
USER MANUAL

Simpro Hiflow



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For the purpose 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)

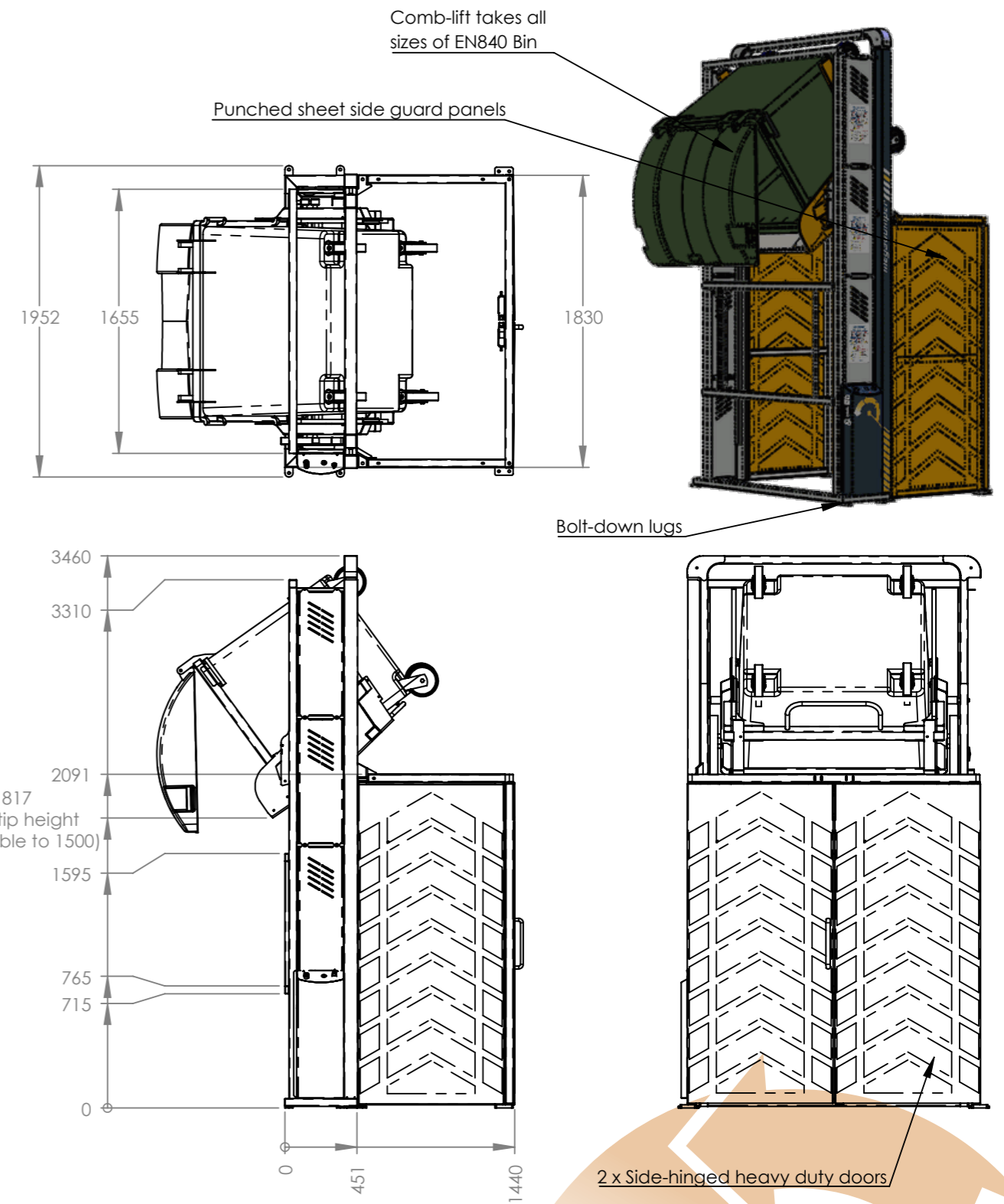
1 metre (m) = 1000 millimetres (mm) = 39.37 inches (in) = 3.28 feet (ft) = 1.09 yards (yd)

The following textual conventions are used throughout this document:

▲ Text in GREEN indicates a point of interest.

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

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



Hiflow HF1800.3.N Standard Layout and Dimensions

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2 Overview

Congratulations on your purchase of a Simpro Hiflow bin lifter.

The Hiflow's tipping action is an advanced version of the system used on Simpro bin-tipping machines for many years. It is simple and efficient and allows the machine to have a comparatively small footprint, regardless of the tipping height. The Hiflow also has a patented comb-hitch system which can lift and empty all sizes of EN840-standard bins from 60L to 1100L, with no adjustment and no need to clamp or strap bins in place.

With a Simpro Hiflow, you can focus on what you're good at. We'll empty the bins into it.

2.1 Key features

Key features of the Hiflow include:

1. A patent-pending comb-hitch system which uses gravity to lock bins into place while they are lifted and tipped. With just three moving parts, this system is very reliable and can lift all sizes of EN840 bin without clamping.
2. A tipping action which lift the bins straight up, and then gently rolls them forward around the lip of the destination receptacle. This allows for a small floor footprint with high stability.
3. A standardised control interface which allows simple, fast integration with other waste processing equipment.
4. The option of a Cat3 (PLd) or Cat4 (PLe) safety monitoring system in accordance with AS/NZS4024:2014.
5. A weight capacity of up to 600kg (or 800kg with small modifications).
6. A reliable, virtually maintenance-free design.
7. A fully hot-dip galvanised frame, tipping guide and comb-hitch.

2.2 Construction

The Hiflow consists of a steel frame with two vertical masts and stabilizing legs, a steel comb-hitch mechanism, two hydraulic rams, lifting chains, punched-sheet guarding, two steel-framed side-hinge doors, a hydraulic powerpack with electronic control systems, a powerpack cover, control panel, 3-phase power lead and four bolt-down lugs.



2.3 Mechanism

When the RAISE button is pressed, two hydraulic rams are extended, which pull on an arrangement of chains, causing the comb-hitch to travel vertically in the masts. The comb-hitch is inverted at the appropriate height by an arrangement of rollers and curved tracks.

The rams are supplied by a hydraulic power pack, which has a 3-phase motor. Electric and hydraulic control mechanisms allow the operator to raise and lower the bin in a controlled manner.

2.4 Duty cycle

The duty cycle of the Hiflow depends on various environmental factors and the manner in which the machine is used. The figures given below are estimates only.

Power Supply	Duty Cycle (tipping at 1800mm)		
	Throughput (net tipped material)	No. of bins equivalent (average ~500kg each)	Units
3-Phase Mains	20,000kg	40 bins	per hour, nonstop

2.5 Intended operational life

The intended operational life of the Hiflow is as follows:

Average Gross Bin Weight	Intended operational life
< 200kg	250,000 cycles
200kg – 300kg	200,000 cycles
300kg – 500kg	150,000 cycles
500kg – 600kg	100,000 cycles
> 600kg	50,000 cycles

2.6 Noise emissions

The noise emissions of the Hiflow bin lifter in standard operation have been assessed as not exceeding ~60 dB(A) at the operator's ear.

Operators are not required to wear hearing protection but are recommended to do so if using the machine on a constant basis.

⚠ ISO standards for machinery safety specify that noise emissions are to be measured in A-weighted decibels (dB(A)), a unit of volume which is adjusted to reflect the sensitivity of human hearing. The measurements are to be taken at a point 1.6 metres above the ground, immediately adjacent to the operator's work position.

2.7 Environmental restrictions

The Hiflow may be used indoors or outdoors. However, the following restrictions apply:

1. A minimum floor area of four square metres, with a clear passage to exits;
1. Height above sea level not more than 1000m;
2. Ambient temperature not higher than +40°C and not lower than -10°C;
3. At ambient temperatures above 35°C, the relative humidity should not exceed 50%; at lower temperatures, higher relative humidity is permitted;
4. Do not use in flammable, explosive, corrosive, acidic or alkaline environments.

2.8 Notes

- ⚠ This User Manual describes approved procedures for the operation, maintenance, and routine inspection of the Hiflow hydraulic bin-tipping machine.
- ⚠ This manual is written in English, and is to be considered the 'Original Instructions' for the purposes of EU Machinery Directive 2006/42/EC.
- ⚠ Operator(s) must read and understand this manual before using the machine.
- ⚠ If the machine is to be leased, sold or otherwise transferred, then this manual shall accompany the machine.
- ⚠ Simpro reserves the right to modify the design of the machine. If there is anything in this manual that is not consistent with the actual machine, the actual machine should be considered correct and the manual is only for reference.
- ⚠ Contact your authorized Simpro agent in the first instance if you encounter any problems or faults with the machine.
- ⚠ Any errors in this manual should be reported by email to info@simpro.world.

