Mass Excavator Undercarriage measurements

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EX8000 9

Hitachi

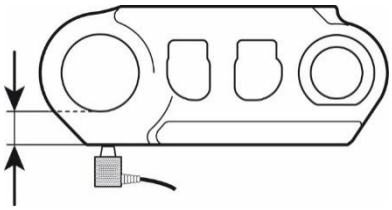
EX1200/EX1900/EX2000

1. Link

Measure the link with Depth Gauge or Ultrasonics

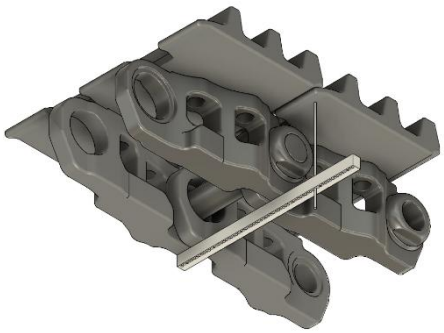
Link - Ultrasonic - UT Probe must be directly over the mid- point of the pin hole. Ensure probe is clear of dirt and debris

1. Measure the rail over the bush strap or the bush end of the link.
2. Twist probe to ensure proper signal.



Link – Depth Gauge

1. Measure amount of material between the rail and bush.
2. Make sure under surface of shoe is clean.
3. Place the depth gauge on the bottom of the rail with pin passing directly through the centre of the bush to meet the undersurface of the shoe.
4. Measure pin length with a Ruler.



2. Bushes

Measure the Bush with Ultrasonics or Callipers

Bush – Ultrasonic Measurement

1. Measure both sides of the bush with the ultrasonic tool.
2. Test several points on both sides of the bush until you find the lowest reading.
3. Use the lowest value to calculate the percentage worn.

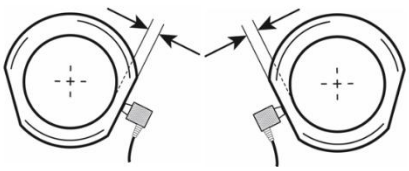


Fig.1 Forward Direction measurement

Fig.2 Reverse Direction Measurement

Bush Calliper Measurement

1. Feel the bush with your hand to see if it has been turned. If it has been turned, a calliper cannot be used to measure the bush.
2. The bush is worn on both sides from forward and reverse motion
3. Ensure the callipers are at 90o to the bush.
4. Measure the forward wear surface, and then the reverse wear surface. Check the measurement with a tape measure.
5. Use the lowest value to calculate the percentage worn.

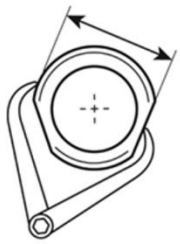


Fig.1 Forward Direction measurement

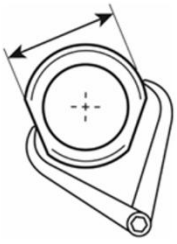
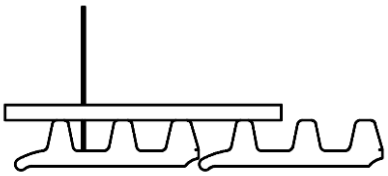


Fig.2 Reverse Direction Measurement

3. Track Shoe

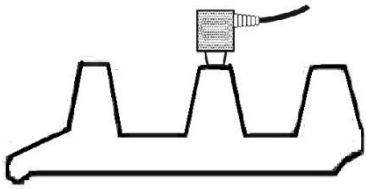
Measuring the Track Shoe with Depth Gauge or Ultrasonics

Track Shoe - Grouser Height - Depth Guage



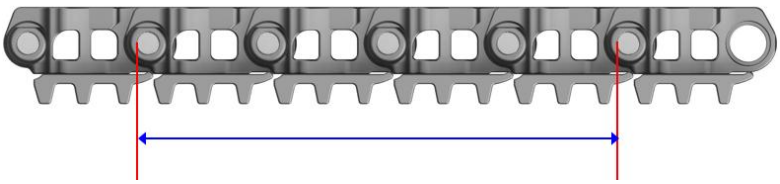
1. Place the depth gauge across two flat shoes from grouser to grouser.
2. Place the pin through the depth gauge to the top of shoe.
3. Measure pin length with a tape measure.

