



4-IN-1 BUCKET BROOM

OPERATING & MAINTENANCE MANUAL



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Contents

1	Introduction	1
2	Safety Definitions: Terms and Symbols.....	2
3	Safety Instructions	3
3.1	Important Points	5
4	PreDelivery	6
4.1	Check Pickup Fit	6
4.2	Check Range of Motion.....	6
4.3	Check Hydraulic Hoses	7
4.4	Check Electrical Connection	7
4.5	Hydraulic Motor Running-in.....	7
5	Assembly Instructions	8
5.1	Hitching Up the 4in1 Broom Bucket	8
5.2	Removing the 4in1 Broom Bucket.....	9
6	Operating Instructions	10
6.1	Specified Operations and Limitations.....	10
6.2	Brush Rotation Direction	12
6.3	The Cutting Edges.....	13
6.3.1	Front Cutting Edge	13
6.3.2	The Dozer Blade	13
6.3.3	The Opening and Closing Action	13
6.4	Brush Height Adjustment	14
7	Maintenance and Care.....	15
7.1	Hydraulics.....	15
7.2	Prior to Use	15
7.3	Routine Inspection (Every 12 Weeks).....	16
7.4	Greaseable Points.....	16
7.5	Rotating the Front Cutting Edge.....	17
7.6	Rotating the Rear Cutting Edge	18

7.7	Replacing the Brush.....	19
8	Risk Assessment	21
9	Parts.....	28
9.1	Ordering Parts.....	28
9.1.1	Reference Information.....	28
10	Parts List	29
11	Appendices.....	40
11.1	Safety Sign Locations	40
12	Warranty	41
12.1	Definition	41
12.2	Warranty.....	41

1 INTRODUCTION



4in1 Broom Bucket

Congratulations on purchasing a Norm Engineering Pty Ltd attachment. We have designed this 4in1 broom bucket for a long, productive, and safe life. Your attachment will provide you with years of service provided regular maintenance and correct usage is applied.

This manual offers a guide on how to safely assemble, mount, operate and maintain your 4in1 broom bucket. While the manual attempts to cover most situations, there are many unforeseen risks and events that are not included due to the capability of the 4in1 broom bucket. On this basis the owner and/or operator must determine if this attachment is suited for a particular purpose.

Norm Engineering Pty Ltd can accept no responsibility or liability for how you operate your equipment: we can only provide warning notes and safety precautions in relation to the standard operation of the 4in1 broom bucket.




The illustrations and data used in this manual were current at the time of printing but due to possible engineering and/or production changes, this product may vary slightly. Norm Engineering Pty Ltd reserves the right to redesign and/or change components as may be necessary without notification.

2 SAFETY DEFINITIONS: TERMS AND SYMBOLS

We will use the ANSI Z535.4-2011(R2017) standard for the definitions of signal words as described in conjunction with colours red, orange, and yellow. These are used with the Safety Alert Symbol:

- **Signal word:** Are defined as the words used in the signal word panel. The signal words for hazard alerting signs are “DANGER”, “WARNING”, and “CAUTION”. Safety notice signs use the signal word “NOTICE”. Safety instruction signs use signal words that are specific to the situation.
- **DANGER:** Indicates a hazardous situation, which, if not avoided, **will** result in death or serious injury. This signal word is to be limited to the most extreme situations. (White letters on a red background)

- **WARNING:** Indicates a hazardous situation, which, if not avoided, **could** result in death or serious injury. (Black letters on an orange background)

- **CAUTION:** Indicates a hazardous situation, which, if not avoided, **could** result in minor or moderate injury. (Black letters on a yellow background)

- **NOTICE:** Indicates information considered important, but **not** hazard-related (e.g., messages relating to property damage). (White letters on a blue background)

- **SAFETY INSTRUCTIONS:** Indicates a type of safety sign, where specific **safety-related instructions** or **procedures** are described. More definitive signal words are encouraged, where practical (e.g., SAFE SHUTDOWN PROCEDURE, SAFE OPERATING PROCEDURE). (White letters on a green background)


3 SAFETY INSTRUCTIONS



WARNING

Obey all the safety instructions listed in this section and throughout this manual. Failure to follow instructions could result in death or serious injury.

NOTICE

Before attempting any type of assembly operation, maintenance, or other work on or near this product:

- READ and COMPLETELY UNDERSTAND:
 - This manual,
 - The manuals provided with the power unit being used with this attachment.
- Read and understand all safety signs associated with the equipment being used.
- Know all your controls and know how to quickly stop all power unit movement, the attachment movement, and the engine in case of an emergency.

SAFETY IS YOUR RESPONSIBILITY AS THE OPERATOR OF THE EQUIPMENT

Inappropriate and/or irresponsible use of a 4in1 broom bucket may cause serious injury and trauma. The operator must have all relevant industry competencies, qualifications, certificates and/or licenses.

The operator must understand their responsibilities under the relevant acts and regulations of the governing body. Failure to comply with your legal obligations under the act may result in prosecutions against you.

As the equipment operator you are responsible to familiarise yourself, and anyone else who will assemble, operate, maintain, or work around this product with the safety information contained within this manual. You must make certain that all operators and maintenance personnel have a complete understanding of the full and exact contents of this manual and those of the power unit.

There are usually specific precautions and steps in the power unit operating manual to be taken to ensure your safety prior to engaging the attachment.

Conduct a job site survey during the planning phase of any construction project to identify potential hazards and develop and implement appropriate control measures to protect workers.

Accidents are preventable if the equipment operator is careful and responsible. No accident prevention program can be successful unless there is a wholehearted commitment and cooperation of the person who is directly responsible for the operation of the equipment.

Make sure anyone who will be installing, maintaining, repairing, removing, and/or storing this product applies the Workplace Health and Safety Act requirements. This includes ensuring that the person has been instructed in the safe operation of this product and of the power unit to which this attachment is likely to be attached.

Know and follow good work practices, some of these include:

- To optimise the physical environment such as having a well-lit, level surface that is clean and dry to work on.
- Use properly grounded, test and tagged electrical outlets and tools.
- Use the right tool for the job at hand.
- Make sure that your tools are in good condition for performing the required function.
- When using tools, wear the protective equipment specified by the tool manufacturer (hardhat, safety glasses, work gloves, protective shoe...)
- When the attachment has been out in the sun, remember to wear protective gloves as the metal will be hot to touch.
- Before starting, know the job duration, job complexity, and best procedure.
- Ensure workers have the capacity to do the job.
- Check that all hazards have been identified and control measures implemented.
- Clear communication so everyone present knows what is happening.
- Clear emergency stop procedure so there is no confusion in an emergency.
- Ensure the use of tyre stoppers and securing framework to stop the plant and plant attachment moving during maintenance.

3.1 IMPORTANT POINTS

When your power unit is used during any type of assembly, operation, maintenance, or other work on or near this product:

- Before leaving the operator's station or before beginning any type of work on this product, lower this product to the ground, apply your power unit's parking brake, stop the engine, remove the starter key, wait for all moving parts to stop, and then relieve all pressure in the hydraulic lines. Refer to your power unit's operating manual for instructions on preparing the equipment for hitching up an attachment and relieving hydraulic pressure in lines.
- Know your power unit's safe lifting and operating capacity and the weight of this product. (Check the parent machines operator manuals for safe operating limits).
- Only allow the operator to be around the power unit or this product when either is in motion. Ensure work area is clear of all personnel.
- Apply all safety guidelines in relation to the operator and the equipment.
- Only operate controls from the operator's station.
- Maintain operator presence at all times when the engine is running, or the product is raised on the power unit.
- Reduce speeds when additional weight and width need to be considered especially over rough ground.
- Consider the operating environment if dust is a concern reduce the machine speed.
- Whilst in motion keep the product close to the ground and under control.

4 PREDELIVERY

The following steps should be performed when fitting this attachment to a power unit for the first time. Failure to perform these checks may lead to damage of the attachment, the power unit and be a risk to safety. Warranty claims that arise as a result of skipping these steps may be challenged.

4.1 CHECK PICKUP FIT

Perform '5.1 Hitching Up the 4in1 Broom Bucket' to check how the attachment fits the coupler. Check for the following:

- Do the pins lock?
- Is it a snug fit?

4.2 CHECK RANGE OF MOTION

Carefully go through the attachment and parent machines full range of motion together. If unexpected contact occurs, contact Norm Engineering to discuss. Due to the capabilities of this product some contact with the machine may be unavoidable. In this case place the warning sticker provided on the attachment and inform the owner/operator.



4.3 CHECK HYDRAULIC HOSES

If you are unsure how to route the hydraulic hoses, contact Norm Engineering. Connect hoses and once again thoroughly check full range of motion to make sure:

- They **DON'T** pull tight.
- They **DON'T** have excessive length.

If the hose length is not correct, call Norm Engineering first for assistance.

4.4 CHECK ELECTRICAL CONNECTION

We take every opportunity to supply the attachment as a plug and play solution with a factory matching electrical connector, but unfortunately this is not possible for all machines.

Norm Engineering recommends using a certified and qualified electrical technician to perform these modifications to the parent machine. For additional information refer to section '12 Warranty'.

If wiring is required Norm Engineering recommends connecting the attachment via a relay to a momentary push button on the opposite control switch to the one that operates the standard flow auxiliary hydraulics. Wire polarity is not important and max current draw is under 5 Amps.

4.5 HYDRAULIC MOTOR RUNNING-IN

To maximise the life of the unit, it must be run in for a period. To carry out the running in procedure, suspend the brush just off the ground in a horizontal working position. Ensure there are no bystanders within the nominated radius as defined in the risk assessment completed prior to commencing any works.

Operate the motor at 30% of rated pressure for 20 minutes in each direction before application of full operating load.

5 ASSEMBLY INSTRUCTIONS



WARNING

Obey all instructions listed in this section of the manual. Failure to follow the instructions listed below could lead to serious injuries.