3 Safety

The Hiflow has been designed to be as safe as possible without restricting the ease-of-use and versatility of the machine.

⚠ A comprehensive Hazard and Risk Assessment should be undertaken before the Hiflow is used for the first time, as described in Section 3.3.

3.1 Safety features

The safety features of the Hiflow are as follows:

1. Sheet-metal panels which prevent personnel access to all moving parts.
2. A safety interlock system which disables the machine unless both doors are shut, and locks the doors as soon as the comb-hitch leaves the ground.
3. A tipping action which always maintains the weight of the bin within the machine footprint to ensure stability.
4. A pressure-compensating lowering valve which automatically regulates the lowering speed regardless of the weight of the bin.
5. A control system which immediately stops the machine whenever the RAISE or LOWER button is released.

3.2 Reasonably foreseeable misuse

The reasonably foreseeable misuse considered in the Hiflow design is as follows:

1. Attempts to use the machine by untrained operators;
2. Attempts to empty bins that the cradle is not specifically designed to hold;
3. Attempts to bypass the door interlock or other safety systems;
4. Attempts to clear spilt material from inside the guarding without proper procedures;
5. Attempts to clean the machine without following proper procedures.

3.3 Hazard and Risk Assessment

Machinery owners are required by law to conduct a comprehensive Hazard and Risk Assessment for their equipment, considering all relevant factors such as the area it is used, the skill and training of operators, the proximity of other persons, frequency of use, etc.

The following section is not a comprehensive site-specific Hazard and Risk Assessment, but an assessment of the generic risk factors associated with the Hiflow design. Blank template spaces are provided for the assessment of additional site-specific hazards.

⚠ As with all powered industrial equipment, some hazards will remain despite any precautions undertaken by the manufacturer or owner of the machine. It is essential

that all operators are aware of these residual hazards and what they must do to prevent harm to themselves or to others, as described in Section 3.4.

3.3.1 Risk Evaluation guide

As defined by ISO safety standards, any given hazard has a numeric Risk Factor, from which may be derived the final Risk Evaluation. These factors can be calculated as follows.

3.3.1.1 Risk Factor calculation

The Risk Factor associated with a given hazard may be calculated from the following table, using the formula: **Risk Factor = LO x FE x DPH x NP**

LO	Likelihood of Occurrence	FE	Frequency of Exposure	DPH	Degree of Possible Harm	NP	Number of Persons at risk
0.1	Impossible, or possible only in extreme circumstances	0.1	Infrequently	0.1	Scratch or bruise	1	1 – 2 persons
0.5	Highly unlikely though conceivable	0.2	Annually	0.5	Laceration, mild ill-health	2	3 – 7 persons
1	Unlikely but could occur	1	Monthly	1	Break minor bone or illness (temporary)	4	8 – 15 persons
2	Possible but unusual	1.5	Weekly	2	Break major bone or illness (permanent)	8	16 – 50 persons
5	Even chance – could happen	2.5	Daily	4	Loss of 1 limb or eye/serious illness (temporary)	12	51 or more persons
8	Probable – not surprised	4	Hourly	8	Loss of 2 limbs or eyes/serious illness (permanent)		
10	Likely, only to be expected	5	Constantly	15	Fatality		
15	Certain, no doubt						

3.3.1.2 Risk Evaluation

Once the Risk Factor has been calculated, the Risk Evaluation can be derived using the following table:

Risk Factor	0-1	2-5	6-10	11-50	51-100	101-500	501-1000	1001 +
Risk Evaluation	Negligible	Very Low	Low	Significant	High	Very high	Extreme	Unacceptable

3.3.2 Identified Hazards

The following common hazards have been identified with the Dumpmaster design. For each hazard, a full Risk Evaluation has been completed, and suitable control measures described.

Blank template spaces are provided at the end for machinery owners to identify, assess and control additional site-specific hazards.

Entanglement or amputation of fingers or limbs in moving parts										
Operator	LO:	0.5	FE:	4	DPH:	1	NP:	1	Risk Factor:	2
	Guarding prevents access to all moving parts and trapping hazards.									
Other persons	LO:	1	FE:	4	DPH:	1	NP:	1	Risk Factor:	4
	As above.									
Control measures	Operators are responsible to obey warning signs fitted to the machine and instructions, regarding keeping himself and others clear of all moving parts.									
Comments	The Hiflow is designed so that trapping hazards are eliminated, minimized or isolated.									
Crushing by unauthorized rapid descent of comb-hitch										
Operator	LO:	0.5	FE:	4	DPH:	1	NP:	1	Risk Factor:	2
	The operator is protected from the comb-hitch by the frame and guarding during operation. A door safety interlock system ensures that the door can only be opened when the comb-hitch is on the ground, and the comb-hitch cannot be raised unless the door is closed and locked. Significant safety margins ensure that the probability of failure of any steel, hydraulic, or control parts failing is very low.									
Other persons	LO:	0.5	FE:	4	DPH:	1	NP:	1	Risk Factor:	2
	As above.									
Control measures	Operators are responsible to obey warning signs fitted to the machine and instructions, regarding keeping himself and others away from the area under the comb-hitch when raised. The machine must be regularly maintained and faults repaired immediately.									
Comments	A hydraulic speed-control valve limits the maximum speed of descent in normal use.									
Operator or others being hit by falling or flying debris										
Operator	LO:	1	FE:	4	DPH:	0.5	NP:	1	Risk Factor:	2
	The operator is protected from the comb-hitch by the frame and guarding during operation. There is some risk if items such as broken glass are being tipped.									
Other persons	LO:	1	FE:	4	DPH:	0.5	NP:	1	Risk Factor:	2
	There is some risk to others standing close to the bin if items such as broken glass are being tipped									
Control measures	Operators are responsible to obey all instructions and warning signs regarding keeping himself and others away from the machine while in use. If tipping items such as glass, metal or liquids, glasses and gloves should be worn									
Comments										

Crushing if the machine falls over										
Operator	LO:	0.1	FE:	2.5	DPH:	1	NP:	1	Risk Factor:	0.25
	Low risk as Hiflow tippers are bolted to the ground, and are very stable. The bin centre of gravity remains well within the machine's footprint throughout the tipping cycle.									
Other persons	LO:	0.1	FE:	2.5	DPH:	1	NP:	1	Risk Factor:	0.25
	As above.									
Control measures	Do not operate on uneven ground, or ground with a slope of more than 1:12. Never attempt to empty liquids from closed-top drums.									
Comments										
Electrocution or electric shock										
Operator	LO:	1	FE:	4	DPH:	15	NP:	1	Risk Factor:	60
	Some risk is always present with mains power leads.									
Other persons	LO:	1	FE:	4	DPH:	15	NP:	1	Risk Factor:	60
	As above.									
Control measures	Fit a Residual Current Device (RCD) to all power sockets. Check all leads frequently and repair or replace if damaged. All leads should be checked and tagged by a registered electrician at regular intervals.									
Comments	Hiflow tippers are earthed and comply with AS60204.1.									
Contamination from tipping toxic powder and liquid										
Operator	LO:	2	FE:	4	DPH:	1	NP:	1	Risk Factor:	8
	The operator may be exposed to liquids or powders being tipped, especially in windy conditions. If the product being tipped could cause any harm whatsoever to personnel, suitable Personal Protective Equipment must be worn.									
Other persons	DPH:	2	FE:	4	DPH:	1	NP:	1	Risk Factor:	8
	As above.									
Control measures	The operator is responsible to wear appropriate Personal Protective Equipment, and ensure that all other persons are well clear of the area. Powder should only be tipped in calm conditions, or a wind shield should be installed.									
Comments	Substances of a toxicity that cannot be protected against with PPE should not be emptied with a Hiflow. Alternative methods should be used.									
Damage to skin when used in extreme weather conditions										
Operator	LO:	2	FE:	4	DPH:	1	NP:	1	Risk Factor:	8
	If the machine is to be used in extreme cold or heat, the operator must wear gloves and other suitable Personal Protective Equipment.									
Other persons	LO:	2	FE:	4	DPH:	1	NP:	1	Risk Factor:	8
	As above.									
Control measures	All persons are responsible to wear Personal Protective Equipment suitable for the environmental conditions in which the machine is being used. See Section 2.7 for Hiflow environmental restrictions.									
Comments										

