



## Subway Wheels Maintenance Book



Edition 2020

## History

**1891**

Brothers Edouard and André Michelin start the production of wheels in Clermont-Ferrand and patent the first demountable bike tyre.

**1906**

Development and start of production of the first demountable wheel for passenger cars.

**1950's**

Birth of the first subway on tyre in Paris

**1957**

Separation of the wheel production in La Chapelle-Saint-Luc/Troyes.

**1958**

Start of production of one-piece wheels with well for passenger cars.

**1960's**

Creation of the subway on tyre in Montréal and Mexico City.

**1970**

Start of production of one-piece wheels with well and 15° bead seat angle for trucks.

**1997**

Michelin takes over from Mannesmann 51% of Mannesmann-Kronprinz AG in order to reinforce its market position in steel wheel business.

**1999**

Complete take over of the shares by Michelin. Creation of Michelin Kronprinz Werke.

**2001**

Separation of the wheel business within Michelin. Creation of Michelin Roues France S.A.S.

**2005**

Take over of the total Michelin wheel business by mefro Group as of January 2005. Integration in mefro wheels GmbH.

**2012**

mefro Roues France is renamed.

**2013**

Shut down of the truck wheel workshop.

**2016**

Completion of size enlargement program in the workshop, with capacities established at 8Jx18.

**2018**

Accuride take over mefro wheels group.

**2019**

Accuride Wheels Europe and Asia GmbH created, mefro wheels France is renamed to Accuride Wheels Troyes S.A.S.

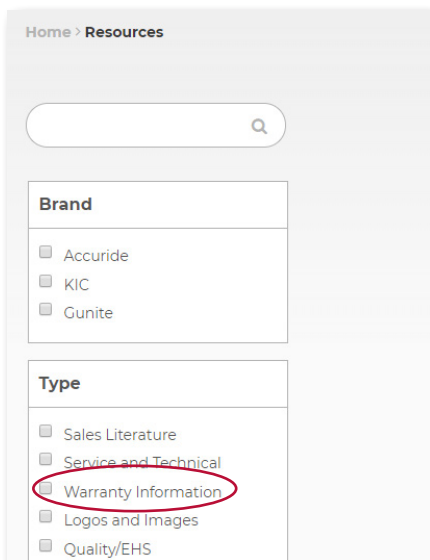
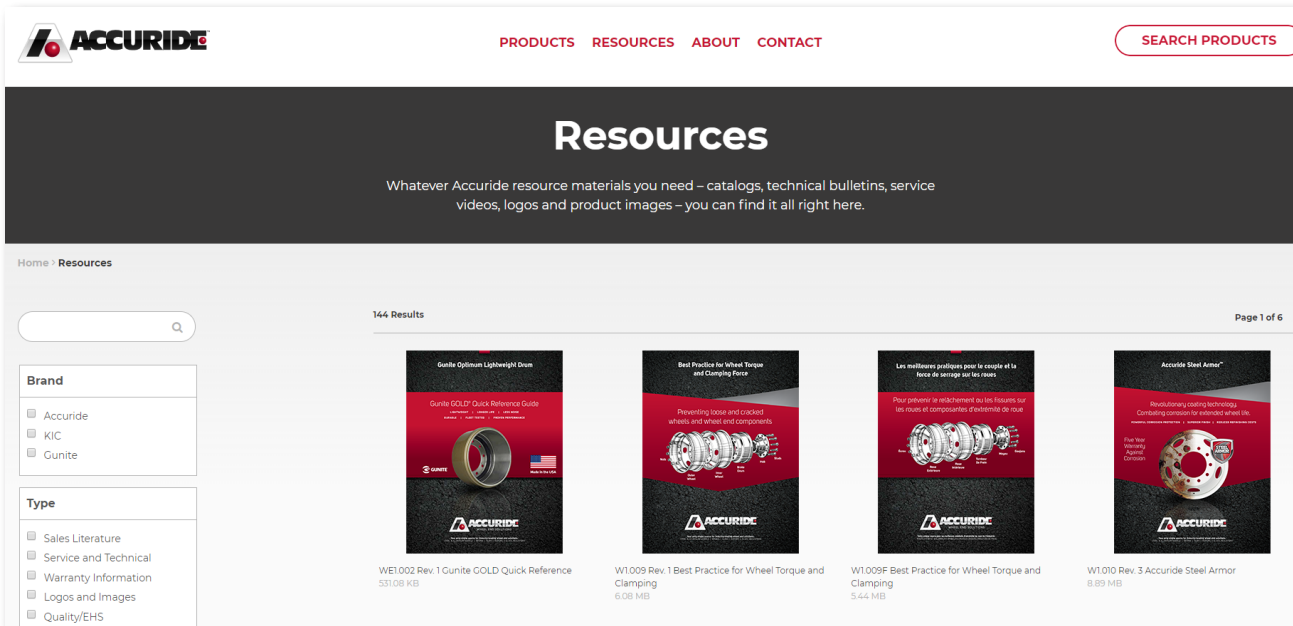
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# SECTION I: CONDITIONS & RECOMMENDATIONS

## Accuride limited warranty coverage

For warranty information, visit [AccurideCorp.com/Resources](http://AccurideCorp.com/Resources).



Select the Warranty Information box.

## Safety is important

The wheel is a highly stressed component of the vehicle that in service may be subjected to extreme forces. Therefore, it is absolutely necessary to check the wheels periodically and to pay particular attention to their mounting, removal and maintenance in order to ensure safe operations and to prevent any possible risk.

Particular care has to be used to handle the wheels having multi-piece rims. Improper or unsafe wheel/tyre servicing practices can lead to serious accidents.

Therefore, all service operations must be performed only by qualified personnel, appropriately trained: they have to use correct procedures, proper equipment and tools, and safety precautions.

## General safety and maintenance recommendations

Never use wheels or wheel components which cannot be well identified, even if they appear to have the correct dimensions and the same correct function.

The identifications impressed on the stud hole area of the wheel disc and/or on the rim/rings will help to ensure the correct replacement with another component having identical characteristics and performance, as required by the vehicle manufacturer.

The geometric characteristics of the wheel disc must correspond exactly to the matching vehicle parts (axle hub and brake) in order to guarantee the proper fitting and an effective load transmission. The use of the correct replacement part becomes particularly important for the removable rings of a multi-piece rim, since the ring of a given rim size may not be interchangeable with the one belonging to another rim type.

For the proper choice of the component to be mounted as replacement, careful attention has to be paid to these items: size of ring - system of assembly – execution details (shape and dimensions).

Even small differences may in fact be critical. Consequently for safety reasons, in the case of multi-piece rims, the origin of the components must be the same. Mismatched or wrong rings mounted on a multi-piece rim can cause serious mounting or service accidents or, at the least, the wheel failure, without any prior warning.

**WARNING:** It is absolutely forbidden and illegal to repair rims, discs and other wheel parts by heating, by welding, by addition or removal of material. In particular the repair of stud holes or the replacement of wheel discs must not be undertaken.

## SECTION I: CONDITIONS & RECOMMENDATIONS

### General storage recommendations

Wheels should be stored in a dry and closed storage place. The wheels should be stored on wooden or EUWA metal pallets on which wheels are stacked in layers separated by cardboard or polyethylene dividers. The pallets can be tightened:

- with plastic stripes,
- with a polyethylene film wrapped around
- with a polyethylene shrink bag without UV protection
- with a polyethylene shrink bag with UV protection

Following rules are required for the storage of coated wheels:

Packaging Type	Storage in a closed warehouse	Storage in a covered open store	Outside storage
Plastic strips	AUTHORIZED	PROHIBITED	PROHIBITED
Polyethylene film wrapped around the pallet	AUTHORIZED	AUTHORIZED 6 months max	PROHIBITED
Polyethylene shrink bag without UV protection	AUTHORIZED	AUTHORIZED 6 months max	PROHIBITED
Polyethylene shrink bag with UV protection + Cardboard dividers	AUTHORIZED	AUTHORIZED	PROHIBITED*
Polyethylene shrink bag with UV protection + Polyethylene dividers	AUTHORIZED	AUTHORIZED	AUTHORIZED 6 months max

\*Cardboard dividers stored outside can get wet due to ambient humidity even with Polyethylene shrink bags. In this case the pallet can collapse and cause wheels damages and safety hazards.

