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Norm Engineering

8IN STROKE 4IN1 LOADER BUCKET

Manufacturer of  
Earthmoving Attachments for:  
Skid Steer Loaders  
Backhoes  
Excavators



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8IN STROKE 4IN1 LOADER BUCKET  
**OPERATING & MAINTENANCE  
MANUAL**

Version 1.0a

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## 1 INTRODUCTION



**8IN STROKE 4IN1 LOADER BUCKET**

Congratulations on purchasing a Norm Engineering Pty Ltd attachment. We have designed this loader 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 loader 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 loader 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 loader 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 Z535.4-2007 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:** The word that calls attention to the safety sign and designates a degree or level of hazard seriousness. The signal words for product safety signs are "DANGER", "WARNING", "CAUTION", and "NOTICE".
- **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. It may also be used without the safety alert symbol as an alternative to "Notice". (Black letters on a yellow background) 
- **NOTICE:** "NOTICE" is the preferred signal word to address practices not related to personal injury. The safety alert symbol shall not be used with this signal word. 
- **CAUTION:** As an alternative to "NOTICE" the word "CAUTION" without the safety alert symbol may be used to indicate a message not related to personal injury. 

## 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 loader 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 loader operating manual to be taken to ensure your safety prior to engaging the loader bucket.

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:

- Work on a level surface in a well-lit area.
- Keep the area clean and dry.
- Use properly grounded electrical outlets & 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 (i.e. hardhat, safety glasses, work gloves, protective shoes, etc.)
- When the loader bucket has been out in the sun, remember to wear protective gloves as the metal will be hot to touch.

### 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 loader'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 loader's operating manual for instructions on preparing the equipment for hitching up an attachment and relieving hydraulic pressure in lines.
- Know your loader'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 speeds.
- Whilst in motion keep the product close to the ground and under control.

## 4 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.

### 4.1 HITCHING UP THE LOADER BUCKET

#### **DANGER**

All safety precautions pertaining to both the power unit and the loader bucket need to be followed.

**Step one:** Before beginning any work on 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 loader bucket.

**Step two:** Refer to your loader'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 loader 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 loader operating manual to release the pressure in the hydraulic system.

**Step five:** Connect the hydraulic couplings on the loader 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 loader bucket cylinder several times before taking it near other personnel.

### 4.2 REMOVING THE LOADER BUCKET

#### **DANGER**

All safety precautions pertaining to both the power unit and the loader bucket need to be followed.

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

**Step two:** Rest the loader bucket on the ground.

**Step three:** Disconnect the attachment's hydraulic couplings from the power unit following all safety precautions. Refer to your loader's operating manuals.

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

**Step five:** Refer to your loader's operating manual for instructions on removing the attachment and confirm the hitch is fully disengaged from the loader bucket. Store safely.

## 5 SPECIFIED OPERATIONS

### DANGER

The operator of the power unit needs to make sure that the area that is to be worked on is a safe working environment following all the safety requirements. Refer to any risk assessment or survey that has been conducted to ensure potential hazards have required controls to ensure safety for workers.

### 5.1 THE CLOSED BUCKET

The 4in1 bucket is to be used for stockpiling, loading, digging, dumping, scraping and carrying. It is not to be used for any other purpose.

### NOTICE

ENSURE the load capacity of the bucket is within the constraints of the power unit.

ENSURE the bucket has the capacity to pick up or carry the objects.

### DANGER

ENSURE that the bucket carries only what it has been designed to carry – this does NOT include people.

### 5.2 THE DOZER BLADE

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

### CAUTION

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

It is possible to jar the neck, back and shoulders when hitting an unseen object.

### 5.3 THE BACK BLADE

Used with the bucket open, the back blade can be used for levelling, scraping and clean-up work.

### CAUTION

ENSURE the bucket is closed proper before attempting to rip at an obstacle.

ENSURE the bucket is used for the correct purposes only – NOT as a lifting point.

### WARNING

It is possible to back into other people.

Jarring of the neck, back and shoulders may occur if an obstacle is hit whilst operating the

power unit in reverse.

### 5.4 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.

### CAUTION

ENSURE appropriate use of the closing and opening action, which does not include attempting to clamp objects with the bucket.

### CAUTION

ENSURE when moving clamped material that this is clear of personnel below or near the area, as there is a danger of material

releasing and falling.

