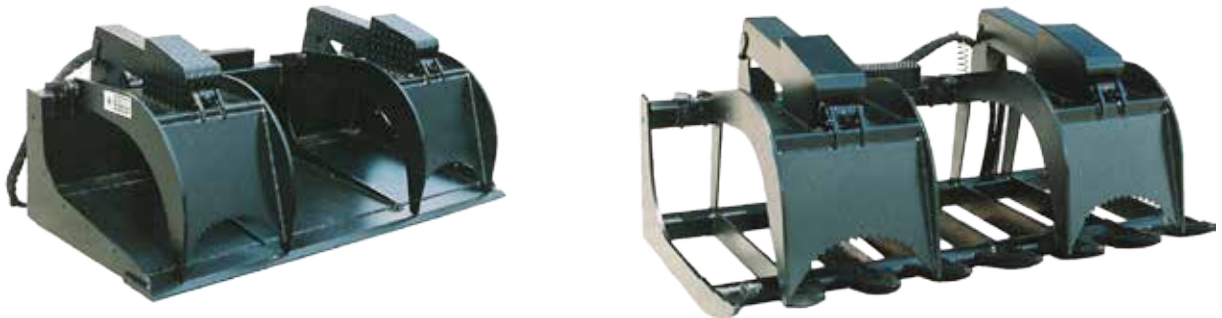


Heavy Duty & Demolition Grade Grapple Attachments



Owner's/Operator's Manual



WARNING



For safe operation, read these rules and instructions carefully to avoid accidents that could result in Death or Serious Injury.

TO THE OWNER/OPERATOR OF THIS IMPLEMENT

Please read this manual "before" unpacking or using this implement for the first time. This manual provides you with the necessary instructions to safely install and use your purchase. Do not let other people use this attachment without first being instructed how to safely use it.

STAR Industries

4101 Garland Drive
Fort Worth, TX 76117
Phone 817.485.6073
Fax 817.428.6008
www.starindustries.com

Save this manual for future reference!

Thank You

Our sincere appreciation to you on the purchase of a quality Grapple Attachment designed and manufactured in the USA. Product experience of a combined 30 years is the cornerstone of our company, and our goal is to provide you with a heavy duty product that will give you years of satisfaction and operation.

Our record of successful and satisfied customers is evidence of the concern for quality and designed strength that we place into each and every product we build.

As this manual expresses the need for safe operation of your acquisition from Star Industries, it is important that you and all operators of this implement become familiar with the operation, maintenance and safety instructions found in this manual, as well as in the manual that accompanied the skid steer machine that will power this attachment. Add some common sense to the items mentioned in these manuals as the recipe for safe operation.

We invite you to look at more innovative products on our web site:

<http://www.starindustries.com/>

Sincerely,
Management & Employees
STAR Industries

Information

Record product information here for future reference

Model (✓) ----- Grapple Bucket (____) Root Grapple (____)

Choose Duty (✓) ----- Heavy Duty (____) Demolition Grade (____)

Width in Inches (✓) ----- 66" (____) 72" (____)

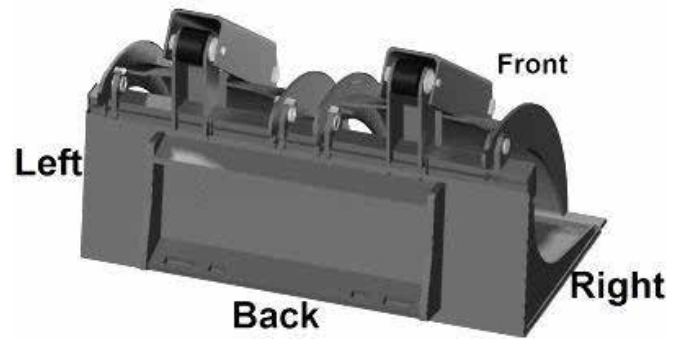
S/N or MFG. Date _____ Date of Purchase ____/____/____

Dealer Name _____ Dealer Phone ____-____-____

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Orientation



Serial Number Plate is Located on Top of Mounting Plate

Importance of Safety

Accidents can be very costly to human life and property. As the operator is the #1 safety device on all types of vehicles or equipment, it is important that the operator read, learn and know all safety recommendations for this product. The user is responsible to his family, friends and co-workers to operate in a safe manner. Ensure that everyone who operates or assists in the operation or maintenance of this product read and understand all the elements required to safely operate this piece of equipment. This attachment has moving parts that include additional dangers. Throughout this manual you will find safety notes which are very important to read and understand before operating this piece of equipment. These classifications alert you to situations that could be harmful to you or bystanders. When you see these alerts in the manual, carefully read and follow all instructions and also protect other workers from the same danger.

⚠ DANGER Will result in Death or Serious Injury.

⚠ WARNING Could result in Death or Serious Injury.

⚠ CAUTION Could result in Minor or Serious Injury.

⚠ NOTICE Not related to Personal Injury.

Operator Safety Training Tips

⚠ It is the responsibility of the operator using this attachment to be acquainted with the safe operation. In addition to reading this manual, it is important that the operator read the skid steer's operation manual and follow its manufacturer's recommendations!

⚠ Before digging into any surface, always contact the "Diggers Hotline" to identify underground utilities to avoid an accident that could result in Death or Serious Injury to the operator or fellow workers.

Before lifting, lowering or tilting the blade, make sure the area is clear of bystanders or objects. Machinery parts sometimes have sharp edges. Wear work gloves when moving parts. Always use caution around attachment parts as they often are very sharp.