Unpacked wheels should not lie directly on contact with the floor. They should be put on a wooden pallet in a closed and dry storage room.

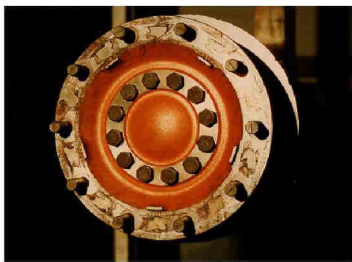
According to the ISO 14400 international norm, vehicles parked outside for long periods can cause the build up of water, salt and dirt in specific areas of the wheels, leading to corrosion points in these areas.

## Recommendations on hub geometry

We would like to draw your attention to the facts that:

- Vehicle hub shape, stiffness and outer edge condition have an important influence on wheel fatigue performance. Sharp edges encourage crack development and propagation.
- The weight optimization of vehicle's hubs should take into account the performance of the whole system of hub, brake and wheel.
- When requesting specific wheel designs for new hubs or axles the compatibility and interchangeability between parts already on the market should be considered, in order to avoid potential safety problems.
- The fact that different, not standardized hub shapes exist already on the market may lead to multiple footprints on wheels which are exchanged between vehicles. In this case, high additional stresses can be induced in the wheel mounting surface which may lead to premature wheel failure. The standardization of hub shape is recommended.

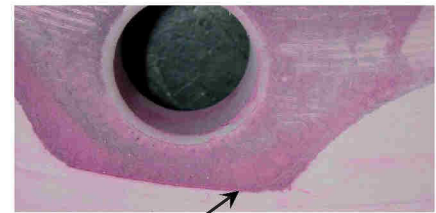
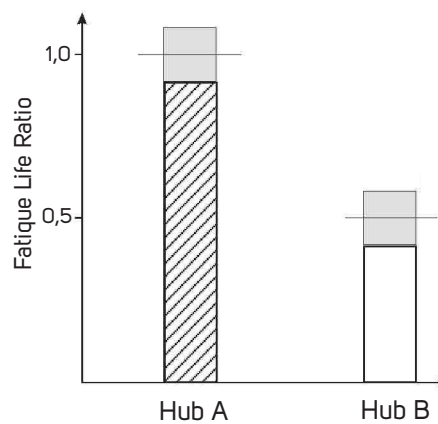
## Influence of the hub design on the wheel life



Hub A



Hub B



Fatigue crack



Fracture location in bolting area of an aluminum truck wheel (Hub B)

## **SECTION I: CONDITIONS & RECOMMENDATIONS**

### **Recommendations on wheel painting**

Damage or rust on the painted surface could be repainted after removal of rust. When repainting a load wheel, it must be borne in mind that in wheel mounting areas, at countersinks and on the rim, side ring and lock ring contact area the total thickness of coating including base coating should not exceed 60 µm.

When repainting a guide wheel, it must be borne in mind that any alteration of the initial surface treatment of the bolt's threads is to be avoided.

By painting removal operation the bolt's threads should be fully protected. No sandblasting, nor chemical pickling should be apply on the bolt's threads. By painting operation, no Ed-coating, nor primer coating, nor over coating should be seen on bolt's threads.

The non respect of these recommendations could lead to a loss of tightening torque during usage, and thus a loss of the guide wheel.

### **Recommendations on tightening torque**

In case the vehicle manufacturer does not mention any recommendations, Accuride recommends, depending on the screw strength class, the following tightening torques for load wheel with hub centered fixture:

M18: from 350Nm to 400Nm

M20: from 500Nm to 550Nm

M22: from 600Nm to 650Nm

Regarding the guide wheels, both shells should be assembled through short studs with 190Nm ± 10Nm tightening torque. Then guide wheel should be fixed on hub through long studs with 170Nm ± 10Nm tightening torque.

Tightening torque prescribed by the vehicle manufacturer must be maintained. Disc wheel nuts have to be tightened in sequence across the wheel disc rather than round the wheel disc using a hand impact nut runner or torque spanner. It is recommended to re-tighten nuts after approximately 50 km of operation.



## Recommendations in case of mounting other run-flat systems

Other run-flat systems could be mounted on our loaded wheels.

In such a case, depending on material used for the run-flat system at the contact point with the wheel, we do recommend to make a crack research and a general geometrical measurement after each flat running situation, in order to verify if the wheel have been affected by the run-flat system and/or situation.

**In case any cracks and/or small deformation of the wheel is detected, the complete system (wheel and run-flat system) has to be exchanged.**

In case of re-usage decision, do not forget to identify the pieces that have been submitted to the run-flat condition (wheel and run-flat system).

Each wheels and/or run-flat system that have already been running flat twice should be scrapped and replaced.

High loading situation concentrated at the wheel rim center damages the material and its properties decrease drastically.

**WARNING:** Each run-flat situation should be followed by a deep analysis of all the parts (wheel and run-flat system). After a first flat rolling, if decision is taken to reuse all the parts, they should be specifically marked. In any case a wheel and or a run-flat system is reused, it has to be scrapped after it second flat running situation. No reparation is allowed on these high stressed parts.

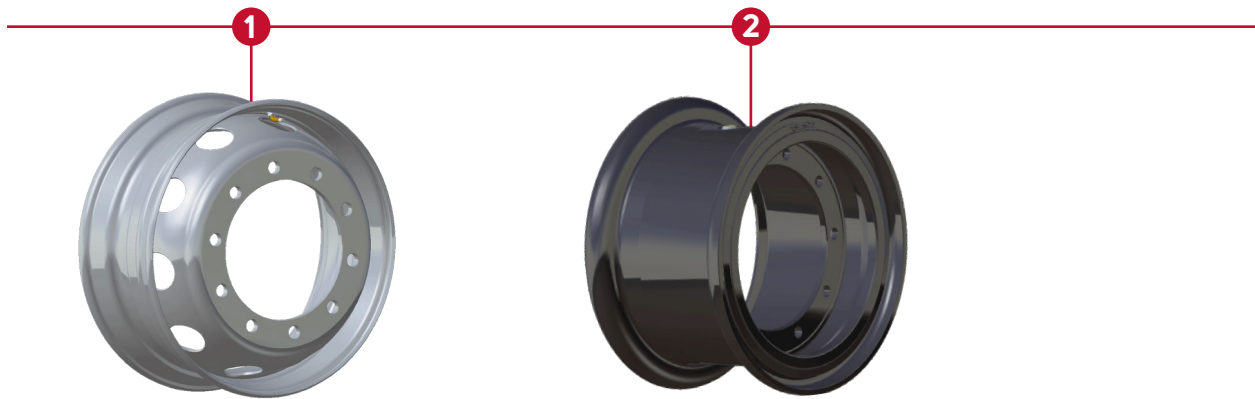
## SECTION II: WHEEL MAINTENANCE

### Wheel composition

The wheel is the element of vehicle which is in charge of carrying the vehicle weight (load capacity) and transmit the acceleration/deceleration effort to the tyre.

A "Carrying Wheel" could be a single piece (using a drop centre rim) or multi-piece (using a flat-base rim).

A single piece wheel is composed of a disc and a rim which are welded together.

