Cat® Undercarriage

System Management

Management Guide

- Operating and Maintenance Tips
- Track Adjustment Procedures
- Hardware Requirements

CAT®

Undercarriage System Management

Work it hard. Make it last. Fix it right.

Caterpillar® Undercarriage is designed to work and wear as a system to reduce your operating costs.

You make daily decisions that impact undercarriage wear and costs. This guide can help you and your operators understand how undercarriage works and how to reduce wear and save money. Although wear can't be halted, we are committed to helping you make each undercarriage system last with correct operation and maintenance.

Your Undercarriage Management Guide is not a repair manual.

You shouldn't try to diagnose undercarriage problems from the pictures and descriptions in this book. This guide is not a substitute for the advice and recommendations of your parts and service representative.

Operating and Maintenance Tips

Custom Track Service

Your undercarriage is an expensive investment. It accounts for as much as 20 percent of the price of a new track-type machine. Undercarriage can represent as much as 50 percent of machine maintenance costs.

Our goal is to help keep your undercarriage operating cost per hour or per mile/km as low as possible.

That's why we developed Custom Track Service (CTS).

Our parts and service representatives:

- Have the best training and tools to manage your undercarriage system.
- Regularly inspect and measure wear on your undercarriage.
- Prepare reports with maintenance and repair alternatives so you can make informed decisions to reach the lowest possible cost-per-hour or per mile/km of operation.

While there is no substitute for Custom Track Service, you also play an important role in maintaining undercarriage life. The following pages describe conditions and situations that affect undercarriage and highlight ways you can help slow or reduce wear.

Factors Affecting Wear

Application

The type of job the machine is doing and the type of materials it is working in can affect the rate of wear on different components. The following situations all assume level terrain:

Dozing and push loading usually shift the machine weight toward the front, causing faster wear rates on the front rollers and idlers.

Ripping and drawbar shift the weight toward the back, increasing wear on the rear rollers, idlers, and sprockets.

Loading, as with a carry dozer, shifts the weight from the rear to the front of the machine as it changes from digging to carrying. Wear will occur more on the front and rear rollers than the center ones.

Excavating shifts the weight to the side where the digging is being done. Spreading dumped material tends to create more wear on the undercarriage side where the operator hits the pile, due to the material entering the undercarriage from the side.

Packing

During operation, materials can stick to and pack between mating components such as rollers, links, sprocket teeth, and bushings. Packing prevents parts from engaging correctly. This can cause higher loads and increased wear rates. Packing is inevitable in many applications; however, there are things you can do to reduce the effects of packing.

- Use center punched shoes in certain situations to help relieve extrudable materials such as wet sand, clay, or snow.
- Clean out your undercarriage as often as possible. Garbage, twigs, stones, and demolition debris cannot be extruded through the center punched shoes.
- Use roller guards only when necessary because they may trap debris and increase the effects of packing. They are designed primarily for use in high-impactunderfoot conditions.

Terrain

Most of the time you can't control the terrain you are working in. However, it is important to understand how contours and slopes affect undercarriage wear.

Working uphill shifts the weight and load balance to the rear, causing higher wear on rear rollers and increasing forward drive side sprocket and bushing wear.

Working downhill shifts weight and load balance forward causing a relatively higher wear rate on front track rollers and idlers.

Working on a side hill shifts the weight and load balance to the downhill side of the machine. This increases the wear rate on the components and parts on the sides that are on the upper side of the hill.

Working on a crown shifts the load to the inboard components, increasing wear on inner links, inner roller, idler treads, and grouser ends.

Working in a depression shifts the load to the outboard components, increasing wear on outer links, outer roller, idler treads, and grouser ends.

Operating and Maintenance Tips

Factors Affecting Wear

Always use the narrowest shoe possible

Use narrow shoes which still provide adequate flotation for your application. Proper floatation helps to reduce wear by keeping track from being submerged in material, but using wider shoes than required by your application can lead to:

- *Increased bushing and sprocket wear*
  Turning resistance, loads, and weight increase with wider shoes, especially in rough underfoot conditions. This added stress causes faster wear rates for bushings and sprockets.
- *Increased link, track roller, idler tread, and flange wear*
  Using shoes that are too wide increases the interference between these surfaces, causing them to wear faster.
- *Loosening of pins, bushings, and shoe hardware*
  Leverage forces increase with wider shoes. In high impact or especially rough terrain, greater leverage forces may lead to premature loosening of bolted and pressed-fit components.
- *Reduction of track joint life*
  Bending forces are exaggerated when using wide shoes in high impact applications, causing pressed track joints to "open up." This may lead to loss of lubricant, internal wear, and replacement or reconditioning of track joints sooner than expected.
- *Shoe breakage*
  Severe turning resistance in extreme conditions and bending forces may cause wide shoes to break.