ENSURE that the bucket has the capacity to pick up or carry the objects.

ENSURE the bucket is closed prior to carrying the materials.

### WARNING

Objects may fall from the open bucket. Personnel may be impacted if the operator attempts to carry an oversized load.

## 6 SAFE OPERATING LIMITS

### WARNING

Refer to the parent equipment manual to ensure you follow all the limits specified. Do not exceed load limits.

## 7 MAINTENANCE AND CARE

### **WARNING**

Repairs and maintenance must be carried out safely to prevent injury.

While conducting repairs and maintenance, the loader bucket must be removed from the loader and hydraulic pressure released. Refer to your loader's operating manual. The loader bucket must be supported and secure on a firm base. Be aware of fluids under pressure and take safety precautions to protect from injury.

### 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 loader 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.
- Clean the bucket of any excessive material build up. In particular, ensure there is no material built up in the towers behind each cylinder. Bent cylinder rods, due to material build up, are not covered under warranty.
- 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.
- Loader bucket signs are in place, in good order, and legible.
- Grease all fittings – this needs to be performed on a daily basis.
- Inspect cutting edges for wear or damage and rotate (or replace) them if necessary. See Section 7.4.

Note: Some of the hydraulic cylinders will have two grease fittings on the cross tube end of the barrel section of the cylinder. Only one of these two fittings need to be greased.

### 7.3 MONTHLY

The following activities are recommended:

- All pins must be greased at regular intervals.
- Fittings, hoses and hydraulics must be checked to make sure there are no leaks.
- Pins and bushes must be inspected and replaced before wear damages the loader bucket structure.
- Inspect and replace worn parts such as cutting edges and wear plates before wear damages the structure of the bucket.
- Inspect and replace worn teeth before wear occurs through to the tooth adaptors
- Organise for a certified and qualified hydraulics fitter to inspect and replace hydraulic hoses and seals in the hydraulic parts as necessary.

### 7.4 BOLT-ON-CUTTING EDGES (ONLY APPLIES TO MODELS WITH BOLT-ON EDGES)

#### **WARNING**

Failure to obey the following procedures could result in death or serious injury.

Do NOT use blocking made of concrete blocks, logs, buckets, barrels or any other material that could suddenly collapse of check 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 proper to undertaking any replacements to the loader bucket.

### 7.4.1 REPLACING THE FRONT EDGE

**Step one:** Park your loader on a level surface with this product properly attached.

**Step two:** Refer to the loader operating manual for safety precautions regarding making disengagements for enabling replacements of parts on the loader bucket.

**Step three:** Lower this product onto preplaced blocking. It must be sufficient to support the bucket.

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

**Step five:** Remove the cutting edge and either turn the cutting edge end-for-end or, if this process has already occurred, properly dispose of the cutting edge. Properly dispose of all nuts and bolts.

**Step six:** Clean the surface of the floor that the cutting edge will attach to. If installing a reversed cutting edge, ensure the attached surface is clean. Failure to properly clean both surfaces may lead to the cutting edge fasteners loosening over time.

**Step seven:** Install the new or reversed cutting edge by loosely securing each end of the cutting edge with a new bolt and nut. **Do not** reuse the old nuts and bolts.

**Step eight:** Install all the remaining new nuts and bolts and tighten all the new nuts to the required torque for the loader bucket. Note the required torque is 60 ft.lbs.

### 7.4.2 REPLACING THE REAR EDGE AND BULLDOZER EDGE

**Step one:** Ensure a safe working environment, enabling access to the edge retaining bolts and required clamps.

**Step two:** Start your loader, raise the bucket and open the floor. Engage the loader arm lock and make sure all safety instructions are followed as per the power unit operating manual prior to commencing the next step.

**Note,** this includes engaging the loader arm locks **before** commencing any work on the bucket.

**Step three:** Remove all nuts from the bolts that secure the cutting edge to the floor or rear of the bucket. Begin in the centre and ensure you remove the outside nuts last. Use of a pipe wrench or hand grinder may be required to remove extremely damaged or worn nuts.

**Step four:** Remove the cutting edge and either turn the cutting edge end-for-end or, if this process has already occurred, properly dispose of the cutting edge. Properly dispose of all nuts and bolts.