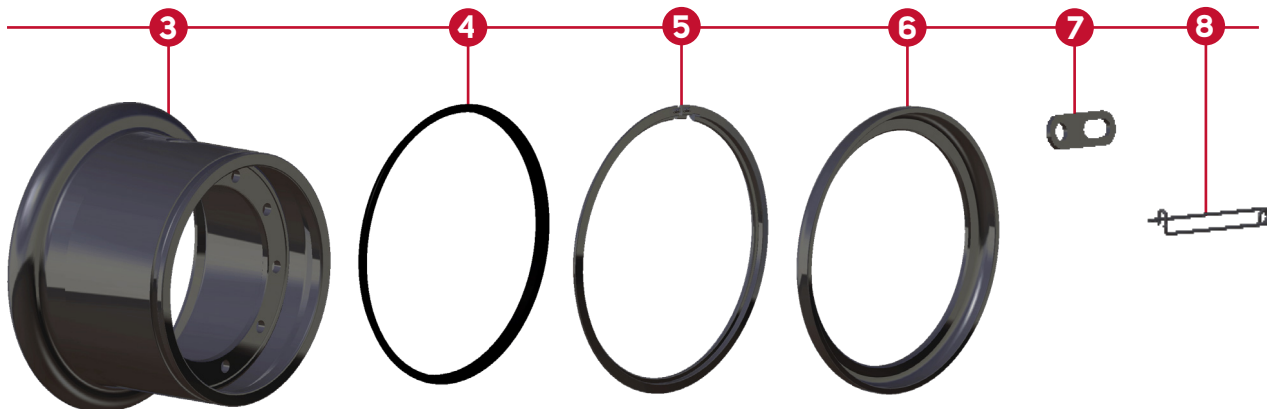


1 - Single piece wheel (using drop centre rim)

2 - Multi-piece wheel (using flat-base rim)

Multi-piece wheels are composed of a wheel body (composed of a rim and a disc welded together), a side ring (or side-coin), a sealing ring, a locking ring, a security pin and a security plate.

In some cases, the security pin and security plate are not needed, the sealing ring is not needed (tube type usage).



3 - Wheel body

4 - Sealing ring

5 - Side ring

6 - Locking ring

7 - Security plate

8 - Security pin

## Removal of wheel and tyre demounting

The personnel responsible for the wheel mounting/demounting operations must be qualified and have proper training.

In the case of divided (bolted) wheels, wheels with multi-piece rims of both single and twin mounting, or similar, **it is a mandatory rule for safety reasons that, before starting to unbolt the tyre wheel assembly from the vehicle axle, that the tyre must be fully deflated** even when a low inflation pressure is involved.

Unseen damages could cause the explosion of the assembly during removal, if the tyre still contains air under pressure.

To ensure a complete tyre deflation, remove the valve core. Remove, disassemble and inspect a tyre-rim assembly that has been operated in a run-flat or in under-inflated condition (that is 80% or less of the recommended pressure).

To carry out these operations, use suitable tools and follow the demounting procedure prescribed by the vehicle or tyre manufacturer.

II

## Mounting of tyre onto wheel rim

Be sure that the rim size and diameter are the right ones for the tyre to be mounted. Inspect the wheels and its components to verify that all parts are in good conditions.

**Do not use damaged, worn out or cracked parts and do not try to repair them.**

**Do not fit an inner tube to a tubeless tyre to overcome a problem of air leakage.**

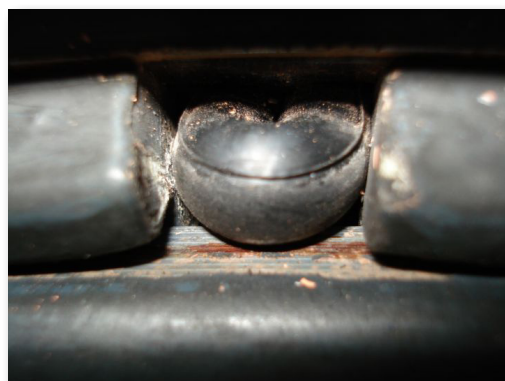
Check all matching surfaces i.e. hub, studs, nuts, disc attachment face - and in case of multi-piece rims all contact surfaces for a correct ring seating - removing dirt, rust, scratches and other similar surface defects without affecting the wheel material.

In particular, drop centre rims fitted with tubeless tyre must have the bead seat areas free from rust and rubber deposit, in order to ensure air-sealing.

Especially for tubeless tyres, inspect the valve and replace the stem.

On wheels with drop centre rims (single piece), place the tyre over the small bead seat side of the rim, push the lower bead over the rim flange and then, progressively, into the rim well. Using the first lever to keep in place the upper tyre bead, work by short steps with the second lever to complete the fitting of the tyre.

On the multi-piece rims, the correct positioning of the removable 'kombi' ring or of the side/lock rings has to be carefully checked prior to inflation and later on after having applied about 0,3 - 0,5 bar of air pressure.



Sealing ring default mounting



Dust and rust on the tyre sealing contact area

## SECTION II: WHEEL MAINTENANCE

### Mounting of tyre onto wheel rim

**Never stand in front of the wheel. An inflated tyre, even with low air pressure, must never be worked on with a hammer while trying to correct an improper position of the rings.**

In such a case, all air has to be let out of tyre before the necessary correction can be done. To complete the tyre inflation use a "safety cage", designed with suitable strength or at least put safety chains round the wheel, always avoiding to stay in the potentially dangerous areas. Particular precaution must be taken by the operator, and any other people present whenever handling an inflated tyre/wheel assembly or while checking the pressure of a tyre mounted on the vehicle, and never to remain in front of the wheel. This especially if it is a large dimension with high inflation pressure.

**Extreme care should be taken: the sudden release of the air contained in the tyre can cause serious injuries.**

**Always use an air gauge to measure the tyre pressure.**

The correct value, specified for the tyre, must be maintained to avoid damage to tyre or fracture of the wheel/rim.

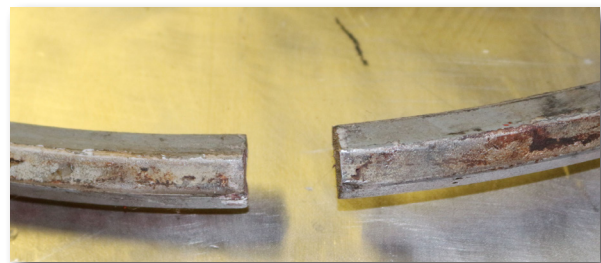
Before tyre mounting, the locking ring should be verified. A non mounted locking ring should not have any gap between its ends. In such a case, locking rim should be changed.



Inflation in safety cage



Rotation of the wheel on the mounting machine



Gap between locking ring ends  
Locking ring to be scrapped

## Mounting of wheel to the vehicle - studs and nuts -

The tyre/wheel assembly must be correctly positioned relative to the hub when mounting on the vehicle.

**Be sure that: the diameter of pilot hole - diameter of stud holes - number and shape of stud holes - wheel offset or inset - type and kind of studs and nuts correspond to the characteristics of the vehicle axle hub.**

All mounting parts such as studs, spherical or conical nuts, nuts with captive washer, special parts, must fit exactly to the wheel being mounted.

**Any incorrect combination of parts (different type, different shape of radius/angle, different length) may cause nut loosening or the wheel failure.**

To prevent rusting, small amounts of oil may be applied to the wheel nut and stud threads. Care must be taken not to over lubricate.