Application-specific hazard:								
Operator	LO:		FE:		DPH:		NP:	Risk Factor:
Other persons	LO:		FE:		DPH:		NP:	Risk Factor:
Control measures								
Comments								
Application-specific hazard:								
Operator	LO:		FE:		DPH:		NP:	Risk Factor:
Other persons	LO:		FE:		DPH:		NP:	Risk Factor:
Control measures								
Comments								
Application-specific hazard:								
Operator	LO:		FE:		DPH:		NP:	Risk Factor:
Other persons	LO:		FE:		DPH:		NP:	Risk Factor:
Control measures								
Comments								
Application-specific hazard:								
Operator	LO:		FE:		DPH:		NP:	Risk Factor:
Other persons	LO:		FE:		DPH:		NP:	Risk Factor:
Control measures								
Comments								

Application-specific hazard:								
Operator	LO:		FE:		DPH:		NP:	Risk Factor:
Other persons	LO:		FE:		DPH:		NP:	Risk Factor:
Control measures								
Comments								
Application-specific hazard:								
Operator	LO:		FE:		DPH:		NP:	Risk Factor:
Other persons	LO:		FE:		DPH:		NP:	Risk Factor:
Control measures								
Comments								

3.4 Residual Hazards

As with all powered industrial equipment, some 'residual hazards' may be present despite any guarding or safety measures implemented by the manufacturer.

The operator has a legal responsibility to identify and assess these residual hazards, and to take **all reasonable precautions** to eliminate, isolate, or minimize them. Such precautions may include any or all of the following:

- ⚠ Procedures to record and monitor that operators are properly trained.
- ⚠ Implementation of Standard Operating Procedures.
- ⚠ Disciplinary measures to ensure the Standard Operating Procedures are observed.
- ⚠ Posting signage, floor marking, or other warnings as deemed appropriate.
- ⚠ Taking steps to develop a culture of safety and open communication among machinery operators.

3.5 Safety Norms

The following safety norms must be observed for the safe use of a Hiflow bin lifter.

Only trained and authorised persons should be permitted to use the machine.

Operators must read and obey the instructions displayed on the machine.

Never operate machine on ground with a slope ratio greater than 1:12.

Never operate machine on the edge of a raised dock or platform, unless designed for that application.

Never operate machine with any covers or guards removed.

Never attempt to empty the contents of closed-top drums unless the machine is securely bolted down.

All persons other than the operator must keep at least two metres clear while the machine is in use.

Always keep feet and hands well clear of bin and comb-hitch when operating.

Do not place feet or foreign objects under the side guards or door.

Do not empty bins if over-filled.

Before connecting machine to mains supply, ensure voltage and frequency correspond with that listed on the rating plate.

Do not use an extension lead to connect machine to the mains supply.


Do not operate if power supply lead and insulation is damaged.

Do not connect a damp power plug or socket.

Ensure the supply socket is fitted with a residual current device.

Ensure there is complete continuity between the machine and an effective earthing system which complies with local and national regulations. The manufacturer cannot be held liable for the consequences of an inadequate earthing system.

4 Operating Instructions

 How to operate a standard machine, with no autocycle function or PLC controller.

1. Before operation, **check that the machine is stable and safe to use:**
 - a. Machine is on level ground, with a slope of 1:12 or less.
 - b. All covers and safety guards are in place.
 - c. Wheel brakes are applied, and/or the feet are wound down onto the ground.
 - d. All personnel other than the operator are well clear of the machine.
 - e. The cradle is fully lowered.
 - f. The key is inserted and turned to the ON position.
 - g. The battery indicator (if fitted) shows an acceptable level of charge.
2. Open the door and place the full bin onto the cradle, taking care that it is properly positioned, then shut the door.
3. **Press and hold the RAISE button** until the bin reaches the inverted position, then release. Wait for the contents of the bin to empty.
4. **Press and hold the LOWER button** until the cradle rests on the ground.
5. Open the door and remove the empty bin.
6. Repeat from step 1) as required.

 Release the RAISE or LOWER button to stop the cradle at any time.



5 Maintenance

The Hiflow is designed to give many years of service with minimal maintenance. In the event a fault or malfunction does occur, refer to the [Quick Trouble Shooting Guide in Section 5.1](#) before contacting your agent for service.

- ⚠ Contact your Simpro agent if repair or service work is required.
- ⚠ All repair and service work must be carried out by qualified personnel.
- ⚠ Replacement parts must be supplied by Simpro or an authorized Simpro agent, and must be of the same design and specification as the original parts.
- ⚠ Replacement hydraulic fluid must comply with specifications in [Section 5.5.5](#).
- ⚠ A detailed Service Manual giving specific testing and repair instructions is available on request from Simpro.

5.1 Quick Troubleshooting Guide

Refer to the Quick Troubleshooting Guide below before contacting your agent for service.

Problem	Possible Causes	Remedy
The machine will not lift bins, and the motor does not run	Flat battery	Recharge the battery
	Blown fuse, faulty plug, or faulty power lead	Check and rectify
	Faulty switch or wiring	Check and rectify
	Faulty raise relay or contactor	The relay contactor should click when the 'up' button is pressed – if not, check and replace
	Motor running wrong direction (3-phase only)	Swap phase wires in plug
The machine will not lift bins, although the motor runs	Door safety interlock(s) malfunctioning	Contact your agent for details and / or wiring diagrams
	Bin too heavy	Reduce bin weight
Comb-hitch will not come down from the fully raised position	Pressure-relief valve set too low	Contact your agent
	Comb-hitch sticking in masts	Spray inside of masts at top of slots. Smear grease on top of the curved tipping tracks". Lubricate the roller arm at top of comb-hitch
	Lift ram(s) jamming	Contact your agent
Comb-hitch jams part way down	Faulty switch, wiring, or lowering valve	The lowering valve should click when the button is pressed – if not, check the switch, wiring and electro-magnetic coil
	Follower roller(s) not turning freely	Lubricate the roller
	Roller arm(s) twisted or comb-hitch sitting out of level	Check and straighten if necessary

5.2 Cleaning

The Hiflow may be cleaned with a low-pressure water jet, a cloth and a mild cleaning solution. Cleaning should be done with the comb-hitch in the lowered position.

⚠ Do not clean the Hiflow with a high-pressure water jet, such as a water-blaster.

5.3 Ingress protection

Item	Ingress Protection
Push buttons	IP66
Switches	IP66
Lamps	IP66
Door lock	IP66
Coded magnetic switch	IP66
Motor	IP54 (additional protection provided by covers)
Overall	IP55 (available options: IP56, IP69K)

5.4 Comb-hitch jams

Occasionally the comb-hitch may become jammed at some point in the tipping cycle. This is usually a minor issue which may be easily rectified.

- ⚠ The comb-hitch is not powered down – it is lowered by gravity alone.
- ⚠ All machines have a solenoid-operated lowering valve and a pressure-compensating flow control valve.
- ⚠ Some machines also have a hose-burst valve on the ram port, and an external manually-adjustable in-line flow control valve.

5.4.1 Comb-hitch jams while raising

If the comb-hitch jams while raising the cause may be either an overweight bin, or a mechanical fault, such as a bent tipping guide or misaligned roller.

5.4.1.1 Overweight bin

1. Lower the comb-hitch to ground level, open the doors and remove the bin.
2. Manually remove some material from the bin, then try again.

⚠ If the pressure-relief valve is adjusted incorrectly, the comb-hitch may stall even when lifting bins that are within the rated capacity of the machine. Adjustment of the pressure-relief valve may only be carried out by a suitably qualified technician, with prior authorization from Simpro.

5.4.1.2 Mechanical fault

1. If possible, lower the comb-hitch to ground level, open the doors and remove the bin.
2. Attempt to visually identify the cause of the jamming. The most likely causes are:
 - a. The lifting chains may have derailed from one of the plastic guides at the top of the mast.
 - b. A mast may have been bent or damaged, jamming one of the mast rollers

- c. Lack of lubrication on the follower roller, or the main comb-hitch axles.
 - d. The comb-hitch may be sitting out of level, due to poor adjustment of the lifting chains or to a breakage.
 - e. The 'roller arm(s)' may be pressing against the 'tipping track', due to the comb-hitch sitting out of level, or not being properly centered between the masts.
3. With the comb-hitch lowered, rectify the problem by straightening and/or realigning the mechanical components as required. If the mast is bent, you may need to contact your agent for support.
 4. Run the machine through several full cycles to ensure the problem has been properly resolved.

