



Gunite Disc Brake Rotors



Maintenance Manual

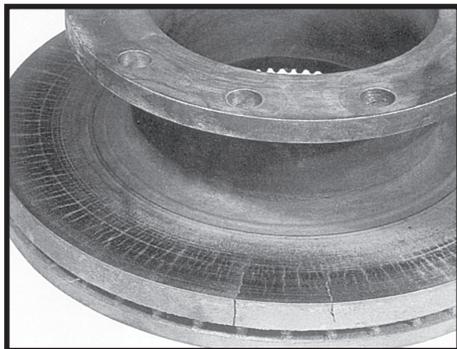
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STEEL & ALUMINUM WHEELS | DRUMS | HUBS | ROTORS | SLACK ADJUSTERS

Gunite is the industry leader in the development of brake system components for heavy-duty truck applications including air disc brake rotors. Gunite was the first to introduce ventilated disc brake rotors which significantly improved heat dissipation as required for applications on class 7 and 8 vehicles. Today, Gunite continues to lead the industry in the development of durable, lightweight disc brake rotor designs for current and future brake systems. This manual provides you with a comprehensive program for the inspection and maintenance of disc brake rotors. By following the proper procedures, you can effectively spot problems, take preventive or corrective action, and ensure many miles of profitable, trouble-free service from your Gunite disc brake rotors.

When and How to Inspect Disc Brake Rotors

A regular and thorough inspection is very important to the proper operation of your braking system and should be included in your regularly scheduled preventative maintenance program. By inspecting your brake components on a regular basis, you can greatly reduce your per-mile brake maintenance cost as compared to simply reacting to brake problems as they occur. When following the inspection procedures outlined in this manual, it is not necessary to remove the rotor. The common problems shown here can easily be seen by simply removing the tire and rim and inspecting the rotor surface. The following problems are the most common problems experienced with rotors in the normal operation of the braking system. If one or more of these problems exist, the proper corrective action indicated should be taken immediately to ensure safe braking on demand.



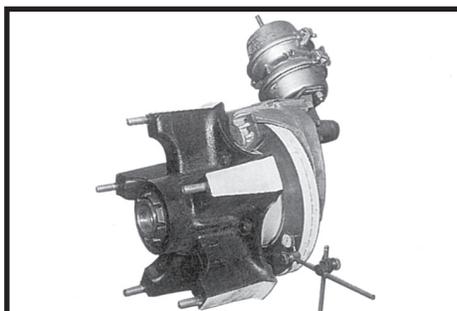
Cracked Rotors

Braking surface cracks are seen as radial cracks appearing in the braking surface and rounding the edge of the rotor at the inside or outside diameter of the braking surface. These cracks are usually caused by torque imbalance which shifts a greater share of the braking function to only a few of the vehicle's brakes. The brakes, which are providing a greater share of the braking action, will always be the ones to show the greater rotor wear and will sometimes crack. Cracked rotors observed during regular inspection must be replaced. If the rotor is not replaced, the cracks will accelerate lining wear and can eventually progress into the barrel section of the rotor and cause separation of the braking section from the mounting flange. Rotors found to have cracks while en route should be replaced at the next available service facility. After installing a new disc brake rotor, the braking system should be checked for proper brake balance to allow for maximum brake efficiency and prevent subsequent cracking.



Heat-Checking

Heat-checking is the appearance of numerous short, thin, radial interruptions of the braking surfaces of the rotor. Heat-checking is a normal phenomena of the disc brake function just as they are on brake drums. Heat-checking is the result of the heating and cooling of the braking surface which occurs as the brakes are applied during normal operation of the vehicle. Heat-checks are not detrimental to the function or the performance of the braking system and no corrective action is required for this condition. Heat-checks will frequently wear away and reform as a result of the normal braking process however, heat-checks can progress over time into cracks in the braking surface depending on such factors as lining/rotor wear rate, brake system balance, and how hard the brakes are used.

