

***Diamond***  
***Attachments***™

# OPERATORS & PARTS MANUAL

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**D6K 21J001-UP**





## **TABLE OF CONTENTS**

### **D6K 21J001-UP**

General Operations .....	5
Warnings .....	8
Maintenance .....	9
240-1476D Mounting Group .....	10-11
240-1471D Ripper Group .....	12-13
9T2716D Cylinder Assembly .....	14-15
3G-0109D Shank Group .....	16-17
Limited Warranty .....	18-20
Shank Warranty .....	21-22

*This manual is subject to change without written notice.*

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# GENERAL OPERATIONS

Ground engagement tools, or rippers, are mainly used for two purposes in earthwork. One is to provide a safe alternative to blasting, and the second is to make a hard packed surface easier to dig and move. Various factors are involved when preparing to enter a job site. In addition to the safety aspect of determining the existence of any subsoil structures or placements such as gas or electrical lines, and the logistical pre-planning of the job site, it is just as important to determine the type of material you will be moving. Whether you are ripping through rock infused soil, hard packed earth, or laying pipe or cable, choosing the proper tool for your needs is imperative. Diamond Attachments strives to meet this need by providing you, the customer, with a cost effective, quality built product that meets or exceeds OEM requirements. Our rippers are manufactured to precise specifications and tolerances which in many cases, allow OEM parts to be used as replacements when possible.

A ripper consists of a single shank, or set of shanks, mounted in a frame that is attached to the rear of the dozer. The frame is built in such a manner that when coupled with a hydraulic cylinder(s), the shank(s) can be lowered into the ground while being pulled in order to break and loosen the soil and or rock. The construction of the ripper consists of the lower frame, or drawbar, the upper frame, or top arms, and the beam, or toolbar, which is fitted with one to five pockets that hold the shanks. The following types of rippers are produced by Diamond Attachments:

1. **Hinge Type:** The frame carrying the toolbar and shank(s) pivots where it attaches to the dozer in such a manner that the shanks move in an arc. The advantage of this type of arrangement is that the depth and angle of the shanks can be adjusted for various material conditions.
2. **Parallelogram Type:** The frame carrying the toolbar and shank(s) has two pairs of hinge arms, upper and lower. This allows the shanks to maintain the same angle to the ground as the ripper is raised or lowered. The advantage of this type of arrangement, is that this angle is maintained regardless of the depth of penetration. Another advantage is that when the ripper is raised from the ground in the carry position, the shanks are easier to inspect for damage from the operator cabin.

1. **Adjustable Parallelogram Type:** This ripper combines the features of the Hinge ripper with the Parallelogram. The upper hinge arms are replaced by a pair of hydraulic cylinders that can change the shank angles for better penetration, with the added advantage of being able to make adjustments to the angle while ripping to compensate for changing material conditions.



The shanks used in rippers can be either straight or curved. Straight shanks are normally used for large solid material conditions, while curved shanks work best for road or pavement, or bedded plane conditions. Shanks are made up of a long solid shaft, normally of cast material, narrowing at the lower end, to which loosely fitted replaceable tooth points are attached. The points or tips, help to reduce the strain on the shank by slightly swiveling while embedded in the ground. Shanks may have a second or third mounting hole, which allows the operator to adjust the ripping depth for specific conditions. Different tips are available depending on the type of material being ripped. Diamond Attachments fit their shanks with the General Purpose (GP) tip, which is suitable for most common penetration needs.

Single pocket rippers with one shank are most often used for ripping massive or blocky formations. This allows all of the force and weight of the dozer to be applied to the single shank. These types of rippers are normally attached to larger dozers, and can be fitted with shanks that reach a depth of 4 feet.

Multiple pocket rippers can be used on a variety of dozers, track and wheel loaders, and even motor graders. These rippers can utilize a single shank in the center pocket to achieve results similar to the single pocket models or in modified combinations with additional shanks for all of the available pockets. Using shanks in all of the available pockets requires maximum power, and will provide the widest area of production, with the most thorough breakage of the area.

