Safety notification for CIMAC wheels using

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Contact Information

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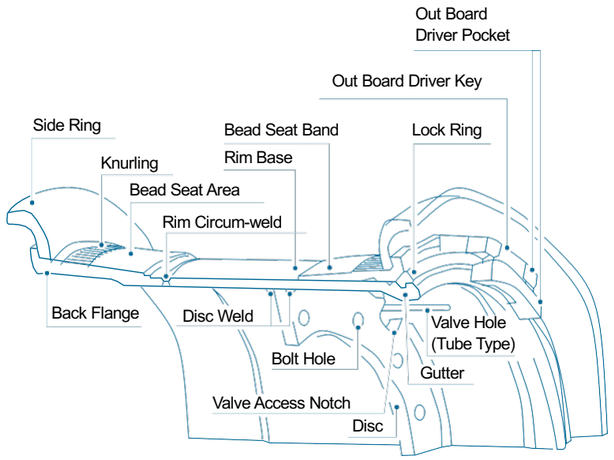
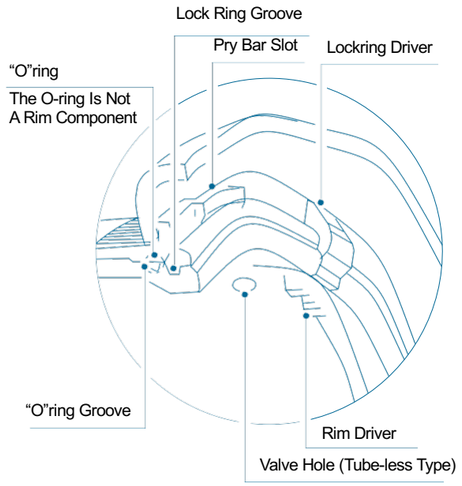
Definitions of rim components

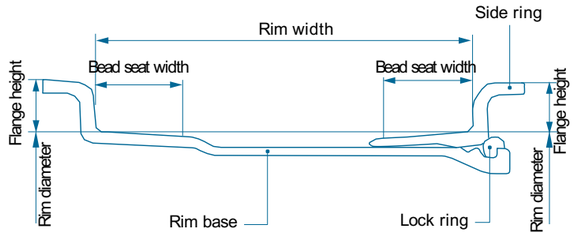
Rims are classified according to the number of components. There are 2-piece, 3-piece and 5-piece.



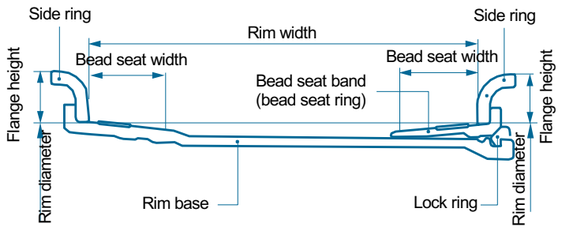
Names of rim components involving an out board driver



Names of gutter section involving lock ring driver



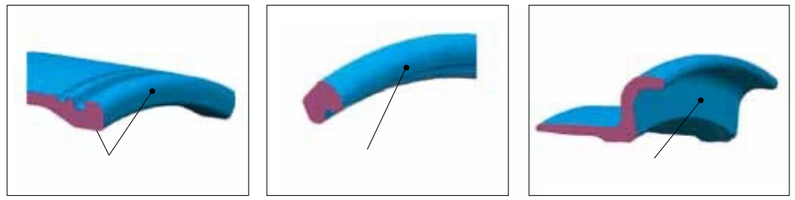
Names and specifications of 3-piece rim components



Names and specifications of 5-piece rim components

Stamping Illustration On CIMAC Multi-piece Wheels

Stamping Illustration On Centurion Multi-piece Wheels
A. Stamping Position
a. 3-piece Wheels



Rim | Lock Ring | Side Ring

b. 5-piece Wheels

Side ring | Rim | Lock Ring | Bead Seat

B. Illustration For The Stamping
Tube Type
On Rim: CIMAC RM2514TA DATE
RM - Rim
25 - Wheel Dia.
14 - Wheel Width
T - Tube Type
A - Model Type

On Side Ring: SR25/1.5TA SR
- SIDE RING
25 - Fitted Rim Dia.
1.5 - Flange Height
T - Tube Type
A - Model Type

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Stamping Illustration On CIMAC Multi-piece Wheels

On Lock Ring: LR25MT
LR - LOCK RING
25 - Fitted Rim Dia.
L - Light Type
M - Medium Type
T - Tube Type

Tubeless Type
On Rim: CIMAC RM25195A DATE
RM - Rim
25 - Wheel Dia.
195 – Rim Width
A - Model Type

Bead Seat: BS25PA
BS - Bead Seat
25 - Fitted Rim Width
P - Particular
A - Model Type
On Side Ring: SR25/3.5A
SR - Side Ring
25 - Fitted Rim Dia.
3.5 - Flange Height
A - Type Model

On Lock Ring: LR25L
LR - Lock Ring
25 - Fitted Rim Dia.
L - Light (M - Medium, H - Heavy)

On Driver Key:
CIMAC LOGO On Drive Pocket:
CIMAC
Part Number

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Servicing Multi-piece Wheel Can Be Very Dangerous!

This instruction manual concerns multi-piece wheels for industrial and construction vehicles, manufactured by CIMAC Wheel Industrial. Co. Here we provide detailed information on the construction, specifications and handling of multi-piece wheels to ensure product safety. Step-by-step explanations and safety points are given in this manual for safely servicing these wheels.

Failure to follow these instructions and safety precautions can be extremely dangerous and result in SERIOUS INJURY or DEATH to the tire changer and/or bystanders.

Here are the relevant governmental and institutional references for servicing tires and wheels. Please read them before proceeding with this manual.

- OSHA (U.S. Occupational Safety and Health Administration), Code of Federal Regulations 29 CFR Part 1910.177, “Servicing multi-piece and single-piece wheels”.
- MSHA (Mine Safety and Health Administration) Introduction guide series IG60 SAE (Society of Automotive Engineers) J1337 Off-Road Wheel Maintenance Procedures and Service Precautions.
- RMA (U.S. Rubber Manufacturers Association) “CARE AND SERVICE OF OFFTHE-HIGHWAY TIRES”
- RMA (U.S. Rubber Manufacturers Association) “TIRE INFORMATION SERVICE BULLETIN”
- “Tire and Rim Handling Manual”, published by tire manufacturers.
- “Instruction Manual” and its section on tires and wheels, published by vehicle manufacturer.

Definition of the word “wheel” in this manual are used to describe both rim with disc and rim without disc.

1. Safety precautions

1.1 Definition for safety precautions

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This manual uses three precautionary words that to define the level of risks. The three words are given below.

Warning

Potential danger. If procedures and instructions are not followed, serious accident of death or severe injury could occur.

Caution

Minor or moderate injury could occur.

Notice

Property damage or malfunction of the product could occur.

2. Important warnings

Improper servicing of tires and wheels has serious risk of an “explosive separation of the wheel”, which can lead to serious, or fatal accidents for the worker and bystanders. Workers and supervisors must comply strictly to the warnings in this manual.

2.1 Precautions for prevention of "explosive separation of wheel components"

Warning

- Before servicing tires and wheels, always completely deflating the tire before removing it from the wheel.
- Before removing tire and wheel from a vehicle or equipment, completely deflate the tire before removing the clamp components and other parts installed on the wheel;
- Before servicing a tire, remove the valve so that all of the air can escape.
  Identify the appropriate combination of wheel components using the matching charts and product markings.
  If air pressure has fallen 80% below the pressure at the time of inflation, or the tire has been punctured, disassemble the wheel and determine the cause. After

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determining the cause, replace any deformed or damaged wheel components that may have caused air leaks.