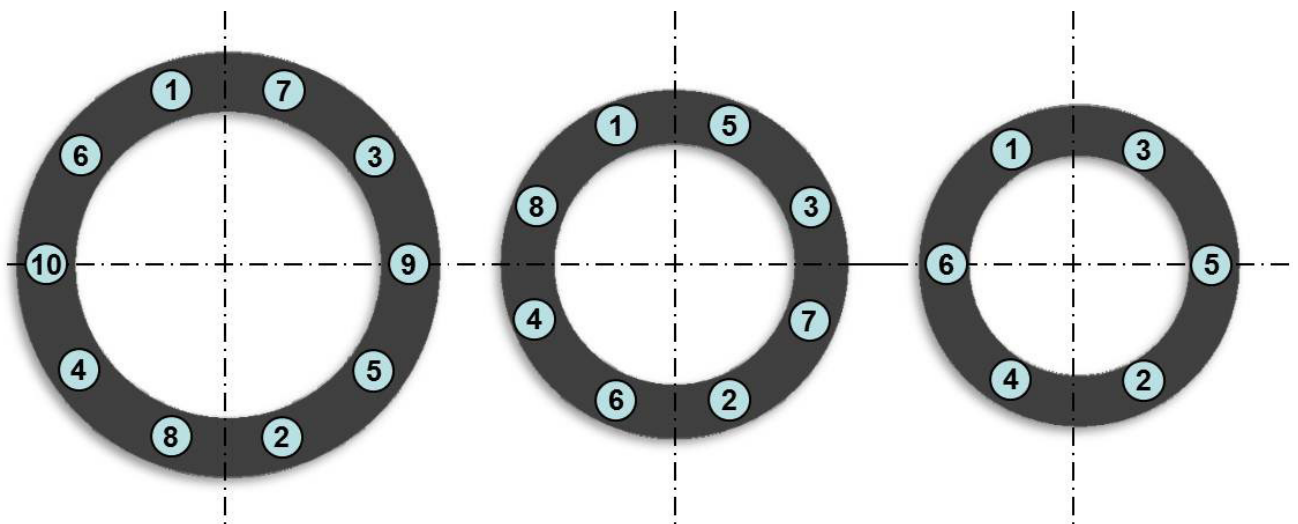
Studs and nuts of all disc wheels have to be fastened in accordance with the vehicle manufacturer's instructions, either using a torque spanner or by means of a tool designed to reach the torque value specified by the vehicle manufacturer.

As far as the recommended amount of the torque is concerned, the instructions of the vehicle producer must be followed. The correct tightening sequence is crosswise for the wheel disc, that is to tighten one nut then the opposite one or the farthest away.

**Excessive nut tightening may cause deformation of wheel disc or of stud/stud failure. An insufficient tightening may cause the wheel loosening.**

**On a new vehicle and always after a wheel/tyre replacement, it is imperative to verify the mounting torque after approximately 50-100 km of operation and, where necessary, to re-tight the wheel nuts to the correct value.**

**It is recommended to check the nut torque as soon as possible, at least at each inspection.**



## SECTION II: WHEEL MAINTENANCE

### Identify a damaged rim/wheel

At each tyre inspection, check the wheel condition: a complete cleaning of all surfaces before inspection will help in finding more easily and surely possible defects. Check closely all components after removal, to ensure that they are in good condition and look for any possible non conformity.

In order to avoid damage to tyres, during mounting or while in use, any sharp edges, burrs or uneven areas which might have occurred during service should be deburred and covered with a suitable paint to protect against corrosion.

The matching surfaces between the wheel and the vehicle as well as those of the components in a multi-piece rim must be cleaned and protected against corrosion, also. Be careful not to exceed 50µm of coating on the surfaces in contact.

**The wheel, as a safety part, must not show fractures, deformations, distortions, severe corrosion, excessive wear, buckled or twisted rings (where existing) or other similar defects. Such pieces must not be reused, but destroyed and scrapped.**

Also in the event of a suspected damage or if in doubt about the suitability of a wheel/rim component, the involved part must be replaced.

The replacement has to be carried out with new pieces having completely identical characteristics. In the event that the correct removable rings are not available, a new complete rim/wheel should be fitted.

Typical defects that require the parts replacement, are:

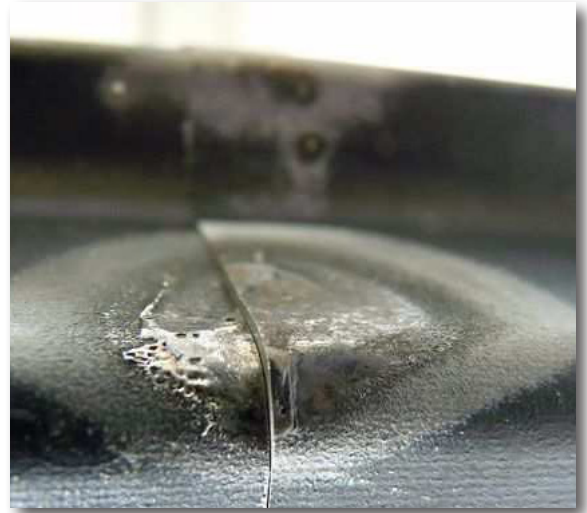
- Cracks in the wheel disc face, in particular the stud holes area and the ventilation holes can be concerned.
- Deformations or abnormal imprints in the seats of the studs/studs fixings.
- Leaks in tubeless tyres derived by micro-cracks in the rim or by wear and tear marks on the rim-tyre matching surface.
- Bent rim flanges (generally due to impacts against obstacles).
- Circumferential cracks on the rear flange or at the gutter in the base of multi-piece rims.
- Broken, buckled side/kombi ring or excessive corrosion on rings of multi-piece rims.
- Twisted rings, in particular lock and 'kombi' rings.

**It is not allowed to perform any technical modification on the wheel.**

Wear on rim flanges (top of the flanges) can be tolerated up to a maximum of 10% of the initial thickness of the rim material.



Crack in hump



Electrical arc



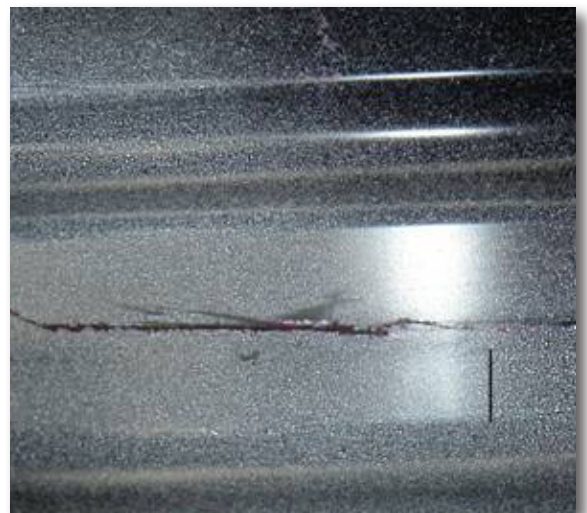
Crack in the rim flange



Crack at ventilation hole



Crack in the rim welding seam



Crack in the rim

## SECTION II: WHEEL MAINTENANCE

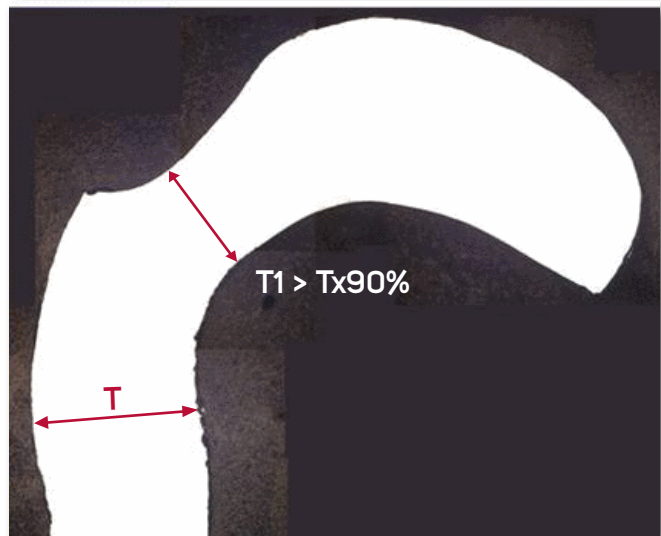
### Identify a damaged rim/wheel



Wear on the seat due to corrosion and overloading



Wear on rim flanges (top of the flanges) and seat can be tolerated up to a maximum of 10% of the initial thickness of the rim material.