Measuring the Track Shoe with Ultrasonics



1. Place the probe on the grouser bar at least 1/3of the distance across the grouser bar. Measure the thickness.

4. Track Elongation – Tape Measure



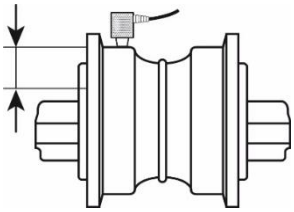
1. Track elongation needs to be measured over four links.
2. Find an easily accessible point on a link and measure to the same point on the fourth link.

5. Track Rollers

Measuring the Track Roller with Ultrasonics, Callipers or Depth Gauge

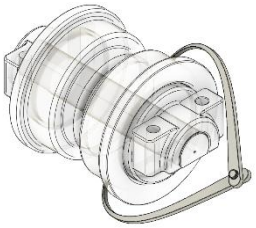
Track Rollers with Ultrasonics –

1. Measure different points using the ultrasonic tool.
2. Find and record the lowest reading.
3. Ensure measurement is not over a bolt hole.



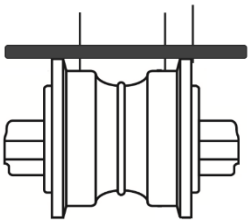
Track Rollers with Callipers

1. Place callipers at right angle to the track roller.
2. Find the lowest points of measurements with the tips of the callipers.



Track Rollers with depth Gauge

1. Place the depth Gauge across the top of the flanges
2. Push a pin down onto each surface where it comes into contact with the rail

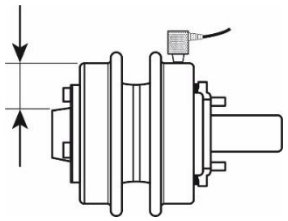


6. Carrier Rollers

Measuring the Carrier Roller with Ultrasonics or Callipers

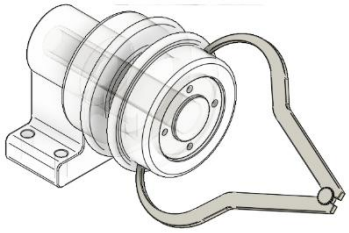
Carrier Rollers with Ultrasonics –

1. Measure different points using the ultrasonic tool.
2. Find and record the lowest reading.
3. Ensure measurement is not over a bolt hole.



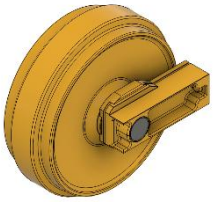
Carrier Rollers with Callipers

1. Place callipers at right angle to the track roller.
2. Find the lowest points of measurements with the tips of the callipers.

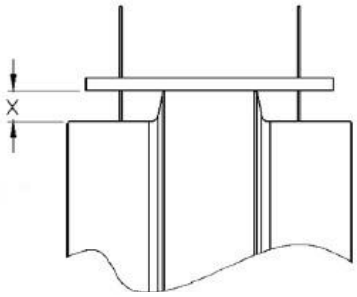


7. Idlers

Measuring Flange Height with Depth gauge



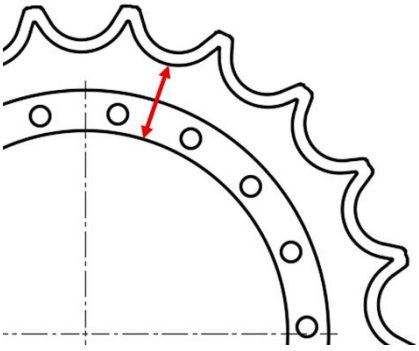
1. Brush idler clean of debris.
2. Lay depth gauge bar onto flat surface of the idler.
3. Push pins down to the wear surface, ensure there is no riding.
4. Measure each of the pins to obtain the average measurement.



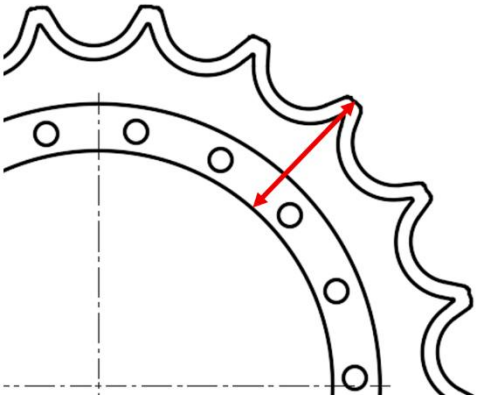
8. Sprocket

Measuring Sprocket Tooth Tip and Tooth Valley difference using Callipers or Pattern