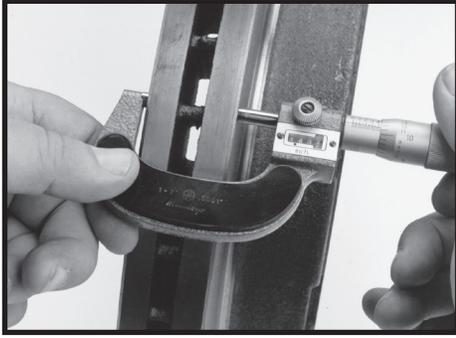


Lateral Run-Out (Wobble)

Using a dial indicator, as shown in the photo, measure the lateral run-out or wobble of the rotor. The lateral run-out should not exceed a total indicator reading of .020" during one full revolution on properly adjusted wheel bearings. If the lateral run-out exceeds .020" total indicator reading, check the mounting surfaces between the rotor and the wheel or hub, fastener torques, as well as the condition of and adjustment of the wheel bearing.

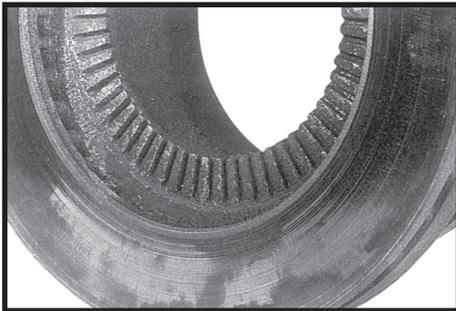
Radial Run-Out

Using a dial indicator, check the radial run-out as measured at the outside diameter of the braking surface. The radial run-out should not exceed .035" total indicator reading. If the radial run-out of the rotor exceeds .035", replace the rotor.



Rotor Thickness

Rotor thickness should be checked to make sure that the rotor thickness meets the dimensional tolerance stamped into the rotor casting. When measuring the thickness of the rotor, the thickness should not vary more than .005" when measured at several points around the rotor. If the measurement exceeds .005" and the rotor is within allowable tolerances to be resurfaced, the rotor should be resurfaced. If the rotor is not within the allowable tolerance for resurfacing, it should be replaced.



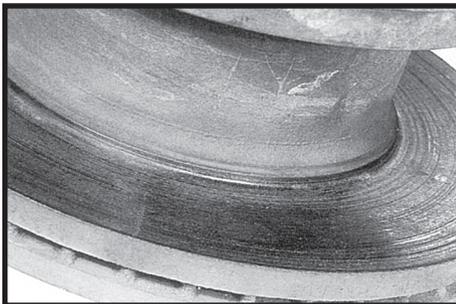
Grease-Stained Rotors

If this condition exists, the brake rotors will show discolored spots on the braking surface, with oil and/or grease splattered on the brake assembly. This condition is most likely caused by a faulty lubrication system or improper greasing of the brake mechanism. To correct the problem, the source of the grease and/or oil must be located and necessary repairs made to eliminate the leak. Remove the entire brake assembly and clean each component thoroughly. If the linings are soaked with oil or grease, they must be replaced.



Martensite Spotted Rotors

This condition indicates that the rotor has been subjected to extremely high temperatures caused by an improperly balanced braking system, a dragging brake or continued severe brake applications. These extremely high temperatures have caused structural changes to occur in the rotor material which makes the rotor more susceptible to cracking. To correct this problem, the rotor should be resurfaced to restore concentricity by removing the hard raised areas. If resurfacing will not remove the heat spots, or if the resurfacing reduces the rotor thickness below the minimum recommended thickness, stamped on the outside diameter of the rotor, the rotor must be replaced. Brake linings should be checked for uneven wear and be replaced if necessary. After reinstalling or replacing the rotor, the braking system should be checked for proper balance to restore maximum braking efficiency.