- ⚠ Never use drugs or alcoholic drinks when operating or servicing this piece of equipment.
- ⚠ Always wear the proper personal protection equipment when servicing or operating this piece of equipment.
- ⚠ Never service or operate this attachment with bare feet, sandals, or other light footwear.
- ⚠ Always use eye protection during operation.
- ⚠ Speed Kills! Operate this implement at a safe working speed.
- ⚠ When transporting the implement, keep a safe speed to avoid losing control of the attachment or prime mover.
- ⚠ Keep proper clearance between the implement and objects (utilities, tree stumps, large rocks, buildings, etc.). Contacting these objects with the implement or prime mover could cause a loss of control or damage to the implement or property.
- ⚠ Before each operation of this implement, check all hardware (bolts, nuts, pins, etc.) for their proper location and tightness.
- ⚠ Stop the engine on the skid steer and set the brake to avoid the implement rolling forward or backwards while you are exiting the prime mover.
- ⚠ Store this implement in an area not frequented by children.
- ⚠ Allow no riders on this attachment. Keep all bystanders clear of attachment during operation.
- ⚠ Always replace worn, torn or missing safety decals before operating.
- ⚠ Never operate the attachment when bystanders are within 10 feet (3 m) of the work area.

⚠ Operate only during daylight or well-lit artificial light.

Skid Steer Requirements

Your grapple attachment must be connected to a skid steer with adequate horsepower and weight to provide satisfactory results. Tracked loaders will provide superior traction in ground engaging applications and wheeled loaders may provide the best option for above ground material handling applications.

The attachment plate on your grapple attachment will connect to the couplers on most major brand skid steer loaders. Do not modify the attachment plate on this attachment to fit older styles of attachment couplers on older machines. Contact your skid steer loader dealer to supply an updated coupler on an older skid steer to fit this attachment.

Your skid steer must also be equipped with an auxiliary circuit that is available on the loader arms and is controlled by a switch, pedal or handle inside the skid steer loader cab.

⚠ CAUTION *Make sure your skid steer is in good working condition. Follow the operating instructions found in the manual that accompanied your skid steer. Failure to do so could result in Minor or Serious Injury.*

Unpacking Your Shipment

Your attachment arrives from the factory banded to a wooden pallet, and requires no final assembly before use.

⚠ CAUTION *Careless removal of the shipping bands that secure the implement to the pallet could result in Minor or Serious Injury. Clear the area of all bystanders and stand to the side when cutting the bands with a pair of sheet metal shears.*

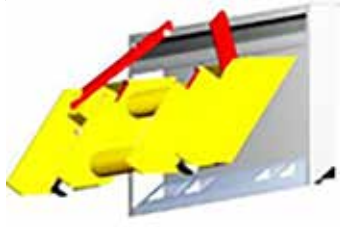
Using Your Implement

Connecting Attachment to Skid Steer

⚠ DANGER *Never enter the area underneath the coupler or any part of the attachment when it is in the raised position to avoid an accident that will result in Death or Serious Injury.*

Verify that the hydraulic hoses are clear from the front of the attaching plate on the attachment and that the mounting plate is free from dirt and debris. When clear, move the skid steer to proximity of attachment plate.

Tilt skid steer coupler forward to align coupling point with the upper part on the attachment plate and raise the coupler slightly.



Connecting Coupler to Attachment

When the top edge of the coupler is seated in the top part of the coupler plate, roll the skid steer tilt function back until the attaching plate is flat against the skid steer coupler. Lock down the coupler levers. Note: If your skid steer is equipped with a hydraulically operated coupler, activate the coupler lock at this time.

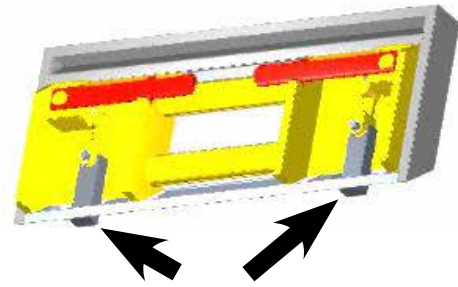
○
PLEASE NOTE:
Attachment and Machine-
side Couplings must be
FREE OF DEBRIS
BEFORE INSTALLING.
Failure to comply will void
warranty.

NOTICE Wipe off any dirt or dust from the male or female hydraulic flat-face couplers with a clean rag before attaching hoses, to keep contaminants from entering the hydraulic system.

Connect the attachment hydraulic hoses to the auxiliary supply couplers located on your skid steer loader lift arm.

Check the surrounding area for bystanders and clear them before starting the skid steer or attachment.

Before operating the attachment, always visually inspect and verify that the coupler lock pins are fully engaged through the latch slots on the attachment plate.



Check Coupler Lock Engagement

Pre-Operation Walk-around Inspection

Before every use, it is important to perform a short inspection and certain maintenance on your grapple attachment.

	Item
✓	Check that all shields and guards are in place.
✓	Look for loose bolts and tighten them if necessary.
✓	Check that all safety decals are in place and can be read. Replace them if necessary.
✓	Take care of our environment. Repair any hydraulic leaks.

Grapple Attachment Controls

Your grapple attachment is designed to run off the skid steer loader auxiliary hydraulic system, with the additional grapple open & close function activated by a control switch, pedal or handle in the operator's cab. Consult your skid steer operator's manual for precise instructions on how to activate, reverse and neutralize the auxiliary circuit.

Height and tilt functions of the attachment are operated with the control handles or pedals in the cab. Consult your skid steers operator's manual for precise instructions regarding these functions.

Your skid steer may have a "float" function on the lowering circuit. When placed in the float position, the attachment will follow the contour of the ground being worked. This is especially helpful when back-dragging a new cut. See your skid steer's Operator's Manual for instructions about how to use the float on your skid steer.

If during your initial startup you realize the grapple function operates in the opposite direction that you prefer, you can change positions of the quick disconnect

couplers on the attachment hoses to remedy your problem.

Before Using the Grapple the First Time

⚠ WARNING *Moving the attachment with bystanders in the area could result in Death or Serious Injury. Before moving the attachment or machine, always make sure the area is clear of bystanders.*

⚠ NOTICE *If this is your initial startup with this attachment on this machine, check the skid steer's hydraulic oil level and add oil, if necessary, before and after doing steps 1 & 2 below.*

After starting skid steer, lift the attachment 10" (254mm) off the ground surface:

1. With the skid steer engine RPMs just above idle, slowly engage the auxiliary hydraulic flow to the grapple arm until the grapple arm(s) are fully open. Reverse the direction of the grapple arms until the grapple arm(s) are fully closed. Repeat this two more times to purge any air from the system.
2. Lower the attachment to the ground and shut off the skid steer's engine and exit the operator's compartment.
3. Check the skid steers hydraulic oil level, and add oil if necessary.
4. Inspect the grapple attachment's hydraulic plumbing for any noticeable leaks. Correct these leaks before continuing.