Rim flange wear due to overloading





Stud hole deformation

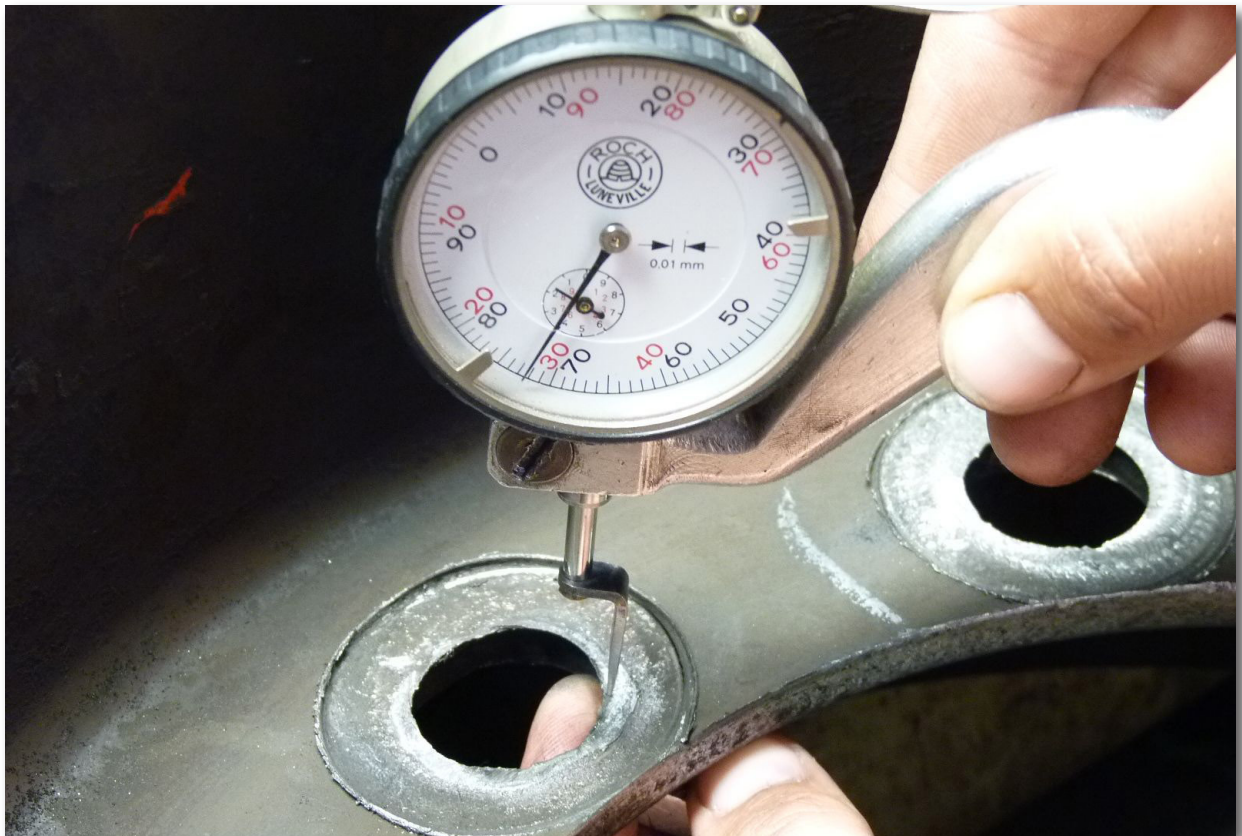


Wheel disc cracks at stud hole

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Wear on wheel/hub and/or wheel/nut contact area with thickness decrease is not tolerated. If the disc thickness is under the minimum defined value (see wheel drawing) the wheel has to be scrapped.

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Nut contact area thickness check

## SECTION II: WHEEL MAINTENANCE

### Carrying wheel range



**16-7.33V-10-N49-P18-SC**  
35742MO  
Colour: Black E-Coating  
Type: Multi-piece  
Stamped code: 35742MO  
Weight: 50,5kg



**16-9.00V-10-NIS55.5-M20-SC-AF**  
20042MO  
Colour: Black E-Coating  
+ Black Mat  
Type: Multi-piece  
Stamped code : 904530  
Weight: 53,1kg



**16-9.00V-10-NIS63-M20-SC-AF-MDL**  
30485MO  
Colour: Black E-Coating  
Specifics: 2 valve holes  
Type: Multi-piece  
Stamped code: 30485MO  
Customer code: 331502  
Weight: 53,1kg



**16-9.00V-10-NIS63-M20-SC-AF**  
35069MO  
Colour: Black E-Coating  
Type: Multi-piece  
Stamped code: 35069MO  
Customer code: 593290  
Weight: 53,1kg



**16-9.00V-10-N63-P18-SC-AF**  
35469MO  
Colour: Black E-Coating  
Specifics: 2xM8 holes  
Type: Multi-piece  
Stamped code: 680151  
Weight: 54,4kg



**16-11.00V-10-NIS63-M20-SC-AF**  
20045MO  
Colour: Black E-Coating  
+ Black PU 905  
Type: Multi-piece  
Stamped code: 810231  
Customer code: 408081  
Weight: 62,5kg



**D20-8.50-10-150-M20-SC-V-AF**  
20053MO  
Colour: Black E-Coating  
+ Silver RAL 9006  
Type: Multi-piece  
Stamped code: 811068  
Customer code: 811068  
Weight: 66,9kg



**8,5X20-10-NIS59M20-01**  
14012MO  
Colour: Black E-Coating  
+ Black RAL 9005  
Type: Single piece  
Stamped code: 202401/CAI056571  
Customer code: 056571  
Weight: 49kg

## Carrying wheel range (cont.)



**8,5X20-10-NIS65,5M20-01**  
14013MO  
Colour: Black E-Coating  
+ Silver RAL 9006  
Type: Single piece  
Stamped code: 202402/810214  
Customer code: 682492  
Weight: 49kg



**8.5X20-10-OS170 M22**  
20105MO  
Colour: Black E-Coating  
+ Silver RAL 9006  
Type: Single piece  
Stamped code: 971167  
Customer code: 971167  
Weight: 51,8kg



**D22-8.50-10-IS50-M18-SC-AF**  
20009MO  
Colour: Black E-Coating  
+ Grey RAL 7016  
Type: Multi-piece  
Stamped code: 288001  
Customer code: 288001  
Weight: 72,8kg



**D22-8.50-10-IS50-M18-SC-AF**  
20047MO  
Colour: Black E-Coating  
Type: Multi-piece  
Stamped code: 810238  
Customer code: 810238  
Weight: 63,8kg



**D22-8.50-10-IS55-M18-SC-AF**  
20137MO  
Colour: Black E-Coating  
+ Silver RAL 9006  
Type: Multi-piece  
Stamped code: 20137MO  
Customer code: 120540  
Weight: 78,5kg



**D22-8.50-10-OS170-M22-SC-AF**  
20138MO  
Colour: Black E-Coating  
+ Silver RAL 9006  
Type: Multi-piece  
Stamped code: 20138MO  
Customer code: 818339  
Weight: 79,9kg



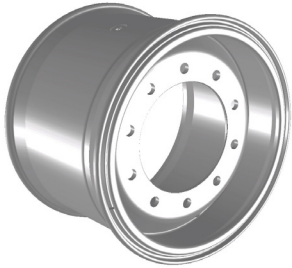
**22.5x8.25U-10-NIS63-M20-01**  
35573MO  
Colour: Black E-Coating  
Type: Single piece  
Stamped code: 35573MO  
Customer code: 454053  
Weight: 42kg



**22.5x8.25U-10-NIS68-M20-VP-V**  
15068MO  
Colour: Black E-Coating  
Type: Single piece  
Stamped code: 35616MO  
Customer code: 619725  
Weight: 43kg

## SECTION II: WHEEL MAINTENANCE

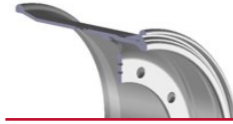
### Carrying wheel range (cont.)



