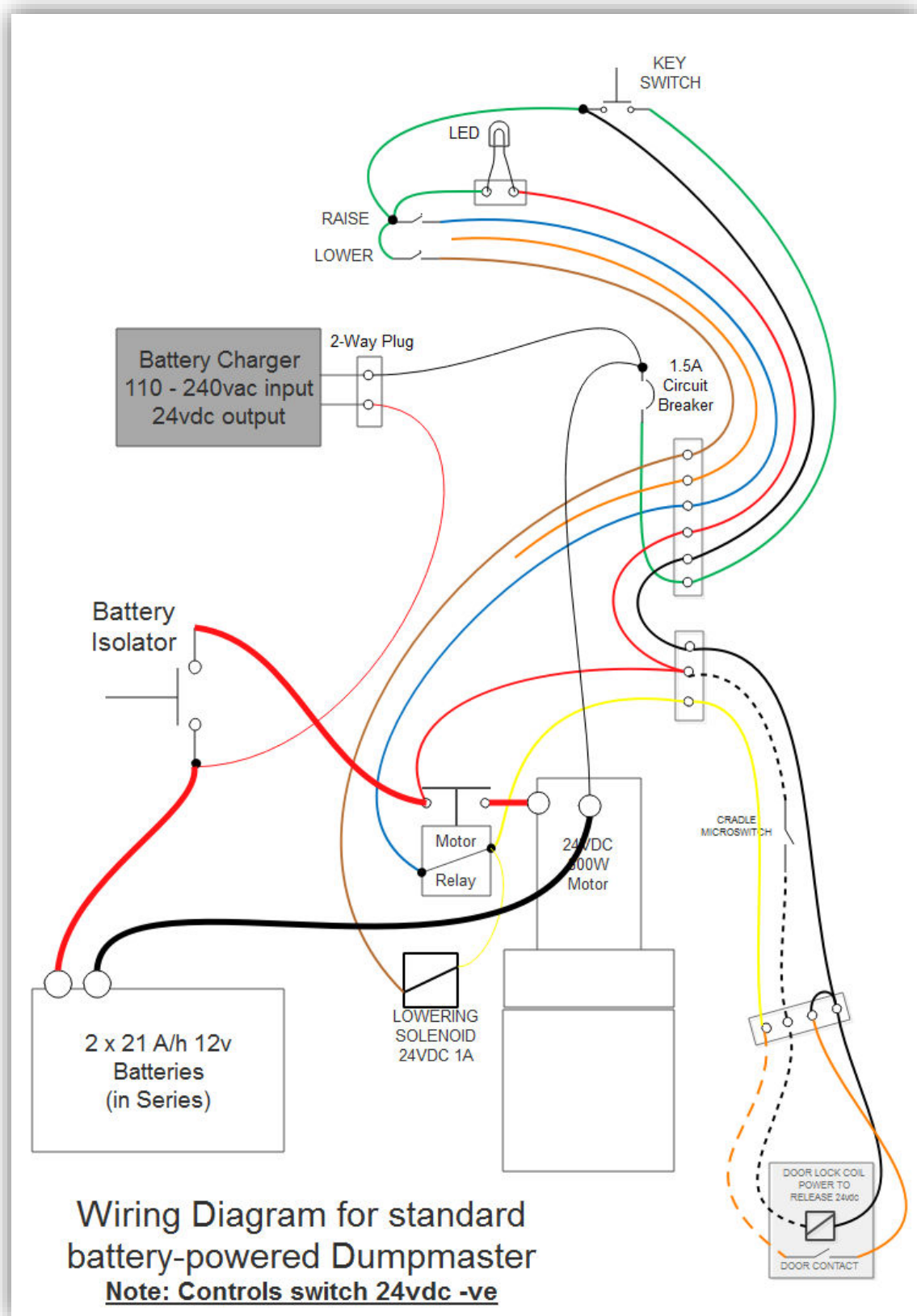
Positive supply to the motor comes through the relay mounted on the side of the motor (see [Section 4.5](#)); negative is permanently connected to the motor terminal.

4.13.2 Motor Brushes

The motors have four brushes which wear down over time. As the brushes are difficult and time-consuming to replace, it is usually better to fit a complete new motor.

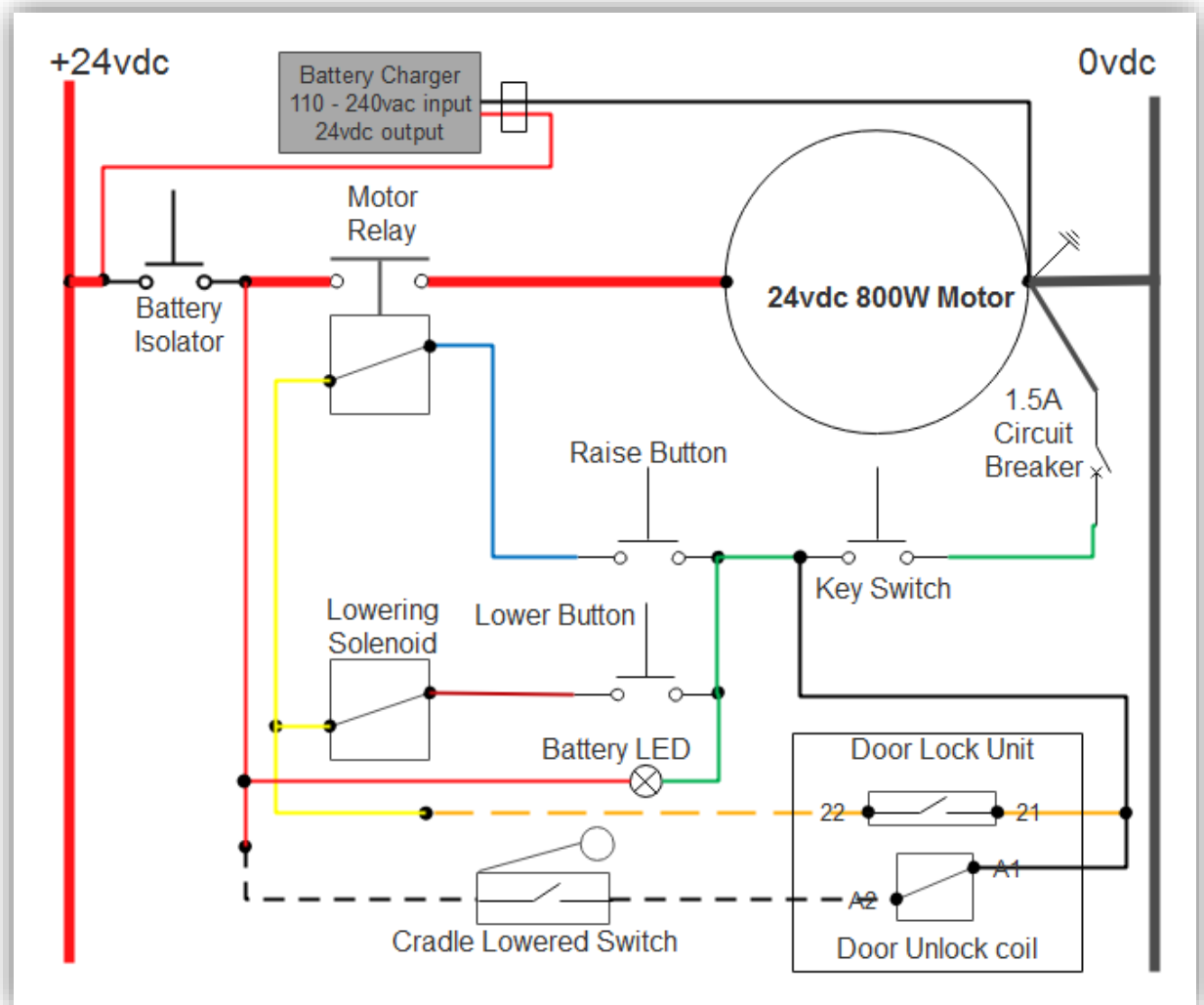
4.14 Wiring Diagram for Battery Dumpmaster

⚠ This is a generic diagram only. Individual machines may differ depending on date of manufacture. Always refer to the 'as-built' circuit diagram affixed to the inside of the powerpack cover.