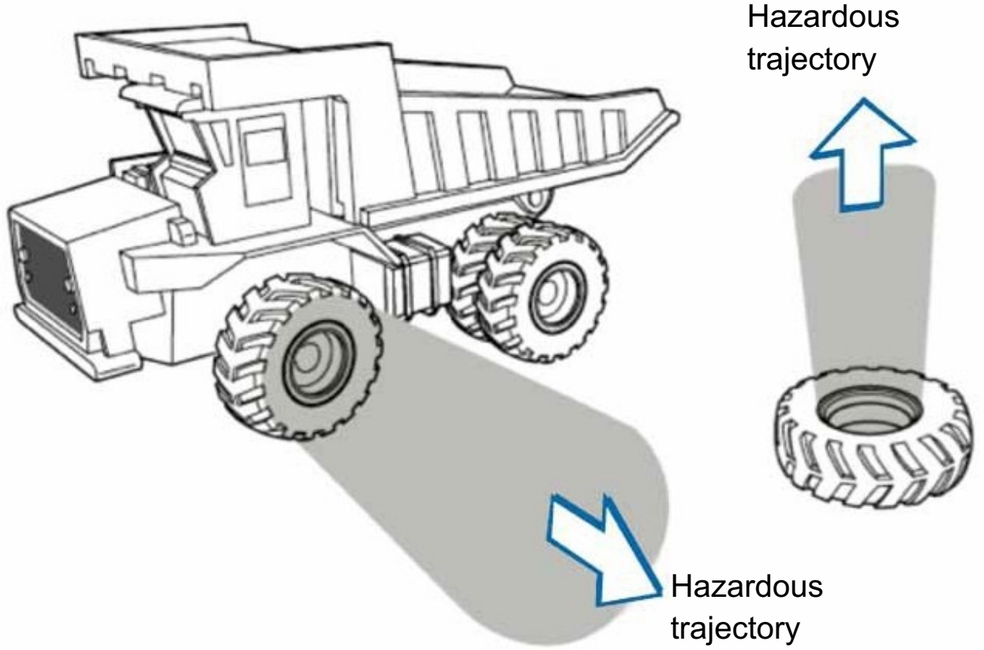
- DO NOT combine wheel components from different manufacturers.
- There may be differences in shapes and features between components from other companies and components manufactured by CIMAC wheels (lock ring, rim bases, bead seat bands, side rings). Always make sure that components are not mixed by checking the manufacturer's markings prior to assembly.
- DO NOT use lock rings with open ends (ends that do not touch). There is a danger if the lock ring does not set correctly.
- DO NOT remove or install or modify a wheel with components in a way that the product specifications are changed.
- DO NOT modify a wheel with welding, heating, soldering, & etc. These modifications could lead to the deformation as well as the deterioration of the strength and structural integrity of the wheel and its components.
- When a tire is being mounted, it is strictly forbidden to perform tasks that may generate heat, flames, or sparks such as welding, soldering or grinding. There is possibility to lead an explosion or a fire because of excessive tire pressure.
- Prior to inflating the tire, it may be necessary to tap the wheel components into position to set them. If tapping is needed, DO NOT use a steel hammer. Instead use a hard plastic hammer. Use of a steel hammer could cause deformation or cracking.
- When mounting and demounting tires, maintain a firm grip on the tire lever as it may be jerked loose and cause injury.
- While inflating the tire, when the air pressure reaches 35kPa (5psi), check whether the wheel components are set correctly. If they are not set correctly, immediately stop the work, deflate completely and disassemble the components. Inspect the component's mating surfaces and discard any components or materials that interfere with complete assembly. When the problem is resolved, resume assembly.
- DO NOT exceed and always comply with the tire pressure recommended by the tire manufacturer.

- Store inflated tires correctly to avoid fall and cause accidents. Falling tires can cause major accidents involving workers, and the impact from a significant fall could lead to the "explosive separation of wheel components".

2.2 Precautions for reduction or prevention of injury, death or damage from explosive separation

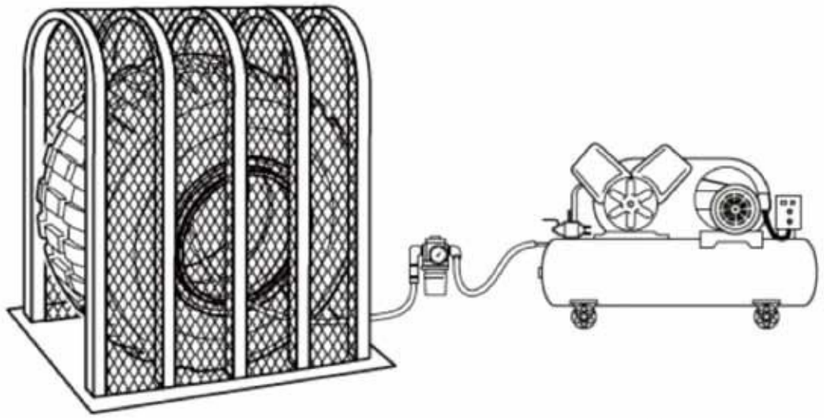
Warning

During inflation of tires, installer or bystanders must always be outside the range of the "danger zone" shown in the illustration below.



Always inflate the tires inside a tire inflation safety cage.

Tyre inflation safety cage



Always wear protective gear when servicing tires and wheels. (Gloves, safety shoes, safety glasses, ear protection, helmet & etc.)

2.3 General precautions

Warning

- Check the “Tire and Wheel Handling Manual” published by the tire manufacturer for information on work and inspections, etc. regading tire handling.
- When moving tires and wheels, be careful to avoid accidental drops or falls that could cause injury or “explosive separation of the wheel.”
- Use the proper tools and follow the proper procedures in using the tools when handling tires and wheels.
- Wheel components that are deformed, bent, cracked, worn, corroded, or damaged should be clearly labeled to indicate their condition, separated, and discarded.

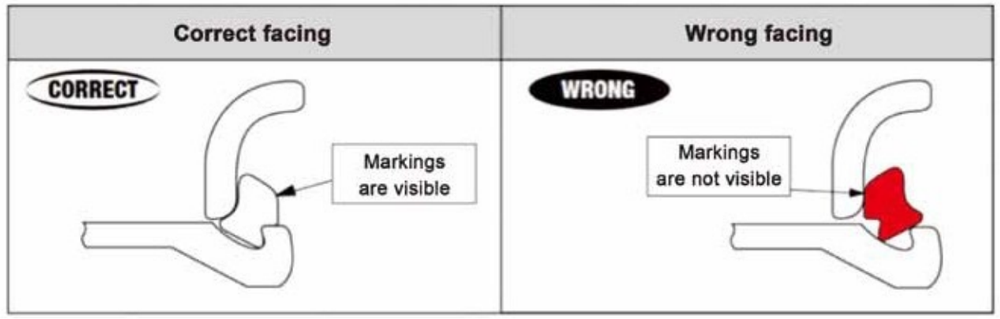
Facing of lock ring

The markings on the locking ring should be seen before, during, and after installation. This indicate the correct installation of the lock ring.

If the locking ring is installed incorrectly when markings are not visibly facing the installer (back to front), it will not install properly with the gutter band and there is a risk of the locking ring dislodging under pressure.

Warning

If the locking ring is installed back to front, the markings are not visible, and continuing assembly could result in an explosion and serious injury or death.



2.4 How to demount tire from CENTURION’s 3-piece wheel

[Required tools]

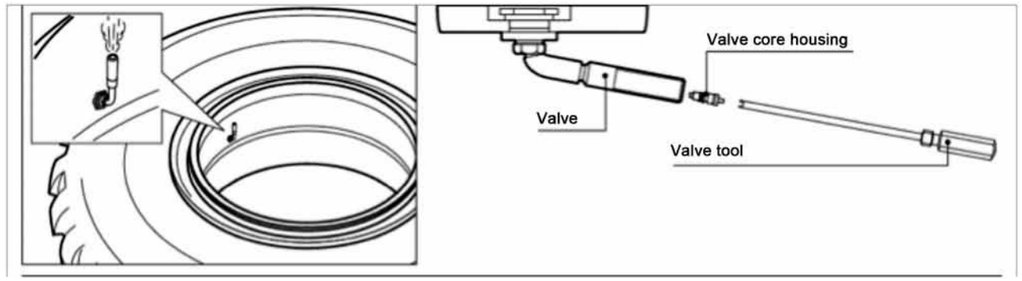
- Valve tool
- Wire for valve cleaning
- Wire brush
- Tire lever for tire mount and demount (confirm specifications of tool type with your tire dealer)
- Lifting equipment (crane, chains, sling, forklift, tire handler, etc.)

STEP 1 Release all air

- Prior to demounting tire from wheel, release all air by removing the valve core housing with the valve tool.