When using varying numbers of shanks in the multi-shank ripper, it is important to balance the configuration of the shanks in order to prevent strain or twisting of the ripper frame. In the case of a three pocket ripper, where pocket 2 is in the middle, and pockets 1 and 3 are on the ends of the toolbar, the following configurations can be used without damage to the ripper. One shank in center pocket 2. Two shanks in end pockets 1 and 3 with no shank in center pocket 2. And finally three

shanks in pockets 1, 2, and 3. Using a single shank in any pocket other than center pocket 2, or using two shanks in any combination with the center pocket 2, will damage the ripper and void the warranty.

The same shank configuration process is used in the five pocket ripper as well. Number the pockets on the toolbar 1 to 5 with pocket 3 being the center pocket. The following combinations are the only valid configurations that will prevent damage to the ripper. One shank in pocket 3 only. Two shanks in pockets 1 and 5, or two shanks in pockets 2 and 4. Three shanks in pockets 1, 3, and 5, or three shanks in pockets 2, 3, and 4. Four shanks in pockets 1, 2, 4, and 5. Five shanks in pockets 1, 2, 3, 4, and 5. As mentioned earlier, using any configuration other than these, may cause damage to the ripper, and will void the warranty.

In addition to the restrictions of shank configurations listed above, it must be stressed that turning the dozer with the shanks lowered into the ground will not only break shanks, but also may damage the ripper frame, and will void the warranty. Also, using non-standard attachments in the shank pockets such as towing hook-ups, or using the ripper to pull additional equipment, may damage the ripper, and will void the warranty as well.

Maximization of ripping production is a combination of the proper gear and speed. First gear with a speed of 1 to 1 ½ MPH, will normally give the most economical production and the maximum drawbarpull. Excessive speed creates greater wear and tear on the dozer, and decreases the life of the replaceable shank tips.

Ripping depth should be done at the maximum depth allowed by the ripper, and the ground conditions. If you encounter increased stratification, it is best to rip at partial depths, and remove the material at its natural layers, instead of taking out a full ripped layer.

Spacing between passes and ripping direction is best decided by the material being worked, job layout, and availability of additional equipment such as scrapers or other dozers. Ripping across fractures or vertical laminations results in more effective breakage, and ripping downhill takes advantage of the dozer weight and horsepower.

Hopefully this information will allow you, our customer, to make the right decision for your ripping needs, and in doing so, you will gain the most return on your investment, and we at Diamond Attachments, will have added a satisfied customer.