5.4.2 Comb-hitch jams while lowering

If the comb-hitch jams on the way down, or has jammed on the way up but will not come down, it may be due to a hydraulic, electrical, or mechanical fault.

5.4.2.1 Hydraulic or electrical fault

When the LOWER button is pressed, the lowering valve should emit a 'click' sound as it opens. If it does not, the problem may be either a hydraulic or electrical fault.

1. Manually disable the safety door interlocks as per [Section 5.7.1](#), and open the doors.
2. Attach a lifting sling to a forklift or mobile crane, and gently take the weight of the comb-hitch and bin.

⚠ Never place any part of your body underneath the comb-hitch unless it is securely supported.

3. Remove the powerpack cover.
4. Unscrew the fitting attaching the steel hydraulic pipe to the powerpack and hold the end of the pipe over a container with a capacity of at least 2 litres.
5. Lower the comb-hitch slowly with the forklift or crane, while collecting the hydraulic fluid in the container.
6. Once the comb-hitch is fully lowered, remove the bin.
7. Reconnect the hydraulic pipe and fitting and refill the oil tank.
8. Check that the lowering valve coil is receiving an electrical signal. An LED lamp should glow on the coil plug when the LOWER button is pressed. If it does not, check the wiring.
9. If the coil is receiving an electrical signal but not opening, it may need to be cleaned:
 - a. Remove the coil from the valve stem.
 - b. Unscrew the lowering valve cartridge.
 - c. Clean the cartridge with compressed air.
 - d. Replace the lowering valve components by reversing this procedure.
10. Replace the lowering valve, and test to see if the comb-hitch lowers correctly.

11. Re-enable the safety door interlocks and run the machine through several full cycles to ensure the problem has been properly resolved. If the lowering valve is still not operating correctly, it may need to be replaced – contact your agent.

5.4.2.2 Mechanical fault

If the lowering valve is operating correctly (emits a 'click' sound when the LOWER button is pressed), the problem may be a mechanical fault.

1. Manually release the safety door interlocks as per [Section 5.7.1](#), and open the doors.
2. Provide support for the comb-hitch, either with a structure underneath or with a sling holding it to the top of the main frame. Allow for it to fall no more than 50mm.

⚠ Never place any part of your body underneath the cradle unless it is securely supported.

3. Attempt to visually identify the cause of the jamming. The most likely causes are:
 - a. The lifting chains may have derailed from one of the plastic guides at the top of the mast.
 - b. A mast may have been bent or damaged, jamming one of the mast rollers
 - c. Lack of lubrication on the follower roller, or the main comb-hitch axles.
 - d. The comb-hitch may be sitting out of level, due to poor adjustment of the lifting chains or to a breakage.
 - e. The 'roller arm(s)' may be pressing against the 'tipping track', due to the comb-hitch sitting out of level, or not being properly centered between the masts.
4. Rectify the problem by straightening and/or realigning the mechanical components as required. If the mast is bent, you may need to contact your agent for support.
5. Close the door and test to see if the comb-hitch lowers correctly.
6. Re-enable the safety door interlocks and run the machine through several full cycles to ensure the problem has been properly resolved.

5.5 Hydraulic system

⚠ Spare parts are available from Simpro or any Simpro agent.
⚠ Refer to [Section 5.5.6](#) for a schematic diagram of the hydraulic system.

5.5.1 Powerpack

The hydraulic powerpack is supplied as a complete unit. The motor, pump, oil tank, and all control valves are mounted into the centre manifold.

5.5.2 Control valves

The hydraulic system has four primary control valves:

1. Check valve
2. Pressure-relief valve
3. Solenoid lowering valve
4. Pressure-compensating lowering-speed valve (this automatically regulates the lowering speed, regardless of the load on the comb-hitch).

5.5.3 Lift Rams

The lift rams are a single-acting displacement type, very robust and reliable, but easy to maintain should the need arise. Steel tubes run from the power-pack to each ram.

⚠ On some models, a hose-burst valve is fitted directly to the ram port.

5.5.4 Maintenance

As the pump only runs while the comb-hitch is lifting, it can take at least 500 bins to reach 1 hour's run time of the power-pack. The oil should be replaced and the suction filter cleaned after 12 months, then after every 100 hours of run time. The lowering valve should also be removed and cleaned at this time.

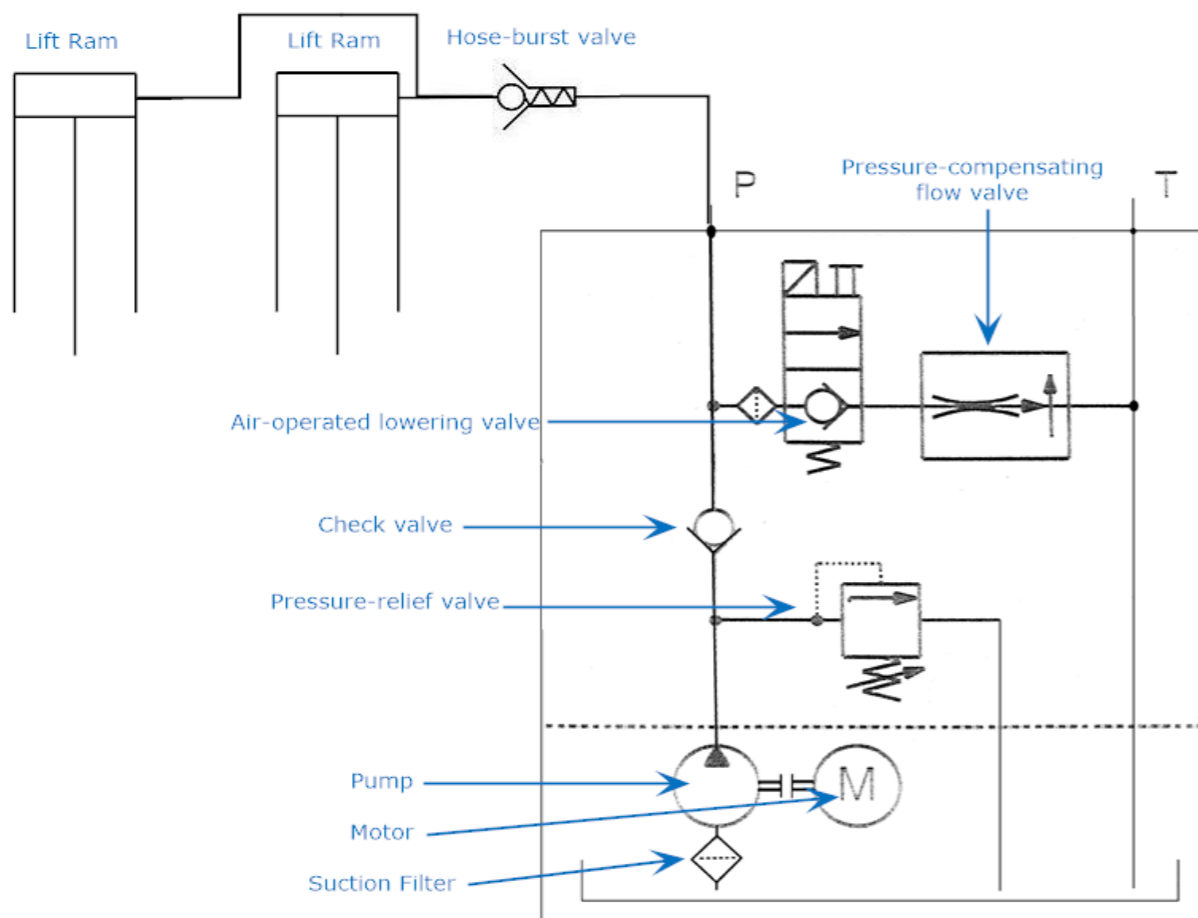
5.5.5 Hydraulic fluid

Any good-quality mineral oil-based hydraulic fluid can be used. Fluid with a Viscosity Grade of 22 (ISO VG 22) is recommended; fluid with a Viscosity Grade of 32 (ISO VG 32) may be used, but will reduce the lowering speed slightly.