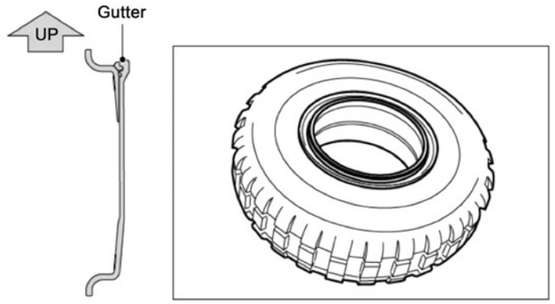
Warning

- Be aware of the trajectory of the valve core as it may shoot out during removal.
- When removing tire and wheel from a vehicle or equipment, before removing the parts (clamps, nuts, etc.), secure the wheel base accessories (extension valve fixing brackets, etc.) and the wheel base to the vehicle and release all air from the tire.
- When demounting outer tires and wheels of dual assemblies, make sure all air from the inner tires are released as well.



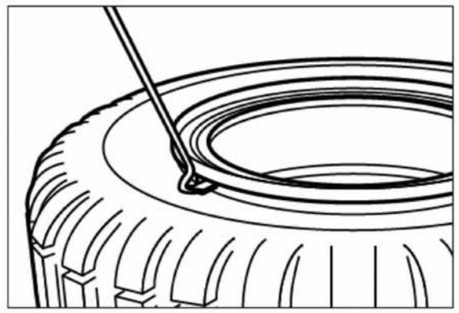
STEP 2 Set up the tire and wheel

After releasing all the air, place the tire and wheel on the ground and the gutter side facing up.



STEP 3 Detach tire bead seat from side ring

Insert the tire lever between the tire bead and the side ring to unseat the bead from the side ring. Using the lever to push the tire down and around the entire circumference.



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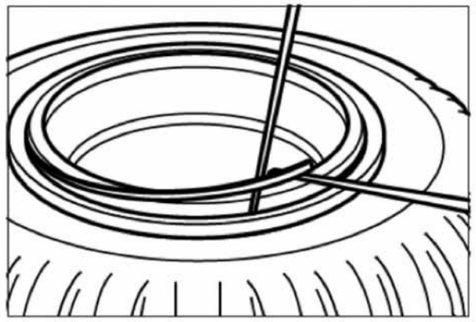
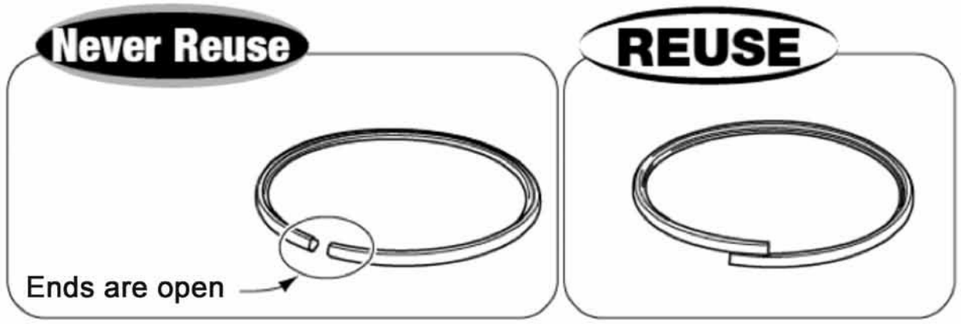
STEP 4 Remove lock ring

- Insert the tire lever to lift one end of the locking ring up from the locking ring groove.
- With a second tire lever, dislodge the Locking ring around the circumference of the wheel until the locking ring is loose and free from the assembly.





Warning

Discard lock rings with ends that do not touch. correctly and could result in serious injury or death.

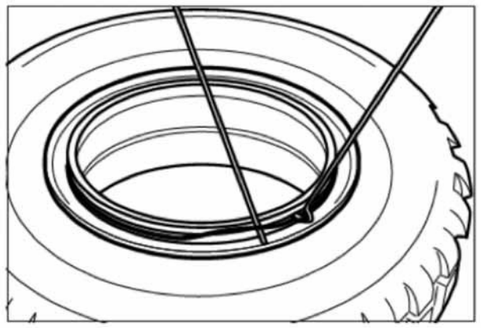
These lock rings will not set

STEP 5 Remove O-ring

- Insert the tire lever to push down on the side ring in order to remove the O-ring.
- Remove the O-ring.

Notice

Do Not reuse O-rings. Always use new O-rings.



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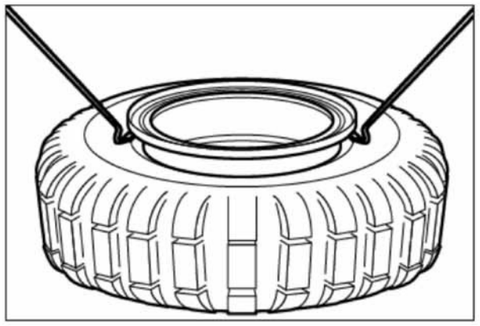
STEP 6 Remove side ring

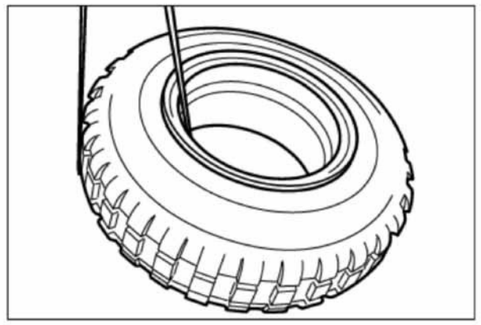
Use the tire lever to remove the side ring.



STEP 7 Turn tire and wheel over

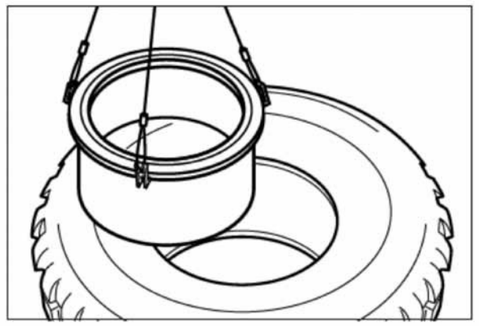
Use lifting equipment to turn the tire and wheel over, and set them on the ground.

When moving tires and wheels, avoid accidental drops or falls that could injure you or bystanders.



STEP 8 Detach tire bead from wheel base, and remove wheel base.

- IPush the tire lever between the tire bead and the wheel base.
- Push the tire down, losen and detach tire bead from the wheel base.
- Remove the wheel base.



Warning

When moving tires and wheels, avoid accidental drops or falls that could injure you or bystanders.

2.5 How to mount tire onto CIMAC's 3-piece wheel

[Required tools]

- alve tool
- Wire for cleaning valve core
- Tire seating blocks
- Tire lever for tire mount/demount (confirm specifications of tool type with your tire dealer)
- Hard plastic hammer (not steel)
- Lifting equipment (crane, chains, nylon sling, forklift, tire handler, etc.)
- Lubricant for tire mounting (product recommended by tire dealer)
- Wire brush • Air gauge • Air chuck

STEP 1 Confirm tire and wheel component combination

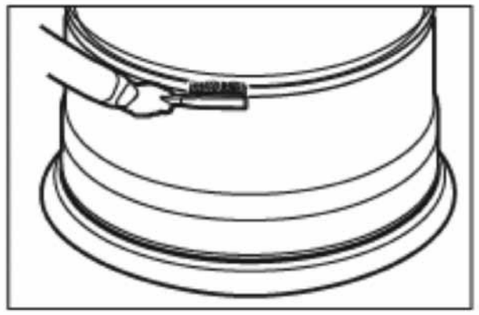
- Check tire size and markings on wheel base, and make sure that the combination is correct.
- Check markings on wheel components and matching charts, and make sure that the combination matches and is correct.

Warning

- DO NOT combine CIMAC Wheels wheel components with wheel components manufactured by other companies.
- If there are any doubts concerning combinations or matching charts, immediately stop the work and contact your CIMAC wheel dealer.

STEP 2 Clean wheel components and check condition

- Clean wheel components with a wire brush so that inspection, maintenance, and mounting can be done correctly.
- Check that there is no deformation, bent, cracking, wear, corrosion, or damage on the wheel components.



Warning

- Discard any wheel components that are deformed, bent, cracked, worn corroded, or damaged, or are suspected of being so, and replace them with undamaged components.
- Discard any lock rings with open ends (ends that do not touch).

Notice

Foreign materials, debris and etc. can adhere to the lock ring grooves on the wheel base or to O-ring grooves, causing air leaks. Make sure all grooves are clean before assembly.

STEP 3 Caoting (When Needed)

Coat any areas where the anti-corrosive oil or paint is missing.