Your parts and service representative can help determine the best shoe width for your underfoot conditions.

Control the operation of your machine

One of the best ways to protect your machine against unnecessary wear is to make sure it is used properly. All of the following cause additional wear on the components of your undercarriage:

- Slipping the track reduces production and increases wear on all undercarriage components, especially on grouser bars.
- Avoid unnecessary reverse operations Non-productive reverse operation compounds bushing and sprocket wear. If the machine must be taxied from one location to another, reverse operation will cause more bushing wear regardless of speed.
- Operating the machine at a non-productive high speed may cause link, tractor roller, and idler tread wear. Wear increases proportionally to speed.
- Always turning the machine in one direction may cause link side rail/ track roller flange and idler flange wear. Wear increases on one side of the machine because of the greater horsepower and distance traveled.

Be sure your track is always properly adjusted

Every application affects undercarriage wear differently and requires proper track adjustment. Adjust your track in the underfoot conditions in which your machine is working. For example, if track that is correctly adjusted for a non-packing application is put into a packing situation, packing materials will increase track tension, making the track adjustment too tight. Added track tension increases both the load and the wear on all mating components of your undercarriage.
Improperly adjusted track can result in problems and wear on other components such as:

- *Bushing and sprocket accelerated wear*
  Tight track increases loads which advances wear. Wear occurs as the bushing rotates and/or slides in the sprocket.
- *Link, track roller, and idler accelerated wear*
  To a lesser extent, tight track increases loads between the links, rollers, and idlers. This particularly accelerates wear on the idlers.

For information on how to adjust your track, see Track Adjustment Procedures.

Undercarriage repair options

Maximize the life of your undercarriage and reduce your cost per hour by taking advantage of these undercarriage repair options:

- Wet bushing turn
- Roller reshelling
- Roller swapping
- Idler resurfacing
- Track shoe regrousering

Operating Checklist

- ☐ *1. Always use the narrowest shoe possible which still allows adequate flotation.*
- ☐ *2. Minimize high operating speeds in non-productive situations, especially in reverse.*
- ☐ *3. Alternate turning direction since turning only in one direction wears out one side of the machine faster than the other.*
- ☐ *4. Rotate the track from side to side if you or your operators tend to work on one side of the machine more than the other.*
- ☐ *5. Do not spin the tracks since it reduces production while increasing wear on all undercarriage components, especially on grouser bars.*

Maintenance Checklist

- ☐ 1. Call your parts and service representative for expert advice and service.
- ☐ 2. Adjust the track for correct tension. Always adjust track in its working environment. Correct track adjustment is critical.
- ☐ 3. Tighten the track hardware correctly, using Caterpillar torque-turn method.
- ☐ 4. Make daily visual inspections of the equipment. Check for loose bolts, leaking seals, and abnormal wear.
- ☐ 5. Keep the undercarriage clean of mud and debris so rollers can turn properly.

Track Adjustment Procedures

Incorrectly adjusted track can cost you money both in accelerated undercarriage wear and downtime.

If the track is too tight, damaging non-productive loads are placed on the undercarriage and its manual components.

Tight track accelerates track wear and reduces tractor drawbar horsepower. Adjustment procedures take only a few minutes and require only one person.

When adjusting your track on any Caterpillar machine:

1. *Always adjust the track in the working area.*
2. *Do not try to squeeze any packing material from in between the track.*
3. *Never loosen the relief valve more than one turn. Grease and oil are under extreme pressure and can penetrate the body, causing serious injury.*

Elevated Sprocket Tractors

1. Move the tractor forward and let it coast to a stop without applying the brakes. Make sure slack is between the sprocket and front idler. Then park the machine and turn off the engine. Place a tight line over the grouser tips from the sprocket to the front idler.

2. For machines without carrier rollers, measure the distance "A" from the line to the grouser tip at the lowest point of sag. Refer to Chart 1 to determine the correct sag for each model.

For machines with carrier rollers, measure the distance from the line to the grouser tips in two places at the lowest point of sag between the front idler and carrier roller "A" and between the carrier roller and sprocket "B." Then average the two measurements. Refer to Chart 2 to determine the correct sag for your model.

For SystemOne machines with or without carrier rollers, refer to chart 3.

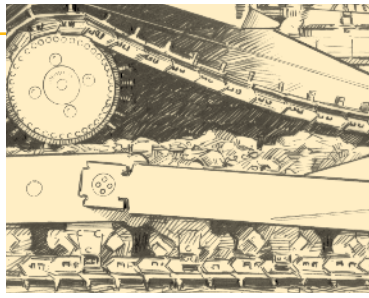
3. If your track requires adjustment, locate the hydraulic fill and relief valve in the rear roller frame, and remove the inspection cover.

Using a manual grease gun, add grease at the adjustment mechanism to tighten the track. To loosen the track, open the relief valve and allow grease to escape. Then close the relief valve.