For any assistance with the following processes, please contact Norm Engineering.

5.1 HITCHING UP THE 4IN1 BROOM BUCKET



DANGER

All safety precautions pertaining to both the power unit and the 4in1 broom bucket need to be followed. Sufficient planning should be made prior to any work commencing in case of an emergency situation.

Step one: Before beginning any work with this product, lower the product to the ground on a firm level surface that is large enough to accommodate this product, the power unit and all workers involved in the hitching up the 4in1 broom bucket.

Step two: Refer to your power unit's operating manual for instructions on hitching up this attachment. Visually inspect to ensure the attachment is fully engaged to the power unit hitch.

Step three: Engage the locking mechanism. A visual inspection should be performed to confirm all locking systems are secured. Give the 4in1 broom bucket a few short sharp movements close to the ground to ensure it is engaged.

Step four: Rest the attachment on the ground and refer to the power unit operating manual to release the pressure in the hydraulic system.

Step five: Connect the hydraulic couplings and electrical connectors on the 4in1 broom bucket to the power unit couplings following all safety precautions specified in the power units operating manual.

Step six: Start the machine and cycle the 4in1 broom bucket hydraulic cylinders and hydraulic motor several times before taking it near other personnel.

5.2 REMOVING THE 4IN1 BROOM BUCKET



DANGER

All safety precautions pertaining to both the power unit and the 4in1 broom bucket need to be followed. Sufficient planning should be made prior to any work commencing in case of an emergency situation.

Step one: Remove the machine from anywhere near other personnel and onto a firm level surface large enough to safely accommodate this product, the power unit and all workers involved in removing the 4in1 broom bucket.

Step two: Rest the 4in1 broom bucket on the ground.

Step three: Disconnect the attachments hydraulic couplings and electrical connectors from the power unit following all safety precautions. Refer to your power unit's operating manuals.

Step four: Disengage the locking mechanism. A visual inspection should be performed to make sure the 4in1 broom bucket is fully disengaged.

Step five: Refer to your power unit's operating manual for instructions on removing the attachment and confirm the hitch is fully disengaged from the 4in1 broom bucket.

Step six: Store safely.

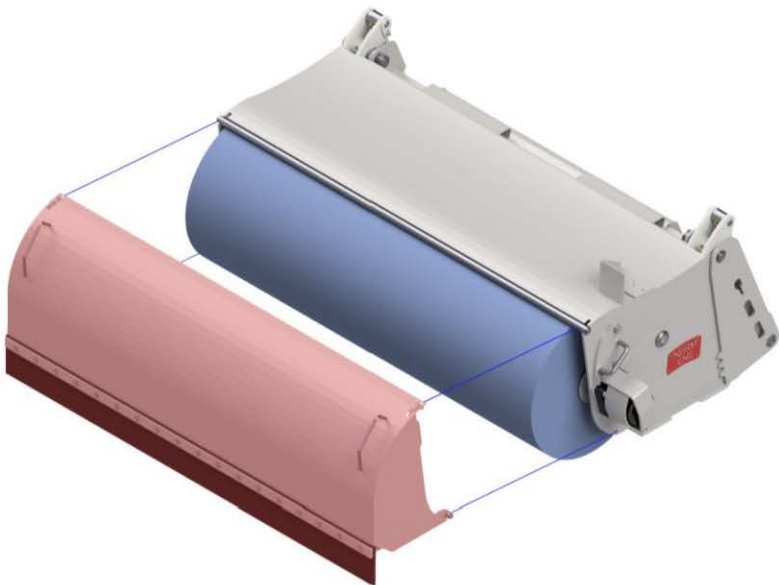
6 OPERATING INSTRUCTIONS

⚠ DANGER When using the 4in1 broom bucket, ensure all personnel wear appropriate personal protective equipment at all times. All personnel must stand well clear of the 4in1 broom bucket during operation. Contact with the attachment, parent machine or flying debris and dust could cause injury to personnel working in the vicinity of the machine.

6.1 SPECIFIED OPERATIONS AND LIMITATIONS

The 4in1 broom bucket is designed to be an all-purpose attachment. It comes with a front cover that helps limit dust and debris kicked up. The removal of the front cover allows the operator to have more access to the brush. This added exposure allows the brush to get to places it couldn't before, such as the bottom of shallow asphalt trenches.

The 4in1 broom bucket also comes with a 4in1 bucket section. This gives the attachment the ability to be used for levelling, scraping, scooping, dumping, clamping and minor dozer blade work. The bucket jaws also allow for faster collection of soil and small debris piles without the need to switch attachment or damage the drive shaft by running the brush into the pile.



DANGER

- **NEVER** use the 4in1 broom bucket as a lifting point.

- **NEVER** use the 4in1 broom bucket to lift or carry people.

WARNING

- **MISUSE** may damage the attachment or lead to injury and trauma.

- **USE** low engine speeds to prevent excessive throwing of dust and debris.
- **ENSURE** the sweeper carries only what it was designed to carry.
- **ENSURE** the load capacity of the machine is not exceeded when using this product.

CAUTION

- **AVOID** dropping objects from the broom by not overloading the bucket.

- **ENSURE** bucket remains level while lifting the broom over the cabin.
- **ENSURE** you travel at a slow speed appropriate to prevent causing damage if an unseen obstacle is hit.

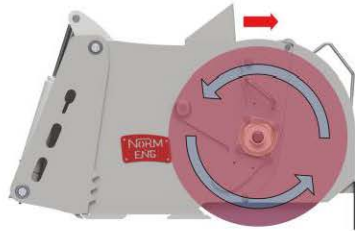
NOTICE

- **USE** low engine speeds to maximizes brush life.

- **NEVER** use the 4in1 broom bucket to pull or push over objects.
- **NEVER** use the broom's brush to collect large piles of soil and debris.
- **NEVER** reverse the broom rotation while the brush is still turning.
- **ALWAYS** engage the brush with engine at idle and increase to operating speed. When stopping brush rotation, **BE SURE** to return engine to idle before disengaging oil flow.

6.2 BRUSH ROTATION DIRECTION

When sweeping with the hood the brush should rotate so that the material is pushed in front of the machine. This causes material to rotate over the top of the brush between the brush and the cover and into the bucket. Any material that does not end up in the bucket is pushed in front of the sweeper and will be collected as the machine drives forward.

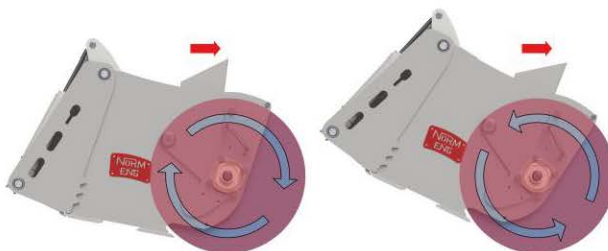


When sweeping without the front cover the broom can be angled down to expose more of the brush. This allows the brush to access the bottom of a shallow asphalt trenches. When sweeping without the front cover, rotate the brush so it flicks the material backwards into the bucket. This minimises dust kick up.



- **WHEN** sweeping material forward, reduce motor sweep to minimise dust and debris kick up.
- **ENSURE** no one is in front of the sweeper.
- **IF** dust kick up is excessive stop sweeping and reassess method.

The brush rotation might need to be changed when sweeping forwards if the angle required to access the bottom of the trench is so great that the material is not being collected in the bucket. In this case rotate the brush to push the material in front of the broom and collect material at the end of the trench.



6.3 THE CUTTING EDGES



CAUTION

ENSURE the bolt-on edges are used only for their prescribed purposes, failure to heed this will result in excessive wear and possible damage to your attachment.

6.3.1 FRONT CUTTING EDGE

The front bolt-on edge should only be used for scraping mud and other hard packed material to be swept, it should not be used for any other purpose.

6.3.2 THE DOZER BLADE

With the bucket in an open position, the dozer blade section can be used to push unwanted material in a controlled manner.



NOTICE

- **ENSURE** the cut can be managed by the bucket. Be aware that too deep a cut has the potential to over stress the bucket.

ENSURE you travel safely and at a speed appropriate to prevent damage if an unseen obstacle is hit.



WARNING

- **JARRING** your neck, back and shoulders is possible when hitting an unseen object.

ENSURE the work area is clear prior to use and all care is taken in operating the 4in1 broom bucket in this manner, as vision of the dozing area can be obstructed by the broom section of the attachment.

6.3.3 THE OPENING AND CLOSING ACTION

This action can be used for scooping up fines into the bucket and also dumping the load into a truck.



NOTICE

- **ENSURE** appropriate use of the closing and opening action, as attempting to clamp some objects may damage the bucket.



WARNING

- **ENSURE** when moving clamped material that the area is clear of personnel below or near the area, as there is danger of material releasing and falling.

6.4 BRUSH HEIGHT ADJUSTMENT

The 4in1 broom bucket is designed with a robust and uncomplicated height adjustment system. When the brush has become too worn to properly sweep, remove the bolt (circled in red) from either side of the sweeper and lower the brush to the next height increment using the handles (highlighted in red). The optimum sweeping height for the brush is between 10-20mm below the cutting edge. As a result, each height increment lowers the brush 20mm.



7 MAINTENANCE AND CARE

WARNING

Before commencing maintenance, place the attachment on level ground. Ensure enough area to perform maintenance on the attachment. Follow '5.2 Removing the 4in1 Broom Bucket'.

WARNING

After maintenance is complete, follow '5.1 Hitching Up the 4in1 Broom Bucket'.

7.1 HYDRAULICS

WARNING

Read and understand all safety requirements prior to beginning any maintenance to any hydraulic connections. It is imperative that if there are any fittings, repairs etc. required these must be conducted by a fully certified and qualified hydraulics fitter.