5. **Tooth Valley – Ruler or Calliper** – Measure from a common structure such as the Final Drive Housing to the Tooth Valley Floor



6. **Tooth Tip – Ruler or Calliper** – Measure from a common structure such as the Final Drive Housing to the Tooth Tip
7. Subtract Tooth Valley dimension from Tooth Tip dimension to arrive at assessable value.
8. If cannot get a reasonable reading, use the evaluation codes A, B, C, X to provide an indication of condition

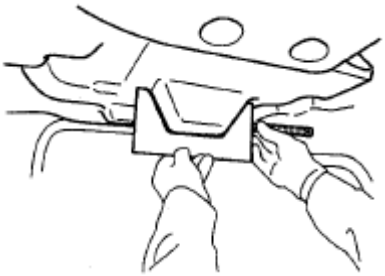


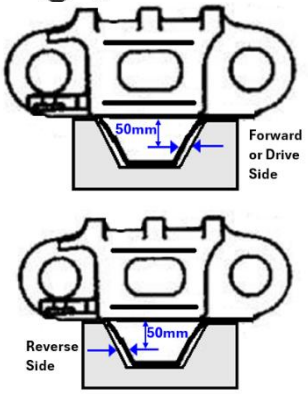
EX2500/EX2600/EX3500/EX3600/EX5500/EX5600

1. Monoblock – Track Shoe

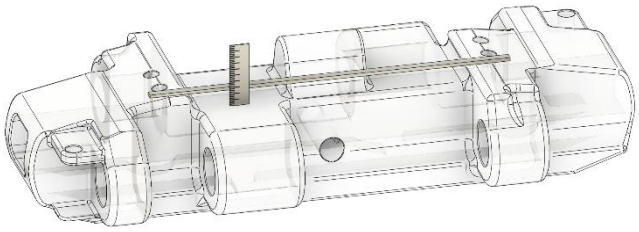
Measure the Track Shoe Tooth Length, Track Shoe Tread, Track Shoe Grouser Height and Track Shoe Pitch

1.1. **Track Shoe Tooth Length** – use a pattern placed over the Tooth/Drive Lug and measure at the point 50mm above the height of the tooth base as shown on the image.
Measure the Forward Drive Side.
Then measure the Reverse Drive Side of the Tooth

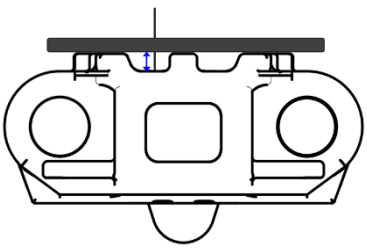




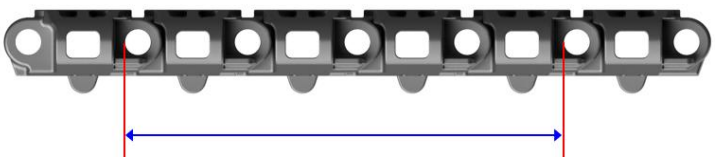
1.2. **Track Shoe Tread Depth** – use a ruler placed across the bae of the shoe against the drive lug and measure the depth of the Tread Path. The tread path will increase in depth as it becomes worn.



1.3. **Track Shoe Grouser Height** – Place the Depth Gauge across the grousers as shown in the image. Press the pin down to the surface of the Track Pad between the grousers. The measure the length of the extended Pin



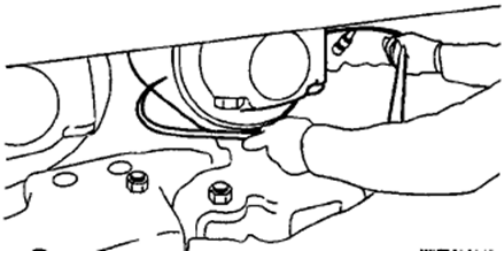
1.4. **Track Elongation** – measure 4 sections with the starting point the same as the ending point

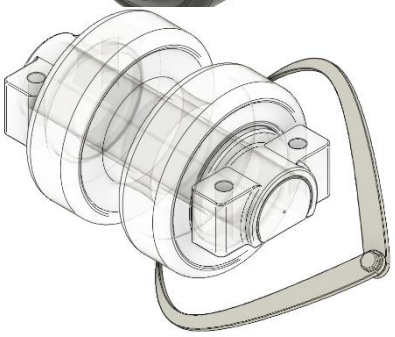


2. Track/Lower Roller

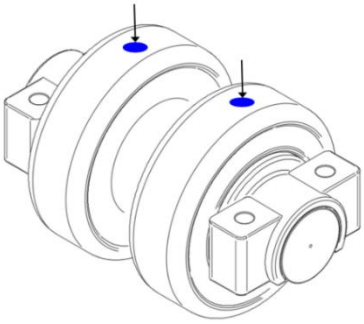
Measure the Lower Roller with Calliper or Ultrasonics

2.1. **Lower Roller – Calliper** - measure the Carrier Roller in a number of positions using the calliper.