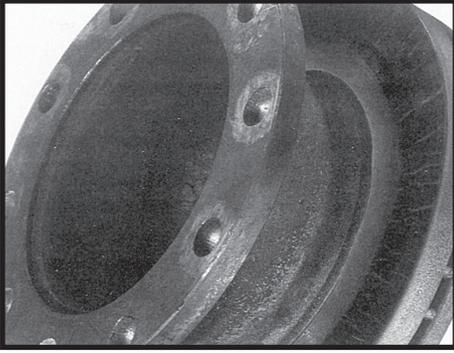


Scored Rotors

A scored rotor is indicated by a defined grooved appearance on the braking surface. If the depth of the scoring exceeds .015" and the thickness of the braking surface can be resurfaced and still remain within allowable tolerances, then the rotor should be resurfaced to restore a smooth braking surface. The linings should also be replaced to provide maximum braking efficiency.

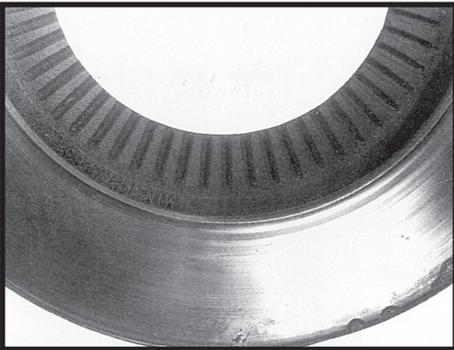
NOTE

WHEN RESURFACING THE ROTOR, THE FINISH OF THE BRAKING SURFACE FINISH SHOULD NOT EXCEED A 150 Ra MICROFINISH.



Bluing Rotors

A rotor which shows the signs of bluing has been subjected to extremely high temperatures. This condition may be caused by continued hard stops or by brake system imbalance. It is not necessary to resurface or replace the rotor as long as the rotor remains within the allowable tolerance for operation. To correct this problem the brake system should be checked for proper balance. The rotor should be checked to make sure that the rotor thickness is correct and the brake caliper should be checked for proper adjustment and clearance. If this condition is left unresolved, it can result in the development of a martensite condition or cause the rotor to crack.

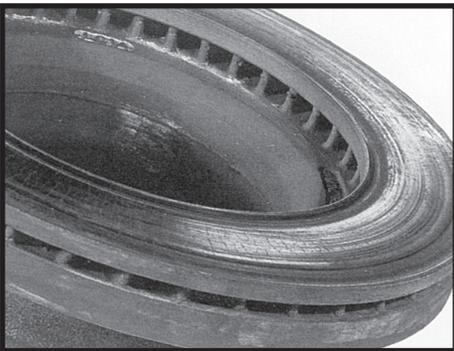


Polished Rotors

A polished rotor can be identified by the mirror-like finish on the braking surface. This problem can easily be solved by sanding the braking surface with an 80 grit emery cloth. It is also necessary to remove the glaze from the linings at the same time, using the 80 grit emery cloth. If the problem recurs, the linings should be checked to make sure that they have the correct friction rating.

NOTE

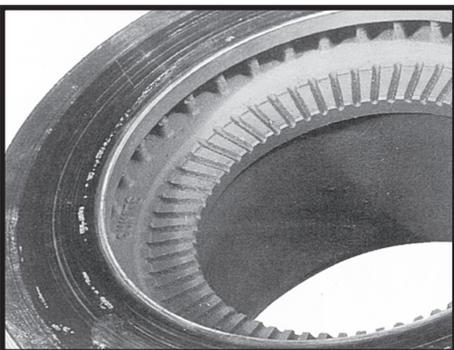
IT IS A RECOMMENDED PROCEDURE TO SAND THE BRAKING SURFACE OF THE ROTOR AT THE TIME OF RELINING.



