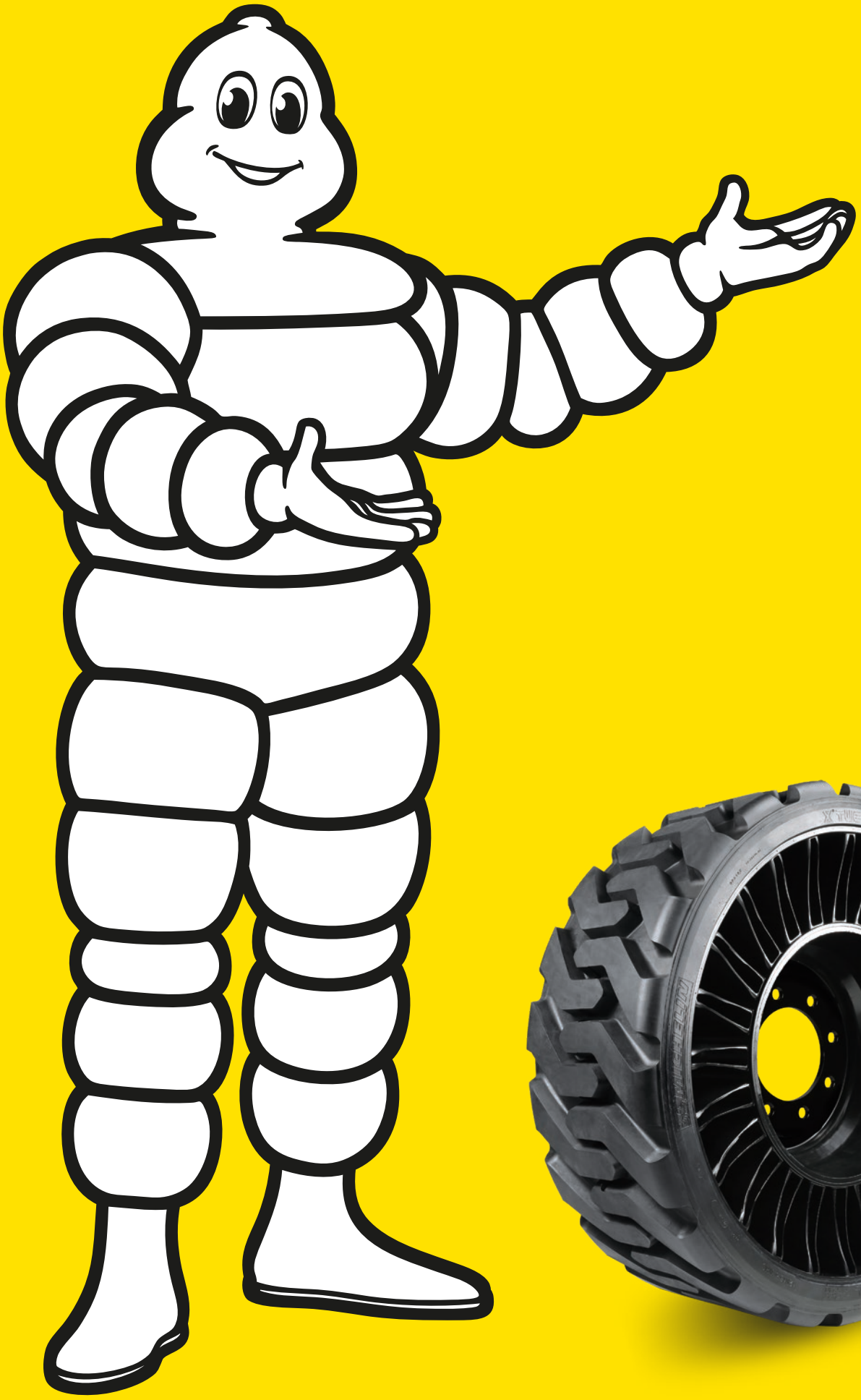
MICHELIN X® TWEEL™
AIRLESS RADIAL TIRE

WARRANTY GUIDE

MICHELIN



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MICHELIN X® TWEEL WARRANTY OVERVIEW

A Michelin X® Tweel™ airless radial tire is a single unit that replaces the current tire and wheel assembly. There is no need for complex mounting equipment and once they are bolted on, there is no air pressure to maintain. The unique energy transfer within the polyresin spokes helps reduce the "bounce" associated with pneumatic tires, while providing outstanding handling characteristics. They are designed to perform like pneumatic tires, without the inconvenience and downtime caused by flat tires.

At Michelin Tweel, we strive to be a leader in airless tire technology advancement, which is why we stand behind every Tweel with the Michelin Tweel Warranty Plan. This comprehensive protection package includes a limited mileage/hour warranty on every Tweel we make. This is just one of the many reasons why customers can purchase a set of Michelin Tweels with confidence.

Use this guide to determine the warranty information for specific Michelin X® Tweel™ airless radial tires Here you'll find root cause analysis on Turf, SSL, TMF, UTV and Utility/Golf Cart Tweels. You will also find warranty specifications for Turf, SSL, TMF, UTV and Utility/Golf Cart Tweels for easy reference when explaining the differences in tire warranty coverages to your customers.

Who is Covered?

The original purchaser of new Michelin X® Tweel™ assemblies, bearing a Michelin serial number or the original invoice for machine, if Tweels were equipped on machine new, are covered by the terms and conditions of this limited warranty.

What is Covered and For How Long?

Michelin X® Tweel™ assemblies used in normal service, listed by the OEM (Original Equipment Manufacturer) as being compatible with the size assembly being presented for claim, are covered against workmanship and material for the life of the original usable tread or 3 years from the date of purchase, whichever comes first. The original usable tread depth is the original tread down to the level of 4/32nds of an inch (3mm) of tread remaining. At that time, all warranties, express or implied, are terminated. Date of purchase is documented by new OEM (Original Equipment Manufacturer) vehicle equipment sales invoice or by new Tweel assembly sales invoice. If proof of purchase cannot be documented, the age of the Tweel assembly and replacement eligibility will be determined at the sole discretion of the Michelin Representative or Authorized Michelin Dealer inspecting the Tweel assembly in question. For this reason, it is very important that you retain the proof of purchase documentation. Replacement charge, (if any) will be made based on the condition of the Tweel assembly, as assessed by the Michelin Representative or Authorized Michelin Dealer inspecting the Tweel assembly being submitted for warranty claim.