7.2 PRIOR TO USE

Prior to use, the 4in1 broom bucket shall be visually inspected to verify the attachment is in an operational state. The inspection will check for:

- Signs of wear, including corrosive and abrasive wear.
- Markings are legible.
- Welds are not damaged, cracked or worn.
- Hydraulic hoses, fittings and cylinders are in good conditions with no leaks.
- All fasteners are in place and correctly torqued.
- Inspect the wear of the brush and cutting edges.
- Grease all fittings – this needs to be performed on a daily basis.

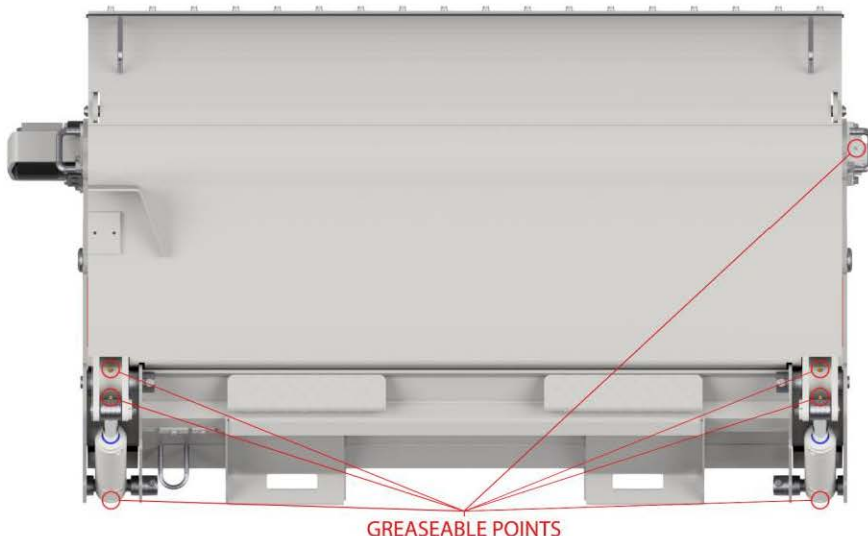
7.3 ROUTINE INSPECTION (EVERY 12 WEEKS)

Routine inspections should include but is not limited to the following:

- Fittings, hoses, and hydraulics must be checked to ensure there are no leaks.
- Pins and bushes should be inspected for signs of excessive wear and replaced before the wear damages the structure of the 4in1 broom bucket.
- Inspect the attachment for wear, particularly around the cutting edges, and seek advice on repairs if wear is excessive.
- Organise for a certified and qualified hydraulics fitter to inspect and replace hydraulic hoses and seals in the hydraulic parts as necessary. For additional information refer to section '12 Warranty'.
- Check to ensure attachment markings are legible.

7.4 GREASEABLE POINTS

The location of all seven greaseable points can be found in the diagram below. As part of 7.2 Prior to Use, ensure these points have been greased prior to use.



7.5 ROTATING THE FRONT CUTTING EDGE



- **DO NOT** use blocking material that could collapse or shift positions.

- **DO NOT** use wood or steel blocking that shows any signs of material decay.
- **DO NOT** use blocking that is warped, twisted, or tapered.
- **ENSURE** a safe working environment prior to replacing any sweeper components

Step one: Park your power unit on a level surface and lower this product onto preplaced blocking. It must be sufficient to support the attachment.

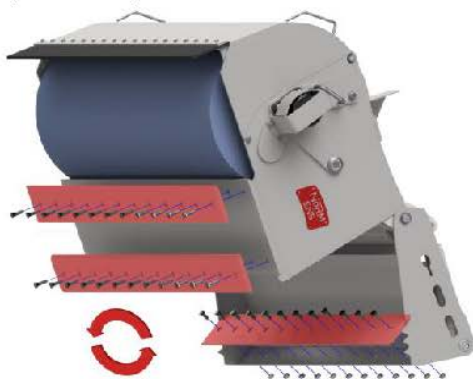
Step two: Follow '5.2 Removing the 4in1 Broom Bucket' and power unit operating manual for safe disengagement of the attachment.

Step three: Remove all nuts from the bolts that secure the cutting edge to the attachment. Begin in the centre and remove the end nuts last. Use of a pipe wrench or in some cases a hand grinder may be necessary to remove extremely worn or damaged nuts.

Step four: Remove the cutting edge and either rotate or, if this process has already occurred, properly dispose of cutting edge, nuts, and bolts.

Step five: Install the new or reversed cutting edge by loosely securing each end of the cutting edge with new bolts and nuts.

Step six: Install all the remaining new bolts and nuts and tighten all the nuts to the required torque (60 ft. Lbs).



7.6 ROTATING THE REAR CUTTING EDGE



- **DO NOT** use blocking and support material that could collapse or shift positions.
- **DO NOT** use supports or blocking that shows any signs of material decay.
- **DO NOT** use supports or blocking that is warped, twisted, or tapered.
- **ENSURE** a safe working environment prior to replacing any sweeper components

Step one: Park your power unit on a level surface and lower this product onto preplaced blocking. It must be sufficient to support the attachment.

Step two: Open 4in1 Bucket and support jaw to prevent closing and allow for safe access to the nuts, bolts and cutting edges.

Step three: Follow '5.2 Removing the 4in1 Broom Bucket' and power unit operating manual for safe disengagement of the attachment.

Step four: Remove all nuts from the bolts that secure the cutting edge to the attachment. Begin in the centre and remove the end nuts last. Use of a pipe wrench or in some cases a hand grinder may be necessary to remove extremely worn or damaged nuts.

Step five: Remove the cutting edge and either rotate or, if this process has already occurred, properly dispose of cutting edge, nuts, and bolts.

Step six: Install the new or reversed cutting edge by loosely securing each end of the cutting edge with new bolts and nuts.

Step seven: Install all the remaining new bolts and nuts and tighten all the nuts to the required torque (60 ft. Lbs).

7.7 REPLACING THE BRUSH

WARNING

- **DO NOT** use blocking material that could collapse or shift positions.

- **DO NOT** use wood or steel blocking that shows any signs of material decay.
- **DO NOT** use blocking that is warped, twisted, or tapered.
- **ENSURE** a safe working environment prior to replacing any sweeper components.

Step one: Lower the bucket section onto sufficient blocking to replace the brush before following '5.2 Removing the 4in1 Broom Bucket'.

Step two: Follow '6.4 Brush Height Adjustment' to return the brush to the top position. This will allow the drive block to be removed past the side plate.

Step three: Remove height adjustment and arm pivot bolts (red highlighted) from motor side height adjustment assembly (blue highlighted).

CAUTION

Sweeper brush on the motor side will swing down as the motor unit is removed.

Step four: Pull motor side height adjustment assembly away from the attachment with motor unit attached (blue highlighted).

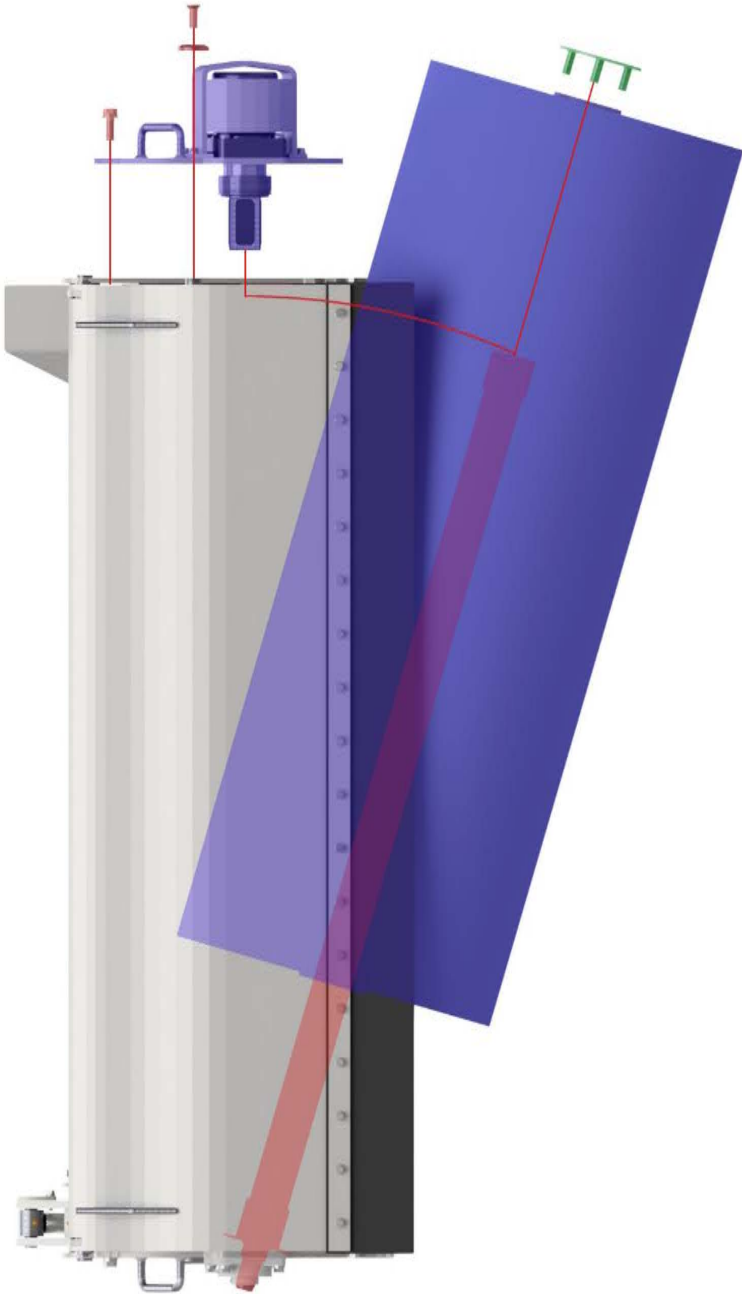
Step five: Lower motor side of the brush and remove the broom stopper (green highlighted) before pulling the old brush off the drive shaft and replacing with the new brush and capping with the broom stopper.