Worn Rotors

The minimum worn rotor thickness is shown on the outside diameter of the rotor braking section or cast into the body of the rotor. The minimum dimension applies to the cross-sectional measurement between the two braking surfaces of the rotor. This measurement should be made at several points around the entire circumference of the rotor. If the thickness of the rotor is below the minimum dimension* shown on the rotor, the rotor must be replaced. If there is sufficient thickness remaining on the rotor, it may be resurfaced as long as the resulting thickness does not fall below the minimum thickness required. The rotor should also be checked to make sure that the wear is approximately equal on both braking surfaces. If one surface is worn more than the other, the brake system is not functioning properly and should be inspected and repaired.

* See chart for minimum dimensions located on page 5.



Lining Transfer

Lining transfer is indicated by a thin layer of lining material which has become welded to the rotor braking surface. Initially the lining deposits will be spotty; however, as the problem progresses the lining deposits will be covering more of the braking surface. Lining transfer will accelerate lining wear. This problem is the result of extremely high operating temperatures which are usually caused by dragging brakes, continued hard stops, brake system imbalance or brake system malfunction. The rotor can be resurfaced to remove the lining deposits and restore a proper braking surface. The rotor thickness, after resurfacing, must not be below the minimum thickness stamped on the rotor.

Clogged Or Restricted Vent Holes

Vehicles operating in severe-duty environments may experience clogged or restricted vent holes due to the accumulation of mud, gravel or other debris. Such restrictions must be removed in order to provide even cooling of the rotor during normal operation.

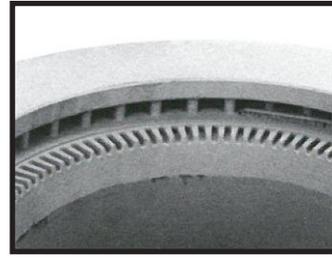
Corroded Exciter Teeth

ABS exciter teeth on the brake rotor may become corroded from exposure to corrosive elements found in chemicals used to melt snow and ice. This is especially true in regions that use chloride based products to prevent formation of ice on the roadway. Disc brake rotors should be inspected often to determine if corrosion has built-up on and around the exciter teeth. Any corrosion must be cleaned away using a wire brush. If the corrosion is severe, as shown in figure 1 below, the ABS system **will not** function properly and braking ability will be affected.

The rotor must be replaced immediately to ensure proper operation of the braking system. It is recommended that the disc brake rotors on vehicles operating in states that use corrosive chemicals on the roadway, be replaced with Gunite GEOMET coated rotors. See figure 2 below. These rotors have a special coating applied to the entire outer surface, which retards corrosion on the exciter teeth. **Care must be taken when storing, handling and installing GEOMET coated rotors to not scratch or damage the surface integrity of the coating. If the coating is damaged corrosion may result under normal operating conditions where corrosive elements are present.**



1. Un-treated cast iron where corrosion has destroyed the exciter teeth. Rotor must be replaced immediately.



2. Gunite GEOMET coated rotor.

Proper Stacking and Storage of Rotors

When stacking and storing rotors, care must be taken not to damage the integral machined-in exciter teeth or the braking surface of the rotor. Rotors should be stacked flange-to-flange and braking surface to braking surface as shown in figure 4 below. Rotors should never be "nested" as shown in figure 5 below. Stacking rotors in this manner may damage the exciter teeth, which are machined into the rotor body. Nesting rotors treated with Gunite's GEOMET anti-corrosion coating will damage the coating allowing rust and corrosion to build up on and around the exciter teeth causing the ABS system to operate improperly.



4. Properly stacked rotors



5. Improperly stacked rotors. Damage will occur.

Proper Selection of New Rotors

Brake performance is directly affected by compatibility of each component in the brake system. Disc brake rotors are carefully engineered to meet the specific requirements of each brake system. All replacement rotors must meet the quality and performance standards set by the brake system manufacturer. By replacing worn or damaged rotors with rotors of equal quality, each brake will perform equally to provide a balanced system and maximum braking efficiency. In addition, care must be taken to properly match the correct brake lining with the replacement rotor specifications. Proper matching of brake components allows the braking system to operate efficiently which will result in maximum stopping performance, longer service life between relining and overall lower brake maintenance costs. When replacing worn or damaged rotors, there is certain information which will be required to identify the correct replacement rotor. When specifying the replacement rotor you will need to know the manufacturer's part number and provide any other information appearing on the rotor.