4. Operate the machine in forward and reverse, then re-measure track tension.

To avoid damage to internal roller frame components, do not allow the length of the exposed tube "B" to exceed the dimensions listed in Chart 4.

1.



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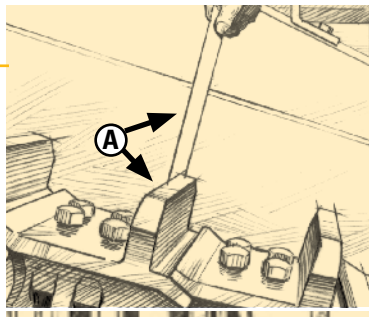

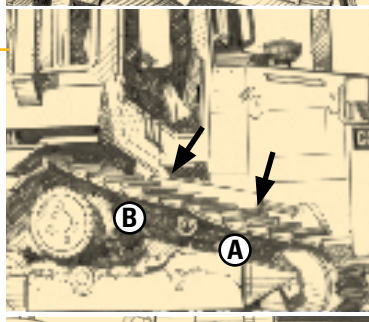

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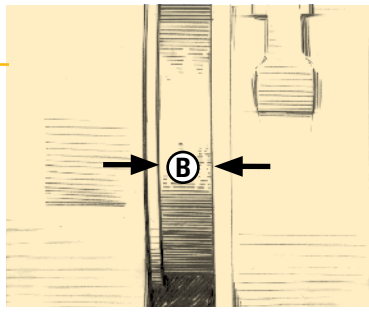


Chart 1.
Proper Track Sag

Machines without carrier rollers

	Inches			Millimeters		
Model	**Min**	**Target**	**Max**	**Min**	**Target**	**Max**
D11T, D11R, D11N, D10	6.1	6.5	6.9	155	165	175
D10T, D10R, D10N, D9L, 589	5.7	6.1	6.5	145	155	165
D9T, D9R, D9N	4.7	5.1	5.5	120	130	140
D8T, D8R, D8N, 578, 583T/R	4.1	4.5	4.9	105	115	125
D8L	5.1	5.5	5.9	130	140	150
D7R, D7H, 572R	4.1	4.5	4.9	105	115	125
D6T, D6R, D6H, 527	4.1	4.5	4.9	105	115	125
D5H, D4H, 517, 561H, 561M	3.5	3.9	4.3	90	100	110

Chart 2.
Proper Track Sag

Machines with carrier rollers

	Inches			Millimeters		
Model	**Min**	**Target**	**Max**	**Min**	**Target**	**Max**
D11T, D11R, D11N, D10	2.6	3.0	3.4	65	75	85
D10T, D10R, D10N, D9L, 589	2.4	2.8	3.2	60	70	80
D9T, D9R, D9N	2.2	2.6	3.0	55	65	75
D8T, D8R, D8N, D8L, 578, 583T/R	2.2	2.6	3.0	55	65	75
D7R, D7H, 572R	2.2	2.6	3.0	55	65	75
D6T, D6R, D6H, 527	1.8	2.2	2.6	45	55	65
D6N, D6M, D5H, 517	1.8	2.2	2.6	45	55	65
D5N, D5M, D4H, 561H, 561M	1.0	1.4	1.8	25	35	45

Chart 3.
Proper Track Sag SystemOne™

Machines with carrier rollers*

	Inches			Millimeters		
Model	**Min**	**Target**	**Max**	**Min**	**Target**	**Max**
D8T, D8R	2.2	2.6	3.4	45	65	75
D6T/R/H, D6N/M, D5H	1.6	1.8	2.0	40	45	50
D5N/M, D4H	1.0	1.4	1.8	25	35	45
Machines without carrier rollers*						
D8T/R	3.1	4.5	4.9	80	115	125
D6T/R/H	4.1	4.5	4.9	105	115	125

* If excessive track jumping occurs, run the track adjustment to the minimum side of the track sag range.