What is Not Covered?

Michelin X® Tweel™ assemblies which become unserviceable due to:

- The attachment of any foreign object or implement (not specifically approved or applied by Michelin) to the interior or exterior of the Tweel assembly
- Impact damage, cuts, snags, machine damage, machine accident/collision, fire , mis-mounting, chemical corrosion, chemical exposure, lightning, or contact with electrical power lines, overload, misapplication, misuse, neglect, operation at excessive speed, environmental temperatures outside the range of -40F to 240F, chain damage, and/or mechanical condition of the vehicle
- Loss of time, inconvenience, loss of use of vehicle, or consequential damage
- Tweel assemblies over 3 years old, based on new OEM vehicle sales invoice, new Tweel assembly sales invoice or determination by a Michelin Representative
- Improper repair
- Ozone or weather cracking
- Casing value with more than one retread

Michelin X® Tweel™ SSL Retreading

The Michelin X® Tweel™ SSL assemblies have a prorated limited warranty based on tread wear within the first 3 years from date of purchase. The usable Michelin X® Tweel™ SSL tread depth is the original tread down to the level of 4/32nds (3mm) of tread remaining. The Michelin X® Tweel™ SSL assembly casing is also warranted up to and including the first retread, as long as it remains within the 3-year period from original purchase date. All other Michelin X® Tweel™ assemblies carry a 3-year time based prorated limited warranty.

How Replacement Charges for Warranty Claims are Determined

Any Michelin X® Tweel™ assembly is covered by this limited warranty that becomes unserviceable due to a workmanship and materials condition, within the time and tread depth limits indicated above, will be replaced with a comparable new Michelin X® Tweel™ assembly at the sole discretion of the Michelin Representative inspecting the Tweel assembly. The replacement charge will be determined using such factors as the age of the Tweel assembly, how long it has been in service, and the nature of the application in which the Tweel assembly was being used. (See "What Is Covered and For How Long.")

What Owners Must Do

When making a claim under the terms and conditions of this limited warranty, the owner must present the Tweel assembly and documentation showing the date of purchase to the appropriate Michelin Sales Representative or Authorized Michelin Dealer. Personal identification may be required and the vehicle on which the Tweel assembly was/were mounted must be available for inspection.

Michelin X® Tweel™ LIMITED WARRANTY ONLY CLAIMS SUBMITTED ON A CURRENT MICHELIN WARRANTY CLAIM FORM, PROPERLY EXECUTED AND SIGNED BY THE APPROPRIATE MICHELIN SALES REPRESENTATIVE OR AUTHORIZED MICHELIN DEALER, AND SIGNED BY THE OWNER, WILL BE RECOGNIZED AS VALID. WARNING: DISREGARDING ANY OF THE SAFETY PRECAUTIONS OR OPERATIONAL GUIDELINES LISTED IN THE VEHICLE OEM's DATA BOOK OR MAINTENANCE GUIDE MAY RESULT IN SERIOUS PERSONAL INJURY OR DEATH. ALWAYS TORQUE WHEEL FASTENERS IN THE PROPER SEQUENCE, AND IN ACCORDANCE WITH VEHICLE OEM RECOMMENDATIONS. ENSURE ALL LIFTING AND SECURING PROCEDURES FOR EQUIPMENT ARE FOLLOWED. MODIFICATION OF THE X® Tweel™ FOR PURPOSES OTHER THAN THE ORIGINAL MANUFACTURERS USE IS STRICTLY PROHIBITED. THE Michelin X® Tweel™ ASSEMBLIES ARE NOT APPROVED FOR HIGHWAY USE.

Some counties and states in the USA allow vehicles to be used on public roads. A Department of Transportation approved tire is not currently required by the counties and states in the USA that allow the use of a vehicle on public roads. Please consult local or state laws for using your vehicles on public roads.

Michelin X® Tweel™ assemblies used in normal service, listed by the OEM (Original Equipment Manufacturer) as being compatible with the size assembly being presented for claim, are covered against workmanship and material for the life of the original usable tread, hour/mileage warranty, 3 years from the date of purchase, or whichever comes first.

WARNING: DISREGARDING ANY OF THE SAFETY PRECAUTIONS AND INSTRUCTIONS CONTAINED IN THE DATA BOOK OR MAINTENANCE GUIDE MAY RESULT IN TIRE FAILURE OR EXPLOSION CAUSING SERIOUS PERSONAL INJURY OR DEATH.

X TWEEL COMMON WARRANTY SPECIFICATIONS

The most common warranty specifications for the Michelin Tweel are defined below. These are some but not all the possible reasons for warranty of a Michelin Tweel.

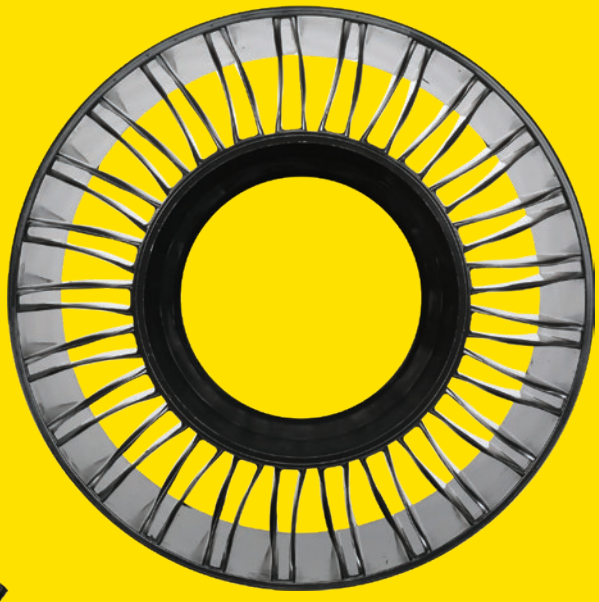
- If there are: Greater than 5 total broken spokes (broken all the way across the width of the spoke and not caused by impacts or road hazards),
- If there are: Greater than 2 consecutive broken spokes (broken all the way across the width of the spoke and not caused by impacts or road hazards)
- If there is a separation: Greater than 50 mm (2 in) separation depth (the circumferential length of the separation is not part of the warranty specifications and can continue to be used unless 50 mm deep, not caused by impacts or road hazards).
- Improper mounting or over-torquing lug nuts or studs will void Tweel warranty.