Sizing of Disc Brake Rotors

If the manufacturer's part number is not available, your parts supplier can still determine the correct rotor for your application if you provide the following information. The first step is to identify the basic rotor design. It is either "U - Section" figure A or "Hat Section" figure B. Once this is determined, follow each of the eight steps pictured below making careful note of the measurements and information.

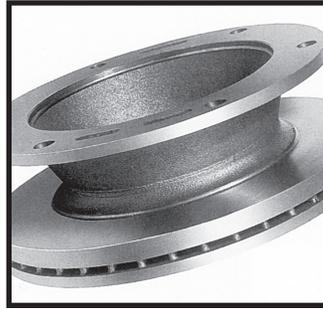


Figure A

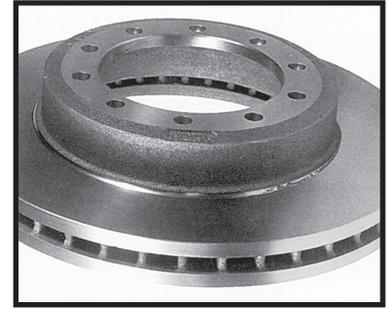
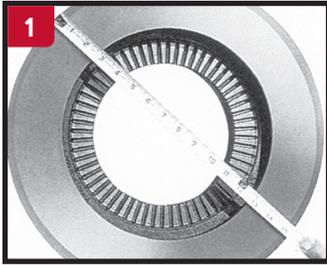
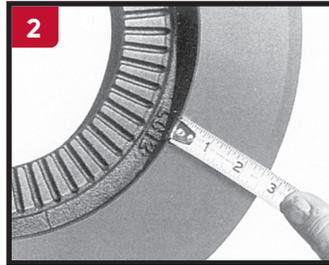


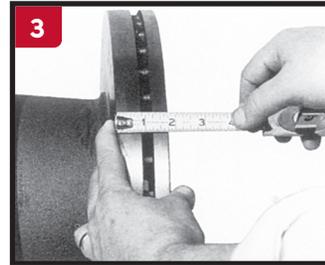
Figure B



1. Outside diameter of rotor, measured across the braking surface.



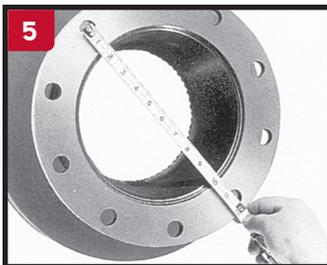
2. Width of braking surface.



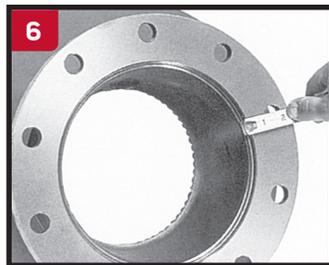
3. Rotor width, braking surface to outer diameter.



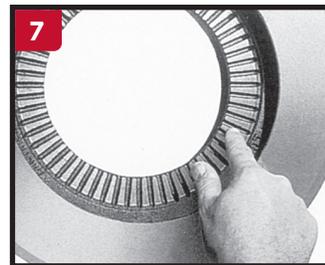
4. Identification stamped on outer diameter.



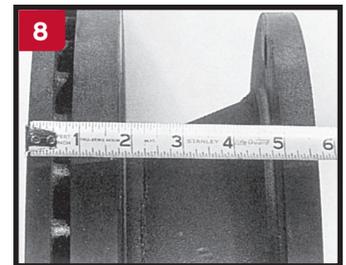
5. Bolt circle diameter.