# **WARNING**



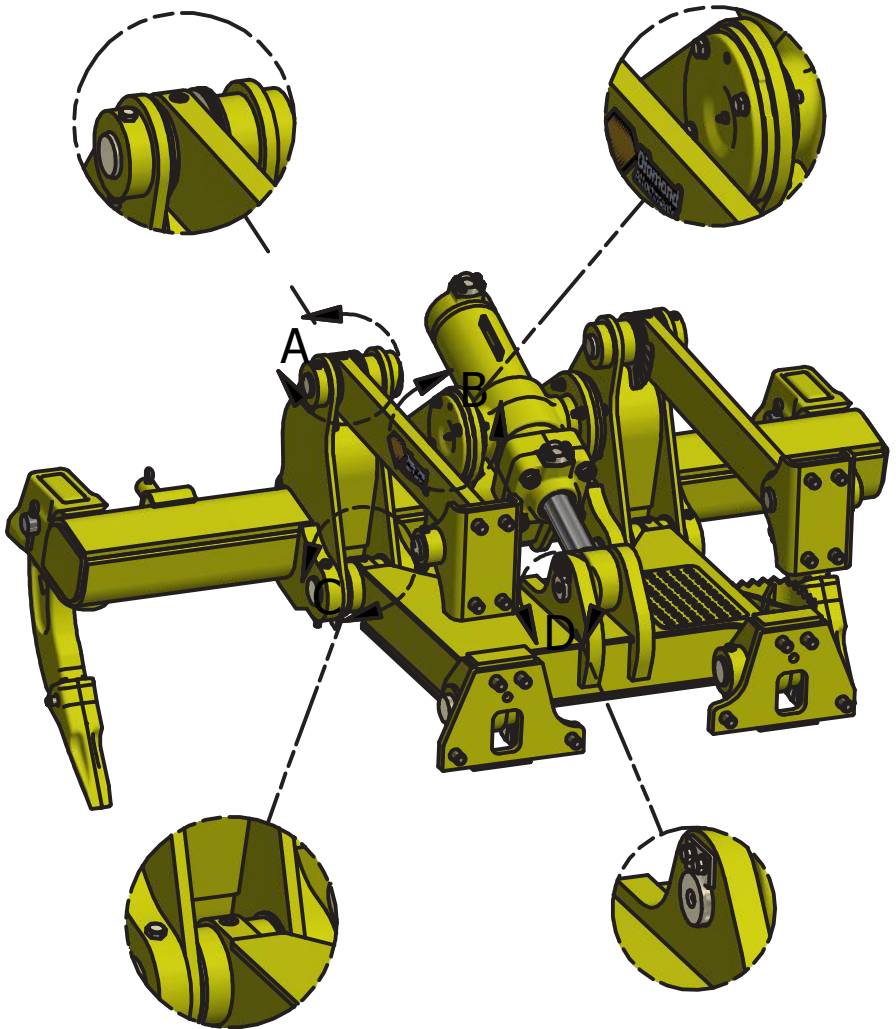
This attachment contains areas that have the potential to pinch, snag, or crush. During operation, keep a safe distance from moving parts and avoid wearing loose fitting clothing and jewelry.



To lessen the potential of injury due to stored energy, lower the ripper to the resting position and relieve all hydraulic pressure before performing maintenance.



# MAINTENANCE

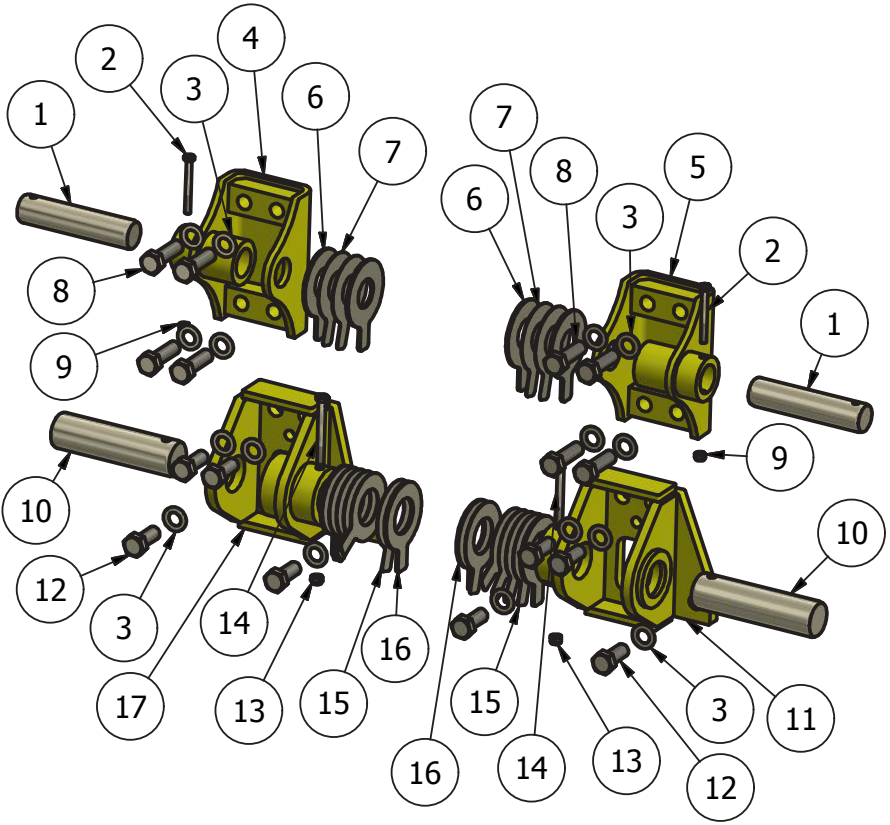


Grease all eleven (11) grease points regularly!