Chart 4.
Track Roller Frame Extension Specifications

Machines with and without carrier rollers

Model (Serial Number Range)	Inches	Millimeters
D11T, D11R (AAF) (7PZ) (9TR00202-UP) (9XR00154-UP)	7.8	198
D11R, D11N	7.0	178
D10T (RJG), D10R (AKT) (3KR01331-UP), D10	7.3	186
D10N (2YD1-515)	5.8	148
D10R (3KR1-1330), D10N (2YD516-UP)	6.8	173
D9T (RJS), D9R (ACL) (ABK) (8BL1422-UP) (7TL1212-UP)	7.0	178
D9R (8BL1-1421) (7TL1-1211), D9N	5.9	150
D9L, D8L, 589	6.5	165
D8T, D8R, 583T/R (7XM5094-UP) (6YZ) (KPZ)	6.0	152
D8R (7XM1-5093), D8N (9TC) (5TJ)	5.6	142
D8 T/R SystemOne	6.0	152
D8N, 578 (9TC) (5TC)	5.6	142
D7R - STD, XR	5.4	136
D7R - LGP, 572R	5.4	136.5
D7H - STD, XR	5.0	126
D7H - LGP	5.0	127
D6R - STD (2YN1-544) (3ZN1-763)	6.2	156.8
D6T, D6R - STD (2YN545 & UP) (3ZN764 & UP) (AFM) (AEM)	5.8	147.5
D6R - XR (6JN1-415) (7KN1-450)	6.2	156.8
D6R - XR (6JN416 & UP) (7KN451 & UP)	5.8	147.5
D6R - LGP (8LN1-528) (9PN1-1578)	6.0	151.8
D6T, D6R - LGP (8LN529 & UP) (9PN1579 & UP) (ACJ) (ADE)	5.6	142.5
D6R - XL (4MN1-503) (5LN1-2765)	6.0	153.5
D6T- XL, XW, LG, D6R - XL (4MN504 & UP) (5LN2766 & UP)	5.7	144.2
D6R - XW	5.7	144.2
D6H - STD, XR	6.4	161.8
D6H - LGP, 527	6.2	156.8
D6H - XL	6.0	153.5
D6N/M - XL	4.0	102.4
D6N/M - LGP	4.3	108.2
D5N/M - XL	3.6	91.7
D5N/M - LGP	3.5	88.5
D5H, 517	4.4	112
D4H, 561H/M	3.9	100

Track Adjustment Procedures

Low Sprocket Tractors and Loaders

1. Move the machine forward and let it coast to a stop without applying the brakes. Then park the machine and turn off the engine.

   Place a tight line over the grouser tips from the sprocket to the front idler. Track sag should be about 2 inches or 50 millimeters. If your track requires adjustment, complete the following steps.

2. Connect the grease gun to the fitting at the track adjustment mechanism "A" located under the inspection plate. "B" is the front idler bearing assembly.

3. Add grease to extend the hydraulic track adjuster until the idler is at maximum forward position. The relief valve should remain closed.

   After adding grease, the track should be almost straight between the front carrier roller and idler.

4. On machines with one carrier roller per side, place a mark on the track roller frame .4 inch or 10 millimeters behind the rear edge of the front idler bearing assembly "B."
   On machines with more than one carrier roller per side, mark the track roller frame .5 inch or 13 millimeters behind the rear edge of the assembly.

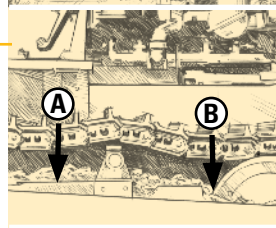
5. Open the hydraulic relief valve.

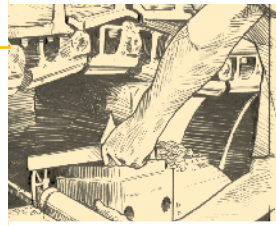
6. Place a track pin or drawbar pin between the sprocket teeth near the link assembly.

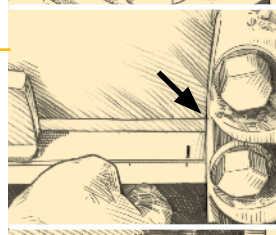
7. Travel in reverse until the idler backs up at least .5 inch or 13 millimeters. Move the machine forward until the pin is free of the track, then remove the pin.

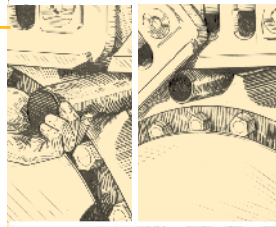
8. Close the hydraulic relief valve. Using the grease gun, extend the hydraulic track adjuster until the rear edge of the idler bearing assembly aligns with the mark on the roller frame.

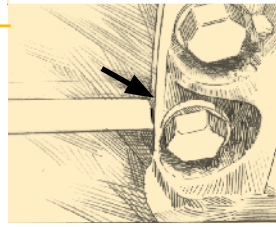
The resulting sag should be about 2 inches or 50 millimeters. Operate the machine in forward and reverse, then reinspect track adjustment.











Hydrostatic Loaders

1. Move the machine forward and let it slowly come to a stop. Then park the machine and turn off the engine.

   Place a tight line over the grouser tips from the sprocket to the front idler

   Measure the distance from the line to the grouser tips at the lowest point of sag. Proper track tension is about 2 inches or 50 millimeters.

2. If the track requires adjustment, remove the cover for the adjusting mechanism.

   Connect the grease gun to the fitting. Add grease to move the idler forward until the track is tight.