**D22.5-14.00-10-IS117.5-M22-SC-AF  
20057MO**

Colour: Black E-Coating  
+ Silver RAL 9006

Type: Multi-piece  
Stamped code: 857627  
Customer code: 857627  
Weight: 70,5kg



**D22.5-14.00-10-IS113-M22-SC-AF  
20036MO**

Colour: Black E-Coating  
+ Silver RAL 9006

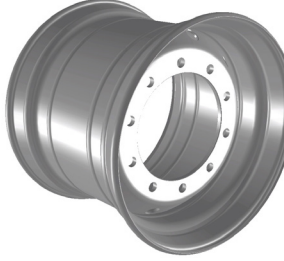
Specifics: 2xM8 holes  
Type: Multi-piece  
Stamped code: 605306  
Customer code: 605306  
Weight: 67kg



**D22.5-15.00-12-IS163-M22  
35575MO**

Colour: Black E-Coating  
+ Silver RAL 9006

Type: Multi-piece  
Stamped code: 35575MO  
Weight: 77,5kg



**22.5x17.00H2-10-IS105-M22-01  
37894MO**

Colour: Black E-Coating  
+ Silver RAL 9006

Type: Single piece  
Stamped code: 37894MO  
Weight: 60kg

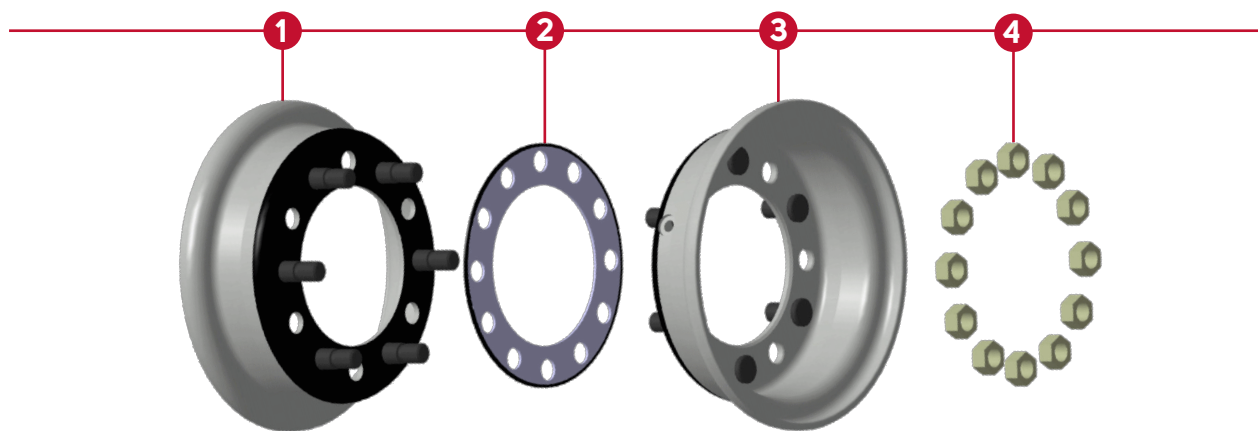
## SECTION III: GUIDE WHEEL SPECIFICS

### Guide wheel composition

A guide wheel is made of two shells equipped with long or short studs which are mounted with a press on the shells, and a washer seal made of steel and rubber. The two shells are assembled and maintain together using nuts which number differ depending on the amount of short studs present on the shell.

Guide wheels are generally used with vertical axle. In some cases guide wheels could be used as loading wheels with horizontal axle.

**All the previous specifications can be applied to the guide wheels. The following information are specific for guide wheels.**



- 1 - Shell with valve hole
- 2 - Sealing ring
- 3 - Shell without valve hole
- 4 - Nut

### Removal of wheel and tyre demounting

For the tyre demounting, please refer to tyre manufacturer specific mounting documentation and/or vehicle manufacturer maintenance documentation.

## SECTION III: GUIDE WHEEL SPECIFICS

### Sealing ring maintenance

Sealing ring of the guide wheels stored in the following condition have to be used within the first four years after production date (see stamped date in the steel part of the sealing ring).

#### Mechanical constraints

Rubber part of the sealing ring should not be constrained to any effort or mechanical constraint. Neither shocks nor deformations are admitted.

#### Temperature and Atmosphere

Product should be stored in a relative humid place from 40% to 70% of humidity under temperature between +5°C to +25°C.

Temporary deviation could be admitted on temperature from minimum -5°C to maximum +40°C. A too long exposure under or above these tolerances could be injurious for the sealing ring rubber area. The storage place should be ventilated as less as possible. Air drafts should be avoided. No corrosive atmosphere is admitted (ozone, solvent, acids, etc).

#### Light

Sealing ring should be protected from sun light and high artificial lighting. They should be kept in a closed cupboard.

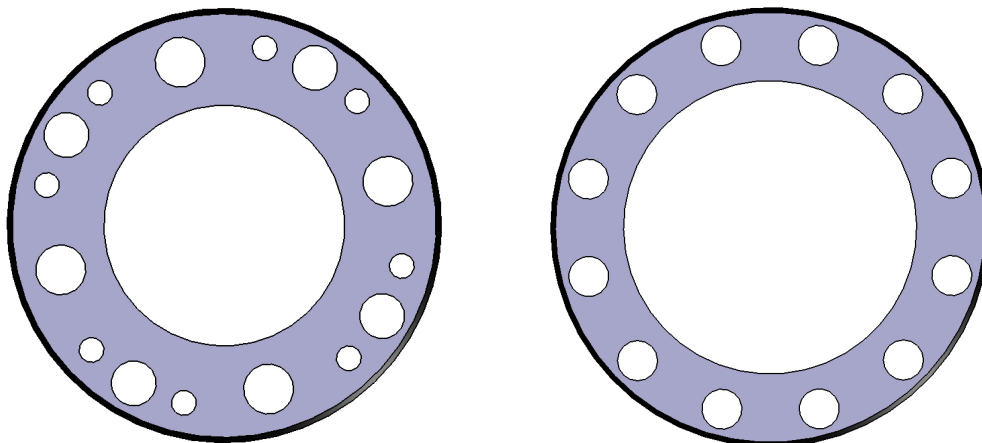
#### Liquids

Any contact with solvent, oil, grease and abrasive cleaning product is prohibited. Sealing ring should not be merged in any liquid contained by any other metallic recipient.

#### Solid materials contact

Sealing ring should not be in direct contact with some material such as copper, iron, magnesium, polyvinyl chloride and other elastomer of different quality.

In usage condition, there is no end date of using, as soon as there is no unscrewing of both shells, if the mounting prescriptions have been respected. A sealing ring that have been mounted on shells which have been screwed should not be re-used. Change the sealing ring each time the shells are dismantled (unscrewed).



## Mounting of tyre onto guide wheel

For the tyre mounting, please refer to tyre manufacturer specific mounting documentation.

**The assembly of the two guide wheel shells has to be done through the short studs with a tightening torque of 190Nm  $\pm$  10Nm.**

**Don't forget to place the washer seal between both shells.**

**The washer seal has to be replaced after each shell disassembly.**

## Mounting of wheel to the vehicle - studs and nuts -

For the wheel mounting to the vehicle, please refer to vehicle manufacturer maintenance documentation.

**The assembly of the guide wheel on the vehicle have to be done through the long studs with a tightening torque of 170Nm  $\pm$  10Nm.**

Never use a wheel or a shell where one or more studs are partially or totally getting out of their place. The complete shell has to be replaced.