Getting Familiar with the Attachment

⚠ DANGER *Never operate the grapple arms when bystanders are within 10' (3 m) of your work area.*

⚠ CAUTION *Be cautious when operating on un-level ground surfaces. A machine roll over could result in Minor or Serious Injury. Always wear your seat belt when operating this type of machinery.*

Before starting the engine with this grapple attachment connected to the skid steer, make sure you are knowledgeable and comfortable with the operation of the auxiliary hydraulic control as outlined in the previous sections of this manual and that in the skid steer loader Owner's Manual.

When operating the grapple attachment, set the skid steer throttle at a speed that will produce the required flow, to the attachment and the other loader functions. If the skid steer is equipped with a foot throttle, use it to control engine speed and power being delivered to the attachment. Refer to your skid steer manual or call your local skid steer dealer for additional help, if necessary.

To begin with, learn what the attachment looks like in a level position when you are seated in the skid steer. Knowing what a level implement looks like will help you with your attachment operation.

The correct ground speed for using this attachment will depend on the application and conditions and usually can be monitored by sound and feel and depends on the material density. If the skid steer engine is bogging down because of taking too big of a "bite" with the attachment, it will be necessary to raise or decrease the load a little until the machine's power can overcome the material load on the attachment.

Before Starting

⚠ WARNING Before digging into any surface, always contact the "Diggers Hotline" to identify underground utilities to avoid an accident that could result in Death or Serious Injury to the operator or fellow workers.

⚠ WARNING Exposure to crystalline silica dust along with other hazardous dusts may cause serious or fatal respiratory disease. It is recommended to use dust suppression, dust collection and if necessary personal protective equipment during the operation of any attachment that may cause a high level of dust.

Inspect the area to be worked and make sure it is free of any utilities, rocks, fence posts, or any other objects that you do not want to move.

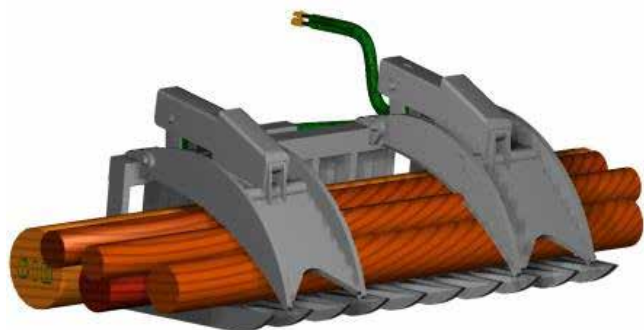
Determine a safe and efficient duty cycle pattern before the start of the job.

Grapple Attachment Tips

⚠ CAUTION *Never operate this attachment when bystanders are in proximity of the work area that could result in Minor or Serious Injury by contact with the machine, attachment or flying debris.*

1. Always inspect the work area before starting the job. Locate and mark any utilities, steel posts, rocks or any other objects that could be damaged or would damage the blade during operation. Never assume the work area is safe and never skip the inspection part before start of operation.

2. Operate at a safe slow-paced speed that will allow you to watch the area ahead and behind the attachment & loader. Since about half of your duty cycle may be in reverse, look behind you and/or utilize your mirrors when backing up. Verify that your backup alarm is working properly to warn others when you are in reverse, but never think that the alarm replaces your responsibility to visually check what's behind you.
3. Attachment control is the most important element to getting a good, steady cut. Overloading the attachment will only result in spinning the tracks or tires and will make unwanted ruts. Overloading the attachment will also necessitate raising the implement to off load some of the resistance occurring by the material. When you raise the attachment, you will create an unlevelled surface that will increase as the front of the prime mover drives over the rise of the ground surface.
4. If you lift too heavy a load with your attachment, your may raise the rear of your skid steer, and further reduce your tractive power available to move the load.
5. Before beginning your forward motion with the attachment, stop the skid steer and make any final adjustments to the attachment in terms of height & tilt.
6. Center your load on the attachment. Estimate the load center and pick it accordingly. If the load feels unbalanced when you lift it, reposition your grab and retry the lift. An unbalanced load could upset your skid steer.



Center load on attachment

7. After loading your attachment and clamping the arms over the load, roll the attachment back and retighten the clamp arm pressure. When rolling back the attachment, the load will settle and require some additional clamping pressure to secure the load.

⚠ WARNING When lifting a load of brush or trees, make sure all ends are not tangled with standing trees that could cause the center of gravity to be compromised, resulting in a rollover that could cause Death or Serious Injury.

8. The grapple clamp should not be used for pushing or pulling down trees or any type of structure. Its purpose is to clamp the load so it can be moved to a different spot on the job site.
9. To save some service work and down time, always pay attention that tree branches or roots do not poke through past the attachment arms and damage any hydraulic parts or even enter the cab area.
10. Be careful that a branch or root doesn't "whip" back at the skid steer. Wear safety glasses to prevent dirt getting in your eyes.

⚠ WARNING Use extreme caution when working around low hanging electrical lines. Do not raise the attachment in an area where there are low electrical lines to prevent an accident that could result in Death or Serious Injury.

11. Keep your distance from any type of utility, whether underground or in the air.
12. Always clean the quick-disconnect couplers before connecting them to the skid steer. Utilize plastic or metal caps to protect the ends when not being used. Tuck the quick disconnect hoses somewhere in the attachment where they will be out of the dirt and will not be driven over.

Maintaining your Attachment

Before Every Use

Check that all fasteners (nuts, bolts, pins, keepers) are in their right place and are tight.

Inspect and replace any worn, torn or missing safety decals.

Investigate the location of any oil leaks and repair.

Lubricate all pivot joints with #2 lithium grease.

Every Week

Check the condition of the cutting edge and/or tooth points. Order parts if the cutting edge or points are becoming worn and replace as soon as possible.

After Every Season

Inspect the implement for any loose or worn parts that may need to be replaced prior to the next season.

Visually inspect the cutting edge. Replace, if necessary.