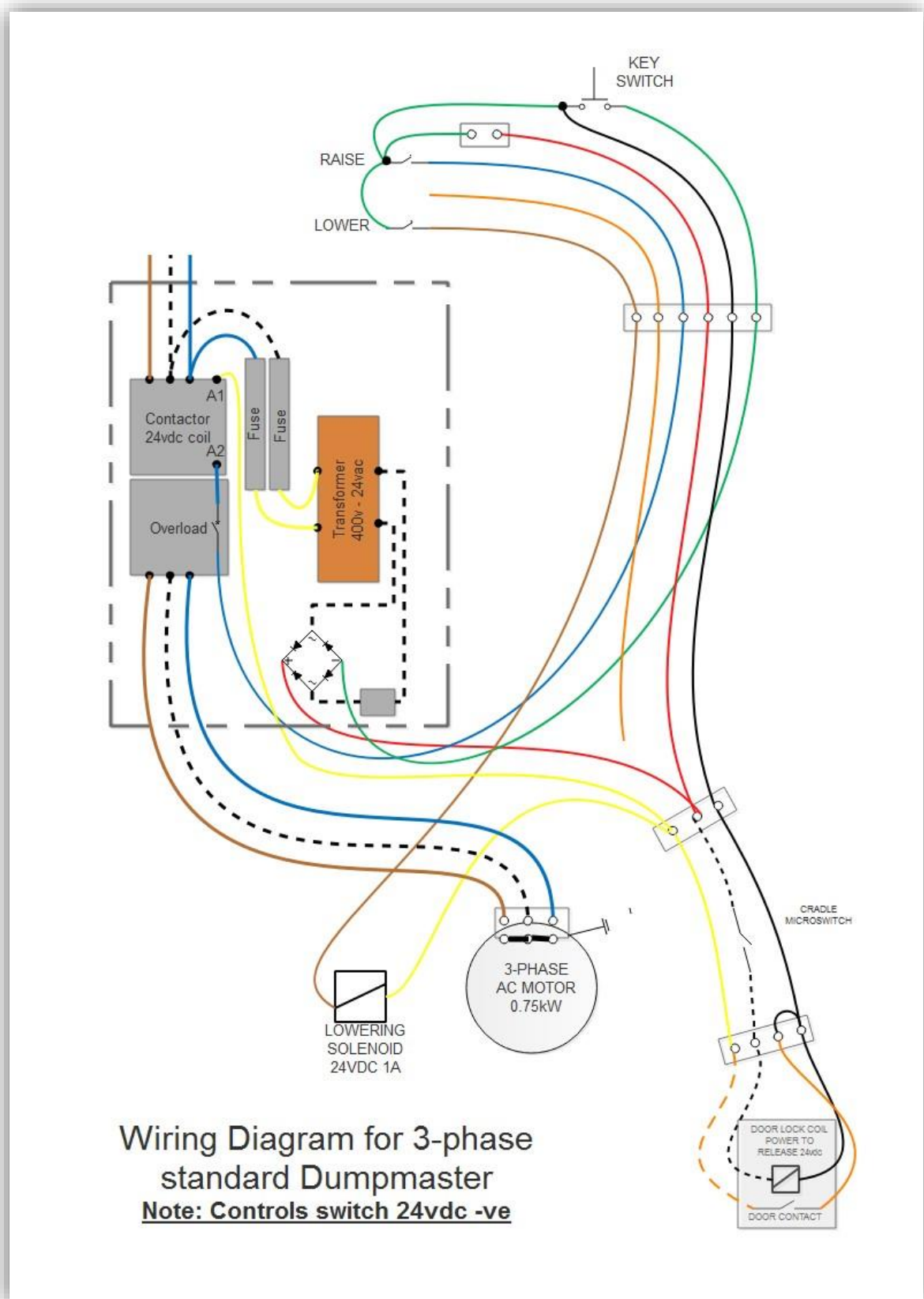
4.15 Circuit Diagram for Battery Dumpmaster

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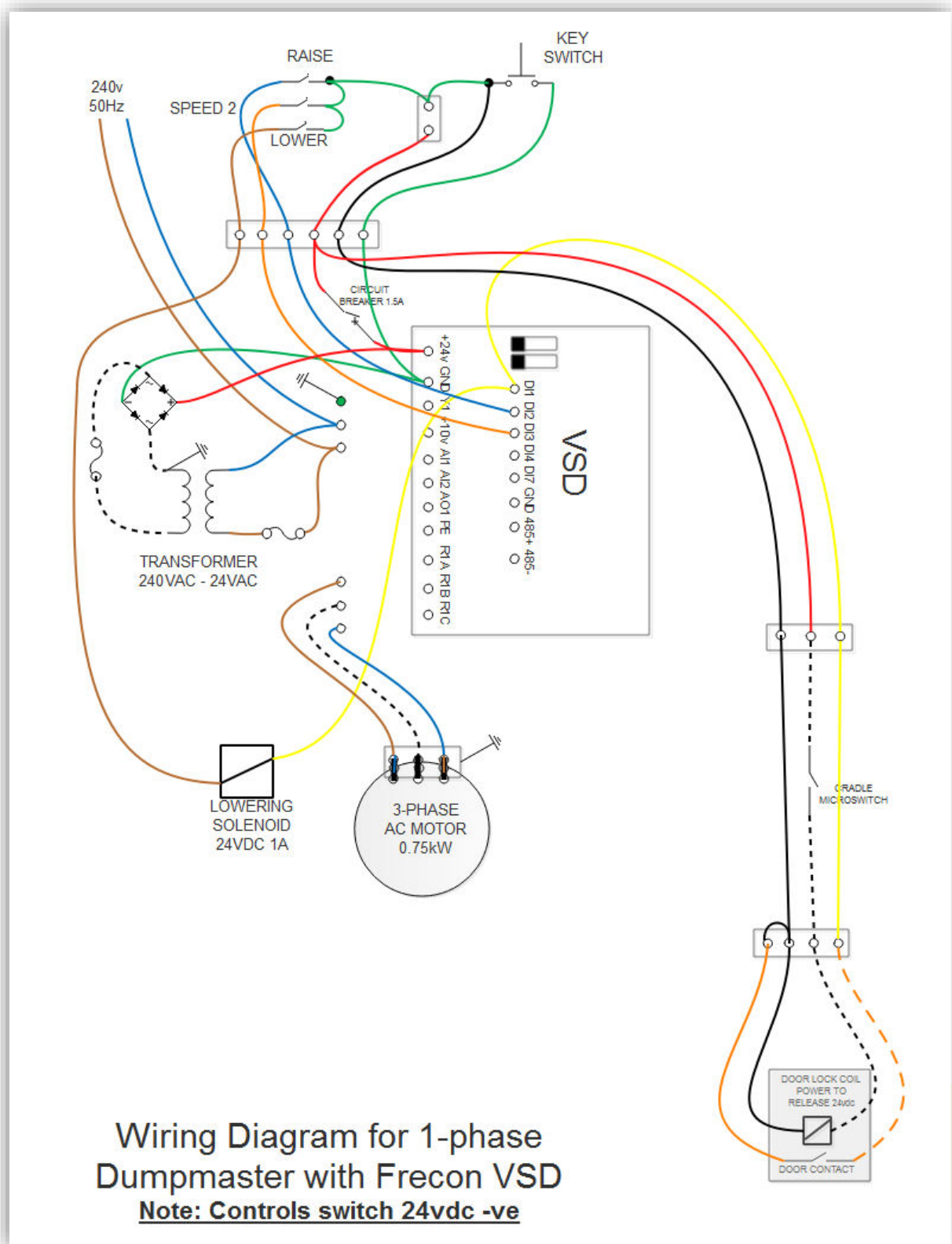
4.16 Wiring Diagram for 3-Phase Dumpmaster

⚠ This is a generic diagram only. Individual machines may differ depending on date of manufacture. Always refer to the 'as-built' circuit diagram affixed to the inside of the powerpack cover.