6. Size and number of bolt holes.



7. Are there any exciter teeth cast into the rotor?



8. Overall depth of the "U - Section" or "Hat Section" of the rotor.

Recommended Refinishing Dimensions

Applications	Outside Diameter (in)	Width - New (in)	Minimum Dimension After Refinishing (in)	Discard Dimension (in)
Kelsey-Hayes Air Disc Brake-Model I	15.38	1.535	1.455	1.415
Kelsey-Hayes Air Disc Brake-Model II & IIF	15.38 17.18	1.750 1.750	1.670 1.670	1.630 1.630
Rockwell Air Disc Brake-Solid Rotor	14.92	0.905	0.825	0.785
Rockwell Air Disc Brake-Ventilated Rotor	15.25 18.00	1.750 1.750	1.670 1.670	1.630 1.630
Kelsey-Hayes TH 24-Air Over Hydraulic Brakes	15.62 1.750	1.670	1.630	1.630
Bendix Hydraulic Brakes	15.00 15.39	1.435 1.535	1.355 1.455	1.315 1.415
Dayton Hydraulic Brakes	14.76 15.38 15.39	1.345 1.535 1.535	1.265 1.455 1.455	1.225 1.415 1.415

If you have problems not covered in this publication, we suggest you contact the vehicle manufacturer for additional maintenance information.

ACCURIDE WHEEL END SOLUTIONS (AWES) LIMITED WARRANTY TO FILE A WARRANTY CLAIM, CALL (800) 869-2275 ext 1

Accuride warrants to the original purchaser or the original end user that its products are free from defects in material and workmanship. The limited warranty time-frame (reference table below) is based on the date of product manufacture and shall be void if the product is altered, modified, misapplied, misused, neglected, repaired or not maintained in accordance with the instructions printed in the product-specific Accuride Safety & Service Manuals⁽²⁾.

GENERAL PRODUCT OVERVIEW

Product Type	8 years/ 96 months	5 years/ 60 months	2 years/ 200,000 miles ⁽¹⁾	1 year/ 12 months
Accuride Aluminum Wheels ⁽²⁾		Industry Standard Aluminum Wheels Duplex [®] Aluminum Wheels ACCU-SHIELD [®] Wheels ACCU-ARMOR [™] Wheels ProShield Black Wheels	Flange Wear on ACCU-FLANGE [™] Wheels	
Accuride Steel Wheels ⁽²⁾	Corrosion Only ⁽⁶⁾	Extra Service Wheels [™] (ESW) Styled Steel Wheels Tubeless Wheels and Demountable Rims Steel Armor [™] ⁽⁶⁾		ProFinish [™] Corrosion Only ⁽⁶⁾ Duplex [®] Steel Disc Wheels Duplex [®] Demountable Rims Tube-Type Wheels & Demountable Rims Light Truck Wheels Steel Bolt-Together Specialty Wheel

Product Type	6 years/ 1,000,000 miles ⁽¹⁾	5 years/ 500,000 miles ⁽¹⁾	4 years/ 400,000 miles ⁽¹⁾	3 years/ 350,000 miles ⁽¹⁾	3 years/ 300,000 miles ⁽¹⁾	2 years/ 200,000 miles ⁽¹⁾	Limited Warranty ⁽²⁾
Gunite Slack Adjusters ⁽²⁾	Over-The-Road/Line Operated Trucks and Trailers ⁽⁴⁾	Over-The Road/Line Operated Trucks and Trailers ⁽³⁾	School Bus/City Delivery Vehicles ⁽⁴⁾		School Bus/City Delivery Vehicles ⁽³⁾ Severe Service: Garbage/Refuse Trucks, Fire Trucks, Logging, etc. ⁽⁴⁾	Severe Service: Garbage/Refuse Trucks, Fire Trucks, Logging, etc. ⁽³⁾	
Gunite Hubs ⁽²⁾		TRU-SET [®] Trailer		TRU-SET [®] Front/Steer TRU-SET [®] Rear/Drive			Industry Standard Hubs
Gunite Brake Drums ⁽²⁾							Industry Standard Brake Drums
Gunite Disc Brake Rotors ⁽²⁾⁽⁵⁾							Industry Standard Disc Brake Rotors
Gunite Spoke Wheels ⁽²⁾							Industry Standard Spoke Wheels

(1) Time or miles, whichever occurs first. Time is measured from date of manufacture.