Clean, sand & repaint any area that looks worn or scratched to prevent further rusting. Use an equipment-paint found at your local hardware store or building center.

Replace any warning decals that have been lost or damaged.

Store your implement in a shed or cover with a water-proof tarp to protect it from the weather. Store in an area not frequented by children.

Cutting Edge Removal & Replacement

⚠ WARNING *To avoid an accident that could result in Death or Serious Injury, never find yourself in a position where any body part is located under an unsupported blade or frame when servicing this attachment.*

⚠ WARNING *Hazardous dust can be generated if painted surfaces are heated or welded and could result in death or Serious Injury. Remove paint before welding and always make repairs in a well-ventilated area and wear an approved respirator.*

⚠ CAUTION Cutting edges can be very heavy and could cause Minor or Serious Injury if mishandled. Always wear protective gloves and footwear.

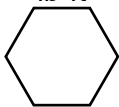


1. Weld-on cutting edge replacement is not a task for most machinery operators and should be referred to a welding shop that possesses the proper equipment, knowledge and experience.
2. Replacement cutting edges are available from your Star Industries dealer.

Hydraulic System

⚠ WARNING A small stream of oil from a pinhole leak could penetrate your skin if contacted. To avoid an accident that could result in Death or Serious Injury, never use your hand or other body parts in an attempt to locate a hydraulic leak.

NOTICE Always release the hydraulic system pressure from the hydraulic circuits prior to removing the attachment or any hydraulic system service work.


Hardware Torque

	Grade 2 lb-ft 	Grade 5 lb-ft 	Grade 8 lb-ft 
1/4"	66*	8	12
5/16"	10	17	20
3/8"	20	30	45
1/2"	45	75	110
3/4"	160	260	380
7/8"	190	400	600
1"	-	580	900
*= inch pounds Higher torques require the use of a torque multiplier. All values are "dry" torques.			


Specifications

Heavy Duty Grapple Bucket		
Spec.		
Width	66" (1676mm)	72" (1829mm)
Length	34" (863mm)	
Opening Height	38.6"(980mm)	
Weight	800 lbs. (363 kg)	850 lbs. (386 kg)
SSL Auxiliary Hyd. Circuits Required	1	
Hyd. Relief Setting	3000 PSI (207 bar)	

Specifications

Demolition Grade Grapple Bucket	
Spec.	
Width	72" (1829mm)
Length	39" (990mm)
Opening Height	45"(1143mm)
Weight	1050 lbs. (476 kg)
SSL Auxiliary Hyd. Circuits Required	1
Hyd. Relief Setting	3000 PSI (207 bar)

Heavy Duty Root Grapple		
Spec.		
Width	66" (1676mm)	72" (1829mm)
Length	38.25" (972mm)	
Opening Height	35.3"(897mm)	
Weight	725 lbs. (329 kg)	850 lbs. (386 kg)
SSL Auxiliary Hyd. Circuits Required	1	
Hyd. Relief Setting	3000 PSI (207 bar)	

Demolition Grade Root Grapple	
Spec.	
Width	72" (1829mm)
Length	42" (1066mm)
Opening Height	42.75"(1085mm)
Weight	975 lbs. (442 kg)
SSL Auxiliary Hyd. Circuits Required	1
Hyd. Relief Setting	3000 PSI (207 bar)

Parts

As this manual includes different types of grapple attachment, please take care in selecting the parts from the correct parts pages!

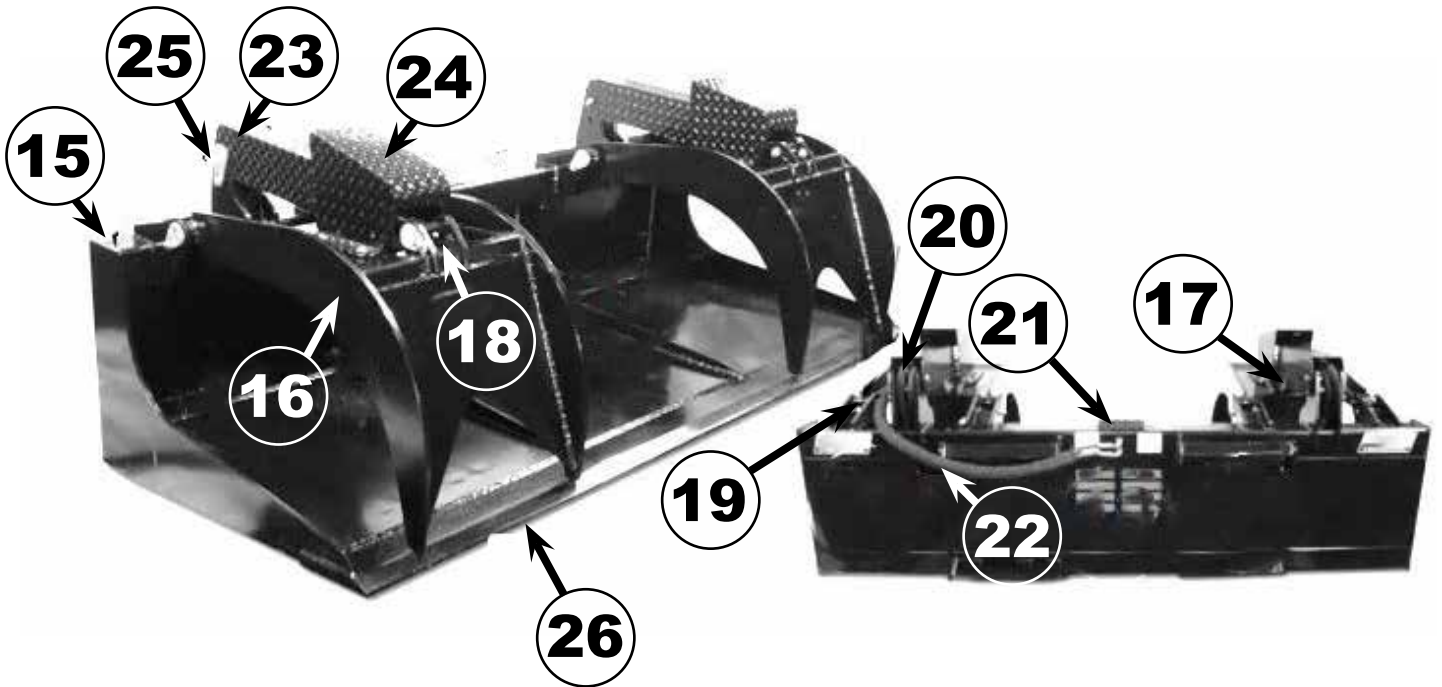
When requiring any parts for your implement, please collect the following information:

Implement Model Number
Implement Serial Number
Attachment Width
Parts Manual Date (lower right corner)
Parts Manual Page
Part Description
Quantity Required
Ship-to Name & Address
Payment Method

...then call your local dealer for factory fresh parts specifically designed for your attachment.