**Step five:** Clean the surface of the floor (or back skin) that the cutting edge will attach to. If installing a reversed cutting edge, ensure the attached surface is clean. Failure to properly clean both surfaces may lead to the cutting edge fasteners loosening over time.

**Step six:** Install the new or reversed cutting edge by loosely securing each end of the cutting edge with a new bolt and nut. **Do not** reuse the old nuts and bolts.

**Step seven:** Install all the remaining new nuts and bolts and tighten all the new nuts to the required torque for the loader bucket. Note the required torque is 60 ft.lbs.



## 8 PARTS

### QUALITY BACKUP

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

### 8.1 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 loader bucket in the spaces provided under *Section 7.1.1 Reference Information*.

#### 8.1.1 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 loader bucket.

Model Number:

.....

Make:

.....

Serial Number:

.....

Date Purchased:

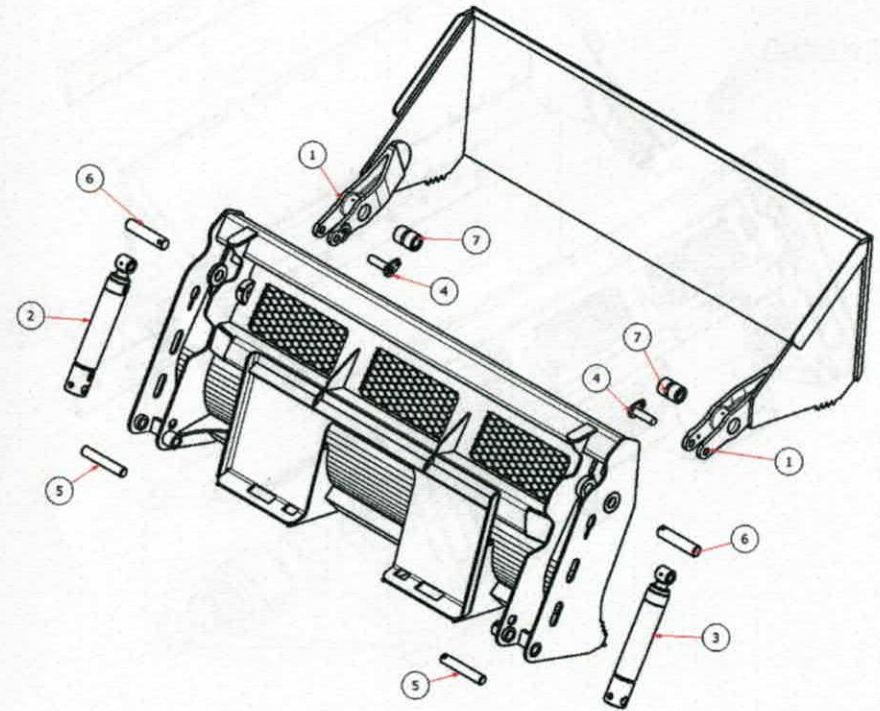
.....

## 9 PARTS LIST

### STANDARD PARTS LIST

Item	QTY	Description	Refer to Diagram
1	2	Cast arm	1
2	1	2.5" Bore – 8" Stroke – L.H. Hydraulic Cylinder	1, 3
3	1	2.5" Bore – 8" Stroke – R.H. Hydraulic Cylinder	1, 3
4	2	Hydraulic cylinder top pin & flag	1
5	2	Hydraulic cylinder bottom pin	1
6	2	Pivot pin	1
7	2	Pivot bush	1