Caution

- Anti-corrosive oil and paint may contain toxic ingredients. Follow safety instructions provided by the manufacturers of the anti-corrosive oil or paint.
- Depending on the vehicle, some parts have certain areas that may be uncoated in order to prevent loosening of parts attaching the wheel base to the vehicle (clamps, nuts, etc.) and slipping of wheel components, etc. If you're unsure, check with the vehicle manufacturer or your CENTURION wheel dealer.

STEP 4 Set up wheel base and install valve

- Place wheel base on an installation stand with gutter side up.
- Install valve.
- For valve selection and installation, follow instructions in the manuals provided by your tire dealer and valve manufacturer. If in doubt, contact the dealer or manufacturer for clarification.

STEP 5 Mount tire on wheel base

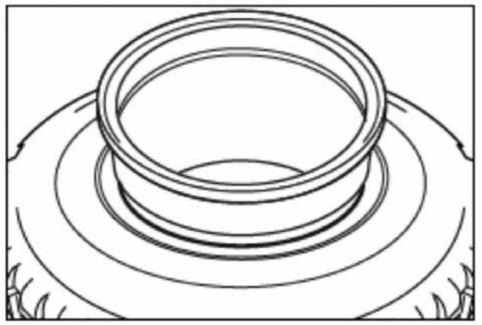
- Apply lubricant to both tire bead seats. Consult tire dealer on the type of lubricant. CENTURION recommend vegetable-based lubricant.
- Place tire on wheel base.

Notice

ONLY apply tire lubricant to areas where the wheel components are in contact with the tire.

STEP 6 Fit side ring

Place side ring into wheel base and fit edge section to tire bead.



STEP 7 Fit O-ring

Apply lubricant to new O-ring and install it in the O-ring groove.

Notice

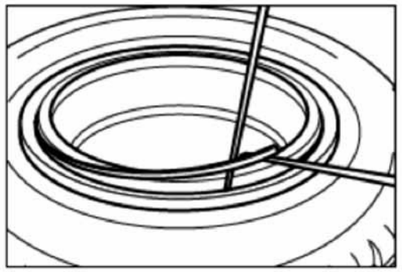
Do not to twist the O-ring.

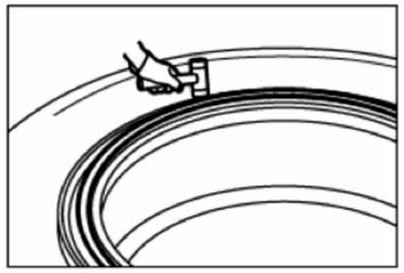
STEP 8 Fit lock ring

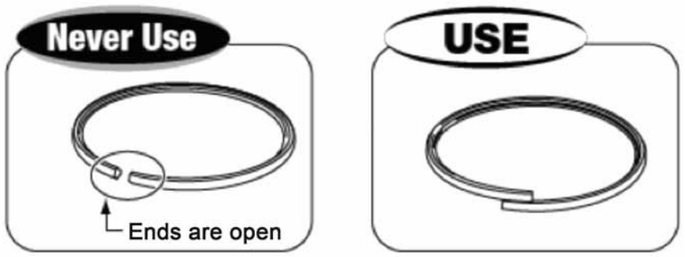
- Fit the end of the lock ring into the lock ring groove in the wheel base. Use the tire lever to install the lock ring around the whole circumference.
- Begin with the opposite of the locking ring gap, lightly tap the locking ring with a hard plastic hammer in both directions back to the locking ring gap to ensure the locking ring is clamped into the locking ring groove.

Warning

- DO NOT use lock rings with open ends (ends that do not touch).
- Check the positioning of the lock ring. The marking on the lock ring should be visible after the installation.







Caution

- Take caution when handling the lock ring as it may spring off.
- Take caution not to get your fingers caught.

STEP 9 FConfirm that wheel components are assembled correctly

Make sure the components match; the facings, and positions of wheel components are correct.

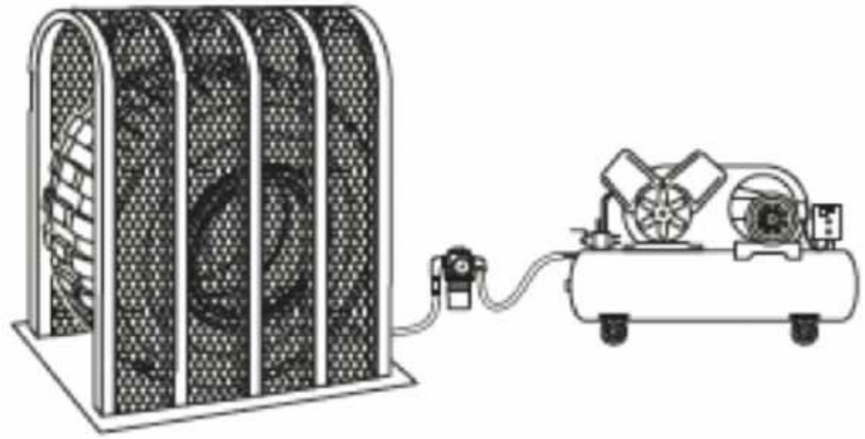
Warning

- Recheck the tire and wheel and make sure that the components match and that that they match the respective tire.
- Recheck the facing of the lock ring and make sure it is installed correctly and is securely in the lock ring groove.
- Make sure that the positioning of the components are correct. DO NOT inflate, hammer, weld or solder to position the wheel components. Doing so can lead to the deformation and deterioration of the strength and structural integrity of the wheel components.

STEP 10 Inflating the tire and wheel

- Wherever possible, place tire and wheel inside a tire inflation safety cage, then inflate tire. During inflation, stay away from the cage.
- When tire has been inflated to a pressure of approximately 35kPa (5psi), check assembly of tire and wheel components. After confirm the assembled correctly, continue inflating up to the rated value.

Tyre inflation safety cage



Warning

If assembly has been done incorrectly, inflation could result in an explosive separation of the wheel. This separation could result in serious injury or death to you or bystanders. Workers and supervisors must comply strictly with the following warnings.

- If you notice a mistake in the assembly, immediately stop inflation, release all the air, and reassemble the tire and wheel components as per instruction.
- NEVER attempt to position the wheel components by inflating the tire.

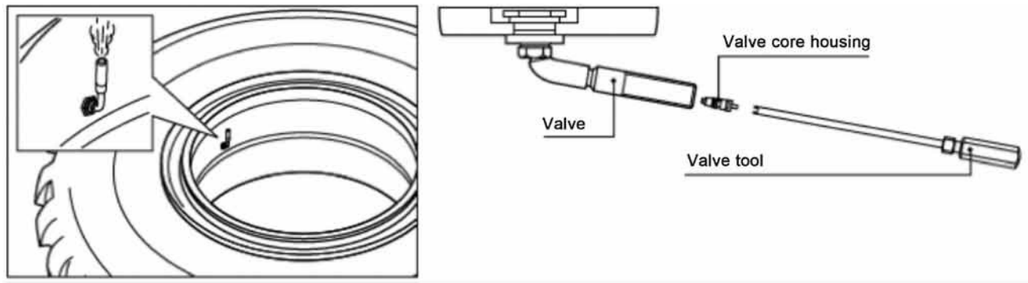
2.6 How to demount tire from CIMAC's 5-piece wheel

[Required tools]

- Valve tool
- Wire for valve cleaning
- Tire lever for tire mount/demount (confirm specifications of tool type with your tire dealer)
- Lifting equipment (crane, chains, nylon sling, forklift, tire handler, etc.)
- Hydraulic bead breaker or similar tools