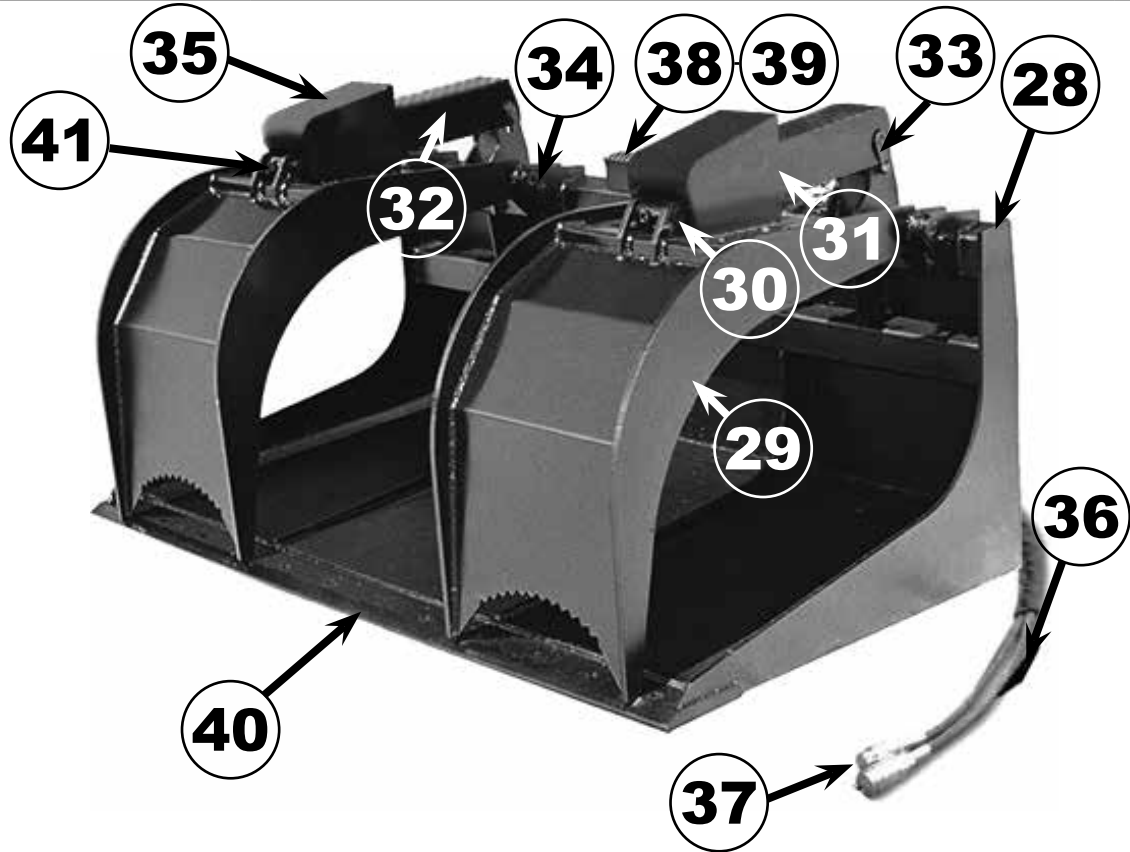


72" Demolition Grade Grapple Bucket



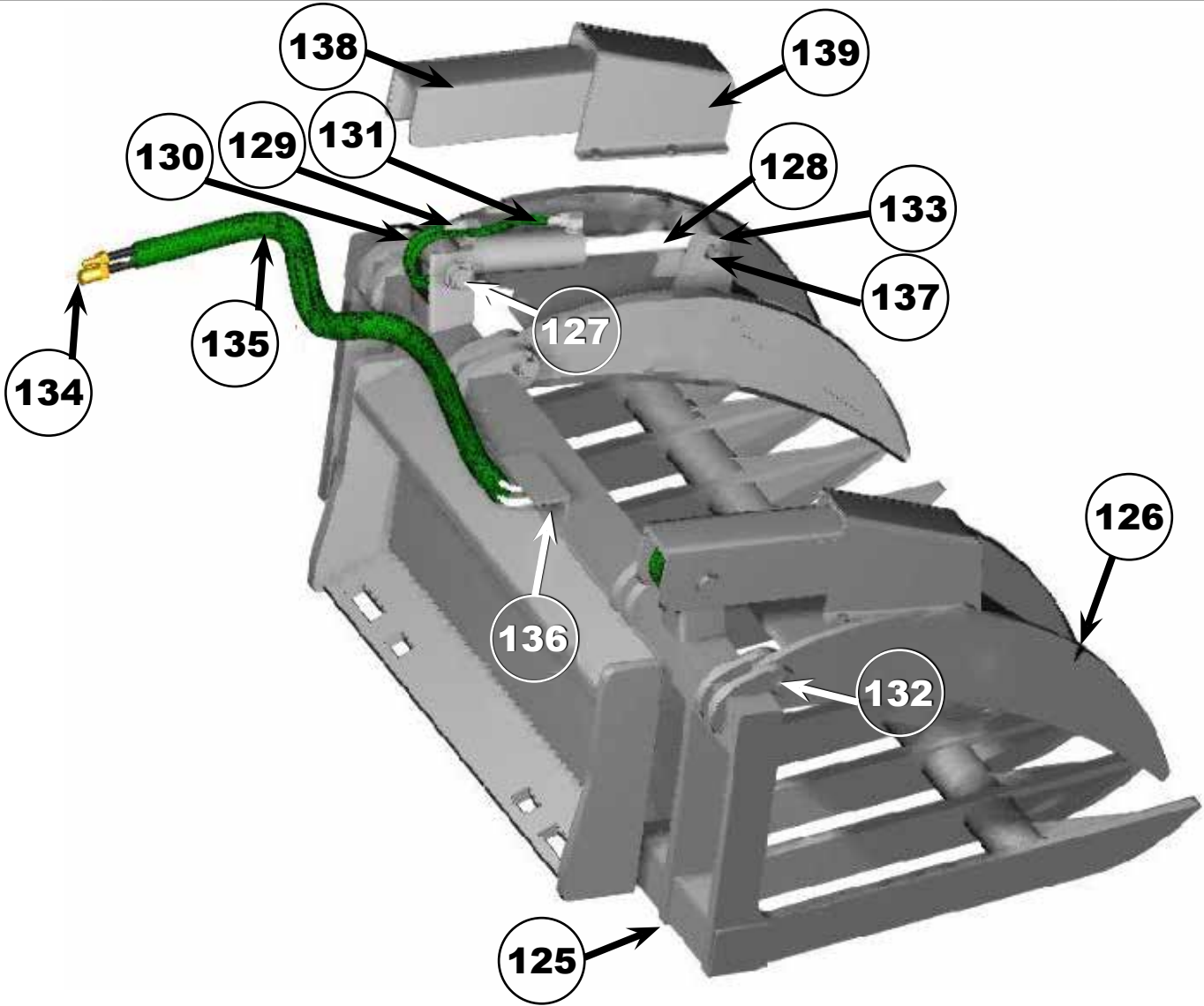
Ref.	Part #	Description	Qty.
15	175DG-72F	Frame Weldment	1
16	175-0040DG	Grapple Tine Weldment	2
17	170-0015B	Pin, Cylinder Base End to Frame (Long Pin)	2
18	170-0016B	Pin, Cylinder Rod End to Grapple Arm (short Pin)	2
18	170-0042	" Drive-In" Zerk for Grapple	2
19	170-0016B	Pin, Grapple Tine to frame (short Pin)	4
20	170-0032	Hose (Tee to Cylinder – Rod End) (Long Hose) For 72" Grapple	2
20	170-0033	Hose (Tee to Cylinder – Base End) (Short Hose) For 72" Grapple	2
21	170-0040	Tee Fitting	2
21	170-0045	Hydraulic Fitting Cover	1
22	170-0025	Hose (Tee to Quick Disconnects) set of 2 in sleeve	1
22	1000-0028	Set of 2 Flat Face Hyd. QD Couplers (male and Female)	1
23	170-0013DGB	Rear Cylinder DG Cover	2
24	170-0014DG	Front Cylinder Rod DG Cover	2
25	170-0011	Hyd Cyl. for Root & Grapple Bkts w/1" pin	2
25	170-0010	Hyd Cyl. for Root & Grapple Bkts w/1.25" pin	2
25	170-0011EL	Elbow 90°, Cylinder	4
26	150-002	Cutting Edge – Weld-on	1

66" and 72" Heavy Duty Grapple Bucket



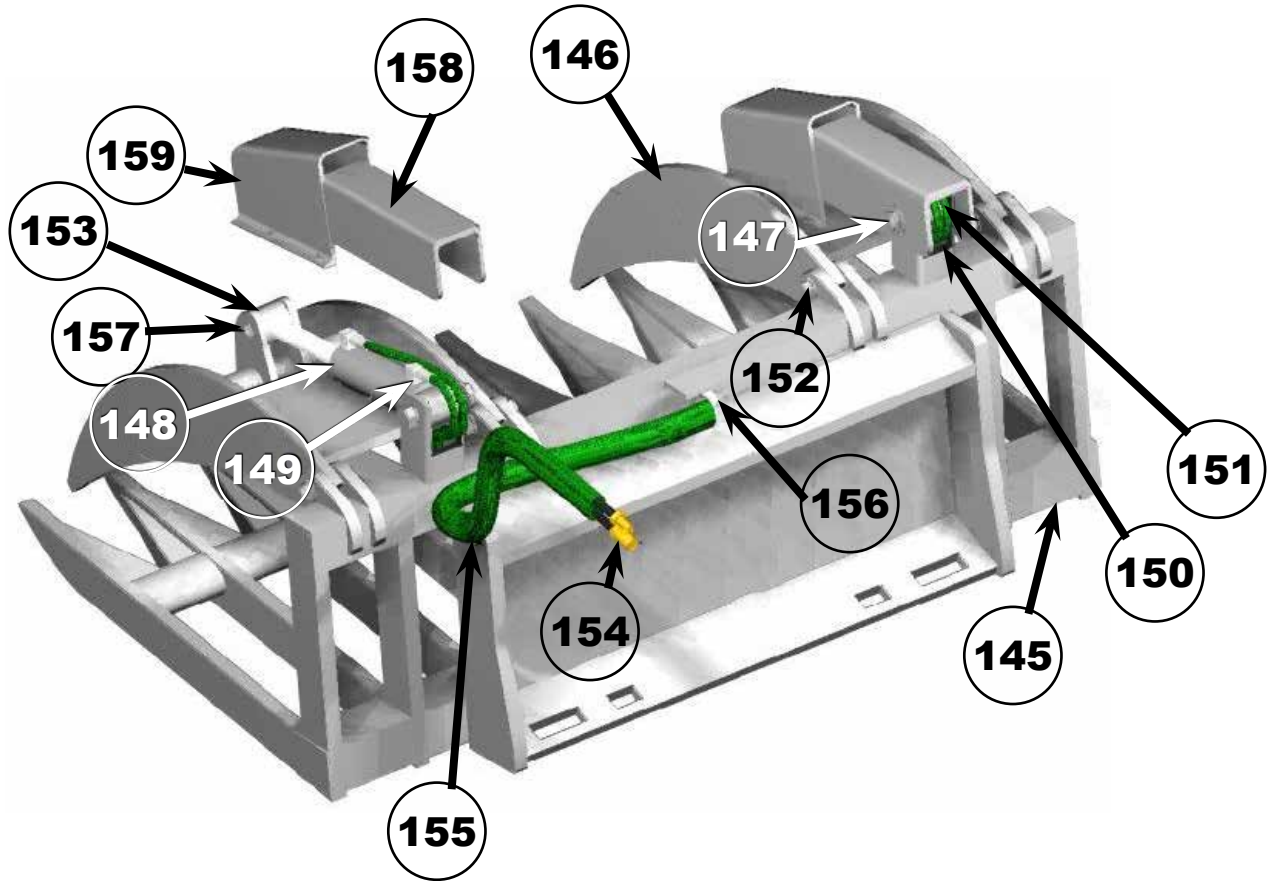
Ref.	Part #	Description	Qty.