3. Using a straight edge, make a mark on the rod even with the recoil housing "A."

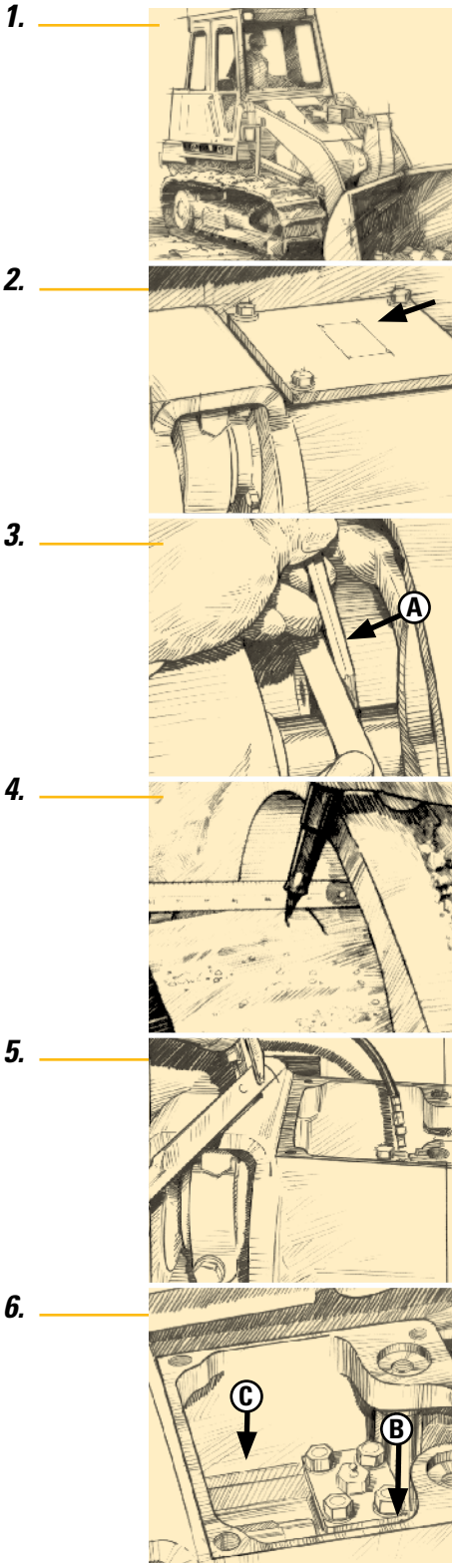
4. Place a second mark on the rod .4 inch or 10 millimeter from the first mark, in the direction of the idler. On the 973, place the mark on the rod .5 inch or 13 millimeters in the direction of the idler.

5. Open the relief valve and let the idler drift back until the second mark is behind the recoil housing. Then close the relief valve.

   Using a grease gun, move the idler forward until the second mark is even with the recoil housing. The resulting sag should be about 2 inches or 50 millimeters.

   Operate the machine in forward and reverse, then reinspect the track.

6. As wear increases on the track link and rolling components, the distance between the piston "B" and recoil housing "C" will increase. Consult a Caterpillar Service Manual or contact us when the distance exceeds:
   • 2 inches or 50 millimeters on 943 and 953 Track Loaders
   • 2.36 inches or 60 millimeters on 963 and 973 Track Loaders



Track Adjustment Procedures

Hydraulic Excavators

1. Operate the machine in the direction of the idlers.

2. Stop with one track pin directly over the front carrier roller. Park the machine and turn off the engine.

3. Place a tight line or straight edge on top of the grousers between the front carrier roller and idler.

Measure the distance from the straight edge to the grouser tip at the lowest point of sag, midway between the front carrier roller and idler.

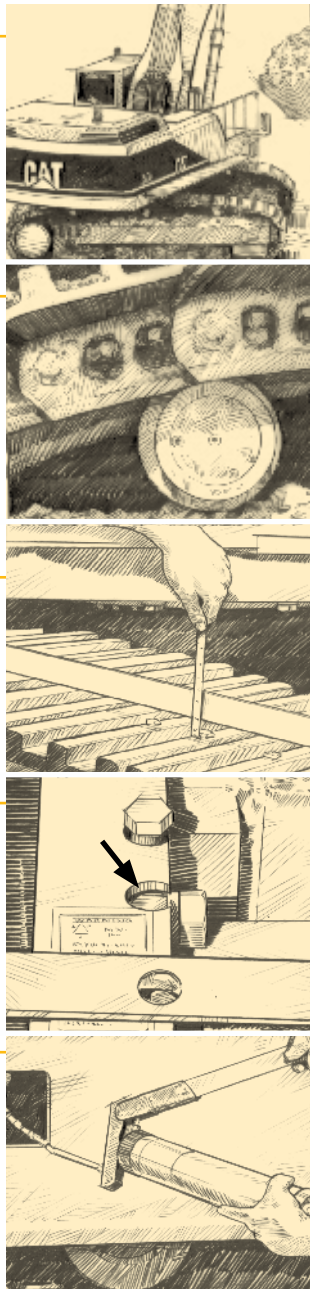
Refer to the chart below to determine the correct sag for each model.