The fluid should have physical lubricating and chemical properties as specified by:

1. Mineral Oil Based Hydraulic Fluids HL (DIN 51524 part 1)
2. Mineral Oil Based Hydraulic Fluids HL P (DIN 51524 part 2)

5.5.6 Hydraulic system schematic



5.6 Safety Door

The standard Hiflow is fitted with two side-hinge safety doors, consisting of a steel frame with punched sheet-metal guarding. These doors are very simple and robust, but will benefit from occasional servicing as follows:

1. Lightly lubricate the door pivot points with silicone spray.
2. Check the door safety interlocks to ensure they work as intended, as follows:
 - a. Firstly, raise the cradle a little off the ground and try to open the doors. If either door can open, the switch operated by the cradle may need adjusting or replacing. Contact the agent or manufacturer for instructions.
 - b. Next, open one door, then press the Raise and Lower buttons and make sure the machine does not run. If it does, contact the agent or manufacturer for instructions.
3. Check that all door fixings are tight.

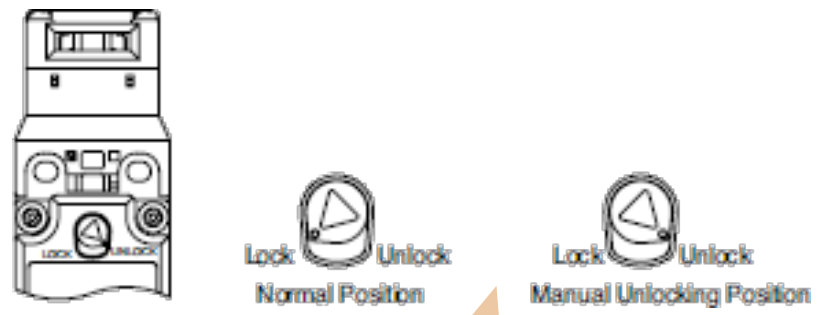
5.7 Safety Door Interlocks

The Hiflow is fitted with two solenoid-operated safety door interlocks. The interlocks are Idec models HS5E-D4403-G or HS5E-F4403-G. These are 'power-to-unlock' type, with four internal contacts which are used to determine whether the door is closed and locked.

5.7.1 Interlock manual override

⚠ This work should only be carried out by a suitably qualified technician.
⚠ The Override Key should be stored in a safe location, accessible only to supervisors and technical staff.

All routine cleaning and maintenance on the Hiflow should be conducted with the comb-hitch in the fully lowered position. If for any reason the interior of the safety cage needs to be accessed **while the comb-hitch is raised**, the interlocks can be manually disabled by carrying out the following procedure.

1. Using a ladder or similar height-access equipment, reach over the top of the safety cage (above the doors) and insert the yellow Override Key into the triangular cam on each safety interlock and turn to the UNLOCK position.
2. The safety doors can now be opened even while the cradle is raised.
 - a. On machines with a standard control system, the safety doors will now function as a switch – the cradle **cannot be moved** while the door is open, but can still operate while the door is shut.
 - b. On machines with a safety-monitored control system, the system will enter 'Safe Mode' – the machine is disabled, and the cradle **cannot be moved** until the door is closed, the interlock is re-enabled, and the safety system is reset.

3. Open the safety doors and carry out cleaning or maintenance as required.
4. Once the work is complete, shut the safety doors and use the Override Key to turn both safety interlocks back to the LOCK position.
5. Remove the Override Key and store in a safe location accessible only to authorized maintenance staff.
6. If the machine is fitted with a safety-monitored control system, press the blue RESET button for two seconds to check and reset the safety system.
7. Fully test the machine and all safety functions before returning to service.

- ⚠ Do not open the safety doors with the Override Key inserted but not fully turned (less than 90°) as this may damage the interlock or cause operational failures.
- ⚠ Do not apply excessive force to the Override Key or the interlock components.
- ⚠ Do not leave the Override Key inserted in the interlock during normal operations.
- ⚠ Do not store the Override Key in a location where it can be accessed by unauthorised staff.

A copy of the user manual for the Idec safety interlocks may be downloaded from this URL: goo.gl/iafPol. A summary of the specifications is included on the following page:

HS5E Safety Door Lock Switches

**Small safety switch with four poles and solenoid.
Ideal for applications in small spaces.**

- Compact body. 35 × 40 × 146 mm.
- Four-pole internal switches.
- Gold-plated contacts.
- Spring lock and solenoid lock types are available.
- The head orientation can be rotated, allowing 8 different actuator entries.
- A metal entry slot ensures the high durability.
- An actuator with rubber cushions alleviates the impact of actuator entry into the slot.
- The locking strength is 1000N minimum (GS-ET-19).
- Integral cable design minimizes wiring, preventing wiring mistakes.
- LED pilot light indicates the solenoid status.
- RoHS directive compliant.
- Degree of protection: IP67 (IEC60529)
- NC contacts are of direct opening action (IEC/EN60947-5-1).
- Proprietary actuators prevent unauthorized opening (ISO14119, EN1088).
- Double insulation structure.




Spring Lock Type

- Automatically locks the actuator without power applied to the solenoid.
- After the machine stops, unlocking is completed by the solenoid, providing high safety features.
- Manual unlocking is possible in the event of power failure or maintenance.

Solenoid Lock Type

- The actuator is locked when energized.
- The actuator is unlocked when de-energized.



UL US TÜV GS CE → □
BG standard in Germany Direct Opening Action Double Insulation

Specifications

Applicable Standards	ISO14119 EN60947-5-1 (TÜV approval) GS-ET-19 (BG approval) CSA C22.2, No. 14 (c-UL recognized)	IEC60947-5-1 EN1088 (TÜV approval) UL508 (UL recognized) IEC60204-1/EN60204-1 (applicable standards for use)
Operating Temperature	-25 to 50°C (no freezing)	
Relative Humidity	45 to 85% (no condensation)	
Storage Temperature	-40 to +80°C (no freezing)	
Pollution Degree	3	
Impulse Withstand Voltage	2.5 kV (between LED, solenoid and grounding; 0.5 kV)	
Insulation Resistance (500V DC megger)	Between live and dead metal parts: 100 MΩ minimum Between live metal part and ground: 100 MΩ minimum Between live metal parts: 100 MΩ minimum Between terminals of the same pole: 100 MΩ minimum	
Electric Shock Protection	Class II (IEC61140)	
Degree of Protection	IP67 (IEC60529)	
Shock Resistance	Operating extremes: 100 m/s ² Damage limits: 1000 m/s ²	
Vibration Resistance	Operating extremes: 10 to 55 Hz, amplitude 0.35 mm minimum Damage limits: 30 Hz, amplitude 1.5 mm minimum	
Actuator Operating Speed	0.05 to 1.0 m/s	
Direct Opening Travel	Actuator HS9Z-A51: 1.1 mm minimum Actuator HS9Z-A51A/A52/A52A/A53/A55: 1.2 mm minimum	
Direct Opening Force	80N minimum	
Tensile Strength when Locked	1000N minimum (GS-ET-19)	
Operating Frequency	900 operations per hour	
Mechanical Life	1,000,000 operations minimum (GS-ET-19)	
Electrical Life	100,000 operations minimum (operating frequency 900 operations per hour, load AC-12, 250V, 1A)	
Conditional Short-circuit Current	50A (250V) (Use 250V/10A fast acting type fuse for short-circuit protection.)	
Cable	UL2464, No. 21 AWG (8-core: 0.5 mm ² or equivalent/coe)	
Cable Diameter	ø7.6 mm	
Weight (approx.)	400g (HS5E-***01)	

Ratings

• **Contact Ratings**

Rated Insulation Voltage (Ui) (Note 1)		250V (between LED or solenoid and ground; 30V)		
Rated Thermal Current (Ith)		2.5A		
Rated Voltage (Ue)		30V	125V	250V
Rated Current (Ie) (Note 2)	AC	Resistive load (AC-12)	—	2A 1A
		Inductive Load (AC-15)	—	1A 0.5A
	DC	Resistive load (DC-12)	2A	0.4A 0.2A
		Inductive Load (DC-13)	1A	0.22A 0.1A

• Minimum applicable load (reference value): 3V AC/DC, 5 mA
 Note 1: UL rating: 125V
 Note 2: TÜV, BG rating: AC-15, 0.5A/250V, DC-13, 0.22A/125V
 UL, c-UL rating: Pilot duty AC 0.5A/125V, Pilot duty DC 0.22A/125V

• **Solenoid**

Locking Mechanism	Spring Lock Type	Solenoid Lock Type
Rated Voltage	24V DC	
Rated Current	286 mA (initial value)	
Coil Resistance	90Ω (at 20°C)	
Pickup Voltage	Rated voltage × 85% maximum (at 20°C)	
Dropout Voltage	Rated voltage × 10% minimum (at 20°C)	
Maximum Continuous Applicable Voltage	Rated voltage × 110%	
Maximum Continuous Applicable Time	Continuous	
Insulation Class	Class F	

• **Pilot Light**

Rated Voltage	24V DC
Rated Current	10 mA
Light Source	LED
Light Color	Green

idec

5.8 Safety Monitoring System (Cat3/Cat4 only)

⚠ If you do not operate a machine with a safety-monitored control system to comply with ISO 13849-1 or AS/NZS 4024 Cat3/Cat4/PL(d)/PL(e), please disregard this section.