Step six: Lift the lowered end of the new brush back into alignment with the sweeper before the placing the height adjustment assembly back into place.

Step seven: Make sure the drive shaft is sitting correctly on the drive block with all rubber spacers in place.

Step eight: Place the height adjustment and arm pivot bolts back into place.

Step nine: Follow '5.1 Hitching Up the 4in1 Broom Bucket' to ensure the new brush spins freely.



8 RISK ASSESSMENT

Assessment Team: Norman Pesch, John Pesch, Sam Ramsden

Date of Assessment: 12/04/2022

Manufacturer: Norm Engineering Pty Ltd

Location: Brisbane

Contact Person: Norman Pesch

Attachment: 4in1 Broom Bucket

Weight: 625-715kg

Intended use: Sweeping & Collecting

Construction material: Steel

Air Operated: NO

Hydraulic Operated: YES

Manually operated: YES

NOTE: When assessing Risk, you MUST consider the following

Inherent Risk:

(Risk before ANY controls). I.e., Before guarding / safety features are fitted.

Residual Risk:

(Risk after controls are fitted). I.e., after guarding / safety features are fitted.

Non Standard Operating Risk:

(Cleaning, Maintenance). I.e., What other risks can these tasks create.

Predictable Misuse:

I.e., What risks could occur due to misuse of the attachment.

HAZARD INFORMATION

The plant must be assessed against the hazards listed for the probability of harm to operators working in close proximity and the environment.

Probability

- A – Common or repeating occurrence
- B – Known to occur or “It has happened”
- C – Could occur, “I’ve heard of it happening”
- D – Not likely to occur
- E – Practically impossible

Consequence

- 1 – Catastrophic – Fatalities
- 2 – Major – Major injury, LTI
- 3 – Moderate – Minor Injury
- 4 – Minor – First aid, slight injury
- 5 – Insignificant – Minimal risk of injury

	A	B	C	D	E
1	H	H	H	S	S
2	H	H	S	S	M
3	H	H	S	M	L
4	H	S	M	L	L
5	S	S	M	L	L

H = High

S = Significant

M = Medium

L = Low

Entanglement:

<p>Can anyone's hair, clothing gloves, necktie, jewellery, rags, and other materials become entangled with moving parts of plant, or materials in motion?</p> <p>It is possible to become entangled in moving parts if SOP's are not followed and if the broom is operated with guarding removed.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
			C	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>
			D	<input type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>

Crushing:

<p>Can anyone be crushed due to falling, uncontrolled or unexpected movement of plant attachment or its load, lack of capacity to slow, stop or immobilise the plant, tipping or rolling over, parts of plant attachment collapsing, contact with moving parts during testing, inspection, maintenance, cleaning, or repair, thrown off, under or trapped between plant and materials or fixed structures?</p> <p>People in close proximity to the plant and plant attachment during operation could be crushed if the operator is not being sufficiently observant, or control over the plant is lost.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
			C	<input type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>
			D	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>

Cutting, Stabbing, Puncturing:

<p>Can anyone be cut, stabbed, or punctured by coming in contact with moving plant or parts, sharp or flying objects, work pieces ejected, work pieces disintegrated, or other factors not mentioned?</p> <p>People can be cut, stabbed, or punctured by material ejected from the sweeper whilst it is operating.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
			C	<input type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>
			D	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>

Striking:

<p>Can anyone be struck by moving objects due to plant or work pieces being ejected or disintegrated, mobility, uncontrolled or unexpected movement of the plant or other factors?</p> <p>People in close proximity to the plant and plant attachment during operation could be seriously hurt if they came into contact with the plant, or plant attachment if the operator is not being sufficiently observant, or control over the plant is lost.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input checked="" type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>		<input type="checkbox"/>
			C	<input type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>
			D	<input type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>

Slipping, Tripping, Falling:

<p>Can anyone using the plant or in the vicinity of the plant, slip, trip or fall due to the working environment or other factors? poor housekeeping, dust on the floor around machines, slippery or uneven work surfaces or lack of guardrails.</p> <p>People standing on the plant or plant attachment could slip or fall from it.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
			C	<input type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
			D	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Shearing:

<p>Can anyone's body parts be cut off between two parts of the plant, or between a part of the plant and a work piece or structure? For example, on a metal guillotine can a finger fit under the guard.</p> <p>People not following SOP's or plant guidelines could become injured from misuses or working in the vicinity of the plant and plant attachment.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
			C	<input type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			D	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Friction:

<p>Can anyone be burnt due to contact with moving parts or surfaces of the plant, or material handled by the plant? For example, on the grinder is there more than 1 mm gap between the tool rest and the wheel?</p> <p>People could be burned by rotating parts if correct SOP's are not followed.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			C	<input type="checkbox"/>	3	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
			D	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

High Pressure Fluid:

<p>Can anyone come into contact with fluids under high pressure, due to plant failure or misuse of the plant?</p> <p>The plant attachment utilizes the plants high pressure hydraulic system, if a failure occurs it is possible to come into contact with high pressure fluid.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
			C	<input type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			D	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Electrical:

<p>Can anyone be injured by electrical shock or burnt due to damaged or poorly maintained leads or switches, water near electrical equipment, working near or contact with live electrical conductors, lack of isolation procedures or the factors not mentioned? For example, are any switches broken, is there a red emergency stop? Can each machine be locked off for repairs?</p> <p>The plant attachment utilizes auxiliary electrical connection to operate a diverter valve on the attachment. Wear or improper installation of electrical components could lead to damage.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>	
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			C	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
			D	<input type="checkbox"/>	4	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>

Dust:

<p>Can anyone suffer ill health or injury due to exposure to dust? For example, cutting, living silica Lack of vision – External influences causing the dust. Plant operation causing the dust.</p> <p>Depending on the operation location of the plant and plant attachment dust being a nuisance could be a factor.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
			C	<input checked="" type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>
			D	<input type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>

Noise:

<p>Can anyone suffer hearing discomforts while the plant is in use? For example, the plant is noisy, and it is difficult to hear.</p> <p>The continual use of the plant and plant attachment over long periods of time can cause ear hearing loss.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input type="checkbox"/>		<input type="checkbox"/>
			C	<input checked="" type="checkbox"/>	3	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
			D	<input type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>

Vibration:

<p>Can anyone suffer injury due to the vibration of the plant?</p> <p>The broom could cause excessive vibration if it is operated whilst damaged or not correctly maintained.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	<input type="checkbox"/>	2	<input type="checkbox"/>		<input type="checkbox"/>
			C	<input type="checkbox"/>	3	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
			D	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>

Environmental:

<p>Can the plant operation cause an environmental issue? For example – pollution, waste materials, noise.</p>	Yes	No	A	<input type="checkbox"/>	1	<input type="checkbox"/>	High Significant Medium Low	<input type="checkbox"/>
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	B	<input type="checkbox"/>	2	<input type="checkbox"/>		<input type="checkbox"/>
			C	<input type="checkbox"/>	3	<input type="checkbox"/>		<input type="checkbox"/>
			D	<input type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>
			E	<input type="checkbox"/>	5	<input type="checkbox"/>		<input type="checkbox"/>

Risk Evaluation

Overall risk category of plant:	High	Significant	Medium	Low
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Risk Controls

Most Desirable

- | | |
|---|---|
| <div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; border-right: 1px solid black; height: 100px; margin-right: 10px;"></div> <ul style="list-style-type: none"> • Elimination • Substitution • Engineering Controls • Isolation • Administrative Controls • PPE </div> | <ul style="list-style-type: none"> - The best way to eliminate the risk is to remove the hazard. - Substitute the hazardous plant with a safer part, alternative process. - Design modification, installation of guarding, automation/ventilation. - Isolate the plant, barricades, crossing, bunting, etc. - Permits, clearances, lock out systems, certification. - Short term control measure. |
|---|---|

Least Desirable

Hazard	Controls
Entanglement	<p>Engineering Controls – A guard cover was placed over all exposed rotating parts to reduce access to possible entanglement areas.</p> <p>Isolation – Ensure the operating and maintenance manual provided with the plant attachment recommends the operator of the plant always follows SOP. The operator must make everybody working in the vicinity of the attachment aware of the dangers and only operate if people are a safe distance away.</p> <p>PPE – Ensuring all people who will be in the vicinity of the plant attachment during operation be wearing clothes that mitigate the chances of becoming entangled by accident.</p>
Crushing, Striking	<p>Isolation – Ensure the operating and maintenance manual provided with the plant attachment recommends the operator of the plant always follows SOP. The operator must make everybody working in the vicinity of the attachment aware of the dangers and only operate if people are a safe distance away.</p> <p>PPE – The use of the correct PPE for the worksite will minimize the damage caused by an incident. A hard hat, steel cap boots and tough worksite clothes as an example.</p> <p>PPE – The use of high visibility PPE will help reduce the case of incidents occurring from impaired vision or operator distraction.</p>
Cutting, Stabbing, Puncturing	<p>Engineering Controls – A skin and rubber guards cover a larger percentage of the brush. This is to prevent material from being ejected from the plant attachment as well as to reduce the accessibility to the brush.</p> <p>Isolation – Ensure the operating and maintenance manual provided with the plant attachment recommends the operator of the plant always follows SOP. The operator must make everybody working in the vicinity of the attachment aware of the dangers and before moving the plant ensure people are safe distance away.</p> <p>PPE – The use of the correct PPE for the worksite will minimize the risk of cutting when working in and around the attachment. Eyewear, gloves, and hard hat will reduce the risk associated with the debris being ejected by the plant attachment.</p>
Slipping, Tripping, Falling	<p>Isolation – The plant attachment has NOT been designed to stand on unless entering or exiting the plant. This will be stated in the operating and maintenance manual. It is the responsibility of the operator to ensure that no persons stand on the plant attachment.</p> <p>PPE – Wearing the correct work boots will reduce chances of slipping.</p>