Keep in mind, the way the Tweel™ tire is designed to function, it can support its full load rating even with 50% of the Polyresin Spokes broken. The shear beam acts at the support by suspending the load of the machine. We are also continuously making process updates to minimize polyresin separations. The Tweel™ tire is still operational at normal capacity with a less than a 50 mm separation as well as with less than the previously mentioned broken spoke guidelines.

The above guidelines apply to all the Tweel products and can be referenced on the Tweel website at https://tweel.michelinman.com/faq.html

PARTS OF A TWEEL™ AIRLESS RADIAL TIRE

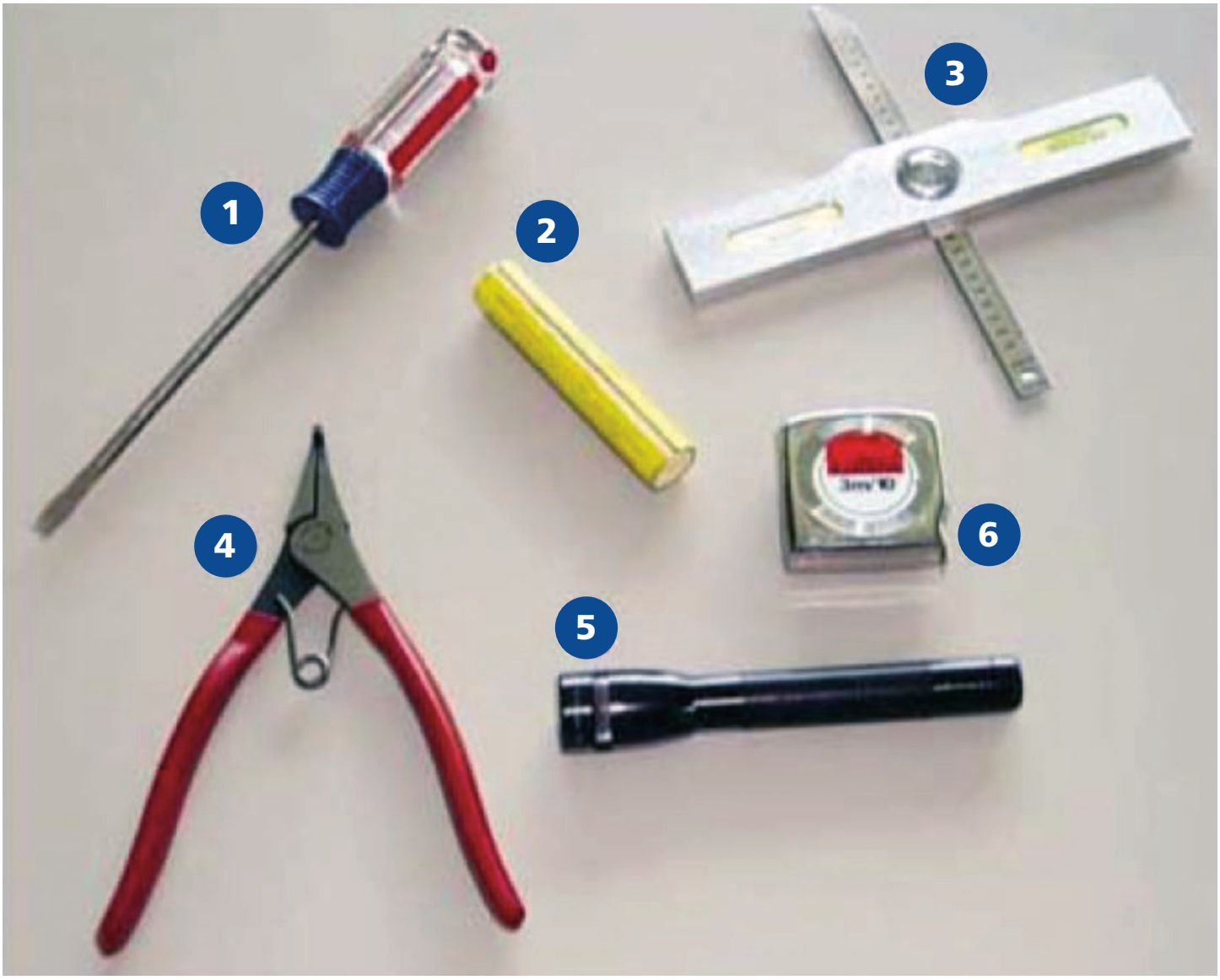
Shear Beam



Polyresin Spokes

Metal Hub

EXAMINATION TOOLS



1. Screwdriver
2. Wax Marker
3. Tread Depth Gauge
4. Separating Tool
5. Flashlight
6. Tape Measure

MICHELIN X® TWEEL™ SSL AIRLESS TIRE TORQUE SPECS AND RETREADING

Torque Specifications

- Ensure appropriate lug nuts are used per the application (conical, flat seat, etc.).
- Tighten lug nuts to a snug "finger tight" condition (no wobble evident between the Michelin Tweel™ airless tire and the mounting surface.
- Next, torque each lug nut to 200 lb-ft or to the machine manufacturer's torque specifications, in a "star pattern" sequence.
- Lug nuts should be retorqued after first ten hours of use, and during every maintenance interval.

Retread Guidelines

- Remove the X® Tweel™ SSL tire from service for retreading at 4/32" (3mm) remaining tread depth.
- The retread should be cured at approximately 98° C (208° F) – no more than 100° C (212° F) for at least 4 hours.
- The time required may vary based on the tread thickness.