# 240-1476D MOUNTING GROUP

Item #	Part #	Qty.	Description
1	240-1491D	2	Pin
2	113707	2	Bolt (M10x1.5x100mm)
3	40365	16	Flatwasher (M24)
4	240-1486D	1	Upper RH Mount
5	240-1487D	1	Upper LH Mount
6	193-3074D	4	3/16" Spacer
7	193-3075D	10*	1/16" Spacer
8	154069	8	Bolt (M24x3.0x80mm)
9	40167	2	Locknut (M10)
10	240-1490D	2	Pin
11	240-1495D	1	Lower RH Mount
12	154067	8	Bolt (M24x3.0x60mm)
13	40171	2	Locknut (M12)
14	154014	2	Bolt (M12x1.75x120mm)
15	9N-4449D	12*	1/16" Spacer
16	9N-4450D	4	3/16" Spacer
17	240-1494D	1	Lower LH Mount

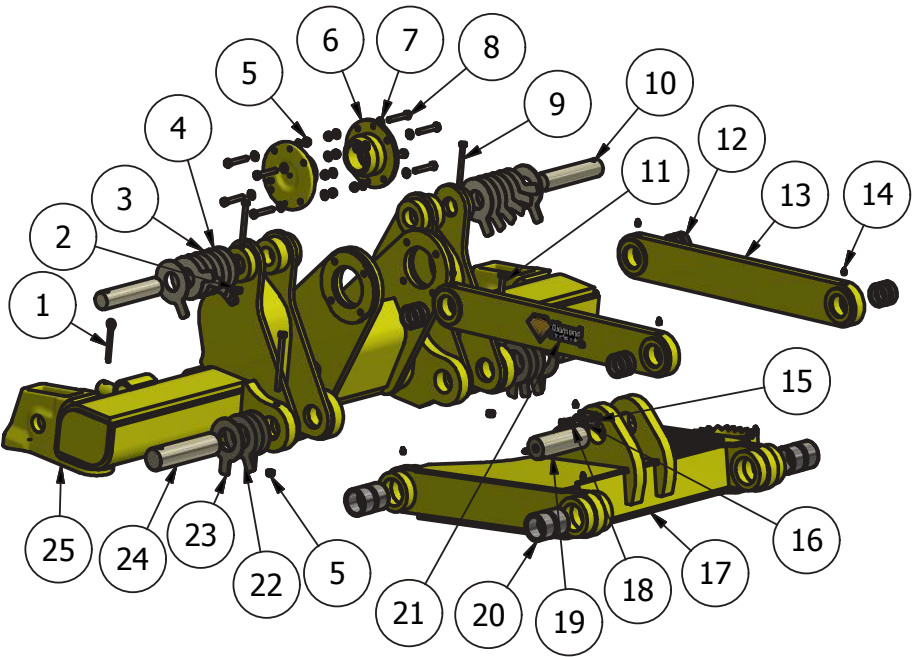
**\*OR AS NEEDED**



# 240-1471D RIPPER GROUP

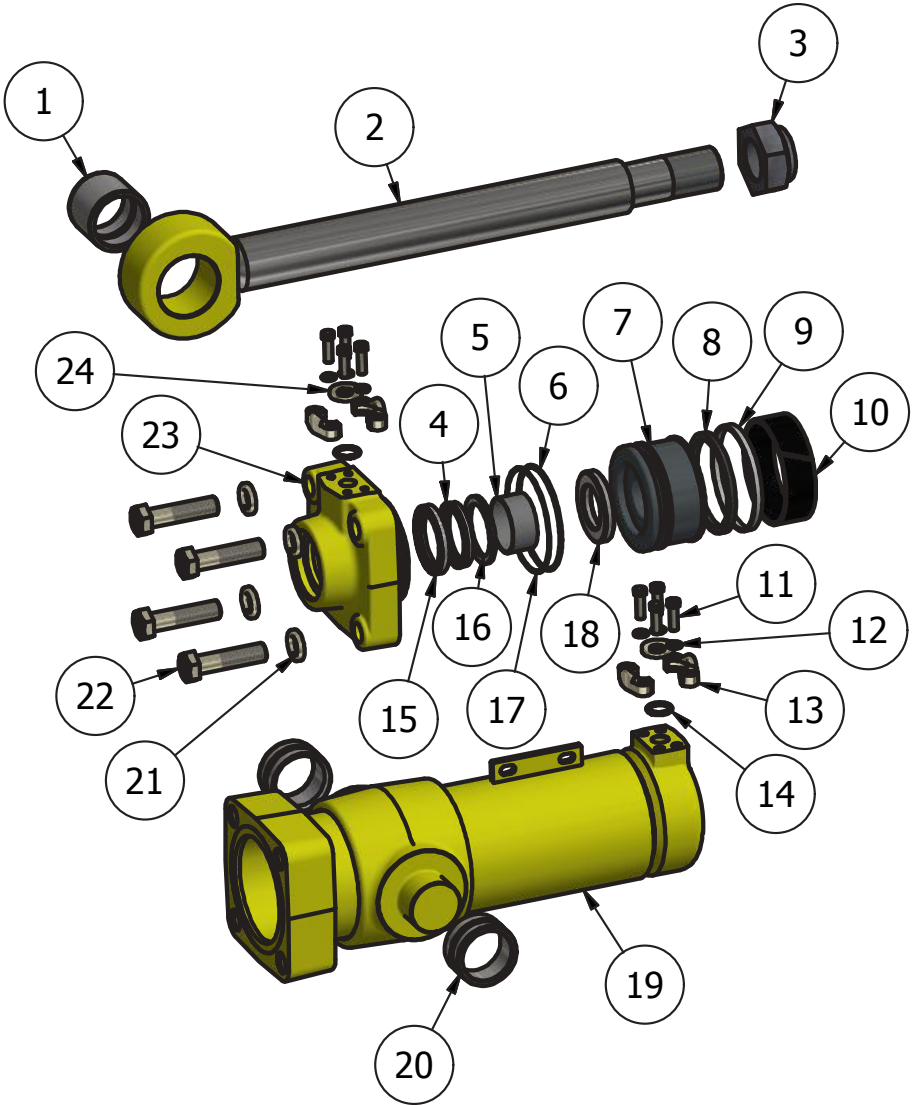
Item #	Part #	Qty.	Description
1	3B-5325D	1	Cotter Pin
2	40167	2	Locknut (M10)
3	193-3075D	10*	1/16" Shim
4	193-3074D	4	3/16" Shim
5	40171	10	Locknut (M12)
6	4K-3004D	2	Trunion Cap
7	40359	16	Flat washer (M12)
8	154009	8	Bolt (M12x1.75x70mm)
9	38670	2	Bolt (M10x1.5x120mm)
10	240-1491D	2	Pin
11	121858	2	Bolt (M12x1.75x160mm)
12	7J-9682D	4	Insert Bushing
13	240-1478D	2	Arm Assembly
14	60102	11	Grease Zerk
15	2K-0703D	1	Bar
16	40385	2	Lock washer (M12)
17	240-1472D	1	Drawbar
18	154001	2	Bolt (M12x1.75x30mm)
19	3K-8510D	1	Pin
20	9W-0099D	4	Insert Bushing
21	300DADEC	2	Decal
22	9N-4449D	6*	1/16" Shim
23	9N-4450D	2	3/16" Shim
24	240-1490D	2	Pin
25	240-1477D	1	Toolbar