4.17 Wiring Diagram for 1-Phase Dumpmaster

- ⚠ This is a generic diagram only. Individual machines may differ depending on date of manufacture. Always refer to the 'as-built' circuit diagram affixed to the inside of the powerpack cover.



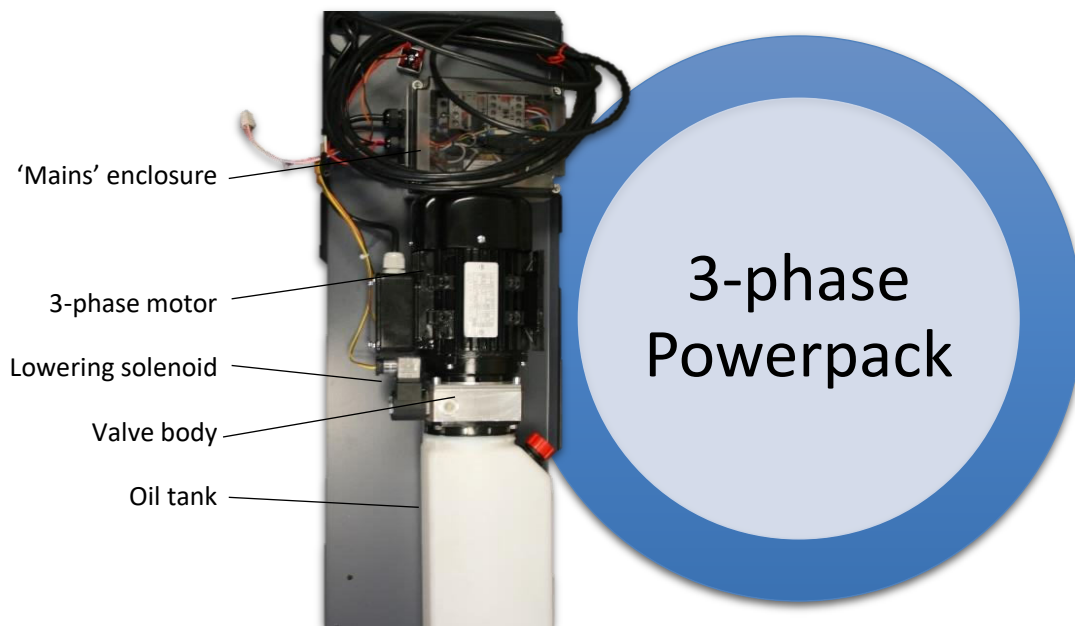
5 Hydraulic Powerpack

5.1 General Description

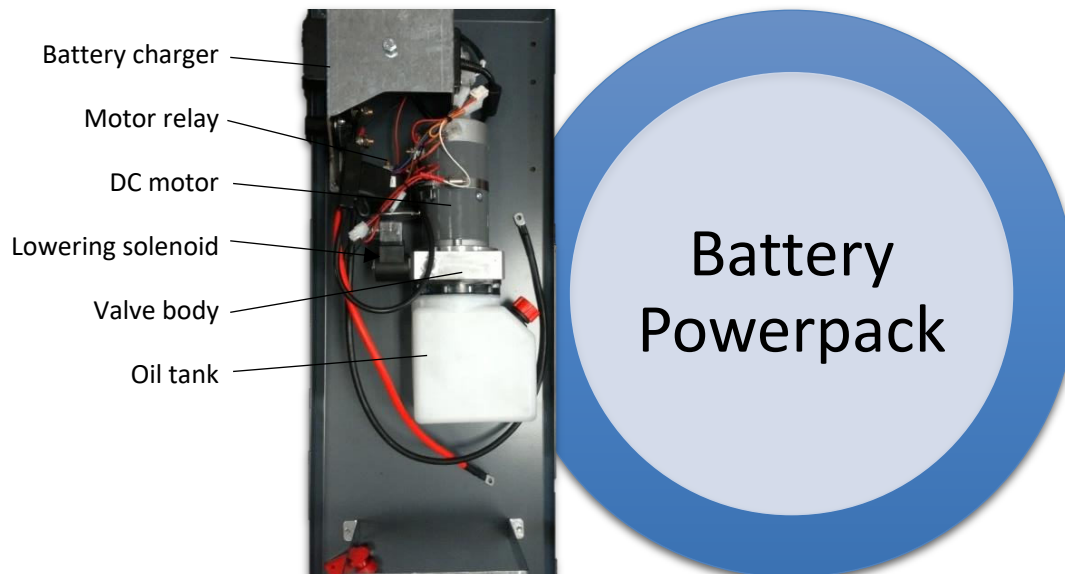
The hydraulic powerpacks used in Dumpmaster bin-tippers are very reliable and long-lasting, and require little regular maintenance. The motor driving the pump is either 24vdc/0.8kW or 3-phase/0.75kW. The motor, pump, oil tank, and all control valves are mounted into an integral unit. The four main control valves are: check valve, pressure-relief valve, solenoid lowering valve, and pressure-compensating lowering speed valve.

⚠ The hydraulic powerpack does not require regular maintenance.

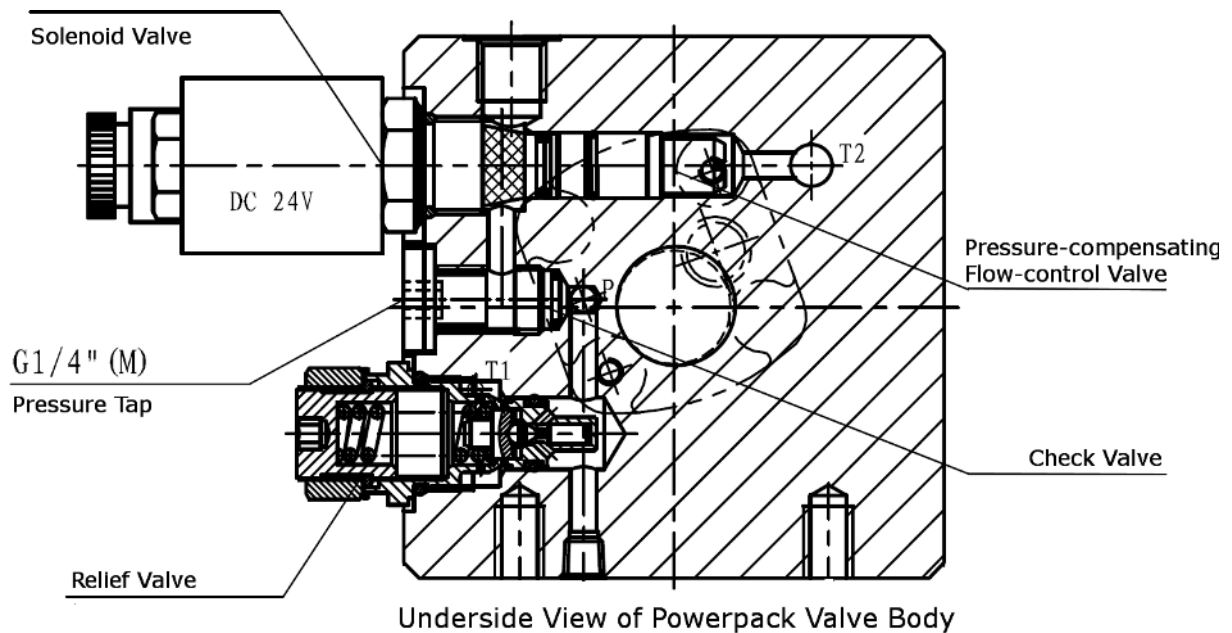
5.1.1 Layout of 3-phase powerpack



5.1.2 Layout of battery powerpack



5.1.3 Layout of powerpack valve body



5.2 Removal and Refitting

1. Ensure cradle is fully lowered.
2. Remove the outer powerpack cover as described on in [Section 4.2](#).
3. Undo the fitting holding the hydraulic tube to the powerpack, and plug or tape both ends to prevent ingress of dirt.
4. Undo the nut holding the lowering solenoid coil on, and remove it.
5. Make note of the wiring connections to the motor and disconnect.
6. Undo the two screws securing the powerpack and lift it away.