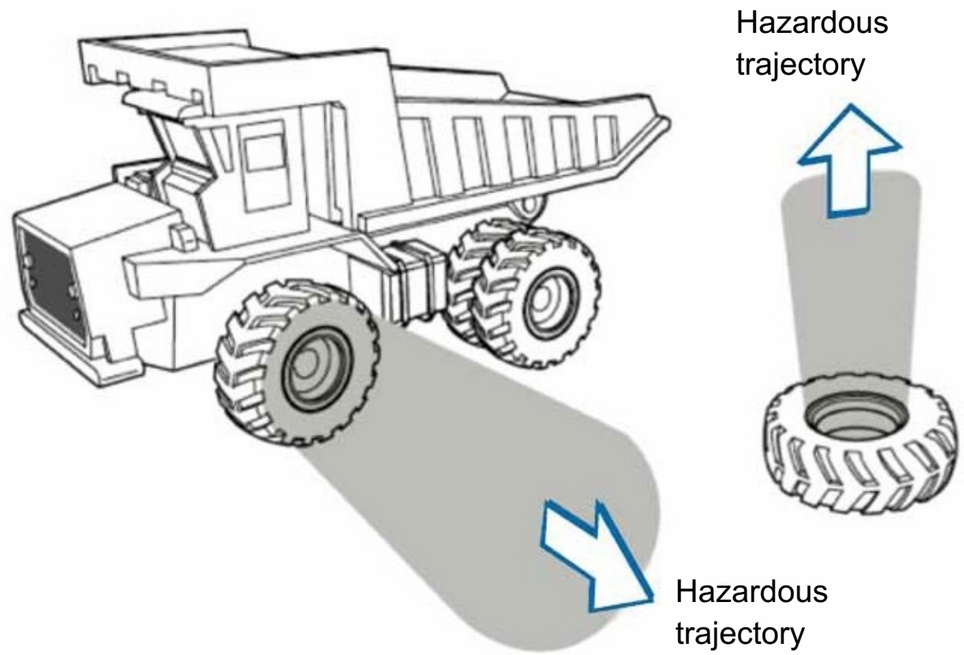
STEP 1 Release ALL air

Before the procedure to demount tire from wheel, release ALL air by removing the valve core housing with the valve tool.



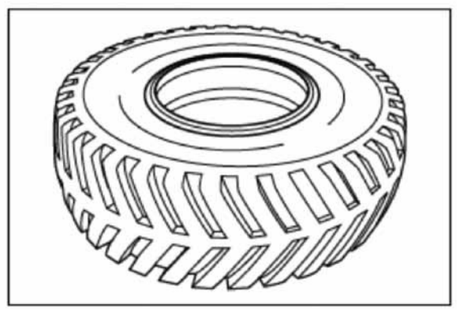
Warning

- Be aware of the trajectory of the valve core as it may eject during removal.
- When removing tire and wheel from a vehicle, first secure the wheel base accessories (extension valve fixing brackets, etc.) and wheel base to the vehicle and release all air from the tire before removing the parts (clamps, nuts, etc.),.
- When demounting dual assemblies (whether outer or inner tire), to sure to release all air from both tires, not simply the one you are working on.



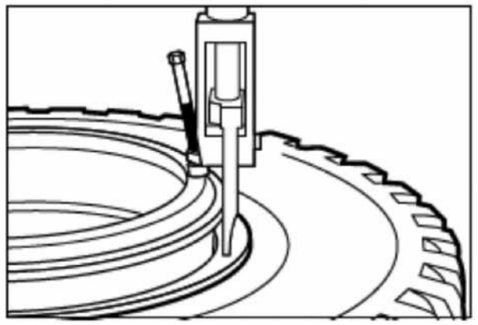
STEP 2 Set up tire and wheel

After releasing all air, lay the tire and wheel on the ground with the gutter side up.



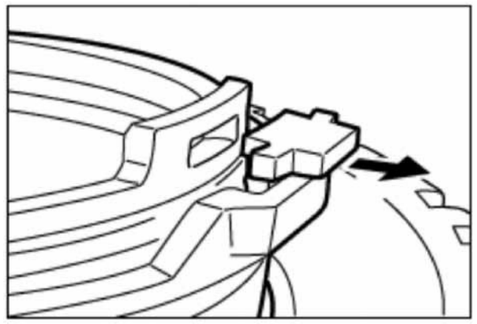
STEP 3 Unseat the tire bead from the bead seat band

Use the bead breaker, push down the side ring, and unseat the tire bead from the bead seat band.



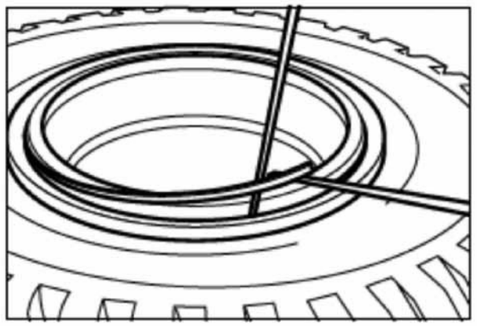
STEP 4 Remove driver key

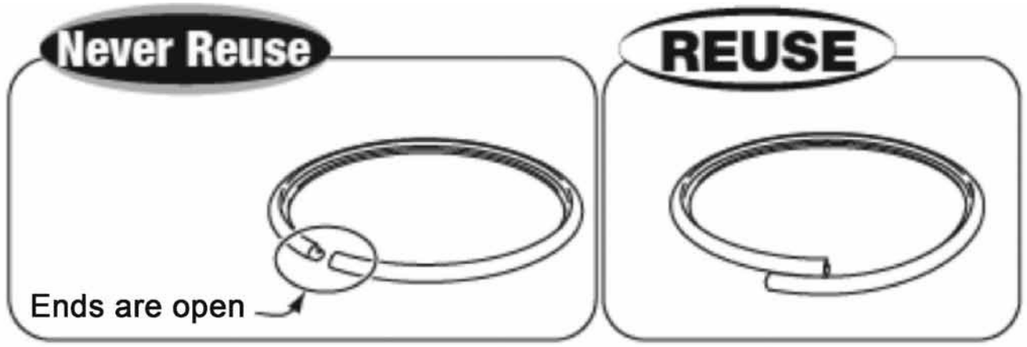
Remove the driver key if it is present.



STEP 5 Remove lock ring

- Use a tire lever to free the bead seat band from the locking ring.
- Use the tire lever lift on one end of the locking ring from the locking groove.
- Using a second lever to free the locking ring around the circumference of the wheel until the locking ring is free from the assembly.



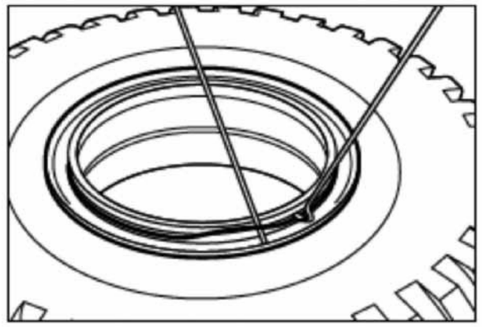


STEP 6 Remove O-ring

- Use the tire lever to push down on the bead seat band to free the O-ring.
- Remove O-ring.

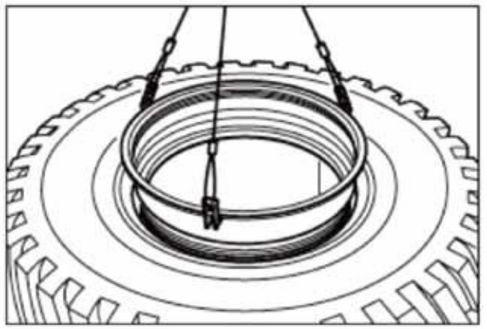
Notice

Used O-rings can not be placed into service again.



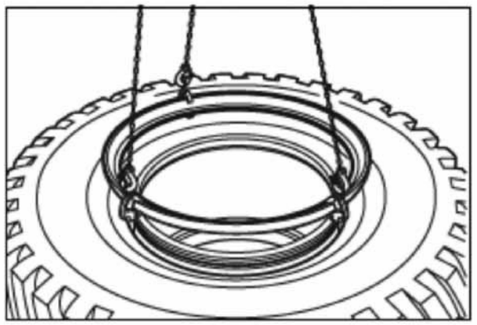
STEP 7 Remove bead seat band

Use lifting equipment to extract and remove the bead seat band.



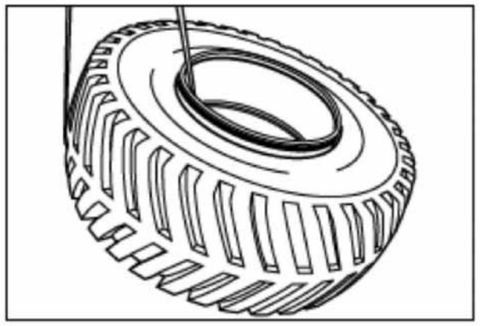
STEP 8 Remove side ring

Use lifting equipment to remove the side ring.