NOTE: There is no tread wear indicator on the Tweel™ airless radial tires. Tweel™ tires that are worn past 4/32" are not considered retreadable.

Retread Recommendations and Location of Belts

X® Tweel™ Size	Tread Width	Buffing Radius	Targeted Buffed Circumference	Belt Width	Undertread Thickness
10N16.5 AT	W255 to W265	Flat or Maximum Radius	88.8" (2255 mm)	9.5" (242 mm)	<1 mm
12N16.5 AT	W29 to W300		97.5" (2475 mm)	10.7" (272 mm)	1 mm
12N16.5 HST			96.9" (2460 mm)		<1 mm

Ways to Increase the Life of an X® Tweel™ SSL Tire:

- Repair all cracked spokes as soon as possible to blunt the crack tip and slow crack growth.
- See https://tweel.michelinman.com or contact your local dealer for questions on repairing cracked spokes.
- Tweel™ spokes are not indestructible, so it is important to avoid impacts and sharp cutting edges and other hard objects as much as possible.
- Rotate tires when half worn.

Michelin X® Tweel™ SSL Warranty: 3 Years or 2,000 Hours of Usable Tread

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WARRANTABLE

Manifestation – Separations

- Movement or looseness between steel hub and polyresin.

Root Cause

- Poor adhesion between steel hub and polyresin during manufacture.

Actions

- Movement or looseness of hub may eventually result in loss of use.
- Shallow separations contained to the edge of the hub may not propagate further.
- If hub is loose or has movement, contact Michelin representative.

X® TWEEL™ SSL TIRE WARRANTY GUIDE

WARRANTABLE

Manifestation – Separations

- Deep separations between shear beam and polyresin spokes (>50mm deep).

Root Cause

- Poor adhesion between rubber in the shear beam and polyresin during manufacture.

Actions

- Deep voids may eventually result in loss of use.
- Shallow separations, contained to the edge of the shear beam, have traditionally NOT propagated further.
- ACTION: If <50mm, continue to monitor depth and if separation deepens, alert Michelin representative for assessment.

Separated bond between polyresin and shear beam (>50mm).

NOTE: Small separations typically do not get larger.

WARRANTABLE

Manifestation – Separations

- Deep separations between steel hub and polyresin spokes (>50mm in depth).

Root Cause

- Poor adhesion between steel in the hub and polyresin during manufacture.

Actions

- Deep voids may eventually result in loss of use.
- Shallow separations, contained to the edge of hub, have traditionally NOT propagated further.
- ACTION: If <50mm, continue to monitor depth and if separation deepens, alert Michelin representative for assessment.

Separated bond between polyresin and shear beam (>50mm).

NOTE: Small separations typically do not get larger.

X® TWEEL™ SSL TIRE WARRANTY GUIDE

NOT WARRANTABLE

Manifestation – Spoke Damage (External Object)

- SSL assembly has a broken spoke, cut or tear due to external object striking with force.

Root Cause

- Caused by impact with road hazards, field debris or other objects such as metal or rocks striking polyresin spokes.

Actions

- Remove any captured objects.
- Ensure operators are aware of potential job site hazards.
- As long as the Tweel™ tire continues to provide traction and support of the loader, it may continue to be used.

NOT WARRANTABLE

Manifestation – Spoke Damage, Spoke Cuts, Torn Spokes

- Tweel™ assembly has a broken spoke, cut or tear. Signs of external aggression are evident. Some spokes will start as localized damage and propagate across the width of the spoke.

Root Cause

- Caused by impact with road hazards, field debris or other objects such as metal or rocks striking polyresin spokes.

Actions

- Ensure Operators are aware of hazards.
- As long as the Tweel™ tire continues to provide traction and support of the loader, it may continue to be used.

X® TWEEL™ SSL TIRE WARRANTY GUIDE

WARRANTABLE

Manifestation – Broken or Cracked Spokes

- Tweel™ assembly has a broken or cracked spoke. Signs of external aggression are NOT evident. Caution – Some spokes will start as localized damage and propagate across the width of the spoke. Check both sides.

Root Cause

- Potentially caused by the manufacturing process. Review required.

Actions

- Remove and replace.
- Return to Michelin, if:
  - Greater than 5 total broken spokes (broken all the way across the width of the spoke and not caused by impacts or road hazards).
  - Greater than 2 consecutive broken spokes (broken all the way across the width of the spoke and not caused by impacts or road hazards).

INTERIOR

No witness marks are seen on either side of the spokes.

NOTE: (Always inspect the both interior and exterior. Cuts can propagate from either side and appear clean when only looking at only one side.)

EXTERIOR

WARRANTABLE

Manifestation – Broken or Cracked Spokes

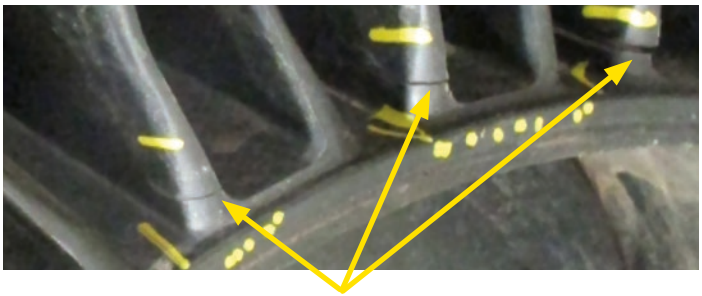
- Tweel™ assembly has a broken or cracked spoke. Signs of external aggression are NOT evident. Caution – Some spokes will start as localized damage and propagate across the width of the spoke. Check both sides.

Root Cause

- Caused by flexion of spoke on weak section of polyresin.
- NOTE: This does NOT have a starting point at the edge of the spokes.