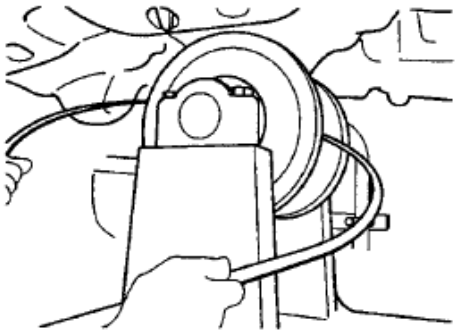
2.2. **Track Roller - Ultrasonic Tool** - Use the Ultrasonic Tool to measure both areas of the roller surface in contact with the Rail. Use the lowest/most worn value.

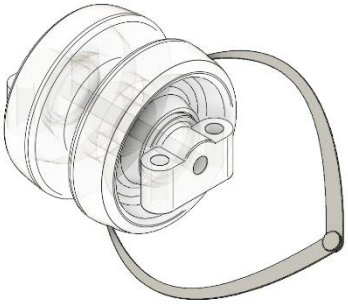


3. Carrier/Upper Roller

Measure the Carrier or Upper Roller with Calliper

Carrier Roller – **Calliper** – measure the Carrier Roller in a number of positions using the calliper.

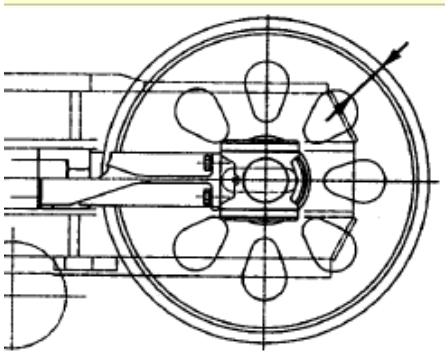


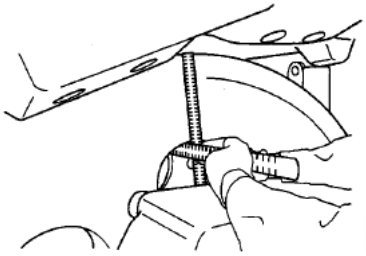


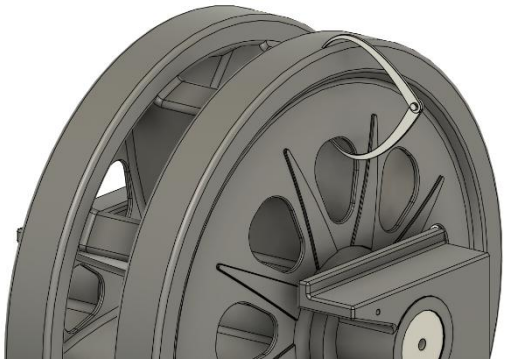
4. Front Idler

Measure the Idler Tread Path Wear

Front Idler – **Ruler** – measure the distance from the top of the Tear Drop to the surface of the Rim or Tread Path