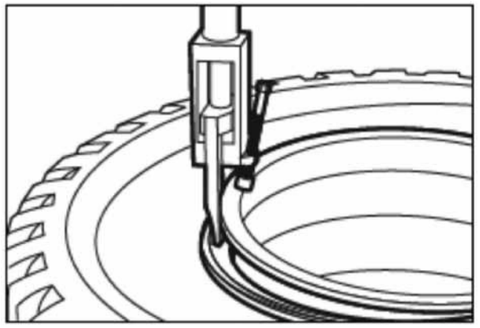
STEP 9 Turn over tire and wheel

Use lifting equipment to turn over the tire and wheel, and place them on the ground.



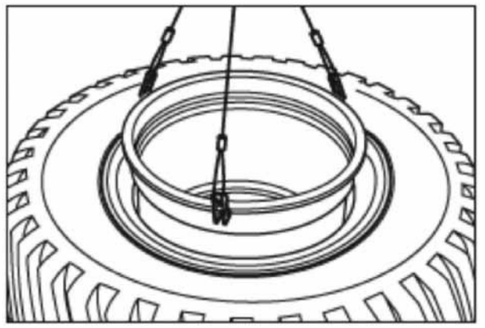
STEP 10 Unseat the tire bead from the wheel base

Use the bead breaker, push down the side ring, and separate the tire bead from the bead seat band.(See Step 3)



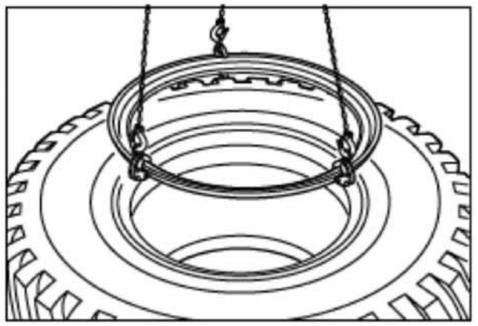
STEP 11 Remove wheel base

Use the lifting equipment to remove the wheel base.



STEP 12 Remove side ring

Use the lifting equipment to remove the side ring.



2.7 How to mount tire onto CIMAC's 5-piece wheel

[Required tools]

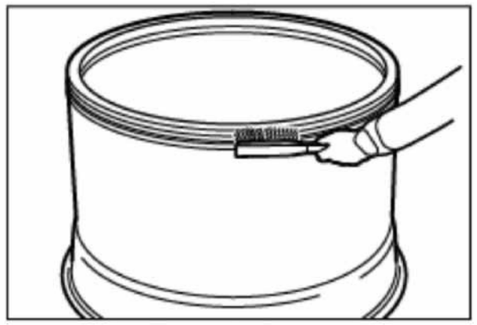
- Valve tool • Wire for cleaning valve core • Tire seating blocks
- Tire lever for tire mount/demount (confirm specifications of tool type with your tire dealer)
- Hard plastic hammer (Not steel)
- Lifting equipment (crane, chains, nylon sling, forklift, tire handler, etc.)
- Lubricant for tire mounting (product recommended by tire dealer)
- Wire brush • Air gauge • Air chuck

STEP 1 Confirm tire and wheel component assembly

- Verify tire size and markings on rim base, and make sure that the tire and wheel size matches.
- DO NOT combine CIMAC wheels wheel components with wheel components manufactured by other companies.

STEP 2 Clean wheel components and check Condition

- Clean wheel components with a wire brush.
- After cleaning, make sure that there is no bent, deformation, cracking, wear, tear, corrosion, or any types of damages on the wheel components.



Warning

If any wheel components that are damaged, bent, worn, deformed, cracked, corroded , in any way, replace them with new components.

STEP 3 Recoat (When Necessary)

Recoat with anti-corrosive oil or paint if necessary.

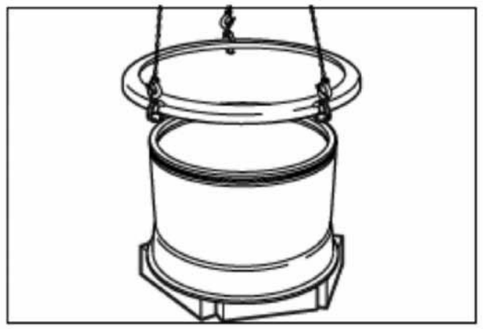
Caution

Some wheel parts have certain areas that may be uncoated in order to prevent loosening of parts attaching the rim base to the vehicle (clamps, nuts, etc.) and slipping of wheel components, etc. If you're not sure, check with the vehicle manufacturer or your CIMAC wheel dealer.

STEP 4 Set up wheel base and install side ring

- Rest wheel base on wheel base stand with gutter side up.
- Install the side ring.

Warning

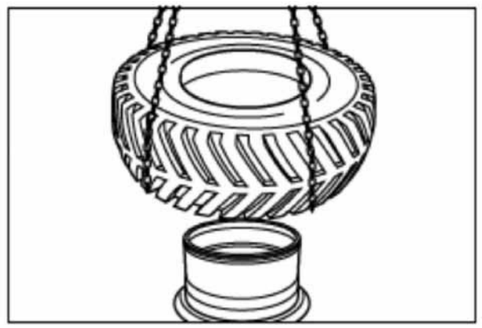


STEP 5 Install valve

Install valve.

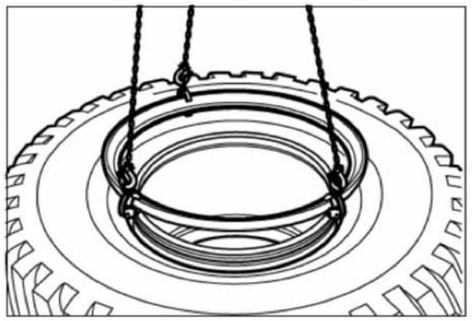
STEP 6 Mount tire on wheel base

- Apply a vegetable oil-based lubricant to both tire bead seats.
- Place tire on wheel base, and assemble.



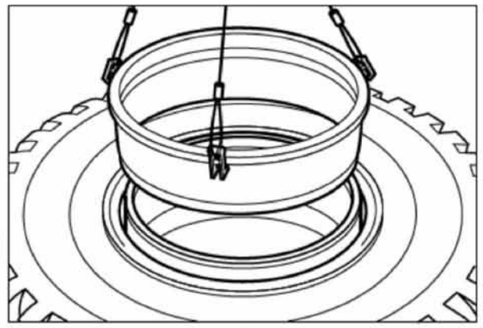
STEP 7 Fit side ring

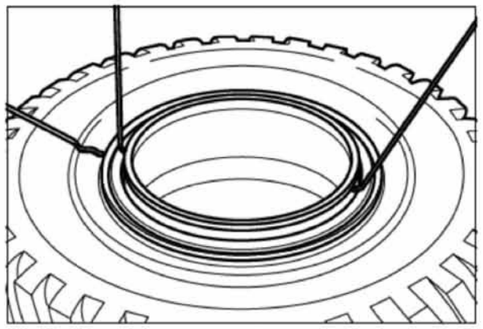
Install the side ring.



STEP 8 Install bead seat band

- Push bead seat band into side ring and wheel base.
- Use the tire lever to push in the bead seat band make sure that the edge of bead seat band fits the tire bead.





Warning

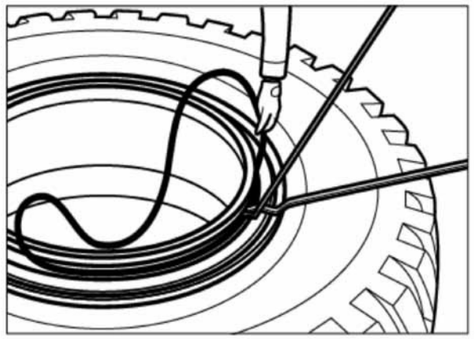
If a mallet is used to aid in pressing down on the bead seat band, make sure hard plastic hammer is used.

STEP 10 Fit O-ring

Use a new O-ring, apply lubricant to it and install it in the O-ring groove.

Notice

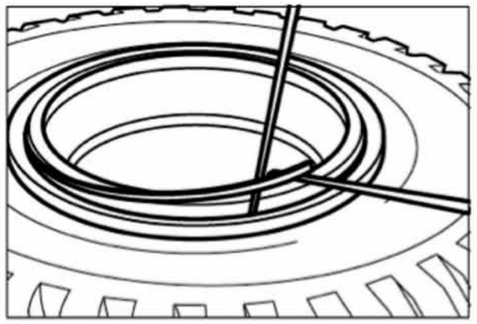
Make sure no twist of the O-ring.