(2) See Remedies and Limitations of Remedies and refer to appropriate Accuride guide for additional limited warranty condition details: Accuride Rim/Wheel Safety & Service Manual, Gunite Heavy-Duty Brake Drums, Gunite Automatic Slack Adjuster Service Manual, Gunite Disc Brake Rotors Maintenance & Installation Manual, and Gunite Disc Wheel Hubs, High-Performance Hubs, Spoke Wheels Maintenance & Installation Manual, and Steel Wheel Refinishing Criteria.

(3) Manufactured prior to April 6, 2015.

(4) Manufactured on or after April 6, 2015.

(5) Limited warranty for life of product.*

* "Life of product" means such period until the product has reached its maximum/minimum brake surface limitation. Product remains subject to the terms and conditions in this limited warranty, including the provisions on additional product warranty criteria and remedies and limitation of remedies.

(6) Designated steel wheels are covered by a limited warranty to be free of "rust damage" from the date of manufacture indicated on the wheel: ProFinish[™] for twelve (12) months, Steel Armor[™] for sixty (60) months. Rust damage is defined as rust sufficient to require refinishing as determined by Accuride in accordance with the most current version of Accuride's technical bulletin W2.043 Steel Wheel Refinishing Criteria. The Steel Armor[™] warranties do not cover, and expressly exclude, rust in the crevice between the disc and the rim. The Steel Armor[™] coating limited warranties herein apply to wheels manufactured by Accuride on or after January 1, 2017.

ACCURIDE WHEEL END SOLUTIONS (AWES) LIMITED WARRANTY TO FILE A WARRANTY CLAIM, CALL (800) 869-2275 ext 1

ADDITIONAL PRODUCT SPECIFIC LIMITED WARRANTY CRITERIA

Wheels and Rims: The warranty shall be void if the product is used with improper tire sizes, inflation pressures, or exceeded load ratings. The warranty shall be void if the product is not properly maintained in accordance with the Accuride Rim/Wheel Safety & Service Manual. The warranty does not cover defects resulting from corrosion except as stated elsewhere in this document, other non-Accuride components, accident, excessive speed or other abnormal or severe operating conditions.

ACCU-ARMOR™, ACCU-SHIELD®, ACCU-FLANGE™, STEEL ARMOR™, PROFINISH™, PROSHIELD XGT™ and PROSHIELD BLACK: Accuride does not cover the following conditions: (i) Any damage in the areas of the mounting surfaces, such as the area under the mounting nuts, the area in contact with hubs or drums and the area in contact with other wheels in dual position, (ii) Any damage due to cleaning, including damage from the use of abrasives, abrasive brushes, steel wool, scouring pads, strong chemicals or corrosion except as stated elsewhere in this document, and/or (iii) Any damage to the wheel finish due to wheel/tire assembly, removal, balancing weight, misuse, or chipping, whether by contact with road obstacles such as stones, gravel, curbs, barriers, signs, tire changing equipment or otherwise. ACCU-SHIELD®, PROSHIELD XGT™ and PROSHIELD BLACK products are not covered for corrosion. ACCU-FLANGE® products, after washing, can have wheel polish or carnauba wax applied with a 100% cotton cloth. The STEEL ARMOR™ warranties are void with respect to, and expressly exclude, all wheels that have been refinished or refurbished and, for wheels used without an Accuride Wheel-Guard®, the disc face and any other areas impacted by this failure. The STEEL ARMOR™ and PROFINISH™ warranties expressly exclude and do not cover (a) paint appearance, paint integrity, or paint adhesion to the wheels due to chipping effect and (b) corrosion in the crevice between the wheel disc and rim. Accuride recommends cleaning wheels with mild soap and water.