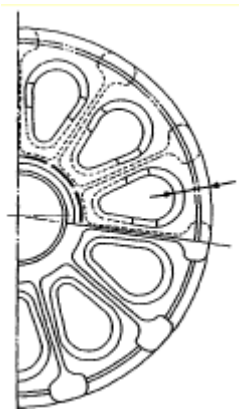


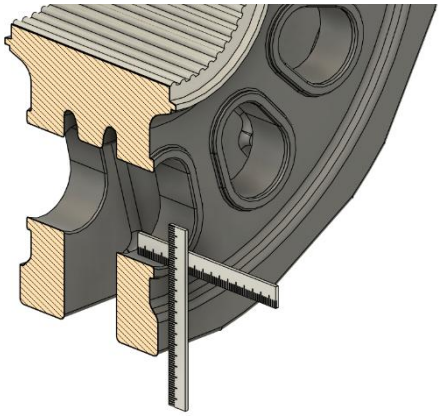
Tumbler

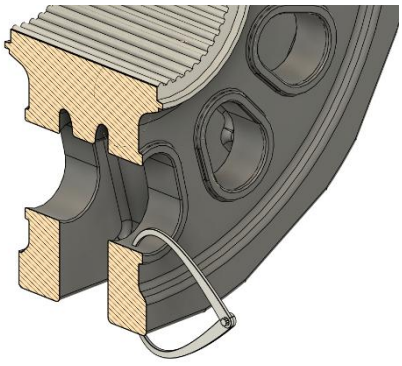
Measure the Tumbler Tread Depth Wear and the ear on the Drive Lug/Claw

4.1. **Tumbler Tread Depth** – **Ruler** –

Measure the thickness of the Tread Depth using a bar passing though the top of the Tear Drop, and measuring to the top of the surface of the Tread Path

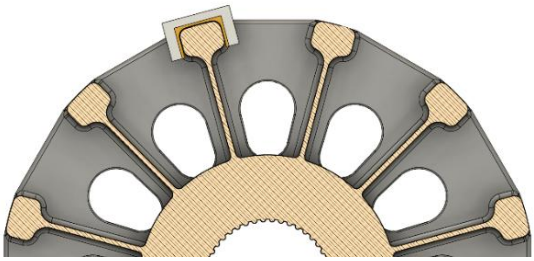




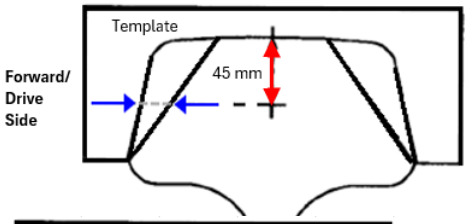


4.2. **Tumbler Tooth Dimension – Forward and Reverse**

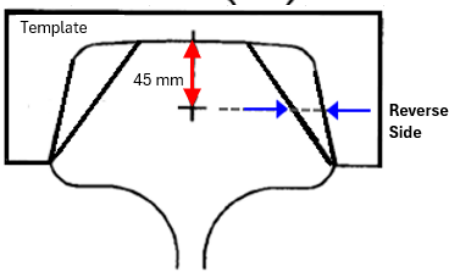
Measurement – Ruler and Pattern

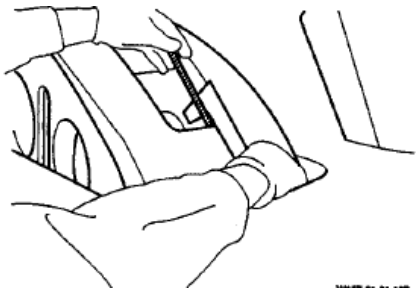


Forward – using the Template or Pattern, place pattern over the Tumbler Tooth and then at the point marked on the pattern, 45 mm below the upper surface, measure with a ruler the gap between the Patter and the Tooth surface



Reverse – using the Template or Pattern, place pattern over the Tumbler Tooth and then at the point marked on the pattern, 45 mm below the upper surface, measure with a ruler the gap between the Patter and the Tooth surface



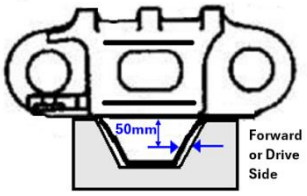


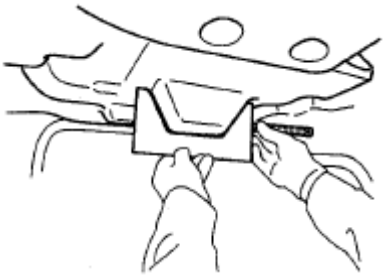
EX8000

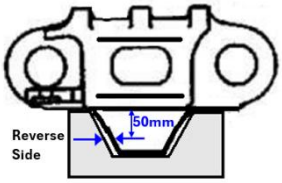
2. Monoblock – Track Shoe

Measure the Track Shoe Tooth Length, Track Shoe Tread, Track Shoe Grouser Height and Track Shoe Pitch