4. If the track is too tight, loosen it by opening the relief valve and allowing grease to escape.

5. Tighten track by adding grease at the hydraulic fill and relief valve. Travel in forward and reverse to equalize tension throughout the track. Then reinspect adjustment.

Proper Track Sag

	Inches			Millimeters		
Model	**Min**	**Target**	**Max**	**Min**	**Target**	**Max**
All 200-Family series excavators	1.0	1.3	1.5	25.0	32.5	40.0
All E-Family series excavators	1.6	1.85	2.1	40.0	47.5	55.0
All 300-Family series excavators	1.6	1.85	2.1	40.0	47.5	55.0
All 500 and TK-Family series excavators	1.6	1.85	2.1	40.0	47.5	55.0
5080, 5090B, 5130, 5130B, 5110B	1.6	1.85	2.1	40.0	47.5	55.0



Hardware Requirements

Track Roller & Idler Caps

Inadequate clamping of the track roller and idler caps can result in broken retaining bolts and damage to the frame or bogie bore.

To install roller and idler hardware:

1. Lubricate the bolt threads with 5P3931 Anti-seize Compound.
2. Align the shaft and cap dowel holes to ensure proper bearing lubrication and shaft movement.
3. Completely tighten the bolt/bolts on the side having metal contact.
4. Completely tighten the bolt on the side that has a gap.
5. Tighten the bolts to the specified torque shown in the charts below.

Elevated Sprocket - Roller Hardware Torque Requirements

Model	Bolt Size	Torque
D4H, 943 with caps	5/8"	200 ± 20 lb ft (270 ± 25 N·m)
D5H, D4H, 953	5/8"	200 ± 30 lb ft (270 ± 40 N·m)
D5N, D5M, D6N, D6M, 953	M16	200 ± 30 lb ft (270 ± 40 N·m)
D6H, 963	3/4"	320 ± 45 lb ft (430 ± 60 N·m)
D6T, D6R, 963	M20	340 ± 50 lb ft (530 ± 70 N·m)
D7R, D7H, D8T, D8R, D8N, D8L, D9T, D9R, D9N	7/8"	550 ± 50 lb ft (750 ± 70 N·m)
D9L, D10T, D10R, D10N	1"	850 ± 75 lb ft (1125 ± 100 N·m)
D10	1-1/8"	1015 ± 105 lb ft (1350 ± 135 N·m)
D11T, D11R, D11N	1-1/4"	1650 ± 150 lb ft (2200 ± 200 N·m)

Elevated Sprocket - Idler Hardware Initial Torque Requirements

Model	Bolt Size	Torque
D5H, D4H	5/8"	200 ± 30 lb ft (270 ± 40 N·m)
D5N, D5M	M16	200 ± 30 lb ft (270 ± 40 N·m)
D6N, D6M	M16	220 ± 30 lb ft (300 ± 40 N·m)
D6T, D6R	M20	430 ± 60 lb ft (570 ± 80 N·m)
D6H	3/4"	360 ± 45 lb ft (475 ± 60 N·m)
D7R, D7H	7/8"	515 ± 65 lb ft (700 ± 90 N·m)
D8L	1"	850 ± 75 lb ft (1125 ± 100 N·m)
D9L	1-1/8"	1365 ± 105 lb ft (1850 ± 135 N·m)
D9L	1-1/4"	1650 ± 105 lb ft (2200 ± 200 N·m)
D9T, D9R, D9N, D8T, D8R, D8N	1-1/8"	1185 ± 150 lb ft (1600 ± 200 N·m)
D10T, D10R, D10N, D10	1-1/4"	1700 ± 220 lb ft (2300 ± 300 N·m)
D11T, D11R, D11N	1-3/8"	2220 ± 260 lb ft (3000 ± 350 N·m)

Sprocket Segment

The principal cause of segment loosening and subsequent loss and/or damage to other parts is incorrect segment hardware installation.

To install segment hardware:

1. Lubricate the bolt threads and the washer face of the nut with 5P3931 Anti-seize Compound.
2. Tighten all nuts on any one segment to the specified initial torque shown in the chart. This draws the mating parts together tightly.
3. Tighten each nut an additional 1/3 turn. This stretches the bolt properly for good retention.