<p style="text-align: center;">Shearing</p>	<p>Engineering Controls – A guard plate has been added to cover any rotating components to prevent accidents from happening.</p> <p>Isolation – Ensure the operating and maintenance manual provided with the plant attachment recommends the operator of the plant always follows SOP. The operator must make everybody working in the vicinity of the attachment aware of the dangers and before moving the plant ensure people are safe distance away.</p> <p>Administrative Controls – A warning sticker should be placed in visible position on the plant attachment highlighting the potential risk.</p>
<p style="text-align: center;">Friction</p>	<p>Engineering Controls – A guard plate has been added to cover any rotating components to prevent accidents from happening.</p> <p>Isolation – Workers should be aware of surfaces that become hot to touch from operating and instructed to avoid them.</p> <p>PPE – Working gloves should be worn to reduce the chances of getting minor burns.</p>
<p style="text-align: center;">High Pressure Fluid</p>	<p>Engineering Controls – The routing of the hydraulic hoses and the design of the plates which guard the hydraulic motor minimize the risk of the hydraulic failure and exposure to high pressure fluids.</p> <p>Administrative Controls – The manual will address correct maintenance schedules for the plant attachment hydraulics to reduce the risk associated with hydraulic component failure.</p> <p>Administrative Controls – A warning sticker should be placed in a visible position on the plant attachment highlighting the potential risk.</p>
<p style="text-align: center;">Electrical</p>	<p>Engineering Controls – The routing of the electrical cable is designed to minimize the risk of the cable being damaged and exposed wires leading to injury.</p> <p>Administrative Controls – The manual will address correct maintenance schedules for the plant attachment to reduce the risk associated with risk caused by improper maintenance, or installation. Only authorized technicians should perform repairs on electrical components</p>
<p style="text-align: center;">Dust</p>	<p>Isolation and Administrative Controls – To reduce the hazards associated with dust, the manual should instruct the operator to consider their working environment and operate in a manner to reduce the risk of dust being kicked up. This can be managed by setting and maintaining a sensible speed.</p> <p>PPE – If the environment is such that the dust cannot be sufficiently controlled, the onsite supervisor should ensure all workers are wearing the correct PPE.</p>

Noise	PPE – To reduce the risk associated with excessive noise the correct PPE should be worn whilst operating or being within a vicinity of the plant and plant attachment during operations.
Vibration	Administrative Controls – A regular maintenance schedule will help prevent from issues such as misalignment or uneven wear which causes excessive vibration.

Any Modification to Plant Attachment Voids Risk Assessment

Purchaser and User are required to conduct their own risk assessment to identify hazards prior to use.

This risk assessment does not necessarily cover all possible hazards associated with this product and should be utilized in conjunction with the purchasers and users individual risk assessments to identify all environmental, health, and safety risks associated with specific tasks, locations, and personnel.

9 PARTS

QUALITY BACKUP

*We manufacture 90% of our parts inhouse.
This means we can get your parts to you... quickly.*

9.1 ORDERING PARTS

For ordering parts contact either your dealer or Norm Engineering directly. Contact details are included at the front of this manual. To assist, note the details of your 4in1 broom bucket in the spaces provided under *Section 9.1.1 Reference Information*.

9.1.1 REFERENCE INFORMATION

Always refer to the model and serial number when ordering parts or requesting from you dealer. The serial number for this product is located on the identification place of your 4in1 broom bucket.

Model Number:

.....

Make:

.....

Serial Number:

.....

Date Purchased:

.....

10 PARTS LIST

When ordering replacement parts, please include the following information:

- The machine make and model.
- The serial number on the attachment.
- The item number, as indicated by the following figures and tables.
- Parts with a part number of “.:” indicate a component that varies dependent on machine make and model. A serial number and item number is essential if ordering these parts.

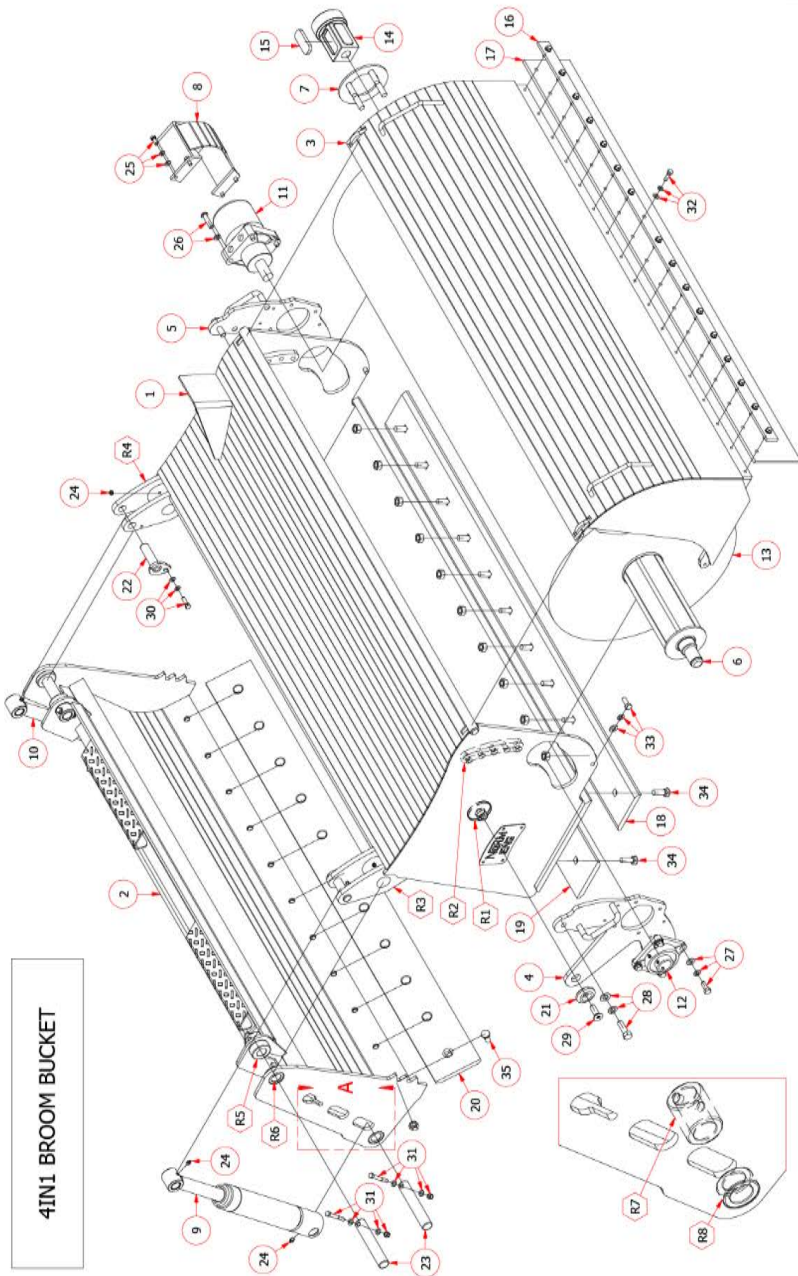
Items numbers with a “R” before the number indicate parts that require specialty tools and some knowledge in fabrication and welding to replace.

4IN1 BROOM BUCKET PARTS LIST

Item	Part Number	QTY	Description	Diagram
1	.:	1	4IN1 BROOM BUCKET – FRONT HALF	1
2	.:	1	4IN1 BROOM BUCKET – REAR HALF	1
3	.:	1	4IN1 BROOM BUCKET – FRONT COVER	1
4	SW309	1	RHS HEIGHT ADJUSTMENT PLATE	1
5	SW310	1	LHS HEIGHT ADJUSTMENT PLATE	1
6	.:	1	DRIVE SHAFT	1
7	SW093	1	BROOM STOPPER	1
8	SW311	1	4IN1 BROOM BUCKET – MOTOR GUARD	1
9	C2501	1	2.5" CYL 8" STROKE - REVERSIBLE - SIDE PORT	1
10	C2501	1	2.5" CYL 8" STROKE - REVERSIBLE - SIDE PORT	1
11	ME-18-02NORM	1	SWEEPER MAIN HYDRAULIC MOTOR	1
12	UCF208-108	1	MAIN SWEEPER SHAFT BEARING	1
13	.:	1	24" BRUSH	1
14	-	1	DRIVE BLOCK – 140 LONG	1
15	SW349	4	DRIVE BLOCK RUBBER	1
16	.:	1	FRONT RUBBER FASTENER PLATE	1
17	.:	1	FRONT RUBBER T/S 4IN1 BROOM BUCKET	1
18	.:	1	FRONT BOLT ON CUTTING EDGE	1
19	.:	1	MIDDLE BOLT ON CUTTING EDGE	1
20	.:	1	REAR BOLT ON CUTTING EDGE	1

21	CS0035	2	LIFTING ARM BUSH	1
22	PI047	2	4IN1 TOP HYDRAULIC CYLINDER PIN	1
23	PI045	4	4IN1 BOTTOM HYDRAULIC CYLINDER PIN	1
24	NS2001	6	3/8" GREASE NIPPLE	1
25	-	4	BOLT KIT – MOTOR GUARD ASSEMBLY	1
26	-	4	BOLT KIT – HYDRAULIC MOTOR	1
27	-	4	BOLT KIT – MAIN SWEEPER SHAFT BEARING	1
28	-	2	BOLT KIT – HEIGHT ADJUSTMENT	1
29	-	2	BOLT KIT – ADJUSTMENT ARM PIVOT	1
30	-	2	BOLT KIT – 4IN1 TOP HYD. CYLINDER PIN	1
31	-	4	BOLT KIT – 4IN1 BTM HYD. CYL./PIVOT PIN	1
32	-	-	BOLT KIT – RUBBER FASTENING PLATES	1
33	-	2	BOLT KIT – FRONT BROOM GUARD	1
34	-	-	BOLT KIT – FR/MID BOLT ON CUTTING EDGE	1
35	-	-	BOLT KIT – REAR BOLT ON CUTTING EDGE	1
R1	SW305	2	BROOM CENTRE PIVOT BUSH	1
R2	SW011	2	BROOM HEIGHT ADJUSTMENT PLATE	1
R3	NS5029BS	1	RHS 4IN1 CAST PIVOT ARM	1
R4	NS5030NS	1	LHS 4IN1 CAST PIVOT ARM	1
R5	RE013	2	4IN1 BROOM BUCKET MAIN PIVOT RETAINER	1
R6	BU039	2	4IN1 BROOM BUCKET MAIN PIVOT BUSH	1
R7	RE030	2	4IN1 BUCKET BOTTOM HYD. CYL. RETAINER	1
R8	BU037	2	4IN1 BUCKET BOTTOM HYD. CYL. BUSH	1