28	175HD66-F	Frame Weldment for 66" Grapple Bucket	1
28	175HD72-F	Frame Weldment for 72" Grapple Bucket	1
29	175-0040HD	Grapple Tine Weldment	2
30	170-0016B	Pin, Cylinder Rod End to Grapple Arm (short Pin)	2
31	170-0011	Hyd Cyl. for Root & Grapple Bkts w/1" pin	2
31	170-0010	Hyd Cyl. for Root & Grapple Bkts w/1.25" pin	2
31	170-0011EL	Elbow 90°, Cylinder	4
32	170-0013HDB	Rear Cylinder Cover	2
33	170-0015B	Pin, Cylinder Base End to Frame (Long Pin)	2
34	170-0016B	Pin, Grapple Tine to frame (short Pin)	4
35	170-0014HD	Front Cylinder Rod Cover	2
36	170-0025	Hose (Tee to Quick Disconnects) set of 2 in sleeve	1
37	1000-0028	Set of 2 Flat Face Hyd. QD Couplers (male and Female)	1
38	170-0030	Hose (Tee to Cylinder – Rod End) (Long Hose) For 66" Grapple	2
	170-0031	Hose (Tee to Cylinder – Base End) (Short Hose) For 66" Grapple	2
	170-0032	Hose (Tee to Cylinder – Rod End) (Long Hose) For 72" Grapple	2
	170-0033	Hose (Tee to Cylinder – Base End) (Short Hose) For 72" Grapple	2
	170-0045	Hydraulic Fitting Cover	1
39	170-0040	Tee Fitting	2
40	150-01	Cutting Edge – Weld-on 66"	1
40	150-02	Cutting Edge – Weld-on 72"	1
41	170-0042	" Drive-In" Zerk for Grapple	2