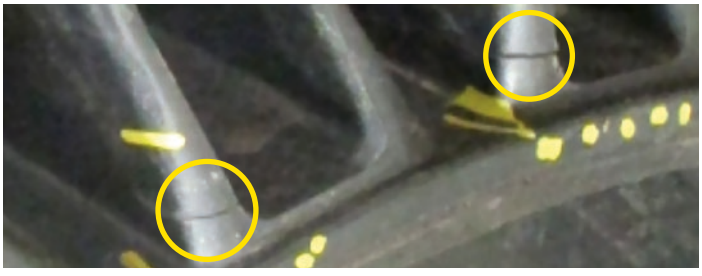
Actions

- Remove and replace.



No witness marks are seen on either side of the spokes.

NOTE: (Always inspect the both interior and exterior. Cuts can propagate from either side and appear clean when only looking at only one side.)



X® TWEEL™ SSL TIRE WARRANTY GUIDE

WARRANTABLE

Manifestation – Spoke Tear, Center of Spoke, Not at Edge

- Tweel™ assembly has broken spoke, cut or tear. Some spokes will start as a localized damage and propagate across the entire spoke.

Root Cause – Manufacturing

- Potentially caused by the manufacturing process.
- NOTE: This does NOT have a starting point at the edge of the spokes.

Actions

- Remove and replace.
- **This issue is Warrantable if**:
  - Greater than 5 total broken spokes (broken all the way across the width of the spoke and not caused by impacts or road hazards).
  - Greater than 2 consecutive broken spokes (broken all the way across the width of the spoke and not caused by impacts or road hazards).

NOT WARRANTABLE

Manifestation – Bent, Dented or Damaged Hub

- Tweel™ hub assembly has dings, tears, divots, scrapes or damage to the hub.

Root Cause – Foreign Objects

- Caused by blunt impact with fixed objects.

Actions

- Ensure operators are aware of hazards.
- As long as the Tweel™ tire continues to provide traction and support of the loader, it may continue to be used.

X® TWEEL™ SSL TIRE WARRANTY GUIDE

NOT WARRANTABLE

Manifestation – Cuts, Chunks or Gouges in the Shear Beam Area

- Tweel™ shear beam exhibits cuts, tears or aggression due to external contact with curbing, asphalt, rocks, steel beams, railroad tracks, etc.

Root Cause – Foreign Objects

- Caused by impact with sharp and fixed objects. Sometimes, the cuts are exacerbated by wheel spinning.

Actions

- Ensure operators are aware of hazards.
- As long as the Tweel™ tire continues to provide traction and support of the loader, it may continue to be used.

NOT WARRANTABLE

Manifestation – Cuts, Chunks or Gouges in the Tread Area

- Tweel™ assembly exhibits cuts, chunks or gouges in the tread area.

Root Cause – Foreign Objects

- Caused by impact with sharp and fixed objects. Sometimes, the cuts are exacerbated by wheel spinning.

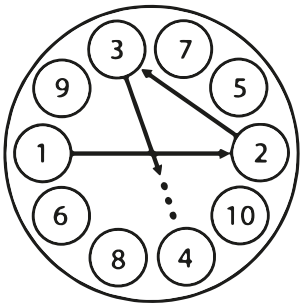
Actions

- Ensure operators are aware of hazards.
- As long as the Tweel™ tire continues to provide traction and support of the loader, it may continue to be used.
- Monitor tread depth and remove for retreading at 4/32".

MICHELIN X® TWEEL™ TMF AIRLESS TIRE TORQUE SPECS AND PROPER MOUNTING

Always follow the original equipment manufacture's requirements for ballast weight assemblies. Contact your local Hiab Service Center for questions.

Warranty for TMF Tweels: 3 years or 2000 hours.



10-Bolt Hub

Action Required

- Use only MOFFET M14-1.50 Wheel Nut (Hiab MOFFET Part Number: 503.055.0345).
- Hand tighten wheel lug nuts until no wobble is evident.
- Torque each wheel lug nut to 150 LB-FT in a star pattern (**see image on right**).
- Check torque after first 10 hours of use, and during every maintenance interval.

Ways to increase the life of a Michelin X® Tweel™ TMF

Repair all cracked spokes as soon as possible to blunt the crack tip and slow crack growth.

See tweel.michelinman.com or contact your local dealer for questions regarding spoke crack repairs.

Tweel spokes are not indestructible, so its important to avoid hard impacts and sharp objects as much as possible.

NOT WARRANTABLE

Manifestation – Cuts, Chunks or Gouges in the Tread Area

- Tweel™ assembly exhibits cuts, chunks or gouges in the tread area.

Root Cause – Foreign Objects

- Caused by impact with sharp and fixed objects. Sometimes, the cuts are exacerbated by wheel spinning.

Actions

- Ensure operators are aware of hazards.
- As long as the Tweel™ tire continues to provide traction and support of the loader, it may continue to be used.
- Monitor tread depth and remove for retreading at 4/32".

X® TWEEL™ TMF TIRE WARRANTY GUIDE

NOT WARRANTABLE

Manifestation – Polyresin Tear Near Shear Beam

- Tweel™ assembly has torn/cut polyurethane material in relation to the Shear Beam area.

Root Cause – Foreign Objects

- Caused by impact with sharp and fixed objects.

Actions

- Ensure operators are aware of hazards.
- As long as the Tweel™ tire continues to provide traction and support of the loader, it may continue to be used.
- Monitor tread depth and remove for retreading at 4/32".

WARRANTABLE

Manifestation – Separations

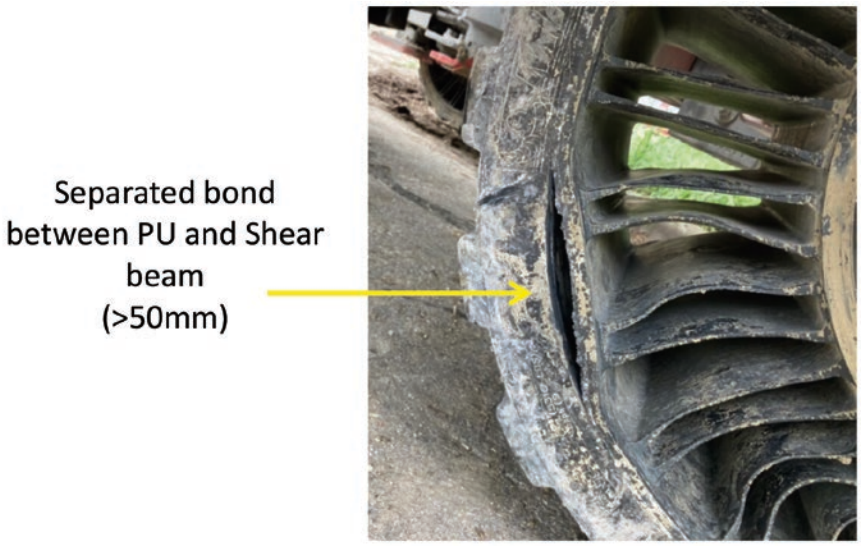
- Deep separations between shear beam and polyresin spokes (>50mm deep).