**\*OR AS NEEDED**



# 9T-2716D CYLINDER ASSEMBLY

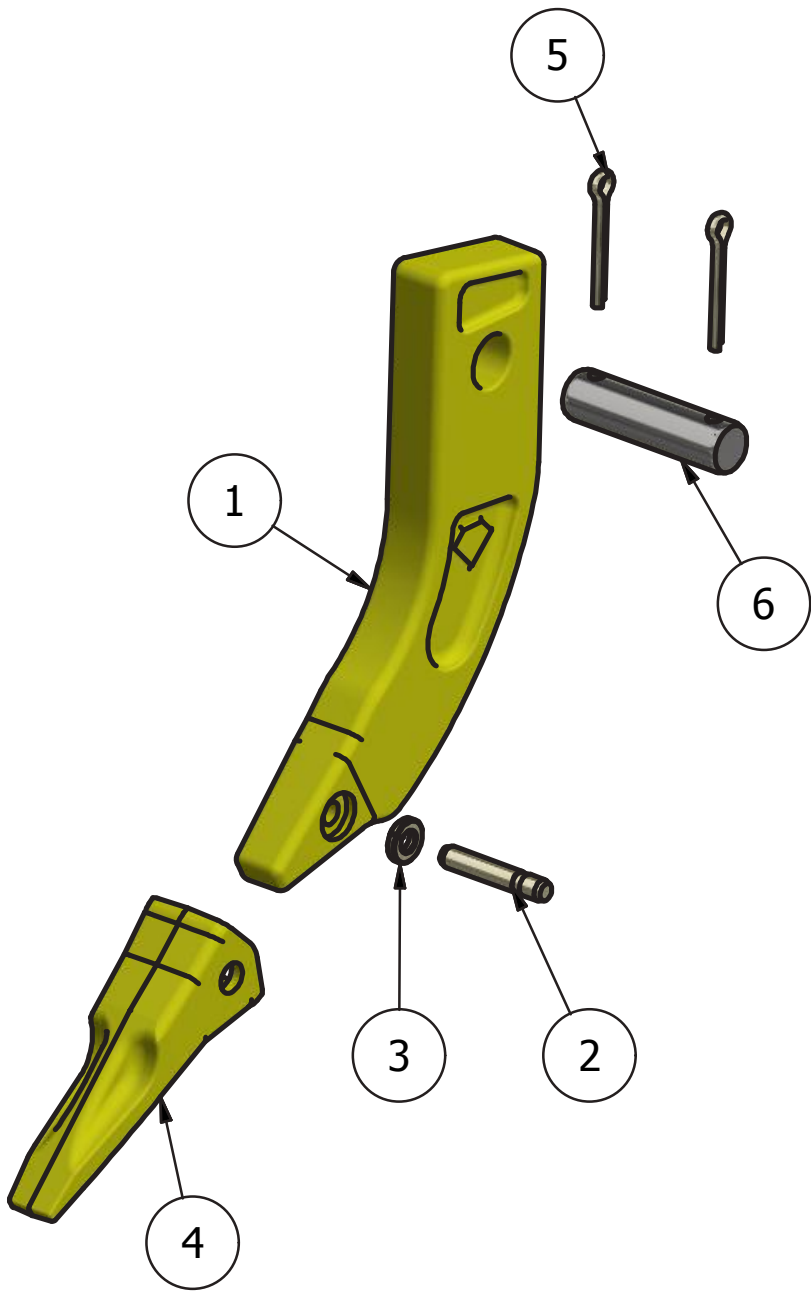
Item #	Part #	Qty.	Description
1	2K-4507D	1	Insert Bushing
2	9T-2714D	1	Ram Assembly
3	2J-0564D	1	Locknut
4	5J-0964D	1	U-Cup Seal
5	8T-5668D	1	Wear Ring
6	5F-3144D	1	O-Ring
7	3G-1753D	1	Piston
8	5J4973D	1	Inner Seal (Assembly)
9	5J4974D	1	Outer Seal (Assembly)
10	4J-3420D	1	Wear Ring
11	15107	8	Bolt (3/8"-16 x 1-1/4")
12	1133893	8	Lock washer (3/8")
13	34FHA	4	Half Clamp
14	34FPO	2	O-Ring
15	8C-3840D	1	Dust Seal
16	8C-3839D	1	Seal
17	2K-4096D	1	Backup Ring
18	3G-1757D	1	Piston Washer
19	9T-2715D	1	Barrel Assembly
20	4K-3128D	2	Insert Bushing
21	1133899	4	Lock washer (7/8")
22	15417	4	Bolt (7/8"-9 x 3-1/2")
23	9T-6863D	1	Head
24	12FLPLUG	2	Shipping Cap