Diagram 1

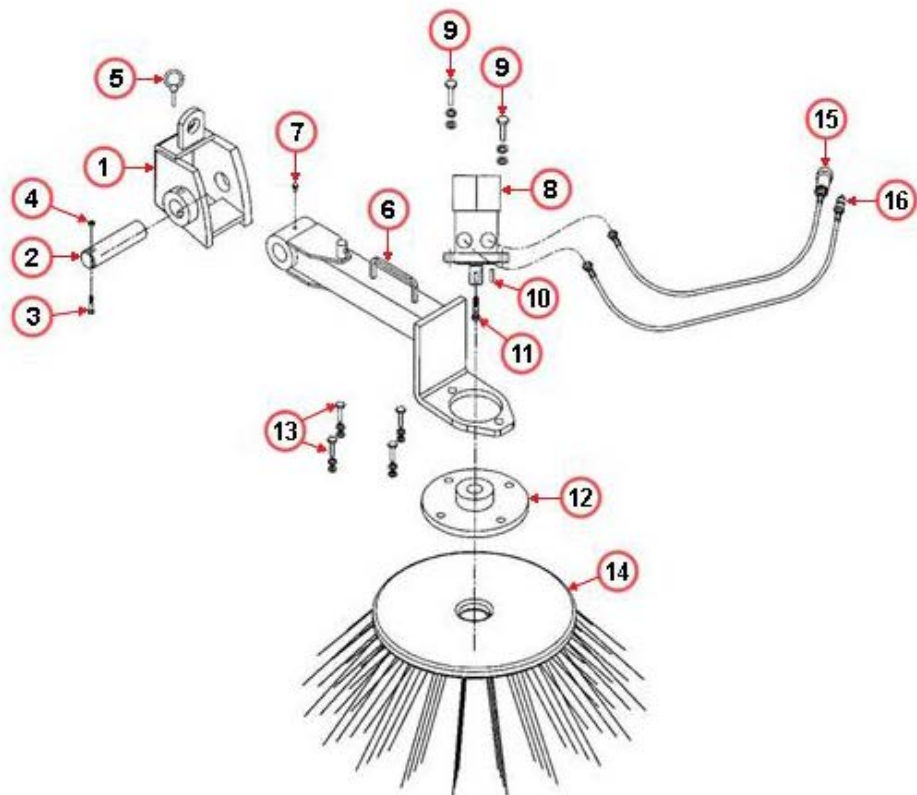


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DETAIL A
SCALE 1:6

4IN1 BROOM BUCKET GUTTER BRUSH PARTS LIST

Item	QTY	Description	Diagram
1	1	GUTTER BRUSH MOUNTING BLOCK	2
2	1	GUTTER BRUSH MOUNTING PIN	2
3	1	MOUNTING PIN BOLT	2
4	1	MOUNTING PIN NUT	2
5	1	GUTTER BRUSH RETAINING CLIP	2
6	1	GUTTER BRUSH ARM	2
7	1	GREASE NIPPLE	2
8	1	GUTTER BRUSH DRIVE MOTOR	2
9	2	DRIVE MOTOR MOUNTING BOLTS	2
10	1	WOODRUFF KEY	2
11	1	BRUSH RETAINING BOLT	2
12	1	BRUSH MOUNTING PLATE	2
13	2	BRUSH MOUNTING PLATE BOLTS	2
14	1	BRUSH	2
15	1	FEMALE HYDRAULIC HOSE	2
16	1	MALE HYDRAULIC HOSE	2

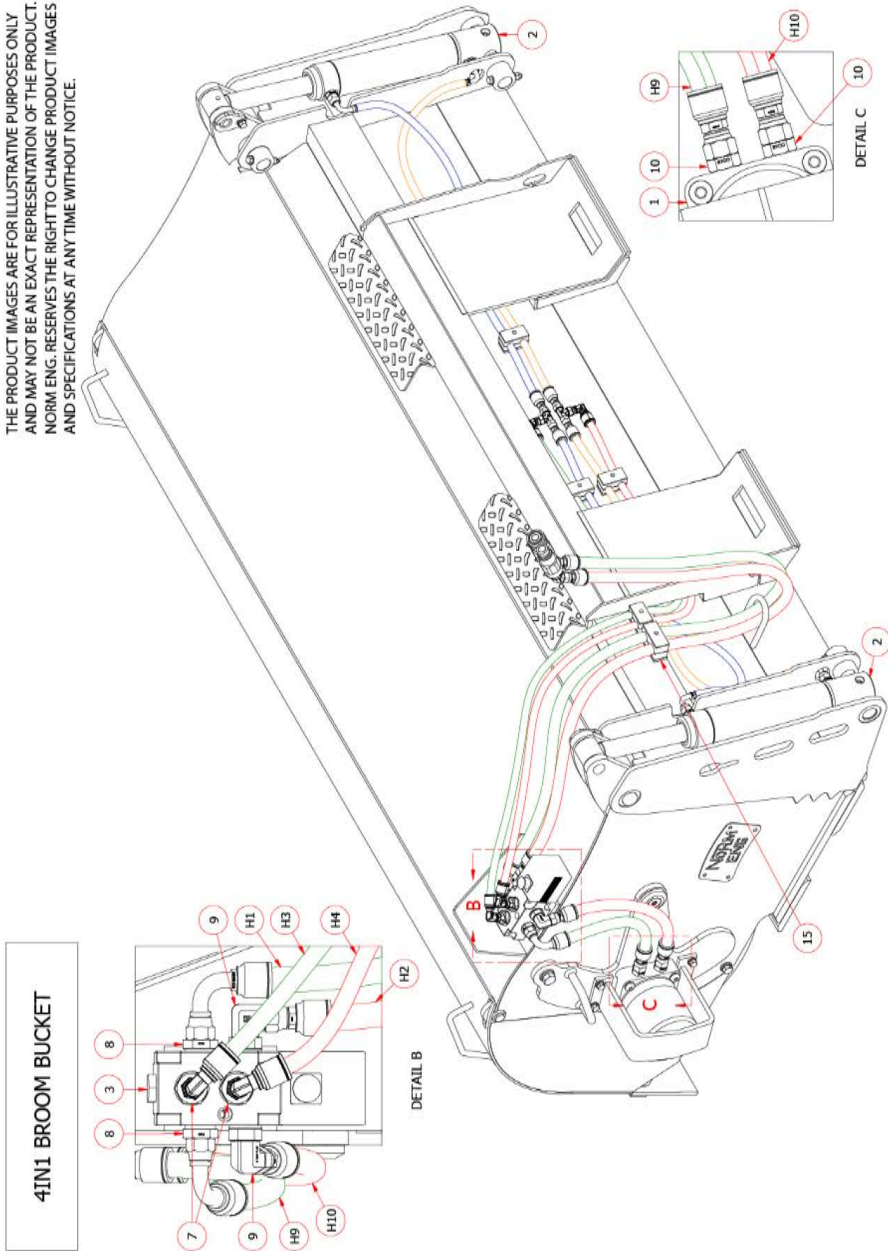


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4IN1 BROOM BUCKET HYDRAULICS PARTS LIST