Standard Brake Drums, Spoke Wheels, Disc Wheel Hubs, Automatic Slack Adjusters, and Hardware: The above warranty shall be void if (i) any goods have exceeded Accuride's acceptable wear limits or have been subjected to accidents or abnormal conditions of use, temperature, moisture, dirt or corrosive matter, or (ii) the product fails as the result of another manufacturer's product. The TRU-SET® disc wheel hub requires the use of a seller-approved hubcap and lubricant.

REMEDIES AND LIMITATIONS OF REMEDIES

In the event of any material breach of the above limited warranties, Accuride agrees to repair or replace,* at its sole option, without charge any and all of its warrantable product that fail during normal use and service due to defects in material and/or workmanship, all subject to the original purchaser providing written notice of the alleged breach within 30 days of failure. Time is of the essence herein, and original purchaser's failure to provide written notice to Accuride within the required time of any alleged breach of the foregoing warranty will release and discharge Accuride from any obligation or liability for that breach of warranty. In no event will Accuride be liable for any other costs associated with the replacement or repair of product covered under this warranty, including labor, installation or other costs incurred by customer.

* - NOTWITHSTANDING THE ABOVE, THE SOLE REMEDY UNDER THE STEEL ARMOR™ WARRANTIES SHALL BE THE PAYMENT OF US \$35 FOR STEEL ARMOR™ OR THE REPAIR OR REPLACEMENT OF THE WHEEL (AT ACCURIDE'S SOLE OPTION) IF A WARRANTABLE PRODUCT FAILS DURING NORMAL USE AND SERVICE DUE TO DEFECTS IN MATERIAL AND/OR WORKMANSHIP. Only one claim per wheel may be paid under the Steel Armor™ warranties. The remedy described in this paragraph is Accuride's sole and exclusive obligation under these warranties and in no event will Accuride be liable for special, incidental or consequential damages. Customer must timely report the breach of warranty and demonstrate warrantability under the then applicable procedures during the warranty period. The remedies set forth herein shall be the sole and exclusive remedies available to the original purchaser so that Accuride repair, replacement, or payment as described above is a fulfillment of all Accuride obligations. Accuride SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES OF ANY KIND. FURTHER, UNDER NO CIRCUMSTANCE SHALL ACCURIDE BE LIABLE FOR DAMAGES BEYOND THE PRICE OF THE GOODS PURCHASED BY THE ORIGINAL PURCHASER, WHETHER IN CONTRACT, IN TORT OR UNDER ANY WARRANTY OR OTHER USE.

Accuride reserves the right to require product return and/or washing (as previously noted) prior to warranty assessment as a condition of eligibility for warranty remedies. Product return expense must be paid by the product owner and if the product is found warrantable, reasonable freight expenses may be reimbursed by Accuride. No goods are to be returned to Accuride without a Returned Goods Authorization (RGA). If Accuride determines that any of the returned goods are non-warrantable, Accuride reserves the right to charge the original purchaser for the recovery of all transportation costs and expenses incurred in examining, processing and handling such goods. Any controversy or claim that customer may wish to bring that is arising out of or related to this limited warranty or breach hereof must be commenced in writing within 30 days of notification of warrantable status or shall be deemed to be waived.

Any product deemed non-warrantable is the property of the original purchaser and can be returned to the original purchaser upon its request and at its sole cost and expense. Should the non-warrantable item(s) not be reclaimed, Accuride will disposition the product no sooner than 30 days after original purchaser notification has been made.

For all warranty related questions, please contact your Accuride warranty administrator at (800) 869-2275 Option 1 or submit questions or claims to warrantyadmin@accuridecorp.com.

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