Root Cause

- Poor adhesion between Rubber in the Shear beam and Polyurethane during manufacture.

Actions

- Deep voids will eventually cause problems in field.
- Shallow separations contained to edge of shear beam have traditionally NOT propagated further.
- ACTION – If <50mm, continue to monitor depth and if separation deepens, alert Tweel Representative for assessment.



X® TWEEL™ TMF TIRE WARRANTY GUIDE

NOT WARRANTABLE

Manifestation – Spoke Damage, Spoke Cuts, Torn Spokes

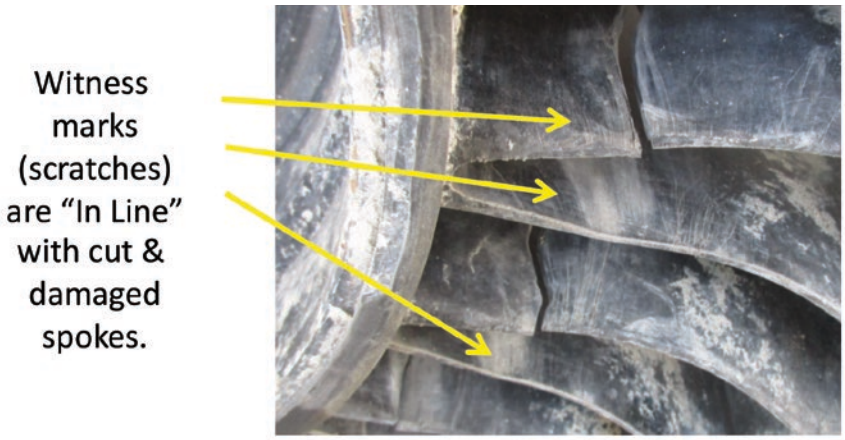
- Tweel™ Assembly has a broken spoke, cut or tear. Signs of external aggression are evident. Some spokes will start as localized damage and propagate across the width of the spoke.

Root Cause – Foreign Objects

- Caused by impact with road hazards, field debris or other objects such as metal or rocks striking Polyurethane spokes.

Actions

- Ensure operators are aware of hazards.
- As long as the Tweel™ tire continues to provide traction and support of the loader, it may continue to be used.



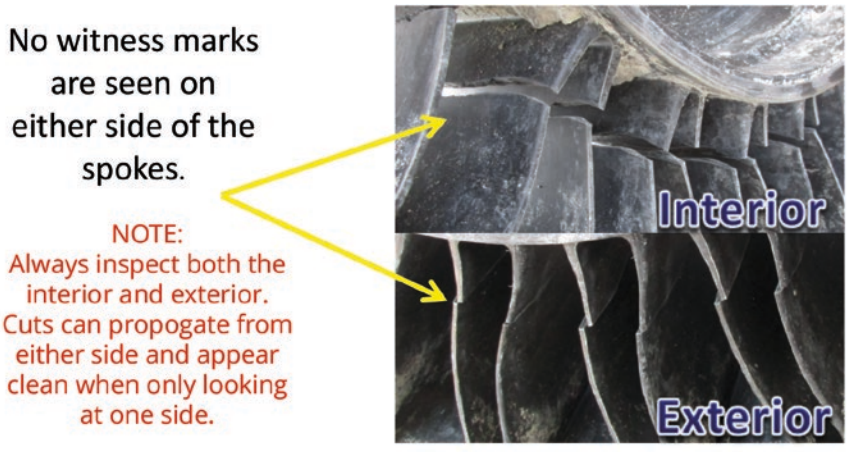
WARRANTABLE

Manifestation – Broken or Cracked Spokes

- Tweel™ Assembly has a broken or cracked spoke. Signs of external aggression are NOT evident. Caution – Some spokes will start as localized damage and propagate across the width of the spoke. Check both sides.

Root Cause – Foreign Objects

- Potentially caused by the manufacturing process. Review required.



Actions

- Remove and replace.
- Return to Michelin.
- Greater than 5 total broken spokes (Broken all the way across the width of the spoke and not caused by impacts or road hazards)
- Greater than 2 consecutive broken spokes (Broken all the way across the width of the spoke and not caused by impacts or road hazards)

TECHNICAL SPECIFICATIONS: X® TWEEL™ TURF TIRES PROPER INSTALLATION INSTRUCTIONS

Action Required

Inspect and verify that the Michelin X® Tweel™ tire and wheel assembly is mounted properly.

Michelin X® Tweel™ Airless Radial Tire to Machine Torque Specification

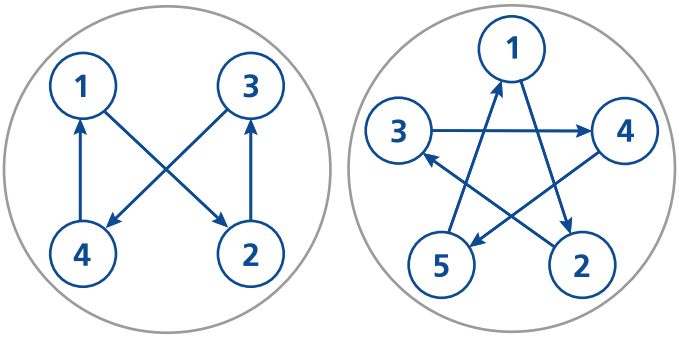
- Ensure lug nuts with a 60° conical seat are used, and free from damage as pictured.
- Tighten lug nuts to a snug "finger tight" condition (no wobble evident between the MICHELIN TWEEL tire and wheel assembly and the mounting surface).
- Then torque each lug nut to the machine manufacturer's specifications in a 'star pattern' sequence (see illustration on right).
- **DO NOT EXCEED 75 lb-ft!**
- Lug nuts should be re-torqued after first 10 hours of use, and during every maintenance interval.