5.8.1 Overview

Machines with a safety rating of PL(d)/Cat3 or higher are fitted with a Rockwell CR-30 Safety Relay to monitor the safety systems. The CR30 Safety Relay continuously monitors the status of the Emergency Stop contacts, door interlock, bin-hitch-lowered sensor, and tipper-in-position sensor (if fitted).

The Safety Relay goes into 'Safe Mode':

1. If any fault is detected;
2. Whenever the door is unlocked/opened;
3. Whenever the Emergency Stop is pressed;
4. Whenever the tipper is moved away from the 'safe' position (optional).

Whenever the machine is in SAFE MODE the blue RESET lamp glows, and the machine must be 'reset' before it can be operated. To reset the machine, first ensure the door is correctly closed and locked, the Emergency Stop is released, and the tipper is in the correct position. Next, press and hold the RESET button for about two seconds. A diagnostic test is run on the machine, and if all safety functions are operating correctly the lamp will go out when the button is released, indicating a successful reset. If a fault has been detected in any of the safety equipment or connections, the machine will not reset and cannot be operated – the RESET lamp will continue to glow.

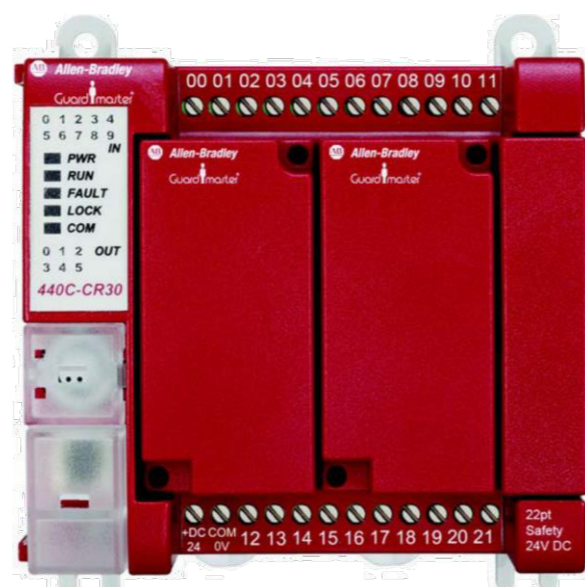
This documentation is to assist an engineer or electrician to find and repair any fault preventing the system from resetting. Most faults can be traced from the LEDs on the CR30 safety relay itself; some locks and sensors also have LEDs to assist in trouble-shooting.

5.8.2 440C-CR30 Safety relay

The 440C-CR30-22BBB (CR30) relay is a software-configurable safety relay. This device is intended to be part of the safety-related control system of a machine. The CR30 safety relay is based on the Micro800 platform and must be configured using a personal computer (PC) with the Allen-Bradley® Connected Components Workbench software.

The housing is red to signify it as a safety device and to distinguish it from the grey-coloured standard controllers.

The CR30 safety relay accommodates up to 24 safety monitoring functions. Examples of safety monitoring functions are single channel input, dual channel input, two hand control, reset, and feedback. It has 22 embedded safety rated inputs



and outputs and accepts up to two plug-in modules, each of which has four standard inputs and four standard outputs.

The CR30 safety relay can be configured to accept two single-wire safety inputs and to provide two single-wire safety outputs. This feature allows the CR30 safety relay to be an integral part of an extensive machine safeguarding system.

There are 10 Input LED's, 5 General Status LED's, and 6 Output LED's. These can help identify faults and do basic trouble-shooting. The input and output LED's are set up when designing the program. A print-out of the program function and what each LED refers to should be provided with each machine.

The 'PWR' and 'RUN' LED's should be on when the system is ready for use. If the 'FAULT' or 'LOCK' LED's are showing, try cycling the power. If they remain on, a computer with 'Connected Components Workbench software installed must be connected to identify and resolve the problem.

5.8.3 Troubleshooting

Faults in the CR30 relay fall into two categories: recoverable faults, and non-recoverable faults. Non-recoverable faults require power cycling to recover after the fault is corrected. Recoverable faults can be cleared by eliminating the cause of the fault and cycling the inputs associated with the fault. The output that is connected to an input with that fault is switched off. The other outputs, which are not affected by the fault, will continue to work.

Examples of recoverable faults include:

- SMF Faults
- Cross loop
- Simultaneity Faults
- Reset button fault
- Muting: Synchronization time exceed
- Muting time exceeded
- Sequence fault

5.8.4 Configuration

The CR30 is software configurable using the Rockwell Automation 'Connected Components Workbench' (CCW) software. CCW is a set of collaborative tools supporting the CR30 safety relays. It is used to configure the CR30, program the Micro 800 controllers, and configure many PowerFlex drives and PanelView graphic display terminals.

The CCW software is free and can be downloaded from the Rockwell website here: goo.gl/7wgl1d. To help you configure your relay through the Connected Components Workbench software, you can refer to the Connected Components Workbench Online Help (provided with the software).

The CR30 has a USB interface for connection to a personal computer for configuration. Use a standard USB A Male to B Male cable for connecting to the relay.



6 Assembly, Handling, Transport & Storage

6.1 Assembly

The Hiflow is usually delivered in three parts – the main frame and two doors. To assemble the machine carry out the following procedure:

1. Using lifting straps or chains attached to a forklift, gently lift the main frame upright and into its final installed position.
2. Fold out the two side-guards so they are perpendicular to the frame.
3. Use two persons to position one of the doors onto its lower mounting lugs (at the base of the side-guard panels) while a third person lowers the top frame member onto the upper door-mount pin, to hold it in place.
4. Repeat the procedure for the second door. One person will need to hold the first door in place while the top frame member is briefly lifted to mount the second door.
5. Insert the supplied bolts into the eight matching pre-drilled holes in the top frame member and side-guard panels, and tighten the nuts from below. This completes the machine's structural integrity.
6. Ensure the machine is correctly positioned, then bolt it securely to the ground with 'Dynabolts' or similar.
7. Check that the available power supply matches the phase and voltage on the machine's rating plate, then connect the main power lead. The Hiflow may now be placed into service.

6.2 Moving

Before the Hiflow can be moved it should be unbolted from the ground, the doors removed, and the side-guard panels folded into the frame. The frame and the doors should then be moved individually, using a lifting sling attached to a forklift or crane.

⚠ Extra care should be taken when moving the Hiflow on sloping ground.

6.3 Lifting

Before the Hiflow can be lifted it should be unbolted from the ground, the doors removed, and the side-guard panels folded into the frame. The frame and the doors should then be lifted individually, using a lifting sling attached to a forklift or crane.

- ⚠ Standard Hiflow machines weigh between 500kg and 600kg in total.
- ⚠ Never stand or reach underneath any components that are being lifted.

6.4 Transportation

Before the Hiflow can be transported it should be unbolted from the ground, the doors removed, and the side-guard panels folded into the frame. The frame should then be laid into a horizontal position on a large pallet, the doors placed on top of it, and securely strapped onto place.

The pallet may then be loaded onto a truck using a forklift, and tied into place with straps.

⚠ Take care that the pallet is fastened against lateral forces from any direction.