Refitting is a reversal of the above procedure, with attention to the following points:

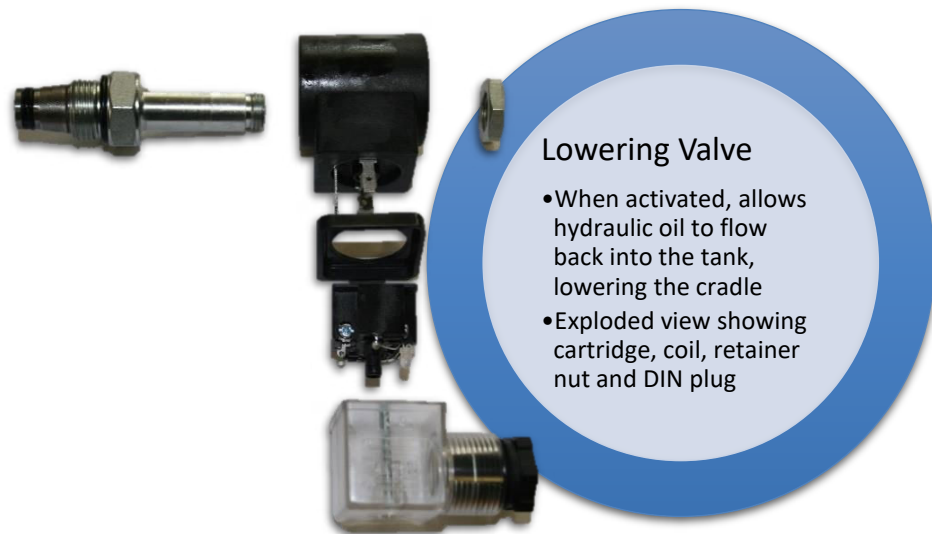
1. Ensure the wiring is reconnected the same as original.
2. Do not use thread sealant on the hydraulic fitting.
3. On some powerpacks a spacer is inserted between the powerpack and the inner panel.
4. Test for correct operation before refitting the outer cover.

5.3 Hydraulic Oil Tank

5.3.1 Removal and Refitting

1. Remove the powerpack as described in [Section 5.2](#).
2. Undo the four bolts holding the tank to the centre manifold, then carefully from the tank off.
3. Dispose of the old oil, and thoroughly clean the tank and suction filter.
4. New oil may be put into the tank before refitting, or after. If oil is put in before, keep the level at least 30mm below the filler.
5. Remount the powerpack, and test-run the machine.
6. Refit the outer cover.

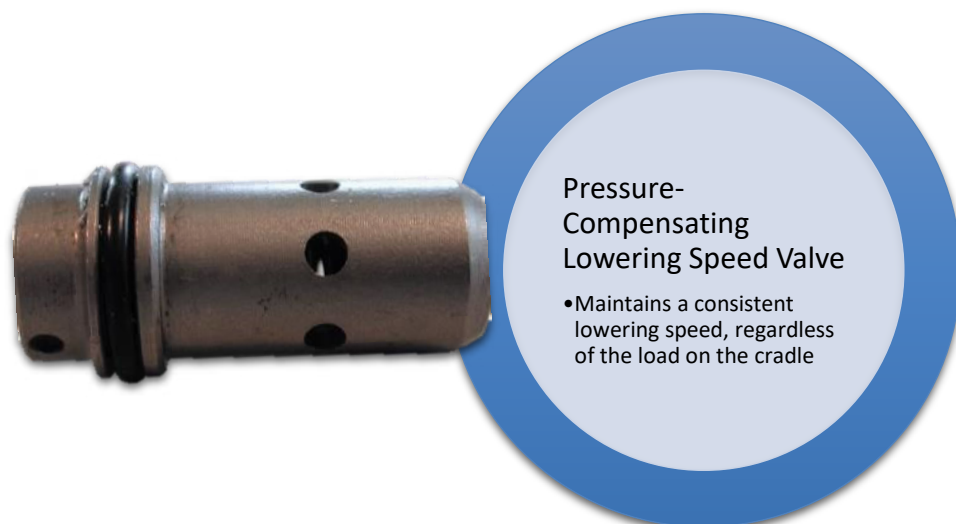
5.4 Lowering Valve



5.4.1 Removal and Refitting

1. Unscrew the retainer nut and slide the coil off.
2. Unscrew the valve from the main body using a ring spanner.
3. Clean the valve carefully with compressed air. Ensure that the centre poppet can move freely, and that it seals firmly on the valve seat when released.
4. Clean the valve orifice before refitting the valve.
5. Refit the valve and coil.

5.5 Pressure-Compensating Lowering Speed Valve



5.5.1 Removal and Refitting

1. Remove the lowering valve as described in [Section 5.4](#).
2. Using long-nose pliers, pull the valve out from the orifice.
3. To replace, simply push into orifice, then replace the lowering valve.

5.6 Pressure-Relief Valve

The pressure-relief valve limits the maximum hydraulic pressure flowing to the ram, and thus the maximum weight that can be lifted.

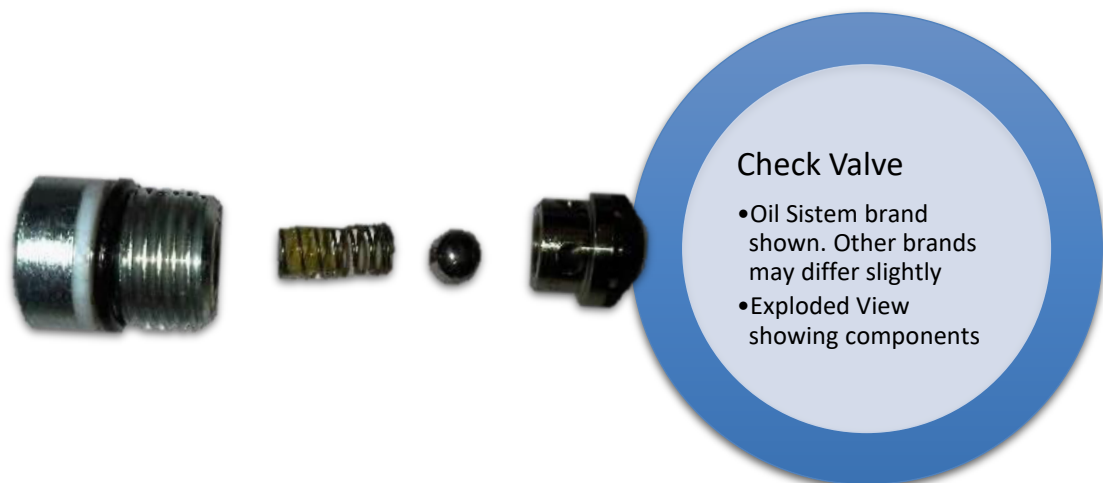
If the bin is heavier than the valve will permit, the motor and pump still run but the oil bypasses straight back into the tank. While this does not do any harm to the machine, oil passing through the pressure-relief valve generates a lot of heat. For this reason, if the valve is operating frequently, either the pressure limit setting should be increased, or the bin weight reduced.

⚠ Authorization must be obtained from the manufacturer before adjusting the pressure-relief valve setting. Unauthorized adjustment will void the warranty.