72" Demolition Grade Root Grapple



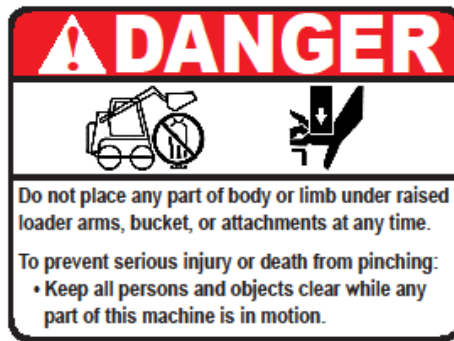
Ref.	Part #	Description	Qty.
125	170DG-72F	Frame Weldment	1
126	170-0040DG	Grapple Tine Weldment	2
127	170-0015B	Pin, Cylinder Base End to Frame (Long Pin)	2
128	170-0011	Hyd Cyl. for Root & Grapple Bkts w/1" pin	2
128	170-0010	Hyd Cyl. for Root & Grapple Bkts w/1.25" pin	2
129	170-0011EL	Elbow 90°, Cylinder	4
130	170-0033	Hose (Tee to Cylinder – Base End) (Short Hose) For 72" Grapple	2
131	170-0032	Hose (Tee to Cylinder – Rod End) (Long Hose) For 72" Grapple	2
132	170-0016B	Pin, Grapple Tine to frame (short Pin)	4
133	170-0042	" Drive-In" Zerk for Grapple	2
134	1000-0028	Set of 2 Flat Face Hyd. QD Couplers (male and Female)	1
135	170-0025	Hose (Tee to Quick Disconnects) set of 2 in sleeve	1
136	170-0040	Tee Fitting	2
136	170-0045	Hydraulic Fitting Cover	1
137	170-0016B	Pin, Cylinder Rod End to Grapple Arm (short Pin)	2
138	170-0013DGB	Rear Cylinder Cover	2
139	170-0014DG	Front Cylinder Rod Cover	2

66" and 72" Heavy Duty Root Grapple

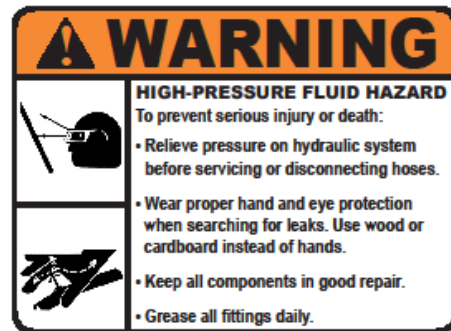


Ref.	Part #	Description	Qty.
145	170HD-66F	Frame Weldment for 66" Grapple	1
145	170HD-72F	Frame Weldment for 72" Grapple	1
146	170-0040HD	Grapple Tine Weldment	2
147	170-0015B	Pin, Cylinder Base End to Frame (Long Pin)	2
148	170-0011	Hyd Cyl. for Root & Grapple Bkts w/1" pin	2
148	170-0010	Hyd Cyl. for Root & Grapple Bkts w/1.25" pin	2
149	170-0011EL	Elbow 90°, Cylinder	4
150	170-0030	Hose (Tee to Cylinder – Rod End) (Long Hose) For 66" Grapple	2
150	170-0032	Hose (Tee to Cylinder – Rod End) (Long Hose) For 72" Grapple	2
151	170-0031	Hose (Tee to Cylinder – Base End) (Short Hose) For 66" Grapple	2
151	170-0033	Hose (Tee to Cylinder – Base End) (Short Hose) For 72" Grapple	2
152	170-0016B	Pin, Grapple Tine to frame (short Pin)	4
153	170-0042	" Drive-In" Zerk for Grapple	2
154	1000-0028	Set of 2 Flat Face Hyd. QD Couplers (male and Female)	1
155	170-0025	Hose (Tee to Quick Disconnects) set of 2 in sleeve	1
156	170-0040	Tee Fitting	2
156	170-0045	Hydraulic Fitting Cover	1
157	170-0016B	Pin, Cylinder Rod End to Grapple Arm (short Pin)	2
158	170-0013HDB	Rear Cylinder Cover	2
159	170-0014HD	Front Cylinder Rod Cover	2