**It is absolutely forbidden to replace the existing studs by other ones.**

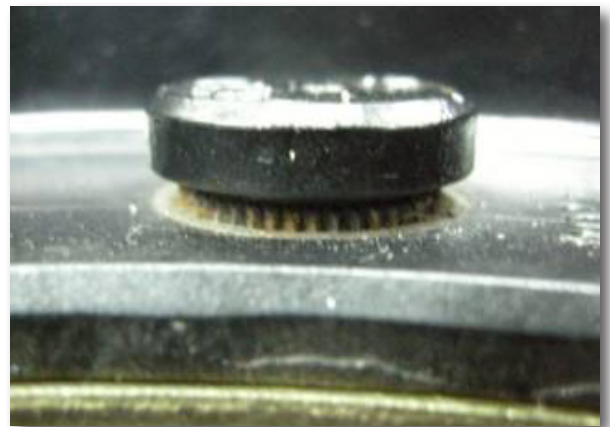
**It is absolutely forbidden to use different type of nuts or studs.**

Re-installation of a stud could lead to an unsafe situation link to wheel unscrewing.

**Shell and its studs should never be dissociated.**



Stud got out of its place



Stud got partially out of its place

## SECTION III: GUIDE WHEEL SPECIFICS

### Identify a damaged shell/wheel

While mounting/dismounting guide wheels, a special care is required in order not to shock the leaking junction between shells, as this can lead to a air leakage.

**After a guide wheel has been disassembled the washer seal has to be scrapped. Never use twice a washer seal as it can lead to an air leakage.**

**Accuride wheel coatings have been specially studied and defined in order to avoid air leakage due to coating blister.**

In the connection area with the washer seal, Accuride has masked this part in order not to have any over coating, but only the corrosion protection implemented by an Edcoating process.

The sealing junction of the shells have to be cleaned up before remounting as it could lead to air leakage.



Scratch in guide wheel shell sealing area



Shell with paint blistering in the leaking area



Dismounting scratches in the tyre sealing area



Guide wheel

In this area a painting reparation is avoid. A new wheel has to be mounted.



Amount of dirt in the sealing area



Possible defect that can be seen, which lead to an immediate wheel replacement. After an electric chock the wheel has to be scrapped.



Electric chock in



Electric chock out

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If a crack appears, the complete wheel has to be scrapped, as the complete wheel (both shells) has been submit to abnormal tension.

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Crack out of an attachment hole

## SECTION III: GUIDE WHEEL SPECIFICS

### Guide wheel range




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**4.00J-8-4-N7-M18-SC**  
MRM20064MO-000A000-810223  
Specifics: Black E-Coating  
Black RAL7016




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**4.00E-9-6-7-P16-SC-A**  
MRM20072MO-000A000-810185  
Specifics: Black E-Coating  
Black RAL9004  
Individual serial number  
337341




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**4.00E-9-6-7-P16-SC**  
MRM20076MO-000A000-810224  
Specifics: Black E-Coating  
118726




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**4.00E-9-3-N7-P16-SC**  
MRM20066MO-HB0A000-358438  
Specifics: Black E-Coating  
Silver RAL9006  
Only 3 long studs




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**4.00E-9-6-7-M16-SC**  
MRM20078MO-000A000-810243  
Specifics: E-Coating  
No long stud




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**4.00E-9-6-NIS7-P16-SC**  
MRM20068MO-000A000-526335  
Specifics: Black E-Coating  
Silver RAL 9006  
Inverted usage




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**4.00E-9-6-N7-M16-SC**  
MRM20069MO-HB0A000-712748  
Specifics: Black E-Coating  
Silver RAL9006  
Special long studs

## SECTION IV: A.C.M. SPECIFICS

### A.C.M. Composition

Appui Central Metallique is the long French name for A.C.M. The A.C.M. function is to enable vehicle to run on one or more flat tyres while keeping the vehicle position and maintaining a good control.

An A.C.M. is made of three or four aluminum sectors which are maintained together with axles and pins. It could be that an A.C.M. is maintained without need of axles nor pins. These ones are named A.C.M. "tenon-mortaise".

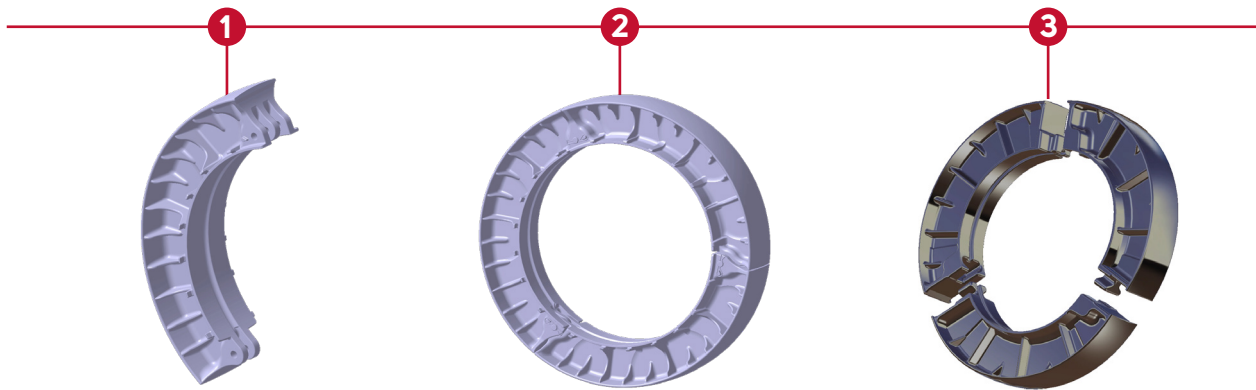
The A.C.M. are maintained on the rim, between both beads of the tyre by the use of a rubber ring.

**All the previous specifications can be applied to A.C.M.**

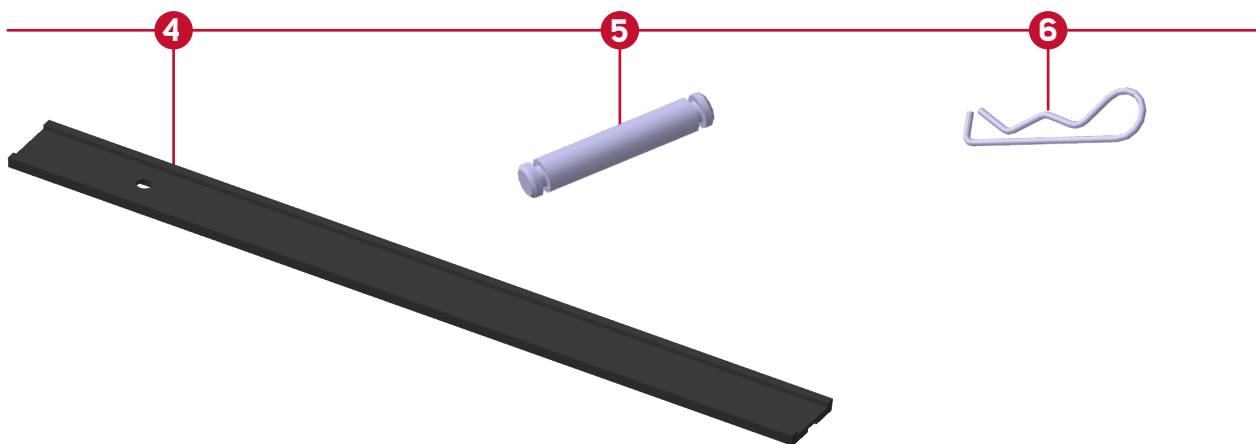
**The following information are specific for A.C.M.**

III

IV



- 1 - A.C.M. sector
- 2 - Assembled A.C.M.
- 3 - A.C.M. which doesn't need axles nor pins



- 4 - Rubber ring
- 5 - Axle
- 6 - Pin

## SECTION IV: A.C.M. SPECIFICS

### Removal and re-usage condition

While changing the tyre, each parts of the A.C.M. have to be checked in order to identify any default that could be coming from a mounting failure. In case of visible defect such as pin deformation, mating on the axis, ovalization of the holes, pin imprints, or in case of doubt, pieces have to be replaced by new ones.