5.6.1 Adjustment

1. Remove the ram cover and the outer powerpack cover as described in [Section 4.2](#).
2. The pressure-relief valve adjustment screw is located near the back of the left-hand side face of the centre housing. Loosen the locknut (13mm) then turn the screw clockwise (4mm Allen key) to increase the pressure limit.
3. Test the capacity using a full bin. The point of maximum hydraulic pressure is reached just before the cradle becomes horizontal. Set the limit just sufficient to pick up the heaviest bins.
4. When the setting is satisfactory, tighten the locknut, and replace the cap.
5. Refit the powerpack cover and ram cover.

5.7 Check Valve



The check valve is located under the cap screw between the lowering valve and the relief valve. If the cradle slowly creeps down from a raised position, it is likely that there is a small piece of foreign matter in either the lowering valve or the check valve.

5.7.1 Removal and Refitting

1. Remove the screw cap
2. Using tool supplied by Simpro, carefully unwind the check valve cartridge.
3. Clean thoroughly.
4. Refitting is the reversal of this process.

6 Hydraulic Ram

6.1 General Description.

Dumpmaster bin-tippers use a single-acting displacement-type hydraulic ram, which is very reliable, but also easy to service should the need arise. There is no piston, just a seal in the head which seals onto the chrome-plated spear. A groove machined into the outside of the ram head locates into the ram-mounting bracket, which is welded to the mast. A screw band-clamp holds the lower end of the ram into the bracket; the top end locates in a special adjustable bracket.

Two moulded 'ram rollers' run on a cross-bar on the end of the spear.

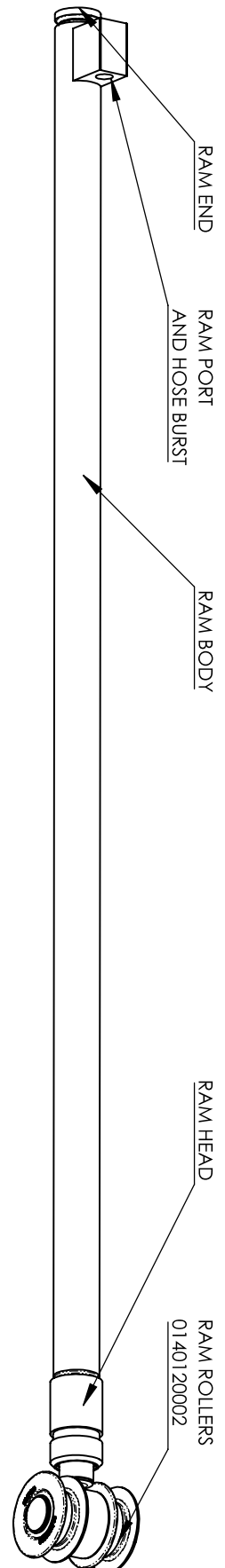
A 'hose-burst valve' is fitted to the port. The actual valve cartridge may be either directly mounted in the ram port or in a housing which is screwed onto the port.

6.2 Removal and Refitting

1. Raise the cradle a little and sit it down on some suitable packing.
2. Remove the ram cover. Press the 'Lower' button, while pushing up on the ram rollers, to fully retract the ram.
3. Undo the fitting holding the hydraulic tube at the top of the ram.
4. Undo the band-clamp holding the bottom of the ram to the mast.
5. Disengage the chains from the rollers, pull the bottom of the ram out from the lower support bracket, and then slide the ram down out of the top support bracket.
6. The tabs on the top bracket may need to be bent out a little to allow the weld at the top of the ram to come through. If so, they should be tapped back when the ram has been replaced.
7. Refitting is the reversal of this process.

6.3 Dismantling and Servicing

1. Hold the ram body horizontally in a vice, with the roller end slightly higher.
2. Pull the chrome-bar spear right out of the ram body, and lay carefully aside.
3. Take the ram body out of the vice, and pour the small amount of remaining oil into a suitable container for disposal.
4. If the seal has been leaking, pick it out of its groove near the end, using a small, sharp screwdriver. It is very difficult to remove without damaging it, and it is recommended to simply stab it and pull it out.
5. If there is a pinhole leak in a weld, it is generally best to fit a complete replacement ram body, and return the faulty one to Simpro for repair. If this is not feasible, mark the location of the hole, and grind a groove at least 3mm deep, and 10mm each side of the hole. If possible, weld using MIG or arc



welder. If an electric welder is not available, it may be brazed, but difficulty may be experienced because of oil contamination. The seal will need to be replaced, if the hole is in the “head” weld.

6. The ram body should be cleaned with degreaser, and then blown out with compressed air.
7. To reassemble, fit a new seal (#R44035), if necessary. Smear oil on the seal and inside the head. Wipe the chrome bar carefully, then fit it back into the ram body, using a twisting action as it goes through the seal.

6.4 Ram Alignment

The ram-end rollers should be running just clear of the mast throughout the full travel of the ram. If the rollers press hard against the mast at any point, they may cause the spear to “bind”, which may prevent the cradle from coming down properly. The top bracket has 4 small tabs, which can be bent to ensure the ram is correctly aligned, particularly when it is extended. For example, if the rollers press hard against the mast when the ram is extended, bend the tabs so that the top of the ram is held nearer the mast.

6.5 Ram Guide Channel

Some machines have a Ram Guide Channel fitted, to ensure the ram rollers track accurately. This guide will need to be removed before working on the ram or chain rollers. It is retained with 1 bolt through the ram-stop at the bottom. To remove the guide, firstly remove the bolt; loosen the hose clamp securing the ram to the mast, then pull the guide down. When a guide is fitted, it also retains the rollers onto the crossbar, so the rollers can be easily replaced once the guide is removed. To refit the guide, simply put in position, push upwards to engage the ram bracket, and do up the securing bolt.

6.6 Hose-burst Valve



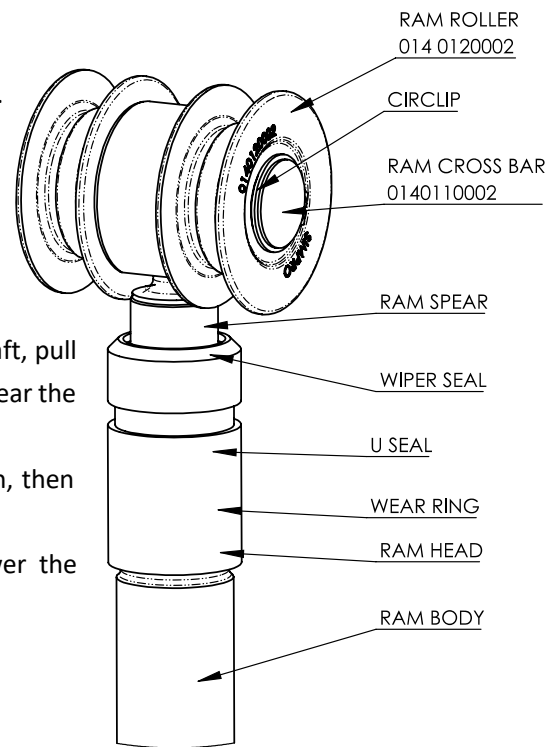
The hose-burst valve operates if the flow out of the ram exceeds approximately 10 litres/min. If it does lock, the hose must be repaired, then the ram extended slightly to reopen the valve.

The valve cartridge may be unscrewed from the port with a tool available from Simpro.