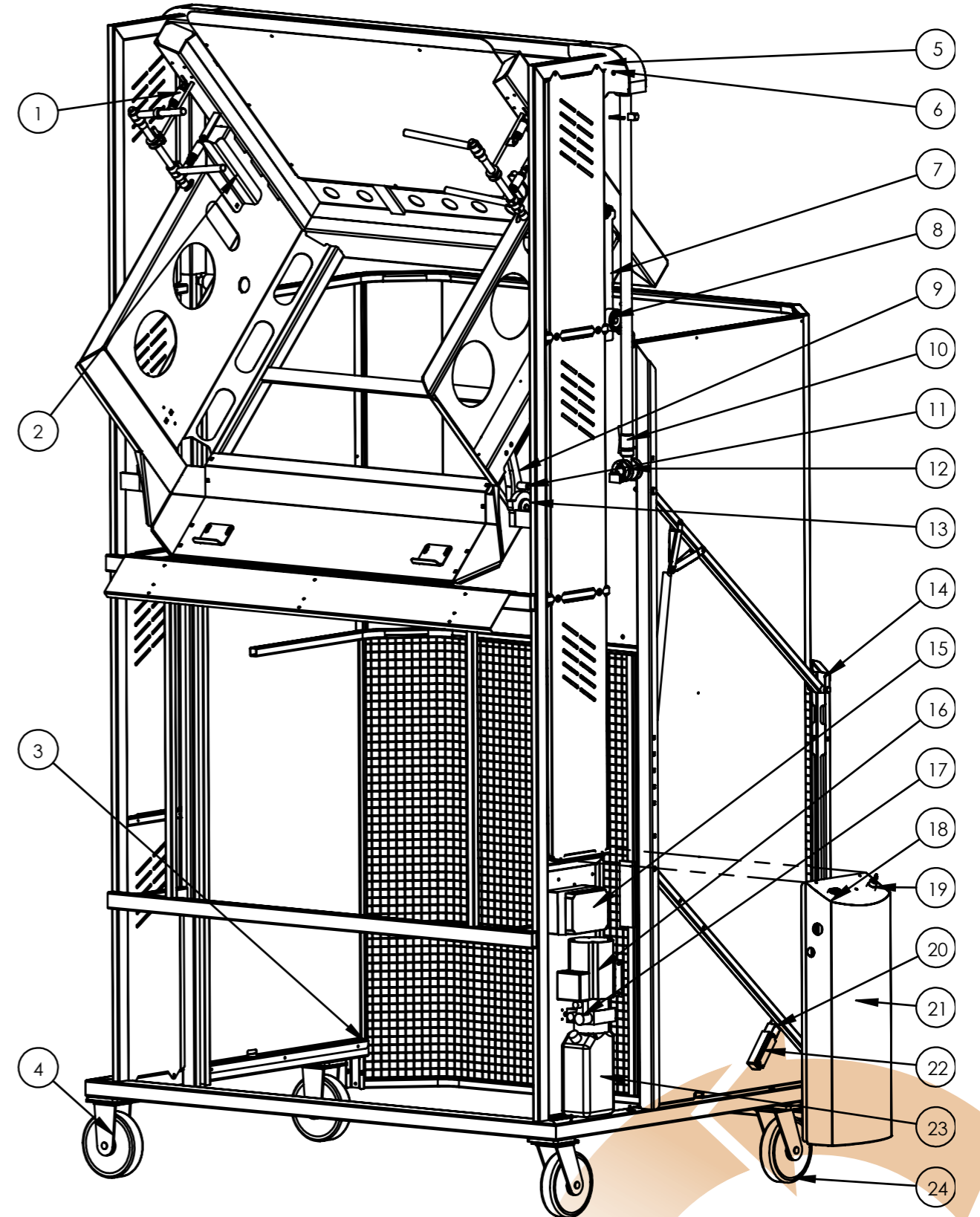
7 Spare Parts

The following table includes the most common spare parts for both the MegaDumper and the Hiflow bin lifter. Most parts are common between these two models.

An illustrated list of parts may be viewed on our support website here:

<https://simpro.world/bin-lifters/hiflow/spare-parts>.

Diagram Ref	Part Number	Description
1	0320150000	Tension spring
2	0400020169	Pair of 240l bins catches
3	0140120005	Square plastic end cap 75 x 50 x 3
4	0250040084	200mm castor wheel, no brake
5	0640200064	Top roller with 2x bearings
6	0140110003	Stainless steel axle for top roller
7	0220020105	Laser-cut sliding plate 425 x 90 x 10
8	0220120002	Mast roller
9	0220190117	Matching L/R pair of roller arms, complete with rollers and bushes
10	0090090002	Ram seal, 1 1/4" x 1 1/2" x 1/4"
11	0060010003	Bush, bronze 16 x 20 x 40
12	0140120002	Ram-end roller, moulded
13	0090120000	Follower roller, moulded
14	0220020117	Swing-up mesh door
15	0250050122	Transformer, 1-phase, 240/24vac 26va
15	0250050122	Transformer, 3-phase, 400/24vac 26va
16	0880050008	Motor, 1-phase, 1.1Kw, 2-pole
16	0880050013	Motor, 3-phase, 0.75Kw, 2-pole
17	0250090067	Lowering valve coil for 24vdc control system
18	0790050007	Raise/Lower switch, complete with rubber boot
19	0790050003	Key switch, rotary, complete with removable key
20	0250050065	Actuator for TLS-GD2 locks
21	0250050064	Door interlock with power-to-release solenoid, Idec brand
22	0140020033	Powerpack cover
23	0250090044	Powerpack, with hydraulic pump and reservoir, no motor
24	0250040085	200mm castor wheel, with foot- brake



8 Warranty

8.1 Definitions

1. "Simpro" means Simpro Handling Equipment Limited, [New Zealand Registered Company No. 1827916](#).
2. "Agent" means a person or company authorized by Simpro to sell a Product.
3. "Service Agent" means a person or company authorized by Simpro to repair a Product.
4. "End User" means the first purchaser of a Product from a Sales Agent authorised by Simpro to sell the Product.
5. "Warranty" means the commitment that Simpro has to guarantee the workmanship and componentry to any End User of Products manufactured and sold by Simpro.
6. "Warranty Claim" means an application from an Agent to Simpro to be reimbursed for expenses relating to repairs done to remedy a fault with a Simpro Product.
7. "Warranty Period" means the length of time that Simpro undertakes to guarantee a Product.
8. "Back to Base" means that the costs associated with the transporting of a Product between the Service Agent and the End User is the End Users responsibility.
9. "Standard Products" means any Product displayed as a standard product on the Simpro website, <https://simpro.world/>.
10. "Part" and "Parts" refer to components of a Product.
11. "Minor Fault" means a fault or defect that requires less than one hour to rectify
12. "Instruction Handbook" means a document so titled that provides brief information and guidance on the operation of the Product for commonly performed functions.
13. "Service Manual" means a document so titled that provides comprehensive information and guidance for service, repairs and maintenance.
14. "Warranty Registration Process" means the process of an End User registering their product with Simpro. This may be done using the web form here: <https://simpro.world/support/warranty-registration>
15. "Application for Warranty Consideration Form" means the system used to file a Warranty Claim with Simpro. This may be done using the web form here: <https://simpro.world/support/warranty-claim>.

8.2 Coverage

1. Simpro provides a 12 month Back to Base Warranty on all Standard Products unless alternative terms have been agreed to in writing.
2. The Warranty terms and conditions on custom-built and non-standard machines are generally specified on quotations, and placing an order implies acceptance of the Warranty terms. If no specific Warranty details have been provided, the standard terms and conditions will apply.
3. The 12-month Warranty period shall be taken from the date the machine first leaves the Agent's premises, whether sold or just supplied for trial. The Agent shall keep accurate records of the date of all machine trials, sales, etc.
4. Simpro will, at its option, repair or replace any items that fail or prove defective within the Warranty period.
5. Simpro's liability under the terms of this Warranty shall be limited to remedying any fault that occurs on machines it has manufactured or supplied, and shall not cover any consequential loss or damage.
6. The Warranty on batteries is for 6 months only. Information on maximising the life of your batteries may be viewed here: <https://simpro.world/connect/blog/deep-cycle-batteries-watts-it-all-about>

8.3 Exclusions

1. Simpro will not recognise a Warranty Claim against a machine where payment to Simpro for that machine is outstanding. If a Warranty Claim is made before payment is due, the full payment must be made on the due date. The Warranty Claim, if accepted, will be credited at a later date.

2. Warranty Claims may not be recognized unless the [Warranty Registration Process](#) has been completed. If not done at the time of sale, this should be done at the time of the Warranty Claim. If warranty registration has not been completed, proof of purchase may be required.
3. Damage caused or contributed to by misuse, abuse, accident, unauthorised repairs or modifications, or failure to use the machine in accordance with instructions is specifically excluded.
4. Travelling time and mileage are specifically excluded from the Simpro warranty coverage. However under certain circumstances Simpro at its discretion may contribute to these costs. Authorisation must be obtained from Simpro prior to any such Warranty Claim. This does not prohibit an Agent offering more extensive Warranty cover, outside of this Warranty, as negotiated between the Agent and the End User.