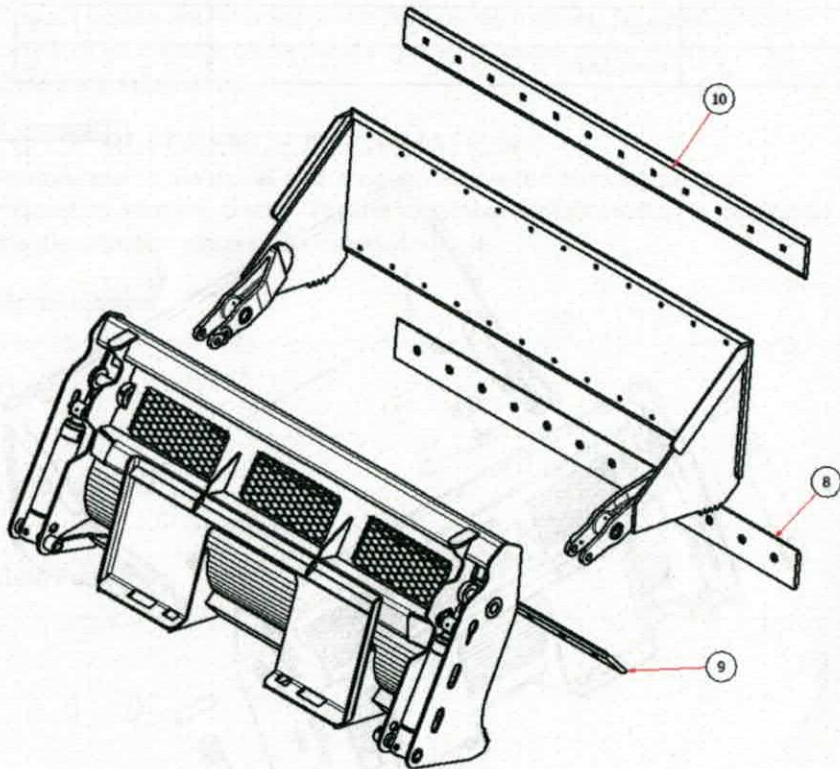
Diagram 1



### OPTIONAL PARTS LIST

Item	QTY	Description	Refer to Diagram
8	1	Bolt-on cutting edge – rear	2
9	1	Bolt-on cutting edge – middle	2
10	1	Bolt-on cutting edge – front	2

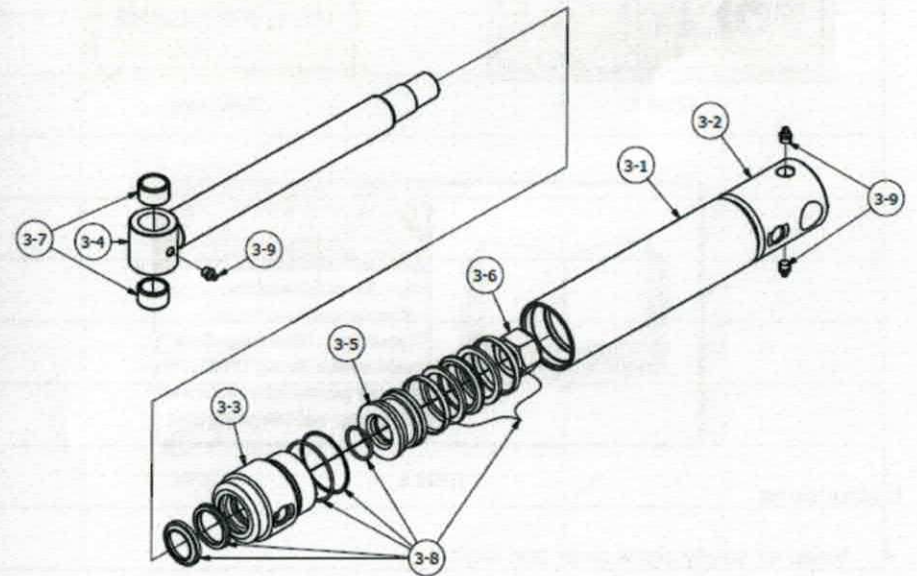
Diagram 2



### CYLINDER PARTS LIST

Item	QTY	Description	Refer to Diagram
3-1	1	Barrel	3
3-2	1	End cap, port inline	3
3-3	1	Gland	3
3-4	1	Rod weldment	3
3-5	1	Piston	3
3-6	1	Piston retaining nut	3
3-7	2	Hardened bush	3
3-8	1	Seal kit	3
3-9	2	Grease nipple	3

Diagram 3





<b>Section 2    Weekly and routine maintenance and safety checks</b>					
<i>Recommended checks described in Section 7.3</i>					
Date	Hourmeter	Name of inspector	Company	Qualifications	Signature
	h				
	h				
	h				
	h				
	h				
	h				

<b>Section 3    Faults, difficulties and problems log</b>					
<i>Record all issues that are discovered during any of the recommended maintenance checks.</i>					
Date	Time	Fault, difficulty or problem	Company	Repairs	
				Comment	Signature
	am/pm				
	am/pm				
	am/pm				
	am/pm				
	am/pm				
	am/pm				