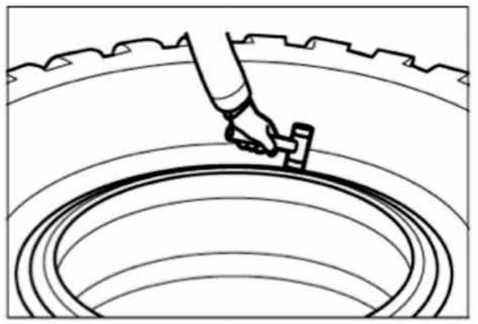


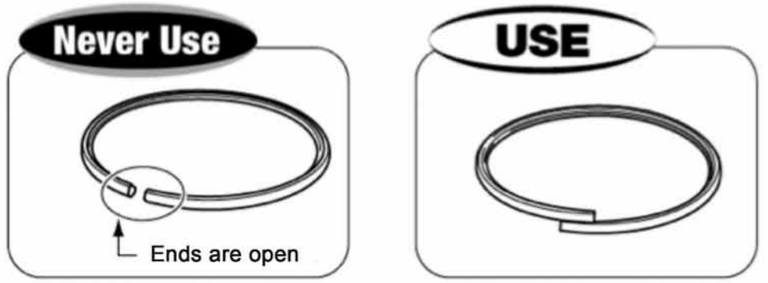
STEP 11 Fit lock ring

- Place the ends of the lock ring into the lock ring groove in the wheel base. Use the tire lever to install the lock ring around the entire circumference.

- Starting with the opposite the locking ring gap, carefully tap the locking ring with a hard plastic hammer in both directions back to the locking ring gap so that the locking ring is clamped into the locking ring groove.

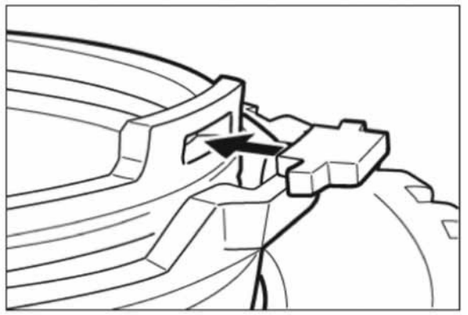






STEP 12 Install driver key

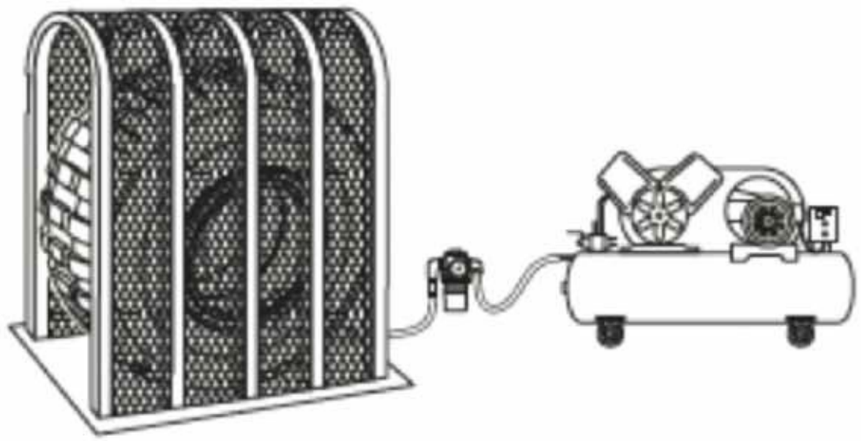
If the wheel requires driver key, install the driver key.



STEP 13 Inflating the tire and wheel

- Inflate the tire to a pressure no more than 35kPa (5psi), inspect assembly of tire and wheel components.
- If assembled correctly, continue inflating up to the pressure specified by the tire manufacturer.

Tyre inflation safety cage



Warning

Workers and supervisors must comply strictly with the following caution as the trajectory may widen.

- DO NOT allow the air pressure to exceed the pressure specified by the tire manufacturer.
- If you notice a mistake in the assembly, immediately stop inflation, release all the air, and reassemble the tire and wheel components.
- NEVER position the wheel components by inflating the tire.

2.8 Checkpoint of servicing tires and wheels when wheel remains installed on vehicle

The following instruction must be complied when servicing tire and wheel with the wheel still on the vehicle

POINT 1 Release ALL air from the tire

Warning

- Turn off the vehicle's power off and secure the vehicle from moving.
- Remove the valve core and release all air from the tire.
- Be aware of the trajectory of the valve core as it may shoot out during removal.
- Before removing wheel base accessories (extension valve fixing brackets, etc.), make sure all air has been released from the tire
- Remove air from all tires even if you are only working on one of the dual assemblies.

POINT 2 Protection against explosive separation of tire and wheel components

Warning

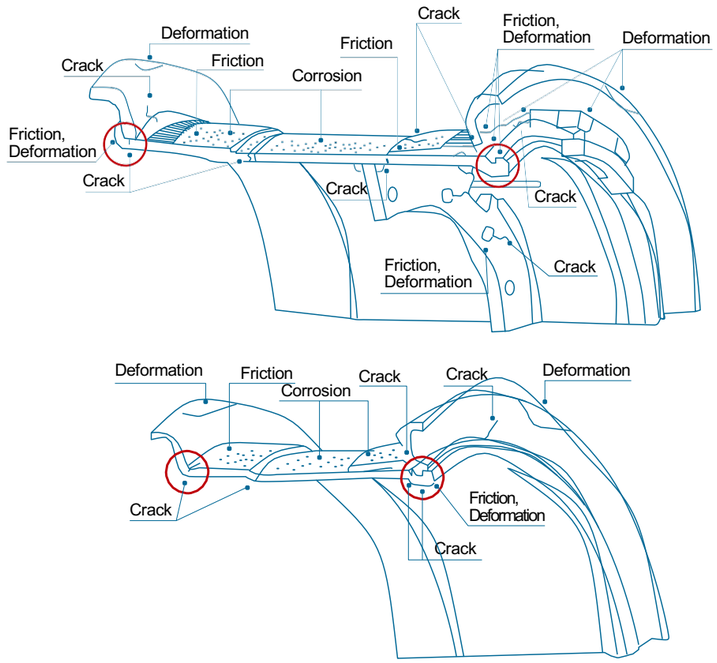
- Always work outside the range of the "hazardous trajectory" shown in the illustration below. Exercise extreme caution as the range of the trajectory may widen.
- When servicing tires still on the vehicle, protect yourself against the hazardous trajectory, such as using the crane arm or tire handler.

1 General inspection checkpoints

An explanation of inspections performed with the tire mounted on the wheel.

Warning

- During tire inspections, check that there is no cracking, wear, deformation or damange on the wheel components.
- Thorough inspect the gutter section and back flange section, indicated by the red circle in the illustration below. The illustration below also shows check points for inspections when servicing tires and wheels
- Perform inspection strictly according to this guide



1.1 Cleaning prior to inspection

Cleaning wheel components using a wire brush.

Pay particular attention to cleaning the O-ring grooves and lock ring grooves on the gutter.

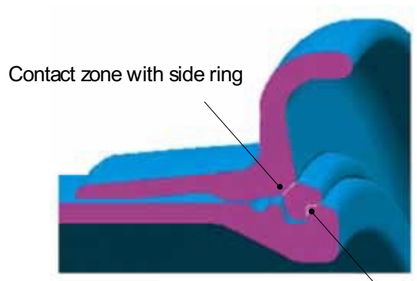
1.2 Inspection

Perform inspections based on the methods and points shown below.