6.7 Ram-end Rollers

6.7.1 Removal and Refitting

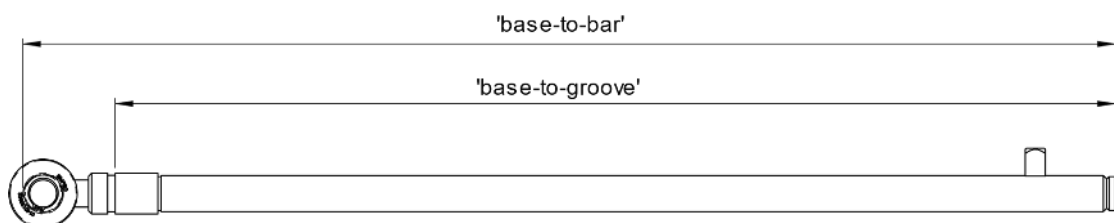
1. Lower the cradle onto a nail box or similar packing.
2. Remove the ram cover.
3. Press the 'Lower' button while pressing up on the end of the ram.
4. Remove the band clamp holding the ram back against the mast.
5. Remove the circlip holding the roller onto the shaft, pull the ram out from the mast to allow the roller to clear the chain, then slide it off.
6. Fit a new roller, refit the band clamp and tighten, then carefully extend the ram again.
7. Raise the cradle, remove the packing, and lower the cradle fully.
8. Refit the ram cover when satisfied.



6.8 Ram Replacement

In the unlikely event of hydraulic ram failure, the following information must be provided to ensure a correct replacement ram is supplied.

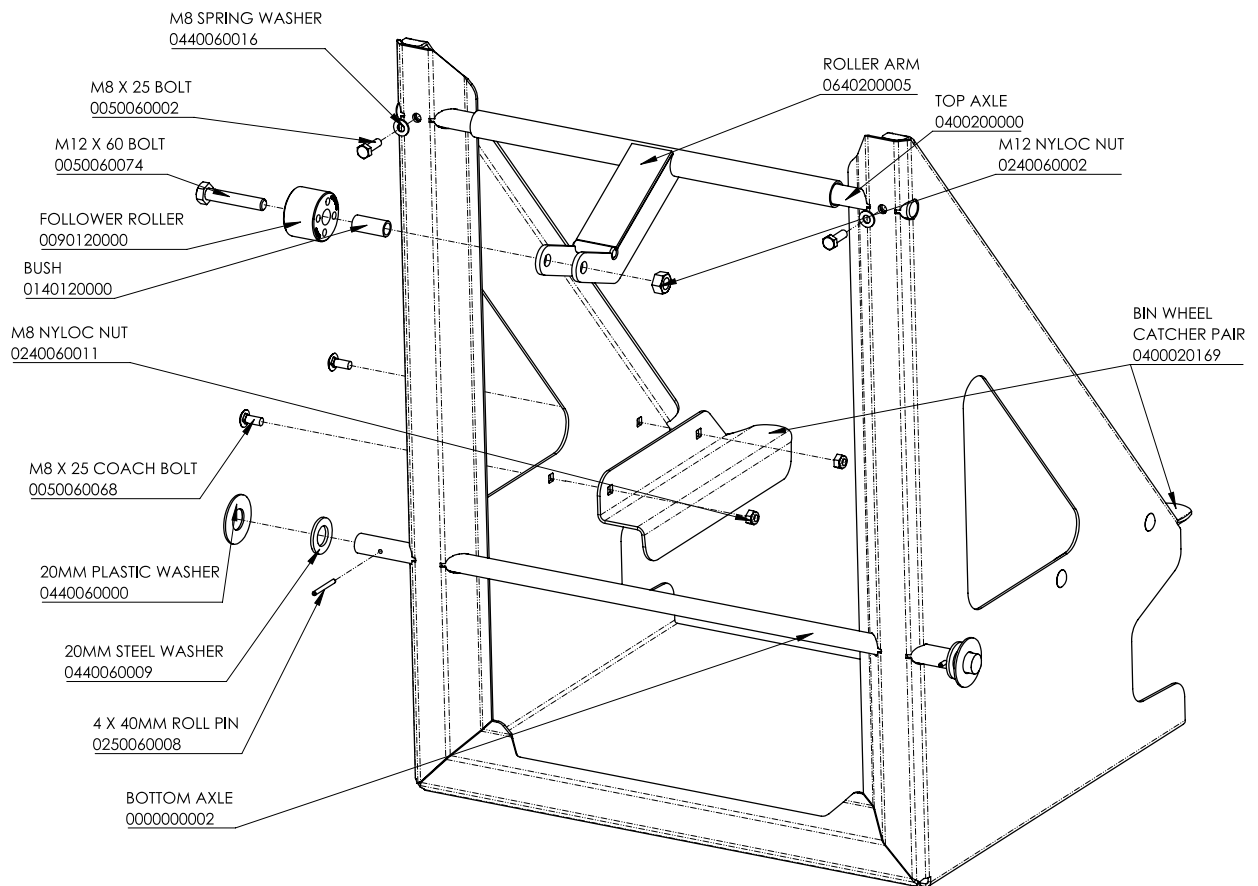
1. The model and serial number of the machine, as recorded on the machine rating plate.
2. The 'base-to-bar' length of the hydraulic ram, as shown in the diagram below.
3. The 'base-to-groove' length of the hydraulic ram, as shown in the diagram below.



▲ This information is essential for a correct replacement ram to be supplied. Simpro is not liable for costs caused by incorrect or inaccurate ram measurement.



7 Bin Cradle



7.1 General Description

The standard bin-cradle consists of a pressed frame designed to hold plastic two-wheeled bins from 80l-240l. The main axle locates into 'sliding plates' inside each mast, and the 'roller arm' pivots on a bar near the top of the cradle. The roller arm has a 'follower roller' that runs on a specially shaped 'tipping track'.

The cradle is raised evenly as the ram extends, by means of chains lifting 'sliding plates' inside the masts. The cradle relies on gravity alone to come down, so it must run freely if it is not to jam.

A range of cradles is available to suit most bins and drums, and these can be quickly and easily interchanged if desired.

7.2 Removal and Refitting

1. With the cradle resting on the ground, undo the bolt through the centre of the follower roller, remove the roller and the steel bush, and let the roller arm hang down.
2. Using a 4mm pin punch, tap out the roll-pin from the main cradle axle, on the opposite side from the controls.
3. Slide the cradle to the right until the axle comes out of the sliding plate on the left, pull it forward to clear the mast, then slide to the left, so the axle comes out of the other plate.
4. Refitting is a reversal of the above procedure. Note that the steel washers go onto the axle first, followed by the nylon washers. These must be fitted before the cradle is replaced.

7.3 Cradle Jamming

Use the following procedures to identify and solve issues with cradle jamming or sticking.

 **Note that the Dumpmaster cradle is not powered down, it is lowered by gravity alone.**

7.3.1 Cradle jams at top of cycle

1. Check that the lowering valve solenoid is operating as per [Section 4.6](#).
2. Spray inside masts with silicon spray, lubricate the main cradle axles where they rotate in the plates in the masts, and the roller arm tube where it rotates on its axle. Apply grease to top of the curved section of the tipping track. Ensure the lifting chains are not stiff and rusted.
3. If the cradle still jams, take it right to the top, and disconnect the machine from the power supply. Standing beneath the cradle, raise and lower it by hand several times. If it moves freely without sticking, the problem is likely to be with the ram, or the chains not being located correctly in the roller or guide. If it does not move freely, attempt to locate the cause – there could be a lump of zinc inside the mast, the mast could be damaged or bent, or the roll-pins in the cradle axle could be forcing the washers hard against the masts.

7.3.2 Cradle jams part-way down

1. Check whether the washers on the main axle are tight against the mast on both sides. If they are, one or both masts may be bent.
2. Check that the cradle is sitting level; if not, level the cradle as per [Section 7.4](#).
3. If the roller arm is jamming on the 'tipping track' it may be bent, causing the follower roller to track to one side.
4. If the cradle stops at about the horizontal position, the square member that the top of the tipping track is welded to may be bent in towards the masts. If so, it may be bent out using a strong-back and a heavy-duty clamp.
5. If any alterations have been made to the cradle, or if there is still some product in the bin, there may not be enough weight on the main axle to retract the lift ram.