### Removal of A.C.M. on wheel and tyre

For the tyre demounting, please refer to tyre manufacturer specific mounting documentation and/or vehicle manufacturer maintenance documentation.

When dismounting the A.C.M. out of the tyre, give a particular attention not to hurt or shock any part of the material.

A shock on the A.C.M. sector or on the pin or on the axle could lead to a lose of functionality.

Never use a defect piece.

### Mounting of A.C.M. on wheel and tyre

For the A.C.M. demounting, please refer to tyre manufacturer specific mounting documentation.

**After a flat rolling, a global inspection of the A.C.M. is required. All the parts composing the A.C.M. have to be checked. In case of traces of shocks on any part composing the A.C.M., the shocked parts have to be replaced.**

In case of re-usage decision, do not forget to identify the pieces that have been submitted to the run-flat condition.

**If A.C.M. has already run-flat once, at the second flat run it has to be replaced, even if it doesn't look having any defect.**

**Rubber ring has to be replaced after each dismounting operation.**

A flat rolling should not exceed 150km in nominal loading condition. In such a case, **after 150km flat running, the A.C.M. parts have to be scrapped and replaced by new ones.**

The plays between wheel, rubber ring and A.C.M sector are defined in order to have a good maintainability between all the pieces and to avoid as much as possible vibrations.

**Therefore, A.C.M. and its rubber ring have to be used only on the corresponding Accuride wheels carrying or guide wheels.**

## Identify a damaged A.C.M.



Broken A.C.M. due to bad maintenance, lots of choc traces while mounting/dismounting.

**A.C.M. has to be changed.**

IV



Pin imprinted due to lateral vibrations.

**A.C.M. has to be changed.**



Trace of a nut that have been imprinted on the A.C.M. while rolling flat.

**A.C.M. has to be changed.**

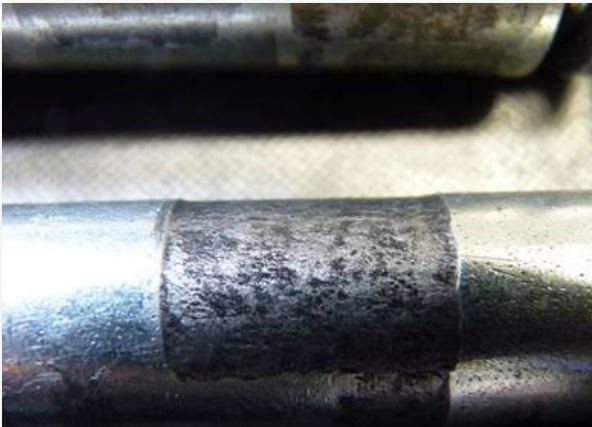
## SECTION IV: A.C.M. SPECIFICS

### Identify a damaged A.C.M.



Small pieces of A.C.M. getting off due to abnormal radial vibrations.

**A.C.M. has to be changed.**



Axle matting due to radial vibrations.

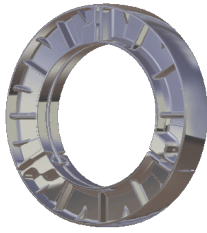
**A.C.M. and components have to be changed.**



Pin deformation could be due to dismounting operation.

**Pin has to be changed.**

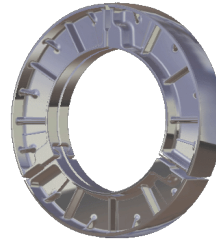
## A.C.M. range



**8 - 168 - 50 - TM**  
MRX20129MO-000A000  
Rim: 4.00J - 8  
20129MO



**8 - 177 - 30 - A**  
MRX35059MO-000A000  
Rim: 4.00J - 8  
579062



**8 - 177 - 50 - TM**  
MRX20023MO-000A000  
Rim: 4.00J - 8  
579047



**9 - 224 - 50 - A1**  
MRX20027MO-000A000  
Rim: 4.00E - 9  
579072

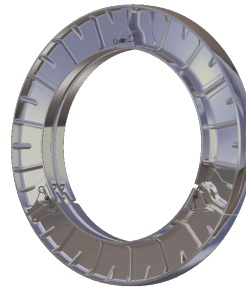
IV



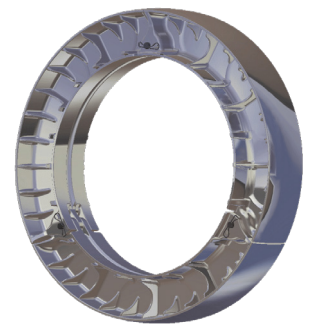
**16 - 410 - 130 - AD**  
MRX20019MO-000A000  
Rim: 16 - 9.00V  
579481



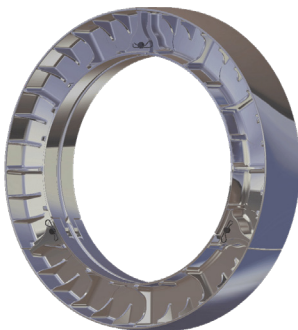
**16 - 410 - 180 - AD**  
MRX20021MO-000A000  
Rim: 16 - 11.00V  
579278



**17.5 - 330 - 80 - A**  
MRX35276MO-000A000  
Rim: D17.5 - 6.00  
579479



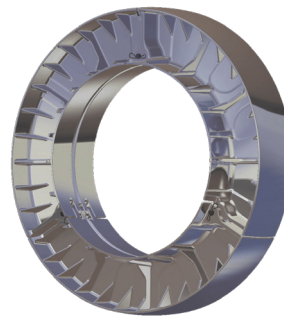
**20 - 385 - 119 - A**  
MRX20030MO-000A000  
Rim: D20 - 8.50  
579044



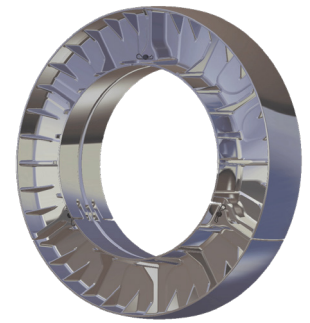
**22 - 420 - 119 - AD**  
MRX20032MO-000A000  
Rim: D22 - 8.50  
579061



**22.5 - 400 - 80 - A**  
MRX20143MO-000A000  
Rim: D22.5 - 7.50V  
579495



**22.5 - 473 - 200 - A**  
MRX20004MO-000A000  
Rim: D22.5 - 14.00  
047828



**22.5 - 478.5 - 200 - A**  
MRX20012MO-000A000  
Rim: D22.5 - 14.00  
300324

## The Company

Accuride Corporation is a worldwide industry leader, strongly positioned to supply wheel end system solutions to the global automotive and commercial vehicle industries.

Accuride Wheels Europe and Asia is a Solingen, Germany-based manufacturer and supplier of steel wheels for the global commercial vehicle, off-road and automotive industries. The company's on-highway business supplies steel wheels for commercial vehicles – including trucks, buses, truck trailers, subways on tyres and light commercial vehicles – as well as for passenger cars and utility trailers. Its off-road business primarily supplies wheels for agricultural and construction equipment. Accuride Wheels Europe and Asia employs about 3,000 people and operates two manufacturing plants in Germany, two in Russia and one each in France, Turkey and China.

With world headquarters in Evansville, Ind., USA, Accuride Corporation is a supplier of wheel end systems to the global commercial vehicle industry. The company's products include commercial vehicle wheels and wheel-end components and assemblies; and steel wheels for the European automotive and global agricultural and construction equipment markets. The company's products are marketed under its brand names, which include Accuride®, Accuride Wheel End Solutions™, Gunite® and KIC®. Accuride is a portfolio company of Crestview Partners.



**Your only single source for industry-leading wheel end solutions.**

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

For more information: [subway@accuridecorp.fr](mailto:subway@accuridecorp.fr) | [accuridecorp.com](http://accuridecorp.com)

Accuride Wheels Europe and Asia | Weyerstrasse 112-114 | 42697 Solingen Germany