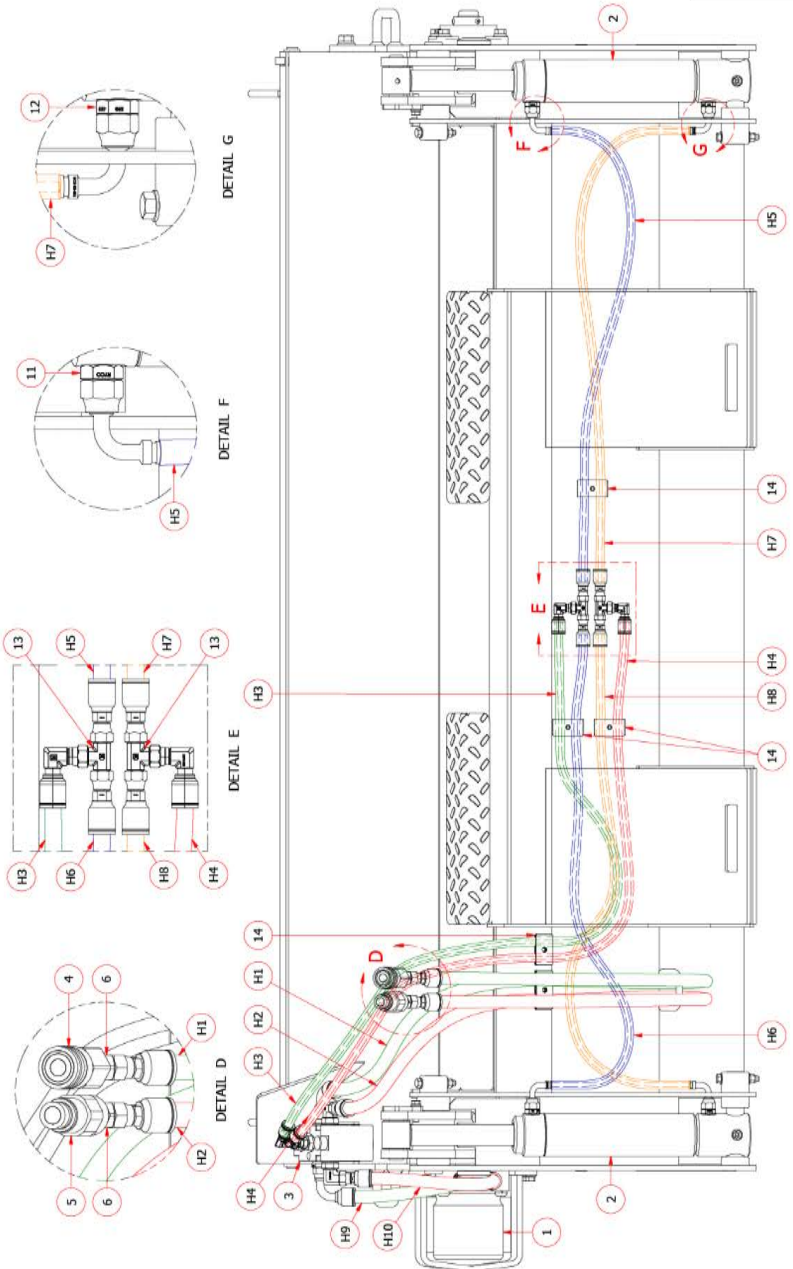
Item	Part Number	QTY	Description	Diagram
1	ME-18-02NORM	1	SWEEPER MAIN HYDRAULIC MOTOR	3-4
2	C2501	2	2.5" CYL 8" STROKE - REVERSIBLE - SIDE PORT	3-4
3	VS280	1	VS280 HYDRAULIC VALVE	3-4
4	F A13 ½ BSP	1	1/2" FLAT FACE STUCCHI FEMALE	4
5	M A13 ½ BSP	1	1/2" FLAT FACE STUCCHI MALE	4
6	G-BP-45-1208	2	45 - ADAPTOR - 1/2" BSPPM - 3/4" JICM	4
7	B-G-0809	2	ST - ADAPTOR - 1/2" BSPPM - 9/16" JICM	3
8	B-G-0812	2	ST - ADAPTOR - 1/2" BSPPM - 3/4" JICM	3
9	G-BP-90-1208	2	90 - ADAPTOR - 1/2" BSPPM - 3/4" JICM	3
10	G-N-1414	2	ST - ADAPTOR - 7/8" UNOM - 7/8" JICM	3
11	NHF0001	2	ST - ADAPTOR - 1mm/2.5mm RESTRICTOR	4
12	G-N-1212	2	ST - ADAPTOR - 3/4" UNOM - 3/4" JICM	4
13	G-G-G-090909	2	T-ADAPTOR - 9/16" JICM x 3	4
14	CF2-M14C	4	14 ID DOUBLE TUBE CLAMP	4
15	CF3-H08C	1	21.3 ID DOUBLE TUBE CLAMP	3
H1	∴	1	FEMALE COUPLING TO RHS VALVE	3-4
H2	∴	1	MALE COUPLING TO RHS VALVE	3-4
H3	∴	1	TOP VALVE TO TOP T-ADAPTOR	3-4
H4	∴	1	TOP VALVE TO BTM. T-ADAPTOR	3-4
H5	∴	1	RHS TOP T-ADAPTOR TO TOP RHS CYL.	4
H6	∴	1	LHS TOP T-ADAPTOR TO TOP LHS CYL.	4
H7	∴	1	RHS BTM. T-ADAPTOR TO BTM. RHS CYL.	4
H8	∴	1	LHS BOTTOM T-ADAPTOR TO BTM. LHS CYL.	4
H9	∴	1	LHS VALVE TO TOP SWEEPER MOTOR	3-4
H10	∴	1	LHS VALVE TO BTM. SWEEPER MOTOR	3-4

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4in1 BROOM BUCKET

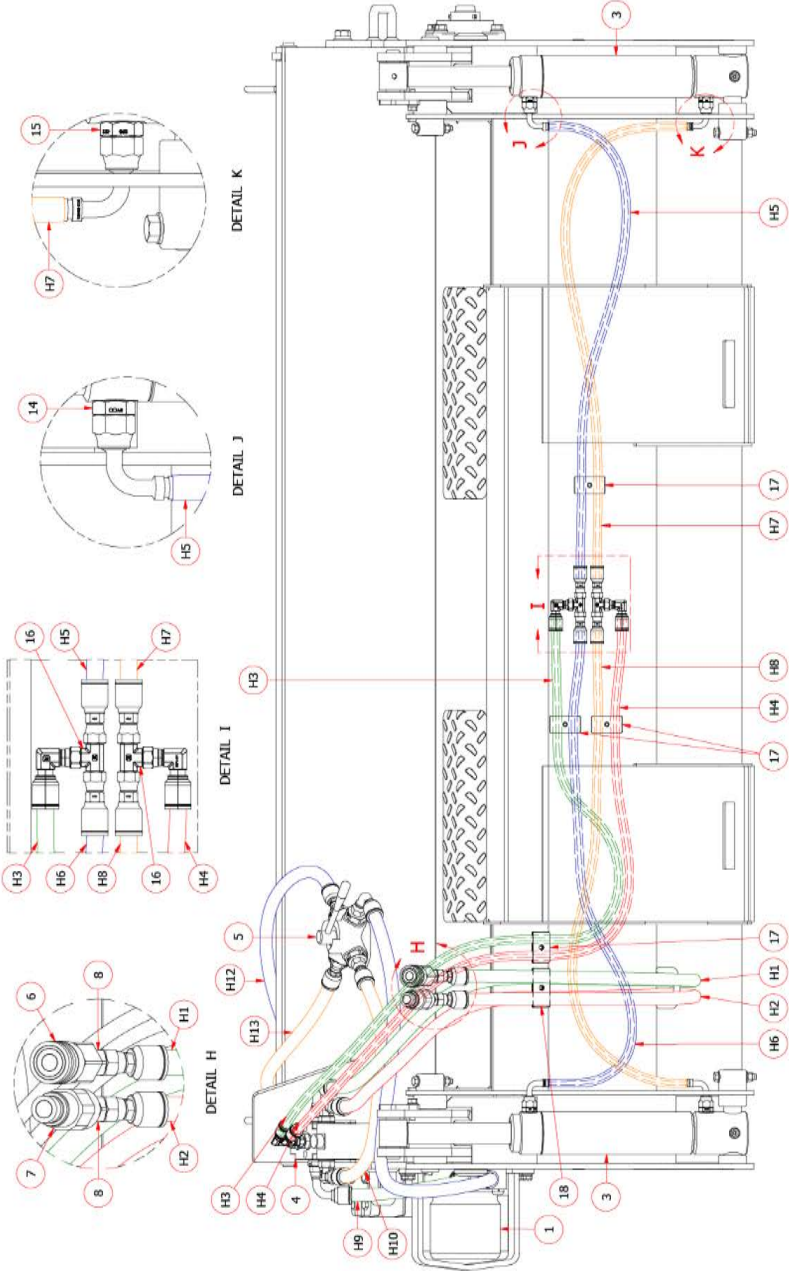


4IN1 BROOM BUCKET W/ GUTTER BRUSH HYDRAULICS PARTS LIST

Item	Part Number	QTY	Description	Diagram
1	ME-18-02NORM	1	SWEEPER MAIN HYDRAULIC MOTOR	5-6
2	-	1	GUTTER BRUSH HYDRAULIC MOTOR	6
3	C2501	2	2.5" CYL 8" STROKE - REVERSIBLE - SIDE PORT	5
4	VS280	1	VS280 HYDRAULIC VALVE	5-6
5	DH20-4-A	1	PORT DIVERTER VALVE	5-6
6	F A13 ½ BSP	1	1/2" FLAT FACE STUCCHI FEMALE	5
7	M A13 ½ BSP	1	1/2" FLAT FACE STUCCHI MALE	5
8	G-BP-45-1208	2	45 - ADAPTOR - 1/2" BSPPM - 3/4" JICM	5
9	B-G-0809	2	ST - ADAPTOR - 1/2" BSPPM - 9/16" JICM	6
10	B-G-0812	2	ST - ADAPTOR - 1/2" BSPPM - 3/4" JICM	6
11	G-BP-90-1208	2	90 - ADAPTOR - 1/2" BSPPM - 3/4" JICM	6
12	B-G-1212	4	ST - ADAPTOR - 3/4" BSPPM - 3/4" JICM	6
13	G-N-1414	4	ST - ADAPTOR - 7/8" UNOM - 7/8" JICM	6
14	NHF0001	2	ST - ADAPTOR - 1mm/2.5mm RESTRICTOR	5
15	G-N-1212	2	ST - ADAPTOR - 3/4" UNOM - 3/4" JICM	5
16	G-G-G-090909	2	T-ADAPTOR - 9/16" JICM x 3	5
17	CF2-M14C	4	14 ID DOUBLE TUBE CLAMP	5
18	CF3-H08C	1	21.3 ID DOUBLE TUBE CLAMP	5
H1	∴	1	FEMALE COUPLING TO RHS 6-PORT VALVE	5-6
H2	∴	1	MALE COUPLING TO RHS 6-PORT VALVE	5-6
H3	∴	1	TOP 6-PORT VALVE TO TOP T-ADAPTOR	5-6
H4	∴	1	TOP 6-PORT VALVE TO BOTTOM T-ADAPTOR	5-6
H5	∴	1	RHS TOP T-ADAPTOR TO TOP RHS CYL.	5
H6	∴	1	LHS TOP T-ADAPTOR TO TOP LHS CYL.	5
H7	∴	1	RHS BOTTOM T-ADAPTOR TO BTM. RHS CYL.	5
H8	∴	1	LHS BOTTOM T-ADAPTOR TO BTM. LHS CYL.	5
H9	∴	1	LHS 6-PORT VALVE TO SWEEPER MOTOR	5-6
H10	∴	1	LHS 6-PORT VALVE TO 4-PORT VALVE	5-6
H11	∴	1	SWEEPER MOTOR TO 4-PORT VALVE	6
H12	∴	1	4-PORT VALVE TO GUTTER BRUSH MOTOR	5-6
H13	∴	1	GUTTER BRUSH MOTOR TO 4-PORT VALVE	5-6