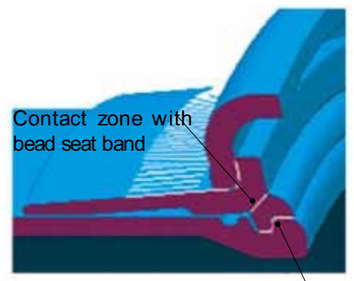
inspections when servicing tires and rims

Lock ring inspections

For 3-piece rims



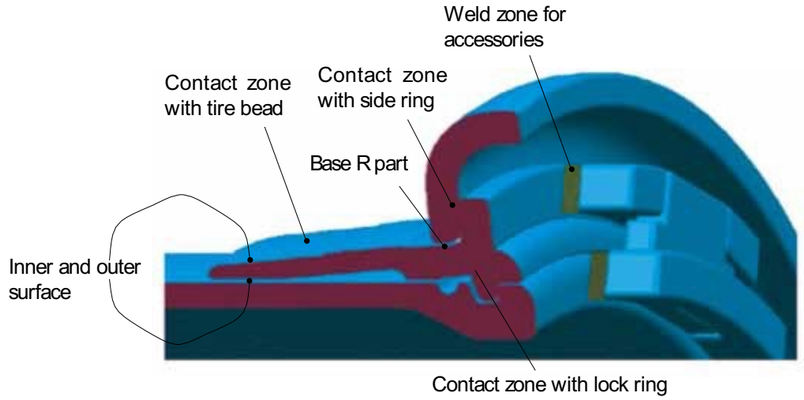
For 5-piece rims



Inspected part	Check method	Checkpoint				
		Cracking	Wear	Deformation/ Ellipse/ Spread Edges	Corrosion	Surface roughnes s
Contact zone with bead seat band or side ring	Visual inspection	○	○			○
	Non-destructive inspection					
Contact zone with gutter of rim base	Visual inspection	○	○		○	○
	Non-destructive inspection					
Overall form	Visual inspection			○		
	Non-destructive inspection					

Note: Non-destructive inspections include magnetic particle inspections, ultrasonic inspections, and dye penetrant inspections, etc.

Bead seat band inspections



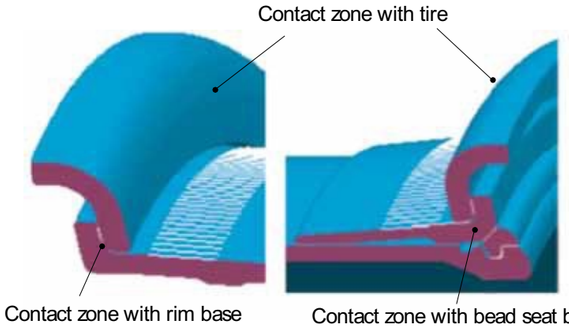
Inspected part	Check method	Checkpoint				
		Cracking	Wear	Deformation / Ellipse	Corrosion	Surface roughness
Base R part	Visual inspection	○	○		○	○
	Non-destructive inspection	○				
Contact zone with side ring	Visual inspection	○	○		○	○
	Non-destructive inspection	○				
Contact zone with lock ring	Visual inspection	○	○			○
	Non-destructive inspection					
Contact zone with tyre bead	Visual inspection		○		○	
	Non-destructive inspection					
Inner and outer surface	Visual inspection				○	
	Non-destructive inspection					
Overall form	Visual inspection			○		
	Non-destructive inspection					
Weld zone for accessories	Visual inspection	○				
	Non-destructive inspection					

Note: Non-destructive inspections include magnetic particle inspections, ultrasonic inspections, and dye penetrant inspections, etc.

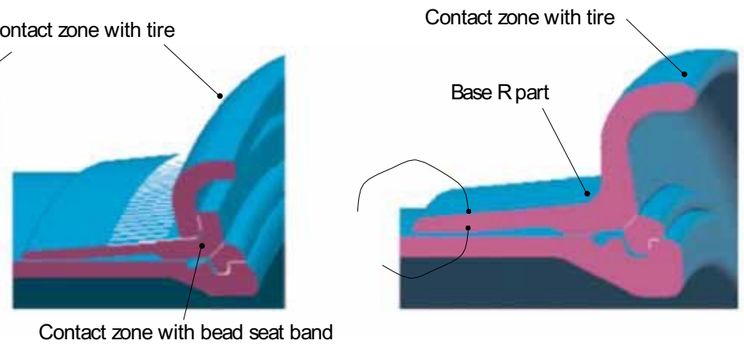
·Always verify the actual product for the weld zones of rim components and accessories as they vary by type.

Side ring inspections

For 5-piece rims



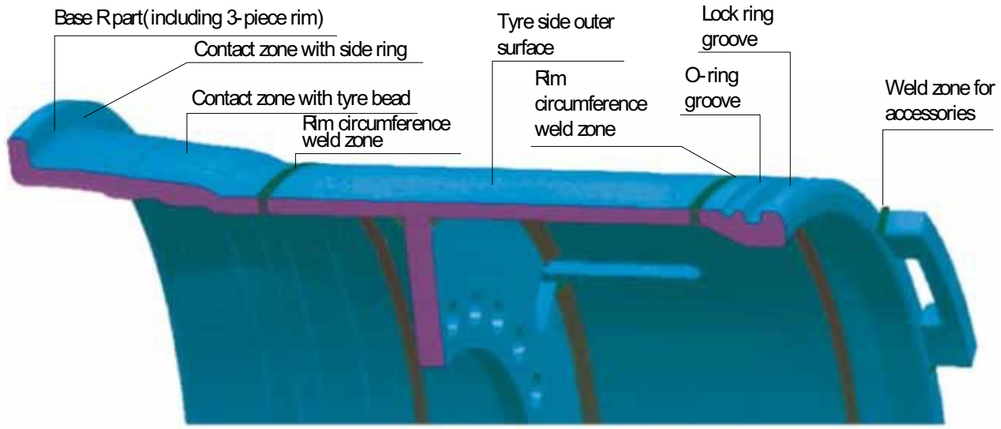
For 3-piece rims



Inspected part	Check method	Checkpoint				
		Cracking	Wear	Deformation / Ellipse	Corrosion	Surface roughness
Contact zone with rim base (for 5-piece rims)	Visual inspection	○	○		○	○
	Non-destructive inspection	○				
Contact zone with bead seat band (for 5-piece rims)	Visual inspection	○	○			○
	Non-destructive inspection	○				
Base R part (for 3-piece rims)	Visual inspection	○	○		○	○
	Non-destructive inspection	○				
Inner and outer surface (for 3-piece rims)	Visual inspection				○	
	Non-destructive inspection					
Contact zone with tyre	Visual inspection		○		○	
	Non-destructive inspection					
Overall form	Visual inspection			○		
	Non-destructive inspection					

Note: Non-destructive inspections include magnetic particle inspections, ultrasonic inspections, and dye penetrant inspections, etc.

Rim base inspections



Inspected part	Check method	Checkpoint				
		Cracking	Wear	Deformation/ Ellipse	Corrosion	Surface roughness
O-ring groove	Visual inspection	○			○	○
	Non-destructive inspection	○				
Lock ring groove	Visual inspection	○	○		○	○
	Non-destructive inspection	○				
Contact zone with side ring	Visual inspection	○	○		○	○
	Non-destructive inspection	○				
Base R part	Visual inspection	○	○		○	○
	Non-destructive inspection	○				
Rim circumference weld zone	Visual inspection	○				
	Non-destructive inspection	○				
Valve hole	Visual inspection	○		○		
	Non-destructive inspection					
Disc weld zone	Visual inspection	○				
	Non-destructive inspection	○				
Disc bolt holes	Visual inspection	○	○	○		
	Non-destructive inspection					
Contact zone with tyre bead	Visual inspection		○		○	
	Non-destructive inspection					
Tire side outer surface	Visual inspection				○	
	Non-destructive inspection					
Weld zone for accessories	Visual inspection	○				
	Non-destructive inspection					

Note: Non-destructive inspections include magnetic particle inspections, ultrasonic inspections, and dye penetrant inspections, etc.
· Always verify the actual product for the weld zones of rim components as they vary by type.

Warranty

CIMAC wheels warrants the following products to be free from defects in workmanship and materials for a period of one (1) years or two thousand (2000) hours from the date of manufacture, whichever comes first. This warranty excludes finish.

- Off-Road Wheels
- Off-Road Rims

This warranty will be void for any of the following reasons:

- If the product has been altered without the express written consent from CIMAC wheels.
- If the product has been used in a manner inconsistent with current standards and specifications established by the TRA, ETRTO, JATMA and ITTAC.
- If the product has been used in a manner inconsistent with the specifications, instructions, and procedures contained in the current wheel and rim manual from the Wheel and Rim Association.
- If the product has been handled in a manner that violates the OSHA Regulation Section 1910:177; "Safe Operating Procedures" required by federal law.
- If the product has been used with improper tire sizes, inflation pressures, or loads as expressed in our information.
- If the product has been damaged as a result of improper tightening procedures, torqued in excess (or deficient) or that torque recommended by spoke wheel or hub manufacturer, or faulty engagement due to use of improper mounting components or procedures.

CIMAC'S obligation under this warranty is limited to replacement of any product that proves to be defective with like-size wheel or rim.

This warranty applies worldwide.