Michelin X® Tweel™ ZTR/Turf Warranty:
3 Years or 2,000 Hours or Usable Tread Life

Michelin X® Tweel™ Golf Cart Warranty:
3 Years or 12,000 Miles or 20,000 Kilometers

⚠ WARNING Incorrect mounting can lead to separation of the TWEEL from the vehicle, loss of control, serious injury or death.

Star Pattern Sequence for Tightening Lug Bolts



4-Bolt Hub 5-Bolt Hub

Good Lug Nut

Good Stud

Worn Lug Nut – Do Not Use

Damaged Stud – Do Not Use

X® TWEEL™ TURF TIRE WARRANTY GUIDE

WARRANTABLE (If >50mm Deep)

Manifestation – Separations

- Deep separations between shear beam and polyresin spokes (>50mm deep).

Root Cause

- Caused by poor adhesion between rubber in the shear beam and polyresin during manufacture.

Actions

- Deep voids will eventually cause problems in field.
- Shallow separations contained to edge of shear beam have traditionally NOT propagated further.
- ACTION – Continue to monitor the depth and if they deepen, contact your Michelin representative.

NOT WARRANTABLE

Manifestation – Wallowed Bolt Holes

- Assembly has wallowed out and misshapen bolt holes.

Root Cause

- Incorrect size lug nuts.
- Worn lug nuts (taper).
- Mounting lug nuts backwards.
- Incorrect mounting procedures (i.e. torquing procedures or pattern).

Actions

- Ensure lug nuts and threads of mounting bolts are in good condition each time TWEEL assembly is removed. Replace worn bolts and lug nuts.
- Ensure lug nuts with a 60° conical seat are used.
- Tighten lug nuts to a snug "finger tight" condition (no wobble evident between the MICHELIN TWEEL tire and wheel assembly and the mounting surface).
- Then torque each lug nut to the machine manufacturer's specifications in a "star pattern" sequence.
- Lug nuts should be re-torqued after first 10 hours of use, and during every maintenance interval.

X® TWEEL™ TURF TIRE WARRANTY GUIDE

NOT WARRANTABLE

Manifestation – Damaged/Torn Spokes

- Tweel™ assembly has a broken spoke, cut or tear. Signs of external aggression are evident. Some spokes will start as localized damage and propagate across the entire spoke.

Root Cause – Foreign Objects

- Caused by impact with road or field hazards, or loose objects such as metal or rocks striking polyresin spokes at speed.

Actions

- Ensure Operators are aware of hazards when mowing.
- As long as Tweel™ tire continues to provide traction and support of mower it may be used.

WARRANTABLE

Manifestation – Spoke Tear, Center of Spoke, Not at Edge

- Tweel™ assembly has broken spoke, cut or tear. Some spokes will start as a localized damage and propagate across the entire spoke.

Root Cause – Manufacturing

- Caused by flexion of spoke on weak section of polyresin.
- NOTE: This does NOT have a starting point at the edge of the spokes.

Actions

- A Michelin representative should be informed promptly if this is observed.
- As long as Tweel™ tire continues to provide traction and support of mower it may be used.
- **This issue is Warrantable if**:
  - Greater than 5 total broken spokes (broken all the way across the width of the spoke and not caused by impacts or road hazards).
  - Greater than 2 consecutive broken spokes (broken all the way across the width of the spoke and not caused by impacts or road hazards).

NOT WARRANTABLE

Manifestation – Spoke Damage by Embedded Object)

- Tweel™ assembly has a broken spoke, cut or tear due to external object striking with force.

Root Cause – Foreign Objects

- Caused by impact with road or field hazards, or loose objects such as metal or rocks striking polyresin spokes at speed.

Actions

- Ensure operators are aware of potential job site hazards.
- As long as the Tweel™ tire continues to provide traction and support of the mower, it may continue to be used.

NOT WARRANTABLE

Manifestation – Shear Beam Damage by Curbs, Objects

- Tweel™ Assembly has surface cuts, tear, or aggression due to external striking of curbing, asphalt, rocks, etc.

Root Cause – Foreign Objects

- Caused by impact with road or field hazards, or loose objects such as metal or rocks striking shear beam at speed.

Actions

- Ensure Operators are aware of potential job site hazards.
- As long as the Tweel™ tire continues to provide traction and support of the mower, it may continue to be used.

X® TWEEL™ TURF TIRE WARRANTY GUIDE

NOT WARRANTABLE

Manifestation – Wobble

- Tweel™ assembly displays non-concentric lateral run-out tolerances that effect ride.

Root Cause – Impact Damage

- Normally caused from oblique striking of curbs at high speed.

Actions

- Take care when climbing curbs to approach slowly.

X® TWEEL™ CASTER WARRANTY GUIDE

WARRANTABLE

Manifestation – Wobble

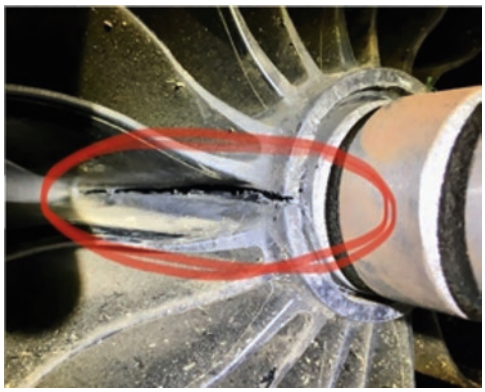
- Polymer material around the hub area has cracked and/or broken.

Root Cause

- Combination of severe use, original material selection, or variation in manufacturing process parameters.