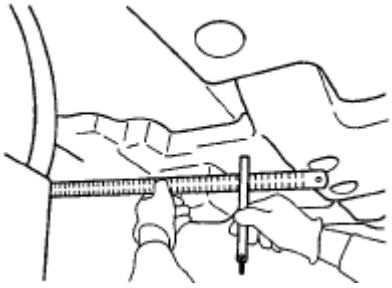
4.3. **Track Shoe Tooth Length** – use a pattern placed over the Tooth/Drive Lug and measure at the point 50mm above the height of the tooth base as shown on the image.
Measure the Forward Drive Side.
Then measure the Reverse Drive Side of the Tooth



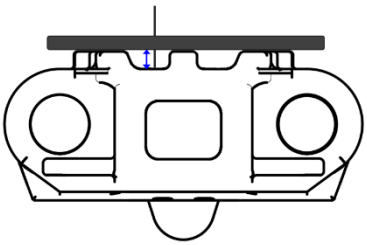




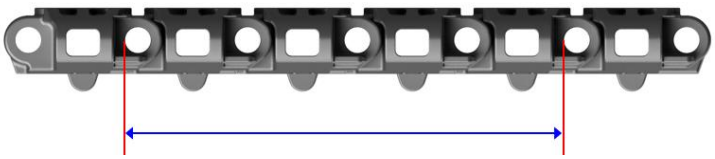
4.4. **Track Shoe Tread Depth** – use a ruler placed across the bae of the shoe against the drive lug and measure the depth of the Tread Path. The tread path will increase in depth as it becomes worn.



4.5. **Track Shoe Grouser Height** – Place the Depth Gauge across the grousers as shown in the image. Press the pin down to the surface of the Track Pad between the grousers. The measure the length of the extended Pin



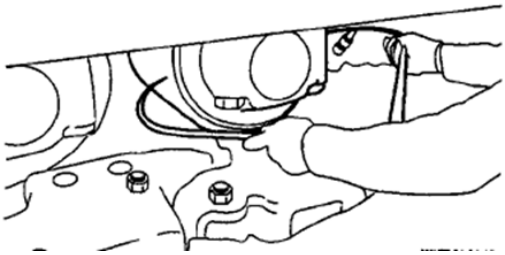
4.6. **Track Elongation** – measure 4 sections with the starting point the same as the ending point

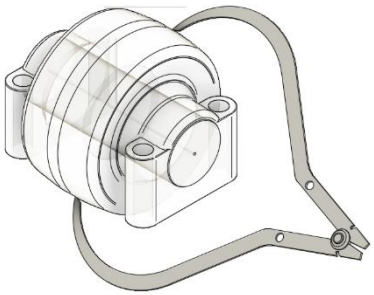


5. Track/Lower Roller

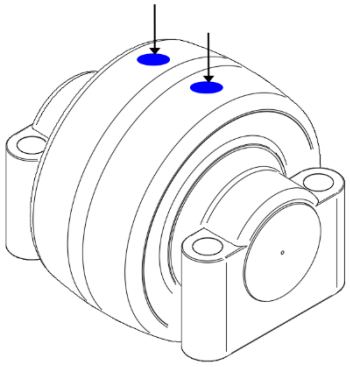
Measure the Lower Roller with Calliper or Ultrasonics

5.1. **Lower Roller – Calliper** - measure the Carrier Roller in a number of positions using the calliper.





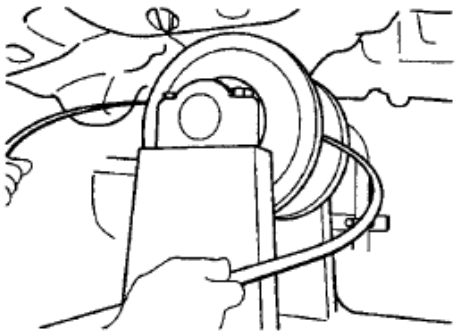
5.2. **Track Roller - Ultrasonic Tool** - Use the Ultrasonic Tool to measure both areas of the roller surface in contact with the Rail. Use the lowest/most worn value.

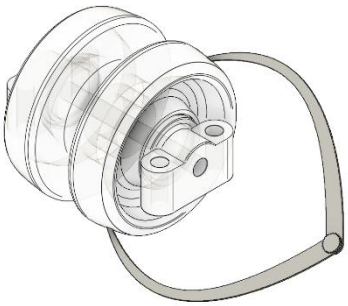


6. Carrier/Upper Roller

Measure the Carrier or Upper Roller with Calliper

Carrier Roller – **Calliper** – measure the Carrier Roller in a number of positions using the calliper.