Elevated Sprocket - Sprocket Segment Hardware Initial Torque

Model	Bolt Size	Initial Torque
D6T, D6R, D6N, D6M, D5N, D5M D5H, D4H	5/8"	130 ± 30 lb ft (175 ± 40 N·m)
D8T, D8R, D8N, D8L, D7R	3/4"	220 ± 40 lb ft (300 ± 50 N·m)
D9L	7/8"	650 ± 50 lb ft (870 ± 70 N·m)
D9T, D9R, D9N	7/8"	480 ± 50 lb ft (650 ± 70 N·m)
D10T, D10R, D10N, D10	1"	650 ± 50 lb ft (870 ± 70 N·m)
D11T, D11R, D11N	1-1/8"	650 ± 50 lb ft (870 ± 70 N·m)

Low Sprocket - Sprocket Segment Hardware Initial Torque

Model	Bolt Size	Initial Torque
D4K, D3K, D4G, D4C, D3G, D3C, 935	1/2"	50 ± 8 lb ft (70 ± 10 N·m)
953C	M16	75 ± 15 lb ft (100 ± 20 N·m)
D6K, D5K, D6, D5G, D5C, D5, 973, 963, 955, 953B, 943, 939	5/8"	130 ± 30 lb ft (175 ± 40 N·m)
D7, 977, 973	3/4"	220 ± 40 lb ft (300 ± 50 N·m)
D9, D8, 983	7/8"	\250 ± 50 lb ft (340 ± 70 N·m)

Hardware Requirements

Conventional Shoe and Link

The number one cause of shoe loosening is improperly tightened shoe hardware. Use the following procedure to tighten your track bolts.

1. Lubricate the bolt threads and bolt washer faces with 5P3931 Anti-seize Compound.
2. Install Self-Locking Track Nuts with the rounded corners against the link.
3. Tighten the bolts to the specified initial torque shown in the chart below.
4. Give each bolt an additional 1/3 turn. Initial torque draws the parts together tightly. An additional 1/3 turn gives the bolt correct stretch for good retention. This ensures that the bolt's maximum clamping force is used.

Elevated Sprocket Track – Initial Torque for fastening shoes and split master links

Track Size	Bolt Size	Initial Torque
D5N, D5M, D5H, D4H	5/8"	130 ± 30 lb ft (175 ± 40 N·m)
D7H, D6T, D6R, D6N, D6M, D6H, 527, 517	3/4"	300 ± 50 lb ft (400 ± 70 N·m)
D7R,D7H	7/8"	250 ± 50 lb ft (340 ± 70 N·m)
D8T, D8R, D8N, D8L, D8T SystemOne	7/8"	480 ± 50 lb ft (650 ± 70 N·m)
D9T, D9R. D9N, D9L	1"	650 ± 50 lb ft (870 ± 70 N·m)
D9H	1"	300 ± 50 lb ft (400 ± 70 N·m)
D10T, D10R, D10N, D10	1-1/8"	650 ± 50 lb ft (870 ± 70 N·m)
D11T, D11R, D11N	1-3/8"	1100 ± 110 lb ft (1500 ± 150 N·m)

Low Sprocket Track – Initial Torque for fastening shoes and split master links

Model	Bolt Size	Initial Torque
D4K, D4G, D4C, D3K, D3G, D3C, D3, 931, 935	9/16"	65 ± 15 lb ft (90 ± 20 N·m)
D5K, D5G, D5C, D5, D4, 953, 943, 941, 939	5/8"	130 ± 30 lb ft (175 ± 40 N·m)
D6, D7, 977, 973, 963, 955	3/4"	220 ± 40 lb ft (300 ± 50 N·m)
D8, 983, 973	7/8"	250 ± 50 lb ft (340 ± 70 N·m)
D9	1"	400 ± 50 lb ft (540 ± 70 N·m)

Excavator/Front Shovel Track – Initial Torque for fastening shoes

Model	Bolt Size	Initial Torque
225, 215, 213, 211, 205	5/8"	130 ± 30 lb ft (175 ± 40 N·m)
235, 231, 229, 225, FB227	3/4"	220 ± 40 lb ft (300 ± 50 N·m)
521, 522, TK711, TK721, TK722, TK741	3/4"	300 ± 50 lb ft (400 ± 70 N·m)
235	7/8"	250 ± 50 lb ft (340 ± 70 N·m)
245	1"	4\00 ± 50 lb ft (540 ± 70 N·m)
307	1/2"	165 ± 15 lb ft (220 ± 20 N·m)
307, 308	14 mm	185 ± 18 lb ft (245 ± 25 N·m)
311, 312, 313, 314	16 mm	130 ± 30 lb ft (175 ± 40 N·m)
315, 317, 318, 319, 320, 320S, 321, 322, 323, 324, 325, 511, TK711	20 mm	300 ± 50 lb ft (400 ± 70 N·m)
350	1"	370 ± 50 lb ft (500 ± 70 N·m)
330, 532, 541, TK732	22 mm	370 ± 50 lb ft (500 ± 70 N·m)
345, 551, 552, TK751, TK752	24 mm	370 ± 50 lb ft (500 ± 70 N·m)
365	27 mm	400 ± 50 lb ft (540 ± 70 N·m)
385. 5090	30 mm	675 ± 70 lb ft (990 ± 100 N·m)
5080, 375	27 mm	400 ± 50 lb ft (540 ± 70 N·m)
5130	1-3/8"	1100 ± 110 lb ft (1500 ± 150 N·m)
5110	1-1/8"	650 ± 50 lb ft (870 ± 70 N·m)

Split Master Link

The importance of correctly assembling and torquing cannot be overemphasized. Follow these steps for both new and used split master links.