7.4 Cradle Levelling

If the cradle is not sitting level it may jam. Use the following procedure to correctly level the cradle:

1. Ensure the machine is sitting on flat, level ground, and that the floor under the cradle is free from obstructions. Lower the cradle fully.
2. Remove the ram covers.
3. Pull both chains out, at about half-way between the ram-end rollers and the top roller. They will both pull out the same amount when adjusted correctly.
4. If one chain pulls out further than the other, either tighten the adjustor nut on that side, or loosen the adjustor nut on the other side. Ensure the nylon lock-thread of the nut is gripping onto the bolt (i.e. do not undo the nut too far).
5. If insufficient adjustment is available, a different length adjusting bolt can be fitted, and/or chains links added or removed.
6. Check the adjustment by raising and lowering the cradle several times. It is normally easy to see if both sides lift at the same instant. When satisfied, refit the ram cover.

8 Guarding and Door

8.1 Mesh Guarding and Side-hinge Door

Mesh side guards have a square steel tube frame, and are used with side-hinge doors only. A plastic bung with an 11mm hole at the 'top inner corner' locates onto a 10mm rod welded to the mast. Another plastic bung with a 10mm steel pin moulded in at the 'lower inner corner' locates into a hole in the base frame.

A bolting plate welded on the 'lower outer corner' bolts onto the base frame to retain the guard; on one side the bolting plate includes a spigot on which the bottom corner of the door pivots. A 'U-bar' formed from square steel tube is screwed to the top of the side guards to provide rigidity and the top door hinge pin.

8.1.1 Mesh guarding assembly

- ⚠ Machines are often supplied with guarding removed to reduce the volume for shipping.
- ⚠ The guarding is easier to assemble with the machine lying in a horizontal position.

1. Slide the top of the right-hand side guard (with a 16mm spigot welded to the lower bolting plate) onto the 10mm pin welded to the mast, on the side opposite the controls.
2. Slide the guard back down, locating the lower pin into the hole in the base frame.
3. Attach the bolting plate to the base frame with an M8 x 25 bolt.
4. Repeat for the left-hand side guard.
5. Sit the U-bar in position but do not screw on yet.
6. Sit the door in place, locating on the spigots top and bottom.
7. Screw the U-bar on to the top of the side guards.
8. Stand the machine up (if not already standing)
9. Connect the cables for the door lock and the cradle microswitch.
10. Check the operation of the door and lock.
11. Dismantling is a reversal of the above procedure.

8.2 Sheet-metal Guarding and Lift-up Door

Sheet-metal side guards have no frame, and are used with a lift-up door only (the door may be mesh or sheet-metal). A hole in the top flange locates on the pin welded to the mast. The bottom flange is screwed to the base frame with self-drilling screws. The 'brace panel' has two formed square steel frames which locate through cut-outs in the side pressings.

The door is mounted on two arms on each side; these pivot off a flange on the side guards, and on the door frame. The two upper arms have pressed brackets bolted on which hold the top of the gas strut. The size and position of these brackets is carefully calculated so the door is well-balanced at all points of its travel. The gas struts must be mounted with the body at the top, to ensure the shaft seal is kept lubricated.

8.2.1 Sheet-metal guarding assembly:

 Machines are often supplied with guarding removed to reduce the volume for shipping.

 The guarding is easier to assemble with the machine lying in a horizontal position.

1. Slide the right-hand guard panel onto the 10mm pin welded to the mast, on the side opposite the controls.
2. Slide the guard back down, and screw the bottom flange to the base frame.
3. Repeat for the left-hand side guard.
4. Slide the brace panel into place and screw to the side guards.
5. Mount the door arms using M10 x 65 coach bolts and Nylock nuts. The sleeves welded to the ends of the arms are offset, and must be mounted so the arms are 'away from' the side panels. The top arms must have the strut brackets near to the masts.
6. Mount the door to the top arms first, then pull down against the struts and mount the lower arms.

 It is recommended to use two persons to mount the door.

7. Mount the door lock(s).
8. Stand the machine up (if not already standing)
9. Check the operation of the door and lock.
10. Lubricate the pivot points. The Nylock nuts on the arm pivot bolts should be firm but not too tight.

8.3 Other Covers

The top of the 'ram cover' and matching 'dummy cover' locate into slots in the top plates of the main frame, and are retained by screws at the bottom.

The 'Outer cover' and 'Inner Panel' have two pins welded onto the bottom which locate in holes in the base frame; they are secured with two screws at the top.

There are also two small plates that clip into openings in the top of the machine. These must be removed to get access to the top roller or moulded wear strip. To remove, lever out with a screwdriver. To refit, the plate must be bent; clip the ends in then tap the plate flat with a hammer.

9 General

9.1 Lifting Chains


Dumpmaster bin tippers have two lifting chains; they are attached to the ram mount bracket by means of adjusting (levelling) bolts, and to the 'sliding plates' which run inside the masts. The chain is nickel-plated ½" British Standard Simplex (08B-1). The chains go around rollers on the bottom end of the ram, then up to the 'top roller'; one chain goes down inside the 'near' mast, and the other goes across the top, and down inside the 'far' mast. A moulded 'wear strip' guides it around the curve; the chain must be located in the grooves of the wear strip or the cradle may jam.

See [Section 7.4](#) for details regarding correct cradle adjustment and levelling.

If the machine must be laid down for any reason, the cradle should be tied down to the base frame before it is tipped over, to keep tension on the chains. If the machine is laid horizontally without tying the cradle down it is very likely that the chains will move from their correct positions on the top roller and wear strip.

9.1.1 Removal and Refitting

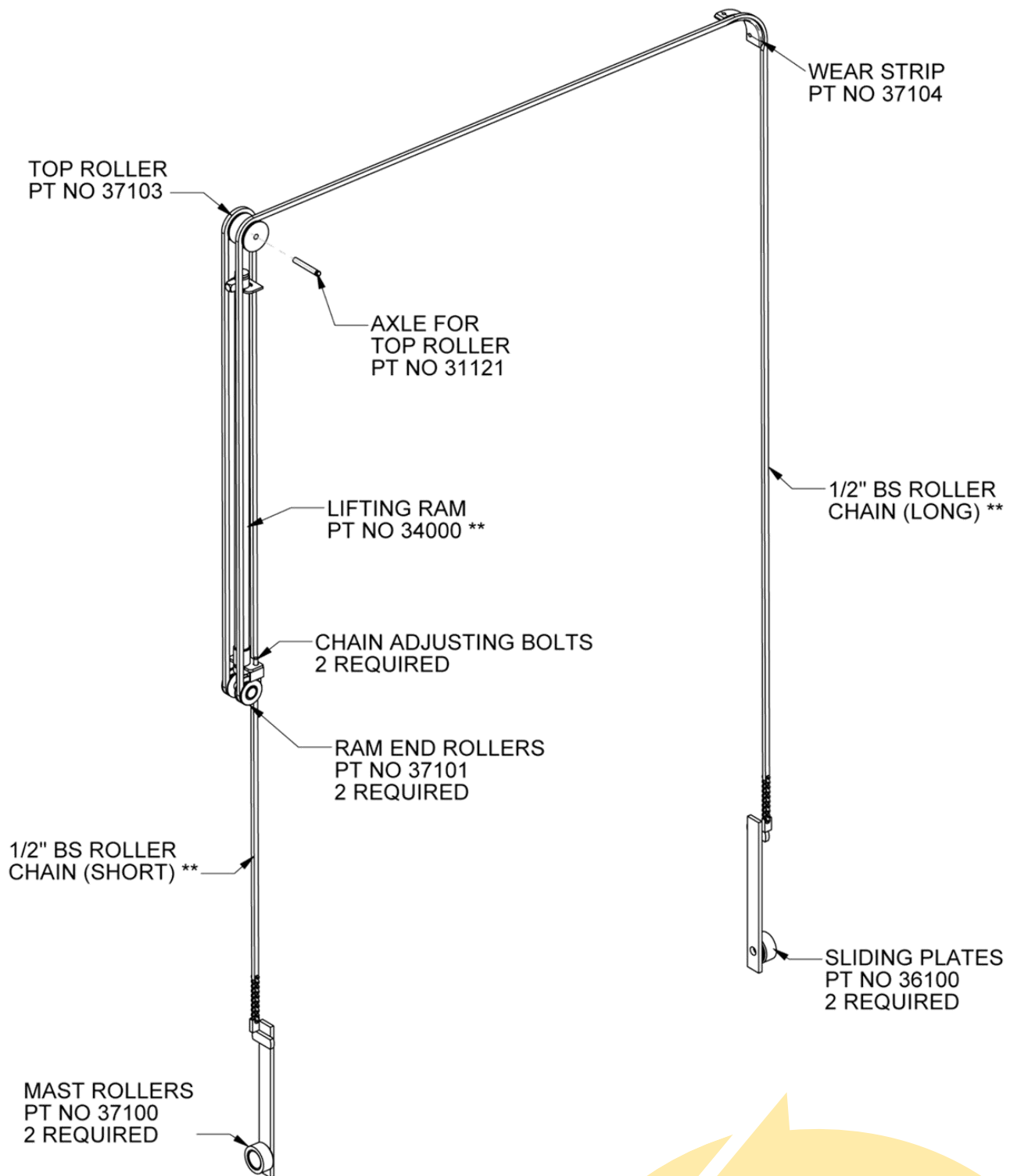
1. Remove the cradle as described in [Section 7.2](#).
2. Remove the ram cover. Make a note of how much thread is showing above the Nylock nuts on each side, as a guide for reassembly, then undo the nuts using a 17mm spanner or socket.
3. The adjusting bolts must be disconnected if the chains are to be removed. Tie a length of string or thin wire to the ends of the chains before allowing them to feed into the masts, to make refitting easier. To remove the sliding plates and chains, the machine must be raised a little, or laid over on its front.
4. When refitting, ensure the chains are correctly routed, and that the correct adjustor bolts are fitted to each side.
5. Refit the cradle and adjust the nuts so the cradle sits level, as described in [Section 7.4](#).