## **3G-0109D SHANK GROUP**

<b>Item #</b>	<b>Part #</b>	<b>Qty.</b>	<b>Description</b>
1	9J-8913D	1	Shank
2	9J-2358D	1	Tip Pin
3	1U-2405D	1	Tip Retainer
4	6Y-0309D	1	Tip
5	3B-5325D	2	Cotter Pin
6	2K-6413D	1	Shank Pin







## DIAMOND ATTACHMENTS, L.L.C. LIMITED WARRANTY

### LIMITED WARRANTY

This limited warranty covers defects in materials or workmanship only. Diamond Attachments will repair or replace any parts, which are found to be defective in materials or workmanship for a period of six (6) months from the date of shipment from the factory. The defect must occur during normal use of the product within the warranty period. **SHANKS ARE EXPRESSLY EXCLUDED FROM THIS LIMITED WARRANTY AND ADDRESSED IN A SEPARATE WARRANTY.**

### Limitations

This Limited Warranty outlines specific legal rights. Diamond Attachments does not authorize any person to create for Diamond Attachments any obligation or liability other than stated in this Limited Warranty. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE SHALL BE APPLICABLE TO ANY PRODUCT SOLD HEREUNDER.

TO THE EXTENT PERMITTED BY LAW, DIAMOND ATTACHMENTS DISCLAIMS LIABILITY FOR ANY SPECIAL, INCIDENTAL CONSEQUENTIAL, OR PUNITIVE DAMAGES, LOSS OF TIME OR PROFITS, DIRECT, INDIRECT, GENERAL OR SPECIAL DAMAGES ARISING OUT OF ANY BREACH OF WARRANTY, EXPRESS OR IMPLIED. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

### Customer Responsibility

It is the customer's responsibility to maintain the equipment in accordance with the instructions provided in the Operator's Manual. Diamond Attachments recommends that you keep records and receipts; you may be asked to prove that the maintenance instructions have been followed.

It is also your responsibility to operate the equipment in a safe manner, and for the use for which it was designed. If a defect in materials or workmanship occurs, it is your responsibility to cease operating the equipment until repairs are made. Damage, which occurs from continued operation, is not covered by this warranty. Attempts by the customer to repair the equipment prior to notifying Diamond Attachments or authorized Diamond Attachments dealer may void the warranty. You should contact Diamond Attachments or your authorized Diamond Attachments dealer immediately so that repairs can be made in a timely manner.