Actions

- Remove and replace.
- Contact your Michelin representative.



WARRANTABLE

Manifestation – Wobble

- Polymer tread has cracked across the crown.

Root Cause

- Combination of severe use, original material selection, or variation in manufacturing process parameters.

Actions

- Remove and replace.
- Contact your Michelin representative.

WARRANTABLE

Manifestation – Wobble

- Bushing/Bearing area has filled with outside materials.

Root Cause

- Not having installed dust covers when Tweel Caster was put into service.

Actions

- Remove and replace.
- Contact your Michelin representative.
- Install dust covers whenever using this fitment.
- Dust covers must be installed to maintain Tweel warranty.

TECHNICAL SPECIFICATIONS: X® TWEEL™ UTV TIRES PROPER INSTALLATION INSTRUCTIONS

The Michelin X® Tweel™ airless radial tire is manufactured with a specific wheel offset and bolt pattern that matches many OEM fitments. However in some cases, an adapter or spacer can be used to ensure there is no interference with the machine.

MICHELIN TWEEL Airless Radial Tire Mounting to Machine

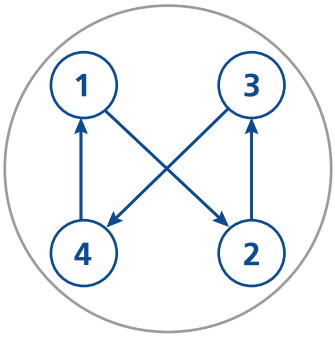
- Ensure the vehicle hub mounting surface is clean and smooth.
- Ensure lug nuts with a 60° conical seat are used.
- Tighten lug nuts to a snug "finger tight" condition (no wobble evident between the Michelin Tweel™ tire and the mounting surface).
- Then torque each lug nut to the machine manufacturer's specifications in a 'star pattern' sequence.
- Lug nuts should be re-torqued after first 10 hours of use, and during every maintenance interval.
- See https://tweel.michelinman.com or contact your local dealer for questions on mounting with spacers and adapters.

The Michelin X® Tweel™ UTV tire is specifically designed for ATVs/UTVs. Please refer to the U.S. Tire Manufacturers Tire Information Service Bulletin TISB 07 – Misapplication of "Not for Highway Service (NHS)" Tires for more information.

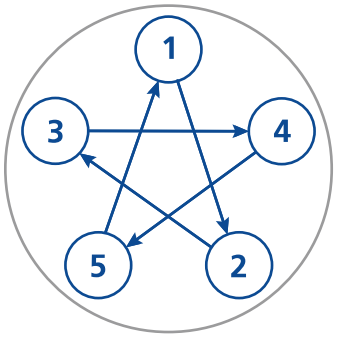
Tweel™ ATV/UTV tires are not DOT approved. Some counties and states in the USA allow ATVs/UTVs to be used on public roads. A DOT approved tire is not currently required by the counties and states in the USA that allow the use of an ATV/UTV on public roads. Please consult local or state laws for using your ATV/UTV on public roads.

Michelin X® Tweel™ UTV Warranty:
3 Years or 12,000 Miles or 20,000 Kilometers

Star Pattern Sequence for Tightening Lug Bolts



4-Bolt Hub



5-Bolt Hub

60° Conical Seat Nut

All Other Types of Nuts

X® TWEEL™ UTV TIRE WARRANTY GUIDE

WARRANTABLE (If >50mm Deep)

Manifestation – Separations

- Deep separations between shear beam and polyresin spokes (>50mm deep).

Root Cause

- Caused by poor adhesion between rubber in shear beam and polyresin during manufacture.

Actions

- Deep voids will eventually cause problems in field.
- Shallow separations contained to edge of shear beam have traditionally NOT propagated further.
- ACTION – Continue to monitor the depth and if they deepen contact your Michelin representative.

NOT WARRANTABLE

Manifestation – Spoke Damage by Embedded Object)

- Tweel™ assembly has a broken spoke, cut or tear due to external object striking with force.

Root Cause – Foreign Objects

- Caused by impact with road or field hazards, or loose objects such as metal or rocks striking polyresin spokes at speed.

Actions

- Ensure operators are aware of potential hazards.
- As long as the Tweel™ tire continues to provide traction and support of the machine, it may continue to be used.

X® TWEEL™ UTV TIRE WARRANTY GUIDE

NOT WARRANTABLE

Manifestation – Damaged/Torn Spokes

- Tweel™ assembly has a broken spoke, cut or tear. Signs of external aggression are evident. Some spokes will start as localized damage and propagate across the entire spoke.

Root Cause – Foreign Objects

- Caused by impact with road or field hazards, or loose objects such as metal or rocks striking polyresin spokes at speed.

Actions

- Ensure operators are aware of potential hazards.
- As long as the Tweel™ tire continues to provide traction and support of utility vehicle it may be used.

NOT WARRANTABLE

Manifestation – Wallowed Bolt Holes

- Assembly has wallowed out and misshapen bolt holes.

Root Cause

- Incorrect size lug nuts.
- Worn lug nuts (taper).
- Mounting lug nuts backwards.
- Incorrect mounting procedures (i.e. torquing procedures or pattern).

Actions

- Ensure lug nuts and threads of mounting bolts are in good condition each time TWEEL assembly is removed. Replace worn bolts and lug nuts.
- Ensure lug nuts with a 60° conical seat are used.
- Tighten lug nuts to a snug "finger tight" condition (no wobble evident between the MICHELIN TWEEL tire and wheel assembly and the mounting surface).
- Then torque each lug nut to the machine manufacturer's specifications in a "star pattern" sequence.
- Lug nuts should be re-torqued after first 10 hours of use, and during every maintenance interval.

NOTES

NOTES

TWEEL™

Airless Radial Tire

For more information about the Michelin Tweel™ Warranty please refer to information available on the Michelin Tweel™ website.

https://tweel.michelinman.com

For further assistance (in the USA)

Call: 1-888-622-2306

Or Write: Michelin Consumer Care
P.O. Box 19001
Greenville, SC 29602-9001