8.4 End User Claim Procedure

1. Where a fault or breakdown appears to have occurred the End User should, if applicable, first consult the Quick Troubleshooting Guide section of the User Manual provided with each machine, to ascertain the cause of the fault and remedy if possible. This information may also be accessed on the Simpro Support website: <http://support.simpro.world>.
2. If the fault is not able to be remedied, the End User should contact the Agent who sold the machine, and explain as fully as possible the fault, including all relevant factors such as:-
 1. Did the fault occur suddenly or has it been giving trouble over some time?
 2. Was the machine being used at the time?
 3. Is the fault intermittent?
 4. Are the batteries fully charged?
 5. If repair is urgent, and the Agent cannot be contacted, the End User may contact Simpro direct.

8.5 Agent Claim Handling Procedure

1. Upon receiving notification of a fault, the Service Agent should attempt to determine the cause and a course of action before going to see the machine.
2. The Service Agent should contact Simpro for assistance in identifying the fault, if it is not apparent. This step is important, so that if a site visit is necessary, the correct tools and spare Parts can be taken. It is also important to establish whether there may have been any negligence, misuse or an accident that contributed to or caused the fault.
3. Parts requiring replacement will be supplied by Simpro free of charge; in some cases, it may be necessary to source Parts locally if needed urgently, but Simpro must authorize this if the cost of the item exceeds \$50.00 and is to be charged to Simpro.
4. If the fault is not a Minor Fault, the Agent must notify Simpro and receive authorization to proceed before the repair work is done. Simpro will assist in every way possible, including discussing the problem directly with the End User if necessary to determine the best method of effecting the repair, in the shortest time possible.
5. Upon completion of the repair to an acceptable standard, the Agent shall complete the [Application For Warranty Consideration Form](#) and include copies of any invoices for labour, and any Parts supplied.
6. The cost of Warranty repairs is not to be deducted from any payments due to Simpro, unless Simpro issues a credit note clearly stating the amount and which invoice it relates to.
7. Simpro undertakes to be reasonable in respect of all Warranty repairs undertaken by Agents, but reserves the right to decline payment for:-
 1. Work done or materials replaced that were not authorized in advance by Simpro.
 2. Work not done to an acceptable standard.
 3. Work taking an unduly long time, due (in part or in full) to the lack of knowledge or skill of the serviceman or the Agent. The time allowed for repair work will be based on Simpro's assessment of what a reasonably skilled tradesman would take. Full Service Manuals are available on request at any time from Simpro and all service visits should be conducted with a Service Manual at hand.
8. dealer who supplied the machine. No claims will be recognised unless authorisation is obtained from the manufacturer before any repairs are done.

This warranty shall be interpreted according to the laws of New Zealand and the parties agree to submit to the jurisdiction of the Courts of New Zealand.

9 EC Declaration of Conformity



DECLARATION OF CONFORMITY

ORIGINAL

Business Name and Full Address of Manufacturer

Simpro Handling Equipment Ltd
66 Rangī Road, Takanini 2105
Auckland, New Zealand

Name and Address of Authorised Representative

As above

Name and Address of the Person in Community Authorised to compile the Technical File (if different to above)

Safe Machine Limited
DBH Business Centre, Coxwold Way, Billingham, Tees Valley TS23 4EA UK

Description of product (Commercial Name)

Hiflow

Function, Model, Type, Serial Number

Function: Bin Tipper	Model: Hiflow
Type:	Serial No:

Standards Used

EN 349 1993, EN 574 1996+A1:200, EN 953 1997, EN ISO 4413 2010, EN ISO 12100 2010, EN ISO13849-1 2006, EN ISO 13857 2008, EN 60204 2006+A1 2009, EN61000-6-2 2005, EN61000-6-4 2007

Place of Declaration

66 Rangī Road, Takanini 2105
Auckland, New Zealand

Date of Declaration:

5 December 2018

Declaration

I declare that the machinery fulfils all the relevant provisions of the following Directives:- Machinery Directive 2006/42/EC, Electromagnetic Compatibility Directive 2004/108/EC.

Person Empowered to Draw Up Declaration

Name: Daniel Craig Currie
Position: Business Development Manager

Signature:

Declaration No: 007



10 Scheduled Inspections

It is recommended to conduct regular scheduled inspections of the Hiflow bin lifter. This helps to ensure operator safety and extend the service life of the machine.

The inspection schedule is divided into three parts: weekly, monthly and annual inspections. The inspection procedures are described in the following pages, along with tables to log the results.

- ⚠ It is strongly recommended to carry out scheduled inspections as described in this section.
- ⚠ Operators should immediately stop using the machine and request an inspection if any fault or abnormal operation is observed.

10.1 Pre-inspection checklist

1. Wear suitable Personal Protective Equipment, including safety boots and protective eyewear.
2. Ensure there are no ignition sources nearby.
3. Lower the comb-hitch and remove bin.
4. Turn off the key switch and unplug the charging lead.
5. Remove the powerpack cover.
6. Clean the powerpack and electric circuitry with compressed air. Never use water or chemicals.
7. Always use height safety equipment when servicing elevated areas such as the top of the mast.

10.3 Monthly inspection

The following inspection should be carried out monthly, and the results recorded in the log.

Monthly Inspection Checklist			
Category	No.	Item	Check
General	1	Entire machine	Conduct a complete tipping cycle and check for any faults or abnormal behaviour.
Hydraulic systems	2	Hydraulic ram	Check there are no oil leaks.
	3	Oil reservoir	Check the level of hydraulic oil.
Electrical systems	4	Mains power lead	Check that the lead is in good condition.
Safety systems	5	Door interlock actuators	Check the actuators are securely attached to the doors with security screws, and the bolts enters the interlocks freely and smoothly, without force. Check the doors are locked while the comb-hitch is raised above 100mm.
Mechanical systems	6	Inside masts	Lightly lubricate with silicone spray.
	7	Roller pivot arm	Lightly lubricate with silicone spray.
	8	Door hinges	Lightly lubricate with silicone spray.
	9	Comb-hitch axle	Lightly lubricate with silicone spray.
	10	Mounting lugs	Check that all mounting bolts are tight and not corroded or broken.


Date	Service Person	Location	Checks complete	Notes on repairs or maintenance required	Parts and materials used

10.4 Annual inspection

The following inspection should be carried out annually, and the results recorded in the log opposite.

Annual Inspection Checklist			
Category	No.	Item	Check
General	1	Entire machine	Conduct a complete tipping cycle and check for any faults or abnormal behaviour.
Hydraulic systems	2	Hydraulic ram	Check there are no oil leaks.
	3	Oil reservoir	Check the level of hydraulic oil.
Electrical systems	4	Mains power lead	Check that the lead is in good condition.
Safety systems	6	Door interlock actuators	Check the actuators are securely attached to the doors with security screws, and the bolts enters the interlocks freely and smoothly, without force. Check the doors are locked while the comb-hitch is raised above 100mm.
Mechanical systems	7	Lifting chains	Check the length and condition of the lifting chains. If the length is outside the allowable tolerance, or there are signs of corrosion or wear, they should be replaced. Lightly lubricate with silicone spray.
	8	Ram rollers	Lightly lubricate with silicone spray.
	9	Follower rollers	Lightly lubricate with silicone spray.
	10	Inside masts	Lightly lubricate with silicone spray.
	11	Roller pivot arm	Lightly lubricate with silicone spray.
	12	Door hinges	Lightly lubricate with silicone spray.
	13	Comb-hitch axle	Lightly lubricate with silicone spray.
	14	Mounting lugs	Check that all mounting bolts are tight and not corroded or broken.

Date	Service Person	Location	Checks complete	Notes on repairs or maintenance required	Parts and materials used

 Simpro has been developing, manufacturing and retailing Smart Lifting solutions for over thirty years. From humble beginnings as a small engineering firm in Auckland, New Zealand, the company has grown to become a leading supplier of equipment for niche applications – such as bin lifting, tipping and handling equipment, pallet trucks, stackers, order pickers, and goods lifts.

Simpro products play an unobtrusive but essential role for thousands of companies around the world, in industries as diverse as waste management, resource extraction, pharmaceutical manufacturing and food processing. They are distributed through a worldwide network of agents, and are backed by a sophisticated in-house design and fabrication capability.

Simpro is a family-owned company, registered with the New Zealand Companies Office as Simpro Handling Equipment Ltd, company no. 1827916. Simpro Europe Srl is the exclusive distributor of Simpro products across Europe and the UK, and is headquartered in Italy.

The products in this brochure contain intellectual property, including design elements registered to or licensed by Simpro Handling Equipment Ltd.



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