This Warranty Does **NOT** Cover Damages Caused By:

- *Abusive operations*
- *Neglected Maintenance*
- *Misuse or neglect*
- *Unapproved attachments*
- *Natural calamities or accidents*
- *Usage contrary to the intended purpose*
- *Unauthorized modifications*

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This Warranty Does **NOT** Cover:

- *Pickup or delivery of the equipment or product*
- *Installation or other labor charges*
- *Rental of replacement equipment during the repair period*
- *Freight charges for replacement parts*
- *Travel time or mileage*
- *Component parts that are not manufactured by Diamond Attachments*

**How to Obtain Warranty Service**

To obtain warranty service under the terms and conditions of this Limited Warranty, you must deliver the product to Diamond Attachments, 4381 S. Mississippi Ave. Ste. A., Atoka, OK 74525 (transportation and insurance prepaid) or to an authorized Diamond Attachments dealer, within the warranty period, along with proof of purchase. If you have questions, please call Diamond Attachments at (580) 889-6202.

**Governing Law**

Any and all actions arising out of the sale of this product or the accompanying warranty shall be governed by and construed in accordance with the laws of the state of Oklahoma and the applicable laws of the United States of America without regard to conflict of law principles.

Any action or proceeding under or in connection with this product or the accompanying warranty may only be brought in the District Court of Atoka County, Oklahoma.



## DIAMOND ATTACHMENTS, L.L.C. SHANK LIMITED WARRANTY

### LIMITED WARRANTY

This limited warranty covers defects in materials or workmanship only. Diamond Attachments will repair or replace shanks against breakage for thirty (30) days from the date of shipment. The defect must occur during normal use of the product within the warranty period.

#### Limitations

This Limited Warranty outlines specific legal rights. Diamond Attachments does not authorize any person to create for Diamond Attachments any obligation or liability other than stated in this Limited Warranty. This warranty gives you specific legal rights, and you might also have other rights which vary from state to state.

DIAMOND ATTACHMENTS MAKES NO OTHER WARRANTY OF ANY KIND WHATEVER, EXPRESS OR IMPLIED; AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED AND EXCLUDED.

TO THE EXTENT PERMITTED BY LAW, DIAMOND ATTACHMENTS DISCLAIMS LIABILITY FOR ANY SPECIAL, INCIDENTAL CONSEQUENTIAL, OR PUNITIVE DAMAGES, LOSS OF TIME OR PROFITS, DIRECT, INDIRECT, GENERAL OR SPECIAL DAMAGES ARISING OUT OF ANY BREACH OF WARRANTY, EXPRESS OR IMPLIED. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

#### Customer Responsibility

It is also your responsibility to operate equipment in a safe manner, and for the use for which it was designed. If a defect in materials or workmanship occurs, it is your responsibility to cease operating the equipment until repairs are made. Damage, which occurs from continued operation, is not covered by this warranty. Attempts by the customer to repair the equipment prior to notifying Diamond Attachments or authorized Diamond Attachments dealer may void the warranty. You should contact Diamond Attachments or your

authorized Diamond Attachments dealer immediately so that repairs can be made in a timely manner.

Ripper Shanks Will **NOT** BE Warranted If:

- *The shanks are welded or cut on.*
- *The shanks are used in a manner that is inconsistent with their design (i.e., pulled behind a tractor larger than they were designed for).*
- *Any circumstances deemed unusual or uncommon use by Diamond Attachments*

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This Warranty Does **NOT** Cover Damages Caused By:

- *Abusive operations*
- *Neglected Maintenance*
- *Misuse or neglect*
- *Unapproved attachments*
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- *Usage contrary to the intended purpose*
- *Unauthorized modifications*

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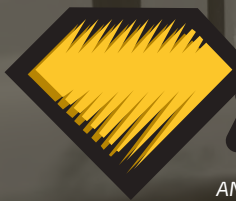
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**Governing Law**

Any and all actions arising out of the sale of this product or the accompanying warranty shall be governed by and construed in accordance with the laws of the state of Oklahoma and the applicable laws of the United States of America without regard to conflict of law principles.

Any action or proceeding under or in connection with this product or the accompanying warranty may only be brought in the District Court of Atoka County, Oklahoma.





**Diamond  
Attachments**™

AN EQUAL OPPORTUNITY EMPLOYER

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