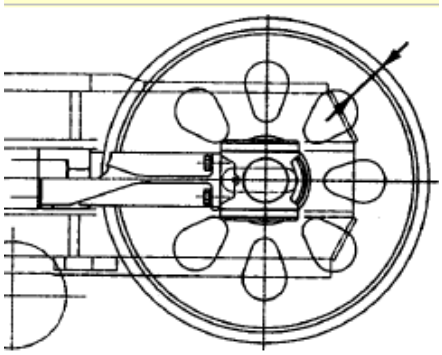


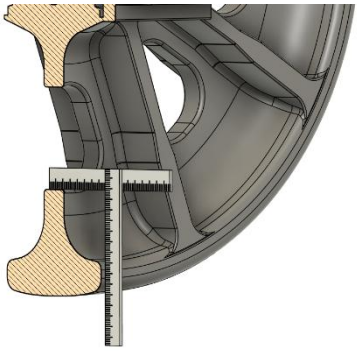


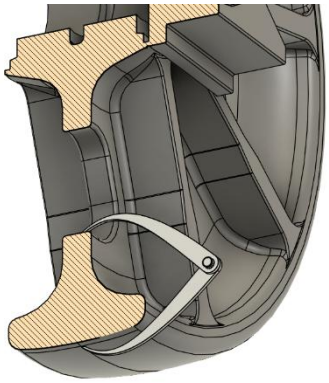
7. Front Idler

Measure the Idler Tread Path Wear

Front Idler – **Ruler** – measure the distance from the top of the Tear Drop to the surface of the Rim or Tread Path



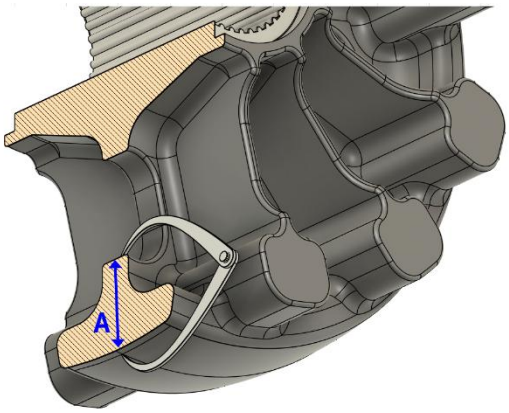




8. Tumbler

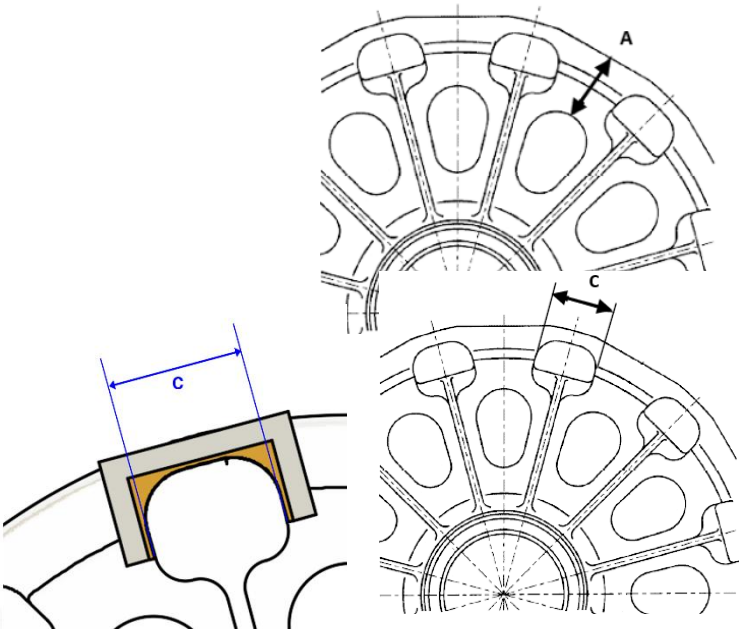
Measure the Drive Tumbler Tread Outer Diameter, Claw Length and Tread Width

Drive Tumbler Tread Outer Diameter – **Ruler** – measure the thickness of the Tread Depth using a caliper with the teeth located in the 2 position: 1. On the top of the Tear drop 2: Middle of the outer Surface of the Tread Path as shown in the diagram.



Drive Tumbler - Claw Length - Ruler

Use a Template placed over the Claw, to measure the width C and effectively the wear of the Claw



Drive Tumbler - Tread Width – Template –

Measure the Tread Width (B) using a Template placed on the Tread as shown in the Image