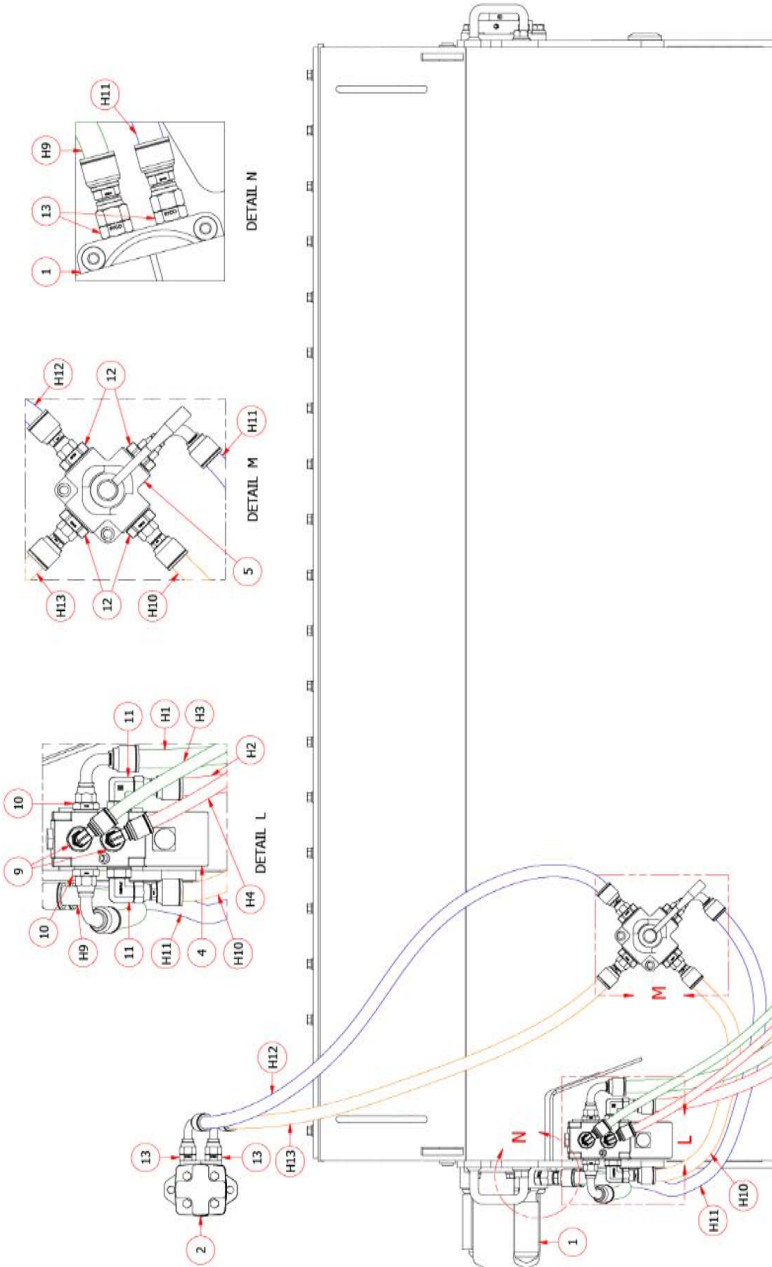
THE PRODUCT IMAGES ARE FOR ILLUSTRATIVE PURPOSES ONLY AND MAY NOT BE AN EXACT REPRESENTATION OF THE PRODUCT. NORM ENG. RESERVES THE RIGHT TO CHANGE PRODUCT IMAGES AND SPECIFICATIONS AT ANY TIME WITHOUT NOTICE.

4in1 Broom Bucket WITH GUTTER BRUSH



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4in1 BROOM BUCKET WITH GUTTER BRUSH



11 APPENDICES

11.1 SAFETY SIGN LOCATIONS

Item	Description
1	Warning Pinch point
2	Danger High pressure fluid
3	Warning Attachment can contact machine
4	Danger Read the manual



ITEM 1



ITEM 2



ITEM 3



ITEM 4

Instructions

- Keep all safety signs clear and legible.
- Replace all missing, illegible, or damaged safety signs.
- When replacing parts which have safety signs attached make sure the replacement part has the safety sign.

12 WARRANTY

12.1 DEFINITION

“Dealer” means a dealer that purchases products directly from Norm Engineering Pty Ltd.

“End consumer” means a consumer that purchases products either directly from Norm Engineering Pty Ltd or directly from a “dealer” as defined above.

“Products” includes goods and services.

12.2 WARRANTY

Norm Engineering Pty Ltd welcomes you as a purchaser of its products. All Norm Engineering products are designed to ensure the highest standards, reliability, and performance.

Norm Engineering Pty Ltd warrants hydraulic cylinders against defects in manufacture for a period of twelve months from date of sale by the dealer or Norm Engineering Pty Ltd to the end consumer. The warranty in relation to hydraulic cylinders ceases upon the occurrence of damage to the piston rod of the hydraulic cylinder.

No warranty applies to hoses, tubes, and fittings in relation to any of the products.

Norm Engineering Pty Ltd warrants all its other products against defects in manufacture for a period of twelve months from the date of sale by the dealer or Norm Engineering Pty Ltd to the end consumer.

Norm Engineering Pty Ltd will, subject to the terms of this warranty, in relation to defective goods:

- a) replace the defective goods at no cost to the end consumer; or
- b) repair the defective goods at no cost to the end consumer; or
- c) pay the cost of having the defective goods repaired.

Norm Engineering Pty Ltd will, subject to the terms of this warranty, in relation to defective services:

- a) supply the services again to the end consumer at no cost to the end consumer; or
- b) pay the cost of having the service supplied again to the end consumer.

Warranty claims may be sent either to Norm Engineering Pty Ltd., P.O. Box 178, Mt Ommaney, Qld. 4074 or to the dealer.

All warranty periods shall commence from the date of sale by Norm Engineering Pty Ltd or the dealer to the end consumer. It is the end consumer's responsibility to establish the date of sale of the product to the end consumer by the dealer.

The end consumer may establish the date of sale by producing to Norm Engineering Pty Ltd the dated contract of sale between the end consumer and the dealer with its warranty claim.

If the end consumer is not able to establish the date of sale of the product to the end consumer by the date of its warranty claim, the warranty period shall be deemed to commence from the date of sale of the product by Norm Engineering Pty Ltd to the dealer.

This warranty will not apply if the end consumer does not use the product in accordance with Norm Engineering Pty Ltd's recommendation.

This warranty will not apply if the end consumer does not use products applied or fitted to any machine, equipment, or plant, in accordance with Norm Engineering Pty Ltd's operating recommendation for the product.

This warranty does not apply to any loss or damage caused through consequential neglect. Unless the end consumer indicates to Norm Engineering Pty Ltd prior to purchasing the product that it intends to use the product for a particular purpose, there is no implied warranty that the product will fit for that particular purpose. Ask Norm Engineering for clarification of the intended use is not included in the manual.

Only a dealer authorised in writing, or issued with an order number, by Norm Engineering Pty Ltd may carry out warranty repairs. Prior written approval must be obtained from Norm Engineering Pty Ltd before warranty repairs are carried out. Norm Engineering Pty Ltd will not recognise any warranty claim for reimbursement of repair costs unless the repairs have been carried out by an authorised dealer with prior written approval from Norm Engineering Pty Ltd to carry out the repairs.

Norm Engineering Pty Ltd limits its liability, as follows:

1) Pursuant to Section 68A of the Trade Practices Act 1974, this clause applies in respect of any of the goods or services supplied under this contract which are not of a kind ordinarily acquired for personal, domestic or household use or consumption, provided that this clause will not apply if the end consumer establishes that reliance on it would not be fair and reasonable.

2) Liability for breach of a condition or warranty implied into this contract by the Trade Practices Act 1974 other than a condition implied by Section 69 is limited:

a) In the case of goods, to any one of the following as determined by Norm Engineering Pty Ltd:

i. the replacement of goods

ii. the repair of the goods

iii. the payment of the cost of having the goods repaired, excluding travelling and freight charges.

b) In the case of services, to any one of the following as determined by Norm Engineering Pty Ltd.

i. the supplying of the services again; or

ii. the payment of the cost of having the services supplied again

Expenses incurred by the end consumer in connection with making a warranty claim shall be borne by the end consumer unless otherwise agreed by Norm Engineering Pty Ltd.

To the extent permitted by law, all implied conditions, and warranties in the contract of sale between Norm Engineering Pty Ltd and the end consumer are hereby excluded.

The benefits conferred by this warranty on the end consumer are in addition to all other legal rights and remedies that the end consumer has in respect of the products.

Contracts of sale for products, and this warranty are submitted to the exclusive jurisdiction of the courts of Queensland.



WARRANTY NOTICE

DEALER:

STATE: SIGNED:

END CONSUMER:

NAME:

ADDRESS:

.....

.....

STATE: POSTAL CODE:

PHONE: SIGNED:

DATE OF SALE TO THE END CONSUMER:/...../.....

DESCRIPTION OF PRODUCTS:

.....

.....

.....

SERIAL NO:

DELIVERY DOCKET NO:

DELIVERY DATE:/...../.....

NOTE: THIS FORM IS TO BE COMPLETED BY THE DEALER
AND RETURNED TO: NORM ENGINEERING - P O BOX 178
MT OMMANEY, BRISBANE, QUEENSLAND, AUSTRALIA, 4074