 **If it is necessary to repair or replace a chain, ensure that no connecting links are used at a point where they would pass through the ram-end rollers, as they will jam.**

9.2 Castor Wheels

As standard, Dumpmasters are fitted with four castors with 100mm diameter 'Blue Resilex' wheels. The two castors at the 'door' end have footbrakes. The castors are secured to the base with a single M12 x 35mm bolt through the centre.

9.3 Dumpmaster Lifting Arrangement



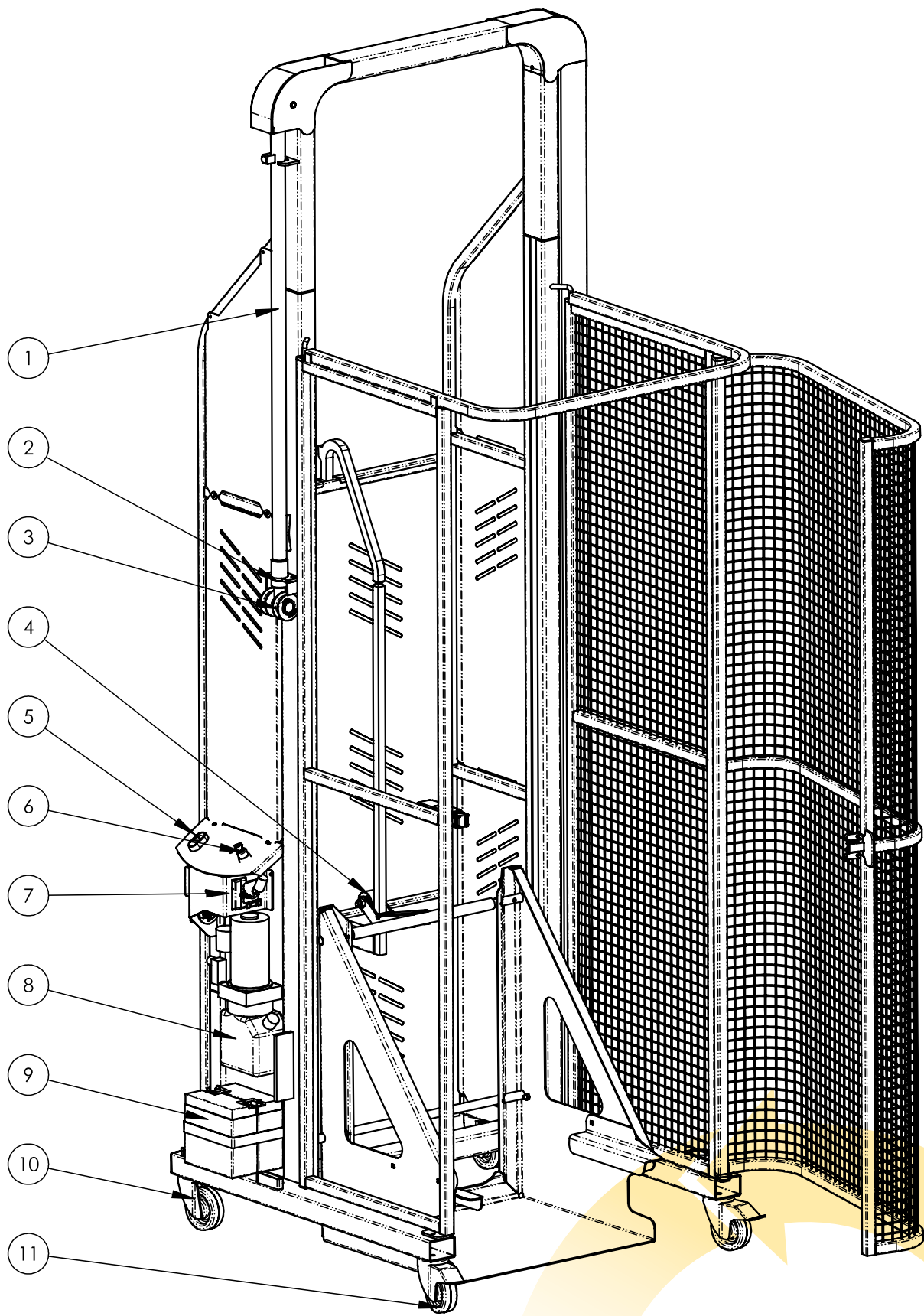
**** THE LENGTHS OF THE CHAINS AND LIFT RAM VARY ACCORDING TO THE TIPPING HEIGHT AND CRADLE TYPE. PLEASE SPECIFY THESE WHEN ORDERING SPARE PARTS.**

10 Common Spare Parts

The following table includes only the most common parts.

A full list of parts is available on request from Simpro, or may be viewed on our support site <http://support.simpro.world>

Diagram Ref	Part Number	Description
-	0640200064	Top roller
-	0140110003	Top roller axle
-	0140120004	Top moulded chain guide
1	0330090003	Complete Hydraulic Ram for DM1200, DM1500, DM1800
2	0090090006	Ram Seal
3	0140120002	Ram-End Rollers
-	0790050206	Door lock
4	0090120000	Follower Roller
5	0790050007	Raise/Lower Switch
6	0790050003	Key Switch
7	0390050006	24v Battery Charger
8	0940090068	24v Hydraulic Powerpack
9	0250050009	21 Ah 12v Battery
-	0140120007	Mast roller
-	0250050137	Cradle microswitch
10	0250040072	Non-braked Castor
11	0250040076	Braked Castor
-	0250050089	Emergency Stop button
-	0140120005	Plastic End Cap
-	0760040013	Door Latch – plastic
-	0760040003	Door Latch – metal





Solar Powered Dumpmaster
Many other options available
<http://simpro.world/dumpmaster>