Decals



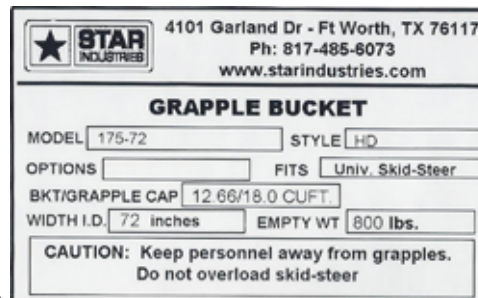
1*



2*



3



4

Decal set Part Number is ("Product Model"-05)

Ref.	Description	Qty.
1*	Decal, (Danger Pinch Points)	1
2*	Decal, (Warning, High Pressure Fluid Hazard)	1
3	Decal, STAR Industries	1
4*	Decal, Product data plate & Contact information	1

* Replace any worn, torn or missing safety decals before operating!

Troubleshooting		
Problem	Cause	Resolution
Hydraulic oil level goes down during operation	Leak at hoses on attachment	Investigate & repair
	Leak in skid steer hydraulic system	Investigate & repair
Grapple does not open or close	Quick disconnects not connected	Check and recouple quick disconnects
	Hose damaged	Check for smashed or kinked hose and replace if found.
	Skid steer auxiliary circuit inoperative	Investigate and have repaired.
Grapple moves very slow	Restricted hose	Check for damaged hose between skid steer & grapple cylinders. If damaged, replace the hose.
	Relief Circuit on skid steer bad	Investigate & have repaired.
	Auxiliary valve spool on skid steer not shifting properly	Investigate and have repaired.
	Grapple cylinder seals by-passing	Have cylinder(s) repacked or replaced.

**Think Safety,
Every day!**

STAR INDUSTRIES **LIMITED WARRANTY**

Star Products are warranted to the original purchaser against defective workmanship and/or materials (when properly installed, used, and maintained) for a period as specified below from date of delivery to the customer by an authorized Star Dealer or direct from Star Industries. This warranty does not cover misuse, abuse, normal wear and tear, or accidental damage.

5 year Warranty:	All Star products except as noted below. (Includes HD Auger Drives & most non-hydraulic products)
2 year Warranty:	Medium Duty Auger Drives
1 year Warranty:	Auger Bits and Auger Accessories (excludes auger drives), Crane Forks, Grapples, Angle Broom, Self Dumping Hoppers, Replacement Forks, and Over the Bucket Forks
6 month Warranty:	Concrete Mixers

WARRANTY CLAIM NOTIFICATION:

Product defects should be reported to the Star dealer from whom the product was purchased or to Star Industries in writing promptly after discovery. Preferably photographs showing the defect should also be provided along with a written report of circumstances involved. Warranty claims not made within 30 days after discovery of the defect shall be null and void.

WARRANTY DETERMINATION:

If a warranty claim is found worthy and made within the warranty period we reserve the right at our discretion to repair existing defects or to replace it with the same or current model free of charge or to issue a credit for the reasonable cost of repair or take possession of the equipment and issue reimbursement for the calculated value.

WARRANTY PROCEDURE:

Upon notification, Star Industries will advise if the product will need to be returned to Star Industries for inspection and/or repair, or If the Star Dealer, or other entity, can be authorized to make the inspection/repair at their location, or if circumstances dictate other solutions. Dealer or other entity repairs must have prior written authorization. A "cost of repair" estimate will be required prior to authorization. Reimbursement

will be at the current "Star Warranty Labor Rate" and will not include reimbursement for off-site travel. A Warranty Claim Form must be submitted within 45 days of warranty repair authorization to receive credit for repair. A return authorization number must be obtained from Star Industries before a product can be returned for inspection and/or warranty and that number must appear on the return shipping label. Upon inspection, Star Industries will determine if the product is defective and if so, whether it will be repaired or replaced. Repair or replacement is at the discretion of Star Industries. Transportation charges to Star Industries are not covered under the warranty and must be prepaid by dealer or customer unless it is within the first two years of warranty. In which case, if evidence acceptable to Star Industries, is provided that the product is defective and the return is from within the continental United States or Canada, Star will arrange for return shipment at Star Industries expense. Products found to be defective within the initial two year period and returned to Star Industries for repair or replacement will be returned to the dealer or customer freight prepaid providing it is within the continental United States or Canada. Warranted products to be shipped outside the United States or Canada and those warranted after the initial 2 years will be shipped freight collect. Unwarrantable products will be returned freight collect at the request of the dealer or customer, otherwise they will be destroyed.

LIMITATION OF DAMAGES:

Star's obligation under this warranty shall not include costs of installation, duty, taxes or any other charges whatsoever or any liability for direct, indirect, incidental or consequential damages or delay. Star's liability for any and all losses and damage to purchaser resulting from any cause whatsoever, including negligence or breach of form of warranty, express or implied by Star, alleged damage for defective goods, irrespective of whether such defects are discoverable or latent, shall in no event exceed the purchase price of the particular goods. Products repaired or replaced under this warranty are warranted only for the remainder of the original warranty. Any improper use including operation after discovery of defective or worn parts not approved by Star or any alteration or repair by others in such manner as in Star's judgment affects the product materially and adversely shall void this warranty.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND ARE IN LIEU OF ALL OTHER WARRANTIES (WHETHER WRITTEN, ORAL OR IMPLIED) INCLUDING WARRANTIES OF MERCHANTABILITY AND WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.