1. Before installing the track, the point of connection for the master link must be clean and undamaged. Remove all paint from points of connection.
2. Use 4C5593 Lubricant or 5P3931 Anti-seize Compound on master bolt threads.
3. Put master links together and check alignment of holes for master bolts. Install one master bolt in each link. The bolts must turn easily, by hand, in the threads.
4. Remove the bolts. Install the master track shoe and all four master bolts. Turn the master bolts by hand.
5. Tighten the master bolts to the specified initial torque shown in the chart.
6. Give each bolt an additional 1/2 turn. Give a 1/3 turn for D6T, D6R, D6H, D7H (S&L), D8L, D8T, D8R, D8N, D9L, D9T, D9R,D9N, D10T, D10R, D10N, 589, 578, 245, 235.

SystemOne™ Shoe and Link

The number one cause of shoe loosening is improperly tightened shoe hardware. Use the following procedure to tighten your track bolts.

1. Lubricate the bolt threads and bolt washer faces with 5P3931 Anti-seize Compound.
2. Install Self-Locking Track Nuts with the rounded corners against the link.
3. Tighten the bolts to the specified initial torque shown in the chart below.
4. Give each bolt an additional 1/3 turn.

Initial torque draws the parts together tightly. An additional 1/3 turn gives the bolt correct stretch for good retention. This ensures that the bolt's maximum clamping force is used.

SystemOne Track

Track Size	Bolt Size	Initial Torque
D6T, D6R, D6H, 953 D/C/B	22 mm	370 ± 50 lb ft (500 ± 70 N·m)
D6N, D6M, D5H, 953 D/C/B	20 mm	300 ± 50 lb ft (400 ± 70 N·m)
D6K, D5K	18 mm	150 ± 20 lb ft (200 ± 25 N·m)
D5G, D5C, D5N	16 mm	110 ± 20 lb ft (145 ± 40 N·m)
D4K, D4G, D4C, D3K, D3G, D3C	16 mm	110 ± 20 lb ft (145 ± 40 N·m)

SystemOne™ Shoe and Clamp Masterlink

The number one cause of shoe loosening is improperly tightened shoe hardware. Use the following procedure to tighten your track bolts.

1. Lubricate the bolt threads and bolt washer faces with 5P3931 Anti-seize Compound.
2. Install Self-Locking Track Nuts with the rounded corners against the link.
3. Tighten the bolts to the specified initial torque shown in the chart.
4. Then turn each bolt 90º at a time for four (4) turns. These turns are to be completed in a clockwise pattern.

   Initial torque draws the parts together tightly. The additional turns gives the bolt correct stretch for good retention. This ensures that the bolt's maximum clamping force is used.

SystemOne Track Clamp Master

Track Size	Bolt Size	Initial Torque
D6T, D6R, D6H, 953 D/C/B	22 mm	300 ± 50 lb ft (400 ± 70 N·m)
D6N, D6M, D5H, 953 D/C/B	20 mm	220 ± 50 lb ft (300 ± 50 N·m)
D6K, D5K	18 mm	180 ± 50 lb ft (250 ± 50 N·m)
D5G, D5C, D5N	16 mm	185 ± 50 lb ft (250 ± 50 N·m)

Expect More from the Experts

When you buy a Cat undercarriage system, you get the support of our parts and service representatives who have tools to help you manage your undercarriage system. Custom Track Service (CTS) is the best way to control costs and downtime.

While there is no substitute for CTS, you play an equally important role in managing your undercarriage system. Understanding how your undercarriage works and wears is critical. With correct operation and maintenance you can reduce wear and save money. Together we form a working relationship to lower costs.

Maximize the Life of Your Undercarriage

Undercarriage maintenance costs can consume 50 percent or more of the maintenance budget for your Cat track-type machines. It's good management to understand how your undercarriage works so you can reduce wear and minimize operation and maintenance costs.

- Maintain optimum track tension
- Run the right shoe width for conditions
- Monitor operator habits
- Prepare machines for underfoot conditions

These procedures, combined with Custom Track Service (CTS) from your Cat Dealer, can extend the life of your undercarriage and cut downtime

CAT® DEALERS DEFINE WORLD-CLASS PRODUCT SUPPORT.

We offer you the right parts and service solutions, when and where you need them.

The Cat Dealer network of highly trained experts can help you maximize your equipment investment.

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